

**Gate valve,  
billet-forged**

with pressure seal bonnet

with butt weld ends

**p approx. 600 bar  
DN 50-800**

## Applications

- In industrial plants, power stations, process and marine engineering
- For water, steam, gas, oil and other non-aggressive fluids
- Other fluids on request

## Design data

- Maximum permissible pressure approx. 600 bar
- Maximum permissible temperature 650 °C
- Selection as per pressure/temperature ratings (see overleaf)

## Materials

- Body:
 

P 250 GH	1.0460	up to 450 °C
15 NiCuMoNb 5	1.6368	up to 450 °C
16 Mo 3	1.5415	up to 530 °C
13 CrMo 4-5	1.7335	up to 550 °C
10 CrMo 9-10	1.7380	up to 570 °C
X 10 CrWMoVNb 9-2	1.4901	up to 650 °C
X 10 CrMoVNb 9-1	1.4903	up to 650 °C
- Other materials on request

## Standard model

- Body made of forged steel
- Pressure seal bonnet
- Non-rotating stem
- Wedge-type valve disc
- Yoke head designed for mounting electric and pneumatic actuators (DIN ISO 5210/5211)
- Seat/disc interface made of wear-resistant and corrosion-proof stellite-6
- Connection branch for body pressure relief valve as per type series booklet 7300.1

## Variants

- Flanged models
- Bypass
- Drain branch
- Parallel discs
- Pressure relief connections (3-branch system)
- Pressure relief hole in seat ring
- Hard-faced back seat
- Lantern ring in gland packing
- Cup spring supported threaded bush
- Packing combination for high-temperature applications
- Pressure seal joint ring capped with stainless steel
- Mechanical position indicator
- Position switch
- Spur or bevel gear
- Electric and pneumatic actuators
- Actuating bush for remote actuation
- Free from non-ferrous metals
- Locking device
- Inspections to technical codes such as PED/AD2000/TRD (German Steam Boiler Regulations) or to customer specification

## Additional information

- Swing check valve type ZRS in pressure seal design see type series booklet 7278.1
- Body pressure relief valve see type series booklet 7300.1
- Operating instructions: 0570.81

## On all enquiries/orders please specify

- |                         |                               |
|-------------------------|-------------------------------|
| 1 Type                  | 9 Flow rate                   |
| 2 PN                    | 10 Pipe connection            |
| 3 DN                    | 11 Variants                   |
| 4 Design pressure       | 12 Type series booklet number |
| 5 Differential pressure | 13 Pressure relief            |
| 6 Design temperature    | 14 Installation position      |
| 7 Material              | 15 Actuation method           |
| 8 Fluid handled         |                               |

When ordering spare parts, please indicate the original serial number and the year of manufacture.

The valves do not have a potential internal source of ignition and can be used in potentially explosive atmospheres, group II, category 2 (zones 1+21) and category 3 (zones 2+22) according to ATEX 94/9/EC.

The valves satisfy the safety requirements of Annex I of the European Pressure Equipment Directive 97/23/EC (PED) for fluids in Groups 1 and 2.



## Pressure/Temperature ratings

Material	Sub-series	Permissible operating pressures in bar at temperatures in °C 1) 2)																											
		20	100	150	200	250	300	350	400	425	450	475	500	510	520	530	540	550	560	570	580	590	600	610	620	630	640	650	
P 250 GH 1.0460	C	212	202	181	161	141	126	105	85	76	66																		
	D	323	308	277	246	215	192	161	130	115	100																		
	E	426	407	366	325	284	254	213	172	152	132																		
	F	521	496	446	397	347	310	260	210	186	160																		
15NiCuMoNb5 1.6368	C	429	407	394	380	367	356	341	327	314	242																		
	D	660	618	598	578	558	539	518	498	476	374																		
	E	869	814	789	764	738	711	685	658	629	495																		
	F																												
16Mo3 1.5415	C	268	237	214	192	177	151	147	141	140	136	134	94	66	52	42													
	D	408	361	326	292	269	231	223	215	211	207	205	143	100	79	63													
	E	539	478	432	386	356	304	294	284	279	275	269	189	132	104	83													
	F	657	583	527	471	434	372	359	347	341	335	329	231	162	128	102													
13CrMo4-5 1.7335	C	268	243	228	213	202	187	177	167	162	157	155	138	118	95	79	61	49											
	D	408	369	346	323	308	284	269	254	246	238	235	211	178	145	119	93	75											
	E	539	488	457	427	407	376	355	335	325	315	310	277	236	191	158	124	100											
	F	657	596	558	521	496	459	434	409	397	385	378	341	288	233	193	151	121											
10CrMo9-10 1.7380	C	268	248	232	217	213	202	187	177	173	167	162	136	119	104	91	79	69	58	51									
	D	408	377	354	331	323	308	284	269	262	254	246	207	181	158	138	119	104	89	78									
	E	539	498	467	437	427	407	376	355	345	335	325	275	239	210	183	158	138	117	103									
	F	657	608	570	533	521	496	459	434	422	409	397	335	292	255	223	193	168	144										
X10CrMoVnB 9-1 1.4903	C	268													245	225	204	185	166	148	131	116	102	89	78	67	59	50	
	D	408													324	296	270	244	214	195	174	154	135	117	103	87	77	67	
	E	539													470	429	391	353	316	283	251	221	197	170	148	126	112	96	
	F	657													514	472	428	387	347	311	275	244	215	186	162	139	122	105	
X10CrWMoVnB 9-2 1.4901	C	268																			134	120	107	94	82	71	61	53	
	D	408																			201	180	160	142	123	106	92	79	
	E	539																			262	234	208	184	160	138	120	103	
	F	657																			314	281	250	221	192	166	144	124	

1) The valves can be used down to -10 °C

2) The test pressure is stipulated in accordance with the provisions of the technical codes PED 97/23/EC; DIN EN 12516-2; EN 12266-1

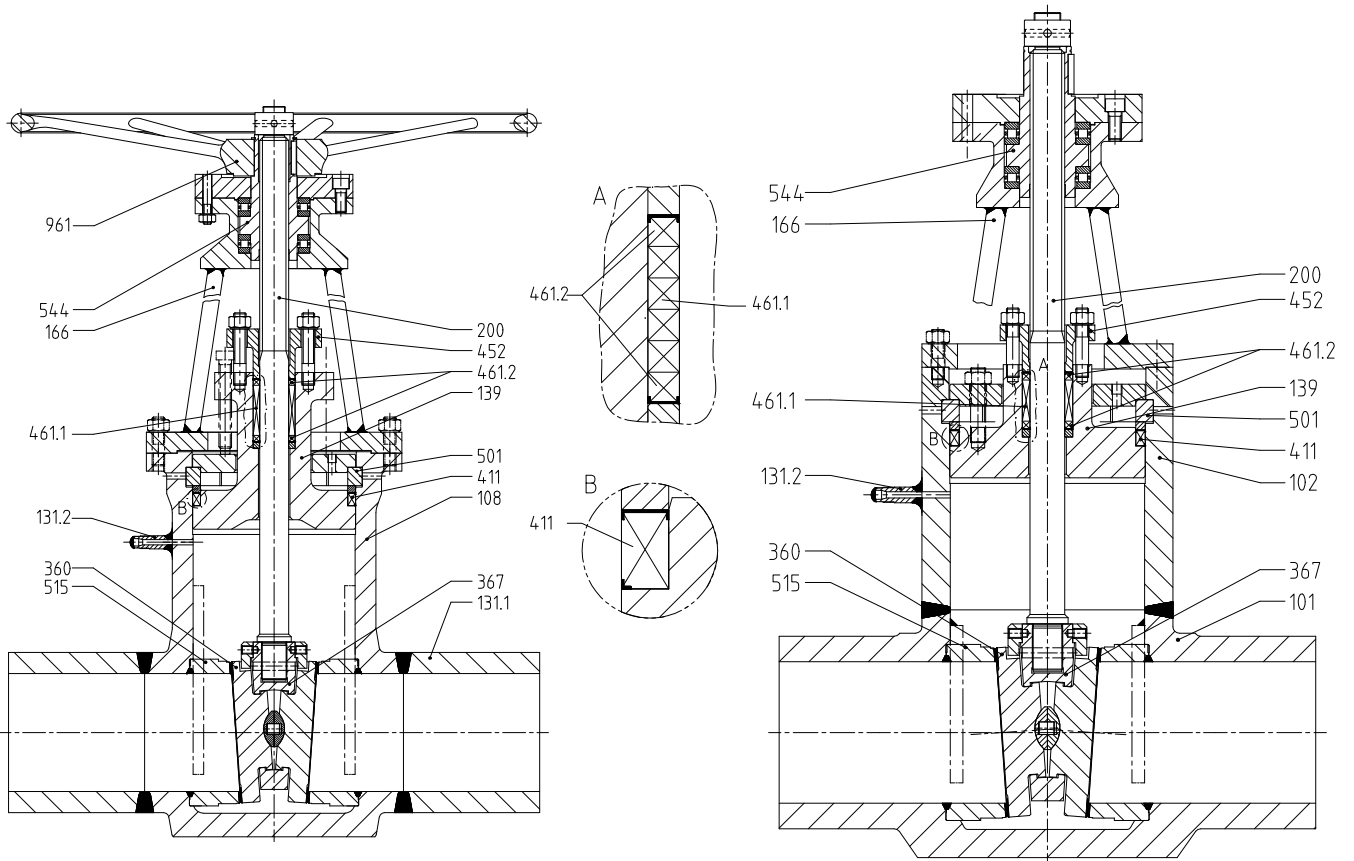
## Materials

Part No.	Description	Materials for operating temperatures up to °C						
		450		530	550	570	600	650
101	Lower body part	P 250 GH 1.0460	15NiCuMoNb5 1.6368	16Mo3 1.5415	13CrMo4-5 1.7335	10CrMo9-10 1.7380	10CrMo9-10 1.7380	X10CrMoVnB 9-1 1.4903
102	Upper body part							
108	Body							
131.1	Connection branch							
139	Bonnet	10CrMo9-10 1.7380	15NiCuMoNb5 1.6368	16Mo3 1.5415	13CrMo4-5 1.7335	10CrMo9-10 1.7380	X10CrMoVnB 9-1 1.4903	X10CrWMoVnB 9-2 1.4901
501 *)	Segmental ring							
360 *)	Wedges hard-faced with stellite 6							
368 *)	Parallel discs hard-faced with stellite 6	13CrMo4-5 1.7335	15NiCuMoNb5 1.6368	16Mo3 1.5415	13CrMo4-5 1.7335	10CrMo9-10 1.7380	X10CrMoVnB 9-1 1.4903	X10CrWMoVnB 9-2 1.4901
515	Seat ring hard-faced with stellite 6							
131.2	Connection branch	13CrMo4-5 1.7335				10CrMo9-10 1.7380	X10CrMoVnB 9-1 1.4903	
166	Yoke	13CrMo4-5 - 1.7335						10CrMo9-10 - 1.7380 X10CrMoVnB 9-1 - 1.4903
200 *)	Stem	X39CrMo17-1 1.4122 X22CrMoV11-1 1.4923						X22CrMoV11-1 1.4923 X5NiCrTi2615 1.4980
367 *)	Wedge holder	13CrMo4-5 1.7335	15NiCuMoNb5 1.6368	10CrMo9-10 1.7380			X10CrMoVnB 9-1 1.4903	
411.1 *)	Joint ring	Pure graphite capped with stainless steel						
452	Gland cover	13CrMo4-5 - 1.7335				10CrMo9-10 - 1.7380		
461 *)	Gland packing	Pure graphite / packing end rings capped with stainless steel						
544 *)	Threaded bush	Copper base alloys						
961	Handwheel	Steel						

\*) Recommended spare parts

DN 50/50 - 200/175

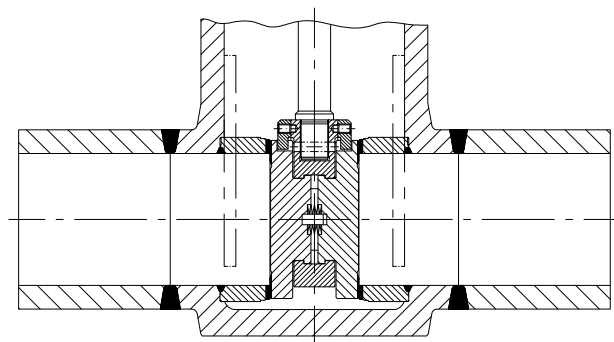
DN 200/200 - 500/450



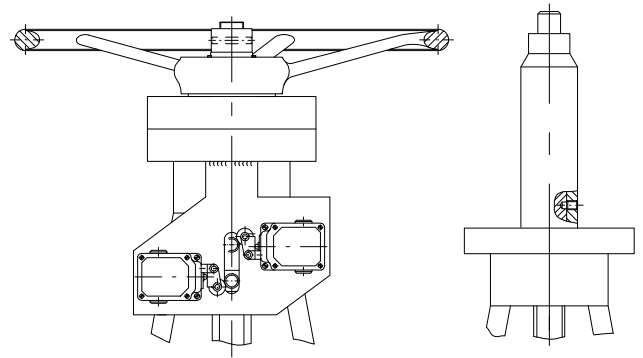
with connection branch extensions

without connection branch extensions

**Variants**

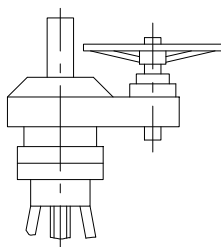


Parallel discs

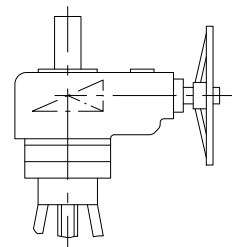


Position indicator with position switch

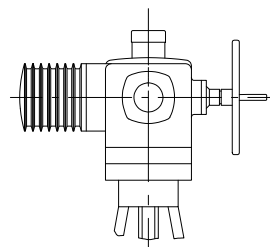
Actuating bush



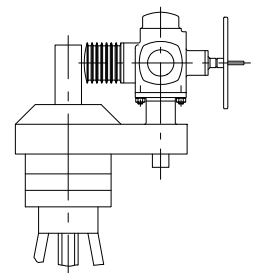
Spur gear with handwheel



Bevel gear with handwheel

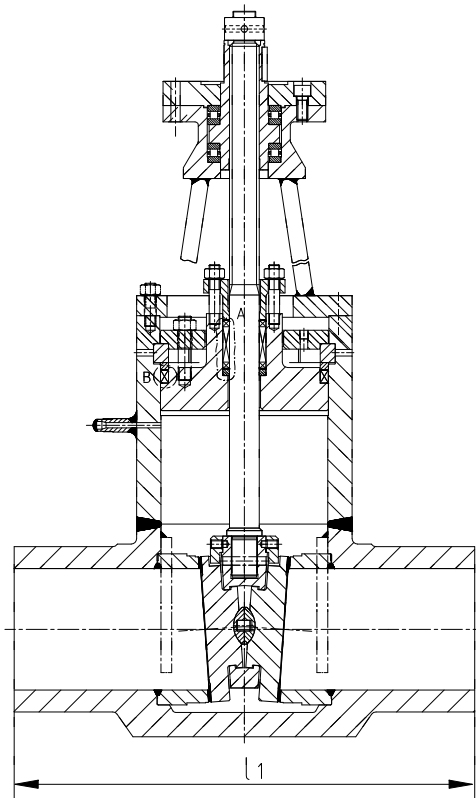


Electric actuator



Electric actuator with spur gear

Model with connection branch extensions: DN 200/200-500/450



Face-to-face lengths and weights

Dimensions in mm

Subseries	Face-to-face length l <sub>1</sub>				Weights incl. handwheel (approx. kg)			
	C	D	E	F	C	D	E	F
200/200	750	950		1050	435	830	1175	1550
250/200	900	1150			470	920	1330	1675
250/250					740	1380	2075	2740
300/250	1050	1350			820	1555	2250	2965
300/300					1295	2320	3365	4350
350/300	1200	1550			1420	2615	on request	
350/350					1865	3445		
400/350	1350	1750			2035	3890		
400/400					2700	4835		
450/400	1500	1950			2975	5510		
450/450					3450	6420		
500/450	1650	2150			3835	-		

Body pressure relief valve

See type series booklet 7300.1

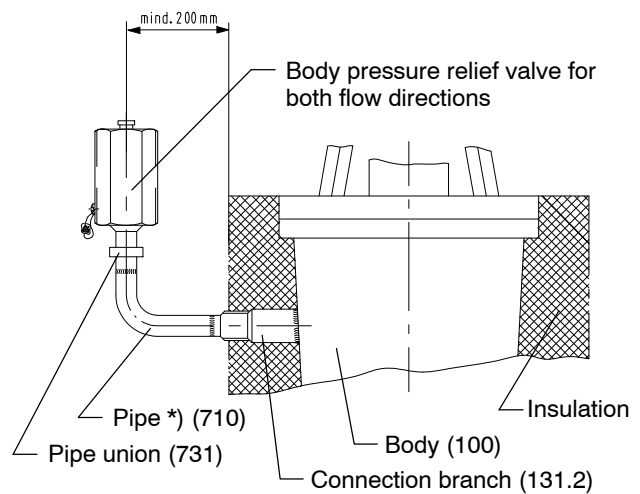
A body pressure relief valve is necessary if, with the gate valve closed, there is a danger of the liquid trapped inside the valve body heating up and causing an unacceptable pressure increase inside the valve. A warning sign is affixed to the yoke arm near the name plate.

All gate valves with pressure seal bonnet are factory-supplied with a closed connection branch (part No. 131.2) with connection dimensions  $\phi 22/\phi 14.1$  (suitable for pipe  $\phi 21.3 \times 3.6$ ).

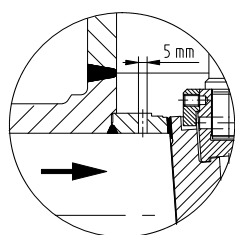
When ordering please state whether a pressure relief valve is to be provided, or whether excess pressure is to be released via a bypass or a relief hole in the inlet-side seat ring (515). In those cases, the gate valves can be used for one flow direction only.

PLEASE NOTE:

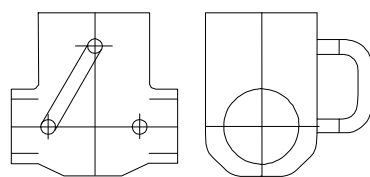
The pressure relief valve must not be welded directly to the connection branch (part No. 131.2) but must be connected to it via an intermediate pipe (part No. 710) in a vertical, upright position outside the insulating material. The minimum distance to the insulation is 200 mm.



\*) The pipe between the connection branch and the pressure relief valve is not included in KSB's scope of supply.



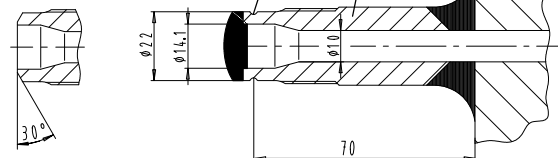
Pressure relief hole in inlet-side seat ring



To be connected on site, depending on flow direction

When connecting to a pipe (710), cut here and bevel the face to obtain a welding groove.

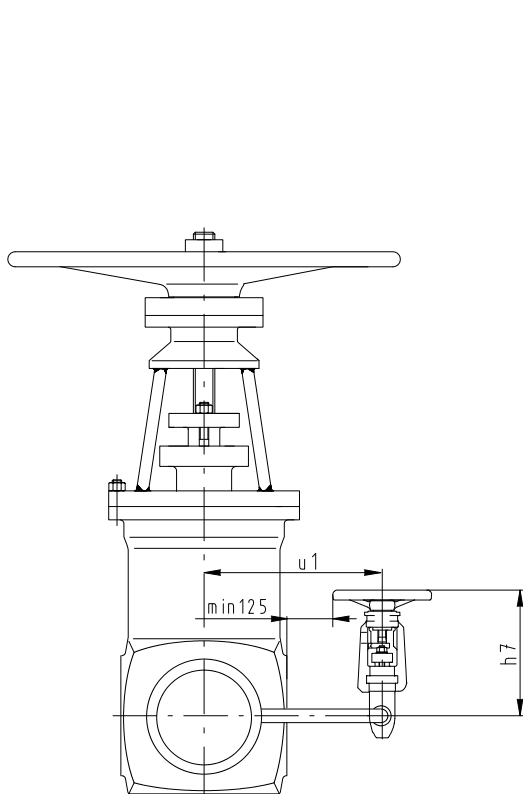
Welding groove



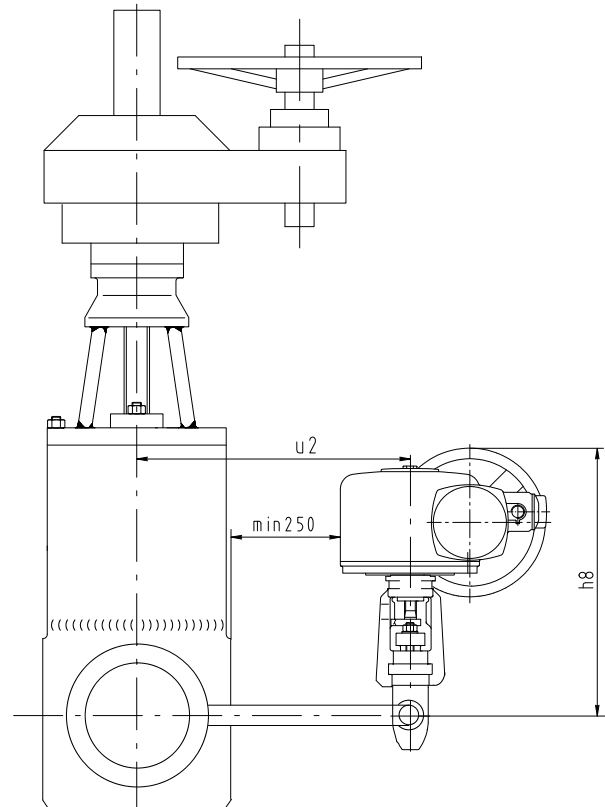
## Bypass

When the pressure difference specified below between the operating pressure upstream and the backpressure downstream of the valve is exceeded, the gate valves must be provided with a bypass. If a bypass is necessary or requested for other reasons, a NORI® 320/NORI® 500 globe valve as per type series booklet 7640.1/7641.1, DN 15 (for gate valve seat diameters up to and incl. 150 mm) or DN 25 (for gate valve diameter from 175 mm), is fitted in the bypass line as a standard (larger nominal sizes on request).

Seat diameter	S	/50-/175	/200	/250	/300	/350	/400	/450
$\Delta p$ (bar)	Subseries	C	255			240		205
		D	365			330		275
		E	475	440	385	275		220
		F	585	330	275	220		200



Model with handwheel and bypass with handwheel



Model with spur gear and bypass with actuator

## Bypass dimensions Subseries C, D

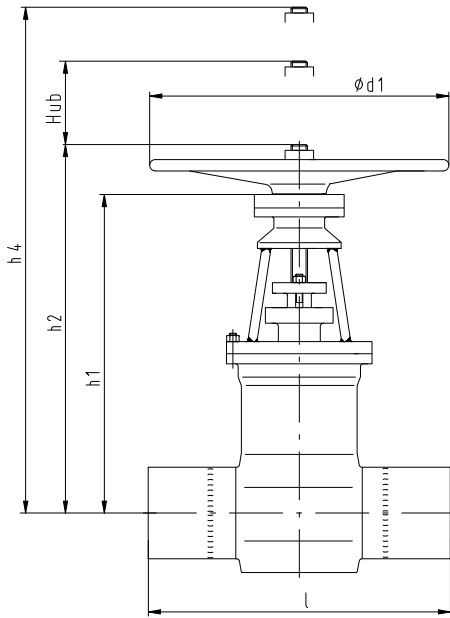
Dimensions in mm

Seat diameter S	Max. overhang		Height	
	$u_1$	$u_2$	h 7	h 8
/50	315	425	240	570
/65	330	440		
/80	340	450		
/100	360	470		
/125	395	505		
/150	420	530		
/175	455	565	255	
/200	500	695		
/250	560	755		
/300	600	830		
/350	600	830		
/400	600	830		
/450	705	935		

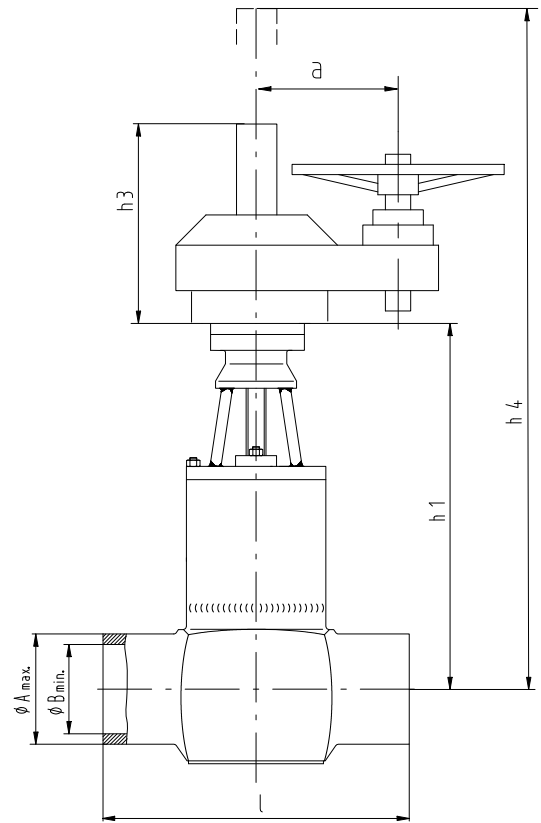
Dimensions for subseries E, F on request

## Dimensions of subseries C and D

Dimensions of butt weld ends and weld groove form to customer's specification, but only within dimensions  $A_{max.}$  and  $B_{min.}$   
 Special dimensions on request



≤ DN/S 200/175



≥ DN/S 200/200

Dimensions

in mm

Subseries	Face-to-face length		Butt weld ends un-machined				Centre-to-top heights								Overhang		Handwheel diam.		Stroke		Weight			
	C	D	øA <sub>max.</sub>		øB <sub>min.</sub>	h 1		h 2		h 3		h 4 <sup>1)</sup>		C	D	C	D	C	D	C	D			
DN / S	50/50	300	350	65	70	45	400		485		145		680	810					60	60	45	64		
	65/50	360	425	85	90			475		560		170						315	400	49	66			
	65/65				104	60	480		565				790	815	175	240			70	75	55	79		
	80/65				130																57	81		
	80/80	390	470	102	115	70	505	545	600	640		195									73	118		
	100/80												220	850	940						85	87	76	125
	100/100	450	550	120	140													400	500			119	222	
	125/100			145	155	90	620	660	710	760	220	255	1020	1120							105	109	122	230
	125/125	525	650	155	175	110	655	745	750	855	270	305	1110	1290	240	240/300							177	283
	150/125			185																			182	293
Nominal size / Seat diameter	150/150	600	750	180	200													500				267	431	
	175/150	675	850	200	220	135	790	855	890	970	300	320	1315	1470	240/300	300/360			800	147	156	277	446	
	200/150	750	950	225	250																	290	461	
	175/175	675	850	220	230																	405	615	
	200/175	750	950	245	280	155	810	1030	925	1175	320		1425	1780	300/360			630		176	184	415	665	
	200/200			260	295							400											430	740
	250/200	700	800	295	340	180	910	1065	1025	1210	370		1605	1885		360/380			800	1000	196	207	435	785
	250/250			305	365																		740	1255
	300/250	850	950	360	410	225	1015	1280	1150	1445	450	450	1870	2700		360/380					238	250	765	1355
	300/300			380	410														1000					
350/300	950	1150	410	470	275	1350	1525	1515	1740		500	575	2385	2475	360/380	380/410					295	310	1300	2155
350/350			430	480																		1810	3300	
400/350	1050	1350	460	535	320	1475	1625	1640	1875			645	2630	2995								1900	3600	
400/400			485	565																		2640	4650	
450/400	1200	1550	515		365	1720	1785	1930	2035		675	745	3055	3300		380/410	410/445	Transmission gearing required			400	402	2795	5135
450/450			530	600																		3360	6185	
*) 500/450	1350	1750	585		410	1765	2100	1975	2380			795	3220	3755								3635	6700	

1) h4 = Disassembly clearance

\*) Larger nominal sizes on request

## Dimensions of subseries E and F

Dimensions of butt weld ends and weld groove form to customer's specification, but only within dimensions  $A_{max.}$  and  $B_{min.}$ .  
Special dimensions on request

Dimensions in mm

Subseries	Face-to-face length		Butt weld ends unmachined			Centre-to-top heights						Overhang	Handwheel diam.		Stroke	Weight		
	E	F	$\varnothing A_{max.}$		$\varnothing B_{min.}$	h 1		h 2		h 3		h 4 <sup>1)</sup>	a	d 1		E, F	kg	
			E	F	E, F	E	F	E	F	E	F	E, F		E	F			
50/50 65/50 65/65 80/65	350		85		45	475		560		170		840	240	400		63	80	85
	425		95			555		650		220				500			78	120
	470		110		60	675		775		220/255		1160		630		91	120	145
	550		120			775		885		920				800			112	123
80/80 100/80 100/100 125/100 125/125 150/125 150/150 175/150 200/150 175/175 200/175 200/200 250/200 250/250 300/250 300/300 350/300 350/350 400/350 400/400 450/400 450/450 500/450	470		120	130	70	675		775		220/255		1160	240/300	500	630	91	205	250
	550		130	140		775		885		920				1380			630	800
	650		150	160	90	775	810	885	920	305/320		1535	360/380	1000	162	189	285	415
	750		160	180		875	910	990	1025	305/320							800	
	850		185	195	110	875	910	990	1025	305/320		1535	360/380	1000	162	189	475	690
	850		195	225		875	910	990	1025	305/320							800	
	850		225	240	135	965	1000	1110	1145	320/370		1715	360/380	1000	162	189	750	1000
	950		240	260		965	1000	1110	1145	320/370							1715	
	950		260	290	155	980	1050	1125	1195	370/410		1795	360/380	1000	162	189	790	1050
	850		250	270		980	1050	1125	1195	370/410							1795	
	950		260	290	180	1130	1165	1295	1330	420/460		1990	380/410	1000	210	260	1090	1420
	900		285	300		1130	1165	1295	1330	420/460							1990	
1050		350	375	225	1410	1435	1620	1645	460/525		2465	380/410	1000	260	320	1220	1620	
1150		425	445		1410	1435	1620	1645	460/525							2465		260
1250		425	435	275	1705	1755	1915	1965	510/575		2945	380/410	1000	320	372	2120	2815	
1350		500	520		1705	1755	1915	1965	510/575							2945		320
1450		565	595	320	1805	1920	2055	2170	625/645		3255	410/445	Transmission gearing required	408	456	on request		
1550		365	395		1805	1920	2055	2170	625/645							3255		408
1650		365	395	365	1945	2080	2195	2330	725/745		3495	410/445	Transmission gearing required	408	456	on request		
1750		640	670		1945	2080	2195	2330	725/745							3495		408
1850		640	670	410	2180	2320	2460	2600	845		3900	410/445	Transmission gearing required	408	456	on request		
1950		640	670	410	2180	2320	2460	2600	845							3900	410/445	408

<sup>1)</sup> h4 = Disassembly clearance

## Subseries B

### Dimensions

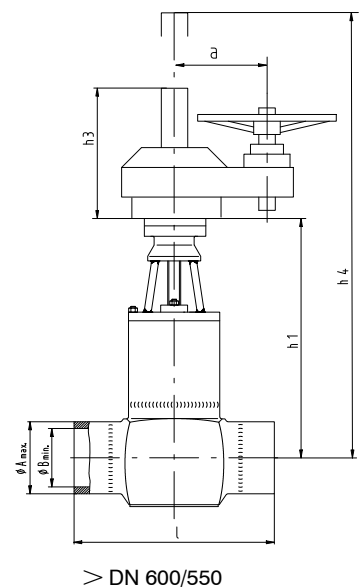
Dimensions in mm

Subseries B	Face-to-face length	Butt weld ends unmachined		Centre-to-top heights			Overhang	Weight
		$\varnothing A_{max.}$	$\varnothing B_{min.}$	h 1	h 3	h 4 <sup>1)</sup>	a	
600/550	1350	660	500	2200	830	3580	410/445	on request
700/650	1550	770	600	2300	930	3830	410/445	
800/750	1750	870	700	2570	1080	4400	410/445	

### Pressure/Temperature ratings

Material	Sub-series	Permissible operating pressures in bar at temperatures in °C																	
		<sup>2)</sup>																	
		20	300	350	400	425	450	475	500	510	520	530	540	550	560	570	580	590	600
16Mo3 1.5415	B	100	86	81	75	72	69	57	44										
13CrMo4-5 1.7335	B	100	100	95	90	87	84	74	65	55	45	37							
10CrMo9-10 1.7380	B	100	100	98	93	90	88	76	64	56	49	43	37	32					
X10CrMoVNb 9-1 1.4903	B	100								100	96	87	79	71	64	57	50	45	

<sup>2)</sup> The valves can be used down to -10 °C



≥ DN 600/550

## Product features - to our customers' benefit

### Stop nut

#### Your benefits

- Limited wedge action prevents jamming in closed position
- Reliable opening of the gate valve even in case of temperature fluctuations

### Non-rising handwheel

#### Your benefit

- Ideal in confined spaces

### Threaded bush with cylindrical roller thrust bearings

#### Your benefit

- Smooth actuation

### DIN ISO connection flange

#### Your benefits

- Straightforward retrofitting of actuators without having to dismantle the pressure-retaining components
- No modifications required

### Pressure seal bonnet, metal-capped pure graphite gaskets

#### Your benefit:

- Reliable sealing to atmosphere, especially of high pressures and temperatures.
- Metal cap reliably protects graphite against oxidation, particularly at high temperatures.

### Confined, pure graphite gland packing with metal-capped packing end rings

#### Your benefits

- High tightness
- Maintenance-friendly
- Reliable sealing to atmosphere
- Metal cap reliably protects graphite against oxidation, particularly at high temperatures.

### Back seat

#### Your benefit:

- Additional stem seal for emergency operation
- Blow-out protection for staff and plant

### Flexible two-piece wedge

#### Your benefit:

- Precise alignment with body seats
- Wedge discs are easy to replace

### Sealing surfaces made of wear and corrosion resistant materials

#### Your benefit:

- High functional reliability
- Long service life

### Wedge holder

#### Your benefit:

- No additional load on wedges by actuating moment

