

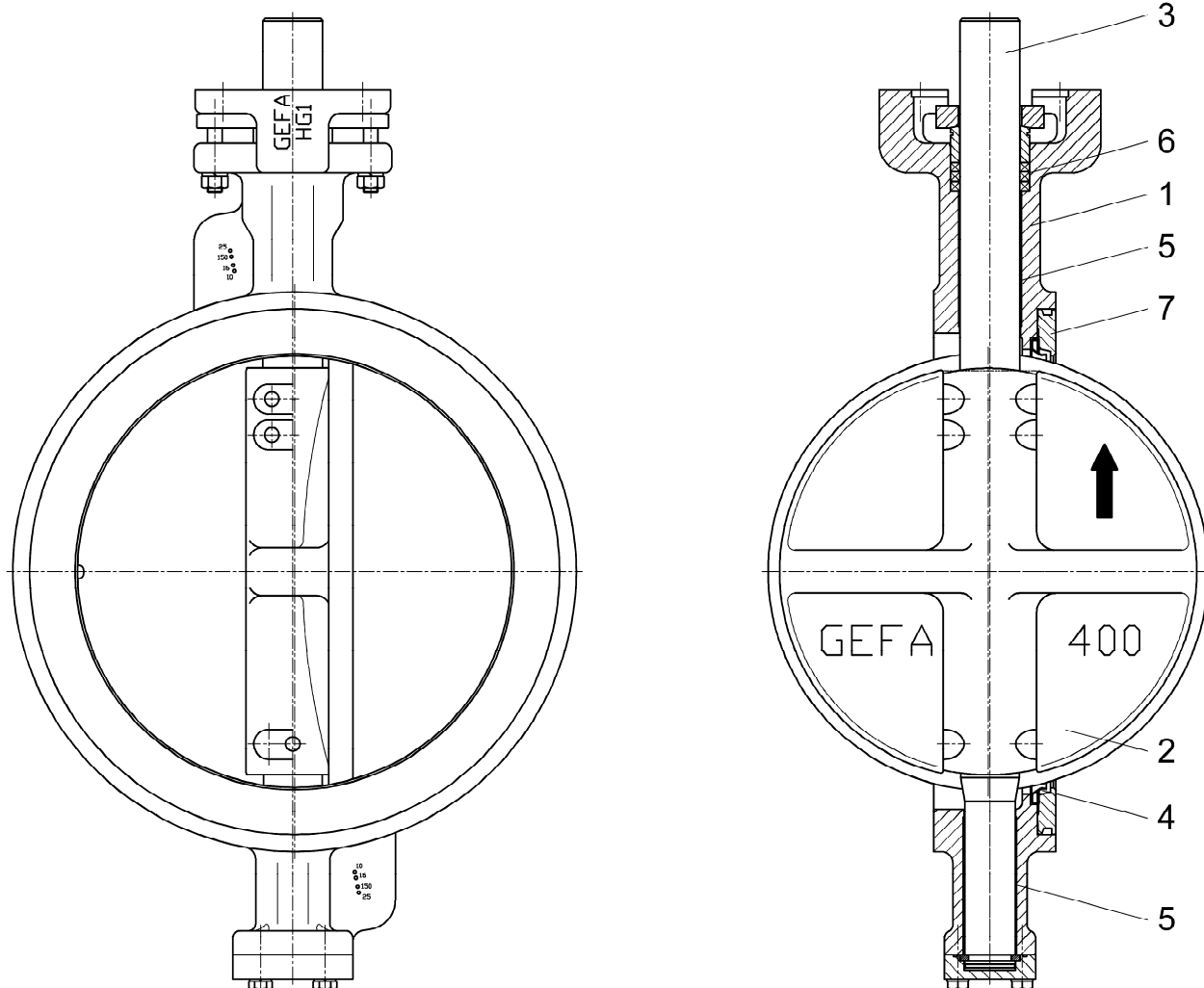
Teil Nr. Part No.	Bezeichnung Description	Material					
		HG14466TG	HG16666TG	HG14435M	HG16635M	HG14435HM	HG16635HM
max. Betriebstemperatur ** max. working temperature **		+ 220 °C		+ 220 °C		+ 450 °C	
1	Gehäuse Body	GS-C25	1.4408	GS-C25	1.4408	GS-C25	1.4408
2	Klappenscheibe Disc	1.4408	1.4408	1.4408 nitriert/nitrated	1.4408 nitriert/nitrated	1.4408 nitriert/nitrated	1.4408 nitriert/nitrated
3	Welle Stem	1.4571	1.4571	1.4571	1.4571	1.4571	1.4571
4*	Sitzring Seat	PTFE/Glas PTFE/glass	PTFE/Glas PTFE/glass	1.4571 nitriert/nitrated	1.4571 nitriert/nitrated	1.4571 nitriert/nitrated	1.4571 nitriert/nitrated
5	Lagerbuchse Bearing	1.4401 PTFE	1.4401 PTFE	1.4401 PTFE	1.4401 PTFE	1.4401 nitriert/nitrated	1.4401 nitriert/nitrated
6*	Packung Gland packing	PTFE	PTFE	PTFE	PTFE	Graphit graphite	Graphit graphite
7	Klemmring Insert ring	C-Stahl Carbon steel	1.4408	C-Stahl Carbon steel	1.4408	C-Stahl Carbon steel	1.4408

\* = Verschleißteile / Wearing parts

\*\* = In Abhängigkeit vom Druck / depending on working pressure

**Wahlweise andere Werkstoffe lieferbar / Other materials available**

Änderungen vorbehalten  
subject to changes



Teil Nr. Part No.	Bezeichnung Description	Material					
		HG14444TG	HG16666TG	HG14444M	HG16635M	HG14444HM	HG16635HM
	max. Betriebstemperatur ** max. working temperature **	+ 220 °C		+ 220 °C		+ 450 °C	
1	Gehäuse Body	GS-C25	1.4408	GS-C25	1.4408	GS-C25	1.4408
2	Klappenscheibe Disc	GS-C25 vernickelt/ nickel-plated	1.4408	GS-C25 vernickelt/ nickel-plated	1.4408 nitriert/nitrated	GS-C25 vernickelt/ nickel-plated	1.4408 nitriert/nitrated
3	Welle Stem	1.4021	1.4571	1.4021	1.4571	1.4021	1.4571
4*	Sitzring Seat	PTFE/Glas PTFE/glass	PTFE/Glas PTFE/glass	1.4571 nitriert/nitrated	1.4571 nitriert/nitrated	1.4571 nitriert/nitrated	1.4571 nitriert/nitrated
5	Lagerbuchse Bearing	1.4401 PTFE	1.4401 PTFE	1.4401 PTFE	1.4401 PTFE	1.4401 nitriert/nitrated	1.4401 nitriert/nitrated
6*	Packung Gland packing	PTFE	PTFE	PTFE	PTFE	Graphit graphite	Graphit graphite
7	Klemmring Insert ring	C-Stahl Carbon steel	1.4571	C-Stahl Carbon steel	1.4571	C-Stahl Carbon steel	1.4571

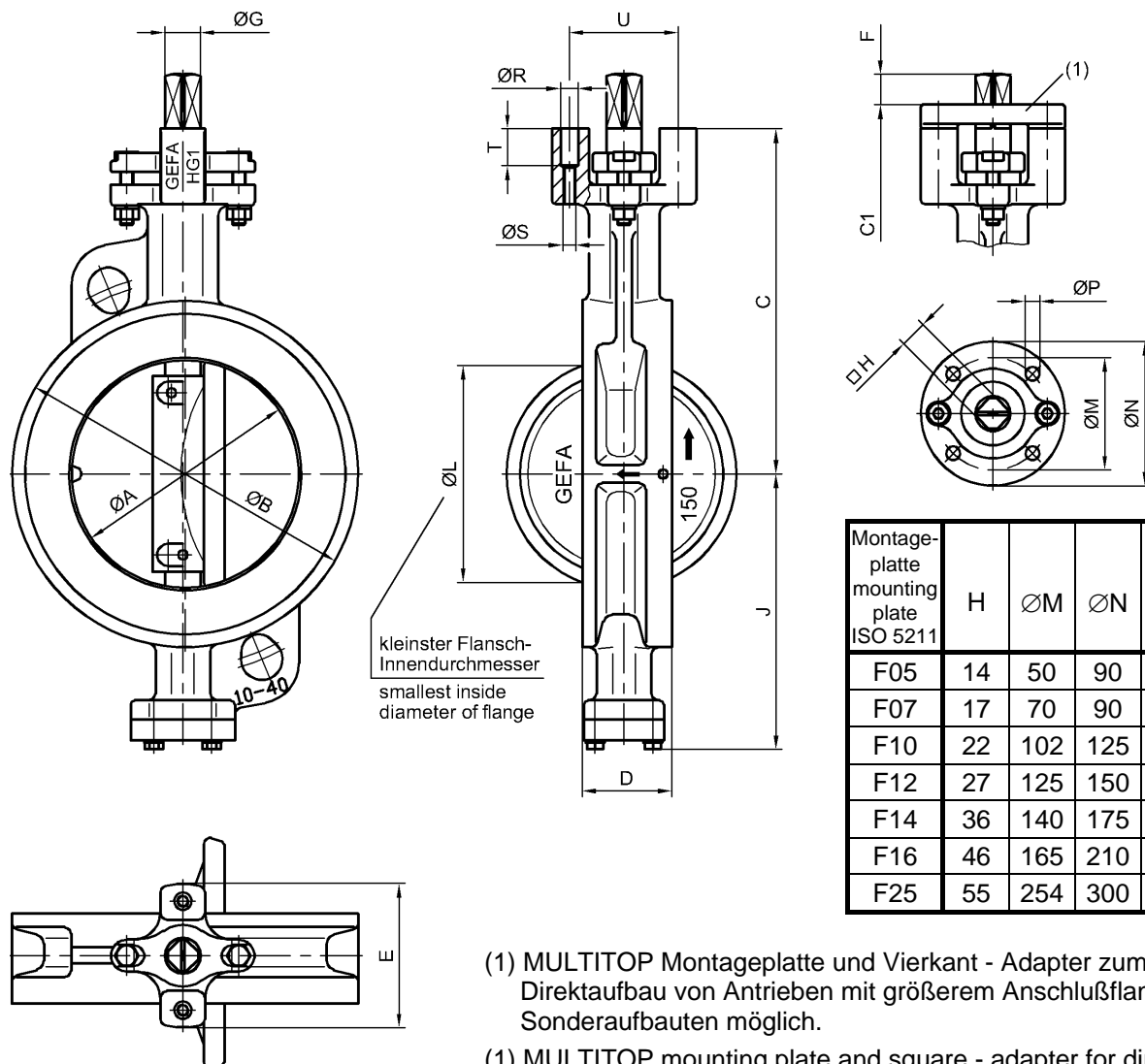
\* = Verschleißteile / Wearing parts

\*\* = In Abhängigkeit vom Druck / depending on working pressure

**Wahlweise andere Werkstoffe lieferbar / Other materials available**

Änderungen vorbehalten  
subject to changes

Baulänge: EN 558-1 Reihe 20 (DIN 3202-K1) Face to face dimension: EN 558-1 line 20 (DIN 3202-K1)



Montage- platte mounting plate ISO 5211	H	ØM	ØN	nxØP
F05	14	50	90	4x6,6
F07	17	70	90	4x9
F10	22	102	125	4x11
F12	27	125	150	4x14
F14	36	140	175	4x18
F16	46	165	210	4x22
F25	55	254	300	8x18

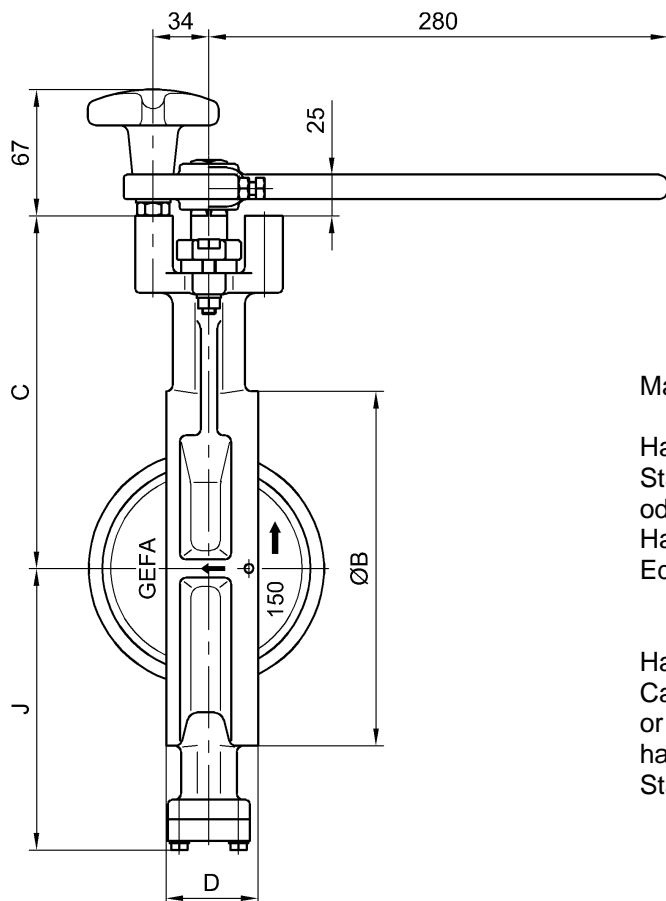
- (1) MULTITOP Montageplatte und Vierkant - Adapter zum Direktaufbau von Antrieben mit größerem Anschlußflansch. Sonderaufbauten möglich.
- (1) MULTITOP mounting plate and square - adapter for direct mounting of actuators with larger connection flange. Special designs possible.

DN	NPS	ØA	ØB	C	C1	D	E	F	G	J	ØL	ØR	ØS	T	U	kg	kleinster Anschluß min. mounting plate DIN 3337/ISO 5211
50	2"	47	102	142	157	43	90	16	18	103	46	11	M8	23	68	3,9	F05
65	2 1/2"	64	122	154	169	46	90	16	18	115	59	11	M8	23	68	4,7	F05
80	3"	76	133	162	177	46	90	16	18	122	76	11	M8	23	68	5,2	F05
100	4"	98	156	179	194	52	90	16	18	135	93	11	M8	23	68	6,7	F05
125	5"	119	188	197	212	56	90	19	22	152	118	11	M8	23	68	9,6	F07
150	6"	140	216	215	230	56	90	19	22	174	139	11	M8	23	68	11,7	F07
200	8"	190	268	262	280	60	125	24	28	216	190	13	M10	23	95	19,6	F10
250	10"	237	323	292	310	68	125	24	28	248	238	13	M10	23	95	28,0	F10
300	12"	280	375	336	356	78	150	29	36	283	281	16	M12	22	115	40,0	F12

Gewicht ohne Montageplatte  
Weight without mounting plate

Änderungen vorbehalten  
subject to changes

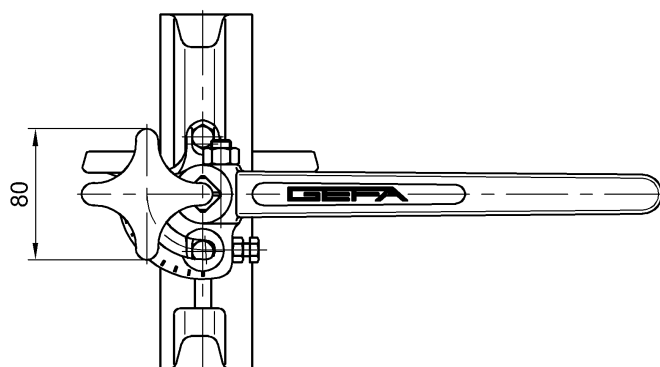
## Hochleistungsklappe Serie HG1 mit Handhebel High performance butterfly valve series HG1 with hand lever



### Material

Handhebel:  
Stahlguss galvanisch chromatiert  
oder Edelstahl  
Handhebel-Zubehör:  
Edelstahl

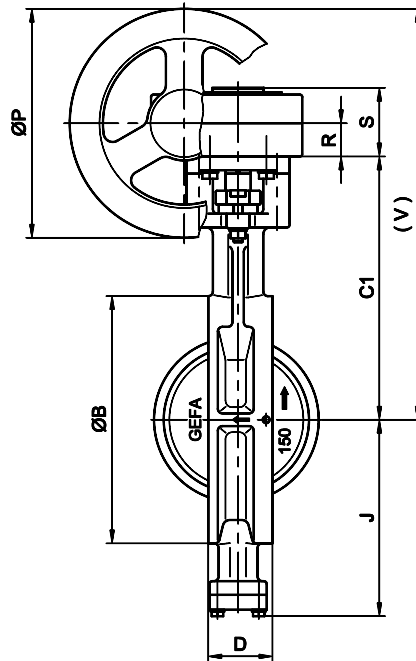
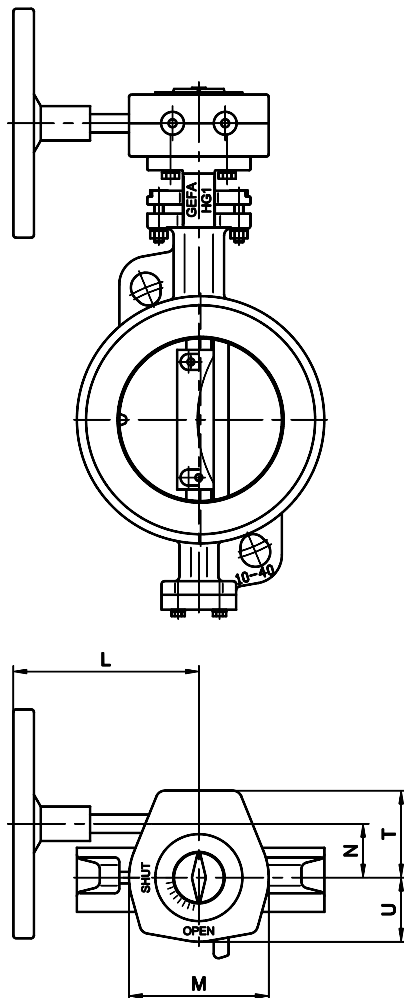
Hand lever:  
Carbon steel galvanized chromated  
or stainless steel  
hand lever accessories:  
Stainless steel



DN	NPS	ØB	C	D	J
50	2"	102	142	43	103
65	2 1/2"	122	154	46	115
80	3"	133	162	46	122
100	4"	156	179	52	135
125	5"	188	197	56	152
150	6"	216	215	56	174

Gewicht Handhebel inklusive Zubehör: 1,5 kg  
Weight of hand lever including accessories: 1,5 kg

Änderungen vorbehalten  
subject to changes



Getriebewerkstoffe / Gear materials

Gehäuse / Body:

Aluminium / aluminium

Welle / Stem:

Edelstahl / stainless steel

Handrad / Handwheel:

Stahl / steel

Gewicht des Getriebes inklusive Handrad und  
 Montageplatte.

Clappenspezifische Daten entnehmen Sie bitte den  
 entsprechenden Datenblättern.

Sitz: TG = PTFE/Glas-Sitzring / M = Metall-Sitzring

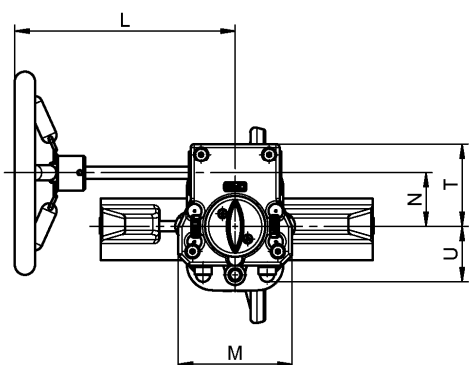
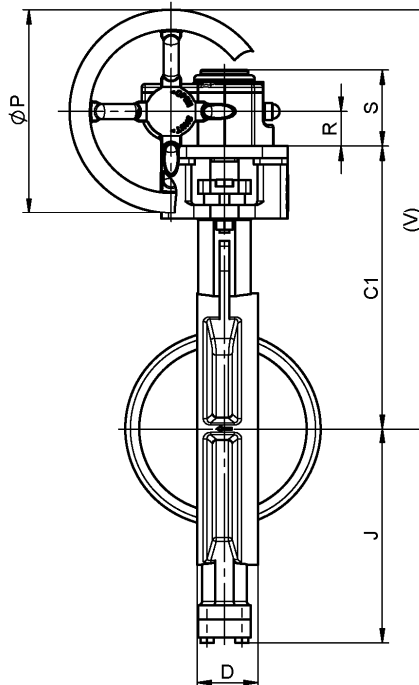
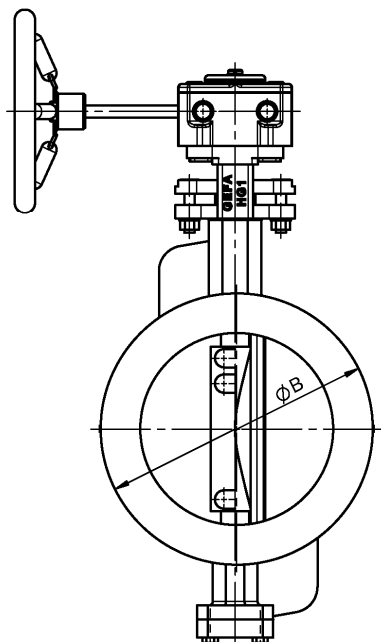
Weight of gear operator including handwheel and  
 mounting plate.

Regarding valve data please refer to relevant data  
 sheets.

Seat: TG = PTFE/glass-seat / M = metal seat

DN	NPS	Sitz Seat	Getriebe Typ Gear type	ØB	C1	D	J	L	M	N	ØP	R	S	T	U	V	kg
50	2"	TG/M	BGH200900714140	102	157	43	103	160	100	50	140	28	58	73	57	255	1,8
65	2 1/2"	TG/M	BGH200900714140	122	169	46	115	160	100	50	140	28	58	73	57	267	1,8
80	3"	TG/M	BGH200900714140	133	177	46	122	160	100	50	140	28	58	73	57	275	1,8
100	4"	TG/M	BGH200900714140	156	194	52	135	160	100	50	140	28	58	73	57	292	1,8
125	5"	TG/M	BGH200900717200	188	212	56	152	163	100	50	200	28	58	73	57	340	2,2
150	6"	TG/M	BGH200900717200	216	230	56	174	163	100	50	200	28	58	73	57	358	2,2
200	8"	TG/M	BGH201251222300	268	280	60	216	225	142	65	300	40	73	96	75	470	4,2
250	10"	TG/M	BGH201251222300	323	310	68	248	225	142	65	300	40	73	96	75	500	4,2
300	12"	TG/M	BGH201401227400	375	356	78	283	325	185	80	400	51	99	126	100	607	10,2

## Hochleistungsklappe Serie HG1 mit Grauguss Getriebe BGPQ High performance butterfly valve series HG1 with cast iron gear operator BGPQ DN 50 - DN 300



Getriebewerkstoffe / Gear materials  
Gehäuse / Body: Grauguss / cast iron  
Welle/Stem: Edelstahl / stainless steel  
Handrad / Handwheel: Stahl / steel

Auf Wunsch ist ein Kettenrad lieferbar.  
Gewicht des Getriebes inklusive Handrad.  
Klappenspezifische Daten entnehmen Sie bitte  
den entsprechenden Datenblättern.  
Sitz: TG = PTFE/Glas-Sitzring / M = Metall-Sitzring

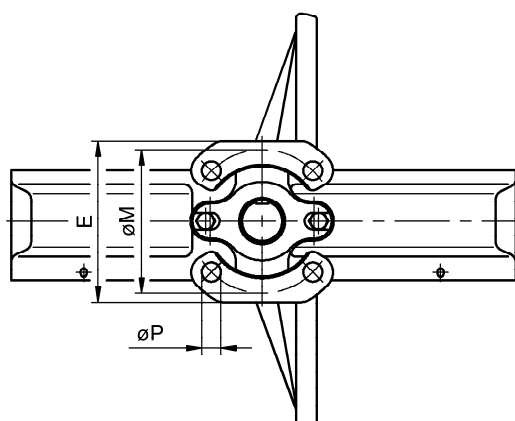
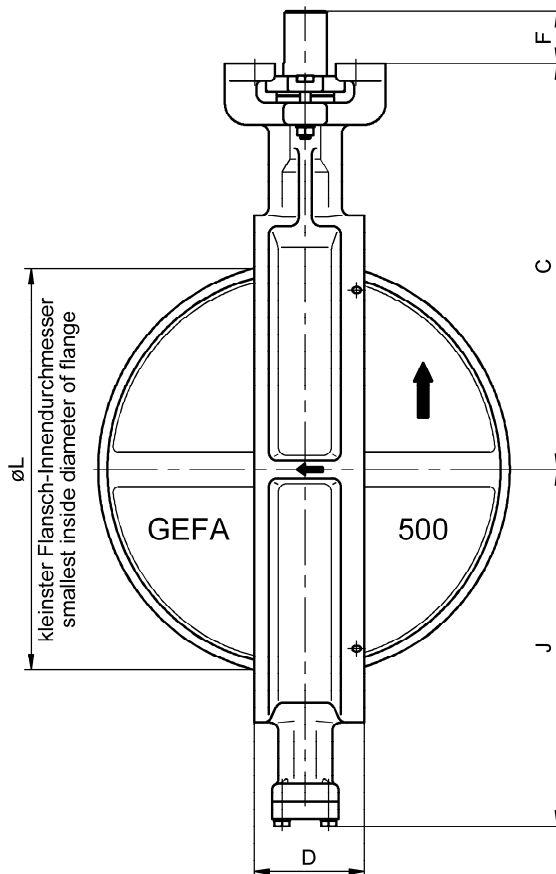
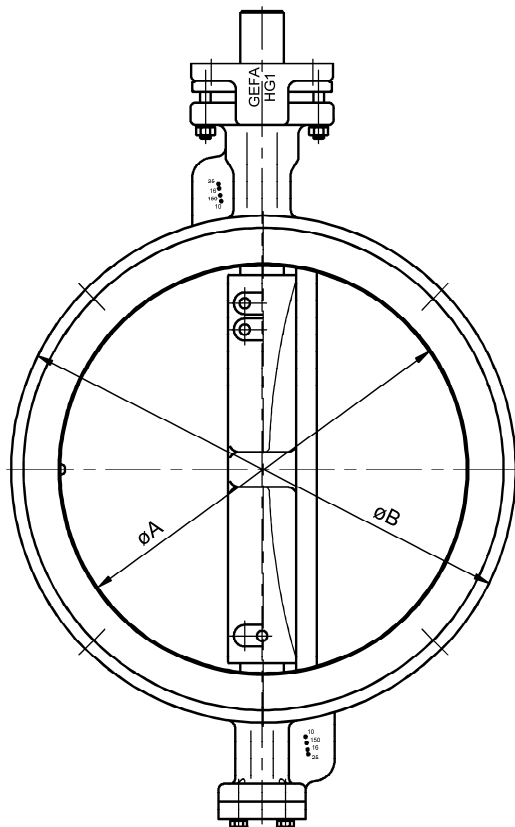
Upon request chain wheel can be supplied.  
Weight of gear operator including handwheel.  
Regarding valve data please refer to relevant data sheets.  
Seat: TG = PTFE/glass-seat / M = metal seat

DN	NPS	Sitz Seat	Getriebe Typ Gear type	ØB	C1	D	J	L	M	N	ØP	R	S	T	U	V	kg
50	2"	TG/M	BGPQ200S14V12512	102	157	43	103	126	84	44	125	29	64	68	46	249	2,3
65	2 1/2"	TG/M	BGPQ200S14V12512	122	169	46	115	126	84	44	125	29	64	68	46	261	2,3
80	3"	TG/M	BGPQ200S14V12512	133	177	46	122	126	84	44	125	29	64	68	46	269	2,3
100	4"	TG/M	BGPQ200S14V12512	156	194	52	135	126	84	44	125	29	64	68	46	286	2,3
125	5"	TG/M	BGPQ400S17V20012	188	212	56	152	215	112	53	200	34	75	82	55	346	4,1
150	6"	TG/M	BGPQ400S17V20012	216	230	56	174	215	112	53	200	34	75	82	55	364	4,1
200	8"	TG/M	BGPQ400S22V20012	268	280	60	216	215	112	53	200	34	75	82	55	414	4,1
250	10"	TG	BGPQ400S22V20012	323	310	68	248	215	112	53	200	34	75	82	55	444	4,1
250	10"	M	BGPQ800S22V25015	232	310	68	248	266	135	69	250	43	91	115	73	478	7,6
300	12"	TG	BGPQ800S27V25015	375	356	78	283	266	135	69	250	43	91	115	73	524	7,6
300	12"	M	BGPQ1500S27V40020	375	356	78	283	309	156	84	400	45	97	123	83	601	12,5

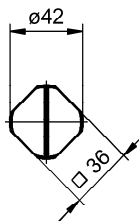
## Maße / Dimensions Hochleistungsclappe Serie HG1 high performance butterfly valve series HG1 DN 350 - DN 500

Baulänge: EN 558-1 Reihe 20 (DIN 3202-K1)  
Kopfflansch: ISO 5211

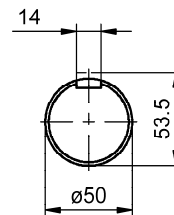
Face to face dimension: EN 558-1 line 20 (DIN 3202-K1)  
Mounting plate: ISO 5211



DN 350



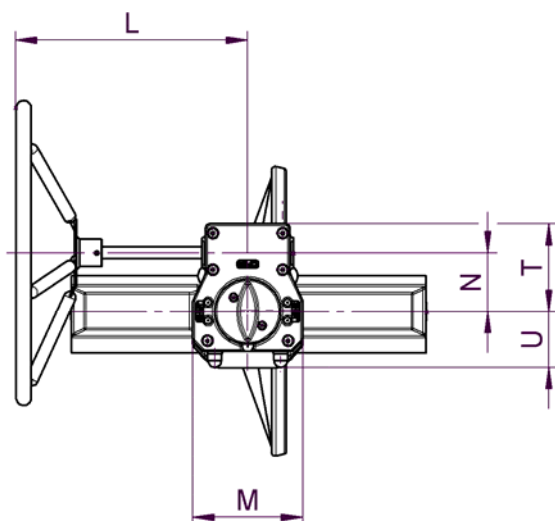
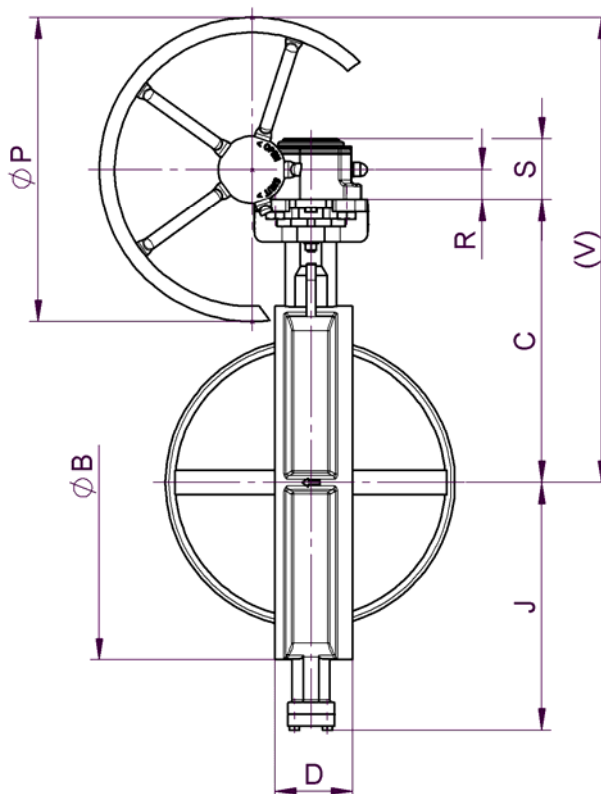
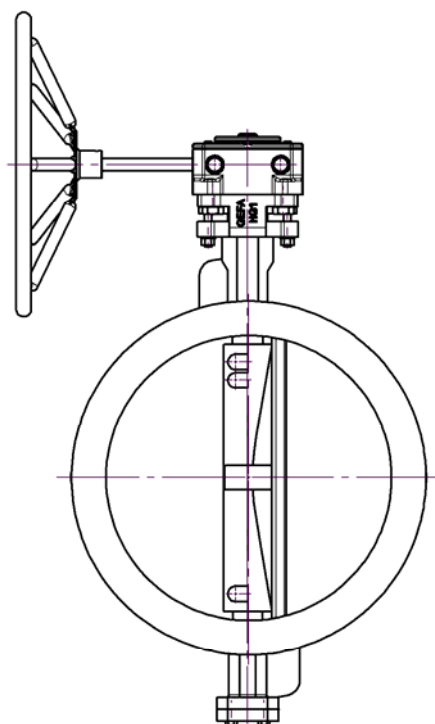
DN 400 / DN 500



Passfeder DIN 6885  
Key DIN 6885

DN	NPS	$\varnothing A$	$\varnothing B$	C	D	E	F	J	$\varnothing L$	M	$n \times \varnothing P$	Kopfflansch Mounting plate ISO 5211	kg
350	14"	318	415	365	78	145	38	312	321	140	4x18	F 14	51
400	16"	362	470	405	102	185	60	351	363	165	4x22	F 16	79
500	20"	467	580	465	127	185	60	409	468	165	4x22	F 16	118

## Hochleistungsklappe Serie HG1 mit Grauguss Getriebe BGPQ High performance butterfly valve series HG1 with cast iron gear operator BGPQ DN 350 - DN 600



### Getriebewerkstoffe / Gear materials

Gehäuse / Body: Grauguss / cast iron  
Welle/Stem: Edelstahl / stainless steel  
Handrad / Handwheel: Stahl / steel

Auf Wunsch ist ein Kettenrad lieferbar.

Gewicht des Getriebes inklusive Handrad.

Klappenspezifische Daten entnehmen Sie bitte den entsprechenden Datenblättern.

Sitz: TG = PTFE/Glas-Sitzring / M = Metall-Sitzring

Upon request chain wheel can be supplied.

Weight of gear operator including handwheel.

Regarding valve data please refer to relevant data sheets.

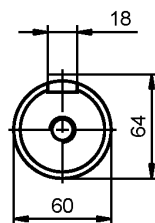
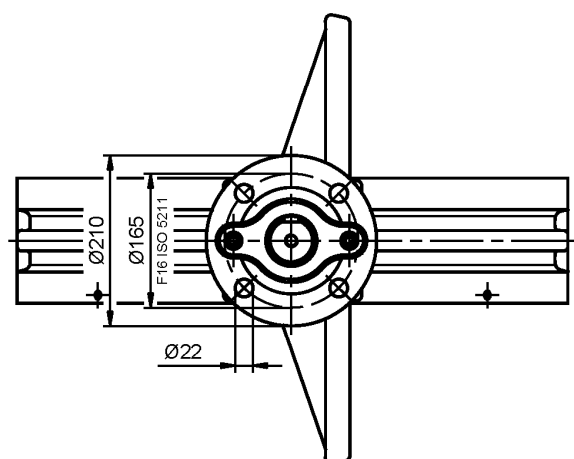
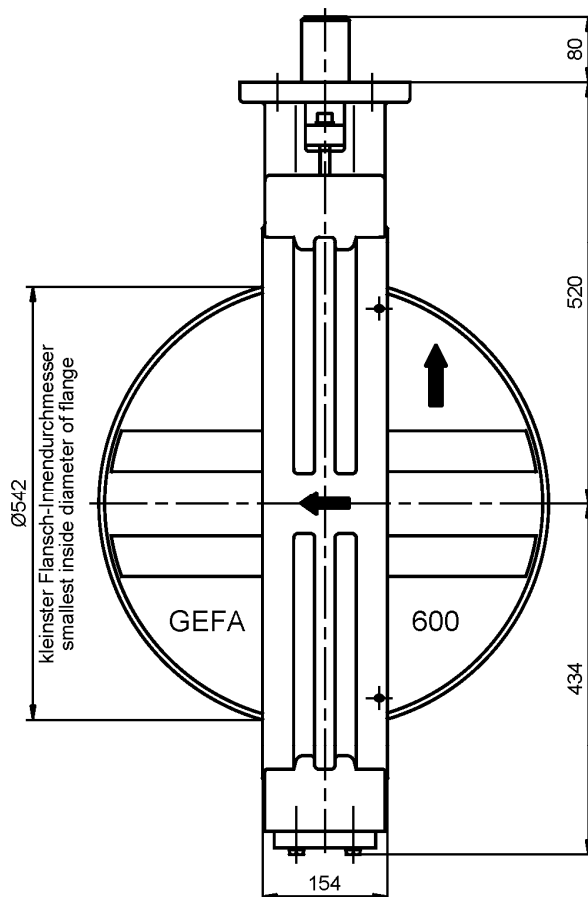
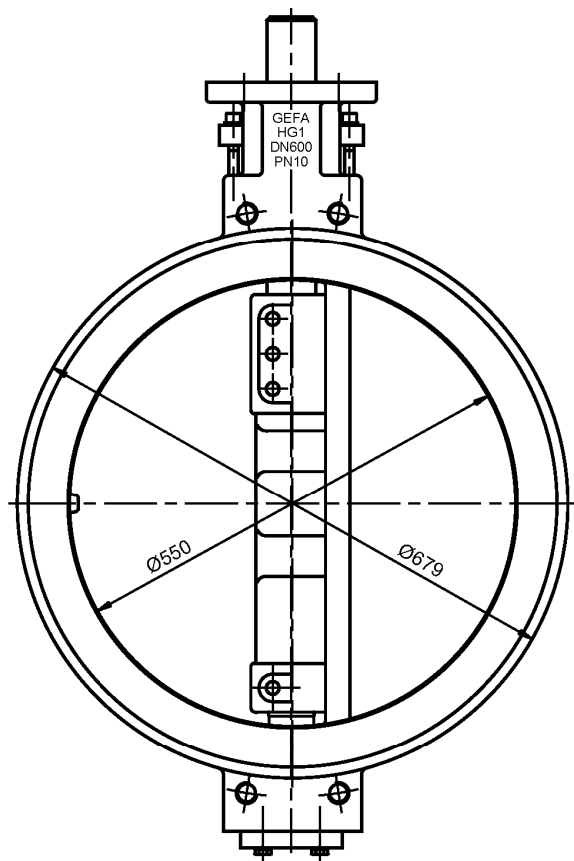
Seat: TG = PTFE/glass-seat / M = metal seat

DN	NPS	Sitz Seat	Getriebe Typ Gear type	ØB	C	D	J	L	M	N	ØP	R	S	T	U	V	kg
350	14"	TG/M	BGPQ1500S36V40020	415	365	78	312	309	156	84	400	45	97	123	83	610	12,5
400	16"	TG/M	BGPQ2000S5050020	470	405	102	351	379	180	97	500	50	100	144	92	705	16,5
500	20"	TG	BGPQ2000S5050020	580	465	127	409	379	180	97	500	50	100	144	92	765	16,5
500	20"	M	BGPQ3000S5050020	580	465	127	409	383	250	118	500	49	118	163	115	764	27,0
600	24"	TG/M	BGPQ4000S6050020	679	520	154	434	408	282	138	500	55	128	186	140	825	37,0

## Maße / Dimensions Hochleistungsclappe Serie HG1 high performance butterfly valve series HG1 DN 600

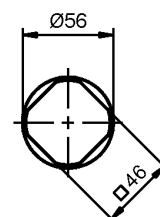
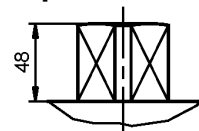
Baulänge: EN 558-1 Reihe 20 (DIN 3202-K1)  
 Kopfflansch: F16 nach ISO 5211

Face to face dimension: EN 558-1 line 20 (DIN 3202-K1)  
 Mounting plate: F16 acc. to ISO 5211



Paßfeder DIN 6885  
 Key DIN 6885

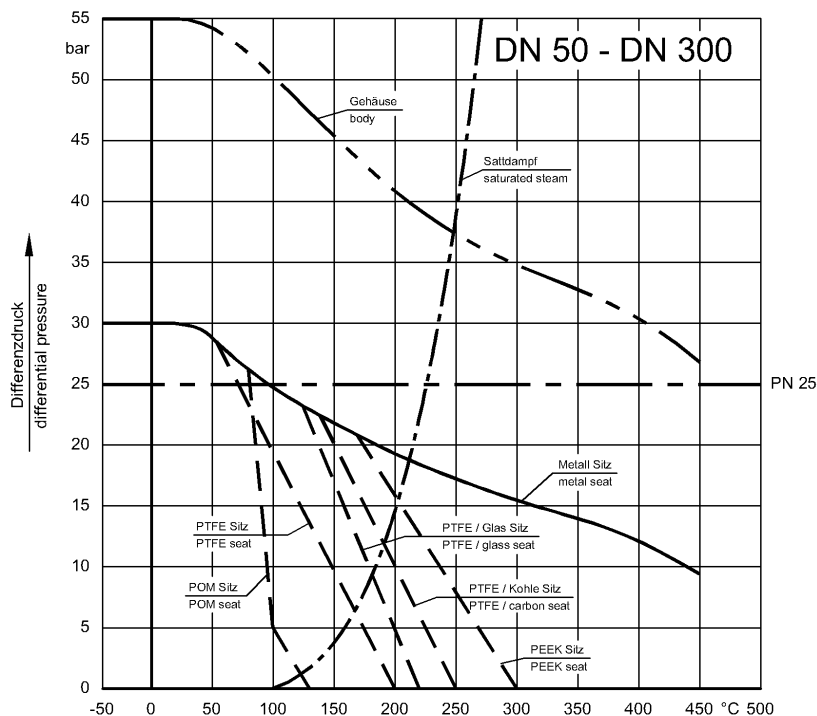
**Optional Vierkant - Anschluss  
 Optional square - connection**



Gewicht / weight: 225 kg

Änderungen vorbehalten  
 subject to changes

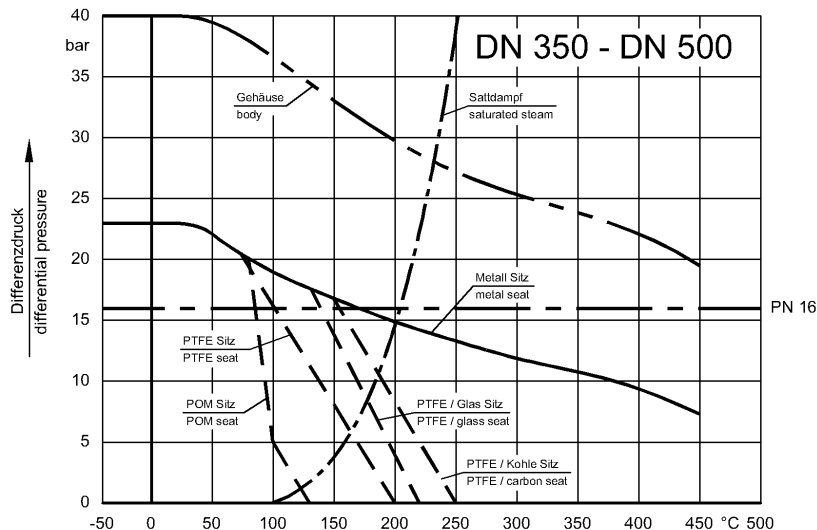
## Druck-Temperatur-Diagramm Hochleistungs-klappe Serie HG Pressure-temp. range diagram high performance butterfly valve series HG



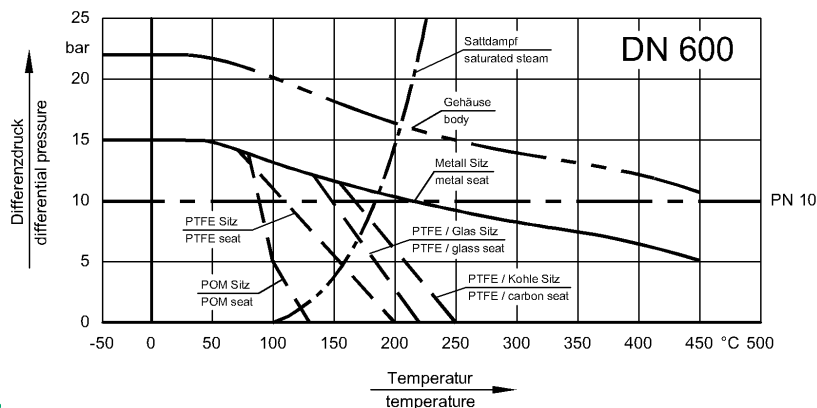
Metall Sitz:  
Temperatur: > 280 °C  
Leckrate: DIN 3230-BO > 2  
EN 12266-P12 > B

Metal seat:  
Temperature: > 280 °C  
Seat Leakage: DIN 3230-BO > 2  
EN 12266-P12 > B

Bei Einsatz von PEEK oder POM Sitzringen gegen die empfohlene Druckrichtung beträgt der maximale Differenzdruck 5 bar.



The maximum differential pressure for PEEK or POM seats is 5 bar if the valve is used against the recommended flow direction.



# Drehmomente Hochleistungsklappe Serie HG

## Torques high performance butterfly valve series HG

DN	NPS	Drehmoment PTFE-Sitz Torque PTFE-seat $\Delta p = 10 \text{ bar}$ Nm	Drehmoment PTFE-Sitz Torque PTFE-seat $\Delta p = 16 \text{ bar}$ Nm	Drehmoment PTFE-Sitz Torque PTFE-seat $\Delta p = 25 \text{ bar}$ Nm	Drehmoment Metall-Sitz Peek-Sitz Torque metal-seat peek-seat $\Delta p = 10 \text{ bar}$ Nm	Drehmoment Metall-Sitz Peek-Sitz Torque metal-seat peek-seat $\Delta p = 16 \text{ bar}$ Nm	Drehmoment Metall-Sitz Peek-Sitz Torque metal-seat peek-seat $\Delta p = 25 \text{ bar}$ Nm
50	2"	53	55	59	70	72	73
65	2 1/2"	53	55	59	70	72	73
80	3"	55	60	66	78	80	86
100	4"	70	77	88	92	97	106
125	5"	93	104	130	131	143	156
150	6"	131	144	181	179	196	214
200	8"	204	224	280	256	281	318
250	10"	290	319	398	340	378	433
300	12"	418	535	685	536	681	854
350	14"	627	819	—	873	1219	—
400	16"	943	1252	—	1316	1851	—
500	20"	1461	1986	—	2044	2818	—
600	24"	2282	—	—	3219	—	—

Firesafe: PTFE + 10%

Bei der Auslegung der Antriebe ist es nicht erforderlich, einen zusätzlichen Sicherheitsfaktor zu berücksichtigen.

Die Drehmomentangaben beziehen sich auf nicht schmierende Medien.

Bei schmierenden Medien können die Werte um ca. 20 % reduziert werden.

An additional security factor is not necessary for actuator selection.

The torque data refer to non-lubricating media.

For lubricating media the torques can be reduced by approx. 20 %.

DN	NPS	Klappen Öffnungswinkel Degree of disc rotation								
		10°	20°	30°	40°	50°	60°	70°	80°	90°
50	2"	3	12	24	37	48	57	66	73	79
65	2 1/2"	5	21	40	62	79	94	109	121	130
80	3"	7	26	51	79	101	120	139	159	166
100	4"	17	63	121	188	240	286	331	367	395
125	5"	19	72	131	197	262	340	485	600	655
150	6"	22	85	142	223	325	445	635	790	858
200	8"	80	192	335	475	655	935	1250	1600	1810
250	10"	114	277	480	686	945	1350	1740	2310	2610
300	12"	180	430	745	1065	1470	2090	2790	3590	4050
350	14"	220	530	920	1315	1810	2580	3450	4420	5000
400	16"	305	730	1270	1815	2500	3570	4760	6110	6900
500	20"	530	1270	2210	3160	4340	6200	8280	10600	12000
600	24"	790	1910	3310	4730	6520	9300	12400	15950	18000

$K_v$  = Durchflussmenge in  $m^3/h$  bei einem Druckverlust von 1 bar für Wasser ( $\rho=1000 \text{ kg/m}^3$ )

$K_v$  = Water flow ( $\rho=1000 \text{ kg/m}^3$ ) in  $m^3/h$  passing through the valve at a pressure drop of 1 bar

$C_v$  = Durchflussmenge in US gal/min bei einem Druckverlust von 1 psi für Wasser ( $\rho=1000 \text{ kg/m}^3$ )

$C_v$  = Water flow ( $\rho=1000 \text{ kg/m}^3$ ) in US gal/min passing through the valve at a pressure drop of 1 psi

$C_v = K_v \times 1,16$

Formeln für die Berechnung des  $K_v$ -Wertes / Basic formula for calculation of  $K_v$ -value

Differenzdruck pressure drop	Flüssigkeit liquid	Gas gas	Dampf steam
$p_2 > \frac{p_1}{2}$ $\Delta p < \frac{p_1}{2}$	$K_v = Q \cdot \sqrt{\frac{\rho}{1000 \cdot \Delta p}}$	$K_v = \frac{Q_N}{514} \cdot \sqrt{\frac{\rho_N \cdot (t_1 + 273^\circ)}{\Delta p \cdot p_2}}$	$K_v = \frac{G}{31,6} \cdot \sqrt{\frac{v_2}{\Delta p}}$
$p_2 < \frac{p_1}{2}$ $\Delta p > \frac{p_1}{2}$	$K_v = Q \cdot \sqrt{\frac{\rho}{1000 \cdot \Delta p}}$	$K_v = \frac{2 \cdot Q_N}{514 \cdot p_1} \cdot \sqrt{\rho_N \cdot (t_1 + 273^\circ)}$	$K_v = \frac{G}{31,6} \cdot \sqrt{\frac{2 \cdot v}{p_1}}$

$Q$  ( $m^3/h$ ) Durchflussmenge im Betriebszustand  
 $Q_N$  ( $m^3/h$ ) Durchflussmenge bei 0 °C, 1013,3 mbar  
 $G$  (kg/h) Massenstrom  
 $p_1$  (bar) abs. Vordruck  
 $p_2$  (bar) abs. Nachdruck  
 $\Delta p$  (bar) Differenzdruck ( $p_1 - p_2$ )  
 $\rho$  ( $kg/m^3$ ) Dichte im Betriebszustand  
 $\rho_N$  ( $kg/m^3$ ) Dichte bei 0 °C, 1013,3 mbar  
 $v_2$  ( $m^3/kg$ ) spezifisches Volumen bei  $p_2$   
 $v$  ( $m^3/kg$ ) spezifisches Volumen bei  $p_1/2$  und  $t_1$   
 $t_1$  (°C) Betriebstemperatur

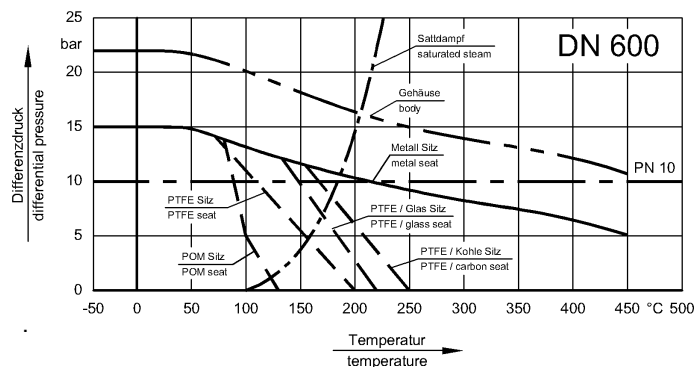
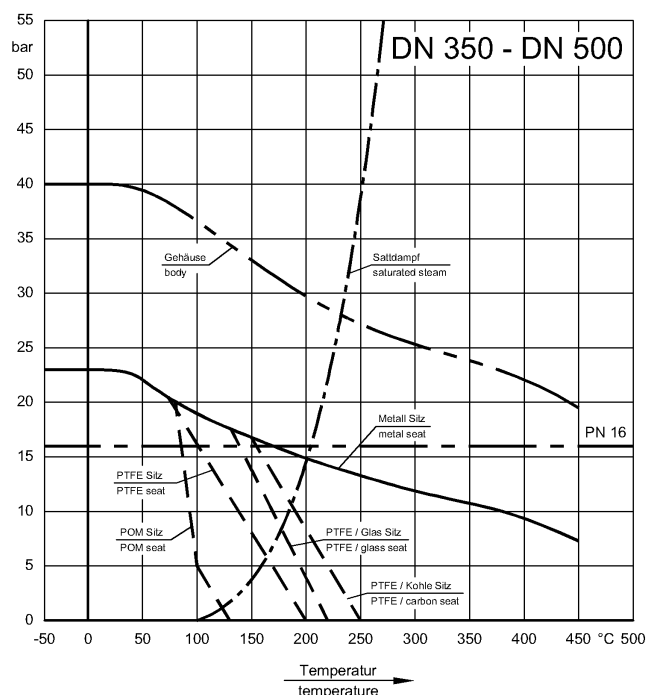
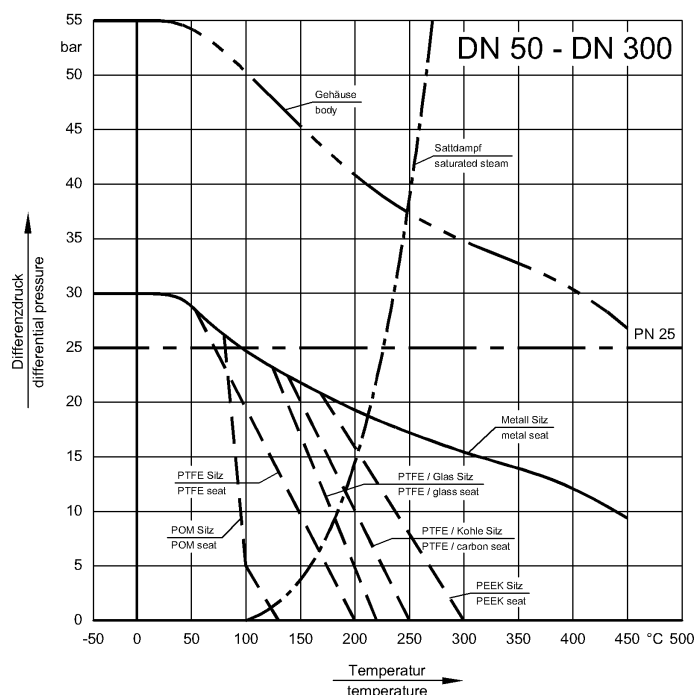
Flow during operation  
 Flow at 0 °C, 1013,3 mbar  
 Mass flow  
 abs. inlet pressure  
 abs. outlet pressure  
 Pressure drop ( $p_1 - p_2$ )  
 Specific gravity of fluid during operation  
 Specific gravity of fluid at 0 °C, 1013,3 mbar  
 Specific volume at  $p_2$   
 Specific volume at  $p_1/2$  and  $t_1$   
 Working temperature

### Introduction

The following information and instructions are important for perfect installation and safe operation of the valve. Prior to installation and initial use of the valve, the qualified staff in charge of installing and operating the valve has to be instructed according to this information.

### Proper use

The high performance butterfly valve series HG may only be used to stop, throttle and control media flows within the permissible pressure/temperature limits.



Metal seat:  
Temperature: > 280 °C  
Seat Leakage: DIN 3230-BO > 2  
EN 12266-P12 > B

The maximum differential pressure for PEEK or POM seats is 5 bar if the valve is used against the recommended flow direction.

The suitability of the product-related parts used and their chemical resistance properties have to be clarified before start-up of the plant.

The usual flow rate must not be exceeded.

Vibrations, water hammers and cavitation as well as abrasive components result in damage of the valve and affect its service life.

Valves must not be used to support the pipeline nor as a step-up.

This includes the different kinds of operation like hand levers, gear operators, actuators, feedback and control systems.

When using a hand lever, handwheel and manual emergency operation, take care that there is enough space for a proper operation.

### Earthing the valve

If the high performance butterfly valve is supplied with anti-static device and used in potentially explosive zones, the body of the valve must be connected effectively at site with the potential compensation cable before the valve is put into operation.

## Transport and storage

The valve must be transported and stored dry and clean.

In humid rooms, a drying material or heating must be used to avoid condensation.

During transport and intermediate storage the high performance butterfly valve should not be outside a temperature range of -15°C and +30°C.

The transport packaging protects the valve against soiling and damage. Impact and vibrations must be avoided.

If the valves are painted (coated) on the outside, this coating must remain without damage, otherwise the faulty spots must be repaired immediately.

The factory-adjusted basic setting (position of the disc at delivery) must not be changed.

## Conditions for mounting the valve

The high performance butterfly valve series HG is installed between pipeline flanges acc. to DIN 2501 or ANSI B16.5.

It should be taken into account, that a valve which is designed for a particular flange standard cannot be normally used for other flanges. If pipeline flanges are to be used which are not in accordance with the specifications of the order, the manufacturer is to be consulted.

Pipelines always have to be run in such a way that damaging shear and bending stresses cannot act on the valve body.

The surfaces of the pipeline flanges between which the valve is installed have to be parallel to one another, the sealing surfaces must be clean and without damage. No cross marks may be visible.

Do not carry out welding work on the flanges and pipelines when the high performance valve has been installed, as this could cause damage to the valve.

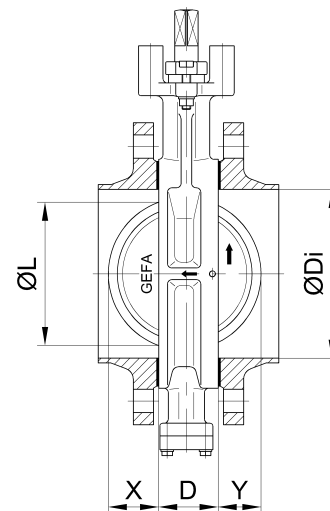
The high performance butterfly valve is clamped between two pipeline flanges using two suitable seals.

Screws, nuts and seals are not included in the manufacturer's scope of supply.

All the usual flange seals can be used.

The "clearance" of the mating flanges - including inner coating - has to be sufficient to allow the disc to be fully opened without touching ( $\varnothing Di \geq \varnothing L + 6 \text{ mm}$ ). This must be checked before the valve is installed and compared with the space necessary for the valve according to the table.

DN	D	$\varnothing L$	X	Y
50	43	46	8	2
65	46	59	13	10
80	46	76	21	15
100	52	93	26	24
125	56	118	38	31
150	56	139	48	41
200	60	190	71	62
250	68	238	93	80
300	78	281	110	95
350	78	321	130	115
400	102	363	139	128
500	127	468	180	168
600	154	542	202	199



## Transport packaging

Transport packaging protects the interior of the valve from soiling and damage.

Do not remove the packaging until the valve is going to be installed.

## Installation position

Basically the high performance butterfly valve series HG can be installed in any position.

If the concentration of suspended matter is high (e.g. media which are very viscous), it is recommended to mount the high performance butterfly valve with valve shaft in horizontal position and stop boss facing upwards.

For nominal sizes >DN300 it is generally recommended to mount the valve with valve shaft in horizontal position.

The recommended pressure direction (direction of the arrow on the body) guarantees the highest level of tightness.

The GEFA high performance butterfly valve also provides a reliable seal when it is used against the recommended pressure direction.

Consult the manufacturer if the valve is to be used for applications with a frequent change of pressure direction.

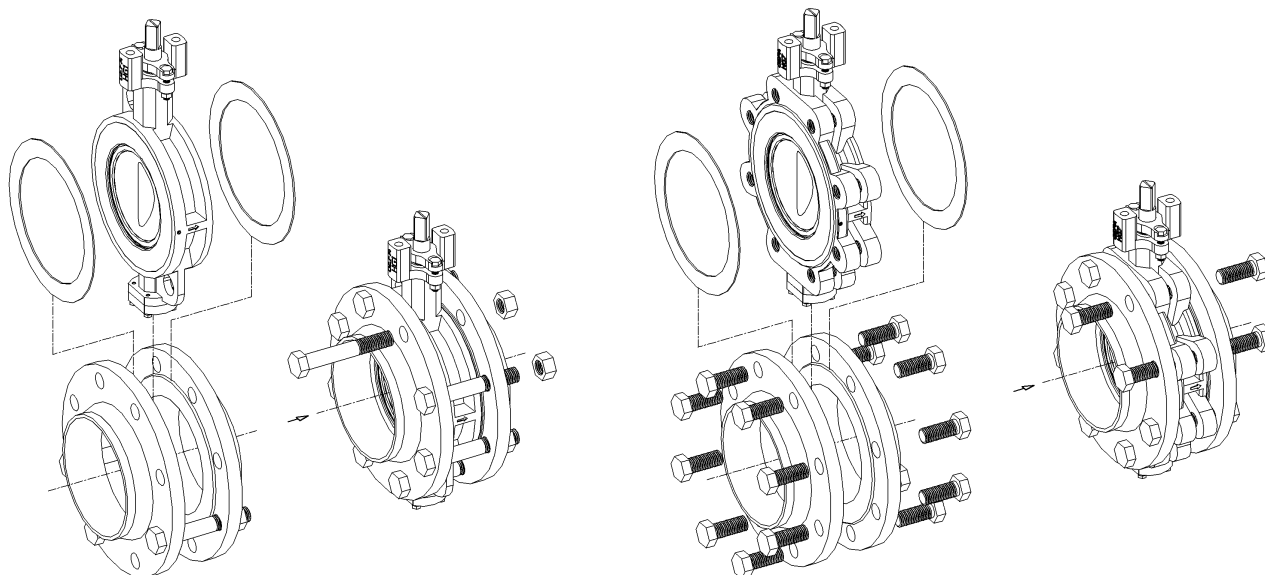
## Installation

- Prior to the mounting of the valve, flush the pipeline to remove all traces of soiling, welding residues, etc.
- Remove the transport packaging and check whether the flange connections are without damage and clean.
- Check whether the flange clearance is in accordance with the face-to-face dimension of the high performance butterfly valve.
- Before mounting the valve, the flanges are to be sufficiently spread using a suitable tool.
- The valve must be **completely closed**.
- In order to intercept the valve between the flanges during the mounting process, we recommend (depending on the mounting position) to insert the lower flange screws without tightening them. The screw is not to be initially inserted in the centring aid area (rib).

- Insert the high performance valve and the seals between the flanges.
- Insert the flange screws.
- Remove the spreader and hand-tighten the screws.
- Check whether the valve, the seals and the counter-flanges are in true alignment.
- Carefully open and close the valve in order to ensure that the valve disc is not getting in touch with the pipeline. Check that the disc has adequate clearance.
- With the valve disc completely closed, tighten the flange screws crosswise using the stipulated torque. The tightening torque depends on the seals chosen.

If no specifications are given, the following standard values can be used:

M16 = 85 Nm      M20 = 165 Nm      M24 = 285 Nm      M27 = 425 Nm      M30 = 570 Nm      M33 = 780 Nm



**DANGER:** When installing the butterfly valve with flanged body used in an end-of-line function, the free connection side must be additionally secured by a blind flange or (only for short-term use) the valve must be locked tightly in the "CLOSED" position. The following safety instructions must be heeded:

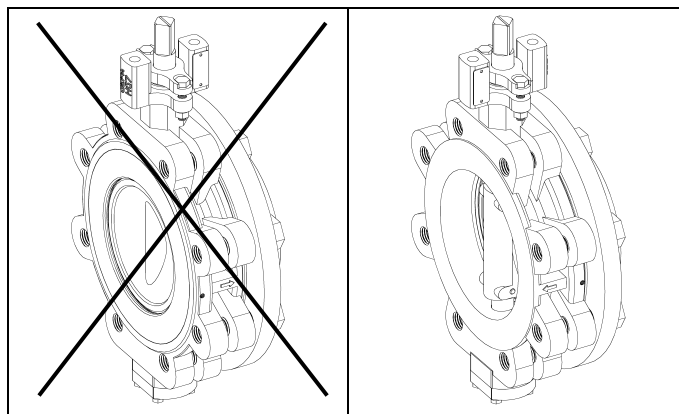
Version "Valve to be flanged off at one side":

**DANGER:** The valve may be under pressure when the flange in pressure direction is missing.  
The valve must not be under pressure when the flange on the insert ring side is missing.

The arrow showing the pressure direction and the plate marking the side where the flange can be taken off must always be heeded.

If the marking is not clear, none of the pipeline flanges may be removed with the system under pressure.

If a pipeline flange is removed, make sure that no damage can be caused by medium spraying out due to a leak in the sealing system.



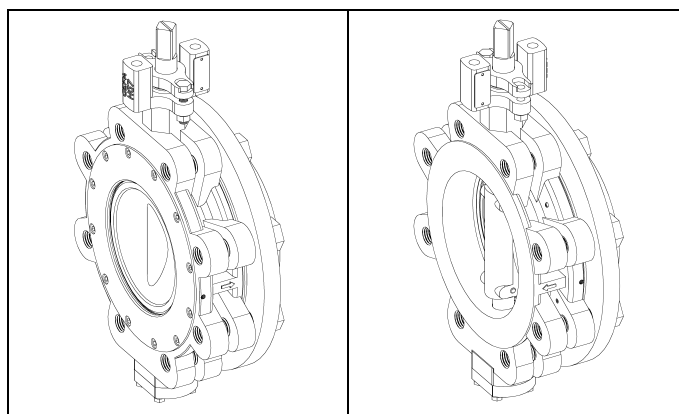
Version "Valve to be flanged off at both sides":

**DANGER:** The valve may be under maximum pressure when the flange in pressure direction is missing.  
When the flange on the insert ring side is missing, note that the pressure is reduced.

The arrow showing the pressure direction and the plate marking the side where the flange can be taken off must always be heeded.

If the marking is not clear, none of the pipeline flanges may be removed with the system under pressure.

If a pipeline flange is removed, make sure that no damage can be caused by medium spraying out due to a leak in the sealing system.



reduced pressure  
DN 50 – DN 300: 16 bar  
DN 350 – DN 500: 10 bar  
DN 600: 6 bar

max. pressure  
DN 50 – DN 300: 25 bar  
DN 350 – DN 500: 16 bar  
DN 600: 10 bar

### Mounting of operating elements

The highest level of tightness can only be achieved when the valve disc is completely closed. In case operating elements (hand levers, gear operators, actuators, etc.) are mounted, the stop position must be exactly adjusted.

The stop boss does not serve the purpose of a limit stop, but merely as an override safety device which ensures that the seat ring is not damaged. The highest level of tightness of the valve is achieved ca. 1°-2° before the stop boss is reached.

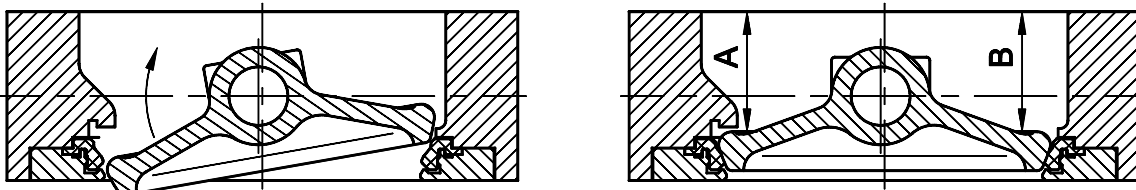
If the valve is not installed in the pipeline, the exact stop position can be checked as follows:

The distance from the edge of the body to the valve disc must be measured on both sides at a position offset 90° to the valve shaft. If the distances are identical, the valve is closed exactly.

Care must be taken that the valve is always moved to the stop position from the opened position. This is the only way to guarantee that any play from the actuator (e.g. gear) has no influence on the stop position.

If the exact stop position has been overridden, the valve must be returned to the opened or partly opened position, then moved back again into the stop position from this opened position.

**A = B**



It must be ensured that the actuator is centred on the valve shaft.

The weight of a mounted actuator must not place a one-sided load on the valve shaft.

For this reason, actuators must be supported if necessary - without fixation.

External loads must not be applied to actuators, this can damage or destroy the valve.

If the valve is mounted in the recommended pressure direction, the opening movement of the valve disc is supported by the pressure of the medium, this being design-related (double-eccentric design).

For this reason, when carrying out switching operations using a hand lever, the lever is to be held secure when the star knob is being loosened.

After the switching operation has been completed, the position of the hand lever is to be secured by tightening the star knob.

### Initial operation

The high performance butterfly valve has been tested for leakage using air or water. Residues of the test medium may still be on the contact surfaces of the valve. Possible reactions with the operating medium must be observed.

Prior to initial operation, the pipeline must be flushed effectively with the valve fully opened to eliminate soiling and to avoid damage to the sealing surfaces. The valve must not be switched during the flushing process.

During a system pressure test the following pressures must not be exceeded:

1,5 x PN with disc in open position

1,1 x PN with disc in closed position

### Impermissible operation

Never operate the butterfly valve without actuating devices and/or locking of the shaft.

Do not operate the valve in the cavitation area.

Do not exceed the pressure/temperature range.

Avoid all foreign particles on the sealing surfaces.

### Removing the valve

Before removing the high performance butterfly valve make sure that the pipe section is depressurised and evacuated.

In case of toxic, caustic and other outgasing media the pipe section must also be ventilated.

Safety classification is the responsibility of the system operator.

The high performance butterfly valve is removed by loosening the flange screws and sufficient spreading of the mating flanges.

The valve disc must be closed at an angle within the face-to-face dimension of the valve to prevent damage to the disc.

The position mark on the narrow end of the shaft square or the keyway is parallel to the valve disc.

Actuators either have to be dismantled before the valve is removed or they have to be secured against unauthorized or unintentional operation.

### Disposal / repair of the valve

After having removed the valve it has to be disassembled and cleaned to prevent injuries caused by residues of the medium.

If the valve is returned to the manufacturer, a safety data sheet relating to the media must be included.

Subject to modifications without notice.

Edition: 2011-07-28

## General information

A routine maintenance or lubrication of the high performance butterfly valve is not necessary.

Should a leakage occur at the gland packing, retighten the gland nut (20). Take care that the gland nut is not tightened too much. Normally the leakage can be stopped by simply turning the nut by a quarter.

## Replacing the Gland Packing

If the leakage cannot be stopped using the above method, the gland packing must be replaced.

For replacing the gland packing the valve needs not to be removed from the pipeline.

- Check whether the pipeline has been rendered depressurized and is empty.
- Remove the operating element.
- Loosen the fixing devices (18, 20) of the gland flange and lift off the gland flange (9).
- Remove the gland (8). A groove in the upper part of the gland makes the removal easier.
- Remove the packing rings (6) and thoroughly clean the packing area.
- Insert a new packing set, whereby it is to be ensured that the correct packing material is used.
- Insert the gland, place the gland flange on top and fix it using the screws and nuts. Tighten the nuts reciprocally so that the gland flange is not tilted. Only slightly tighten the nuts until the leakage is stopped.

## Replacing the Seat

The valve must be taken out of the pipeline for replacing the seat.

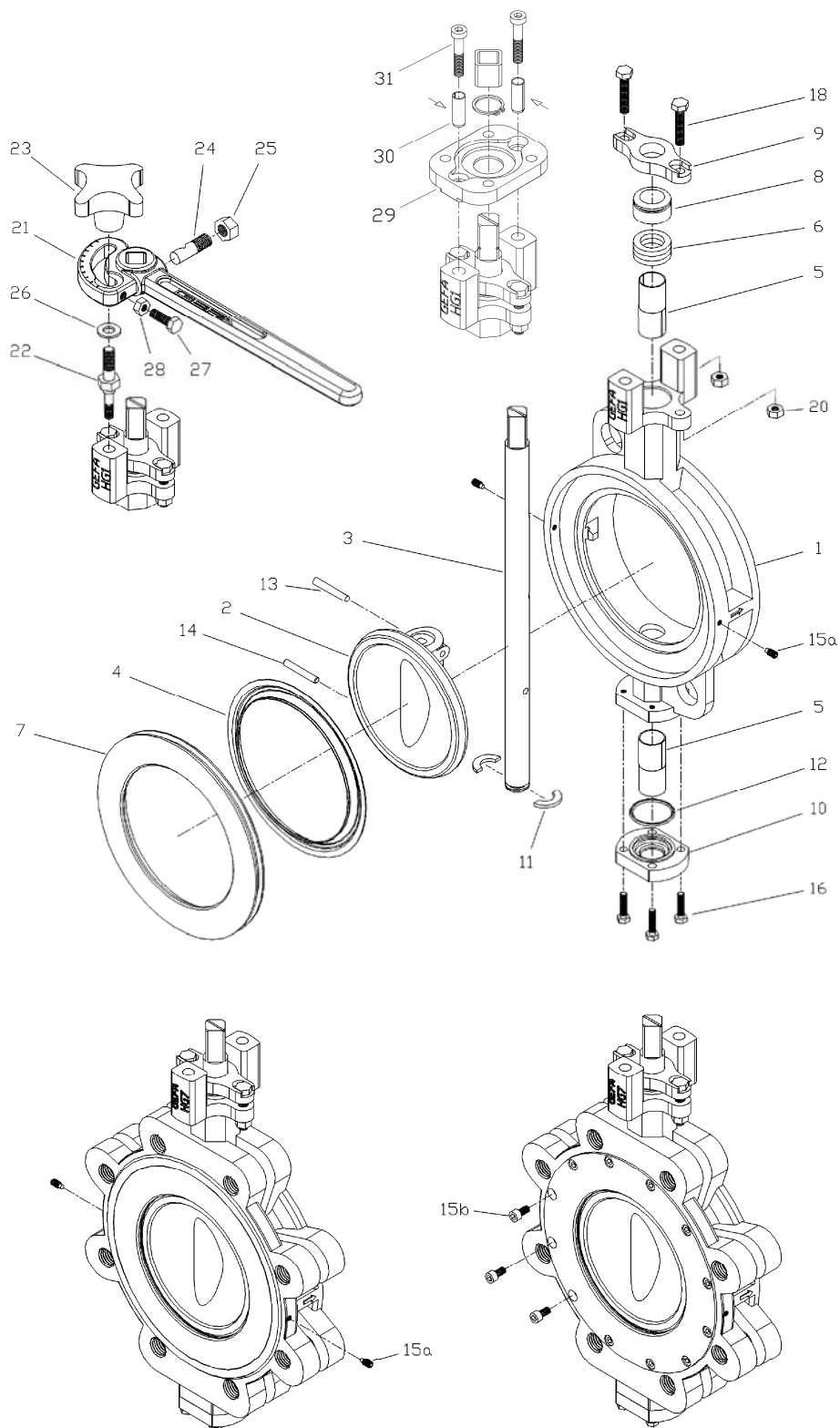
- Ensure that the pipeline is rendered depressurized and is empty.
- Completely close the valve, loosen the flange screws and remove them so far that the valve can be taken out.
- Lay the valve down with the insert ring (7) facing upwards.
- Loosen the set screws (15a) or cylinder screws (15b) and remove the insert ring.
- Remove the old seat (4). Clean the body and insert ring in the area of the seat-engaging surface.
- Lateral screw connection (15a): Open the valve. Install the new seat with the insert ring. Screw in the set screws (15a) in such a way that the insert ring can be moved but not lifted out. Close the valve to centre the insert ring and the seat. Tighten the set screws reciprocally (fingertight fastening) to fix the insert ring.
- Axial screw connection (15b): Close the valve completely. Install the new seat with the insert ring and tighten the cylinder screws (15b) reciprocally.

## Mounting of the Hand Lever

- Screw the stud bolt (22) into the body and put the washer (26) on it.
- Insert the clamping bolt (24) into the hand lever (21) in such a way that the slit in the clamping bolt is aligned with the square in the hand lever.
- Place the hand lever on the shaft (3). The hand lever must lie on top of the washer (26).
- Tighten the clamping bolt with nut (25), thus fixing the hand lever to the shaft.
- Close the valve and adjust the stop position using the screw (27). Secure the screw with a nut (28).
- Screw the star knob (23) onto the stud bolt. For operating the valve loosen the star knob and retighten afterwards.

## Mounting of the MULTITOP mounting plate

- Place the mounting plate (29) on the body.
- Insert the spring dowel sleeves (30) through the mounting plate into the body. The slit in the split taper sleeve must be facing in the force direction (see arrow in the mounting drawing) to reach a rigid connection. Do not insert the mounting plate without using spring dowel sleeves as the transverse forces cannot be taken on by the screws.
- Insert the cylinder screws (31) and tighten them.
- If required, push the square adapter onto the shaft. If necessary, use the enclosed retaining ring to ensure that the square adapter will not slip off the shaft.



- |                 |                          |                  |                        |
|-----------------|--------------------------|------------------|------------------------|
| 1 Body          | 9 Gland flange           | 16 Hexagon screw | 26 Washer              |
| 2 Disc          | 10 Bottom flange         | 18 Hexagon screw | 27 Hexagon nut         |
| 3 Stem          | 11 Axial securing device | 20 Hexagon nut   | 28 Hexagon nut         |
| 4 Seat          | 12 Bottom flange seal    | 21 Hand lever    | 29 Mounting plate      |
| 5 Bearing       | 13 Tapered pin           | 22 Stud bolt     | 30 Spring dowel sleeve |
| 6 Gland packing | 14 Straight pin          | 23 Star knob     | 31 Cylinder screw      |
| 7 Insert ring   | 15a Set screw            | 24 Clamping bolt |                        |
| 8 Gland         | 15b Cylinder screw       | 25 Hexagon nut   |                        |