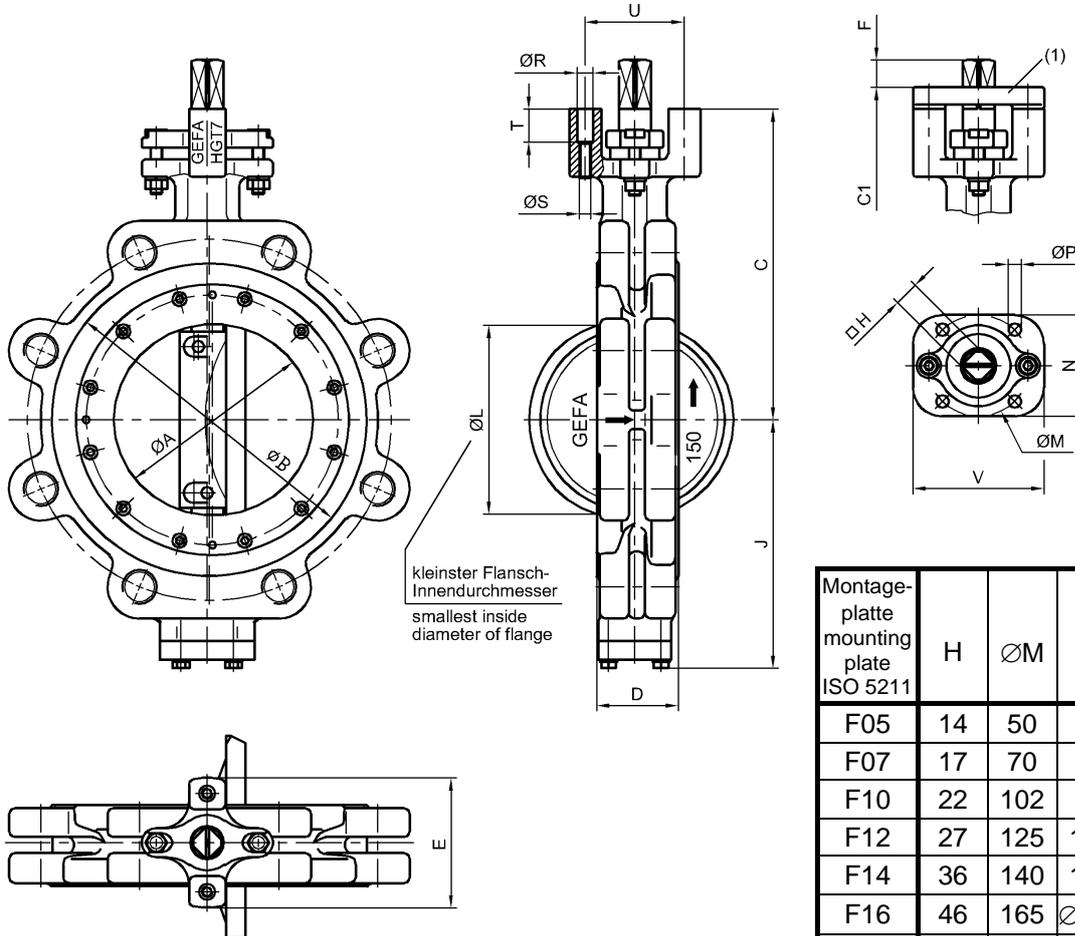


Baulänge: EN 558-1 Reihe 20 (DIN 3202-K1) Face to face dimension: EN 558-1 line 20 (DIN 3202-K1)



kleinster Flansch-Innendurchmesser
 smallest inside diameter of flange

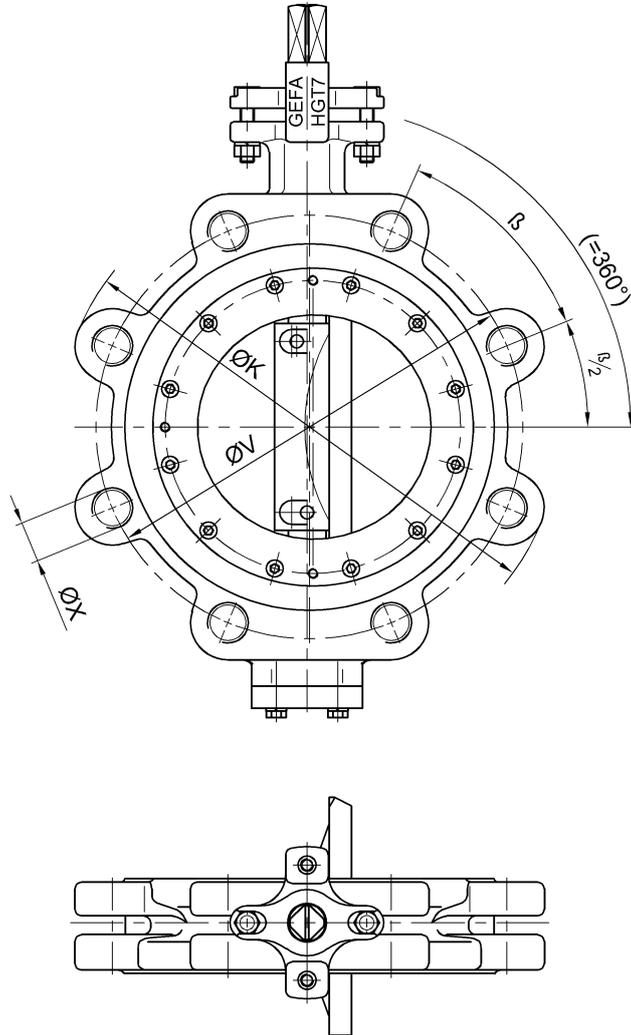
Montageplatte mounting plate ISO 5211	H	ØM	N	nxØP	V
F05	14	50	50	4x6,6	90
F07	17	70	70	4x9	90
F10	22	102	95	4x11	125
F12	27	125	125	4x14	150
F14	36	140	135	4x18	150
F16	46	165	Ø210	4x22	-
F25	55	254	Ø300	8x18	-

- (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	kleinster Anschluss min. mounting plate DIN 3337/ISO 5211
80	3"	70,5	133	162	177	46	90	16	18	122	76	11	M8	23	68	F05
100	4"	91,5	156	179	194	52	90	16	18	135	93	11	M8	23	68	F05
125	5"	111,5	188	197	212	56	90	19	22	152	118	11	M8	23	68	F07
150	6"	131,8	216	215	230	56	90	19	22	174	139	11	M8	23	68	F07
200	8"	177	268	262	280	60	125	24	28	216	190	13	M10	23	95	F10
250	10"	225	323	292	310	68	125	24	28	248	238	13	M10	23	95	F10
300	12"	268	375	336	356	78	150	29	36	283	281	16	M12	22	115	F12

Gewicht ohne Montageplatte
 Weight without mounting plate

Änderungen vorbehalten
 subject to changes

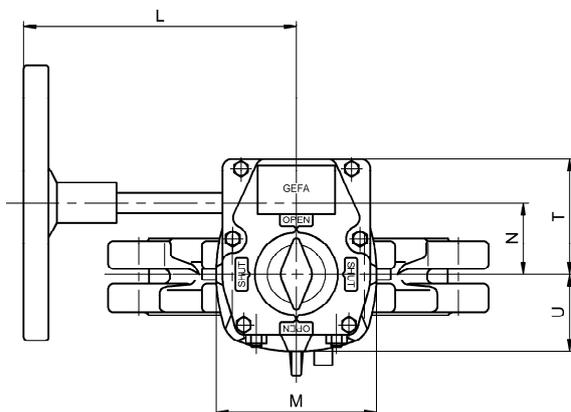
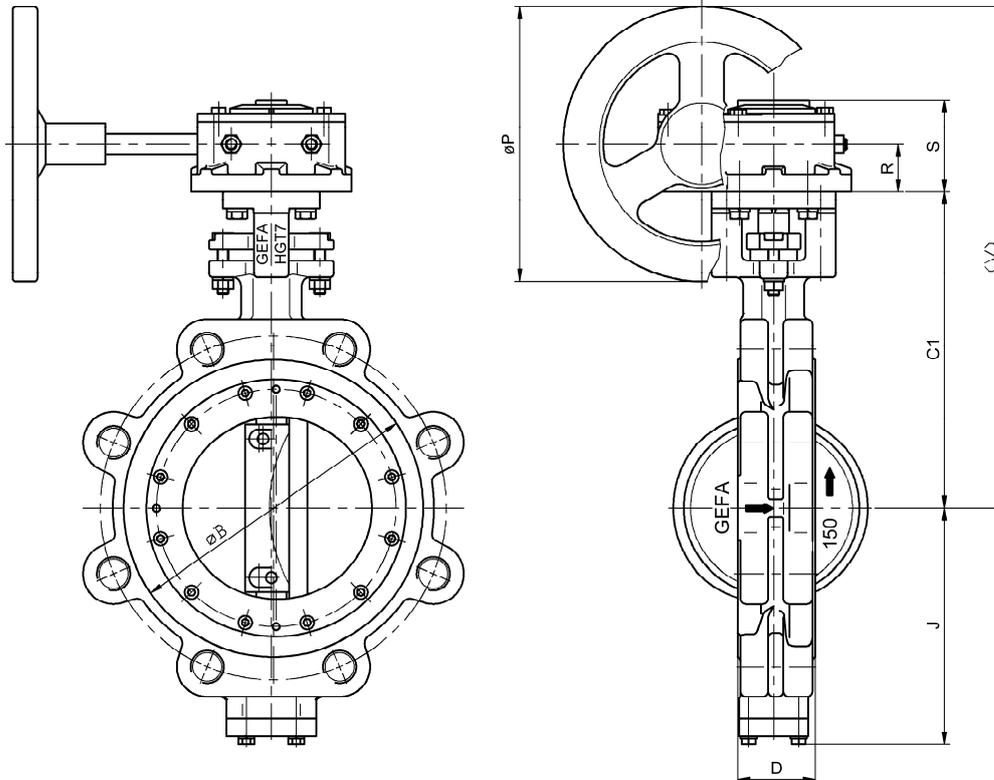


DN	NPS	Druckstufe pressure class	ØK	ØV	n	ØX	β	kg	DN	NPS	Druckstufe pressure class	ØK	ØV	n	ØX	β	kg
80	3"	PN10-PN40	204	160	8	M16	45°	8,0	200	8"	PN10	335	295	8	M20	45°	23,0
		Class 150		152,4	4	5/8" UNC	90°				298,5		8	3/4" UNC	45°		
		Class 300		168,1	8	3/4" UNC	45°										
100	4"	PN10 / PN16	236	180	8	M16	45°	10,0	200	8"	PN16	374	295	12	M20	30°	30,0
		PN25 / PN40		190	8	M20	45°				310		12	M24	30°		
		Class 150		190,5	8	5/8" UNC	45°				320		12	M27	30°		
		Class 300		200,2	8	3/4" UNC	45°				330,2		12	7/8" UNC	30°		
125	5"	PN10 / PN16	271	210	8	M16	45°	13,8	250	10"	PN10	435	350	12	M20	30°	41,5
		PN25 / PN40		220	8	M24	45°				355		12	M24	30°		
		Class 150		215,9	8	3/4" UNC	45°				370		12	M27	30°		
		Class 300		235	8	3/4" UNC	45°				385		12	M30	30°		
150	6"	PN10 / PN16	294	240	8	M20	45°	16,5	300	12"	PN10	474	400	12	M20	30°	54,0
		PN25 / PN40		250	8	M24	45°				410		12	M24	30°		
		Class 150		241,3	8	3/4" UNC	45°				431,8		12	7/8" UNC	30°		

Maximale Druckbelastung: siehe Druck-Temperatur-Diagramm
 Maximum pressure: please refer to pressure-temp. range diagram

Änderungen vorbehalten
 subject to changes

Dreifachexzenterklappe Serie HGT7 mit Grauguss Getriebe triple offset series HGT7 with cast iron gear operator DN 80 - DN 300

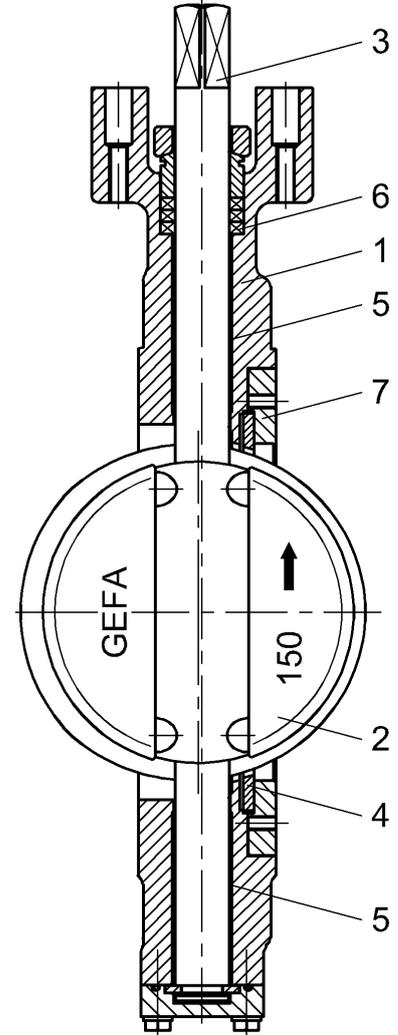
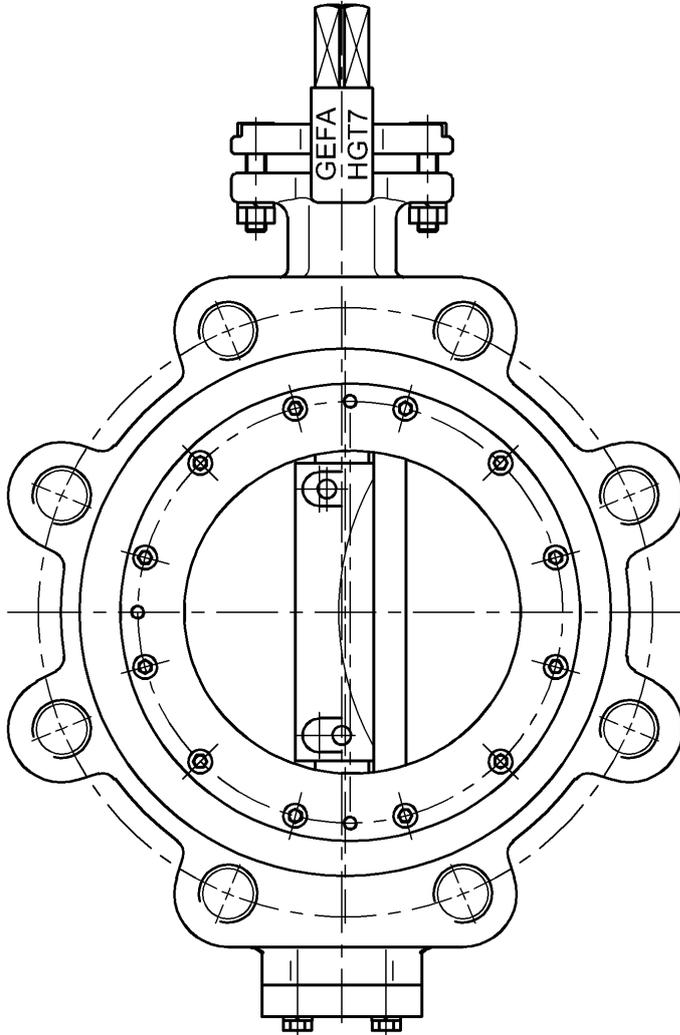


Getriebewerkstoffe / Gear materials
 Gehäuse / Body: Grauguss / cast iron
 Welle/Stem: Stahl / steel
 Handrad / Handwheel: Stahl / steel

Auf Wunsch ist ein Kettenrad lieferbar.
 Gewicht des Getriebes inklusive Handrad.
 Klappenspezifische Daten entnehmen Sie bitte
 den entsprechenden Datenblättern.

Upon request chain wheel can be supplied.
 Weight of gear operator including handwheel.
 Regarding valve data please refer to relevant
 data sheets.

DN	NPS	Getriebe Typ Gear type	ØB	C1	D	J	L	M	N	ØP	R	S	T	U	V	kg
80	3"	BGMM0714	133	177	46	122	150	88	39	125	27	58	62	45	267	2,9
100	4"	BGMM0714	156	194	52	135	150	88	39	125	27	58	62	45	284	2,9
125	5"	BGMM0717	188	212	56	152	187	88	39	200	27	58	62	45	339	3,5
150	6"	BGMM1017	216	230	56	174	197	116	52	200	35	67	84	58	365	5,0
200	8"	BGMM1222	268	280	60	216	301	150	67	250	42	81	105	75	447	10,0
250	10"	BGMM1222	323	310	68	248	301	150	67	250	42	81	105	75	477	10,0
300	12"	BGMM1227	375	356	78	283	301	150	67	250	42	81	105	75	523	10,0



Teil Nr. Part No.	Bezeichnung Description	Material					
		HGT76666MG	HGT74466MG	HGT74466CG	HGT76666MM	HGT74466MM	HGT74466CC
	max. Betriebstemperatur ** max. working temperature **	+ 450 °C			+ 450 °C		
1	Gehäuse Body	1.4408	GS-C25	GS-C25	1.4408	GS-C25	GS-C25
2	Klappenscheibe Disc	1.4408 nitriert/nitrated	1.4408 nitriert/nitrated	1.4408 nitriert/nitrated	1.4408 nitriert/nitrated	1.4408 nitriert/nitrated	1.4408 nitriert/nitrated
3	Welle Stem	1.4462	1.4462	1.4462	1.4462	1.4462	1.4462
4*	Sitzring Seat	1.4571/Graphit 1.4571/Graphite	1.4571/Graphit 1.4571/Graphite	Stahl/Graphit Steel/Graphite	1.4571/1.4571	1.4571/1.4571	Stahl/Stahl Steel/Steel
5	Lagerbuchse Bearing	1.4401 nitriert/nitrated	1.4401 nitriert/nitrated	1.4401 nitriert/nitrated	1.4401 nitriert/nitrated	1.4401 nitriert/nitrated	1.4401 nitriert/nitrated
6*	Packung Gland packing	Graphit Graphite	Graphit Graphite	Graphit Graphite	Graphit Graphite	Graphit Graphite	Graphit Graphite
7	Klemmring Insert ring	1.4571	C-Stahl Carbon steel	C-Stahl Carbon steel	1.4571	C-Stahl Carbon steel	C-Stahl Carbon steel

* = Verschleißteile / Wearing parts

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

Wahlweise andere Werkstoffe lieferbar / Other materials available

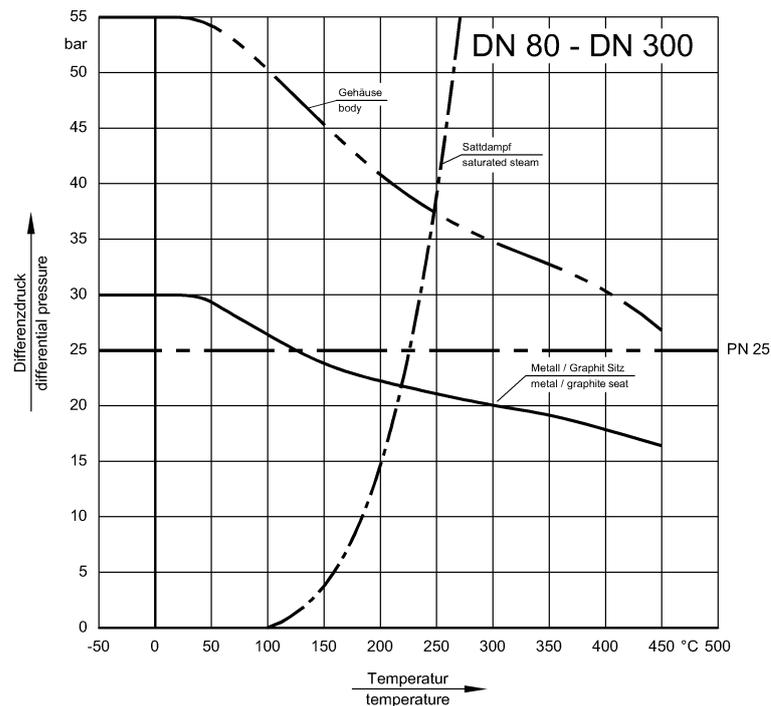
Änderungen vorbehalten
subject to changes

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 triple offset butterfly valve series HGT may only be used to stop, throttle and control media flows within the permissible pressure-/temperature limits.



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 gear operators, actuators, feedback and control systems.

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

Earthing the valve

If the triple offset butterfly valve series HGT 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 triple offset 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 triple offset butterfly valve series HGT 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 triple offset butterfly valve has been installed, as this could cause damage to the valve.

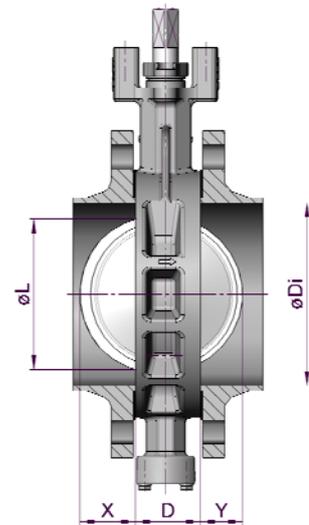
The triple offset butterfly valve is clamped between two pipeline flanges using two suitable seals.

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
80	46	80	23	8
100	52	98	28	18
125	56	121	39	26
150	56	141	48	37
200	60	190	71	56
250	68	239	93	74
300	78	285	112	90



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 triple offset butterfly valve series HGT 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 triple offset butterfly valve with valve shaft in horizontal position.

Recommended pressure direction and tightness requirements

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

Using the recommended mounting position the valve disc is pressurized from the stem side by the pressure of the medium.

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

Important: The operating torque influences the seat tightness. The triple offset butterfly valve series HGT is torque-seated (it is not closed in the seat in a stroke-dependent way).

The actuator torque is constantly used to ensure contact pressure between the seating surfaces – see chapter 'Mounting of operating elements and actuators'.

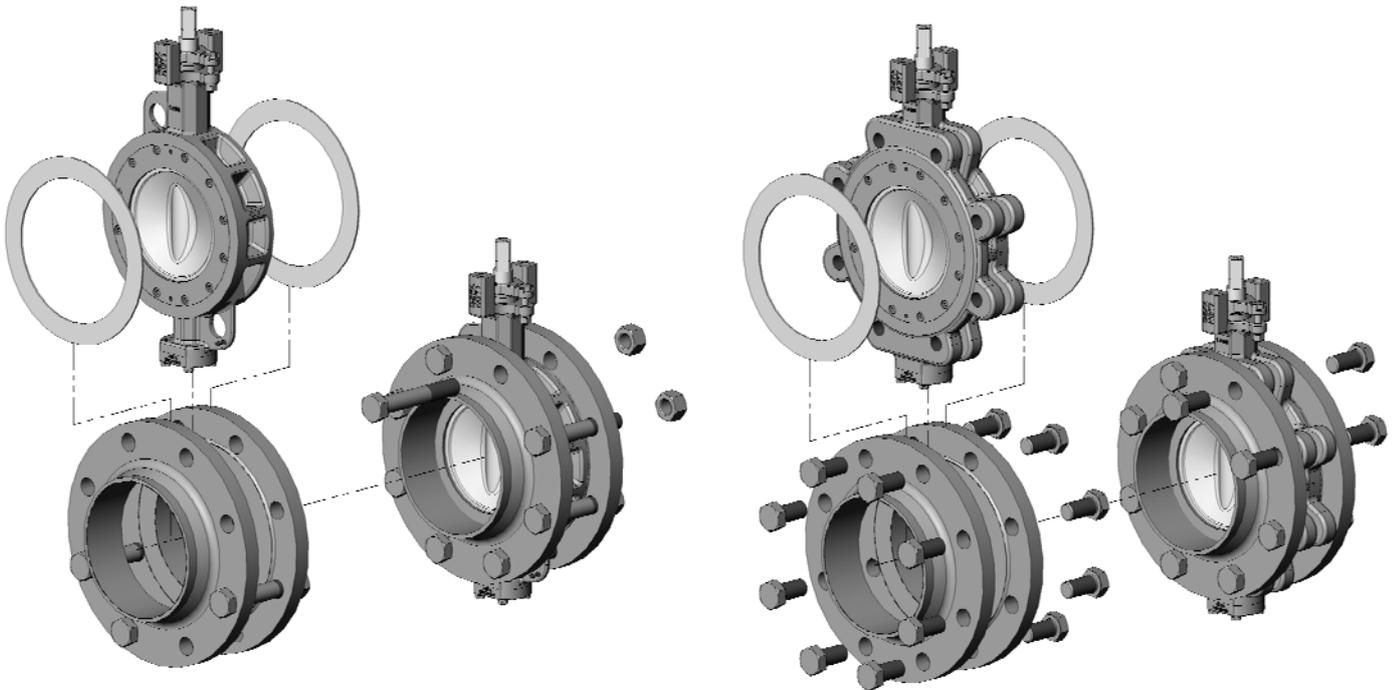
Installation

- 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 triple offset 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 triple offset butterfly 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. Only manual operations that are self-locking like gear operators for valves are allowed. Hand levers with notch plates do not fulfil this function!

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.

Mounting of operating elements and actuators

The highest level of seat tightness is only achieved if the valve disc is permanently pressed into the seat. This is realized by the actuating torque, ensuring a constant pressure in the CLOSED position. Only manual operations are allowed that are self-locking (gear operators for valves). Hand levers with notch plates do not fulfil this function!

Actuators (pneumatic, electric and hydraulic) need to be equipped with a stroke adjustment in the CLOSED position, allowing to set the CLOSED position by an overtravel, adjustable by approx. 3°. The stroke adjustment has to be unscrewed to allow the disc to close torque-seated. The adjustable final stroke (CLOSED position) must not limit the actuator's pivoting angle. This ensures that the valve disc is constantly pressed into the seat by the actuator's torque (closing torque).

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

If operational elements and actuators are subsequently added by someone who is not a member of our technical staff, we assume no liability for the proper function of the valve.

Initial operation

The triple offset 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 triple offset 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 triple offset 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: 2011-01-03

General information

A routine maintenance or lubrication of the triple offset butterfly valve HGT is not necessary. Should a leakage occur at the gland packing, retighten the gland nut (21). 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 it is not necessary to remove the valve from the pipeline.

- Check whether the pipeline has been rendered depressurized and is empty.
- Remove the operating element.
- Loosen the fixing devices (19, 20, 21) 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 area of the gland packing.
- 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, nuts and split washers. Tighten the nuts alternately so that the gland flange is not tilted. Only slightly tighten the nuts until the leakage is stopped.

Replacing the Seat

In order to ensure that the valve works safely, we highly recommend to order the replacing of the seat at the factory of GEFA Processtechnik GmbH. If the changing of the seat is not carried out by our staff, we will not assume any liability for the correct working of the valve.

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 so that the valve's actuator connection is in a 12 o' clock position. The flat sealing surface of the disc is now on the left-hand side.
- Unscrew the cylinder screws (16) and lift the insert ring out of the body.
- Remove the old seat (4). Clean the body, insert ring and disc in the area of the seat-engaging surface.
- Bring the disc exactly into 'CLOSED' position. For this, the front side of the disc must be parallel to the seat contact surface.
- In the area of the seat contact surface the body (1) has 3 center holes ($\varnothing 2$ mm). The holes are arranged on top (12 o' clock), at the bottom (6 o' clock) and on the left-hand side (9 o' clock). Insert the new seat (4) in such a way that the holes in the seat are congruent with the center holes in the body. Now the sealing surface of the seat must fully lie against the disc.
- The insert ring is equipped with 2 opposing threaded holes. Another threaded respectively center hole is displaced at 90° to these threaded holes. The insert ring is to be placed into the body in such a way that the opposing threaded holes are in the 12 o' clock and 6 o' clock positions and the third hole is in the 9 o' clock position (left-hand side).
- Insert the cylinder screws (16) and slightly tighten them alternately.
- Carefully open and close the valve 5 times to allow the seat to centre itself. Whilst actuating the valve, it may be necessary to increase the force with each closing operation in order to ensure the exact position of the seat.
- Tighten the screws of the insert ring alternately, using following torque:
 $M5 = 6 \text{ Nm}$ $M6 = 10 \text{ Nm}$
- In order to achieve an optimum seat tightness, the seat has to be forced once. For this purpose, the insert ring has to be pushed against the body, using the following force:

DN	80	100	125	150	200	250	300
Force [kN]	60	70	90	100	150	200	240

If no corresponding compactor is available, the seat can also be forced by installing it between 2 flanges. Using this method care should be taken that a ring (or a disc) has to be laid on the insert ring, that has a slightly smaller outside diameter than the outside diameter of the insert ring is. Tighten the flange screws alternately with the following torque (that apply to DIN PN 10 flanges):

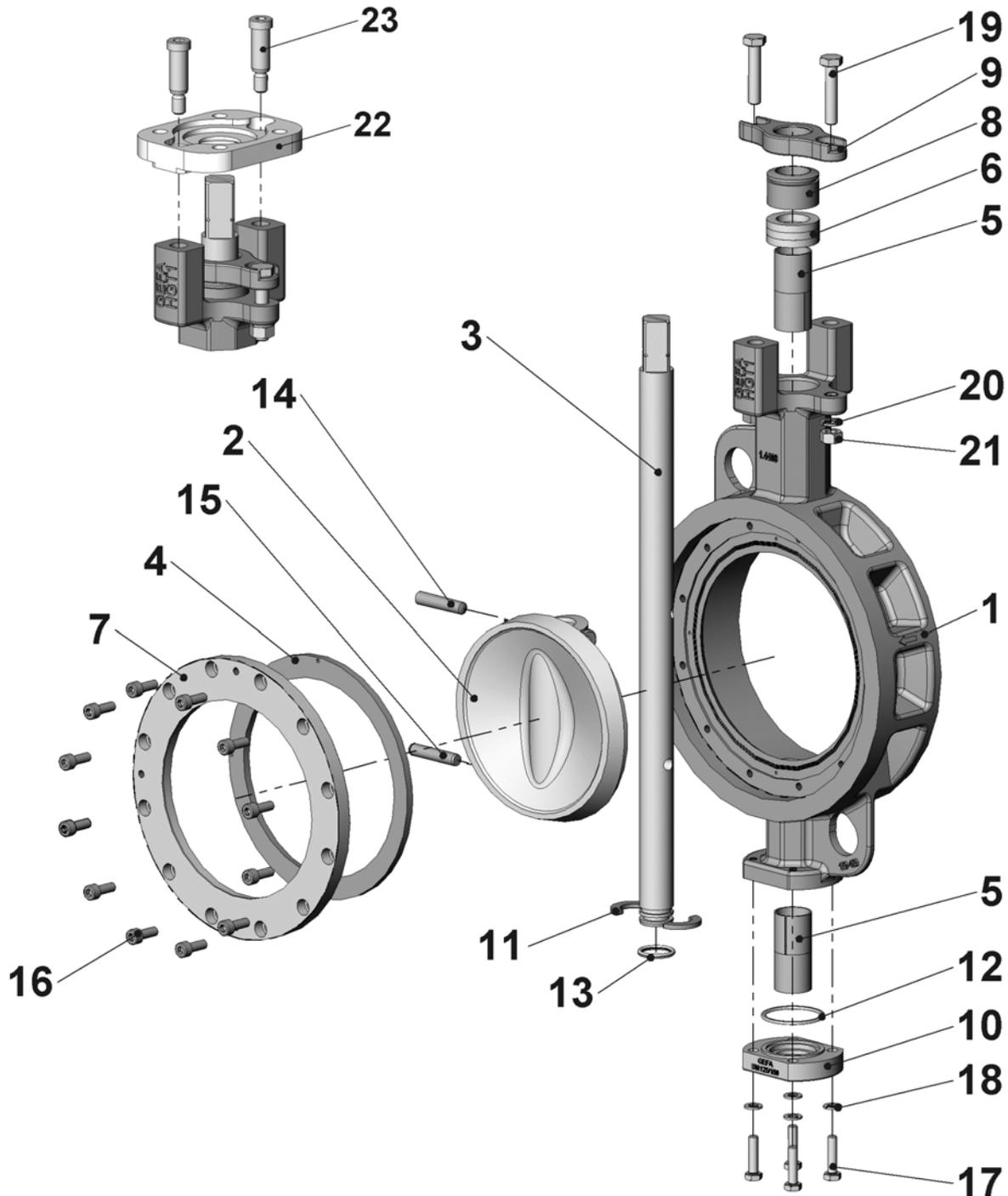
DN	80	100	125	150	200	250	300
Tightening torque [Nm]	22	25	35	45	65	65	75

Ensure that the pressure is evenly applied to the insert ring.

- After having forced the seat, alternately retighten the screws of the insert ring with the following torque:
 $M5 = 6 \text{ Nm}$ $M6 = 10 \text{ Nm}$
- Pressure-test the valve.

Mounting of the Mounting Plate

- Fit the mounting plate (22) and fix it using the screws (23).
Danger: GEFA original screws (23) MUST be used. Using other screws may cause injury or death to people as well as serious damage to the valve and other physical objects belonging to the operator.
- If required, push the square adapter onto the shaft. If necessary, use adequate means to ensure that the square adapter will not slip off the stem.



1 Body	7 Insert ring	13 O-ring	19 Hexagon screw
2 Disc	8 Gland	14 Tapered pin	20 Split washer
3 Stem	9 Gland flange	15 Straight pin	21 Hexagon nut
4 Seat	10 Bottom flange	16 Cylinder screw	22 Mounting plate
5 Bearing	11 Axial securing device	17 Hexagon screw	23 Fixing screw
6 Gland packing	12 Bottom flange seal	18 Split washer	

Subject to modifications without notice

Edition: 2012-05-07