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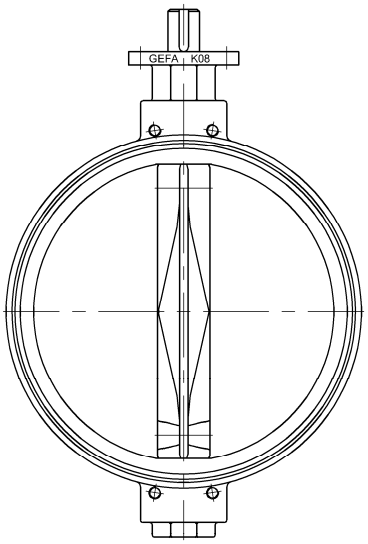
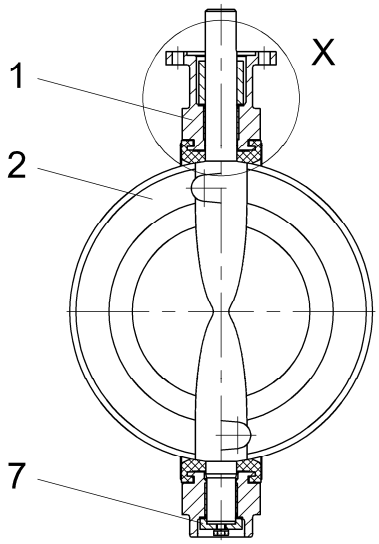
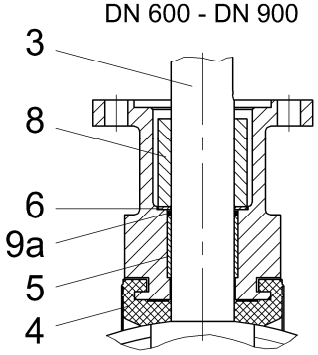
# Werkstoffe
# Processklappe Serie K08
# Materials
# butterfly valve series K08

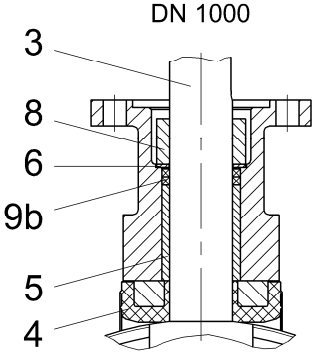



X
DN 600 - DN 900




X
DN 1000




| Teil Nr.<br>Part No. | Bezeichnung<br>Description | Material | | | |
|---|---|---|---|---|---|
| | | K08 4423 E | K08 2423 E | K08 2466 E | K08 2479 E |
| 1 | Gehäuse<br>Body | GP240GH<br>Stahlguss GS-C25<br>Steel GS-C25 | EN-GJS-400-18-LT<br>Sphäroguss GGG40.3<br>Ductile iron GGG40.3 | EN-GJS-400-18-LT<br>Sphäroguss GGG40.3<br>Ductile iron GGG40.3 | EN-GJS-400-18-LT<br>Sphäroguss GGG40.3<br>Ductile iron GGG40.3 |
| 2 | Klappenscheibe<br>Disc | EN-GJS-400-15<br>Sphäroguss GGG40<br>Ductile iron GGG40 | EN-GJS-400-15<br>Sphäroguss GGG40<br>Ductile iron GGG40 | 1.4408 | EPDM-beschichtet<br>EPDM coated |
| 3 | Welle<br>Stem | 1.4021 | 1.4021 | 1.4021 | 1.4021 |
| 4* | Sitzring<br>Seat | Stahl / EPDM<br>Steel / EPDM | Stahl / EPDM<br>Steel / EPDM | Stahl / EPDM<br>Steel / EPDM | Stahl / EPDM<br>Steel / EPDM |
| 5* | Lagerbuchse<br>Bearing | Stahl / PTFE<br>Steel / PTFE | Stahl / PTFE<br>Steel / PTFE | Stahl / PTFE<br>Steel / PTFE | Stahl / PTFE<br>Steel / PTFE |
| 6* | Gleitring<br>Slide ring | POM | POM | POM | POM |
| 7 | Stützscheibe<br>Support ring | Stahl / Steel | Stahl / Steel | Stahl / Steel | Stahl / Steel |
| 8 | Stellring<br>Set collar | Stahl / Steel | Stahl / Steel | Stahl / Steel | Stahl / Steel |
| 9a/9b* | Dichtung<br>Sealing | NBR/Kunstfaser+PTFE<br>NBR/synthetic fibre+PTFE | NBR/Kunstfaser+PTFE<br>NBR/synthetic fibre+PTFE | NBR/Kunstfaser+PTFE<br>NBR/synthetic fibre+PTFE | NBR/Kunstfaser+PTFE<br>NBR/synthetic fibre+PTFE |

* = Verschleißteile / Wearing parts

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

Änderungen vorbehalten
subject to changes

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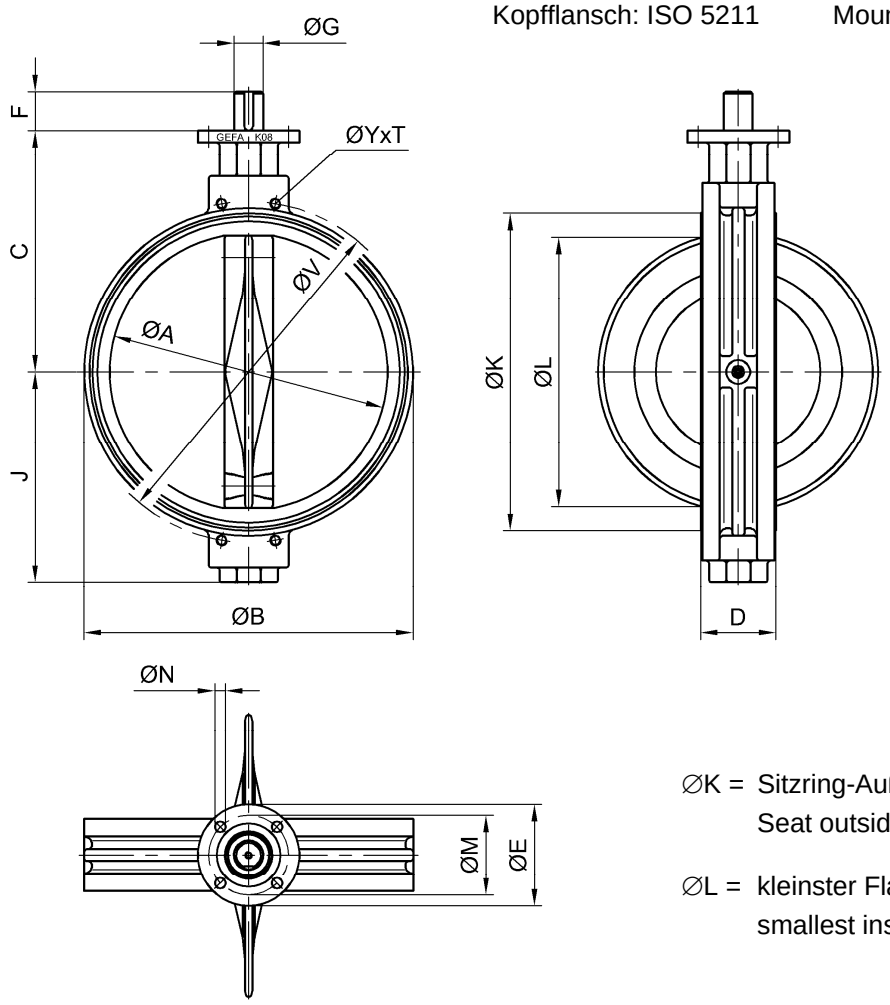
# Maße / Dimensions
# Processklappe Serie K08
# Butterfly valve series K08
# DN 600 - DN 1000

Kopfflansch: ISO 5211 Mounting plate: ISO 5211




ØK = Sitzring-Außendurchmesser
Seat outside diameter

ØL = kleinster Flanschinnendurchmesser
smallest inside diameter of flange

| DN | NPS | ØA | ØB | C | D | ØE | F | ØG | J | ØK | ØL | Passfeder Key DIN 6885 | Kopfflansch Mounting plate | | | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | ØM | ØN | ISO 5211 | |
| 600 | 24“ | 580 | 679 | 500 | 149 | 210 | 80 | 60 | 435 | 657 | 566 | 18 x 11 | 165 | 4 x ∅22 | F16 | 150 |
| 700 | 28“ | 680 | 784 | 550 | 169 | 210 | 80 | 60 | 485 | 762 | 663 | 18 x 11 | 165 | 4 x ∅22 | F16 | 230 |
| 800 | 32“ | 780 | 890 | 620 | 189 | 300 | 110 | 75 | 560 | 868 | 761 | 20 x 12 | 254 | 8 x ∅18 | F25 | 310 |
| 900 | 36“ | 880 | 990 | 690 | 209 | 300 | 110 | 75 | 610 | 968 | 858 | 20 x 12 | 254 | 8 x ∅18 | F25 | 420 |
| 1000 | 40“ | 980 | 1140 | 760 | 229 | 300 | 110 | 100 | 730 | 1068 | 963 | 28 x 16 | 254 | 8 x ∅18 | F25 | 650 |

| DN | NPS | Druckstufe / Pressure class PN 6 | | | Druckstufe / Pressure class PN 10 | | | Druckstufe / Pressure class PN 16 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ØV | ØY | T | ØV | ØY | T | ØV | ØY | T |
| 600 | 24“ | 705 | 4 x M24 | 40 | 725 | 4 x M27 | 40 | 770 | 4 x M33 | 40 |
| 700 | 28“ | 810 | 4 x M24 | 40 | 840 | 4 x M27 | 40 | 840 | 4 x M33 | 40 |
| 800 | 32“ | 920 | 4 x M27 | 40 | 950 | 4 x M30 | 40 | 950 | 4 x M36 | 40 |
| 900 | 36“ | 1020 | 4 x M27 | 40 | 1050 | 4 x M30 | 40 | 1050 | 4 x M36 | 40 |
| 1000 | 40“ | 1120 | 4 x M27 | 40 | 1160 | 4 x M33 | 40 | 1170 | 4 x M39 | 40 |

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

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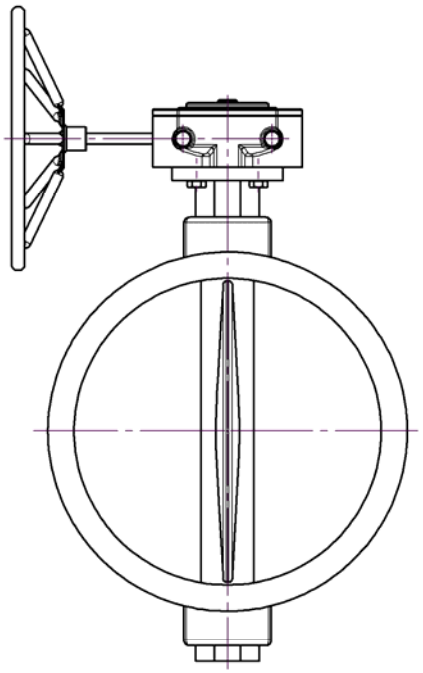
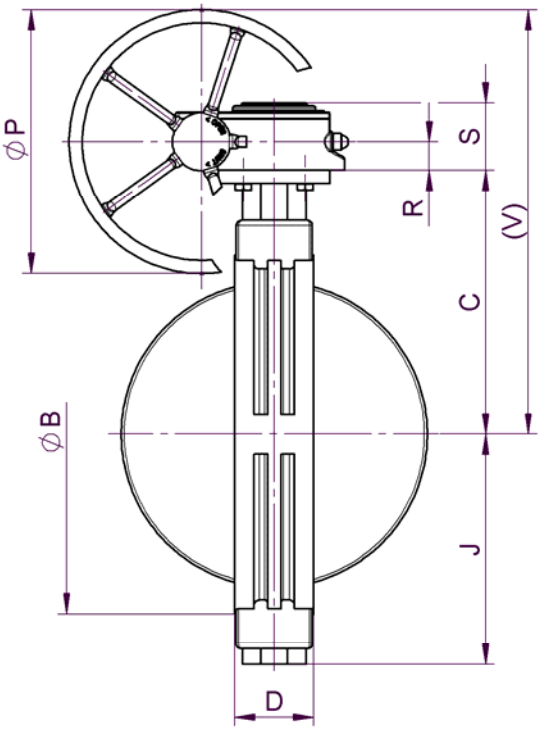
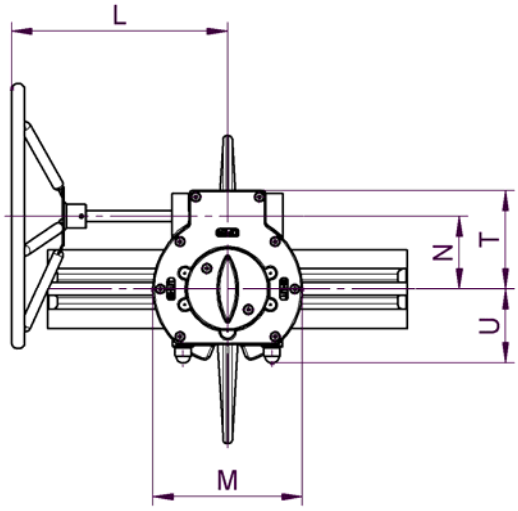
# Processklappe Serie K08 mit Grauguss Getriebe BGPQ
# Butterfly valve series K08 with cast iron gear operator BGPQ
# DN 600 - DN 1000






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.

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<br>Gear type | ∅B | C | D | J | L | M | N | ∅P | R | S | T | U | V | kg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 600 | 24“ | BGPQ4000S6050020 | 679 | 500 | 149 | 435 | 408 | 282 | 138 | 500 | 55 | 128 | 186 | 140 | 805 | 37,0 |
| 700 | 28“ | BGPQ6500S6050020 | 784 | 550 | 169 | 485 | 440 | 282 | 138 | 500 | 55 | 128 | 186 | 140 | 855 | 41,5 |
| 800 | 32“ | BGPQ6500S7550020 | 890 | 620 | 189 | 560 | 440 | 282 | 138 | 500 | 55 | 128 | 186 | 140 | 925 | 41,5 |
| 900 | 36“ | BGPQ12000S7550020 | 990 | 690 | 209 | 610 | 471 | 376 | 180 | 500 | 64 | 135 | 240 | 167 | 1004 | 66,0 |
| 1000 | 40“ | BGPQ16000S10060025 | 1140 | 760 | 229 | 730 | 556 | 376 | 180 | 600 | 64 | 135 | 240 | 167 | 1124 | 74,5 |

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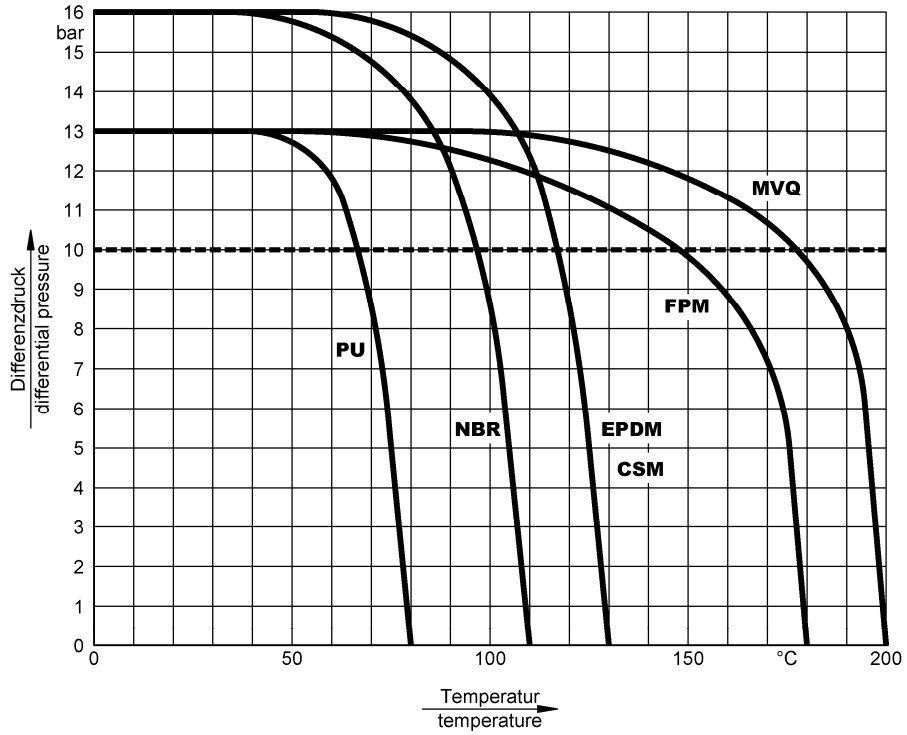
# Druck-Temperatur-Diagramm weichdichtende Processklappe Serie K
# Pressure-temp. range diagram soft-seated butterfly valve series K




Ab DN 200 ist bei einem Differenzdruck über 13 bar der Einsatz von Sitzringen mit erhöhter Shore Härte erforderlich.

Folgende Serien sind bis zu einem maximalen Differenzdruck von 10 bar geeignet:
K11: DN 50-DN150
KG9 mit Edelstahlgehäuse: DN200-DN300
KG2/KG4 und Armaturen ab DN 600

Bei Einbau der Processklappe mit Anflanschgehäuse als Endarmatur beträgt der maximale Betriebsdruck 6bar. Der freie Anschluss ist zusätzlich mit einem Gegenflansch abzusichern.

Serie K optional Vakuumdicht bis 1x10-2 mbar

For a differential pressure of more than 13 bar valves > DN 200 have to be equipped with a seat having a higher shore hardness.

The following series are suitable up to a maximum differential pressure of 10 bar:

K11: DN 50-DN150
KG9 Body stainless steel: DN200-DN300
KG2/KG4 and valves ≥ DN 600

When installing the lug type butterfly valve as end-in-line valve, the max. differential pressure is 6 bar. The free port must be secured by a counter flange.

Series K optional vacuum tight up to 1x10-2 mbar

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# Drehmomente für GEFA - Processklappen Serie K
# Torques for GEFA - butterfly valves series K

| DN | | Anwendungsfall 1 Application 1 | | | Anwendungsfall 2 Application 2 | | |
|---|---|---|---|---|---|---|---|
| mm | inch | Δp 5 bar (Nm) | Δp 10 bar (Nm) | Δp 16 bar (Nm) | Δp 5 bar (Nm) | Δp 10 bar (Nm) | Δp 16 bar (Nm) |
| 25 | 1“ | 7 | 9 | 10 | 9 | 10 | 12 |
| 32 | 1 1/4“ | 7 | 9 | 10 | 9 | 10 | 12 |
| 40 | 1 1/2“ | 10 | 12 | 13 | 13 | 14 | 15 |
| 50 | 2“ | 20 | 24 | 25 | 28 | 29 | 30 |
| 65 | 2 1/2“ | 25 | 26 | 29 | 33 | 34 | 36 |
| 80 | 3“ | 30 | 34 | 39 | 39 | 44 | 47 |
| 100 | 4“ | 44 | 49 | 54 | 59 | 64 | 69 |
| 125 | 5“ | 64 | 69 | 79 | 83 | 98 | 112 |
| 150 | 6“ | 88 | 108 | 118 | 123 | 137 | 157 |
| 200 | 8“ | 157 | 196 | 216 | 206 | 235 | 275 |
| 250 | 10“ | 235 | 294 | 334 | 314 | 363 | 412 |
| 300 | 12“ | 343 | 441 | 490 | 441 | 530 | 589 |
| 350 | 14“ | 490 | 638 | 736 | 628 | 755 | 863 |
| 400 | 16“ | 638 | 883 | 1030 | 834 | 1030 | 1170 |
| 450 | 18“ | 883 | 1197 | 1422 | 1079 | 1373 | 1619 |
| 500 | 20“ | 1128 | 1570 | 1864 | 1324 | 1864 | 2139 |
| 600 | 24“ | 2354 | 2453 | 2649 | 2697 | 2894 | 3286 |
| 700 | 28“ | 3728 | 3924 | 4169 | 4120 | 4513 | 5003 |
| 800 | 32“ | 4218 | 4414 | 4856 | 4709 | 5200 | 6082 |
| 900 | 36“ | 8780 | 9025 | 9565 | 9025 | 9614 | 10693 |
| 1000 | 40“ | 10300 | 11282 | 12263 | 11772 | 13250 | 15206 |
| 1200 | 48“ | 17167 | 18140 | 19620 | 18148 | 19620 | 22563 |

**Anwendungsfall 1:**
Drehmomente bei normalen Anwendungen, bei denen weder eine Schwellung noch Verhärtung des Sitzringes zu erwarten ist.
z.B.:
- Wasser (Kühlwasser - Seewasser etc.)
- schmierfähige Medien
- Temperaturen 0 - 80 °C
- Betätigung der Armaturen sollte einmal im Monat erfolgen.

**Anwendungsfall 2:**
Drehmomente bei Anwendungen, bei denen die spezifischen Einflüsse unbekannt sind.
z.B.:
- Kohlenwasserstoffe - Säuren - Trockenservice - Dispersionen - hohe Temperaturen
- Armaturen bleiben über längere Zeiträume geschlossen.

**Application 1:**
Torques for normal applications, if neither expansion nor induration of the seat is expected.
for example:
- water (cooling water - sea water etc.)
- lubricating media
- temperatures ranging from 0 - 80 °C
- valves should be actuated once a month.

**Application 2:**
Torques for applications with unknown specific influences.
for example:
- hydrocarbon, acids, dry media, dispersions, high temperatures
- valves remain shut for a longer period.

- Das zu erwartende Betätigungsmoment ergibt sich aus der Summe aller Reibungswiderstände beim Öffnen und Schließen der Armatur gegen die angegebenen Differenzdrücke.
- Der Einfluß des dynamischen Momentes ist in der Tabelle nicht berücksichtigt.
- Bei der Auslegung von Antrieben ist es nicht erforderlich, einen zusätzlichen Sicherheitsfaktor zu berücksichtigen. In Sonderfällen kann der Klappenscheibendurchmesser reduziert werden, um ein geringeres Drehmoment zu erreichen. Die Klappe ist dann allerdings nur noch bis 3,5 bar dicht.

- The expected torque results from all frictional resistances during opening and closing of the valve against above mentioned differential pressures.
- The influence of the dynamic moment has not been considered in the table.
- An additional security factor is not necessary for actuator selection. In special cases the diameter of the disc can be reduced to get a lower torque. Then the valve is only tight up to 3,5 bar.

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# Durchflussbeiwert $K_v$ für Processklappe Serie K
# $K_v$ value for butterfly valve series K

| DN | NPS | Klappen Öffnungswinkel / Degree of disc rotation | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 10° | 20° | 30° | 40° | 50° | 60° | 70° | 80° | 90° |
| 25 / 32 | 1“ / 1 1/4“ | 0,5 | 1,8 | 4,5 | 7,0 | 12 | 18 | 30 | 46 | 53 |
| 40 | 1 1/2“ | 0,9 | 4,5 | 10 | 17 | 28 | 42 | 67 | 104 | 125 |
| 50 | 2“ | 1,8 | 7,0 | 16 | 26 | 44 | 70 | 115 | 175 | 210 |
| 65 | 2 1/2“ | 2,8 | 10 | 23 | 39 | 60 | 95 | 155 | 280 | 340 |
| 80 | 3“ | 3,5 | 14 | 33 | 57 | 95 | 146 | 240 | 380 | 510 |
| 100 | 4“ | 5,5 | 25 | 54 | 95 | 155 | 240 | 395 | 620 | 820 |
| 125 | 5“ | 8,6 | 38 | 86 | 155 | 240 | 385 | 635 | 950 | 1200 |
| 150 | 6“ | 15 | 52 | 120 | 215 | 342 | 547 | 940 | 1380 | 1800 |
| 200 | 8“ | 21 | 95 | 215 | 376 | 590 | 940 | 1540 | 2400 | 3200 |
| 250 | 10“ | 33 | 154 | 342 | 607 | 940 | 1540 | 2310 | 4000 | 5300 |
| 300 | 12“ | 49 | 222 | 504 | 855 | 1455 | 2310 | 3760 | 6000 | 8000 |
| 350 | 14“ | 65 | 290 | 658 | 1200 | 1880 | 2900 | 4790 | 8000 | 9500 |
| 400 | 16“ | 86 | 380 | 855 | 1540 | 2395 | 3850 | 6325 | 9500 | 12000 |
| 500 | 20“ | 130 | 610 | 1370 | 2480 | 3930 | 6160 | 10260 | 16000 | 19000 |
| 600 | 24“ | 188 | 855 | 1970 | 3420 | 5470 | 8550 | 14100 | 23000 | 26000 |
| 700 | 28“ | 255 | 1145 | 2710 | 4670 | 7470 | 11970 | 19530 | 30000 | 36000 |
| 800 | 32“ | 335 | 1600 | 3530 | 6120 | 9920 | 15670 | 25665 | 38000 | 47000 |
| 900 | 36“ | 430 | 2220 | 4440 | 7770 | 12820 | 19660 | 32500 | 54000 | 66000 |
| 1000 | 40“ | 575 | 2570 | 5990 | 10260 | 16700 | 26500 | 43600 | 64000 | 78000 |

$K_v$ = Durchflussmenge in $m^3/h$ bei einem Druckverlust von 1 bar für Wasser ($\rho$=1000 $kg/m^3$)
$K_v$ = Water flow ($\rho$=1000 $kg/m^3$) 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 $kg/m^3$)
$C_v$ = Water flow ($\rho$=1000 $kg/m^3$) 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<br>pressure drop | Flüssigkeit<br>liquid | Gas<br>gas | Dampf<br>steam |
|---|---|---|---|
| $p_2 > \frac{p_1}{2}$ / $\Delta p < \frac{p_1}{2}$ | $K_v = Q \cdot \sqrt{\frac{\rho}{1000 \cdot \Delta p}}$ | $K_v = \frac{Q_N}{514} \cdot \sqrt{\frac{\rho_N \cdot (t_1 + 273°)}{\Delta p \cdot p_2}}$ | $K_v = \frac{G}{31{,}6} \cdot \sqrt{\frac{v_2}{\Delta p}}$ |
| $p_2 < \frac{p_1}{2}$ / $\Delta p > \frac{p_1}{2}$ | $K_v = Q \cdot \sqrt{\frac{\rho}{1000 \cdot \Delta p}}$ | $K_v = \frac{2 \cdot Q_N}{514 \cdot p_1} \cdot \sqrt{\rho_N \cdot (t_1 + 273°)}$ | $K_v = \frac{G}{31{,}6} \cdot \sqrt{\frac{2 \cdot v}{p_1}}$ |

| | | | |
|---|---|---|---|
| Q | ($m^3/h$) | Durchflussmenge im Betriebszustand | Flow during operation |
| $Q_N$ | ($m^3h$) | Durchflussmenge bei 0 °C, 1013,3 mbar | Flow at 0 °C, 1013,3 mbar |
| G | (kg/h) | Massenstrom | Mass flow |
| $p_1$ | (bar) | abs. Vordruck | abs. inlet pressure |
| $p_2$ | (bar) | abs. Nachdruck | abs. outlet pressure |
| $\Delta p$ | (bar) | Differenzdruck ($p_1$-$p_2$) | Pressure drop ($p_1$-$p_2$) |
| $\rho$ | ($kg/m^3$) | Dichte im Betriebszustand | Specific gravity of fluid during operation |
| $\rho_N$ | ($kg/m^3$) | Dichte bei 0 °C, 1013,3 mbar | Specific gravity of fluid at 0 °C, 1013,3 mbar |
| $v_2$ | ($m^3/kg$) | spezifisches Volumen bei $p_2$ | Specific volume at $p_2$ |
| v | ($m^3/kg$) | spezifisches Volumen bei $p_1/2$ und $t_1$ | Specific volume at $p_1/2$ and $t_1$ |
| $t_1$ | (°C) | Betriebstemperatur | Working temperature |

Änderungen vorbehalten
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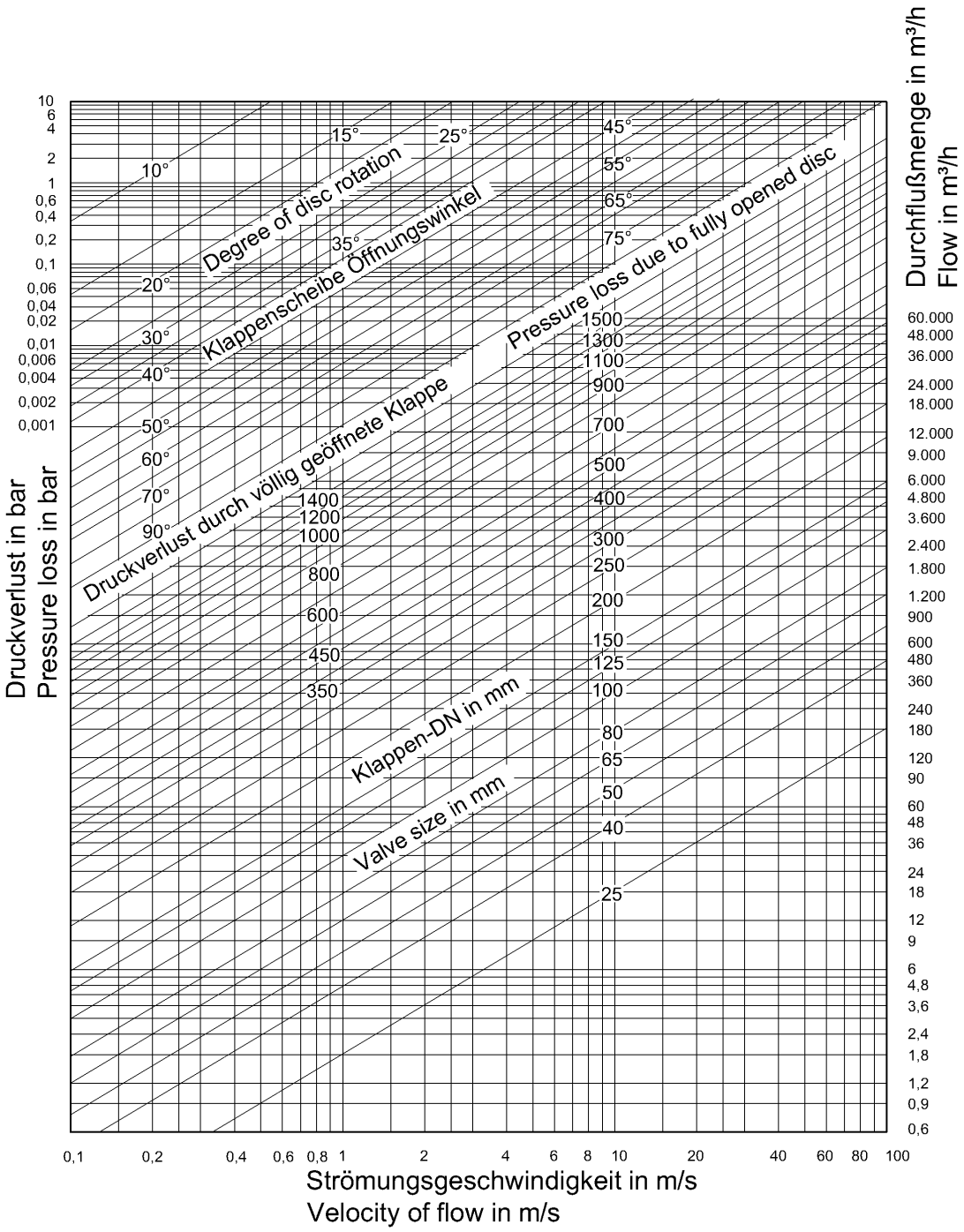
# Nomogramm zur Bestimmung von Druckverlusten Processklappen Serie K
# Nomogram for the determination of pressure losses GEFA-Butterfly valves series K




**Anmerkung:** Alle Werte beziehen sich auf Wasser von 15° C.
Bei einer Stömungsgeschwindigkeit von über 8 m/s bei voll geöffneter Klappe ist Rücksprache mit dem Lieferwerk erforderlich.

**Remarks:** Values refer to water at 15° C.
In case of velocity of flow with more than 8 m/s at fully opened disc consultation with the supplier is necessary.

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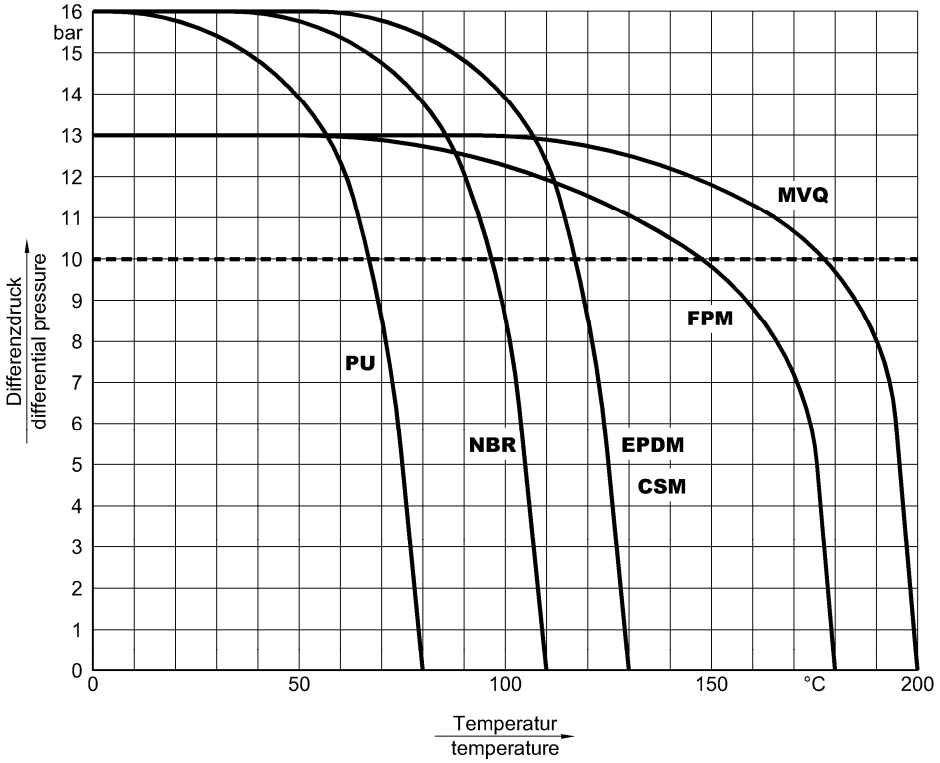
# Operating instructions Installation / Operation soft-seated butterfly valve series K

## 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 soft-seated butterfly valve series K may only be used to stop, throttle and control media flows within the permissible pressure/temperature limits.




From DN 200 the use of seats with higher shore hardness is necessary at a differential pressure of more than 13 bar.
Lug type valves: Max. differential pressure 6 bar for valves used in an end-of-line function.
KG2 / KG4, K11 DN 50 – DN 150,
KG9 66.. DN 200 – DN 300
and valves from DN 600: Max. differential pressure 10 bar.

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 butterfly valve is supplied with anti-static device and used in potentially explosive zones, the earthing strap supplied with 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 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.
The outer paintwork (coating) must remain undamaged, otherwise the faulty spots must be repaired immediately.
The factory-adjusted basic setting (position of the disc at delivery) must not be changed.

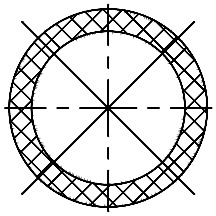
## Conditions for mounting the valve

The soft-seated butterfly valve series K is installed between pipeline flanges acc. to DIN2501 or ANSI B16.5.
The pipeline must not have any axial or angular offset, since otherwise the disc could be damaged and the seat can become deformed, which is not permitted.

The seat of the GEFA butterfly valve has a sealing lip.
Due to this seat design the butterfly valve is "self-sealing" to the flanges and does not require additional flange gaskets.
Pre-condition: The flange sealing surfaces have been checked to make sure that they have a smooth surface structure.
Residues (welding beads) must be removed.
No cross marks may be visible.

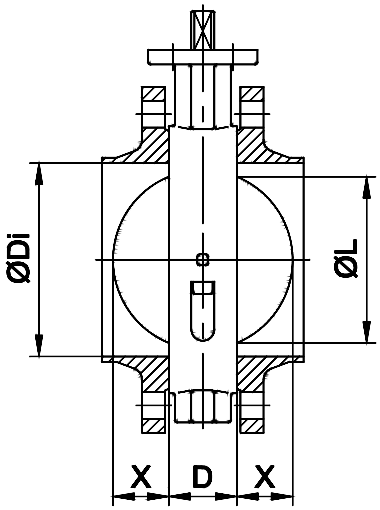
The "clearance" of the mating flanges - including inner coating- has to be sufficient to allow the disc to be fully opened without touching (ØDi ≥ ØL + 6 mm). This must be checked before the valve is installed and compared with the space necessary for the valve according to the table.

**Do not use flange gaskets**



**(Seat serves as flange gasket)**

| DN | D | ØL | X |
|---|---|---|---|
| 50 | 43 | 33 | 6 |
| 65 | 46 | 48 | 10 |
| 80 | 46 | 64 | 17 |
| 100 | 52 | 91 | 27 |
| 125 | 56 | 117 | 37 |
| 150 | 56 | 137 | 46 |
| 200 | 60 | 190 | 70 |
| 250 | 68 | 240 | 91 |
| 300 | 78 | 290 | 111 |
| 350 | 78 | 330 | 131 |
| 400 | 102 | 377 | 144 |
| 500 | 127 | 475 | 182 |
| 600 | 149 | 567 | 215 |
| 700 | 169 | 665 | 255 |
| 800 | 189 | 763 | 295 |
| 900 | 209 | 859 | 334 |
| 1000 | 229 | 967 | 378 |




## 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 butterfly valve series K can be installed in any position. The recommended position, however, is with the shaft being horizontal.
The lower disc edge should open in flow direction.

## Installation

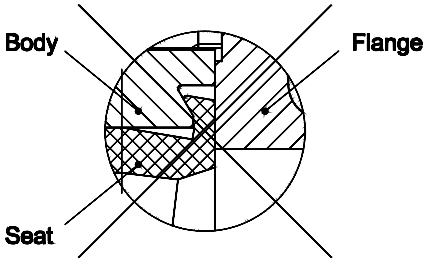
The soft-seated butterfly valve series K has to be switched to a slightly angled position.
The position of the disc must be within the face-to-face dimension of the valve.

Spread the mating flanges and insert the valve carefully between the flanges.

If the pipeline is to be welded at site, temporary fitting blocks should be installed instead of the butterfly valve, since flying sparks and welding residues can damage the seat due to high temperatures.
Never leave the butterfly valve installed when welding of the pipeline/flanges has to be completed.

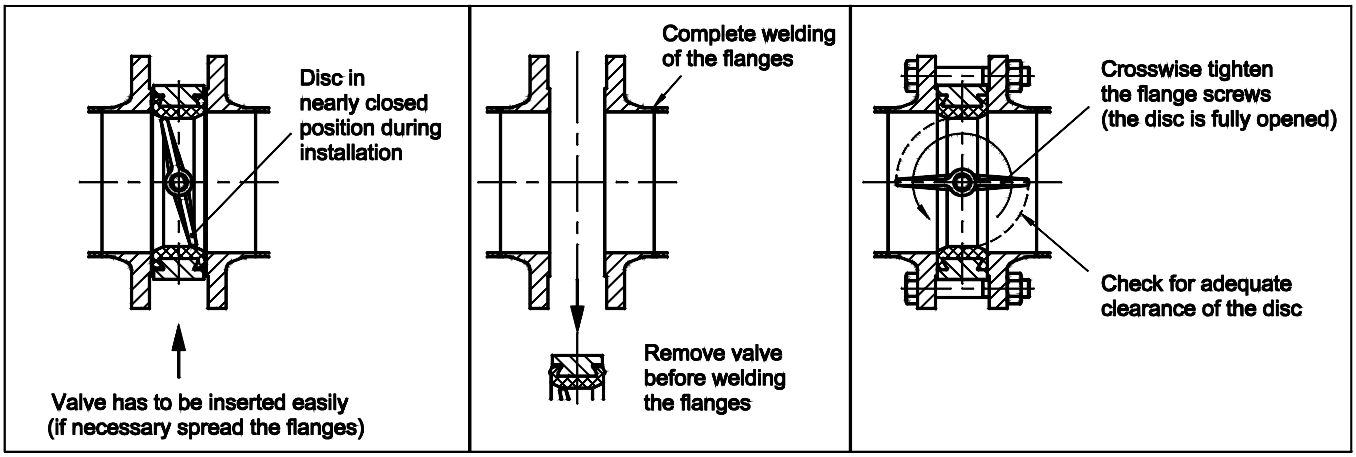
Center the butterfly valve using the flange screws. The outside diameter of the valve body is used for full centering!

**NOTE!**
If the valve is inserted incorrectly between the flanges, the seat can become displaced and destroyed.




Remove the flange-spreaders and tighten the flange screws slightly and evenly crosswise with the disc fully opened.
During this procedure, check that the valve is centered between the mating flanges.
Open and close the valve several times and cross-tighten the flange screws once again with the disc in closed position. (Tightening torque: please refer to below table).
Check that the disc has adequate clearance.

When installing the lug type butterfly valve as end-in-line valve, the free port must be secured by a blind flange.




Tightening torque for flange screws

| DN | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NPS | 1 ½" | 2" | 2 ½" | 3" | 4" | 5" | 6" | 8" | 10" | 12" | 14" | 16" | 20" | 24“ | 28“ | 32“ | 36“ | 40” |
| Tightening torque [Nm] | 85 | 85 | 85 | 85 | 85 | 85 | 165 | 165 | 165 | 165 | 165 | 285 | 285 | 415 | 415 | 570 | 570 | 760 |

## Mounting of actuators

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 shaft of the valve:
if necessary actuators must be supported without fixing.
External loads must not be applied to actuators, this can damage or destroy the valve.

## Initial operation

The 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 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 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. Actuators either have to be dismounted 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.

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# Operating instructions Dismounting and mounting butterfly valve series K07 / K08 DN 600 – DN 900

## Dismounting

- Move the disc in position ‘open’.
- Dismount the actuator.
- Loose and remove the screws between disc and stem (rubber lined disc: first remove lining of the bolts and then remove the bolts).
- Remove support ring, slide ring and dirt-protection sealing from the bottom of the valve.
- Remove adjustment ring, sliding ring and dust-protection sealing.
- Fix the disc without tensile and remove the stem (acc. the diameter of the valve a device with pressure/tensile of 20 t is required).
- Unscrew both screws – clogged 90° to the cam – on both sides of the steel liner of the seat.
- Pull seat at the shaft exit to the inside and remove.
- Remove bearing.

## Mounting

- Clean all parts, check bearings, if necessary replace.
- Installation of the seat:
  The seat has to be pressed at the mould seam of the steel liner so that the seat looks like a heart. In this form the seat has to be placed in the valve body and has to adjust to one of the drillings. Press the seat into the valve body. Adjust the seat again so that the drillings of the seat fit together with the drillings of the body.
- Put in the disc, adjust with a mandril.
- Mount the stem.
- Fit the disc and stem with the screws/bolts together.
- Only for lined disc:
  Install the bolts, after finishing the whole valve fit the attached rubber spare part with glue and vulcanize it.
- Fit upper and lower dust protection rings, mount the sliding ring and support ring at the bottom.
- Install the upper sliding ring and adjustment ring.
- **Close** the valve, then press and fix the adjustment ring.
- Place the seat screws.
- Mount the actuator, move the disc several times and make the pressure test.
- **Storage: disc 15° open.**

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# Operating instructions Dismounting and mounting butterfly valve series K07 / K08 DN 1000

## Dismounting

- Move the disc in position ‘open’.
- Dismount the actuator.
- Loose and remove the screws between disc and stem (rubber lined disc: first remove lining of the bolts and then remove the bolts).
- Remove support ring, sliding ring and dirt-protection sealing from the bottom of the valve.
- Remove adjustment ring, sliding ring and dust-protection sealing.
- Fix the disc without tensile and remove the stem (acc. the diameter of the valve a device with pressure/tensile of 20 t is required).
- Unscrew both screws – clogged 90° to the cam – on both sides of the back up ring o f the seat.
- Remove the seat.
- Remove bearing.

## Mounting

- Clean all parts, check bearings, if necessary replace.
- Press the seat into the valve body. Adjust the seat so that the drillings of the seat fit together with the drillings of the body.
- Put in the disc, adjust with a mandril.
- Mount the stem.
- Fit the disc and stem with the screws/bolts together.
- Only for lined disc:
  Install the bolts, after finishing the whole valve fit the attached rubber spare part with glue and vulcanize it.
- Fit upper and lower dust protection rings, mount the sliding ring and support ring at the bottom.
- Install the upper sliding ring and adjustment ring.
- **Close** the valve, then press and fix the adjustment ring.
- Place the seat screws.
- Mount the actuator, move the disc several times and make the pressure test.
- **Storage: disc 15° open.**