



DNS-FBGD

Double Flange Butterfly Valve

Welcome

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DNS-FBGD- Double Flange Butterfly Valve

Double eccentric flange butterfly valve Presentation



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DNS-FBGD-Double Flange Butterfly Valve



- Comply EN 593, F/F meet EN 558-1 series #13 & #14.
- Comply AWWA C504
- For water system

**Double eccentric
butterfly valve**



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DNS-FBGD-Double Flange Butterfly Valve



**Double eccentric
butterfly valve**

Manual
electric
pneumatic



**World famous
brand actuator**

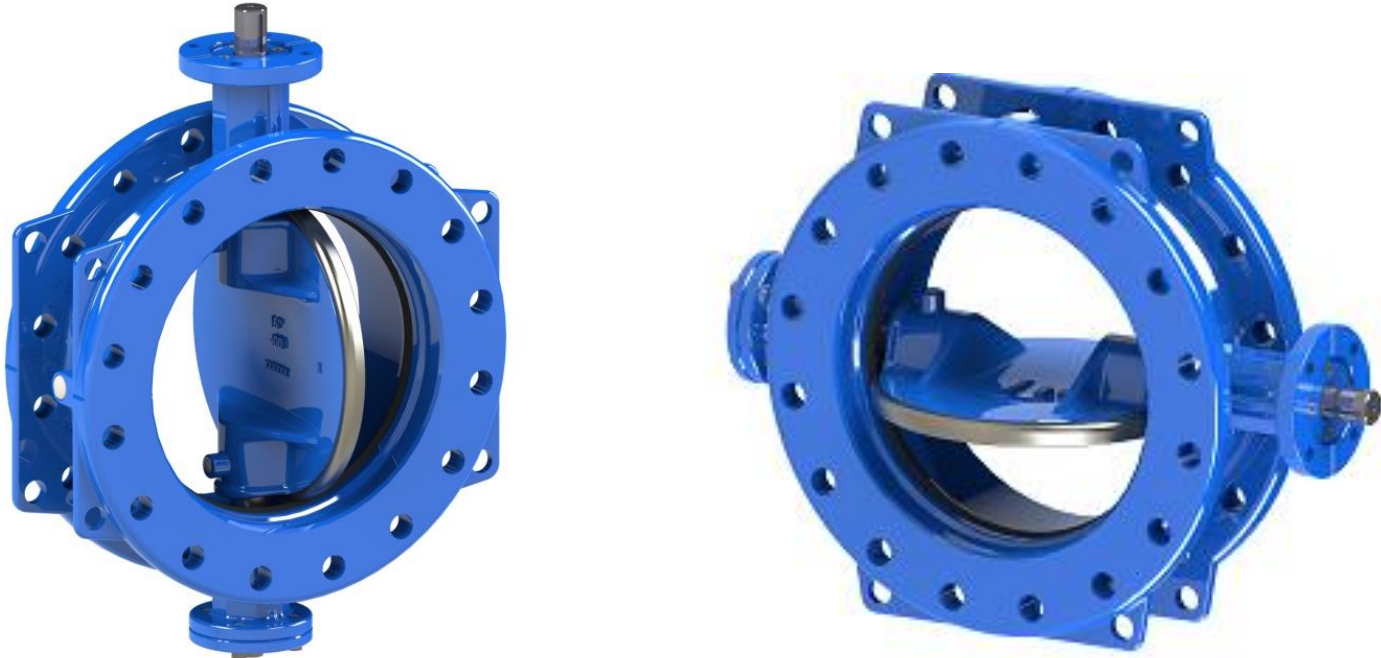


Pneumatic actuator



Electric actuator

DNS-FBGD- Flat Shape Disc

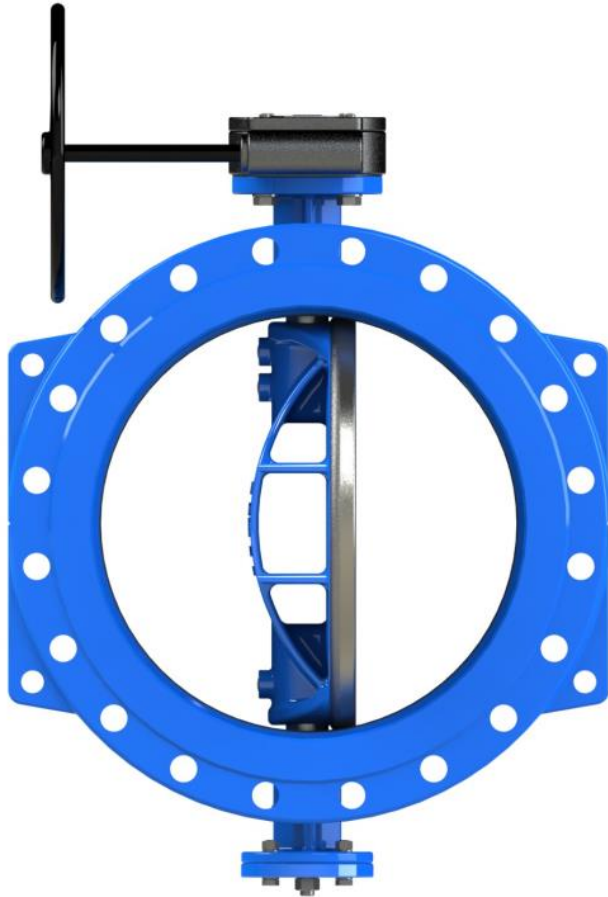


- Flat shape disc design for size DN150-500MM
- For bigger rubbish flow thru during pipeline flushing
- >10,000 cycle test



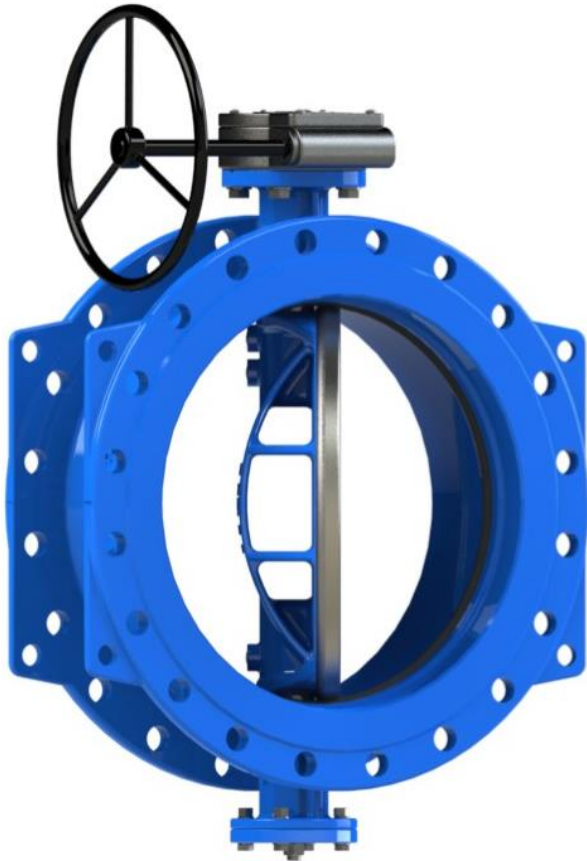
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DNS-FBGD- Arch Shape Disc



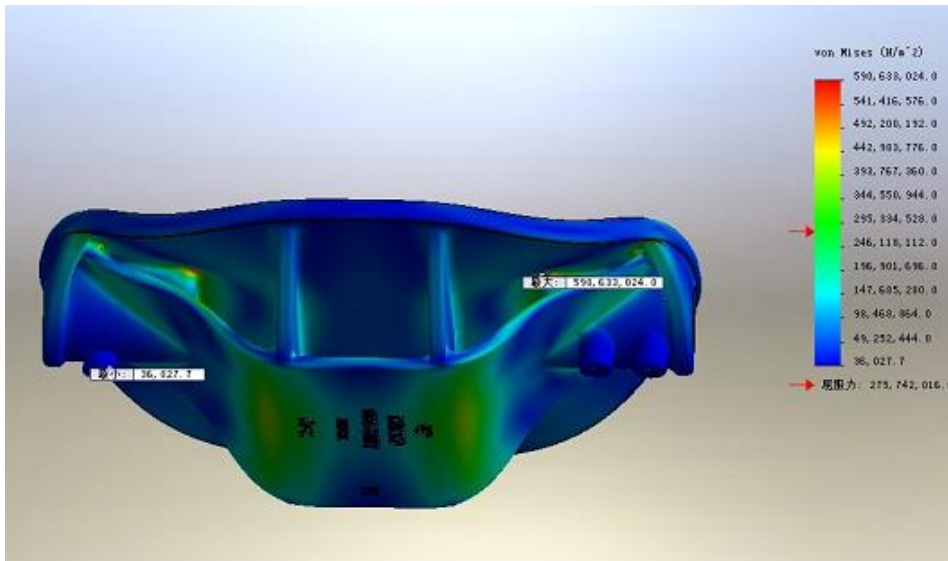
- Arch shape design, stronger ribs on back side, size DN350-1200MM
- Double eccentric design, less wearing of rubber
- Reduce the compression of rubber seat
- Increase the life cycle of rubber
- EPDM seal for drinking water
- >5,000 cycle test, for DN600 and up – **We tested in 10,000 cycles for DN600**

DNS-FBGD- Flow Through Disc Design



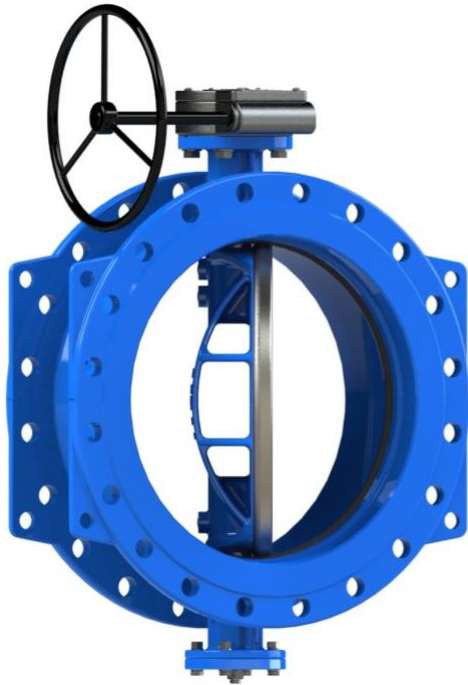
- Flow thru disc-energy saving, lower pumping cost
- Reduce head loss and minimize turbulence
- Seal in both direction. Disc and stem are strong without many deformation
- Much less weight than famous world brand-AK/VG/Tco

DNS-FBGD- Disc Strength Simulation



- Calculated by Solidwork
- Arch shape. No need to be thick to ensure the strength.
- Put safety factor after simulation.
- 100% both side seal.

Worm Gear - AFC vs. Others



- IP67/68 as standard
- Worm gear connected with top flange
- No need spring pin and yoke.



- Normal grade
- Need yoke to connect worm gear.
- Need pin to connect.



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DNS-FBGD- Weight Comparison



Weight comparison-Kg

Brand	AFC	VG	AK	Tyc
DN600-PN10	250	320	410	373
DN600-PN16	295	460	410	373
DN1200-PN10	1350	1740	1283	1570
DN1200-PN16	1500	2285	1953	1570



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DNS-FBGD- Flow Coefficient - PN10

Full Open Cv

10 Bar			
Size	Flat disc	Arch disc	Ratio
DN600	25380	26378	103.93%
DN800	46894	49340	105.22%
DN1000	73272	77094	105.22%
DN1200	112195	116466	103.81%
DN1400	141808	146563	103.35%
DN1500	172343	176486	102.40%
DN1600	208535	213548	102.40%
DN1800	248174	254139	102.40%

Full Open Cv

16 Bar			
Size	Flat disc	Arch disc	Ratio
DN600	24199	25150	103.93%
DN800	44711	47043	105.22%
DN1000	69896	73506	105.16%
DN1200	106972	111044	103.81%
DN1400	135304	139775	103.30%
DN1500	167042	172562	103.30%
DN1600	198827	203606	102.40%
DN1800	236620	242308	102.40%



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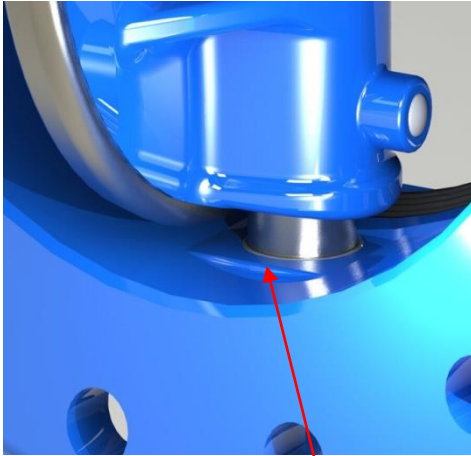
DNS-FBGD- Torque Comparison



Torque comparison-NM

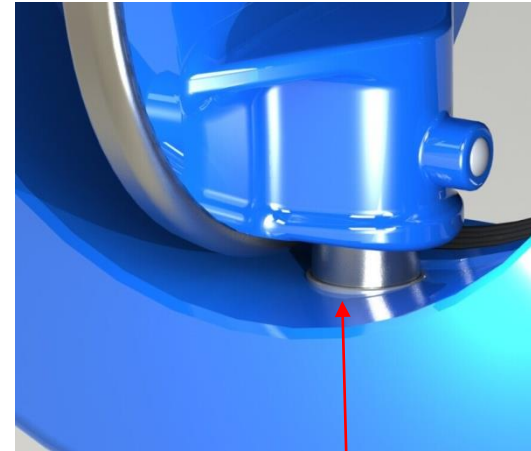
Brand	AFC	VA	Europe	Tyc
DN600-PN10	1572	2000	3300	2134
DN600-PN16	2136	3500	5280	2556
DN1200-PN10	9000	16000	19890	14500
DN1200-PN16	12500	28200	24680	18460

DNS-FBGD- Special Design for Stem Hole



AFC-with a platform

- Keep the sleeve bearing fully in the hole, strong protection
- No harming to the bearing during operation



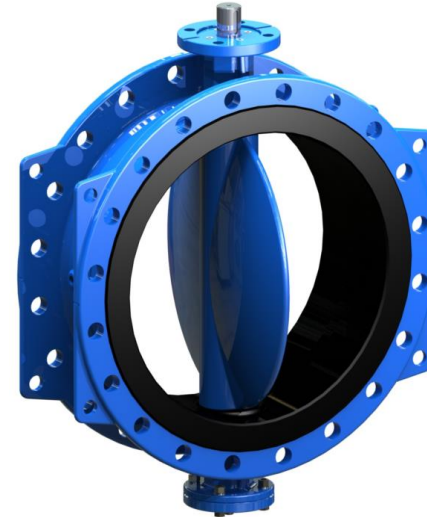
Others- without platform

- Part of the bearing will be outside-weaker bearing or inside of the hole-rusting
- Will be easy wearing during operation



Double eccentric

- Preferred direction give a better sealing force
- Much lower operation torque
- Double sealing in either direction



Centerline

- In either direction, heavy compression of seal.
- The vulcanized rubber cannot be replaced. Floating rubber is easy to leak when installation.
- Much higher operation torque



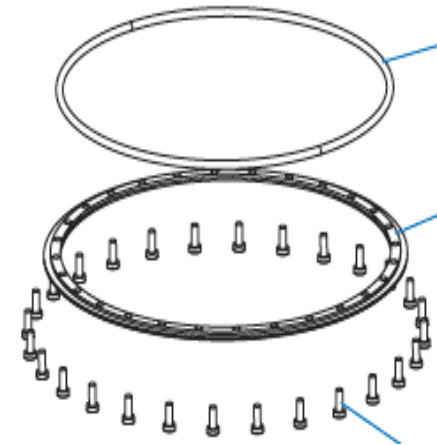
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DNS-FBGD- No Need Plate And Screw



AFC

**No screw, no loosen issue
for rubber seat**



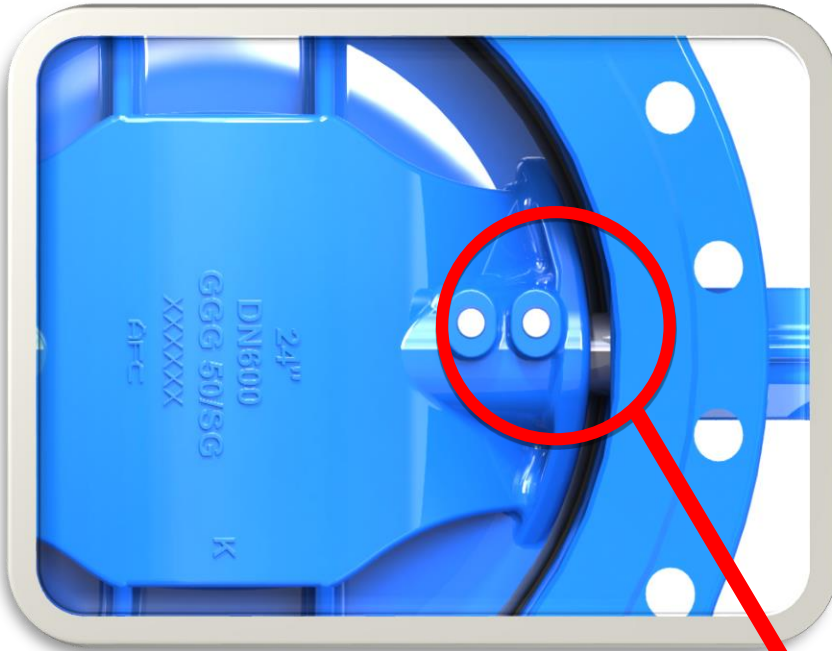
Others

- **Several screws for fixing the rubber seal**
- **Heavy torque due to the rubber seal is compressed (not equal for all rubber seal)**

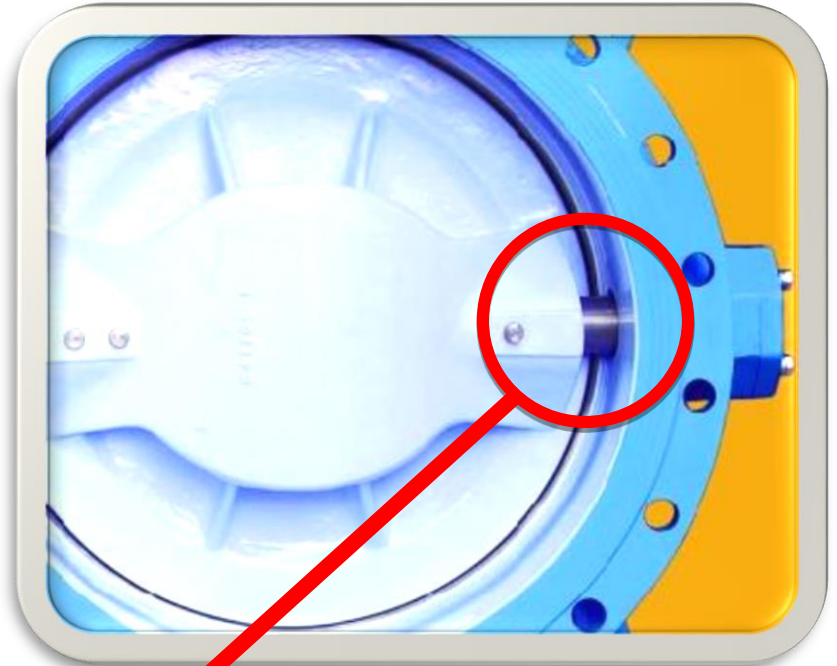


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DNS-FBGD- Why Lower Torque



AFC



others

**Shorter expose the stem, less
operational torque**

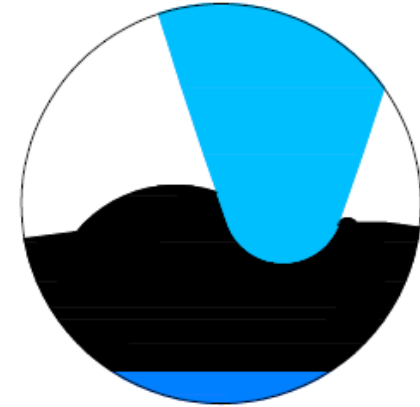


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DNS-FBGD- Why Lower Torque



Double eccentric



centerline

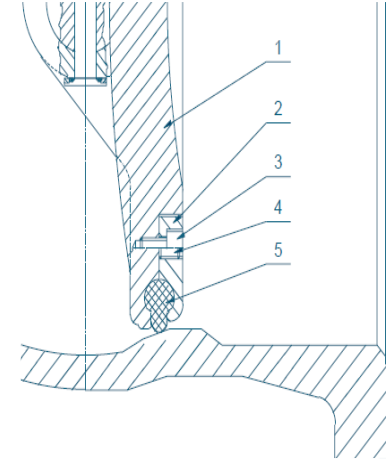
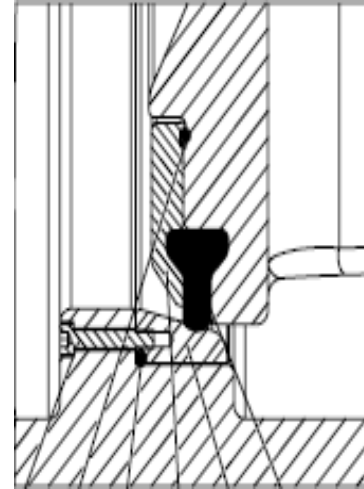
- Multi groove on seal surface, have more space for rubber extension during compression
- Less long term compression on both neck part
- Two way for extension for double eccentric, but not for centerline

DNS-FBGD- Rubber Seat Comparison



AFC

- Rubber in relax state on the body
- No bolts. Prevent bolt loosen issue



Others

- Rubber seal is fixed by plate causing the twist of the rubber
- The torque is big due to the rubber seal accumulated in one side.
- Need several bolts to fix. One got loosen, need to re- fix all.

DNS-FBGD- Rubber Seat Comparison



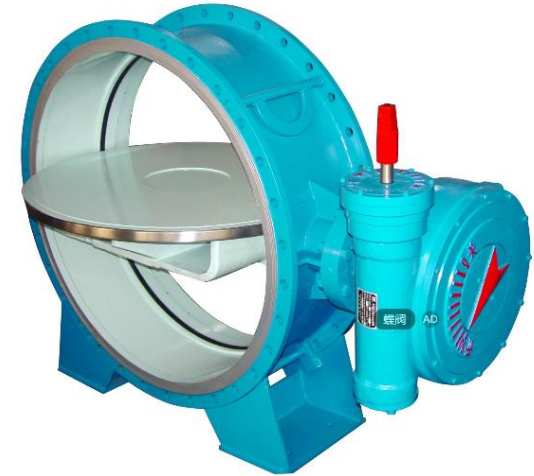
AFC

- Rubber in relax state on the body
- No bolts. Prevent bolt loosen issue



Others

- Rubber seal is floating on the body without support in the back
- The grooved without coating, rusty issue.
- Rubber seal back is empty, has back pressure causing heavy torque.

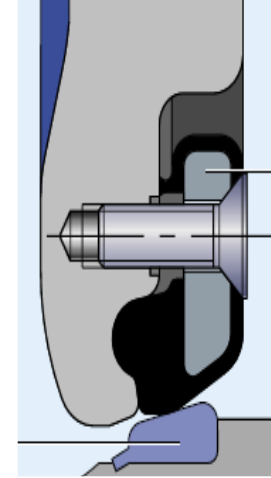


DNS-FBGD- Rubber Seat Comparison



AFC

- Rubber in relax state on the body
- No bolts. Prevent bolt loosen issue



EH-ROC

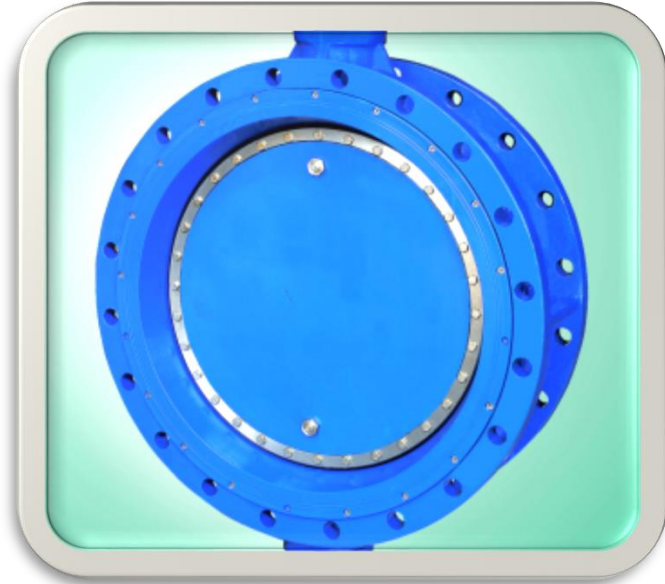
- The rubber is covered in SS ring to fix the rubber seal.
- The torque is big due to the rubber seal accumulated in one side.
- Need several bolts to fix. One got loosen, need to re- fix all.

DNS-FBGD- No Chance to Leak from the Disc and Pin



AFC-Tangent Pin

- Interchangeable Disc
- Higher strength for tangent Pin, no gap between pin and stem.
- Not easy to deform



Others-Round Pin

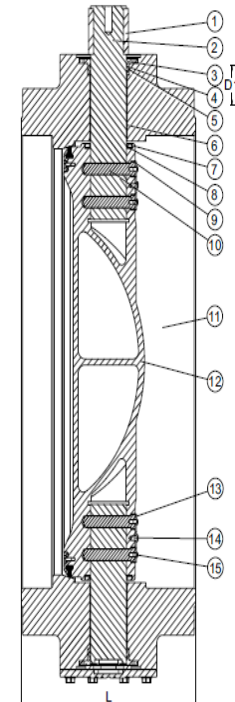
- Cannot interchangeable for disc.
- Pin through stem to decrease the strength of stem
- In over torque operation, the thinner stem will have change to breakage
- Have leaking possibility

DNS-FBGD-Comparison for Disc and Pin



AFC-DISC

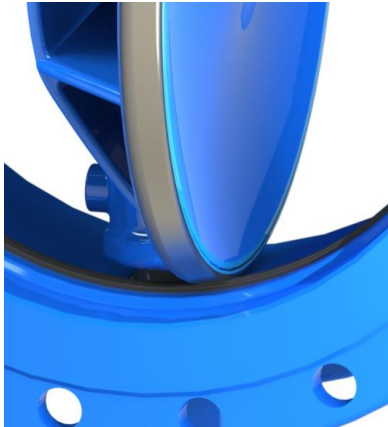
- Tangent pin - interchangeable
- Get the maximum stem strength by using tangent pin.



AK-DISC

- Round pin- cannot interchangeable
- Pin through the stem to damage the strength of the stem

DNS-FBGD- Compression and Abrasion Area



Double eccentric



• Centerline

- Much smaller compressed and stress area while fully open
- Much lower abrasion during operation

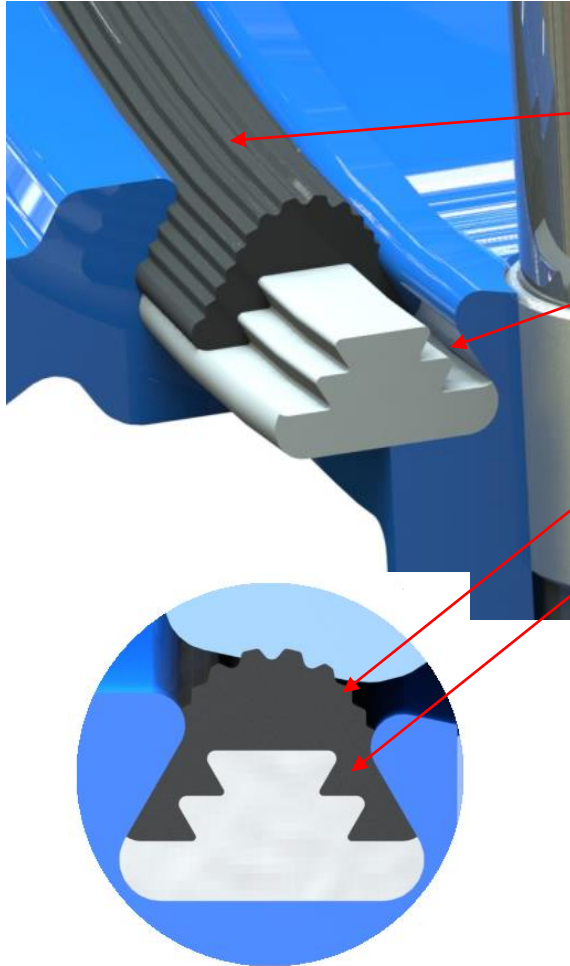
**Disc-rubber contact area while fully open-
SQMM**

Type	double eccentric	Centerline type
DN600	324	7068
DN1200	372	28274



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DNS-FBGD-Dovetail Seal Design



- Multi ribs on the seal-reduce operation torque
- Seal fixed in the groove and epoxy on the back side as a wedge, no worry of loosen
- can be replaced or repaired at site
- No need for bolting or retainer, no chance for loosen the bolting or blow out rubber



Designed Network Solutions

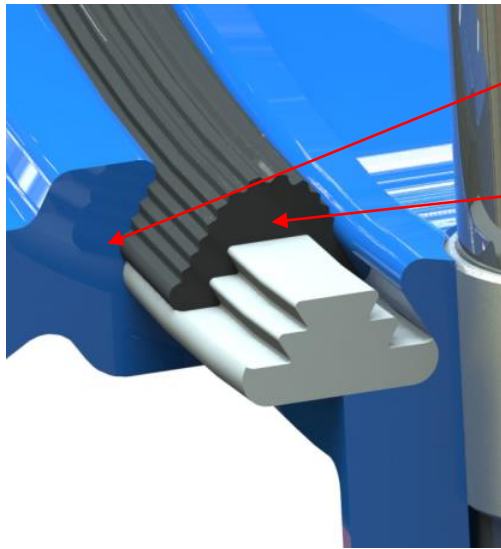
DNS-FBGD-Dovetail Seal Design



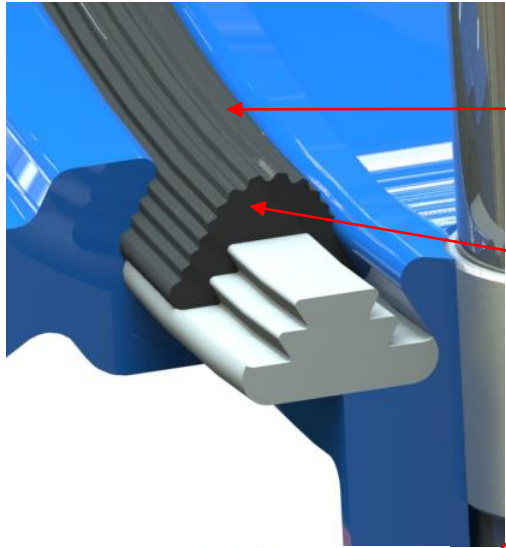
- Max. 3 degree disc offset center without leakage

- Grooved is coated with FBE to prevent backside rusting

- Over half century service in USA, proven design seal



DNS-FBGD-Dovetail Seal Design



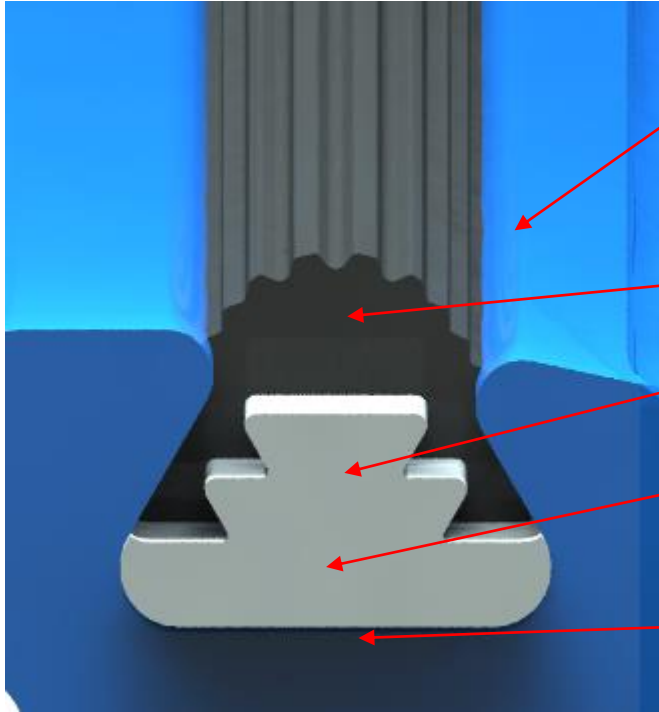
- Reduce the possibility of compressed and minimize over compression of seat
- seat is installed at relax state compared to a seat that is “stressed” with retainer ring and fastener
- Dove tail design, can tight the rubber seal





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DNS-FBGD-Dovetail Seal Design

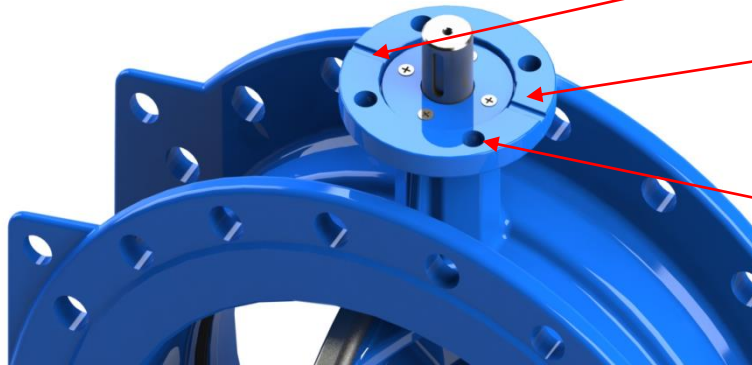


- No need bolting and permanent positioned , decrease nut loose & hole rusting
- Seal can be repaired or replaced in field
- Epoxy injected on the backside of groove
- Epoxy filled up all dovetail cavity and seal positioned after curing
- No rusting on the seal backside



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DNS-FBGD- Top Flange Mounting

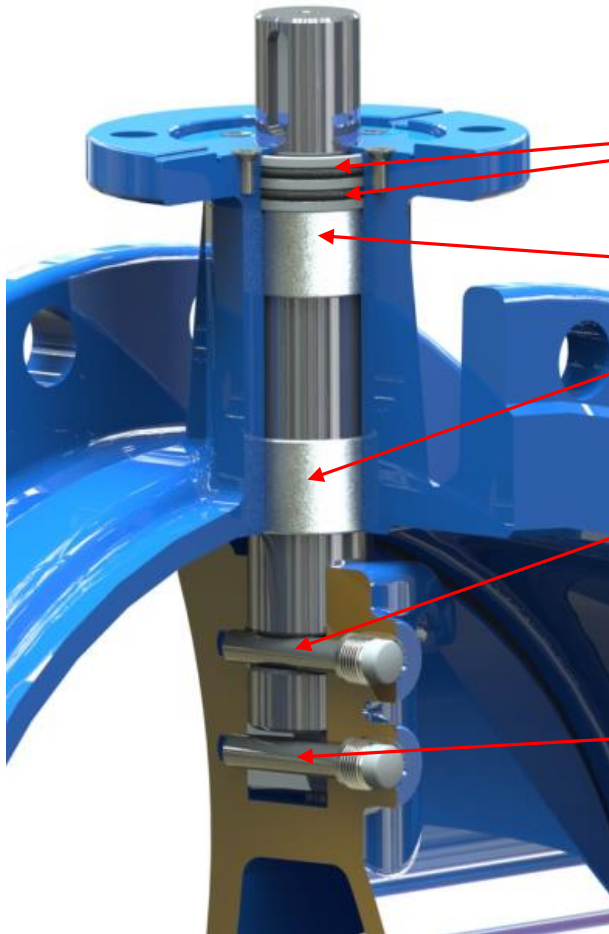


- two groove for water exhausting
- Easy for leakage observation, no harm to actuator
- ISO mounting 5211



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DNS-FBGD- Upper Stem

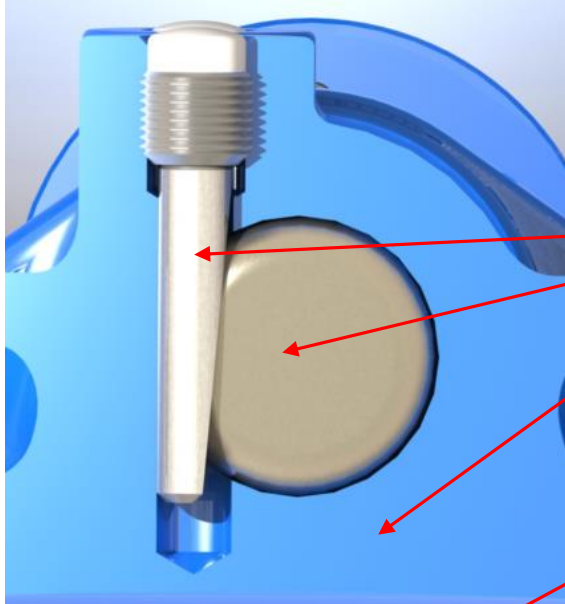


- 2/3 o-ring on the top of stem, can be replaced in the field
- 2 bushings , low friction & self lubricating
- 431SS Tangential pin, reliable and strength, reduce the possibility of loosening thru vibration at the outlet of pump
- Provide the tightest possible connection between the shaft and disc.



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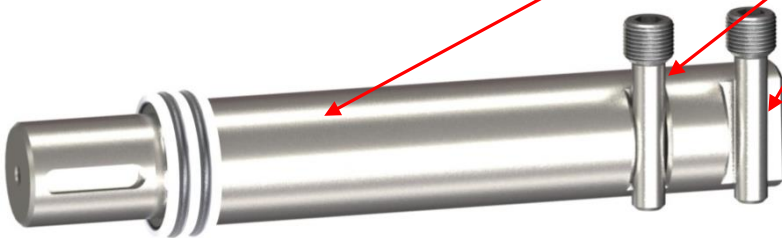
DNS-FBGD- Upper Stem Design



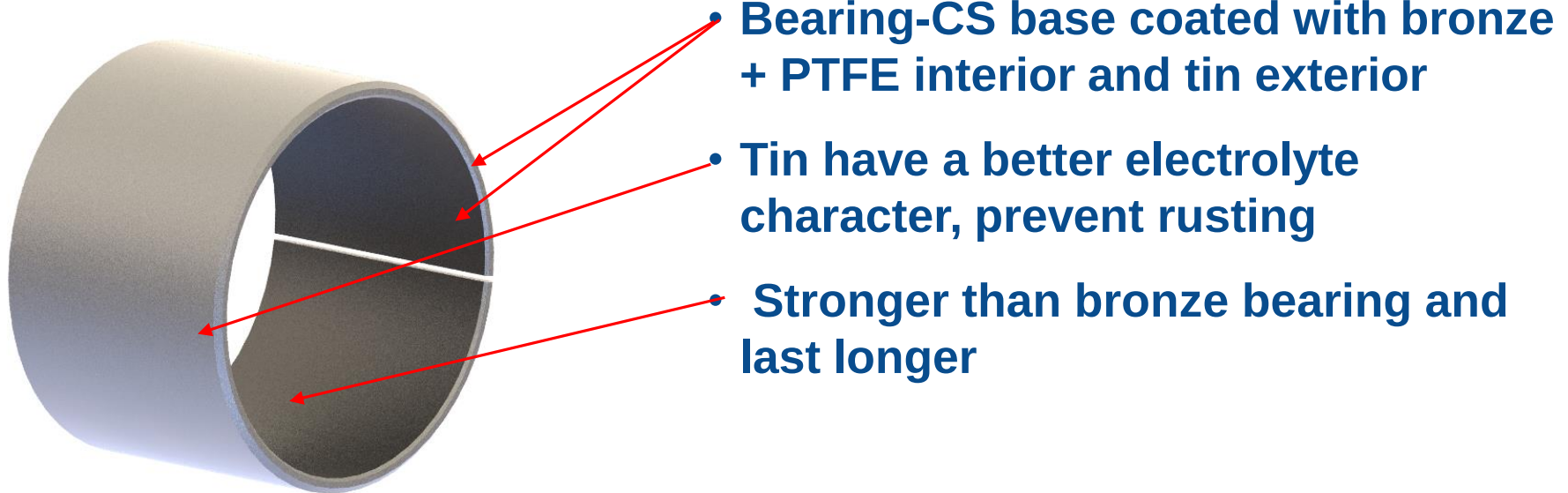
Stronger tangential pin for connection between disc and stem by using

1*420/304/316 SS upper stem

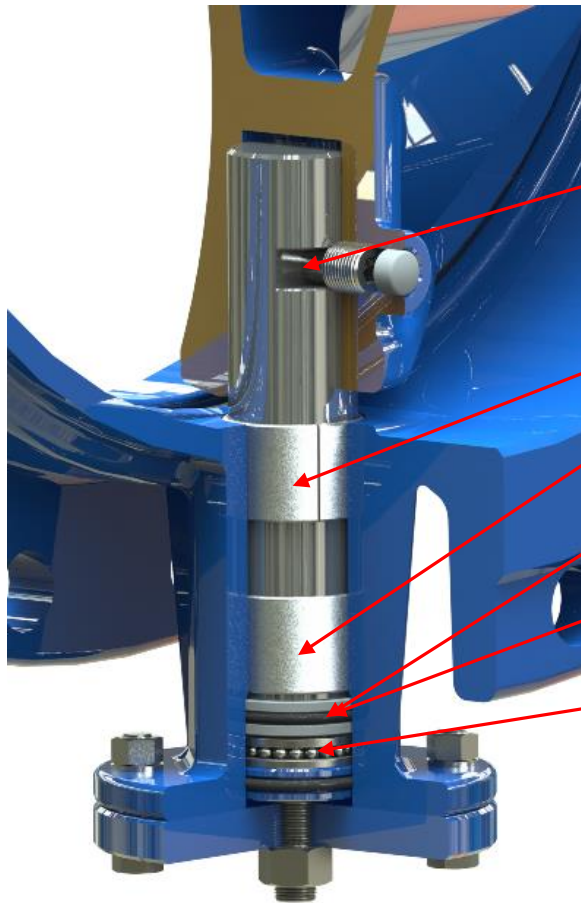
2*431SS tangential pin



DNS-FBGD-Bushing Design



DNS-FBGD- Bottom Design

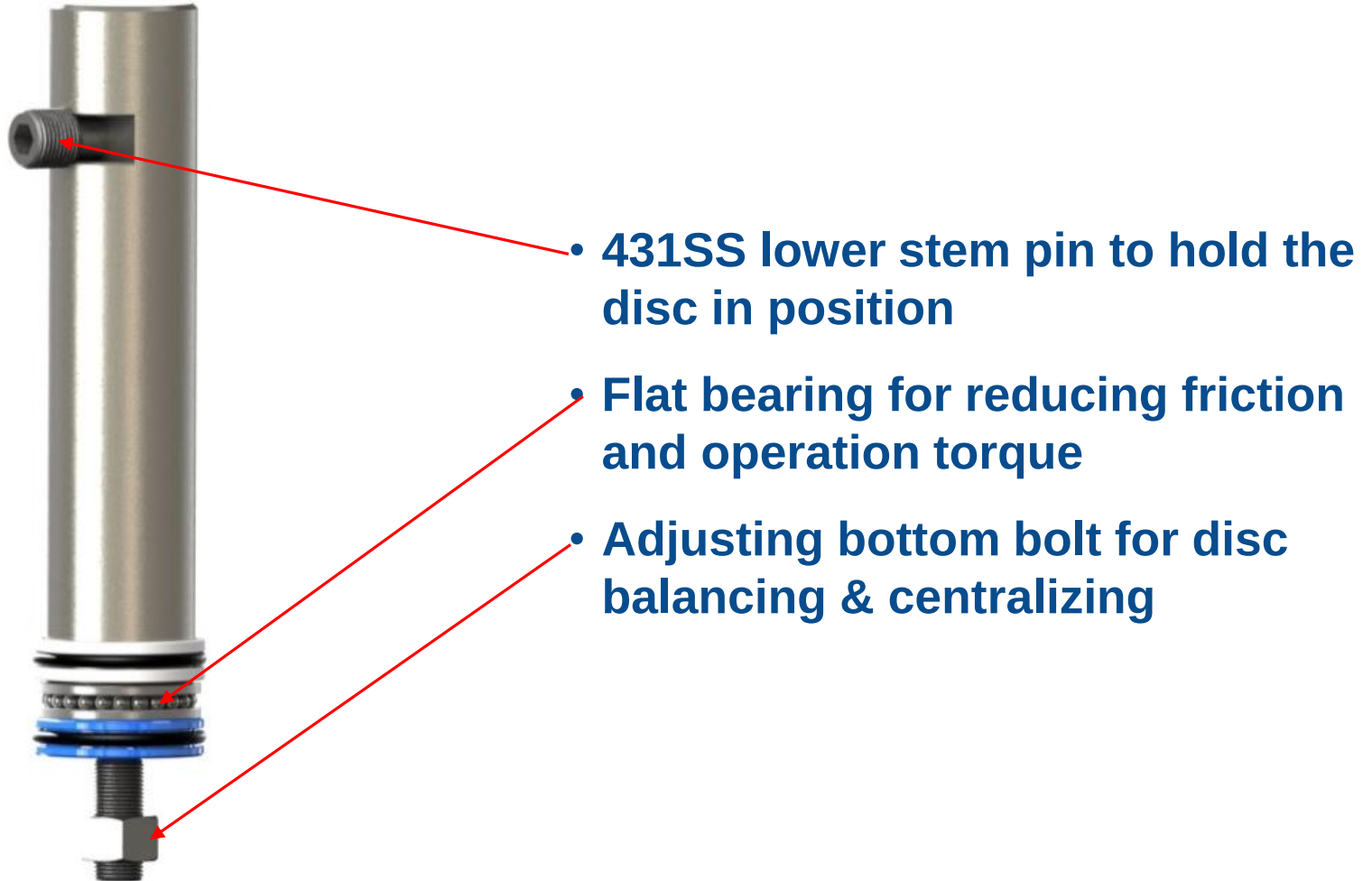


- Bottom pin to hold disc for turning
- Special double bushing
- 2 O-rings underneath to prevent leak from lower stem
- O-ring can be replaced during service
- Size $\geq$ DN700 has a flat bearing to reduce operation torque during operation



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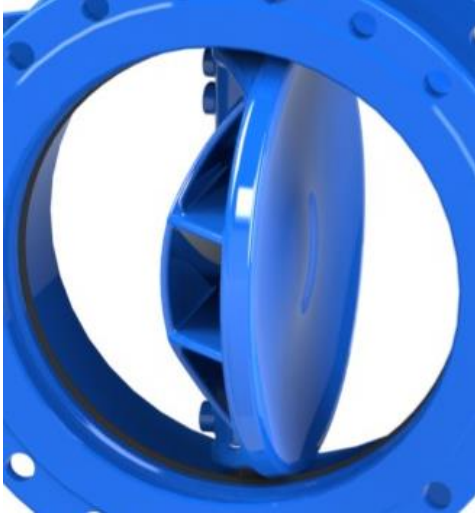
DNS-FBGD- Bottom Design



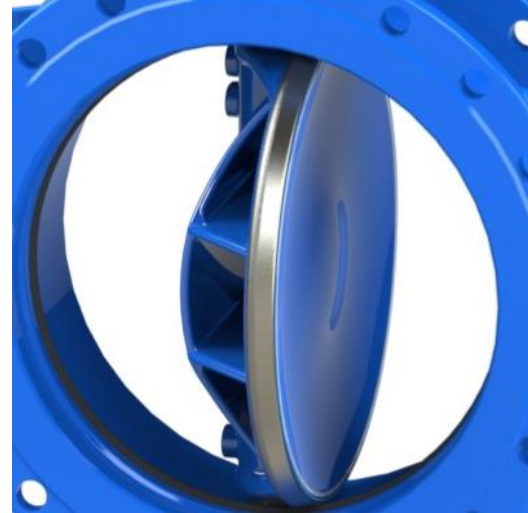


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DNS-FBGD- SS Plate Seat



Epoxy coating



SS plate 316L seat

- Epoxy coating seat could get better-no sharp edge, smooth surface than 316L stainless seat
- Polished stainless up to 0.16MM roughness
- Epoxy coating Increases life cycle of rubber



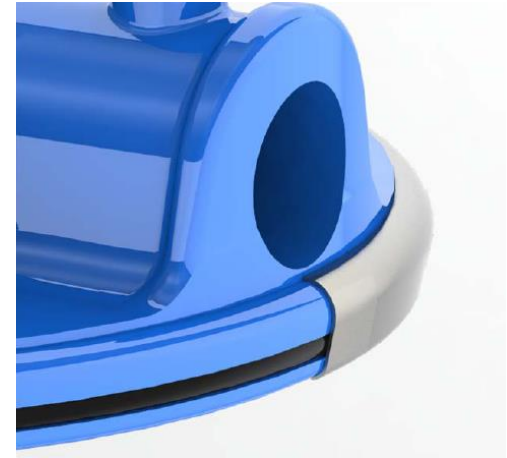
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DNS-FBGD- SS Rolling Plate Seat



DN80~DN500

DN600~DN1200



- 1. The SS plate can help to reduce the cost of the SS seat.
- 2. The SS seat has a hook to fix on the disc to avoid SS plate tearing out from disc.
- 3. The O-Ring between SS plate and disc will do the sealing.



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DNS-FBGD- Mass Production

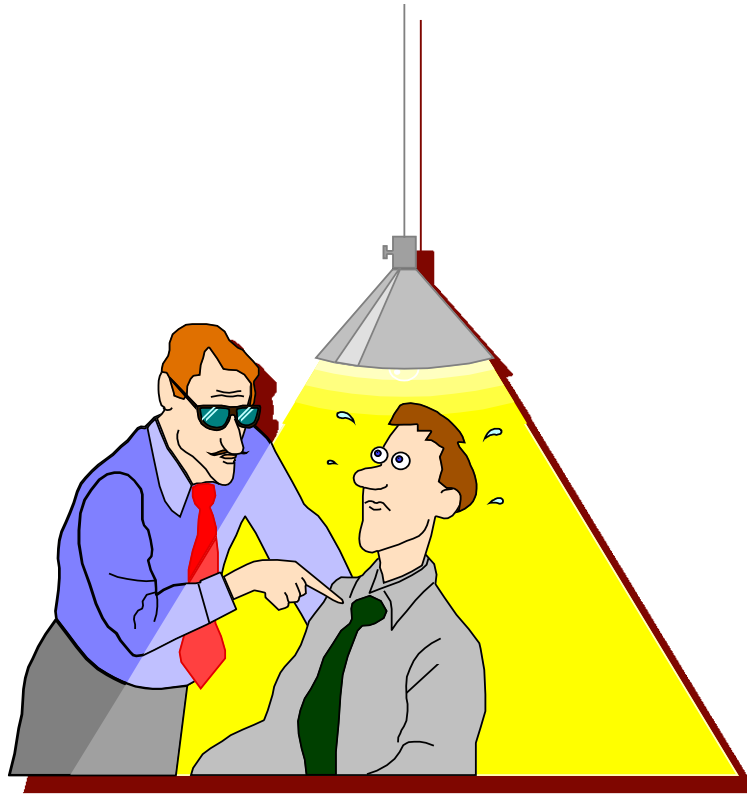




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DNS-FBGD- Double Flange Butterfly Valve

Questions ???





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DNS-FBGD- Double Flange Butterfly Valve

Your Partner IN Water Flow Control Valve



See you again!

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