

# JFS

BEIJING JOINT FLOW SYSTEM CO.



**BUTTERFLY VALVE**



## TRIPLE ECCENTRIC METAL TO METAL BIDIRECTIONAL BUTTERFLY VALVE FOR HEAT SUPPLY

Triple Eccentric Metal to Metal Bidirectional Butterfly Valve is a kind of long life and energy-efficient butterfly valve, it is designed with a structure of triple eccentric and a seat of fully metal to metal, it can be used in application with higher temperature and higher pressure, such as metallurgy, steel, electricity, petroleum, chemical, heat supply, air, coal, gas, municipal water supply and drainage.

The valve can be suitable for wafer, lug, double flange, butt weld connection.

As it is very suitable for all kinds of corrosive fluid such as acid, alkali, etc., Triple Eccentric Metal to Metal Bidirectional Butterfly Valve is best choice in city heat supply system.

- Innovative fully metal to metal sealing structure
- Exclusive used for application for Heat Supply
- Reliable bidirectional zero leakage seal
- Replaceable sealing type, easy for maintenance
- Perfect resistance for High-temperature, High-pressure, Corrosion, Erosion

### FEATURE

- High performance triple eccentric bidirectional sealing structure
- Perfect isolation of air and fluid and flow regulation characteristics
- Long lifetime due to integral Stainless Steel seat overlaid with Stellite hard face
- No friction, abrasion and stagnation on the seat
- Easy for replacement and adjustment of seat and sealing ring
- Suitable for higher temperature, higher pressure and corrosive application
- Metal to metal seal structure can hold up to +850°C
- Lower operating torque and reliable closing torque
- Fire safe design
- Compact structure, light weight

### SPECIAL FEATURE FOR HEAT SUPPLY

- Fully Metal to Metal seal structure
- Replaceable seal structure
- Bidirectional zero leakage



## TRIPLE ECCENTRIC METAL TO METAL BIDIRECTIONAL BUTTERFLY VALVE FOR HEAT SUPPLY

### STANDARD

|                             |                                                         |
|-----------------------------|---------------------------------------------------------|
| Design and Manufacture      | API 609/EN 593/ISO10631                                 |
| Inspection and Testing      | API 598/EN12266-1/ISO 5208                              |
| Face to Face Dimension      | API609/ASME B16.10/EN558/ISO 5752                       |
| Flange Dimension            | ASME B16.5/ASME B16.47/EN 1092/GOST33259-2015/ ISO 7005 |
| Pressure-Temperature Rating | ASME B16.34/EN12516                                     |

\*More standard specifications are available on request.

### TEST DATA

|                                     |             |         |         |             |         |         |             |         |
|-------------------------------------|-------------|---------|---------|-------------|---------|---------|-------------|---------|
| Nominal Diameter DN (mm)            | 50-3200     | 50-3200 | 50-2000 | 50-2000     | 50-1200 | 2"-60"  | 2"-48"      | 2"-24"  |
| Nominal Pressure PN (MPa)           | 0.6         | 1.0     | 1.6     | 2.5         | 4.0     | 150(lb) | 300(lb)     | 600(lb) |
| Hydraulic Shell Test Pressure (MPa) | 0.9         | 1.5     | 2.4     | 3.75        | 6.0     | 3.0     | 7.5         | 16.5    |
| Hydraulic Seal Test Pressure (MPa)  | 0.66        | 1.1     | 1.76    | 2.75        | 4.4     | 2.2     | 5.5         | 11.1    |
| Temperature (°C)                    | -10~300(DI) |         |         | -29~425(CS) |         |         | -40~550(SS) |         |

\*More test specifications are available on request.

### COMPARISON BETWEEN LAMINATED VALVE AND METAL TO METAL VALVE

| No | Item                 | Laminated Valve                         | Metal to Metal Valve                                |
|----|----------------------|-----------------------------------------|-----------------------------------------------------|
| 1  | Sealing Ring         | SS+Graphite Laminated/Retaining ring,   | Metal to Metal/Retaining ring, replaceable          |
| 2  | Seat                 | Overlaid metal seat/Located on the body | Fully Metal to Metal/Replaceable                    |
| 3  | Sealing Direction    | Unidirectional/Installation limited     | Bidirectional/Installation without limited          |
| 4  | Sealing Performance  | Unidirectional, leakage is allowed      | Bidirectional, zero leakage                         |
| 5  | Sealing Ring Feature | Sealing ring is bad in wear-resisting,  | Sealing ring is good in wear-resisting,             |
| 6  | Replacement          | Located seat is not replaceable         | Replaceable seat is easy for maintenance            |
| 7  | Suitable Application | All kinds                               | Special for Heat supply                             |
| 8  | Lifetime             | 15 years                                | 30 years; 5 years for warranty, 15 years repair for |

## TRIPLE ECCENTRIC METAL TO METAL BIDIRECTIONAL BUTTERFLY VALVE FOR HEAT SUPPLY

### TRIPLE ECCENTRIC PRINCIPLE

#### Principle:

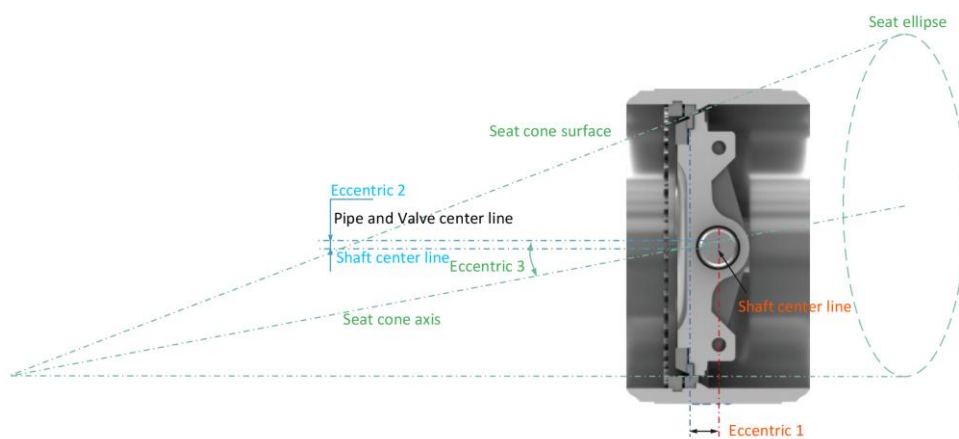
Triple Eccentric Metal to Metal Butterfly Valve have feature of bidirectional bubble shut off, as the disc sealing ring will contact the seat only when fully closing, it will reduce friction and wear, a special torque will enhance flexible seal to stronger seal like welded which will ensure uniformity of seal performance.

#### Geometry:

Eccentric 1: The shaft is offset behind the seat axis to allow complete sealing contact around the entire seat.

Eccentric 2: The shaft center line is offset from the pipe and valve which provides interference free opening and closing of the valve.

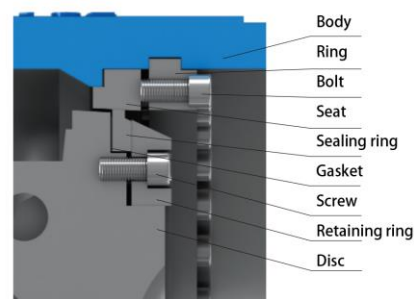
Eccentric 3: The seat cone axis is offset from the shaft center line to eliminate friction during closing and opening and to achieve uniform compressive sealing around the entire seat.



### TRIPLE ECCENTRIC DESIGN

#### 1. Replaceable Metal to Metal Sealing Structure

Triple Eccentric Metal to Metal Butterfly Valve supplies a flexible and reliable sealing structure, sealing ring and seat are both replaceable, which is easy for installation, maintenance and replacement. When sealing ring or seat is damaged, no need to replace the entire valve, only reply the damaged sealing ring or seat, it will reduce cost, save time and many works for maintenance.



Metal to Metal Sealing Structure

**TRIPLE ECCENTRIC METAL TO METAL BIDIRECTIONAL BUTTERFLY VALVE FOR HEAT SUPPLY**

Triple Eccentric Metal to Metal Butterfly Valve is designed as fully metal to metal Stainless Steel forged sealing ring and seat, and surface of sealing is overlaid with Stellite or Tungsten carbide. It has perfect feature of anti-erosion, wear resistance, anti-corrosion, anti-high pressure and temperature, long life time. 30 years long lifetime in heat supply system can achieve same level with pipeline. It can hold up to 850°C high temperature or worst working conditions.

Triple Eccentric Metal to Metal Butterfly Valve's unique sealing structure ensure valve's bidirectional sealing performance and no any leakage when bearing pressure in both positive and reverse direction.

**2. Dynamic Load Low leakage Shaft Seal Structure**

Low leakage Shaft Seal only allow leakage of no more than 20PPM

- A. Shaft is guided and located by shaft bearing to avoid shaft packing leakage due to shaft lateral deviation by pressure lash.
- B. Shaft packing is pre-compression treated with weave graphite rope in two ends and laminated graphite ring in the middle to avoid leakage.
- C. Roughness of Shaft and Packing Gland: Shaft (Ra 0.4-0.8), Packing Gland (Ra 1.6).

D. Optional dynamic load gland flange can make packing compressed continuously and reduce leakage.



**3. High strength Anti-lock Bering**

Shaft is located between two long bearings, which are made of Chromium plated, Nitrides or Tu-Cr-Co Alloy (optional), to avoid solids entering in from O rings, big diameter shaft is to be connected to disc and absorb loads together with taper pin and key, so as to bear uneven expansion due to temperature.



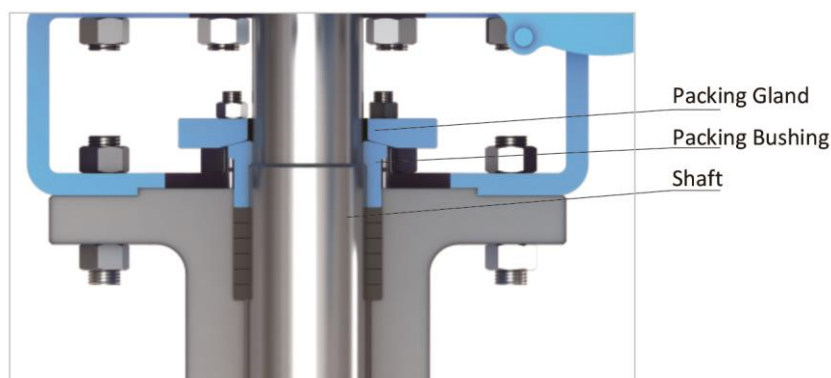
## TRIPLE ECCENTRIC METAL TO METAL BIDIRECTIONAL BUTTERFLY VALVE FOR HEAT SUPPLY

### 4. Double Anti-blowout Shaft

Double anti-blowout shaft design according to API 609.

Upper: Shaft is designed as step shape to avoid blowout by the aid of Packing Gland.

Lower: Split rings are inserted into the groove at bottom of the shaft to avoid blowout.



Packing Gland Anti-Blowout



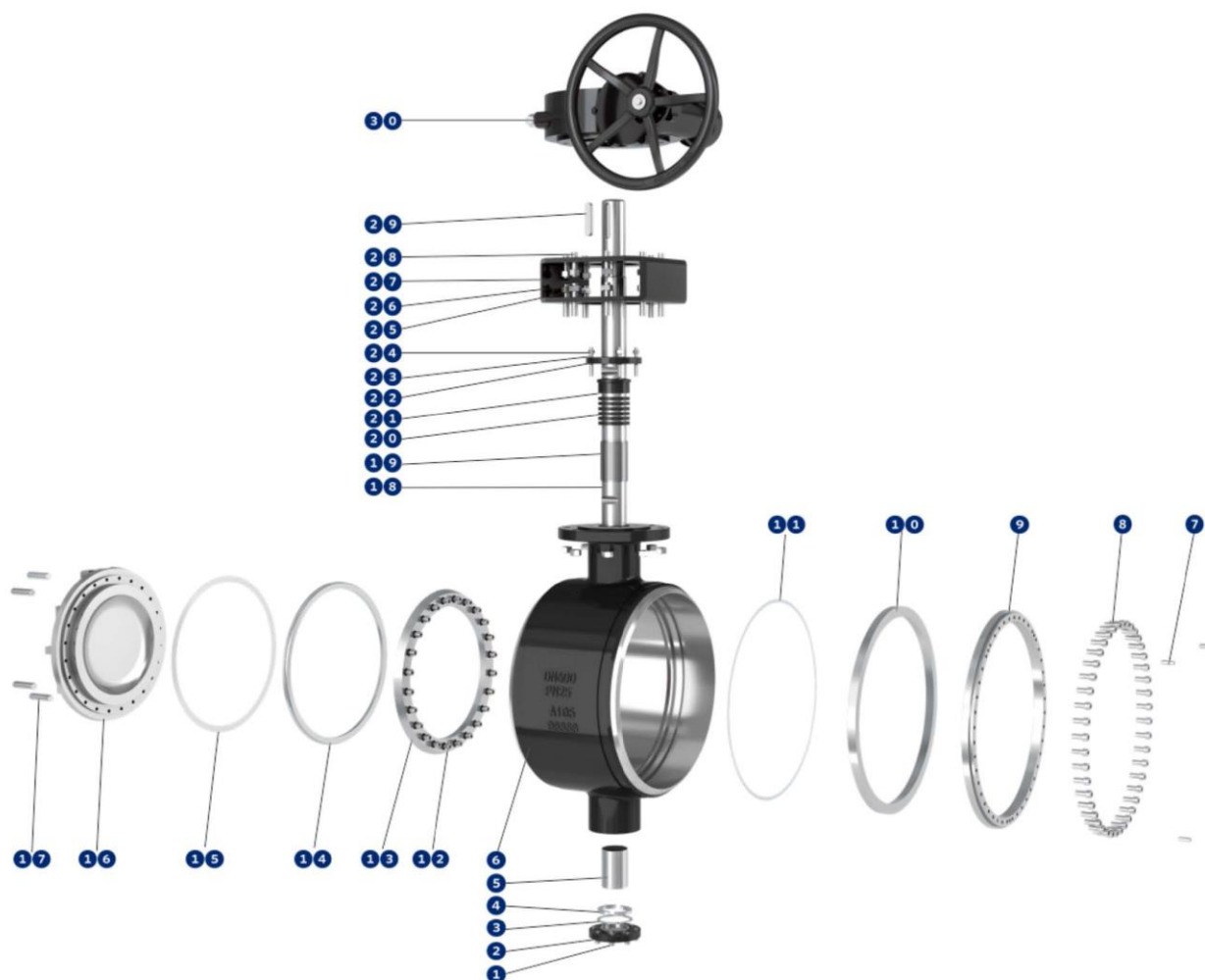
Split Ring Anti-Blowout

### 5. Low torque design

Friction torque and Eccentric torque are reduced by special design, then the valve is operated easily.

## TRIPLE ECCENTRIC METAL TO METAL BIDIRECTIONAL BUTTERFLY VALVE FOR HEAT SUPPLY

### PARTS LIST AND MATERIAL



| No. | Parts Name            | Carbon Steel | Stainless Steel | Low-temperature<br>Carbon Steel | High-temperature<br>Carbon Steel |
|-----|-----------------------|--------------|-----------------|---------------------------------|----------------------------------|
| 1   | Socket head screw     | 8.8/B7       | B8/B8M          | B8/L7                           | B8/B16                           |
| 2   | Bonnet                | A105         | 304/316         | LF2                             | F11/304                          |
| 3   | Gasket                | 304+Graphite | 316+Graphite    | 304+Graphite                    | 304+Graphite                     |
| 4   | Ring                  | 1035         | 316             | 304                             | 304                              |
| 5   | Lower bushing         | SF-1         | SF-1S/C95200    | 304+N                           | 304+N                            |
| 6   | Body                  | WCB/A105     | CF8/CF8M        | LCB/LC1                         | WC6/C5                           |
| 7   | Locating screw        | 8.8/B7       | B8/B8M          | B8                              | B8                               |
| 8   | Socket locating screw | 8.8/B7       | B8/B8M          | B8                              | B8                               |

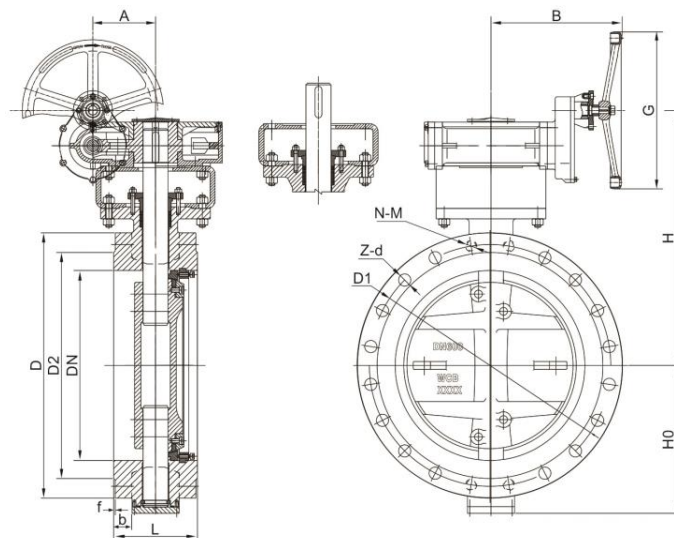
## TRIPLE ECCENTRIC METAL TO METAL BIDIRECTIONAL BUTTERFLY VALVE FOR HEAT SUPPLY

|    |                      |                   |                   |                   |                   |
|----|----------------------|-------------------|-------------------|-------------------|-------------------|
| 9  | Ring                 | A105/420          | F304/F316         | F304              | F304              |
| 10 | Seat                 | 304/420+STL       | F304/F316+STL     | F304+STL          | F304+STL          |
| 11 | Seat gasket          | 304+Graphite      | 316+Graphite      | 304+Graphite      | 304+Graphite      |
| 12 | Retaining ring screw | 8.8/B7            | B8/B8M            | B8/L7             | B8/B16            |
| 13 | Retaining ring       | A105              | F304/F316         | 304/LF2           | F11/304           |
| 14 | Sealing ring         | 304+N(STL)        | 304/316+N(STL)    | 304+N(STL)        | 304+N(STL)        |
| 15 | Sealing ring gasket  | 304+Gra.          | 316+Gra.          | 304+Gra.          | 304+Gra.          |
| 16 | Disc                 | WCB               | CF8/CF8M          | LCB/LC1           | WC6/C5            |
| 17 | Pin                  | 420               | 17-4PH            | 304               | 304               |
| 18 | Shaft                | 420               | 17-4PH            | XM-19             | XM-19             |
| 19 | Upper bushing        | SF-1              | SF-1S/C95200      | 304+N             | 304+N             |
| 20 | Packing              | Flexible Graphite | Flexible Graphite | Flexible Graphite | Flexible Graphite |
| 21 | Packing bushing      | A105              | F304/F316         | LF2               | F11/CF8           |
| 22 | Gland                | A105              | F304/F316         | B8/L7             | F11/CF8           |
| 23 | Gland bolt           | 8.8/B7            | B8/B8M            | B8/L7             | B8/B16            |
| 24 | Gland nut            | 8/2H              | 8/8M              | 8/8M              | 8/8M              |
| 25 | Yoke nut             | 8/2H              | 8/2H              | 8/8M              | 8/8M              |
| 26 | Yoke stud            | 8.8/B7            | 8.8/B7            | B8/L7             | B8/B16            |
| 27 | Yoke                 | WCB               | WCB               | LCB/CF8           | CF8               |
| 28 | Worm stud            | 8.8/B7            | 8.8/B7            | B8/L7             | B8/B16            |
| 29 | Key                  | 1045              | 1045              | 1045              | 1045              |
| 30 | Worm gear box        | Assembly Set      | Assembly Set      | Assembly Set      | Assembly Set      |

\*More material specifications are available on request.

## TRIPLE ECCENTRIC METAL TO METAL BIDIRECTIONAL BUTTERFLY VALVE FOR HEAT SUPPLY

### DIMENSION (Flange Type / PN <4.0MPa, Class 150 LB)



| DN (mm) | NPS (inch) | L   | H0   | H    | A   | B   | G   | Est. Weight (Kg) |
|---------|------------|-----|------|------|-----|-----|-----|------------------|
| 50      | 2          | 108 | 82.5 | 195  | 50  | 144 | 180 | 16               |
| 65      | 2½         | 112 | 92.5 | 215  | 50  | 144 | 180 | 17               |
| 80      | 3          | 114 | 100  | 215  | 50  | 144 | 180 | 18               |
| 100     | 4          | 127 | 110  | 235  | 50  | 144 | 180 | 21               |
| 125     | 5          | 140 | 125  | 290  | 63  | 200 | 300 | 34               |
| 150     | 6          | 140 | 180  | 310  | 63  | 200 | 300 | 43               |
| 200     | 8          | 152 | 202  | 360  | 63  | 200 | 300 | 58               |
| 250     | 10         | 165 | 235  | 395  | 80  | 230 | 350 | 72               |
| 300     | 12         | 178 | 265  | 425  | 80  | 230 | 350 | 105              |
| 350     | 14         | 190 | 305  | 475  | 125 | 260 | 400 | 154              |
| 400     | 16         | 216 | 335  | 520  | 125 | 260 | 400 | 202              |
| 450     | 18         | 222 | 365  | 550  | 125 | 260 | 400 | 231              |
| 500     | 20         | 229 | 405  | 610  | 125 | 370 | 400 | 318              |
| 600     | 24         | 267 | 450  | 655  | 160 | 398 | 500 | 490              |
| 700     | 28         | 292 | 520  | 725  | 160 | 398 | 500 | 715              |
| 800     | 32         | 318 | 605  | 795  | 200 | 418 | 600 | 1000             |
| 900     | 36         | 330 | 655  | 885  | 200 | 418 | 700 | 1240             |
| 1000    | 40         | 410 | 715  | 950  | 200 | 418 | 700 | 1496             |
| 1200    | 48         | 470 | 840  | 1125 | 263 | 510 | 700 | 2218             |
| 1400    | 56         | 530 | 980  | 1275 | 333 | 550 | 800 | 2674             |
| 1600    | 64         | 600 | 1125 | 1470 | 333 | 550 | 800 | 3409             |
| 1800    | 72         | 670 | 1240 | 1585 | 374 | 590 | 900 | 4735             |
| 2000    | 80         | 760 | 1380 | 1720 | 374 | 590 | 900 | 6967             |

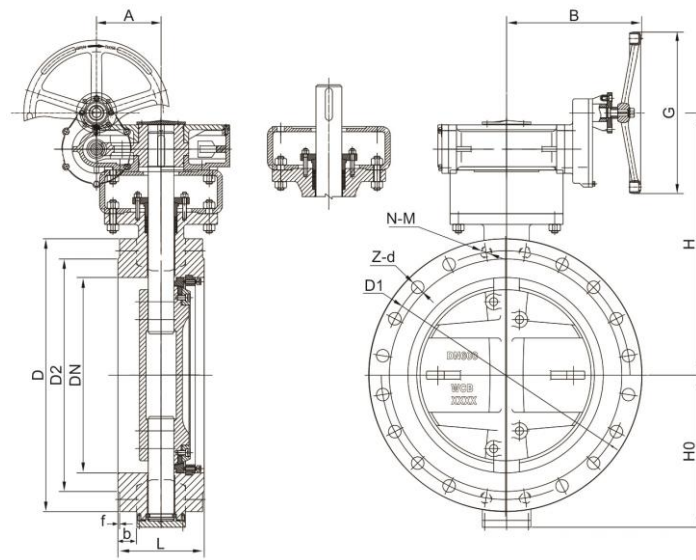
\*Face to face dimensions (L) herein are according to EN 558/ISO 5752 series 13.

\*Flange dimensions (D, D1, D2, Z-d, b, f) refer to Catalogue of Accessory: Series 8 – Flange.

\*More dimension specifications are available on request.

## TRIPLE ECCENTRIC METAL TO METAL BIDIRECTIONAL BUTTERFLY VALVE FOR HEAT SUPPLY

### DIMENSION (Flange Type / PN $\geq$ 4.0 MPa, Class 300 LB, Class 600 LB)



| DN (mm) | NPS (inch) | L   | H0    | H    | A   | B   | G    | Est. Weight (Kg) |
|---------|------------|-----|-------|------|-----|-----|------|------------------|
| 50      | 2          | 150 | 82.5  | 195  | 50  | 144 | 180  | 19               |
| 65      | 2½         | 170 | 92.5  | 210  | 50  | 144 | 180  | 20               |
| 80      | 3          | 180 | 100   | 230  | 50  | 144 | 180  | 23               |
| 100     | 4          | 190 | 117.5 | 250  | 50  | 144 | 180  | 26               |
| 125     | 5          | 200 | 135   | 295  | 63  | 200 | 300  | 43               |
| 150     | 6          | 210 | 215   | 340  | 80  | 230 | 350  | 64               |
| 200     | 8          | 230 | 220   | 390  | 80  | 230 | 350  | 74               |
| 250     | 10         | 250 | 265   | 485  | 125 | 260 | 400  | 119              |
| 300     | 12         | 270 | 290   | 490  | 125 | 260 | 400  | 165              |
| 350     | 14         | 290 | 310   | 540  | 125 | 370 | 400  | 259              |
| 400     | 16         | 310 | 340   | 620  | 160 | 398 | 500  | 325              |
| 450     | 18         | 330 | 390   | 645  | 200 | 418 | 600  | 366              |
| 500     | 20         | 350 | 415   | 670  | 200 | 418 | 600  | 444              |
| 600     | 24         | 390 | 500   | 740  | 200 | 418 | 600  | 661              |
| 700     | 28         | 430 | 580   | 900  | 263 | 510 | 700  | 1096             |
| 800     | 32         | 470 | 665   | 975  | 333 | 550 | 800  | 1492             |
| 900     | 36         | 510 | 690   | 1010 | 333 | 550 | 800  | 1823             |
| 1000    | 40         | 550 | 755   | 1090 | 333 | 550 | 800  | 2198             |
| 1200    | 48         | 630 | 950   | 1365 | 374 | 590 | 900  | 3087             |
| 1400    | 56         | 710 | 1090  | 1475 | 453 | 635 | 1000 | 3940             |

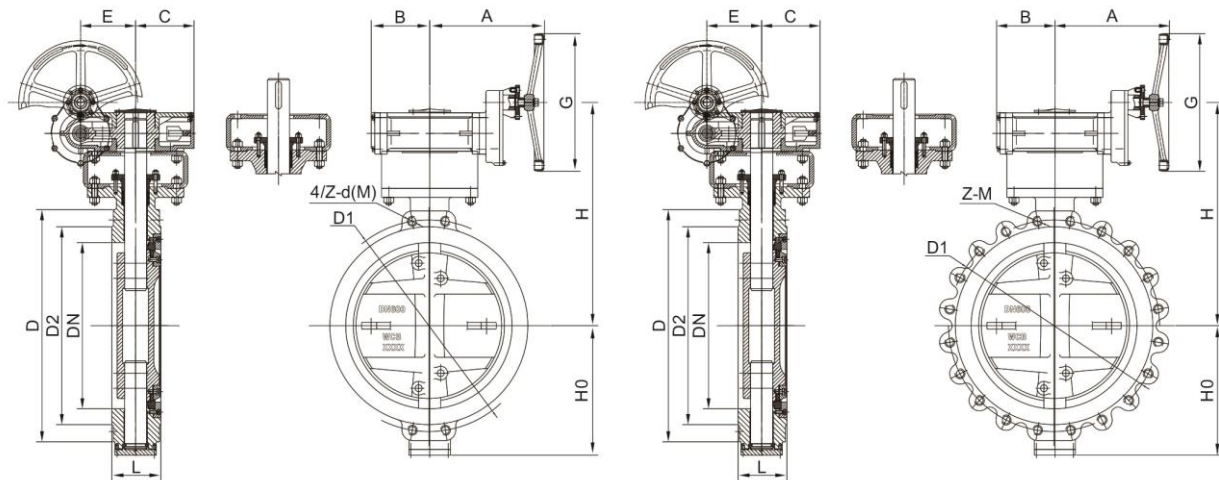
\*Face to face dimensions (L) herein are according to EN 558/ISO 5752 series 14.

\*Flange dimensions (D, D1, D2, Z-d, b, f) refer to Catalogue of Accessory: Series 8 – Flange.

\*More dimension specifications are available on request.

## TRIPLE ECCENTRIC METAL TO METAL BIDIRECTIONAL BUTTERFLY VALVE FOR HEAT SUPPLY

### DIMENSION (Wafer /Lug Type / PN≤4.0MPa)



| DN (mm) | NPS (inch) | L   | H0  | H    | A   | B   | C   | E   | G   | Est. Weight (Kg) |
|---------|------------|-----|-----|------|-----|-----|-----|-----|-----|------------------|
| 80      | 3          | 64  | 105 | 215  | 144 | 56  | 56  | 50  | 180 | 15               |
| 100     | 4          | 64  | 117 | 225  | 144 | 56  | 56  | 50  | 180 | 17               |
| 125     | 5          | 70  | 135 | 290  | 200 | 75  | 96  | 63  | 300 | 24.5             |
| 150     | 6          | 76  | 165 | 315  | 200 | 75  | 96  | 63  | 300 | 30               |
| 200     | 8          | 89  | 200 | 360  | 200 | 75  | 96  | 63  | 300 | 45               |
| 250     | 10         | 114 | 235 | 395  | 230 | 90  | 120 | 80  | 350 | 63               |
| 300     | 12         | 114 | 265 | 425  | 230 | 90  | 120 | 80  | 350 | 82               |
| 350     | 14         | 127 | 300 | 480  | 260 | 152 | 165 | 125 | 400 | 140              |
| 400     | 16         | 140 | 330 | 505  | 260 | 152 | 165 | 125 | 400 | 170              |
| 450     | 18         | 152 | 360 | 540  | 260 | 152 | 165 | 125 | 400 | 196              |
| 500     | 20         | 152 | 400 | 575  | 370 | 180 | 198 | 125 | 400 | 280              |
| 600     | 24         | 178 | 454 | 685  | 398 | 200 | 215 | 160 | 500 | 362              |
| 700     | 28         | 229 | 545 | 755  | 398 | 200 | 215 | 160 | 500 | 430              |
| 800     | 32         | 241 | 575 | 825  | 418 | 235 | 270 | 200 | 600 | 535              |
| 900     | 36         | 241 | 655 | 960  | 418 | 235 | 270 | 200 | 700 | 708              |
| 1000    | 40         | 300 | 725 | 1015 | 418 | 235 | 270 | 200 | 700 | 1090             |
| 1200    | 48         | 360 | 860 | 1150 | 510 | 275 | 335 | 263 | 700 | 1455             |
| 1400    | 56         | 390 | 995 | 1345 | 550 | 275 | 335 | 333 | 800 | 1750             |

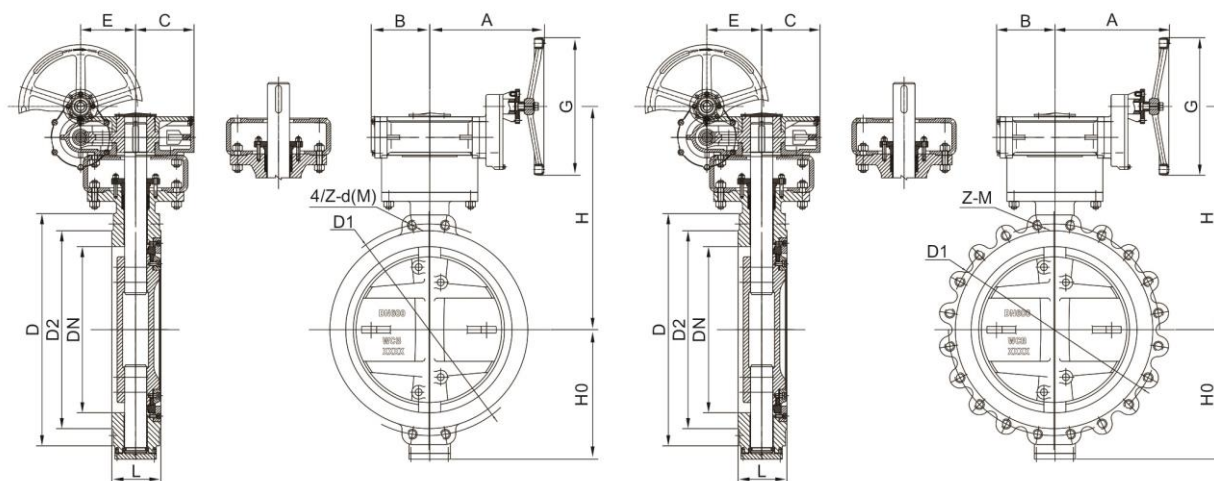
\*Face to face dimensions (L) herein are according to ISO 5752 series 16 (DN≤500) and series 20 (DN>500).

\*Flange dimensions (D, D1, D2, Z-d) refer to Catalogue of Accessory: Series 8 – Flange.

\*More dimension specifications are available on request.

## TRIPLE ECCENTRIC METAL TO METAL BIDIRECTIONAL BUTTERFLY VALVE FOR HEAT SUPPLY

### DIMENSION (Wafer /Lug Type / PN >4.0MPa)



| DN (mm) | NPS (inch) | L   | H0  | H   | A   | B   | C   | E   | G   | Est. Weight (Kg) |
|---------|------------|-----|-----|-----|-----|-----|-----|-----|-----|------------------|
| 80      | 3          | 64  | 120 | 270 | 200 | 75  | 96  | 63  | 300 | 23               |
| 100     | 4          | 64  | 135 | 285 | 200 | 75  | 96  | 63  | 300 | 26               |
| 125     | 5          | 70  | 160 | 325 | 230 | 90  | 120 | 80  | 350 | 38               |
| 150     | 6          | 78  | 215 | 410 | 260 | 152 | 165 | 125 | 400 | 56               |
| 200     | 8          | 102 | 220 | 425 | 370 | 152 | 165 | 125 | 400 | 96               |
| 250     | 10         | 117 | 265 | 505 | 370 | 152 | 165 | 125 | 400 | 130              |
| 300     | 12         | 140 | 295 | 545 | 398 | 180 | 198 | 160 | 500 | 227              |
| 350     | 14         | 155 | 335 | 570 | 418 | 200 | 215 | 200 | 600 | 290              |
| 400     | 16         | 178 | 390 | 620 | 418 | 200 | 215 | 200 | 600 | 367              |
| 500     | 20         | 216 | 450 | 760 | 510 | 235 | 270 | 263 | 700 | 476              |
| 600     | 24         | 232 | 550 | 850 | 550 | 275 | 335 | 333 | 800 | 659              |

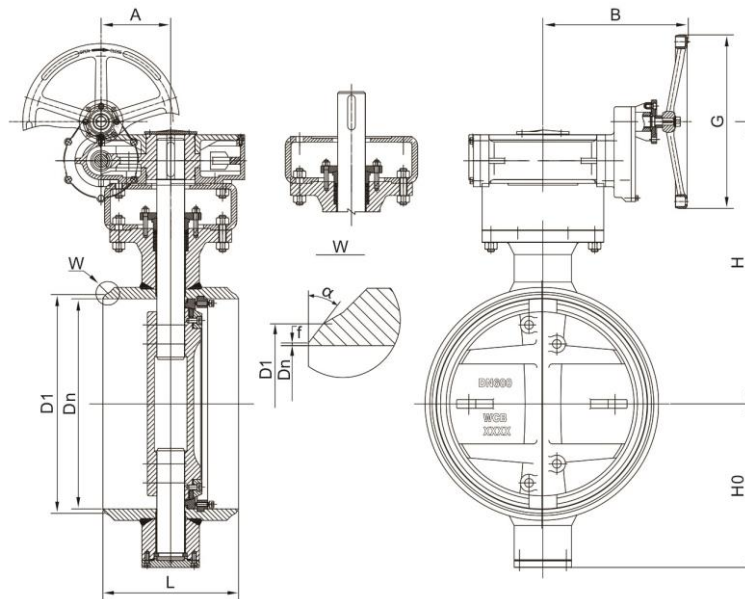
\*Face to face dimensions (L) herein are according to ISO 5752 series 16 (DN ≤ 500) and series 20 (DN > 500).

\*Flange dimensions (D, D1, D2, Z-d) refer to Catalogue of Accessory: Series 8 – Flange.

\*More dimension specifications are available on request.

## TRIPLE ECCENTRIC METAL TO METAL BIDIRECTIONAL BUTTERFLY VALVE FOR HEAT SUPPLY

### DIMENSION (Butt Weld Type)



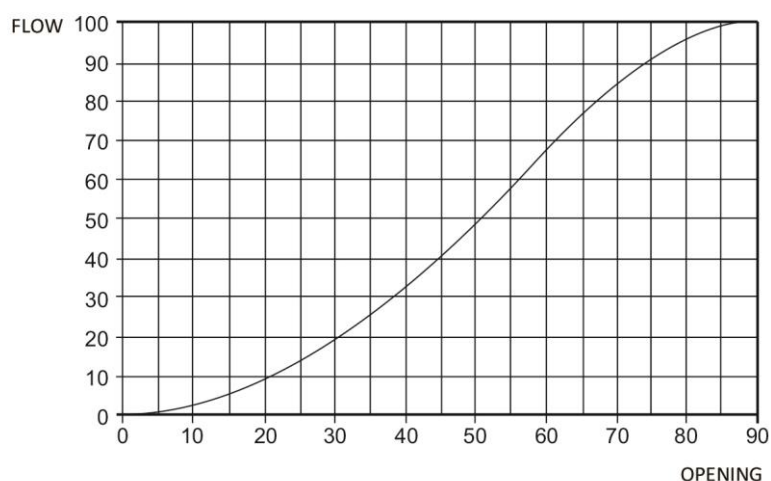
| DN   | NPS | L   | D <sub>n</sub> | D1   | H0   | H    | A   | B   | G   | Est. Weight (kg) |
|------|-----|-----|----------------|------|------|------|-----|-----|-----|------------------|
| 80   | 3   | 180 | 82             | 91   | 85   | 225  | 50  | 144 | 180 | 18               |
| 100  | 4   | 190 | 106            | 117  | 100  | 245  | 50  | 144 | 180 | 20               |
| 125  | 5   | 200 | 132            | 144  | 170  | 290  | 63  | 200 | 300 | 32               |
| 150  | 6   | 210 | 159            | 172  | 180  | 310  | 63  | 200 | 300 | 41               |
| 200  | 8   | 230 | 206            | 223  | 205  | 360  | 63  | 200 | 300 | 56               |
| 250  | 10  | 250 | 259            | 278  | 235  | 395  | 80  | 230 | 350 | 69               |
| 300  | 12  | 270 | 308            | 329  | 265  | 425  | 80  | 230 | 350 | 101              |
| 350  | 14  | 290 | 340            | 362  | 305  | 475  | 125 | 260 | 400 | 148              |
| 400  | 16  | 310 | 388            | 413  | 335  | 520  | 125 | 260 | 400 | 193              |
| 450  | 18  | 330 | 439            | 464  | 365  | 550  | 125 | 260 | 400 | 221              |
| 500  | 20  | 350 | 488            | 516  | 405  | 615  | 125 | 370 | 400 | 306              |
| 600  | 24  | 390 | 589            | 619  | 465  | 665  | 160 | 398 | 500 | 469              |
| 700  | 28  | 430 | 693            | 721  | 540  | 730  | 200 | 418 | 600 | 684              |
| 800  | 32  | 470 | 793            | 825  | 625  | 865  | 200 | 418 | 600 | 954              |
| 900  | 36  | 510 | 894            | 927  | 690  | 930  | 263 | 510 | 700 | 1293             |
| 1000 | 40  | 550 | 996            | 1029 | 755  | 1030 | 263 | 510 | 700 | 1431             |
| 1200 | 48  | 630 | 1194           | 1235 | 880  | 1165 | 333 | 550 | 800 | 2121             |
| 1400 | 56  | 710 | 1394           | 1440 | 1010 | 1335 | 333 | 550 | 800 | 2553             |
| 1600 | 64  | 790 | 1594           | 1640 | 1125 | 1470 | 374 | 590 | 900 | 3409             |
| 1800 | 72  | 870 | 1794           | 1840 | 1240 | 1585 | 374 | 590 | 900 | 4735             |

\*Face to face dimensions (L) herein are according to EN 558/ISO 5752 series 14.

\*More dimension specifications are available on request.

## TRIPLE ECCENTRIC METAL TO METAL BIDIRECTIONAL BUTTERFLY VALVE FOR HEAT SUPPLY

### FLOW CHARACTERISTICS CURVE



### FLOW CHARACTERISTICS (Class 150 LB)

| Size |      | Disc Opening |      |       |       |       |       |       |       |        |
|------|------|--------------|------|-------|-------|-------|-------|-------|-------|--------|
| in   | mm   | 10°          | 20°  | 30°   | 40°   | 50°   | 60°   | 70°   | 80°   | 90°    |
| 3    | 80   | 3            | 12   | 20    | 29    | 45    | 65    | 91    | 130   | 170    |
| 4    | 100  | 7            | 29   | 47    | 66    | 105   | 151   | 214   | 303   | 400    |
| 6    | 150  | 18           | 78   | 128   | 182   | 289   | 417   | 593   | 840   | 1120   |
| 8    | 200  | 34           | 150  | 247   | 350   | 554   | 801   | 1138  | 1610  | 2150   |
| 10   | 250  | 59           | 258  | 424   | 600   | 951   | 1375  | 1953  | 2765  | 3690   |
| 12   | 300  | 85           | 369  | 605   | 858   | 1358  | 1963  | 2789  | 3947  | 5260   |
| 14   | 350  | 114          | 499  | 819   | 1161  | 1838  | 2657  | 3775  | 5342  | 7120   |
| 16   | 400  | 137          | 599  | 984   | 1394  | 2206  | 3190  | 4532  | 6413  | 8550   |
| 18   | 450  | 184          | 804  | 1321  | 1872  | 2964  | 4286  | 6089  | 8616  | 11490  |
| 20   | 500  | 255          | 1113 | 1828  | 2590  | 4100  | 5928  | 8424  | 11921 | 15900  |
| 24   | 600  | 357          | 1563 | 2568  | 3641  | 5762  | 8331  | 11837 | 16750 | 22330  |
| 28   | 700  | 475          | 2077 | 3413  | 4838  | 7657  | 11070 | 15729 | 22258 | 29680  |
| 30   | 750  | 625          | 2733 | 4491  | 6366  | 10076 | 14567 | 20698 | 29290 | 39050  |
| 32   | 800  | 695          | 3042 | 4998  | 7990  | 11213 | 16211 | 23033 | 32594 | 43460  |
| 36   | 900  | 850          | 3718 | 6108  | 8658  | 13704 | 19812 | 28152 | 39838 | 53120  |
| 40   | 1000 | 1105         | 4831 | 7936  | 11249 | 17805 | 25742 | 36576 | 51759 | 69010  |
| 42   | 1050 | 1416         | 6197 | 10181 | 14430 | 22840 | 33021 | 46920 | 66396 | 88530  |
| 48   | 1200 | 1738         | 7605 | 12495 | 17710 | 28031 | 40526 | 57583 | 81486 | 108650 |

## TRIPLE ECCENTRIC METAL TO METAL BIDIRECTIONAL BUTTERFLY VALVE FOR HEAT SUPPLY

### FLOW CHARACTERISTICS (Class 300 LB)

| Size |      | Disc Opening |      |       |       |       |       |       |       |       |
|------|------|--------------|------|-------|-------|-------|-------|-------|-------|-------|
| in   | mm   | 10°          | 20°  | 30°   | 40°   | 50°   | 60°   | 70°   | 80°   | 90°   |
| 3    | 80   | 6            | 15   | 23    | 33    | 48    | 71    | 106   | 137   | 150   |
| 4    | 100  | 11           | 28   | 42    | 61    | 88    | 129   | 193   | 248   | 280   |
| 6    | 150  | 30           | 75   | 113   | 165   | 240   | 352   | 525   | 675   | 750   |
| 8    | 200  | 50           | 126  | 190   | 278   | 405   | 594   | 884   | 1137  | 1260  |
| 10   | 250  | 80           | 200  | 301   | 441   | 641   | 942   | 1403  | 1804  | 2000  |
| 12   | 300  | 139          | 347  | 521   | 763   | 1110  | 1630  | 2427  | 3121  | 3470  |
| 14   | 350  | 186          | 465  | 697   | 1022  | 1487  | 2184  | 3253  | 4183  | 4650  |
| 16   | 400  | 253          | 632  | 948   | 1390  | 2022  | 2970  | 4422  | 5686  | 6320  |
| 18   | 450  | 346          | 864  | 1297  | 1901  | 2965  | 4061  | 6049  | 7777  | 8640  |
| 20   | 500  | 421          | 1051 | 1577  | 2313  | 3364  | 4941  | 7359  | 9461  | 10510 |
| 24   | 600  | 655          | 1638 | 2457  | 3603  | 5241  | 7698  | 11464 | 14740 | 16380 |
| 26   | 650  | 860          | 2150 | 3225  | 4729  | 6879  | 10104 | 15049 | 19348 | 21500 |
| 28   | 700  | 942          | 2354 | 3531  | 5179  | 7533  | 11064 | 16478 | 21186 | 23540 |
| 30   | 750  | 1167         | 2917 | 4376  | 6418  | 9336  | 13712 | 20422 | 26257 | 29170 |
| 32   | 800  | 1312         | 3280 | 4919  | 7215  | 10495 | 15414 | 22957 | 29516 | 32800 |
| 36   | 900  | 1670         | 4175 | 6262  | 9185  | 13360 | 19622 | 29224 | 37574 | 41750 |
| 38   | 950  | 1835         | 4587 | 6881  | 10092 | 14680 | 21561 | 32112 | 41286 | 45870 |
| 40   | 1000 | 2008         | 5020 | 7530  | 11044 | 16064 | 23594 | 35140 | 45179 | 50200 |
| 42   | 1050 | 2298         | 5744 | 8616  | 12637 | 18382 | 26998 | 40210 | 51698 | 57440 |
| 48   | 1200 | 2978         | 7444 | 11167 | 16378 | 23822 | 34989 | 52111 | 67000 | 74440 |

### FLOW CHARACTERISTICS (Class 600 LB)

| Size |     | Disc Opening |      |      |      |      |      |       |       |       |
|------|-----|--------------|------|------|------|------|------|-------|-------|-------|
| in   | mm  | 10°          | 20°  | 30°  | 40°  | 50°  | 60°  | 70°   | 80°   | 90°   |
| 3    | 80  | 6            | 14   | 22   | 31   | 46   | 67   | 100   | 128   | 140   |
| 4    | 100 | 10           | 24   | 36   | 52   | 76   | 112  | 166   | 214   | 240   |
| 6    | 150 | 23           | 57   | 86   | 125  | 182  | 268  | 399   | 513   | 570   |
| 8    | 200 | 41           | 103  | 154  | 226  | 329  | 483  | 718   | 923   | 1030  |
| 10   | 250 | 65           | 162  | 242  | 255  | 517  | 759  | 1131  | 1454  | 1620  |
| 12   | 300 | 96           | 239  | 359  | 526  | 766  | 1125 | 1676  | 2155  | 2390  |
| 14   | 350 | 164          | 409  | 614  | 900  | 1310 | 1923 | 2865  | 3683  | 4090  |
| 16   | 400 | 216          | 541  | 812  | 1191 | 1732 | 2544 | 3789  | 4871  | 5410  |
| 18   | 450 | 301          | 751  | 1128 | 1653 | 2404 | 3532 | 5260  | 6763  | 7520  |
| 20   | 500 | 395          | 988  | 1482 | 2173 | 3161 | 4643 | 6915  | 8891  | 9880  |
| 24   | 600 | 602          | 1503 | 2254 | 3307 | 4810 | 7064 | 10521 | 13527 | 15030 |

## TRIPLE ECCENTRIC METAL TO METAL BIDIRECTIONAL BUTTERFLY VALVE FOR HEAT SUPPLY

### ASME B16.34 Pressure-Temperature Curve

ASTM A216-WCB、A217-C5、A351-CF8

