

## KEYSTONE HILOK HIGH PERFORMANCE BUTTERFLY VALVES

### WAFER AND LUGGED

The HiLok high performance butterfly valves offer efficient, bidirectional sealing



#### FEATURES

- Cast on ISO top plate.
- Long neck for insulation service.
- External travel stop, outside of the medium area.
- Accessible packing adjustment without operator removal.
- Positive sealing which is mechanically achieved and does not rely on line pressure assistance.
- Bidirectional shut-off performance.
- Available in soft, fire-safe and metal seated.
- Long life durability due to double offset operating principle minimizing seat wear.
- Two piece shaft for maximum flow and minimum headloss.
- Quadruple shaft bearings to ensure stability during high pressure, high cycle applications.
- Fast and simple seat replacement.
- Uninterrupted gasket surface.
- Minimum 4 locating lugs per diameter.
- TA-Luft approved (optional).
- Optional groove in accordance with DIN 2512-N (up to DN 400).
- Radial, low stress disc pins.
- Available in both DIN and ASME versions.
- All valves are in compliance with PED, Category III, Module H.

#### GENERAL APPLICATION

A unique valve for chemical and general industrial applications.  
Grease or silicone free valves available for special applications such as paint or oxygen systems.

#### TECHNICAL DATA

|                           |                                                                              |
|---------------------------|------------------------------------------------------------------------------|
| Sizes:                    | DN 50-900 (NPS 2-36)                                                         |
| Temperature:              | -50 °C up to +400 °C                                                         |
| Design criteria:          | EN 12516 (DIN 3840)                                                          |
| Flange compatibility:     | DIN PN 10-40, BS 4504, NFE 29203, ASME B16.5, ASME B16.47 series A Class 150 |
| Face to face:             | EN 558-1 series 20/25, API 609 cat-A, MSS SP 68, NFE29305                    |
| Top plate:                | ISO 5211                                                                     |
| Maximum working pressure: | DN 50 to 400: 40 bar<br>DN 450 to 600: 25 bar<br>DN 700 to 900: 16 bar       |
| Material certification:   | EN 10204 3.1 (DIN 50049 3.1.b)                                               |
| Pressure testing:         | EN 12266-1                                                                   |

# KEYSTONE HILOK HIGH PERFORMANCE BUTTERFLY VALVES

## DESIGN FEATURES

### NO LEAKAGE

- 1 Seat**  
Tightness is unaffected by pressure changes, or changes in flow direction as the seat can move radially in its recess.
- 2 Bottom end cover**  
Ensures lower stem tightness by its static seal.
- 3 Packing system**  
The perfect internal tightness is obtained by a conventional packing system in expanded graphite. The excellent temperature stability ensures 100% static and dynamic tightness. Optional available in PTFE which is TA-Luft VDI 2440 approved.

### EASY ACCESSIBLE

- 4 Standardized top plate**  
The integrally cast top plate in accordance with ISO 5211. The actuator can be flush mounted, eliminating the need of brackets and couplings.
- 5 Twin column construction**  
Easy access to the packing system without removing the actuator.
- 6 Extended neck**  
Especially designed for insulated pipework allowing easy access to the gland adjustment area, which would be located outside of the insulation area due to the elongated neck.
- 7 Integrated locating plates**  
Precise centering of the valve on the pipe.
- 8 Retaining ring**  
With screws outside of flange sealing zone, facilitating easy maintenance. The uninterrupted sealing surface allows the installation of spiral wound gaskets.

### PERFECT SHAFT GUIDING

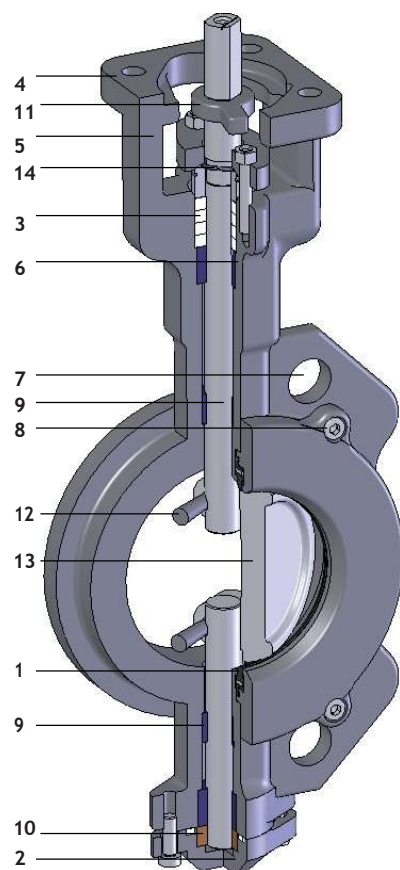
- 9 Bearings**  
Two corrosion resistant bearings on upper and lower stem provide low friction coefficient and high load capacity. The bearings avoid any deflection of shaft at the packing level, ensuring perfect bidirectional tightness.
- 10 Axial disc stem positioning**  
Shrunk on the shaft during assembly. It retains its position for the lifecycle of the valve and prevents displacement of disc in relation to the seat while being in service.
- 11 Travel stop**  
Located at the mounting plate level. The travel stop is set during assembly at 90° disc angle in order to avoid any over traveling of the disc.  
- The travel stop contact against the mounting plate, thus avoiding potential over-torque of the discstem.  
- When actuator has been removed and valve is in service, the position of the disc is clearly shown.
- 12 Disc to stem connection**  
The use of radial located disc pins removes engagement clearance and eliminates valve hysteresis.

### OPTIMIZED DESIGN

- 13 Disc**  
The double eccentric disc design is optimized via the finite element method to ensure a non-contact between the seat and disc already at small angles.

### SAFETY

- 14 Blow-out proof stem prevention**



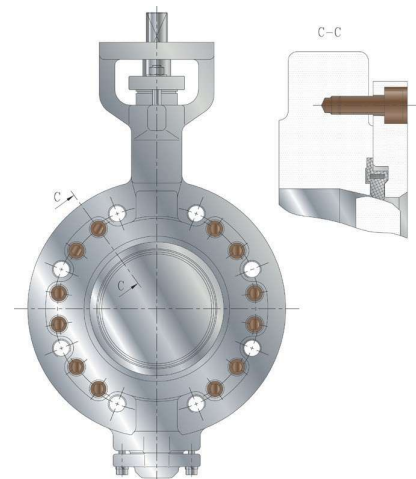
### Optional end of line bidirectional feature

As standard, the lugged HiLok body design can be used as end of line unidirectional (mounted with the retaining ring upstream).

As an option, the HiLok can be provided with a reinforced retaining ring which is bolted to the valve body making the valve suitable for bidirectional end of line service.

The unique feature of this design is that the retaining ring bolts are located outside the gasket contact area. This results in an uninterrupted gasket area in both flow directions, achieving an optimum tightness at the flange connection.

Consult the sales organization for pressure/temperature rating for end of line installation.



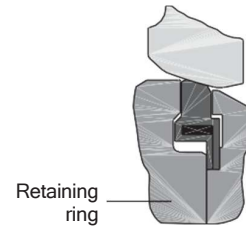
# KEYSTONE HILOK HIGH PERFORMANCE BUTTERFLY VALVES

## SEAT OPTIONS

### HILOK RTFE SEAT

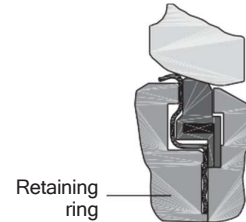
The seat is made of filled RTFE in order to minimize cold flow effects at high temperatures. The combined action of seat geometry and the elastic metal insert guarantees a long lasting bidirectional shutoff.

Size range DN 50-900. Tightness class EN 12266-1 rate A.  
Maximum pressure end of line: DN 50-600: 16 bar; DN 700-900: 10 bar.

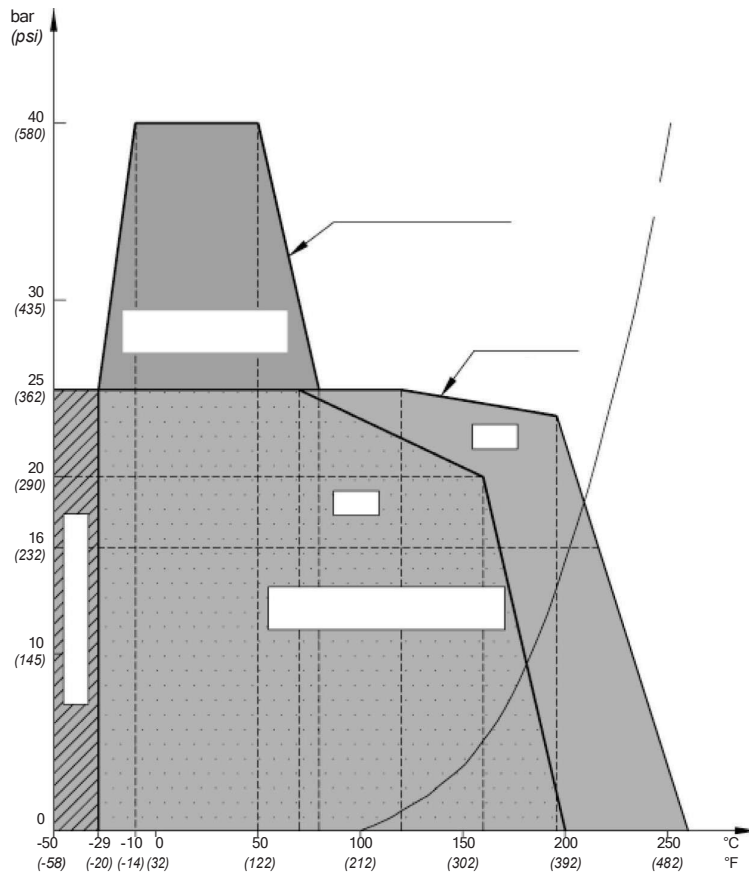


### HILOK FIRE SAFE SEAT

Size range DN 50-500. Tightness class EN 12266-1 rate A.  
Maximum pressure end of line: DN 50-500: 16 bar.



P/T DIAGRAM (HILOK RTFE AND FS)



The valve has been designed according fire test standards. The standard RTFE seat is mounted with a stainless steel ring. In the event of fire, it supersedes over the RTFE seat and provides a bidirectional back-up seal, according to API 607 / BS 6755 part 2.

PN 40 not suited for dangerous media such as explosive, flammable, toxic or oxidizing media.

**NOTE:** HiLok can be used for end of line service mounted with the shaft downstream

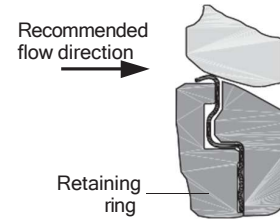
# KEYSTONE HILOK HIGH PERFORMANCE BUTTERFLY VALVES

## SEAT OPTIONS

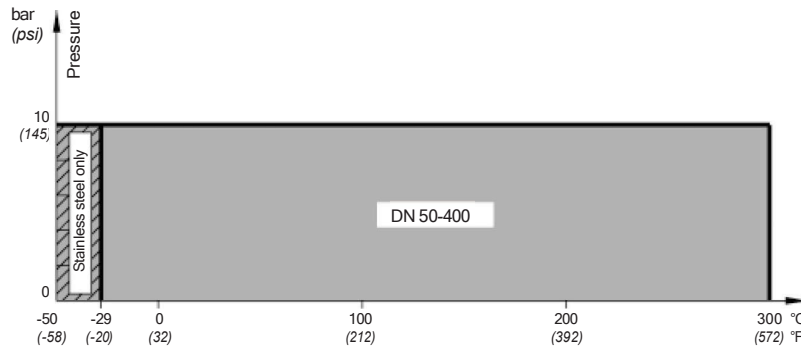
### HILOK METAL PP SEAT (PULP AND PAPER)

The valve has been specifically designed for pulp and paper applications. This seat design promotes longer life span and lower maintenance.

Size range DN 50-400. Tightness class EN 12266-1 rate D.



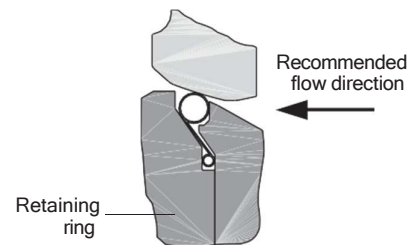
P/T DIAGRAM (HILOK PP SEAT)



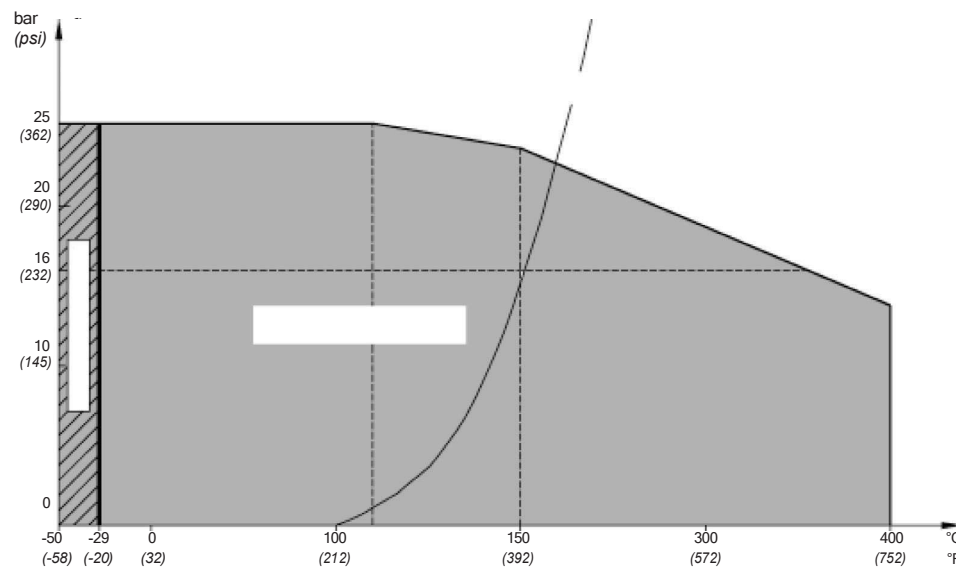
### HILOK METAL HT SEAT (HIGH TEMPERATURE)

The valve integrates a metal seat in order to be used on all applications with high pressure and high temperature.

Size range DN 50-400. Tightness class EN 12266-1 rate C.



P/T DIAGRAM (HILOK HT SEAT)



# KEYSTONE HILOK HIGH PERFORMANCE BUTTERFLY VALVES

## HYDRAULIC CHARACTERISTICS

### K<sub>v</sub>/C<sub>v</sub> VALUES

|                | DN  |     |     |     |     |      |      |      |      |      |       |       |       |       |       |       |       |
|----------------|-----|-----|-----|-----|-----|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
|                | 50  | 65  | 80  | 100 | 125 | 150  | 200  | 250  | 300  | 350  | 400   | 450   | 500   | 600   | 700   | 800   | 900   |
| K <sub>v</sub> | 115 | 210 | 320 | 500 | 820 | 1200 | 2300 | 3600 | 5200 | 7300 | 9500  | 12000 | 14800 | 21600 | 30200 | 40200 | 51200 |
| C <sub>v</sub> | 133 | 244 | 371 | 580 | 951 | 1392 | 2668 | 4176 | 6032 | 8468 | 11020 | 13900 | 17200 | 25000 | 35000 | 46500 | 59200 |

### BREAKAWAY TORQUE VALUES (Nm)

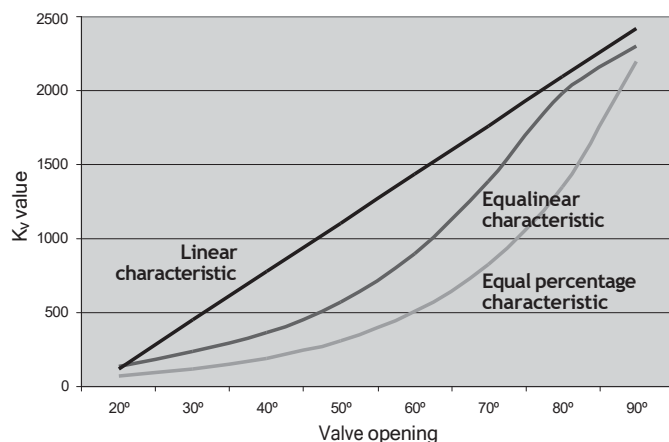
|           |                                                | Valve size (DN) |    |    |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|-----------|------------------------------------------------|-----------------|----|----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|
| Seat      | Condition                                      | 50              | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300  | 350  | 400  | 450  | 500  | 600  | 700  | 800  | 900  |
| RTFE      | 40 bar Δp <sup>[1]</sup><br>(shaft downstream) | 36              | 44 | 60 | 96  | 150 | 221 | 416 | 620 | 920  | 1200 | 1688 |      |      |      |      |      |      |
| RTFE      | 25 bar Δp <sup>[2]</sup><br>(bidirectional)    | 27              | 33 | 45 | 73  | 115 | 170 | 320 | 480 | 720  | 950  | 1350 | 1700 | 2300 | 3200 | 4500 | 6000 | 8000 |
| RTFE      | 10 bar Δp<br>(shaft downstream)                | 27              | 33 | 38 | 62  | 97  | 143 | 265 | 390 | 595  | 760  | 1070 | 1350 | 1820 | 2750 |      |      |      |
| RTFE      | 7 bar Δp<br>(shaft downstream)                 | 27              | 33 | 34 | 55  | 85  | 125 | 230 | 345 | 520  | 690  | 970  | 1225 | 1655 | 2330 |      |      |      |
| Fire safe | 25 bar Δp<br>(bidirectional)                   | 27              | 33 | 45 | 73  | 115 | 170 | 320 | 480 | 720  | 950  | 1350 | 1700 | 2300 | 3200 |      |      |      |
| Metal PP  | 10 bar Δp<br>(shaft downstream)                | 27              | 33 | 45 | 73  | 115 | 170 | 320 | 480 | 720  | 950  | 1350 |      |      |      |      |      |      |
| Metal HT  | 25 bar Δp <sup>[3]</sup><br>(shaft upstream)   | 54              | 66 | 90 | 146 | 230 | 340 | 640 | 910 | 1290 | 1655 | 2350 |      |      |      |      |      |      |
| RTFE      | Powder applications<br>max. 25 Δp              | 36              | 44 | 60 | 96  | 150 | 221 | 416 | 620 | 920  | 1200 | 1688 | 2110 | 2830 | 3900 |      |      |      |

1. PTFE torque values equal to RTFE
2. RTFE DN 50-600 max pressure 25 bar, DN 700-900 max pressure 16 bar
3. Metal HT DN 50-200 max. pressure 25 bar, DN 250-400 max. pressure 16 bar

### MAXIMUM ALLOWABLE SHAFT TORQUE (Nm)

|                 | Valve size (DN) |     |     |     |     |     |     |      |      |      |      |      |       |       |       |       |       |
|-----------------|-----------------|-----|-----|-----|-----|-----|-----|------|------|------|------|------|-------|-------|-------|-------|-------|
| Shaft material  | 50              | 60  | 80  | 100 | 125 | 150 | 200 | 250  | 300  | 350  | 400  | 450  | 500   | 600   | 700   | 800   | 900   |
| X20Cr13         | 122             | 122 | 122 | 297 | 297 | 743 | 743 | 1332 | 1957 | 1957 | 3108 | 6389 | 10793 | 10793 | 25948 | 25948 | 52851 |
| X5CrNiCuNb 16-4 | 163             | 163 | 163 | 396 | 396 | 989 | 989 | 1772 | 2603 | 2603 | 4135 | 8497 | 14356 | 14356 | 34511 | -     | -     |

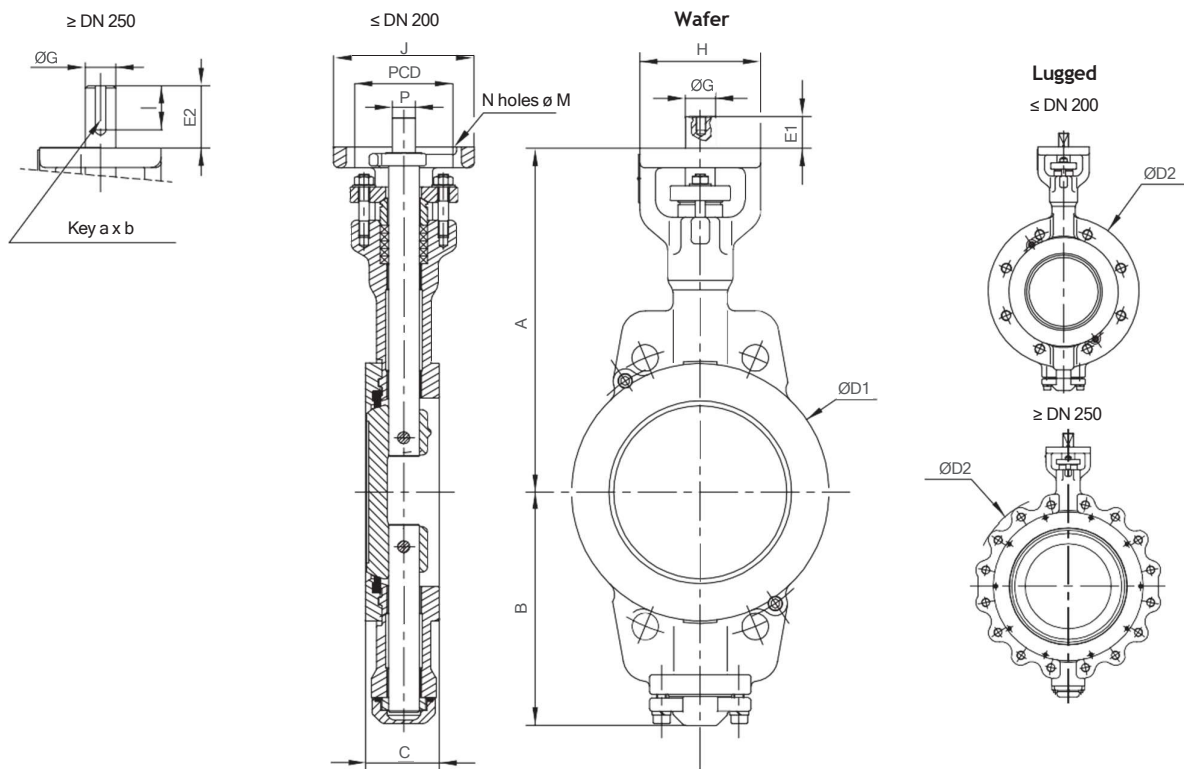
### K<sub>v</sub> TABLE



The double off set equalinear HiLok disc combines high strength, high flow capacity and excellent control characteristics with a minimum of seat wear.

The equalinear HiLok characteristic is approximately mid way between that of linear and equal percentage, making the valve suitable as a flow control valve in many industrial flow applications.

### GENERAL DIMENSIONS BARE SHAFT VALVE



### VALVE DIMENSIONS (mm)

| KEY DIMENSIONS (mm) |     |     |     |     |      |      |      |    |       |     |     |      |     |    |     |   |    |    |     | Weight (kg) |        |
|---------------------|-----|-----|-----|-----|------|------|------|----|-------|-----|-----|------|-----|----|-----|---|----|----|-----|-------------|--------|
| DN                  | A   | B   | C*  | C** | øD1  | øD2  | E1   | P  | E2    | øG  | H   | J    | PCD | øM | Q   | N | a  | b  | l   | Wafer       | Lugged |
| 50                  | 175 | 102 | 43  | 43  | 97   | 153  | 25.5 | 11 | -     | 14  | 70  | 80   | 70  | 9  | 40  | 4 | -  | -  | -   | 3.1         | 4.8    |
| 65                  | 191 | 116 | 46  | 46  | 117  | 173  | 25.5 | 11 | -     | 14  | 70  | 80   | 70  | 9  | 51  | 4 | -  | -  | -   | 4.5         | 6.9    |
| 80                  | 197 | 122 | 46  | 49  | 130  | 190  | 25.5 | 11 | -     | 14  | 70  | 80   | 70  | 9  | 66  | 4 | -  | -  | -   | 4.9         | 7.7    |
| 100                 | 233 | 149 | 52  | 56  | 158  | 225  | 25.5 | 14 | -     | 18  | 100 | 100  | 102 | 11 | 90  | 4 | -  | -  | -   | 8.2         | 13.7   |
| 125                 | 245 | 160 | 56  | 64  | 188  | 261  | 25.5 | 14 | -     | 18  | 100 | 100  | 102 | 11 | 113 | 4 | -  | -  | -   | 9.8         | 17.0   |
| 150                 | 283 | 193 | 56  | 70  | 212  | 294  | 25.5 | 19 | -     | 25  | 100 | 110  | 102 | 11 | 141 | 4 | -  | -  | -   | 12.5        | 22.5   |
| 200                 | 307 | 217 | 60  | 71  | 267  | 365  | 25.5 | 19 | -     | 25  | 100 | 110  | 102 | 11 | 189 | 4 | -  | -  | -   | 21.9        | 33.7   |
| 250                 | 371 | 251 | 68  | 76  | 321  | 420  | -    | -  | 70.0  | 35  | 132 | 140  | 125 | 14 | 236 | 4 | 10 | 8  | 60  | 40.4        | 52.5   |
| 300                 | 399 | 302 | 78  | 83  | 372  | 476  | -    | -  | 70.0  | 35  | 132 | 140  | 125 | 14 | 282 | 4 | 10 | 8  | 60  | 54.6        | 77.5   |
| 350                 | 421 | 324 | 78  | 92  | 431  | 542  | -    | -  | 70.0  | 35  | 132 | 140  | 125 | 14 | 326 | 4 | 10 | 8  | 60  | 74.4        | 96.5   |
| 400                 | 453 | 358 | 102 | 102 | 484  | 606  | -    | -  | 80.0  | 40  | 140 | 149  | 140 | 18 | 374 | 4 | 12 | 8  | 73  | 97.6        | 133.0  |
| 450                 | 522 | 392 | 114 | 114 | 534  | 662  | -    | -  | 80.0  | 50  | -   | ø175 | 140 | 18 | 418 | 4 | 14 | 9  | 60  | 145.0       | 206.0  |
| 500                 | 550 | 427 | 127 | 127 | 590  | 722  | -    | -  | 85.0  | 60  | -   | ø210 | 165 | 22 | 467 | 4 | 18 | 11 | 80  | 188.0       | 244.0  |
| 600                 | 634 | 485 | 154 | 154 | 689  | 837  | -    | -  | 85.0  | 60  | -   | ø210 | 165 | 22 | 559 | 4 | 18 | 11 | 80  | 224.0       | 306.0  |
| 700                 | 720 | 547 | 165 | 165 | 799  | 947  | -    | -  | 108.0 | 80  | -   | ø300 | 254 | 18 | 659 | 8 | 22 | 14 | 100 | 269.0       | 450.0  |
| 800                 | 771 | 598 | 190 | -   | 900  | 1070 | -    | -  | 108.0 | 80  | -   | ø300 | 254 | 18 | -   | 8 | 22 | 14 | 100 | 515.0       | 825.0  |
| 900                 | 878 | 687 | 241 | -   | 1000 | -    | -    | -  | 108.0 | 100 | -   | ø350 | 254 | 18 | -   | 8 | 28 | 16 | 100 | 850.0       | 1063.0 |

## NOTES

- Dimensions in mm, weights in kg.
- Dimensions and weights are given as guide.
- The maximum working capability of any valve is either the body rating or the seat shut-off capability, whichever is the lower.
- K dimension in function of the required flange drilling pattern.
- C\*: Face-to-face according EN 558-1, series 20 (factory standard)
- C\*\*: Face-to-face according EN 558-1, series 25 (optional)

# KEYSTONE HILOK HIGH PERFORMANCE BUTTERFLY VALVES

## ORDERING INFORMATION

### SELECTION GUIDE

|                                                                              |            |            |                                       |          |           |          |           |
|------------------------------------------------------------------------------|------------|------------|---------------------------------------|----------|-----------|----------|-----------|
| <b>Example:</b>                                                              | <b>HL1</b> | <b>150</b> | <b>915</b>                            | <b>W</b> | <b>MA</b> | <b>B</b> | <b>00</b> |
| <b>Type</b>                                                                  |            |            |                                       |          |           |          |           |
| HL1 HiLok standard face to face - series 20                                  |            |            |                                       |          |           |          |           |
| HL2 HiLok f.t.f EN 558 T1 - series 25                                        |            |            |                                       |          |           |          |           |
| HL3 HiLok f.t.f EN 558 T1 - series 16                                        |            |            |                                       |          |           |          |           |
| <b>Size (DN)</b>                                                             |            |            |                                       |          |           |          |           |
| 50-900                                                                       |            |            |                                       |          |           |          |           |
| <b>Trim</b>                                                                  |            |            |                                       |          |           |          |           |
| See material trim table                                                      |            |            |                                       |          |           |          |           |
| <b>Body style</b>                                                            |            |            |                                       |          |           |          |           |
| W Wafer                                                                      |            |            |                                       |          |           |          |           |
| L Lugged                                                                     |            |            |                                       |          |           |          |           |
| <b>Flange connection</b>                                                     |            |            |                                       |          |           |          |           |
| 10                                                                           | PN 10      | M3         | Multi drill. PN 10/16                 |          |           |          |           |
| 16                                                                           | PN 16      | M4         | Multi drill. PN 10/16/A150            |          |           |          |           |
| 25                                                                           | PN 25      | M9         | Multi drill. PN 10/16/25/A150         |          |           |          |           |
| 40                                                                           | PN 40      | MA         | Multi drill. PN 10/16/25/40/A150      |          |           |          |           |
| A1                                                                           | ASME 150   | MB         | Multi drill. PN 10/16/25/40/A150/A300 |          |           |          |           |
| <b>Operation</b>                                                             |            |            |                                       |          |           |          |           |
| B Bare shaft                                                                 |            |            |                                       |          |           |          |           |
| <b>Variant</b>                                                               |            |            |                                       |          |           |          |           |
| 00 Standard (Any option other than standard is indicated by the option code. |            |            |                                       |          |           |          |           |

### MATERIAL TRIM TABLE

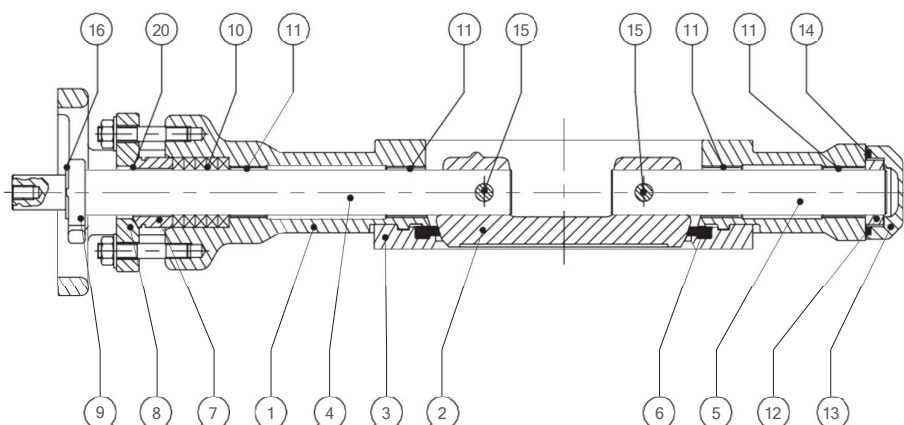
| Body                                            | Disc                       | Shaft           | Seat          | Bearing                | Shaft packing | Bottom cover packing | Trim code |
|-------------------------------------------------|----------------------------|-----------------|---------------|------------------------|---------------|----------------------|-----------|
| <b>General purpose trims</b>                    |                            |                 |               |                        |               |                      |           |
| Carbon steel                                    | Stainless steel            | Stainless steel | RTFE          | Carbon steel / PTFE    | Graphite      | Expanded graphite    | 908       |
| Carbon steel                                    | Stainless steel            | Stainless steel | Virgin PTFE   | Carbon steel / PTFE    | PTFE          | PTFE                 | 907       |
| Stainless steel                                 | Stainless steel            | Stainless steel | RTFE          | Stainless steel / PTFE | Graphite      | Expanded graphite    | 915       |
| Stainless steel                                 | Stainless steel            | Stainless steel | Virgin PTFE   | Stainless steel / PTFE | PTFE          | PTFE                 | 914*      |
| Stainless steel                                 | Stainless steel            | Stainless steel | RTFE          | Stainless steel / PTFE | LATTYflon®    | PTFE                 | 935       |
| Stainless steel                                 | Stainless steel            | Stainless steel | Virgin PTFE   | Stainless steel / PTFE | LATTYflon®    | PTFE                 | 960       |
| <b>Metal seated HT (high temperature) trims</b> |                            |                 |               |                        |               |                      |           |
| Carbon steel                                    | Stainless steel chrome pl. | Stainless steel | Metal HT      | Stainless steel        | Graphite      | Expanded graphite    | 909       |
| Stainless steel                                 | Stainless steel chrome pl. | Stainless steel | Metal HT      | Stainless steel        | Graphite      | Expanded graphite    | 916       |
| <b>Metal seated PP (pulp and paper) trims</b>   |                            |                 |               |                        |               |                      |           |
| Carbon steel                                    | Stainless steel chrome pl. | Stainless steel | Metal PP      | Carbon steel / PTFE    | Graphite      | Expanded graphite    | 910       |
| Stainless steel                                 | Stainless steel chrome pl. | Stainless steel | Metal PP      | Stainless steel / PTFE | Graphite      | Expanded graphite    | 917       |
| <b>Fire safe seated trims</b>                   |                            |                 |               |                        |               |                      |           |
| Carbon steel                                    | Stainless steel            | Stainless steel | Metal PP/RTFE | Carbon steel / PTFE    | Graphite      | Expanded graphite    | 911       |
| Stainless steel                                 | Stainless steel            | Stainless steel | Metal PP/RTFE | Stainless steel / PTFE | Graphite      | Expanded graphite    | 918       |

<sup>91</sup>LATTY is a registered trademark of Latty International S.A.

\*Trim 914 can be supplied with FDA approval. Indicate during order placement.

# KEYSTONE HILOK HIGH PERFORMANCE BUTTERFLY VALVES

## MATERIAL SPECIFICATIONS



### MATERIAL SPECIFICATIONS

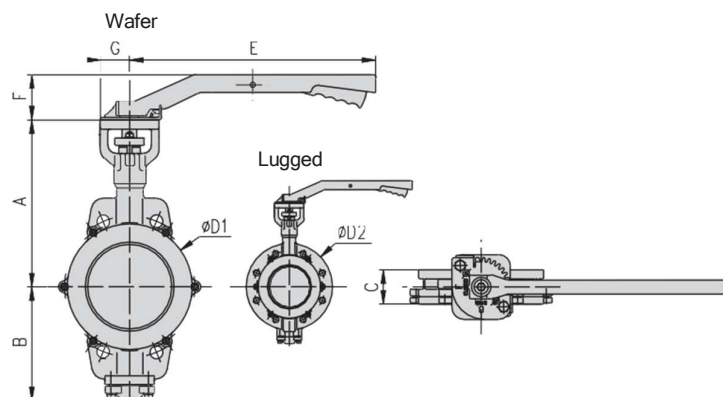
| Part | Name                   | Material                 | Material reference                   | Remark                                                |
|------|------------------------|--------------------------|--------------------------------------|-------------------------------------------------------|
| 1    | Body                   | Carbon steel             | EN GP 240 GH / A 216 Gr. WCB         | DIN 1.0619                                            |
|      |                        | Stainless steel          | EN GX5CrNiMo 19-11-2 / A351 Gr. CF8M | DIN 1.4408                                            |
| 2    | Disc                   | Stainless steel          | EN GX5CrNiMo 19-11-2 / A351 Gr. CF8M | DIN 1.4408                                            |
|      |                        | SS chrome plated         | EN GX5CrNiMo 19-11-2 / A351 Gr. CF8M | DIN 1.4408                                            |
| 3    | Retaining ring         | Carbon steel             | EN GP 240 GH / A 216 Gr. WCB         | DIN 1.0619                                            |
|      |                        | Stainless steel          | EN X5CrNiMo 19-11-2 / AISI 316       | DIN 1.4401                                            |
|      |                        | Stainless steel          | EN GX5CrNiMo 19-11-2 / A351 Gr. CF8M | DIN 1.4408                                            |
| 4-5  | Stem                   | Stainless steel          | EN X20Cr13 / AISI 420                | DIN 1.4021                                            |
|      |                        | Stainless steel          | EN X5CrNiCuNb 16-4 / A564 Gr.630     | DIN 1.4542                                            |
| 6    | Seat                   | Reinforced PTFE          |                                      | 15% graphite filled TFE                               |
|      |                        | FS PP/RTFE               |                                      | 15% graphite filled TFE                               |
|      |                        | PTFE                     |                                      | White virgin PTFE                                     |
|      |                        | RTFE lip seat            |                                      | 25% stainless steel filled TFE                        |
|      |                        | Metal PP                 | ENX2CrNiMo 17-2-2 / AISI 316L        | DIN 1.4404                                            |
|      |                        | Metal HT                 | ENX2CrNiMo 17-2-2 / AISI 316L        | DIN 1.4404                                            |
| 7    | Packing gland          | Stainless steel          | EN X12Cr13 / AISI 410                | DIN 1.4406                                            |
|      |                        | Stainless steel          | EN X2CrNi 19-11 / AISI 304L          | DIN 1.4306                                            |
| 8    | Gland bridge           | Carbon steel             | EN C22E / AISI 105                   | DIN 1.1149                                            |
|      |                        | Stainless steel          | EN X5CrNiMo 19-11-2 / AISI 316       | DIN 1.4401                                            |
| 9    | Position indicator     | Carbon steel             | EN C22E / AISI 105                   | DIN 1.1149                                            |
|      |                        | Stainless steel          | EN X5CrNiMo 19-11-2 / AISI 316       | DIN 1.4401                                            |
| 10   | Shaft packing          | Expanded graphite        |                                      |                                                       |
|      |                        | Braided PTFE             |                                      |                                                       |
|      |                        | LATTYflon®               | 3260LM                               |                                                       |
| 11   | Bearing                | Carbon steel + PTFE      |                                      | In combination with a CS body                         |
|      |                        | Stainless steel + PTFE   |                                      | In combination with a SS body                         |
|      |                        | Stainless steel nitrided |                                      | In combination with a SS & CS body with metal HT seat |
| 12   | Disc locating shoulder | Stainless steel          | EN X2CrNi 19-11 / AISI 304L          | DIN 1.4306                                            |
| 13   | Bottom end cover       | Carbon steel             | EN C22E / AISI 105                   | DIN 1.1149                                            |
|      |                        | Stainless steel          | EN X5CrNiMo 19-11-2 / AISI 316       | DIN 1.4401                                            |
|      |                        | Stainless steel          | EN GX5CrNiMo 19-11-2 / A351 Gr. CF8M | DIN 1.4408                                            |
| 14   | Bottom cover packing   | PTFE                     |                                      |                                                       |
|      |                        | Expanded graphite        |                                      |                                                       |
| 15   | Disc pin               | Stainless steel          | ENX2CrNiMo 17-12-2 / AISI 316L       | DIN 1.4404                                            |
| 16   | Circlips               | Carbon steel             |                                      | In combination with a CS body                         |
|      |                        | Stainless steel          |                                      | In combination with a SS body                         |
| 17   | Indication plate       | Stainless steel          |                                      |                                                       |
| 18   | Key                    | Carbon steel             | EN C35E / AISI 1038                  | DIN 1.1180                                            |
| 19   | Bolts                  | Galvanized steel         |                                      | In combination with a CS body                         |
|      |                        | Stainless steel          | A2/70, A4/70, A4/80                  | DIN 1.4301                                            |
| 20   | Anti blow out ring     | Stainless steel          |                                      | In combination with a SS body                         |

# KEYSTONE HILOK HIGH PERFORMANCE BUTTERFLY VALVES

## GENERAL DIMENSIONS WITH HAND LEVER

### NOTCHED LEVER 'LC'

MATERIAL: ALUMINIUM



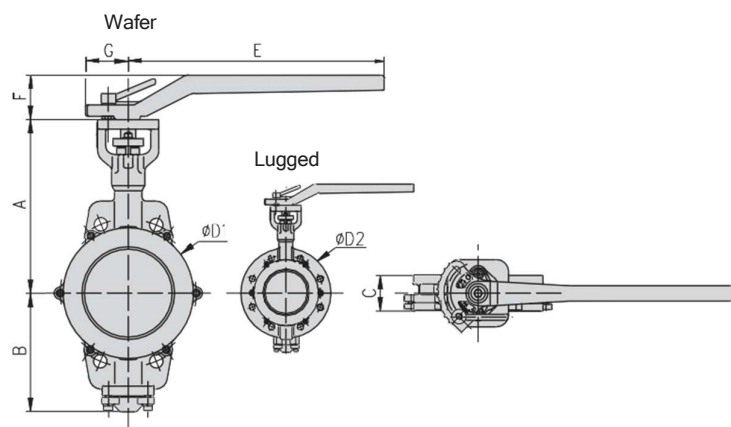
| Size       | Number of locking positions |
|------------|-----------------------------|
| DN 50-80   | 9                           |
| DN 100-125 | 9                           |
| DN 150     | 7                           |

### DIMENSIONS (mm)

| DN<br>(mm) | NPS<br>(inch) | Lever | A   | B   | C  | ØD1 | ØD2 | E   | F  | G  | Weights (kg) |        |
|------------|---------------|-------|-----|-----|----|-----|-----|-----|----|----|--------------|--------|
|            |               |       |     |     |    |     |     |     |    |    | Wafer        | Lugged |
| 50         | 2             | LC 4  | 175 | 102 | 43 | 97  | 153 | 230 | 69 | 45 | 3.6          | 5.3    |
| 65         | 2½            | LC 4  | 191 | 116 | 46 | 117 | 173 | 230 | 69 | 45 | 5.0          | 7.4    |
| 80         | 3             | LC 4  | 197 | 122 | 46 | 130 | 190 | 230 | 69 | 45 | 5.4          | 8.2    |
| 100        | 4             | LC 12 | 233 | 149 | 52 | 158 | 225 | 320 | 75 | 52 | 8.9          | 14.4   |
| 125        | 5             | LC 12 | 245 | 160 | 56 | 188 | 261 | 320 | 75 | 52 | 10.5         | 17.7   |
| 150        | 6             | LC 20 | 283 | 193 | 56 | 212 | 294 | 420 | 75 | 52 | 13.5         | 23.5   |

### LOCKABLE LEVER 'LF'

MATERIAL: DUCTILE IRON



### DIMENSIONS (mm)

| DN<br>(mm) | NPS<br>(inch) | Lever | A   | B   | C  | ØD1 | ØD2 | E   | F  | G  | Weights (kg) |        |
|------------|---------------|-------|-----|-----|----|-----|-----|-----|----|----|--------------|--------|
|            |               |       |     |     |    |     |     |     |    |    | Wafer        | Lugged |
| 50         | 2             | LF 4  | 175 | 102 | 43 | 97  | 153 | 230 | 69 | 45 | 4.1          | 5.8    |
| 65         | 2½            | LF 4  | 191 | 116 | 46 | 117 | 173 | 230 | 69 | 45 | 5.5          | 7.9    |
| 80         | 3             | LF 4  | 197 | 122 | 46 | 130 | 190 | 230 | 69 | 45 | 5.9          | 8.7    |
| 100        | 4             | LF 12 | 233 | 149 | 52 | 158 | 225 | 320 | 75 | 66 | 9.8          | 15.3   |
| 125        | 5             | LF 12 | 245 | 160 | 56 | 188 | 261 | 320 | 75 | 66 | 11.5         | 18.6   |
| 150        | 6             | LF 20 | 283 | 193 | 56 | 212 | 294 | 420 | 75 | 69 | 14.5         | 24.5   |
| 200        | 8             | LF 20 | 307 | 217 | 60 | 267 | 365 | 420 | 75 | 69 | 24.0         | 35.7   |

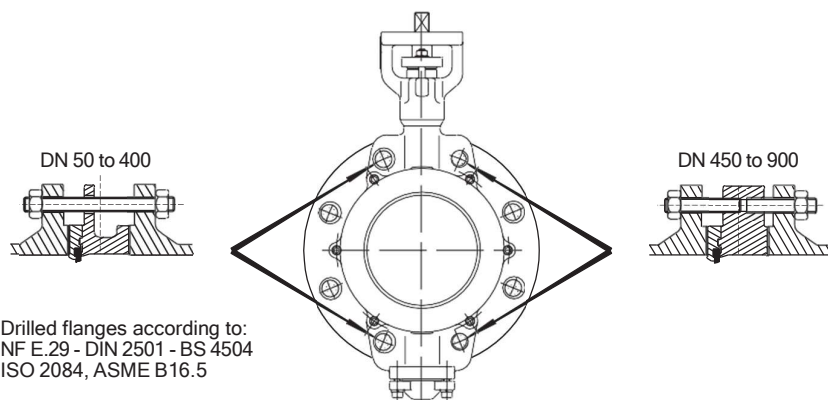
### NOTES

- Dimensions in mm, weights in kg.
- Dimensions and weights are given as guide.
- C: Face-to-face according EN 558-1, series 20 indicated.

# KEYSTONE HILOK HIGH PERFORMANCE BUTTERFLY VALVES

## BOLTING DIMENSIONS

### WAFER TYPE



| DN  | Nb. | Length |       |       |       |
|-----|-----|--------|-------|-------|-------|
|     |     | PN 10  | PN 16 | PN 20 | PN 25 |
| 450 | 4x2 | 140    | 140   | 160   | 150   |
| 500 | 4x2 | 140    | 160   | 160   | 160   |
| 600 | 4x2 | 160    | 175   | 185   | 185   |
| 700 | 4x2 | 140    | 175   | 185   | 185   |

|                             | DN   |      |      |      |      |      |      |      |      |     |     |          |          |          |     |
|-----------------------------|------|------|------|------|------|------|------|------|------|-----|-----|----------|----------|----------|-----|
|                             | 50   | 65   | 80   | 100  | 125  | 150  | 200  | 250  | 300  | 350 | 400 | 450      | 500      | 600      | 700 |
| <b>Nr of thru bolts</b>     |      |      |      |      |      |      |      |      |      |     |     |          |          |          |     |
| PN 10                       | 4    | 4    | 8    | 8    | 8    | 8    | 8    | 12   | 12   | 16  | 16  | *16      | *16      | *16      | *20 |
| PN 16                       | 4    | 4    | 8    | 8    | 8    | 8    | 12   | 12   | 12   | 16  | 16  | *16      | *16      | *16      | *20 |
| PN 20                       | 4    | 4    | 4    | 8    | 8    | 8    | 8    | 12   | 12   | 12  | 16  | *12      | *16      | *16      | *24 |
| PN 25                       | 4    | 8    | 8    | 8    | 8    | 8    | 12   | 12   | 16   | 16  | 16  | *16      | *16      | *16      | *20 |
| PN 40                       | 4    | 8    | 8    | 8    | 8    | 8    | 12   | 12   | 16   | 16  | 16  | *16      | *16      | *16      | *20 |
| PN 50                       | 8    | 8    | 8    | 8    | 8    | 12   | 12   | 16   | 16   | 20  | 20  | *20      | *20      | *20      | *24 |
| ASME 150                    | 4    | 4    | 4    | 8    | 8    | 8    | 8    | 12   | 12   | 12  | 16  | *12      | *16      | *16      | *24 |
| <b>Ø of thru bolts</b>      |      |      |      |      |      |      |      |      |      |     |     |          |          |          |     |
| PN 10                       | M16  | M16  | M16  | M16  | M16  | M20  | M20  | M20  | M20  | M20 | M24 | M24      | M24      | M27      | M27 |
| PN 16                       | M16  | M16  | M16  | M16  | M16  | M20  | M20  | M24  | M24  | M24 | M27 | M27      | M30      | M33      | M33 |
| PN 20                       | M16  | M16  | M16  | M16  | M20  | M20  | M20  | M24  | M24  | M27 | M27 | M30      | M30      | M33      | M33 |
| PN 25                       | M16  | M16  | M16  | M20  | M24  | M24  | M24  | M27  | M27  | M30 | M33 | M33      | M33      | M36      | M39 |
| PN 40                       | M16  | M16  | M16  | M20  | M24  | M24  | M27  | M30  | M30  | M33 | M36 | M36      | M39      | M45      | M45 |
| PN 50                       | M16  | M20  | M20  | M20  | M20  | M20  | M24  | M27  | M30  | M30 | M33 | M33      | M33      | M39      | M42 |
| ASME 150 (UNC)              | 5/8" | 5/8" | 5/8" | 5/8" | 3/4" | 3/4" | 3/4" | 7/8" | 7/8" | 1"  | 1"  | **1 1/8" | **1 1/8" | **1 1/4" | -   |
| <b>Length of thru bolts</b> |      |      |      |      |      |      |      |      |      |     |     |          |          |          |     |
| PN 10                       | 120  | 120  | 120  | 130  | 130  | 150  | 150  | 170  | 170  | 190 | 230 | 265      | 265      | 310      | 310 |
| PN 16                       | 120  | 120  | 120  | 130  | 130  | 150  | 150  | 170  | 190  | 235 | 250 | 270      | 290      | 340      | 340 |
| PN 20                       | 120  | 120  | 130  | 130  | 150  | 150  | 170  | 180  | 180  | 200 | 235 | 290      | 320      | 360      | 390 |
| PN 25                       | 120  | 120  | 130  | 150  | 150  | 170  | 170  | 200  | 200  | 240 | 250 | 280      | 310      | 360      | 360 |
| PN 40                       | 120  | 120  | 130  | 150  | 150  | 170  | 180  | 240  | 240  | 250 | 300 | 310      | 360      | 400      | 400 |
| PN 50                       | 120  | 130  | 150  | 150  | 170  | 170  | 190  | 220  | 240  | 240 | 280 | 310      | 340      | 390      | 435 |
| ASME 150                    | 120  | 120  | 130  | 130  | 150  | 150  | 170  | 180  | 180  | 200 | 235 | 290      | 320      | 360      | 390 |

\* in the 4 lugs / in addition to these thru bolts

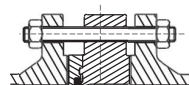
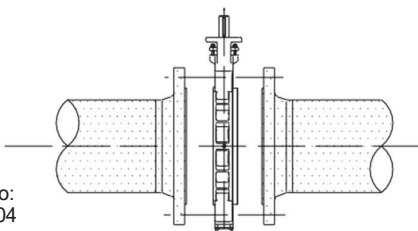
\*\* bolt size threading: up to and including 1" UNC  
≥ 1 1/8" 8 UN. UNC on request only

# KEYSTONE HILOK HIGH PERFORMANCE BUTTERFLY VALVES

## BOLTING DIMENSIONS

### LUGGED TYPE

Drilled flanges according to:  
NF E.29 - DIN 2501 - BS 4504  
ISO 2084, ASME B16.5



DN 50 to 400



DN 450 to 900

|                             | DN   |      |      |      |      |      |      |      |      |     |     |          |          |          |      |
|-----------------------------|------|------|------|------|------|------|------|------|------|-----|-----|----------|----------|----------|------|
|                             | 50   | 65   | 80   | 100  | 125  | 150  | 200  | 250  | 300  | 350 | 400 | 450      | 500      | 600      | 700  |
| <b>Nr of thru bolts</b>     |      |      |      |      |      |      |      |      |      |     |     |          |          |          |      |
| PN 10                       | 4    | 4    | 8    | 8    | 8    | 8    | 8    | 12   | 12   | 16  | 16  | 20x2     | 20x2     | 20x2     | 24x2 |
| PN 16                       | 4    | 4    | 8    | 8    | 8    | 8    | 12   | 12   | 12   | 16  | 16  | 20x2     | 20x2     | 20x2     | 24x2 |
| PN 20                       | 4    | 4    | 4    | 8    | 8    | 8    | 8    | 12   | 12   | 12  | 16  | 16x2     | 20x2     | 20x2     | 28x2 |
| PN 25                       | 4    | 8    | 8    | 8    | 8    | 8    | 12   | 12   | 16   | 16  | 16  | 20x2     | 20x2     | 20x2     | 24x2 |
| PN 40                       | 4    | 8    | 8    | 8    | 8    | 8    | -    | -    | -    | -   | -   | -        | -        | -        | -    |
| ASME 150                    | 4    | 4    | 4    | 8    | 8    | 8    | 8    | 12   | 12   | 12  | 16  | 16x2     | 20x2     | 20x2     | 28x2 |
| <b>Ø of thru bolts</b>      |      |      |      |      |      |      |      |      |      |     |     |          |          |          |      |
| PN 10                       | M16  | M16  | M16  | M16  | M16  | M20  | M20  | M20  | M20  | M20 | M24 | M24      | M24      | M27      | M27  |
| PN 16                       | M16  | M16  | M16  | M16  | M16  | M20  | M20  | M24  | M24  | M24 | M27 | M27      | M30      | M33      | M33  |
| PN 20                       | M16  | M16  | M16  | M16  | M20  | M20  | M20  | M24  | M24  | M27 | M27 | M30      | M30      | M33      | M33  |
| PN 25                       | M16  | M16  | M16  | M20  | M24  | M24  | M24  | M27  | M27  | M30 | M33 | M33      | M33      | M36      | M39  |
| PN 40                       | M16  | M16  | M16  | M20  | M24  | M24  | -    | -    | -    | -   | -   | -        | -        | -        | -    |
| ASME 150 (UNC)              | 5/8" | 5/8" | 5/8" | 5/8" | 3/4" | 3/4" | 3/4" | 7/8" | 7/8" | 1"  | 1"  | **1 1/8" | **1 1/8" | **1 1/4" | -    |
| <b>Length of thru bolts</b> |      |      |      |      |      |      |      |      |      |     |     |          |          |          |      |
| PN 10                       | 120  | 120  | 120  | 130  | 130  | 150  | 150  | 170  | 170  | 190 | 230 | 140      | 140      | 160      | 170  |
| PN 16                       | 120  | 120  | 120  | 130  | 130  | 150  | 150  | 170  | 190  | 235 | 250 | 140      | 160      | 175      | 175  |
| PN 20                       | 120  | 120  | 130  | 130  | 150  | 150  | 170  | 180  | 180  | 200 | 235 | 160      | 160      | 185      | 210  |
| PN 25                       | 120  | 120  | 130  | 150  | 150  | 170  | 170  | 200  | 200  | 240 | 250 | 150      | 160      | 185      | 185  |
| PN 40                       | 120  | 120  | 130  | 150  | 150  | 170  | -    | -    | -    | -   | -   | -        | -        | -        | -    |
| ASME 150                    | 120  | 120  | 130  | 130  | 150  | 150  | 170  | 180  | 180  | 200 | 235 | 160      | 160      | 185      | 210  |

\*\* bolt size threading: up to and including 1" UNC  
≥ 1 1/8" 8 UN. UNC on request only