

## CARBON STEEL TRIPLE OFFSET LUG BUTTERFLY VALVE PN40

Carbon steel triple offset butterfly valve lug PN40 for steam, heating, geothermics, industrial cold, shipbuilding and petrochemical.

Butterfly valve with firesafe certificate ISO 10497 to reduce risks in case of fire.

Fugitive emission according to EN 15848-1 :2006 C Class for an excellent tightness on the stem and to prevent external leakage.

Compatible with explosive atmosphere, ATEX Zone 1&21 and Zone 2&22.

Handling possible with gearbox.

Thanks to the ISO 5211 plate, an actuator can be installed on the valve.



**Certificate**  
**3.1**



**Size :** DN100 to DN300

**Connection :** Between flanges PN40

**Min Temperature :** -39°C

**Max Temperature :** +349°C

**Max Pressure :** 40 Bars

**Specifications :** Fugitive emissions

ISO 5211 mounting pad

Fire safe ISO 10497:2010

ATEX

100% tightness

**Materials :** Carbon steel ASTM A216 WCB

## CARBON STEEL TRIPLE OFFSET LUG BUTTERFLY VALVE PN40

### SPECIFICATIONS :

- 100% tightness
- Lug type
- Between PN40 flanges
- Triple offset
- Bidirectional with preferential flow direction indicated by the arrow (30 bars maximum if the flow is not according to the arrow)
- Fire safe according to ISO 10497 : 2010
- ISO 5211 mounting pad
- Stainless steel CF8M disc
- Full crossing stem
- **Bare shaft (possible with gear box Ref.1191)**
- Inorganic zinc rich primer, gray color, 10 µm thickness
- Finish painting heat resisting aluminum Silver color RAL 9006, 30 µm thickness

### USE :

- Heating, geothermics, industrial cold, shipbuilding, petrochemical
- Steam : 30 bars maximum
- Min and max Temperature Ts : - 39°C to + 349°C
- Max Pressure Ps : 40 bars ( see graph ), 30 bars if valve installed in reverse flow direction indicated by the arrow
- When using at dead end of pipeline, reverse preferential flow direction
- Max pressure at dead end of pipeline is 30 bars

### RANGE :

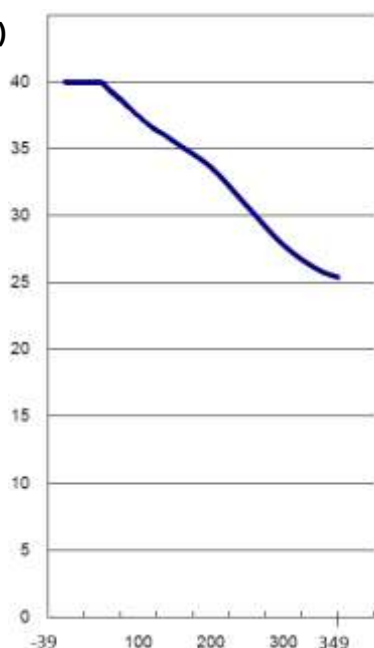
- Triple offset Lug butterfly valve type PN40 **bare shaft Ref. 1118** DN 100 to DN 300
- Gear box **Ref. 1191** from DN 100 to DN 300

### ENDS :

- Between PN40 flanges

### PRESSURE / TEMPERATURE GRAPH :

**PRESSURE (Bar)**



**TEMPERATURE (°C)**

| Relation Pressure / Temperature |                |
|---------------------------------|----------------|
| Temperature (°C)                | Pressure (Bar) |
| 0                               | 40             |
| 50                              | 40             |
| 100                             | 37.4           |
| 150                             | 35.5           |
| 200                             | 33.6           |
| 250                             | 30.7           |
| 300                             | 27.8           |
| 349                             | 25.9           |

**CARBON STEEL TRIPLE OFFSET LUG BUTTERFLY VALVE PN40**

**TORQUE VALUE ( in Nm with safety coefficient of 30 % included ) :**

| DN                        | 100 | 150 | 200  | 250  | 300  |
|---------------------------|-----|-----|------|------|------|
| Torque ( Nm ) at 12.5 Bar | 226 | 429 | 504  | 930  | 1317 |
| Torque ( Nm ) at 25 Bar   | 226 | 429 | 529  | 930  | 1354 |
| Torque ( Nm ) at 40 Bar   | 326 | 719 | 1058 | 1826 | 2707 |

**GEARBOX SPECIFICATIONS :**

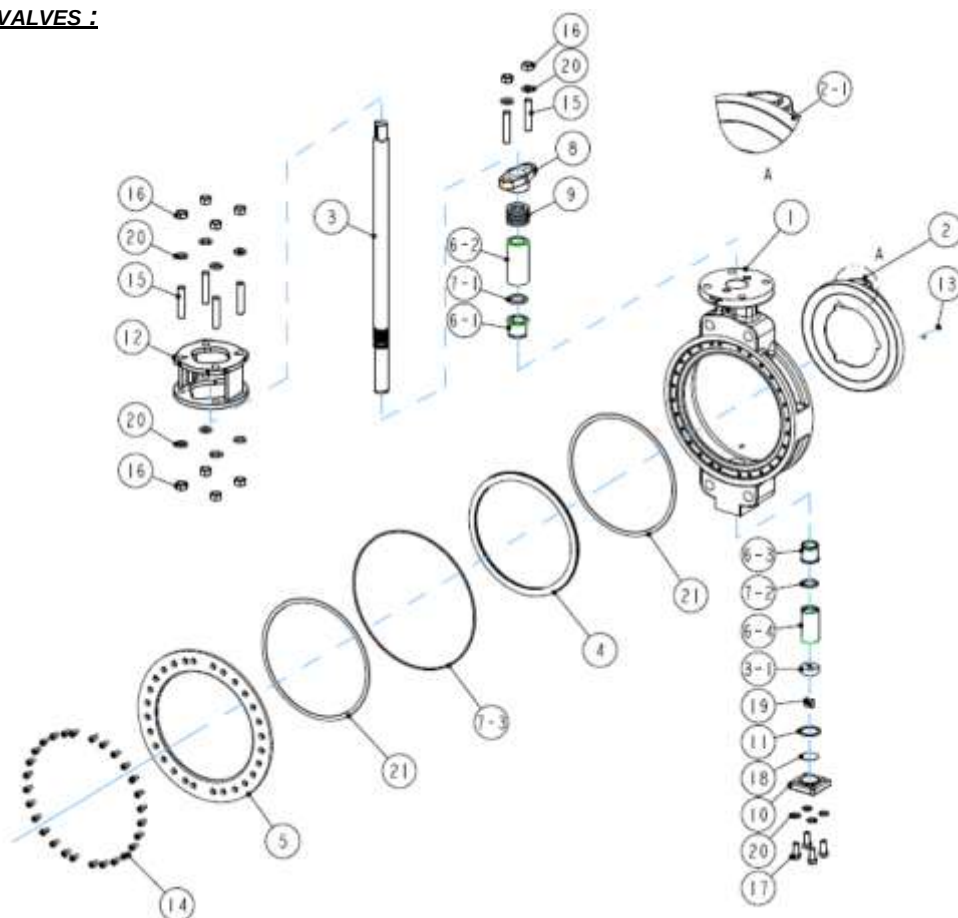
| DN                                      | 100     | 150     | 200     | 250     | 300     |
|-----------------------------------------|---------|---------|---------|---------|---------|
| Ref.                                    | 1191003 | 1191004 | 1191005 | 1191006 | 1191007 |
| Ratio factor                            | 1 : 32  | 1 : 32  | 1 : 36  | 1 : 62  | 1 : 70  |
| Number of cycles for opening or closing | 8       | 8       | 9       | 16      | 18      |
| Input torque ( Nm )                     | 61      | 61      | 109     | 127     | 225     |
| Output torque ( Nm )                    | 490     | 490     | 980     | 1960    | 3922    |

**FLOW COEFFICIENT Kv ( m3 / h ) :**

| DN                      |      | 100   | 150   | 200    | 250    | 300    |
|-------------------------|------|-------|-------|--------|--------|--------|
| Percent of rated travel | 10%  | 20,7  | 61,2  | 105,2  | 165,5  | 252,6  |
|                         | 20%  | 31,0  | 92,2  | 157,8  | 248,3  | 378,4  |
|                         | 30%  | 45,7  | 138,8 | 237,1  | 372,4  | 567,2  |
|                         | 40%  | 76,7  | 231,0 | 394,8  | 620,7  | 945,7  |
|                         | 50%  | 127,6 | 385,3 | 657,8  | 1035,3 | 1576,7 |
|                         | 60%  | 143,1 | 431,0 | 736,2  | 1159,5 | 1765,5 |
|                         | 70%  | 178,4 | 538,8 | 920,7  | 1449,1 | 2207,8 |
|                         | 80%  | 217,2 | 654,3 | 1117,2 | 1759,5 | 2680,2 |
|                         | 90%  | 268,1 | 808,6 | 1380,2 | 2173,3 | 3311,2 |
|                         | 100% | 255,2 | 769,8 | 1314,7 | 2069,8 | 3153,4 |

**CARBON STEEL TRIPLE OFFSET LUG BUTTERFLY VALVE PN40**

**MATERIALS VALVES :**



| Item | Designation         | Materials                     |
|------|---------------------|-------------------------------|
| 1    | Body                | ASTM A216 WCB                 |
| 2    | Disc                | ASTM A351 CF8M                |
| 2-1  | Disc seat           | Stellite Gr.6 Weld overlay    |
| 3    | Shaft               | UNS S32205                    |
| 3-1  | Shaft stop          |                               |
| 4*   | Laminated seat      | A479 XM-19 + Graphite         |
| 5    | Retainer            | ASTM A351 CF8                 |
| 6-1* | Bushing             | AISI 316 + RTFE               |
| 6-2* |                     |                               |
| 6-3* |                     |                               |
| 6-4* |                     |                               |
| 7-1* | Gasket              | Graphite                      |
| 7-2* |                     |                               |
| 7-3* |                     |                               |
| 8    | Gland               | ASTM A351 CF8                 |
| 9*   | Gland packing       | Graphite                      |
| 10   | Bottom cover        | ASTM A216 WCB                 |
| 11*  | Bottom cover gasket | Graphite                      |
| 12   | Yoke                | Ductile iron A536 Gr.65-45-12 |

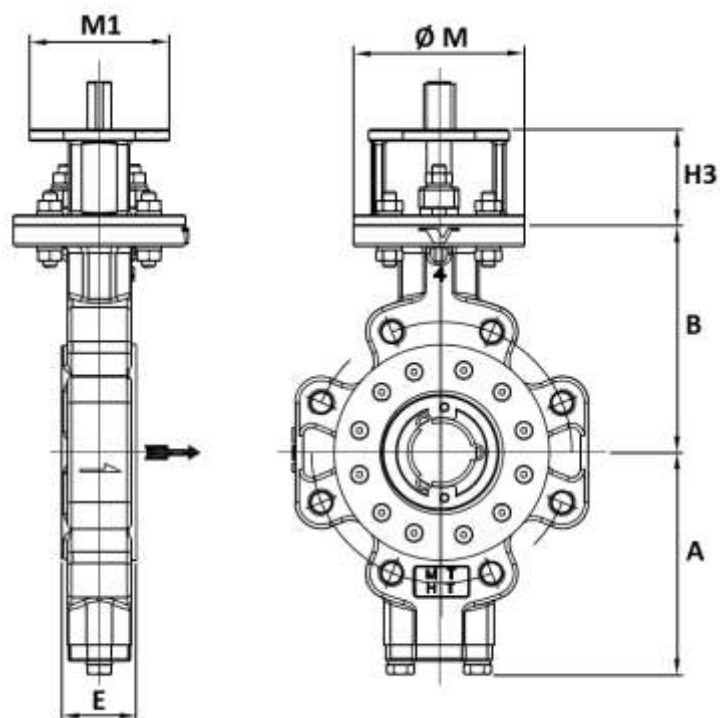
| Item | Designation   | Materials       |
|------|---------------|-----------------|
| 13*  | Stop stud     | A193 B8M        |
| 14   | Socket bolt   | A193 B8         |
| 15   | Stud          |                 |
| 16   | Nut           | A194 8          |
| 17   | Bolt          | A193 B8         |
| 18*  | Lock plate    | AISI 316 + RTFE |
| 19   | Socket bolt   | A193 B8         |
| 20   | Spring washer | A240 304        |
| 21*  | Gasket        | Graphite        |

( \* : spare parts )

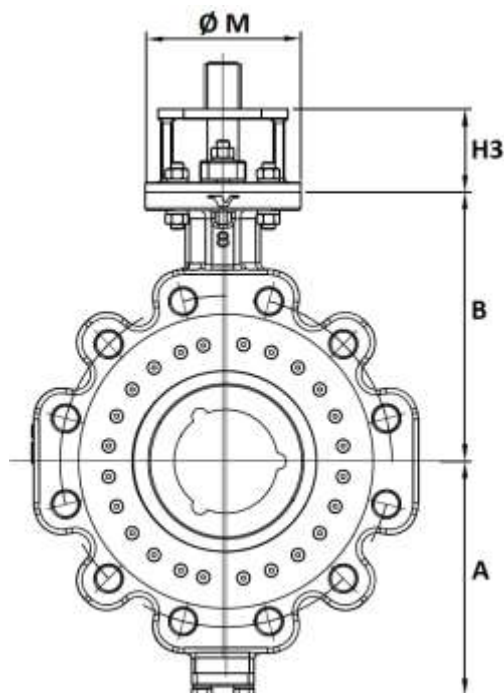
**CARBON STEEL TRIPLE OFFSET LUG BUTTERFLY VALVE PN40**

**VALVES SIZE DN100 - 200 ( in mm ) :**

**DN 100 – 150**



**DN200**

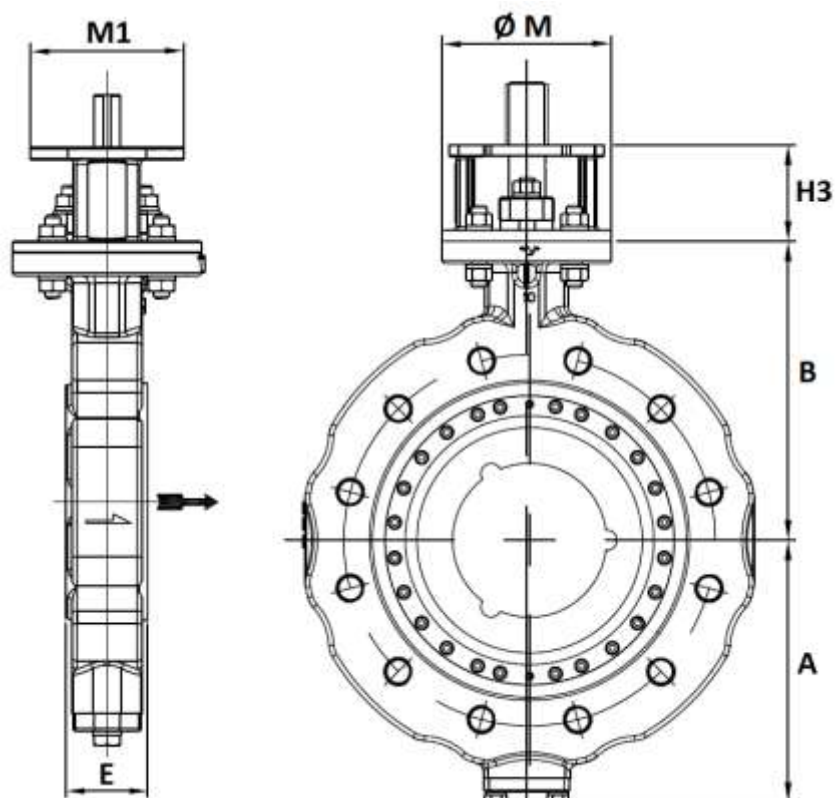


| DN             | 100     | 150     | 200     |
|----------------|---------|---------|---------|
| E              | 54      | 61      | 75      |
| A              | 162     | 197     | 227     |
| B              | 165     | 215     | 260     |
| H3             | 70      | 70      | 80      |
| Ø M            | 125     | 125     | 150     |
| M1             | 102     | 102     | 125     |
| Weight (in Kg) | 15      | 22      | 50      |
| Ref.           | 1118100 | 1118150 | 1118200 |

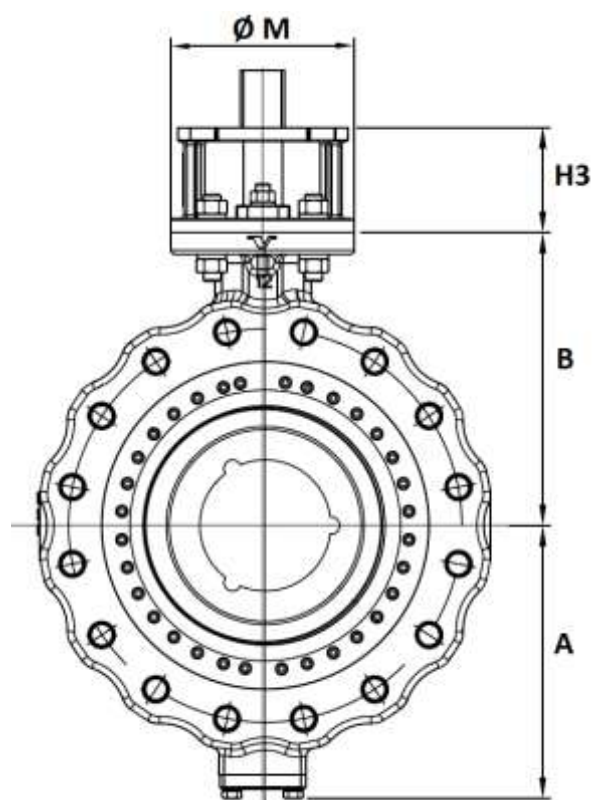
**CARBON STEEL TRIPLE OFFSET LUG BUTTERFLY VALVE PN40**

**VALVES SIZE DN250 - 300 ( in mm ) :**

**DN 250**



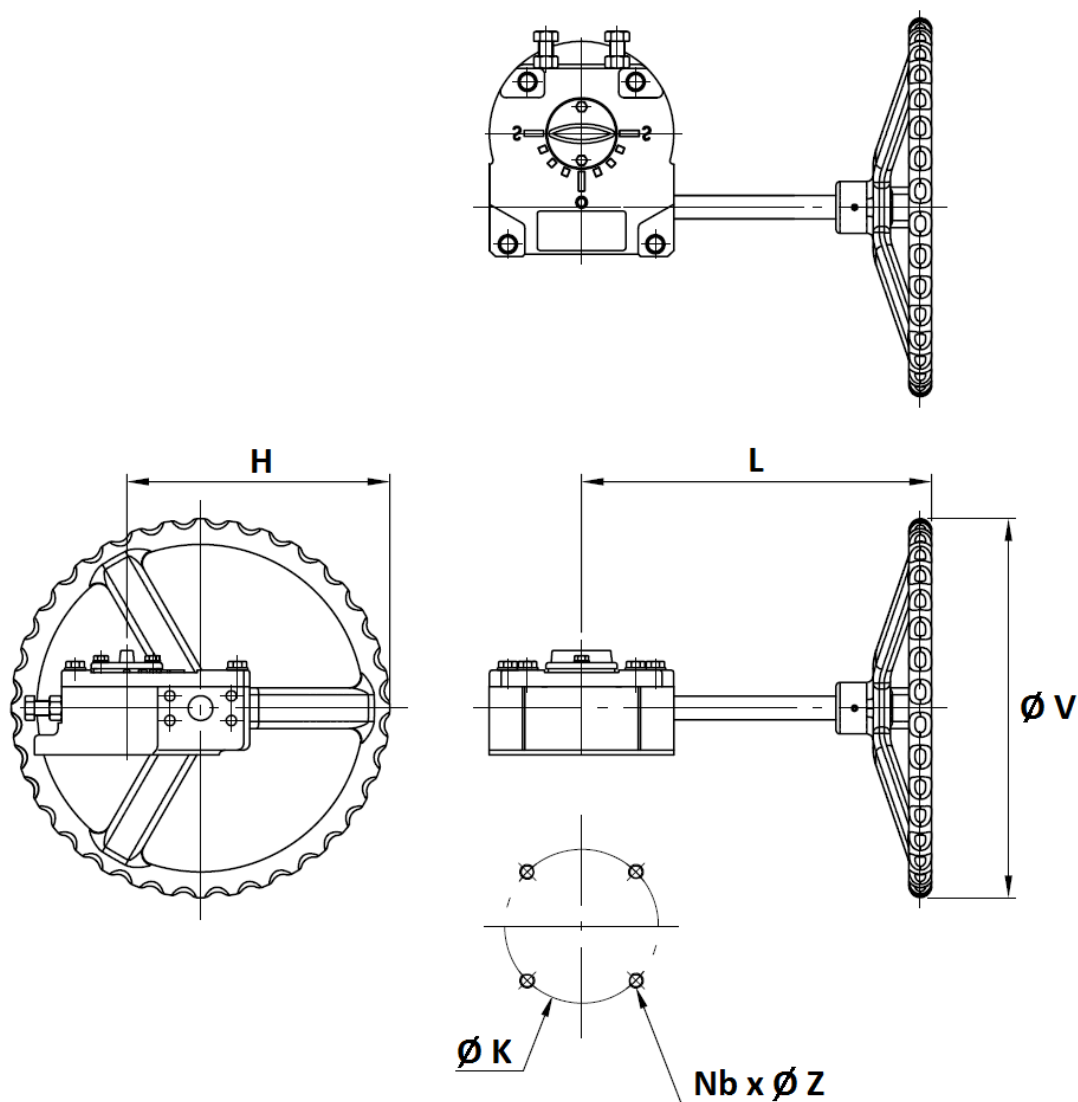
**DN300**



| DN             | 250     | 300     |
|----------------|---------|---------|
| E              | 85      | 94      |
| A              | 271     | 314     |
| B              | 310     | 335     |
| H3             | 100     | 120     |
| Ø M            | 175     | 210     |
| M1             | 160     | 195     |
| Weight (in Kg) | 91      | 131     |
| Ref.           | 1118250 | 1118300 |

**CARBON STEEL TRIPLE OFFSET LUG BUTTERFLY VALVE PN40**

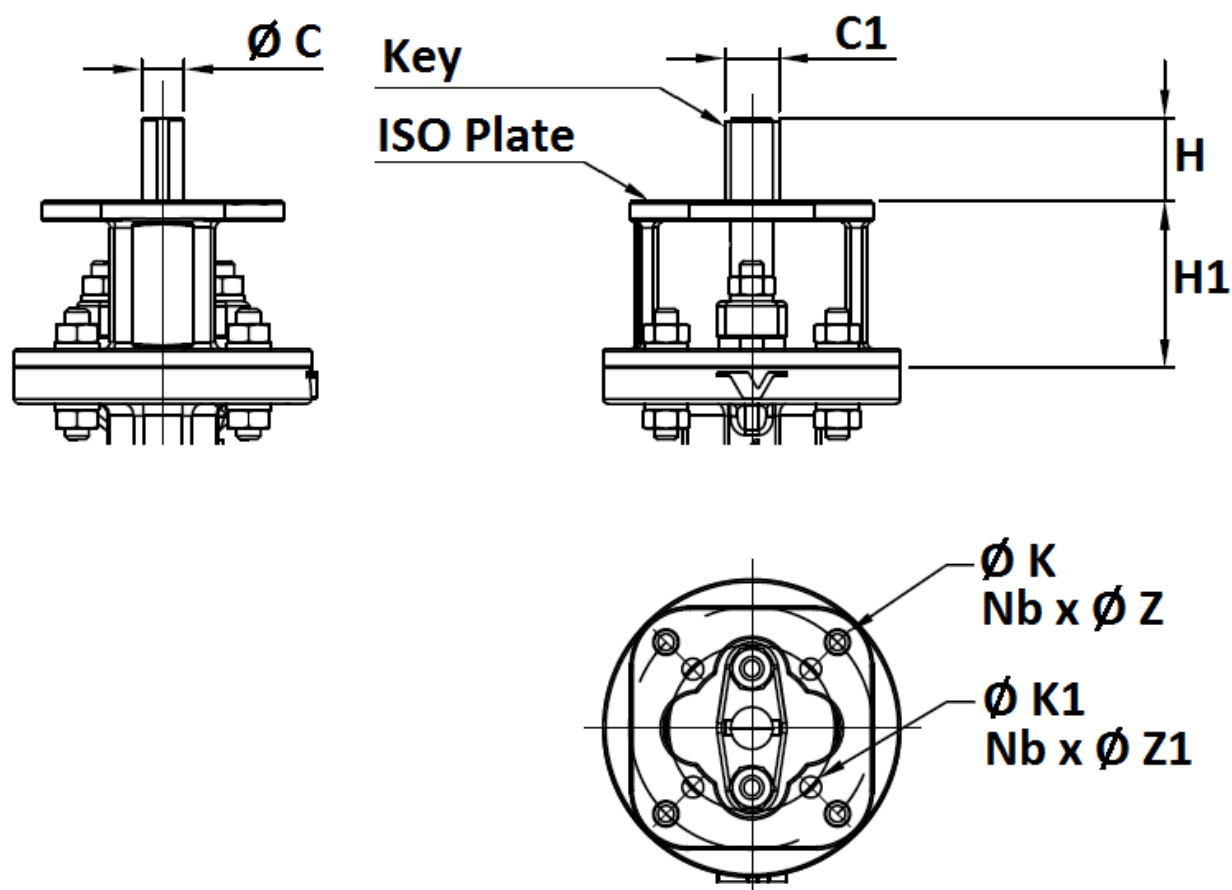
**GEAR BOX SIZE :**



| DN             | 100     | 150     | 200     | 250     | 300     |
|----------------|---------|---------|---------|---------|---------|
| L              | 212     | 285     | 341     | 319     |         |
| H              | 151     | 215     | 284     | 323     |         |
| Ø V            | 200     | 310     | 400     | 400     |         |
| Ø K            | 102     | 125     | 140     | 165     |         |
| ISO            | F10     | F12     | F14     | F16     |         |
| N x Ø Z        | 4 x M10 | 4 x M12 | 4 x M16 | 4 x M20 |         |
| Weight (in Kg) | 12      | 14      | 16      | 35      |         |
| Ref.           | 1191003 | 1191004 | 1191005 | 1191006 | 1191007 |

**CARBON STEEL TRIPLE OFFSET LUG BUTTERFLY VALVE PN40**

ISO PLATE AND STEM SIZE (in mm) :

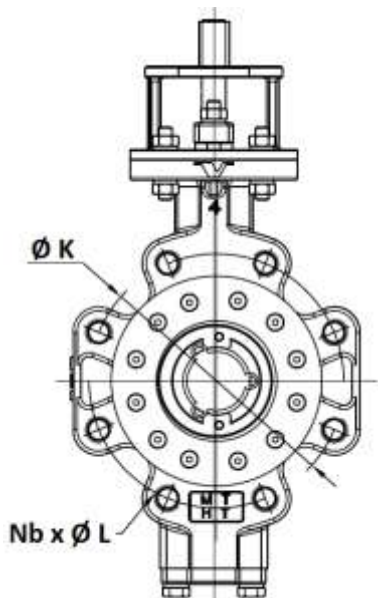


| DN      | 100    | 150    | 200    | 250    | 300    |
|---------|--------|--------|--------|--------|--------|
| Ø C     | 17.9   | 21.85  | 29.85  | 37.7   | 44.7   |
| C1      | 22.9   | 27.85  | 35.85  | 43.7   | 50.7   |
| H       | 35     | 45     | 45     | 65     | 65     |
| H1      | 70     | 70     | 80     | 100    | 120    |
| Key     | 6x6x2  | 8x8x2  | 8x8x2  | 10x8x2 | 12x8x2 |
| Ø K     | 102    | 102    | 125    | 140    | 165    |
| ISO     | F10    | F10    | F12    | F14    | F16    |
| N x Ø Z | 4 x 11 | 4 x 11 | 4 x 14 | 4 x 18 | 4 x 22 |
| Ø K1    | 70     | 70     | 102    | 125    | 140    |
| ISO1    | F07    | F07    | F10    | F12    | F14    |
| NxØZ1   | 4 x 9  | 4 x 9  | 4 x 11 | 4 x 14 | 4 x 18 |

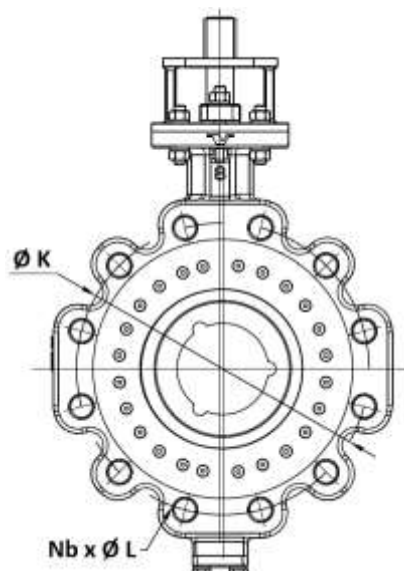
**CARBON STEEL TRIPLE OFFSET LUG BUTTERFLY VALVE PN40**

SIZE FOR FLANGES CONNECTION PN40 ( in mm ) :

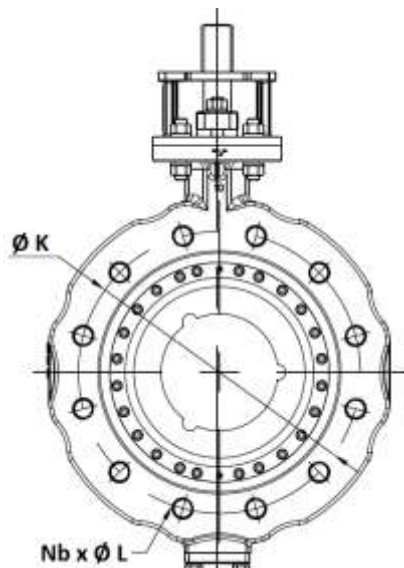
**D100-150**



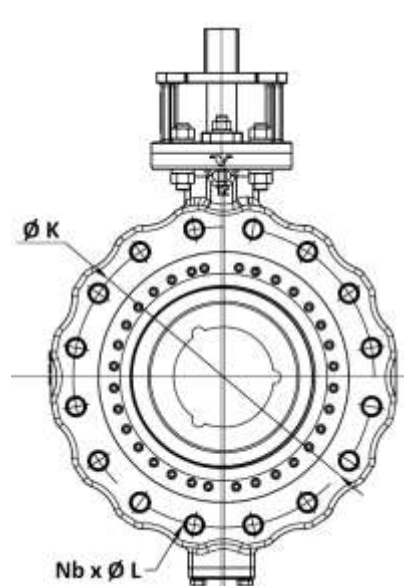
**DN200**



**DN250**



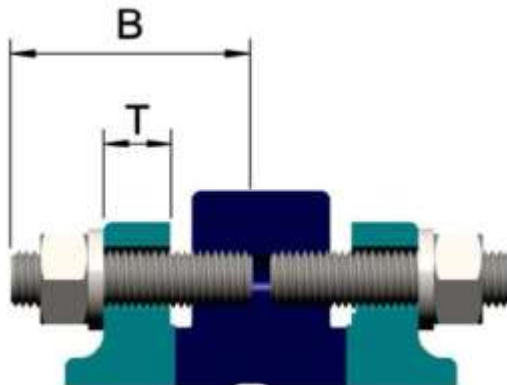
**DN300**



| DN       | 100         | 150       | 200        | 250          | 300          |
|----------|-------------|-----------|------------|--------------|--------------|
| Ø K      | 190         | 250       | 320        | 385          | 450          |
| Nb x Ø L | 8 x M20x2.5 | 8 x M24x3 | 12 x M27x3 | 12 x M30x3.5 | 16 x M30x3.5 |

**CARBON STEEL TRIPLE OFFSET LUG BUTTERFLY VALVE PN40**

**BOLTING SIZE (in mm, not provided) :**



| DN        | 100     | 150   | 200   | 250     | 300     |
|-----------|---------|-------|-------|---------|---------|
| Threading | M20x2.5 | M24x3 | M27x3 | M30x3.5 | M30x3.5 |
| Length B  | 80      | 95    | 110   | 120     | 120     |
| T         | 24      | 28    | 34    | 38      | 42      |

**CARBON STEEL TRIPLE OFFSET LUG BUTTERFLY VALVE PN40**

**STANDARDS :**

- Manufacturer certified ISO 9001:2015
- DIRECTIVE 2014/68/EU : CE N° 0035  
Risk Category III module H
- Designing according to API 609
- Marking according to MSS SP-25
- Tightness tests according to ISO 5208, Rate A and ANSI FCI 70-2-2006 Class VI
- Between flanges according to EN 1092-1 PN40
- ISO 5211 mounting pad
- Length according to EN 558 series 109 (API 609 table 2 Class 300)
- Fire safe according to ISO 10497 : 2010
- Fugitive Emissions according to EN 15848-1 : 2006, Class C
- ATEX Group II Category 2 G/2D Zone 1 & 21 Zone 2 & 22 according to directive 2014/34/EU (Optional marking)
- SIL2 according to IEC/EN 61508, SIL 3 possible according to installation

**ADVICE :** Our opinion and our advice are not guaranteed and SFERACO shall not be liable for the consequences of damages.  
The customer must check the right choice of the products with the real service conditions.

**CARBON STEEL TRIPLE OFFSET LUG BUTTERFLY VALVE PN40**

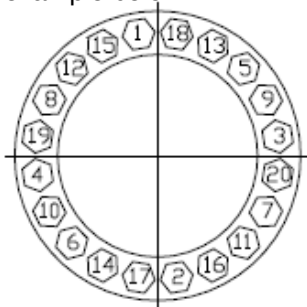
**INSTALLATION INSTRUCTIONS**

**GENERAL GUIDELINES :**

- Ensure that the valves to be used are appropriate for the conditions of the installation (type of fluid, pressure and temperature).
- Be sure to have enough valves to be able to isolate the sections of piping as well as the appropriate equipment for maintenance and repair.
- Ensure that the valves to be installed are of correct strength to be able to support the capacity of their usage.
- **Installation of all circuits should ensure that their function can be automatically tested on a regular basis (at least two times a year).**

**INSTALLATION INSTRUCTIONS :**

- **Before installing the valves, clean and remove any objects from the pipes** (in particular bits of sealing and metal) which could obstruct and block the valves.
- **Ensure that both connecting pipes either side of the valve (upstream and downstream) are aligned** (if they're not, the valves may not work correctly).
- **Make sure that the two sections of the pipe (upstream and downstream) match, the valve unit will not absorb any gaps. Any distortions in the pipes may affect the tightness of the connection, the working of the valve and can even cause a rupture.** To be sure, place the kit in position to ensure the assembling will work.
- **If sections of piping do not have their final support in place, they should be temporarily fixed. This is to avoid unnecessary strain on the valve.**
- Tighten the bolts in cross as the example below :



| Bolting size | Max torque (Nm) |
|--------------|-----------------|
| M16          | 150             |
| M20          | 270             |
| M22          | 434             |
| M24          | 450             |
| M26          | 650             |
| M27          | 700             |
| M28          | 815             |
| M30          | 950             |
| M32          | 1140            |
| M33          | 1300            |
| M36          | 1700            |

**CARBON STEEL TRIPLE OFFSET LUG BUTTERFLY VALVE PN40**

**INSTALLATION INSTRUCTIONS (SUITE) :**

- The disc must move easily inside the pipe.
- Valves must be opened during cleaning operation.
- Vales must be installed in horizontal position or in vertical position with handle at the top :

**OK**



**OK**



**NO**



- Tests must be done with a cleaned pipe.
- Tests must be done with opened valve. Test pressure must not be higher than the valve specification according to ISO 5208.
- Then open slowly the valve.
- **Do not mount butterfly valves with stainless steel pressed collars and turning flanges without strias.**
- **And not on flat face flanges without strias ( example : painted cast iron fittings )**
- **For an installation in ATEX area, check the conductivity between the valve, the upstream pipe and the downstream pipe and make sure the pipe is connected to the earth.**



**MAINTENANCE :**

- We recommend to operate fully the valve 1 to 2 times per year.
- During maintenance operation, ensure that the pipe isn't under pressure, that there's no fluid in the pipe and that the valve is isolated. If there's a fluid in the pipe , evacuate it. Ensure that there are no risks due to the temperature or the fluid ( like acids ). If the fluid is corrosive , inert the installation before maintenance operation.