KOFLOW

# PLUG VALVE

## Figure Coding System for Plug Valves

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

**① Nominal Diameter Symbols**

A××in value is used to ASME, D×××mm value is used to DIN, and G××mm value being for GB.

**② Valve Type Symbols**

X—Plug Valve

**③ Symbol for Actuation Methods (For handle or lever drive, this code can be omitted.)**

3—Manual Operator; 6—Pneumatic; 6S—Pneumatic Spring Return; 9—Electric

**④ Valve Connection/Ends Symbol**

RF—Raised Face Flange; FF—Fully Flat Face Flange; MFM—Male and Female Flange; TG—Tongued and Grooved Flange;
RJ—Ring Junction Flange; BW—Butt Welding; SW—Socket Welding; NPT—Threaded Connection

**⑤ Structure Type Symbols**

Stuffing Airproof:
3—straight way (flow bore); $4_T$—T Type 3-way; $4_L$—L Type 3-way; 5—4-way
Pressure balance type lubricated:
7—straight way (flow bore); $8_T$—T Type 3-way; $8_L$—L Type 3-way;
Other type:
$7_L$—Lift type; $7_E$—Eccentric structure $7_D$—Double flush structure； $7_C$—Double isolation structure

**⑥Nominal Pressure Symbols**

1—PN16 class150 ; 2—PN25; 3—class300; 4—PN40 class400 ; 6—PN64 class600
9—class900; 10—PN100; 15—class1500; 16—PN160; 20—PN200; 25—class2500;

**⑦ Body Material Symbols**

C—WCB; C5—C5; C6—WC6; C9—WC9; BL—LCB; CL—LCC
8—CF8; 8M—CF8M; 3—CF3; 3M—CF3M; ML—MONEL

**⑧ Symbols of Sealing Surfaces and Lined Material**

F—PTFE; F3—PCTFE; F46—FEP; PA—PFA;
H—Cr13 Series Stainless Steel; Y—Stellite; R—Austenitic Stainless Steel; M—MONEL alloy

**Given demonstration: A8″ X3RF31CF denotes API 8″ x 150Lb sleeve type plug valves, worm gear actuated, RF, straight way with body material of WCB and lined material of F4.**

## Technical Specifications of Plug Valve

| Technical Specifications | API Serials | GB Serials |
|---|---|---|
| Design Specifications | API6D、API599、BS5353 | GB/T19672 |
| Pressure and Temperature Class | ASME B16.34 | GB/T9124 |
| Face-to-face | ASME B16.10 | GB/T12221、GB/T15188.1 |
| Flange Type and Dimensions | ASME B16.5 、ASME B16.47 | GB/T9113 、JB/T79 |
| Butt-welding connection | ASME B16.25 | GB/T12224 |
| Socket-welded connection | ASME B16.11 | / |
| Threaded-welding connection | ASME B16.1.20 | / |
| Inspection and Test | API598 、API6D | JB/T9092、GB/T13927 |

# SUMMARIZATION OF PLUG VALVE

## Summarization

Plug valve is a circumrotating valve with its closure part as a plug, which turns 90° with its through bore connecting to or apart from the same of the body to realize opening or closing. The figure of the valve plug can be made as column or taper.

Of the column plug valve, the flow bore gets rectangle in general, and that of the taper type plug valve, the flow bore is of trapezium. The figures mentioned have made the structure of plug valves legerity, however, certain loss is at the same time generated.

The plug valve is mostly suitable for cutting off, turning on and distributing the flow medium. Sometime it can also be used for throttling based upon suitable medium and the erosion resistance property of the sealing surfaces. Due to the friction action between the sealing surfaces of the plug valve,whereas contact with flow medium can be completely avoided as the valve is fully opened.In this respect, the plug valve can also be used for the medium with suspend grains.

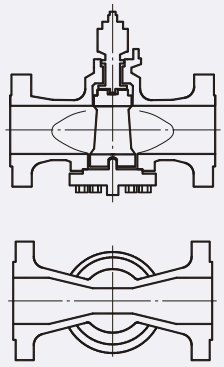
One of the important characteristics of the plug valve is that it is prone to fitting multi-center structure, so that one single plug valve can be designed with two, three, and even four different flow bores. In this way, the design of the pipeline system can be simplified, and both valve quantity and piping fittings can be reduced. The plug valves are widely used in the applications of oil field exploitation, transportation, and refinery facility, while being extensively used for such general industries as petrochemical, chemistry, gas, nature gas, liquefied oil gas, and warming & traffics.

Lined plug valves without lubricant are used for applications of petrochemical and chemistry industries, especially being used for the medium that is not allowed to be with lubricants.

## Straight Way Flow Bore Patterns

The straight way flow bore of plug valves manufactured by Shanghai KOFLOW Machinery Co., Ltd. are of many patterns, there are venturi pattern, standard pattern with straight bore, short pattern, regular pattern and standard camber pattern with straight bore, among which the principal difference is the face-to-face dimensions, diameter and the plug figure.

**VENTURI Pattern:** The face-to-face dimensions of these valves are designed according to Britain and American standards to ensure inter-replacing of valves among different standards. The plug bore of these valves are of reduced bore area, however, the center line position of the plug valves does not change, which generates in the valve body a Venturi action to increase the loss of flow velocity with big percent. The result generated by this action is a corresponding low pressure drop. In this respect, the plug valves can be used in general pipelines, especially used for big sized pipelines to reduce application cost.

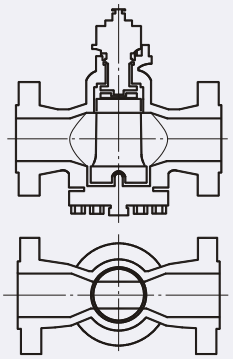


**Venturi pattern**

# SUMMARIZATION OF PLUG VALVE

## Straight Way Flow Bore Patterns

**Standard Plug Valves with straight bore:** The face-to-face dimensions of these valves are designed according to Britain and American standards to ensure farthest inter-replacing of valves among different types of valves. The figure of plug bore looks like a rectangle structure. There is an area echoing to the valve ends, which is with lowest pressure drop. The conversion from body end to the rectangle end-face is even, it will not appear the condition of sudden change of shape or part. Otherwise, the flow medium in the pipeline would generate sudden shake-up of flow velocity or direction.

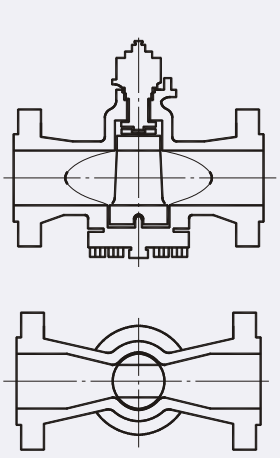


**Standard plug valves With straight bore**

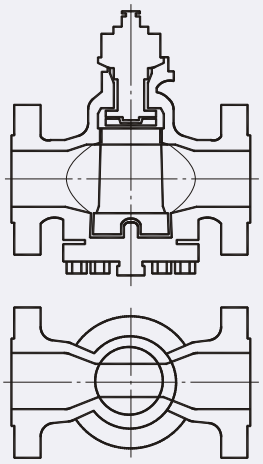
**Short Pattern:** The face-to-face dimensions of these plug valves equal to that of the gate valves designed according to ASME B16.10 CLASS125、150、250 and 300 Lb (NPS1 1/2~NPS12. In order to obtain correspondingly short face-to-face dimension, the diameter of the plug is reduced one with a small cone of rectangle.

**Regular Pattern:** These valves are designed according to Britain and American standards to ensure farthest inter-replacing of valves among different types of valves and different types of connection ends. There is a rectangle figure of the plug bore being with a tiny cone figure on its side face, where there is an area bigger than that of Venturi. The conversion from body end to the rectangle end-face is even, it will not appear the condition of sudden change of shape or part. Otherwise, the flow medium in the pipeline would generate sudden shake-up of flow velocity or direction. The flow bore area of the regular pattern plug valves is bigger than that of Venturi ( reduced bore ).

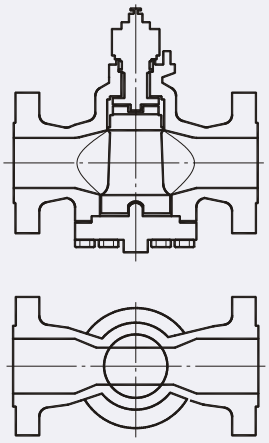
**Standard Camber Plug Valves with Straight Bore:** The diameter of these valves equals to the inside diameter of pipes. The design of the plug valve is mainly for the purpose that some scraping tools or other tools can get through the valve body, and that the valve can be used for some special occasions. The face-to-face dimensions of the plug valve are longer than that of standard pattern one, however, meeting the requirement of Britain and American standards. These plug valves are especially suitable for use in the slurry occasions of sewage disposal factory and for the branches of steam tubes.



**Regular Pattern**



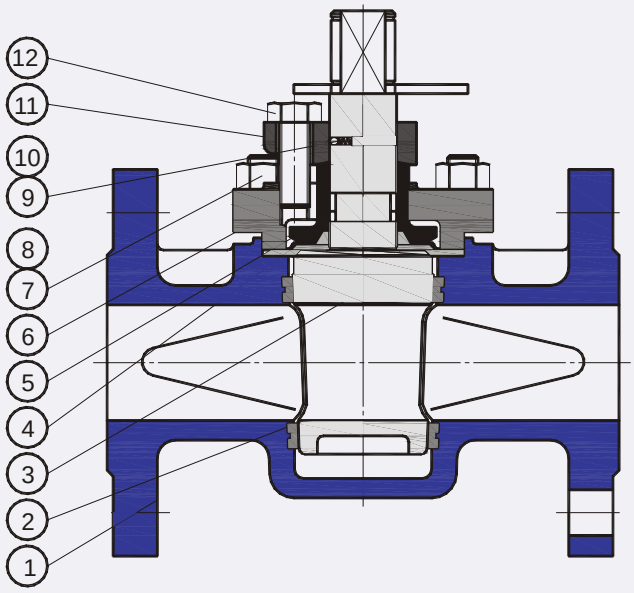
**Short Pattern**



**Standard Camber Plug Valves with Straight Bore**

# SLEEVE TYPE SOFT SEALING PLUG VALVE

## Structure Drawing of Sleeve Type Plug Valve




1、Body
2、Seat Ring
3、Plug
4、Adjusting Gasket
5、Adjusting Gland
6、Cover
7、Cover Bolt
8、Nut
9、Small Ball
10、Spring
11、Shelve Plate
12、Adjusting Bolt

### Description of products structure

The sleeve type soft sealing plug valves are suitable for use in various kinds of pipelines with working conditions as normal pressure of CLASS150-600LBS（PN1.6~10.0MPa）and working temperature of -29-180℃ in such industries as petrochemical, chemistry, pharmacy, chemical fertilizer, and power plant etc. to cut off or turn on the flow medium in the pipelines.

1. The inlet and outlet bores are designed as such that there features the structure of double sealing grooves with sealing rings, thus the sealing pressure ratio between sealing parts grades during the circumrotation of the plug until the position of fully opening or closing is reached, when the enough pressure ratio is generated between sealing parts to reach zero leakage.
2. The structure of double sealing grooves with sealing rings not only can make the PTFE liner steady in the valve body without displacement, but also can absorb the tiny distortion of the liner due to the temperature change. Meanwhile, the forceful friction action between the liner and the plug can advance the service life of the sealing surfaces.
3. There is a combination on the top of the plug shaft, i.e., the PTFE membrane with an O ring and the adjusting gasket, which can adjust the pressure ratio between sealing surfaces to easily rotate the plug while ensuring the airproof of both the outlet and the middle flanges.
4. The complete sealing process can almost be considered nothing to do with the pressure inside the pipeline.
5. Different filling material is adopted for the PTFE liner according to the application temperature and working medium, being good in lubrication and long in service life.

# SLEEVE TYPE SOFT SEALING PLUG VALVE

## Main Structure Features of Sleeve Type Plug Valve

1. The sealing property of the plug valve is realized by surfaces around sleeve, which is secured and protected by the special 360° Metal lip.
2. There is no cavity in the plug valve for accumulating the medium.
3. The metal lip features self-cleaning function while rotating, being suitable for the working conditions of viscidity and easily producing dirty.
4. The plug valve is of bi-directional flow, being more convenient for installation and usage.
5. The parts material and end connect sizes can be selected and matched with reason according to the actual working condition or customers' requirement, meeting various kinds of engineering demands.

## Material List

| No. | Parts Name | C.I. | C,S. | S.S. | | S.S. with lowest Carbon | |
|---|---|---|---|---|---|---|---|
| | | Z | C | P | R | $P_L$ | $R_L$ |
| 1 | Body | A126 CI35A | A216 WCB | A351 CF8 | A351 CF8MA | 351 CF3 | A351 CF3M |
| 2 | Seat Ring(liners/sleeve) | PTFE（$F_4$）、FEP（$F_{46}$）、PCTFE（$F_3$）、PVDF（$F_2$）、PFA PPL | | | | | |
| 3 | Plug | A216 WCB、A105、MONEL、A351 CF8、CF8M、CF3、CF3M | | | | | |
| 4 | adj. Gasket | RPTFE（reinforced $F_4$） PFA | | | | | |
| 5 | adj. Gland | A182 F6、A182 F304、A182 F316、A182 F304L、A182 F316L | | | | | |
| 6 | Cover | A126 CI35A | A216 WCB | A351 CF8 | A351 CF8M | A351 CF3 | A351 CF3M |
| 7 | Bolts | A193 B7 | | A193 B8M | | | |
| 8 | Nuts | A194 2H | | A194 8 | | | |
| 9 | Tiny Ball | A182 F304 | | A182 F316 | | | |
| 10 | Spring | A182 F304 | | A182 F316 | | | |
| 11 | Flange | A216 WCB | | A351 CF8 | | | |
| 12 | adj. Bolt | A194 2H | | A194 8 | | | |

Note: Specific material can be selected according to requirements.

## Products Range

| standard | pressure | ends | Spec. | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 450 |
| | | | 1 /2 | 3 /4 | 1 | 1-1/4 | 1-1/2 | 2 | 2-1/2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 18 |
| class | 150* | flanged | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ |
| | 300* | | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | | |
| | 600** | | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | | | | | | |
| | 150 | BW/ SW/NPT | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | | | | | | | | |
| | 300 | | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | | | | | | | | |
| | 600 | | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | | | | | | | | |
| | 900 | | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | | | | | | | | |
| DIN | 1.6 | BW/SW/ Threaded | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | | | | | | | | |
| | 2.5 | | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | | | | | | | | |
| | 4.0 | | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | | | | | | | | |
| | 10.0 | | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | | | | | | | | |
| | 16.0 | | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ | | | | | | | | |

Note:The sealing types of ASME 150Lb~300Lb flanged plug valve: fully lined, sleeve type;
The sealing type of ASME 600Lb flanged plug valve: sleeve type.

# SLEEVE TYPE SOFT SEALING PLUG VALVE

## Technical Performance Specification

| Technical Performance Specification | | ASME | | | | DIN | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Design Standard | | API599, API6D | | | | API599 | | | | |
| Face-to-face Dimensions | | ASME B16.10 | | | | DIN 3202 | | | | |
| Connection Flanges | | ASME B16.5 | | | | / | | | | |
| BW Ends | | ASME B16.25 | | | | ASME B16.25 | | | | |
| SW Ends | | ASME B16.11 | | | | ASME B16.11 | | | | |
| Threaded Ends | | ASME B1.20.1 | | | | ASME B1.20.1 | | | | |
| Inspection and Testing | | API598.API6D | | | | API598 | | | | |
| Testing Pressure | Normal Pressure | 150 | 300 | 600 | 900 | 1.6 | 2.5 | 4.0 | 10.0 | 16.0 |
| | Shell Testing | 3.0 | 7.5 | 15.0 | 22.5 | 2.4 | 3.75 | 6.0 | 15.0 | 24.0 |
| | Tightness Testing | 2.2 | 5.5 | 11.0 | 16.5 | 1.76 | 2.75 | 4.4 | 11.0 | 17.6 |
| Applicable Temperature | | ⩽150℃ | | | | | | | | |
| Applicable Medium | | Water, steam and oil tec. | | | | | | | | |
| Actuation Methods | | Manual, gear operated, pneumatic operator, electric actuator (Can be selected according to requirements) | | | | | | | | |

Note: Valve connection sizes can be designed and manufactured according to customers′ requirements.

## Approximative Flow Coefficients of Plug Valve

| Diameter | NPS | 1/2 | 3/4 | 1 | 1 1/4 | 1 1/2 | 2 | 2 1/2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DN | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 450 |
| CV | | 7.4 | 19.5 | 48.8 | / | 83.5 | 153 | / | 322 | 555 | / | 955 | 1859 | 2361 | 3400 | 3430 | 7000 | / |

## Operating Torques for Plug Valve Stem

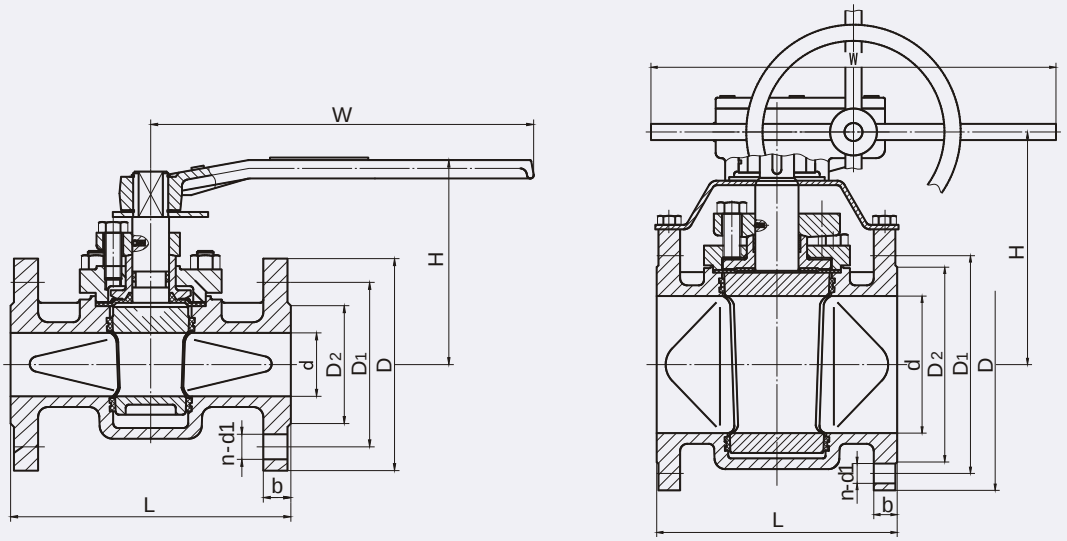
| Diameter | NPS | 1/2 | 3/4 | 1 | 11/4 | 11/2 | 2 | 2 1/2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 18 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DN | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 450 |
| average torque of trunnion | | 4 | 4 | 9.4 | 10.8 | 10.8 | 18 | 23 | 26 | 73 | 146 | 189 | 413 | 783 | 827 | 1170 | 1587 | 1825 |

Note: Safety factor should be taken into consideration by customers when selecting actuators.

# SLEEVE TYPE SOFT SEALING PLUG VALVE

## Flange Connection

CLASS150




## Main Outline Sizes

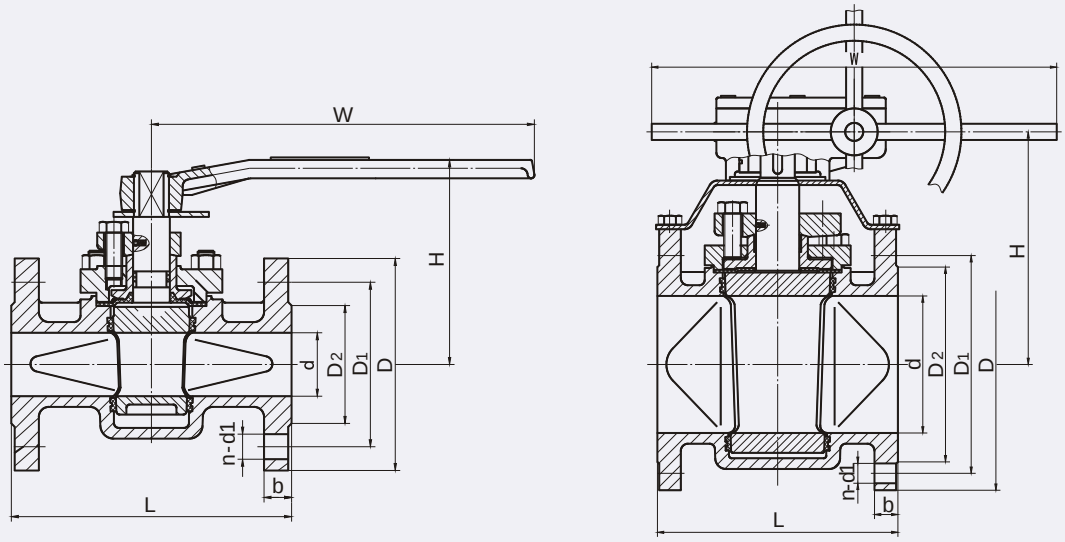
| Nominal diameter | | standard value | | | | | | | reference value | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DN (mm) | NPS (inch) | L | D | D1 | D2 | f | b | Z-d | W | H | G(kg) |
| | | CLASS150 | | | | | | | | | |
| 15 | 1/2 | 108 | 89 | 60.5 | 35 | 2 | 11 | 4-φ15 | 120 | 85 | 2 |
| 20 | 3/4 | 117 | 98 | 70 | 43 | 2 | 11 | 4-φ15 | 140 | 95 | 3 |
| 25 | 1 | 127 | 108 | 79.5 | 51 | 2 | 12 | 4-φ15 | 140 | 105 | 4.5 |
| 32 | 1 1/4 | 140 | 117 | 89 | 64 | 2 | 13 | 4-φ15 | 200 | 115 | 5.2 |
| 40 | 1 1/2 | 165 | 127 | 98.5 | 73 | 2 | 15 | 4-φ15 | 250 | 125 | 7.5 |
| 50 | 2 | 178 | 152 | 120.5 | 92 | 2 | 16 | 4-φ19 | 250 | 140 | 11 |
| 65 | 2 1/2 | 190 | 178 | 139.5 | 105 | 2 | 18 | 4-φ19 | 300 | 150 | 17.1 |
| 80 | 3 | 203 | 190 | 152.5 | 127 | 2 | 19 | 4-φ19 | 300 | 185 | 18 |
| 100 | 4 | 229 | 229 | 190.5 | 157 | 2 | 24 | 8-φ19 | 350 | 200 | 34 |
| 125 | 5 | 254 | 254 | 216 | 186 | 2 | 24 | 8-φ22 | 350 | 215 | 39 |
| 150 | 6 | 267 | 279 | 241.5 | 216 | 2 | 26 | 8-φ22 | 200* | 455 | 68 |
| 200 | 8 | 292 | 343 | 298.5 | 270 | 2 | 29 | 8-φ22 | 240* | 495 | 115 |
| 250 | 10 | 330 | 406 | 362 | 324 | 2 | 31 | 12-φ25 | 280* | 555 | 195 |
| 300 | 12 | 356 | 483 | 432 | 381 | 2 | 32 | 12-φ25 | 320* | 605 | 305 |
| 350 | 14 | 686 | 533 | 476 | 413 | 2 | 35 | 12-φ29 | 320* | 680 | 325 |
| 400 | 16 | 762 | 597 | 540 | 470 | 2 | 37 | 16-φ29 | 360* | 715 | 846 |
| 450 | 18 | 864 | 635 | 578 | 533 | 2 | 40 | 16-φ32 | 400* | 755 | 885 |

* Gear operator;

# SLEEVE TYPE SOFT SEALING PLUG VALVE

## Flange Connection

CLASS300~600




## Main Outline Sizes

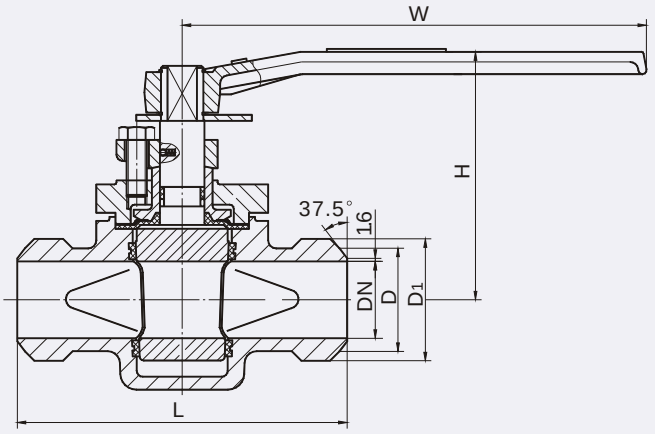
| Nominal Diameter | | Standard Value | | | | | | | Reference Value | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DN (mm) | NPS (inch) | L | D | D1 | D2 | f | b | Z-ϕd | D0 | H | G(kg) |
| | | CLASS300 | | | | | | | | | |
| 15 | 1/2 | 140 | 95 | 66.5 | 35 | 2 | 15 | 4-ϕ15 | 160 | 85 | 2.5 |
| 20 | 3/4 | 152 | 117 | 82.5 | 43 | 2 | 16 | 4-ϕ19 | 160 | 95 | 4 |
| 25 | 1 | 165 | 124 | 89 | 51 | 2 | 18 | 4-ϕ19 | 200 | 105 | 5 |
| 32 | 1 1/4 | 178 | 133 | 98.5 | 64 | 2 | 19 | 4-ϕ19 | 250 | 115 | 6 |
| 40 | 1 1/2 | 190 | 156 | 114.5 | 73 | 2 | 21 | 4-ϕ22 | 250 | 125 | 8.5 |
| 50 | 2 | 216 | 165 | 127 | 92 | 2 | 23 | 8-ϕ19 | 300 | 140 | 13 |
| 65 | 2 1/2 | 241 | 190 | 149 | 105 | 2 | 26 | 8-ϕ22 | 300 | 150 | 15 |
| 80 | 3 | 283 | 210 | 168.5 | 127 | 2 | 29 | 8-ϕ22 | 350 | 185 | 24 |
| 100 | 4 | 305 | 254 | 200 | 157 | 2 | 32 | 8-ϕ22 | 350 | 200 | 27 |
| 125 | 5 | 381 | 279 | 235 | 186 | 2 | 35 | 8-ϕ22 | 400 | 225 | 40 |
| 150 | 6 | 403 | 318 | 270 | 216 | 2 | 37 | 12-ϕ22 | 200* | 460 | 65 |
| 200 | 8 | 419 | 381 | 330 | 270 | 2 | 42 | 12-ϕ25 | 240* | 495 | 145 |
| 250 | 10 | 457 | 445 | 387.5 | 324 | 2 | 48 | 16-ϕ29 | 280* | 560 | 255 |
| 300 | 12 | 502 | 521 | 451 | 381 | 2 | 51 | 16-ϕ32 | 320* | 610 | 325 |
| 350 | 14 | 762 | 584 | 514.5 | 413 | 2 | 54 | 20-ϕ32 | 360* | 685 | 355 |
| CLASS600 | | | | | | | | | | | |
| 25 | 1 | 216 | 124 | 89 | 51 | 7 | 18 | 4-ϕ19 | 250 | 125 | 7 |
| 32 | 1 1/4 | 229 | 133 | 98.5 | 64 | 7 | 21 | 4-ϕ19 | 250 | 135 | 8.2 |
| 40 | 1 1/2 | 241 | 156 | 114.5 | 73 | 7 | 23 | 4-ϕ22 | 300 | 140 | 10.8 |
| 50 | 2 | 292 | 165 | 127 | 92 | 7 | 26 | 8-ϕ19 | 350 | 150 | 12.5 |
| 65 | 2 1/2 | 330 | 190 | 149 | 100 | 7 | 29 | 8-ϕ22 | 350 | 175 | 15.3 |
| 80 | 3 | 356 | 210 | 168 | 127 | 7 | 32 | 8-ϕ22 | 400 | 195 | 25 |
| 100 | 4 | 432 | 273 | 216 | 157 | 7 | 38 | 8-ϕ25 | 400 | 215 | 29.5 |
| 150 | 6 | 559 | 356 | 292 | 216 | 7 | 48 | 12-ϕ29 | 280* | 500 | 70 |

* Gear operator;

# SLEEVE TYPE SOFT SEALING PLUG VALVE

## Butt-welding Ends

ASME / CLASS150~900




## Main Connect Sizes and Weight

| Nominal Diameter | | Standard Value | | | Reference Value | | |
|---|---|---|---|---|---|---|---|
| DN (mm) | NPS (inch) | L | D1 | D | W | H | G(kg) |
| | | CLASS150 | | | | | |
| 15 | 1/2 | 165 | 28 | 25 | 160 | 85 | 3.4 |
| 20 | 3/4 | 190 | 33 | 30 | 160 | 85 | 4.2 |
| 25 | 1 | 216 | 38 | 35 | 190 | 90 | 5.8 |
| 32 | 1 1/4 | 229 | 45 | 42 | 190 | 100 | 6.7 |
| 40 | 1 1/2 | 241 | 56 | 50 | 240 | 110 | 8.4 |
| 50 | 2 | 267 | 70 | 62 | 305 | 120 | 9.1 |
| 65 | 2 1/2 | 305 | 88 | 75 | 305 | 130 | 11.8 |
| 80 | 3 | 330 | 104 | 91 | 450 | 135 | 13.4 |
| 100 | 4 | 356 | 126 | 117 | 600 | 150 | 26.1 |

| Standard Value | | | Reference Value | | |
|---|---|---|---|---|---|
| L | D1 | D | W | H | W(kg) |
| CLASS300 | | | | | |
| 165 | 28 | 25 | 160 | 85 | 3.7 |
| 190 | 33 | 30 | 190 | 90 | 4.6 |
| 216 | 38 | 35 | 190 | 100 | 6.2 |
| 229 | 45 | 42 | 240 | 110 | 7.2 |
| 241 | 56 | 50 | 305 | 120 | 8.9 |
| 267 | 70 | 62 | 305 | 130 | 9.4 |
| 305 | 88 | 75 | 450 | 135 | 12.3 |
| 330 | 104 | 91 | 500 | 150 | 14 |
| 356 | 126 | 117 | 600 | 160 | 27.2 |

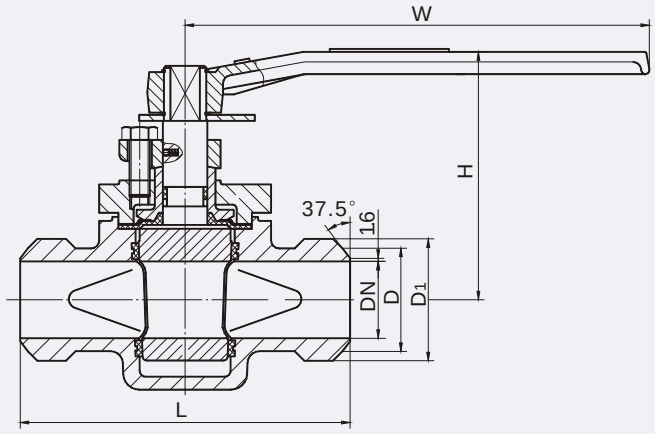
| Nominall Diameter | | Standard Value | | | Reference Value | | |
|---|---|---|---|---|---|---|---|
| DN (mm) | NPS (inch) | L | D1 | D | W | H | G(kg) |
| | | CLASS600 | | | | | |
| 15 | 1/2 | 165 | 31 | 25 | 160 | 90 | 4.1 |
| 20 | 3/4 | 190 | 36 | 30 | 190 | 100 | 4.9 |
| 25 | 1 | 216 | 41 | 35 | 220 | 110 | 6.6 |
| 32 | 1 1/4 | 229 | 49 | 42 | 240 | 120 | 7.7 |
| 40 | 1 1/2 | 241 | 59 | 50 | 305 | 130 | 8.6 |
| 50 | 2 | 292 | 73 | 62 | 325 | 135 | 10.2 |
| 65 | 2 1/2 | 330 | 89 | 75 | 450 | 150 | 13.1 |
| 80 | 3 | 356 | 105 | 91 | 550 | 160 | 15.5 |
| 100 | 4 | 432 | 132 | 117 | 650 | 180 | 28 |

| Standard Value | | | Reference Value | | |
|---|---|---|---|---|---|
| L | D1 | D | W | H | G(kg) |
| CLASS900 | | | | | |
| 190 | 41 | 25 | 190 | 95 | 4.7 |
| 216 | 46 | 30 | 220 | 100 | 5.3 |
| 254 | 51 | 35 | 240 | 110 | 7.4 |
| 279 | 61 | 42 | 305 | 120 | 8.6 |
| 305 | 70 | 50 | 325 | 130 | 9.6 |
| 368 | 88 | 62 | 450 | 135 | 11.3 |
| 419 | 110 | 75 | 550 | 150 | 14.1 |
| 381 | 128 | 91 | 650 | 165 | 16.7 |
| 457 | 157 | 117 | 750 | 185 | 28.7 |

# SLEEVE TYPE SOFT SEALING PLUG VALVE

## Butt-welding Ends

DIN / PN1.6~16.0




## Main Connect Sizes and Weight

| Nominal Diameter | | Standard Value | | | Reference Value | | |
|---|---|---|---|---|---|---|---|
| DN (mm) | NPS (inch) | L | D1 | D | W | H | G(kg) |
| | | PN1.6~2.5（MPa） | | | | | |
| 15 | 1/2 | 130 | 28 | 25 | 160 | 85 | 3.3 |
| 20 | 3/4 | 150 | 33 | 30 | 160 | 85 | 4.2 |
| 25 | 1 | 160 | 38 | 35 | 190 | 90 | 5.8 |
| 32 | 1 1/4 | 180 | 45 | 42 | 190 | 100 | 6.8 |
| 40 | 1 1/2 | 200 | 56 | 50 | 240 | 110 | 8 |
| 50 | 2 | 230 | 70 | 62 | 305 | 120 | 9.1 |
| 65 | 2 1/2 | 290 | 88 | 75 | 305 | 130 | 11.8 |
| 80 | 3 | 310 | 104 | 91 | 450 | 135 | 13.4 |
| 100 | 4 | 350 | 126 | 117 | 600 | 150 | 26.1 |

| Standard Value | | | Reference Value | | |
|---|---|---|---|---|---|
| L | D1 | D | W | H | G(kg) |
| PN4.0（MPa） | | | | | |
| 130 | 28 | 25 | 160 | 85 | 3.5 |
| 150 | 33 | 30 | 190 | 90 | 4.4 |
| 160 | 38 | 35 | 190 | 100 | 6.3 |
| 180 | 45 | 42 | 240 | 110 | 7.3 |
| 200 | 56 | 50 | 305 | 120 | 8.5 |
| 230 | 70 | 62 | 305 | 130 | 9.7 |
| 290 | 88 | 75 | 450 | 135 | 12.4 |
| 310 | 104 | 91 | 500 | 150 | 14.4 |
| 350 | 126 | 117 | 600 | 160 | 27.2 |

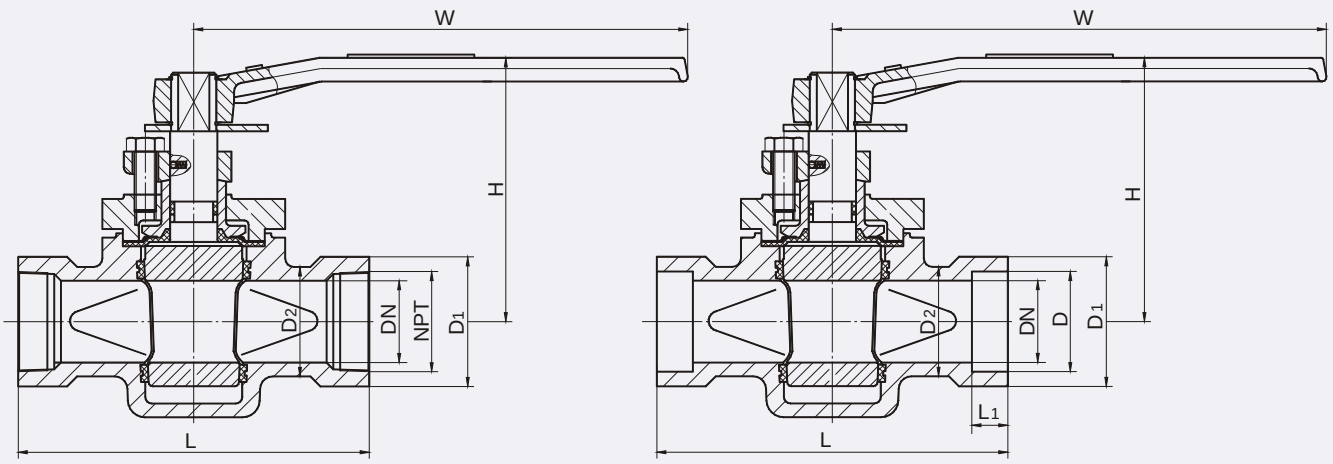
| Nominal Diameter | | Standard Value | | | Reference Value | | |
|---|---|---|---|---|---|---|---|
| DN (mm) | NPS (inch) | L | D1 | D | W | H | G(kg) |
| | | PN10.0（MPa） | | | | | |
| 15 | 1/2 | 165 | 31 | 25 | 160 | 90 | 4.1 |
| 20 | 3/4 | 190 | 36 | 30 | 190 | 100 | 4.9 |
| 25 | 1 | 216 | 41 | 35 | 220 | 110 | 6.6 |
| 32 | 1 1/4 | 229 | 49 | 42 | 240 | 120 | 7.7 |
| 40 | 1 1/2 | 241 | 59 | 50 | 305 | 130 | 8.6 |
| 50 | 2 | 292 | 73 | 62 | 325 | 135 | 10.2 |
| 65 | 2 1/2 | 330 | 89 | 75 | 450 | 150 | 13.1 |
| 80 | 3 | 356 | 105 | 91 | 550 | 160 | 15.5 |
| 100 | 4 | 432 | 132 | 117 | 650 | 180 | 28 |

| Standard Value | | | Reference Value | | |
|---|---|---|---|---|---|
| L | D1 | D | W | H | G(kg) |
| PN16.0（MPa） | | | | | |
| 165 | 41 | 25 | 190 | 95 | 4.4 |
| 190 | 46 | 30 | 220 | 100 | 5.3 |
| 216 | 51 | 35 | 240 | 110 | 7.0 |
| 229 | 61 | 42 | 305 | 120 | 8.1 |
| 241 | 70 | 50 | 325 | 130 | 9.1 |
| 292 | 88 | 62 | 450 | 135 | 10.7 |
| 330 | 110 | 75 | 550 | 150 | 13.7 |
| 356 | 128 | 91 | 650 | 165 | 16.2 |
| 432 | 157 | 117 | 750 | 185 | 28.7 |

* When Dn⩽25, L value as per enterprise standard.
PN1.6~4.0, L value as per DIN 3202/S7; PN10.0~16.0, L value as per DIN 3202/S12.

# SLEEVE TYPE SOFT SEALING PLUG VALVE

**Socket-welding Ends, Screw Thread Ends** ASME / CLASS150~900




## Main Connect Sizes and Weight

| Nominall Diameter | | | Standard Value | | | | | Reference Value | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DN (mm) | NPS (inch) | NPT | L* | L1 | D | D2 | D1 | W | H | G(kg) |
| | | | CLASS150 | | | | | | | |
| 15 | 1/2 | 1/2 | 165 | 10 | 21.95 | 28 | 32 | 160 | 85 | 3 |
| 20 | 3/4 | 3/4 | 190 | 13 | 27.3 | 33 | 38 | 160 | 85 | 3.5 |
| 25 | 1 | 1 | 216 | 13 | 34.05 | 38 | 46 | 190 | 90 | 5.3 |
| 32 | 1 1/4 | 1 1/4 | 229 | 13 | 42.8 | 45 | 55 | 190 | 100 | 6.1 |
| 40 | 1 1/2 | 1 1/2 | 241 | 13 | 48.9 | 56 | 63 | 240 | 110 | 7 |
| 50 | 2 | 2 | 267 | 16 | 61.35 | 70 | 76 | 305 | 120 | 7.3 |
| 65 | 2 1/2 | 2 1/2 | 305 | 16 | 74.2 | 88 | 95 | 305 | 130 | 11 |
| 80 | 3 | 3 | 330 | 16 | 90.15 | 104 | 114 | 450 | 135 | 13 |
| 100 | 4 | 4 | 356 | 19 | 115.8 | 126 | 146 | 600 | 150 | 26.1 |

| Standard Value | | | | | Reference Value | | |
|---|---|---|---|---|---|---|---|
| L* | L1 | D | D2 | D1 | W | H | G(kg) |
| CLASS300 | | | | | | | |
| 165 | 10 | 21.95 | 28 | 32 | 160 | 85 | 3.5 |
| 190 | 13 | 27.3 | 33 | 38 | 190 | 90 | 4.1 |
| 216 | 13 | 34.05 | 38 | 46 | 190 | 100 | 5.8 |
| 229 | 13 | 42.8 | 45 | 55 | 240 | 110 | 6.4 |
| 241 | 13 | 48.9 | 56 | 63 | 305 | 120 | 7.4 |
| 267 | 16 | 61.35 | 70 | 76 | 305 | 130 | 9 |
| 305 | 16 | 74.2 | 88 | 95 | 450 | 135 | 12 |
| 330 | 16 | 90.15 | 104 | 114 | 500 | 150 | 14.3 |
| 356 | 19 | 115.8 | 126 | 146 | 600 | 160 | 27.2 |

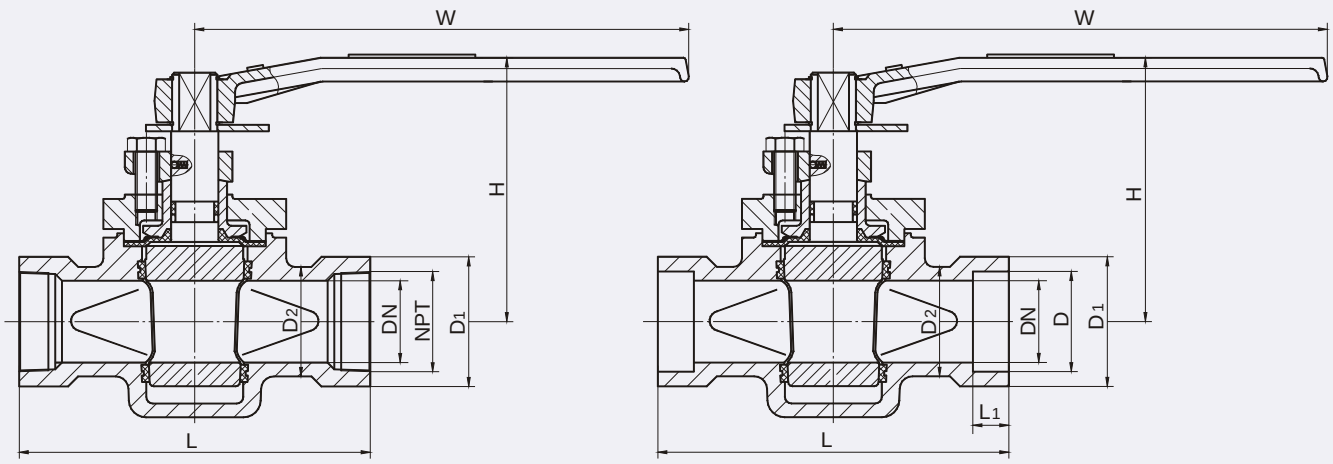
| Nominal Diameter | | | Standard Value | | | | | Reference Value | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DN (mm) | NPS (inch) | NPT | L* | L1 | D | D2 | D1 | W | H | G(kg) |
| | | | CLASS600 | | | | | | | |
| 15 | 1/2 | 1/2 | 165 | 10 | 21.95 | 31 | 32 | 160 | 90 | 3.7 |
| 20 | 3/4 | 3/4 | 190 | 13 | 27.3 | 36 | 38 | 190 | 100 | 4.4 |
| 25 | 1 | 1 | 216 | 13 | 34.05 | 41 | 46 | 220 | 110 | 6.1 |
| 32 | 1 1/4 | 1 1/4 | 229 | 13 | 42.8 | 49 | 55 | 240 | 120 | 7.2 |
| 40 | 1 1/2 | 1 1/2 | 241 | 13 | 48.9 | 59 | 63 | 305 | 130 | 8.1 |
| 50 | 2 | 2 | 292 | 16 | 61.35 | 73 | 76 | 325 | 135 | 9.8 |
| 65 | 2 1/2 | 2 1/2 | 330 | 16 | 74.2 | 89 | 95 | 450 | 150 | 12.6 |
| 80 | 3 | 3 | 356 | 16 | 90.15 | 105 | 114 | 550 | 160 | 14.8 |
| 100 | 4 | 4 | 432 | 19 | 115.8 | 132 | 146 | 650 | 180 | 28 |

| Standard Value | | | | | Reference Value | | |
|---|---|---|---|---|---|---|---|
| L* | L1 | D | D2 | D1 | W | H | G(kg) |
| CLASS900 | | | | | | | |
| 190 | 10 | 21.95 | 41 | 41 | 190 | 95 | 4.3 |
| 216 | 13 | 27.3 | 46 | 46 | 220 | 100 | 4.9 |
| 254 | 13 | 34.05 | 51 | 51 | 240 | 110 | 7 |
| 279 | 13 | 42.8 | 61 | 61 | 305 | 120 | 8.1 |
| 305 | 13 | 48.9 | 70 | 70 | 325 | 130 | 9 |
| 368 | 16 | 61.35 | 88 | 88 | 450 | 135 | 10.7 |
| 419 | 16 | 74.2 | 110 | 110 | 500 | 150 | 13.4 |
| 381 | 16 | 90.15 | 128 | 128 | 650 | 165 | 16 |
| 457 | 19 | 115.8 | 157 | 157 | 750 | 185 | 28.7 |

# SLEEVE TYPE SOFT SEALING PLUG VALVE

## Socket-welding Ends, Screw Thread Ends

DIN / PN1.6~16.0




## Main Connect Sizes and Weight

| Nominal Diameter | | | Standard Value | | | | | Reference Value | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DN (mm) | NPS (inch) | NPT | L* | L1 | D | D2 | D1 | W | H | G(kg) |
| | | | PN1.6~2.5(MPa) | | | | | | | |
| 15 | 1/2 | 1/2 | 130 | 10 | 21.95 | 28 | 32 | 160 | 85 | 3.3 |
| 20 | 3/4 | 3/4 | 150 | 13 | 27.3 | 33 | 38 | 160 | 85 | 4.2 |
| 25 | 1 | 1 | 160 | 13 | 34.05 | 38 | 46 | 190 | 90 | 5.8 |
| 32 | 1 1/4 | 1 1/4 | 180 | 13 | 42.8 | 45 | 55 | 190 | 100 | 6.8 |
| 40 | 1 1/2 | 1 1/2 | 200 | 13 | 48.9 | 56 | 63 | 240 | 110 | 8 |
| 50 | 2 | 2 | 230 | 16 | 61.35 | 70 | 76 | 305 | 120 | 9.1 |
| 65 | 2 1/2 | 2 1/2 | 290 | 16 | 74.2 | 88 | 95 | 305 | 130 | 11.8 |
| 80 | 3 | 3 | 310 | 16 | 90.15 | 104 | 114 | 450 | 135 | 13.8 |
| 100 | 4 | 4 | 350 | 19 | 115.8 | 126 | 146 | 600 | 150 | 26.1 |

| Standard Value | | | | | Reference Value | | |
|---|---|---|---|---|---|---|---|
| L* | L1 | D | D2 | D1 | W | H | G(kg) |
| PN4.0(MPa) | | | | | | | |
| 130 | 10 | 21.95 | 28 | 32 | 160 | 85 | 3.5 |
| 150 | 13 | 27.3 | 33 | 38 | 190 | 90 | 4.4 |
| 160 | 13 | 34.05 | 38 | 46 | 190 | 100 | 6.3 |
| 180 | 13 | 42.8 | 45 | 55 | 240 | 110 | 7.3 |
| 200 | 13 | 48.9 | 56 | 63 | 305 | 120 | 8.5 |
| 230 | 16 | 61.35 | 70 | 76 | 305 | 130 | 9.7 |
| 290 | 16 | 74.2 | 88 | 95 | 450 | 135 | 12.4 |
| 310 | 16 | 90.15 | 104 | 114 | 500 | 150 | 14.4 |
| 350 | 19 | 115.8 | 126 | 146 | 600 | 160 | 27.2 |

| Nominal Diameter | | | Standard Value | | | | | Reference Value | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DN (mm) | NPS (inch) | NPT | L* | L1 | D | D2 | D1 | W | H | G(kg) |
| | | | PN10.0(MPa) | | | | | | | |
| 15 | 1/2 | 1/2 | 165 | 10 | 21.95 | 31 | 32 | 160 | 90 | 4.1 |
| 20 | 3/4 | 3/4 | 190 | 13 | 27.3 | 36 | 38 | 190 | 100 | 4.9 |
| 25 | 1 | 1 | 216 | 13 | 34.05 | 41 | 46 | 220 | 110 | 6.6 |
| 32 | 1 1/4 | 1 1/4 | 229 | 13 | 42.8 | 49 | 55 | 240 | 120 | 7.7 |
| 40 | 1 1/2 | 1 1/2 | 241 | 13 | 48.9 | 59 | 63 | 305 | 130 | 8.6 |
| 50 | 2 | 2 | 292 | 16 | 61.35 | 73 | 76 | 325 | 135 | 10.2 |
| 65 | 2 1/2 | 2 1/2 | 330 | 16 | 74.2 | 89 | 95 | 450 | 150 | 13.1 |
| 80 | 3 | 3 | 356 | 16 | 90.15 | 105 | 114 | 550 | 160 | 15.5 |
| 100 | 4 | 4 | 432 | 19 | 115.8 | 132 | 146 | 650 | 180 | 28 |

| Standard Value | | | | | Reference Value | | |
|---|---|---|---|---|---|---|---|
| L* | L1 | D | D2 | D1 | W | H | G(kg) |
| PN16.0(MPa) | | | | | | | |
| 165 | 10 | 21.95 | 41 | 41 | 190 | 95 | 4.4 |
| 190 | 13 | 27.3 | 46 | 46 | 220 | 100 | 5.3 |
| 216 | 13 | 34.05 | 57 | 57 | 240 | 110 | 7.0 |
| 229 | 13 | 42.8 | 61 | 61 | 305 | 120 | 8.1 |
| 241 | 13 | 48.9 | 70 | 70 | 325 | 130 | 9.1 |
| 292 | 16 | 61.35 | 88 | 88 | 450 | 135 | 10.7 |
| 330 | 16 | 74.2 | 110 | 110 | 550 | 150 | 13.7 |
| 356 | 16 | 90.15 | 128 | 128 | 650 | 165 | 16.2 |
| 432 | 19 | 115.8 | 157 | 157 | 750 | 185 | 28.7 |

* When Dn⩽25, L value as per enterprise standard.

PN1.6~4.0, L value as per DIN 3202/S7; PN10.0~16.0, L value as per DIN 3202/S12.