



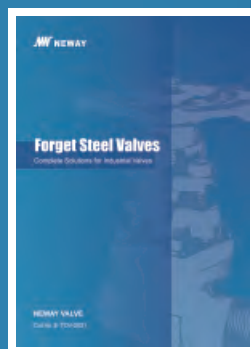
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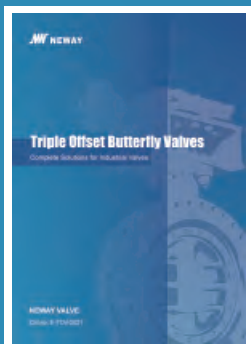
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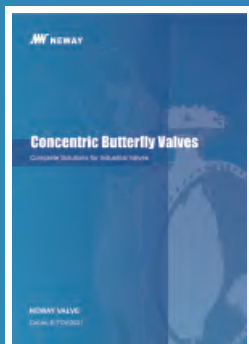
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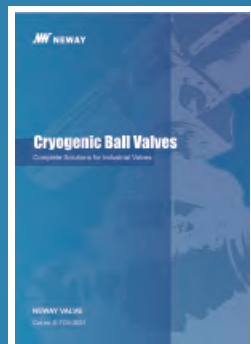
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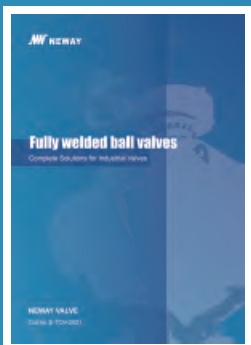
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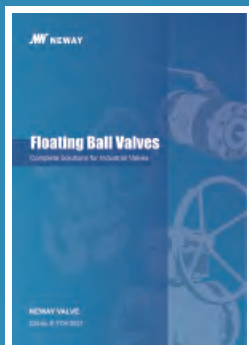
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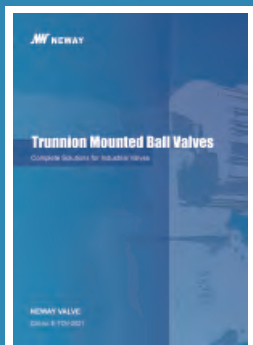
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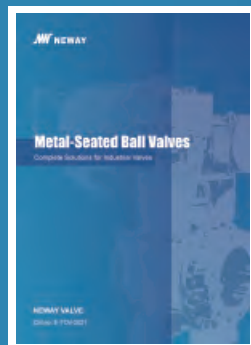
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Cat.no.:E-MSBV



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Cat.no.:E-FWBV-2025



# Fully welded ball valves

Complete Solutions for Industrial Valves

NEWAY VALVE

Cat.no.:E-FWBV-2025



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Complete Solutions for Industrial Valves

As a global leader of valve manufacturing, Newway (SSE:603699) is dedicated to the production, research, and development of industrial valves. Newway is committed to providing complete valve solutions to all industries through advanced engineering and innovation.

Newway's product line includes Ball, Butterfly, Gate, Globe, Check, Nuclear, Control, Subsea, Safety valves. Our high quality standards and innovative ability are recognized by many global end users and EPCs. Newway valves are utilized in a wide variety of industries and working conditions such as Refining, Chemical, Coal Chemical, Offshore(including subsea), Air Separation, LNG, Nuclear Power, Power Generation, and Pipeline Transmission applications.

Facilities & Service

Newway has developed a sophisticated multi-plant management system operating one valve assembly plant, one API6A valve plant, three foundries, and one R&D center. Our largest assembly plant was expanded in 2013, and it now covers 230,000 square meters.

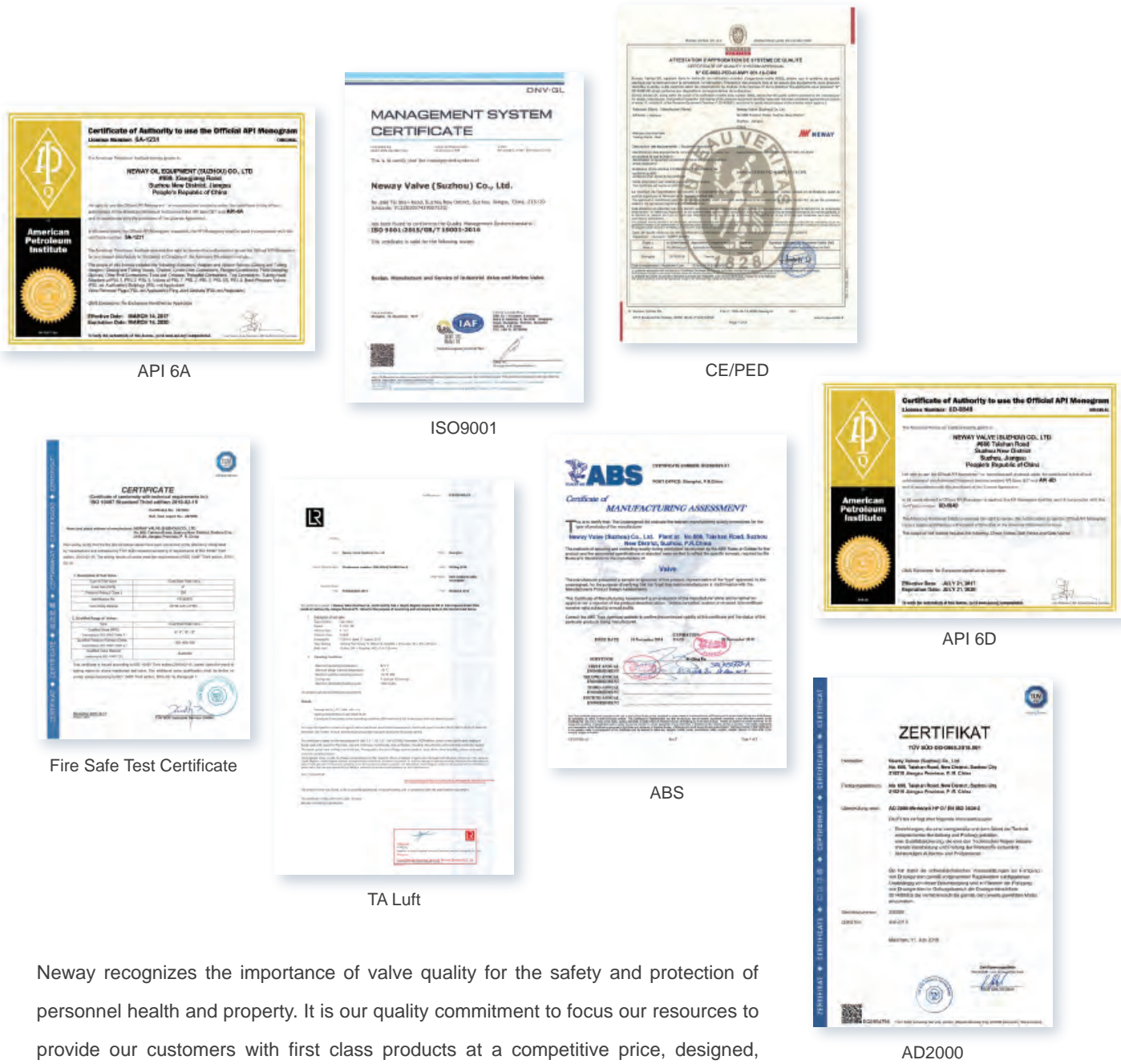
Advanced software (ANSYS, FE-Safe, CF-Design, Siemens PLM and NX) is applied here at Newway for the Research & Development of products. We use SAP to control the traceability and status of all products during the manufacturing process. In order to ensure the safety, eco-friendliness, and reliability of our products, we use the most advanced fire-safe, cryogenic, high pressure, and fugitive emission test equipment.

As part of Newway's global strategy, to provide better service to our customers, we have established our overseas subsidiaries in USA, Netherlands, Italy, Singapore, and Dubai along with over 80 agents and distributors worldwide.

Quality Assurance

Newway is dedicated to the pursuit of "Zero Defect". We maintain a quality management system that encompasses our entire operation from order entry, to final inspection. Through Newway's continuous efforts, our products have successfully achieved industrial certificates including ISO 9001, API 6A, API 6D, CE/PED, ASME N & NPT, TA-Luft, ABS and Fire-Safe approvals.

Quality Commitment

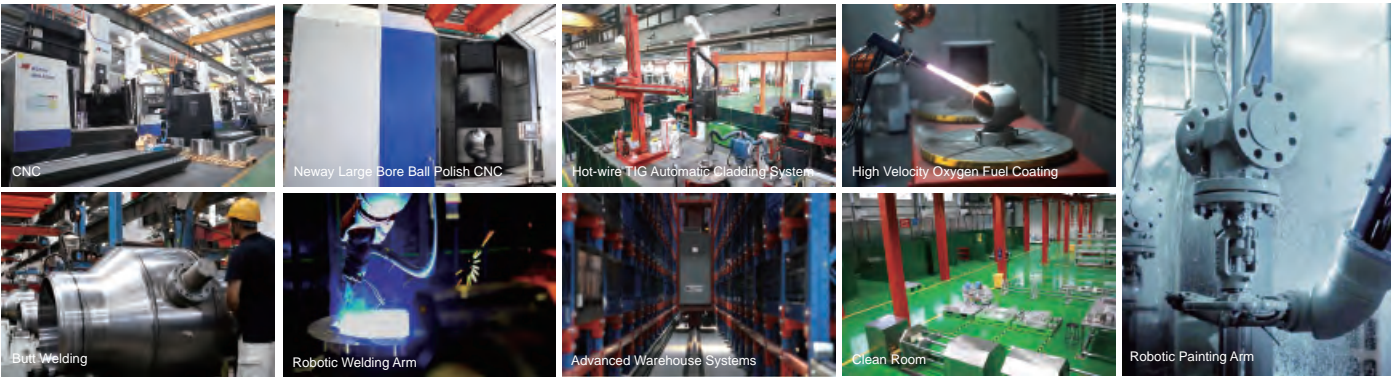


Newway recognizes the importance of valve quality for the safety and protection of personnel health and property. It is our quality commitment to focus our resources to provide our customers with first class products at a competitive price, designed, manufactured, inspected and tested in accordance with our customers specifications and complying with all international standards.

Current industrial standards do not always take into consideration the likelihood and consequences of possible deterioration in service, related to specific service fluids or the external environments in which they operate. Therefore we request that our customers communicate with our engineering department. Our valve optimization program continuously strives to provide valves that withstand deterioration in service, and ensure safety over the valves expected lifetime.




The latest computer technology has been extensively applied in NEWAY manufacturing, which includes a large number of numeric control machines (machining center, CNC horizontal and vertical lathe, and CNC drilling machine) and ERP management system. Additionally, the data through all factories has been connected and shared. These facilitate resource integration, boost productivity, evidently enhancing machining quality and tightening process control.



NEWAY developed comprehensive and advanced inspection and test facilities to control the quality from rough castings or forgings to final products, which enable us to perform ultrasonic testing, radiographic test, liquid penetrant test, magnetic-particle test, spectrum analysis, Material Positive Identification (MPI), impact test, tensile test, hardness test, fire safe test, cryogenic test, vacuum test, low fugitive emission test, high pressure gas test and hydrostatic test.





### Field Performance Test

56" Class900 full welded ball valve prototype developed by Neway independently passed field performance test, including multiples break-to open test at MPD of pipeline, multiple DBB/DIB-1 sealing tests, etc. The test results meet the field performance test requirements.

8x6

①

BW

②

1

③

R

④

-

G

⑤

C471

⑥

/

12333

⑦

Neway part numbers are designed to cover essential features. When ordering, please show the part numbers and a detailed description to avoid misunderstanding of your requirements.

Following descriptions provide a basic guideline in valve specification:

① Nominal Diameter

ull Port

|     |     |       |     |       |      |      |      |      |      |      |
|-----|-----|-------|-----|-------|------|------|------|------|------|------|
| NPS | 2   | 2-1/2 | 3   | 3-1/2 | 4    | 5    | 6    | 8    | 10   | 12   |
| DN  | 50  | 65    | 80  | 90    | 100  | 125  | 150  | 200  | 250  | 300  |
| NPS | 14  | 16    | 18  | 20    | 22   | 24   | 26   | 28   | 30   | 32   |
| DN  | 350 | 400   | 450 | 500   | 550  | 600  | 650  | 700  | 750  | 800  |
| NPS | 34  | 36    | 38  | 40    | 42   | 44   | 48   | 52   | 54   | 56   |
| DN  | 850 | 900   | 950 | 1000  | 1050 | 1100 | 1200 | 1300 | 1350 | 1400 |

duced Port

|     |         |         |         |         |          |         |
|-----|---------|---------|---------|---------|----------|---------|
| NPS | 2x1-1/2 | 2-1/2x2 | 3x2     | 4x3     | 6x4      | 8x6     |
| DN  | 50*40   | 65*50   | 80*50   | 100*80  | 150*100  | 200*150 |
| NPS | 10x8    | 12x10   | 14x12   | 16x14   | 18x16    | 20x18   |
| DN  | 250*200 | 300*250 | 350*250 | 400*350 | 450*400  | 500*450 |
| NPS | 22x20   | 24x20   | 26x24   | 28x24   | 30x24    |         |
| DN  | 550*500 | 600*500 | 650*600 | 700*600 | 750*600  |         |
| NPS | 32x30   | 34x30   | 36x30   | 38x32   | 40x36    |         |
| DN  | 800*750 | 850*750 | 900*750 | 950*800 | 1000*900 |         |

③ ASME Class

| Code | Type |
|------|------|
| 1    | 150  |
| 3    | 300  |
| 4    | 400  |
| 6    | 600  |
| 8    | 800  |
| 9    | 900  |
| 15   | 1500 |
| 25   | 2500 |

④ End Connection

| Symbol | End                     |
|--------|-------------------------|
| R      | Raised face flanged end |
| J      | RTJ flanged end         |
| B      | Butt-weld end           |

⑤ Actuator

| Symbol | Description             |
|--------|-------------------------|
|        | Handwheel Operator      |
| G      | Gear Operator           |
| M      | Electric Actuator       |
| P      | Pneumatic Actuator      |
| H      | Hydraulic Actuator      |
| L      | Gas over Oil Actuator   |
| R      | Raised Face Flanged End |

⑥ Shell Material

|          |      |              |
|----------|------|--------------|
| Material | A105 | LF2          |
| ASTM Ref | A105 | A350 Gr. LF2 |

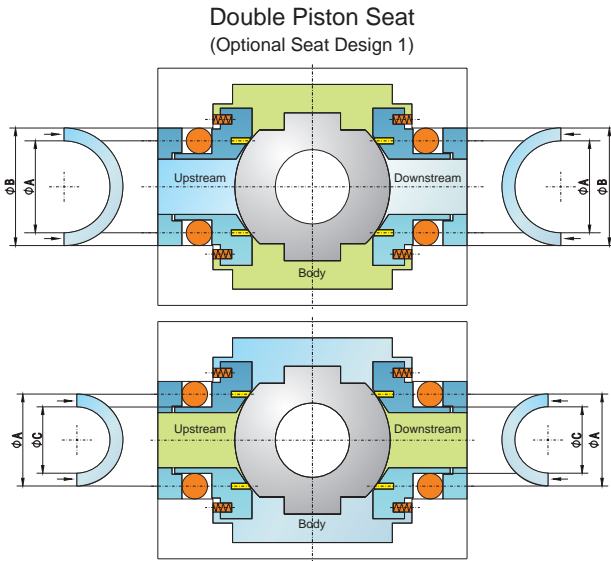
| ⑦ Trim Code |          |        |           |      |           |      |           |          |           |
|-------------|----------|--------|-----------|------|-----------|------|-----------|----------|-----------|
| Seat        |          | O Ring |           | Stem |           | Ball |           | Retainer |           |
| Code        | Material | Code   | Material  | Code | Material  | Code | Material  | Code     | Material  |
| 1           | FKM AED  | 1      | NBR       | 1    | F6a       | 1    | F6a       | 1        | F6a       |
| 2           | HNBR AED | 2      | VITON     | 2    | F304      | 2    | F304      | 2        | F304      |
| -           | -        | 3      | VITON AED | 3    | A105N/ENP | 3    | A105N/ENP | 3        | A105N/ENP |
| -           | -        | 4      | VITON B   | 4    | 17-4PH    | 4    | 17-4PH    | 4        | 17-4PH    |
| -           | -        | 5      | HNBR      | 5    | 4140/ENP  | 5    | 4140/ENP  | 5        | 4140/ENP  |
| -           | -        | 6      | HNBR AED  | 6    | F316      | 6    | F316      | 6        | F316      |
| -           | -        | -      | -         | 7    | F304L     | 7    | F304L     | 7        | F304L     |
| -           | -        | -      | -         | 8    | F316L     | 8    | F316L     | 8        | F316L     |
| -           | -        | -      | -         | 9    | LF2/ENP   | 9    | LF2/ENP   | 9        | LF2/ENP   |

Note: Other materials upon request.

Self Relieving Seats (Single Piston Effect)

The single piston effect is the standard design for trunnion mounted ball valves. Pressure from both upstream and downstream sides pushes the seat rings against the ball.

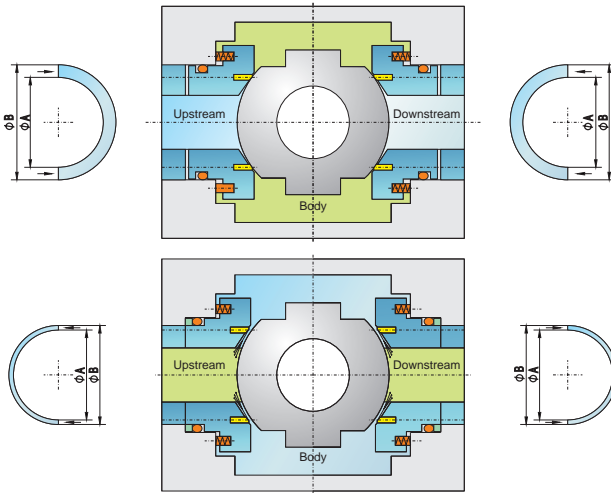
If the force created by the body cavity pressure is greater than the preloaded spring force plus the force created by the pressure from upstream or downstream side, the seats are pushed away from the ball. Thus, any over pressure in the body cavity is released automatically in the valves' fully open or fully closed position.



Upstream Self-relief Seat Downstream Double Piston Seat

The upstream end is designed with self-relief valve seat. The medium pressure pushes the valve seat to the sphere to form a seal. If the force created by the body cavity pressure is greater than the preloaded spring force plus the force created by the pressure from pipeline, the cavity pressure releases via the self-relieving seat. Double piston effect seats are pressure energized in both directions. So the seat rings are always pushed against the ball by the pressure from upstream and downstream or from the cavity.

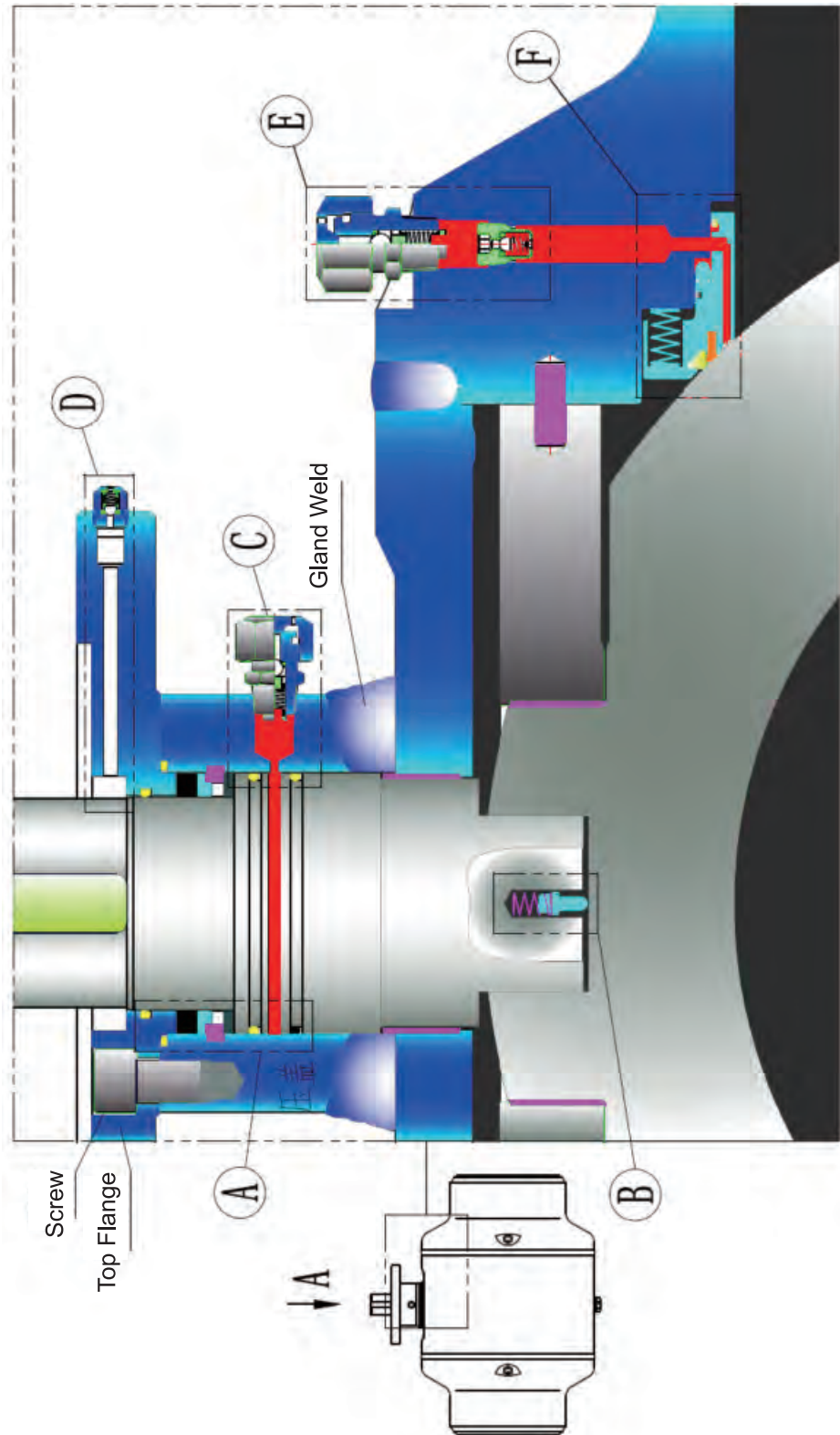
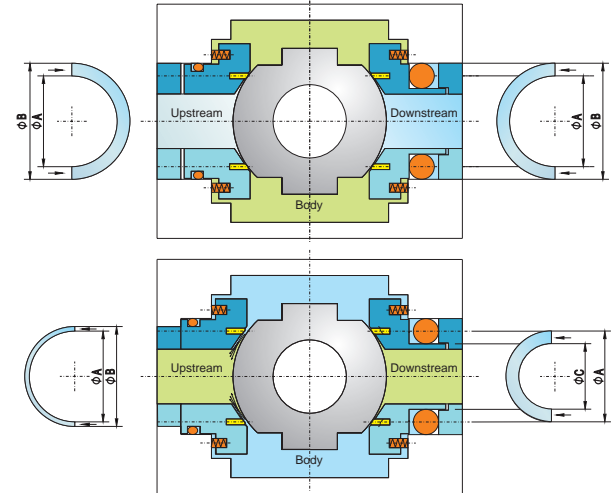
Conventional Self-relieving Seat



Double Piston Seat

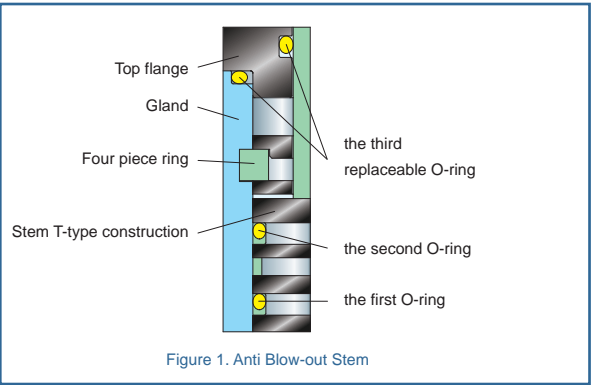
The thrust generated by the upstream and downstream pressure always pushes the seat to the sphere and keeps it sealed. Double piston action ball valve does not have the function of self-release in the middle chamber, so in general, the valve needs to install a safety valve on the valve body. When the pressure in the middle chamber is too high, the pressure can be released through the safety valve.

Upstream Self-relief Seat  
Downstream Double Piston Seat  
(Optional Seat Design 2)



- A Topography of valve stem design
- B Topography of anti-static device
- C Topography of valve stem lubricator
- D Topography of valve position observable design and actuator pressure protection device
- E Topography of valve body lubricator
- F Topography of valve seat structure





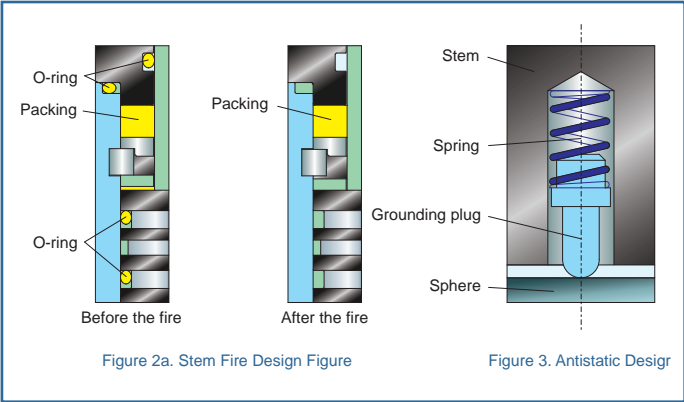
Anti Blow-out Stem

Since the main structure of ball valve is that the ball separated from the stem, if there is no reliable stem anti-blow design, the stem is easy to be blown out. Such a reliable stem blowout proof design is important. All - welded ball valves manufactured by Neway is totally reliable stem anti - blow design. One end of the valve stem close to the ball is designed as a whole T-shaped structure, the four-ring pressing the T-shaped structure of the valve stem, and the four-ring embedded in the gland welded with the valve body, so that it is very reliable to avoid the failure of the top flange screw caused by the valve cavity pressure blown out of the serious As shown in the figure 1.

Super Fire Safe Design

Stem Fire Protection Design

Under normal circumstances, all - welded ball valves manufactured by Neway, before fire, Leakage from the valve stem area is prevented by two O-ring seals and a gland packing. Leakage through the valve body connection is also blocked by an O-ring seal and a body gasket After a fire deteriorated the O-rings, gland and body gasket, the fire safe stem packing prevents external leakage. See figure 2a.

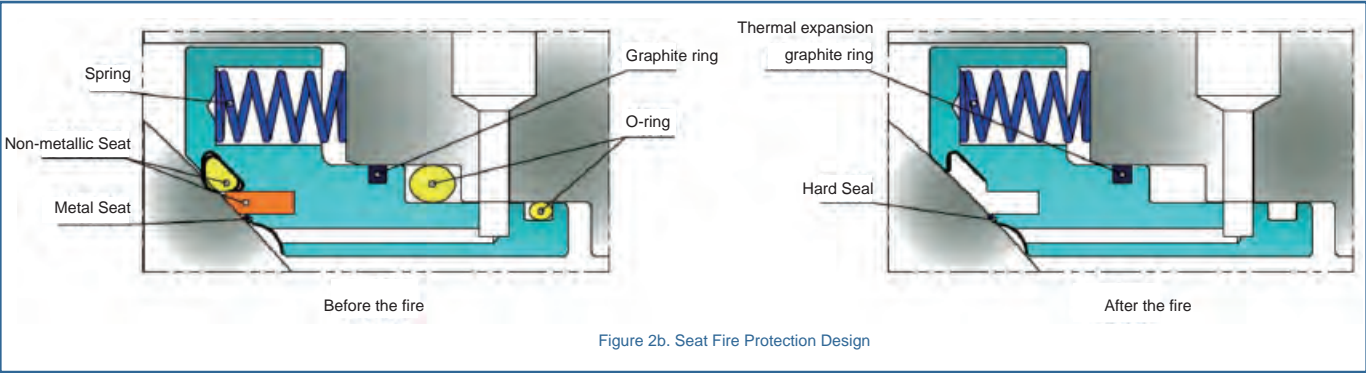


Seat Fire Protection Design

Under normal circumstances, all - welded ball valves manufactured by Neway, before fire, the non-metal seat and circle-type play a sealing role to effectively prevent internal leakage of the valve. When a fire occurs, the non-metal seat and the circllet are invalidated by melting. At this time, under the action of the spring force, the metal seat and the ball form a metal to metal hard seal. The graphite ring expands under high temperature to form a seal. Metal to metal hard seal and graphite expansion seal minimize internal leakage. See figure 2b for details.

Anti-static Device

Anti-static design is any easy or possible accumulation of static charge in the valve cavity parts and the valve body (the valve body is generally connected with the pipeline system grounding device) to form a conductor path, so that the valve switch or medium erosion caused by the friction of static charge effectively into the grounding device. Anti-static device is the standard design for ball valves manufactured by Neway. All welded valves manufactured by Neway only have the potential to accumulate charge in the sphere, so the electrostatic design is: the stem is equipped with a spring and a ground plug, so that the ball forms a conductor between the stem and the valve body, and the static charge can be transferred from the sphere to the grounding device through the stem and valve body, thus avoiding the accumulation of static charge. This accumulation of static can be extremely dangerous in some dangerous areas. See figure 3.

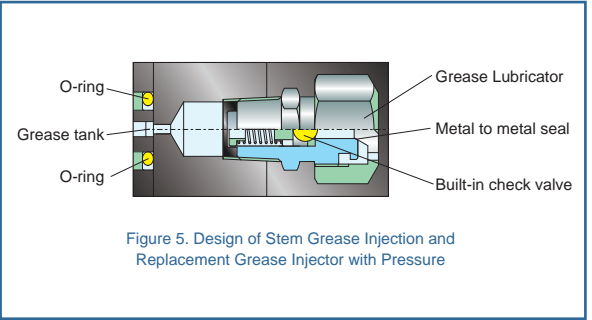


Grease Injection Design

If the valve leaks in the pipeline, the leakage of the valve can be reduced or eliminated by injecting a sealing grease (a sticky grease). When the valve has not been switched for a long time, resulting in greater torque, grease can be injected, which can effectively reduce the operating torque of the valve and enhance the operation friendliness. For all welded ball valves manufactured by Neway, the default design with grease injection is above 6 and below 4. If customers need grease injection design, they can also design with grease injection.

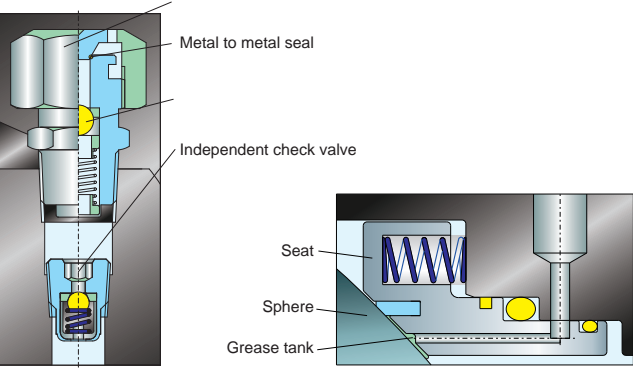
Seat Greasing Device

Seat grease injection of all-welded ball valve manufactured by Neway injects sealing grease or grease into annular grease groove between ball and valve seat by grease injector, so that grease can form grease seal or lubrication in grease groove, effectively prevent valve leakage or reduce valve operating torque. Independent check valves and built-in check valves of grease injectors form two way reverse seals, which effectively prevent backflow of injected grease and leakage of medium. At the same time, the injector is equipped with needle-shaped metal-to-metal seals, that is, the third seal under normal conditions and plays a role in fire prevention. See Figure 4 for details.



Seat Greasing Device

The valve stem grease of all welding ball valve produced by Neway is injected into the grease groove between two circle-type rings by grease injector to make the grease form grease seal or lubrication in the closed space around the valve stem, which can effectively prevent the leakage of the valve or reduce the operating torque of the valve. Grease injector built-in check valve, effectively prevent the oil into the reverse flow, and at the same time with metal to metal needle sealing pair, which plays a normal situation of the third seal (valve stem circlip for the first, built-in check valve second) and play a role in fire prevention. See figure 5.



Stem can be Replaced with Pressure Grease Injector

The all welded ball valve manufactured by Neway can seal the medium with the independent check valve under the normal operation of the valve, so that the grease injector is not affected by the pressure of the medium, so it is very convenient to replace the grease injector. See figure 5.

Can Replace the Design of Grease Injector with Pressure

The so-called with pressure to replace the grease injector is in the normal situation of the grease injector is not affected by the pressure of the medium, the role of this design is in the normal operation of the valve can replace the damaged grease injector, more importantly, can prevent the oil injector due to the operator error operation caused by the high pressure medium blow damage.

Stem can be Replaced with Pressure Grease Injector

The whole welding ball valve produced by Neway, in the normal operation of the valve, the first circle-type of the valve stem has a sealing effect on the medium, so that the grease injector is not affected by the pressure of the medium, so it is very convenient to replace the grease injector. See figure 4.

Zero Leakage (Three-way Stem Seal)

The most important thing of all welded ball valve is to control leakage. Because the body of the fully welded ball valve is welded, there will be no leakage. The only possible leakage is the sealing at the stem, so the sealing at the stem is the guarantee of zero leakage of the fully welded ball valve. The valve stem seal of all welded ball valve manufactured by Neway adopts three seals, the first and second are O-ring seals, the third is replaceable O-ring seals, and the three seals are the guarantee of zero leakage. See Figure 6 for details.

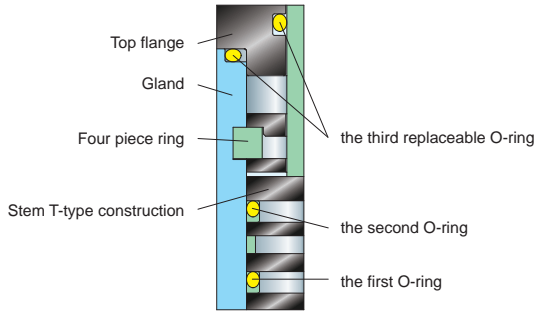


Figure 6. Stem Seal and Seal Design for On-line Replacement

Stem Seal Design can be Replaced Online

All-welded ball valves are the most important to control leakage, and the only possible leakage is the stem. Valves in some operating conditions require frequent switching and stem seal life is limited, making it important to replace or repair seals online after stem seal leaks without affecting valve service. The third seal of the stem of the all-welded ball valve manufactured by Neway can be replaced online. As long as the top flange screw (see general drawing of design features) is removed, it can be replaced by two sealing herrings on it. See figure 6.

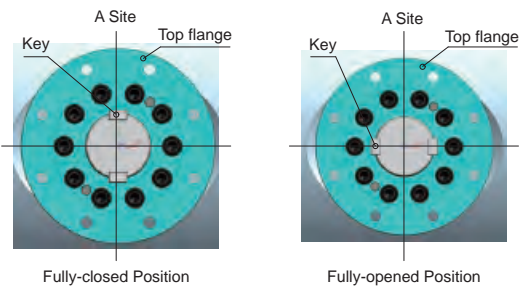


Figure 7. Stem Limit Design

Solid Particle Proof Seat Design

In the process of pipeline construction, there are more or less fixed particles, such as sand, welding slag, etc., which remain in the pipeline. If these fixed particles do not have effective measures to reduce their destructiveness, their harm to the valve is considerable. These particles will damage the seating surface of the valve when the valve is on and off, causing internal leakage of the valve. Neway's fully welded ball valves adopt three-way composite sealing technology. The first metal seat seal can effectively filter out large particles of impurities, the second plastic seal can filter out small particles of impurities, and the last rubber seal ring can achieve zero leakage of the valve. This composite sealing technology can minimize the leakage of the seal caused by impurities. (See Figure 8 for details)

Stem Limit Design

When replacing the actuator, it is necessary to find the full open and full closed positions to adjust the limit structure of the actuator. If the valve itself does not have the limit structure of the stem, it is difficult to find the full open and full closed positions of the valve online. Ball valves manufactured by Neway are equipped with stem limiting devices to facilitate replacement of actuators. See figure 7.

True All Welded Ball Valve (Welded Gland)

Some manufacturers produce full welding ball valve gland and valve body is bolted, this will increase an external leakage point, not the real meaning of the full welding ball valve. The all welded ball valve gland and valve body manufactured by Neway adopt welded structure (see general drawing of design features), which can reduce the external leakage point of the valve, and is a real all welded ball valve which is very helpful for the control of external leakage of all welded ball valve. Figure 8. Solid - particle proof seat design.

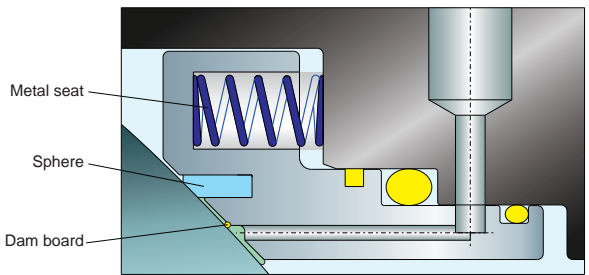


Figure 8. Anti-Solid particle seating design

Double Block and Bleed (DBB) Design

Double block relief design is a requirement of API 6D for pipeline fixed ball valve, that is in the closed position, provides a seal against pressure from both ends of the valve with a means of venting and bleeding the cavity between the seating surfaces. The API 6D fixed all of ball valves manufactured by Neway have this design.

Valve Position Observable Design (Optional)

The observable design of the inherent position of the valve itself plays a key role when the valve is not displayed or the display of the valve position is invalid due to some reasons or when the valve needs to replace the actuator online. The valve manufactured by Neway has a valve observation hole through which different colors of the stem surface can be seen, representing the full opening or full closing of the valve with different colors. This design is optional and does not carry it by default. See Figure 9 for details.

Actuator Pressure Protection Design (Optional)

When the stem of the valve leaks for some reason, the high-pressure medium in the pipeline can easily rush into the actuator and cause damage to the actuator. Valves manufactured by Neway are equipped with actuator pressure protection pressure relief holes, which are equipped with one-way valves to ensure that the high-pressure medium can be discharged while avoiding external pressure or dust into the valve. This design is optional and is not included by default. See figure 9.

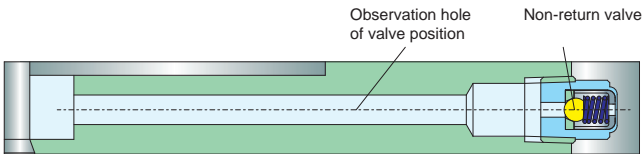


Figure 9. Valve Position Observable and Actuator Pressure Protection Design(Optional)

Self-relieving Seat

All the valve chambers of fixed ball valves are a closed space when the valve is fully open or closed. If there is no pressure relief design in a closed space, it is very dangerous. For example, in areas where the temperature difference between day and night is very large, if the medium enters the valve chamber and is sealed by the valve chamber when the temperature is very low at night, with the rise of noon temperature, the medium can not be released, so the expanding medium can not be released. It is likely to cause the chamber pressure to exceed the design pressure and cause explosion. If the valve produced by Neway has at least one self-pressure relief seat, the pressure in the valve chamber will be discharged into the pipeline through the self-pressure relief seat. If both seats are double piston seats, the high pressure will be discharged from the valve chamber through the self-pressure relief valve in the valve chamber.

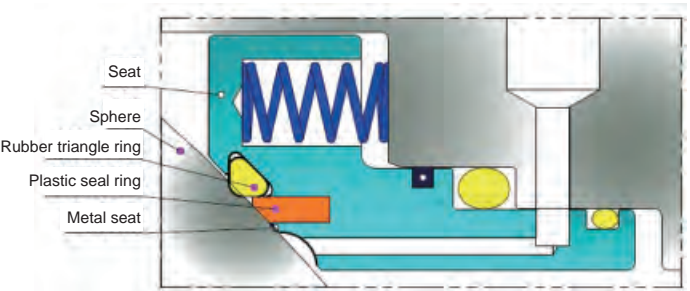
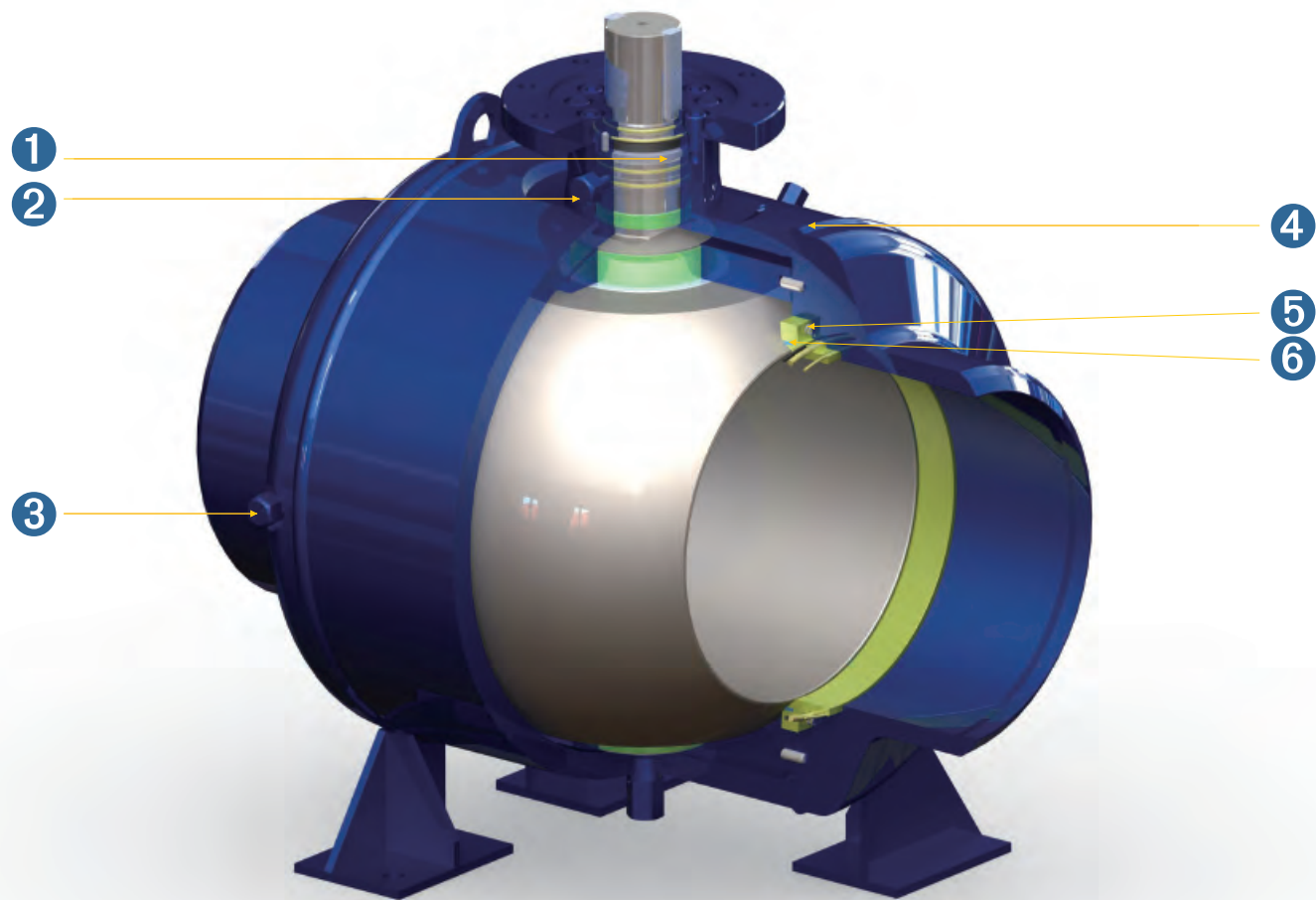


Figure 10. Triangle ring seating design

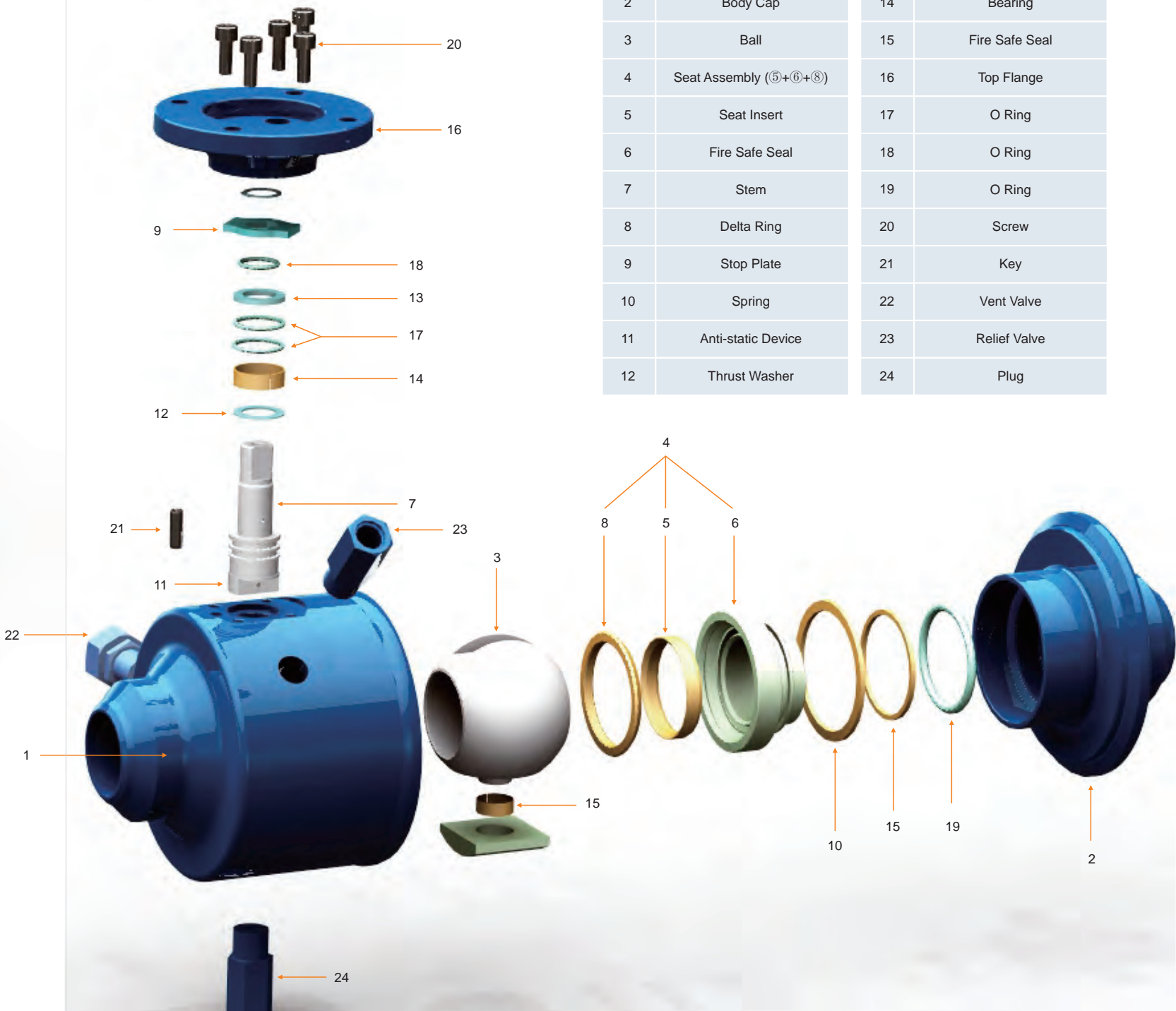
Delta Ring Seat Design

The delta ring is an antiknock rubber delta ring, which has better elasticity and inclusion of fine particles than plastic. This elasticity can easily absorb the slight scratches caused by impurities in the field on the sealing surface of the valve, and in the same case, the use of the delta ring seat will greatly reduce the possibility of leakage due to the leakage of the plastic seat. Neway's delta ring seat is suitable for different caliber valves, especially for large caliber valves with better sealing performance than plastic seats. This design defaults to all calibers of fully welded ball valves. (See Figure 10 for details)

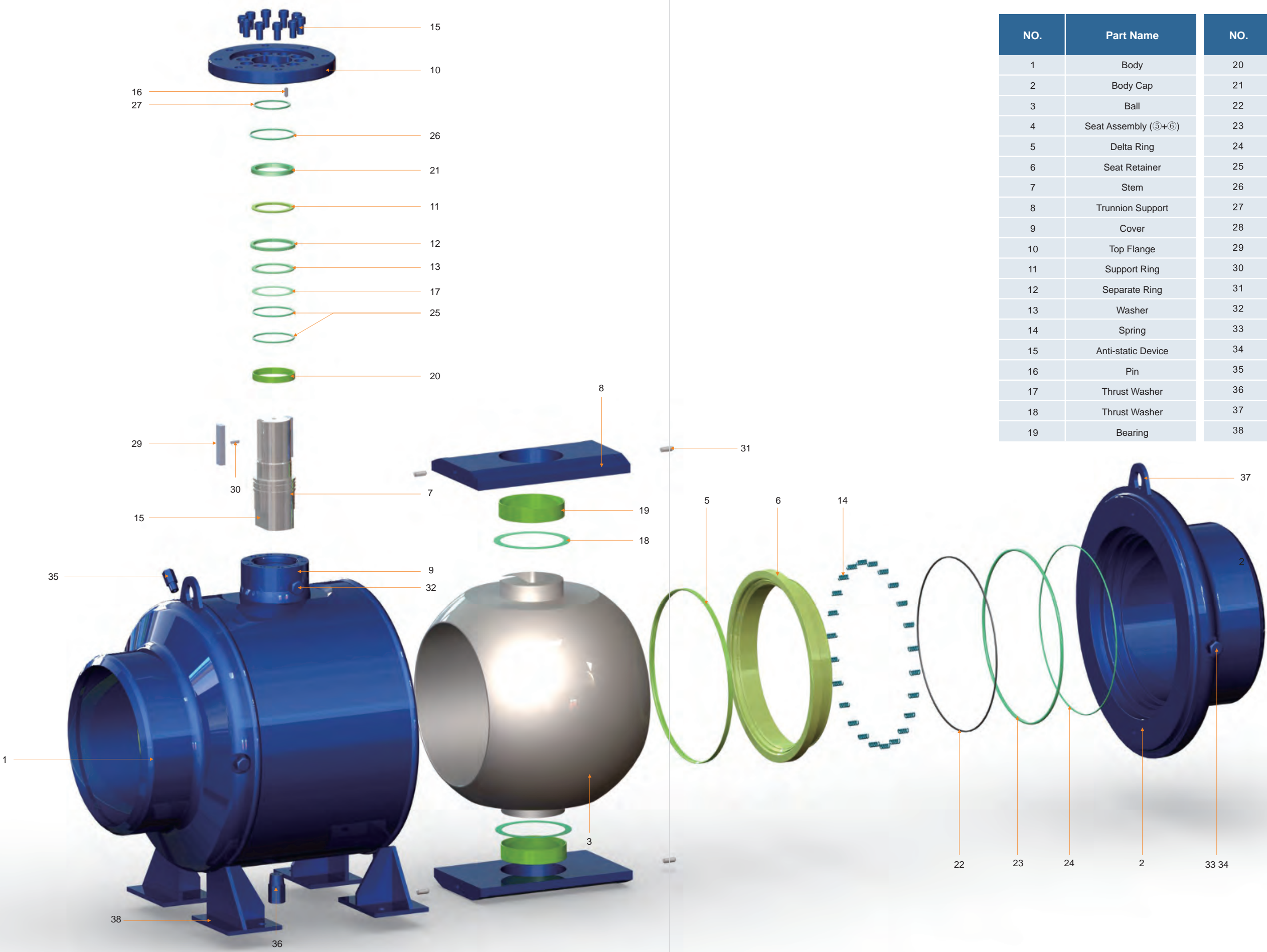




- 1 Blow-out Proof Stem : Safety feature that functions to assure stem sealing at all pressures.
- 2 Emergency Sealant Injection Fitting: Prevents leakage from the stem.
- 3 Emergency Sealant Injection Fitting: Prevents leakage from the seat.
- 4 Fully-welded Body Structure: The line media leakage can be prevented.
- 5 Floating Spring-loaded Seats: Assure sealing even at low pressures.
- 6 Metal to Metal Sealing: When soft seals are deteriorated by fire, seat float to shut off the line media.



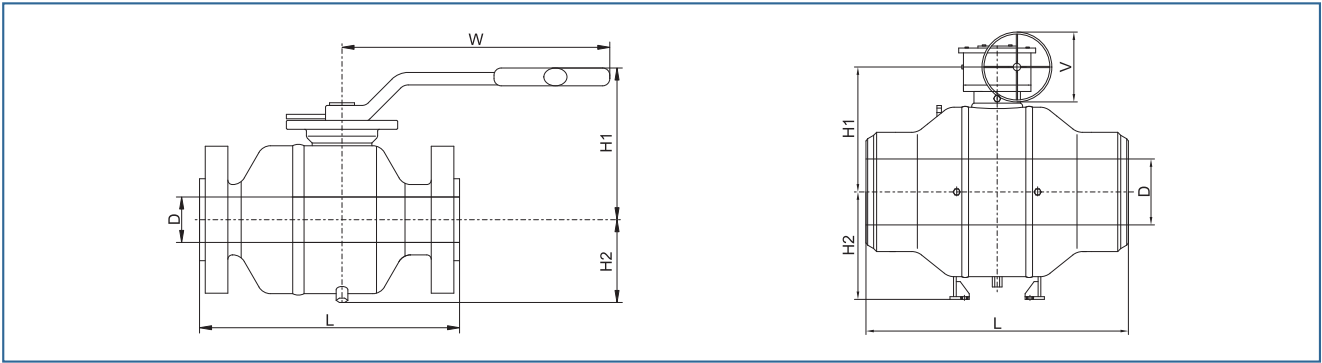
| NO. | Part Name             | NO. | Part Name      |
|-----|-----------------------|-----|----------------|
| 1   | Body                  | 13  | Fire Safe Seal |
| 2   | Body Cap              | 14  | Bearing        |
| 3   | Ball                  | 15  | Fire Safe Seal |
| 4   | Seat Assembly (5+6+8) | 16  | Top Flange     |
| 5   | Seat Insert           | 17  | O Ring         |
| 6   | Fire Safe Seal        | 18  | O Ring         |
| 7   | Stem                  | 19  | O Ring         |
| 8   | Delta Ring            | 20  | Screw          |
| 9   | Stop Plate            | 21  | Key            |
| 10  | Spring                | 22  | Vent Valve     |
| 11  | Anti-static Device    | 23  | Relief Valve   |
| 12  | Thrust Washer         | 24  | Plug           |



| NO. | Part Name           | NO. | Part Name      |
|-----|---------------------|-----|----------------|
| 1   | Body                | 20  | Bearing        |
| 2   | Body Cap            | 21  | Fire Safe Seal |
| 3   | Ball                | 22  | Fire Safe Seal |
| 4   | Seat Assembly (⑤+⑥) | 23  | O Ring         |
| 5   | Delta Ring          | 24  | O Ring         |
| 6   | Seat Retainer       | 25  | O Ring         |
| 7   | Stem                | 26  | O Ring         |
| 8   | Trunnion Support    | 27  | O Ring         |
| 9   | Cover               | 28  | Screw          |
| 10  | Top Flange          | 29  | Key            |
| 11  | Support Ring        | 30  | Pin            |
| 12  | Separate Ring       | 31  | Pin            |
| 13  | Washer              | 32  | Injection      |
| 14  | Spring              | 33  | Injection      |
| 15  | Anti-static Device  | 34  | Check Valve    |
| 16  | Pin                 | 35  | Relief Valve   |
| 17  | Thrust Washer       | 36  | Vent Valve     |
| 18  | Thrust Washer       | 37  | Lifting Lugs   |
| 19  | Bearing             | 38  | Support Legs   |



| No. | Part Name             | Standard           | Low Temperature Environment |
|-----|-----------------------|--------------------|-----------------------------|
| 1   | Body                  | ASTM A 105/QT      | ASTM A350 LF2               |
| 2   | Body Cap              | ASTM A 105/QT      | ASTM A350 LF2               |
| 3   | Ball                  | ASTM A 105N/ENP    | ASTM A350 LF2/ENP           |
| 4   | Seat Assembly (⑤+⑥+⑧) | 5+6+8              | 5+6+8                       |
| 5   | Delta Ring            | VITON AED/HNBR AED | VITON AED/HNBR AED          |
| 6   | Seat Retainer         | ASTM A 195NENP     | ASTM A350 LF2/ENP           |
| 7   | Stem                  | ASTM A105N/ENP     | ASTM A350 LF2/ENP           |
| 8   | Trunnion Support      | ASTM A216 WCB/ENP  | ASTM A352 LCB/ENP           |
| 9   | Cover                 | ASTM A105/QT       | ASTM A350 LF2               |
| 10  | Tap Flange            | ASTM A 105N        | ASTM A350 LF2               |
| 11  | Support Ring          | ASTM A182 F6a      | ASTM A182 F6a               |
| 12  | Separate Ring         | ASTM A182 F6a      | ASTM A182 F6a               |
| 13  | Washer                | ASTM A182 F6a      | ASTM A182 F6a               |
| 14  | Spring                | INCONEL X-750      | INCONEL X-750               |
| 15  | Anti-static Device    | ASTM A276 316      | ASTM A276 316               |
| 16  | Pin                   | AISI 1035          | AISI 1035                   |
| 17  | Thrust Washer         | RPTFE              | RPTFE                       |
| 18  | Thrust Washer         | RPTFE              | RPTFE                       |
| 19  | Bearing               | 316+PTFE           | 316+PTFE                    |
| 20  | Bearing               | 316+PTFE           | 316+PTFE                    |
| 21  | Fire Safe Seal        | 316+GRAPHITE       | 316+GRAPHITE                |
| 22  | Fire Safe Seal        | 316+GRAPHITE       | 316+GRAPHITE                |
| 23  | O Ring                | HNBR               | HNBR                        |
| 24  | O Ring                | HNBR               | HNBR                        |
| 25  | O Ring                | HNBR               | HNBR                        |
| 26  | ORing                 | HNBR               | HNBR                        |
| 27  | O Ring                | HNBR               | HNBR                        |
| 28  | Screw                 | ASTM A193 B7       | ASTM A320 L7M               |
| 29  | Key                   | 45                 | ASTM A182 F6a               |
| 30  | Pin                   | ASTM A276 304      | ASTM A276 304               |
| 31  | Pin                   | ASTM A276 304      | ASTM A276 304               |
| 32  | Injection             | ASTM A182 F304     | ASTM A182 F304              |
| 33  | Injection             | ASTM A182 F304     | ASTM A182 F304              |
| 34  | Check Valve           | ASTM A182 F304     | ASTM A182 F304              |
| 35  | Relitel Valve         | ASTM A182 F304     | ASTM A182 F304              |
| 36  | Vent Valve            | ASTM A182 F304     | ASTM A182 F304              |
| 37  | Lifing Lugs           | ASTM A283.GRC      | ASTM A283.GRC               |
| 38  | Support Legs          | ASTM A283.GRC      | ASTM A283.GRC               |



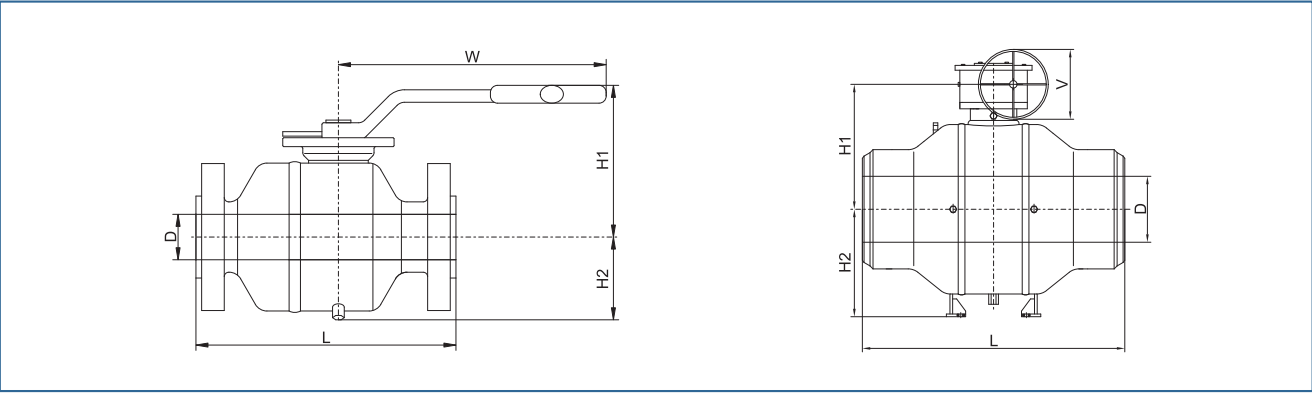
Class 150

| Size |      | D     |      | L     |      |       |      | H1    |        | H2    |        | W     |     | V     |      | Weight   |       |
|------|------|-------|------|-------|------|-------|------|-------|--------|-------|--------|-------|-----|-------|------|----------|-------|
| NPS  | DN   | in    | mm   | in    | mm   | in    | mm   | in    | mm     | in    | mm     | in    | mm  | in    | mm   | lb       | kg    |
| 2    | 50   | 1.93  | 49   | 8.5   | 216  | 8.5   | 216  | 6.04  | 153.3  | 4.10  | 104.25 | 12.99 | 330 | -     | -    | 50.71    | 23    |
| 3    | 80   | 2.91  | 74   | 11.14 | 283  | 11.14 | 283  | 7.28  | 184.8  | 4.80  | 122    | 15.75 | 400 | -     | -    | 79.37    | 36    |
| 4    | 100  | 3.94  | 100  | 12.01 | 305  | 12.01 | 305  | 8.06  | 204.8  | 5.37  | 136.5  | 15.75 | 400 | -     | -    | 132.28   | 60    |
| 6    | 150  | 5.91  | 150  | 15.87 | 403  | 17.99 | 457  | 11.44 | 290.5  | 9.47  | 240.5  | -     | -   | 15.75 | 400  | 418.88   | 190   |
| 8    | 200  | 7.91  | 201  | 19.76 | 502  | 20.51 | 521  | 12.95 | 329    | 10.87 | 276    | -     | -   | 15.75 | 400  | 694.46   | 315   |
| 10   | 250  | 9.92  | 252  | 22.36 | 568  | 22.01 | 559  | 15.45 | 392.5  | 12.44 | 316    | -     | -   | 23.62 | 600  | 776.03   | 352   |
| 12   | 300  | 11.93 | 303  | 25.51 | 648  | 25.00 | 635  | 16.95 | 430.5  | 13.94 | 354    | -     | -   | 23.62 | 600  | 1468.28  | 666   |
| 14   | 350  | 13.15 | 334  | 30.00 | 762  | 30.00 | 762  | 21.22 | 539    | 15.04 | 382    | -     | -   | 23.62 | 600  | 1893.77  | 859   |
| 16   | 400  | 15.16 | 385  | 32.99 | 838  | 32.99 | 838  | 22.68 | 576    | 16.46 | 418    | -     | -   | 23.62 | 600  | 2380.99  | 1080  |
| 18   | 450  | 17.17 | 436  | 35.98 | 914  | 35.98 | 914  | 24.19 | 614.5  | 17.97 | 456.8  | -     | -   | 23.62 | 600  | 3174.65  | 1440  |
| 20   | 500  | 19.17 | 487  | 39.02 | 991  | 39.02 | 991  | 25.73 | 653.5  | 19.51 | 495.5  | -     | -   | 23.62 | 600  | 3747.85  | 1700  |
| 22   | 550  | 21.18 | 538  | 42.99 | 1092 | 42.99 | 1092 | 29.47 | 748.5  | 20.85 | 529.5  | -     | -   | 23.62 | 600  | 4894.26  | 2220  |
| 24   | 600  | 23.19 | 589  | 45.00 | 1143 | 45.00 | 1143 | 31.65 | 804    | 22.70 | 576.5  | -     | -   | 27.56 | 700  | 6117.82  | 2775  |
| 26   | 650  | 24.92 | 633  | 49.02 | 1245 | 49.02 | 1245 | 33.05 | 839.5  | 23.74 | 603    | -     | -   | 27.56 | 700  | 7054.78  | 3200  |
| 28   | 700  | 26.93 | 684  | 52.99 | 1346 | 52.99 | 1346 | 29.86 | 758.5  | 25.33 | 643.5  | -     | -   | 29.92 | 760  | 8917.69  | 4045  |
| 30   | 750  | 28.94 | 735  | 55.00 | 1397 | 55.00 | 1397 | 31.36 | 796.5  | 26.83 | 681.5  | -     | -   | 29.92 | 760  | 10626.27 | 4820  |
| 32   | 800  | 30.67 | 779  | 60.00 | 1524 | 60.00 | 1524 | 32.68 | 830    | 28.11 | 714    | -     | -   | 29.92 | 760  | 12103.36 | 5490  |
| 34   | 850  | 32.68 | 830  | 64.02 | 1626 | 64.02 | 1626 | 30.81 | 782.5  | 29.57 | 751    | -     | -   | 29.92 | 760  | 14779.77 | 6704  |
| 36   | 900  | 34.41 | 874  | 67.99 | 1727 | 67.99 | 1727 | 36.40 | 924.5  | 30.91 | 785    | -     | -   | 29.92 | 760  | 16788.18 | 7615  |
| 40   | 1000 | 38.43 | 976  | 74.80 | 1900 | 72.44 | 1840 | 44.70 | 1135.5 | 34.17 | 868    | -     | -   | 29.92 | 760  | 24310.34 | 11027 |
| 42   | 1050 | 40.16 | 1020 | 80.71 | 2050 | 77.17 | 1960 | 46.02 | 1169   | 35.45 | 900.5  | -     | -   | 29.92 | 760  | 26697.95 | 12110 |
| 48   | 1200 | 45.91 | 1166 | 85.43 | 2170 | 85.43 | 2170 | 50.30 | 1277.5 | 39.70 | 1008.5 | -     | -   | 29.92 | 760  | 40476.82 | 18360 |
| 54   | 1350 | 51.65 | 1312 | -     | -    | -     | -    | 49.65 | 1261   | 42.56 | 1081   | -     | -   | 35.43 | 900  | 71870.61 | 32600 |
| 56   | 1400 | 53.54 | 1360 | -     | -    | -     | -    | 49.72 | 1263   | 45.08 | 1145   | -     | -   | 39.37 | 1000 | 80468.63 | 36500 |
| 60   | 1500 | 57.40 | 1458 | -     | -    | -     | -    | 51.93 | 1319   | 47.99 | 1219   | -     | -   | 39.37 | 1000 | 86200.64 | 39100 |

Class 300

| Size |      | D     |      | L      |      |       |      | H1    |        | H2    |        | W     |     | V     |      | Weight   |       |
|------|------|-------|------|--------|------|-------|------|-------|--------|-------|--------|-------|-----|-------|------|----------|-------|
| NPS  | DN   | in    | mm   | in     | mm   | in    | mm   | in    | mm     | in    | mm     | in    | mm  | in    | mm   | lb       | kg    |
| 2    | 50   | 1.93  | 49   | 8.5    | 216  | 8.5   | 216  | 6.04  | 153.3  | 4.10  | 104.25 | 12.99 | 330 | -     | -    | 50.71    | 24    |
| 3    | 80   | 2.91  | 74   | 11.14  | 283  | 11.14 | 283  | 7.28  | 184.8  | 4.80  | 122    | 15.75 | 400 | -     | -    | 116.84   | 53    |
| 4    | 100  | 3.94  | 100  | 12.01  | 305  | 12.01 | 305  | 8.11  | 206    | 5.59  | 142    | -     | -   | 11.81 | 300  | 216.05   | 98    |
| 6    | 150  | 5.91  | 150  | 15.87  | 403  | 17.99 | 457  | 11.44 | 290.5  | 9.47  | 240.5  | -     | -   | 15.75 | 400  | 465.17   | 211   |
| 8    | 200  | 7.91  | 201  | 19.76  | 502  | 20.51 | 521  | 13.23 | 336    | 10.87 | 276    | -     | -   | 19.69 | 500  | 753.98   | 342   |
| 10   | 250  | 9.92  | 252  | 22.36  | 568  | 22.01 | 559  | 15.45 | 392.5  | 12.44 | 316    | -     | -   | 23.62 | 600  | 824.53   | 374   |
| 12   | 300  | 11.93 | 303  | 25.51  | 648  | 25.00 | 635  | 16.95 | 430.5  | 13.94 | 354    | -     | -   | 23.62 | 600  | 1653.47  | 750   |
| 14   | 350  | 13.15 | 334  | 30.00  | 762  | 30.00 | 762  | 21.22 | 539    | 15.04 | 382    | -     | -   | 23.62 | 600  | 1984.16  | 900   |
| 16   | 400  | 15.16 | 385  | 32.99  | 838  | 32.99 | 838  | 22.68 | 576    | 16.46 | 418    | -     | -   | 23.62 | 600  | 2866.01  | 1300  |
| 18   | 450  | 17.17 | 436  | 35.98  | 914  | 35.98 | 914  | 25.49 | 647.5  | 17.97 | 456.5  | -     | -   | 23.62 | 600  | 3780.92  | 1715  |
| 20   | 500  | 19.17 | 487  | 39.02  | 991  | 39.02 | 991  | 27.70 | 703.5  | 19.51 | 495.5  | -     | -   | 27.56 | 700  | 4166.73  | 1890  |
| 22   | 550  | 21.18 | 538  | 42.99  | 1092 | 42.99 | 1092 | 30.14 | 765.5  | 21.18 | 538    | -     | -   | 27.56 | 700  | 5185.27  | 2352  |
| 24   | 600  | 23.19 | 589  | 45.00  | 1143 | 45.00 | 1143 | 27.28 | 693    | 22.70 | 576.5  | -     | -   | 29.92 | 760  | 6371.35  | 2890  |
| 26   | 650  | 24.92 | 633  | 49.02  | 1245 | 49.02 | 1245 | 28.68 | 728.5  | 24.15 | 613.5  | -     | -   | 29.92 | 760  | 8229.85  | 3733  |
| 28   | 700  | 26.93 | 684  | 52.99  | 1346 | 52.99 | 1346 | 31.99 | 812.5  | 25.77 | 654.5  | -     | -   | 29.92 | 760  | 10086.14 | 4575  |
| 30   | 750  | 28.94 | 735  | 55.00  | 1397 | 55.00 | 1397 | 33.48 | 850.5  | 27.28 | 693    | -     | -   | 29.92 | 760  | 12323.83 | 5590  |
| 32   | 800  | 30.67 | 779  | 60.00  | 1524 | 60.00 | 1524 | 34.80 | 884    | 28.60 | 726.5  | -     | -   | 29.92 | 760  | 13756.83 | 6240  |
| 34   | 850  | 32.68 | 830  | 64.02  | 1626 | 64.02 | 1626 | 36.28 | 921.5  | 30.11 | 764.5  | -     | -   | 29.92 | 760  | 16248.05 | 7370  |
| 36   | 900  | 34.41 | 874  | 67.99  | 1727 | 67.99 | 1727 | 42.38 | 1076.5 | 31.65 | 804    | -     | -   | 29.92 | 760  | 18595.97 | 8435  |
| 40   | 1000 | 38.43 | 976  | 75.98  | 1900 | 72.44 | 1840 | 45.49 | 1155.5 | 34.78 | 883.5  | -     | -   | 29.92 | 760  | 24691.74 | 11200 |
| 42   | 1050 | 40.16 | 1020 | 82.01  | 2083 | 77.17 | 1960 | 49.25 | 1251   | 36.10 | 917    | -     | -   | 31.50 | 800  | 28770.29 | 13050 |
| 48   | 1200 | 45.91 | 1166 | 85.43  | 2170 | 85.43 | 2170 | 43.25 | 1098.5 | 40.41 | 1026.5 | -     | -   | 35.43 | 900  | 41887.78 | 19000 |
| 54   | 1350 | 51.65 | 1312 | -      | -    | -     | -    | 44.65 | 1134   | 42.76 | 1086   | -     | -   | 35.43 | 900  | 71870.61 | 32600 |
| 56   | 1400 | 53.54 | 1360 | 100.12 | 2543 | -     | -    | 49.72 | 1263   | 46.28 | 1175.5 | -     | -   | 39.37 | 1000 | 80468.63 | 36500 |
| 60   | 1500 | 57.40 | 1458 | -      | -    | -     | -    | 56.97 | 1447   | 49.23 | 1250.5 | -     | -   | -     | 1000 | 86200.64 | 39100 |

Dimension & Weight



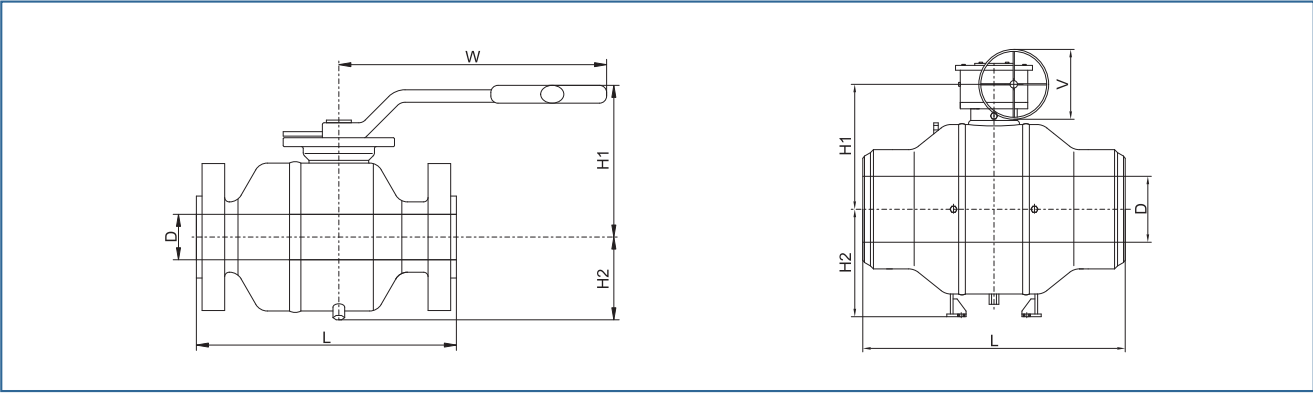
Class 400

| Size |      | D     |      | L      |      |        |      |       |      | H1    |        | H2    |        | W     |     | V     |      | Weight    |       |
|------|------|-------|------|--------|------|--------|------|-------|------|-------|--------|-------|--------|-------|-----|-------|------|-----------|-------|
|      |      |       |      | RF     |      | BW     |      | RTJ   |      |       |        |       |        |       |     |       |      |           |       |
| NPS  | DN   | in    | mm   | in     | mm   | in     | mm   | in    | mm   | in    | mm     | in    | mm     | in    | mm  | in    | mm   | lb        | kg    |
| 2    | 50   | 1.93  | 49   | 11.50  | 292  | 11.50  | 292  | 11.61 | 295  | 6.7   | 170.3  | 4.25  | 108    | 15.75 | 400 | -     | -    | 72.75     | 33    |
| 3    | 80   | 2.91  | 74   | 14.02  | 356  | 14.02  | 356  | 14.13 | 359  | 7.32  | 186    | 5.04  | 128    | -     | -   | 11.81 | 300  | 160.94    | 73    |
| 4    | 100  | 3.94  | 100  | 15.98  | 406  | 15.98  | 406  | 16.14 | 410  | 8.11  | 206    | 5.59  | 142    | -     | -   | 11.81 | 300  | 257.94    | 117   |
| 6    | 150  | 5.91  | 150  | 19.49  | 495  | 19.49  | 495  | 19.61 | 498  | 11.44 | 290.5  | 9.63  | 244.5  | -     | -   | 15.75 | 400  | 504.86    | 229   |
| 8    | 200  | 7.91  | 201  | 23.50  | 597  | 23.50  | 597  | 23.62 | 600  | 13.23 | 336    | 11.08 | 281.5  | -     | -   | 19.69 | 500  | 784.84    | 356   |
| 10   | 250  | 9.92  | 252  | 26.50  | 673  | 26.50  | 673  | 26.61 | 676  | 15.45 | 392.5  | 12.54 | 318.5  | -     | -   | 23.62 | 600  | 1053.81   | 478   |
| 12   | 300  | 11.93 | 303  | 30.00  | 762  | 30.00  | 762  | 30.12 | 765  | 20.20 | 513    | 14.19 | 360.5  | -     | -   | 23.62 | 600  | 1873.93   | 850   |
| 14   | 350  | 13.15 | 334  | 32.52  | 826  | 32.52  | 826  | 32.64 | 829  | 21.22 | 539    | 15.18 | 385.5  | -     | -   | 23.62 | 600  | 2006.20   | 910   |
| 16   | 400  | 15.16 | 385  | 35.51  | 902  | 35.51  | 902  | 35.63 | 905  | 23.98 | 609    | 16.61 | 422    | -     | -   | 23.62 | 600  | 2976.24   | 1350  |
| 18   | 450  | 17.17 | 436  | 38.50  | 978  | 38.50  | 978  | 38.62 | 981  | 25.49 | 647.5  | 18.15 | 461    | -     | -   | 23.62 | 600  | 3880.13   | 1760  |
| 20   | 500  | 19.17 | 487  | 41.50  | 1054 | 41.50  | 1054 | 41.73 | 1060 | 28.58 | 726    | 19.84 | 504    | -     | -   | 27.56 | 700  | 4916.30   | 2230  |
| 22   | 550  | 21.18 | 538  | 45.00  | 1143 | 45.00  | 1143 | 45.39 | 1153 | 26.59 | 675.5  | 21.56 | 547.5  | -     | -   | 29.92 | 760  | 6481.58   | 2940  |
| 24   | 600  | 23.19 | 589  | 48.50  | 1232 | 48.50  | 1232 | 48.86 | 1241 | 28.13 | 714.5  | 23.07 | 586    | -     | -   | 29.92 | 760  | 8730.30   | 3960  |
| 26   | 650  | 24.92 | 633  | 51.50  | 1308 | 51.50  | 1308 | 52.01 | 1321 | 30.49 | 774.5  | 24.55 | 623.5  | -     | -   | 29.92 | 760  | 9964.88   | 4520  |
| 28   | 700  | 26.93 | 684  | 55.00  | 1397 | 55.00  | 1397 | 55.51 | 1410 | 36.93 | 938    | 26.30 | 668    | -     | -   | 29.92 | 760  | 12015.18  | 5450  |
| 30   | 750  | 28.94 | 735  | 60.00  | 1524 | 60.00  | 1524 | 60.51 | 1537 | 38.25 | 971.5  | 27.81 | 706.5  | -     | -   | 29.92 | 760  | 13845.01  | 6280  |
| 32   | 800  | 30.67 | 779  | 65.00  | 1651 | 65.00  | 1651 | 65.63 | 1667 | 39.57 | 1005   | 29.15 | 740.5  | -     | -   | 29.92 | 760  | 16203.96  | 7350  |
| 34   | 850  | 32.68 | 830  | 70.00  | 1778 | 70.00  | 1778 | 70.63 | 1794 | 41.06 | 1043   | 30.65 | 778.5  | -     | -   | 29.92 | 760  | 18144.02  | 8230  |
| 36   | 900  | 34.41 | 874  | 74.02  | 1880 | 74.02  | 1880 | 74.61 | 1895 | 43.17 | 1096.5 | 32.03 | 813.5  | -     | -   | 29.92 | 760  | 22266.66  | 10100 |
| 40   | 1000 | 38.43 | 976  | 85.00  | 2159 | 85.00  | 2159 | -     | -    | 35.14 | 892.5  | 35.16 | 893    | -     | -   | 35.43 | 900  | 29938.74  | 13580 |
| 42   | 1050 | 40.16 | 1020 | 85.63  | 2175 | 85.63  | 2175 | -     | -    | 38.92 | 988.5  | 36.52 | 927.5  | -     | -   | 31.50 | 800  | 33973.19  | 15410 |
| 48   | 1200 | 45.91 | 1166 | 95.87  | 2435 | 95.87  | 2435 | -     | -    | 43.25 | 1098.5 | 40.96 | 1040.5 | -     | -   | 31.50 | 800  | 48281.18  | 21900 |
| 54   | 1350 | 51.65 | 1312 | -      | -    | -      | -    | -     | -    | 45.85 | 1164.5 | 44.69 | 1135   | -     | -   | 39.37 | 1000 | 71870.61  | 32600 |
| 56   | 1400 | 53.54 | 1360 | 106.69 | 2710 | 106.69 | 2710 | -     | -    | 49.04 | 1245.5 | 46.95 | 1192.5 | -     | -   | 39.37 | 1000 | 99485.68  | 45126 |
| 60   | 1500 | 57.40 | 1458 | -      | -    | -      | -    | -     | -    | 56.95 | 1446.5 | 49.94 | 1268.5 | -     | -   | 39.37 | 1000 | 105821.76 | 48000 |

Class 600

| Size |      | D     |      | L      |      |        |      |       |      | H1    |        | H2    |        | W     |     | V     |      | Weight    |       |
|------|------|-------|------|--------|------|--------|------|-------|------|-------|--------|-------|--------|-------|-----|-------|------|-----------|-------|
|      |      |       |      | RF     |      | BW     |      | RTJ   |      |       |        |       |        |       |     |       |      |           |       |
| NPS  | DN   | in    | mm   | in     | mm   | in     | mm   | in    | mm   | in    | mm     | in    | mm     | in    | mm  | in    | mm   | lb        | kg    |
| 2    | 50   | 1.93  | 49   | 11.50  | 292  | 11.50  | 292  | 11.61 | 295  | 6.70  | 170.3  | 4.25  | 108    | 15.75 | 400 | -     | -    | 72.75     | 33    |
| 3    | 80   | 2.91  | 74   | 14.02  | 356  | 14.02  | 356  | 14.13 | 359  | 7.32  | 186    | 5.04  | 128    | -     | -   | 11.81 | 300  | 160.94    | 73    |
| 4    | 100  | 3.94  | 100  | 17.01  | 432  | 17.01  | 432  | 17.13 | 435  | 8.19  | 208    | 5.59  | 142    | -     | -   | 15.75 | 400  | 306.44    | 139   |
| 6    | 150  | 5.91  | 150  | 22.01  | 559  | 22.01  | 559  | 22.13 | 562  | 11.44 | 290.5  | 9.63  | 244.5  | -     | -   | 15.75 | 400  | 617.29    | 280   |
| 8    | 200  | 7.91  | 201  | 25.98  | 660  | 25.98  | 660  | 26.14 | 664  | 13.23 | 338    | 11.08 | 281.5  | -     | -   | 19.69 | 500  | 992.08    | 450   |
| 10   | 250  | 9.92  | 252  | 30.98  | 787  | 30.98  | 787  | 31.14 | 791  | 15.45 | 392.5  | 12.74 | 323.5  | -     | -   | 23.62 | 600  | 1322.77   | 600   |
| 12   | 300  | 11.93 | 303  | 32.99  | 838  | 32.99  | 838  | 33.11 | 841  | 20.98 | 533    | 14.41 | 366    | -     | -   | 23.62 | 600  | 2012.82   | 913   |
| 14   | 350  | 13.15 | 334  | 35.00  | 889  | 35.00  | 889  | 35.12 | 892  | 23.31 | 592    | 15.43 | 392    | -     | -   | 23.62 | 600  | 2050.30   | 930   |
| 16   | 400  | 15.16 | 385  | 39.02  | 991  | 39.02  | 991  | 39.13 | 994  | 24.76 | 629    | 18.58 | 472    | -     | -   | 23.62 | 600  | 3086.47   | 1400  |
| 18   | 450  | 17.17 | 436  | 42.99  | 1092 | 42.99  | 1092 | 43.11 | 1095 | 27.03 | 686.5  | 20.12 | 511    | -     | -   | 27.56 | 700  | 4078.55   | 1850  |
| 20   | 500  | 19.17 | 487  | 47.01  | 1194 | 47.01  | 1194 | 47.24 | 1200 | 24.21 | 615    | 21.81 | 554    | -     | -   | 29.92 | 760  | 5269.04   | 2390  |
| 22   | 550  | 21.18 | 538  | 50.98  | 1295 | 50.98  | 1295 | 51.38 | 1305 | 27.54 | 699.5  | 23.52 | 597.5  | -     | -   | 29.92 | 760  | 7429.57   | 3370  |
| 24   | 600  | 23.19 | 589  | 55.00  | 1397 | 55.00  | 1397 | 55.39 | 1407 | 29.07 | 738.5  | 25.04 | 636    | -     | -   | 29.92 | 760  | 9193.27   | 4170  |
| 26   | 650  | 24.92 | 633  | 57.01  | 1448 | 57.01  | 1448 | 57.52 | 1461 | 30.49 | 774.5  | 26.52 | 673.5  | -     | -   | 29.92 | 760  | 12114.39  | 5495  |
| 28   | 700  | 26.93 | 684  | 60.98  | 1549 | 60.98  | 1549 | 61.50 | 1562 | 37.72 | 958    | 28.27 | 718    | -     | -   | 29.92 | 760  | 13360.00  | 6060  |
| 30   | 750  | 28.94 | 735  | 65.00  | 1651 | 65.00  | 1651 | 65.51 | 1664 | 39.04 | 991.5  | 28.44 | 722.5  | -     | -   | 29.92 | 760  | 14748.91  | 6690  |
| 32   | 800  | 30.67 | 779  | 70.00  | 1778 | 70.00  | 1778 | 70.63 | 1794 | 40.35 | 1025   | 31.77 | 807    | -     | -   | 35.43 | 900  | 17251.15  | 7825  |
| 34   | 850  | 32.68 | 830  | 75.98  | 1930 | 75.98  | 1930 | 76.61 | 1946 | 41.85 | 1063   | -     | -      | -     | -   | 35.43 | 900  | 18651.09  | 8460  |
| 36   | 900  | 34.41 | 874  | 82.01  | 2083 | 82.01  | 2083 | 82.64 | 2099 | 46.79 | 1188.5 | 34.74 | 882.5  | -     | -   | 31.50 | 800  | 23479.20  | 10650 |
| 40   | 1000 | 38.43 | 976  | 85.00  | 2159 | 85.00  | 2159 | -     | -    | 35.14 | 892.5  | 38.11 | 968    | -     | -   | 35.43 | 900  | 32407.91  | 14700 |
| 42   | 1050 | 40.16 | 1020 | 85.63  | 2175 | 85.63  | 2175 | -     | -    | 38.92 | 988.5  | 39.51 | 1003.5 | -     | -   | 31.50 | 800  | 36177.81  | 16410 |
| 48   | 1200 | 45.91 | 1166 | 95.87  | 2435 | 95.87  | 2435 | -     | -    | 43.25 | 1098.5 | 44.11 | 1120.5 | -     | -   | 31.50 | 800  | 53351.80  | 24200 |
| 54   | 1350 | 51.65 | 1312 | -      | -    | -      | -    | -     | -    | 48.64 | 1235.5 | 47.38 | 1203.5 | -     | -   | 39.37 | 1000 | 71870.61  | 32600 |
| 56   | 1400 | 53.54 | 1360 | 106.69 | 2710 | 106.69 | 2710 | -     | -    | 54.11 | 1374.5 | 50.26 | 1276.5 | -     | -   | 39.37 | 1000 | 99485.68  | 45126 |
| 60   | 1500 | 57.40 | 1458 | -      | -    | -      | -    | -     | -    | 56.95 | 1446.5 | 53.37 | 1355.5 | -     | -   | 39.37 | 1000 | 105821.76 | 48000 |

Dimension & Weight



Class 900

| Size |     | D     |     | L     |      |       |      |       |      | H1    |        | H2    |       | W     |     | V     |     | Weight   |       |
|------|-----|-------|-----|-------|------|-------|------|-------|------|-------|--------|-------|-------|-------|-----|-------|-----|----------|-------|
|      |     |       |     | RF    |      | BW    |      | RTJ   |      |       |        |       |       |       |     |       |     |          |       |
| NPS  | DN  | in    | mm  | in    | mm   | in    | mm   | in    | mm   | in    | mm     | in    | mm    | in    | mm  | in    | mm  | lb       | kg    |
| 2    | 50  | 1.93  | 49  | 14.49 | 368  | 14.49 | 368  | 14.61 | 371  | 6.70  | 170.3  | 4.25  | 108   | 15.75 | 400 | -     | -   | 110.23   | 50    |
| 3    | 80  | 2.91  | 74  | 15.00 | 381  | 15.00 | 381  | 15.12 | 384  | 7.32  | 186    | 5.04  | 128   | -     | -   | 11.81 | 300 | 185.19   | 84    |
| 4    | 100 | 3.94  | 100 | 17.99 | 457  | 17.99 | 457  | 18.11 | 460  | 8.19  | 208    | 5.59  | 142   | -     | -   | 15.75 | 400 | 352.74   | 160   |
| 6    | 150 | 5.91  | 150 | 24.02 | 610  | 24.02 | 610  | 24.13 | 613  | 12.50 | 317.5  | 9.82  | 249.5 | -     | -   | 19.69 | 500 | 970.03   | 440   |
| 8    | 200 | 7.91  | 201 | 29.02 | 737  | 29.02 | 737  | 29.13 | 740  | 14.06 | 357    | 11.44 | 290.5 | -     | -   | 23.62 | 600 | 1146.40  | 520   |
| 10   | 250 | 9.92  | 252 | 32.99 | 838  | 32.99 | 838  | 33.11 | 841  | 19.15 | 486.5  | 13.23 | 336   | -     | -   | 23.62 | 600 | 1807.79  | 820   |
| 12   | 300 | 11.93 | 303 | 37.99 | 965  | 37.99 | 965  | 38.11 | 968  | 22.28 | 566    | 14.84 | 377   | -     | -   | 23.62 | 600 | 2480.20  | 1125  |
| 14   | 350 | 12.68 | 322 | 40.51 | 1029 | 40.51 | 1029 | 40.87 | 1038 | 24.59 | 624.5  | 16.08 | 408.5 | -     | -   | 27.56 | 700 | 3549.44  | 1610  |
| 16   | 400 | 14.69 | 373 | 44.49 | 1130 | 44.49 | 1130 | 44.88 | 1140 | 21.71 | 551.5  | 19.59 | 497.5 | -     | -   | 29.92 | 760 | 4431.29  | 2010  |
| 18   | 450 | 16.65 | 423 | 47.99 | 1219 | 47.99 | 1219 | 48.50 | 1232 | 23.82 | 605    | 21.40 | 543.5 | -     | -   | 29.92 | 760 | 6194.98  | 2810  |
| 20   | 500 | 18.54 | 471 | 52.01 | 1321 | 52.01 | 1321 | 52.52 | 1334 | 27.15 | 689.5  | 23.03 | 585   | -     | -   | 29.92 | 760 | 7627.99  | 3460  |
| 22   | 550 | 20.55 | 522 | -     | -    | -     | -    | -     | -    | 33.96 | 862.5  | 25.03 | 635   | -     | -   | 29.92 | 760 | 9722.37  | 4410  |
| 24   | 600 | 22.44 | 570 | 60.98 | 1549 | 60.98 | 1549 | 61.73 | 1568 | 35.53 | 902.5  | 26.63 | 676.5 | -     | -   | 29.92 | 760 | 12118.80 | 5497  |
| 26   | 650 | 24.29 | 617 | 65    | 1651 | 65.00 | 1651 | 65.87 | 1673 | 36.97 | 939    | 28.19 | 716   | -     | -   | 29.92 | 760 | 16417.81 | 7447  |
| 28   | 700 | 26.18 | 665 | 69.02 | 1753 | 69.02 | 1753 | 69.88 | 1775 | 38.70 | 983    | 29.80 | 757   | -     | -   | 29.92 | 760 | 22491.53 | 10202 |
| 30   | 750 | 28.03 | 712 | 74.02 | 1880 | 74.02 | 1880 | 74.88 | 1902 | 42.66 | 1803.5 | 31.48 | 799.5 | -     | -   | 31.50 | 800 | 25225.26 | 11442 |
| 32   | 800 | 29.92 | 760 | 80.00 | 2032 | 80.00 | 2032 | 80.87 | 2054 | 32.95 | 837    | 32.95 | 837   | -     | -   | 35.43 | 900 | 26680.31 | 12102 |
| 34   | 850 | 31.81 | 808 | 85.00 | 2159 | 85.00 | 2159 | 86.14 | 2188 | 33.07 | 840    | 34.61 | 879   | -     | -   | 35.43 | 900 | 38497.07 | 17462 |
| 36   | 900 | 33.66 | 855 | 90.00 | 2286 | 90.00 | 2286 | 91.14 | 2315 | 34.41 | 874    | 36.16 | 918.5 | -     | -   | 35.43 | 900 | 44431.91 | 20154 |



Valve Seat

| the Performance Parameters |  | HNBR AED  | VITON AED | FKM AED-TF95 | VITON GLT AED |
|----------------------------|--|-----------|-----------|--------------|---------------|
| Temperature Range°F        |  | -22~320   | -4~392    | -3.2~392     | -50.8~392     |
| Temperature Range°C        |  | -30~160   | -20~200   | -16~200      | -46~200       |
| Classes. (Class)           |  | 150~1500  | 150~1500  | 150~1500     | 150~1500      |
| Mechanical Properties      | Hardness (Shore A)                                       | 93~98     | 93~98     | 93~98        | 93~98         |
|                            | Strength of Extension (Mpa)                              | ≥17       | ≥17       | ≥18          | ≥17           |
|                            | Elongation at Break                                      | ≥110%     | ≥110%     | ≥75%         | ≥110%         |
|                            | Compression Deformation 22h@200°C                        | ≥30%      | ≥30%      | ≥25%         | ≥30%          |
|                            | Color  | Black     | Black     | Black        | Black         |
| Physical Properties        | Density (g/cm)   | 1.26~1.32 | 1.81~1.87 | 1.81~1.87    | 1.94~1.97     |
|                            | ntiknock PerformanceNORSOK M710 Rev.2 1 ISO 23936-2:2011 | 0         | 0 1 2 3   | 0            | 0 1           |

Seal Ring

| TYPE                | NBR     | HNBR    | VITON   | FFKM    | EPDM    |
|---------------------|---------|---------|---------|---------|---------|
| Temperature Range°F | -22~230 | -40~302 | -4~392  | -4~620  | -58~302 |
| Temperature Range°C | -30~110 | -40~150 | -20~200 | -20~327 | -50~150 |
| Density (g/cm³)     | 1.31    | 1.34    | 1.85    | 2       | 0.87    |
| Hardness (Shore A)  | 75      | 75      | 75      | 75      | 75      |

Description: Other soft sealing materials can be provided according to customer requirements.

Ball Valve Flow Coefficient (Cv Value)

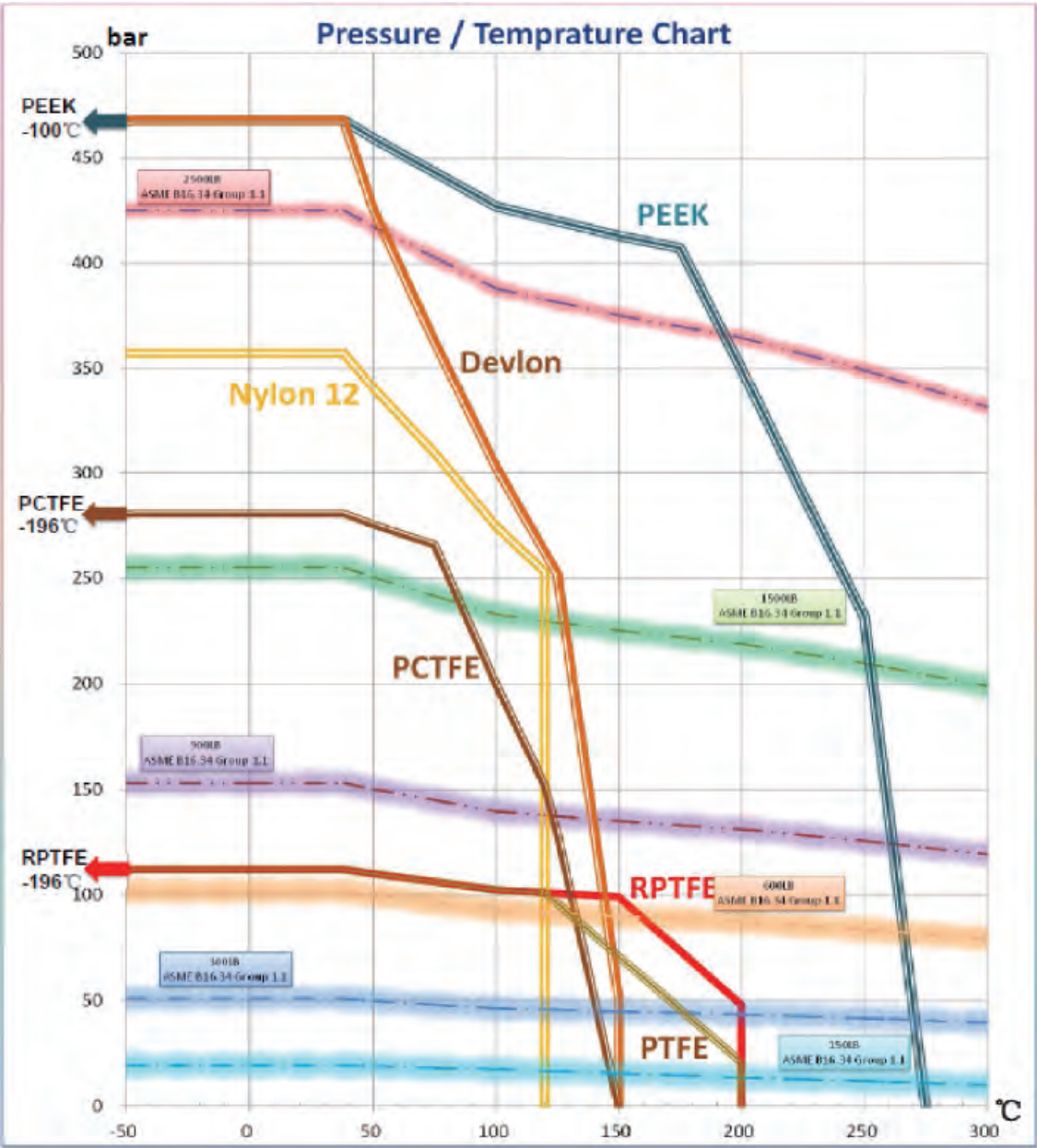
| Size(inch) | Class 150 | Class 300 | Class 600 | Class 900 | Class 1500 |
|------------|-----------|-----------|-----------|-----------|------------|
| 1-1/2      | 227       | 211       | 187       | 167       | 167        |
| 2          | 423       | 384       | 330       | 294       | 294        |
| 3          | 1139      | 965       | 860       | 832       | 749        |
| 4          | 2416      | 2093      | 1759      | 1710      | 1564       |
| 6          | 5241      | 5183      | 4400      | 4212      | 3918       |
| 8          | 10471     | 9991      | 8713      | 8245      | 6921       |
| 10         | 17709     | 17154     | 14573     | 14123     | 11376      |
| 12         | 26241     | 25460     | 22389     | 20864     | 16835      |
| 14         | 32857     | 31176     | 28663     | 24483     | 20967      |
| 16         | 44474     | 42409     | 38998     | 33741     | 27901      |
| 18         | 57002     | 55420     | 50703     | 44491     | 35761      |
| 20         | 73076     | 70180     | 63936     | 55915     | 45445      |
| 22         | 88907     | 85757     | 78750     | -         | -          |
| 24         | 113639    | 109796    | 99314     | -         | -          |

Note:  
All sizes are full port; pressure ratings are per API 6D.

Method of Calculating Flow:  
The Flow Coefficient Cv value is the flow rate of water (gallons/minute) through a fully open valve with a pressure drop of 1 psi to find the flow of liquid through the valve with Cv, use the following formulas.

Liquid Flow:  
QL=Cv(P/G)1/2  
QL:Flow rate of liquid (gal. /min.)  
P:differential pressure across the valve  
G:specific gravity of liquid (for water, G=1)

Gas Flow:  
Qg=61Cv(P2P/g)1/2 (For non-critical flow: P2/P<1)  
QL:Flow rate of gas(CFH at STP)  
P2:outlet pressure (psia)  
G:specific gravity of gas(air: g=1.0)



Note: Other materials are available upon request.  
If the operating condition is beyond the range above, please contact NEWAY's technical team.  
NEWAY reserves the right to update without notice.

Torque Valve

| Size(inch) | Class 150(VITON AED) |          | Class 300(VITON AED) |          | Class 400(VITON AED) |          | Class 600(VITON AED) |          |
|------------|----------------------|----------|----------------------|----------|----------------------|----------|----------------------|----------|
|            | N.m                  | Ft/Lbs   | N.m                  | Ft/Lbs   | N.m                  | Ft/Lbs   | N.m                  | Ft/Lbs   |
| 1~1/2      | 40                   | 29.52    | 50                   | 36.9     | 58                   | 42.81    | 80                   | 59.05    |
| 2          | 50                   | 36.9     | 60                   | 44.28    | 75                   | 55.35    | 120                  | 88.57    |
| 3          | 60                   | 44.28    | 100                  | 73.81    | 167                  | 123.26   | 240                  | 177.14   |
| 4          | 129                  | 95.21    | 210                  | 154.99   | 331                  | 244.30   | 460                  | 339.51   |
| 6          | 380                  | 280.46   | 580                  | 428.08   | 660                  | 487.12   | 900                  | 664.26   |
| 8          | 800                  | 590.45   | 1400                 | 1033.29  | 1613                 | 1190.49  | 2150                 | 1586.83  |
| 10         | 1100                 | 811.87   | 2200                 | 1623.74  | 2493                 | 1839.99  | 3050                 | 2251.09  |
| 12         | 1600                 | 1180.90  | 2510                 | 1852.54  | 3153                 | 2327.11  | 4300                 | 3173.67  |
| 14         | 1800                 | 1328.51  | 3200                 | 2361.80  | 5280                 | 3896.97  | 5723                 | 4223.93  |
| 16         | 3200                 | 2361.80  | 4600                 | 3995.09  | 6143                 | 4533.92  | 8900                 | 6568.76  |
| 18         | 3400                 | 2509.41  | 5510                 | 4066.72  | 9900                 | 7306.82  | 13500                | 9963.84  |
| 20         | 4800                 | 3542.70  | 7600                 | 5609.28  | 11000                | 8118.69  | 16000                | 11809.00 |
| 22         | 5400                 | 3985.54  | 9400                 | 6937.79  | 12300                | 9078.17  | 17500                | 12916.10 |
| 24         | 7000                 | 5166.44  | 12300                | 9078.17  | 14800                | 10923.33 | 19500                | 14392.22 |
| 26         | 8000                 | 5904.50  | 15000                | 11070.94 | 20000                | 14761.25 | 27600                | 20370.53 |
| 28         | 9000                 | 6642.56  | 18000                | 13285.13 | 22000                | 16237.38 | 30000                | 22141.88 |
| 30         | 12950                | 9557.91  | 20000                | 14761.25 | 26600                | 19632.46 | 34000                | 25094.13 |
| 32         | 15000                | 11070.94 | 23000                | 16975.44 | 32000                | 23618.00 | 39000                | 28784.44 |
| 34         | 18000                | 13285.13 | 28000                | 20665.75 | 39000                | 28784.44 | 50000                | 36903.13 |
| 36         | 21000                | 15499.31 | 33000                | 24356.07 | 44000                | 32474.75 | 60000                | 44283.76 |

| Size(inch) | Class 900(VITON AED) |          | Class 1500(VITON AED) |          |
|------------|----------------------|----------|-----------------------|----------|
|            | N.m                  | Ft/Lbs   | N.m                   | Ft/Lbs   |
| 1~1/2      | 140                  | 103.33   | 240                   | 177.14   |
| 2          | 200                  | 147.61   | 320                   | 236.18   |
| 3          | 427                  | 315.15   | 500                   | 369.03   |
| 4          | 750                  | 553.55   | 1000                  | 738.06   |
| 6          | 1200                 | 885.68   | 2900                  | 2140.38  |
| 8          | 3800                 | 2804.64  | 5500                  | 4059.34  |
| 10         | 5000                 | 3690.31  | 8400                  | 6199.73  |
| 12         | 9000                 | 6642.56  | 12000                 | 8856.75  |
| 14         | 11000                | 8118.69  | 15000                 | 11070.94 |
| 16         | 16000                | 11809.00 | 22000                 | 16237.38 |
| 18         | 24000                | 17713.50 | 30000                 | 22141.88 |
| 20         | 27000                | 19927.69 | 37000                 | 27308.32 |
| 22         | 30000                | 22141.88 | 46000                 | 33950.88 |
| 24         | 35000                | 25832.19 | 53000                 | 39117.32 |
| 26         | 38000                | 28046.38 | 65000                 | 47974.07 |
| 28         | 46000                | 33950.88 |                       |          |
| 30         | 60000                | 44283.76 |                       |          |
| 32         | 70000                | 51664.38 |                       |          |
| 34         | 76000                | 56092.76 |                       |          |
| 36         | 80000                | 59045.01 |                       |          |

Note:

1. The calculation of torque is based on room temperature, and the seat ring materials are VITON AED and HNBR AED

2. Torque shown in this table is to be used as a quide for actuator selection. A safety factor of 1.3-1.5 is recommended for actuator sizing.

3. Torque may be changed according to different fluid and trim material.

Product Warranty

Seller will replace without charge or refund the purchase price of products provided by Seller which prove to be defective in material or workmanship, provided in each case that the product is properly installed and is used in the service for which Seller recom- mends it and that written claim, specifying the alleged defect, is presented to the Seller within 18 months from the date of shipment or 12 months after installation, whichever occurs first. Seller shall in no event bear any labor, equipment, engineering or other costs incurred in connection with repair of replacement. The warranty stated in this paragraph is in lieu of all other warranties, either expressed or implied. With respect to warranties, this paragraph states Buyer's exclusive remedy and seller's exclusive liabil- ity.