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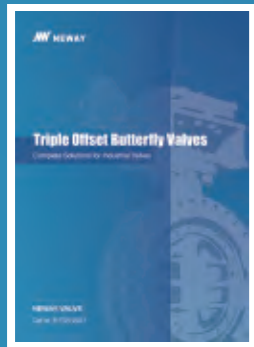
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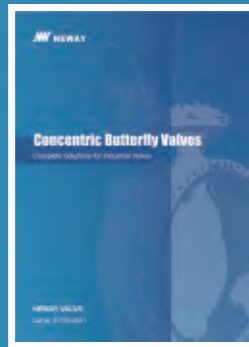
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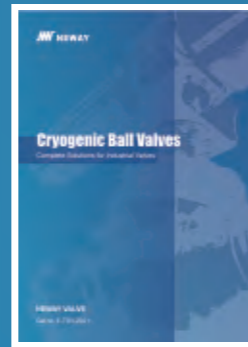
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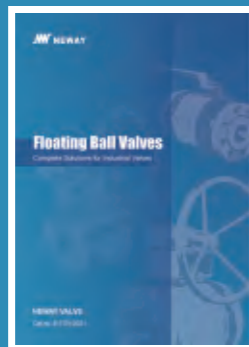
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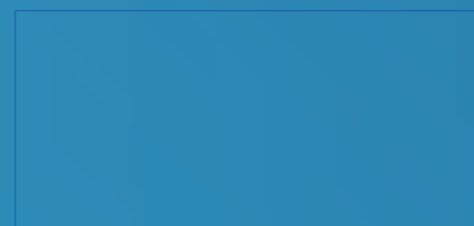
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Fully welded ball valves

Complete Solutions for Industrial Valves



Introduction

- 1 Quality Commitment
- 2 Quality Control & Advanced Manufacturing
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- 18 ~ 20 Engineering Data



Complete Solutions for Industrial Valves

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

Neway'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. Neway 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

Neway 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 35,000 square meters.

Advanced software (ANSYS, FE-Safe, CF-Design, Siemens PLM and NX) is applied here at Neway 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 Neway'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

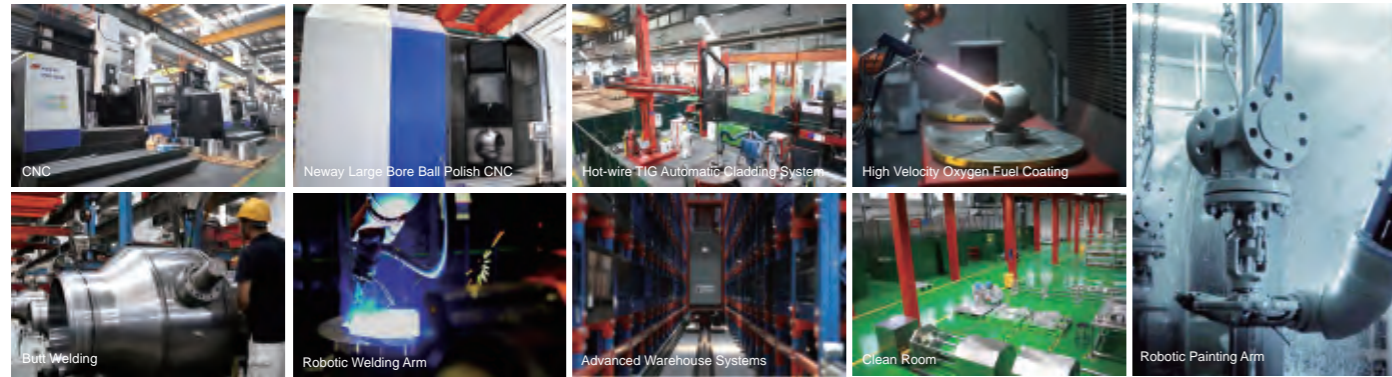
Neway is dedicated to the pursuit of "Zero Defect". We maintain a quality management system that encompasses our entire operation from order entry, to final inspection. Through Neway's continuous efforts, our products have successfully achieved industrial certificates including ISO 9001, API 6A, API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



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

② Valve Types

Code	BW	BWP
Type	Fully-welded TM Ball Valve	Double Piston Fully-welded TM Ball Valve

④ End Connection

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

⑤ Actuator

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

⑥ Shell Material

Material	A105	LF2
ASTM Ref	A105	A350 Gr. LF2

⑦ Trim Code

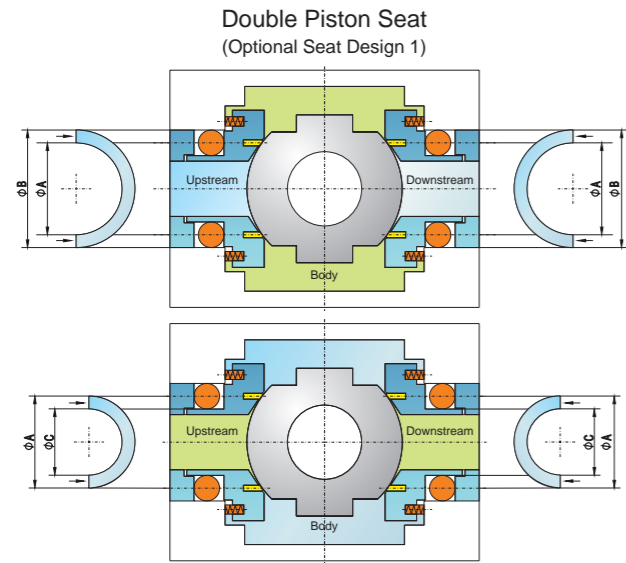
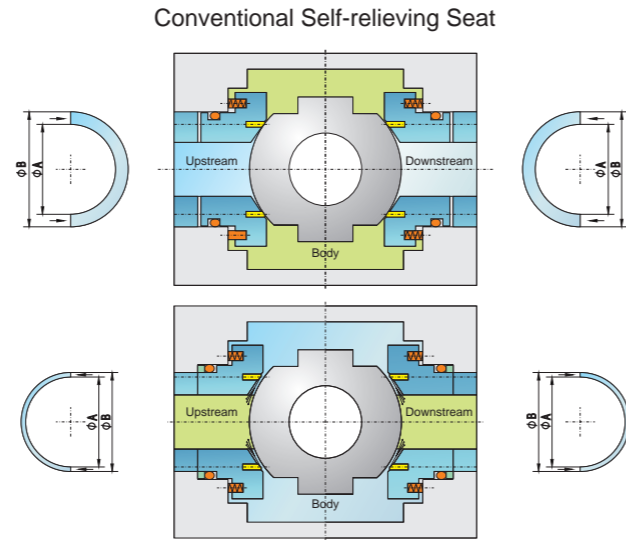
Seat		O Ring		Stem		Ball		Retainer	
Code	Material	Code	Material	Code	Material	Code	Material	Code	Material
1	FKM AED	1	NBR	1	F6a	1	F6a	1	F6a
2	HNBR AED	2	VITON	2	F304	2	F304	2	F304
-	-	3	VITON AED	3	A105N/ENP	3	A105N/ENP	3	A105N/ENP
-	-	4	VITON B	4	17-4PH	4	17-4PH	4	17-4PH
-	-	5	HNBR	5	4140/ENP	5	4140/ENP	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.

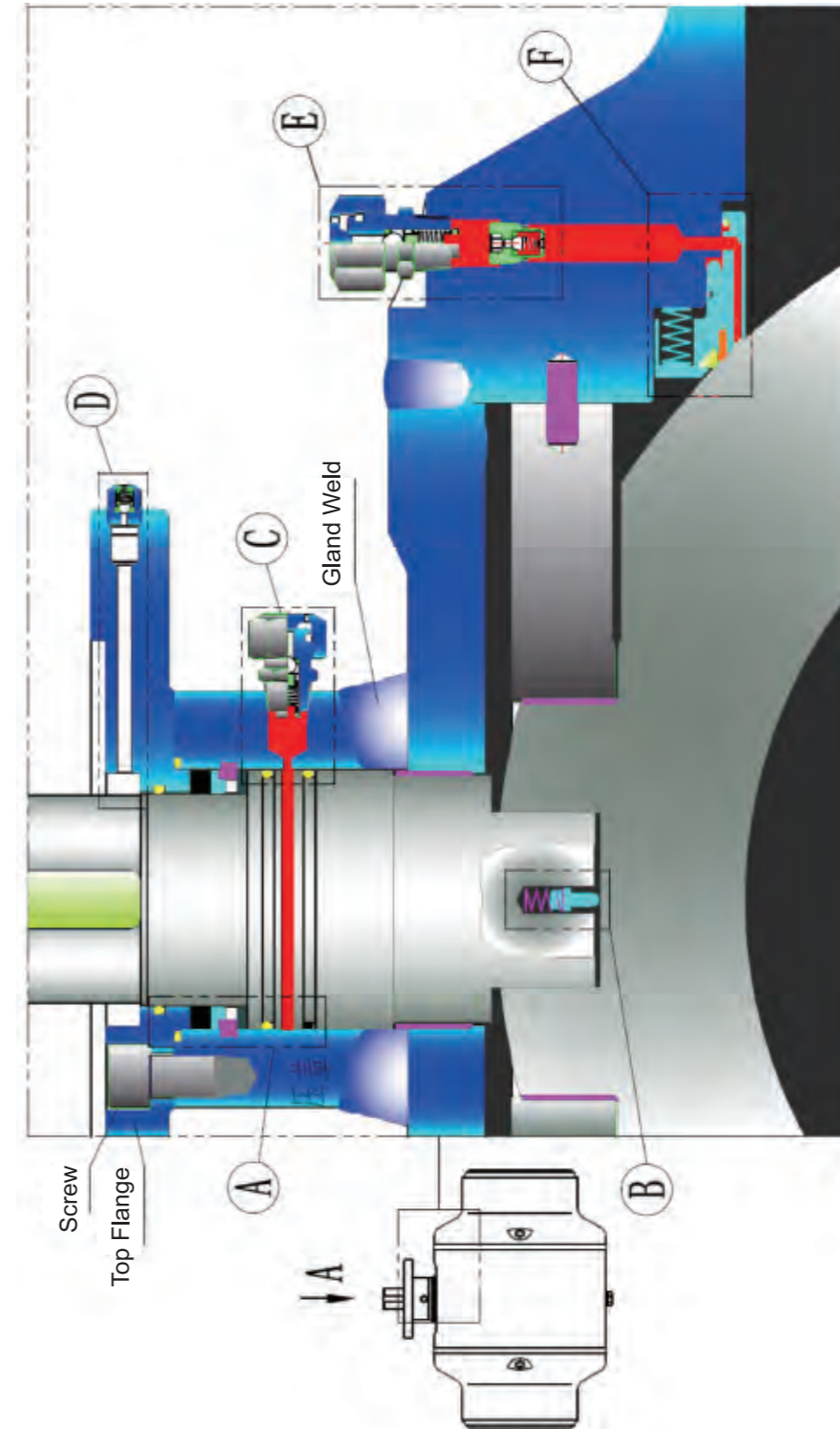
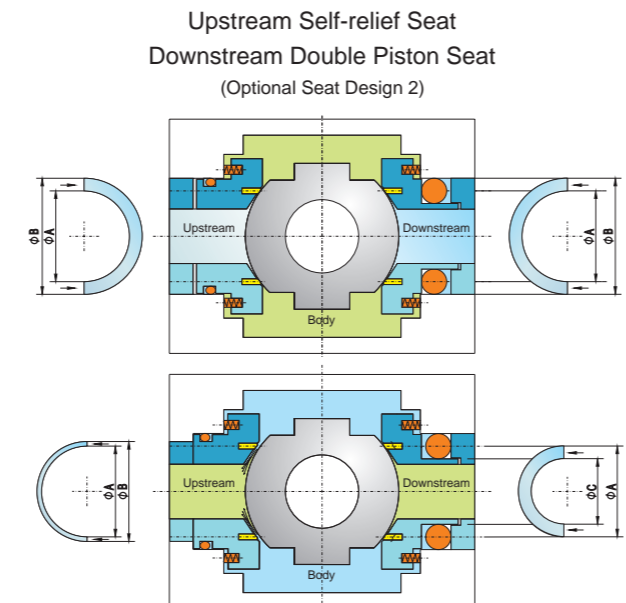


Double Piston Seat

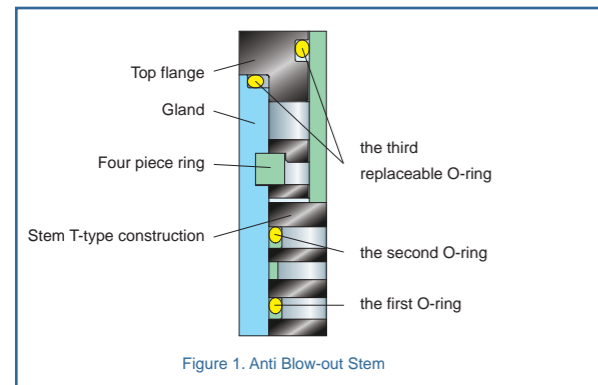
The thrust generated by the upstream and downstream pressure always pushes the seat to the sphere and keeps it sealed. Double piston action ball valve does not have the function of self-release in the middle chamber, so in general, the valve needs to install a safety valve on the valve body. When the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

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.



- 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



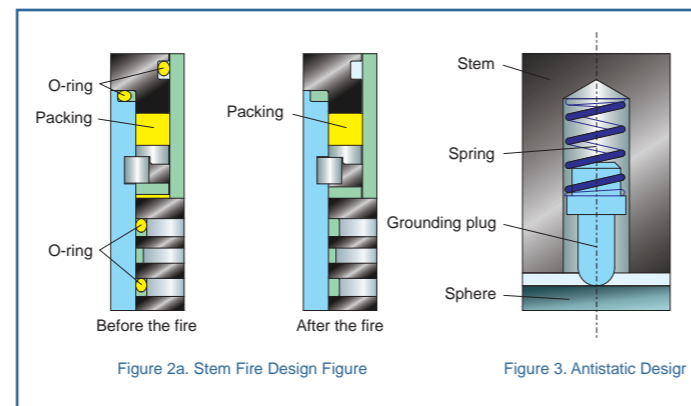
Anti Blow-out Stem

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.

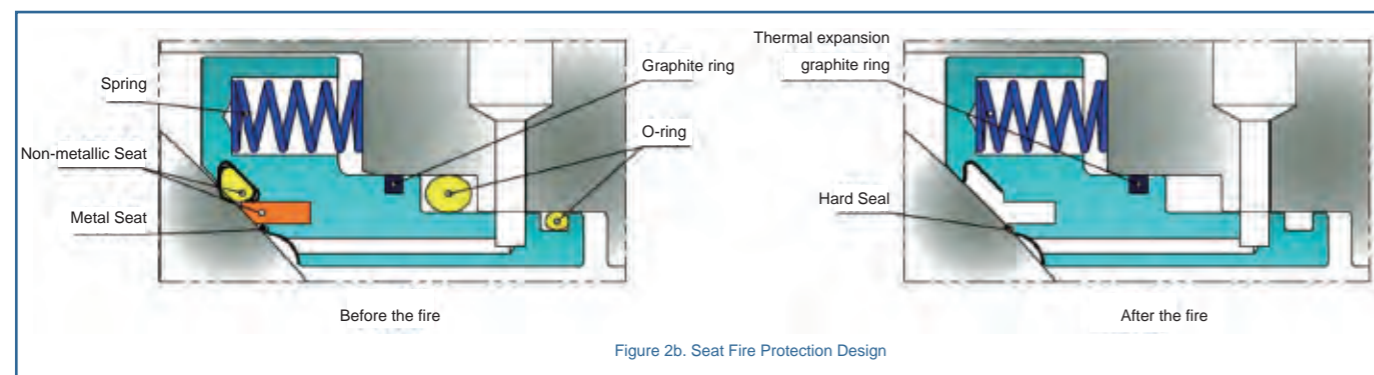


Seat Fire Protection Design

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.

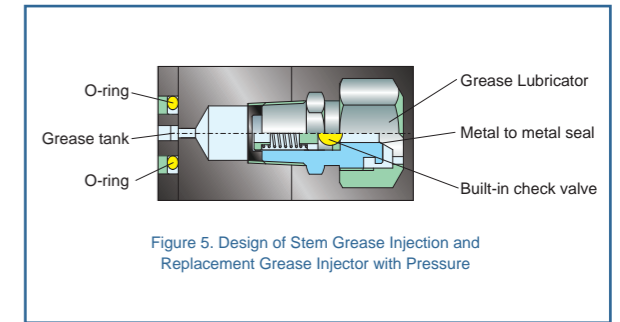
Anti-static Device

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.

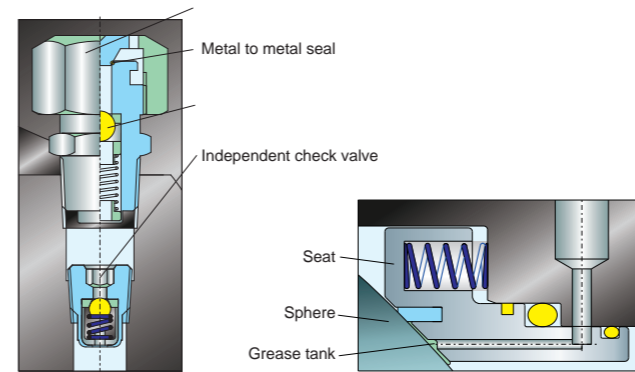


Figure 4. Design of Valve Seat Grease Injection and Pressure Replacement Grease Injector

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 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.

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.

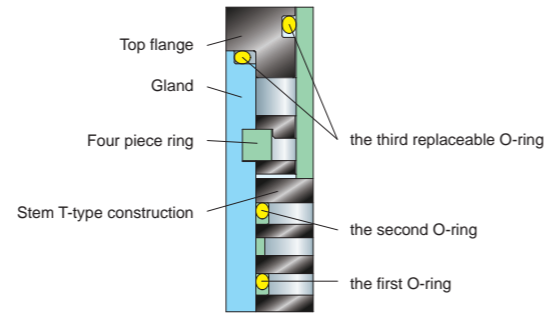


Figure 6. Stem Seal and Seal Design for On-line Replacement

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.

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.

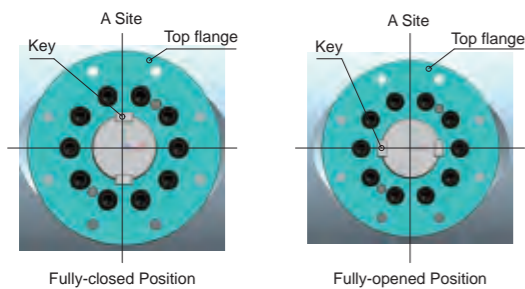


Figure 7. Stem Limit Design

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)

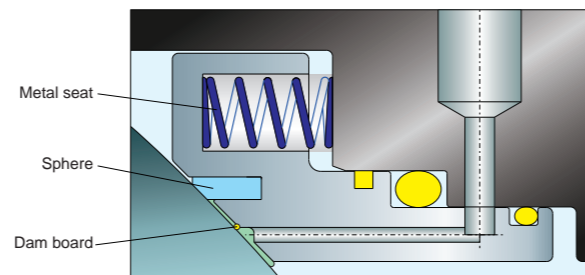


Figure 8. Anti-Solid particle seating design

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.

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.

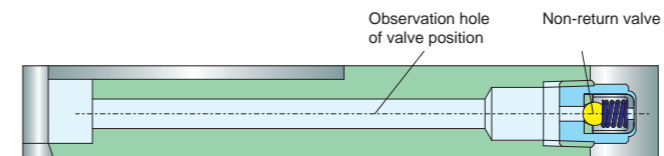


Figure 9. Valve Position Observable and Actuator Pressure Protection Design(Optional)

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.

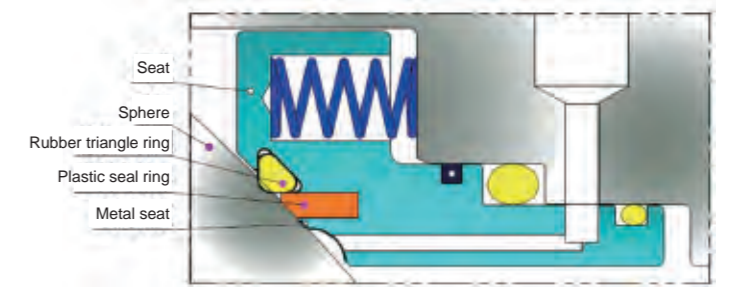
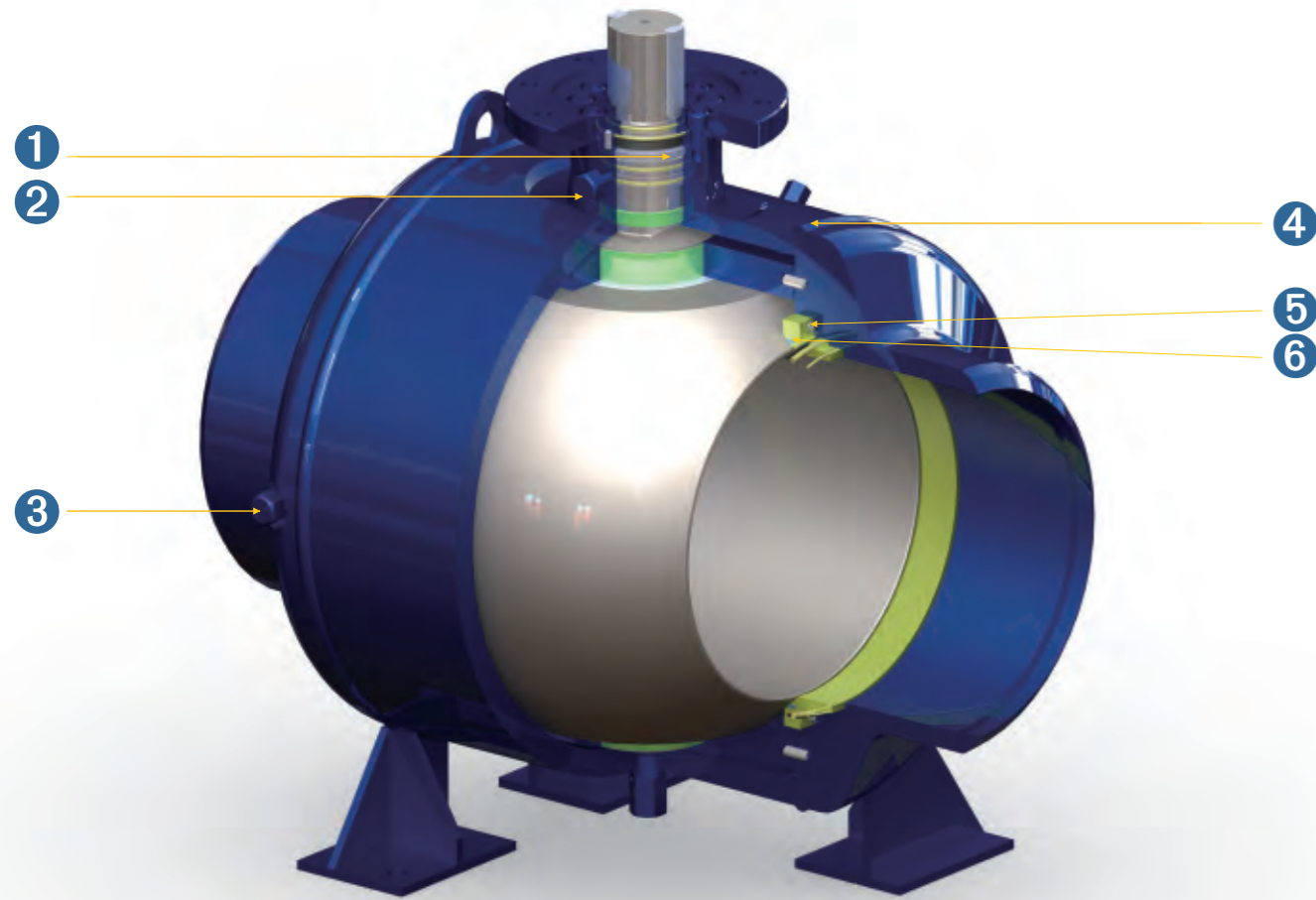


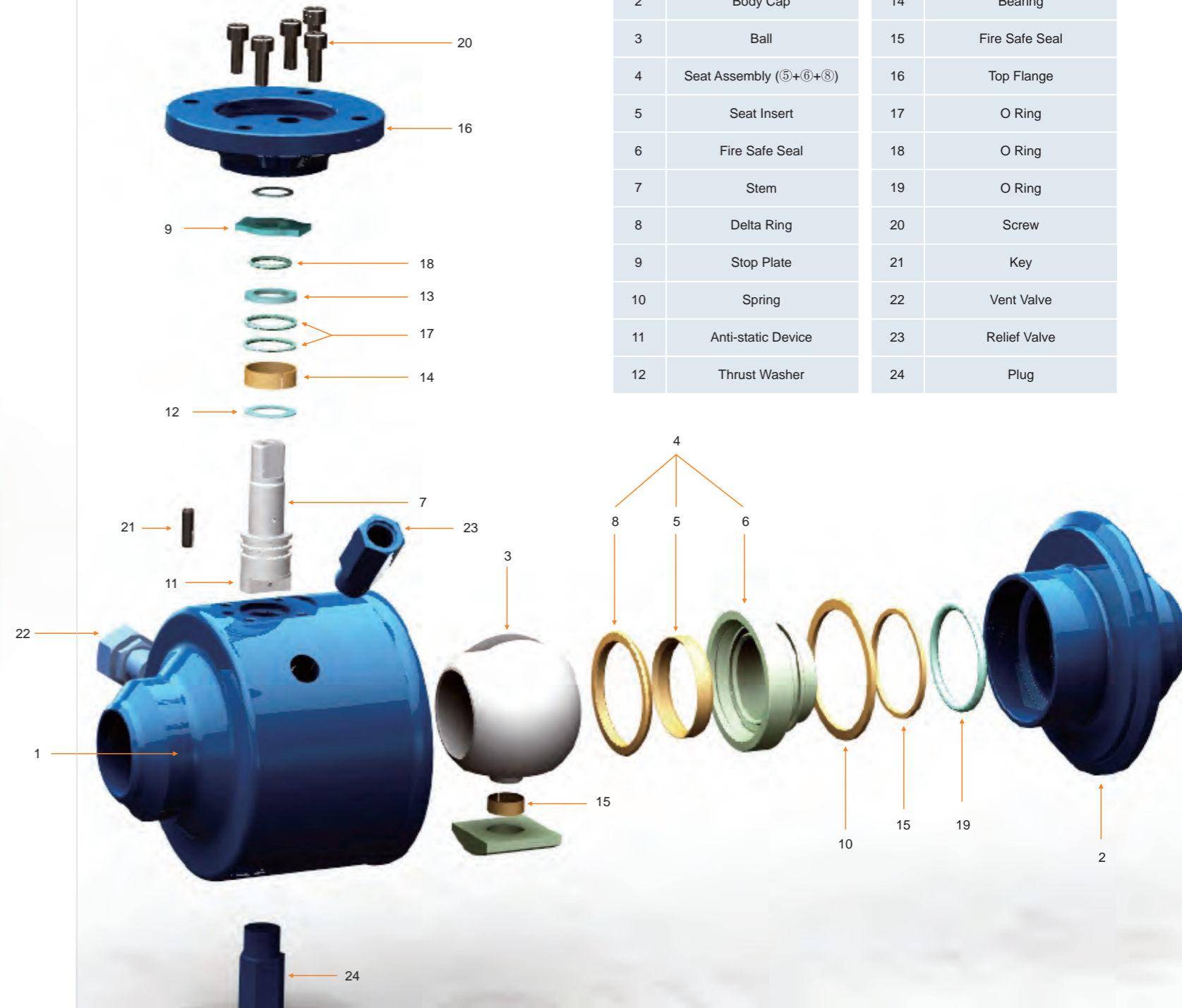
Figure 10. Triangle ring seating design

Delta Ring Seat Design

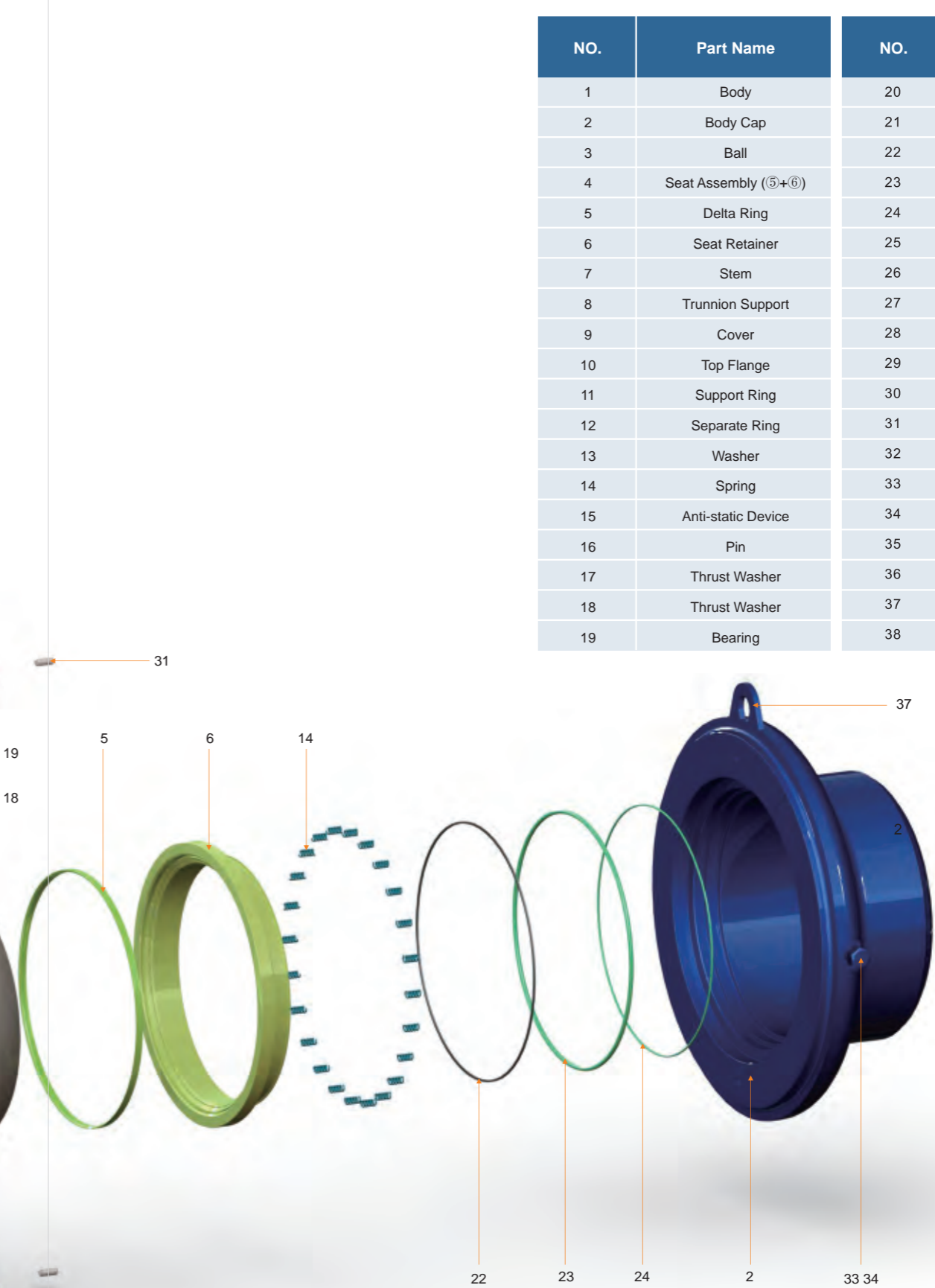
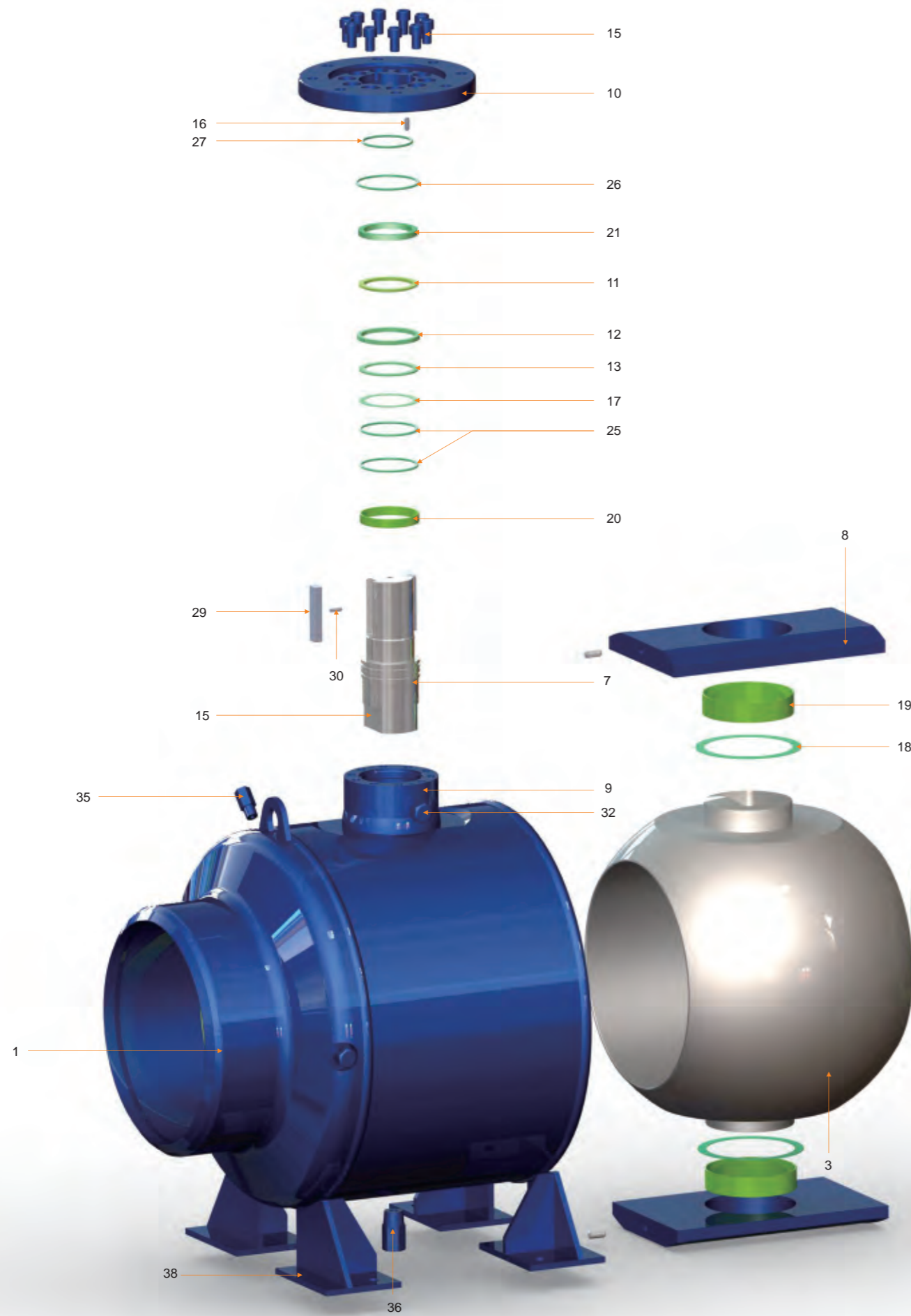
The delta ring is an antiknock rubber delta ring, which has better elasticity and inclusion of fine particles than plastic. This elasticity can easily absorb the slight scratches caused by impurities in the field on the sealing surface of the valve, and in the same case, the use of the delta ring seat 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.

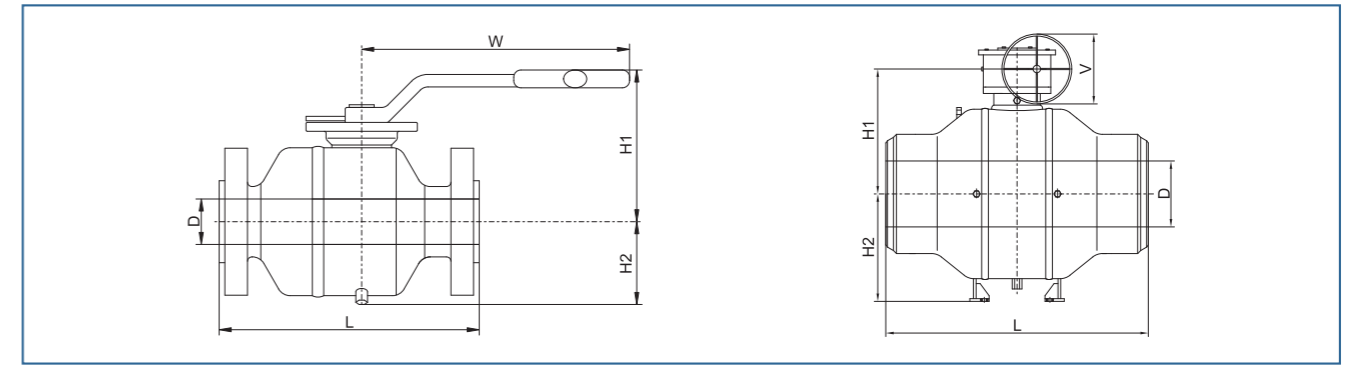


NO.	Part Name	NO.	Part Name
1	Body	13	Fire Safe Seal
2	Body Cap	14	Bearing
3	Ball	15	Fire Safe Seal
4	Seat Assembly (5+6+8)	16	Top Flange
5	Seat Insert	17	O Ring
6	Fire Safe Seal	18	O Ring
7	Stem	19	O Ring
8	Delta Ring	20	Screw
9	Stop Plate	21	Key
10	Spring	22	Vent Valve
11	Anti-static Device	23	Relief 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	Lifting Lugs	ASTM A283.GRC	ASTM A283.GRC
38	Support Legs	ASTM A283.GRC	ASTM A283.GRC



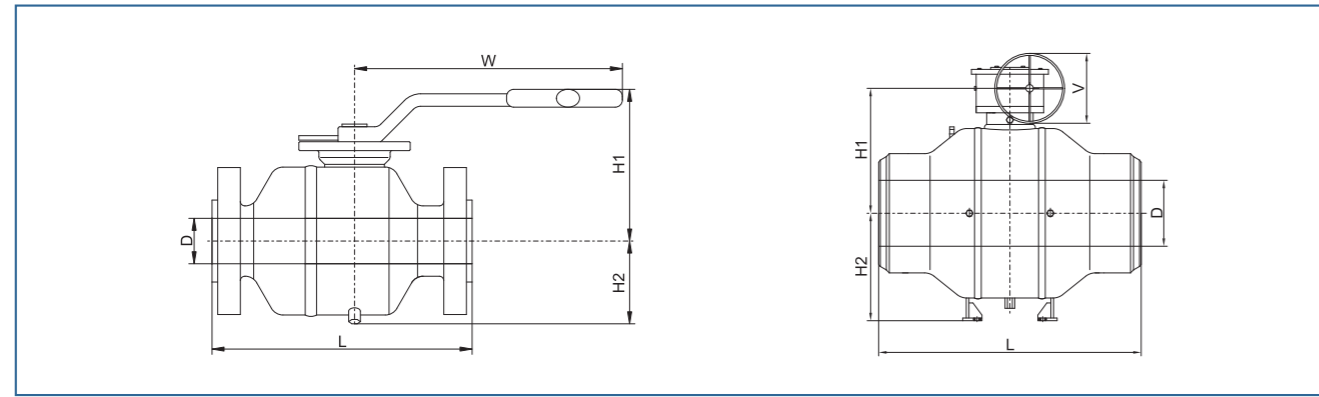
Class 150

Size		D		L				H1		H2		W		V		Weight	
NPS	DN	in	mm	RF		BW		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	RF		BW		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	-	-	39.37	1000	86200.64	39100

Dimension & Weight



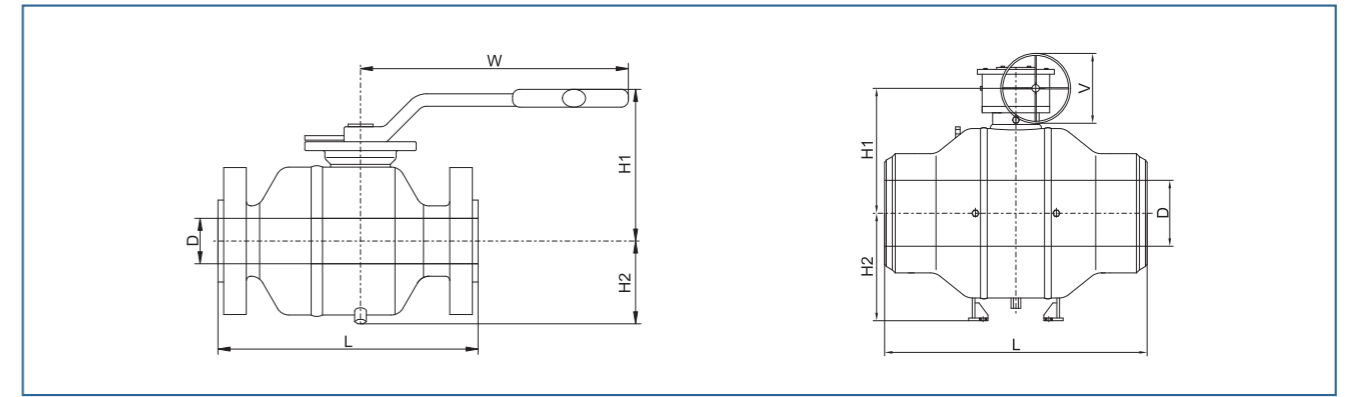
Class 400

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	14.13	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	14.13	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	25.0							

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%
Physical Properties	Color	Black	Black	Black	Black
	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.

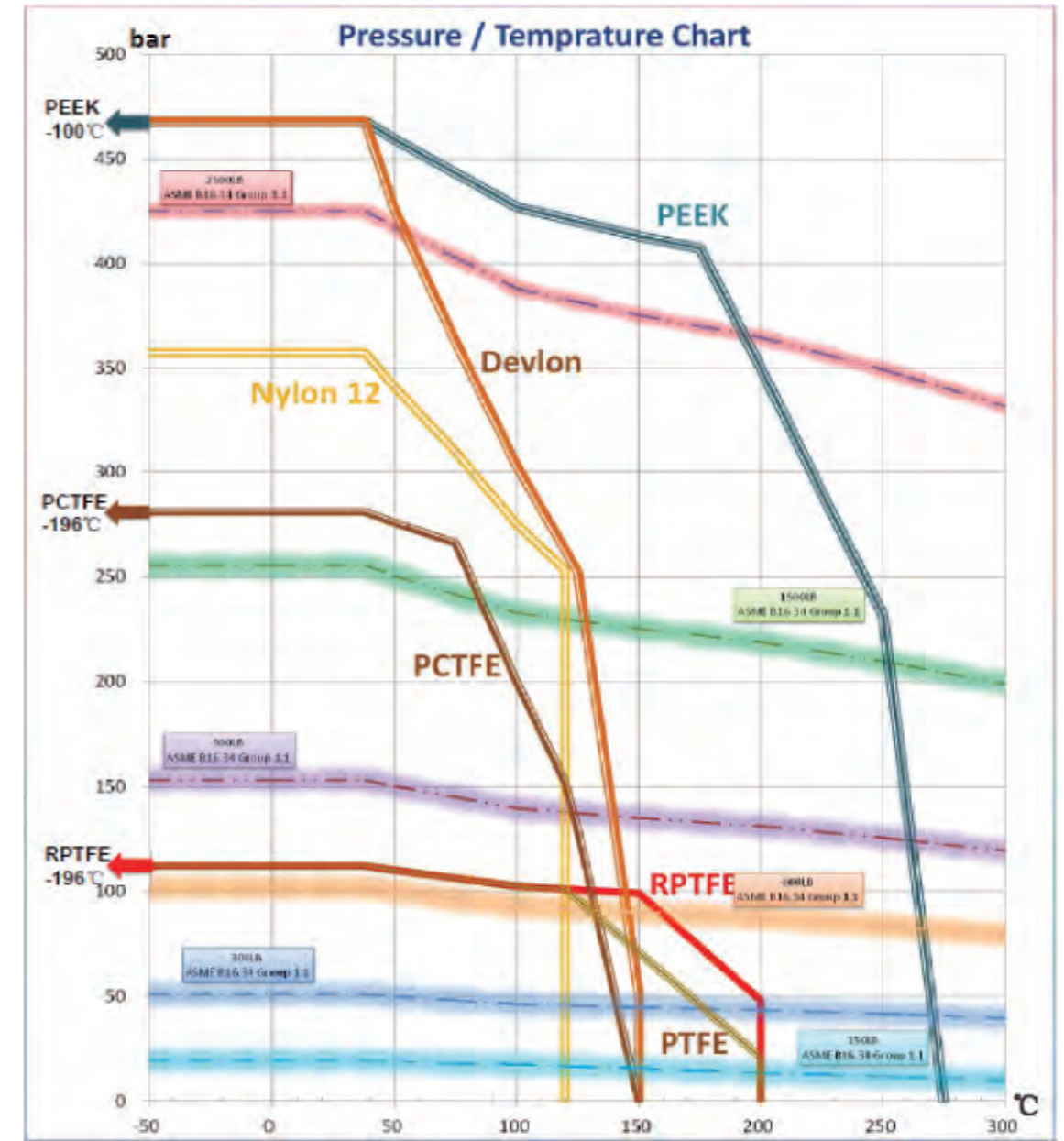
Ball Valve Flow Coefficient (Cv Value)

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: $QL=Cv(P/G)^{1/2}$
 Gas Flow: $Qg=61Cv(P2P/g)^{1/2}$ (For non-critical flow: $P2/P<1$)
 QL:Flow rate of liquid (gal. /min.)
 P:differential pressure across the valve
 G:specific gravity of liquid (for water, G=1)
 QG: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 guide 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 recommends 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 or 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 liability.