



# BALL VALVES CATENA



CDG Valve Manufacturer

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U.S. CDG control fluid technology company  
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# BA



## COMPANY HISTORY

- 1963 : Founded CDG.
- 1985 : CDG brand creation.
- 1989 : Production of pneumatic actuators, and Italy FABIA to establish acooperation.
- 1992 : With the United States FAIRCHILD cooperation,Production of electric actuators.
- 2001 : Focus on the production and assembly of CDG.
- 2005 : Production of hydraulic actuators.
- 2006 : Production of valves.
- 2011 : Oil station development and use.
- 2016 : Set up a number of representative offices in China.

## Company introduction

The CDG is a famous valve manufacturers, the company is headquartered in America's largest city, Detroit, Michigan is located in the northeastern United States, Canada, Detroit river north of Windsor an important port city. With strong industrial base and freight advantage.

CDG products have unique design, short delivery time, competitive price and excellent after-sales support. As a professional manufacturer of valves, it quickly became the industry leader.

CDG has more than 50 years experience in the valve industry. The r&d department USES these experiences to constantly design new products, improve existing products, and adapt to changing market demands and constantly improving international standards.

CDG can provide standard and non-standard solutions that can be customized according to customer needs.

CDG has created a wide range of reliable products. CDG is favored and admired by the world's leading EPC and oil and gas companies because of its high performance in extreme conditions. Its products are

used in power plant, petrochemical, metallurgy, papermaking,automobile and more Product certification based on customer requirements and government legislation is a guarantee of product quality. CDG USES advanced testing laboratories to ensure the durability of its products. Fire safety, high temperature and low temperature testing can be carried out under extreme conditions.

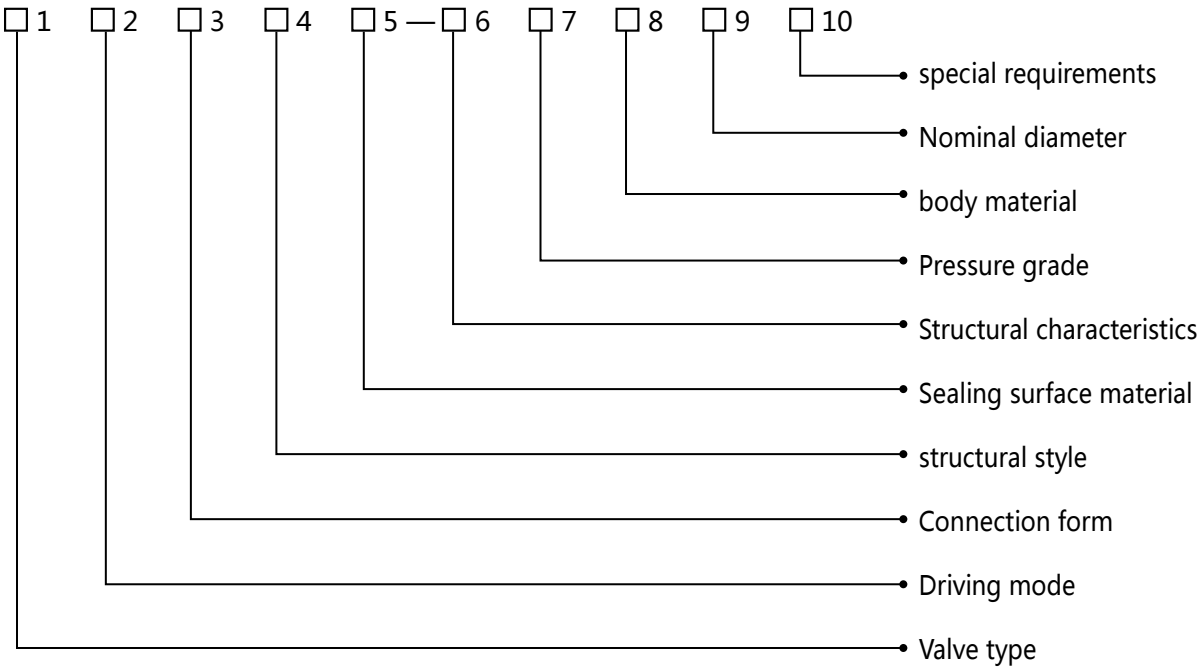
CDG good position, provide comprehensive after-sales support, fast, efficient, with unparalleled expertise. Our skilled engineers and technicians work 24 hours a day to respond to customer queries, solve problems, and provide reliable solutions. A comprehensive after-sales service creates a complete solution, customer support, covering all requirements.

CDG is a long-term, reliable, available and cost- effective partner for your existing and new business.

CDG brand is comprehensive, including valve and oil station, pneumatic actuator, electric actuator and hydraulic actuator and other related fields. To enable CDG to meet different needs it can be sold separately, and can be matched in a complete set, so that users can reduce their worries.

CDG ball valves are widely used in petroleum refining, long-distance pipeline, chemical industry, papermaking, pharmaceuticals, water conservancy, electric power, municipal administration, steel and other fields, especially in oil, natural gas, national oil storage and oil refining cracking units. Its strength, safety and resistance to harsh environment have been specially considered in the design. It is suitable for all kinds of corrosive and non-corrosive media. Different materials can be used to transport water, steam, oil, natural gas, nitric acid, acetic acid, oxidizing media, urea and so on. Ball valve has compact structure, reliable sealing, sealing surface and spherical surface are often in closed state, not easy to be eroded by media, easy to operate and maintain.

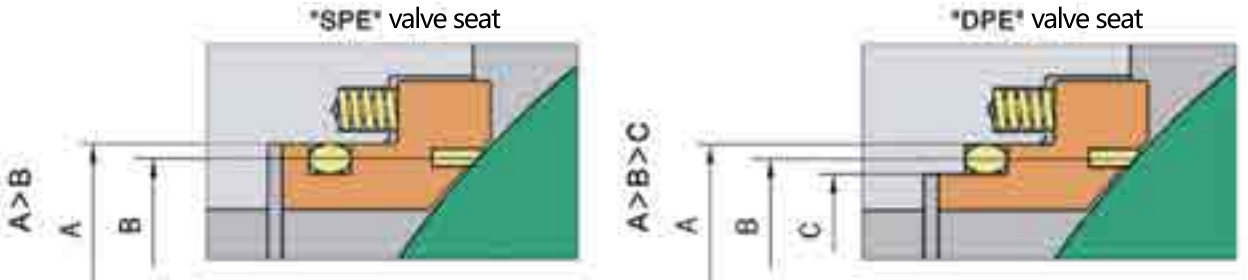
Description of Model Formulation



1. Valve Type Code: BA-Ball Valve
  2. Driving mode code: 2-electro-hydraulic, 3-worm, 5-pneumatic-hydraulic, 6-pneumatic, 7-hydraulic, 9-electric (handle drive strategy)
  3. Connection form code: 4-flange, 6-butt welding, 8-clamp
  4. Structural form code: 7-through fixed, 8-fixed T-type and 9-fixed L-type three-way
  5. Sealing material code: Y-cemented carbide, F-polytetrafluoroethylene (PTFE) FS-PTFE+carbon fiber FC-PTFE+carbon fiber+copper, H-iron base alloy, M-Monel alloy
  6. Structural characteristics code: W-fully welded structure, d-forged steel, g-high pressure, s-three-stage type
  7. Pressure Grade Code: Nominal Pressure Scale is Actual Number
  8. Valve body material code: C-WCB, I-WC6, V-WC9, R-CF8M, S-CF3, L-CF3M, F-LCB, O-CF8, P-F91
  9. Nominal Path Code: Inch
  10. Special Requirements Code: S-Sulphur Resistant, L-Low Temperature, X-Lengthened Rod, I-Insulation
- Note: Carbon steel valve body, omit this code

Piston effect of seat

Piston effect is a kind of sealing form that uses pipeline pressure to push floating seat close to sphere. It can be divided into single piston (SPE) effect and double piston (DPE) effect.



Single piston or double piston effect can be used for upstream and downstream valve seats according to engineering requirements, including the following three combinations:

1. When the upstream and downstream seats are single piston effect, the ball valve is upstream sealed, and the overpressure of the valve chamber is automatically released to the downstream pipeline through the downstream seat.
2. When both upstream and downstream seats are double piston effect, the ball valve is sealed both upstream and downstream, that is, once the upstream seals fail, the downstream seats can still ensure the sealing and ensure the long-term effective operation of the valve. But it loses the function of internal self-discharging of valve chamber overpressure.
3. The upstream seat is a single piston effect. When the downstream is a double piston effect, the ball valve is sealed both upstream and downstream. The overpressure of the valve chamber is automatically relieved to the upstream pipeline through the upstream seat. It not only improves the sealing reliability, the overpressure of the valve chamber and the internal self-discharge, but the valve has the requirements of the main installation direction.

Sealing structure between seat and sphere

1. Traditional soft seals: Embedded soft seals are polymer-to-sphere seals. Applicable to all calibers and pressure levels.
2. CDG combined seal: soft seal made of special elastomer material is used as main seal to ensure zero leakage required by API6D standard; metal quasi-seal between valve seat and spherical surface is used, and an RPTFE quasi-seal is added to protect main seal and improve service life under some working conditions. This patented structure is particularly suitable for the harsh working conditions of dusty natural gas and sandy crude oil.

Traditional sealing structure



CDG combined seal structure





Structure characteristics

The stem is designed for blowout prevention to prevent it from ejecting from the valve body due to improper operation. The valve stem and the sphere are independent of each other, and the valve stem is not affected by the lateral load acting on the sphere by the medium. Stem seal design is independent of the upper and lower two groups. The lower group consists of O-ring and V-ring. The seal is durable and reliable. The upper group is fire safety seal. The upper seal can be safely replaced at zero to maximum pressure difference.

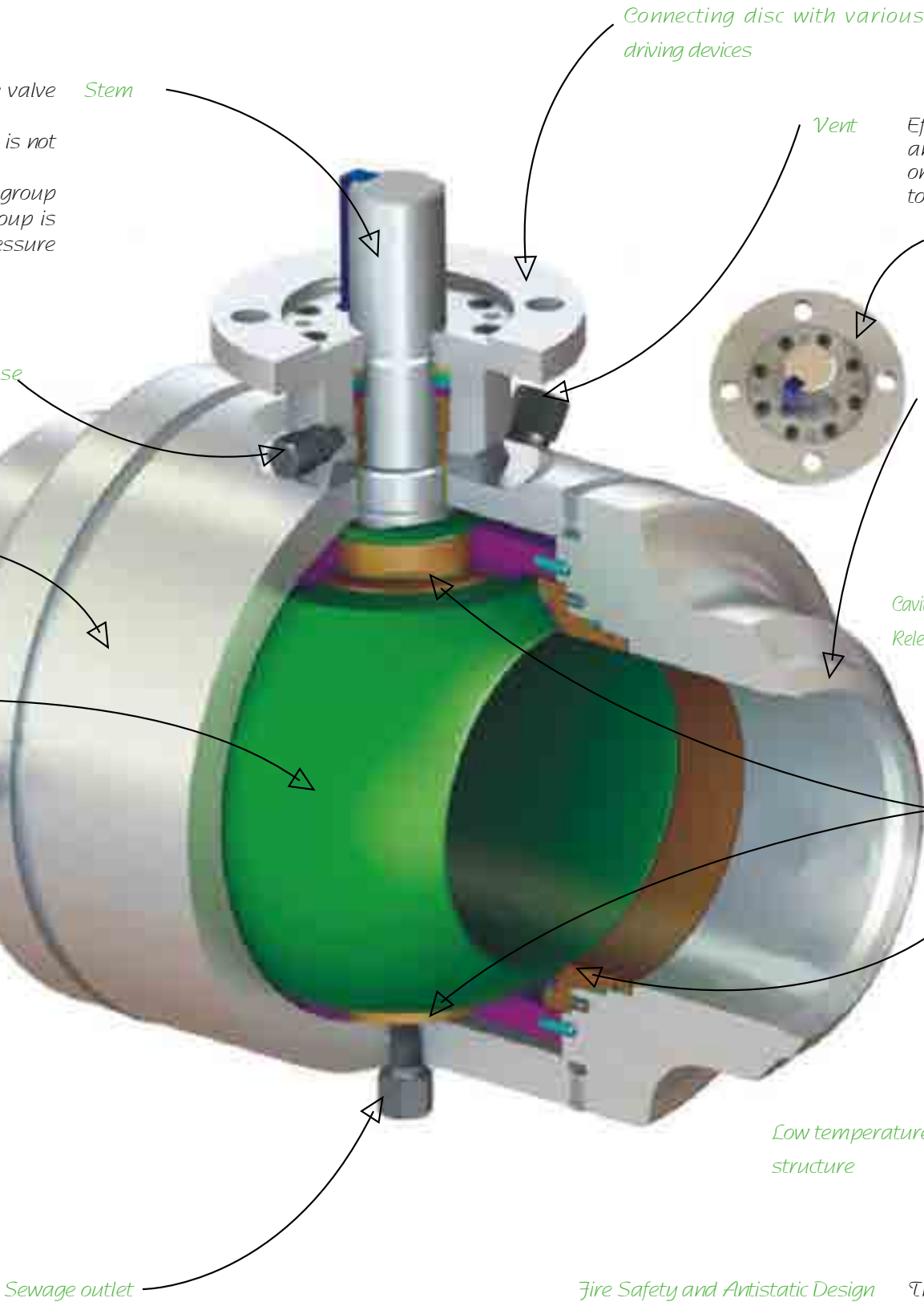
Normal seal does not depend on sealing grease. If the seal is damaged and leaked, it can be injected into the seal grease for emergency repair.

It is made of high quality materials and adopts advanced welding technology for fully welded body structure. It can safely withstand or transmit the maximum pipeline pressure and external force, completely excluding the possibility of leakage.

The sphere is forged and fixed on the valve body by two symmetrical bearing seats. The lateral load acting on the sphere by the medium is transferred to the valve body through the bearing without affecting the stem, which realizes the pure torque operation.

Normal seal does not depend on sealing grease. If the seal is damaged and leaked, it can be injected into the seal grease for emergency repair. A grease injection valve and an embedded one-way valve are installed at each grease injection orifice. Typical grease injection valves have safety caps to ensure their safe and reliable use. The end of the grease injection valves is a quick-connection snap of the grease injection gun.

At the lowest position of the valve body, sewage holes are machined, and sewage valves are arranged to empty the valve chamber and discharge sewage. The sewage discharge valve can be an isolation valve or a special discharge joint to ensure safety, reliability and convenient use.



The disc connected with the valve and the driving device conforms to ISO5211, which facilitates the connection and interchange of various driving devices. The driving device can be installed either in the factory or in the field.

Effective holes are machined on the upper part of the valve body and an emptying valve is installed to empty and clean the valve cavity online. The vent valve can be an isolation valve or a special drain joint to ensure safety, reliability and easy use.

When the actuator is replaced/installed online, the spherical hole cannot be seen. CDG pipeline ball valve can provide a special "positioning groove", without looking through the ball hole, it can help you easily find the full open and closed position of the ball, which is very convenient to adjust the limit device of the actuator.

For the valve with welded end, the material of the end of the valve (transition section) can be adjusted according to the material grade response of the user pipeline to ensure the adaptability and weldability of the material strength. The length of the sleeve of the valve with sleeve at both ends ensures that the welding operation at both ends of the site has no effect on the sealing material.

Cavity overpressure can be discharged either through the seat or outside the valve body. Double isolation and discharge functions will be cancelled if internal discharging through the seat is selected. Leakage is accomplished by a pressure relief valve installed on the vent orifice. Pressure relief valves are equipped with isolation valves to facilitate regular maintenance of pressure relief valves.

Polytetraethylene with low friction coefficient is lined on stainless steel sleeve bearing, which is self-lubricating and maintenance-free. The lateral load acting on the sphere by the medium is transmitted or sustained.

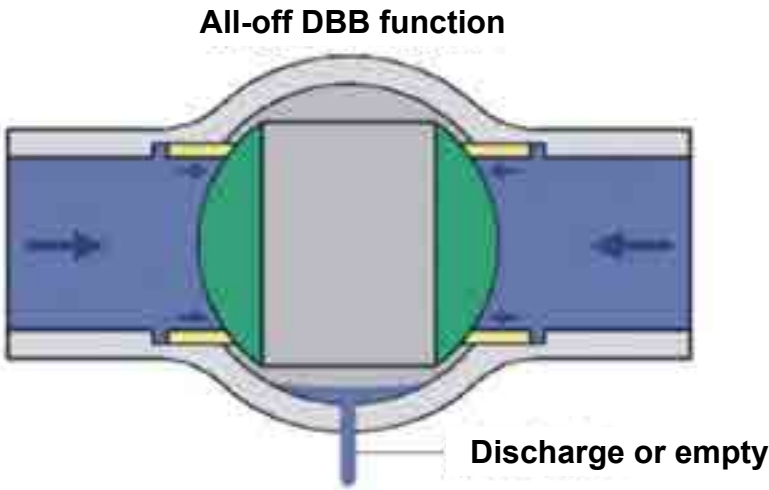
Each valve has two separate floating seat rings to ensure that the valve is tightly sealed from zero to maximum pressure difference in both directions. Seat sealing is accomplished by a combination of forged steel support rings and a firmly embedded soft seal. The support ring can float axially and be self-centered. The low-pressure seal of the valve seat is realized by pre-tightening the spring, and the high-pressure self-seal of the valve seat is realized by the piston effect.

The low temperature ball valve adopts long neck structure design to prevent the failure of stem packing seal under low temperature condition, and the valve seat adopts automatic pressure relief structure design to prevent abnormal pressure rise of the medium in the valve cavity due to temperature rise, so as to ensure the safety of the valve.

The fire safety design of CDG ball valves is verified by fire test according to API6FA/API607 standard. The certificate is issued by an independent international organization. All internal metal parts are electrically connected to the valve body, which meets the requirements of BS5351.

Double Truncation and Emission (DBB)

When the sphere is in full open or closed position, the medium in the valve body cavity can be discharged through the sewage or vent device. At this time, the seats on both sides are cut off at the same time, and any side can withstand full pressure difference. With the DBB function, the ball valve can be drained or sewed online to check the seating integrity.



Low Torque Design

Emergency shut-off valves on trunk lines of long-distance pipelines are almost always in full open position. They are usually driven by actuators and self-supporting emergency shut-off. They can shut down quickly when needed. Therefore, low-torque design is of great importance to the safety and reliability of their use.

Buried design

The valve stem of the buried installation is lengthened according to the engineering requirement so as to operate on the ground, and the corresponding grease injection, sewage discharge and emptying devices are extended from the pipe to the ground.

End connection

Valve end connections can be configured according to user requirements. Common connection modes include flange, butt welding, clamp or any combination.

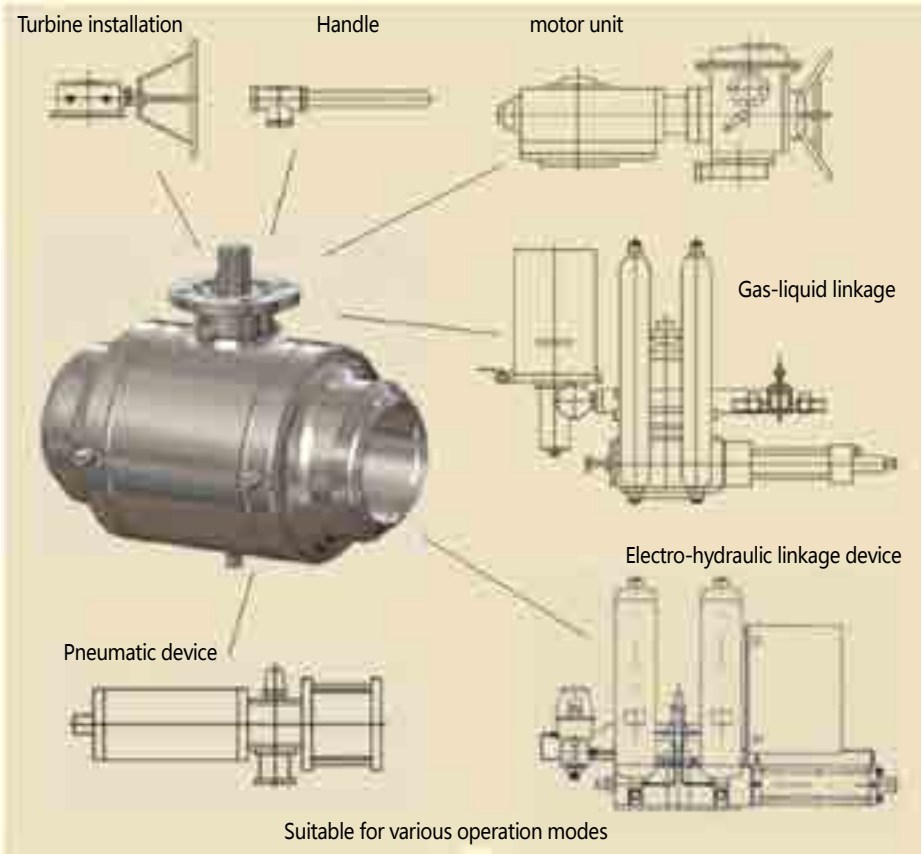
Structural length

The length of the structure is stipulated by API6D and beyond the standard scope according to CDG enterprise standard. It can also be produced according to user's requirements.

Outer coating

External coating design should take full account of the various corrosion in the environment to ensure the service life of the coating for 30-40 years.

Valve operation



Valve body welding

CDG has a set of mature welding technology with low residual stress and low toughness loss. The CTOD value of welded joint is used to evaluate the safety of post-weld heat treatment. The welding process between different materials of CDG has been certified by independent certification authority TUV, and the safety of welded joints has been evaluated by experts. All welding of CDG ball valves is performed by TUV certified welding engineers.



Special welding equipment using CDG proprietary technology



## Non-destructive inspection of welds

Necessary nondestructive inspection of welds is necessary to ensure the safety and reliability of products. The weld seam of CDG fully welded valve body is inspected by 100% multi-channel ultrasonic and radiographic inspection. There is no blind zone and no defect detection obstacle zone.



X-ray inspection of weld seam

## Surface treatment of spheres

Surface treatment of spheres can be selected in nickel and chromium plating according to the requirements of owners. The method of electroless plating is adopted to strictly comply with the technological requirements to ensure that the metal surface achieves the best hardness-to-corrosion performance ratio, and to achieve the maximum optimization of anti-erosion, anti-corrosion and friction coefficient reduction.



Electroless nickel plating

## Advanced processing equipment

Advanced equipment is necessary for manufacturing high-performance fully welded ball valve products. The key parts of CDG ball valve are processed by machining center and numerical control lathe. The one-time qualified rate of products and the interchangeability of parts are 100%, which make an important contribution to providing users with high-quality products.



Large Integrative Ball Machine for Turning and Milling

## Pressure test

CDG has several test platforms for hydraulic and pneumatic tests of all calibers and pressure class valves of 2"- 60" CL150 - CL2500. For each ball valve, CDG carries out pressure test and function test according to API6D, API598 or user requirements. CDG also takes high pressure gas seal test as a routine standard test.

## Special test

CDG also conducts a number of special tests to determine the performance of the ball valve. All tests are conducted in accordance with the standard specifications. The main test items are as follows:

1. Corrosion test of welded joints - Assessment of H<sub>2</sub>S corrosion resistance of welded joints;
2. CTOD test of welded joints - Evaluation of fracture toughness (crack arrest ability);
3. Linkage test with actuator - Evaluate the operation performance of valve connected with actuator;
4. Anti-explosion test of elastomer materials - Evaluation of burst resistance of elastomer under sudden pressure loss;
5. Antistatic test;
6. Fire test;
7. Seismic performance numerical simulation analysis of buried valves;
8. Performance test of anticorrosive coating;
9. Full-stroke Torque Testing-Evaluating the Operability of Valves;
10. The grease injection test - to evaluate the grease injection effect of the sealing system, should be uniformly distributed in the sealing area in a ring shape.
11. Bending, Tensile and Compression Tests - Assessment of the Valve's ability to withstand combined pipeline loads (as opposed to pipelines).



Anti-riot experiment of O-ring



CTOD Experiment



Valve Pressure Test and Full Travel Torque Test



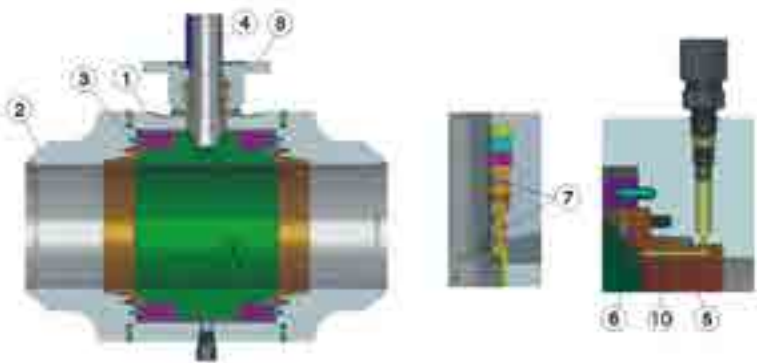
Bending experiment

Main materials

The material used for manufacturing valves meets the requirements of API6D and related standards, so that the performance of valves can adapt to working conditions and environmental conditions, and ensure service life. The following are commonly used materials. Other materials can also be selected according to engineering needs. CDG company chooses the corresponding material combination according to the actual working conditions to help you achieve the optimal cost performance ratio.

① Valve body: ASTM A105[mod] ASTM A350 LF2[mod] ASTM A182 F316[mod]  
② Butt welding end adapter: Valve body ASTM A350 LF6[mod]  
③ Sphere: ASTM A105+ENP ASTM A182 F316+HCr ASTM A350 LF2+ENP ASTM A182 F51  
④ Stem: ASTM A182 F6a+HCr AISI 4140+ENP ASTM A564 630+HCr ASTM A182 F51  
⑤ Seat metal ring: ASTM A105+ENP ASTM A350 LF2+ENP ASTM A182 F316+HCr ASTM A182 F51  
⑥ Seat insertion ring: VTION\* VTION-GLT\* HNBR\* EPDM\* FFKM\* NYLON DEVLON RPTFE PEEK  
⑦ Type O: VTION\* VTION-GLT\* HNBR\* EPDM\* FFKM\* PTFE+AISI 301[LIP SEAL]  
⑧ Bolts/nuts: ASTM A193 B7M/A194 2HM ASTM A193 B8M/A194 8M ASTM A320 L7M/A194 7M  
⑨ Bearing: 316+[R]PTFE 316L+[R]PTFE  
⑩ Pre-tightening spring: INCONEL X750 AISI 302

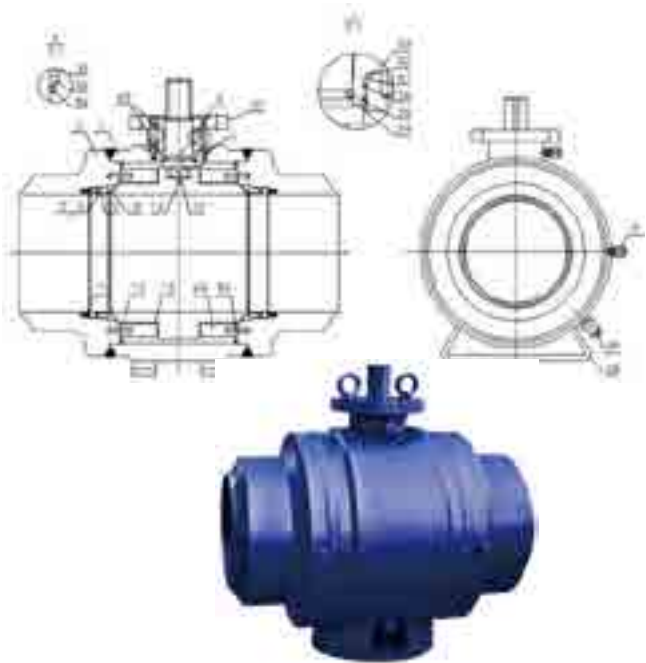
Note: Elastomeric materials with \* are used for pressure levels ≥ CL600 , It should have the capability of pressure relief and anti-riot.For the medium containing H2S, materials conforming to NACE MR-01-75 standard are selected.



Fully Welded Fixed Ball Valve with Forged Steel

Application specification

- 1、 Pressure and temperature grade: ASME B16.34、 BS5351
- 2、 Shell wall thickness: ASME B16.34、 BS5351
- 3、 Hole size: API6D、 BS5351
- 4、 Structure length: ASME B16.10、 API6D
- 5、 Connection dimensions: ASME B16.5、 BS1560
- 6、 Tests and inspections: API6D、 BS5146
- 7、 Subject material: A105、 LF2、 F304、 F316、 F304L、 F316L



Major Component Materials

Serial number	Part name	carbon steel	Low Alloy Steel Series	Stainless steel series
1	valve body	ASTM A105	ASTM A350 LF2	ASTM A182 F316
2	Bonnet	ASTM A105	ASTM A350 LF2	ASTM A182 F316
6	Injection valve	ANSI 1045	ASTM A1045	A276-316
7	O-ring	VITON	VITON	VITON
8	O-ring	VITON	VITON	VITON
9	Seat support ring	ASTM A105	ASTM A350 LF2+ENP	ASTM A182 F316
10	Seal ring	RPTFE	RPTFE	RPTFE
11	Spring	INCONELX-750	INCONELX-750	INCONELX-750
12	sphere	ASTM A105+ENP	ASTM A350 LF2+ENP	ASTM A182 F316
13	sliding bearing	304+PTFE	304+PTFE	316+PTFE
14	Electrostatic spring	A276-316	A276-316	A276-316
22	Stem	A182-F6a	A182-F6a	ASTM A182 F316
24	Shim	304+PTFE	304+PTFE	316+PTFE
25	O-ring	VITON	VITON	VITON
26	O-ring	VITON	VITON	VITON
30	filler	GRAPHITE	GRQPHITE	GRAPHITE
45	screw	ASTM A193-B7/B7M	ASTM A193- 7M	ASTM A193-B8
46	Drain valve	ANSI 1045	ANSI 1045	ASTM A182 F316
49	Lining board	ASTM A105	ASTM A350 LF2+ENP	ASTM A182 F316
50	Liner pin	ANSI 1045	ASTM A350 LF2+ENP	ASTM A182 F316
51	Upper bearing	ASTM A105	ASTM A350 LF2+ENP	ASTM A182 F316
52	Shim	304+GRQPHITE	304+GRQPHITE	316+GRAPHITE
53	Locating pin	ANSI 1045	ANSI 1045	A276-316
54	O-ring	VITON	VITON	VITON
55	Stuffing pad	ASTM A182-F6a	ASTM A182-F6a	ASTM A182 F316
57	Connecting disk	ASTM A105	ASTM A350 LF2	ASTM A182 F316
59	base	ANSI 1025	ANSI 1025	A276-316





BA3<sup>4</sup><sub>6</sub>7<sup>Y</sup><sub>F</sub>-W150Lb full bore

NPS	A inch/mm	B inch/mm	LBW inch/mm	LRF inch/mm	LRJ inch/mm	G inch/mm	H inch/mm	S inch/mm	M inch/mm	L inch/mm	K inch/mm	X inch/mm	Worm gear Weight kg	Light rod weight kg	
														BW	RF/RJ
1.5"	1.50/38	1.50/38	7.52/191	6.50/165	7.01/178	3.19/81	4.88/124	6.30/160	1.18/30	4.72/120	7.09/180	9.84/250	5	15	17
2"	1.93/49	1.93/49	8.50/216	7.01/178	7.52/191	3.58/91	5.47/139	6.89/175	1.18/30	4.72/120	7.09/180	9.84/250	5	20	21
3"	2.91/74	2.91/74	11.14/283	7.99/203	8.50/216	4.61/117	6.38/162	8.98/228	1.18/30	4.72/120	7.09/180	14.96/380	5	38	42
4"	3.94/100	3.94/100	12.01/305	9.02/229	9.49/241	5.51/140	7.36/187	10.63/270	1.18/30	4.72/120	7.09/180	21.65/550	5	60	72
6"	5.91/150	5.91/150	17.99/457	15.51/394	15.98/406	8.46/215	8.07/205	12.20/310	1.46/37	8.66/220	13.78/350	-	9	142	168
8"	7.91/201	7.91/201	20.51/521	17.99/457	18.50/470	10.04/255	10.12/257	15.16/385	2.17/55	9.41/239	18.31/465	-	18	180	216
10"	9.92/252	9.92/252	22.01/559	20.98/533	21.50/546	11.81/300	11.61/295	18.11/460	2.17/55	14.17/360	23.62/600	-	21	297	345
12"	11.93/303	11.93/303	25.00/635	24.02/610	24.49/622	13.39/340	13.03/331	21.14/537	2.17/55	15.83/402	23.62/600	-	28	452	558
14"	13.19/335	13.19/335	30.00/762	27.01/686	27.52/699	14.37/365	14.02/356	23.07/586	2.17/55	15.83/402	23.62/600	-	38	680	802
16"	15.16/385	15.16/385	32.99/838	30.00/762	30.51/775	15.94/405	15.43/392	25.91/658	2.68/68	20.47/520	23.62/600	-	60	880	1110
18"	17.17/436	17.17/436	35.98/914	34.02/864	34.49/876	18.31/465	17.20/437	29.06/738	2.68/68	20.47/520	23.62/600	-	60	1135	1350
20"	19.21/488	19.21/488	39.02/991	35.98/914	36.50/927	19.29/490	18.66/474	31.93/811	3.03/77	21.38/543	29.53/750	-	92	1605	1845
22"	20.79/528	20.79/528	-	-	-	21.26/540	20.67/525	35.63/905	3.03/77	21.38/543	29.53/750	-	92	2080	2340
24"	23.19/589	23.19/589	45.00/1143	42.01/1067	42.52/1080	22.24/565	21.73/552	38.11/968	3.03/77	21.38/543	29.53/750	-	92	2570	3040
26"	24.92/633	24.92/633	49.02/1245	45.00/1143	-	24.02/610	23.74/603	41.34/1050	3.43/87	23.78/604	29.53/750	-	135	3220	3710
28"	26.93/684	26.93/684	52.99/1346	49.02/1245	-	25.98/660	25.35/644	44.65/1134	3.43/87	23.78/604	29.53/750	-	135	3880	4420
30"	28.94/735	28.94/735	55.00/1397	50.98/1295	-	27.56/700	27.01/686	47.91/1217	3.43/87	23.78/604	29.53/750	-	135	4420	5110
32"	30.67/779	30.67/779	60.00/1524	54.02/1372	-	28.74/730	28.43/722	50.71/1288	3.43/87	25.28/642	29.53/750	-	205	5370	6140
34"	32.68/830	32.68/830	64.02/1626	57.99/1473	-	30.71/780	30.39/772	54.02/1372	3.43/87	25.28/642	29.53/750	-	205	6350	7010
36"	34.41/874	34.41/874	67.99/1727	60.00/1524	-	32.28/820	32.17/817	56.89/1445	3.43/87	29.53/660	29.53/750	-	220	7430	8370
40"	38.43/976	38.43/976	-	-	-	35.43/900	35.35/898	63.19/1605	3.43/87	29.53/660	29.53/750	-	220	9990	10920
42"	40.16/1020	40.16/1020	-	-	-	37.40/950	37.01/940	66.14/1680	4.61/117	29.69/754	33.46/850	-	360	11910	13140
48"	45.91/1166	45.91/1166	-	-	-	41.73/1060	41.42/1052	75.00/1905	4.61/117	33.66/855	33.46/850	-	450	16620	17990
56"	53.54/1360	53.54/1360	-	-	-	48.82/1240	49.02/1245	87.60/2225	5.12/130	35.47/901	36.02/915	-	760	30200	31990
60"	57.40/1458	57.40/1458	-	-	-	51.97/1320	52.09/1323	93.70/2380	5.12/130	35.47/901	36.02/915	-	760	33990	36200

BA3<sup>4</sup><sub>6</sub>7<sup>Y</sup><sub>F</sub>-W150Lb Reducing diameter

NPS	A inch/mm	B inch/mm	LBW inch/mm	LRF inch/mm	LRJ inch/mm	G inch/mm	H inch/mm	S inch/mm	M inch/mm	L inch/mm	K inch/mm	X inch/mm	Worm gear Weight kg	Light rod weight kg	
														BW	RF/RJ
2"x1.5"x2"	1.50/38	1.93/49	8.50/216	7.01/178	7.52/191	3.19/81	4.88/124	6.30/160	1.18/30	4.72/120	7.09/180	9.84/250	5	17	21
3"x2"x3"	1.93/49	2.91/74	11.14/283	7.99/203	8.50/216	3.58/91	5.47/139	6.89/175	1.18/30	4.72/120	7.09/180	9.84/250	5	23	26
4"x3"x4"	2.91/74	3.94/100	12.01/305	9.02/229	9.49/241	4.61/117	6.38/162	8.98/228	1.18/30	4.72/120	7.09/180	14.96/380	5	42	49
6"x4"x6"	3.94/100	5.91/150	17.99/457	15.51/394	15.98/406	5.51/140	7.36/187	10.63/270	1.18/30	4.72/120	7.09/180	21.65/550	5	69	84
8"x6"x8"	5.91/150	7.91/201	20.51/521	17.99/457	18.50/470	8.46/215	8.07/205	12.20/310	1.46/37	8.66/220	13.78/350	-	9	162	197
10"x8"x10"	7.91/201	9.92/252	22.01/559	20.98/533	21.50/546	10.04/255	10.12/257	15.16/385	2.17/55	9.41/239	18.31/465	-	18	208	259
12"x10"x12"	9.92/252	11.93/303	25.00/635	24.02/610	24.49/622	11.81/300	11.61/295	18.11/460	2.17/55	14.17/360	23.62/600	-	21	332	402
16"x12"x16"	11.93/303	15.16/385	32.99/838	30.00/762	30.51/775	13.39/340	13.03/331	21.14/537	2.17/55	15.83/402	23.62/600	-	28	569	729
20"x16"x20"	15.16/385	19.17/487	39.02/991	35.98/914	36.50/927	15.94/405	15.43/392	25.91/658	2.68/68	20.47/520	23.62/600	-	60	1030	1320
24"x20"x24"	19.17/487	23.19/589	45.00/1143	42.01/1067	42.52/1080	19.29/490	18.66/474	31.93/811	3.03/77	21.38/543	29.53/750	-	92	1990	2380
30"x24"x30"	23.19/589	28.94/735	55.00/1397	50.98/1295	-	22.24/565	21.73/552	38.11/968	3.03/77	21.38/543	29.53/750	-	92	3130	3800
36"x30"x36"	28.94/735	34.41/874	67.99/1727	60.00/1524	-	27.56/700	27.01/686	47.91/1217	3.43/87	23.78/604	29.53/750	-	135	5280	6320





BA3<sup>4</sup><sub>6</sub>7<sup>Y</sup><sub>F</sub>-W300Lb full bore

NPS	A inch/mm	B inch/mm	LBW inch/mm	LRF inch/mm	LRJ inch/mm	G inch/mm	H inch/mm	S inch/mm	M inch/mm	L inch/mm	K inch/mm	X inch/mm	Worm gear Weight kg	Light rod weight kg	
														BW	RF/RJ
1.5"	1.50/38	1.50/38	7.52/191	7.52/191	7.99/203	3.19/81	4.88/124	6.30/160	1.18/30	4.72/120	7.09/180	9.84/250	5	15	21
2"	1.93/49	1.93/49	8.50/216	8.50/216	9.13/232	3.58/91	5.47/139	6.89/175	1.18/30	4.72/120	7.09/180	9.84/250	5	20	25
3"	2.91/74	2.91/74	11.14/283	11.14/283	11.73/298	4.61/117	6.38/162	8.98/228	1.18/30	4.72/120	7.09/180	14.96/380	5	38	48
4"	3.94/100	3.94/100	12.01/305	12.01/305	12.64/321	5.51/140	7.36/187	10.63/270	1.18/30	4.72/120	7.09/180	21.65/550	5	60	77
6"	5.91/150	5.91/150	17.99/457	15.87/403	16.50/419	8.46/215	8.07/205	12.20/310	1.57/40	9.41/239	13.78/350	-	15	142	178
8"	7.91/201	7.91/201	20.51/521	19.76/502	20.39/518	10.04/255	10.12/257	15.16/385	2.17/55	9.41/239	18.31/465	-	18	180	246
10"	9.92/252	9.92/252	22.01/559	22.36/568	22.99/584	11.81/300	11.61/295	18.11/460	2.17/55	15.83/402	23.62/600	-	28	297	369
12"	11.93/303	11.93/303	25.00/635	25.51/648	26.14/664	13.39/340	13.03/331	21.14/537	2.17/55	15.83/402	23.62/600	-	38	472	572
14"	13.15/334	13.15/334	30.00/762	30.00/762	30.63/778	14.37/365	14.02/356	23.07/586	2.68/68	20.47/520	23.62/600	-	60	710	840
16"	15.16/385	15.16/385	32.99/838	32.99/838	33.62/854	16.14/410	15.83/402	26.38/670	2.68/68	20.47/520	23.62/600	-	60	927	1170
18"	17.17/436	17.17/436	35.98/914	35.98/914	36.61/930	18.31/465	17.36/441	29.53/750	3.03/77	21.38/543	29.53/750	-	92	1210	1450
20"	19.17/487	19.17/487	39.02/991	39.02/991	39.76/1010	19.29/490	18.90/480	32.48/825	3.03/77	21.38/543	29.53/750	-	92	1685	1996
22"	21.18/538	21.18/538	42.99/1092	42.99/1092	43.86/1114	21.26/540	21.06/535	36.22/920	3.43/87	23.78/604	29.53/750	-	135	2290	2560
24"	23.19/589	23.19/589	45.00/1143	45.00/1143	45.87/1165	22.64/575	22.44/570	38.98/990	3.43/87	23.78/604	29.53/750	-	135	2710	3210
26"	24.92/633	24.92/633	49.02/1245	49.02/1245	50.00/1270	24.02/610	24.02/610	41.93/1065	3.43/87	25.28/642	29.53/750	-	205	3380	3980
28"	26.93/684	26.93/684	52.99/1346	52.99/1346	54.02/1372	26.77/680	25.98/660	45.12/1146	3.43/87	25.28/642	29.53/750	-	205	4120	4770
30"	28.94/735	28.94/735	55.00/1397	55.00/1397	55.98/1422	27.56/700	28.35/720	48.62/1235	3.43/87	29.53/660	29.53/750	-	220	4650	5410
32"	30.67/779	30.67/779	60.00/1524	60.00/1524	61.14/1553	30.71/780	29.53/750	51.57/1310	3.43/87	29.53/660	29.53/750	-	220	5610	6490
34"	32.68/830	32.68/830	64.02/1626	64.02/1626	65.12/1654	31.10/790	31.10/790	54.72/1390	4.61/117	29.69/754	33.46/850	-	360	6750	7480
36"	34.41/874	34.41/874	67.99/1727	67.99/1727	69.13/1756	33.07/840	32.68/830	57.68/1465	4.61/117	29.69/754	33.46/850	-	360	7830	8890
40"	38.43/976	38.43/976	-	-	-	36.61/930	37.01/940	64.17/1630	4.61/117	33.66/855	33.46/850	-	450	10540	11530
42"	40.16/1020	40.16/1020	-	-	-	38.19/970	38.39/975	66.93/1700	4.61/117	33.66/855	33.46/850	-	450	12520	13940

BA3<sup>4</sup><sub>6</sub>7<sup>Y</sup><sub>F</sub>-W300Lb Reducing diameter

NPS	A inch/mm	B inch/mm	LBW inch/mm	LRF inch/mm	LRJ inch/mm	G inch/mm	H inch/mm	S inch/mm	M inch/mm	L inch/mm	K inch/mm	X inch/mm	Worm gear Weight kg	Light rod weight kg	
														BW	RF/RJ
2"X1.5"X2"	1.50/38	1.93/49	8.50/216	8.50/216	9.13/232	3.19/81	4.88/124	6.30/160	1.18/30	4.72/120	7.09/180	9.84/250	5	17	24
3"X2"X3"	1.93/49	2.91/74	11.14/283	11.14/283	11.73/298	3.58/91	5.47/139	6.89/175	1.18/30	4.72/120	7.09/180	9.84/250	5	25	32
4"X3"X4"	2.91/74	3.94/100	12.01/305	12.01/305	12.64/321	4.61/117	6.38/162	8.98/228	1.18/30	4.72/120	7.09/180	14.96/380	5	45	62
6"X4"X6"	3.94/100	5.91/150	17.99/457	15.87/403	16.50/419	5.51/140	7.36/187	10.63/270	1.18/30	4.72/120	7.09/180	21.65/550	5	78	102
8"X6"X8"	5.91/150	7.91/201	20.51/521	19.76/502	20.39/518	8.46/215	8.07/205	12.20/310	1.57/40	9.41/239	13.78/350	-	15	162	201
10"X8"X10"	7.91/201	9.92/252	22.01/559	22.36/568	22.99/584	10.04/255	10.12/257	15.16/385	2.17/55	9.41/239	18.31/465	-	18	205	286
12"X10"X12"	9.92/252	11.93/303	25.00/635	25.51/648	26.14/664	11.81/300	11.61/295	18.11/460	2.17/55	15.83/402	23.62/600	-	28	327	429
16"X12"X16"	11.93/303	15.16/385	32.99/838	32.99/838	33.62/854	13.39/340	13.03/331	21.14/537	2.17/55	15.83/402	23.62/600	-	38	590	692
20"X16"X20"	15.16/385	19.17/487	39.02/991	39.02/991	39.76/1010	16.14/410	15.83/402	26.38/670	2.68/68	20.47/520	23.62/600	-	60	1120	1430
24"X20"X24"	19.17/487	23.19/589	45.00/1143	45.00/1143	45.87/1165	19.29/490	18.90/480	32.48/825	2.80/71	21.38/543	23.62/600	-	92	2085	2580
30"X24"X30"	23.19/589	28.94/735	55.00/1397	55.00/1397	55.98/1422	22.64/575	22.44/570	38.98/990	3.43/87	23.78/604	29.53/750	-	135	3400	4100
36"X30"X36"	28.94/735	34.41/874	67.99/1727	67.99/1727	69.13/1756	27.56/700	28.35/720	48.62/1235	3.43/87	29.53/660	29.53/750	-	220	5650	6850



BA3<sup>4</sup><sub>6</sub>7<sup>Y</sup><sub>F</sub>-W400Lb full bore

NPS	A inch/mm	B inch/mm	LBW inch/mm	LRF inch/mm	LRJ inch/mm	G inch/mm	H inch/mm	S inch/mm	M inch/mm	L inch/mm	K inch/mm	X inch/mm	Worm gear Weight kg	Light rod weight kg	
														BW	RF/RJ
1.5"	1.50/38	1.50/38	9.49/241	9.49/241	9.49/241	3.27/83	4.33/110	7.09/180	1.18/30	4.72/120	7.09/180	14.96/380	5	17	22
2"	1.93/49	1.93/49	11.50/292	11.50/292	11.61/295	3.46/88	4.61/117	6.10/155	1.18/30	4.72/120	7.09/180	14.96/380	5	22	30
3"	2.91/74	2.91/74	14.02/356	14.02/356	14.13/359	4.61/117	5.91/150	8.07/205	1.18/30	4.72/120	7.09/180	21.65/550	5	42	54
4"	3.94/100	3.94/100	15.98/406	15.98/406	16.14/410	5.51/140	6.73/171	9.65/245	1.46/37	8.66/220	13.78/350	31.50/800	9	69	92
6"	5.91/150	5.91/150	19.49/495	19.49/495	19.61/498	8.66/220	8.70/221	12.40/315	2.17/55	9.41/239	18.31/465	-	18	153	198
8"	7.91/201	7.91/201	23.50/597	23.50/597	23.62/600	10.43/265	10.12/257	15.28/388	2.17/55	12.05/306	23.62/600	-	21	244	312
10"	9.92/252	9.92/252	26.50/673	26.50/673	26.61/676	12.20/310	11.97/304	18.70/475	2.17/55	15.83/402	23.62/600	-	38	437	508
12"	11.93/303	11.93/303	30.00/762	30.00/762	30.12/765	13.58/345	13.46/342	21.73/552	2.68/68	20.47/520	23.62/600	-	60	680	765
14"	13.15/334	13.15/334	32.52/826	32.52/826	32.64/829	14.76/375	14.41/366	23.82/605	3.03/77	21.38/543	29.53/750	-	92	875	993
16"	15.16/385	15.16/385	35.51/902	35.51/902	35.63/905	16.54/420	16.61/422	27.28/693	3.03/77	21.38/543	29.53/750	-	92	1185	1388
18"	17.17/436	17.17/436	38.50/978	38.50/978	38.62/981	18.11/460	18.07/459	30.12/765	3.03/77	21.38/543	29.53/750	-	92	1650	1810
20"	19.17/487	19.17/487	41.50/1054	41.50/1054	41.73/1060	19.88/505	19.72/501	33.66/855	3.43/87	23.78/604	29.53/750	-	135	2110	2400
22"	21.18/538	21.18/538	45.00/1143	45.00/1143	45.39/1153	22.83/580	21.65/550	36.81/935	3.43/87	23.78/604	29.53/750	-	135	2510	3100
24"	23.19/589	23.19/589	48.50/1232	48.50/1232	48.86/1241	23.23/590	23.39/594	40.08/1018	3.43/87	25.28/642	29.53/750	-	205	3330	3900
26"	24.92/633	24.92/633	51.50/1308	51.50/1308	52.01/1321	25.79/655	24.80/630	43.31/1100	3.43/87	25.28/642	29.53/750	-	205	4060	4485
28"	26.93/684	26.93/684	55.00/1397	55.00/1397	55.51/1410	27.56/700	26.97/685	46.26/1175	3.43/87	29.53/660	29.53/750	-	220	4850	5510
30"	28.94/735	28.94/735	60.00/1524	60.00/1524	60.51/1537	29.53/750	28.54/725	49.61/1260	3.43/87	29.53/660	29.53/750	-	220	5760	6660
32"	30.67/779	30.67/779	65.00/1651	65.00/1651	65.63/1667	31.50/800	30.71/780	53.35/1355	4.61/117	29.69/754	33.46/850	-	360	6985	7950
34"	32.68/830	32.68/830	70.00/1778	70.00/1778	70.63/1794	33.07/840	32.48/825	56.10/1425	4.61/117	29.69/754	33.46/850	-	360	8670	9620
36"	34.41/874	34.41/874	74.02/1880	74.02/1880	74.61/1895	36.61/930	34.25/870	59.25/1505	4.61/117	33.66/855	33.46/850	-	450	9780	11160
40"	38.43/976	38.43/976	-	-	-	39.37/1000	37.40/950	65.55/1665	4.61/117	33.66/855	33.46/850	-	450	12230	13770
42"	40.16/1020	40.16/1020	-	-	-	41.34/1050	39.37/1000	68.11/1730	5.12/130	35.47/901	36.02/915	-	760	13920	15410
48"	45.91/1166	45.91/1166	-	-	-	45.28/1150	44.69/1135	78.35/1990	14.65/372	26.54/674	31.50/800	-	844	20970	22080
56"	53.54/1360	53.54/1360	-	-	-	53.15/1350	51.97/1320	91.73/2330	13.78/350	28.58/726	31.50/800	-	1123	37300	39590
60"	57.40/1458	57.40/1458	-	-	-	57.09/1450	55.91/1420	98.43/2500	14.96/380	33.86/860	37.40/950	-	2180	42600	45110

BA3<sup>4</sup><sub>6</sub>7<sup>Y</sup><sub>F</sub>-W400Lb Reducing diameter

NPS	A inch/mm	B inch/mm	LBW inch/mm	LRF inch/mm	LRJ inch/mm	G inch/mm	H inch/mm	S inch/mm	M inch/mm	L inch/mm	K inch/mm	X inch/mm	Worm gear Weight kg	Light rod weight kg	
														BW	RF/RJ
2"x1.5"x2"	1.50/38	1.93/49	11.50/292	11.50/292	11.61/295	3.27/83	4.33/110	7.09/180	1.18/30	4.72/120	7.09/180	14.96/380	5	19	25
3"x2"x3"	1.93/49	2.91/74	14.02/356	14.02/356	14.13/359	3.46/88	4.61/117	6.10/155	1.18/30	4.72/120	7.09/180	14.96/380	5	26	39
4"x3"x4"	2.91/74	3.94/100	15.98/406	15.98/406	16.14/410	4.61/117	5.91/150	8.07/205	1.18/30	4.72/120	7.09/180	21.65/550	5	51	68
6"x4"x6"	3.94/100	5.91/150	19.49/495	19.49/495	19.61/498	5.51/140	6.73/171	9.65/245	1.46/37	8.66/220	13.78/350	31.50/800	9	85	115
8"x6"x8"	5.91/150	7.91/201	23.50/597	23.50/597	23.62/600	8.66/220	8.70/221	12.40/315	2.17/55	9.41/239	18.31/465	-	18	173	225
10"x8"x10"	7.91/201	9.92/252	26.50/673	26.50/673	26.61/676	10.43/265	10.12/257	15.28/388	2.17/55	12.05/306	23.62/600	-	21	279	377
12"x10"x12"	9.92/252	11.93/303	30.00/762	30.00/762	30.12/765	12.20/310	11.97/304	18.70/475	2.17/55	15.83/402	23.62/600	-	38	495	586
16"x12"x16"	11.93/303	15.16/385	35.51/902	35.51/902	35.63/905	13.58/345	13.46/342	21.73/552	2.68/68	20.47/520	23.62/600	-	60	860	960
20"x16"x20"	15.16/385	19.17/487	41.50/1054	41.50/1054	41.73/1060	16.54/420	16.61/422	27.28/693	3.03/77	21.38/543	29.53/750	-	92	1406	1680
24"x20"x24"	19.17/487	23.19/589	48.50/1232	48.50/1232	48.86/1241	19.88/505	19.72/501	33.66/855	3.43/87	23.78/604	29.53/750	-	135	2510	2860
30"x24"x30"	23.19/589	28.94/735	60.00/1524	60.00/1524	60.51/1537	23.23/590	23.39/594	40.08/1018	3.43/87	25.28/642	29.53/750	-	205	3850	4670
36"x30"x36"	28.94/735	34.41/874	74.02/1880	74.02/1880	74.61/1895	29.53/750	28.54/725	49.61/1260	3.43/87	29.53/660	29.53/750	-	220	6660	8120



BA3<sup>4</sup><sub>6</sub>7<sup>Y</sup><sub>F</sub>-W600Lb full bore

NPS	A inch/mm	B inch/mm	LBW inch/mm	LRF inch/mm	LRJ inch/mm	G inch/mm	H inch/mm	S inch/mm	M inch/mm	L inch/mm	K inch/mm	X inch/mm	Worm gear Weight kg	Light rod weight kg	
														BW	RF/RJ
1.5"	1.50/38	1.50/38	9.49/241	9.49/241	9.49/241	3.27/83	4.33/110	7.09/180	1.18/30	4.72/120	7.09/180	14.96/380	5	17	24
2"	1.93/49	1.93/49	11.50/292	11.50/292	11.61/295	3.46/88	4.61/117	6.10/155	1.18/30	4.72/120	7.09/180	14.96/380	5	22	32
3"	2.91/74	2.91/74	14.02/356	14.02/356	14.13/359	4.61/117	5.91/150	8.07/205	1.18/30	4.72/120	7.09/180	21.65/550	5	45	62
4"	3.94/100	3.94/100	17.01/432	17.01/432	17.13/435	5.51/140	6.73/171	9.65/245	1.46/37	8.66/220	13.78/350	31.50/800	9	75	104
6"	5.91/150	5.91/150	22.01/559	22.01/559	22.13/562	8.66/220	8.70/221	12.40/315	2.17/55	9.41/239	18.31/465	-	18	160	216
8"	7.91/201	7.91/201	25.98/660	25.98/660	26.14/664	10.43/265	10.12/257	15.28/388	2.17/55	15.83/402	23.62/600	-	28	252	342
10"	9.92/252	9.92/252	30.98/787	30.98/787	31.14/791	12.20/310	11.97/304	18.70/475	2.17/55	15.83/402	23.62/600	-	38	453	578
12"	11.93/303	11.93/303	32.99/838	32.99/838	33.11/841	13.58/345	13.46/342	21.73/552	2.68/68	20.47/520	23.62/600	-	60	700	845
14"	13.15/334	13.15/334	35.00/889	35.00/889	35.12/892	14.76/375	14.41/366	23.82/605	3.03/77	21.38/543	29.53/750	-	92	898	1055
16"	15.16/385	15.16/385	39.02/991	39.02/991	39.13/994	16.54/420	16.61/422	27.28/693	3.03/77	21.38/543	29.53/750	-	92	1220	1500
18"	17.17/436	17.17/436	42.99/1092	42.99/1092	43.11/1095	18.31/465	18.50/470	30.55/776	3.43/87	23.78/604	29.53/750	-	135	1830	2120
20"	19.17/487	19.17/487	47.01/1194	47.01/1194	47.24/1200	19.88/505	20.24/514	33.86/860	3.43/87	25.28/642	29.53/750	-	205	2182	2598
22"	21.18/538	21.18/538	50.98/1295	50.98/1295	51.38/1305	22.83/580	22.24/565	37.20/945	3.43/87	25.28/642	29.53/750	-	205	2780	3290
24"	23.19/589	23.19/589	55.00/1397	55.00/1397	55.39/1407	23.23/590	23.98/609	40.31/1024	3.43/87	29.53/660	29.53/750	-	220	3450	4130
26"	24.92/633	24.92/633	57.01/1448	57.01/1448	57.52/1461	25.79/655	25.59/650	43.50/1105	3.43/87	29.53/660	29.53/750	-	220	4460	5285
28"	26.93/684	26.93/684	60.98/1549	60.98/1549	61.50/1562	27.56/700	27.52/699	46.65/1185	4.61/117	29.69/754	33.46/850	-	360	5110	6030
30"	28.94/735	28.94/735	65.00/1651	65.00/1651	65.51/1664	29.53/750	29.33/745	50.20/1275	4.61/117	33.66/855	33.46/850	-	450	6110	7050
32"	30.67/779	30.67/779	70.00/1778	70.00/1778	70.63/1794	31.50/800	31.50/800	53.74/1365	4.61/117	33.66/855	33.46/850	-	450	7580	9150
34"	32.68/830	32.68/830	75.98/1930	75.98/1930	76.61/1946	33.07/840	33.11/841	56.61/1438	4.61/117	33.66/855	33.46/850	-	450	9140	11150
36"	34.41/874	34.41/874	82.01/2083	82.01/2083	82.64/2099	37.40/950	35.04/890	59.84/1520	5.12/130	35.47/901	36.02/915	-	760	10820	12570
40"	38.43/976	38.43/976	-	-	-	39.37/1000	38.19/970	66.14/1680	5.12/130	35.47/901	36.02/915	-	760	13610	14560
42"	40.16/1020	40.16/1020	-	-	-	41.34/1050	40.16/1020	68.70/1745	14.65/372	26.54/674	31.50/800	-	844	15030	16370
48"	45.91/1166	45.91/1166	-	-	-	45.28/1150	45.28/1150	78.94/2005	13.78/350	28.58/726	31.50/800	-	1123	23100	24100
56"	53.54/1360	53.54/1360	-	-	-	53.54/1360	52.76/1340	92.52/2350	14.96/380	33.86/860	37.40/950	-	2180	39890	43210
60"	57.40/1458	57.40/1458	-	-	-	57.48/1460	56.69/1440	99.21/2520	14.96/380	33.86/860	37.40/950	-	2180	44910	47900

BA3<sup>4</sup><sub>6</sub>7<sup>Y</sup><sub>F</sub>-W600Lb Reducing diameter

NPS	A inch/mm	B inch/mm	LBW inch/mm	LRF inch/mm	LRJ inch/mm	G inch/mm	H inch/mm	S inch/mm	M inch/mm	L inch/mm	K inch/mm	X inch/mm	Worm gear Weight kg	Light rod weight kg	
														BW	RF/RJ
2"x1.5"x2"	1.50/38	1.93/49	11.50/292	11.50/292	11.61/295	3.27/83	4.33/110	7.09/180	1.18/30	4.72/120	7.09/180	14.96/380	5	19	27
3"x2"x3"	1.93/49	2.91/74	14.02/356	14.02/356	14.13/359	3.46/88	4.61/117	6.10/155	1.18/30	4.72/120	7.09/180	14.96/380	5	30	35
4"x3"x4"	2.91/74	3.94/100	17.01/432	17.01/432	17.13/435	4.61/117	5.91/150	8.07/205	1.18/30	4.72/120	7.09/180	21.65/550	5	62	85
6"x4"x6"	3.94/100	5.91/150	22.01/559	22.01/559	22.13/562	5.51/140	6.73/171	9.65/245	1.46/37	8.66/220	13.78/350	31.50/800	9	97	143
8"x6"x8"	5.91/150	7.91/201	25.98/660	25.98/660	26.14/664	9.06/230	8.70/221	12.40/315	2.17/55	9.41/239	18.31/465	-	18	182	266
10"x8"x10"	7.91/201	9.92/252	30.98/787	30.98/787	31.14/791	10.83/275	10.12/257	15.28/388	2.17/55	15.83/402	23.62/600	-	28	292	413
12"x10"x12"	9.92/252	11.93/303	32.99/838	32.99/838	33.11/841	12.20/310	11.97/304	18.70/475	2.17/55	15.83/402	23.62/600	-	38	501	760
16"x12"x16"	11.93/303	15.16/385	39.02/991	39.02/991	39.13/994	14.17/360	13.46/342	21.73/552	2.68/68	20.47/520	23.62/600	-	60	789	1120
20"x16"x20"	15.16/385	19.17/487	47.01/1194	47.01/1194	47.24/1200	16.73/425	16.61/422	27.28/693	3.03/77	21.38/543	29.53/750	-	92	1370	1780
24"x20"x24"	19.17/487	23.19/589	55.00/1397	55.00/1397	55.39/1407	19.88/505	20.24/514	33.86/860	3.43/87	25.28/642	29.53/750	-	205	2580	3350
30"x24"x30"	23.19/589	28.94/735	65.00/1651	65.00/1651	65.51/1664	23.23/590	23.98/609	40.31/1024	3.43/87	29.53/660	29.53/750	-	205	4040	5050
36"x30"x36"	28.94/735	34.41/874	82.01/2083	82.01/2083	82.64/2099	29.53/750	29.33/745	50.20/1275	4.61/117	33.66/855	33.46/850	-	450	7060	8650





BA3<sup>4</sup><sub>6</sub>7<sup>Y</sup><sub>F</sub>-W900Lb full bore

NPS	A inch/mm	B inch/mm	LBW inch/mm	LRF inch/mm	LRJ inch/mm	G inch/mm	H inch/mm	S inch/mm	M inch/mm	L inch/mm	K inch/mm	X inch/mm	Worm gear Weight kg	Light rod weight kg	
														BW	RF/RJ
1.5"	1.50/38	1.50/38	12.01/305	12.01/305	12.01/305	3.27/83	4.33/110	5.91/150	1.18/30	4.72/120	7.09/180	14.96/380	5	20	31
2"	1.93/49	1.93/49	14.49/368	14.49/368	14.61/371	3.94/100	5.28/134	6.89/175	1.18/30	4.72/120	7.09/180	21.65/550	5	40	53
3"	2.91/74	2.91/74	15.00/381	15.00/381	15.12/384	4.69/119	5.98/152	8.27/210	1.46/37	8.66/220	13.78/350	31.50/800	9	69	97
4"	3.94/100	3.94/100	17.99/457	17.99/457	18.11/460	5.55/141	7.44/189	10.04/255	2.17/55	18.31/465	13.78/350	-	18	105	136
6"	5.91/150	5.91/150	24.02/610	24.02/610	24.13/613	8.66/220	8.86/225	12.87/327	2.17/55	15.83/402	23.62/6000	-	28	224	292
8"	7.91/201	7.91/201	29.02/737	29.02/737	29.13/740	10.63/270	10.71/272	16.30/414	2.17/55	15.83/402	23.62/600	-	38	325	420
10"	9.92/252	9.92/252	32.99/838	32.99/838	33.11/841	12.60/320	12.40/315	19.72/501	2.68/68	20.47/520	23.62/600	-	60	593	751
12"	11.93/303	11.93/303	37.99/965	37.99/965	38.11/968	14.57/370	14.49/368	23.19/589	3.03/77	21.38/543	29.53/750	-	92	807	1027
14"	12.68/322	12.68/322	40.51/1029	40.51/1029	40.87/1038	15.35/390	15.24/387	24.80/630	3.43/87	23.78/604	29.53/750	-	135	1028	1298
16"	14.69/373	14.69/373	44.49/1130	44.49/1130	44.88/1140	17.32/440	17.56/446	28.74/730	3.43/87	23.78/604	29.53/750	-	135	1434	1714
18"	16.65/423	16.65/423	47.99/1219	47.99/1219	48.50/1232	19.09/485	19.69/500	32.20/818	3.43/87	25.67/652	29.53/750	-	205	2123	2610
20"	18.54/471	18.54/471	52.01/1321	52.01/1321	52.52/1334	20.87/530	21.65/550	35.83/910	3.43/87	29.53/660	29.53/750	-	220	2892	3515
22"	20.55/522	20.55/522	-	-	-	23.62/600	23.62/600	38.98/990	4.61/117	29.69/754	33.46/850	-	360	3580	4350
24"	22.44/570	22.44/570	60.98/1549	60.98/1549	61.73/1568	24.80/630	25.75/654	42.87/1089	4.61/117	33.66/855	33.46/850	-	450	4310	5330
26"	24.29/617	24.29/617	65.00/1651	-	65.87/1673	22.05/560	27.36/695	44.88/1140	4.61/117	33.66/855	33.46/850	-	450	5280	6550
28"	26.18/665	26.18/665	-	-	-	27.95/710	28.54/725	48.43/1230	4.61/117	33.66/855	33.46/850	-	450	6030	7370
30"	28.03/712	28.03/712	74.02/1880	-	74.88/1902	29.92/760	30.31/770	52.17/1325	5.12/130	35.47/901	36.02/915	-	760	7180	8810
32"	29.92/760	29.92/760	-	-	-	32.28/820	32.28/820	55.51/1410	5.12/130	35.47/901	36.02/915	-	760	10870	11890
36"	33.66/855	33.66/855	90.00/2286	-	91.14/2315	37.01/940	36.02/915	61.42/1560	15.04/382	26.54/674	31.50/800	-	844	17150	19100
40"	37.64/956	37.64/956	-	-	-	40.55/1030	39.37/1000	68.50/1740	13.78/350	28.58/726	31.50/800	-	1123	25840	28300
42"	39.61/1006	39.61/1006	-	-	-	42.13/1070	40.55/1030	71.06/1805	13.78/350	28.58/726	31.50/800	-	1123	28660	31840
48"	45.24/1149	45.24/1149	-	-	-	47.24/1200	46.46/1180	81.10/2060	14.96/380	33.86/860	37.40/950	-	2180	38700	41800

BA3<sup>4</sup><sub>6</sub>7<sup>Y</sup><sub>F</sub>-W900Lb Reducing diameter

NPS	A inch/mm	B inch/mm	LBW inch/mm	LRF inch/mm	LRJ inch/mm	G inch/mm	H inch/mm	S inch/mm	M inch/mm	L inch/mm	K inch/mm	X inch/mm	Worm gear Weight kg	Light rod weight kg	
														BW	RF/RJ
2"x1.5"x2"	1.50/38	1.93/49	14.49/368	14.49/368	14.61/371	3.27/83	4.33/110	5.91/150	1.18/30	4.72/120	7.09/180	14.96/380	5	22	43
3"x2"x3"	1.93/49	2.91/74	15.00/381	15.00/381	15.12/384	3.94/100	5.28/134	6.89/175	1.18/30	4.72/120	7.09/180	21.65/550	5	49	74
4"x3"x4"	2.91/74	3.94/100	17.99/457	17.99/457	18.11/460	4.69/119	5.98/152	8.27/210	1.46/37	8.66/220	13.78/350	31.50/800	9	90	141
6"x4"x6"	3.94/100	5.91/150	24.02/610	24.02/610	24.13/613	5.55/141	7.44/189	10.04/255	2.17/55	18.31/465	13.78/350	-	18	143	206
8"x6"x8"	5.91/150	7.91/201	29.02/737	29.02/737	29.13/740	10.04/255	8.86/225	12.87/327	2.17/55	15.83/402	23.62/6000	-	28	255	408
10"x8"x10"	7.91/201	9.92/252	32.99/838	32.99/838	33.11/841	11.42/290	10.71/272	16.30/414	2.17/55	15.83/402	23.62/600	-	38	403	605
12"x10"x12"	9.92/252	11.93/303	37.99/965	37.99/965	38.11/968	14.57/370	12.40/315	19.72/501	2.68/68	20.47/520	23.62/600	-	60	694	912
16"x12"x16"	11.93/303	14.69/373	44.49/1130	44.49/1130	44.88/1140	17.32/440	14.49/368	23.19/589	3.03/77	21.38/543	29.53/750	-	92	930	1310
20"x16"x20"	14.69/373	18.54/471	52.01/1321	52.01/1321	52.52/1334	21.26/540	17.56/446	28.74/730	3.43/87	23.78/604	29.53/750	-	135	1750	2380
24"x20"x24"	18.54/471	22.44/570	60.98/1549	60.98/1549	61.73/1568	24.80/630	21.65/550	35.83/910	3.43/87	29.53/660	29.53/750	-	220	3490	4850
30"x24"x30"	22.44/570	28.03/712	-	74.02/1880	74.88/1902	29.92/760	25.75/654	42.87/1089	4.61/117	33.66/855	33.46/850	-	450	5280	6850
36"x30"x36"	28.03/712	33.66/855	-	90.00/2286	91.14/2315	37.01/940	30.31/770	52.17/1325	5.12/130	35.47/901	36.02/915	-	760	8680	11910



BA3<sup>4</sup><sub>6</sub>7<sup>Y</sup><sub>F</sub>-W1500Lb full bore

NPS	A inch/mm	B inch/mm	LBW inch/mm	LRF inch/mm	LRJ inch/mm	G inch/mm	H inch/mm	S inch/mm	M inch/mm	L inch/mm	K inch/mm	X inch/mm	Worm gear Weight kg	Light rod weight kg	
														BW	RF/RJ
1.5"	1.50/38	1.50/38	12.01/305	12.01/305	12.01/305	3.27/83	4.33/110	5.91/150	1.18/30	4.72/120	7.09/180	9.84/250	5	20	31
2"	1.93/49	1.93/49	14.49/368	14.49/368	14.61/371	3.94/100	5.28/134	6.89/175	1.18/30	4.72/120	7.09/180	21.65/550	5	40	53
3"	2.91/74	2.91/74	18.50/470	18.50/470	18.62/473	5.00/127	6.57/167	8.82/224	2.17/55	9.41/239	18.31/465	37.40/950	18	88	115
4"	3.94/100	3.94/100	21.50/546	21.50/546	21.61/549	6.02/153	7.87/200	11.02/280	2.17/55	14.17/360	23.62/600	-	21	141	177
6"	5.67/144	5.67/144	27.76/705	27.76/705	27.99/711	9.65/245	9.72/247	14.21/361	2.17/55	15.83/402	23.62/600	-	38	320	410
8"	7.56/192	7.56/192	32.76/832	32.76/832	33.11/841	11.81/300	11.81/300	18.62/473	2.68/68	20.47/520	23.62/600	-	60	658	778
10"	9.41/239	9.41/239	39.02/991	39.02/991	39.37/1000	14.17/360	14.29/363	22.44/570	3.03/77	21.38/543	29.53/750	-	92	885	1080
12"	11.30/287	11.30/287	44.49/1130	44.49/1130	45.12/1146	16.54/420	16.73/425	26.57/675	3.43/87	25.28/642	29.53/750	-	205	1280	1570
14"	12.40/315	12.40/315	49.49/1257	49.49/1257	50.24/1276	17.72/450	18.11/460	28.86/733	3.43/87	25.28/642	29.53/750	-	205	1730	2180
16"	14.17/360	14.17/360	54.49/1384	54.49/1384	55.39/1407	20.08/510	20.47/520	32.13/816	3.43/87	29.53/660	29.53/750	-	220	2220	2810
18"	15.98/406	15.98/406	-	60.51/1537	61.38/1559	22.83/580	22.83/580	36.22/920	3.43/87	29.53/660	29.53/750	-	220	3120	3850
20"	17.87/454	17.87/454	-	65.51/1664	66.38/1686	25.59/650	25.59/650	41.34/1050	4.61/117	29.69/754	33.46/850	-	360	4210	5050
22"	19.69/500	19.69/500	-	-	-	28.54/725	28.15/715	45.28/1150	4.61/117	33.66/855	33.46/850	-	450	5580	6580
24"	21.50/546	21.50/546	-	-	77.64/1972	31.10/790	30.71/780	49.21/1250	5.12/130	35.47/901	36.02/915	-	760	7110	8230
26"	23.39/594	23.39/594	-	76.50/1943	-	34.06/865	33.46/850	51.97/1320	5.12/130	35.47/901	36.02/915	-	760	8700	10130
28"	25.24/641	25.24/641	-	-	-	35.83/910	35.43/900	55.91/1420	14.65/372	26.54/674	31.50/800	-	844	10120	12450
30"	27.01/686	27.01/686	-	-	-	38.98/990	38.58/980	60.24/1530	14.65/372	26.54/674	31.50/800	-	844	11900	14190
32"	28.74/730	28.74/730	-	-	-	41.34/1050	41.34/1050	64.96/1650	13.78/350	28.58/726	31.50/800	-	1123	15170	17590
34"	30.51/775	30.51/775	-	-	-	44.09/1120	43.70/1110	68.50/1740	14.96/380	33.86/860	37.40/950	-	2180	19500	21820
36"	32.24/819	32.24/819	-	-	-	46.46/1180	46.06/1170	70.87/1800	14.96/380	33.86/860	37.40/950	-	2180	23100	26920

BA3<sup>4</sup><sub>6</sub>7<sup>Y</sup><sub>F</sub>-W1500Lb Reducing diameter

NPS	A inch/mm	B inch/mm	LBW inch/mm	LRF inch/mm	LRJ inch/mm	G inch/mm	H inch/mm	S inch/mm	M inch/mm	L inch/mm	K inch/mm	X inch/mm	Worm gear Weight kg	Light rod weight kg	
														BW	RF/RJ
2"x1.5"x2"	1.50/38	1.93/49	14.49/368	14.49/368	14.61/371	3.27/83	4.33/110	5.91/150	1.18/30	4.72/120	7.09/180	9.84/250	5	19	27
3"x2"x3"	1.93/49	2.91/74	18.50/470	18.50/470	18.62/473	3.94/100	5.28/134	6.89/175	1.18/30	4.72/120	7.09/180	21.65/550	5	30	35
4"x3"x4"	2.91/74	3.94/100	21.50/546	21.50/546	21.61/549	5.00/127	6.57/167	8.82/224	2.17/55	9.41/239	18.31/465	37.40/950	5	62	85
6"x4"x6"	3.94/100	5.67/144	27.76/705	27.76/705	27.99/711	6.02/153	7.87/200	11.02/280	2.17/55	14.17/360	23.62/600	-	9	97	143
8"x6"x8"	5.67/144	7.56/192	32.76/832	32.76/832	33.11/841	10.24/260	9.72/247	14.21/361	2.17/55	15.83/402	23.62/600	-	18	182	266
10"x8"x10"	7.56/192	9.41/239	35.87/911	35.87/911	39.37/1000	12.20/310	11.81/300	18.62/473	2.68/68	20.47/520	23.62/600	-	28	292	413
12"x10"x12"	9.41/239	11.30/287	44.49/1130	44.49/1130	45.12/1146	14.17/360	14.29/363	22.44/570	3.03/77	21.38/543	29.53/750	-	38	501	760
16"x12"x16"	11.30/287	14.17/360	54.49/1384	54.49/1384	55.39/1407	16.93/430	16.73/425	26.57/675	3.43/87	25.28/642	29.53/750	-	60	789	1120
20"x16"x20"	14.17/360	17.87/454	-	65.51/1664	66.38/1686	20.08/510	20.47/520	32.13/816	3.43/87	29.53/660	29.53/750	-	92	1370	1780
24"x20"x24"	17.87/454	21.50/546	-	76.50/1943	-	25.59/650	25.59/650	41.34/1050	4.61/117	29.69/754	33.46/850	-	205	2580	3350
30"x24"x30"	21.50/546	27.01/686	-	-	-	31.10/790	30.71/780	49.21/1250	5.12/130	35.47/901	36.02/915	-	205	4040	5050
36"x30"x36"	27.01/686	32.24/819	-	-	-	38.98/990	38.58/980	60.24/1530	14.65/372	26.54/674	31.50/800	-	450	7060	8650



BA3<sup>4</sup><sub>6</sub>7<sup>Y</sup><sub>F</sub>-W2500Lb full bore

NPS	A inch/mm	B inch/mm	LBW inch/mm	LRF inch/mm	LRJ inch/mm	G inch/mm	H inch/mm	S inch/mm	M inch/mm	L inch/mm	K inch/mm	X inch/mm	Worm gear Weight kg	Light rod weight kg	
														BW	RF/RJ
1.5"	1.50/38	1.50/38	-	-	-	3.82/97	5.16/131	6.77/172	1.46/37	8.66/220	13.78/350	31.50/800	9	41	64
2"	1.65/42	1.65/42	17.76/451	17.76/451	17.87/454	4.29/109	6.38/162	7.48/190	2.17/55	9.41/239	18.31/465	-	17	66	112
3"	2.44/62	2.44/62	22.76/578	22.76/578	22.99/584	5.87/149	7.91/201	10.24/260	2.17/55	14.17/360	23.62/600	-	23	162	231
4"	3.43/87	3.43/87	26.50/673	26.50/673	26.89/683	7.60/193	9.69/246	11.81/300	2.17/55	15.83/402	23.62/600	-	38	320	418
6"	5.16/131	5.16/131	35.98/914	35.98/914	36.50/927	11.42/290	12.20/310	16.42/417	3.03/77	21.38/543	29.53/750	-	92	695	840
8"	7.05/179	7.05/179	40.24/1022	40.24/1022	40.87/1038	14.96/380	15.75/400	21.85/555	3.43/87	23.78/604	29.53/750	-	135	1605	1773
10"	8.78/223	8.78/223	50.00/1270	50.00/1270	50.87/1292	18.11/460	18.31/465	26.57/675	3.43/87	25.28/642	29.53/750	-	205	2450	2990
12"	10.43/265	10.43/265	55.98/1422	55.98/1422	56.89/1445	20.47/520	21.26/540	30.63/778	4.61/117	29.69/754	33.46/850	-	360	3470	4230
14"	11.50/292	11.50/292	-	-	-	22.05/560	23.62/600	35.04/890	4.61/117	33.66/855	33.46/850	-	450	4260	5090
16"	13.11/333	13.11/333	-	-	-	25.59/650	27.95/710	41.34/1050	5.12/130	35.83/910	36.02/915	-	760	5180	6320
18"	14.72/374	14.72/374	-	-	-	28.74/730	31.10/790	45.67/1160	14.65/372	26.54/674	31.50/800	-	844	7310	8770
20"	16.50/419	16.50/419	-	-	-	32.28/820	33.86/860	51.57/1310	13.78/350	28.58/726	31.50/800	-	1123	9930	11980
24"	19.76/502	19.76/502	-	-	-	37.80/960	40.16/1020	60.24/1530	14.96/380	33.86/860	37.40/950	-	2180	15270	18750

BA3<sup>4</sup><sub>6</sub>7<sup>Y</sup><sub>F</sub>-W2500Lb Reducing diameter

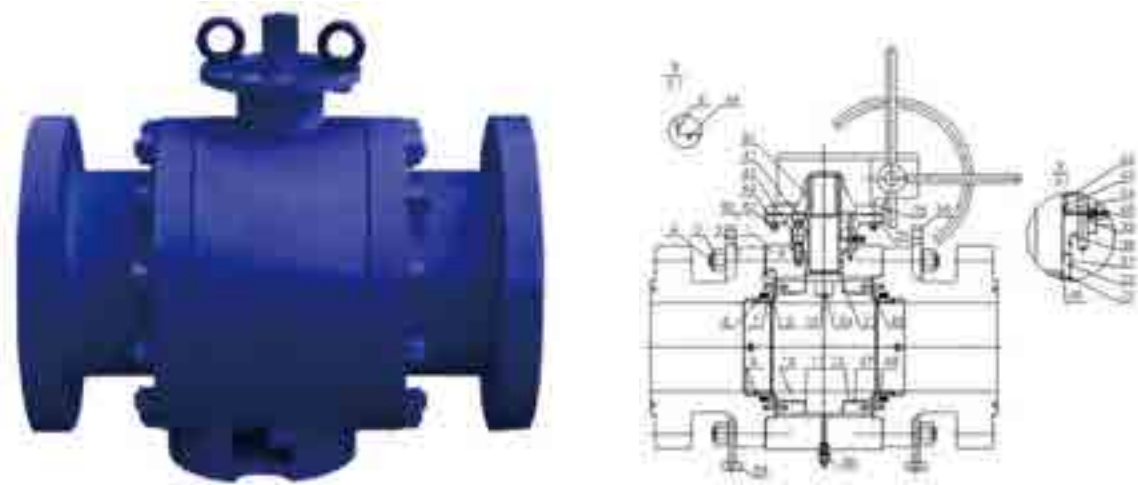
NPS	A inch/mm	B inch/mm	LBW inch/mm	LRF inch/mm	LRJ inch/mm	G inch/mm	H inch/mm	S inch/mm	M inch/mm	L inch/mm	K inch/mm	X inch/mm	Worm gear Weight kg	Light rod weight kg	
														BW	RF/RJ
2"x1.5"x2"	1.50/38	1.65/42	17.76/451	17.76/451	17.87/454	3.82/97	5.16/131	6.77/172	1.46/37	8.66/220	13.78/350	31.50/800	9	46	85
3"x2"x3"	1.65/42	2.44/62	22.76/578	22.76/578	22.99/584	4.29/109	6.38/162	7.48/190	2.17/55	9.41/239	18.31/465	-	17	95	154
4"x3"x4"	2.44/62	3.43/87	26.50/673	26.50/673	26.89/683	5.87/149	7.91/201	10.24/260	2.17/55	14.17/360	23.62/600	-	23	208	316
6"x4"x6"	3.43/87	5.16/131	35.98/914	35.98/914	36.50/927	7.60/193	9.69/246	11.81/300	2.17/55	15.83/402	23.62/600	-	38	398	578
8"x6"x8"	5.16/131	7.05/179	40.24/1022	40.24/1022	40.87/1038	11.42/290	12.20/310	16.42/417	3.03/77	21.38/543	29.53/750	-	92	995	1340
10"x8"x10"	7.05/179	8.78/223	50.00/1270	50.00/1270	50.87/1292	14.96/380	15.75/400	21.85/555	3.43/87	23.78/604	29.53/750	-	135	2205	2750
12"x10"x12"	8.78/223	10.43/265	55.98/1422	55.98/1422	56.89/1445	18.11/460	18.31/465	26.57/675	3.43/87	25.28/642	29.53/750	-	205	3225	3990
16"x12"x16"	10.43/265	13.11/333	-	-	-	20.47/520	21.26/540	30.63/778	4.61/117	29.69/754	33.46/850	-	360	4650	5730
20"x16"x20"	13.11/333	16.50/419	-	-	-	25.59/650	27.95/710	41.34/1050	5.12/130	35.83/910	36.02/915	-	760	6670	8640
24"x20"x24"	16.50/419	19.76/502	-	-	-	32.28/820	33.86/860	51.57/1310	13.78/350	28.58/726	31.50/800	-	1123	11910	15500



Forged Steel Fixed Ball Valve

Application specification

- 1、Pressure and temperature grade: ASME B16.34、BS5351
- 2、Shell wall thickness: ASME B16.34、BS5351
- 3、Hole size: API6D、BS5351
- 4、Structure length: ASME B16.10、API6D
- 5、Connection dimensions: ASME B16.5、BS1560
- 6、Tests and inspections: API6D、BS5146
- 7、Subject material: A105、LF2、F304、F316、F304L、F316L



Serial number	Part name	carbon steel	Low Alloy Steel Series	Stainless steel series
1	valve body	ASTM A105	ASTM A350 LF2	ASTM A182 F316
2	Bonnet	ASTM A105	ASTM A350 LF2	ASTM A182 F316
3	Nut	ASTM A194-2H/2HM	ASTM A194 7M	ASTM A194-2HM/8
4	Bolt	ASTM A193-B7/B7M	ASTM A320 7M	ASTM A193-B7M Cadmium plating/B8
5	Shim	304+GRAPHITE	304+GRAPHITE	316+GRAPHITE
6	Spring	INCONELX-750	INCONELX-750	INCONELX-750
7	Seat Retainer	ANSI 1045	ASTM A350 LF2+ENP	ASTM A182 F316
8	Seal ring	RPTFE	RPTFE	PTFE
9	O-ring	VITON	VITON	VITON
10	sphere	ASTM A105+ENP	ASTM A350 LF2+ENP	ASTM A182 F316

Serial number	Part name	carbon steel	Low Alloy Steel Series	Stainless steel series
11	sliding bearing	304+PTFE	304+PTFE	316+PTFE
12	Electrostatic spring	ASTM A276-316	ASTM A276-316	ASTM A276-316
13	Thrust bearing	304+PTFE	304+PTFE	316+PTFE
20	Stem	ASTM A182-F6a	ASTM A182-F6a	ASTM A182 F316
21	sliding bearing	304+PTFE	304+PTFE	316+PTFE
22	Shim	304+PTFE	304+PTFE	316+PTFE
23	O-ring	VITON	VITON	VITON
24	O-ring	VITON	VITON	VITON
26	Connecting disk	ASTM A105	ASTM A350 LF2	ASTM A182 F316
35	Manual Operator	Assembly	Assembly	Assembly
37	Upper shaft sleeve	ASTM A105	ASTM A350 LF2+ENP	ASTM A182 F316
38	Shim	304+GRAPHITE	304+GRAPHITE	316+GRAPHITE
39	Locating pin	ANSI 1045	ANSI 1045	A276-316
40	Injection valve	ANSI 1045	ANSI 1045	A276-316
41	screw	ASTM A193-B7/B7M	ASTM A193-7M	ASTM A193-B8
42	screw	ASTM A193-B7/B7M	ASTM A193-7M	ASTM A193-B8
43	Stuffing pad	ASTM A182-F6a	ASTM A182-F6a	ASTM A182 F316
44	filler	GRAPHITE	GRAPHITE	GRAPHITE
45	O-ring	VITON	VITON	VITON
46	Metal pressing ring	ASTM A182 F316	ASTM A182 F316	ASTM A182 F316
47	Lining board	ANSI A105	ASTM A350 LF2+ENP	ASTM A182 F316
48	Liner pin	ANSI 1045	ASTM A350 LF2+ENP	ASTM A182 F316
49	O-ring	VITON	VITON	VITON
50	Drain valve	ANSI 1045	ANSI 1045	ASTM A182 F316
51	key	ANSI 1045	ANSI 1045	ANSI 1045
52	Nut	ASTM A194-2H/2HM	ASTM A194 7M	ASTM A194-2HM/8
53	Stud	ASTM A193-B7/B7M	ASTM A320 7M	ASTM A193-B7M Cadmium plating/B8
54	Set screw	ASTM A193-B7/B7M	ASTM A193 7M	ASTM A193-B8
55	Hanging plate	ANSI 1025	ANSI 1025	A276-316
56	base	ANSI 1025	ANSI 1025	A276-316

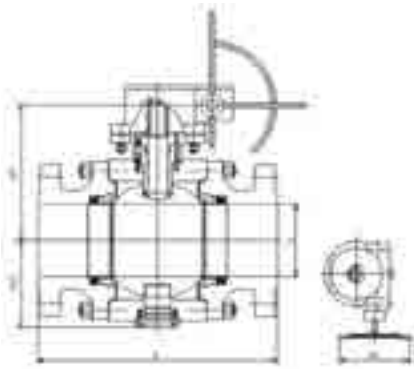


BA347F-d150Lb

NPS	d(inch/mm)	L(inch/mm)	H1(inch/mm)	H2(inch/mm)	W(inch/mm)	Weight (kg)
2"	2.00/50	7.00/177.8	6.02/153	6.50/165	15.74/400	28
3"	3.00/76.2	8.00/203.2	7.68/195	8.03/205	23.63/600	55
4"	4.00/101.6	9.00/228.6	8.39/215	8.54/220	33.46/850	80
6"	6.00/152	15.50/393.7	11.93/303	7.28/185	18.10/460	203
8"	8.00/203	18.00/457.2	13.47/342	8.90/226	18.10/460	289
10"	10.00/254	21.00/533.4	14.48/377	10.20/259	18.10/460	450
12"	12.00/305	24.00/609.6	16.44/418	12.25/311	27.80/705	590
14"	13.25/337	28.00/685.8	17.90/455	13.70/348	27.80/705	815
16"	15.25/387	30.00/762	21.95/558	16.40/417	31.50/800	1580
18"	17.25/438	34.00/863.6	23.54/598	17.83/453	31.50/800	2435
20"	19.25/489	36.00/914.4	24.80/630	18.86/479	31.50/800	2600
24"	23.25/591	42.00/1066.8	27.79/705	23.11/587	31.50/800	4200
26"	25.00/635	45.00/1143	29.53/750	23.62/600	31.50/800	5115
28"	27.00/686	49.00/1244.6	31.49/800	25.59/650	31.50/800	6260
30"	29.00/737	51.00/1295.4	33.85/860	27.24/692	31.50/800	7340
32"	30.75/781	54.00/1371.6	35.75/908	28.98/736	31.50/800	8900



2"-4"



6 "above

BA347F-d300Lb

NPS	d(inch/mm)	L(inch/mm)	H1(inch/mm)	H2(inch/mm)	W(inch/mm)	Weight (kg)
2"	2.00/50	8.50/215.9	6.02/153	6.50/165	15.74/400	30
3"	3.00/76.2	11.13/282.6	7.68/195	8.03/205	23.63/600	60
4"	4.00/101.6	12.00/304.8	8.39/215	8.54/220	33.46/850	100
6"	6.00/152	15.87/403.2	11.93/303	7.28/185	18.10/460	215
8"	8.00/203	19.75/501.7	13.47/342	8.90/226	18.10/460	325
10"	10.00/254	22.37/568.3	14.90/378.5	10.70/272	27.80/705	450
12"	12.00/305	25.50/647.7	16.44/418	12.25/311	27.80/705	590
14"	13.25/337	30.00/762	17.90/455	13.70/348	27.80/705	815
16"	15.25/387	33.00/838.2	21.95/558	16.40/417	31.50/800	1870
18"	17.25/438	36.00/914.4	23.54/598	17.83/453	31.50/800	2755
20"	19.25/489	39.00/916	24.80/630	18.86/479	31.50/800	2965
22"	21.25/540	43.00/1092.2	26.42/671	20.47/520	31.50/800	3360
24"	23.25/591	45.00/1143	24.79/705	23.11/587	31.50/800	4685
26"	25.00/635	49.00/1244.6	30.59/777	23.62/600	31.50/800	5655
28"	27.00/686	53.00/1346.2	31.49/800	25.59/650	31.50/800	6775
30"	29.00/737	55.00/1397	33.85/860	27.24/692	31.50/800	7900
32"	30.75/781	60.00/1524	35.75/908	28.98/736	31.50/800	9550

BA347F-d400Lb

NPS	d(inch/mm)	L(inch/mm)	H1(inch/mm)	H2(inch/mm)	W(inch/mm)	Weight (kg)
2"	2.00/50	9.92/252	6.59/167.5	5.55/141	23.15/588	32
3"	3.00/76.2	13.19/335	8.21/208.5	6.57/167	49.25/1251	64
4"	4.00/101.6	15.98/406	9.61/244	7.97/202.5	51.22/1300	122
6"	6.00/152	19.50/495.3	11.93/303	7.28/185	18.10/460	235
8"	8.00/203	23.50/595.9	13.47/342	8.90/226	18.10/460	355
10"	10.00/254	26.50/673.1	14.90/378.5	10.70/272	27.80/705	495
12"	12.00/305	30.00/762	16.44/418	12.25/311	27.80/705	650
14"	13.25/337	32.50/825.5	17.90/455	13.70/348	27.80/705	895
16"	15.25/387	35.50/901.7	21.95/558	16.40/417	31.50/800	2060
18"	17.25/438	38.50/977.9	23.54/598	17.83/453	31.50/800	3030
20"	19.25/489	41.50/1054.1	24.80/630	18.86/479	31.50/800	3415
22"	21.25/540	45.00/1143	26.42/671	20.47/520	31.50/800	3865
24"	23.25/591	48.50/1231.9	24.79/705	23.11/587	31.50/800	5595
26"	25.00/635	51.50/1308.1	30.59/777	23.62/600	31.50/800	6505
28"	27.00/686	55.00/1397	31.49/800	25.59/650	31.50/800	7790
30"	29.00/737	60.00/1524	33.85/860	27.24/692	31.50/800	9085
32"	30.75/781	65.00/1651	35.75/908	28.98/736	31.50/800	10985

BA347F-d900Lb

NPS	d(inch/mm)	L(inch/mm)	H1(inch/mm)	H2(inch/mm)	W(inch/mm)	Weight (kg)
2"	2.00/50	14.50/368.3	6.59/167.5	5.55/141	23.15/588	48
3"	3.00/76.2	15.00/381	8.21/208.5	6.57/167	49.25/1251	78
4"	4.00/101.6	18.00/457.2	-	7.97/202.5	-	138
6"	6.00/152	24.00/609.6	12.00/305	9.85/250	27.80/705	390
8"	8.00/203	29.00/736.6	15.60/395	13.78/350	31.50/800	700
10"	10.00/254	33.00/838.2	16.93/430	14.96/380	31.50/800	1100
12"	12.00/305	38.00/965.2	18.30/465	15.94/405	31.50/800	1750
14"	12.75/324	40.50/1028.7	21.45/545	19.49/495	31.50/800	2300
16"	14.75/375	44.50/1130.3	24.21/615	22.24/565	31.50/800	3500
18"	16.75/425.5	48.00/1219.2	26.97/685	23.42/595	31.50/800	4727
20"	18.62/473	52.00/1320.8	29.52/750	25.00/635	31.50/800	5542
24"	22.50/571.5	61.00/1549.4	35.23/895	28.54/725	31.50/800	9745

BA347F-d600Lb

NPS	d(inch/mm)	L(inch/mm)	H1(inch/mm)	H2(inch/mm)	W(inch/mm)	Weight (kg)
2"	2.00/50	11.50/292	6.59/167.5	5.55/141	23.15/588	32
3"	3.00/76.2	14.00/355.6	8.21/208.5	6.57/167	49.25/1251	64
4"	4.00/101.6	17.00/431.8	9.61/244	7.97/202.5	51.22/1300	122
6"	6.00/152	22.00/558.8	12.17/309	7.56/192	18.10/460	270
8"	8.00/203	26.00/660.4	14.10/358	9.86/250.5	18.10/460	525
10"	10.00/254	31.00/787.4	16.10/409	11.40/290	27.80/705	775
12"	12.00/305	33.00/838.2	18.68/474.4	13.47/342	27.80/705	1120
14"	13.25/337	35.00/889	19.75/502	14.88/378	31.50/800	1565
16"	15.25/387	39.00/990.6	20.96/532.3	16.79/426.5	31.50/800	2400
18"	17.25/438	43.00/1092.2	25.04/636	19.37/492	31.50/800	3400
20"	19.25/489	47.00/1193.8	26.75/674.8	20.43/519	31.50/800	3950
22"	21.25/540	51.00/1295.4	28.56/725	22.76/578	31.50/800	4900
24"	23.25/591	55.00/1397	30.12/765	25.59/650	31.50/800	6650

BA347F-d1500Lb

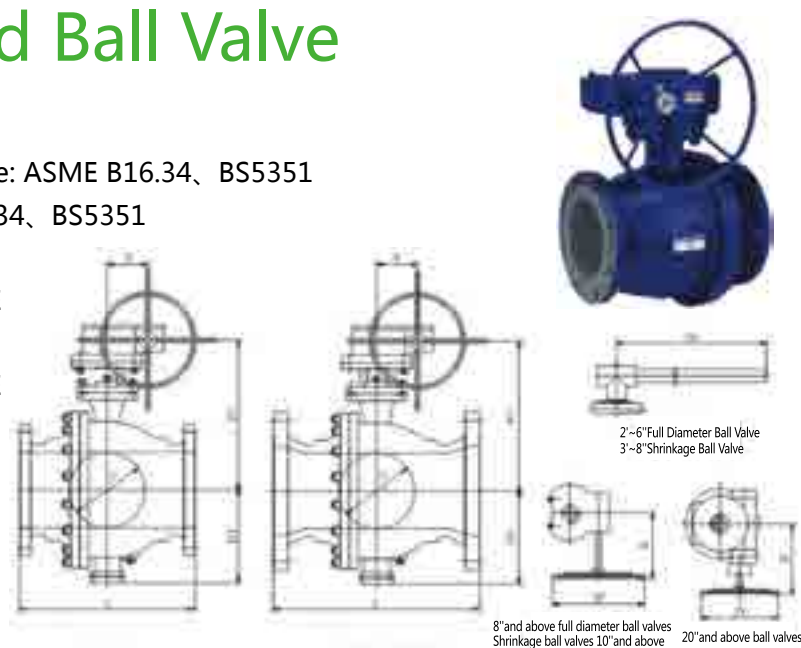
NPS	d(inch/mm)	L(inch/mm)	H1(inch/mm)	H2(inch/mm)	W(inch/mm)	Weight (kg)
2"	2.00/50	14.50/368.3	6.59/167.5	5.55/141	45.70/1160	55
3"	3.00/76.2	18.50/469.9	8.21/208.5	6.57/167	49.25/1251	97
4"	4.00/101.6	21.50/546.1	-	7.97/202.5	-	162
6"	5.75/146	27.75/704.9	14.96/380	9.85/250	31.50/800	592
8"	7.64/194	32.75/831.9	19.29/490	13.78/350	31.50/800	935
10"	9.50/241	39.00/990.6	20.07/510	14.96/380	31.50/800	1900
12"	11.38/289	44.50/1130.3	22.05/460	16.14/410	31.50/800	2285
14"	12.50/317.5	49.50/1257.3	25.00/635	16.69/500	31.50/800	3940
16"	14.25/362	54.50/1384.3	26.97/685	22.44/570	31.50/800	5430



Cast Steel Fixed Ball Valve

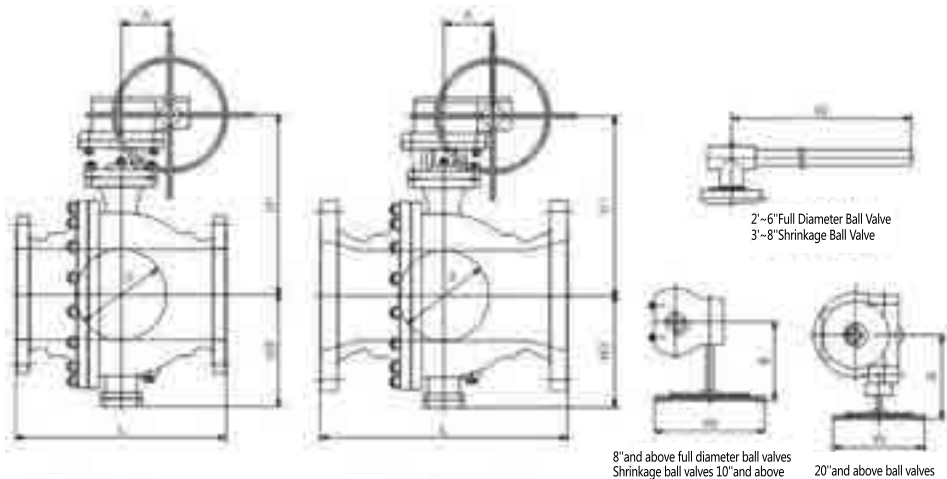
Application specification

- 1、Pressure and temperature grade: ASME B16.34、BS5351
- 2、Shell wall thickness: ASME B16.34、BS5351
- 3、Hole size: API6D、BS5351
- 4、Structure length: ASME B16.10、API6D
- 5、Connection dimensions: ASME B16.5 ( MSSSP -44 ) 、BS1560
- 6、Tests and inspections: API6D、BS5146
- 7、Subject material:WCB、LCB、LCC、CF8、CF8M、CF3、CF3M



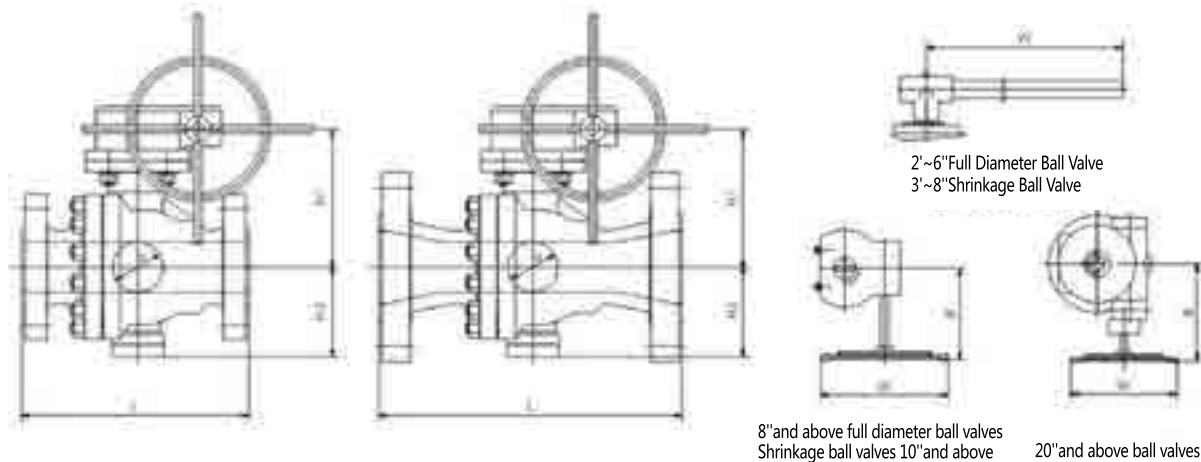
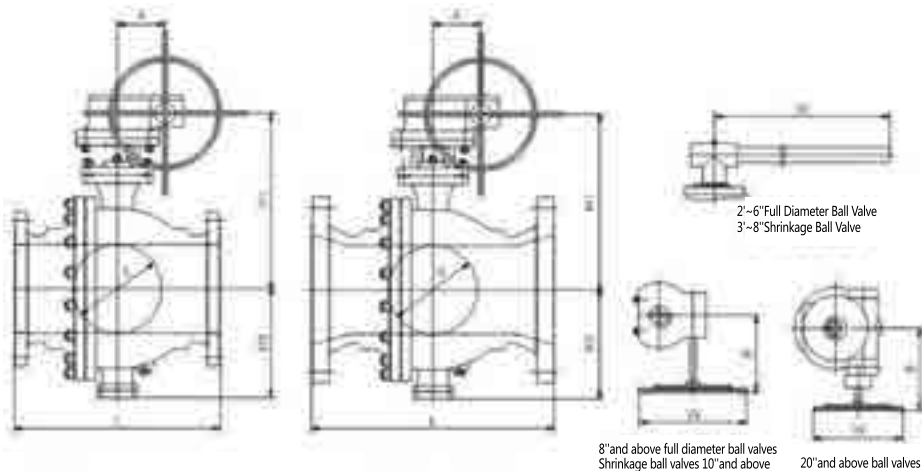
BA347F-150Lb

NPS	d(inch/mm)	L(inch/mm)	H1(inch/mm)	H2(inch/mm)	W(inch/mm)	A(inch/mm)	B(inch/mm)
2"	2/51	7/178	6.94/176	3.74/95	13.78/350	-	-
3"x2"x3"	2/51	8/203	6.94/176	3.74/95	13.78/350	-	-
3"	3/76	8/203	8.46/215	4.72/120	15.75/400	-	-
4"x3"x4"	3/76	9/229	8.46/215	4.72/120	15.75/400	-	-
4"	4/102	9/229	10/252	5.59/142	19.69/500	-	-
6"x4"x6"	4/102	15.5/394	10/252	5.59/142	19.69/500	-	-
6"	6/152	15.5/394	13/330	8.66/220	41.34/1050	-	-
8"x6"x8"	6/152	18/457	13/330	8.66/220	41.34/1050	-	-
8"	8/203	18/457	17.63/448	10.20/259	11.81/300	4.13/105	7.48/190
10"x8"x10"	8/203	21/533	17.63/448	10.20/259	11.81/300	4.13/105	7.48/190
10"	10/254	21/533	19.88/505	12/305	13.78/350	4.92/125	8.07/205
12"x10"x12"	10/254	24/610	19.88/505	12/305	13.78/350	4.92/125	8.07/205
12"	12/305	24/610	21.89/556	13.70/348	15.75/400	7.28/185	12.59/320
14"x12"x14"	12//305	27/686	21.89/556	13.70/348	15.75/400	7.28/185	12.59/320
14"	13.25/337	27/686	24.40/620	15.55/395	19.69/500	7.68/195	13.78/350
16"x14"x16"	13.25/337	30/762	24.40/620	15.55/395	19.69/500	7.68/195	13.78/350
16"	15.25/387	30/762	27.55/700	17.71/450	9.69/500	7.68/195	13.78/350
18"x16"x18"	15.25/387	34/864	27.55/700	17.71/450	9.69/500	7.68/195	13.78/350
18"	17.25/438	34/864	29.52/750	19.09/485	9.69/500	8.46/215	14.96/380
20"x18"x20"	17.25/438	36/914	29.52/750	19.09/485	9.69/500	8.46/215	14.96/380
20"	19.25/489	36/914	31.69/805	20.67/525	9.69/500	8.46/215	14.96/380
22"x18"x22"	17.25/438	40/1016	29.52/750	19.09/485	9.69/500	8.46/215	14.96/380
22"	21.25/540	40/1016	35.04/890	24.21/615	9.69/500	8.46/215	14.96/380
24"x20"x24"	19.25/489	42/1067	31.69/805	20.67/525	9.69/500	8.46/215	14.96/380
24"	23.25/591	42/1067	29.52/1110	26.77/680	9.69/500	11.02/280	18.11/460
26"x22"x26"	21.25/540	45/1143	35.04/890	24.21/615	9.69/500	8.46/215	18.11/380
26"	25/635	45/1143	31.69/1140	28.15/715	9.69/500	11.02/280	18.11/460
28"x24"x28"	23.26/591	49/1245	43.70/1110	26.77/680	9.69/500	11.02/280	18.11/460
28"	27/686	49/1245	46.45/1180	29.52/750	9.69/500	11.02/280	18.11/460
30"x24"x30"	23.25/591	51/1295	43.70/1110	26.77680	9.69/500	11.02/280	18.11/460
30"	29/737	51/1295	48.03/1220	33.46/850	9.69/500	11.02/280	18.11/460
32"x26"x32"	25/635	54/1372	44.88/1140	28.15/715	9.69/500	11.02/280	18.11/460
32"	30.75/787	54/1372	49.21/1250	36.22/950	9.69/500	11.02/280	18.11/460
34"x28"x34"	27/686	58/1473	46.45/1180	29.52/750	9.69/500	11.02/280	18.11/460
34"	32.75/832	58/1473	51.18/1300	38.78/985	9.69/500	11.02/280	18.11/460
36"x30"x36"	29/737	60/1524	48.03/1220	33.46/850	9.69/500	11.02/280	18.11/460
36"	34.5/876	60/1524	53.15/1350	43.34/1050	25.59/650	7.87/200	25.20/640



BA347F-300Lb

NPS	d(inch/mm)	L(inch/mm)	H1(inch/mm)	H2(inch/mm)	W(inch/mm)	A(inch/mm)	B(inch/mm)
2"	2.00/51	8.50/216	6.94/176	3.74/95	13.78/350	-	-
3"x2"x3"	2.00/51	11.14/283	6.94/176	3.74/95	13.78/350	-	-
3"	3.00/76	11.14/283	8.46/215	4.72/120	15.75/400	-	-
4"x3"x4"	3.00/76	12.00/305	8.46/215	4.72/120	15.75/400	-	-
4"	4.00/102	12.00/305	10/252	5.59/142	19.69/500	-	-
6"x4"x6"	4.00/102	15.87/403	10/252	5.59/142	19.69/500	-	-
6"	6.00/152	15.87/403	13/330	8.66/220	41.34/1050	-	-
8"x6"x8"	6.00/152	19.75/502	13/330	8.66/220	41.34/1050	-	-
8"	8.00/203	19.75/502	17.63/448	10.20/259	11.81/300	4.13/105	7.48/190
10"x8"x10"	8.00/203	22.36/568	17.63/448	10.20/259	11.81/300	4.13/105	7.48/190
10"	10.00/254	22.36/568	19.88/505	12.00/305	13.78/350	4.92/125	8.07/205
12"x10"x12"	10.00/254	25.50/684	19.88/505	12.00/305	13.78/350	4.92/125	8.07/205
12"	12.00/305	25.50/684	21.89/556	13.70/348	15.75/400	7.28/185	12.59/320
14"x12"x14"	12.00//305	30.00/762	21.89/556	13.70/348	15.75/400	7.28/185	12.59/320
14"	13.25/337	30.00/762	24.40/620	15.55/395	19.69/500	7.68/195	13.78/350
16"x14"x16"	13.25/337	33.00/838	24.40/620	15.55/395	19.69/500	7.68/195	13.78/350
16"	15.25/387	33.00/838	27.55/700	17.71/450	9.69/500	7.68/195	13.78/350
18"x16"x18"	15.25/387	36.00/914	27.55/700	17.71/450	9.69/500	7.68/195	13.78/350
18"	17.25/438	36.00/914	29.52/750	19.09/485	9.69/500	8.46/215	14.96/380
20"x18"x20"	17.25/438	39.00/991	29.52/750	19.09/485	9.69/500	8.46/215	14.96/380
20"	19.25/489	39.00/991	31.69/805	20.67/525	9.69/500	8.46/215	14.96/380
22"x18"x22"	17.25/438	43.00/1092	29.52/750	19.09/485	9.69/500	8.46/215	14.96/380
22"	21.25/540	43.00/1092	35.04/890	24.21/615	9.69/500	8.46/215	14.96/380
24"x20"x24"	19.25/489	45.00/1143	31.69/805	20.67/525	9.69/500	8.46/215	14.96/380
24"	23.25/591	45.00/1143	29.52/1110	26.77/680	9.69/500	11.02/280	18.11/460
26"x22"x26"	21.25/540	49.00/1245	35.04/890	24.21/615	9.69/500	8.46/215	18.11/380
26"	25.00/635	49.00/1245	31.69/1140	28.15/715	9.69/500	11.02/280	18.11/460
28"x24"x28"	23.25/591	53.00/1346	43.70/1110	26.77/680	9.69/500	11.02/280	18.11/460
28"	27.00/686	53.00/1346	46.45/1180	29.52/750	9.69/500	11.02/280	18.11/460
30"x24"x30"	23.25/591	55.00/1397	43.70/1110	26.77/680	9.69/500	11.02/280	18.11/460
30"	29.00/737	55/1397	48.03/1220	33.46/850	9.69/500	11.02/280	18.11/460
32"x26"x32"	25.00/635	60/1524	44.88/1140	28.15/715	9.69/500	11.02/280	18.11/460
32"	30.75/787	60/1524	49.21/1250	36.22/950	9.69/500	11.02/280	18.11/460
34"x28"x34"	27.00/686	64/1626	46.45/1180	29.52/750	9.69/500	11.02/280	18.11/460
34"	32.75/832	64/1626	51.18/1300	38.78/985	9.69/500	11.02/280	18.11/460
36"x30"x36"	29.00/737	68/1727	48.03/1220	33.46/850	9.69/500	11.02/280	18.11/460
36"	34.50/876	68/1727	53.15/1350	43.34/1050	25.59/650	7.87/200	25.20/640



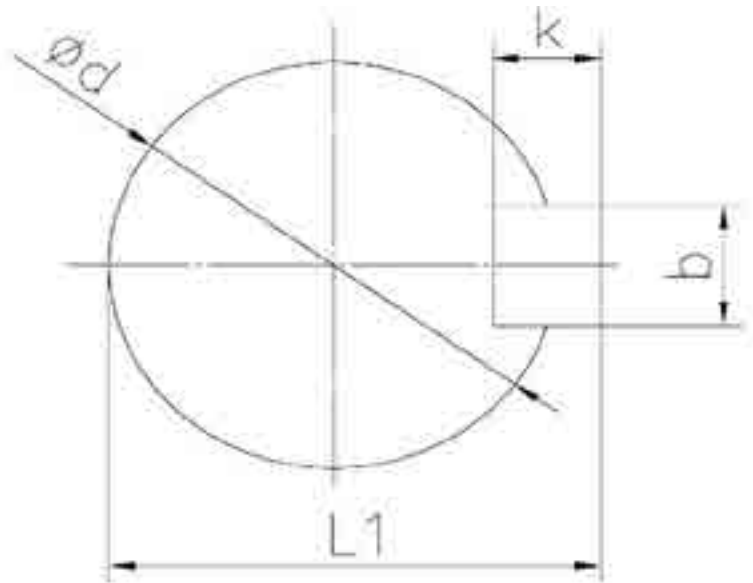
BA347F-600Lb

NPS	d(inch/mm)	L(inch/mm)	H1(inch/mm)	H2(inch/mm)	W(inch/mm)	A(inch/mm)	B(inch/mm)
2"	2.00/51	11.50/292	7.56/192	5.59/142	23.6/600	-	-
3"×2"×3"	2.00/51	14.00/356	7.56/192	5.59/142	23.6/600	-	-
3"	3.00/76	14.00/356	10.98/279	6.77/142	39.37/1000	-	-
4"×3"×4"	3.00/76	17.00/432	10.98/279	6.77/142	39.37/1000	-	-
4"	4.00/102	17.00/432	12.40/315	8.07/172	59.06/1500	-	-
6"×4"×6"	4.00/102	22.00/559	12.40/315	8.07/172	59.06/1500	-	-
6"	6.00/152	22.00/589	12.72/323	10.71/205	19.69/500	7.28/185	12.60/320
8"×6"×8"	6.00/152	26.00/660	12.72/323	10.71/205	19.69/500	7.28/185	12.60/320
8"	8.00/203	26.00/660	15.00/381	13.19/272	19.69/500	7.28/185	12.60/320
10"×8"×10"	8.00/203	31.00/787	15.00/381	13.19/272	19.69/500	7.28/185	12.60/320
10"	10.00/254	31.00/787	20.39/518	15.98/335	19.69/500	8.46/215	14.96/380
12"×10"×12"	10.00/254	33.00/838	20.39/518	15.98/335	19.69/500	8.46/215	14.96/380
12"	12.00/305	33.00/838	22.36/568	18.15/406	19.69/500	8.46/215	14.96/380
14"×12"×14"	12.00/305	35.00/899	22.36/568	18.15/406	19.69/500	8.46/215	14.96/380
14"	13.25/337	35.00/899	26.18/665	20.20/513	19.69/500	8.46/215	14.96/380
16"×14"×16"	13.25/337	39.00/991	26.18/665	20.20/513	19.69/500	8.46/215	14.96/380
16"	15.25/387	39.00/991	28.74/730	22.95/583	19.69/500	8.46/215	14.96/380
18"×16"×18"	15.25/387	43.00/1092	28.74/730	22.95/583	19.69/500	8.46/215	14.96/380
18"	17.25/438	43.00/1092	31.30/795	25.43/646	19.69/500	8.46/215	14.96/380
20"×18"×20"	17.25/438	47.00/1194	31.30/795	25.43/646	19.69/500	8.46/215	14.96/380
20"	19.25/489	47.00/1194	32.48/825	27.80/706	24.02/500	8.46/215	14.96/380
24"×20"×24"	19.25/489	55.00/1397	32.48/825	27.80/706	24.02/500	8.46/215	14.96/380
24"	23.25/591	55.00/1397	38.31/973	32.72/831	24.02/500	11.02/280	18.11/460
26"×22"×26"	21.25/540	57.00/1488	34.06/865	27.99/711	19.69/500	8.46/215	14.96/380
26"	25.00/635	57.00/1488	37.20/945	32.48/825	24.02/610	11.81/300	19.69/500
28"×24"×28"	23.25/591	61.00/1549	36.22/920	30.16/766	19.69/500	11.02/280	18.11/460
28"	27.00/686	61.00/1549	40.78/1038	35.04/890	24.02/610	11.81/300	19.69/500
30"×24"×30"	23.25/591	65.00/1651	38.31/973	32.72/766	19.69/500	11.02/280	18.11/460
30"	29.00/737	65.00/1651	42.83/1088	36.93/938	24.02/610	11.81/300	19.69/500

BA347F-900Lb

NPS	d(inch/mm)	L(inch/mm)	H1(inch/mm)	H2(inch/mm)	W(inch/mm)	A(inch/mm)	B(inch/mm)
2"	2.00/51	14.50/368	7.56/192	5.59/142	23.60/600	-	-
3"×2"×3"	2.00/51	15.00/381	7.56/192	5.59/142	23.60/600	-	-
3"	3.00/76	15.00/381	10.98/279	6.77/142	39.37/1000	-	-
4"×3"×4"	3.00/76	18.00/457	10.98/279	6.77/142	39.37/1000	-	-
4"	4.00/102	18.00/457	12.40/315	8.07/172	59.06/1500	-	-
6"×4"×6"	4.00/102	24.00/610	12.40/315	8.07/172	59.06/1500	-	-
6"	6.00/152	24.00/610	12.72/323	10.71/205	19.69/500	7.28/185	12.60/320
8"×6"×8"	6.00/152	29.00/737	12.72/323	10.71/205	19.69/500	7.28/185	12.60/320
8"	8.00/203	29.00/737	15.00/381	13.19/272	19.69/500	7.28/185	12.60/320
10"×8"×10"	8.00/203	33.00/838	15.00/381	13.19/272	19.69/500	7.28/185	12.60/320
10"	10.00/254	33.00/838	20.39/518	15.98/335	19.69/500	8.46/215	14.96/380
12"×10"×12"	10.00/254	38.00/965	20.39/518	15.98/335	19.69/500	8.46/215	14.96/380
12"	12.00/305	38.00/965	22.36/568	18.15/406	19.69/500	8.46/215	14.96/380
14"×12"×14"	12.00/305	40.50/1029	22.36/568	18.15/406	19.69/500	8.46/215	14.96/380
14"	12.75/324	40.50/1029	26.18/665	20.20/513	19.69/500	8.46/215	14.96/380
16"×14"×16"	12.75/324	44.50/1130	26.18/665	20.20/513	19.69/500	8.46/215	14.96/380
16"	14.75/375	44.50/1130	28.74/730	22.95/583	19.69/500	8.46/215	14.96/380
18"×16"×18"	14.75/375	48.00/1219	28.74/730	22.95/583	19.69/500	8.46/215	14.96/380
18"	16.75/426	48.00/1219	31.30/795	25.43/646	19.69/500	8.46/215	14.96/380
20"×18"×20"	16.75/426	52.00/1321	31.30/795	25.43/646	19.69/500	8.46/215	14.96/380
20"	18.62/473	52.00/1321	32.48/825	27.80/706	24.20/500	8.46/215	14.96/380
24"×20"×24"	18.62/473	61.00/1549	32.48/825	27.80/706	24.20/500	8.46/215	14.96/380
24"	22.50/572	61.00/1549	38.31/973	32.72/831	24.20/500	11.02/280	18.11/460

Torque and Stem Contrast Table

	150LB						300LB						400LB						600LB						900LB						1500LB					
NPS	ISO	torque	φd	h	L1	b×k	ISO	torque	φd	h	L1	b×k	ISO	torque	φd	h	L1	b×k	ISO	torque	φd	h	L1	b×k	ISO	torque	φd	h	L1	b×k	ISO	torque	φd	h	L1	b×k
2	F07	40	20	30	22.5	6X6	F07	70	20	30	22.5	6X6	F10	120	24	35	27.5	□ 8	F10	120	24	35	27.5	□ 8	F12	320	30	50	33.5	□ 8	F12	500	30	-	-	-
3	F07	70	24	25	27	8X7	F07	130	24	25	27	8X7	F12	260	30	50	33.5	□ 8	F12	260	30	50	33.5	□ 8	F12	450	36	55	40	□ 10	F16	700	43	65	48	□ 12
4	F10	140	28	45	31	8X7	F10	250	28	45	31	8X7	F12	270	36	55	40	□ 10	F12	430	36	55	40	□ 10	F16	700	43	65	48	□ 12	F16	1200	53	75	60	□ 16
6	F12	320	36	55	40	□ 10	F12	600	36	55	40	□ 10	F16	950	43	65	48	□ 12	F16	950	43	65	48	□ 12	F16	1600	53	75	60	□ 16	F25	3000	63	95	70.5	□ 18
8	F16	600	43	65	48	□ 12	F16	1000	43	65	48	□ 12	F16	1180	53	75	60	□ 16	F16	1700	53	75	60	□ 16	F25	3000	63	95	70.5	□ 18	F25	5300	73	110	81.5	□ 20
10	F16	1000	53	75	60	□ 16	F16	1800	53	75	60	□ 16	F25	2100	63	95	70.5	□ 18	F25	3000	63	95	70.5	□ 18	F25	5300	73	110	81.5	□ 20	F25	9000	85	120	95.5	□ 25
12	F25	1800	63	95	70.5	□ 18	F25	2800	63	95	70.5	□ 18	F25	3200	73	110	81.5	□ 20	F25	5000	73	110	81.5	□ 20	F25	8500	85	120	95.5	□ 25	F30	16000	105	145	119	□ 32
14	F25	2200	63	95	70.5	□ 18	F25	3600	63	95	70.5	□ 18	F25	4300	85	120	95.5	□ 25	F25	6300	85	120	95.5	□ 25	F30	10000	95	140	107	□ 28	F35	20000	115	170	129	□ 32
16	F25	3000	63	95	70.5	□ 18	F25	5000	73	110	81.5	□ 20	F25	6200	85	120	95.5	□ 25	F25	9000	85	120	95.5	□ 25	F30	15000	105	145	119	□ 32	F35	28000	125	180	140	□ 36
18	F25	4500	73	110	81.5	□ 20	F25	6500	85	120	95.5	□ 25	F25	7800	85	120	95.5	□ 25	F30	13000	105	145	119	□ 32	F35	20000	115	170	129	□ 32	-	-	-	-	-	-
20	F25	5500	73	110	81.5	□ 20	F25	8800	85	120	95.5	□ 25	F30	9500	95	140	107	□ 28	F30	17000	105	145	119	□ 32	F35	28000	125	180	140	□ 36	-	-	-	-	-	-
24	F25	8800	85	120	95.5	□ 25	F30	14000	105	145	119	□ 32	F30	17000	105	145	119	□ 32	F35	28000	125	180	140	□ 36	F40	47000	145	210	162	□ 40	-	-	-	-	-	-
26	F30	10000	95	140	107	□ 28	F30	17000	105	145	119	□ 32	F30	22000	115	170	-	-	F35	33000	125	180	140	□ 36	-	-	-	-	-	-	-	-	-	-	-	-
28	F30	12000	105	145	119	□ 32	F35	21000	115	170	129	□ 32	F35	28000	125	180	-	-	F40	42000	145	210	162	□ 40	-	-	-	-	-	-	-	-	-	-	-	-
30	F30	14000	105	145	119	□ 32	F35	26000	125	180	140	□ 36	F40	30000	145	210	-	-	F40	50000	145	210	162	□ 40												
32	F30	17000	105	145	119	□ 32	F35	31000	125	180	140	□ 36	F40	32000	145	210	162	□ 40	F40	60000	160	235	179	□ 45												
34	F35	20000	115	170	129	□ 32	F40	37000	145	210	162	□ 40	F40	48000	145	210	-	-	F40	70000	160	235	179	□ 45												
36	F35	23000	125	180	140	□ 36	F40	43000	145	210	162	□ 40	F40	56000	160	235	-	-	F48	82000	180	260	202	□ 50												
38	F35	26000	125	180	140	□ 36	F40	49000	145	210	162	□ 40	-	-	-	-	-	-	F48	95000	180	260	202	□ 50												
40	F35	30000	125	180	140	□ 36	F40	56000	160	235	179	□ 45	-	-	-	-	-	-	F48	108000	180	260	202	□ 50												
42	F40	35000	145	210	162	□ 40	F40	63000	160	235	179	□ 45	-	-	-	-	-	-	F60	130000	200	300	224	□ 56												
46	F40	43000	145	210	162	□ 40	F48	82000	180	260	202	□ 50	-	-	-	-	-	-	F60	170000	220	315	247	□ 63												
48	F40	49000	145	210	162	□ 40	F48	90000	180	260	202	□ 50	-	-	-	-	-	-	F60	190000	220	315	247	□ 63												
56	F48	70000	180	260	202	□ 50	F60	135000	200	300	224	□ 56	-	-	-	-	-	-	F70	300000	260	380	290	□ 70												
60	F48	90000	180	260	202	□ 50	F60	170000	220	315	247	□ 63	-	-	-	-	-	-	F80	370000	280	380	314	□ 80	h is the stem protrusion height											

Note: 1. Torque unit is N. m, others are mm. 2. b×k value, e.g. " □ 10" is b = k = 10mm