

**RTC TAIWAN
ATYCO FLUID
CONTROL**

RTC
Lead the smart flow

Metal Seated Ball Valve

Floating and Trunnion Ball Type
Two/Three Forged Split Body For
Critical Service



TAIWAN ATYCO FLUID CONTROL

EQUIPMENT INTERNATIONAL COMPANY LIMITED

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RTC metal seated ball valve is designed for critical service conditions with high temperature, abrasive media and high-cycle operation.

Metal to metal sealed design is based on a ball and two metal seats which are lapped together as a matched set ensuring full contact of seating surfaces and providing a positive shut-off. A high performance hard coating for ball and seat offers superior wear resistance, reduced torque and an extended service life.

The valve can safely and efficiently handle gas and liquid fuel and can also be used as reliable on-off and throttling device in a wide variety of demanding service.

■ **Valve Design Features**

Body

- Two piece or Three piece split body design
- Manufactured from forged material

Ball & Seat

- Mate-lapped and coated for 100% sealing contact
- Hard wear resistant coating for long life under heavy use.
- Seat is available interchangeable

Stem

- Fully guided stem
- Blow-out proof design ensures the stem cannot be blown out by accidental medium compensation.
- Anti-static device

Stem Packing

- Live loaded packing eliminates stem leak
- Assures long operation and low maintenance

Dual Loaded-Spring

- Provides a constant mechanical force on ball against seat to maintain a tight seal
- Provides freedom for thermal expansion of the ball without jamming, even at extreme temperatures.

Dual Body Gasket

- Spiral wounded type
- All trunnion type ball valve are equipped with two body gaskets. This offers effective sealing in the most of corrosive service as well as fireproof seal.

Mounting Flange

- Mounting flange drilled to ISO 5211
- External mount bracket can be adjustable for extended stem

Drain Valve

- Drain design for easy cleaning on pipelines

■ **Chemical Processing**

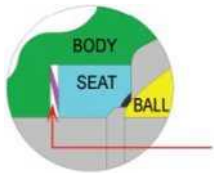
Petrochemical
 Pulp and Paper
 Power Industry
 Mineral Processing
 Refining

Slurries
 Corrosive Services
 Food and Fragrances
 Oil and Gas
 Mining
 Iron ore Processing

RTC's standard valve line has been specifically developed to meet most applications. For specific services, RTC offers appropriate valve and materials to meet these needs.

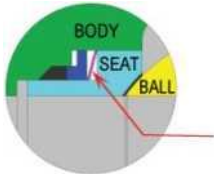
Metal Seated Ball Valve

Seating and Dual Spring Design



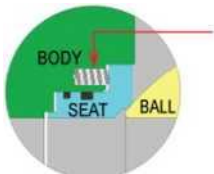
Disc Spring

Trunnion Ball - 150/300/600LB
Ball Seat: Metal with hardfacing
Body Gasket: SS+Graphite
Spring: 17-4 PH SS



Disc Spring

Floating Ball type - 300/600LB
Ball Seat: Metal with hardfacing
Body Gasket: SS+Graphite
Seal Ring: Graphite
Spring: 17-4 PH SS or Inconel 718



Seat Spring

Trunnion Ball - 150/300/600LB
Ball Seat: Metal with hardfacing
Body Gasket: SS+Graphite
Seal Ring: Graphite
Spring: Inconel 718

Hardening Surface Coating

Metal Seated Ball Valve are heavy duty type of valve and mainly utilized in the difficult applications. To provide the best solution for severe service, an advanced surface coating technology is required.

Purposes to Surface Harden

- Increase wear resistance
- Increase performance of mechanical systems
- Improve service life
- Induce suitable residual and compressive stresses

Coating Type	Coating Hardness HCR	Temperature Limit	Corrosion Resistance	Abrasion Resistance
Nickel Alloy	58-64	550	High	Medium
Tungsten Carbide	54-62	425	Medium	High
Stellite	48-52	650	Medium	High
HCP - Hard Chrome Plated	65	500	High	Medium

***Please consult the factory for other special coatings

Lead the smart flow RTC

TECHNICAL SPECIFICATION

Product Type

Robust forging split body design
Full port, reduced port
Valve size: 2"-12"
Rating: ASME/ANSI Class 150,300 & 600
Fig. F7312-FF 2 piece body, floating ball design
Fig. F7313-FF 3 piece body, trunnion ball design

Design Standards

ASME/ANSI B16.34
ASME/ANSI B16.10
ASME/ANSI B16.5
ASME/ANSI B16.25

Valves Flanged, Threaded and Welding End
Face-to-Face, End-to-End Dimensions of Valves
Pipe Flanges and Flanged Fittings
Buttwelding Ends

Valve Testing Standards

API 6D
API 598
MSS-SP-61
ANSI/FCI 70-2-1976
EN12266-1

Specifications for Pipeline Valve
Valve Inspection and Testing
Pressure Testing of Valve
Classifications of Seat Leakage for Control Valve Testing of Metallic Valves

Others

ISO 5211
MSS-SP-25
NACE MR01-75

Dimensions for Attachment of Actuators to Industrial Valves
Standard Marking Systems for Valves
Selection of Cracking-resistant Materials for Oil and Gas Production

Seat Tightness

ANSI/FCI 70-2 establishes a series of six leakage classes for control valves and defines the test procedure. Class V for metal seat allows the least leakage and Class VI is as an option with limited cycle life.

Valve Testing

Each valve is tested for body integrity and seat tightness.

Test Pressure in bar (psi)

Pressure Rating	Class 150	Class 300	Class 600
Shell by water	30 bar (435)	76 bar (1102)	158 bar (2292)
Seat by water	22 bar (319)	56 bar (812)	110 bar (1595)
Seat by air	6 bar(80)		

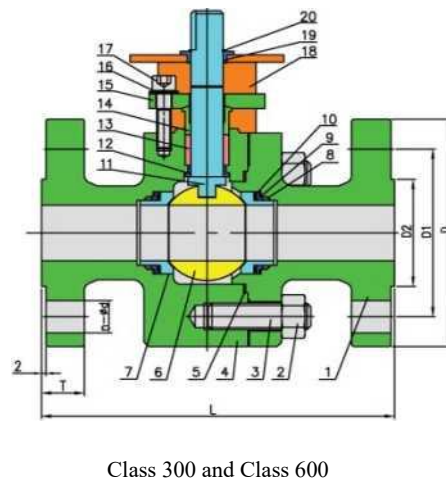
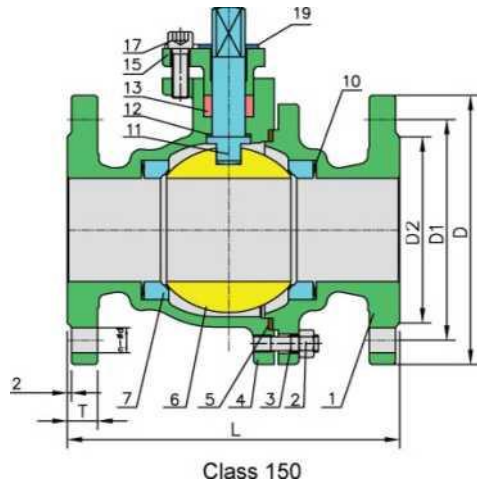
Operator Available

Lever Handle, Gear Operator, Pneumatic and Electric Actuators.

Metal Seated Ball Valve

Lead the smart flow

Series F7312-FF Floating Ball Type Two Piece - Full Port



Standard Material List

No.	Part	Carbon Steel	Stainless Steel	No.	Part	Carbon Steel	Stainless Steel
1	Cap	A105	F316	11	Stem	A276-410	A276-316
2	Nut	A194-2H	A194-B8	12	Trust Washer	304+Graphite	316+Graphite
3	Bolt	A193-B7	A193-B8M	13	Stem Packing	Graphite	Graphite
4	Body	A105	F316	14	Packing Gland	304	316
5	Gasket	304+Graphite	316+Graphite	15	Gland	A105	F316
6	Ball	A105+Ni60	316	16	Spring Washer	304	316
7	Seat	A105+Ni55	316	17	Hex Screw	A193-B7	A193-B8M
8	Seal Ring	Graphite	Graphite	18	Bracket	A36	304
9	Seat Ring	A105+Ni55	316	19	Retainer Bearing	304+N	316+N
10	Disc Spring	17-4 PH	17-4 PH	20	Retainer Washer	Carbon Steel	Stainless Steel

Available Body Material

Carbon Steel Chrome Moly Steel
Stainless Steel Duplex

Other special materials upon request.

Dimensions

Flanged End / Class 150 / Full Port - Fig. F7312-FF-150

SIZE	L	D	D1	D2	T	n-Φd
2"	178	150	120.7	92.1	17.5	4-19
2-1/2"	191	180	139.7	104.8	20.7	4-19
3"	203	190	152.4	127.0	22.3	4-19
4"	229	230	190.5	157.2	22.3	8-19
6"	394	280	241.3	215.9	23.9	8-22
8"	457	345	298.5	269.9	27.0	8-22
10"	533	405	362.0	323.8	28.6	12-25
12"	610	485	431.8	381.0	30.2	12-25

Flanged End / Class 300 / Full Port - Fig. F7312-FF-300

SIZE	L	D	D1	D2	T	n-Φd
2"	216	165	127.0	92.1	20.7	8-19
2-1/2"	241	190	149.2	104.8	23.9	8-22
3"	283	210	168.3	127	27.0	8-22
4"	305	255	200.0	157.2	30.2	8-22
6"	457	320	269.9	215.9	35.0	12-22
8"	502	380	330.2	269.9	39.7	12-25
10"	568	445	387.4	323.8	46.1	16-29
12"	648	520	450.8	381.0	49.3	16-32

Flanged End / Class 600 / Full Port - Fig. F7312-FF-600

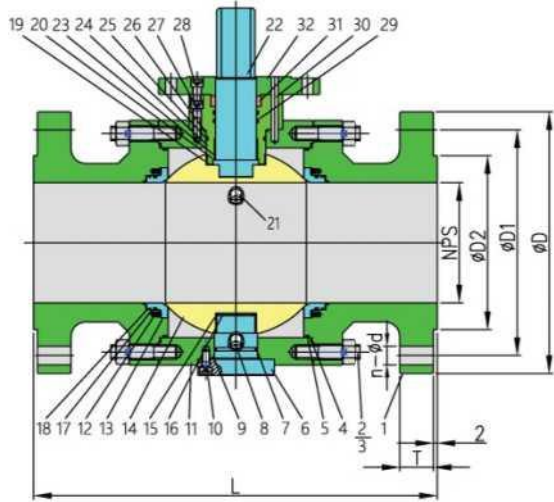
SIZE	L	D	D1	D2	T	n-Φd
2"	295	165	127.0	108	25.4	5-19
2-1/2"	333	190	149.2	127	28.6	8-22
3"	359	210	168.3	146	31.8	8-22
4"	435	275	215.9	175	38.1	8-25
6"	562	355	292.1	241	47.7	12-29
8"	664	420	349.2	302	55.6	12-32
10"	791	510	431.8	356	63.5	16-35
12"	841	560	489.0	413	66.7	20-35

• Dimensions are in mm.

Metal Seated Ball Valve

Lead the smart flow

Series F7313-FF Trunnion Ball Type Three Piece - Full Port



Body Materials:
Carbon Steel
Stainless Steel
Chrome Moly Steel
Duplex
Super Duplex
Other special materials
upon request

Standard Material List

No.	Part	Carbon Steel	Stainless Steel	No.	Part	Carbon Steel	Stainless Steel
1	Cap	A105	F316	17	O-ring	FKM	FKM
2	Bolt	A193-B7	A193-B8M	18	Seal Ring	Graphite	Graphite
3	Nut	A194-2H	A194-8M	19	Bearing	304 Hardened	316 Hardened
4	Body Gasket	304+Graphite	316+Graphite	20	Trust Washer	304+Graphite	316+Graphite
5	O-ring	FKM	FKM	21	Vent Valve	Assembly	Assembly
6	End Cover	A105	F316	22	Stem	A276-410	A276-316
7	O-ring	FKM	FKM	23	Bearing	304 Hardened	304-KM
8	Drain	Assembly	Assembly	24	Packing Gland	A105	F316
9	Gasket	304+Graphite	316+Graphite	25	O-ring	FKM	FKM
10	Hex Screw	A193-B7	A193-8M	26	Packing Ring	304+Graphite	316+Graphite
11	Body	A105	F316	27	Hex Screw	A193-B7	A193-B8M
12	Seat Spring	Inconel 718	Inconel 718	28	Hex Screw	A193-B7	A193-B8M
13	Seat	A105+Ni55	316+Ni55	29	O-ring	FKM	FKM
14	Ball	A105+Ni60	316+Ni60	30	Pin	A193-B7	A193-B8M
15	Bearing	304 Hardened	316 Hardened	31	Stem Packing	Graphite	Graphite
16	Trust Bearing	304+Graphite	316+Graphite	32	Mounting Flange	A105	F316

Dimensions

Flanged End / Class 150 / Full Port - Fig. F7313-FF-150

SIZE	L	D	D1	D2	T	n-Φd
2"	178	150	120.7	92.1	17.5	4-19
2-1/2"	191	180	139.7	104.8	20.7	4-19
3"	203	190	152.4	127.0	22.3	4-19
4"	229	230	190.5	157.2	22.3	8-19
6"	394	280	241.3	215.9	23.9	8-22
8"	457	345	298.5	269.9	27.0	8-22
10"	533	405	362.0	323.8	28.6	12-25
12"	610	485	431.8	381.0	30.2	12-25

Flanged End / Class 300 / Full Port - Fig. F7313-FF-300

SIZE	L	D	D1	D2	T	n-Φd
2"	216	165	127.0	92.1	20.7	8-19
2-1/2"	241	190	149.2	104.8	23.9	8-22
3"	283	210	168.3	127	27.0	8-22
4"	305	255	200.0	157.2	30.2	8-22
6"	457	320	269.9	215.9	35.0	12-22
8"	502	380	330.2	269.9	39.7	12-25
10"	568	445	387.4	323.8	46.1	16-29
12"	648	520	450.8	381.0	49.3	16-32

Flanged End / Class 600 / Full Port - Fig. F7313-FF-600

SIZE	L	D	D1	D2	T	n-Φd
2"	295	165	127.0	108	25.4	5-19
2-1/2"	333	190	149.2	127	28.6	8-22
3"	359	210	168.3	146	31.8	8-22
4"	435	275	215.9	175	38.1	8-25
6"	562	355	292.1	241	47.7	12-29
8"	664	420	349.2	302	55.6	12-32
10"	791	510	431.8	356	63.5	16-35
12"	841	560	489.0	413	66.7	20-35

• Dimensions are in mm.

Metal Seated Ball Valve

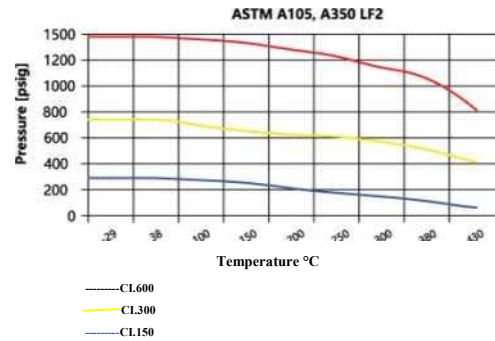
Technical Data

Pressure Temperature Rating

According to ASME B16.34

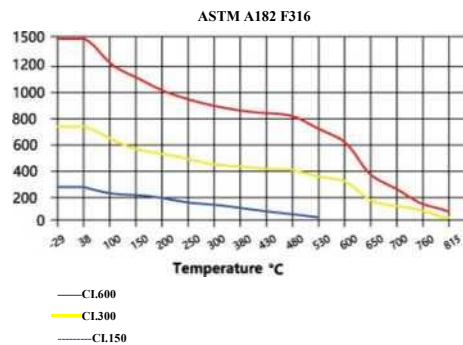
Material Group 1.1 Forging A105, A350 Gr. LF2

Temp. °C	Pressure, psig		
	Class 150	Class 300	Class 600
-29-38	285	740	1480
100	257	675	1350
150	230	655	1310
200	200	635	1265
250	175	607	1215
300	148	577	1150
350	122	545	1088
400	95	503	1005
450	66	333	657
500	40	171	171
538	20	85	85



Material Group 2.2 Forging A182-F316

Temp. °C	Pressure, psig		
	Class 150	Class 300	Class 600
-29-38	275	720	1440
100	235	612	1224
150	215	558	1115
200	199	517	1033
250	175	484	968
300	148	458	916
350	121	439	880
400	94	426	854
450	66	417	836
500	40	409	819
550**	-	362	722
600**	-	288	384
650**	-	184	245
700**	-	121	243
750**	-	85	170
800**	-	50	101
816**	-	40	85



**Use with butt welded valves only.
Flanged end rating stop at 538° C(1000° C)

Design Change

In order to follow the RTC commitment to continuous improvement, we reserve the right to revise or modify product and performance without prior notice.