

INNOBIZ
기술혁신중소기업



ISO 9001/14001



6D-1626

R V C

R O Y A L

BALL VALVES

www.korearoyal.com



ROYAL PRECISION IND.CO.,LTD.

COMPANY INTRODUCTION

ROYAL PRECISION IND. CO., LTD. Ball Valve plant division, since foundation year 1986, develop Manual, Special, and Order Made Valve with excellent quality based on the various experience and advanced technologies and supply to the various industrial field including the food, chemistry, alchol, steel, fiber, environment, and etc.

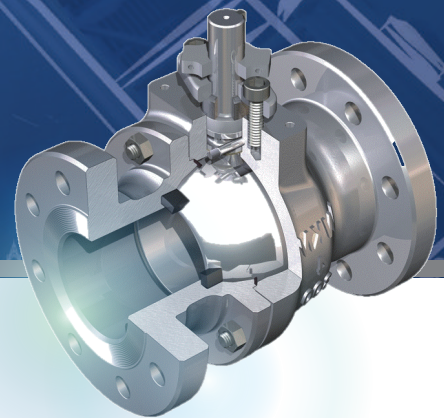


CERTIFICATIONS



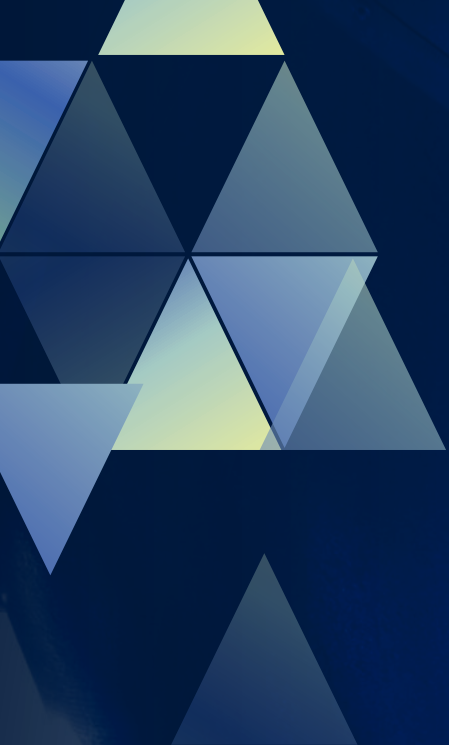


ROYAL PRECISION IND.CO.,LTD.



RVC special design permits the easy disassemble & fluid tight sealing.

ROYAL valves service a wide spectrum of industries such as water treatment chemical, petrochemical, oil, gas and pharmaceutical industries.



ROYAL thinks the customer's satisfaction

firstly always and builds the fast delivery time and rapid and exact service network in the position of customer side.

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CASTING BALL VALVE



ROYAL PRECISION IND.CO.,LTD.



STANDARD DESIGN

- Inspection & Test : API598 / ANSI B 16.34
- Face to Face : ANSI B 16.10
- Flange Dimension : ANSI B 16.5 / JIS B 2220
- Direct Mounting Pad for Easy Automation
- Blow-out Proof Stem
- Full Bore & Reduced Bore



OPERATING

- Extended lever for easy operation.
Also available with gearing, motor actuators, pneumatic or hydraulic actuators for more difficult services.



AVAILABLE OPTIONS

- Other Alloy Steels are Available
- Fire Safe Design Approved
- Anti-static Devices for Ball-Stem-Body
- Stem extension

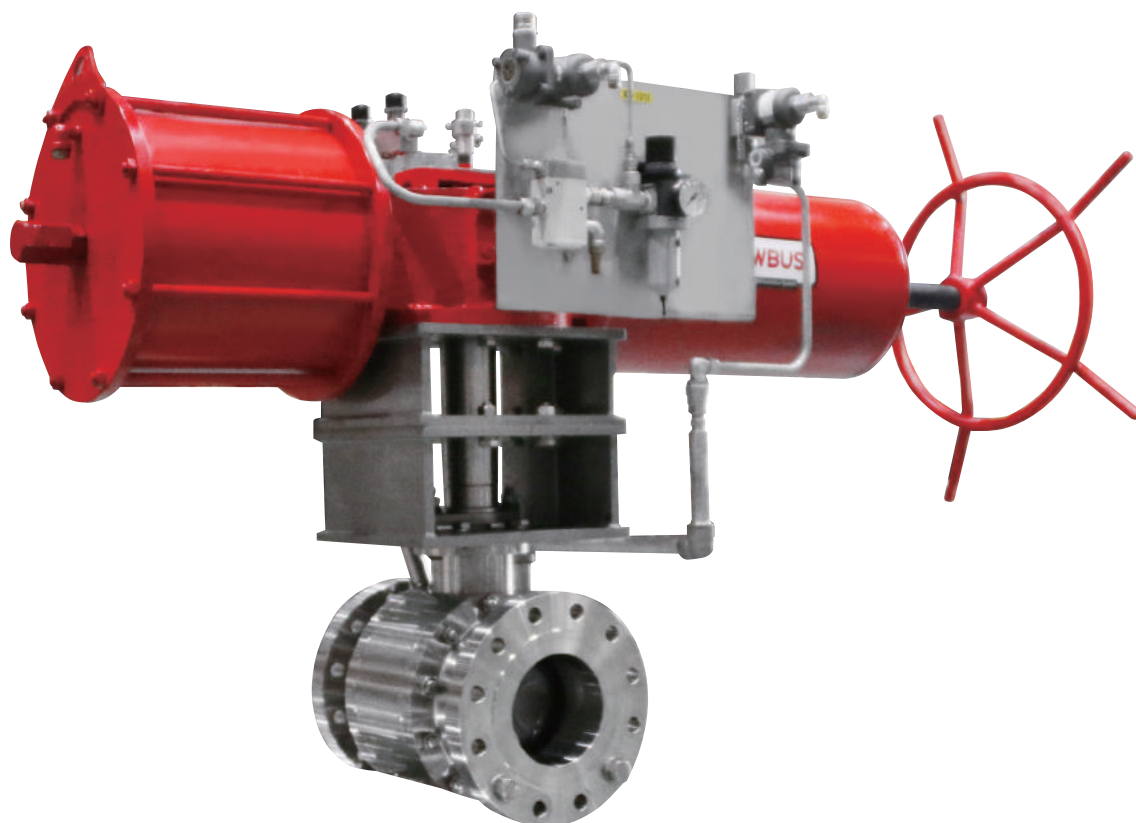


GENERAL SPECIFICATION

- Size : ANSI 1/2"~60" / JIS 15mm~600mm
- Ratings : ANSI CLASS 150LB~1500LB / JIS 10K~63K
- Connections : Flanged
- Body material : A351-CF3M / SCS16A
A351-CF8M / SCS14A
A351-CF8 / SCS13A
A216-WCB / SCPH2
Other Alloy Steels are Available
- Trim material : A351-CF3M / SCS16A
A351-CF8M / SCS14A
A351-CF8 / SCS13A
Other Alloy Steels are Available
- Seals material : PTFE / RTFE / PEEK / GRAPHITE
/ TFM1600 / etc.



FORGED BALL VALVE



STANDARD DESIGN

- Inspection & Test : API598 / ANSI B 16.34
- Face to Face : ANSI B 16.10
- Flange Dimension : ANSI B 16.5
JIS B 2220
- Direct Mounting Pad for Easy Automation
- Blow-out Proof Stem
- Full Bore & Reduced Bore



AVAILABLE OPTIONS

- Other Alloy Steels are Available
- Fire Safe Design Approved
- Anti-static Devices for Ball-Stem-Body
- Stem extension



OPERATING

- Extended lever for easy operation.
Also available with gearing, motor actuators, pneumatic or hydraulic actuators for more difficult services.



GENERAL SPECIFICATION

- Size : ANSI 1/2" ~60" / JIS 15mm~600mm
- Ratings : ANSI CLASS 150LB~1500LB
JIS 10K~63K
- Connections : Flanged
- Body material : A182-F304, F316, F316L, F304L, A105
Other Alloy Steels are Available
- Trim material : A182-F304, F316, F316L, F304L
Other Alloy Steels are Available
- Seals material : PTFE / RTFE / PEEK / GRAPHITE / TFM1600 / etc.

DIVERT 3WAY BALL VALVE (Y-TYPE)



ROYAL PRECISION IND.CO.,LTD.



STANDARD DESIGN

- Inspection & Test : API598 / ANSI B 16.34
- Face to Face : Maker Std
- Flange Dimension : ANSI B 16.5 / JIS B 2220
- Direct Mounting Pad for Easy Automation
- Blow-out Proof Stem
- Full Bore
- Manual Hand Operated, Worm Gear Operated, Pneumatic Operated, Electric Operated, etc.
- Pneumatic Operated Air Press : 4kgf/cm²~6kgf/cm²
- Pneumatic Accessories : Solenoid Valve, Limits Switch, Air Unit, Speed Controller(Weather Proof & Water Proof & Explosion Proof)



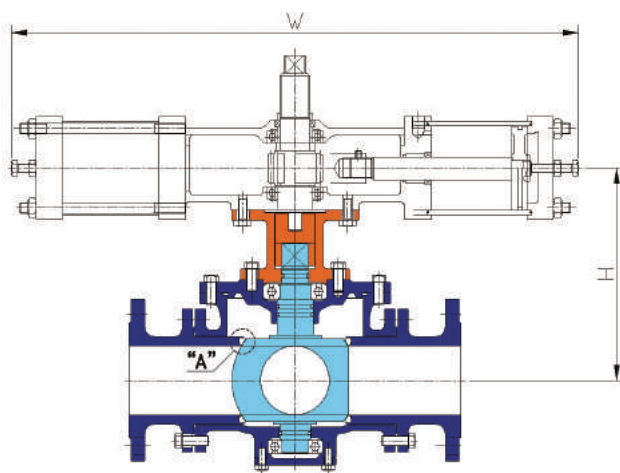
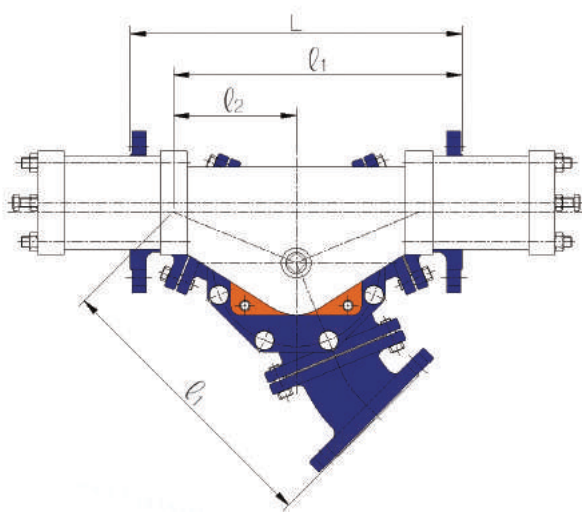
OPERATING

- Extended lever for easy operation. Also available with gearing, motor actuators, pneumatic or hydraulic actuators for more difficult services.



AVAILABLE OPTIONS

- Other Alloy Steels are Available
- Fire Safe Design Approved
- Anti-static Devices for Ball-Stem-Body
- Stem extension

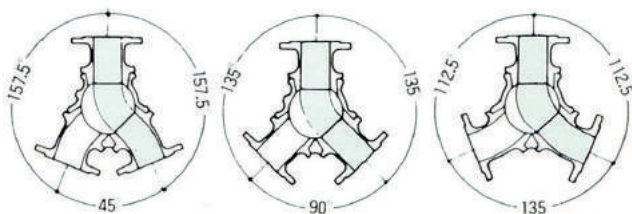




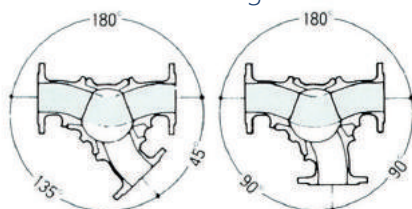
GENERAL SPECIFICATION

- Body size : ANSI 2"~12" / JIS 50mm~300mm
- Ratings : ANSI Class 150LB / JIS 10K
- Connections : Flanged
- Body material : A351-CF3M / SCS16A
A351-CF8M / SCS14A
A351-CF8 / SCS13A
A216-WCB / SCPH2
Other Alloy Steels are Available
- Trim material : A351-CF3M / SCS16A
A351-CF8M / SCS14A
A351-CF8 / SCS13A
Other Alloy Steels are Available
- Seals material : PTFE / RTFE / PEEK /
GRAPHITE / TFM1600 / etc.

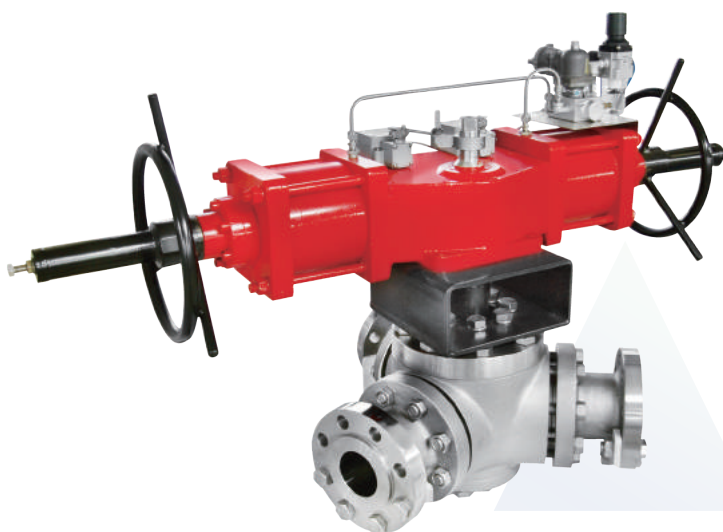
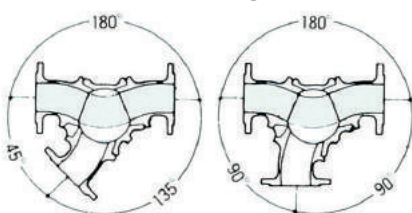
DIRECTION OF FLOW
Upper ↔ Lower



DIRECTION OF FLOW
Left → Right



DIRECTION OF FLOW
Left ← Right



DIMENSIONS

unit : mm

Class	Size	mm	50	65	80	100	125	150	200	250	300
		inch	2"	2-½"	3"	4"	5"	6"	8"	10"	12"
JIS 10K	L		342	342	380	470	560	650	796	920	1170
	H		275	275	298	340	376	420	490	540	620
	W		530	530	595	595	600	600	820	820	1180
	ø 1		260	260	350	385	475	535	610	780	920
	ø 2		89	89	160	150	195	210	212	320	335
ANSI 150LB	L		342	342	388	472	562	656	810	932	1184
	H		275	275	298	340	376	420	490	540	620
	W		530	530	595	595	600	600	820	820	1180
	ø 1		260	260	354	386	476	538	617	786	927
	ø 2		89	89	160	150	195	210	212	320	335

■ "H" (Height) Can be changed by customer's specification

DIVERT 3WAY BALL VALVE (T-TYPE)



ROYAL PRECISION IND.CO.,LTD.



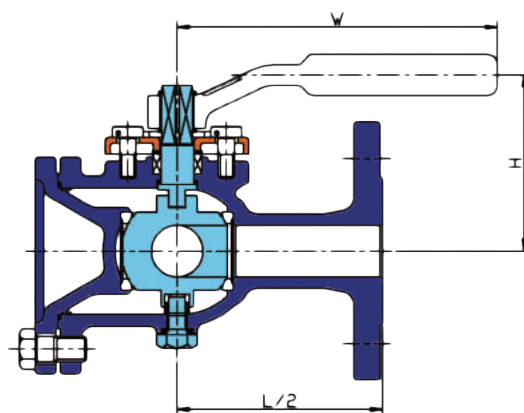
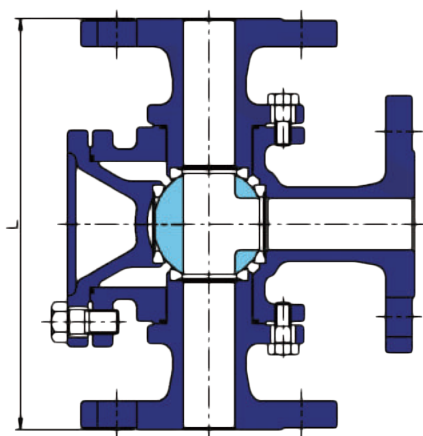
STANDARD DESIGN

- Inspection & Test : API598 / ANSI B 16.34
- Face to Face : Maker Std
- Flange Dimension : ANSI B 16.5 / JIS B 2220
- Direct Mounting Pad for Easy Automation
- Blow-out Proof Stem
- Full Bore
- Manual Hand Operated, Worm Gear Operated, Pneumatic Operated, Electric Operated, etc.
- Pneumatic Operated Air Press : 4kgf/cm²~6kgf/cm²
- Pneumatic Accessories : Solenoid Valve, Limits Switch, Air Unit, Speed Controller(Weather Proof & Water Proof & Explosion Proof)



OPERATING

- Extended lever for easy operation. Also available with gearing, motor actuators, pneumatic or hydraulic actuators for more difficult services.



DIMENSIONS

unit : mm

Class	Size	mm	15	20	25	32	40	50	65	80	100	125	150	200	250	300
		inch	½"	¾"	1"	1-¼"	1-½"	2"	2-½"	3"	4"	5"	6"	8"	10"	12"
JIS 10K	L		190	190	200	240	240	260	320	360	430	499	560	660	860	1000
	H		83	83	93	118	118	127	140	170	185	248	262	351	820	1120
ANSI 150LB	L		190	190	200	240	240	260	324	360	430	504	566	660	860	1000
	H		78	85	95	118	115	125	148	175	222	268	298	375	820	1120

■ "H" (Height) Can be changed by customer's specification



AVAILABLE OPTIONS

- Other Alloy Steels are Available
- Anti-static Devices for Ball-Stem-Body
- Fire Safe Design Approved
- Stem extension

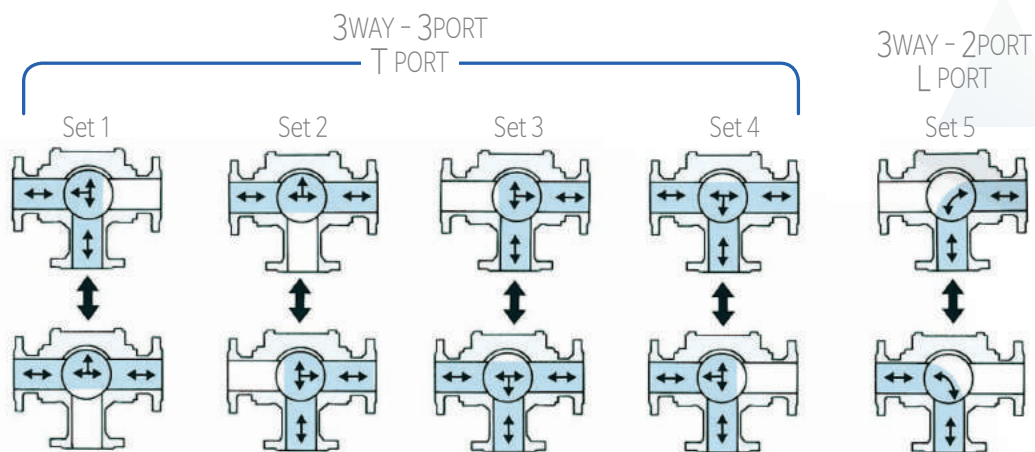


GENERAL SPECIFICATION

- Body size : ANSI 1/2"~12" / JIS 15mm~300mm
- Ratings : ANSI Class 150LB~300LB / JIS 10K~20K
- Connections : Flanged
- Body material : A351-CF3M / SCS16A
A351-CF8M / SCS14A
A351-CF8 / SCS13A
A216-WCB / SCPH2
Other Alloy Steels are Available
- Trim material : A351-CF3M / SCS16A, A351-CF8M / SCS14A,
A351-CF8 / SCS13A, Other Alloy Steels are Available
- Seals material : PTFE / RTFE / PEEK / GRAPHITE / TFM1600 / etc.



OPERATION FORM



DIMENSIONS

unit : mm

Class	Size	mm	15	20	25	32	40	50	65	80	100	125	150	200	250	300
		inch	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"	10"	12"
JIS 20K	L		190	190	200	240	240	260	320	360	430	499	560	660	860	1000
	H		83	83	93	118	118	127	140	170	185	248	262	351	820	1120
ANSI 300LB	L		190	190	200	240	240	260	324	360	430	504	566	660	860	1000
	H		78	85	95	118	115	125	148	175	222	268	298	375	820	1120

■ "H" (Height) Can be changed by customer's specification

DIVERT 4WAY BALL VALVE



ROYAL PRECISION IND.CO.,LTD.



STANDARD DESIGN

- Inspection & Test : API598 / ANSI B 16.34
- Face to Face : Maker Std
- Flange Dimension : ANSI B 16.5 / JIS B 2220
- Direct Mounting Pad for Easy Automation
- Blow-out Proof Stem
- Full Bore
- Manual Hand Operated, Worm Gear Operated, Pneumatic Operated, Electric Operated, etc.
- Pneumatic Operated Air Press : 4kgf/cm²~6kgf/cm²
- Pneumatic Accessories : Solenoid Valve, Limits Switch, Air Unit, Speed Controller(Weather Proof & Water Proof & Explosion Proof)



OPERATING

- Extended lever for easy operation. Also available with gearing, motor actuators, pneumatic or hydraulic actuators for more difficult services.



AVAILABLE OPTIONS

- Other Alloy Steels are Available
- Fire Safe Design Approved
- Anti-static Devices for Ball-Stem-Body
- Stem extension

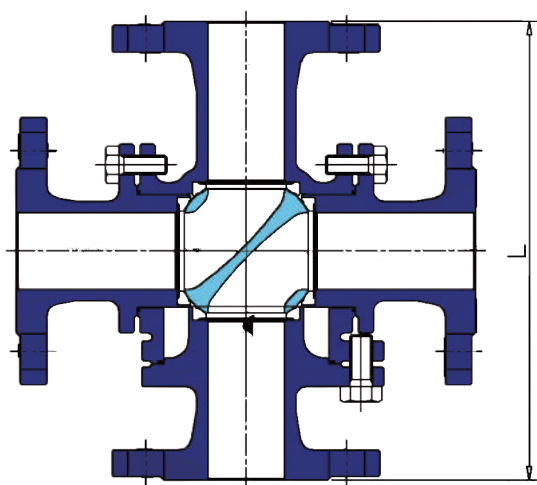
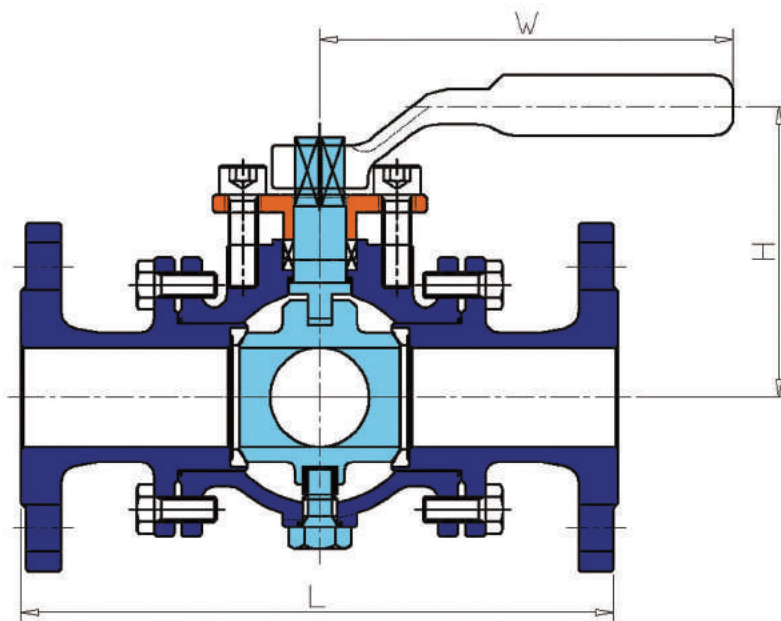


DIMENSIONS

unit : mm

Class	Size	mm	15	20	25	32	40	50	65	80	100	125	150	200	250	300
		inch	½"	¾"	1"	1-¼"	1-½"	2"	2-½"	3"	4"	5"	6"	8"	10"	12"
JIS 10K	L		190	190	200	240	240	260	320	360	430	499	560	660	860	1000
	H		83	83	93	118	118	127	140	170	185	248	262	351	820	1120
ANSI 150LB	L		190	190	200	240	240	260	324	360	430	504	566	660	860	1000
	H		78	85	95	118	115	125	148	175	222	268	298	375	820	1120

■ "H" (Height) Can be changed by customer's specification



GENERAL SPECIFICATION

- Body size : ANSI 1/2"~12" / JIS 15mm~300mm
- Ratings : ANSI Class 150LB~300LB / JIS 10K~20K
- Connections : Flanged
- Body material : A351-CF3M / SCS16A
A351-CF8M / SCS14A
A351-CF8 / SCS13A
A216-WCB / SCPH2
Other Alloy Steels are Available
- Trim material : A351-CF3M / SCS16A
A351-CF8M / SCS14A
A351-CF8 / SCS13A
Other Alloy Steels are Available
- Seals material : PTFE / RTFE / PEEK / GRAPHITE
/ TFM1600 / etc.



DIMENSIONS

unit : mm

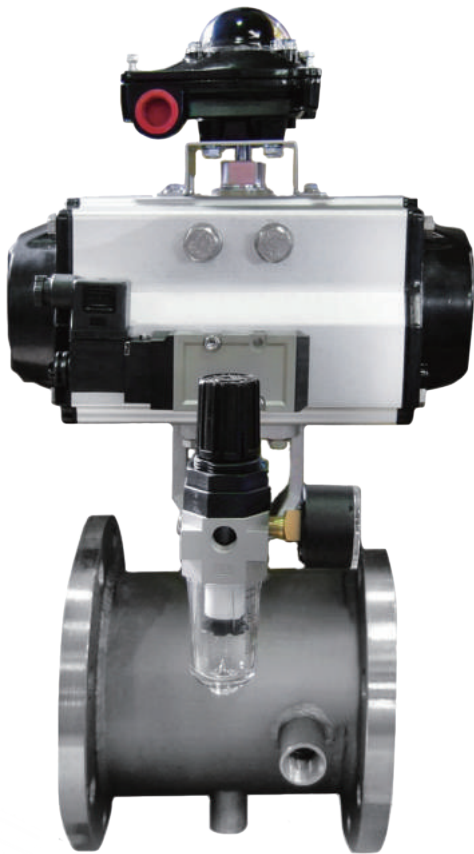
Class	Size	mm	15	20	25	32	40	50	65	80	100	125	150	200	250	300
		inch	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"	5"	6"	8"	10"	12"
JIS 20K	L		190	190	200	240	240	260	320	360	430	499	560	660	860	1000
	H		83	83	93	118	118	127	140	170	185	248	262	351	820	1120
ANSI 300LB	L		190	190	200	240	240	260	324	360	430	504	566	660	860	1000
	H		78	85	95	118	115	125	148	175	222	268	298	375	820	1120

■ "H" (Height) Can be changed by customer's specification

JACKETED BALL VALVE



ROYAL PRECISION IND.CO.,LTD.



STANDARD DESIGN

- Inspection & Test : API598 / ANSI B 16.34
- Flange Dimension : ANSI B 16.5 / JIS B 2220
- Blow-out Proof Stem
- Face to Face : ANSI B 16.10
- Direct Mounting Pad for Easy Automation
- Full Bore & Reduced Bore



OPERATING

- Extended lever for easy operation.
Also available with gearing, motor actuators, pneumatic or hydraulic actuators for more difficult services.



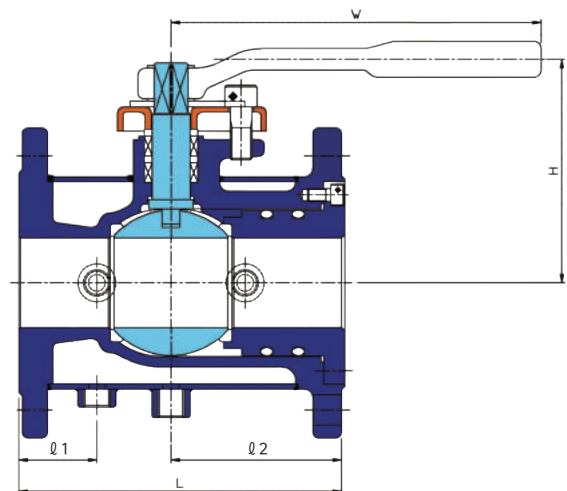
AVAILABLE OPTIONS

- Other Alloy Steels are Available
- Anti-static Devices for Ball-Stem-Body
- Fire Safe Design Approved
- Stem extension



GENERAL SPECIFICATION

- Ratings : JIS 10K
- Connections : Flanged
- Body material : SCS16A / SCS14A / SCS13A
Other Alloy Steels are Available
- Trim material : SCS16A / SCS14A / SCS13A
Other Alloy Steels are Available
- Seals material : PTFE / RTFE / PEEK
/ GRAPHITE/ TFM1600 / etc.



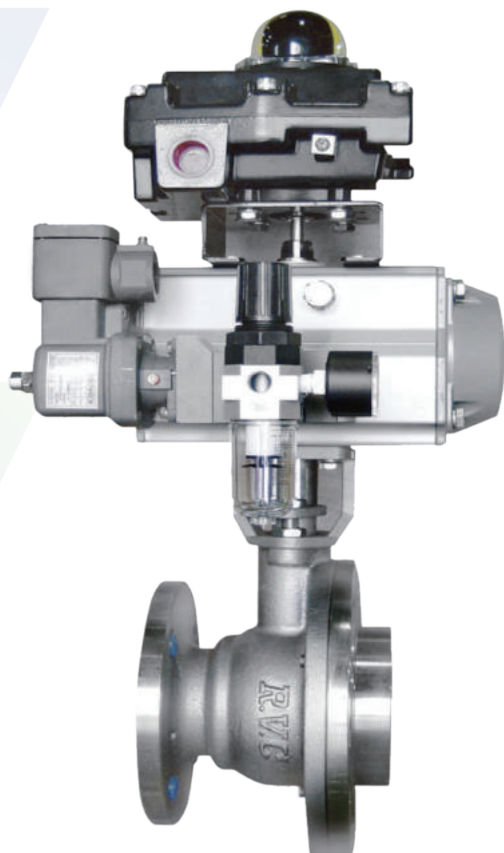
DIMENSIONS

unit : mm

Class	Size	15A×40A	20A×40A	25A×50A	40A×65A	50A×80A	65A×100A	80A×125A	100A×150A	150A×200A
JIS 10K	L	108	117	127	165	178	190	203	229	394
	H	110	111	124.5	142	146.5	157.5	178	195	249.5
	W	116	116	156	236	236	236	333	333	447
	Ø 1	47.5	36.5	40.5	44.5	43	45	46.5	64.5	92
	Ø 2	54	58.5	63.5	82.5	89	95	101.5	114.5	197

■ "H" (Height) Can be changed by customer's specification

TANK BOTTOM BALL VALVE



STANDARD DESIGN

- Inspection & Test : API598 / ANSI B 16.34
- Face to Face : Maker Std
- Flange Dimension : ANSI B 16.5 / JIS B 2220
- Direct Mounting Pad for Easy Automation
- Blow-out Proof Stem
- Full Bore
- Manual Hand Operated, Worm Gear Operated, Pneumatic Operated, Electric Operated, etc.
- Pneumatic Operated Air Press : 4kgf/cm²~6kgf/cm²
- Pneumatic Accessories : Solenoid Valve, Limits Switch, Air Unit, Speed Controller(Weather Proof & Water Proof & Explosion Proof)



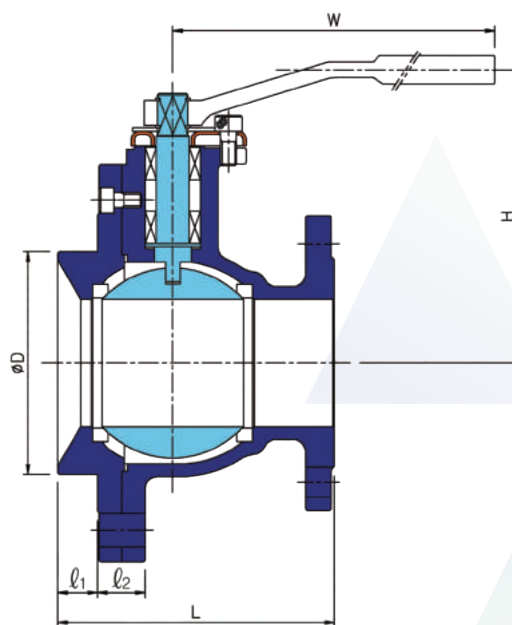
OPERATING

- Extended lever for easy operation. Also available with gearing, motor actuators, pneumatic or hydraulic actuators for more difficult services.



GENERAL SPECIFICATION

- Ratings : JIS 10K
- Connections : Flanged
- Body material : SCS16A, SCS14A, SCS13A, SCPH2
Other Alloy Steels are Available
- Trim material : SCS16A, SCS14A, SCS13A
Other Alloy Steels are Available
- Seals material : PTFE / RTFE / PEEK / GRAPHITE / TFM1600 / etc.



DIMENSIONS

unit : mm

Class	Size	25A×40A	40A×50A	50A×65A	65A×100A	80A×125A	100A×150A	125A×200A	150A×250A	200A×300A
JIS 10K	L	109	125	133	153	174	186	245	327	330
	Ø 1	21	21	23	23	25	27	25	25	35
	Ø 2	26	26	28	28	30	32	22	22	31
	Ø D	48	60	76	114	140	166	216	269	300
	H	125	142	150	167	197	213	243	297	303
	W	155	220	220	280	280	280	447	557	697

■ "H" (Height) Can be changed by customer's specification

ECCENTRIC HALF BALL VALVE



ROYAL PRECISION IND.CO.,LTD.



STANDARD DESIGN

- Inspection & Test : API598 / ANSI B 16.34
- Face to Face : ANSI B 16.10
- Flange Dimension : ANSI B 16.5 / JIS B 2220
- Direct Mounting Pad for Easy Automation
- Blow-out Proof Stem
- Full Bore & Reduced Bore



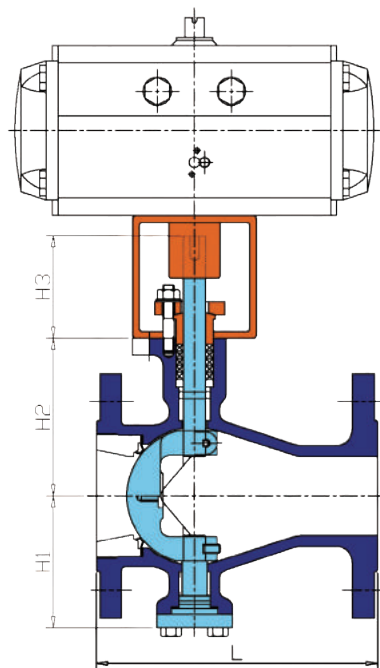
AVAILABLE OPTIONS

- Other Alloy Steels are Available
- Fire Safe Design Approved
- Anti-static Devices for Ball-Stem-Body
- Stem extension



GENERAL SPECIFICATION

- Body size : ANSI 1"~12" / JIS 25mm~300mm
- Ratings : ANSI Class 150LB / JIS 10K
- Connections : Flanged
- Body material : A351-CF3M / SCS16A
A351-CF8M / SCS14A
A351-CF8 / SCS13A
Other Alloy Steels are Available
- Trim material : A351-CF3M / SCS16A
A351-CF8M / SCS14A
A351-CF8 / SCS13A
Other Alloy Steels are Available
- Seals material : PTFE / RTFE / PEEK / GRAPHITE / TFM1600 / etc.



DIMENSIONS

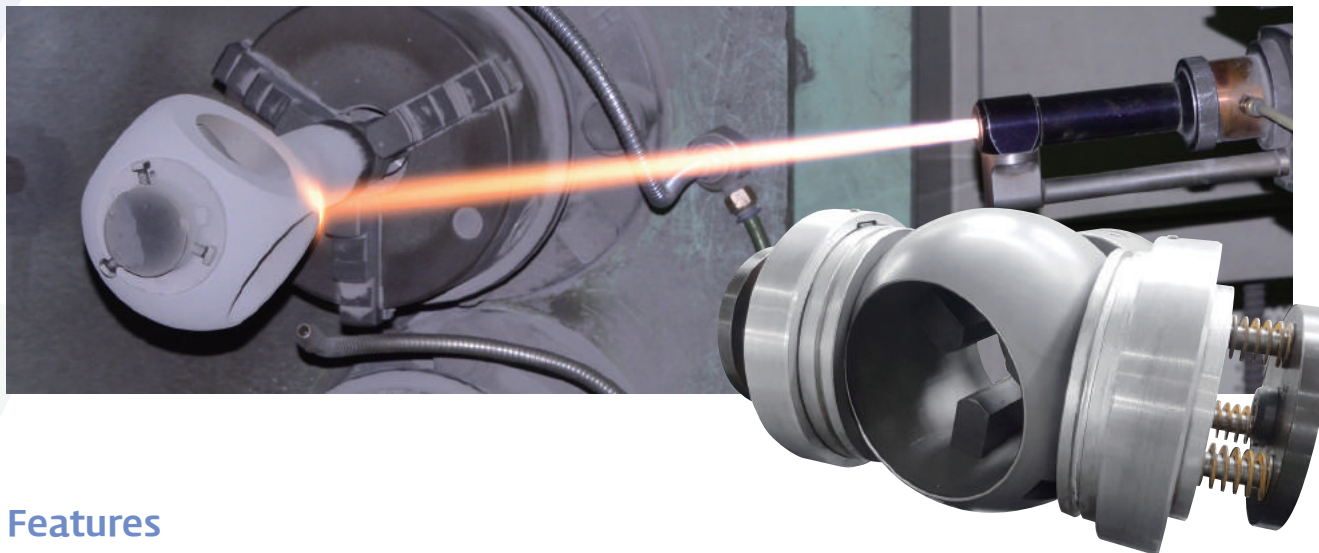
unit : mm

Class	Size	mm inch	25 1"	40 1-1/2"	50 2"	65 2-1/2"	80 3"	100 4"	125 5"	150 6"	200 8"	250 10"	300 12"
JIS 10K & ANSI 150LB	L		190	190	200	240	240	260	320	360	430	499	1000
	H1		83	83	93	118	118	127	140	170	185	248	1120
	H2		190	190	200	240	240	260	324	360	430	504	1000
	H3		78	85	95	118	115	125	148	175	222	268	1120

■ "H" (Height) Can be changed by customer's specification

METAL SEAT BALL VALVE

Hard Coating by HVOF



Features

• Low Torque

It demonstrates the low, constant and expectable torque even at an extreme line such as high temperature, high pressure and so on.

• Lapping Process

It perfectly assures sealing of ball and seat through the lapping machine which is autonomously manufactured by RVC.

• Possible to choose diverse materials

It can be manufactured with a stainless steel and a hastelloy line that are superior at corrosion resistance, and an incoloy line that are superior against high temperature and at oxidation resistance.

• High Strength Stem

It is designed to be workable at all lines.

Lapping Machine

• Speedy response

The parts can be compatible because it uses standard valves unless it is a valve having special specifications and special materials that a customer requests. The costs are economical and the date of delivery makes good time comparing to other companies. And it enables to show quick response for maintenance.

• Valve automation

The metal seat ball valve can be made by automation alike a general ball valve.

• Various Hard Facing

It can be laminated to fit to the temperature condition of relevant fluid according to a customer's request.

Coating Table

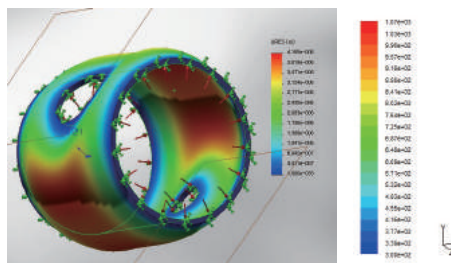
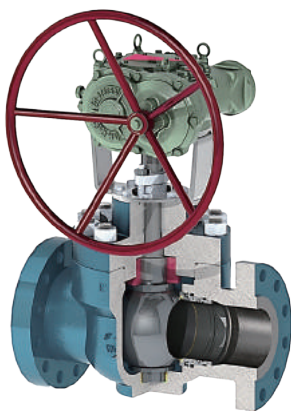
Process	Type	Coating Code	Temp. Limit	Hardness	Application
Hard Chrome	Plating	HCR	810℃	Hv750-Hv860	For Low Temperature
Electro-less Nickel Phosphorus		ENP	320℃	Hv700	For gas, sea water
Stellite	welding	STL#6	810℃	Hv520-Hv700	For Steam, Liquid containing less solids
Chrome Carbide	HVOF	CCC	810℃	Hv830-Hv940	For Steam, Corrosive Chemical, High temperature liquid
Tungsten Carbide		TTC	500℃	Hv830-Hv1200	For Moderate temperature powder, Chemical, Liquid containing solids
PVD	Plating	PVD	810℃	Hv3200	For liquid with high hardness solids



DESIGN FEATURES

The TOP ENTRY BALL VALVE is

a structure in which can repair the ball and seat ring without separating the valve from the installed pipeline.

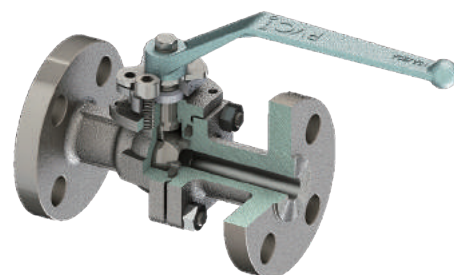


Top entry ball valve

The top entry ball valve is a structure in which can repair the ball and seat ring without separating the valve from the installed pipeline.

Side Entry Floating ball valve

If you can easily remove the valve from the installed pipeline, you can use a side entry floating ball valve. The structure in which the seat is fixed and the ball moves and sealing is performed as the seat ring is pressed in the downstream valve by the ball supported by valve seat through the pressure of the fluid. Valve structure is simple, which results in low cost and the most basic structure. It is suitable for low pressure, small diameter valves.



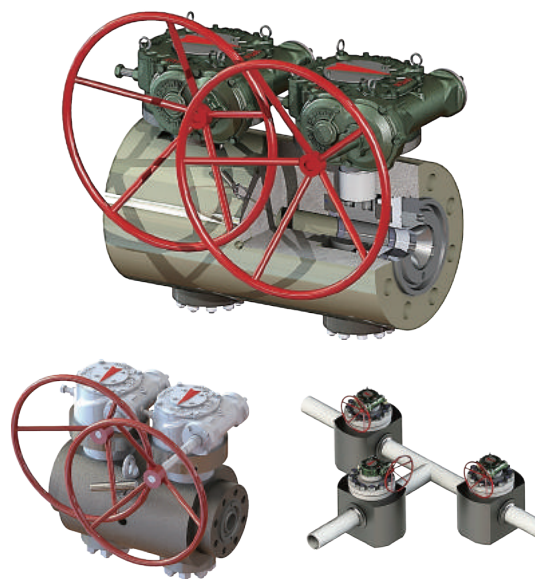
Trunnion ball valve

It is a structure in which the ball is fixed and the seat moves, sealing is performed as the seat ring is pressed in the upstream valve through the pressure of the fluid .

Valve structure is complicated and expensive, and it is suitable for large diameter valve ranging from low pressure to high pressure.

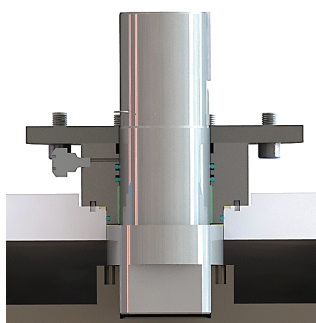
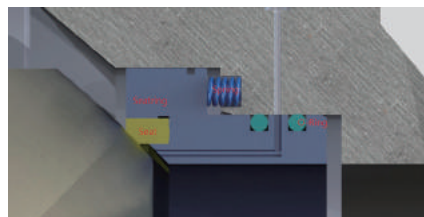
Double Block and Bleed valves

It is a valve with two sealing faces. It is designed to drain or vent the body cavity through the bleed valve between both seats because it provides sealing in both upstream and downstream seat by differential pressure in full close or full open state. This valve allows the status of the seat to be checked without rotate of ball in a fully closed position and is used in many industrial sectors such as chemical, petrochemical, oil and gas.



Seat Rings

Soft seats are standard. The two seat rings are made of a plastic material with excellent wear resistance and corrosion resistance, and has lubrication characteristics that reduce friction, ensuring low torque. The two seat rings are designed with two o-rings or one o-ring and one graphite each to ensure bidirectional sealing over all pressure ranges.

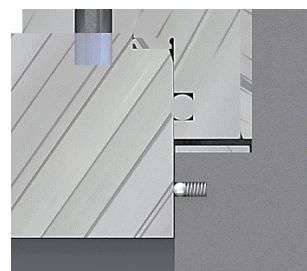


Anti blow out stem

Body-stem Joint is designed for stem shall not breakaway.

Emission free body sealing valves

The stem and bonnet sealing parts are designed to satisfy the relevant regulations in order to reduce harmful substances released into the atmosphere during valve operation.



Anti-static device

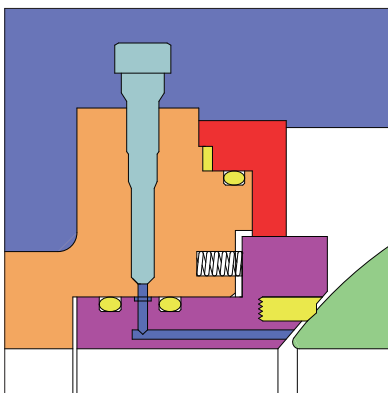
It is designed to prevent fire from being caused by static electricity in the valve when the valve is used in piping line where flammable fluid flows.



DESIGN FEATURES

RVC BALL VALVES are

RVC ball valves are designed in accordance with API607, API6FA standards.



Sealant Injection Fitting

This function can temporarily restore the fluid shutoff function by injecting sealant through the injection port if the seat ring is damaged and a small amount of leakage occurs.
(Applies only if requested by the customer)

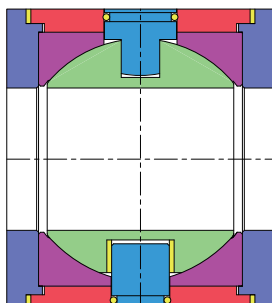
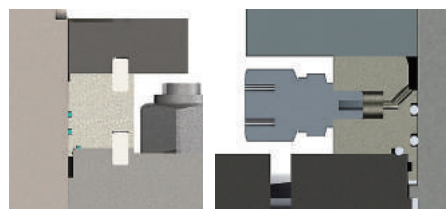


Fire safe design

Valves that use soft seats in ball valves in the event of a fire will lose its fluid shut-off function due to damage to the seat. In this case, it is the structure of the function that minimizes the damage. RVC ball valves are designed in accordance with API607, API6FA standards.

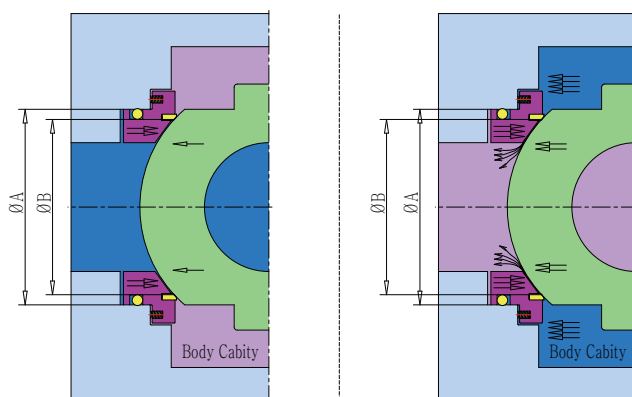
Stem sealing

With graphite packing and two O-rings, perfect sealing is possible. The sealant injection structure is provided between the O-ring and the graphite packing.



Pocketless Ball Valve

The space between the body and the ball has the same dimensions within the tolerance range of 0.5mm to 2mm depending on the size. Since no pockets are formed in the body of the ball valve, it is possible to prevent organic substances from staying inside the ball valve and getting rotten as well as sticking, mixing, and contamination of the fluid, which enables it to be used for the line where fluid has viscosity or possibility of congestion



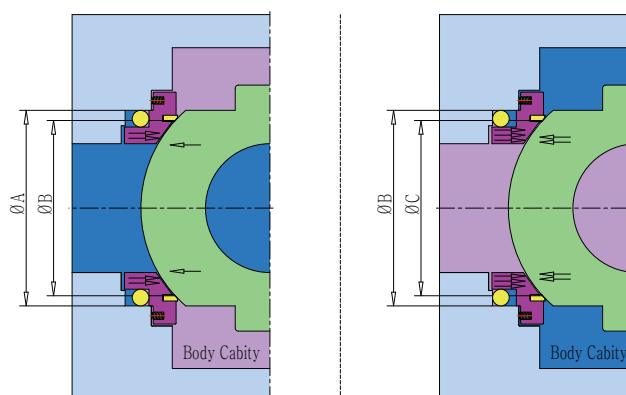
STANDARD

Single Piston Effect (Self-Relieving Seats)

The single piston effect is the standard design of the Trinian ball valve. The fluid pressure in the Upstream & Downstream pushes the seat ring all the way to the ball. If the thrust generated by the pressure in the body cavity is greater than the thrust of the spring preload and fluid pressure, the seat ring is pushed out of the ball. As the seat ring is pushed away from the ball, the pressure in the body cavity is released when the valve is closed or open.

Double Piston Effect

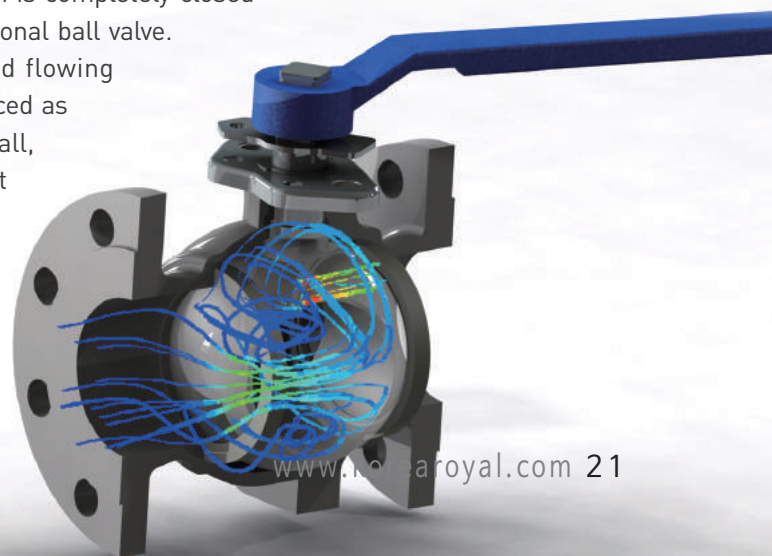
The seat of the Double Piston effect provides pressure in both directions. Upstream & downstream pressure creates thrust, which pushes the seat ring always toward the ball. Therefore, each seat ring maintains the required air tightness even if the body cavity pressure is applied. Since the double piston effect valve does not relieve the pressure of the body cavity separately, it is necessary to use a relief valve to solve it.



OPTIONAL

Arcuate Cut Ball

The enlarged inner peripheral portion provided at the entrance of the through-hole of the ball for the valve enables the region where the through-hole is opened at the moment when the flow path is opened and immediately before the flow path is completely closed to be greatly widened as compared with the conventional ball valve. Therefore, at this moment, the velocity of the fluid flowing through the through-hole of valve ball is greatly reduced as compared with the case of the conventional valve ball, whereby the damage of the valve ball and the valve seat is suppressed and the durability is improved.





DESIGN FEATURES



Fugitive Emission Tester

External emission can be minimized with a grand packing designed by our company. Our grand packing is designed to satisfy ISO 15848-1. The newly made valves are tested by a fugitive emission test equipment manufactured by our company.

Vaccum Tester

The general ball valves are manufactured after the external emission test by priority. But they can be shipped out after the vacuum test with a vacuum test equipment by a customer's request.



Helium Leak Tester

The inspection method using helium gases has big advantages that there is no product damage by the leakage inspection in producing or in using a product and that it is easy to handle because it is harmless gases. And also, the reliability of leakage inspection in the general air is highly evaluated because the helium gas is rare due to a little amount in the air. This can be applicable by a customer's request.

Roundness Tester

The out-of-roundness of ball, which is the most important part in a ball valve, is often inspected and controled the quality for the valve possible to seal 100%.



Clean Room

If a customer requests, the valves can be cleaned, assembled and inspected in a clean room which can manage floating particles in the room air less than the regulated cleanliness, and control the indoor temperature, humidity, pressure, noxious gases, vibration, illuminance, and dispersion and speed of airflow within the certain range.

VALVE PRODUCTS RANGE

Rating(ASME)	150	300	600	900	1500	2500
Inch / mm	275 psi 19bar	720 psi 50bar	1440 psi 100bar	2160 psi 150bar	3560 psi 250bar	5980 psi 420bar
1/2" / 15	◆ ▲ ● ■	◆ ▲ ● ■	◆ ● ■	◆ ● ■	◆ ● ■	◆ ● ■
3/4" / 20	◆ ▲ ● ■	◆ ▲ ● ■	◆ ● ■	◆ ● ■	◆ ● ■	◆ ● ■
1" / 25	◆ ▲ ● ■	◆ ▲ ● ■	◆ ● ■	◆ ● ■	◆ ● ■	◆ ● ■
1 1/2" / 40	◆ ▲ ● ■	◆ ▲ ● ■	◆ ● ■	◆ ● ■	◆ ● ■	◆ ● ■
2" / 50	◆ ▲ ● ■	◆ ▲ ● ■	◆ ● ■	◆ ● ■	◆ ● ■	◆ ● ■
3" / 80	◆ ▲ ● ■	◆ ▲ ● ■	◆ ● ■	◆ ● ■	◆ ● ■	◆ ● ■
4" / 100	◆ ▲ ● ■	◆ ▲ ● ■	◆ ● ■	◆ ● ■	◆ ● ■	◆ ● ■
6" / 150	◆ ▲ ● ■	◆ ▲ ● ■	●	◆ ●	◆ ●	◆ ●
8" / 200	◆ ▲	◆ ▲ ●	●	◆ ●	◆ ●	◆ ●
10" / 250	◆ ▲	◆ ▲ ●	●	◆ ●	◆ ●	◆ ●
12" / 300	◆ ▲	◆ ▲ ●	●	◆ ●	◆ ●	◆ ●
14" / 350	◆ ▲	◆ ▲ ●	●	◆ ●	◆ ●	◆ ●
16" / 400	◆ ▲	◆ ▲ ●	●	◆ ●	◆ ●	◆ ●
18" / 450	▲	◆ ▲ ●	●	◆ ●	◆ ●	◆ ●
20" / 500	▲	◆ ▲ ●	●	◆ ●	◆ ●	◆ ●
22" / 550	●	●	●	◆ ●	◆ ●	◆ ●
24" / 600	●	●	●	◆ ●	●	
26" / 650	●	●	●	◆ ●	●	
28" / 700	●	●	●	◆ ●	●	
30" / 750	●	●	●	◆ ●	●	
32" / 800	●	●	●	◆ ●	●	
34" / 850	●	●	●			
36" / 900	●	●	●			
40" / 1000	●	●	●			
42" / 1050	●	●				
46" / 1150	●	●				
48" / 1200	●	●				
56" / 1400	●	●				
60" / 1500	●	●				

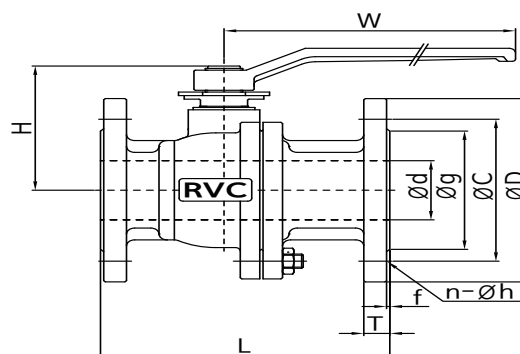
◆ : 1-piece top entry design ▲ : 2-piece design ● : 3-piece design ■ : DBB design



DIMENSION CHART

JIS

JIS B 2220



● JIS 10K

※ Dimensions are millimeters

Nominal Size	ID of Bore d	OD of Flange D	Dia of Raised Face g	Thickness of Flange T	f	Dia of Bolt Circle c	Dia of Bolt Hole h	Number of Bolt	Dia of Bolt	Lever Length W	Center to Top H	End to End L
15	15	95	51	12	1	70	15	4	M12	116	59	108
20	20	100	56	14	1	75	15	4	M12	116	65	117
25	25	125	67	14	1	90	19	4	M16	156	73	127
32	32	135	76	16	2	100	19	4	M16	156	91	140
40	40	140	81	16	2	105	19	4	M16	236	96	165
50	50	155	96	16	2	120	19	4	M16	236	104	178
65	65	175	116	18	2	140	19	4	M16	236	116	190
80	80	185	126	18	2	150	19	8	M16	333	136	203
100	100	210	151	18	2	175	19	8	M16	333	154	229
125(S)	125	250	182	20	2	210	23	8	M20	447	210	254
125	125	250	182	20	2	210	23	8	M20	447	210	356
150(S)	150	280	212	22	2	240	23	8	M20	557	235	267
150	150	280	212	22	2	240	23	8	M20	557	235	394
200(S)	200	330	262	22	2	290	23	12	M20	697	306	292
200	200	330	262	22	2	290	23	12	M20	697	306	457
250	250	400	324	24	2	355	25	12	M22	697	342	533
300	300	445	368	24	3	400	25	16	M22	900	408	610
350	340	490	413	26	3	445	25	16	M22	-	462	686
400	400	560	475	28	3	510	27	16	M24	-	550	762
450	450	620	530	30	3	565	27	20	M24	-	620	864
500	500	675	585	30	3	620	27	20	M24	-	680	914
600	600	795	690	32	3	730	33	24	M30	-	870	1067

● JIS 20K

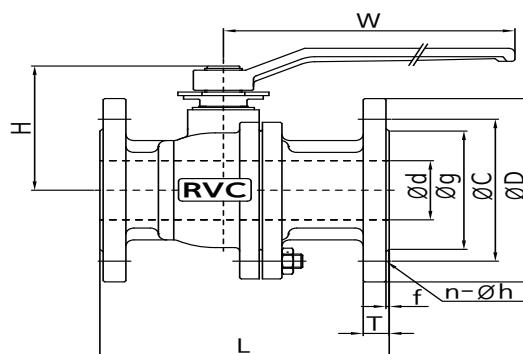
※ Dimensions are millimeters

Nominal Size	ID of Bore d	OD of Flange D	Dia of Raised Face g	Thickness of Flange T	f	Dia of Bolt Circle c	Dia of Bolt Hole h	Number of Bolt	Dia of Bolt	Lever Length W	Center to Top H	End to End L
15	15	95	51	14	1	70	15	4	M12	116	66	140
20	20	100	56	16	1	75	15	4	M12	116	72	152
25	25	125	67	16	1	90	19	4	M16	156	76	165
32	32	135	76	18	2	100	19	4	M16	156	100	178
40	40	140	81	18	2	105	19	4	M16	236	108	190
50	50	155	96	18	2	120	19	8	M16	236	112	216
65	65	175	116	20	2	140	19	8	M16	236	120	241
80	80	200	132	22	2	160	23	8	M20	333	185	283
100	100	225	160	24	2	185	23	8	M20	333	210	305
125(S)	125	270	195	26	2	225	25	8	M22	447	-	-
125	125	270	195	26	2	225	25	8	M22	447	255	381
150(S)	150	305	230	28	2	260	25	12	M22	557	-	-
150	150	305	230	28	2	260	25	12	M22	557	280	403
200(S)	200	350	275	30	2	305	25	12	M22	697	-	-
200	200	350	275	30	2	305	25	12	M22	697	330	502
250	250	430	345	34	2	380	27	12	M24	697	405	568
300	300	480	395	36	3	430	27	16	M24	900	456	648
350	335	540	440	40	3	480	33	16	M30	-	512	762
400	380	605	495	46	3	540	33	16	M30	-	550	838
450	430	675	560	48	3	605	33	20	M30	-	620	914
500	480	730	615	50	3	660	33	20	M30	-	680	991
600	580	845	720	54	3	770	39	24	M36	-	870	1143

DIMENSION CHART

ANSI

ANSI B 16.5



ANSI 150LB

※ Dimensions are millimeters

Nominal Size	ID of Bore d	OD of Flange D	Dia of Raised Face g	Thickness of Flange T	f	Dia of Bolt Circle c	Dia of Bolt Hole h	Number of Bolt	Dia of Bolt	Lever Length W	Center to Top H	End to End L
½"	13	89	35	11.2	1.6	60.5	16	4	½"	116	59	108
¾"	19	98	43	11.2	1.6	70	16	4	½"	116	65	117
1"	25	108	51	11.2	1.6	79.5	16	4	½"	156	73	127
1¼"	32	117	64	12.7	1.6	89	16	4	½"	156	91	140
1½"	38	127	73	14.3	1.6	98.5	16	4	½"	236	96	165
2"	51	152	92	15.9	1.6	120.5	19	4	⅝"	236	104	178
2½"	64	178	105	17.5	1.6	139.5	19	4	⅝"	236	116	190
3"	76	190	127	19.1	1.6	152.5	19	4	⅝"	333	136	203
4"	102	229	157	23.9	1.6	190	19	8	⅝"	333	154	229
5"(S)	127	254	186	23.9	1.6	216	22	8	¾"	447	210	254
5"	127	254	186	23.9	1.6	216	22	8	¾"	447	210	356
6"(S)	152	279	216	25.4	1.6	241.5	22	8	¾"	557	235	267
6"	152	279	216	25.4	1.6	241.5	22	8	¾"	557	235	394
8"(S)	203	343	270	28.6	1.6	298.5	22	8	¾"	697	306	292
8"	203	343	270	28.6	1.6	298.5	22	8	¾"	697	306	457
10"	254	406	324	30.2	1.6	362	25	12	⅞"	697	342	533
12"	305	483	381	31.8	1.6	432	25	12	⅞"	900	408	610
14"	337	533	413	35	1.6	476	29	12	1"	-	462	686
16"	387	597	470	36.6	1.6	539.5	29	16	1"	-	550	762
18"	438	635	533	39.7	1.6	578	32	16	1⅝"	-	620	864
20"	489	698	584	42.9	1.6	635	32	20	1⅝"	-	680	914
24"	591	813	692	47.7	1.6	749.5	35	20	1¼"	-	870	1067

ANSI 300LB

※ Dimensions are millimeters

Nominal Size	ID of Bore d	OD of Flange D	Dia of Raised Face g	Thickness of Flange T	f	Dia of Bolt Circle c	Dia of Bolt Hole h	Number of Bolt	Dia of Bolt	Lever Length W	Center to Top H	End to End L
½"	13	95	35	14.3	1.6	66.5	16	4	½"	116	66	140
¾"	19	117	43	15.9	1.6	82.5	19	4	⅝"	116	72	152
1"	25	124	51	17.5	1.6	89	19	4	⅝"	156	76	165
1¼"	32	133	64	19.1	1.6	98.5	19	4	¾"	156	100	178
1½"	38	156	73	20.7	1.6	114.5	22	4	¾"	236	108	190
2"	51	165	92	22.3	1.6	127	19	8	⅝"	236	112	216
2½"	64	190	105	25.4	1.6	149	22	8	¾"	236	120	241
3"	76	210	127	28.6	1.6	168	22	8	¾"	333	185	283
4"	102	254	157	31.8	1.6	200	22	8	¾"	333	210	305
5"	127	279	186	35	1.6	235	22	8	¾"	447	-	-
5"	127	279	186	35	1.6	235	22	8	¾"	447	255	381
6"	152	318	216	36.6	1.6	270	22	12	¾"	557	-	-
6"	152	318	216	36.6	1.6	270	22	12	¾"	557	280	403
8"	203	381	270	41.3	1.6	330	25	12	⅞"	697	-	-
8"	203	381	270	41.3	1.6	330	25	12	⅞"	697	330	502
10"	254	444	324	47.7	1.6	387.5	29	16	1"	697	405	568
12"	305	521	381	50.8	1.6	451	32	16	1⅝"	900	456	648
14"	337	584	413	54	1.6	514.5	32	20	1⅝"	-	512	762
16"	387	648	470	57.2	1.6	571.5	35	20	1¼"	-	550	838
18"	432	711	533	60.4	1.6	628.5	35	24	1¼"	-	620	914
20"	483	775	584	63.5	1.6	686	35	24	1¼"	-	680	991
24"	584	914	692	69.9	1.6	813	41	24	1½"	-	870	1143



TORQUE DATA

2-WAY 10K SOFT SEAT					2-WAY 10K METAL SEAT				
inch	mm	Kgf-m	nm(*9.8)	Safety Factor Include	inch	mm	Kgf-m	nm(*9.8)	Safety Factor Include
1/2	15	1.03	10.09	16.15	1/2	15	2.06	20.19	32.30
3/4	20	1.35	13.23	21.17	3/4	20	2.70	26.46	42.34
1	25	1.46	14.31	22.89	1	25	2.92	28.62	45.79
1 1/4	32	2.28	22.34	35.75	1 1/4	32	4.56	44.69	71.50
1 1/2	40	3.48	34.10	54.57	1 1/2	40	6.96	68.21	109.13
2	50	4.00	39.20	62.72	2	50	8.00	78.40	125.44
2 1/2	65	4.50	44.10	70.56	2 1/2	65	9.00	88.20	141.12
3	80	8.70	85.26	136.42	3	80	17.40	170.52	272.83
4	100	19.17	187.87	300.59	4	100	38.34	375.73	601.17
5	125	27.00	264.60	423.36	5	125	54.00	529.20	846.72
6	150	46.80	458.64	733.82	6	150	93.60	917.28	1,467.65
8	200	63.00	617.40	987.84	8	200	126.00	1,234.80	1,975.68
10	250	81.00	793.80	1,270.08	10	250	162.00	1,587.60	2,540.16
12	300	166.00	1,626.80	2,602.88	12	300	332.00	3,253.60	5,205.76
14	350	290.00	2,842.00	4,547.20	14	350	580.00	5,684.00	9,094.40
16	400	386.00	3,782.80	6,052.48	16	400	772.00	7,565.60	12,104.96
18	450	576.00	5,644.80	9,031.68	18	450	1,152.00	11,289.60	18,063.36
20	500	649.00	6,360.20	10,176.32	20	500	1,298.00	12,720.40	20,352.64
22	550	893.00	8,751.40	14,002.24	22	550	1,786.00	17,502.80	28,004.48
24	600	1,249.00	12,240.20	19,584.32	24	600	2,498.00	24,480.40	39,168.64

3-WAY T-TYPE 10K SOFT SEAT					3-WAY Y-TYPE 10K SOFT SEAT				
inch	mm	Kgf-m	nm(*9.8)	Safety Factor Include	inch	mm	Kgf-m	nm(*9.8)	Safety Factor Include
1/2	15	2.06	20.19	32.30	1/2	15	1.54	15.09	24.15
3/4	20	2.70	26.46	42.34	3/4	20	2.02	19.80	31.67
1	25	2.92	28.62	45.79	1	25	2.19	21.46	34.34
1 1/4	32	4.56	44.69	71.50	1 1/4	32	3.42	33.52	53.63
1 1/2	40	6.96	68.21	109.13	1 1/2	40	5.22	51.16	81.85
2	50	8.00	78.40	125.44	2	50	6.00	58.80	94.08
2 1/2	65	9.00	88.20	141.12	2 1/2	65	6.76	66.25	106.00
3	80	17.40	170.52	272.83	3	80	13.05	127.89	204.62
4	100	38.34	375.73	601.17	4	100	28.76	281.85	450.96
5	125	54.00	529.20	846.72	5	125	40.50	396.90	635.04
6	150	93.60	917.28	1,467.65	6	150	70.20	687.96	1,100.74
8	200	126.00	1,234.80	1,975.68	8	200	94.50	926.10	1,481.76
10	250	162.00	1,587.60	2,540.16	10	250	121.50	1,190.70	1,905.12
12	300	332.00	3,253.60	5,205.76	12	300	249.00	2,440.20	3,904.32
14	350	580.00	5,684.00	9,094.40	14	350	435.00	4,263.00	6,820.80
16	400	772.00	7,565.60	12,104.96	16	400	579.00	5,674.20	9,078.72
18	450	1,152.00	11,289.60	18,063.36	18	450	864.00	8,467.20	13,547.52
20	500	1,298.00	12,720.40	20,352.64	20	500	973.50	9,540.30	15,264.48
22	550	1,786.00	17,502.80	28,004.48	22	550	1,340.00	13,132.00	21,011.20
24	600	2,498.00	24,480.40	39,168.64	24	600	1,874.00	18,365.20	29,384.32

* The following torque data of 2-way ball valve is the average torque of 50~100pcs per each size and may have $\pm 20\%$ tolerance depending on actual service condition.

* In case of the selection of actuator, safety factor 60% should be added for smooth operation.

SERVICE PRESSURE & TEMPERATURE RATINGS

Temperature, °F	Working Pressure by Classes, psig							
	A351-CF3, (2) A351-CF8		A351-CF3M, (3) A351-CF8M		A351-CF8C		A351-CN7M	
	150	300	150	300	150	300	150	300
- 20 to 100	275	720	275					
200	235	600	240	12	1	70	15	4
300	205	530	215					
400	180	470	195					
500	170	435	170	14	1	75	15	4
600	140	415	140					
650	120	410	125					
700	110	405	110	14	1	90	19	4
750	95	400	95					
800	80	395	80					
850	65	390	65	16	2	100	19	4
900	50	385	50					
950	35	375	35					
1000	20	325	20	16	2	120	19	4
1050	20(1)	310	20(1)					
1100	20(1)	260	20(1)					
1150	20(1)	195	20(1)	18	2	140	19	4
1200	20(1)	155	20(1)					
1250	20(1)	110	20(1)					
1300	20(1)	85	20(1)	18	2	150	19	8
1350	20(1)	60	20(1)					
1400	20(1)	50	20(1)					
1450	15(1)	35	20(1)	18	2	175	19	8
1500	10(1)	25	15(1)					
Hydrostatic Test Pressure, psig								
shell	425	1100	425	425	1100	425	350	900
seat / Baskseat	325	800	325	325	800	325	275	675

Notes : (1) For welding end valves only, Flanged end ratings terminate at 1000°F (2) Not to be used over 800°F (3) Not to be used over 850

Temperature, °F	Gage Working Pressure by Rating Number, bar							
	A351-CF3, (2) A351-CF8		A351-CF3M, (3) A351-CF8M		A351-CF8C		A351-CN7M	
	PN 20	PN 50	PN 20	PN 50	PN 20	PN 50	PN 20	PN 50
- 29 to 30	19.0	49.6	19.0	49.6	19.0	49.6	5.8	41.4
50	18.4	47.8	18.4	48.1	18.5	48.4	15.6	40.7
100	15.7	40.9	16.2	42.2	16.7	43.5	14.6	38.1
150	13.9	36.3	14.8	38.5	15.5	40.5		
200	12.6	32.8	13.7	35.7	14.0	38.4	13.8	36.0
250	11.7	30.5	12.1	33.4	12.1	36.2		
300	10.2	29.1	10.2	31.6	10.2	34.4		
350	8.4	28.1	8.4	30.4	8.4	32.9		
375	7.4	27.8	7.4	29.7	7.4	32.2		
400	6.5	27.5	6.5	29.1	6.5	31.8		
425	5.6	27.5	5.6	28.7	5.6	31.5		
450	4.7	26.9	4.7	28.1	4.7	30.8		
475	3.7	26.6	3.7	27.4	3.7	30.0		
500	2.8	26.1	2.8	26.8	2.8	27.8		
525	1.9	23.9	1.9	25.8	1.9	25.8		
550	1.3(1)	21.8	1.3(1)	25.0	1.3(1)	25.0		
575	1.3(1)	20.1	1.3(1)	24.1	1.3(1)	24.1		
600	1.3(1)	16.7	1.3(1)	21.4	1.3(1)	21.4		
625	1.3(1)	13.1	1.3(1)	18.3	1.3(1)	17.8		
650	1.3(1)	10.5	1.3(1)	14.1	1.3(1)	11.6		
675	1.3(1)	7.8	1.3(1)	12.6	1.3(1)	8.7		
700	13.1(1)	6.0	13.1(1)	9.9	13.1(1)	6.7		
725	13.1(1)	4.6	13.1(1)	7.7	13.1(1)	5.3		
750	13.1(1)	3.7	13.1(1)	5.9	13.1(1)	4.0		
775	1.3(1)	2.8	1.3(1)	4.6	1.3(1)	3.2		
800	1.0(1)	2.1	1.0(1)	3.5	1.0(1)	2.6		
Gage Hydrostatic Test Pressure, bar								
shell	29	75	29	75	29	75	24	63
seat / Baskseat	21	55	21	55	21	55	18	46

Notes : (1) For welding end valves only, Flanged end ratings terminate at 540°C (2) Not to be used over 425°C (3) Not to be used over 455°C



CLASS VI SEAT LEAKAGE ALLOWABLE

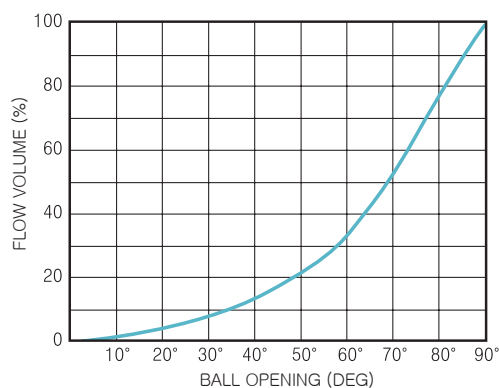
• In accordance with ANSI B16.104-1976

Leakage Class Designation	Maximum Leakage Allowable	Test Medium	Test Pressures	Testing Procedures Required for Establishing Rating
I	...	...	...	No test required provided user and supplier so agree.
II	0.5% of rated capacity	Air or water at 50-125°F (10-52°C)	45-60 psig or max. operating differential, whichever is lower	Pressure applied to valve inlet, with outlet open to atmosphere or connected to a low head loss measuring device, full normal closing thrust provided by actuator.
III	0.1% of rated capacity	As above	As above	As above
IV	0.01% of rated capacity	As above	As above	As above
V	0.0005 ml per minute of water per inch of port diameter per psi differential	Water at 50-125°F (10-52°C)	Max. service pressure drop across valve plug, not to exceed ANSI body rating. (100psi pressure drop minimum)	Pressure applied to valve inlet after filling entire body cavity and connected piping with water and stroking valve plug closed. Use net specified max. actuator thrust, but no more, even if available during test. Allow time for leakage flow to stabilizer.
VI	Not to exceed amounts shown in following table based on port diameter	Air or Nitrogen at 50-125°F (10-52°C)	50 psig or max. rated differential pressure across valve plug, whichever is lower.	Actuator should be adjusted to operating conditions specified with full normal closing thrust applied to valve plug seat. Allow time for leakage flow to stabilize and use suitable measuring device.

0.5NOMINAL PORT DIAMETER		LEAK RATE	
Inches	Millimeters	ml Per Minute	Bubbles Per Minute
1"	25	0.15	1
½"	38	0.30	2
2"	51	0.45	3
2½"	64	0.60	4
3"	76	0.90	6
4"	102	1.70	11
6"	152	4.00	27
8"	203	6.75	45

• Flow Characteristic

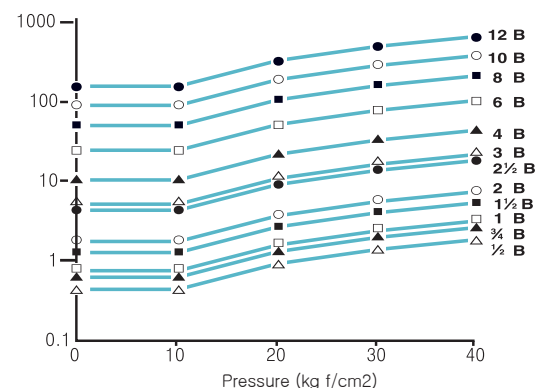
Flow characteristic of ball valve is shown by the percent of flow volume and the degree of ball opening after measuring the flow volume and pressure drop.



• Torque date

The following torque data of ball valve is the average torque of 50~100 pcs per each size and may have ±20% tolerance depending on actual service condition.

In case of the selection of actuator, safety factor 60% should be added for smooth operation.



• CV DATA

Full Bore

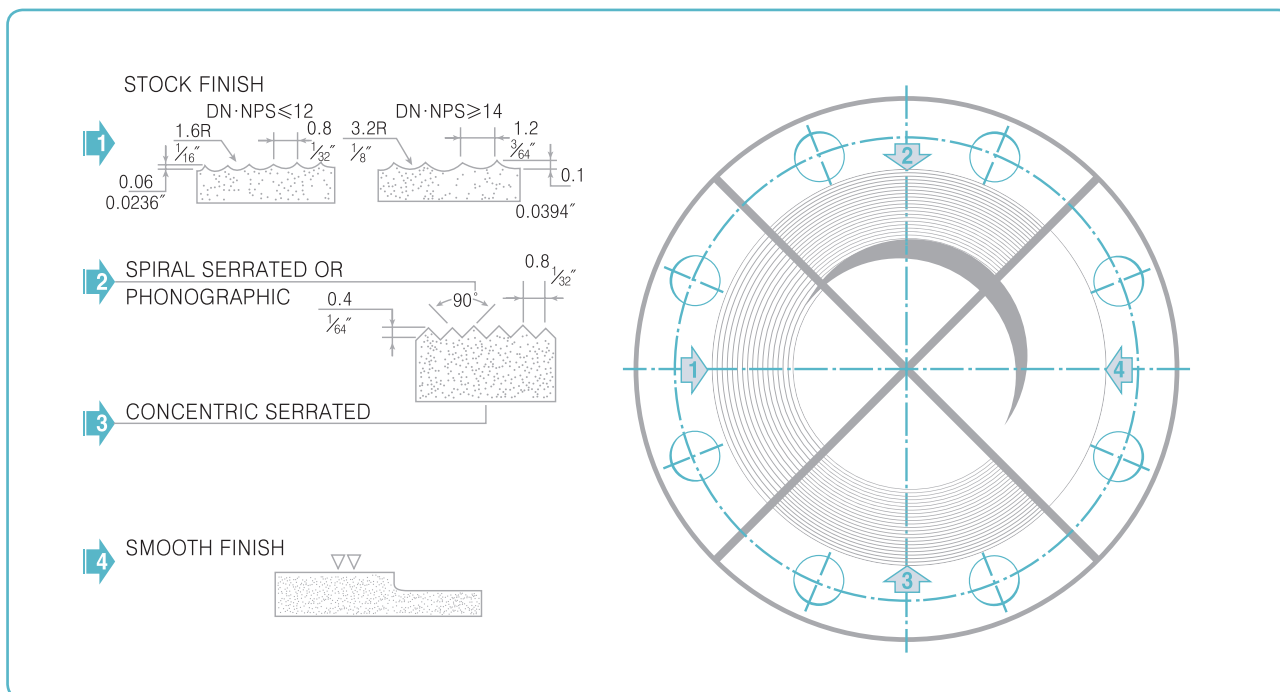
Valve Size	½	¾	1	1¼	2	2½	3	4	5	6	8	10	12
Cv	25	50	90	245	460	725	1,250	2,400	3,600	5,400	10,500	17,500	26,000

Reduce Bore

Valve Size	2	2½	3	4	5	6	8	10	12
Cv	190	340	410	620	920	1,250	2,900	5,000	8,700

FLANGE FACING FINISH

STANDARD FINISHES for Face of Flange(MSS SP6)



STOCK FINISH

The most widely used of any gasket finish, because, practically, is suitable for all ordinary service conditions. This is a continuous spiral groove. Flanges sizes 12" and smaller, are produced with a $1/16"$ round-nosed tool at a feed of $1/32"$ per revolution. For sizes 14" and larger, the finish is made with $1/8"$ round-nosed tool at a feed of $3/64"$ per revolution.

SPIRAL SERRATED OR PHONOGRAPHIC

This finish is produced by using a 90° included-angle [V] tool, making a spiral groove $1/64"$ deep with a feed of $1/32"$.

CONCENTRIC SERRATED

This finish is produced by using a 90° included-angle [V] tool, making concentric groove $1/64"$ deep and $1/32"$ apart.

SMOOTH FINISH

This finish is produced by several shapes of tools cutting at speeds and feeds which leave no definite tool marks apparent to the naked eye.

1. RAISED FACE, AND LARGE MALE AND FEMALE

Either a serrated-concentric or serrated-spiral finish having from 30 to 55 grooves per inch is used. The cutting tool employed has an approximate 0.06 in. or larger radius. The resultant surface finish has a 500 microinch ($12.5\mu\text{m}$) approximate roughness.

2. TONGUE AND GROOVE, AND SMALL MALE AND FEMALE

The gasket contact surface does not exceed 125 microinch ($3.2\mu\text{m}$) roughness.

3. RING JOINT

The inside wall surface of gasket groove does not exceed 63 microinch ($1.6\mu\text{m}$) roughness.

4. BLIND

Blind flanges need not be faced in the center if, when this center part is raised, its diameter is at least 1 in. smaller than the inside diameter of fittings of the corresponding pressure class. When the center part is depressed, its diameter is not greater than the inside diameter of the corresponding pressure class fittings. Machining of the depressed center is not required.



TEST PRESSURE & DURATION

• API6D

Valve Pressure Class	Minimum Test Pressures, kgf/cm ²		
	Shell Hydrostatic	Seat Hydrostatic	Seat Pneumatic
150	29	21	5±1
300	77	56	5±1
400	102	74.6	5±1
600	153	112.5	5±1
900	228.6	168.8	5±1
1500	379.8	281.3	5±1
2500	633	464.2	5±1
Valve Size NPS (Inches)	Shell Test Duration (Minutes)		Seat Test Duration (Minutes)
½~4"	2		2
6"~10"	5		5
12"~18"	15		5
20"≤	30		5

• KS B 2308

Valve Pressure Class	Minimum Test Pressures, kgf/cm ²		
	Shell Hydrostatic	Seat Hydrostatic	Seat Pneumatic
10	21	-	6
20	36	-	24
30	51	-	34
Valve Size NPS (Inches)	Shell Test Duration (Minutes)		Seat Test Duration (Minutes)
≥50	1		1
65~150	1		1
200~300	2		2
350≤	5		2

• JIS B 2220

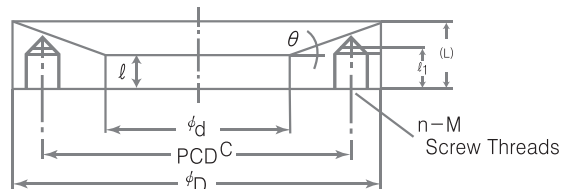
Valve Pressure Class	Minimum Test Pressures, kgf/cm ²		
	Shell Hydrostatic	Seat Hydrostatic	Seat Pneumatic
10	24	-	6
16	35	-	6
20	44	-	6
Valve Size NPS (Inches)	Shell Test Duration (Minutes)		Seat Test Duration (Minutes)
≥50	1		1
65~150	1		1
200~300	2		2
350≤	5		2

• ANSI B 16.34

Valve Pressure Class	Minimum Test Pressures, kgf/cm ²					
	Shell Hydrostatic		Seat Hydrostatic		Seat Pneumatic	
	A216-WCB A350-LF2	A351-CF3 A351-CF3M A351-CF8 A351-CF8M	A216-WCB A350-LF2	A351-CF3 A351-CF3M A351-CF8 A351-CF8M	A216-WCB A350-LF2	A351-CF3 A351-CF3M A351-CF8 A351-CF8M
150	32	31	21.1	21.3	5.7	5.7
300	80	77	58	56	5.7	5.7
600	158	154	115	112	5.7	5.7
900	236	230	172	168	5.7	5.7
Valve Size NPS (Inches)	Shell Test Duration (Minutes)		Seat Test Duration (Minutes)			
≥2"	15		15			
2.5"~8"	60		30			
10"≤	180		60			
20"≤	180		120			

TANK PAD & GASKET

OPTIONAL PARTS



Valve Press	D	d	C	(L)	L	L1	n	m	θ	GASKET	STUD BOLT
1" 25A	140	48	105	50	7	20	4	M12	30°	Ø89×Ø49×2T	M12×50L
1-½" 40A	155	60	120	49	11	20	4	M14	30°	Ø104×Ø61×2T	M14×51L
2" 50A	175	76	140	52	10	23	4	M16	30°	Ø122×Ø77×2T	M16×57L
2-½" 65A	210	114	175	51	12	25	6	M14	30°	Ø159×Ø115×2T	M14×57L
3" 80A	250	140	210	57	10	24	6	M18	30°	Ø188×Ø141×2T	M18×62L
4" 100A	280	166	240	57.7	17	25	6	M20	30°	Ø220×Ø167×2T	M20×64L
5" 125A	330	216	290	56	23	25	12	M20	30°	Ø268×Ø218×2T	M20×68L
6" 150A	400	269	355	58	23	27	12	M22	30°	Ø333×Ø270×2T	M22×78L

VACCUM RANGE & CHARACTERISTICS

	Rough Vaccum	Midium Vaccum	High Vaccum	UHV
Pressure range(Torr)	ATM ~ 1Torr	1Torr ~ 10-3Torr	10-3Torr ~ 10-7Torr	<10-7Torr
Particle number Density(cm-3)	1019 ~ 1016	1016 ~ 1013	1013 ~ 109	<109
Mean free Path(cm)	<10-2	10-2 ~ 10	10 ~ 104	>104
Impingement rate(ea/cm2/s)	1023~ 1020	1020 ~ 1017	1017 ~ 1013	<1013
Monolayer time(second)	<10-5	10-5 ~ 10-2	10-2 ~ 100	>100
Type of gas flow	Viscous flow	Knudsen flow	Molecular flow	Molecular flow

BALL VALVE TEST PRESSURE TABLE

Valve Pressure Class Shell	Hydrostatic(Minimum)	Seat Hydrostatic(Minimum)	Air Seat
ANSI 150LB	29 kgf/cm ²	21 kgf/cm ²	4~6 kgf/cm ²
ANSI 300LB	77 kgf/cm ²	56 kgf/cm ²	4~6 kgf/cm ²
ANSI 600LB	154 kgf/cm ²	113 kgf/cm ²	4~6 kgf/cm ²

★ Standard Design

a) Test Press' : API 598 / API 6D Std. / ANSI B 16.34

HOLDING TIME

Valve Size	Shell test minutes	Seat test minute
2"~4" (50A~100A)	2	2
6"~10" (150A~250A)	5	5
12"~18" (300A~450A)	15	5
20"이상 (500A 이상)	30	5



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