KITZ
Steel Ball Valves
Floating Ball Design

INTERNATIONAL EDITION

PLEASE NOTE THAT ALL KITZ VALVES FOR NORTH AMERICA ARE 100% ASBESTOS FREE.

North American Edition

KITZ CORPORATION OF AMERICA

KITZ Steel Ball Valves

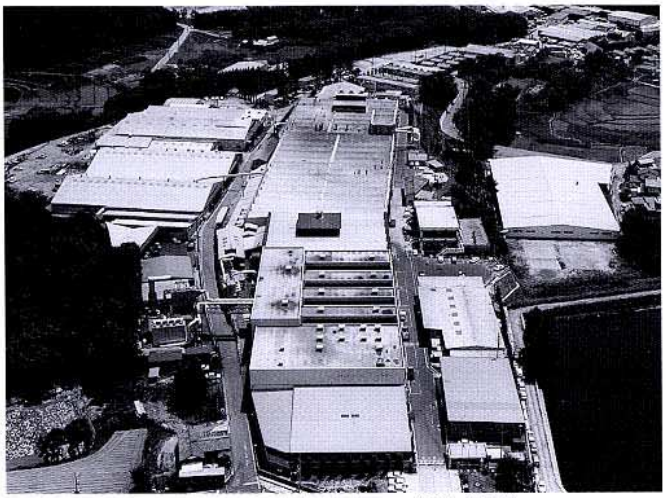
Floating Ball Design

Contents

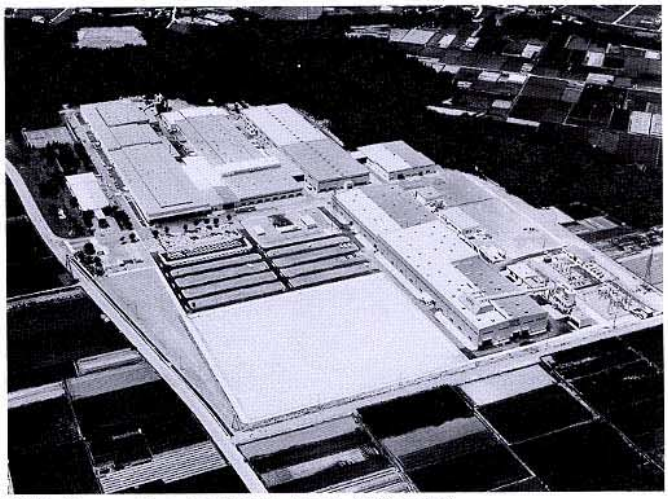
The products introduced in this catalog are all covered by ISO 9001 and 9002 certification awarded KITZ Corporation, KITZ Corporation of Europe, S.A. and KITZ Corporation of Taiwan.

KITZ Corporation of Taiwan, Kaohsiung Plant, Taiwan (ISO 9002)

KITZ Corporation of Europe, S.A., Barcelona Plant, Spain (ISO 9001)



KITZ Corporation, Nagasaka Plant, Japan (ISO 9001)



KITZ Corporation, Ina Plant, Japan (ISO 9001)

KITZ Steel Ball Valves
Floating Ball Design

Design and Inspection Standards of KITZ Flanged Ball Valves*1

Item		American Standards	British Standards
Pressure-temperature ratings	Body	ASME B16.34	BS 5351
	Resilient sealing parts	KITZ Standard	
General valve design		API 608	BS 5351
Shell wall thickness		ASME B16.34	BS 5351
Face-to-face dimensions		ASME B16.10	BS 2080*2
End flange dimensions and flange gasket facing		ASME B16.5	BS 1560
Pressure test		API 598 or API 6D*3	BS 6755 Part 1*3
Fire test		API 607 and API 6FA	BS 6755 Part 2

Note: *1 For design standards of threaded or socket welding end ball valves, refer to Pages 17 through 19.
*2 Option for 2" to 4" Class 150 full port design.
*3 Option.

Product Coding for KITZ Flanged Ball Valves

Example:

	150	U	T	A	M			
G-	150	SC	T	BZ			M	S
	①	②	③	④	⑤	③A	⑥	⑦

① Valve operational measure
None .....Lever handle
G .....Worm gear
E .....Electric actuator
B .....KITZ Type B actuator
BS .....KITZ Type BS actuator
BSW .....KITZ Type BSW actuator
D .....KITZ Type D actuator
DS .....KITZ Type DS actuator
DSW .....KITZ Type DSW actuator

② ASME pressure class
150, 300, 600 or 1500

③ Shell material
SC .....Carbon or low alloy steel
U .....Stainless or high alloy steel

③A Shell material
An additional symbol is suffixed here, if other than WCB or CF8 is employed for shell material, such as:

M	.....CF8M	BL	.....LCB
V	.....CF3	CL	LCC
O	.....CF3M	1L	.....LC1
CB	.....CF8C	2L	.....LC2
CN	.....CN7M	3L	.....LC3

④ Symbol for ball valves

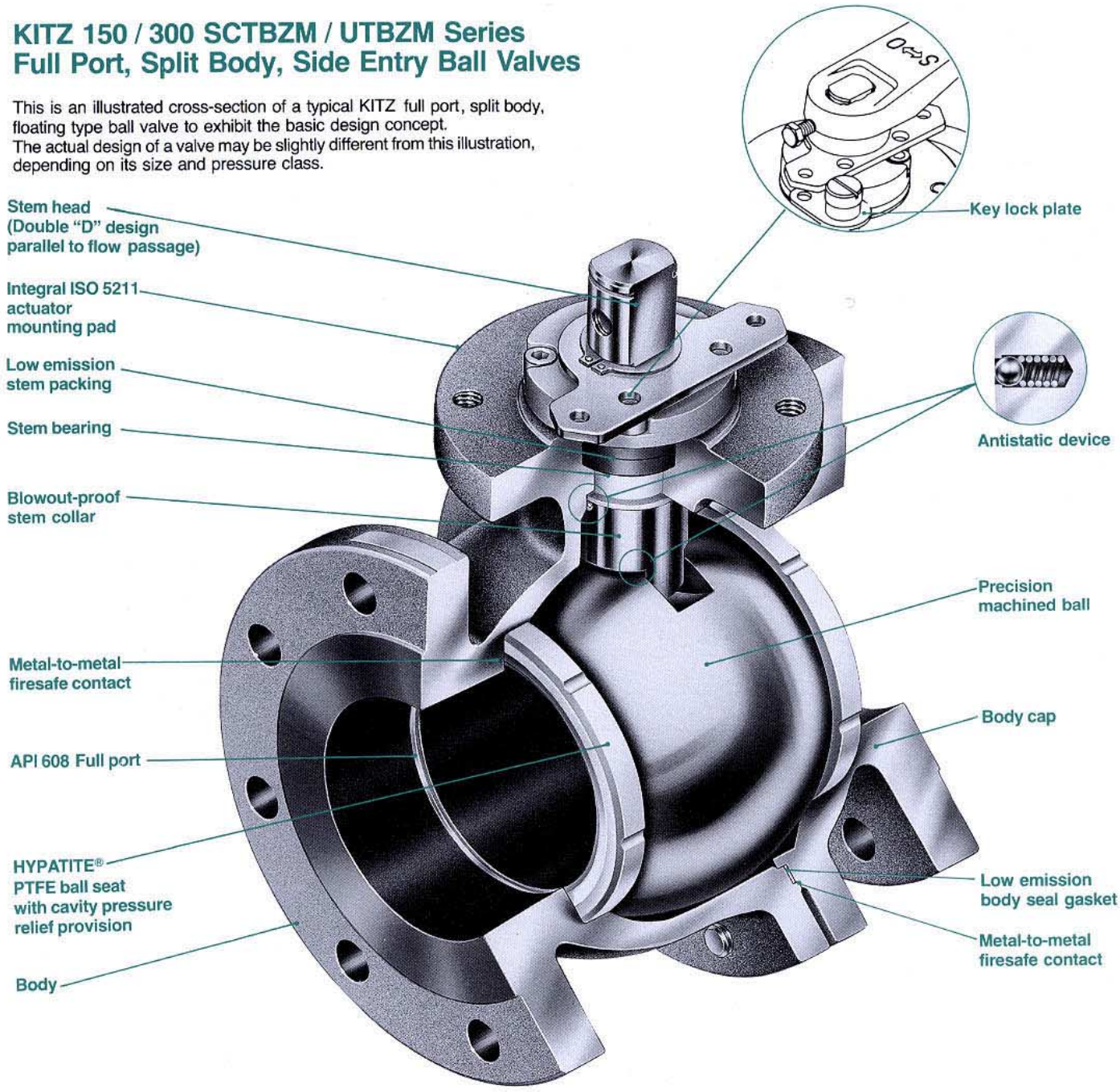
⑤ Valve design
BZ .....Full port, split body with ISO actuator mounting pad
B .....Full port, split body with KITZ actuator mounting pad
A .....Regular port, uni-body with ISO actuator mounting pad

⑥ Trim material for carbon steel valves
No symbol suffixed for 304 s/s trim.
"M" suffixed for 316 s/s trim.

⑦ "S" suffixed for flexible graphite packing and gasket for super-fire-safe provision.
No symbol suffixed for PTFE packing and gasket.

KITZ 150 / 300 SCTBZM / UTBZM Series
Full Port, Split Body, Side Entry Ball Valves

This is an illustrated cross-section of a typical KITZ full port, split body, floating type ball valve to exhibit the basic design concept.
The actual design of a valve may be slightly different from this illustration, depending on its size and pressure class.



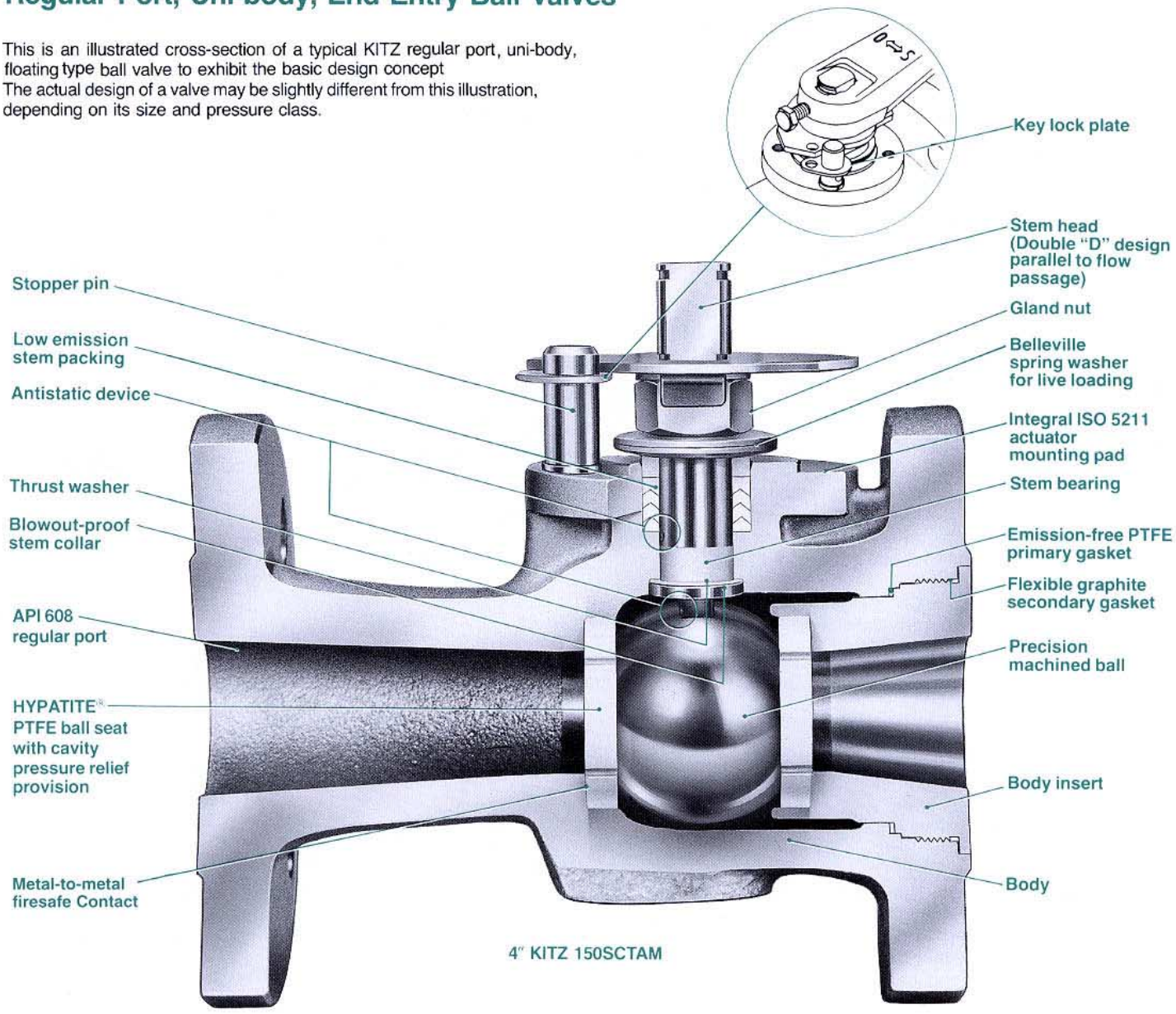
4" KITZ 150SCTBZM

Extensive safety considerations

KITZ ball valves are designed with extensive safety considerations for users. Blow-out proof stems, provision of locking devices and prevention of misalignment of lever handles provide safe handling in the field and trouble-free operation in the plant. Antistatic devices, firesafe seal design and cavity pressure relief features all assure the economic benefits of smooth, steady plant operation. KITZ advancements in low emission design features contribute to the global battle against fugitive emissions while greatly reducing costs caused by product loss.

KITZ 150 / 300 SCTAM / UTAM Series
Regular Port, Uni-body, End Entry Ball Valves

This is an illustrated cross-section of a typical KITZ regular port, uni-body, floating type ball valve to exhibit the basic design concept
The actual design of a valve may be slightly different from this illustration, depending on its size and pressure class.



4" KITZ 150SCTAM

Bubble-tight sealing mechanism

Floating ball design supports the ball with two rigid **HYPATITE®** PTFE seats placed in the valve body, one on the upstream side, the other on the downstream side of the ball. The upstream pressure pushes the ball, which compresses the downstream side seat to completely shut off fluid flow. Low emission stem packing is securely tightened with precision engineered gland boltings or Belleville live loading spring washers, minimizing need of packing retightening work.

Simplified actuator mounting

ISO 5211 actuator mounting pad is integrally provided for uniformly simplified mounting of any actuators provided with valve mounting flanges designed to ISO 5211 dimensional requirement.

Easy maintenance

Split body design for KITZ 150 / 300 SCTBZM / UTBZM Series provides the convenience of very easy maintenance critically required for process plants. Body inserts of uni-body, end entry design for KITZ 150 / 300 SCTAM / UTAM Series are threaded into the valve body with provision of unthreading for valve disassembly in case of maintenance operation.

Seven Safety Considerations for KITZ 150 / 300 SCTBZM / UTBZM and 150 / 300 SCTAM / UTAM Series Ball Valves

1. **Double "D"** stem head design provides mounting of the lever handle always in parallel to the flow passage. Misalignment of the handle is thus prevented. (Fig. 1)

2. The lower end of the stem is designed with an integral collar to be **blowout-proof**. It also functions as the backseat for assured stem sealing. (Fig. 2)

3. An **antistatic feature** is provided to ensure electrical continuity between ball, stem, and body. (Fig. 2)

4. Facility for mounting a **locking device** for prevention of accidental valve operation is provided.

5. **Plant fires** are a serious concern for soft-seated ball valves because of possible fluid leakage and consequent increase of the fire magnitude caused by deterioration of resilient sealing materials.

   KITZ ball valves are engineered for firesafety and successfully **fire tested** to minimize both external and internal fluid leakage after plant fires. They have **post-fire metal-to-metal contact** of all sealing areas such as:

   - Contact between ball and valve shell (Fig. 3 & 4)
   - Contact between stem and valve shell (Fig. 5 & 6)
   - Valve shell coupling flanges of split body design (Fig. 7 & 8)
   - Contact between valve body and insert of uni-body design (Fig. 9)

   The problem of external fluid leakage is more serious than internal leakage through the valve bore because of the fear of fueling the fire. To prevent this, KITZ ball valves may be ordered with **flexible graphite packing** and **gaskets**, which are extremely heat resistant, and not affected by the fire. For details, refer to Page 38 and 39.

6. The surface of stem and stuffing box, and interface clearance of stem-to-gland, stem-to-stem bearing and gland-to-stuffing box are precision controlled on machining and assembly for **low emission service**. Materials and design of PTFE or flexible graphite packing and gasket are also carefully selected to minimize leakage of line fluid into the atmosphere. Refer to Page 6 and 7 for more information.

7. A provision of **cavity pressure relief** is incorporated into precision engineered KITZ HYPATITE® PTFE ball seats for the ultimate safety. Refer to Page 5 for details.

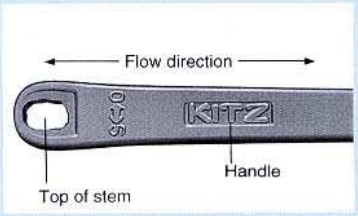


Fig. 1

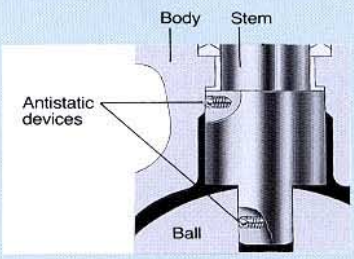


Fig. 2

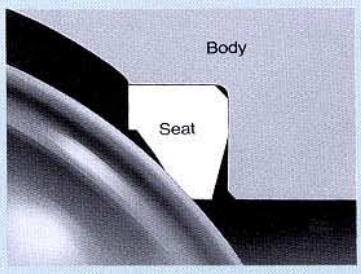


Fig. 3 (Before fire)

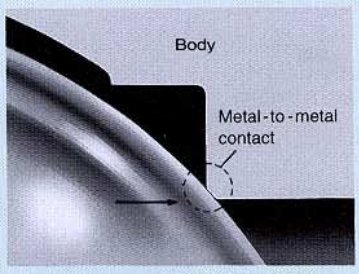


Fig. 4 (After fire)

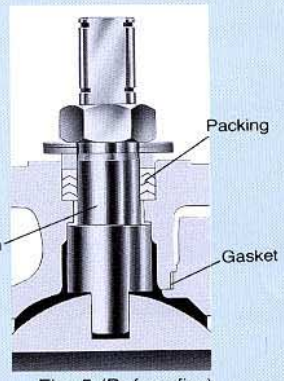


Fig. 5 (Before fire)

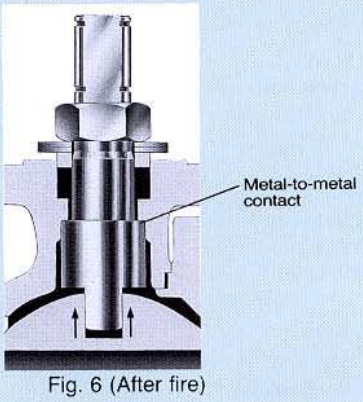


Fig. 6 (After fire)

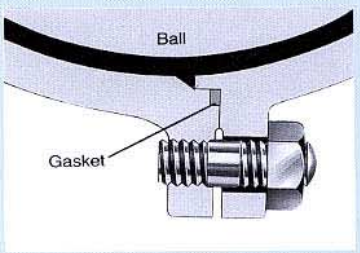


Fig. 7 (Before fire)

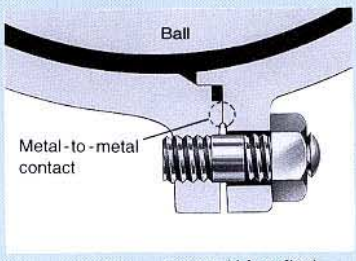


Fig. 8 (After fire)

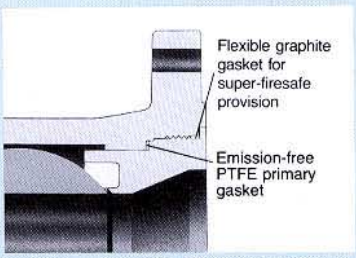


Fig. 9 (Uni-body insert)

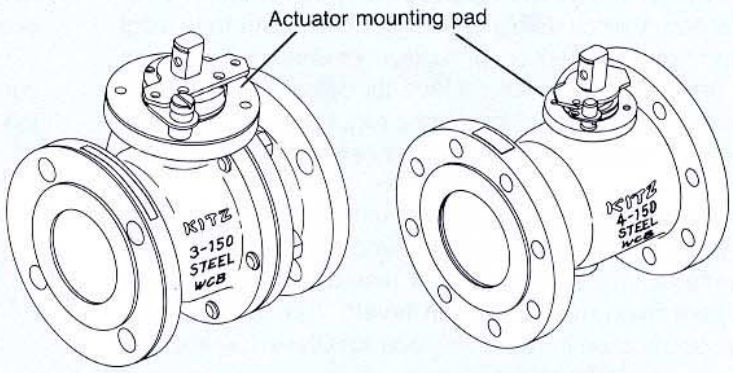
As the primary body seal, emission free PTFE gasket is always provided. Flexible graphite gasket may be additionally employed as the secondary body seal for super-firesafe provision.

ISO 5211 Actuator Mounting Pads

KITZ 150/300 SCTBZM/UTBZM Series and 150/300 SCTAM/UTAM Series ball valves are always furnished with integral actuator mounting pad designed and factory-drilled according to ISO 5211 specification. This easily and uniformly enables mounting of any actuators provided with ISO 5211 valve mounting flanges.

Note Customers are requested to prepare mounting brackets and connectors for the actuators chosen for their valve automation. Actuators can be mounted on KITZ ball valves without disassembly of valve glands.

Actuator mounting pad



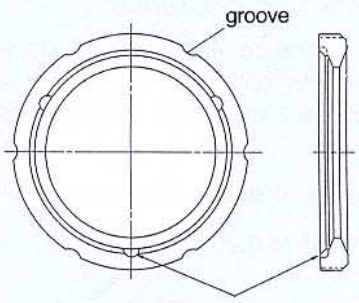
Split body design Uni-body design

HYPATITE® PTFE Ball Seats

KITZ ball valves are furnished, as the manufacturer's standard, with **HYPATITE®** PTFE ball seats made of denatured PTFE, a molecularly reinforced PTFE/PFA copolymer, and specially engineered for high performance which include:

- Wide service temperature range of −20°F (−29°C) through 500°F (260°C).
- High chemical resistance is comparable to virgin PTFE.
- Monomer permeability is lower than other PTFE materials.
- Resistance against compression and creeping (cold flow) is higher than other PTFE materials to guarantee long life cycle.
- Specific gravity and friction coefficient are equal to those of virgin PTFE for smooth valve operation.
- Purity of processed products is guaranteed as highly as virgin PTFE.
- Resiliency is as high as other PTFE materials for bubble-tight sealing performance.

★ Refer to Page 36 and 37 for more technical data.



A typical HYPATITE® PTFE seat used for 4" KITZ 150 SCTBZM ball valves.

Optional Ball Seats

In addition to the standard **HYPATITE®** PTFE ball seats, virgin PTFE and carbon filled PTFE seats are optionally available for versatility in service applications.

Cavity Pressure Relief

Some line fluid is usually left trapped inside the ball-body cavity. This fluid can expand under the influence of high ambient or line temperature. An abnormal increase of such cavity pressure may sometimes damage the valve seats or balls, unless the valve has an adequate cavity pressure relief provision. **Trunnion mounted ball valves generally provide perfect protection from this problem.** Refer to KITZ Cat. No. K-202 for technical details of KITZ trunnion mounted ball valves.

In case of floating ball valves, however, their rather simple seating principle requires some special protection from excessive cavity pressure rise **when highly volatile liquid in service is subject to frequent and large temperature variation, while the valve is not frequently operated.** KITZ 150/300 SCTBZM/UTBZM and 150/300 SCTAM/UTAM Series ball valves offer **self-relieving of excessive cavity pressure** as a standard feature engineered in HYPATITE® ball seats.

Other general solutions for floating ball valves include employment of automatic pressure relief valves or drilling pressure equalization holes on the ball. If the requirement of automatic cavity pressure relief is as critical as in chlorine service, be sure to contact KITZ Corporation or its distributors for technical advice.

Low Emission Design Features for KITZ 150 / 300 SCTBZM / UTBZM and 150 / 300 SCTAM / UTAM Series Ball Valves

The US Federal Clean Air Act requires all plants handling the toxic gases and chemicals listed by the Environmental Protection Agency (EPA) to periodically monitor their plant equipment for detection of fugitive emissions exceeding 500 ppm, and repair or replace all defective equipment immediately. The California state regulation requires 100 ppm maximum leak level for the Northern California Region.

Our low emission service ball valves developed after several years of trial and error at our laboratory, are designed, engineered, manufactured and tested to now meet the **100 ppm maximum emission level***. This is KITZ standard specification in North America for Class 150 and 300 flanged ball valves of floating ball design, identified as KITZ 150 / 300 SCTAM / UTAM Series** (Uni-body, end entry design) and 150 / 300 SCTBZM / UTBZM Series (Split body, side entry design) in this catalog. Major design considerations for having upgraded our standard valves to the low emission performer are introduced below:

* Maximum leak level guaranteed for the duration of the KITZ warranty in North America for emission monitoring with EPA Method 21 procedures and methane-calibrated organic vapor analyzers.

** Except 1" and smaller sizes, which are provided with only one piece of packing ring due to limited stuffing box dimension.

Diametrical interface clearance

The diametrical clearance of the three interfacing contacts shown here is strictly controlled to prevent the line fluid from leaking into the atmosphere through these potential leak paths.

① 20 mils (0.5 mm) maximum for stem to gland contact

② 2 to 10 mils (0.05 to 0.25 mm) for gland to stuffing box contact

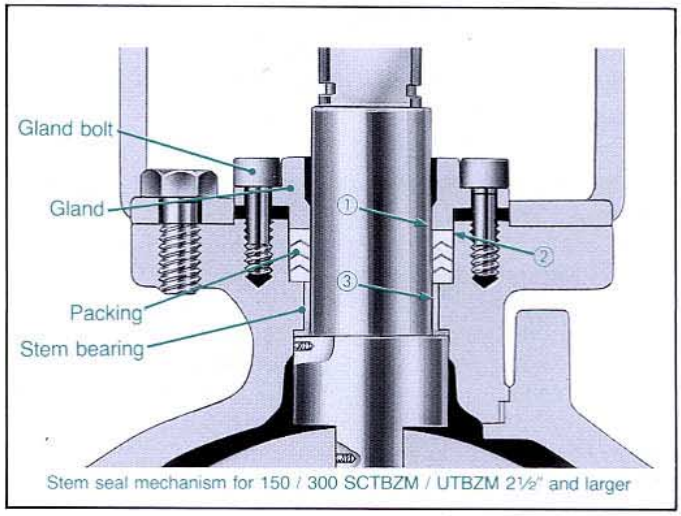
③ 8 to 16 mils (0.2 to 0.4 mm) for stem to stem bearing contact

Stem

The stem surface finish is controlled to between 16 RMS and 32 RMS. This specification is particularly important for flexible graphite packing, because, while the stem travels through the packing rings, graphite tends to fill micro scratches on the stem surface and migrates to the stem to function as a lubricant. Too fine a stem smoothness loses this advantage and increase leakage. The stem straightness and roundness are also controlled according to our design and manufacturing standards.

Stuffing box

The surface finish is controlled to a maximum 125 RMS. Contrary to the stem, the stuffing box wall statically contacts packing rings, and a reasonably rougher surface finish results in a better sealing performance. The cylindricity and verticality are precision controlled according to KITZ design and manufacturing standards.



Stem seal mechanism for 150 / 300 SCTBZM / UTBZM 2½" and larger

Gland packing

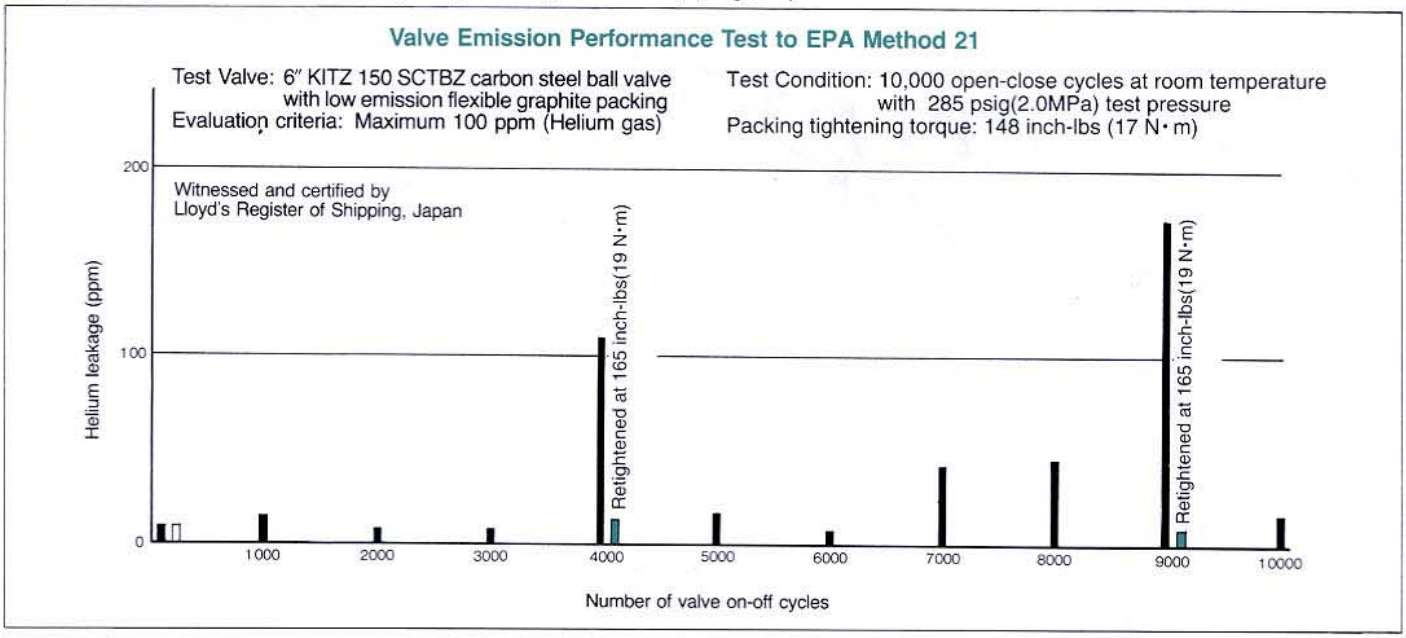
For the standard version, V shape PTFE packing rings are employed for medium temperature low emission service. For the optional super-firesafe version, flexible graphite rings reinforced with stainless steel wire are used for high temperature low emission service.

Gasket

PTFE gaskets and flexible graphite gaskets are used for medium and high temperature low emission service respectively. The gasket contact faces of valve shells are precision machined to further upgrade the sealing function of the valve shell joint.

Low Emission Performance Test

The outstanding low emission performance of KITZ ball valves was proved by our repeated laboratory tests. Here is an example of test reports certified by Lloyd's Register of Shipping, Japan.



A third party performance test was also carried out on our 6" Class 300 uni-body ball valve packed with flexible graphite, at Yarmouth Research and Technology, Maine, USA, according to one user's testing specifications. The test conditions included 10,000 cycle operation of the test valve through 3 thermal cycles at 350°F (177°C), with the valve stem positioned horizontally to the ground, and the leak level was monitored from the plastic sealed valve bonnet. The results were found very similar to our own findings at our laboratory.

Low Emission Acceptance Test

While no official testing standard is in effect as of May 1, 1999, KITZ Corporation has developed its own test procedure and evaluation criteria basing on the results of laboratory tests carried out for the last several years. Most significantly, we employ **10 ppm** maximum leak level for the helium gas pressurized valves as the acceptance criteria for the random test carried out prior to shipment. A concern for the stress relaxation of graphite packing which might be caused by passage of time during transportation and storage of valves, was the reason for this very severe acceptance criteria.

KITZ General Term of Warranty for Low Emission Service Valves

Warranty Period: 12 months after placement in service, but not exceeding 18 months after shipment from KITZ factories.

Warranty Conditions:

1. Proper storage and maintenance of valves prior to installation, according to the KITZ maintenance manual.
2. Proper handling of valves during transportation and plant construction, which includes sandblasting and painting, for protection of exposed stems and glands of valves.
3. **Need of adequate retightening of gland packing sets***, according to the KITZ maintenance manual to reduce the leak level, when an excessive level of fugitive emission is detected during:
   a) Pre-installation valve inspection
   b) Process pilot run or start-up operation
   c) Periodic or occasional inspection of valves in service
4. **Valve stems must be kept free of scratches, scars or corrosion.**
5. Following all other instructions provided in the KITZ maintenance and operation manuals.

* This condition is particularly important when valves are subjected to thermal cycles on the site. Users are recommended to ensure that packing is retightened after every cool-down of the process.

Pressure-Temperature Ratings

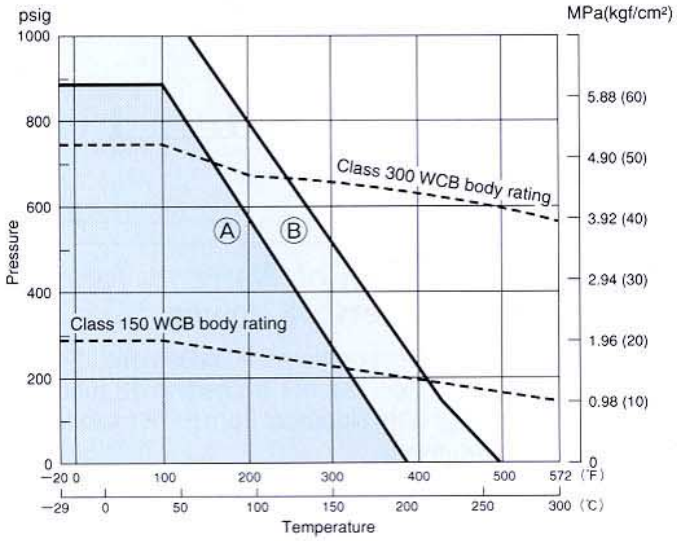
The pressure-temperature ratings of ball valves are determined, not only by valve shell materials, but more essentially by sealing materials used for ball seats, gland packing and gaskets. Sealing materials may be high molecule plastics or rubbers, but the choice is limited by the characteristics of the service fluid, working temperatures, working pressures, velocity of fluid, and operational frequency of valves.

As it is very difficult to predetermine the exact pressure-temperature rating for all kinds of fluid under all imaginable conditions, we have prepared general rating charts for non-shock fluid service here, based on our past experiences both in the field and in our laboratory.

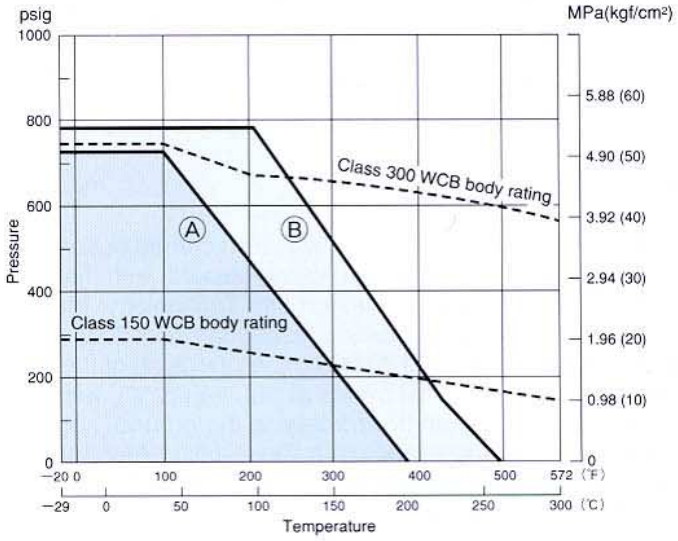
In case of extraordinary service conditions as mentioned below, contact KITZ Corporation or its distributors for technical advice:

1. Valves shall be left fully closed for a long period of time under high temperature or high differential pressure.
2. Valves shall be frequently operated under high temperature or high differential pressure.
3. Frequent change of line pressure or temperature.

150 / 300 SCTBZM / UTBZM : ½" and ¾"
150 / 300 SCTAM / UTAM : ½" to 1"

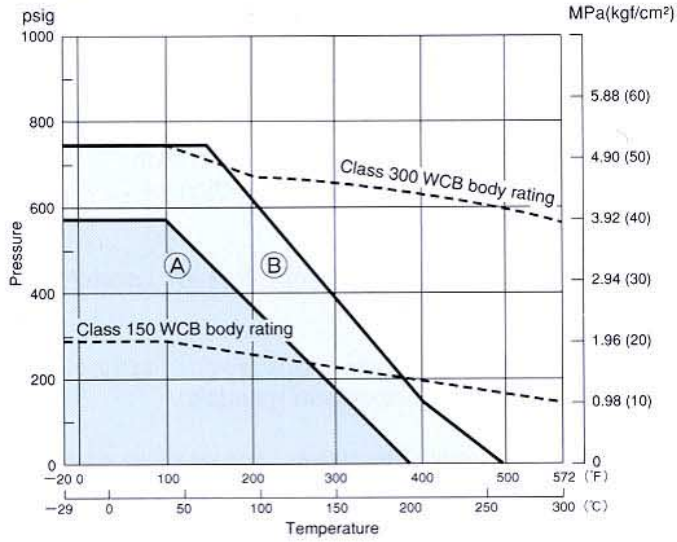


150 / 300 SCTBZM / UTBZM : 1" to 2½"
150 / 300 SCTAM / UTAM : 1¼" to 3"

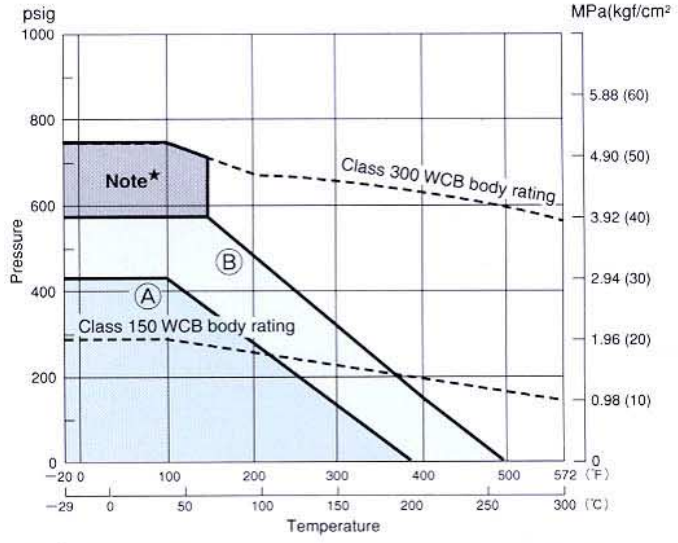


Seat materials Ⓐ: Virgin PTFE Ⓑ: HYPATITE® PTFE or Carbon-filled PTFE HYPATITE® is the standard seat material for KITZ ball valves. Specify virgin PTFE or carbon-filled PTFE when required. The body pressure ratings shown here are for ASTM A216 Gr. WCB. For the pressure ratings of other valve shell materials, refer to the latest edition of ASME B16.34.

150 / 300 SCTBZM / UTBZM : 3" and 4"
150 / 300 SCTAM / UTAM : 4" and 6"

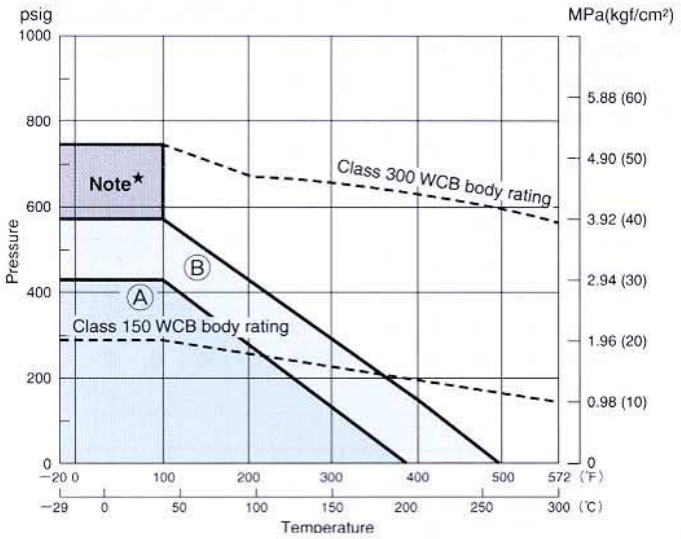


150 / 300 SCTBZM / UTBZM : 5" and 6"
150 / 300 SCTAM / UTAM : 8" and 10"



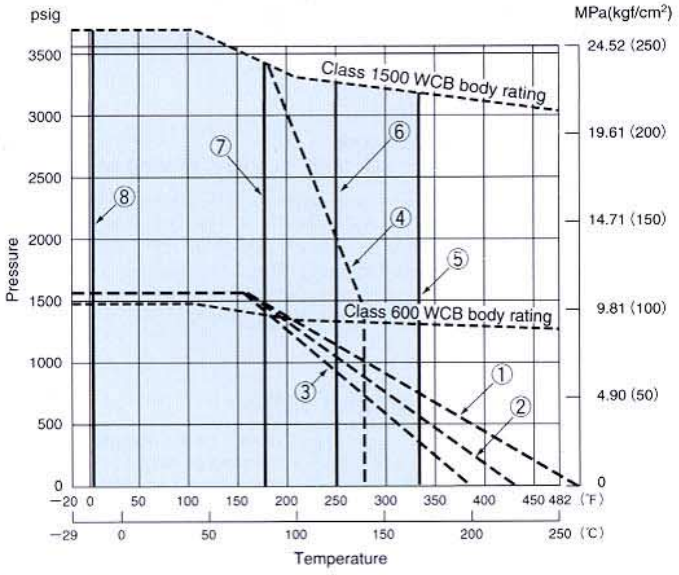
Note* Continuous pressurization is not recommended in this P-T range.

150 / 300 SCTBM / UTBM : 8" and 10"
(Refer to **SPECIAL NOTE** on Page 10.)



Note* Continuous pressurization is not recommended in this P-T range.
Refer to Page 8 for Ⓐ and Ⓑ.

600 / 1500 SCTBM / UTBM



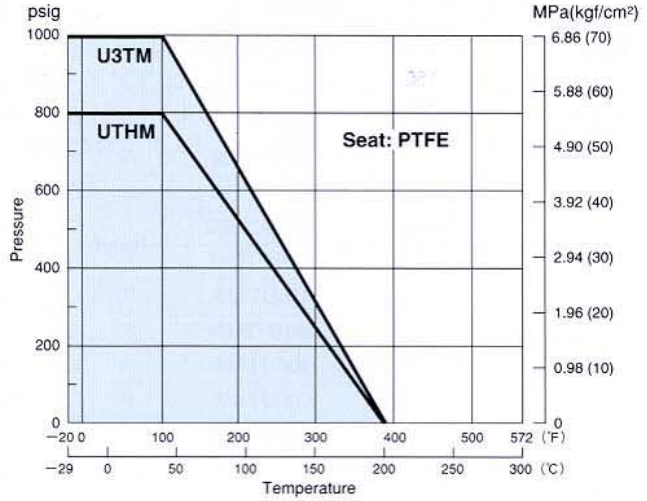
Ball Seat Materials
①: KITZ HYPATITE or Carbon-filled PTFE
②: Glass-filled PTFE with MoS_2
③: Virgin PTFE
④: Nylon with MoS_2

O-ring Upper Limit
⑤: (1) FPM
(2) Low-temperature FPM
⑥: (1) EPDM
(2) ECO (Epichlorohydrin Copolymer)
⑦: (1) NBR
(2) Low-temperature NBR

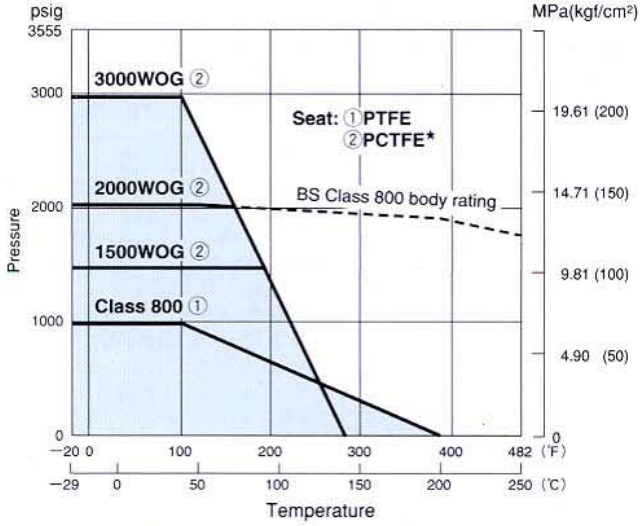
O-ring Lower Limit ※
⑧: FPM

※ O-rings made of others than FPM can withstand −20°F (−29°C).

Type 800 UTHM / Type 1000 U3TM

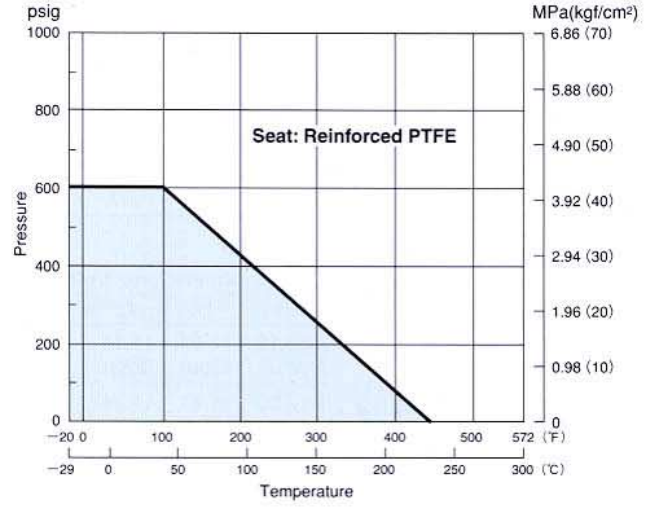


Class 800 to Type 1500 / 2000 / 3000 SCTK



* Polychloro-Trifluoro-Ethylene

Type 600 UTKM / SCTK



Product Range

Shell Material	Class	KITZ Product Code	*1 Port	Body Design	Size in. / Ends mm	½	¾	1	1½	2	2½	3	4	5	6	8	10
						15	20	25	40	50	65	80	100	125	150	200	250
Carbon Steel	150	150SCTBZM	F	Split	Flanged	●	●	●	●	●	●	●	●	●	●	○*2	▲*2 *3
		150SCTAM	R	Uni	Flanged	●	●	●	●	●		●	●		●	●	●
	300	300SCTBZM	F	Split	Flanged	●	●	●	●	●	●	●	●		●	○*2	
		300SCTAM	R	Uni	Flanged	●	●	●	●	●		●	●		●	●	●
	600	600SCTBM	F	Split	Flanged	●	●	●	●								
	1500	1500SCTBM	F	Split	Flanged	●	●	●	●								
Stainless Steel	150	150UTBZM	F	Split	Flanged	●	●	●	●	●	●	●	●	●	●	○*2	▲*2 *3
		150UTAM	R	Uni	Flanged	●	●	●	●	●		●	●		●	●	●
	300	300UTBZM	F	Split	Flanged	●	●	●	●	●	●	●	●		●	○*2	
		300UTAM	R	Uni	Flanged	●	●	●	●	●		●	●		●	●	●
	600	600UTBM	F	Split	Flanged	●	●	●	●								
	1500	1500UTBM	F	Split	Flanged	●	●	●	●								

Shell Material	Class & Type	KITZ Product Code	*1 Port	Body Design	Size in. / Ends mm	¼	⅜	½	¾	1	1¼	1½	2
						8	10	15	20	25	32	40	50
Carbon Steel	600	SCTK*4	D	Uni	Threaded only	●	●	●	●	●	●	●	●
	800	800SCTK*4	R	Split	Threaded / Welded	●	●	●	●	●	●	●	●
	1500	1500SCTK*4	R	Split	Threaded / Welded	●	●	●	●	●	●	●	●
	2000	2000SCTK*4	R	Split	Threaded / Welded	●	●	●	●	●	●	●	●
	3000	3000SCTK*4	R	Split	Threaded / Welded	●	●	●	●	●	●	●	●
Stainless Steel	600	UTKM*4	D	Uni	Threaded only	●	●	●	●	●	●	●	●
	800	UTHM*4	R	Split	Threaded only			●	●	●	●	●	●
	1000	U3TM*4	R	Swing away	Threaded / Welded	●	●	●	●	●	●	●	●

*1 Bore design (API 608): F=Full port R=Regular port D=Reduced port
*2 Refer to **SPECIAL NOTE** on this page.
*3 Worm gear operation is standardized for the sizes marked ▲ with the prefix "G–" on each KITZ product code.
*4 PT threaded end type is the standard. Prefix KITZ product code with "AK" for NPT threaded end valves, or with "AW" for socket welding end valves.

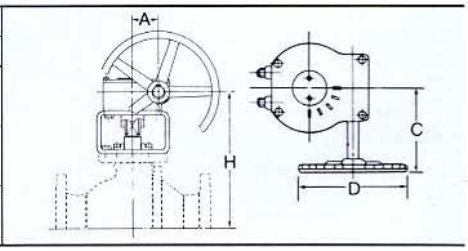
SPECIAL NOTE

Sizes 8″ and 10″ of KITZ 150 / 300 SCTBZM / UTBZM Series ball valves are not available at this time. If full port, split body ball valves are required, 8″ and 10″ of KITZ 150 / 300 SCTBM / UTBM Series are available. 150 / 300 SCTBM / UTBM Series are provided with KITZ standard design actuator mounting pads instead of ISO 5211 mounting pads.

Gear Operation

150 / 300 SCTBZM / UTBZM Series (6″) and 150 / 300 SCTBM / UTBM Series (8″ and 10″)

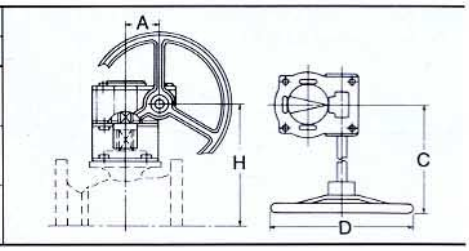
Class	150	300	Gear Dimensions in.(mm) H	D	C	A
Valve Size (inch)	6	6	13.78 (350)	12.20 (310)	6.50 (165)	2.58 (65.5)
	8	8	16.30 (414)	14.17 (360)	8.27 (210)	3.48 (88.5)
	10★	—	18.78 (477)	19.69 (500)	14.33 (363)	3.68 (93.5)



Worm gear operators may be mounted on KITZ ball valves at your option for the smoothest valve operation. For the sizes marked with an asterisk (★), worm gear mounting is KITZ standard. Electric or pneumatic actuators are also optionally available. Contact KITZ distributors for appropriate choice and sizing of valve actuators.

150 / 300 SCTAM / UTAM Series

Class	150	300	Gear Dimensions in.(mm) H	D	C	A
Valve Size (inch)	6	6	10.12 (257)	11.81 (300)	11.14 (283)	2.80 (71)
	8	8	12.05 (306)	11.81 (300)	11.14 (283)	2.80 (71)
	10	10	14.33 (364)	15.75 (400)	13.27 (337)	3.39 (86)



Class 150 / 300 Carbon Steel Ball Valves

Full port, split body, side entry design

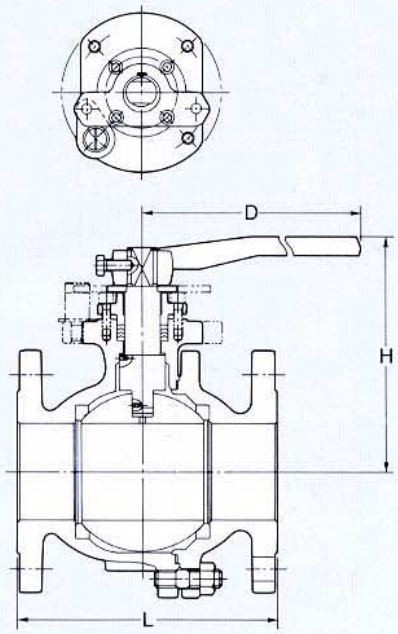
Features

- Maximum 100 ppm emission*
- Cavity pressure relief
- ISO 5211 actuator mounting pad**
- High performance **HYPATITE®** PTFE ball seats
- Fire test certification

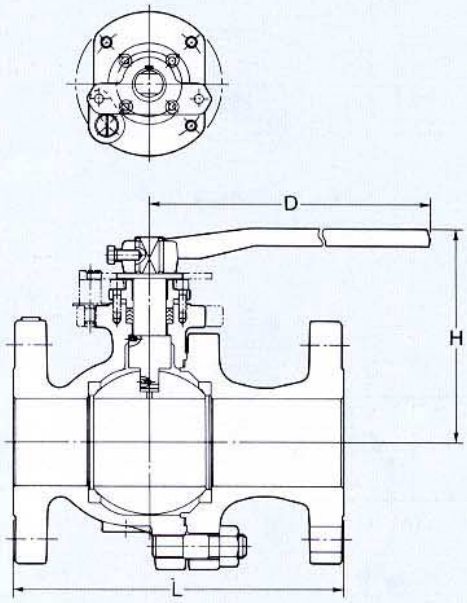
* Standard for North America.
** Refer to **SPECIAL NOTE** on Page 10.

Page 8 and 9 for
Pressure-Temperature Ratings
Page 26 for
Construction and Materials
Page 22 and 23 for
Dimension of Actuator Mounting Pad

150SCTBZM



300SCTBZM



Dimensions of 150SCTBZM

Valve size		1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10
	mm	15	20	25	40	50	65	80	100	125	150	200	250
Bore	in.	0.55	0.75	0.95	1.50	1.97	2.52	2.99	3.94	4.84	5.94	7.87	9.84
	mm	14	19	24	38	50	64	76	100	123	151	200	250
L	in.	4.25	4.61	5.00	6.50	7.01	7.48	7.99	9.02	14.02	15.51	17.99	20.98
	mm	108	117	127	165	178	190	203	229	356	394	457	533
H	in.	4.27	4.49	5.51	5.12	5.47	6.97	7.24	8.62	9.25	12.48	13.98	18.78
	mm	111	114	140	130	139	177	184	219	235	317	355	477
D	in.	5.12	5.12	6.30	9.06	9.06	15.75	15.75	18.03	18.03	39.37	59.06	19.69
	mm	130	130	160	230	230	400	400	458	458	1000	1500	500

Valve operator
1/2″~8″: Lever operation
6″~8″: Optional gear operation
10″: Standard gear operation

Test pressure
Shell (hydrostatic): 450 psig (3.10 MPa)
Seat (air): 80 psig (0.55 MPa)

Option
- Flexible graphite packing and gasket (See Page 4 and 26)
- Ball and stem to CF8 (304)

Dimensions of 300SCTBZM

Valve size		1/2	3/4	1	1 1/2	2	2 1/2	3	4	6	8
	mm	15	20	25	40	50	65	80	100	150	200
Bore	in.	0.55	0.75	0.94	1.50	1.97	2.52	2.99	3.94	5.94	7.87
	mm	14	19	24	38	50	64	76	100	151	200
L	in.	5.51	5.98	6.50	7.48	8.50	9.49	11.14	12.01	15.87	19.76
	mm	140	152	165	190	216	241	283	305	403	502
H	in.	4.27	4.49	5.51	5.12	5.47	6.97	7.24	10.28	12.48	13.98
	mm	111	114	140	130	139	177	184	261	317	355
D	in.	5.12	5.12	6.30	9.06	9.06	15.75	15.75	29.53	39.37	59.06
	mm	130	130	160	230	230	400	400	750	1000	1500

Valve operator
1/2″~8″: Lever operation
6″~8″: Optional gear operation

Test pressure
Shell (hydrostatic): 1125 psig (7.76 MPa)
Seat (air): 80 psig (0.55 MPa)

Option
- Flexible graphite packing and gasket (See Page 4 and 26)
- Ball and stem to CF8 (304)

Note: For 8″ and 10″, the dimensions of 150 / 300 SCTBM are given. Refer to **SPECIAL NOTE** on Page 10.

Class 150/300 Carbon Steel Ball Valves

Regular port, uni-body, end entry design

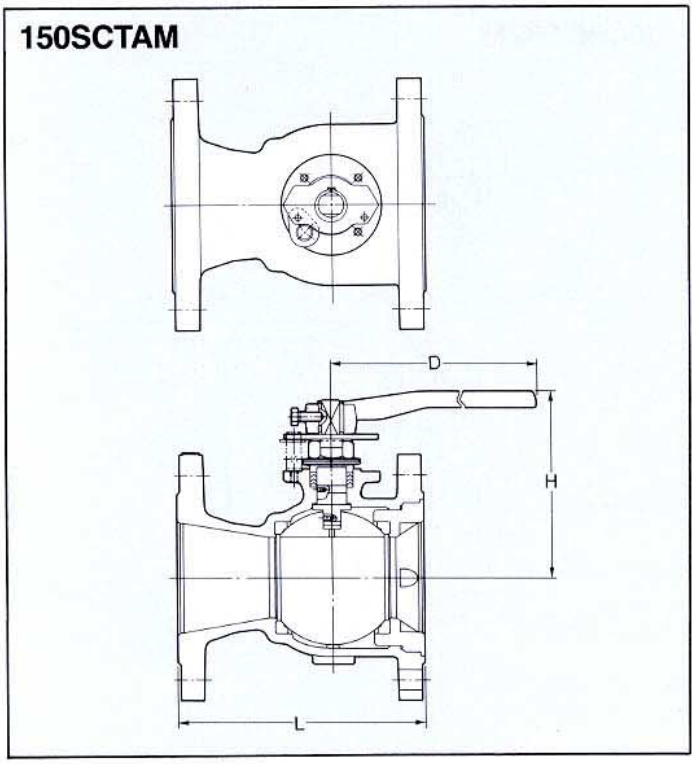
Features

- Maximum 100 ppm emission*
- Cavity pressure relief
- ISO 5211 actuator mounting pad
- High performance HYPATITE® PTFE ball seats
- Fire test certification

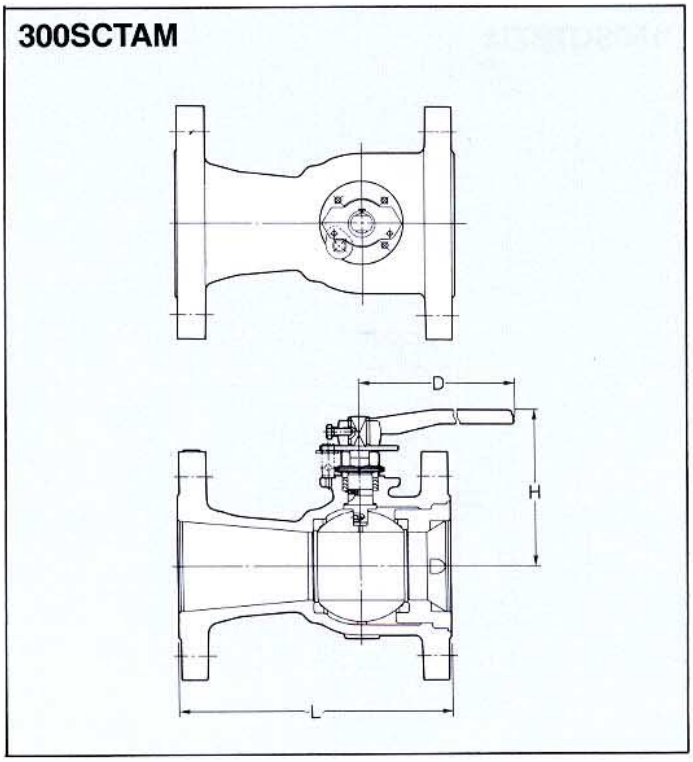
* Standard for North America. (1″ and smaller excluded.)

Page 8 and 9 for
Pressure-Temperature Ratings
Page 27 for
Construction and Materials
Page 24 and 25 for
Dimension of Actuator Mounting Pad

150SCTAM



300SCTAM



Dimensions of 150SCTAM

Valve size		1/2	3/4	1	1 1/2	2	3	4	6	8	10
	mm	15	20	25	40	65	80	100	150	200	250
Ball bore	in.	0.39	0.49	0.67	1.18	1.50	2.28	3.00	4.49	5.67	7.36
	mm	10	12.5	17	30	38	58	76	114	144	187
L	in.	4.25	4.61	5.00	6.50	7.01	7.99	9.02	10.51	11.50	12.99
	mm	108	117	127	165	178	203	229	267	292	330
H	in.	4.06	4.17	4.57	5.24	4.69	6.18	6.77	10.24	11.73	13.98
	mm	103	106	116	133	119	157	172	260	298	355
D	in.	5.52	5.52	6.30	6.30	9.06	15.75	15.75	29.53	39.37	59.06
	mm	140	140	160	160	230	400	400	750	1000	1500

Valve operator
1/2″~10″: Lever operation
6″~10″: Optional gear operation

Test pressure
Shell (hydrostatic): 450 psig (3.10 MPa)
Seat (air): 80 psig (0.55 MPa)

Option
- Flexible graphite packing and gasket (See Page 4 and 27)
- Ball and stem to CF8 (304)

Dimensions of 300SCTAM

Valve size		1/2	3/4	1	1 1/2	2	3	4	6	8	10
	mm	15	20	25	40	65	80	100	150	200	250
Ball bore	in.	0.39	0.49	0.67	1.18	1.50	2.28	3.00	4.49	5.67	7.36
	mm	10	12.5	17	30	38	58	76	114	144	187
L	in.	5.51	5.98	6.50	7.48	8.50	11.14	12.01	15.87	16.50	17.99
	mm	140	152	165	190	216	283	305	403	419	457
H	in.	4.06	4.17	4.57	5.24	4.69	6.18	6.77	10.24	11.73	13.98
	mm	103	106	116	133	119	157	172	260	298	355
D	in.	5.52	5.52	6.30	6.30	9.06	15.75	15.75	29.53	39.37	59.06
	mm	140	140	160	160	230	400	400	750	1000	1500

Valve operator
1/2″~10″: Lever operation
6″~10″: Optional gear operation

Test pressure
Shell (hydrostatic): 1125 psig (7.76 MPa)
Seat (air): 80 psig (0.55 MPa)

Option
- Flexible graphite packing and gasket (See Page 4 and 27)
- Ball and stem to CF8 (304)

Class 600/1500 Carbon Steel Ball Valves

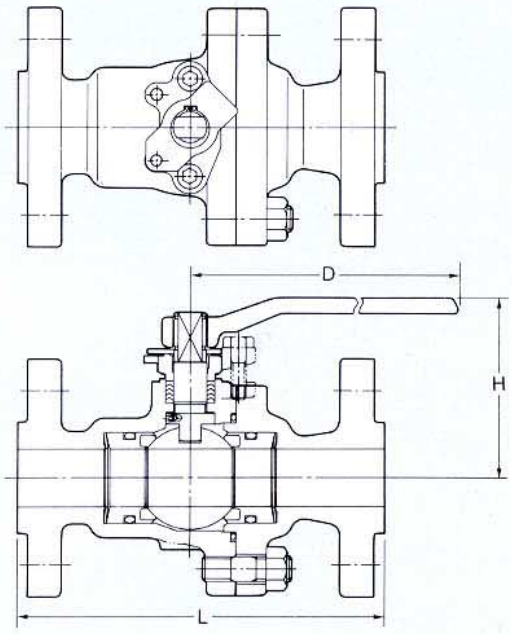
Full port, split body, side entry design

Features

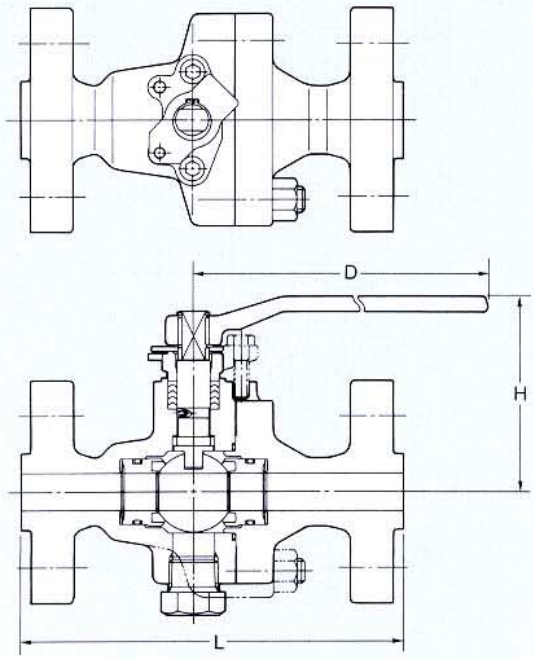
- Antistatic device
- Blowout-proof stem
- Fire test certification for Class 600
- Double "D" stem head
- Ball seats: Reinforced PTFE with MoS_2 for Class 600
  Nylon with MoS_2 for Class 1500

Page 9 for
Pressure-Temperature Ratings
Page 30 and 32 for
Construction and Materials

600SCTBM



1500SCTBM



Dimensions of 600SCTBM

Valve size		1/2	3/4	1	1 1/2
	mm	15	20	25	40
Bore	in.	0.51	0.75	0.98	1.50
	mm	13	19	25	38
L	in.	6.50	7.48	8.50	9.49
	mm	165	190	216	241
H	in.	4.13	4.25	5.12	4.65
	mm	105	108	130	118
D	in.	5.12	5.12	6.30	9.06
	mm	130	130	160	230

Valve operator
Lever operation

Test pressure
Shell (hydrostatic): 2225 psig (15.34 MPa)
Seat (air): 80 psig (0.55 MPa)

Option

- Flexible graphite packing and gasket (See Page 4 and 30)
- Ball and stem to 304

Dimensions of 1500SCTBM

Valve size		1/2	3/4	1	1 1/2
	mm	15	20	25	40
Bore	in.	0.51	0.75	0.98	1.50
	mm	13	19	25	38
L	in.	8.50	9.02	10.00	12.01
	mm	216	229	254	305
H	in.	4.80	4.53	4.80	6.18
	mm	122	115	122	157
D	in.	6.30	9.06	9.06	15.75
	mm	160	230	230	400

Valve operator
Lever operation

Test pressure
Shell (hydrostatic): 5575 psig (38.44 MPa)
Seat (air): 80 psig (0.55 MPa)

Option

- Flexible graphite packing and gasket (See Page 4 and 32)
- Ball and stem to 304

Class 150 / 300 Stainless Steel Ball Valves

Full port, split body, side entry design

Features

- Maximum 100 ppm emission*
- Cavity pressure relief
- ISO 5211 actuator mounting pad**
- High performance **HYPATITE®** PTFE ball seats
- Fire test certification

* Standard for North America.

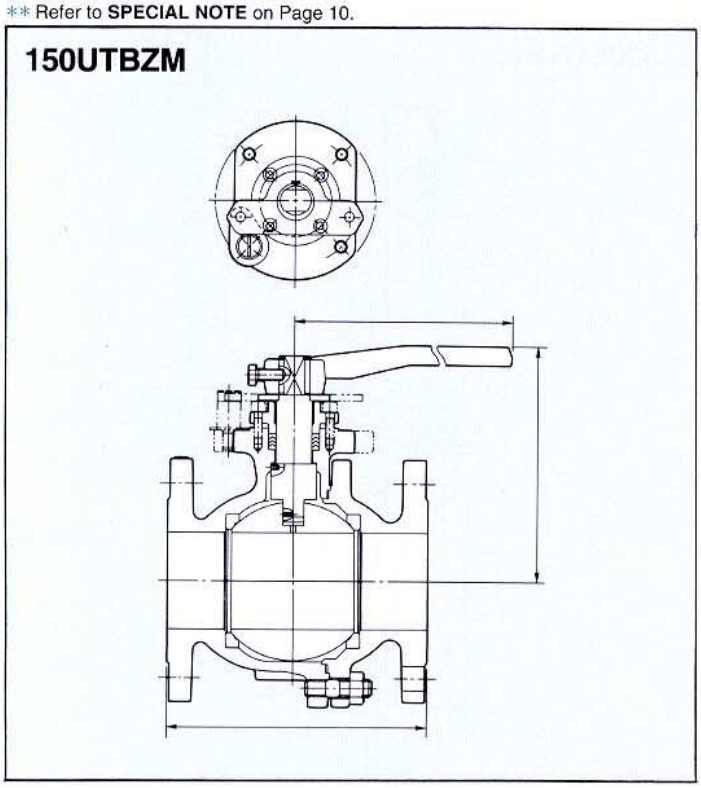
** Refer to **SPECIAL NOTE** on Page 10.

Page 8 and 9 for
Pressure-Temperature Ratings

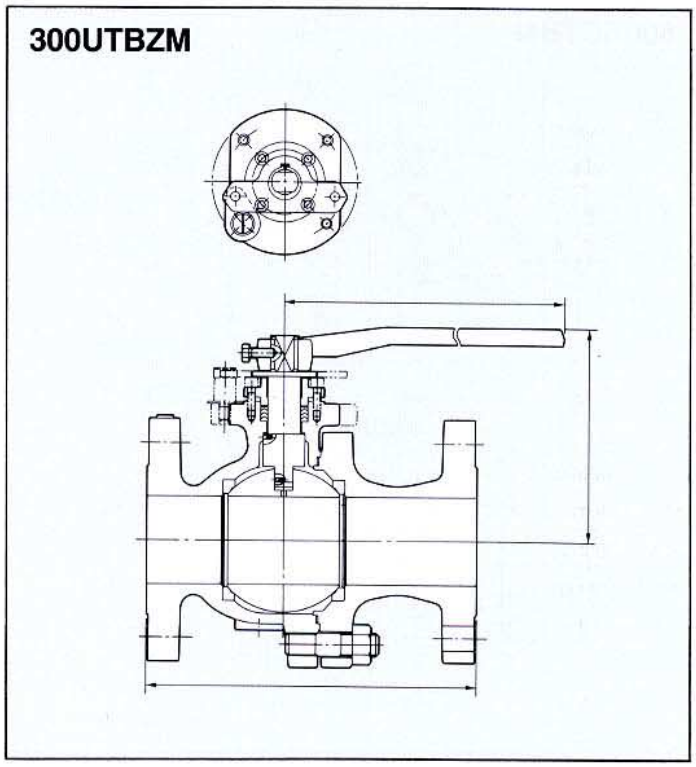
Page 28 for
Construction and Materials

Page 22 and 23 for
Dimension of Actuator Mounting Pad

150UTBZM



300UTBZM



Dimensions of 150UTBZM

Valve size		1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8	10
	mm	15	20	25	40	50	65	80	100	125	150	200	250
Bore	in.	0.55	0.75	0.95	1.50	1.97	2.52	2.99	3.94	4.84	5.94	7.87	9.84
	mm	14	19	24	38	50	64	76	100	123	151	200	250
L	in.	4.25	4.61	5.00	6.50	7.01	7.48	7.99	9.02	14.02	15.51	17.99	20.98
	mm	108	117	127	165	178	190	203	229	356	394	457	533
H	in.	4.37	4.49	5.51	5.12	5.47	6.97	7.24	8.62	9.25	12.48	13.98	18.78
	mm	111	114	140	130	139	177	184	219	235	317	355	477
D	in.	5.12	5.12	6.30	9.06	9.06	15.75	15.75	18.03	18.03	39.37	59.06	19.69
	mm	130	130	160	230	230	400	400	458	458	1000	1500	500

Valve operator
1/2"~8": Lever operation
5"~8": Optional gear operation
10": Standard gear operation

Test pressure
Shell (hydrostatic): 425 psig (2.93 MPa)
Seat (air): 80 psig (0.55 MPa)

Option
- Flexible graphite packing and gasket (See Page 4 and 28)

Dimensions of 300UTBZM

Valve size		1/2	3/4	1	1 1/2	2	2 1/2	3	4	6	8
	mm	15	20	25	40	50	65	80	100	150	200
Bore	in.	0.55	0.75	0.94	1.50	1.97	2.52	2.99	3.94	5.94	7.87
	mm	14	19	24	38	50	64	76	100	151	200
L	in.	5.51	5.98	6.50	7.48	8.50	9.49	11.14	12.01	15.87	19.76
	mm	140	152	165	190	216	241	283	305	403	502
H	in.	4.37	4.49	5.51	5.12	5.47	6.97	7.24	10.28	12.48	13.98
	mm	111	114	140	130	139	177	184	261	317	355
D	in.	5.12	5.12	6.30	9.06	9.06	15.75	15.75	29.53	39.37	59.06
	mm	130	130	160	230	230	400	400	750	1000	1500

Valve operator
1/2"~8": Lever operation
6"~8": Optional gear operation

Test pressure
Shell (hydrostatic): 1100 psig (7.58 MPa)
Seat (air): 80 psig (0.55 MPa)

Option
- Flexible graphite packing and gasket (See Page 4 and 28)

Note: For 8" and 10", the dimensions of 150 / 300 UTBM are given. Refer to **SPECIAL NOTE** on Page 10.

Class 150/300 Stainless Steel Ball Valves

Regular port, uni-body, end entry design

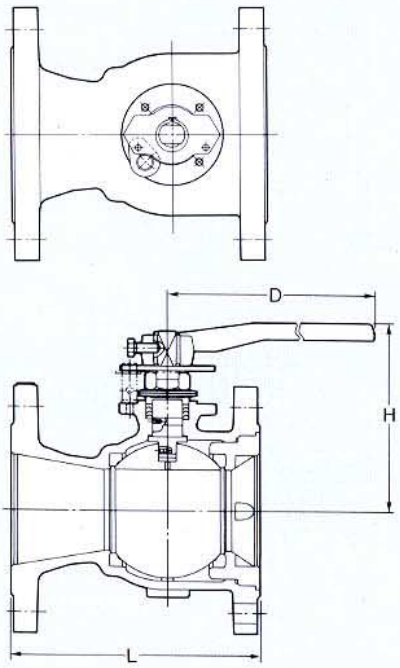
Features

- Maximum 100 ppm emission*
- Cavity pressure relief
- ISO 5211 actuator mounting pad
- High performance **HYPATITE**® PTFE ball seats
- Fire test certification

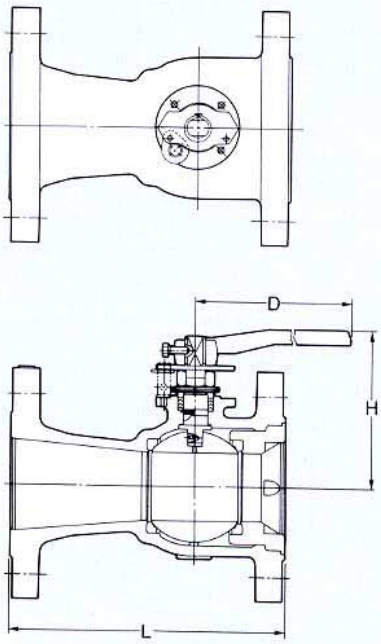
* Standard for North America. (1″ and smaller excluded.)

Page 8 and 9 for
Pressure-Temperature Ratings
Page 29 for
Construction and Materials
Page 24 and 25 for
Dimension of Actuator Mounting Pad

150UTAM



300UTAM



Dimensions of 150UTAM

Valve size	in.	1/2	3/4	1	1 1/2	2	3	4	6	8	10
	mm	15	20	25	40	65	80	100	150	200	250
Ball bore	in.	0.39	0.49	0.67	1.18	1.50	2.28	3.00	4.49	5.67	7.36
	mm	10	12.5	17	30	38	58	76	114	144	187
L	in.	4.25	4.61	5.00	6.50	7.01	7.99	9.02	10.51	11.50	12.99
	mm	108	117	127	165	178	203	229	267	292	330
H	in.	4.06	4.17	4.57	5.24	4.69	6.18	6.77	10.26	11.73	13.98
	mm	103	106	116	133	119	157	172	260	298	355
D	in.	5.52	5.52	6.30	6.30	9.06	15.75	15.75	29.53	39.37	59.06
	mm	140	140	160	160	230	400	400	750	1000	1500

Valve operator
1/2″~10″: Lever operation
6″~10″: Optional gear operation

Test pressure
Shell (hydrostatic): 425 psig (2.93 MPa)
Seat (air): 80 psig (0.55 MPa)

Option
- Flexible graphite packing and gasket (See Page 4 and 29)

Dimensions of 300UTAM

Valve size	in	1/2	3/4	1	1 1/2	2	3	4	6	8	10
	mm	15	20	25	40	65	80	100	150	200	250
Ball Bore	in.	0.39	0.49	0.67	1.18	1.50	2.28	3.00	4.49	5.67	7.36
	mm	10	12.5	17	30	38	58	76	114	144	187
L	in.	5.51	5.98	6.50	7.48	8.50	11.14	12.01	15.87	16.50	17.99
	mm	140	152	165	190	216	283	305	403	419	457
H	in.	4.06	4.17	4.57	5.24	4.69	6.18	6.77	10.24	11.73	13.98
	mm	103	106	116	133	119	157	172	260	298	355
D	in.	5.52	5.52	6.30	6.30	9.06	15.75	15.75	29.53	39.37	59.06
	mm	140	140	160	160	230	400	400	750	1000	1500

Valve operator
1/2″~10″: Lever operation
6″~10″: Optional gear operation

Test pressure
Shell (hydrostatic): 1100 psig (7.58 MPa)
Seat (air): 80 psig (0.55 MPa)

Option
- Flexible graphite packing and gasket (See Page 4 and 29)

Class 600/1500 Stainless Steel Ball Valves

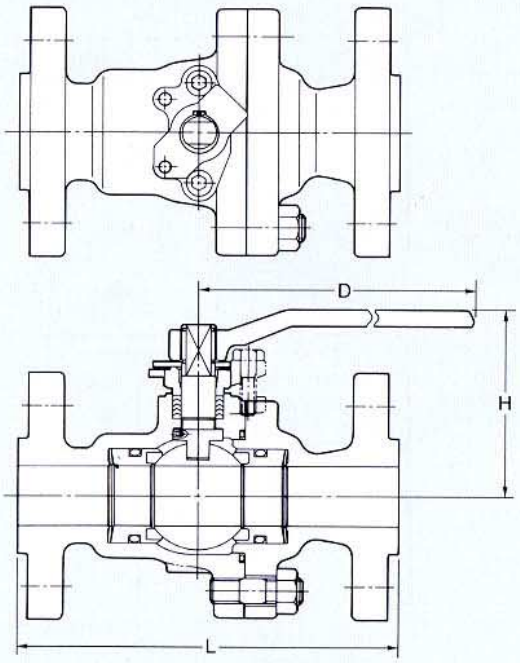
Full port, split body, side entry design

Features

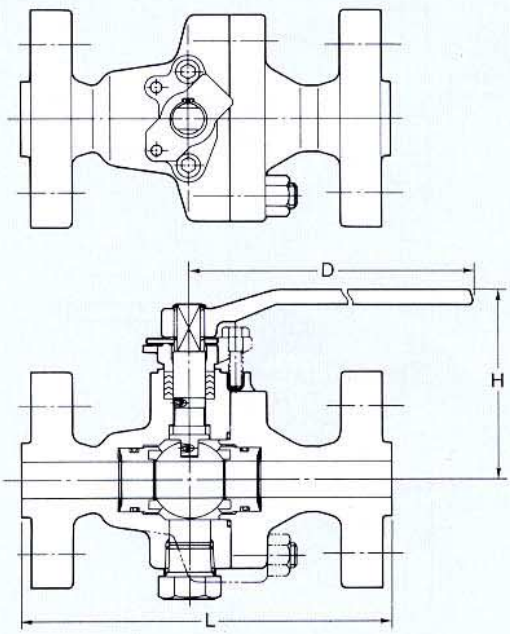
- Antistatic device
- Blowout-proof stem
- Fire test certification for Class 600
- Double "D" stem head
- Ball seats: Reinforced PTFE with MoS_2 for Class 600
  Nylon with MoS_2 for Class 1500

Page 7 for
Pressure-Temperature Ratings
Page 31 and 33 for
Construction and Materials

600UTBM



1500UTBM



Dimensions of 600UTBM

Valve size		1/2	3/4	1	1 1/2
	mm	15	20	25	40
Bore	in.	0.51	0.75	0.98	1.50
	mm	13	19	25	38
L	in.	6.50	7.48	8.50	9.49
	mm	165	190	216	241
H	in	4.13	4.25	5.12	4.65
	mm	105	108	130	118
D	in	5.12	5.12	6.30	9.06
	mm	130	130	160	230

Valve operator
Lever operation

Test pressure
Shell (hydrostatic): 2175 psig (15.00 MPa)
Seat (air): 80 psig (0.55 MPa)

Option
- Flexible graphite packing and gasket
  (See Page 4 and 33)

Dimensions of 1500UTBM

Valve size		1/2	3/4	1	1 1/2
	mm	15	20	25	40
Bore	in.	0.51	0.75	0.98	1.50
	mm	13	19	25	38
L	in.	8.50	9.02	10.00	12.01
	mm	216	229	254	305
H	in.	3.62	4.53	4.80	6.18
	mm	92	115	122	157
D	in.	6.30	9.06	9.06	15.75
	mm	160	230	230	400

Valve operator
Lever operation

Test pressure
Shell (hydrostatic): 5400 psig (37.23 MPa)
Seat (air): 80 psig (0.55 MPa)

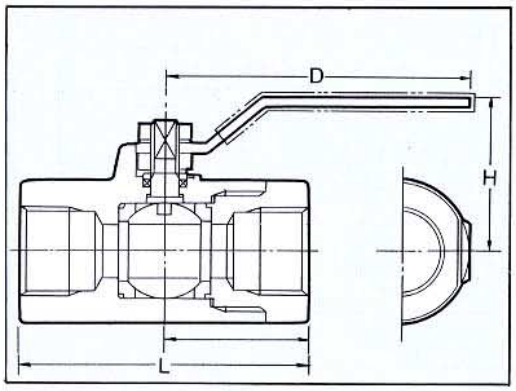
Option
- Flexible graphite packing and gasket
  (See Page 4 and 31)

Class 800 and Type 1500 / 2000 / 3000 Carbon Steel Ball Valves

Regular port, split body design, threaded ends

Page 9 for Pressure-Temperature Ratings

- Antistatic device
- Blowout-proof stem
- Fire test certification
- Choice of end connections:
  Rc threads to BS21
  NPT threads to
  ASME B1.20.1



Product codes

Type	Rc thread	NPT thread	Socket-weld
Class 800	800SCTK	AK800SCTK	AW800SCTK
1500WOG	1500SCTK	AK1500SCTK	AW1500SCTK
2000WOG	2000SCTK	AK2000SCTK	AW2000SCTK
3000WOG	3000SCTK	AK3000SCTK	AW3000SCTK

Note: 1) Class 800 ball valves are designed to BS 5351.
2) 1500WOG, 2000WOG and 3000WOG ball valves are designed to KITZ standard for servicing water, oil and gaseous fluid under the maximum working pressure of 1500, 2000 and 3000 psi respectively.

Standard materials

Parts	Materials
Body	A105
Body cap	A105
Stem	316 (Class 800) 329 (Type 1500 / 2000 / 3000)
Ball	316
Gland packing	PTFE
Ball seat	PTFE (Class 800) PCTFE*(Type 1500 / 2000 / 3000)

* Polychloro-Trifluoro-Ethylene

Valve operator
Lever operation

Option
Flexible graphite packing and gasket

Dimensions

Valve size		in.	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
		mm	8	10	15	20	25	32	40	50
Ball bore		in.	0.39	0.39	0.39	0.59	0.79	0.98	1.26	1.50
		mm	10	10	10	15	20	25	32	38
L		in.	3.46	3.46	3.46	3.54	4.13	4.61	5.12	5.91
		mm	88	88	88	90	105	117	130	150
H		in.	1.73	1.73	1.73	2.13	2.24	2.56	2.76	3.19
		mm	44	44	44	54	57	65	70	81
D	Class 800	in.	3.94	3.94	3.94	4.53	4.53	5.31	5.31	5.90
		mm	100	100	100	115	115	135	135	150
	Type 1500, 2000, 3000	in.	3.94	3.94	3.94	4.53	4.53	6.30	6.30	9.06
		mm	100	100	100	115	115	160	160	230

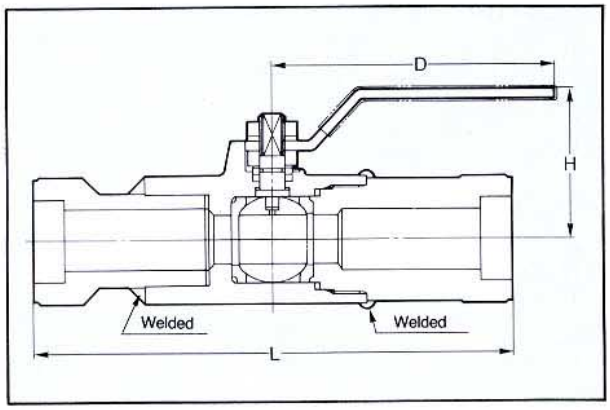
Class 800 and Type 1500 / 2000 / 3000 Carbon Steel Ball Valves

Regular port, split body design, socket welding ends

Page 9 for Pressure-Temperature Ratings

- Antistatic device
- Blowout-proof stem
- Fire test certification
- Socket welding ends to
  ASME B16.11

Note:
1) Class 800 ball valves are designed to BS 5351.
2) 1500WOG, 2000WOG and 3000 WOG ball valves are designed to KITZ standard for servicing water, oil and gaseous fluid under the maximum working pressure of 1500, 2000 and 3000 psi respectively.



KITZ product codes are given on top of this page.

Standard materials

Parts	Materials
Body	A105
Body cap	A105
Stem	316 (Class 800) 329 (Type 1500/2000/3000)
Ball	316
Gland packing	Flexible graphite
Ball seat	PTFE (Class 800) PCTFE* (Type 1500/2000/3000)

End-to-end dimension: KITZ standard
* Polychloro-Trifluoro-Ethylene

Valve operator
Lever operation

Option
Flexible graphite packing and gasket

Dimensions

Valve size		in.	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
		mm	8	10	15	20	25	32	40	50
Ball bore		in.	0.39	0.39	0.39	0.59	0.79	0.98	1.26	1.50
		mm	10	10	10	15	20	25	32	38
L		in.	6.70	6.70	6.70	6.93	7.72	8.27	8.90	10.31
		mm	170	170	170	176	196	210	226	262
H		in.	1.73	1.73	1.73	2.13	2.24	2.56	2.76	3.19
		mm	44	44	44	54	57	65	70	81
D	Class 800	in.	3.94	3.94	3.94	4.53	4.53	5.31	5.31	5.90
		mm	100	100	100	115	115	135	135	150
	Type 1500, 2000, 3000	in.	3.94	3.94	3.94	4.53	4.53	6.30	6.30	9.06
		mm	100	100	100	115	115	160	160	230

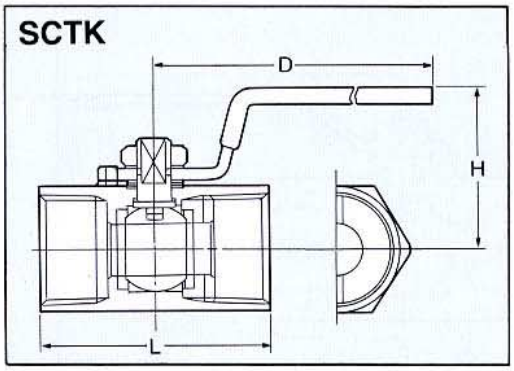
Type 600 Carbon Steel Ball Valves

Reduced port, uni-body design, threaded ends

Page 9 for Pressure-Temperature Ratings

- Blowout-proof stem
- Choice of threaded ends:
  Rc threads to BS21 (Fig. SCTK)
  NPT threads to ASME B1.20.1
  (Fig. AKSCTK)

SCTK



Standard materials

Parts	Materials
Body	WCB
Ball	316(≤3/8″)·304 (≥1/2″)
Stem ※	316
Ball Seat	Reinforced PTFE
Gland Packing	Reinforced PTFE
Handle	Plastic covered 430

※304 stem for 3/4″ and larger of SCTK.

End-to-end dimensions: KITZ standard

Valve operator

Lever operation
T-type handle as option
(3/4″ & larger only)

Test pressure

Shell (hydrostatic): 900 psig (6.20 MPa)
Seat (air): 80 psig (0.55 MPa)

Dimensions

Valve size		1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
	mm	8	10	15	20	25	32	40	50
Ball bore	in.	0.20	0.28	0.36	0.49	0.63	0.79	0.96	1.26
	mm	5	7	9.2	12.5	16	20	24.5	32
L	in.	1.54	1.73	2.22	2.32	2.80	3.07	3.27	3.94
	mm	39	44	56.5	59	71	78	83	100
H	in.	1.22	1.42	1.61	1.73	1.89	2.13	2.56	2.83
	mm	31	36	41	44	48	54	65	72
D	in.	2.36	2.76	3.35	3.35	3.94	3.94	4.92	4.92
	mm	60	70	85	85	100	100	125	125

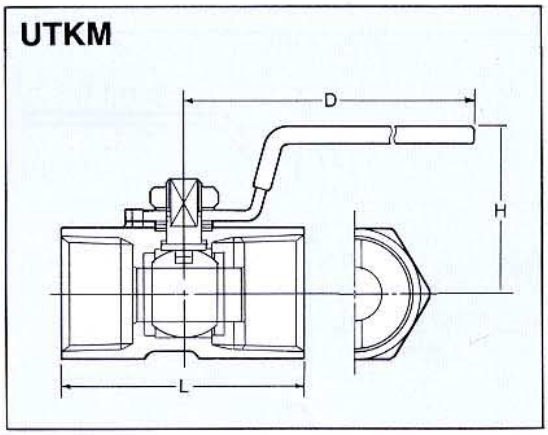
Type 600 Stainless Steel Ball Valves

Reduced port, uni-body design, threaded ends

Page 9 for Pressure-Temperature Ratings

- Blowout-proof stem
- Choice of threaded ends:
  Rc threads to BS21 (Fig. UTKM)
  NPT threads to ASME B1.20.1
  (Fig. AKUTKM)

UTKM



Standard materials

Parts	Materials
Body	CF8M
Ball	316
Stem	316
Seat	Reinforced PTFE
Gland packing	Reinforced PTFE
Handle	Plastic covered 430

End-to-end dimensions: KITZ standard

Valve operator

Lever operation
T-type handle as option

Test pressure

Shell (hydrostatic): 900 psig (6.20 MPa)
Seat (air): 80 psig (0.55 MPa)

Dimensions

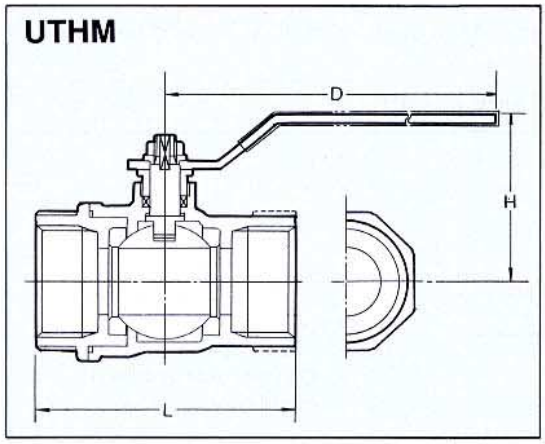
Valve size		1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
	mm	8	10	15	20	25	32	40	50
Ball bore	in.	0.20	0.28	0.36	0.49	0.63	0.79	0.96	1.26
	mm	5	7	9.2	12.5	16	20	24.5	32
L	in.	1.54	1.73	2.22	2.32	2.80	3.07	3.27	3.94
	mm	39	44	56.5	59	71	78	83	100
H	in.	1.22	1.42	1.61	1.73	1.89	2.13	2.56	2.83
	mm	31	36	41	44	48	54	65	72
D	in.	2.36	2.76	3.35	3.35	3.94	3.94	4.92	4.92
	mm	60	70	85	85	100	100	125	125

Type 800 Stainless Steel Ball Valves

Regular port, split body design, threaded ends

Page 9 for Pressure-Temperature Ratings

- Blowout-proof stem
- Choice of threaded ends:
  Rc threads to BS21 (Fig. UTHM)
  NPT threads to ASME B1.20.1 (Fig. AKUTHM)



Standard materials

Parts	Materials
Body	CF8M
Body cap	CF8M
Ball	316
Stem	316 Cr plated
Seat	PTFE
Gland packing	PTFE
Handle	Plastic covered 430

End-to-end dimensions: KITZ standard

Valve operator
Lever operation

Test pressure
Shell (hydrostatic): 1200 psig (8.27 MPa)
Seat (air): 80 psig (0.55 MPa)

Dimensions

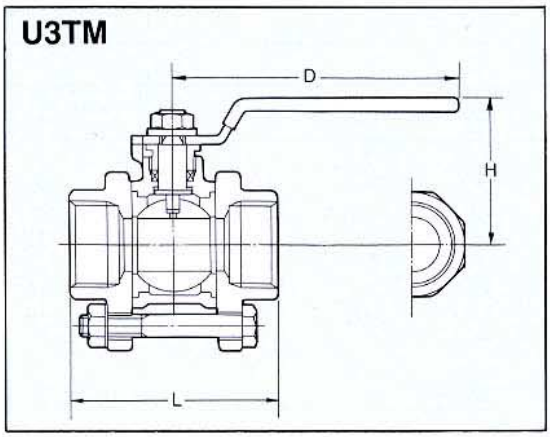
Valve size	in.	1/2	3/4	1	1 1/4	1 1/2	2
	mm	15	20	25	32	40	50
Ball bore	in.	0.39	0.59	0.79	0.98	1.26	1.57
	mm	10	15	20	25	32	40
L	in.	2.36	2.76	3.15	3.74	4.25	4.88
	mm	60	70	80	95	108	124
H	in.	1.85	2.09	2.48	2.64	3.07	3.31
	mm	47	53	63	67	78	84
D	in.	3.94	3.94	5.12	5.12	5.91	5.91
	mm	100	100	130	130	150	150

Type 1000 Stainless Steel Ball Valves

Regular port, swing-away body design, threaded or socket welding ends

Page 9 for Pressure-Temperature Ratings

- Blowout-proof stem
- Swing-away body for maintenance ease
- Choice of threaded ends:
  Rc threads to BS21 (Fig. U3TM)
  NPT threads to ASME B1.20.1 (Fig. AKU3TM)
- Socket welding ends to ASME B16.11 (Fig. AWU3TM)



Standard materials

Parts	Materials
Body	CF8M
Body cap	CF8M
Stem	316 Cr plated
Ball	CF8M/316
Seat	PTFE
Gland packing	PTFE
Handle	Plastic covered 430

End-to-end dimensions: KITZ standard

Valve operator
Lever operation

Test pressure
Shell (hydrostatic): 1500 psig (10.34 MPa)
Seat (air): 80 psig (0.55 MPa)

Dimensions

Valve size	in.	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
	mm	8	10	15	20	25	32	40	50
Ball bore	in.	0.39	0.39	0.39	0.59	0.79	0.98	1.26	1.50
	mm	10	10	10	15	20	25	32	38
L	in	2.24	2.24	2.48	2.91	3.23	3.86	4.33	5.04
	mm	57	57	63	74	82	98	110	128
H	in.	1.65	1.65	1.85	2.09	2.48	2.64	3.07	3.31
	mm	42	42	47	53	63	67	78	84
D	in.	3.15	3.15	3.94	3.94	5.12	5.12	5.91	5.91
	mm	80	80	100	100	130	130	150	150

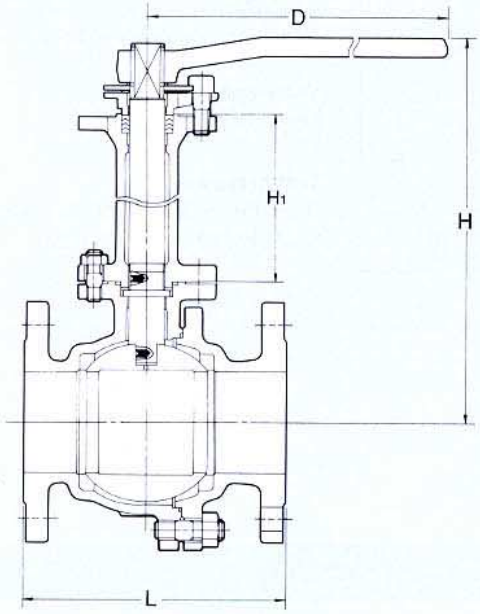
Class 150 Low Temperature Service Ball Valves

- Long stem extension for assured stem seal and freezing prevention.
- Bolted joint of stem extension with valve body. No welding joint.
- Protection of stem alignment by means of two bearings built on top and bottom of stem extension.

Lowest working temperature: −112˚F (−80˚C)

Full Port

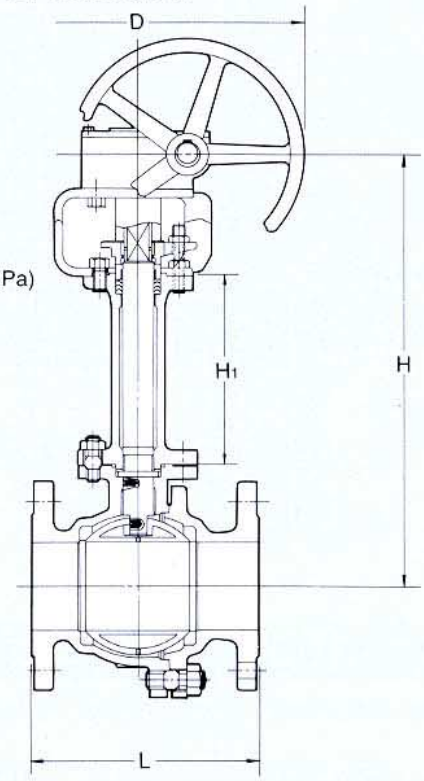
150UTBX



Valve operator
1/2″~8″: Lever operation
5″~8″: Optional gear operation
10″: Standard gear operation

Test pressure
Shell (hydrostatic): 425 psig (2.93 MPa)
Seat (air): 80 psig (0.55 MPa)

G-150UTBX



Refer to Page 28 for the basic construction.

Dimensions of 150UTBX

Valve size		1/2	3/4	1	1 1/2	2	2 1/2	3	4	5	6	8
	mm	15	20	25	40	50	65	80	100	125	150	200
Bore	in.	0.59	0.79	0.98	1.57	1.97	2.56	3.15	3.94	4.92	5.91	7.87
	mm	15	20	25	40	50	65	80	100	125	150	200
L	in.	4.25	4.61	5.00	6.50	7.01	7.48	7.99	9.02	14.02	15.51	17.99
	mm	108	117	127	165	178	190	203	229	356	394	457
H	in.	9.92	10.04	11.18	12.17	12.36	14.65	15.04	17.52	18.31	21.85	24.21
	mm	252	255	284	309	314	372	382	445	465	555	615
H1	in.	5.51	5.51	5.91	6.69	6.69	7.48	7.48	8.66	8.66	8.66	8.66
	mm	140	140	150	170	170	190	190	220	220	220	220
D	in.	5.12	5.12	6.30	9.06	9.06	15.75	15.75	18.11	18.11	39.37	59.06
	mm	130	130	160	230	230	400	400	460	460	1000	1500

Dimensions of G-150UTBX

Valve size		5	6	8	10
	mm	125	150	200	250
Bore	in.	4.92	5.91	7.87	9.84
	mm	125	150	200	250
L	in.	14.02	15.51	17.99	20.98
	mm	356	394	457	533
H	in.	22.01	23.58	26.61	30.00
	mm	559	599	676	762
H1	in.	8.66	8.66	8.66	9.45
	mm	220	220	220	240
D	in.	12.20	12.20	14.17	19.69
	mm	310	310	360	500

Standard materials

Parts	Materials
Body	CF8
Body cap	CF8
Bonnet	CF8
Stem	304
Ball	304 / CF8
Gland	CF8
Gland packing	PTFE
Ball seat	HYPATITE® PTFE
Gasket	Ceramic filled PTFE
Bonnet bolt / nut	B8/8
Gland bolt	B8
Cap bolt / nut	B8/8

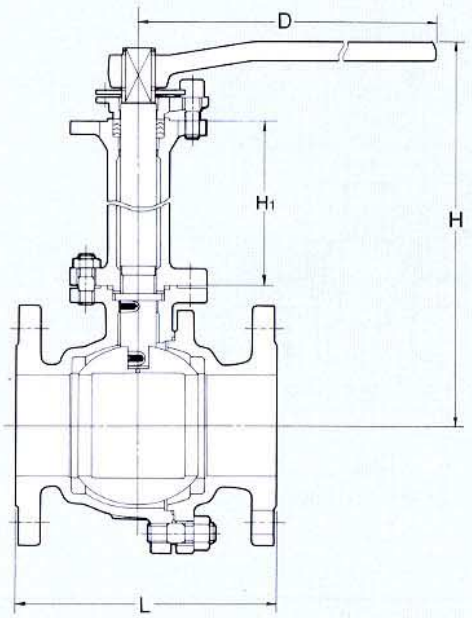
Class 300 Low Temperature Service Ball Valves

- Long stem extension for assured stem seal and freezing prevention.
- Bolted joint of stem extension with valve body. No welding joint.
- Protection of stem alignment by means of two bearings built on top and bottom of stem extension.

Lowest working temperature: −112°F (−80°C)

Full Port

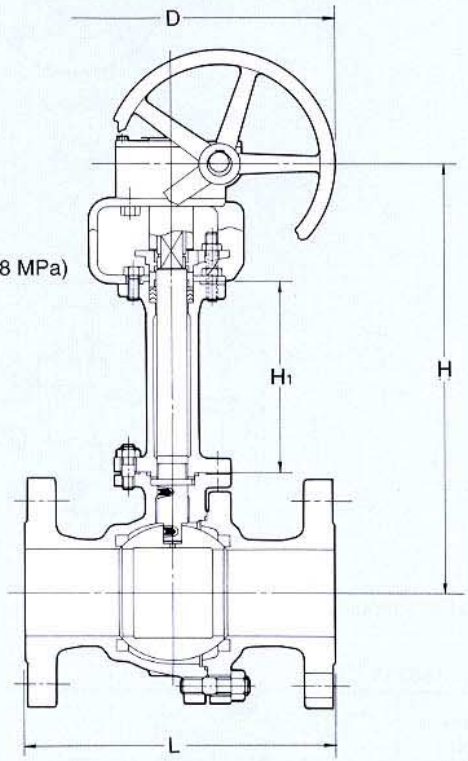
300UTBX



Valve operator
1/2″~8″: Lever operation
6″~8″: Optional gear operation

Test pressure
Shell (hydrostatic): 1100 psig (7.58 MPa)
Seat (air): 80 psig (0.55 MPa)

G-300UTBX



Refer to Page 28 for the basic construction.

Dimensions of 300UTBX

Valve size		1/2	3/4	1	1 1/2	2	3	4	6	8
	mm	15	20	25	40	50	65	100	150	200
Bore	in.	0.59	0.79	0.98	1.57	1.97	3.15	3.94	5.91	7.87
	mm	15	20	25	40	50	80	100	150	200
L	in.	5.51	65.98	6.50	7.48	8.50	11.14	12.01	15.87	19.76
	mm	140	152	165	190	216	283	305	403	502
H	in.	9.92	10.04	11.18	12.17	12.36	15.04	19.09	21.85	24.21
	mm	252	255	284	309	314	382	485	555	615
H1	in.	5.51	5.51	5.91	6.69	6.69	7.48	8.66	8.66	8.66
	mm	140	140	150	170	170	190	220	220	220
D	in.	5.12	5.12	6.30	9.06	9.06	15.75	29.53	39.37	59.06
	mm	130	130	160	230	230	400	750	1000	1500

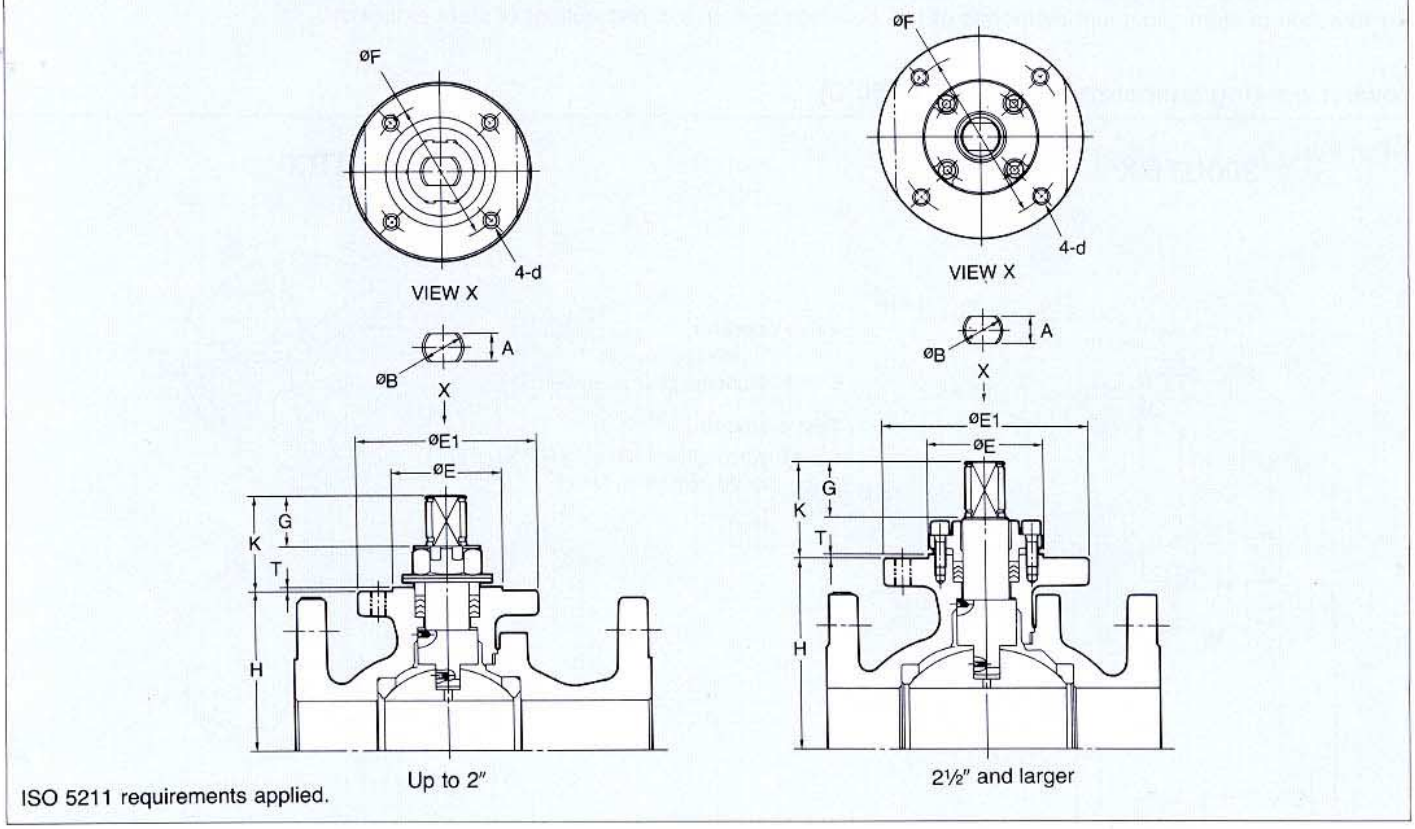
Dimensions of G-300UTBX

Valve size		6	8
	mm	150	200
Bore	in.	5.91	7.87
	mm	150	200
L	in.	15.87	19.76
	mm	403	502
H	in.	23.58	26.61
	mm	599	676
H1	in.	8.66	8.66
	mm	220	220
D	in.	12.20	14.17
	mm	310	360

Standard materials

Parts	Materials
Body	CF8
Body cap	CF8
Bonnet	CF8
Stem	304
Ball	304 / CF8
Gland	CF8
Gland packing	PTFE
Ball seat	HYPATITE® PTFE
Gasket	Ceramic filled PTFE
Bonnet bolt / nut	B8/8
Gland bolt	B8
Cap bolt / nut	B8/8

Dimensions of ISO Actuator Mounting Pad for Class 150 / 300 Full Port, Split Body, Side Entry Design Ball Valves.



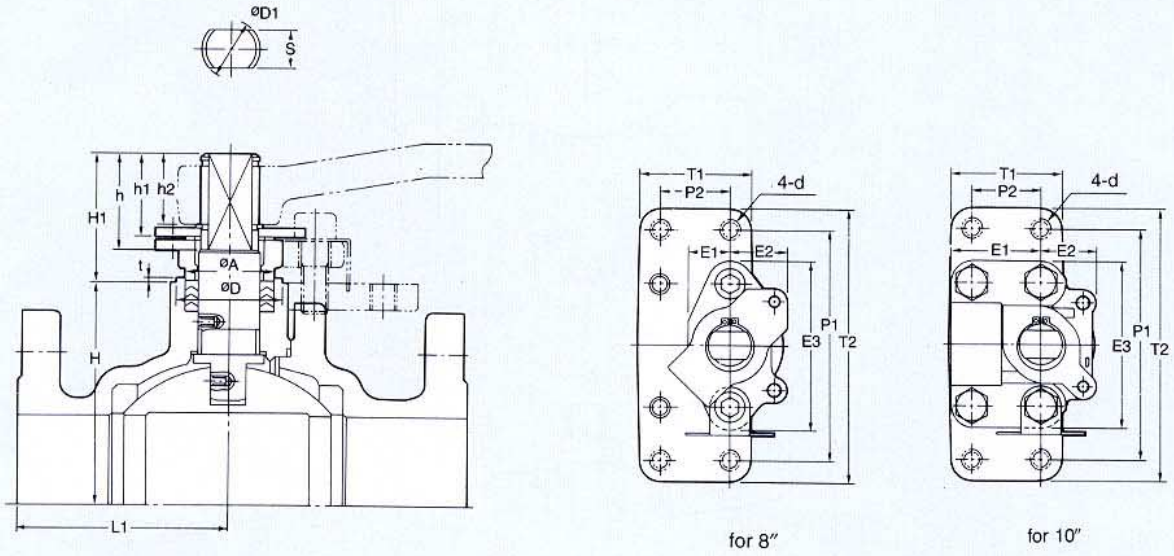
ISO 5211 requirements applied.

Dimensions

Nominal size (inch)		−0.05mm −0.10mm A	0 −0.1mm øB	−0.1mm −0.2mm øE	øE1	±0.2mm øF	G	H	K	d M thread	d UNC thread	T	ISO 5211 flange type
1/2	in.	0.31	0.41	0.98	1.89	1.42	0.67	1.69	1.16	M6	1/4-20UNC	0.06	F03
	mm	8	10.3	25	48	36	17	43	29.5			1.5	
3/4	in.	0.31	0.41	0.98	1.89	1.42	0.67	1.83	1.16	M6	1/4-20UNC	0.06	F03
	mm	8	10.3	25	48	36	17	46.5	29.5			1.5	
1	in.	0.39	0.55	1.38	2.56	1.97	0.79	2.17	1.52	M6	1/4-20UNC	0.08	F05
	mm	10	14	35	65	50	20	55	38.5			2	
1 1/2	in.	0.55	0.79	2.17	3.54	2.76	1.02	2.80	1.89	M8	5/16-18UNC	0.08	F07
	mm	14	20	55	90	70	26	71	48			2	
2	in.	0.55	0.79	2.17	3.54	2.76	1.02	3.15	1.89	M8	5/16-18UNC	0.08	F07
	mm	14	20	55	90	70	26	80	48			2	
2 1/2	in.	0.67	1.02	2.76	4.92	4.02	1.40	4.37	2.30	M10	3/8-16UNC	0.08	F10
	mm	17	26	70	125	102	35.5	111	58.5			2	
3	in.	0.67	1.02	2.76	4.92	4.02	1.40	4.65	2.30	M10	3/8-16UNC	0.08	F10
	mm	17	26	70	125	102	35.5	118	58.5			2	
4	in.	0.91	1.32	3.35	5.91	4.92	1.69	5.75	2.60	M12	1/2-13UNC	0.08	F12
	mm	23	33.5	85	150	125	43	146	66			2	
5	in.	0.91	1.32	3.35	5.91	4.92	1.69	6.38	2.60	M12	1/2-13UNC	0.08	F12
	mm	23	33.5	85	150	125	43	162	66			2	
6	in.	1.06	1.56	3.94	6.89	5.51	1.95	7.60	3.01	M16	5/8-11UNC	0.08	F14
	mm	27	39.5	100	175	140	49.5	193	76.5			2	

KITZ product codes:
150SCTBZM
150UTBZM
300SCTBZM
300UTBZM

Dimensions of KITZ Actuator Mounting Pad for Class 150 / 300 8″ and 10″ Full Port, Split Body, Side Entry Design Ball Valves.



Refer to **SPECIAL NOTE** on Page10.

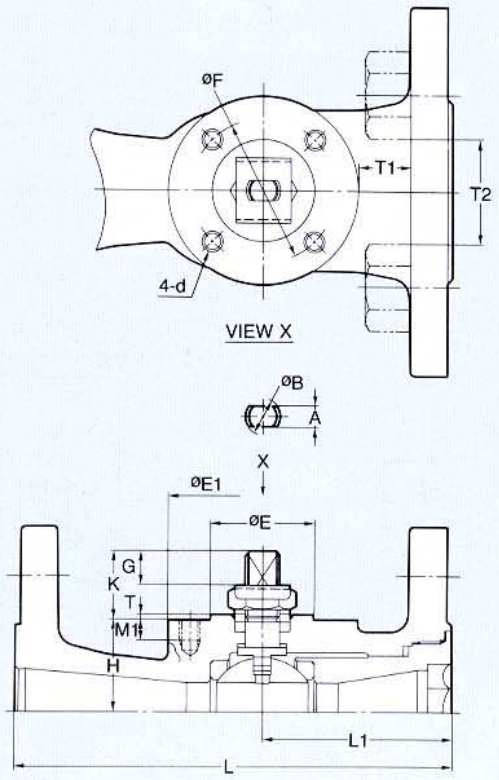
Dimensions

Nominal size (inch)		H	H1	−0.1mm −0.2mm øD	t	h	h1	h2	−0.05mm −0.10mm S	0 −0.2mm øD1	P1	P2	øA	L1 150 SCTBM	L1 150 UTBM	L1 300 SCTBM	L1 300 UTBM	E1	E2	E3	T1	T2	d M thread	d UNC thread
8	in.	8.19	3.78	3.07	0.08	2.91	2.52	2.28	1.26	1.89	7.24	2.36	2.60	9.00	9.00	9.88	9.88	1.46	1.93	5.63	3.78	8.66	M16	5/8-11UNC
	mm	208	96	78	2	74	64	58	32	48	184	60	66	228.5	228.5	251	251	37	49	143	96	220		
10	in.	10.55	4.17	3.62	0.08	3.23	2.87	2.62	1.57	2.28	8.50	2.95	3.07	10.49	10.49	—	—	3.78	2.24	6.57	4.61	10.16	M20	3/4-10UNC
	mm	268	106	92	2	82	73	66.5	40	58	216	75	78	266.5	266.5	—	—	96	57	167	117	258		

KITZ product codes:

150SCTBM
150UTBM
300SCTBM
300UTBM

Dimensions of ISO Actuator Mounting Pad for Class 150 / 300 Regular Port, Uni-body, End Entry Design Ball Valves.



ISO 5211 requirements applied.

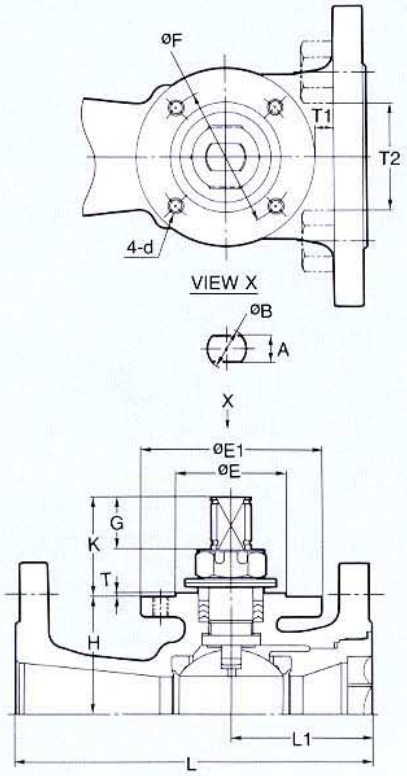
for ½" to 1"

Dimensions

Class	Nominal size (inch)		−0.02mm −0.06mm A	−0.1mm −0.2mm øB	−0.1mm −0.2mm øE	øE1	±0.2mm øF	G	H	K	L	L1	d M thread	d UNC thread	M1	T	T1	T2	ISO 5211 flange type
150	1/2	in.	0.20	0.31	0.98	1.89	1.42	0.30	0.73	0.59	4.25	1.89	M6	1/4-20UNC	0.20	0.06	0.45	0.67	F03
		mm	5	8	25	48	36	7.5	18.5	15	108	48			5	1.5	11.5	17	
	3/4	in.	0.20	0.31	0.98	1.89	1.42	0.30	0.83	0.59	4.61	1.89	M6	1/4-20UNC	0.20	0.06	0.45	0.94	F03
		mm	5	8	25	48	36	7.5	21	15	117	48			5	1.5	11.5	24	
	1	in.	0.24	0.39	1.18	2.17	1.65	0.39	1.06	0.79	5.00	2.17	M6	1/4-20UNC	0.24	0.06	0.55	1.20	F04
		mm	6	10	30	55	42	10	27	20	127	55			6	1.5	14	30.5	
300	1/2	in.	0.20	0.31	0.98	1.89	1.42	0.30	0.73	0.59	5.51	2.05	M6	1/4-20UNC	0.20	0.06	0.47	0.85	F03
		mm	5	8	25	48	36	7.5	18.5	15	140	52			5	1.5	12	21.5	
	3/4	in.	0.20	0.31	0.98	1.89	1.42	0.30	0.83	0.59	5.98	2.24	M6	1/4-20UNC	0.20	0.06	0.55	1.06	F03
		mm	5	8	25	48	36	7.5	21	15	152	57			5	1.5	14	27	
	1	in.	0.24	0.39	1.18	2.17	1.65	0.39	1.06	0.79	6.50	2.44	M6	1/4-20UNC	0.24	0.06	0.55	1.24	F04
		mm	6	10	30	55	42	10	27	20	165	62			6	1.5	14	31.5	

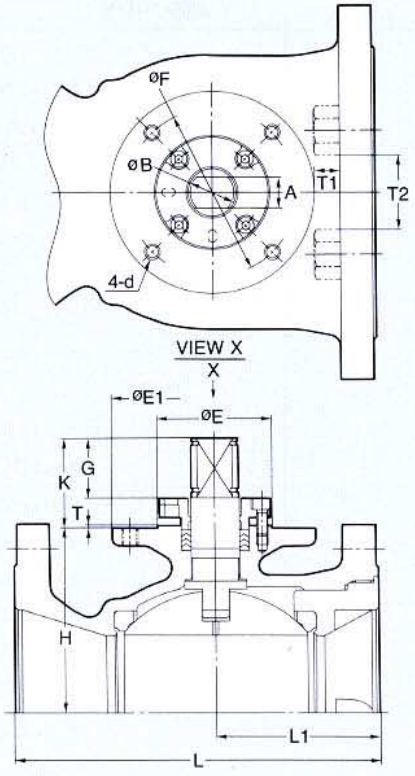
KITZ product codes:
150SCTAM
150UTAM
300SCTAM
300UTAM

Dimensions of ISO Actuator Mounting Pad for Class 150 / 300 Regular Port, Uni-body, End Entry Design Ball Valves.



ISO 5211 requirements applied.

for 1½" to 4"



for 6" to 10"

Dimensions

Class	Nominal size (inch)		−0.02mm −0.07mm A	−0.1mm −0.2mm øB	−0.1mm −0.2mm øE	øE1	±0.2mm øF	G	H	K	L	L1	d M thread	d UNC thread	T	T1	T2	ISO 5211 flange type
150	1½	in.	0.39	0.55	1.38	2.56	1.97	0.81	1.89	1.56	6.50	2.28	M6	1/4-20UNC	0.08	0.37	1.73	F05
		mm	10	14	35	65	50	20.5	48	39.5	165	58			2	9.5	44	
	2	in.	0.55	0.79	2.17	3.54	2.76	1.04	2.32	1.97	7.01	2.76	M8	5/16-18UNC	0.08	0.24	2.13	F07
		mm	14	20	55	90	70	26.5	59	50	178	70			2	6	54	
	3	in.	0.67	0.94	2.17	3.54	2.76	1.42	3.31	2.58	7.99	2.95	M8	5/16-18UNC	0.08	0.31	3.01	F07
		mm	17	24	55	90	70	36	84	65.5	203	75			2	8	76.5	
	4	in.	0.67	0.94	2.17	3.54	2.76	1.42	3.90	2.58	9.02	3.35	M8	5/16-18UNC	0.08	0.51	1.63	F07
		mm	17	24	55	90	70	36	99	65.5	229	85			2	13	41.5	
	6	in.	0.91	1.38	3.35	5.91	4.92	1.71	5.37	2.62	10.51	4.72	M12	1/2-13UNC	0.08	0.65	—	F12
		mm	23	35	85	150	125	43.5	136.5	66.5	267	120			2	16.5	—	
	8	in.	1.06	1.57	3.94	6.89	5.51	1.97	6.54	3.01	11.50	5.16	M16	5/8-11UNC	0.08	0.47	—	F14
		mm	27	40	100	175	140	50	166	76.5	292	131			2	12	—	
	10	in.	1.26	1.89	5.12	8.27	6.50	2.30	7.95	3.56	12.99	6.46	M20	3/4-10UNC	0.08	1.06	—	F16
		mm.	32	48	130	210	165	58.5	202	90.5	330	164			2	27	—	
300	1½	in.	0.39	0.55	1.38	2.56	1.97	0.81	1.89	1.56	7.48	2.56	M6	1/4-20UNC	0.08	0.35	1.73	F05
		mm	10	14	35	65	50	20.5	48	39.5	190	65			2	9	44	
	2	in.	0.55	0.79	2.17	3.54	2.76	1.04	2.32	1.97	8.50	3.54	M8	5/16-18UNC	0.08	0.77	0.69	F07
		mm	14	20	55	90	70	26.5	59	50	216	90			2	19.5	17.5	
	3	in.	0.67	0.94	2.17	3.54	2.76	1.42	3.31	2.58	11.14	3.86	M8	5/16-18UNC	0.08	0.85	1.08	F07
		mm	17	24	55	90	70	36	84	65.5	283	98			2	21.5	27.5	
	4	in.	0.67	0.94	2.17	3.54	2.76	1.42	3.90	2.58	12.01	3.94	M8	5/16-18UNC	0.08	0.81	1.56	F07
		mm	17	24	55	90	70	36	99	65.5	305	100			2	20.5	39.5	
	6	in.	0.91	1.38	3.35	5.91	4.92	1.71	5.37	2.62	15.87	5.43	M12	1/2-13UNC	0.08	0.93	1.30	F12
		mm	23	35	85	150	125	43.5	136.5	66.5	403	138			2	23.5	33	
	8	in.	1.06	1.57	3.94	6.89	5.51	1.97	6.54	3.01	16.50	6.22	M16	5/8-11UNC	0.08	1.02	1.69	F14
		mm	27	40	100	175	140	50	166	76.5	419	158			2	26	43	
	10	in.	1.26	1.89	5.12	8.27	6.50	2.30	7.95	3.56	17.99	7.44	M20	3/4-10UNC	0.08	1.32	1.10	F16
		mm	32	48	130	210	165	58.5	202	90.5	457	189			2	33.5	28	

KITZ product codes:
150SCTAM
150UTAM
300SCTAM
300UTAM

Construction and Materials

No.	Parts		Standard	Super-firesafe
			150SCTBZM 300SCTBZM	150SCTBZMS 300SCTBZMS
1	Body		A216 Gr. WCB*1	
2	Body cap		A216 Gr. WCB*1	
3	Stem		A276 Type 316*2	
4	Ball		A351 Gr. CF8M or A276 Type 316*2	
7	Gland	1/2"~2"	A276 Type 304	
		2 1/2"~6"	A351 Gr. CF8	
8	Gland packing		PTFE	Flexible graphite
9	Handle*3		Ductile iron	
16	Nameplate		Stainless steel	
19	Gasket		PTFE	Flexible graphite
30	Ball seat		HYPATITE® PTFE	
33	Cap nut		A194 Gr. 2H	
34	Gland nut	1/2"~2"	Carbon steel	
35	Cap bolt		A193 Gr. B7	
36	Gland bolt	2 1/2"~6"	A193 Gr. B8	
40A	Lock plate	1/2"~2"	Stainless steel	
40B	Key lock plate		Stainless steel	
43	Coned disc spring	1/2"~2"	Stainless steel	
48	Snap ring		Carbon steel	
49	Stopper		Stainless steel	
67	Stem bearing		Reinforced PTFE	
123	Handle bolt		Carbon steel	
124	Spring + pin (Antistatic device)		Stainless steel	
126	Stopper pin		Stainless steel	

*1. A352 low-temperature service materials are optionally available.
*2. CF8 or Type 304 is optionally available for balls & stems.
*3. Bar type handles are used for 6" Class 150 / 4" and 6" Class 300.
All part numbers are corresponding with those shown in valve assembly drawings.

■ Standard material configuration can be applied to sour service.

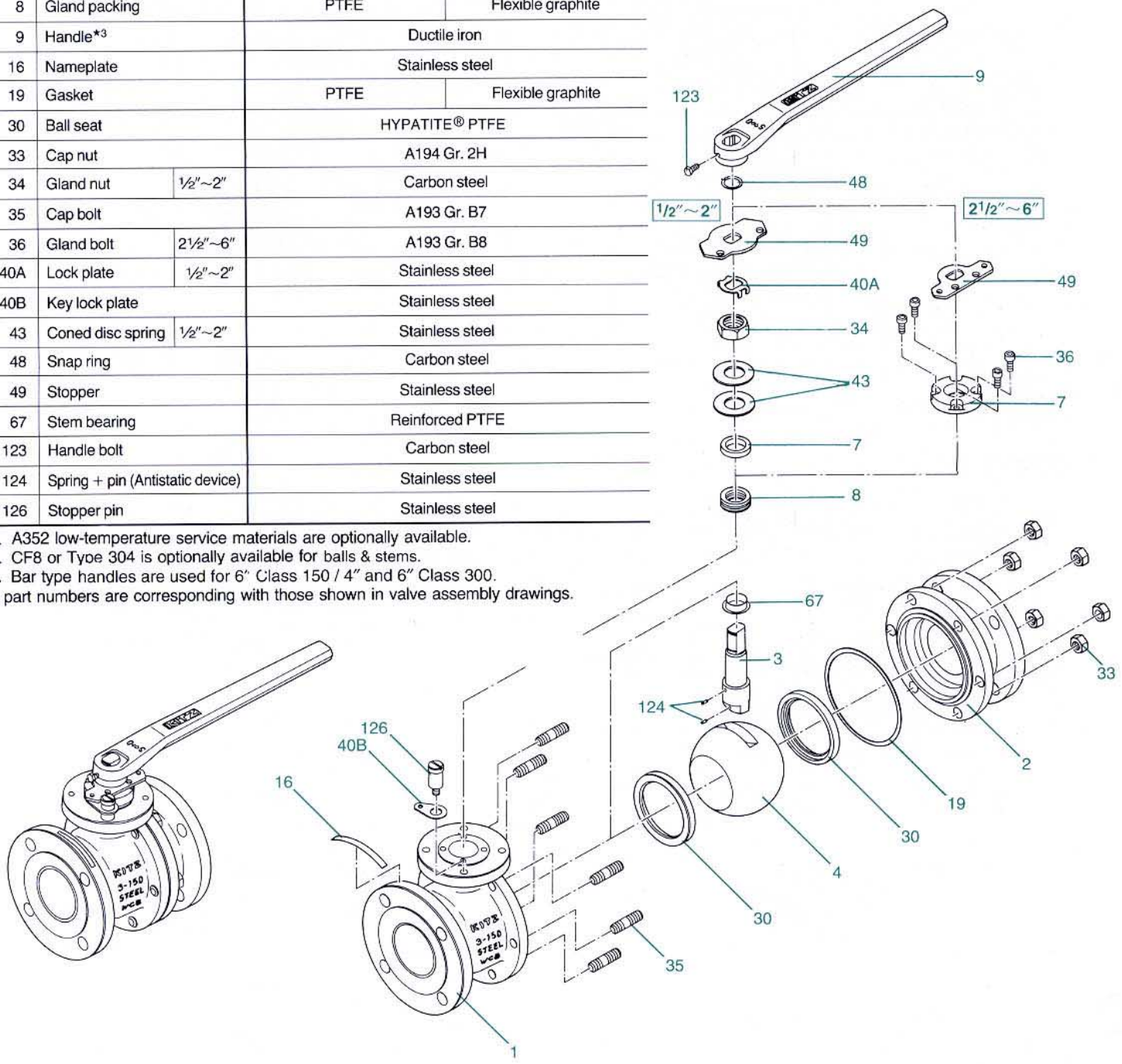


Illustration shows Size 3" design.

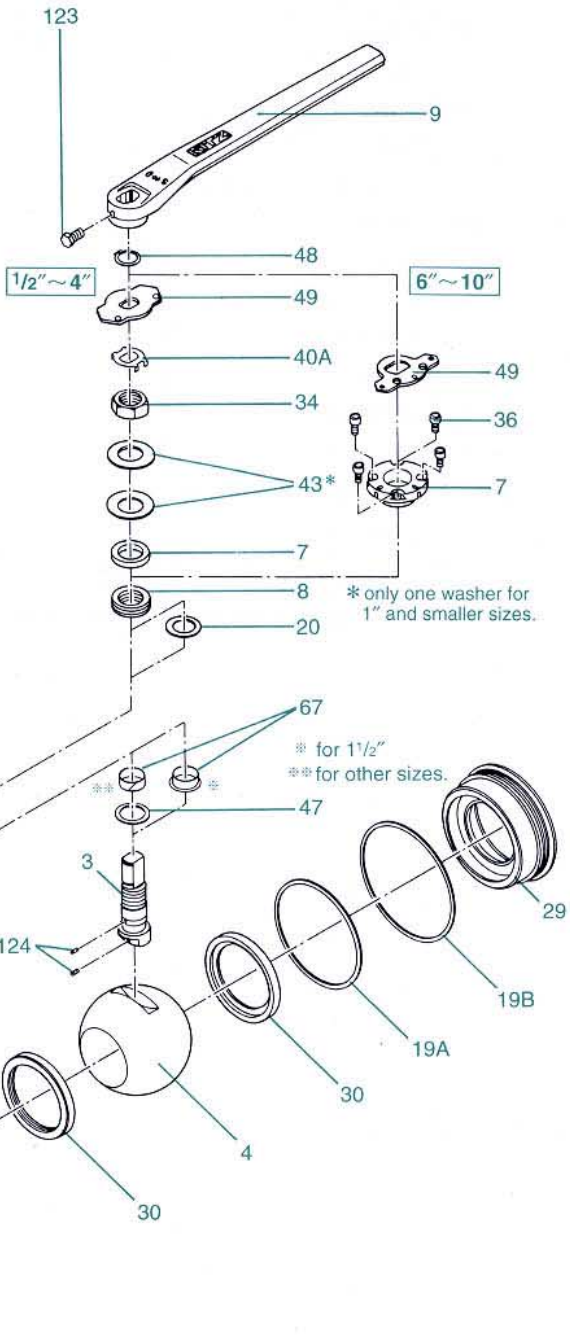
Construction and Materials

No.	parts		Standard	Super-firesafe
			150SCTAM 300SCTAM	150SCTAMS 300SCTAMS
1	Body		A216 Gr.WCB ★1	
3	Stem		A276 Type 316 or A479/A479M Type 316 ★2	
4	Ball		A276 Type 316 or A351 Gr.CF8M ★2	
7	Gland	1/2″~1″	A276 Type 316	
		1 1/2″~4″	A276 Type 304 or A479/A479M Type 304	
		6″~10″	A351 Gr.CF8	
8	Gland packing		PTFE	Flexible graphite
9	Handle ★3	1/2″~1″	Carbon steel	
		1 1/2″~4″	Ductile iron	
10	Handle nut	1/2″~1″	Stainless steel	
16	Nameplate		Stainless steel	
19A	Primary gasket		PTFE	
19B	Secondary gasket ★4		—	Flexible graphite
20	Packing washer	1 1/2″ only	A276 Type 316	
29	Body-insert	1/2″~2″·8″·10″	A216 Gr.WCB	
		3″~6″	A105N	
30	Ball seat		HYPATITE® PTFE	
34	Gland nut	1/2″~1″	Stainless steel	
		1 1/2″~4″	Carbon steel	
36	Gland bolt	6″~10″	A193 Gr.B8M	
40A	Lock plate	1/2″~4″	Stainless steel	
40B	Key lock plate	1/2″~4″	Stainless steel	
43	Washer	1/2″~4″	Stainless steel	
47	Thrust washer	1/2″~1″, 2″~10″	Reinforced PTFE	
48	Snap ring	1 1/2″~10″	Carbon steel	
49	Stopper	1 1/2″~10″	Stainless steel	
67	Stem bearing	1 1/2″~10″	Reinforced PTFE	
123	Handle bolt	1 1/2″~10″	Carbon steel	
124	Spring + pin (Antistatic device)		Stainless steel	
126	Stopper pin		Stainless steel	
145	Spring washer	1 1/2″~10″	Carbon steel	

★1. A352 low-temperature service materials are optionally available.
★2. CF8 or Type 304 is optionally available for balls & stems.
★3. Bar type handles are used for 6″ and larger.
★4. This part is used only for super-firesafe provision.

All part numbers are corresponding with those shown in valve assembly drawings.

■ Standard material configuration can be applied to sour service.



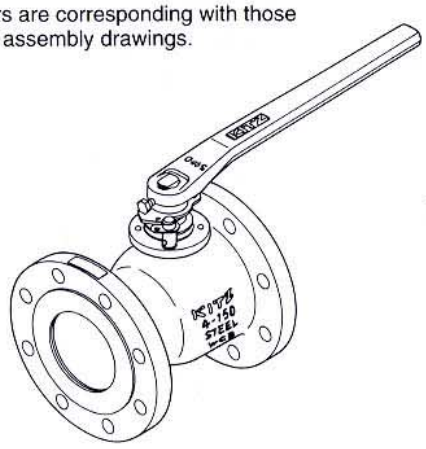


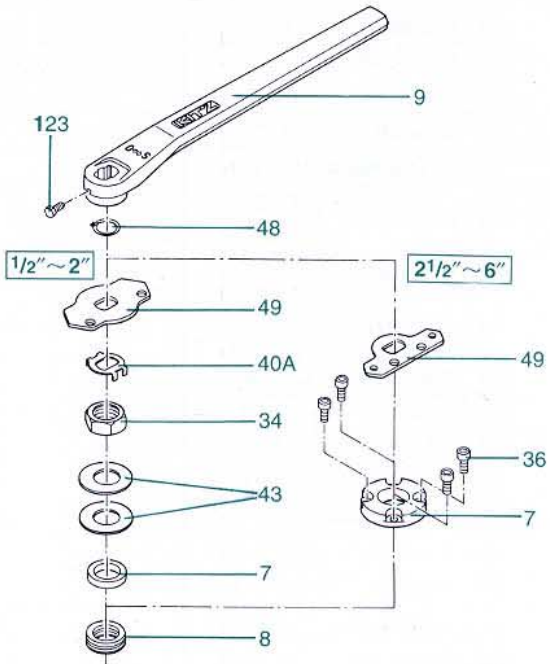
Illustration shows Size 4″ super-firesafe version.

Construction and Materials

No.	Parts		Standard		Super-firesafe
			150 UTBZ 300UTBZ	150 UTBZM 300 UTBZM	150 UTBZS/UTBZMS 300 UTBZS/UTBZMS
1	Body		A351 Gr. CF8*1	A351 Gr. CF8M*1	A351 Gr. CF8/CF8M*1
2	Body cap		A351 Gr. CF8*1	A351 Gr. CF8M*1	A351 Gr. CF8/CF8M*1
3	Stem		A276 Type 304*1	A276 Type 316*1	A276 Type 304/316*1
4	Ball		A276 Type 304 or A351 Gr. CF8 *1	A276 Type 316 or A351 Gr. CF8M *1	A276 Type 304/316 or A351 Gr. CF8/CF8M *1
7	Gland	½"~2"	A276 Type 304		
		2½"~6"	A351 Gr. CF8		
8	Gland packing		PTFE		Flexible graphite
9	Handle*2		Ductile iron		
16	Nameplate		Stainless steel		
19	Gasket		PTFE		Flexible graphite
30	Ball seat		HYPATITE® PTFE		
33	Cap nut		A194 Gr. 8		
34	Gland nut	½"~2"	A276 Type 304		
35	Cap bolt		A193 Gr. B8		
36	Gland bolt	2½"~6"	A193 Gr. B8		
40A	Lock plate	½"~2"	Stainless steel		
40B	Key lock plate		Stainless steel		
43	Coned disc spring	½"~2"	Stainless steel		
48	Snap ring		Stainless steel		
49	Stopper		Stainless steel		
67	Stem bearing		Reinforced PTFE		
123	Handle bolt		Carbon steel		
124	Spring + pin (Antistatic device)		Stainless steel		
126	Stopper pin		Stainless steel		

*1. Other stainless steels are optionally available.
*2. Bar type handles are used for 6" Class 150 / 4" and 6" Class 300.
All part numbers are corresponding with those shown in valve assembly drawings.

■ Standard material configuration can be applied to sour service.



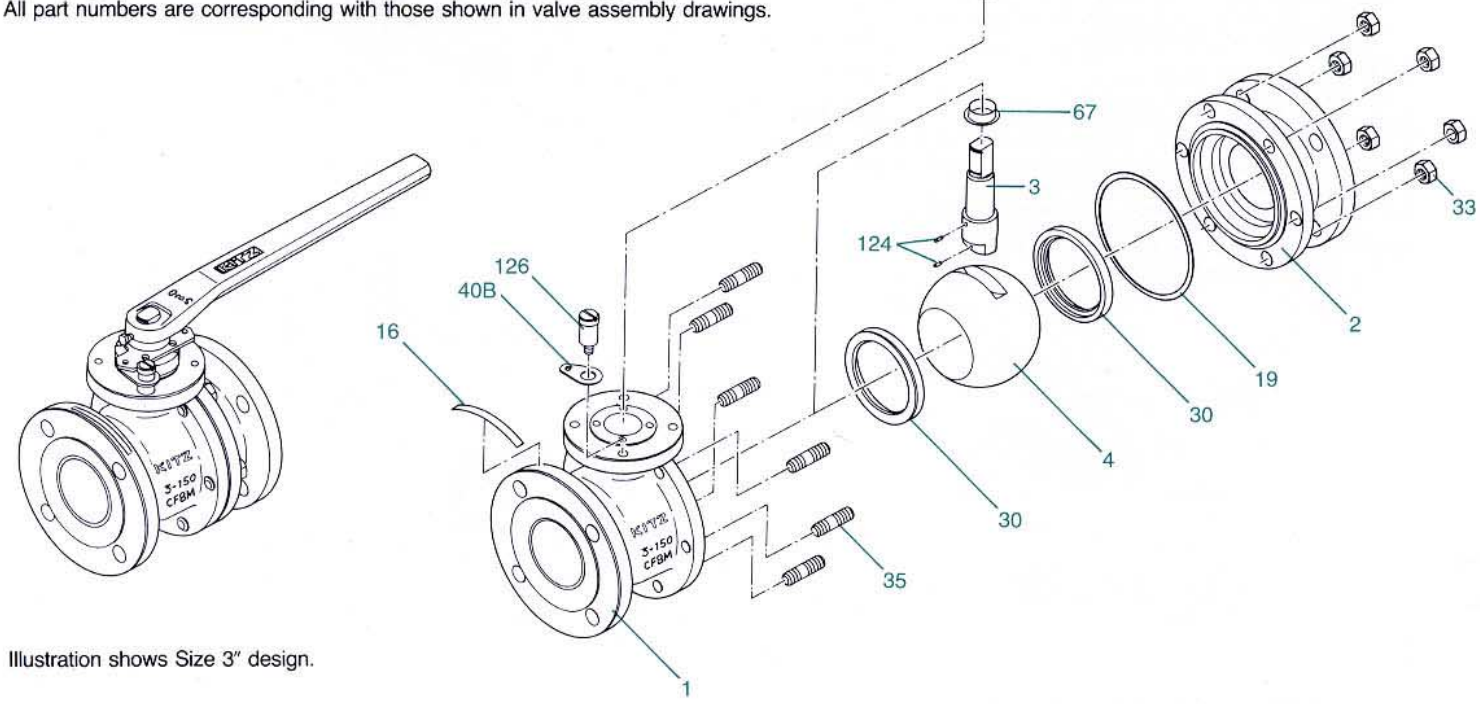


Illustration shows Size 3" design.

Construction and Materials

No.	Parts		Standard		Super-firesafe
			150 UTA 300 UTA	150 UTAM 300UTAM	150 UTAS/UTAMS 300 UTAS/UTAMS
1	Body		A351 Gr. CF8	A351 Gr. CF8M	A351 Gr. CF8/CF8M
3	Stem		A276 Type 304 or A479/A479M Type 304	A276 Type 316 or A479/A479M Type 316	A276 Type 304/316 or A479/A479M Type 304/316
4	Ball		A276 Type 304 or A351 Gr. CF8	A276 Type 316 or A351 Gr. CF8M	A276 Type 304/316 or A351 Gr. CF8/CF8M
7	Gland	½″~1″	A276 Type 316		
		1½″~4″	A276 Type 304 or A479/A479M Type 304		
		6″~10″	A351 Gr. CF8		
8	Gland packing		PTFE		Flexible graphite
9	Handle*1	½″~1″	Stainless steel		
		1½″~4″	Ductile iron		
10	Handle nut	½″~1″	Stainless steel		
16	Nameplate		Stainless steel		
19A	Gasket		PTFE		
19B	Secondary gasket*2		—		Flexible graphite
20	Packing washer	1½″ only	A276 Type 316		
29	Body -insert	½″~2″·8″·10″	A351 Gr. CF8	A351 Gr. CF8M	A351 Gr. CF8/CF8M
		3″~6″	A182 Gr. F304	A182 Gr. F316	A182 Gr. F304/F316
30	Ball seat		HYPATITE® PTFE		
34	Gland nut	½″~4″	Stainless steel		
36	Gland bolt	6″~10″	A193 Gr. B8M		
40A	Lock plate	½″~4″	Stainless steel		
40B	Key lock plate	½″~4″	Stainless steel		
43	Washer	½″~4″	Stainless steel		
47	Thrust washer	½″~1″, 2″~10″	Reinforced PTFE		
48	Snap ring	1½″~10″	Stainless steel		
49	Stopper	1½″~10″	Stainless steel		
67	Stem bearing	1½″~10″	Reinforced PTFE		
123	Handle bolt	1½″~10″	Stainless steel		
124	Spring + pin (Antistatic device)		Stainless steel		
126	Stopper pin		Stainless steel		
145	Spring washer	1½″~10″	Stainless steel		

■ Standard material configuration can be applied to sour service.

*1. Bar type handles are used for 6″ and larger.
*2. This part is used only for super-firesafe provision.
All part numbers are corresponding with those shown in valve assembly drawings.

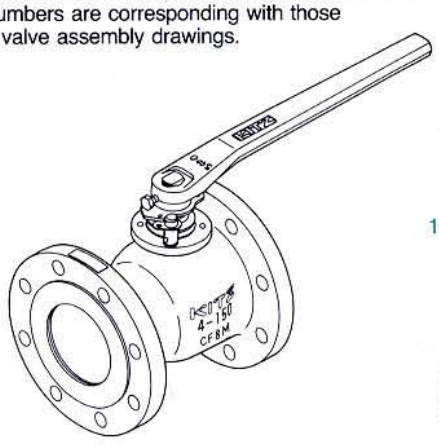
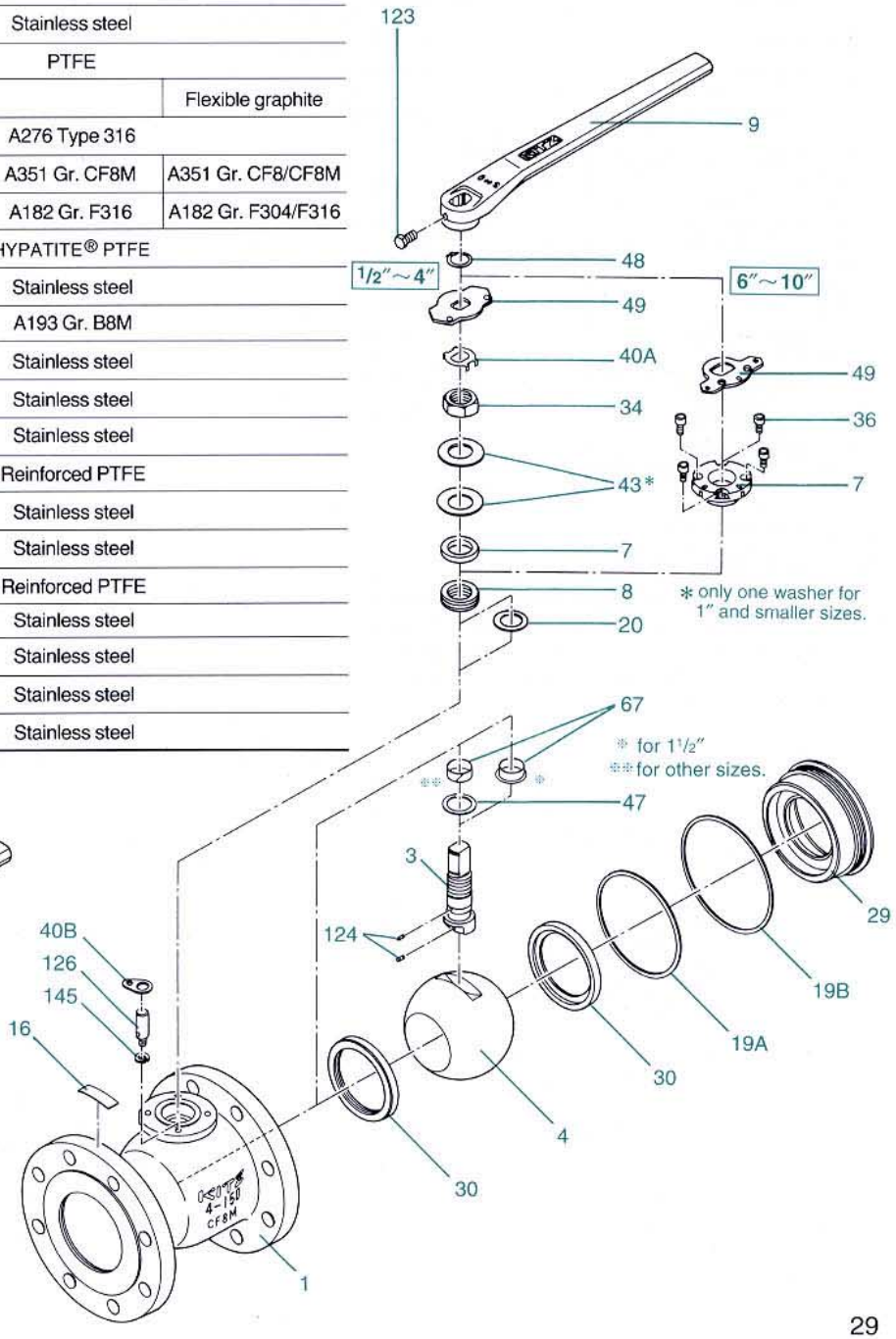


Illustration shows Size 4″ super-firesafe version.

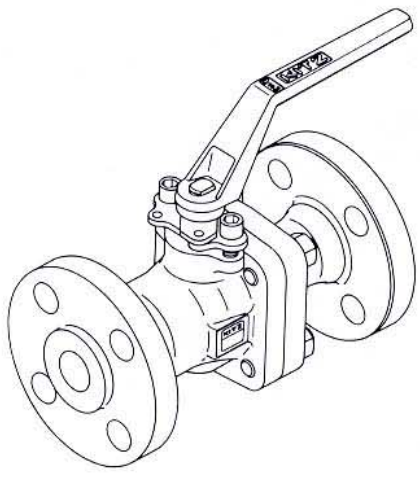


Construction and Materials

No.	Parts	Standard	Super-firesafe
		600SCTBM	600SCTBMS
1	Body	A105*1	
2	Body Cap		
3	Stem	A276 Type 316*2	
4	Ball		
7	Gland	A351 Gr. CF8	
8	Gland packing	PTFE	Flexible graphite
9	Handle	Ductile iron	
16	Nameplate	Stainless steel	
19	Gasket*3	—	Flexible graphite spiral wound
20	Packing washer ½″~1″	A276 Type 316	
30	Ball seat	Reinforced PTFE with MoS_2	
33	Cap nut	A194 Gr. 2H	
35	Cap bolt	A193 Gr. B7	
36	Gland bolt	Cr-Mo steel	
45A	O-ring	NBR	—
45B	O-ring	NBR	
47	Thrust washer	Metal-backed PTFE	
48	Snap ring	Carbon steel	
49	Stopper	Stainless steel	
67	Stem bearing	Reinforced PTFE	
124	Spring & pin (Antistatic device)	Stainless steel	
143	Seat spring	A167 Type 304	
150	Seat retainer	A105 Zn plating	
155	Spacer*3	—	PTFE
175	Retainer gland*3	—	A105
176	Retainer packing*3	—	Flexible graphite

*1. A350 low-temperature service materials are optionally available.
*2. Type 304 is optionally available for balls and stems.
*3. These parts are used only for super-firesafe provision.
All part numbers are corresponding with those shown in valve assembly drawings.

■ An optional material configuration is available for sour service.



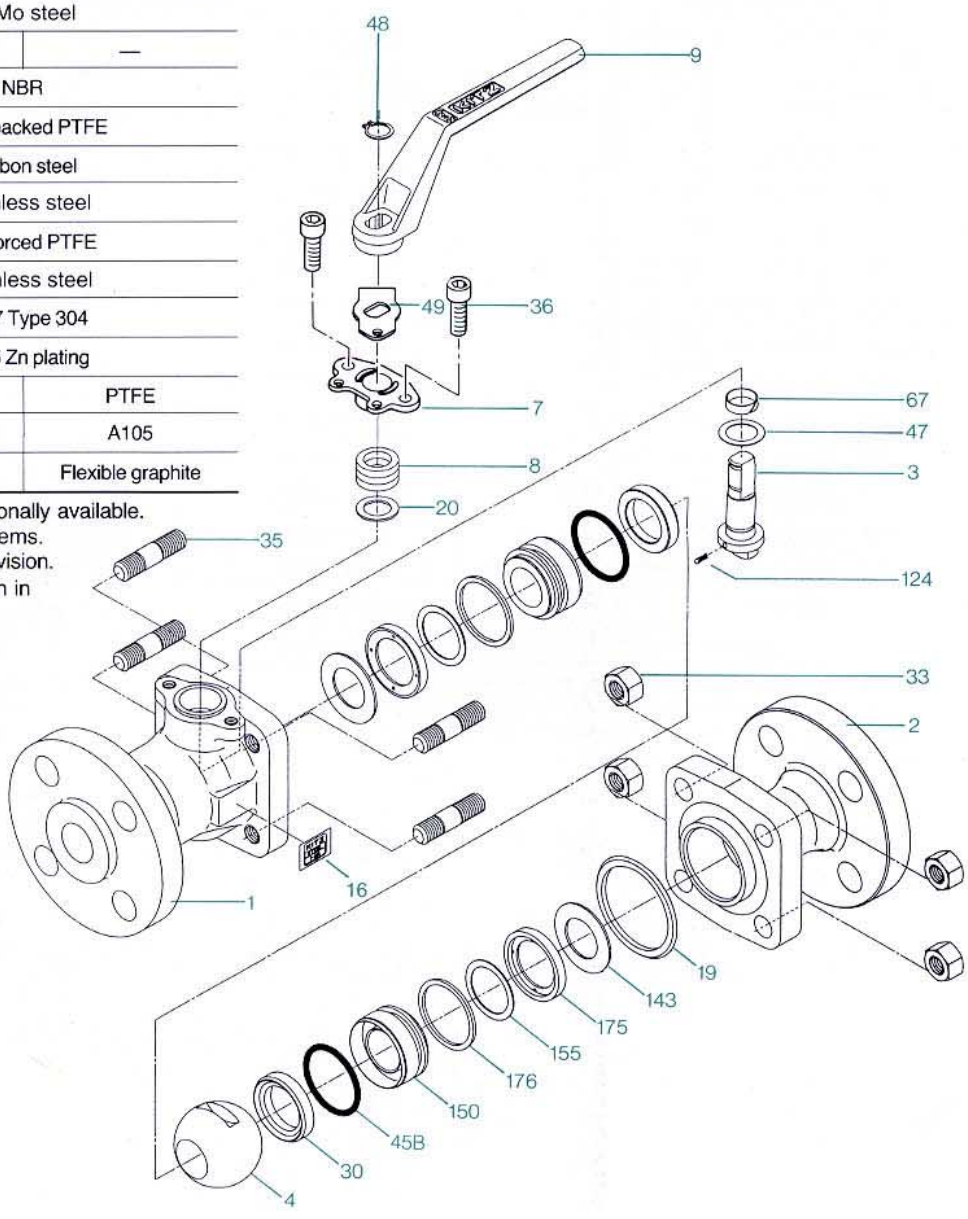


Illustration shows the super-firesafe version.

Construction and Materials

No.	Parts	Standard		Super-firesafe
		600UTB	600UTBM	600UTBS/UTBMS
1	Body	A351 Gr. CF8*2	A351 Gr. CF8M*2	A351 Gr. CF8/CF8M*2
2	Body cap			
3	Stem	A276 Type 304*2	A276 Type 316*2	A276 Type 304/316*2
4	Ball			
7	Gland	A351 Gr. CF8		
8	Gland packing	PTFE		Flexible graphite
9	Handle	Ductile iron		
16	Nameplate	Stainless steel		
19	Gasket*1	—		Flexible graphite spiral wound
20	Packing washer ½"~1"	A276 Type 316		
30	Ball seat	Reinforced PTFE with MoS_2		
33	Cap nut	A194 Gr. 8		
35	Cap bolt	A193 Gr. B8		
36	Gland bolt	A193 Gr. B8		
45A	O-ring	FPM		—
45B	O-ring	FPM		
47	Thrust washer	Metal-backed PTFE		
48	Snap ring	Stainless steel		
49	Stopper	Stainless steel		
67	Stem bearing	Reinforced PTFE		
124	Spring & pin (Antistatic device)	Stainless steel		
143	Seat spring	A167 Type 304	INCONEL X-750	A167 Type 304/ INCONEL X-750
150	Seat retainer	A276 Type 304	A276 Type 316	A276 Type 304/316
155	Spacer*1	—	—	PTFE
175	Retainer gland*1	—	—	A276 Type 304
176	Retainer packing*1	—	—	Flexible graphite

*1. These parts are used only for super-firesafe provision.
*2. Other stainless steel are optionally available.
All part numbers are corresponding with those shown in valve assembly drawings.

■ Standard material configuration can be applied to sour service.

(Refer to the illustration on Page 30)

Construction and Materials

No.	Parts	Standard	Super-firesafe
		1500SCTBM	1500SCTBMS
1	Body	A216 Gr. WCB*1	
2	Body cap		
3	Stem	A276 Type 316*2	
4	Ball		
7	Gland	A351 Gr. CF8	
8	Gland packing	PTFE	Flexible graphite
9	Handle	Ductile iron	
19	Gasket*3	—	Flexible graphite spiral wound
30	Ball seat	Nylon with MoS_2	
31	Stem washer	A276 Type 316	
33	Cap nut	A194 Gr. 2H	
35	Cap bolt	A193 Gr. B7	
36	Gland bolt	Cr-Mo steel	
45A	O-ring	NBR	—
45B	O-ring	NBR	
47	Thrust washer	Metal-backed PTFE	
48	Snap ring	Carbon steel	
49	Stopper	Stainless steel	
67	Stem bearing	Reinforced PTFE	
85	Plug	Carbon steel (Zn plated)	
124	Spring & pin (Antistatic device)	Stainless steel	
143	Seat spring	A167 Type 304	
146	Back-up ring	PTFE	
150	Seat retainer	A105 Zn plating	
155	Spacer*3	—	PTFE
175	Retainer gland*3	—	A105
176	Retainer packing*3	—	Flexible graphite

*1. A352 low-temperature service materials are optionally available.
*2. Type 304 is optionally available for balls & stems.
*3. These parts are used only for super-firesafe provision.

All part numbers are corresponding with those shown in valve assembly drawings.

■ An optional material configuration is available for sour service.

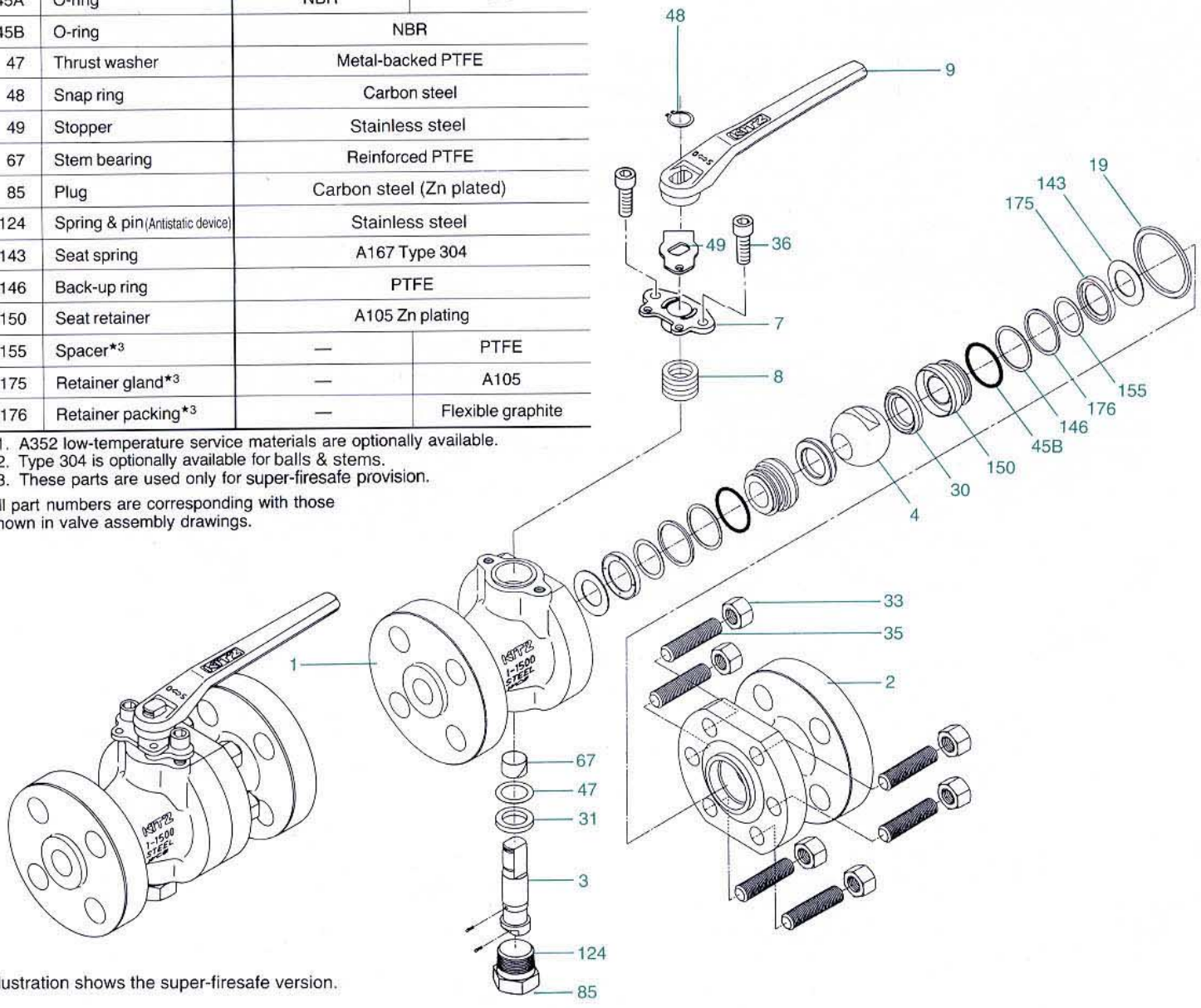


Illustration shows the super-firesafe version.

Construction and Materials

No.	Parts	Standard		Super-firesafe
		1500UTB	1500UTBM	1500UTBS/UTBMS
1	Body	A351 Gr. CF8*2	A351 Gr. CF8M*2	A351 Gr. CF8/CF8M*2
2	Body cap			
3	Stem	A276 Type 304*2	A276 Type 316*2	A276 Type 304/316*2
4	Ball			
7	Gland	A351 Gr. CF8		
8	Gland packing	PTFE		Flexible graphite
9	Handle	Ductile iron		
19	Gasket*1	—		Flexible graphite spiral wound
30	Ball seat	Reinforced PTFE with MoS_2		
31	Stem washer	A276 Type 316		
33	Cap nut	A194 Gr. 8		
35	Cap bolt	A193 Gr. B8		
36	Gland bolt	A193 Gr. B8		
45A	O-ring	FPM		—
45B	O-ring	FPM		
47	Thrust washer	Metal-backed PTFE		
48	Snap ring	Stainless steel		
49	Stopper	Stainless steel		
67	Stem bearing	Reinforced PTFE		
85	Plug	Stainless steel		
124	Spring & pin (Antistatic device)	Stainless steel		
143	Seat spring	A167 Type 304	INCONEL X-750	A167 Type 304/ INCONEL X-750
146	Back-up ring	PTFE		
150	Seat retainer	A276 Type 304	A276 Type 316	PTFE 304/316
155	Spacer*1	—	—	PTFE
175	Retainer gland*1	—	—	A276 Type 304/316
176	Retainer packing*1	—	—	Flexible graphite

*1. These parts are used only for super-firesafe provision.
*2. Other stainless steel are optionally available.
All part numbers are corresponding with those shown in valve assembly drawings.

■ Standard material configuration can be applied to sour service.

(Refer to the illustration on Page 32)

MEMO

Technical Information

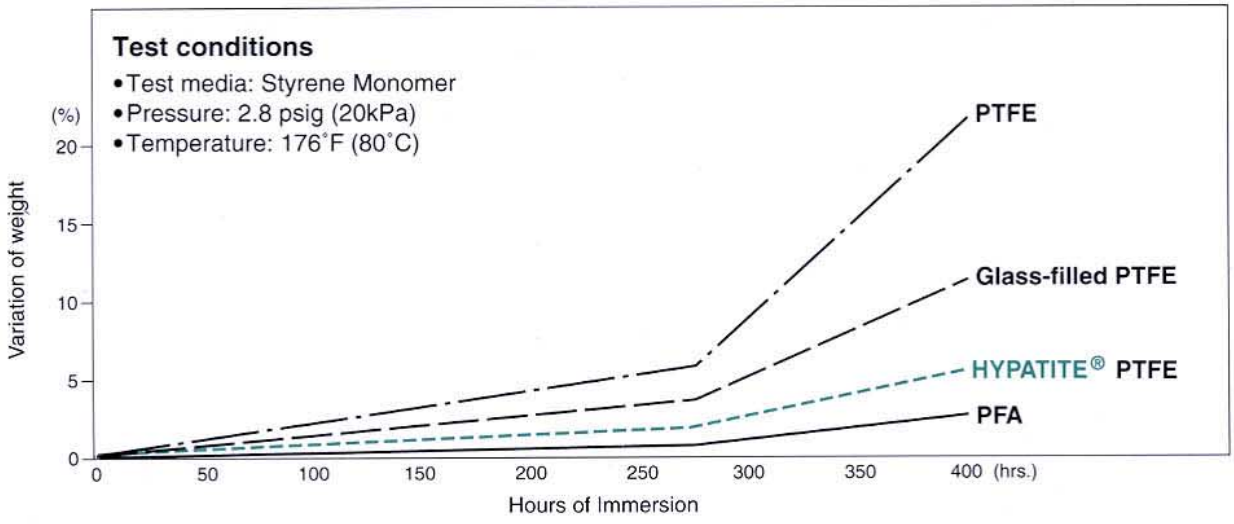
Technical Features of KITZ HYPATITE® PTFE Ball Seats

KITZ **HYPATITE®** PTFE ball seats are made of denatured PTFE, a molecularly reinforced PTFE/PFA copolymer, and specially engineered for trouble-free ball valve operation, in place of conventional glass-filled PTFE seats. The unique performance features of this new generation ball seats are compared with those of conventional virgin or glass-filled PTFE seats below. With the introduction of **HYPATITE®** ball seats, glass-filled PTFE seats are not anymore available from KITZ Corporation, while virgin or carbon-filled PTFE seats remain available for special orders. For compared pressure-temperature ratings of ball seats made of these different materials, refer to Page 8 and 9.

Compared features	HYPATITE® PTFE seats	PTFE seats	Glass-filled PTFE seats
Heat resistance	Good		Good
Sealing performance	Good	Good	Good
Durability	Good		Fair
Creep and compression resistance	Good		Fair
Chemical resistance	Good	Good	
Abrasion resistance	Good	Good	Good
Firesafe provision	Good	Good	
Throttling service	Fair	Fair	Fair
Product contamination	None	None	
Valve operating torque	Low	Low	Low

KITZ HYPATITE® PTFE Ball Seats

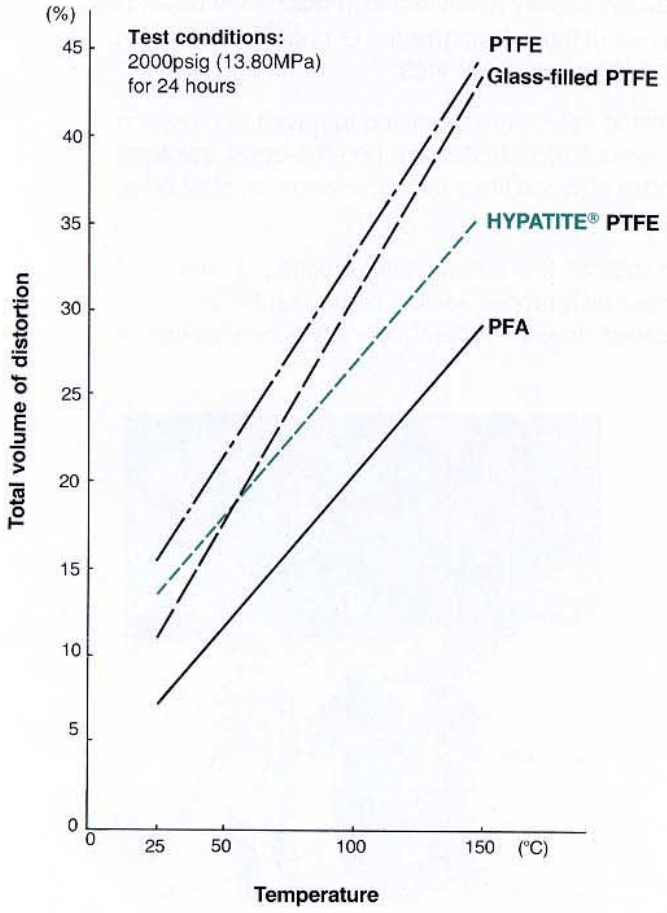
Compared Permeation or Swelling Resistance against Monomer



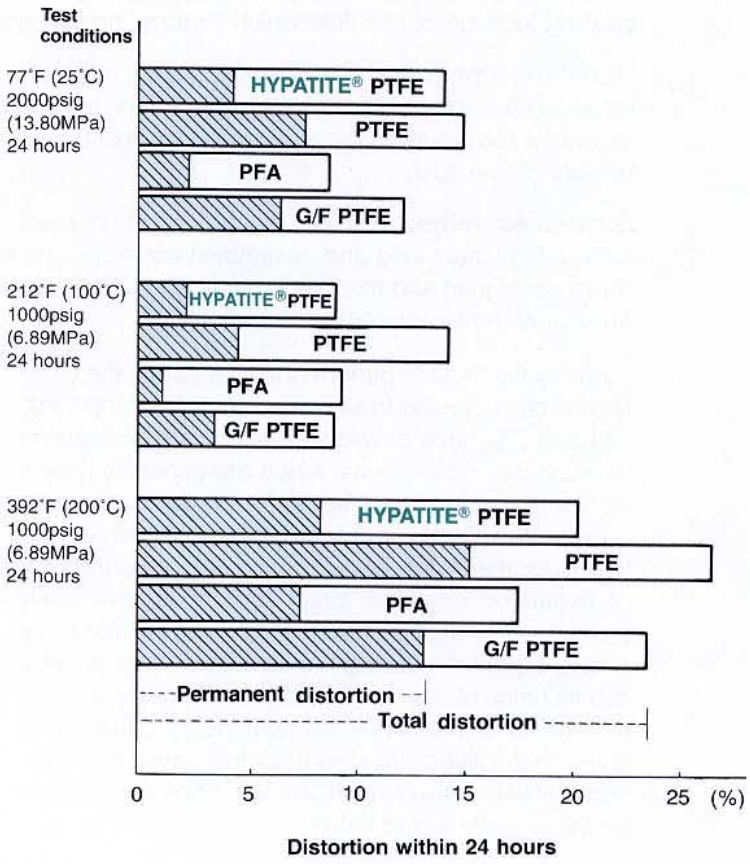
★ This data shows a result of one of the tests carried out at our laboratory under the specific test condition introduced here. Variation in the kind of test media, the phase of test media (gaseous or liquid), preparation of test specimen and test conditions such as pressure, temperature and duration, may cause the test result quantitatively different from this data, but general monomer resistance levels of the seats introduced here are comparatively as exhibited in this test data.

Technical Features of KITZ HYPATITE® Ball Seats

KITZ Ball Valve Seats
Compared Results of Mechanical Load Tests I



KITZ Ball Valves Seats
Compared Results of Mechanical Load Tests II



Fire Test Standards

May 1, 1999

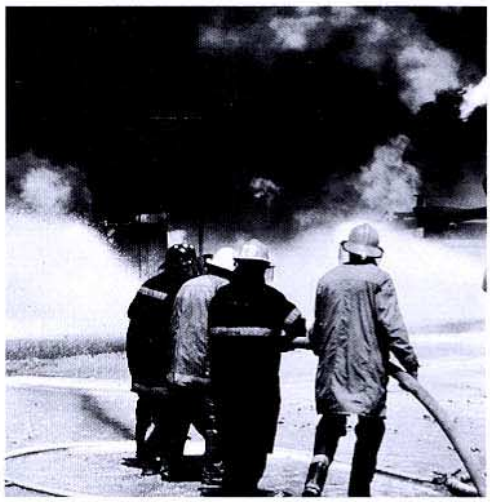
1. Introduction

Plant fires have become an increasingly serious concern due to the installation of a greater number of soft-seated ball and butterfly valves in place of conventional metal-seated gate and globe valves at many refineries and petrochemical plants. Extremely high temperatures usually result in decomposition or deterioration of resilient or non-metallic sealing components such as gland packing rings, O-rings and gaskets, causing leakage of line fluid which, in turn, increases the magnitude of plant fires.

To minimize the extent of damage in such a mishap, soft-seated valves are expected to have the provision for secondary metal-to-metal sealing functions to minimize external and internal (through-the-bore) leakages as well as the provision for undisturbed valve operation during or after the fire enabling emergency shut-off or release of line fluid.

Soft-seated valves may be manufactured to meet such critical fire safety requirements, if designed adequately, machined and assembled correctly, and equipped with proper sealing components.
Valves designed and manufactured in such a way may be called "firesafe valves". Manufacturers' claims of fire safety, however, remain subjective.

To verify the firesafe performance capability, the valve should be subjected to simulated plant fire conditions. API and BSI have developed technical specifications for such destructive tests, which are generally known as fire test standards. Fire tests are destructive and cost a lot to carry out due to high test expenses and bills for a third party's certification, let alone the cost of destroyed samples. Such high costs eventually prohibit repetition of fire tests. To minimize the frequency of fire tests, all existing fire test standards allow a certain range of sizes and pressure classes be qualified and certified without actual test being carried out, given that valves are designed the same and their non-metallic sealing materials are considered same as the actually tested valve.



2. History

BS 6755, Part 2, 1987 (*1) was issued to introduce, in a different form of presentation, the technical contents of **API 6FA, 1985** (*2) and **API 607, 1985** (*3), with an intention of replacing the requirements of BS 5146, Part 1, 1974, Appendix A.1 (*4). Until this new British Standard was issued, technical discrepancies existing between British Standard and API Standards had unnecessarily incurred high costs to valve manufacturers who desired to get their products qualified and certified to these standards, and caused confusion to contractors and end-users for evaluation of the products to be purchased.

Even within the United States, valve manufacturers, contractors and end-users used to have similar kinds of difficulties caused by discrepant fire test requirements which had long existed between API Production Department (which is now responsible for API 6FA) and API Refining Department (which has been responsible for API 607).

Following the virtual unification of fire test requirements made by API Production and Refining Departments in their latest 1985 issues, BSI finally launched a major program to adopt American standards as their own, which shall eventually help realize a globally unified fire test standard through ISO.

*1: "Testing of valves: Specification for fire type-testing requirements".
*2: "Specification for fire test for valves". (2nd edition was issued in 1994.)
*3: "Fire test for soft-seated quarter-turn valves". (4th edition issued in 1993 has nullified the qualification made according to this 3rd edition, as of May 1, 1996.)
*4: "Inspection and test of valves: Specification for steel valves for the petroleum, petrochemical and allied industries: Fire safe testing of soft seated ball valves".

3. Objective of Standardization

As high-lighted by all of these standards, the fire test standard is prepared to establish test requirements which cover test procedures, performance requirements or evaluation criteria, product qualification and test certification, for the objective of technical evaluation of pressure-containing capability of valves exposed to pre-determined, simulated fire conditions.

Here, the performance requirements are intended to establish limits of acceptability of valves regardless of size, nominal pressure or class rating. The burn period, or test duration, is decided on the basis that it represents the maximum time required to extinguish most plant fires. Fires of longer duration than specified in the standards shall be, therefore, considered to be of a major magnitude with consequences, or damage, greater than those anticipated in the fire tests.

For this reason, requirements for more or less stringent testing may be negotiated and established by the valve manufacturer and his customer to meet the customer's specific service applications. In fact, API 607 was subjected to a major revision in its 4th Edition issued in 1993 for more realistic test requirements.

4. Evaluation of Test Results

The maximum allowable leakage rates in these standards are determined for the defined test temperature, pressure and duration. Here it is noted that leakages under other test conditions may be substantially different. Fire test standards are prepared for just a prototype test of the valve with a size and class rating selected by the manufacturer under pre-determined test conditions assumably representing typical plant fire conditions. This can be translated to mean that test reports certified to any of these fire test standards do not necessarily verify satisfactory performance of the valves that users may purchase from the manufacturer at any given time. As already mentioned, fire test is a kind of destructive test (unlike the pressure test conducted for normal valve shipments), and no one would be willing to purchase such destructively tested valves in a commercial transaction.

It was expressively mentioned by BS 5146, 1974, Appendix A.1 that the "test is intended only as a prototype test and is intended to cover a range of sizes of valves having the same pressure rating, design details and material composition". A test report prepared by BSI for the fire test conducted on KITZ ball valves mentioned that the "report only relates to the actual ball valves which were tested and assessed. The results obtained therefore do not necessarily relate to samples from the production line and in no way imply the performance or quality of the continuing production."

The range of sizes and pressure classes to be automatically qualified by a prototype test of a valve of a certain size and rating is introduced here.
Also it should be noted that potential leakage from pipe-to-valve end-connection joint (either flanged, threaded or welded) cannot be evaluated by these standards, and not included in the allowable external leakages specified. API Production Department issued a standard API Bulletin 6F1 (*5), for performance evaluation of such valve end connections exposed to the fire.

Fire Test Valve Qualification (API 607-1993)

Size qualification		Pressure rating qualification	
Size of test valve (NPS)	Valve sizes qualified (NPS)	Rating of test valve (Class)	Valve ratings qualified (Class)
½	¾ and smaller	150	150, 300
1	¾, 1, 1¼, 1½	300	300, 400, 600
2	1½, 2, 2½, 3	400	400, 600, 800
4	3, 4, 5, 6	600	600, 800, 900
8	6 and larger	800	800, 900, 1500
		1500	1500, 2500

*5 Bulletin on Performance of API and ASME End Connections in a Fire Test According to API Specification 6FA, 2nd Edition, Feb. 15, 1994.

General Precautions for Trouble-free Operation of Soft-seated Ball Valves

1. Excessive Cavity Pressure

Refer to Page 5. Very important

2. High-Temperature and High-Pressure Service

The pressure-temperature ratings published by manufacturers are usually considered an appropriate guide to the maximum temperature and pressure that such ball valves may withstand. KITZ recommends, however, reference to the valve distributor or manufacturer for an assurance of suitability when ball valves are to be subjected to the following conditions:

a: ***Floating ball valves*** are left closed for a long period of time under high temperature or high differential pressure.

b: ***Floating ball valves*** are operated frequently for long periods of time under high temperature or high differential pressure.

c: ***Floating ball valves*** are subjected to frequent change of the line pressure or service temperature.

3. Liquids with High Velocity

When ball valves must be operated frequently on liquids with very high velocity, a check should be made with the valve distributor or manufacturer for appropriate advice to minimize the possibility of seat deformation, especially when they are highly pressurized on high-temperature lines.

4. Valve Selection

Be sure to select a valve with design specifications which meet the pressure and temperature conditions required. Take special care to select the valve to be used for the fluid containing abrasives, since the high molecular materials employed in the seats could suffer degradation.

5. Valve Mounting

Before mounting the valve, the pipe bore should be checked to confirm that no weld spatter, scale or rust particles remain inside. For mounting flanged valves, diagonally located flange bolts should be tightened evenly.

6. Degree of Valve Opeining

Ball valves should basically be considered as ON/OFF valves only and care should be taken to ensure that they are fully closed or open. Opening ball valves partially will result in seat erosion and cause seat leakage. Pipelines that require the use of ball valves for throttling service should be designed in consideration of the amount of the seat leakage which may occur in its fully closed position. Note that ball valves should be stored in a fully open position.

7. Valve Actuation

Two types of pneumatic valve actuator (KITZ B-Series and D-Series) are available for our factory mounting. Also KITZ "KELMO" electric actuators are available. Electric actuators or pneumatic actuators of any other specified brands are also available for our factory mounting.
In case of user's mounting their own actuators on KITZ ball valves, however, all users are recommended to contact KITZ or its authorized distributors for adequate technical advice, because any improper sizing of actuators may cause serious problems in the field. It must be carefully noted that the actual value of the operating torque of any given valve may vary, depending on the service conditions listed below:

(1) Fluid
   a. Kind of fluid
   b. Line pressure
   c. Line temperature
   d. Fluid volume
(2) Ambient temperature
(3) Opening/closing degree
(4) Type of actuator
(5) Frequency and pattern of change of line pressure
(6) Frequency and pattern of change of line and ambient temperatures

8. Valve Disassembly

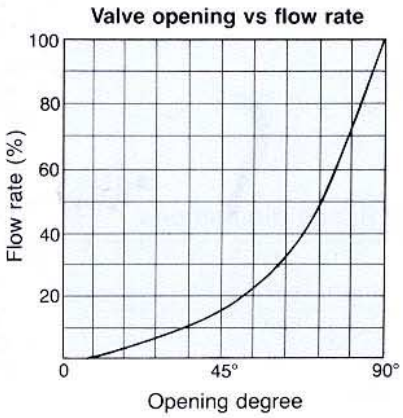
The line fluid should be completely removed from the internal of the valves before they are dismantled from the pipleline for maintenance.
Even after the line fluid has been discharged through the pipeline, some fluid is always trapped inside the body and body cavity (the room surrounded by the body, ball and two seats).
Be sure to completely discharge the pressure trapped in the body cavity, before valve disassembly.

Inspection and Warranty

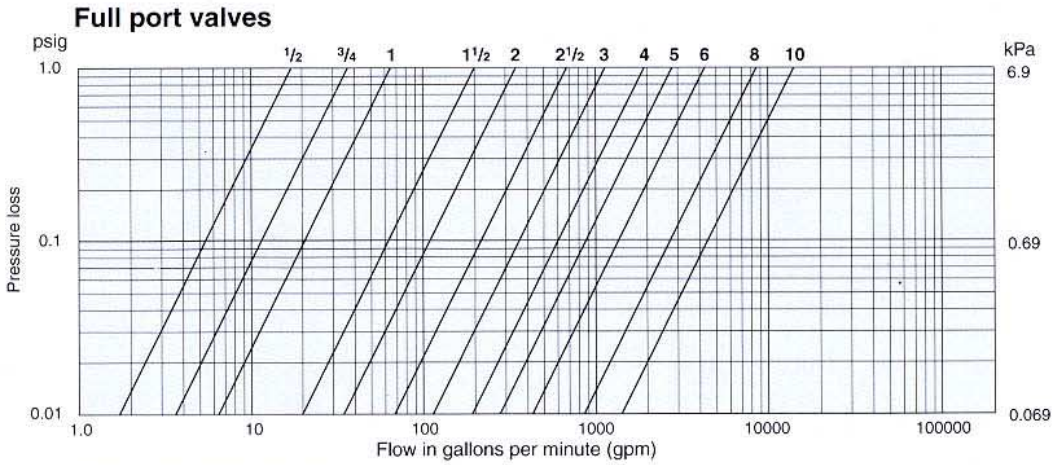
Each KITZ ball valve is subjected to 100% in-house inspection designated by API 598 or BS 6755 Part 1. This includes hydrostatic shell tests and pneumatic low-pressure seat test. Manufacturer's material certificates and test reports are available upon request. Each KITZ ball valve is guaranteed for 12 months after placement in service, but not exceeding 18 months after shipment from KITZ factories.

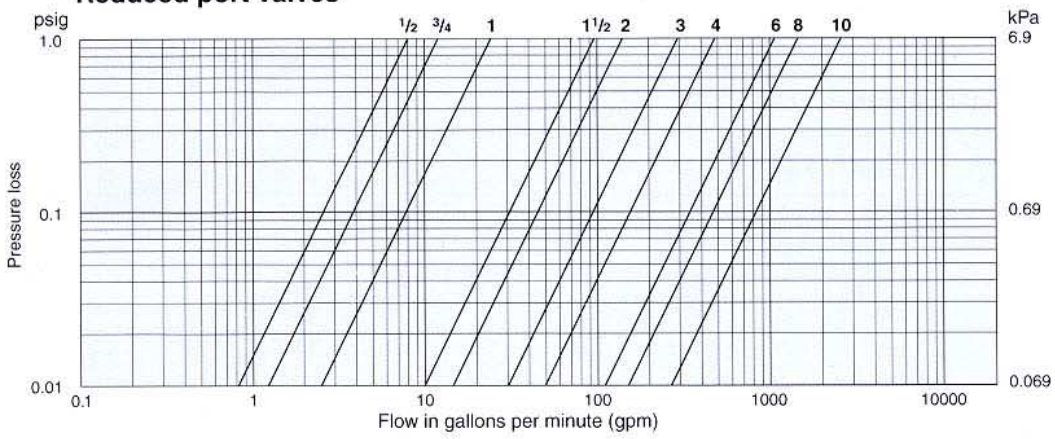
Flow Characteristics

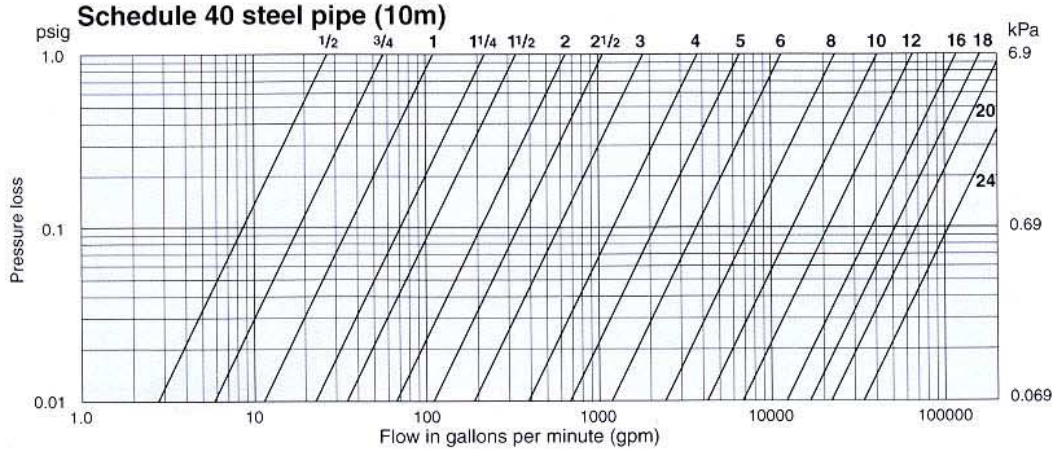
One of the best advantages of ball valves is that every flow per any given bore size is larger than other types of valves. Fluid is much less disturbed by eddy currents or pulsation. To obtain the figure of flow per valve opening, simply multiply the flow rate (%) given here by the corresponding value given in the table of Pressure Loss vs. Flow Rate.



Pressure Loss vs. Flow Rate

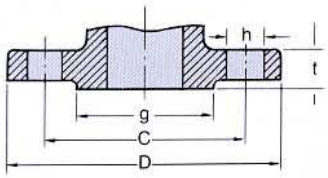


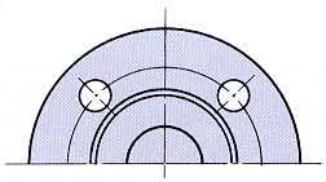




Steel Pipe Flanges

ASME B16.5-1996
Class 150 RF, Class 300 RF





Class 150 steel pipe flange dimensions

Nominal Size		D		C		g		t		h (Bolt hole)		Bolt	
inches	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	Number	Diam.
1/2	15	3.50	89	2.38	60.5	1.38	35	0.44	11.2	0.62	16	4	1/2
3/4	20	3.88	98	2.75	70.0	1.69	43	0.50 (0.44)	12.7 (11.2)	0.62	16	4	1/2
1	25	4.25	108	3.12	79.5	2.00	51	0.56 (0.44)	14.3 (11.2)	0.62	16	4	1/2
1 1/4	32	4.62	117	3.50	89.0	2.50	64	0.62 (0.50)	15.9 (12.7)	0.62	16	4	1/2
1 1/2	40	5.00	127	3.88	98.5	2.88	73	0.69 (0.56)	17.5 (14.3)	0.62	16	4	1/2
2	50	6.00	152	4.75	120.5	3.62	92	0.75 (0.62)	19.1 (15.9)	0.75	19	4	5/8
2 1/2	65	7.00	178	5.50	139.5	4.12	105	0.88 (0.69)	22.3 (17.5)	0.75	19	4	5/8
3	80	7.50	190	6.00	152.5	5.00	127	0.94 (0.75)	23.9 (19.1)	0.75	19	4	5/8
4	100	9.00	229	7.50	190.5	6.19	157	0.94	23.9	0.75	19	8	5/8
5	125	10.00	254	8.50	216.0	7.31	186	0.94	23.9	0.88	22	8	3/4
6	150	11.00	279	9.50	241.5	8.50	216	1.00	25.4	0.88	22	8	3/4
8	200	13.50	343	11.75	298.5	10.62	270	1.12	28.6	0.88	22	8	3/4
10	250	16.00	406	14.25	362.0	12.75	324	1.19	30.2	1.00	25	12	7/8
12	300	19.00	483	17.00	432.0	15.00	381	1.25	31.8	1.00	25	12	7/8
14	350	21.00	533	18.75	476.5	16.25	413	1.38	35.0	1.12	29	12	1
16	400	23.50	597	21.25	539.5	18.50	470	1.44	36.6	1.12	29	16	1
18	450	25.00	635	22.75	578.0	21.00	533	1.56	39.7	1.25	32	16	1 1/8
20	500	27.50	698	25.00	635.0	23.00	584	1.69	42.9	1.25	32	20	1 1/8
24	600	32.00	813	29.50	749.5	27.25	692	1.88	47.7	1.38	35	20	1 1/4

Height of raised face is 0.06 inch (1.6 mm) each. Dimensions in ( ) are for valve flanges.

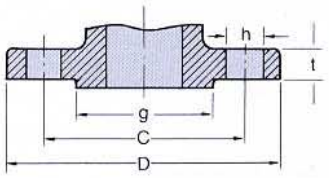
Class 300 steel pipe flange dimensions

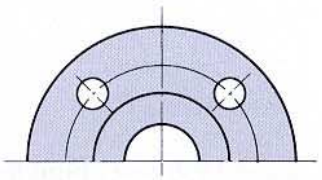
Nominal Size		D		C		g		t		h (Bolt hole)		Bolt	
inches	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	Number	Diam.
1/2	15	3.75	95	2.62	66.5	1.38	35	0.56	14.3	0.62	16	4	1/2
3/4	20	4.62	117	3.25	82.5	1.69	43	0.62	15.9	0.75	19	4	5/8
1	25	4.88	124	3.50	89.0	2.00	51	0.69	17.5	0.75	19	4	5/8
1 1/4	32	5.25	133	3.88	98.5	2.50	64	0.75	19.1	0.75	19	4	5/8
1 1/2	40	6.12	156	4.50	114.5	2.88	73	0.81	20.7	0.88	22	4	3/4
2	50	6.50	165	5.00	127.0	3.62	92	0.88	22.3	0.75	19	8	5/8
2 1/2	65	7.50	190	5.88	149.0	4.12	105	1.00	25.4	0.88	22	8	3/4
3	80	8.25	210	6.62	168.0	5.00	127	1.12	28.6	0.88	22	8	3/4
4	100	10.00	254	7.88	200.0	6.19	157	1.25	31.8	0.88	22	8	3/4
5	125	11.00	279	9.25	235.0	7.31	186	1.38	35.0	0.88	22	8	3/4
6	150	12.50	318	10.62	270.0	8.50	216	1.44	36.6	0.88	22	12	3/4
8	200	15.00	381	13.00	330.0	10.62	270	1.62	41.3	1.00	25	12	7/8
10	250	17.50	444	15.25	387.5	12.75	324	1.88	47.7	1.12	29	16	1
12	300	20.50	521	17.75	451.0	15.00	381	2.00	50.8	1.25	32	16	1 1/8
14	350	23.00	584	20.25	514.5	16.25	413	2.12	54.0	1.25	32	20	1 1/8
16	400	25.50	648	22.50	571.5	18.50	470	2.25	57.2	1.38	35	20	1 1/4
18	450	28.00	711	24.75	628.5	21.00	533	2.38	60.4	1.38	35	24	1 1/4
20	500	30.50	775	27.00	686.0	23.00	584	2.50	63.5	1.38	35	24	1 1/4
24	600	36.00	914	32.00	813.0	27.25	692	2.75	69.9	1.62	41	24	1 1/2

Height of raised face is 0.06 inch (1.6 mm) each.

Steel Pipe Flanges

Class 600 RF



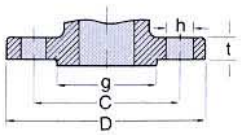


Class 600 steel pipe flange dimensions

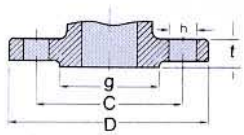
Nominal Size		D		C		g		t		h (Bolt hole)		Bolt	
inches	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	Number	Diam.
1/2	15	3.75	95	2.62	66.5	1.38	35	0.56	14.3	0.62	16	4	1/2
3/4	20	4.62	117	3.25	82.5	1.69	43	0.62	15.9	0.75	19	4	5/8
1	25	4.88	124	3.50	89.0	2.00	51	0.69	17.5	0.75	19	4	5/8
1 1/4	32	5.25	133	3.88	98.5	2.50	64	0.81	20.7	0.75	19	4	5/8
1 1/2	40	6.12	156	4.50	114.5	2.88	73	0.88	22.3	0.88	22	4	3/4
2	50	6.50	165	5.00	127.0	3.62	92	1.00	25.4	0.75	19	8	5/8
2 1/2	65	7.50	190	5.88	149.0	4.12	105	1.12	28.6	0.88	22	8	3/4
3	80	8.25	210	6.62	168.0	5.00	127	1.25	31.8	0.88	22	8	3/4
4	100	10.75	273	8.50	216.0	6.19	157	1.50	38.1	1.00	25	8	7/8
5	125	13.00	330	10.50	266.5	7.31	186	1.75	44.5	1.12	29	8	1
6	150	14.00	356	11.50	292.0	8.50	216	1.88	47.7	1.12	29	12	1
8	200	16.50	419	13.75	349.0	10.62	270	2.19	55.6	1.25	32	12	1 1/8
10	250	20.00	508	17.00	432.0	12.75	324	2.50	63.5	1.38	35	16	1 1/4
12	300	22.00	559	19.25	489.0	15.00	381	2.62	66.7	1.38	35	20	1 1/4
14	350	23.75	603	20.75	527.0	16.25	413	2.75	69.9	1.50	38	20	1 3/8
16	400	27.00	686	23.75	603.0	18.50	470	3.00	76.2	1.62	41	20	1 1/2
18	450	29.25	743	25.75	654.0	21.00	533	3.25	82.6	1.75	45	20	1 5/8
20	500	32.00	813	28.50	724.0	23.00	584	3.50	88.9	1.75	45	24	1 5/8
24	600	37.00	940	33.00	838.0	27.25	692	4.00	101.6	2.00	51	24	1 7/8

Height of raised face is 0.25 inch (6.4 mm) each.

Steel Pipe Flanges



Class 600 to 1500



Class 150, 300

Class 1500 RF

Class 1500 steel pipe flange dimensions

Nominal Size		D		C		g		t		h (Bolt hole)		Bolt	
inches	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	Number	Diam.
1/2	15	4.75	121	3.25	82.5	1.38	35	0.88	22.4	0.88	22	4	3/4
3/4	20	5.12	130	3.50	89.0	1.69	43	1.00	25.4	0.88	22	4	3/4
1	25	5.88	149	4.00	101.5	2.00	51	1.12	28.5	1.00	25	4	7/8
1 1/4	32	6.25	159	4.38	111.0	2.50	64	1.12	28.5	1.00	25	4	7/8
1 1/2	40	7.00	178	4.88	124.0	2.88	73	1.25	31.8	1.12	29	4	1
2	50	8.50	216	6.50	165.0	3.62	92	1.50	38.1	1.00	25	8	7/8
2 1/2	65	9.62	244	7.50	190.5	4.12	105	1.62	41.2	1.12	29	8	1
3	80	10.50	267	8.00	203.0	5.00	127	1.88	47.8	1.25	32	8	1 1/8
4	100	12.25	311	9.50	241.5	6.19	157	2.12	53.9	1.38	35	8	1 1/4
5	125	14.75	375	11.50	292.0	7.31	186	2.88	73.2	1.62	41	8	1 1/2
6	150	15.50	394	12.50	317.5	8.50	216	3.25	82.6	1.50	38	12	1 3/8
8	200	19.00	483	15.50	393.5	10.62	270	3.62	92.0	1.75	45	12	1 5/8
10	250	23.00	584	19.00	482.5	12.75	324	4.25	108.0	2.00	51	12	1 7/8
12	300	26.50	673	22.50	571.5	15.00	381	4.88	124.0	2.12	54	16	2
14	350	29.50	749	25.00	635.0	16.25	413	5.25	133.4	2.38	60	16	2 1/4
16	400	32.50	826	27.75	705.0	18.50	470	5.75	146.1	2.62	67	16	2 1/2
18	450	36.00	914	30.50	774.5	21.00	533	6.38	162.1	2.88	73	16	2 3/4
20	500	38.75	984	32.75	832.0	23.00	584	7.00	177.8	3.12	79	16	3
24	600	46.00	1168	39.00	990.5	27.25	692	8.00	203.2	3.62	92	16	3 1/2

Height of raised face is 0.25 inch (6.4 mm) each.

ASME B16.47-1996 (Series A)

Class 150 steel pipe flange dimensions

Nominal Size		D		C		g		t		h (Bolt hole)		Bolt	
inches	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	Number	Diam.
26	650	34.25	870	31.75	806.5	29.50	749	2.69	68.4	1.38	35	24	1 1/4
28	700	36.50	927	34.00	863.5	31.50	800	2.81	71.4	1.38	35	28	1 1/4
30	750	38.75	984	36.00	914.5	33.75	857	2.94	74.7	1.38	35	28	1 1/4
32	800	41.75	1060	38.50	978.0	36.00	914	3.18	80.8	1.62	41	28	1 1/2
34	850	43.75	1111	40.50	1029.0	38.00	965	3.25	82.6	1.62	41	32	1 1/2
36	900	46.00	1168	42.75	1086.0	40.25	1022	3.56	90.5	1.62	41	32	1 1/2

Height of raised face is 0.06 inch (1.6 mm) each.

Class 300 steel pipe flange dimensions

Nominal Size		D		C		g		t		h (Bolt hole)		Bolt	
inches	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	Number	Diam.
26	650	38.25	972	34.50	876.5	29.50	749	3.12	79.3	1.75	45	28	1 5/8
28	700	40.75	1035	37.00	940.0	31.50	800	3.38	85.9	1.75	45	28	1 5/8
30	750	43.00	1092	39.25	997.0	33.75	857	3.62	92.0	1.88	48	28	1 3/4
32	800	45.25	1149	41.50	1054.0	36.00	914	3.88	98.6	2.00	51	28	1 7/8
34	850	47.50	1207	43.50	1105.0	38.00	965	4.00	101.6	2.00	51	28	1 7/8
36	900	50.00	1270	46.00	1168.5	40.25	1022	4.12	104.7	2.12	54	32	2

Height of raised face is 0.06 inch (1.6 mm) each.

Class 600 steel pipe flange dimensions

Nominal Size		D		C		g		t		h (Bolt hole)		Bolt	
inches	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	Number	Diam.
26	650	40.00	1016	36.00	914.5	29.50	749	4.25	108.0	2.00	51	28	1 7/8
28	700	42.25	1073	38.00	965.0	31.50	800	4.38	111.3	2.12	54	28	2
30	750	44.50	1130	40.25	1022.5	33.75	857	4.50	114.3	2.12	54	28	2

Height of raised face is 0.25 inch (6.4 mm) each.

⚠CAUTION

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For any specific application, users are kindly requested to contact KITZ Corporation for technical advice, or to carry out their own study and evaluation for proving suitability of these products to such an application. Failure to follow this request could result in property damage and/or personal injury, for which we shall not be liable.

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Printed in Japan

9909②CR-SP