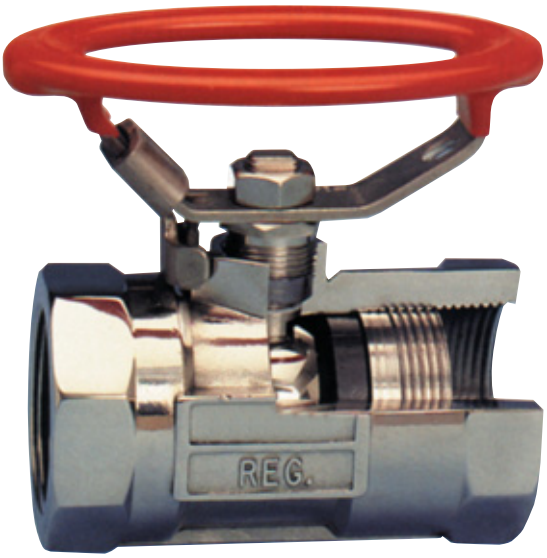
STEAMBALL

ULTRA-TIGHT SHUT-OFF BALL VALVES FOR STEAM SERVICE 0 - 250 PSIG / 550 °F

ELIMINATES THESE COMMON OPERATING PROBLEMS WITH OLD-FASHIONED GATE VALVES

- VALVES THAT ARE STIFF AND DIFFICULT TO OPERATE
- VALVES THAT DO NOT HOLD TIGHT WHEN CLOSED
- PACKING LEAKS



- SIZES 1/4" THRU 10"
- CARBON AND STAINLESS STEEL
- SPECIAL HIGH-TEMPERATURE SEATS
- THREADED AND FLANGED
- MANUAL AND AUTOMATED
- API 607 FIRE TESTED (4TH EDITION)

GREAT LAKES INDUSTRIAL CONTROLS
VENDOR NUMBERS FOR BIG-3 AUTO MANUFACTURERS

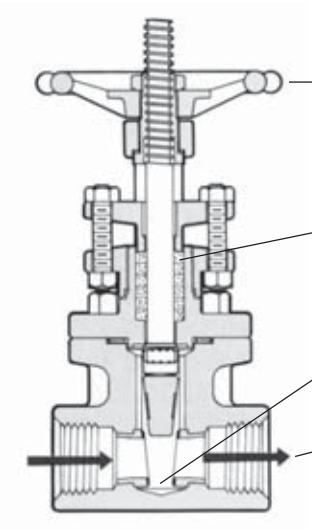
GENERAL MOTORS	245078985
FORD	N6ZAA
CHRYSLER - U.S.A.	30123
CHRYSLER - CANADA	26775

From

GREAT LAKES INDUSTRIAL CONTROLS

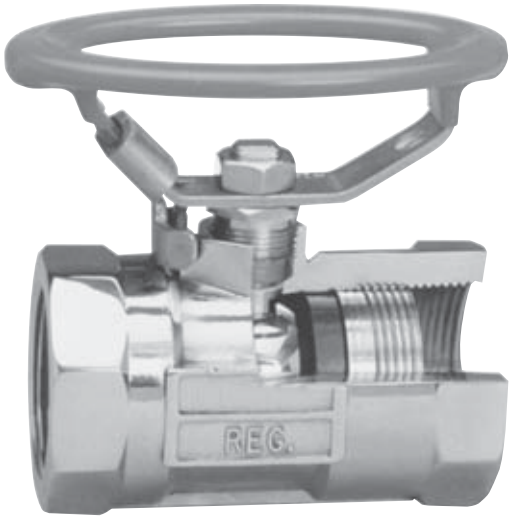
Tel: 1-800-546-0705 E-Mail: glic@cogeco.net

DO YOU HAVE THESE PROBLEMS WITH GATE VALVES ON STEAM SERVICE?



- VALVE BECOMES STIFF AND DIFFICULT TO OPERATE OFTEN REQUIRING A WRENCH TO OPEN AND CLOSE
- PACKING LEAKS
- VALVE DOES NOT SHUT OFF TIGHT BECAUSE OF DIRT AND SCALE BUILD-UP IN SEATING AREA
- VALVE MUST BE INSTALLED IN ONE DIRECTION OF FLOW AND DOES NOT PROVIDE BI-DIRECTIONAL SHUT-OFF

STEAMBALL IS A PROVEN SOLUTION



- LONG SERVICE LIFE ON STEAM PRESSURES 0 - 250 PSIG (TYPICALLY 10 TO 20 YEARS)
- ALMOST NEVER GETS STIFF OR DIFFICULT TO OPERATE
- NO CAVITY AT BOTTOM OF VALVE WHERE DIRT AND SCALE CAN COLLECT INSURING TIGHT SHUT-OFF EVERY TIME
- BI-DIRECTIONAL BUBBLE-TIGHT SHUT-OFF (VALVE CANNOT BE INSTALLED BACKWARDS)
- SPECIAL HIGH-TEMPERATURE MINERAL AND GRAPHITE SEATS
- BACK-UP METAL SEATING
- UNIQUE PACKING RETENTION NUT IS INDEPENDENT OF HANDLE ROTATION AND ELIMINATES PACKING LEAKS

STEAMBALL

ULTRA-TIGHT SHUT-OFF BALL VALVES SPECIALLY DESIGNED FOR STEAM SERVICE

Index

STEAMBALL THREADED VALVES

Series 1100/2100
Unibody Construction Ball Valves

Series 1100 carbon steel and 2100 stainless steel unibody construction ball valves are the highest quality one-piece body style valves available.

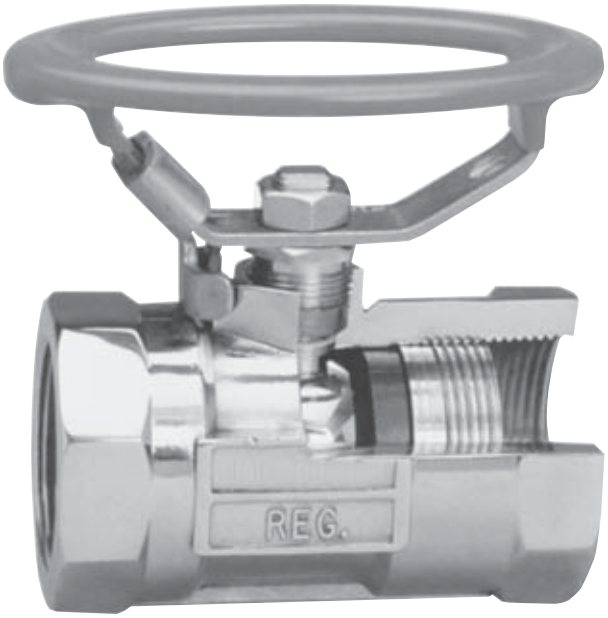
Designed and manufactured to meet the most demanding requirements of the chemical, petroleum and general industries, Series 1100 and 2100 includes as "standard" most features our competition offers as "extra cost" options. Three trim choices are available: Virgin Teflon, Durafill, or Mineral-filled PTFE.

STEAMBALL has included, at no extra cost, safety features as follows: bottom loaded stem, packing nut threaded to body, full ANSI B1.20.3 thread depths, grounded stem to prevent internal static charge arcing, certified API 607 fire-tested construction, and more.

Simply stated, the 1100/2100 series is the highest quality, most reliable unibody ball valve line available. Period.

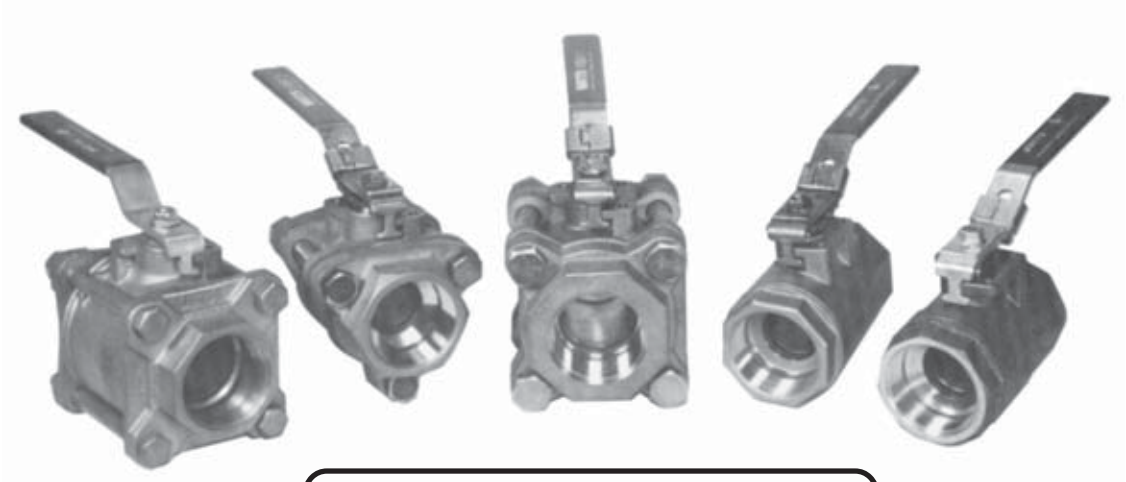
Features

- Lever and oval handles available with locking feature
- Operating pressure
  1/4" thru 1" 2160 WOG
  1 1/4" thru 2" 3100 WOG
- API 607 fire tested, 4th Edition
- Bottom loaded stem, adjustable packing nut threaded to body



- Grounded stem
- NPTF threads to ANSI B1.20.3
- AISI 316 stainless steel ball and stem available (1100)
- Mineral Seats with Metal Back-up Seats
- All seats are pressure equalizing

Standard-Port or Full-Port Designs



OTHER BODY DESIGNS AVAILABLE
ALSO FLANGED IN ANSI 150, 300 & 600

STEAMBALL THREADED VALVES

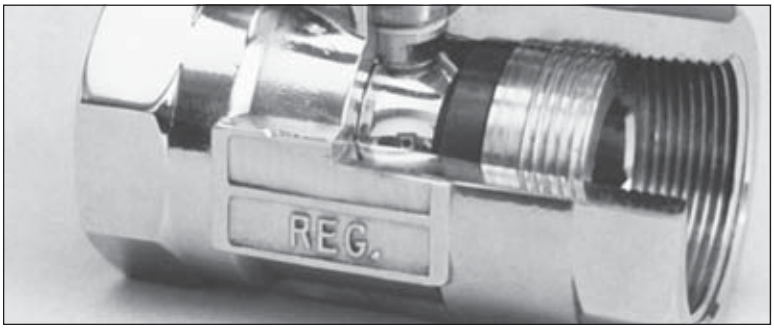
Standard Design Features & Benefits

Bottom Entry Stem

As safety is of primary concern, STEAMBALL utilizes a bottom loaded stem in all ball valves. The stem is retained by a machined shoulder in the body of the valve that mates up to a shoulder on the stem.

Threaded Seat Retainer

The method by which a unibody threaded-end ball valve retains the seat/ball assembly is critical to its performance and to the safety of those who install and operate these valves. STEAMBALL utilizes a safe, responsible and accurate method to accomplish this function - by threading the seat retainer into the valve.

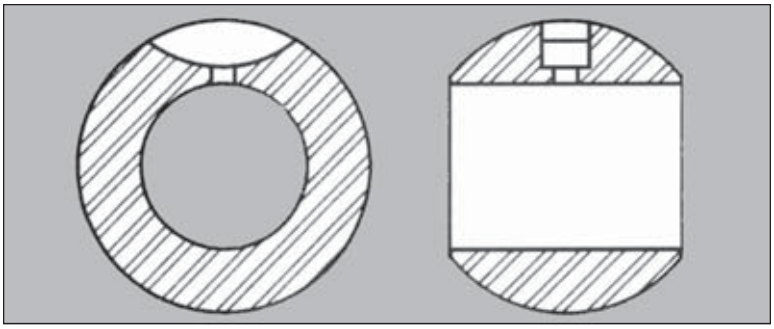


Threaded Seat Retainer

Ball Construction

Every STEAMBALL industrial valve is of a solid ball construction, which provides structural integrity and reduced flow turbulence not available when "hollow" or formed balls are used.

There is a hole in the stem slot of each ball to equalize pressure between the body cavity and the flow stream when the valve is in the open position. This feature prevents seat damage due to thermal cycling by allowing media trapped within the body cavity (between the outside of the ball and the inside of the body) to expand and re-enter the general flow stream through that drilled hole when the valve is in the open position.

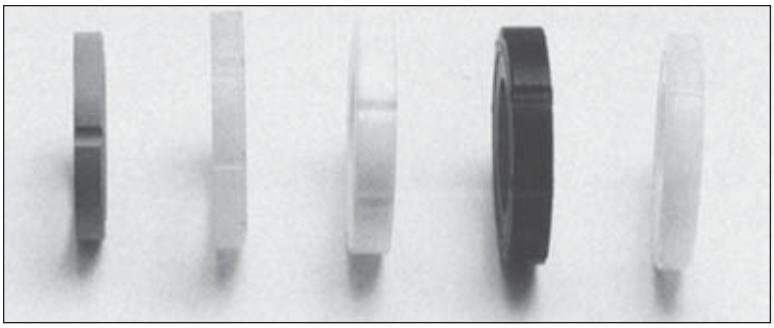


Solid Ball Construction

Optional Seat Materials

STEAMBALL offers a variety of seat materials that are designed to meet the most demanding applications. Each seat material has its own performance characteristics enabling the user to tailor the valve to the specific application.

A lower operating torque is realized by the use of pressure equalizing seats. The outside diameter of each seat is produced with slots that allow the media to flow around the upstream seat. This equalizes the pressure on both sides of the upstream seat, which result in the reduction of the torque required to operate the valves.



Optional Seat Materials

CV Ratings, Max. Operating Torques

Size	CV Rating
1/4", 3/8", 1/2"	4.0
3/4"	7.5
1"	14.0
1 1/4"	19.5
1 1/2"	33.0
2"	50.0

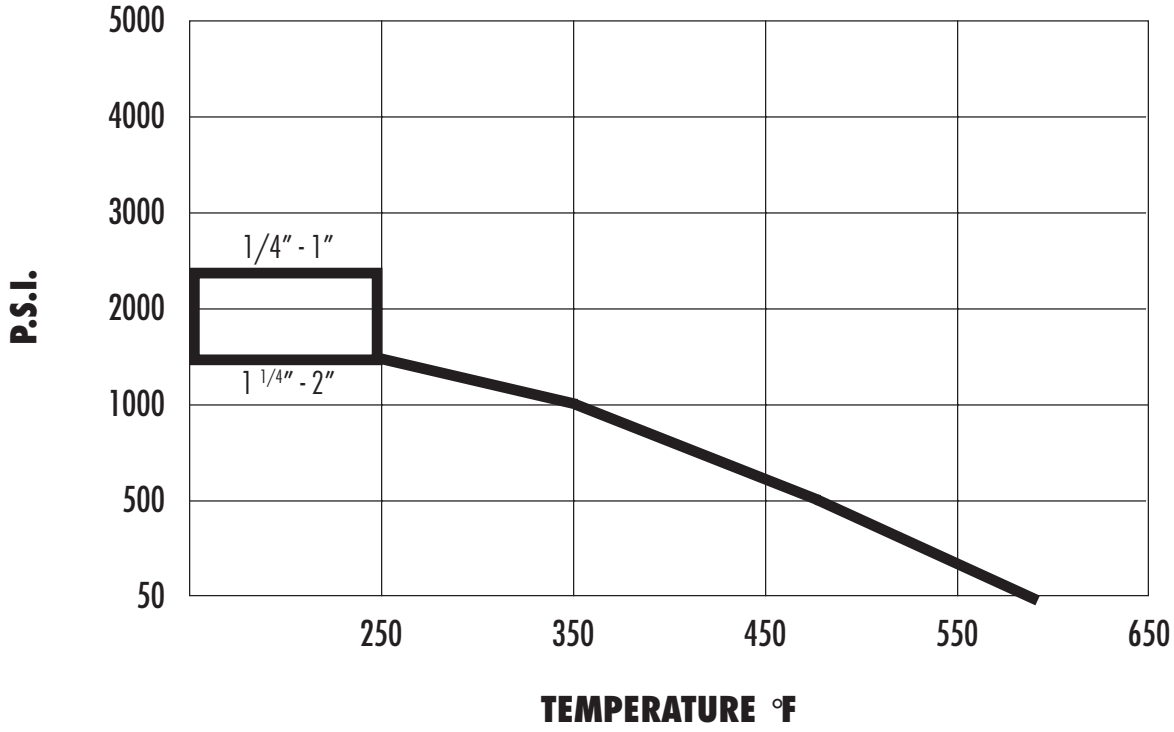
Valve Size	Max. Breakaway Torque (In.-Lbs.) 01 Seats	02 + 04 Seats
1/4", 3/8", 1/2"	40	45
3/4"	50	60
1"	130	150
1 1/4"	180	200
1 1/2"	230	250
2"	280	320

Pressure / Temperature Ratings

Maximum Temperature Rating
Mineral -Filled PTFE

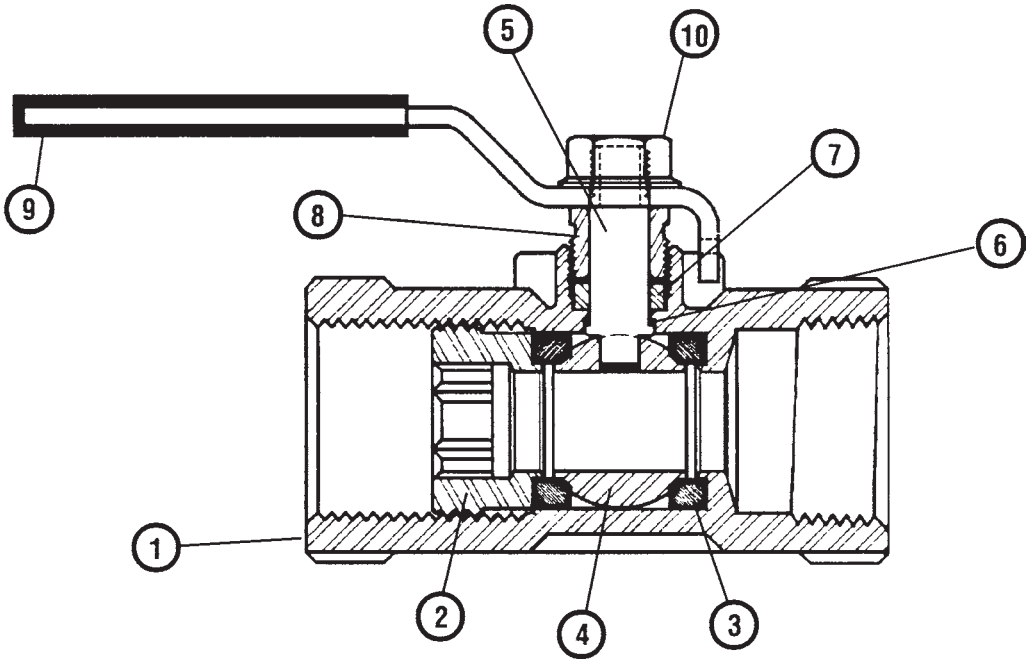
Vacuum Rating
550°F 10 Microns of Hg

Temperature & Pressure Rating Table



STEAMBALL THREADED VALVES

Materials of Construction



Part No.	Series 1100	Series 2100
1. Body	Carbon Steel, Grade WCB	Stainless Steel, Grade CFBM
2. Retainer	Carbon Steel, AISI 12L14	Stainless Steel, AISI 316
3. Seal	Mineral Composition	
4. Ball	Carbon Steel, AISA 12L14, Hard Chrome Plated	Stainless Steel, AISI 316
5. Stem	Carbon Steel, AISA 12L14, Hard Chrome Plated	Stainless Steel, AISI 316
6. Thrust Washer	Graphite	
7. Packing Gland	Graphite	
8. Packing Nut	Carbon Steel, AISA 12L14	Stainless Steel, AISI 316
9. Handle	Carbon Steel Zinc Plated and Vinyl Dipped	
10. Handle Nut	Carbon Steel Zinc Plated	

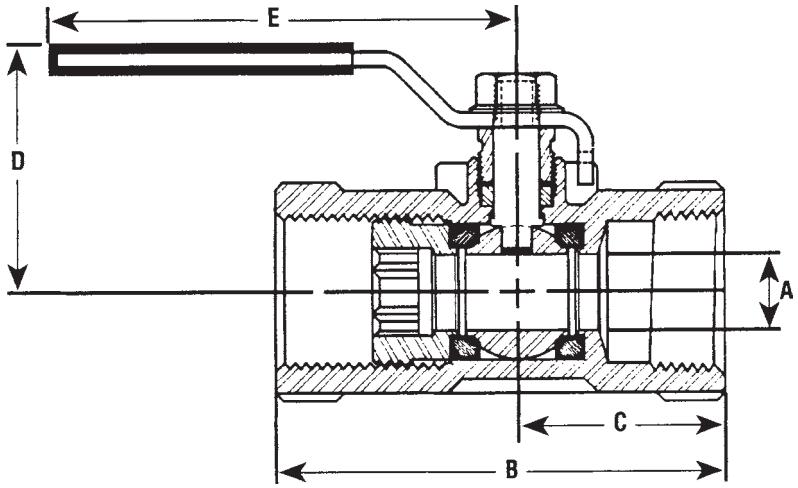
* Optional Seat Materials:

(01) Virgin Teflon
(02) Durafill
(04) Mineral-filled PTFE **

** Requires stainless steel ball and stem.

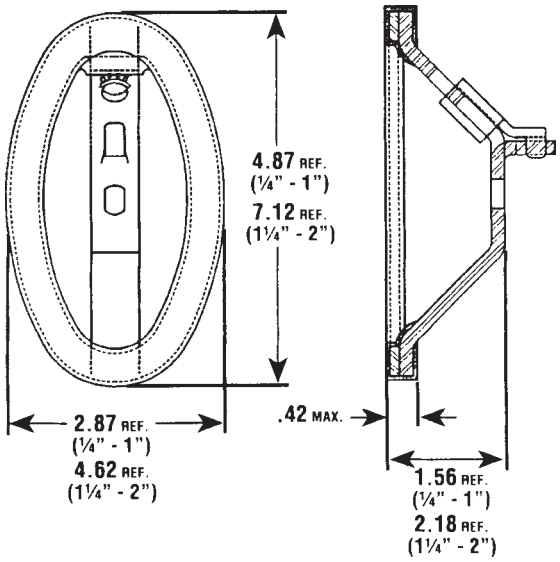
STEAMBALL THREADED VALVES

Dimensions (Inches)



Size	A	B	C	D	E	Weight
1/4", 3/8", 1/2"	.375	2.72	1.31	1.58	3.73	0.6 lbs.
3/4"	.500	3.12	1.46	1.68	3.73	1.0 lbs
1"	.625	3.68	1.70	1.96	3.76	1.8 lbs.
1 1/4"	.812	4.06	1.94	2.31	4.50	3.0 lbs.
1 1/2"	1.00	4.42	2.05	2.42	4.50	4.0 lbs.
2"	1.25	5.01	2.31	2.90	5.19	6.5 lbs.

Oval Handle Dimensions



STEAMBALL FLANGED VALVES

Series 3100 / 4100
Unibody Flanged-End Ball Valves

Series 3100 Carbon Steel /4100 Stainless Steel, Standard Port

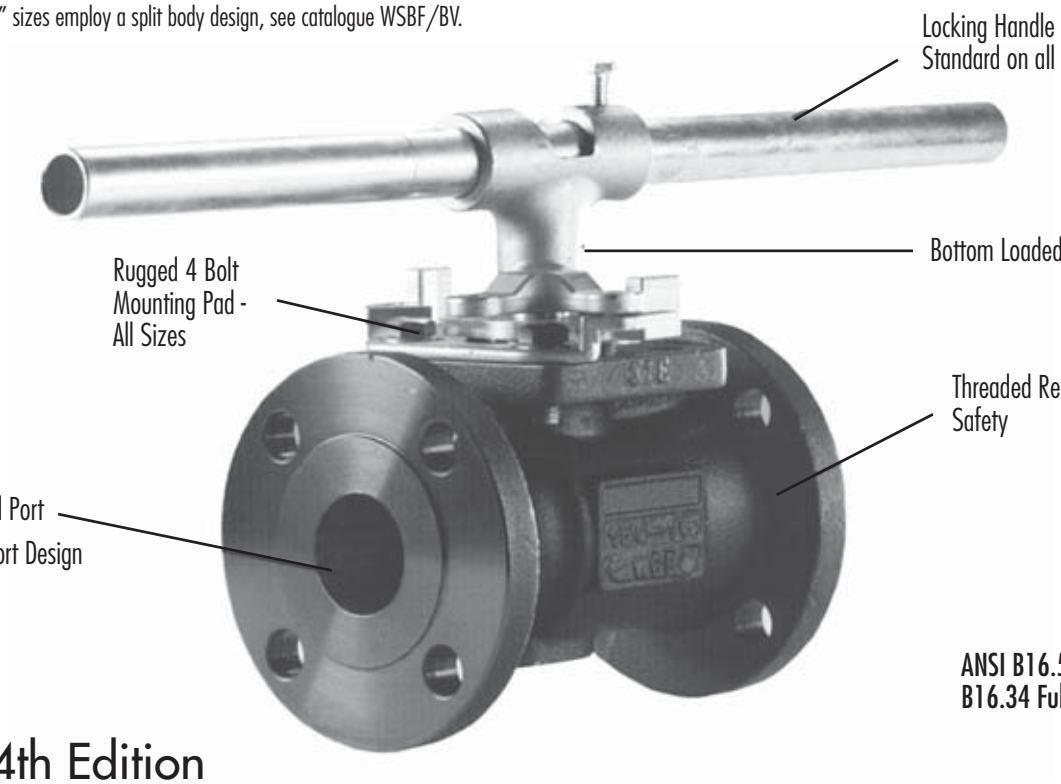
The STEAMBALL Series 3100 and Series 4100 valves are standard port, unibody flanged-end ball valves that are available in both ANSI 150 Class (1/2" - 6") and ANSI 300 Class (1/2" - 4"). These valves fully comply with ANSI B16.10 (face-to-face dimensions), ANSI B1 6.5 (flange dimensions) and ANSI B1 6.34 (design criteria and testing requirements). With certain optional trims, they are available to meet both API 607 (4th edition) and Exxon # EXES 3-14-1 -2A fire safe requirements, as well as NACE MR-01 -75 current revision.

*Class 150 - 8", 10", 12" sizes employ a split body design, see catalogue WSBF/BV.

*Class 300 - 6", 8", 10" sizes employ a split body design, see catalogue WSBF/BV.

It has always been the cornerstone of our engineering design criteria to employ as many of the features that our customers request as standard in our products. The Series 3100/4100 is no exception. Standard features are:

- Lockable handle - all sizes
- 4 bolt actuator mounting
- Threaded seat retainer
- Anti-static device (stem to body)
- Adjustable packing gland
- Uniseal™ seats
- "V" ring stem seal - 1 1/2"-6"



ANSI B16.5, B16.10 and B16.34 Full Compliance

API 607 4th Edition

Fire Safe Compliance: The STEAMBALL Series 3100/4100 meets all requirements for fire safety to API 607 Fourth Edition when ordered with the fire safe trim material codes.

Exxon # EXES. 3-14-1-2A

The STEAMBALL Series 3100/4100 meets all fire safety requirements of this standard when ordered with the "Z80" prefix optional ordering code. Available in sizes 1/2" - 4".

Large Bore Standard Port *

Large Bore Standard Port valves are available in 8", 10" & 12" Class 150 and 6" ,8" & 10" Class 300 sizes. For design details of these products, please see our catalogue WSBF/BV.

STEAMBALL FLANGED VALVES

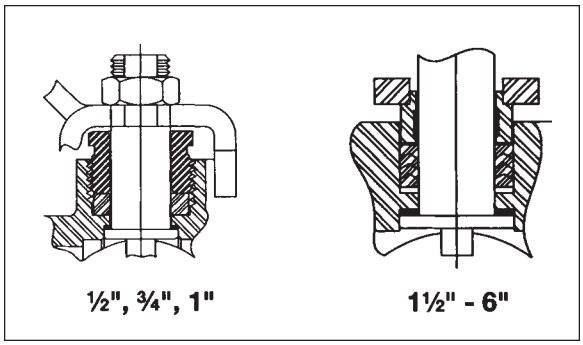
Standard Design Features

Bottom Entry Stem

As safety is of primary concern, STEAMBALL utilizes a bottom-loaded stem in all ball valves. The stem is retained by a machined shoulder in the body of the valve that mates up to a shoulder on the stem.

Stem Sealing Method

A critical component of any valve is its stem sealing capability. Unlike many of its competitors, STEAMBALL exclusively employs a "packing gland" style stem seal design. The STEAMBALL stem seal provides a compression force independent of stem rotation. Either a *yoke* or *threaded body* style stem seal retainer is used, depending upon the valve size and model.



Packing Gland

Threaded Seat Retainer

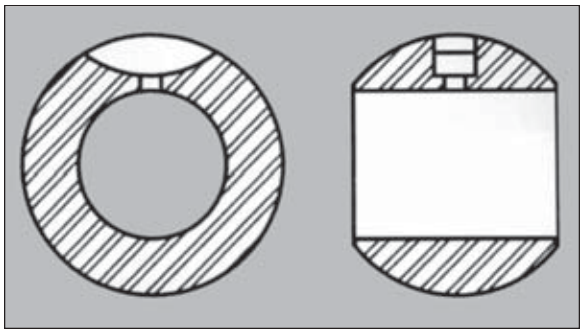
The method by which a unibody, flanged-end ball valve retains the seat/ball assembly is critical to its performance and to the safety of those who install and operate these valves. STEAMBALL utilizes a safe, responsible and accurate method to accomplish this function - by *threading* the seat retainer into the valve. The size and number of threads that firmly hold the seat retainer to the valve body have been designed to comply with the respective ANSI Class rating of the valve. The outside diameter of the seat retainer is inside of the gasket surface providing additional sealing of line fluid if internal gaskets are damaged by temperature or fire conditions (sizes 1/2" - 6"). And, the STEAMBALL Series 3100/4100 is rated for full bi-directional shut-off, as well as "dead-end" service.

Threaded Seat Retainer

Ball Construction

Every STEAMBALL industrial valve is of a solid ball construction, which provides structural integrity and reduced flow turbulence not available when "hollow" or formed balls are used.

A hole is drilled into the stem slot of each ball to equalize pressure between the body cavity and the flow stream. This feature prevents seat damage due to thermal cycling by allowing media trapped within the body cavity (between the outside of the ball and the inside of the body) to expand and re-enter the general flow stream through that drilled hole when the valve is in the open position.



Solid Ball Construction

Uniseal™ Seat Materials

STEAMBALL Regulator introduces a new, state-of-the-art seating material. Uniseal™ is unfilled PTFE, providing the benefit of very low operating torque and almost universal chemical compatibility, yet has the strength of filled PTFE, resulting in higher pressure/temperature ratings. Uniseal™ gains its strength from a modified molecular grain that significantly reduces PTFE's tendency to cold flow. Uniseal™ maintains this strength at higher temperatures, and performs well at saturated steam conditions up to 150 psig. Uniseal™ is the standard seat material in every new STEAMBALL flanged ball valve.

Available Seat Materials

(01) Virgin PTFE
(02) Uniseal ™
(04) Mineral Filled
(05) UHMWPE
(09) PFA

Specifications

Size	CV Rating	Operating Torque Seat Materials			
		01/02	04	05	09
1/2″	15	40	60	72	120
3/4″	25	50	90	108	180
1″	40	100	150	180	300
1 1/2″	90	180	250	300	500
2″	125	240	320	384	640
2 1/2″	260	440	500	600	1000
3″	430	520	600	720	1200
4″	600	650	780	936	1560

Pressure Rating

Maximum Pressure Rating @ 100°F (WOG)

Material	ANSI 150 Class	ANSI 300 Class
Alloy 20 (CN7M)	230	600
Carbon Steel (WCB)	285	740
Stainless Steel (CF8M)	275	720
Monel (M-35-1)	230	600
Hastelloy C (CW-12MW)	290	750

Temperature Rating

Maximum Temperature Rating for Seats @ 0 PSIG

Mineral Filled TFE 550°F

Steam Rating (Saturated)

Uniseal™ - 150 WSP

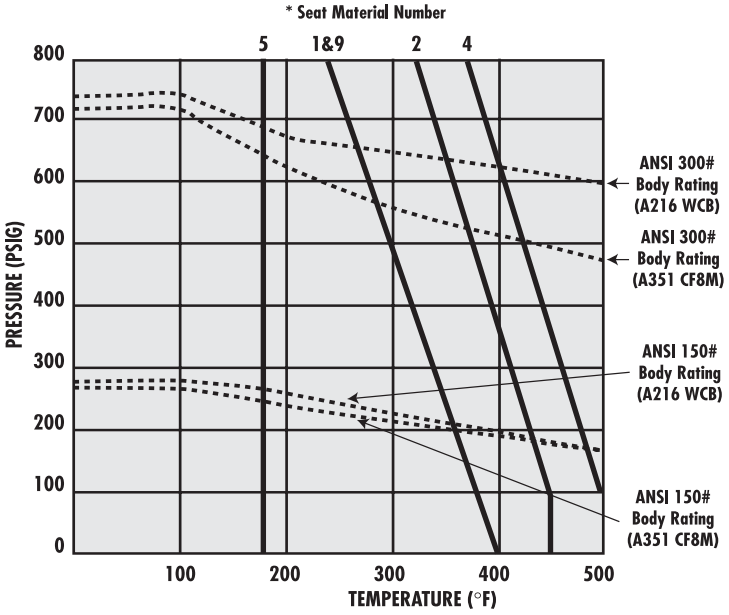
Mineral-Filled TFE - 250 WSP

Vacuum Rating

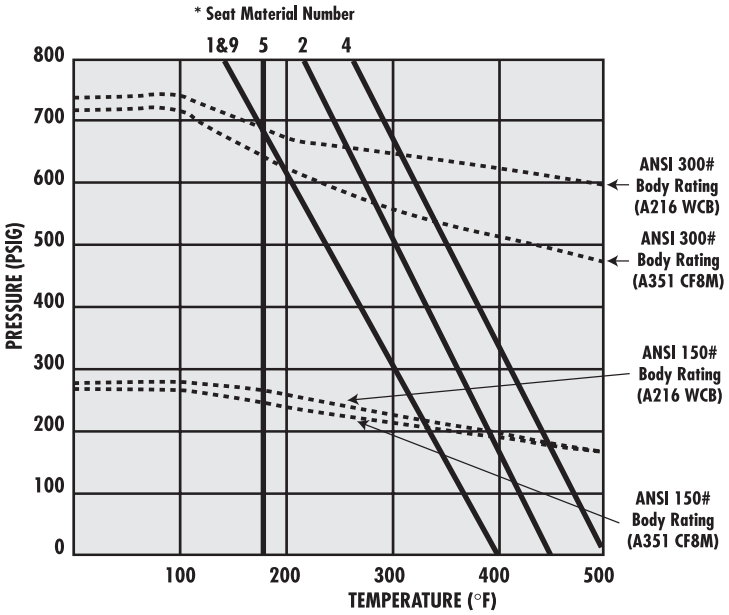
10 Micron of Hg

Seat Rating

Sizes 1/2″ - 2″



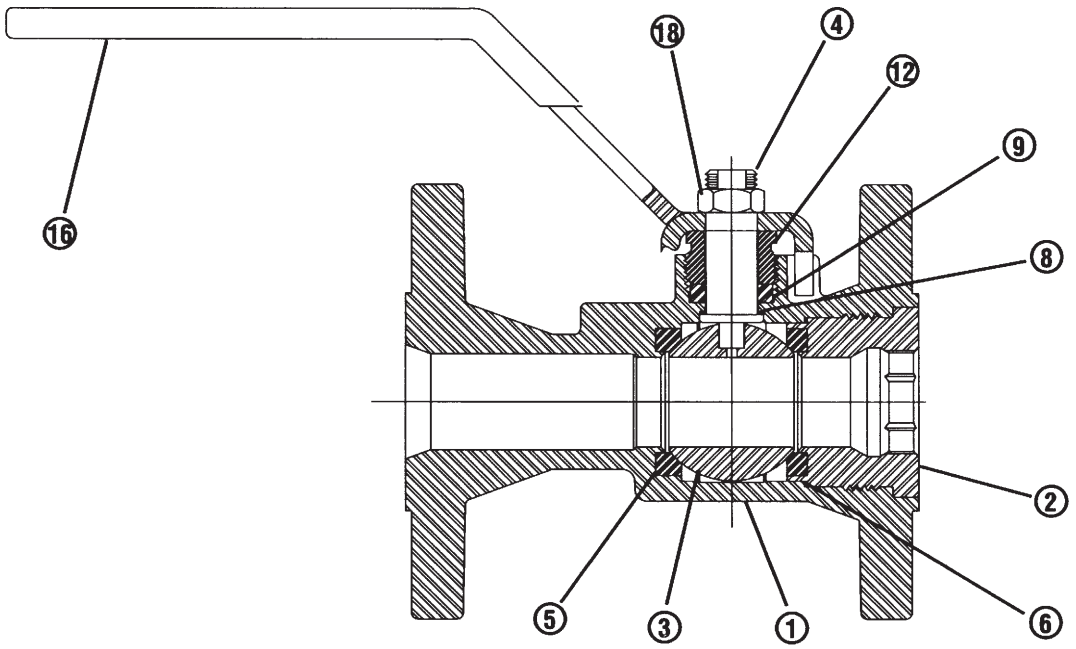
Sizes 2 1/2″ - 4″



STEAMBALL FLANGED VALVES

Materials of Construction

(standard, other materials available)



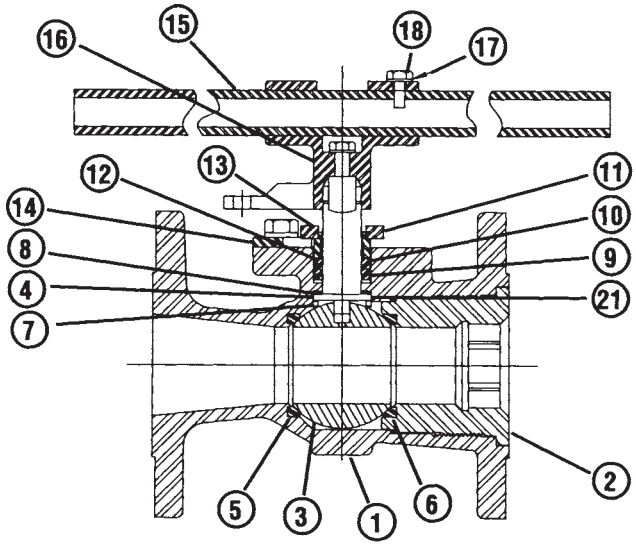
Series 3101/3103, Series 4101/4103 (1/2" through 1")

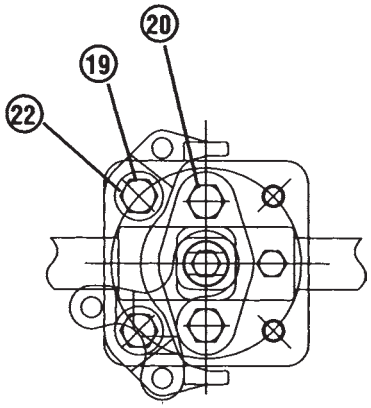
No.	Part	Carbon Steel	Stainless Steel
1	Body	ASTM A216 GR. WCB	ASTN A351 CF8M Stainless Steel
2	Seat Retainer	#1018 C.R.S.	AISI 316 Stainless Steel
3	Ball	AISI 316 Stainless Steel	AISI 316 Stainless Steel
4	Stem	#316 Stainless Steel	#316 Stainless Steel
5	Seat	Mineral Composition	Mineral Composition
6	Body Seal	Reinforced PTFE, 10 - 15% Glass Fill	Reinforced PTFE, 10 - 15% Glass Fill
8	Thrust Washer	Virgin TFE	Virgin TFE
9	Gland Packing	Carbon Reinforced PTFE	Carbon Reinforced PTFE
12	Gland Follower	#1018 C.R.S.	#316 Stainless Steel
16	Locking L-Handle	Carbon Steel Zinc Plate / Vinyl Coated	Carbon Steel Zinc Plate / Vinyl Coated
18	Nut Handle	Carbon Steel	300 Series Stainless Steel

STEAMBALL FLANGED VALVES

Materials of Construction

(standard, other materials available)





Series 1501/2501 (1$^{1/2}$" - 6") and Series 1503/2503 (1$^{1/2}$" - 4")

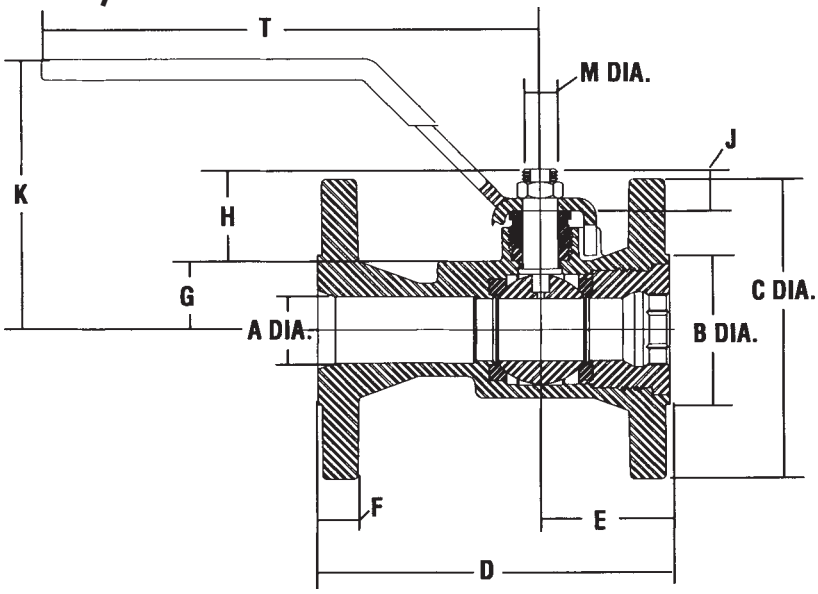
No.	Part	Carbon Steel	Stainless Steel
1	Body	ASTM A216 GR. WCB	ASTM A351 CF8M Stainless Steel
2	Seat Retainer	#1018 C.R.S.	AISI 316 Stainless Steel
3	Ball	1 1/2"- 3" #316 S.S. 4" & 6" A351 -CF8M	AISI 316 Stainless Steel or ASTM CF8M Stainless Steel
4	Stem	#316 Stainless Steel	#316 Stainless Steel
5	Seat	(2) Uniseal™ (4) 25% Mineral-Filled PTFE (5) Ultra-High Molecular Weight Polyethylene (UHMWPE) (9) Perflouroalkoxy (PFA)	(2) Uniseal™ (4) 25% Mineral-Filled PTFE (5) Ultra-High Molecular Weight Polyethylene (UHMWPE) (9) Perflouroalkoxy (PFA)
6	Body Seal	Reinforced PTFE, 10-15% Glass Fill	Reinforced PTFE, 10-15% Glass Fill
7	Ground Spring	#316 Stainless Steel	#316 Stainless Steel
8	Thrust Washer	Uniseal™	Uniseal™
9	Gland Packing	Virgin TFE	Virgin TFE
10	Gland Washer	Graphoil	Graphoil
11	Tape Liner	Reinforced PTFE, 10-15% Glass Fill	Reinforced PTFE, 10-15% Glass Fill
12	Gland Follower	#316 Stainless Steel	#316 Stainless Steel
13	Gland Retainer	1$^{1/2}$" - 3" #1018 C.S. 4" & 6" A216-WCB	1$^{1/2}$" - 3" 304 Stainless Steel 4" & 6" ASTM A351 CF8M
14	Lock Stop Plate	ASTM A351 Grade CF8M	ASTM A351 Grade CF8M
15	Handle Pipe	Carbon Steel, Zinc plate	Carbon Steel, Zinc Plate
16	Locking T-handle	ASTM A351 Grade CF8M	ASTM A351 Grade CF8M
17	Handle Lockwasher	#400 Series S.S.	#400 Series S.S.
18	Nut Handle	#300 Series S.S.	#300 Series S.S.
19	Stop Plate Screw	#300 Series S.S.	#300 Series S.S.
20	Gland Bolt	ASTM A193 GR. B8 (#304 S.S.)	ASTM A193 GR. B8 (#304 S.S.)
21	Stem Washer	(4" - 6" only) #316 S.S.	(4" - 6" only) #316 S.S.
22	Stop Plate Lockwasher	#400 Series S.S.	#400 Series S.S.

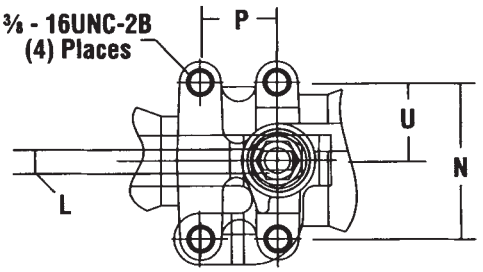
STEAMBALL FLANGED VALVES

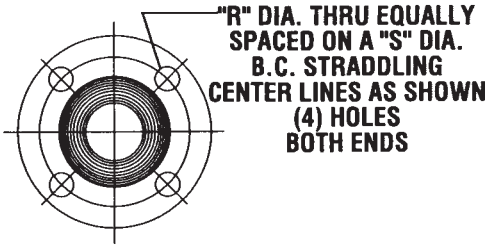
ANSI 150 Class Dimensions

(Inches)

Sizes 1/2" - 1"

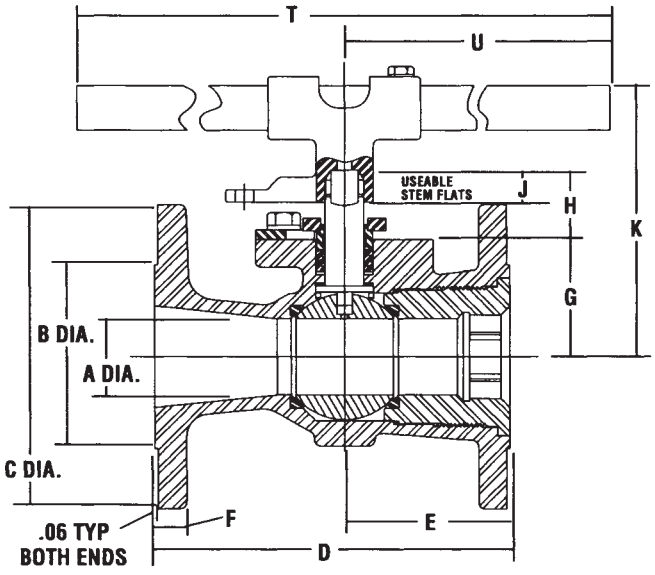


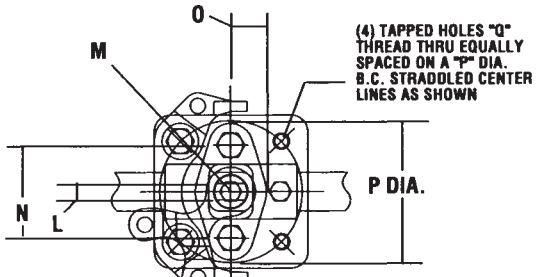


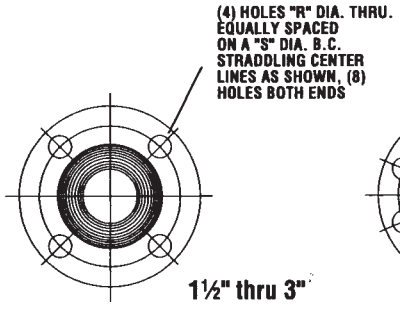


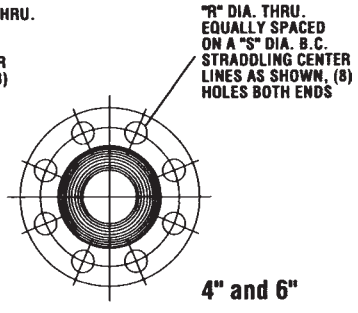
Size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	U
1/2	.500	1.50	3.50	4.25	1.50	.44	.61	.877	.32	2.549	.190/.192	.32	2.060	1.030	.625	2.375	6.06	1.030
3/4	.656	1.81	3.88	4.63	2.01	.50	.72	1.104	.39	2.814	.252/.254	.38	2.060	1.030	.625	2.750	7.06	1.030
1	.875	2.13	4.25	5.00	1.83	.62	.91	1.358	.56	3.858	.273/.379	.50	2.312	1.156	.625	3.125	8.06	1.156

Sizes 1 1/2" - 6"







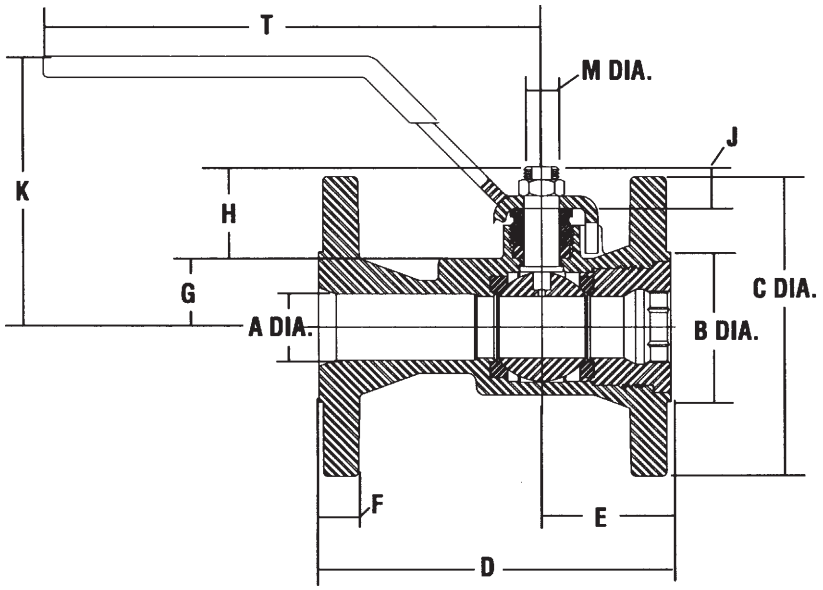


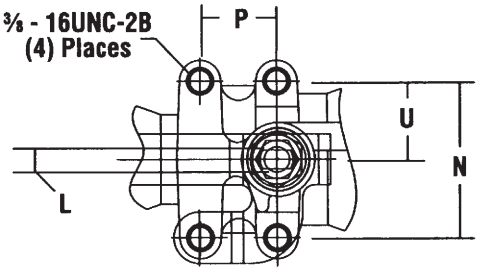
Size	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U
1 1/2	1.25	2.88	5.00	6.50	3.15	.56	2.26	1.32	.70	5.25	.375/.376	.75	2.12	.81	3.25	3/8-16 UNC	.63	3.88	17.00	8.50
2	1.50	3.62	6.00	7.00	3.27	.62	2.31	1.38	.70	5.36	.373/.376	.75	2.12	.81	3.25	3/8-16 UNC	.75	4.75	17.00	8.50
2 1/2	2.00	4.12	7.00	7.50	3.32	.69	2.76	1.36	.70	5.79	.373/.376	.75	2.12	.81	3.25	3/8-16 UNC	.75	5.50	17.00	8.50
3	2.42	5.00	7.50	8.00	3.46	.75	3.06	1.32	.70	6.05	.373/.376	.75	2.12	.81	3.25	3/8-16 UNC	.75	6.00	17.00	8.50
4	3.00	6.20	9.00	9.00	4.10	.94	4.43	4.43	2.32	8.83	.670/.674	1.06	3.38	1.36	4.13	3/8-16 UNC	.75	7.50	22.00	11.00
6	4.50	8.50	11.00	10.50	5.25	1.12	6.02	2.54	2.54	10.55	.861/.865	1.34	3.38	1.36	4.41	1/2-13 UNC	.88	9.50	22.00	11.00

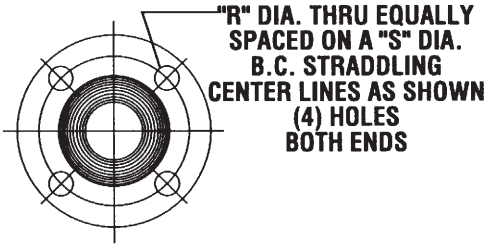
STEAMBALL FLANGED VALVES

ANSI 300 Class Dimensions (Inches)

Sizes 1/2″ - 1″

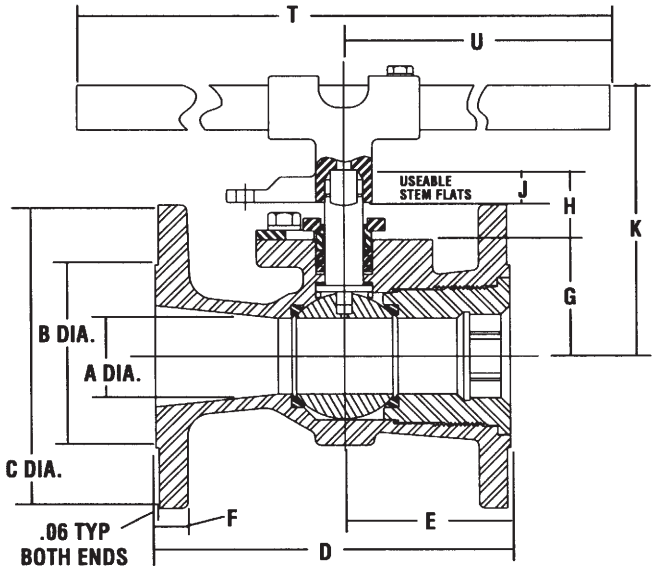


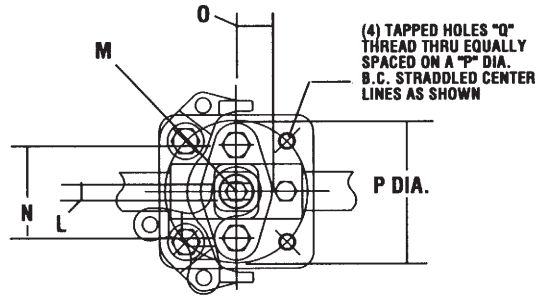


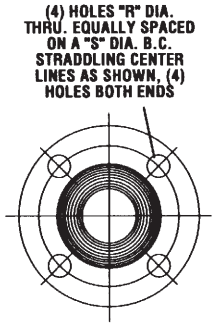


Size	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	U
1/2	.500	1.50	3.50	5.50	1.58	.56	.61	.877	.32	2.549	.190/.192	.32	2.060	1.030	.625	2.625	6.06	1.030
3/4	.656	1.81	4.62	6.00	2.01	.62	.72	1.104	.39	2.814	.252/.254	.38	2.060	1.030	.750	3.250	7.06	1.030
1	.875	2.13	4.25	6.50	1.83	.74	.91	1.358	.56	3.858	.273/.379	.50	2.312	1.156	.750	3.500	8.06	1.156

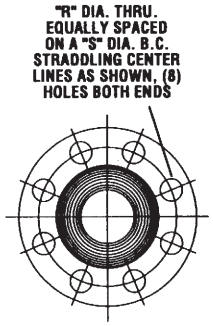
Sizes 1 1/2″ - 4″







1½" thru 3"



4"

Size	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U
1 1/2	1.25	2.88	6.12	7.50	3.15	.81	2.26	1.32	.70	5.25	.375/.376	.75	2.12	.81	3.25	3/8-16 UNC	.88	4.50	17.00	8.50
2	1.50	3.62	6.50	8.50	3.27	.88	2.31	1.38	.70	5.36	.373/.376	.75	2.12	.81	3.25	3/8-16 UNC	.75	5.00	17.00	8.50
3	2.42	5.00	8.25	11.12	3.46	1.12	3.06	1.32	.70	6.05	.373/.376	.75	2.12	.81	3.25	3/8-16 UNC	.75	6.62	17.00	8.50
4	3.00	6.20	10.00	12.00	4.10	1.25	4.43	2.32	1.38	8.83	.670/.674	1.06	3.38	1.36	4.13	3/8-16 UNC	.75	7.88	22.00	11.00