

Ultra-Seal is a range of flanged, free floating (seat supported) ball valves, available in both reduced and full bore designs, incorporating a top mounting flange to ISO 5211 Standard.

### Features

- One piece body construction for compact size, minimum weight and leak elimination.
- Floating ball design for superior, bi-directional shut-off.
- Flexing seat ring design for superior shut-off across the range of pressures and for minimum operating torque.
- High integrity stem seal minimises the potential for atmospheric leakage.
- Corrosion resistant trim. Standard valves incorporate balls and stems of stainless steel for long service life.
- Fire test certified. All sizes and pressure ratings are covered by approved certification.
- Anti-static design.
- Blow-out proof stem design.
- Reduced and full bore.
- Cavity pressure relief to upstream in event of thermal expansion.
- Direct upstream cavity relief for volatile fluids.
- Cryogenic service and testing capability.



### Two design types

There are two separate design types within the Ultra-Seal range, depending upon the valve size.

#### Series 110

Reduced bore 1/2" - 2" (DN15-50)  
Full bore 1/2" - 1 1/2" (DN15-40)

#### Series 200

Reduced bore 3" - 16" (DN80-400)  
Full bore 2" - 14" (DN50-350)

### Model numbering

Individual model numbers are derived from a combination of the:

Design Series Number	(110, 200)
Design Pressure Class	(150, 300, 600)
Body Design Type	(Full or Reduced Bore - F/R)

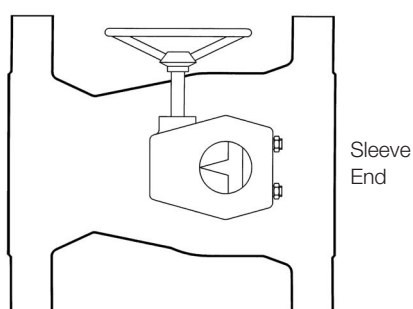
Model 215R	Series 200 Class 150 Reduced Bore
Model 130F	Series 110 Class 300 Full Bore

# Ultra-Seal Ball Valves

## Technical specifications

Design	EN 1983 <sup>(6)</sup>	API 608/API 6D <sup>(2)</sup>
	BS 5351	ASME/ANSI B16.34
Face to Face <sup>(1)</sup>	BS 2080	ASME/ANSI B16.10
		ISO 10497
Fire Testing	BS 6755 Pt. 2	API 607
		API 6FA
Pressure Testing	BS 6755 Pt. 1	API 598/API 6D <sup>(2)</sup>
Material Certification	EN 10204	NACE MR 0103 <sup>(4)</sup>
Quality Assurance	EN 29001	ISO 9001
	BS 5750 Pt. 1	
ISO Top Mounting Flange	EN 12116 <sup>(3)</sup>	ISO 5211
		MSS SP 101

## Standard orientation of a gearbox is as follows



## Notes

1. Long and short patterns available (see tables below).
2. Conformity to API 6D is limited to all Class 150 valves and Class 300 up to 6" (DN150) Full Bore.
3. These specifications are in Project form only, at the time of producing this brochure.
4. Materials of construction conform to the requirement of NACE Standard MR0103 - 2003. Compliance with NACE MR 0175 / ISO 15156 on request.

## Standard operator

			Lever	T-Bar	Gearbox
<b>Full bore</b>	Class 150	ins	2 & 3	4 & 6	8 to 14
		DN	50 & 80	100 & 150	200 to 350
	Class 300	ins	2	3 & 4	6 to 14
		DN	50	80 & 100	150 to 350
<b>Reduced bore</b>	Class 150	ins	3 & 4	6 & 8	10 to 16
		DN	80 & 100	150 & 200	250 to 400
	Class 300	ins	3	4 & 6	8 to 16
		DN	80	100 & 150	200 to 400

## Face to face standard ANSI B16.10 class 150

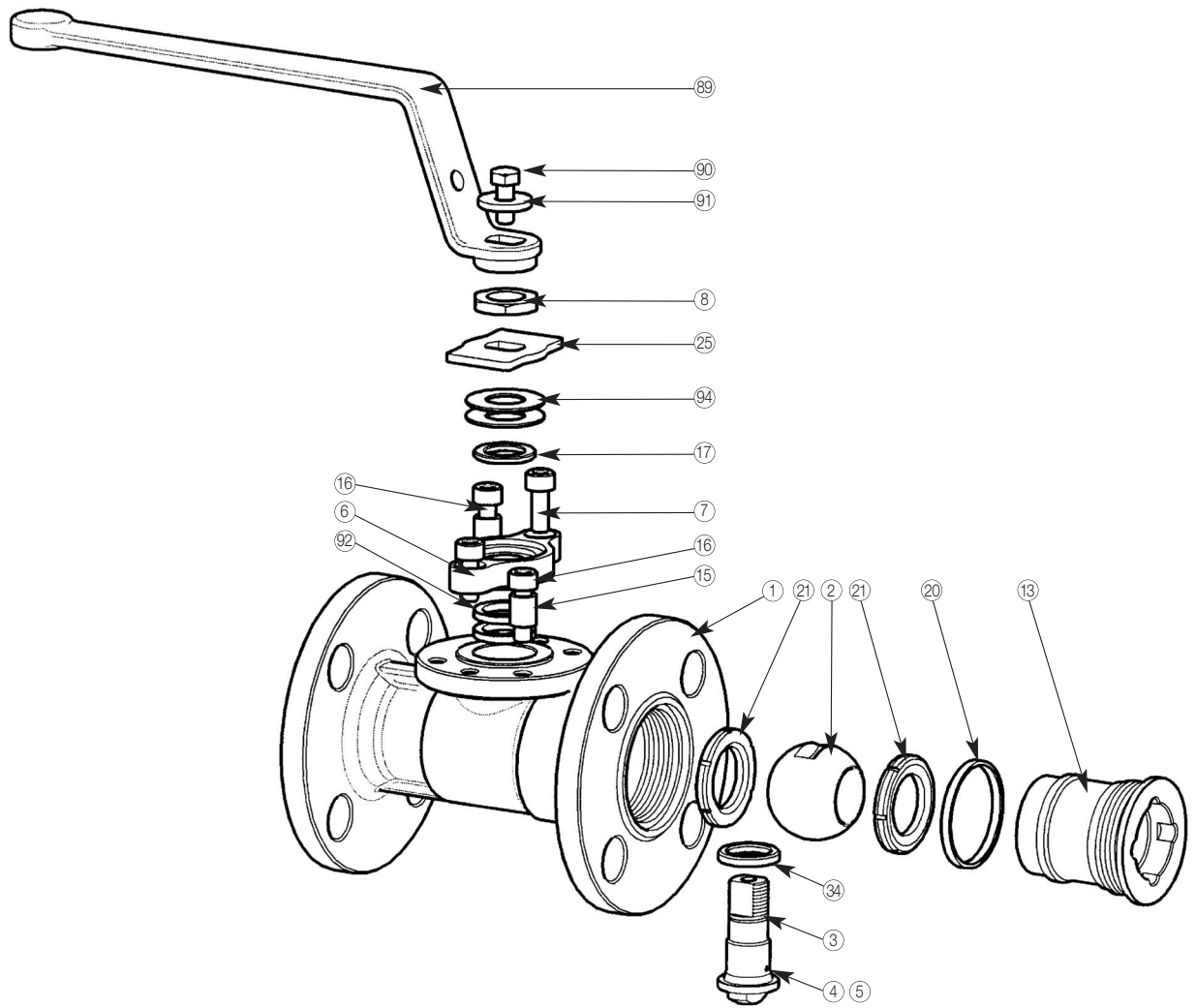
		ANSI B16.10	class 150									
		ANSI B16.10	1/2 - 11/2	2	3	4	6	8	10	12	14	16
		ANSI B16.10	15-40	50	80	100	150	200	250	300	350	400
<b>Full bore</b>	Short		✓	✓	✓	✓	✓					
	Long		✓	✓	✓	✓		✓	✓	✓	✓	
<b>Reduced bore</b>	Short		✓	✓	✓	✓	✓	✓	✓	✓		
	Long		✓	✓	✓	✓					✓	✓

## Notes

These tables identify the standard face to face length of Ultra-Seal ball valves. Alternative pattern lengths are available on request.

## Face to face standard ANSI B16.10 class 300

		ANSI B16.10	class 300									
		ANSI B16.10	1/2 - 11/2	2	3	4	6	8	10	12	14	16
		ANSI B16.10	15-40	50	80	100	150	200	250	300	350	400
<b>Full bore</b>	Short		✓	✓	✓	✓	✓	✓	✓	✓		
	Long		✓	✓	✓	✓	✓				✓	
<b>Reduced bore</b>	Short		✓	✓	✓	✓	✓	✓	✓	✓		
	Long		✓	✓	✓	✓					✓	✓



**Notes**

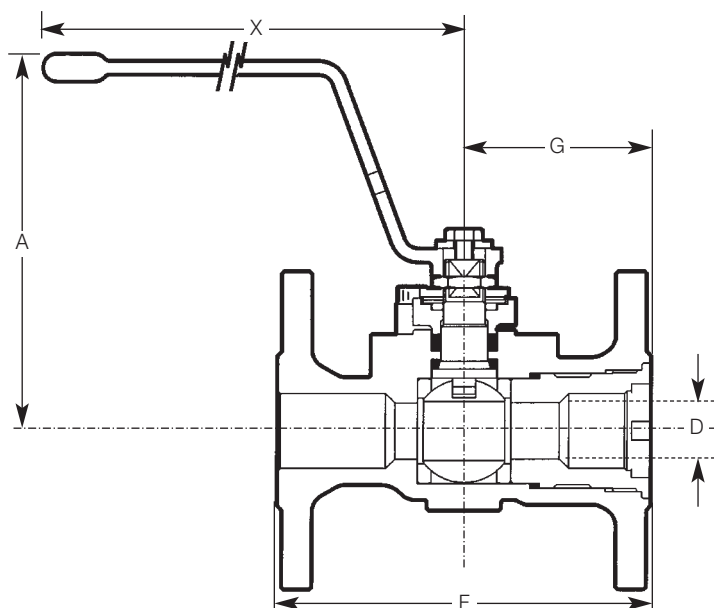
1. Standard materials of construction are given on page 11.
2. Illustration shown, is of a reduced bore.  
Parts identification for full bore is identical.

**Parts list**

Item	Component
1	Body
2	Ball
3	Stem
4	Stem Ball
5	Ball Spring
6	Gland
7	Gland Screw
8	Stem Nut
13	Sleeve
15	Stop Collar
16	Stop Screw
17	Wiper Seal
20	Sleeve Seal
21	Seat Ring
25	Stop Plate
34	Thrust Seal
89	Lever
90	Lever Screw
91	Lever Washer
92	Fire Seal
94	Gland Spring

# Ultra-Seal Ball Valves

dimensions series 110 - reduced & full bore (R/F)



## Reduced bore

		Class 150 - model 115R	class 300 - model 130R	class 600 - model 160R			
Size		ins DN	1/2 15	3/4 20	1 25	1 1/2 40	2 50
<b>A</b>		ins	3 <sup>5</sup> / <sub>8</sub>	3 <sup>11</sup> / <sub>16</sub>	4 <sup>11</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>16</sub>
		mm	92.1	93.7	119.1	128.6	134.9
<b>D</b>		ins	3/8	1/2	3/4	13/16	17/16
		mm	9.5	12.7	19.1	30.2	36.5
<b>F</b>	Class 150	ins	4 1/4	4 5/8	5	6 1/2	7
		mm	108	117.5	127.5	165.1	177.8
<b>F</b>	Class 300	ins	5 1/2	6	6 1/2	7 1/2	8 1/2
		mm	139.7	152.4	165.1	190.5	215.9
<b>F</b>	Class 600	ins	6 1/2	7 1/2	8 1/2	9 1/2	11 1/2
		mm	165.1	190.5	215.9	241.3	292.1
<b>G</b>	Class 150/300	ins	2	2 1/8	2 1/2	2 3/4	2 7/8
		mm	50.8	54	63.5	69.9	73
<b>G</b>	Class 600	ins	2 3/8	2 1/2	2 7/8	3 1/8	3 3/8
		mm	60.4	63.5	73.1	79.4	85.8
<b>X</b>		ins	5 <sup>13</sup> / <sub>16</sub>	5 <sup>13</sup> / <sub>16</sub>	7 1/2	7 1/2	7 1/2
		mm	147.6	147.6	190.5	190.5	190.5
<b>Wt.</b>	Class 150	kg	1.5	2	3	5	8
<b>Wt.</b>	Class 300	kg	2.3	3.3	4.5	8	10.3
<b>Wt.</b>	Class 600	kg	3	4.5	6.5	10.2	14

## Notes

- Series 110 Size Range**  
Reduced Bore 1/2" - 2" (DN15 to 50)  
Full Bore 1/2" - 1 1/2" (DN15 to 40).
- All sizes have lever operation fitted as standard.
- Face to face dimensions (F in table) conform to ANSI B16.10.
- See page 11 for materials of construction.
- Top mounting flange details are given on page 5.

## Full bore

		Class 150 - model 115F	class 300 - model 130F			
Size		ins DN	1/2 15	3/4 20	1 25	1 1/2 40
<b>A</b>		ins	3 <sup>11</sup> / <sub>16</sub>	4 <sup>11</sup> / <sub>16</sub>	4 <sup>13</sup> / <sub>16</sub>	5 1/4
		mm	93.7	119.1	122.2	133.4
<b>D</b>		ins	1/2	3/4	1	1 1/2
		mm	12.7	19.1	25.4	38.1
<b>F</b>	Class 150	ins	4 1/4	4 5/8	5	6 1/2
		mm	108	117.5	127.5	165.1
<b>F</b>	Class 300	ins	5 1/2	6	6 1/2	7 1/2
		mm	139.7	152.4	165.1	190.5
<b>G</b>		ins	2 1/8	2 5/8	2 1/2	2 3/4
		mm	54	58.7	63.5	69.9
<b>X</b>		ins	5 <sup>13</sup> / <sub>16</sub>	5 <sup>13</sup> / <sub>16</sub>	7 1/2	7 1/2
		mm	147.6	147.6	190.5	190.5
<b>Wt.</b>	150	kg	2.6	2.8	4	6.5
	300	kg	3	3.5	5	8

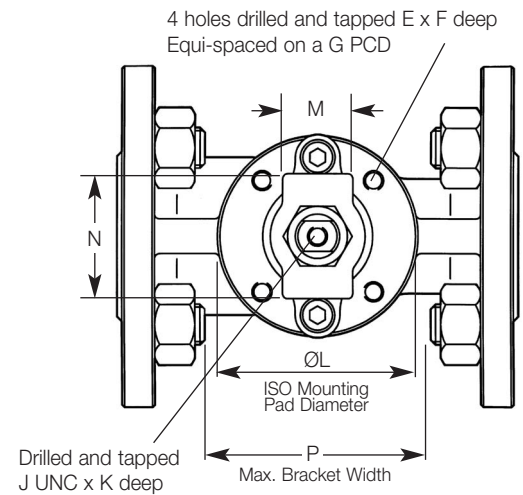
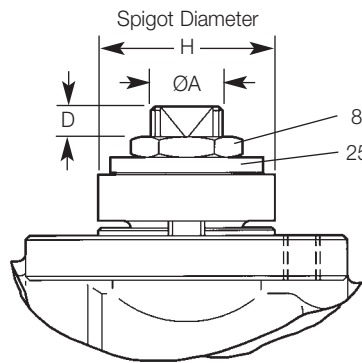
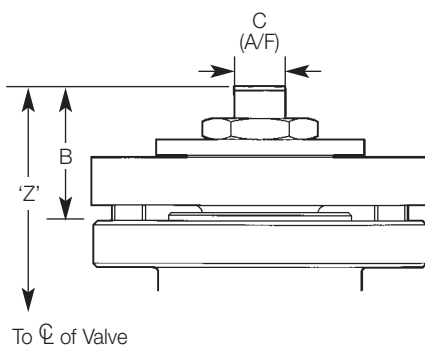
## Notes

1. Topworks dimensions are determined according to the valve stem size (Stem size 6 or 7, see chart).
2. Series 200 stem sizes are shown on page 10.

## Stem size identification

Valve sizes		Stem sizes				
		Reduced bore			Full bore	
ins	DN	150	300	600	150	300
1/2	15	6	6	6	6	6
3/4	20	6	6	6	7	7
1	25	7	7	7	7	7
1 1/2	40	7	7	7	7	7
2	50	7	7	7	(2)	(2)

## Topworks Drawings



## Notes

When fitting actuation, please note the following:

1. The stop plate (25) and stem nut (8) are left in place.
2. Stop screws are to be removed before fitting adaptor.
3. Adaptor is secured to the valve stem using the tapped hole in the top of the stem.

## Topworks dimensions

Stem size		6	7	
ISO	Flange	type	F03	F05
	A	ins	0.375/0.372	0.560/0.557
		mm	9.525/9.449	14.224/14.148
B	ins	0.714	0.989	
	mm	18.1	25.1	
C	ins	0.253/0.250	0.382/0.379	
	mm	6.426/6.350	9.703/9.627	
D	ins	0.138	0.250	
	mm	3.5	6.4	
E		M5	M6	
	F	ins	0.281	0.375
	mm	7.1	9.5	
G	ins	1.417	1.968	
	mm	36.0	50.0	
H	ins	0.984/0.974	1.378/1.368	
	mm	25.00/24.75	35.00/34.75	
J	ins	No. 8UNC	1/4"UNC	
K	ins	0.375	0.500	
	mm	9.5	12.7	
L	ins	1.875	2.500	
	mm	47.6	63.5	
M	ins	0.690	1.020	
	mm	17.5	25.9	
N	ins	13/16	19/16	
	mm	30.2	39.7	
P <sub>(max)</sub>	ins	15/8	2 1/2	
	mm	41.3	63.5	

## Dimension 'Z' - Reduced Bore

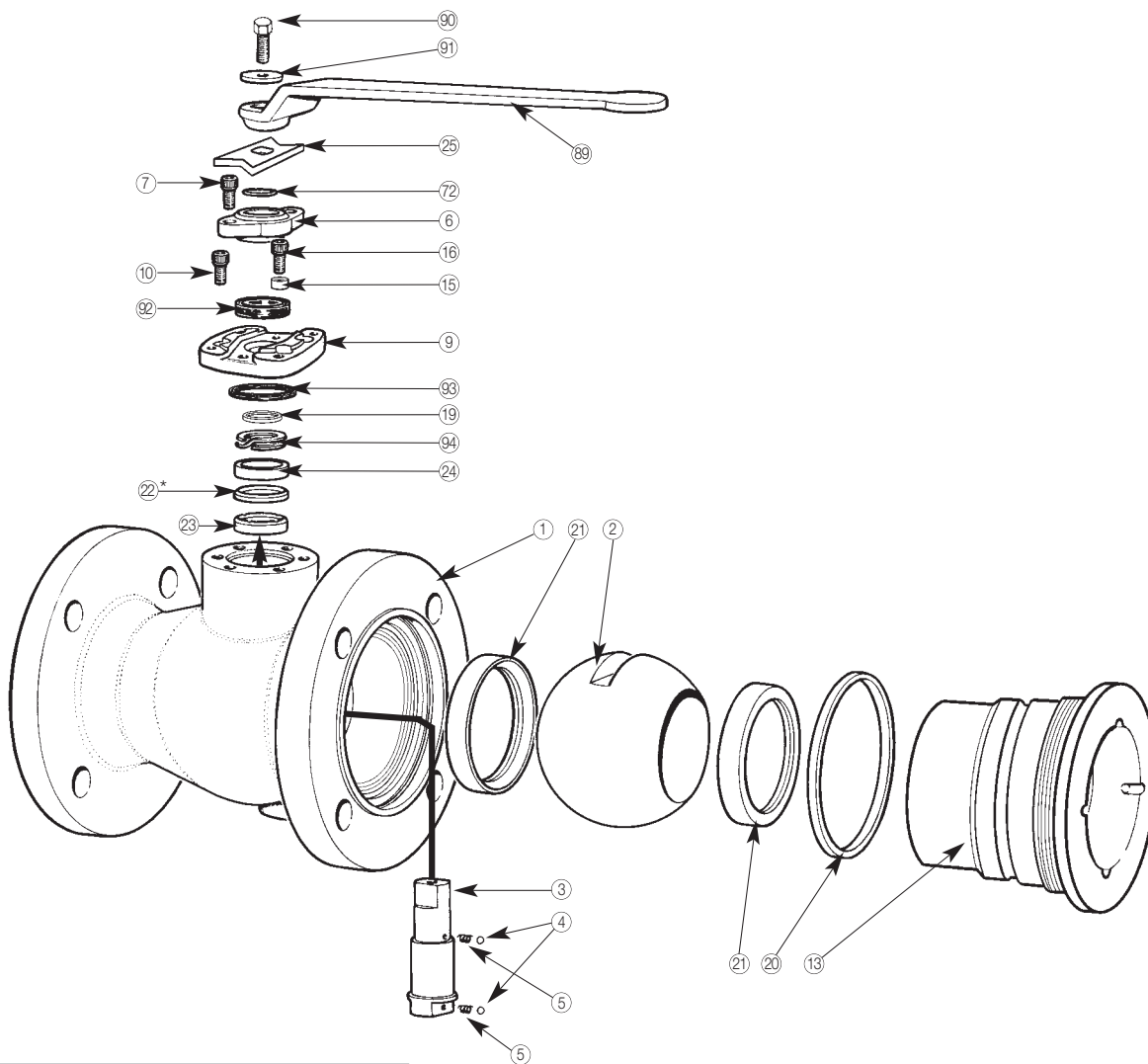
Valve Size	ins	1/2	3/4	1	1 1/2	2
	mm	15	20	25	40	50
Z	ins	1.43	1.53	2.28	2.65	2.84
	mm	36.3	38.9	57.9	67.3	72.1

## Dimension 'Z' - Full Bore

Valve Size	ins	1/2	3/4	1	1 1/2
	mm	15	20	25	40
Z	ins	1.53	2.28	2.450	2.84
	mm	38.9	57.9	62.2	72.1

# Ultra-Seal Ball Valves

parts identification series 200 - reduced bore



## Parts list

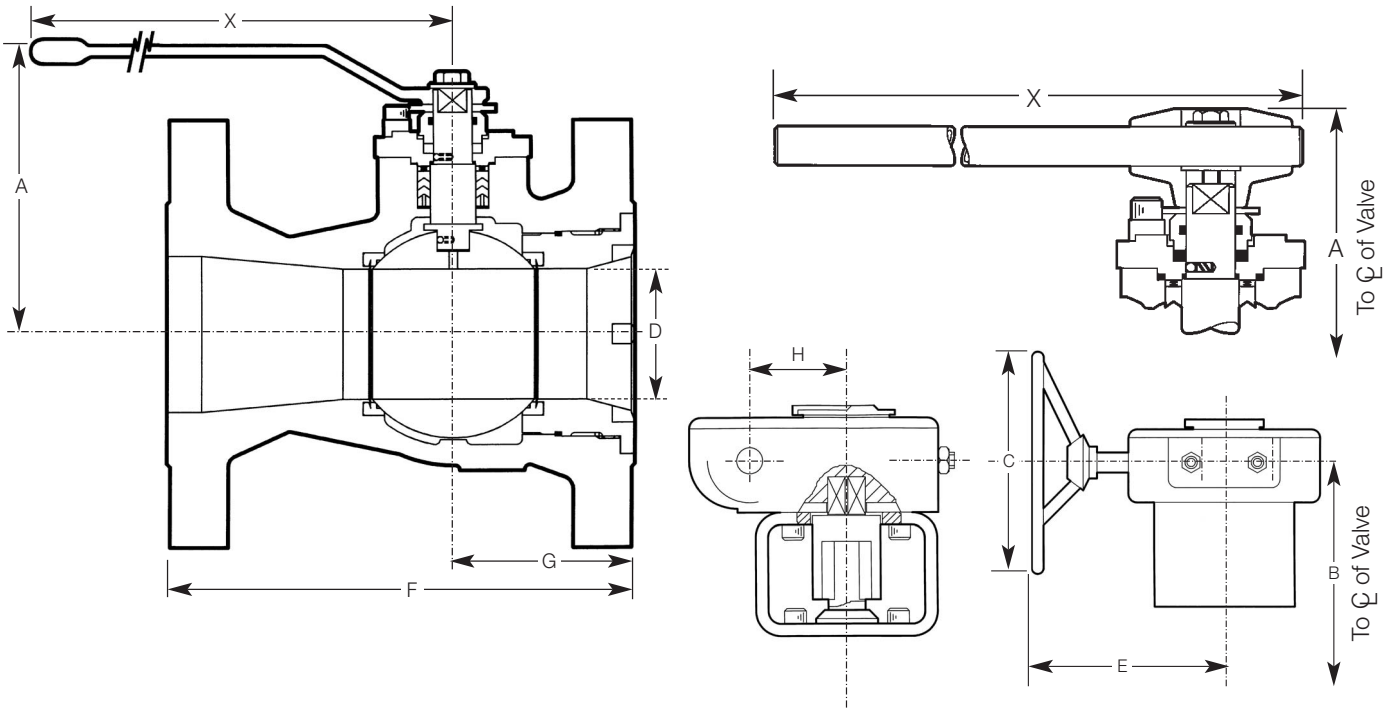
Item	Component
1	Body
2	Ball
3	Stem
4	Stem Ball
5	Ball Spring
6	Gland
7	Gland Screw x2
9	Cover
10	Cover Screw x 4
13	Sleeve
15	Stop Collar x 2
16	Stop Screw x 2
19	Thrust Seal
20	Sleeve Seal
21	Seat Ring
22	Chevron Ring (2)
23	Spreader Ring
24	Header Ring
25	Stop Plate
72	Weather Seal
89	Lever or T-bar/adaptor
90	Lever Screw
91	Lever Washer
92	Fire Seal
93	Cover Gasket
94	Gland Spring

## Notes

- Standard materials of construction are given on page 11.
- Illustration shown is of a size utilising stem size 1, in which there is one chevron seal ring. All other stem sizes utilise two chevron seal rings.

# Ultra-Seal Ball Valves

dimensions series 200 - reduced bore



## Notes

- Series 200 Size Range  
Reduced Bore  
Class 150 3" - 16" (DN80 to 400)  
Class 300 3" - 14" (DN80 to 350)
- The type of operator supplied, as standard, for each size of valve is given on page 2.
- Face to face dimensions (F in table) conform to ANSI B16.10. Details of standard patterns are given on page 2.
- Top mounting flange details are given on page 10.

## Reduced bore - class 150 - model 215R

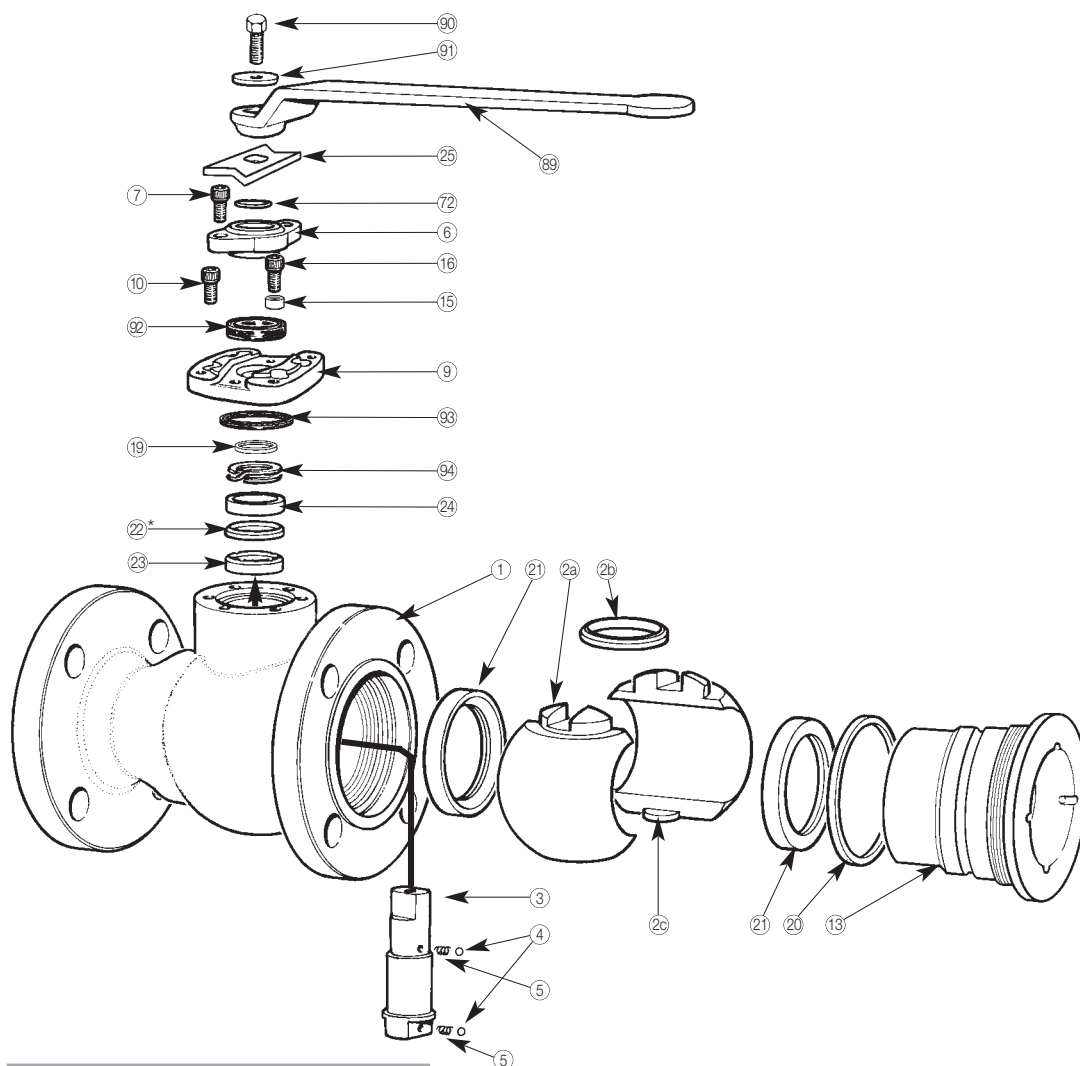
Size	ins	3	4	6	8	10	12	14	16
	DN	80	100	150	200	250	300	350	400
A	ins	5 <sup>11/16</sup>	6 <sup>5/16</sup>	8 <sup>3/4</sup>	10 <sup>1/4</sup>	-	-	-	-
	mm	144.5	160.3	222.3	260.4	-	-	-	-
B	ins	-	-	10.24	12.20	14.76	15.95	16.54	20.08
	mm	-	-	260	310	375	405	420	510
C	ins	-	-	7.87	7.87	19.7	31.5	31.5	31.5
	mm	-	-	200	200	500	800	800	800
D	ins	2 <sup>1/2</sup>	3	4 <sup>1/2</sup>	6	7 <sup>3/8</sup>	9	10	11 <sup>1/2</sup>
	mm	63.5	76.2	114.3	152.4	187.3	228.6	250.8	292
E	ins	-	-	8.58	8.66	11.34	12.24	12.24	13.62
	mm	-	-	218	220	288	311	311	346
F	ins	8	9	10 <sup>1/2</sup>	11 <sup>1/2</sup>	13	14	27	30
	mm	203.2	228.6	266.7	292.1	330.2	355.6	685.8	762
G	ins	3 <sup>1/2</sup>	3 <sup>1/2</sup>	4 <sup>1/2</sup>	5	6	7	7 <sup>1/2</sup>	8 <sup>3/4</sup>
	mm	88.9	88.9	114.3	127	152.4	177.8	190.5	222.3
H	ins	-	-	1.77	2.80	2.80	3.39	3.39	4.13
	mm	-	-	45	71	71	86	86	105
X	ins	10 <sup>1/4</sup>	10 <sup>1/4</sup>	20	26 <sup>1/2</sup>	-	-	-	-
	mm	260.4	260.4	508.0	673.1	-	-	-	-

## Reduced bore - class 300 - model 230R

Size	ins	3	4	6	8	10	12	14
	DN	80	100	150	200	250	300	350
A	ins	5 <sup>11/16</sup>	7 <sup>3/4</sup>	8 <sup>7/8</sup>	10 <sup>3/8</sup>	-	-	-
	mm	144.5	196.9	225.4	263.5	-	-	-
B	ins	-	-	10.24	12.20	14.76	15.95	16.54
	mm	-	-	260	310	375	405	420
C	ins	-	-	7.90	7.90	19.7	19.7	31.5
	mm	-	-	200	200	500	500	800
D	ins	2 <sup>1/2</sup>	3	4 <sup>1/2</sup>	6	7 <sup>3/8</sup>	9	9 <sup>7/8</sup>
	mm	63.5	76.2	114.3	152.4	187.3	228.6	250.8
E	ins	-	-	8.58	8.66	11.34	12.24	12.24
	mm	-	-	218	220	288	311	311
F	ins	11 <sup>1/8</sup>	12	15 <sup>7/8</sup>	16 <sup>1/2</sup>	18	19 <sup>3/4</sup>	30
	mm	282.6	304.8	403.2	419.1	457.2	501.7	762
G	ins	3 <sup>1/2</sup>	4 <sup>1/2</sup>	4 <sup>1/2</sup>	5	6	7	7 <sup>1/2</sup>
	mm	88.9	108	114.3	127	152.4	177.8	190.5
H	ins	-	-	1.77	2.80	2.80	3.39	3.39
	mm	-	-	45	71	71	86	86
X	ins	10 <sup>1/4</sup>	20	20	26 <sup>1/2</sup>	-	-	-
	mm	260.4	508.0	508.0	673.1	-	-	-

# Ultra-Seal Ball Valves

parts identification series 200 - full bore



## Parts list

Item	Component
1	Body
2a	Ball Half
2b	Ball Locking Ring
2c	Ball Key
3	Stem
4	Stem Ball
5	Ball Spring
6	Gland
7	Gland Screw x 2
9	Cover
10	Cover Screw x 4
13	Sleeve
15	Stop Collar x 2
16	Stop Screw x 2
19	Thrust Seal
20	Sleeve Seal
21	Seat Ring
22	Chevron Ring (2)
23	Spreader Ring
24	Header Ring
25	Stop Plate
72	Weather Seal
89	Lever or T-Bar/Adaptor
90	Lever Screw
91	Lever Washer
92	Fire Seal
93	Cover Gasket
94	Gland Spring

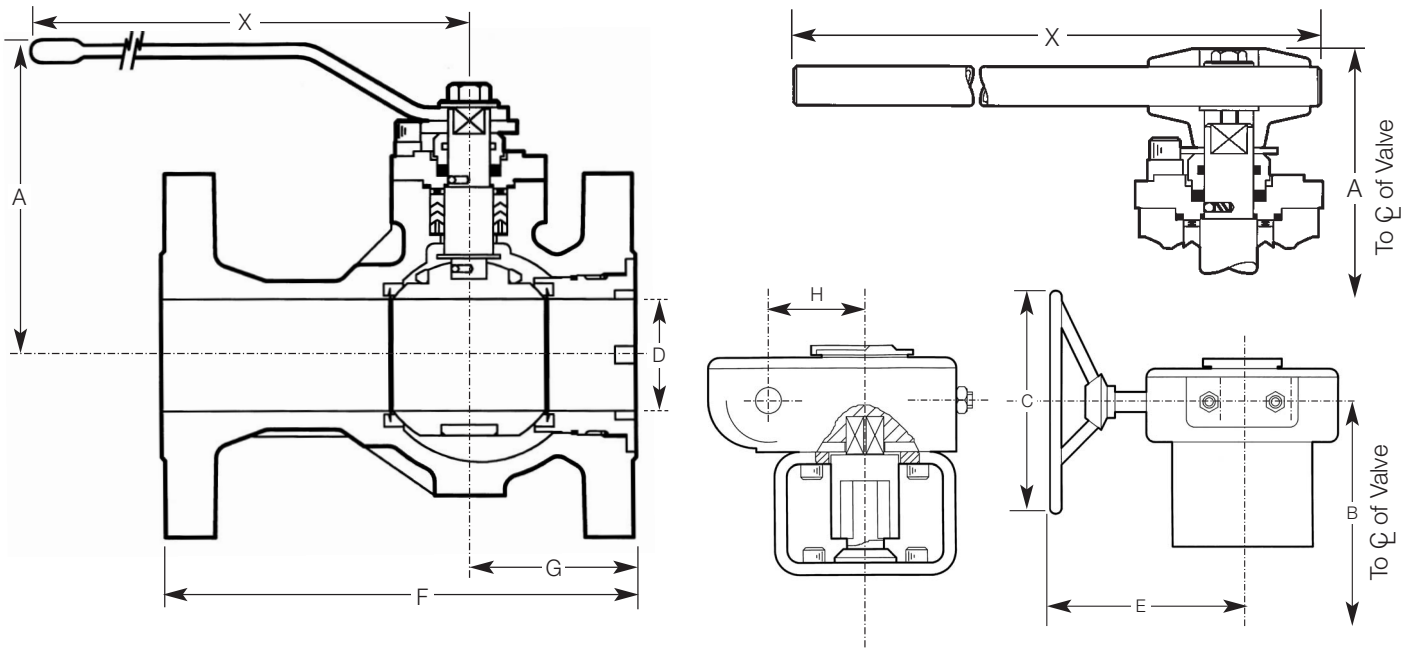
## Notes

- Standard materials of construction are given on page 11.
- Illustration shown is of a size utilising stem size 1, in which there is one chevron seal ring. All other stem sizes utilise two chevron seal rings.



# Ultra-Seal Ball Valves

dimensions series 200 - full bore



## Notes

- Series 200 Size Range  
Full Bore Class 150/300  
2" - 14" (DN50 to 350)
- The type of operator supplied, as standard, for each size of valve is given on page 2.
- Face to face dimensions (F in table) conform to ANSI B16.10.  
Details of standard patterns are given on page 2.
- Top mounting flange details are given on page 10.

## Full bore - class 150 - model 215F

Size	ins	2	3	4	6	8	10	12	14
	DN	50	80	100	150	200	250	300	350
A	ins	5.38	6.38	8.5	10.38	-	-	-	-
	mm	136.5	161.9	215.9	263.5	-	-	-	-
B	ins	-	-	10.43	12.20	15.16	16.73	21.06	22.64
	mm	-	-	265	310	385	425	535	575
C	ins	-	-	7.87	9.84	19.7	31.5	31.5	23.62
	mm	-	-	200	250	500	800	800	600
D	ins	2.0	3.0	4.0	6.0	8.0	10.0	12.0	13.25
	mm	50.8	76.2	101.6	152.4	203.2	254.0	304.8	337
E	ins	-	-	8.58	9.84	11.34	12.24	13.62	15.24
	mm	-	-	218	250	288	311	346	387
F	ins	7.0	8.0	9.0	10 1/2	18.0	21.0	24.0	27.0
	mm	177.8	203.2	228.6	266.7	457.2	533.4	609.6	686
G	ins	2 3/4	4.0	4 3/8	5 7/16	7 1/2	8 1/2	9 1/2	11 1/4
	mm	69.9	101.6	111.1	138.1	190.5	215.9	241.3	285
H	ins	-	-	1.77	2.80	2.80	3.39	4.13	5.12
	mm	-	-	45	71	71	86	105	130
X	ins	10 1/4	10 1/4	20.0	26 1/2	-	-	-	-
	mm	260.4	260.4	508.0	673.1	-	-	-	-

## Full bore - class 300 - model 230F

Size	ins	2	3	4	6	8	10	12	14
	DN	50	80	100	150	200	250	300	350
A	ins	5 3/8	7 13/16	8 1/2	10 3/8	-	-	-	-
	mm	136.5	198.4	215.9	263.5	-	-	-	-
B	ins	-	-	8.58	9.84	11.34	12.24	13.62	15.24
	mm	-	-	218	250	288	311	346	387
C	ins	-	-	7.87	9.84	19.7	31.5	31.5	23.62
	mm	-	-	200	250	500	800	800	600
D	ins	2.0	3.0	4.0	6.0	8.0	10.0	12.0	13 1/4
	mm	50.8	76.2	101.6	152.4	203.2	254.0	304.8	337
E	ins	-	-	8.58	9.84	11.34	12.24	13.62	15.24
	mm	-	-	218	250	288	311	346	387
F	ins	8 1/2	11 1/8	12.0	15 7/8	16 1/2	18.0	19 3/4	30
	mm	215.9	282.6	304.8	403.2	419	457	501	762
G	ins	3	4 5/8	5	6	7 1/2	8 7/8	10 1/8	11 1/4
	mm	76.2	117.5	127	152.4	190.5	225.4	257.2	285.8
H	ins	-	-	1.77	2.80	2.80	3.39	4.13	5.12
	mm	-	-	45	71	71	86	105	130
X	ins	10 1/4	20	20	26 1/2	-	-	-	-
	mm	260.4	508.0	508.0	673.1	-	-	-	-

## Stem size identification

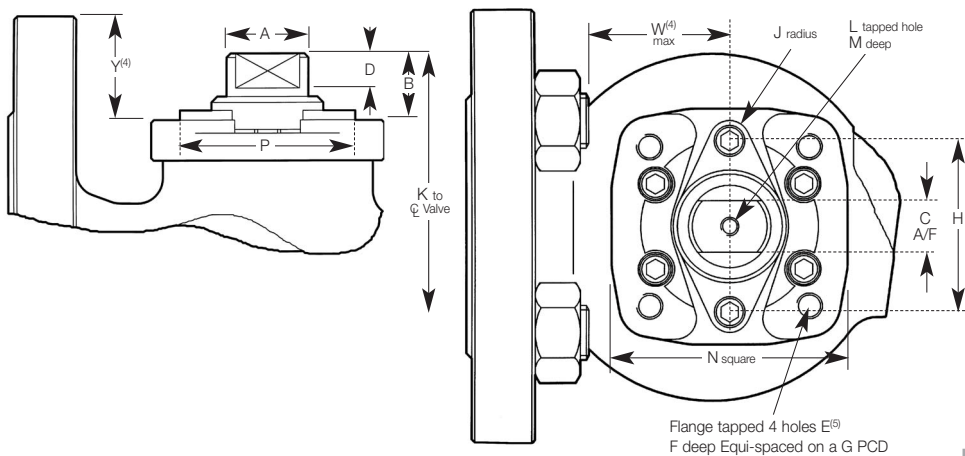
Stem Size	Model Number				K	
	Class	Class	Class	Class	ins	mm
<b>1</b>	2	50	215F	230F	4 <sup>7</sup> / <sub>16</sub>	113
	3	80	215R	230R	4 <sup>3</sup> / <sub>4</sub>	121
	3	80	215F	-	5 <sup>13</sup> / <sub>32</sub>	137
	4	100	215R	-	5 <sup>13</sup> / <sub>32</sub>	137
<b>2</b>	3	80	-	230F	6	152
	4	100	-	230R	6	152
	4	100	215F	230F	6 <sup>11</sup> / <sub>16</sub>	170
<b>3</b>	6	150	215R	230R	7 <sup>1</sup> / <sub>16</sub>	179
	8	200	215R	230R	8 <sup>21</sup> / <sub>32</sub>	220

Stem Size	Model Number				K	
	Class	Class	Class	Class	ins	mm
<b>4</b>	8	200	215F	230F	13 <sup>1</sup> / <sub>16</sub>	332
	10	250	215R	230R	12 <sup>11</sup> / <sub>16</sub>	322
	10	250	215F	230F	14 <sup>1</sup> / <sub>2</sub>	368
	12	300	215R	230R	13 <sup>3</sup> / <sub>4</sub>	349
<b>5</b>	14	350	215R	230R	14 <sup>3</sup> / <sub>8</sub>	365
	12	300	215F	230F	17 <sup>3</sup> / <sub>8</sub>	441
	14	350	215F	230F	18 <sup>5</sup> / <sub>8</sub>	473
	16	400	215R	-	16 <sup>7</sup> / <sub>16</sub>	410

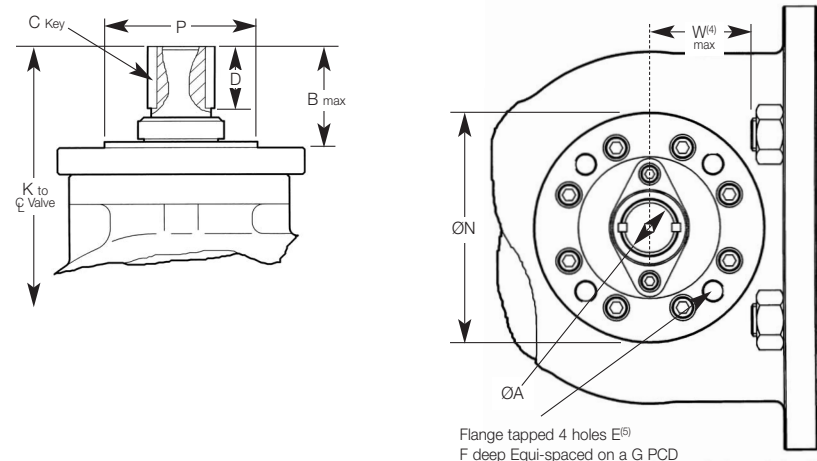
## Notes

- Series 200 utilise five standard stem sizes.
- Top works dimensions are determined according to the valve stem size.
- To determine the relevant stem size for a given valve, refer to Table 1 and locate the model concerned by size, pressure rating and design type. (F = full R = reduced) Then identify the required dimension.
- Dimensions Y and W are only applicable when height of cover falls below top of flange (as shown). Only these valve models are affected. Dimension W is based on bolting to BS 4882.
- Hindle standard is to supply metric tappings. Imperial tappings on request.

## Topworks dimensions series 200 - stem sizes 1, 2, 3



## Topworks dimensions series 200 - stem sizes 4, 5



## Dimensions

Valve Size/Type		Y	W
<b>3" 230R</b>	ins	1.406	1.503
	mm	35.7	38.1
<b>4" 230R</b>	ins	1.406	1.503
	mm	35.7	38.1
<b>6" 230R</b>	ins	1.406	1.503
	mm	35.7	38.1
<b>8" 230R</b>	ins	1.406	1.503
	mm	35.7	38.1
<b>14" 230R</b>	ins	1.406	1.503
	mm	35.7	38.1

## Topworks dimensions series 200 - stem sizes 4, 5

ISO		A		B		C		D		E		F		G		H		J		L		M		N		P	
Stem	Flange	ins	mm	ins	mm	ins	mm	ins	mm	ins	mm	ins	mm	ins	mm	ins	mm	ins	mm	ins	mm	ins	mm	ins	mm	ins	mm
<b>1</b>	F07	0.750	19.05	0.820	20.8	0.505	12.83	15/32	12	15/16	M8x	1/2	12.7	2.25	70	2.093	53.16	5/16	8	1/4 UNC	5/8	16	27/8	73	2.165	55.0	
		0.748	19.00			0.500	12.70			UNC	1.25														2.160	54.9	
<b>2</b>	F10	1.125	28.58	1.077	27.4	0.755	19.18	17/32	13	3/8	M10	1/2	12.7	4.016	102	3.062	77.77	3/8	10	5/8 UNC	5/8	16	41/8	105	2.755	70.0	
		1.123	28.53			0.750	19.05			UNC	x1.5														2.750	69.9	
<b>3</b>	F12	1.374	34.90	1.236	31.4	1.005	25.53	13/16	20	1/2	M12	7/8	22.2	4.920	125	2.093	88.9	5/8	16	3/8 UNC	3/4	19	41/2	114.3	3.345	85.0	
		1.372	34.85			1.000	25.40			UNC	x1.75														3.340	84.8	
<b>4</b>	F16	1.999	50.78	3.483	88.47	1/2 x 5/16	Key	21/4	57	3/4	M20	7/8	22.2	6.496	165	N/A	N/A	N/A	N/A	8.268	210	5.115	130	5.115	130		
		1.997	50.72			UNC				x 2.5	5.115															130	
<b>5</b>	F16	2.374	60.30	4.183	106.25	1/2 x 5/16	Key	3	76	3/4	M20	11/8	28.6	6.496	165	N/A	N/A	N/A	N/A	8.268	210	5.115	130	5.115	130		
		2.372	60.25			UNC				x2.5	5.115															130	

## Notes

1. Max. Carbon content 0.25%.
2. As specified in valve description.
3. Operator type varies by size (see pages 6, 7 & 9).

## Principal components

No.	Component	Carbon Steel Valves	Stainless Steel Valves
1	Body	ASTM A216 WCB (1)	ASTM A351 CF8M
2/2a	Ball (ball half)	316 Stainless Steel	316 Stainless Steel
3	Stem	316 Stainless Steel	316 Stainless Steel
6	Gland	ASTM A216 WCB (1)(2) ASTM A351 CF8M (2)	ASTM A351 CF8M
9	Cover	ASTM A216 WCB (1)	ASTM A351 CF8M
13	Sleeve	Carbon Steel	A.I.S.I. 316
21	Seat Ring	Virgin PTFE	Virgin PTFE

## Other components

The materials of which are common for both Carbon Steel and Stainless Steel Valves

No.	Component	Material
2b/2c	Ball Locking Ring/Key	ASTM A276 Gr. 316
4	Stem Ball	ASTM A276 Gr. 316
5	Ball Spring	MONEL 400
7	Gland Screw	ASTM A193 B8
8	Stem Nut	A.I.S.I. 304
10	Cover Screw	ASTM A193 B8
15	Stop Collar	A.I.S.I. 316
16	Stop Screw	ASTM A193 b8
17	Wiper Seal	Virgin PTFE
19	Thrust Seal	25% GF PTFE
20	Sleeve Seal	Virgin PTFE
22	Chevron Ring	Virgin PTFE
23	Spreader Ring	Virgin PTFE
24	Header Ring	Virgin PTFE
25	Stop Plate	Stainless Steel
34	Thrust Seal	Reinforced PTFE
72	Weather Seal	Nitrile Rubber
89	Handlever (3) T-Bar/Adaptor (3)	Carbon Steel Carbon Steel/Ductile Iron
90	Lever Screw	A.I.S.I. 304
91	Lever Washer	A.I.S.I. 304
92	Fire Seal	Expanded Graphite
93	Cover Gasket	Fire Resistant
94	Gland Spring	A.I.S.I. 316

## Notes

Certification is available on standard production, as follows:  
 - works hydrostatic test  
 - fire test  
 - material (chemical and physical) to EN 10204.

## Standard paint/finish

### Carbon Steel Valves

**Series 110** Phosphate corrosion protection (matt black)

**Series 200** Red oxide primer

### Stainless Steel Valves

Castings are acid pickled to remove surface impurities

### Paint Finishes

A range of painting specifications, for offshore and onshore service conditions, is available to customers requirements.

## Alternative materials

### Body and Trim

Low Carbon Steels

Duplex Stainless Steels

Aluminium Bronze

Monel

Other materials available on request

### Seats

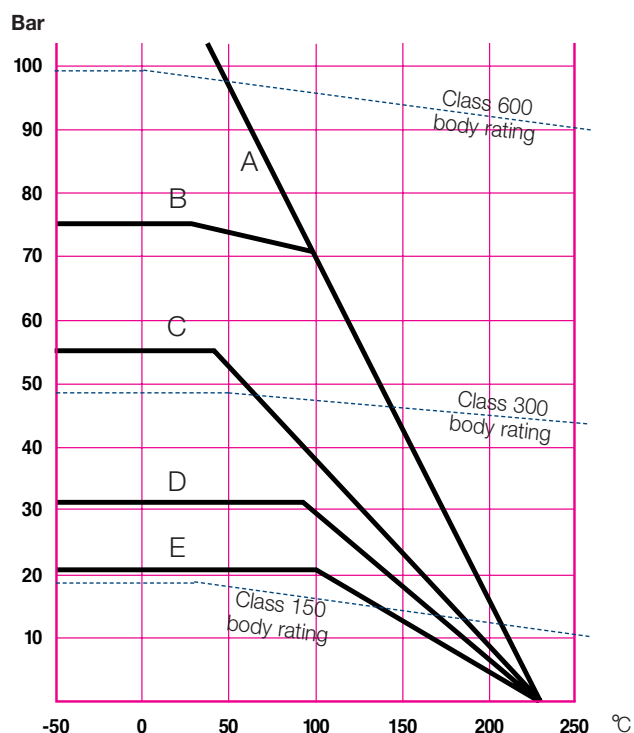
Reinforced PTFE

Carbon Filled PTFE

PEEK™ (Polyetheretherketone)

UHMPE (Ultra High Molecular Polyethylene)

## Pressure/temperature Graph



### Graph line identification

Size	Seat Material				Size	Seat Material			
	Reduced Bore		Full Bore			Reduced Bore		Full Bore	
	PTFE	RTFE	PTFE	RTFE		PTFE	RTFE	PTFE	RTFE
ins 1/2 to 2 DN 15 to 50	B	A	B	A	ins 8 DN 200	D	C	D	D
ins 3 to 4 DN 80 to 100	C	B	C	B	ins 10 DN 250	D	D	E	E
ins 6 DN 150	C	B	D	C	ins 12 to 16 DN 300 to 400	E	E	E	E

### Cv - values

Valve size				Valve size			
Ins	DN	Reduced Bore	Full Bore	Ins	DN	Reduced Bore	Full Bore
1/2	15	6	17	6	150	1000	5400
3/4	20	10	34	8	200	1760	10660
1	25	28	132	10	250	2660	17170
1 1/2	40	73	265	12	300	4400	25700
2	50	110	470	14	350	5400	31500
3	80	310	1200	16	400	6500	-
4	100	480	2210				

### Valve coding system

1	15	F	-	15	-	316
<b>SERIES</b>	<b>CLASS</b>	<b>BORE</b>		<b>FLANGE DRILLING</b>		<b>BODY MATERIAL</b>
1 110	15 150	F Full		15 ANSI 150		316 Stainless Steel ASTM A351 CF8M
2 200	30 300	R Reduced		30 ANSI 300		161 Carbon Steel ASTM A216 WCB
	60 600			60 ANSI 600		LCB Carbon Steel ASTM A352 LCB
						AB2 Aluminium Bronze BS1400 AB2

### Notes

1. The maximum working capability of any given valve is either the body rating or seat rating, whichever is the lower.
2. The Graph Line Identification table indicates the valve models/seat materials represented by lines A to E on the graph.
3. The graph is suitable for use with both carbon steel and stainless steel valves.

#### Example:

At temperature up to 100°C, all models have a seat rating higher than the Class 150 body rating.

The max Pressure/Temperature limit for Class 150 valves is therefore the body rating.

For Class 300 valves, models represented by lines D and E would be limited to the seat rating indicated, since this is less than the Class 300 body rating.

4. Flow Coefficients are for valves in the fully open position.
5. Ultra-Seal Ball Valve Models are categorised by a three part code indicating design type, flange drilling and body material.
6. Other flange drillings available on request.
7. Trim and Other Component materials for standard valves are given on page 11.

**Example given** (115F - 15 - 316).