

Worldwide Oilfield Machine

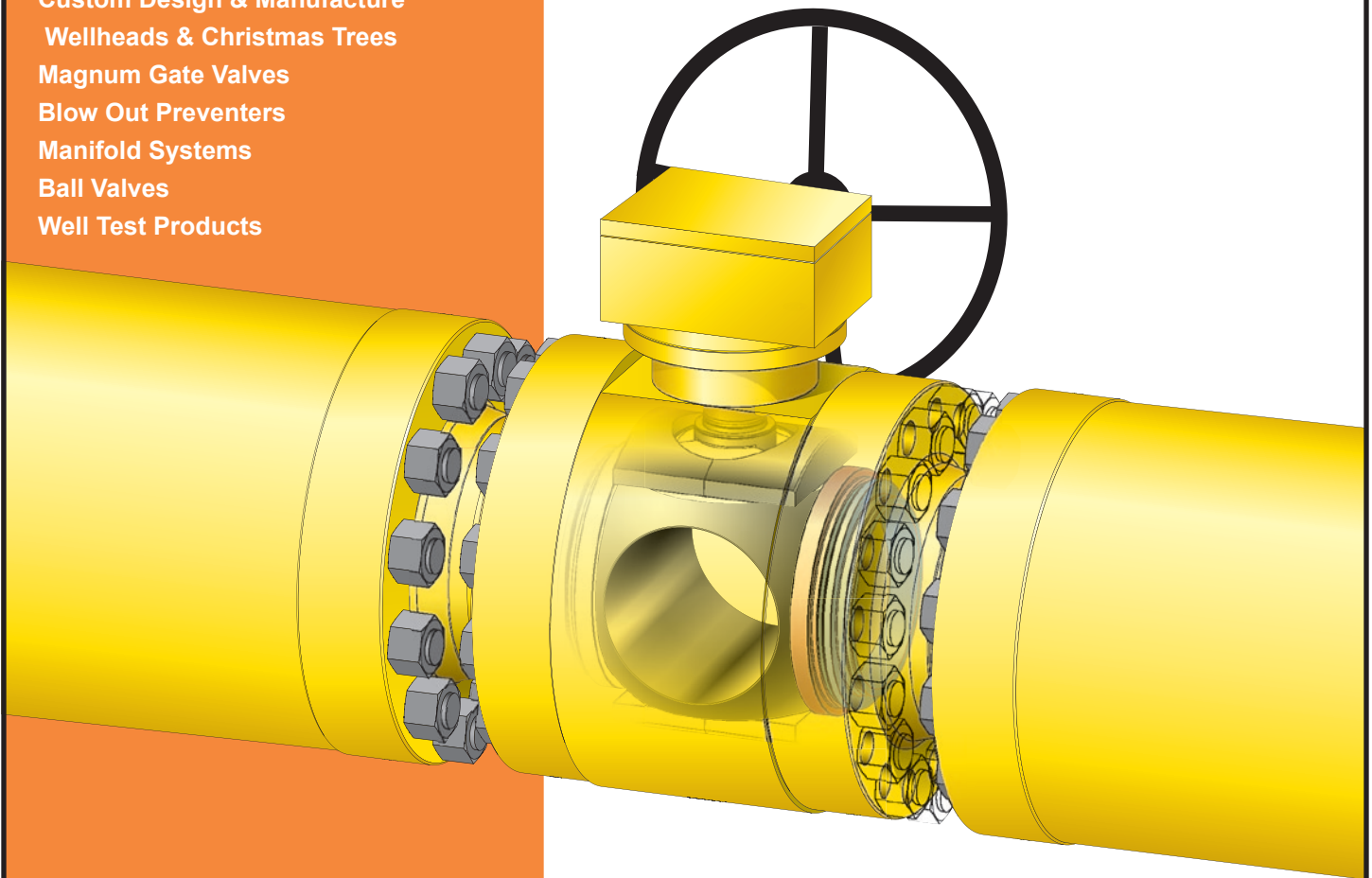
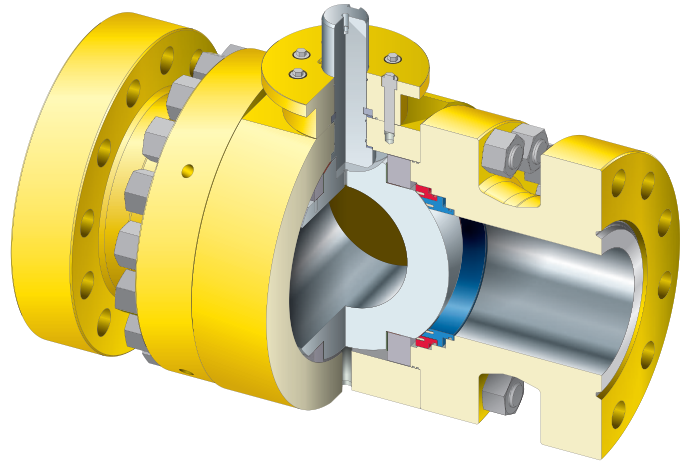
**Model 30-BL**

# Dual-Seal Ball Valve

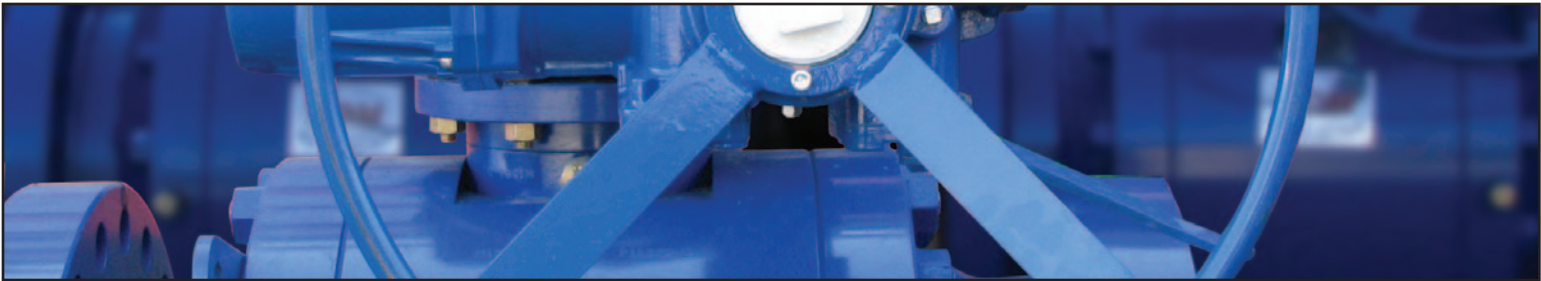


Invention,  
Innovation, and  
Engineering  
Creativity

Subsea Intervention Systems  
Custom Design & Manufacture  
Wellheads & Christmas Trees  
Magnum Gate Valves  
Blow Out Preventers  
Manifold Systems  
Ball Valves  
Well Test Products







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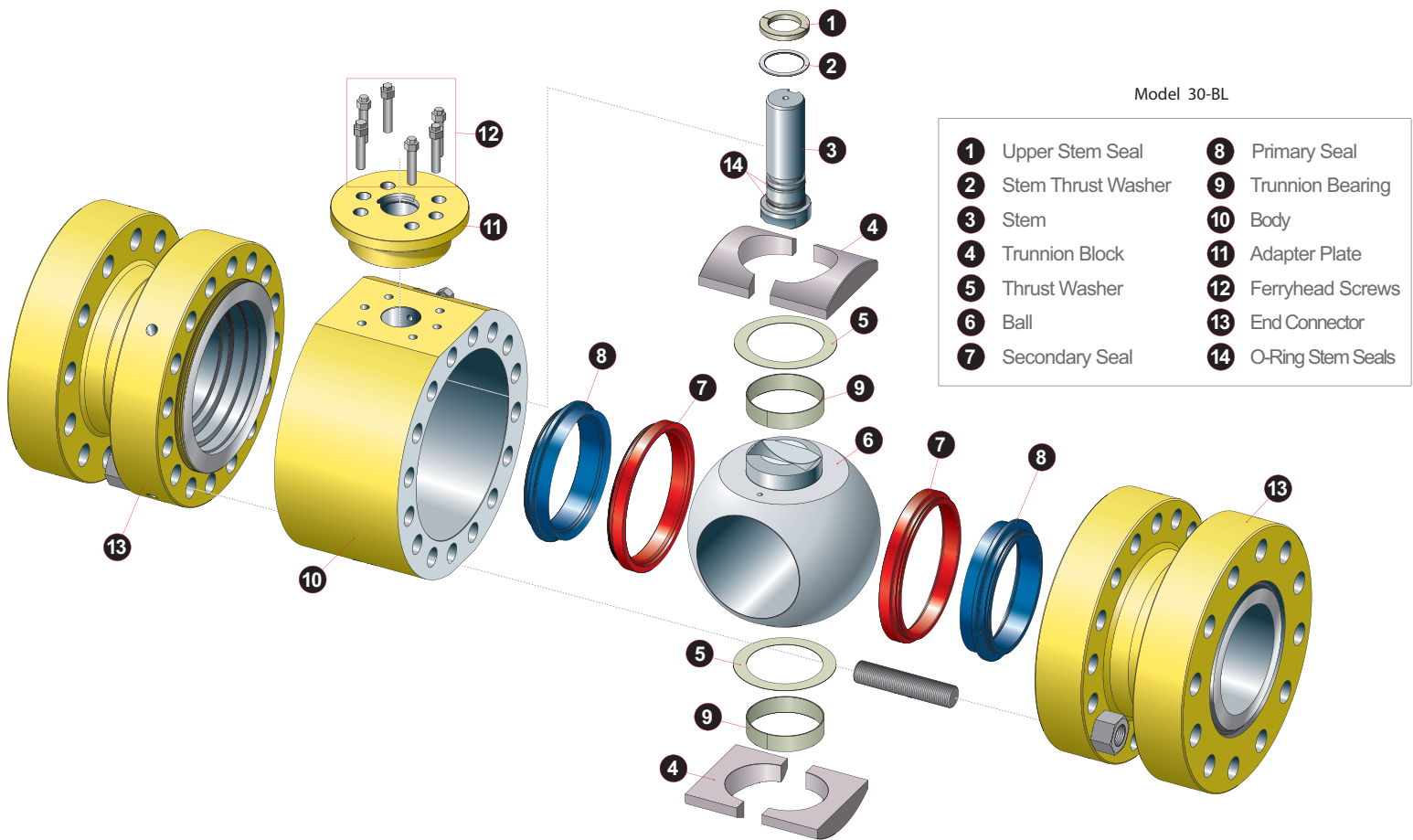
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# WOM MODEL 30-BL DUAL-SEAL BALL VALVE

## WOM introduces

The **World's Only Dual-Seal Ball Valve** to the pipeline, petrochemical, and process industries.  
The Dual-Seal Ball Valve will outperform a through conduit gate valve at the price of a ball valve.



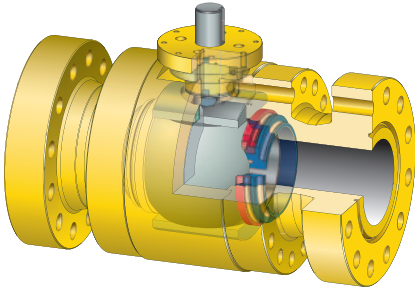
### Features:

- Rugged 3 piece valve design for maximum versatility
- 4 individual stem seals / Passed fugitive emissions standards
- U.S. Patent Numbers: 5338003, 5494256
- Available in sizes 2" thru 36" in all standard ANSI pressure classes
- Body retention of stem adds safety & reliability
- Unique split trunnion design eliminates body penetrations
- Maintenance-free stem packing



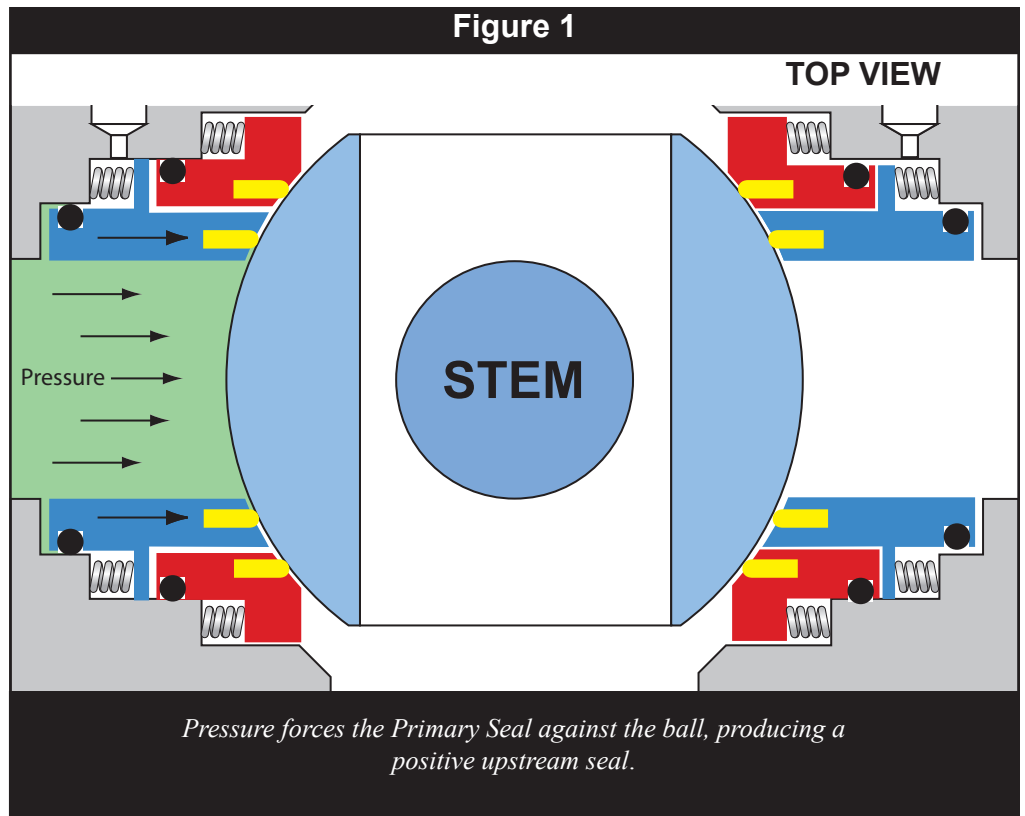


**Upstream Sealing  
Primary Seal  
(Blue)**



**(Figure 1)**

The inner ring, the **Primary Seal**, takes all of the wear and tear during normal operation.

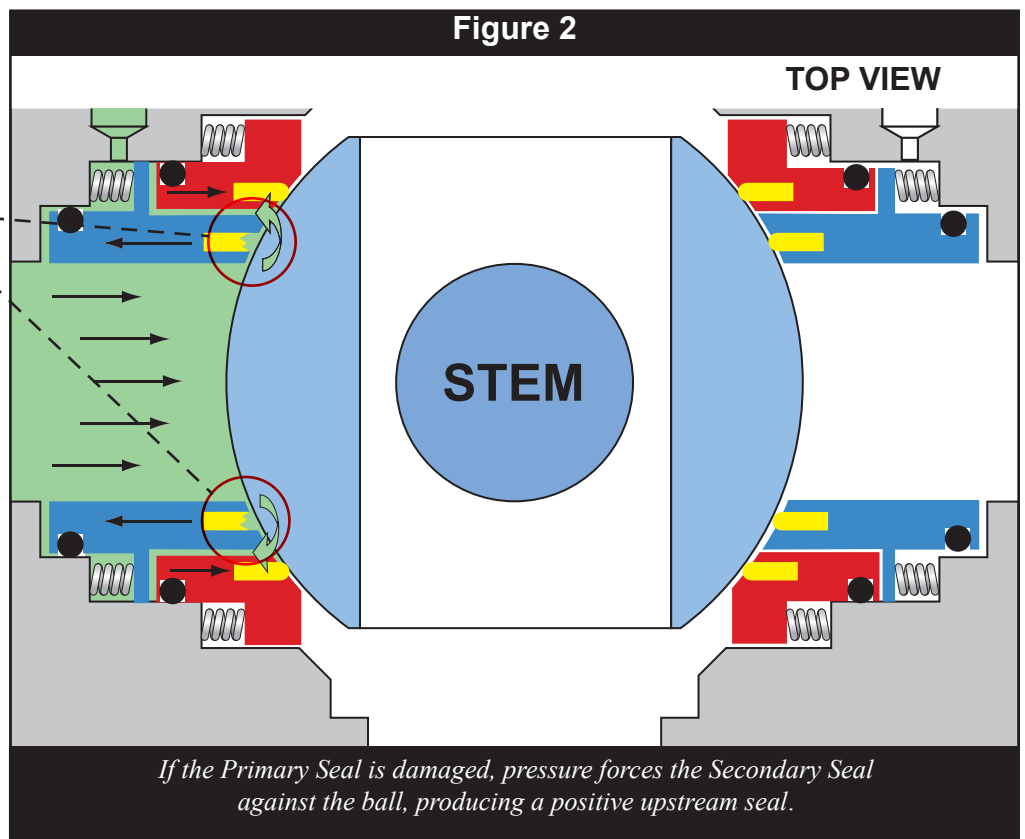


**Upstream Sealing  
Secondary Seal  
(Red)**

**Damaged Seal**

**(Figure 2)**

If the **Primary Seal** is damaged, the pressure bleeds past it and energizes the outer ring, the **Secondary Seal**. This gives the valve a new seal and a new area of the ball to seal against, producing another positive upstream seal. Even if it is damaged, the **Primary Seal** acts as a wiper ring to keep line debris away from the **Secondary Seal**.



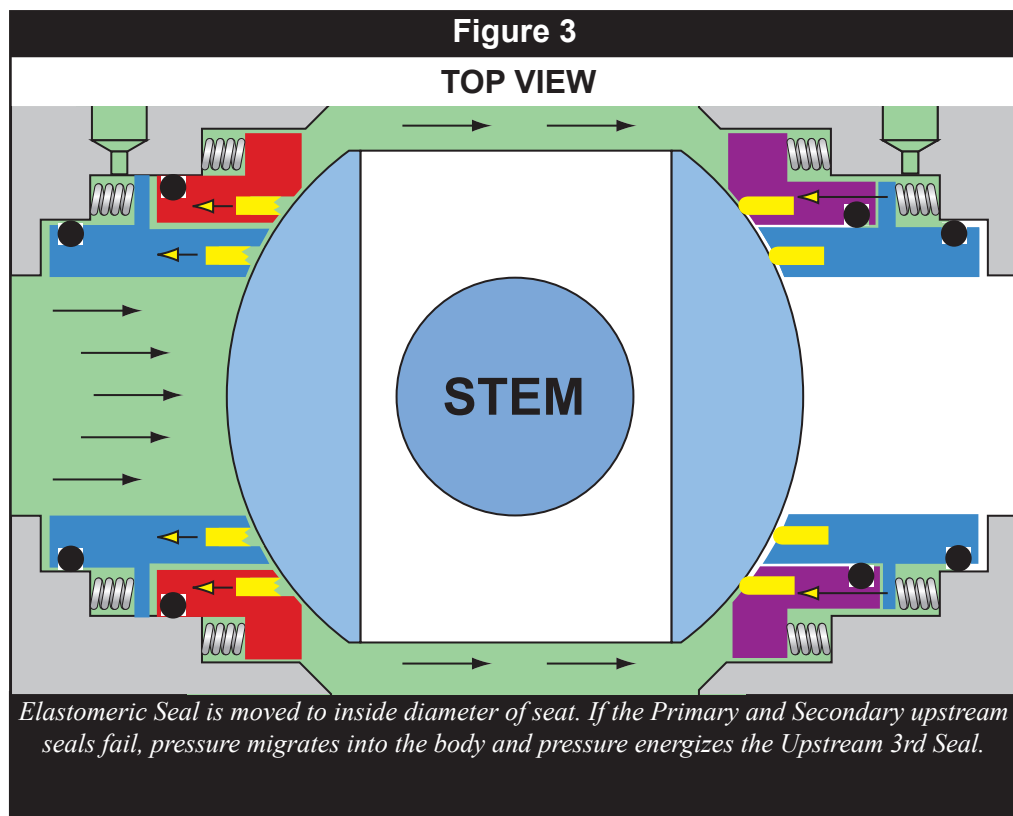
# WOM DUAL-SEAL BALL VALVE

## Optional 3rd Seal (Purple)

(Figure 3)

### Optional 3rd Seal

The Optional **3rd Seal** is achieved by simply moving the Elastomeric Seal from the outside diameter to the inside diameter of a standard **Secondary Seal** on the downstream side of the valve. This seal also assures that any overpressure from thermal expansion will always vent back **upstream** rather than downstream as with conventional ball valves. The Dual-Seal Ball Valve is still bidirectional, even with the addition of the **3rd Seal**.

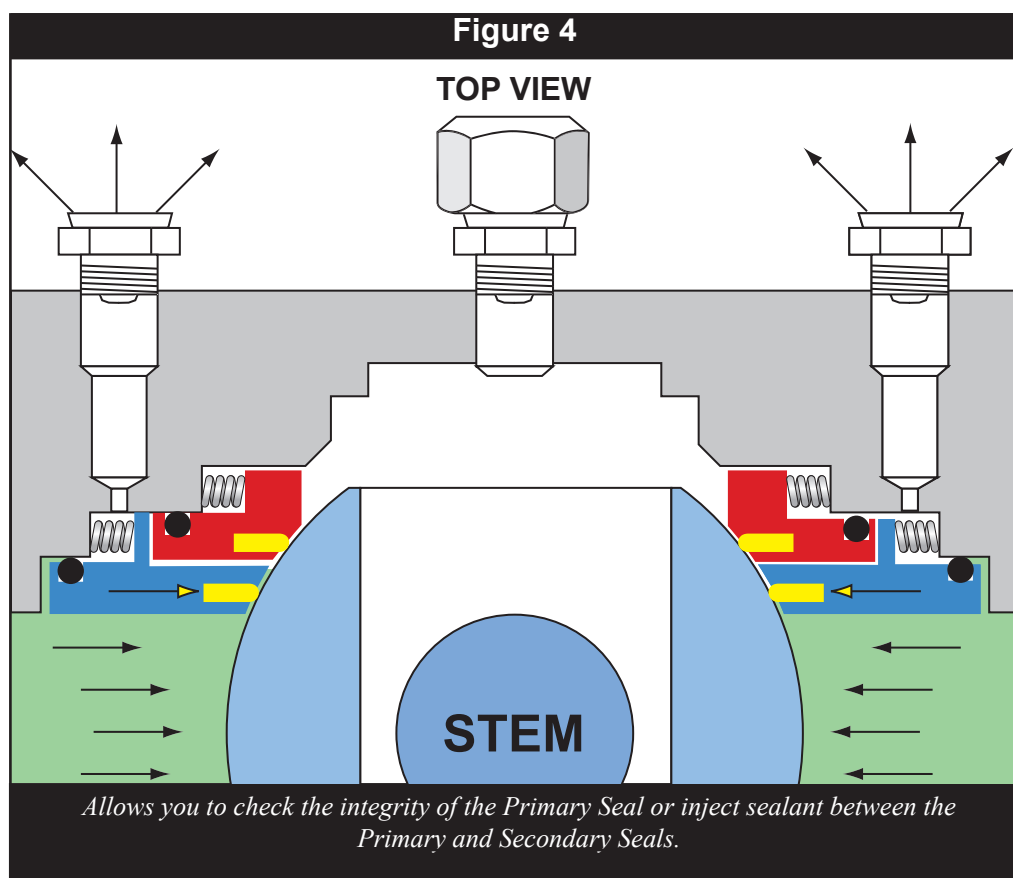


## Test Port Sealant Port

(Figure 4)

### Individually Check Each Seat

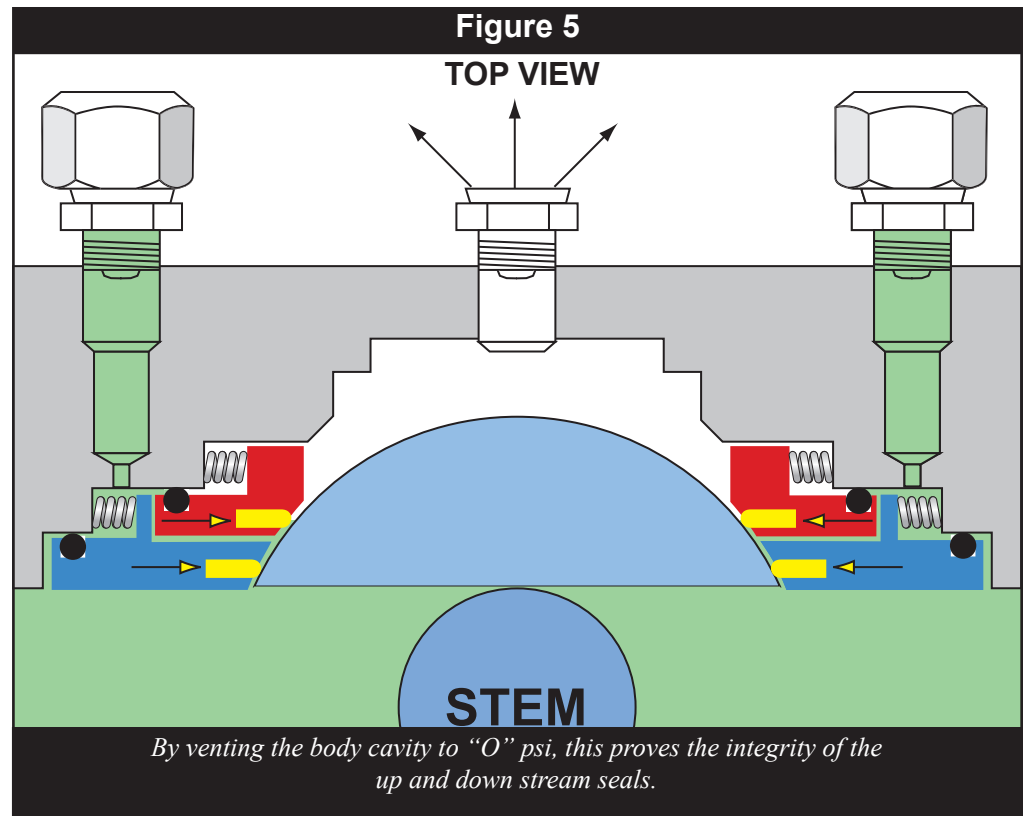
With the Dual-Seal Ball Valve you can check which seal, the Primary or Secondary, is sealing by relieving pressure through one of the seat sealant injection fittings. This is the only valve in the industry that allows you to monitor seal integrity while the valve is still in service.





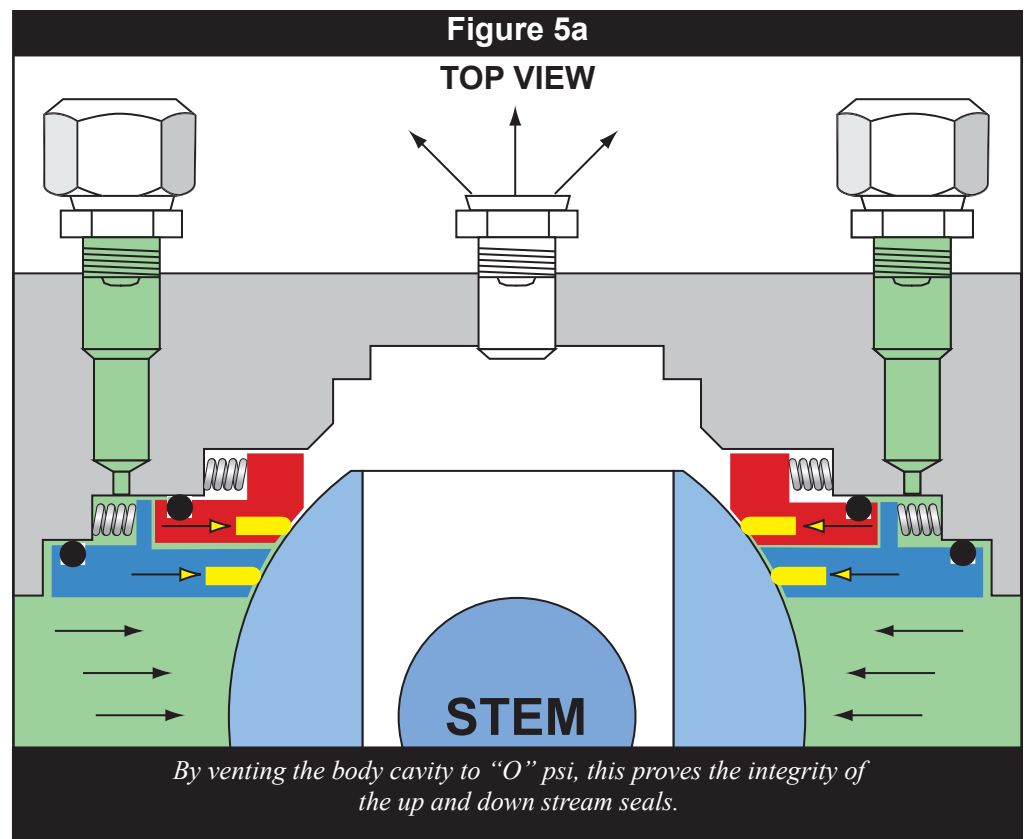
**(Figure 5)**  
**Double Block & Bleed**  
**Open Position**

Valve is in the full open position, the through bore being pressurized and the body cavity having been vented.



**(Figure 5a)**  
**Double Block & Bleed**  
**Closed Position**

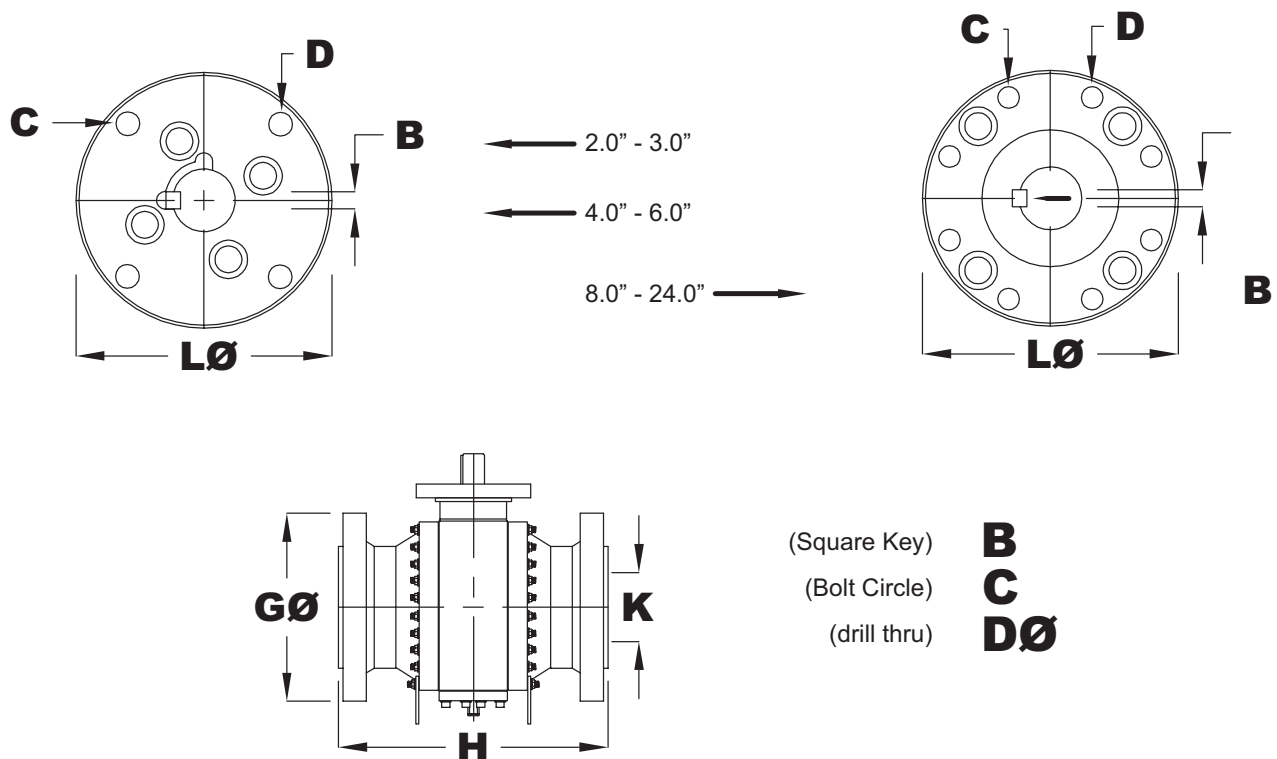
Valve is in the full closed position with equal pressure on both sides of the ball and the body cavity vented to the atmosphere.





# Dimensional Data

## 150 CLASS



DN	50	80	100	150	200	250	300	350	400	450	500	600
VALVE SIZE (IN.)	2	3	4	6	8	10	12	14	16	18	20	24
B	.250	.375	.375	.375	.500	.750	.750	.750	.750	.875	.875	.875
C	4.921 F12	4.921 F12	6.496 F16	6.496 F16	10.00 F25	10.00 F25	10.00 F25	10.00 F25	10.00 F25	10.00 F25	10.00 F25	11.732 F30
D	4 17/32	4 17/32	4 25/32	4 25/32	8 11/16	8 11/16	8 11/16	8 11/16	8 11/16	8 11/16	8 11/16	8 7/8
G	6.0	7.5	9.0	11.0	13.5	16.0	19.0	21.0	23.5	25.0	27.5	32.0
H	7.00	8.00	9.00	15.50	18.00	21.00	24.00	27.00	30.00	34.00	36.00	42.00
K	2.00	3.00	4.00	6.00	8.00	10.00	12.00	13.25	15.25	17.25	19.25	23.25
L	5.90	5.90	8.28	8.28	11.81	11.81	11.81	11.81	11.81	11.81	11.81	16.34
GEAR	N/A	N/A	N/A	DT12	DT21	DT36	DT36	DT36	DT36	-	-	-
TURNS	N/A	N/A	N/A	14.25	15	13.25	13.25	13.25	13.25	-	-	-

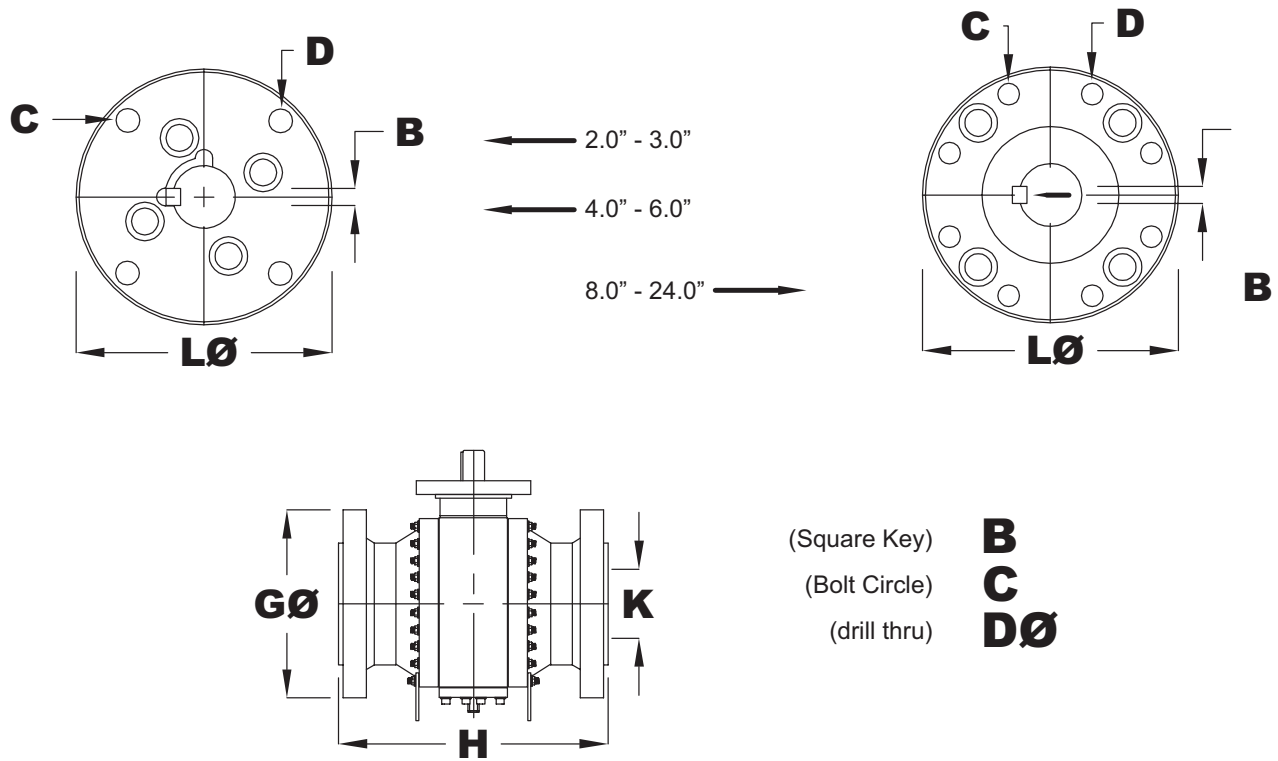


Dimensional data is to be used as general guidelines only;  
Not to be used for design work and is subject to change without notice.



# Dimensional Data

## 300 CLASS



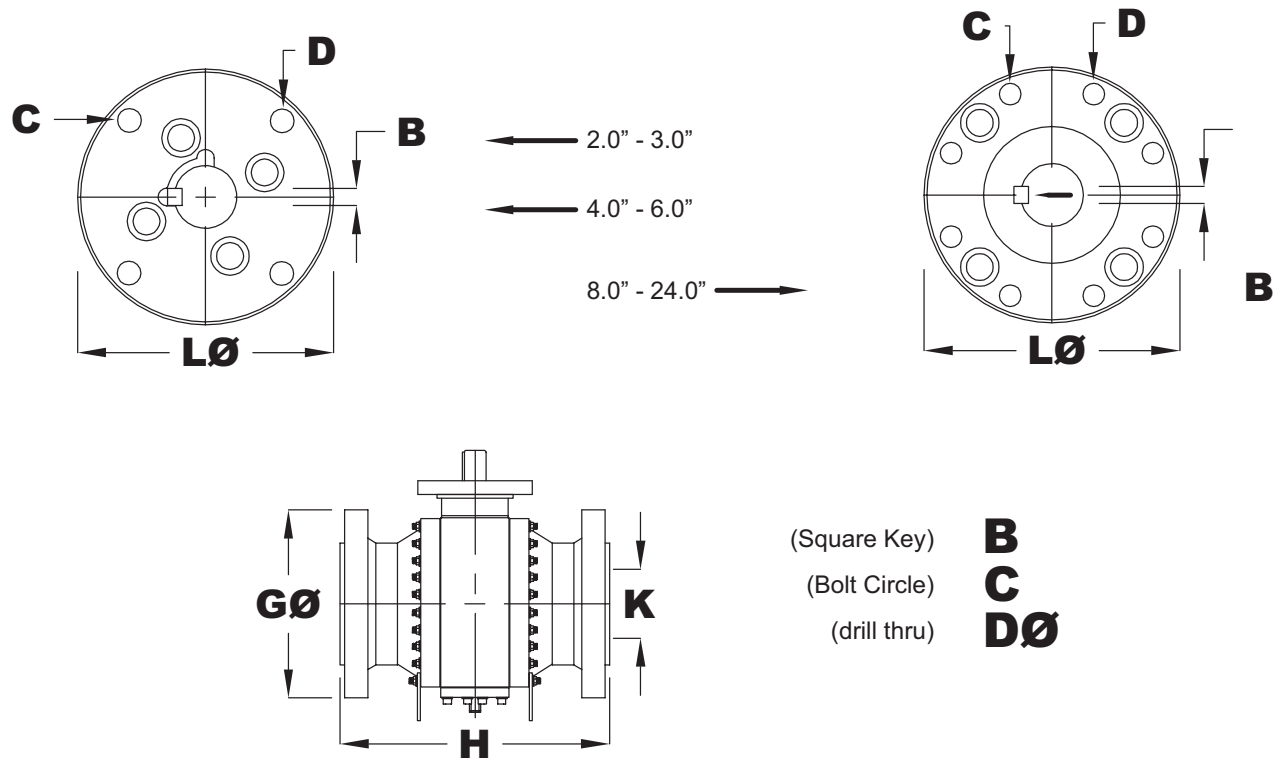
DN	50	80	100	150	200	250	300	350	400	450	500	600
VALVE SIZE (IN.)	2	3	4	6	8	10	12	14	16	18	20	24
B	.250	.375	.375	.375	.500	.750	.750	.750	.750	.875	.875	.875
C	4.921 F12	4.921 F12	6.496 F16	6.496 F16	10.00 F25	10.00 F25	10.00 F25	10.00 F25	10.00 F25	10.00 F25	10.00 F25	11.732 F30
D	4 17/32	4 17/32	4 25/32	4 25/32	8 11/16	8 11/16	8 11/16	8 11/16	8 11/16	8 11/16	8 11/16	8 7/8
G	6.50	8.25	10.00	12.50	15.00	17.50	20.50	23.00	25.50	28.00	30.50	36.00
H	8.50	11.00	12.00	15.88	19.75	22.38	25.50	30.00	33.00	36.00	39.00	45.00
K	2.00	3.00	4.00	6.00	8.00	10.00	12.00	13.25	15.25	17.25	19.25	23.25
L	5.90	5.90	8.28	8.28	11.81	11.81	11.81	11.81	11.81	11.81	11.81	16.34
GEAR	N/A	N/A	N/A	DT12	DT21	DT36	DT36	DT36	DT60	DT90	-	DT140
TURNS	N/A	N/A	N/A	14.25	15	13.25	13.25	13.25	15	60	-	90

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# Dimensional Data

## 600 CLASS



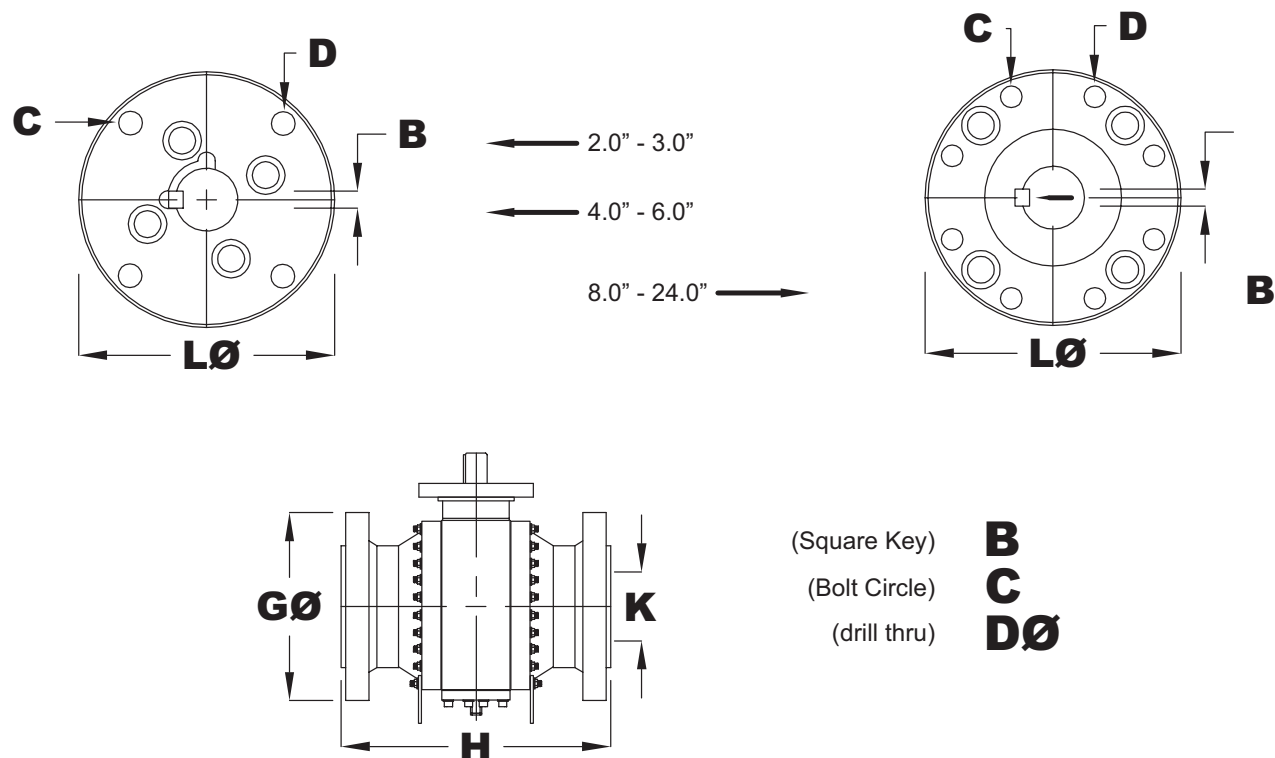
DN	50	80	100	150	200	250	300	350	400	450	500	600	750
VALVE SIZE (IN.)	2	3	4	6	8	10	12	14	16	18	20	24	30
B	.250	.375	.375	.375	.500	.750	.750	.750	.750	.875	.875	.875	.875
C	4.921 F12	4.921 F12	6.496 F16	6.496 F16	10.00 F25	10.00 F25	10.00 F25	10.00 F25	10.00 F25	10.00 F25	10.00 F25	10.00 F25	11.732 F30
D	4 17/32	4 17/32	4 25/32	4 25/32	8 11/16	8 11/16	8 11/16	8 11/16	8 11/16	8 11/16	8 11/16	8 1-1/4	8 7/8
G	6.50	8.25	10.75	14.00	16.50	20.00	22.00	23.75	27.00	29.25	32.00	37.00	44.50
H	11.50	14.00	17.00	22.00	26.00	31.00	33.00	35.00	39.00	43.00	47.00	55.00	65.00
K	2.00	3.00	4.00	6.00	8.00	10.00	12.00	13.25	15.25	17.25	19.25	23.25	28.93
L	5.90	5.90	8.28	8.28	11.81	11.81	11.81	11.81	11.81	11.81	11.81	16.34	22.04
GEAR	N/A	N/A	N/A	DT12	DT36	DT36	DT36	DT60	DT90	DT140	DT140	DT140	-
TURNS	N/A	N/A	N/A	14.25	13.25	13.25	13.25	15	60	90	90	90	-



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# Dimensional Data

## 900 CLASS



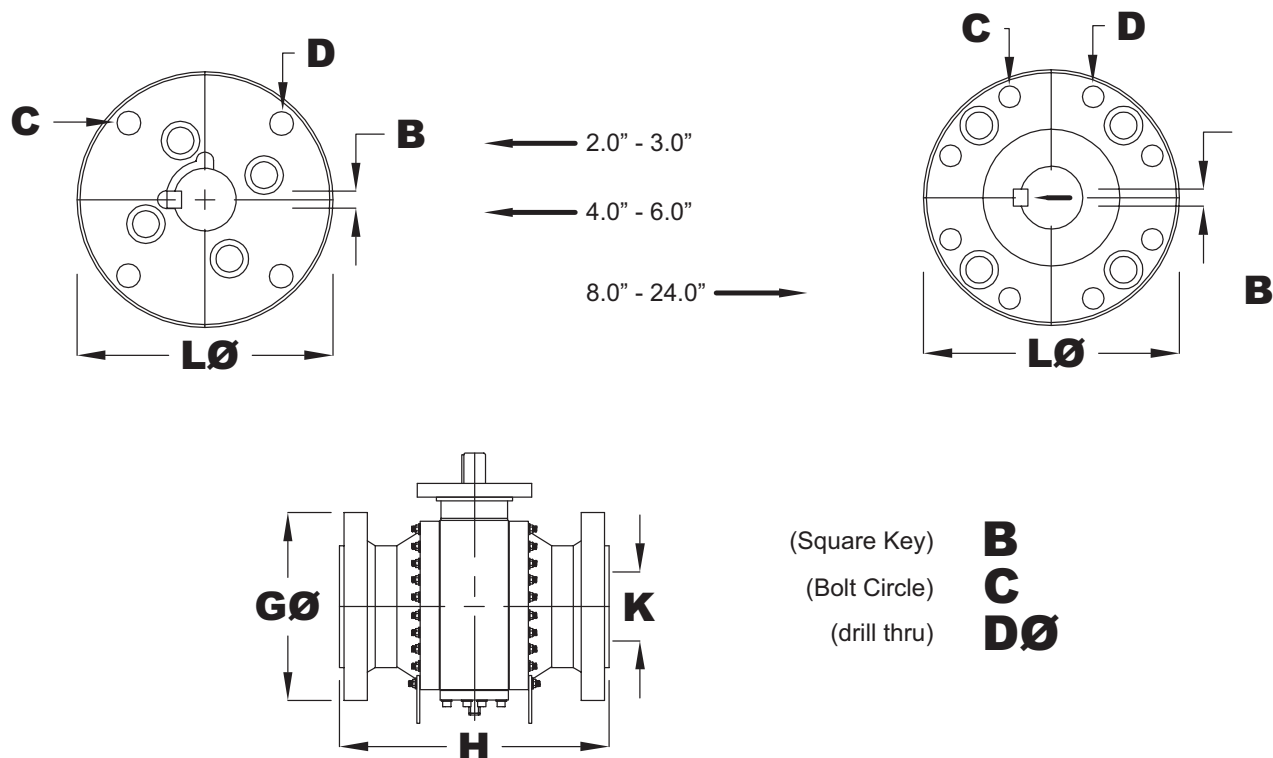
DN	50	80	100	150	200	250	300	350	400	450	500	600	750
VALVE SIZE (IN.)	2	3	4	6	8	10	12	14	16	18	20	24	30
B	.250	.375	.375	.375	.500	.750	.750	.750	.750	.875	.875	.875	.875
C	4.921 F12	4.921 F12	6.496 F16	6.496 F16	10.00 F25	10.00 F25	10.00 F25	10.00 F25	10.00 F25	10.00 F25	10.00 F25	14.016 F35	11.732 F30
D	4 17/32	4 17/32	4 25/32	4 25/32	8 11/16	8 11/16	8 11/16	8 11/16	8 11/16	8 11/16	8 11/16	8 1-1/4	8 7/8
G	8.50	9.50	11.50	15.00	18.50	21.50	24.00	25.25	27.75	31.00	33.75	41.00	48.50
H	14.50	15.00	18.00	24.00	29.00	33.00	38.00	40.50	44.50	48.00	52.00	61.00	69.29
K	2.00	3.00	4.00	6.00	8.00	10.00	12.00	13.25	15.25	17.25	19.25	23.25	28.93
L	5.90	5.90	8.28	8.28	11.81	11.81	11.81	11.81	11.81	11.81	11.81	16.34	22.04
GEAR	N/A	N/A	DT8	DT12	DT36	DT60	DT90	DT60	DT140	DT140	DT140	DT140	-
TURNS	N/A	N/A	7.5	14.25	13.25	15	60	15	90	90	90	90	-

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# Dimensional Data

## 1500 CLASS



DN	50	80	100	150	200	250	300
VALVE SIZE (IN.)	2	3	4	6	8	10	12
B	Pending	Pending	Pending	Pending	Pending	Pending	Pending
C	Pending	Pending	Pending	Pending	Pending	Pending	Pending
D	Pending	Pending	Pending	Pending	Pending	Pending	Pending
G	Pending	Pending	Pending	16.88	21.13	25.75	30.25
H	14.61	18.61	21.61	27.99	33.11	39.37	45.12
K	1.93	2.91	3.94	5.67	7.56	9.41	11.30
L	Pending	Pending	Pending	Pending	Pending	Pending	Pending
GEAR	Pending	Pending	Pending	Pending	Pending	Pending	Pending
TURNS	Pending	Pending	Pending	Pending	Pending	Pending	Pending

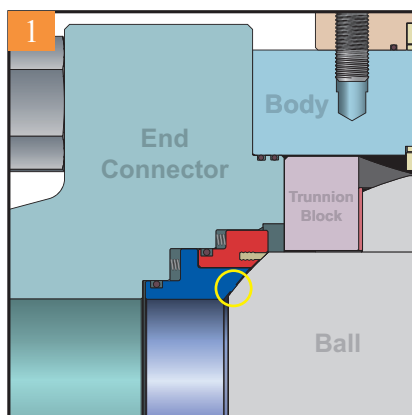
## The Steel Shaping Process

Unlike other manufacturers, WOM handles the complete manufacturing process.

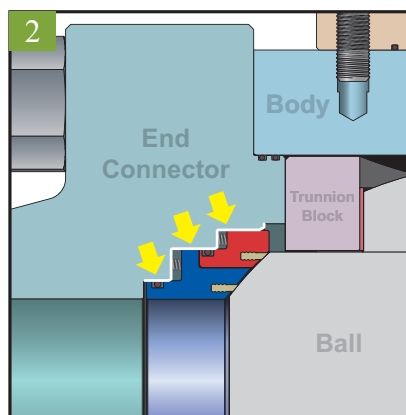


Vertical Integration. We shape the steel, we machine the steel, and we assemble and test. We have full control of the manufacturing process, unlike nearly every other competitor.

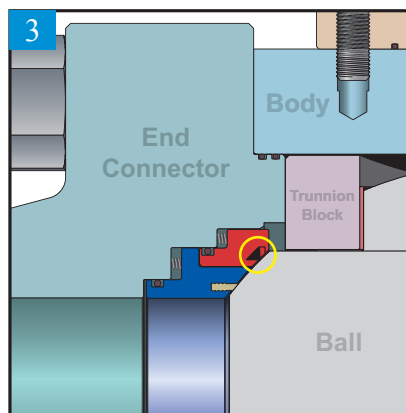
## Special Options Can Be Your Standard



1 Optional Metal to Metal Primary Seal.



2 Optional Corrosive Resistant Alloy (CRA) Welded Inlay in Seat Pockets or other Sealing Areas.



3 Optional Delta Shaped Elastomeric Seal used for ultra low working pressures.

# General Design STANDARDS

## ASME/ANSI Standards

<b>B31.1</b>	Power Piping.
<b>B31.3</b>	Process Piping.
<b>B16.5</b>	Pipe Flanges and Flanged Fittings.
<b>B16.10</b>	Face to Face to End to End Dimensions of Valves.
<b>B16.34</b>	Wall Thickness - Valves Flanged, Threaded and Weld Ends.
<b>ASME B16.47</b>	Large dia.of steel Flanges –NPS 26 Thru' NPS 60 Metric/Inch STD.
<b>B16.25</b>	Butt weld ends.
<b>Design STD.</b>	ASME VIII Div.1 & Div.2.
<b>NACE-MR-01-75</b>	

## API Specifications

<b>API 6D</b>	Specification for Pipeline Valves.
<b>API 600</b>	Steel Gate Valves - Flanged and Welding end and Pressure Seal Bonnets.
<b>API 603</b>	Class 150 - Cast Corrosion Resistant, Flanged End Gate Valve.
<b>API 6FA</b>	Fire Test for Soft Seated 1/4 Turn Valves.
<b>API 598</b>	Valve Inspection & Testing.

## MSS Standards

<b>SP-25</b>	Standard Marking System for Valves.
<b>SP-42</b>	Corrosion Resistant Gate, Globe and Check Valves, Flanged and Weld Ends.
<b>SP-55</b>	Quality Standard for Steel Castings for Valves.
<b>SP-61</b>	Pressure Testing of Steel Valves.

## ASTM Standards

<b>ASTM A193</b>	Alloy Steel and SS Bolting Materials for High Temperature Service.
<b>ASTM A194</b>	Carbon and Alloy Steel Nuts for High Pressure and High Temperature Service.

## ISO Standards

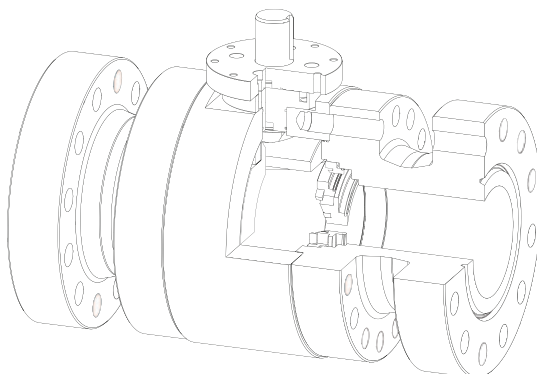
<b>ISO 14313</b>	Top Works –Industrial valves; Part turn
<b>ISO 5211</b>	Actuator attachments
<b>ISO 5208</b>	Industrial valves –Pressure testing
<b>ISO 15156</b>	Petroleum & natural gas industries; Material for use in H2S containing environments in oil & gas production

## Operating Pressures - ASME B 16.34

ANSI Class	Working Pressure	API Class	Working Pressure
150	285		
300	740		
600	1480	2000	2000
900	2220	3000	3000
1500	3705	5000	5000
2500	6170		

Typical Operating PSI for Carbon Steel @ -20 to 100 degrees F

Temperatures Higher or Lower, Please Consult Factory

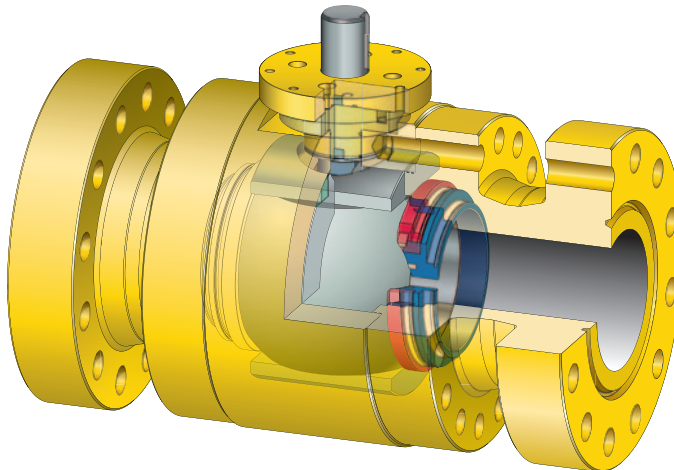




# Trim CHART

WOM "DUAL-SEAL" BALL VALVE MATERIAL SELECTION

	Trim A	Trim B	Trim C	Trim D	Trim E	Trim F	Trim G
<b>COMPONENT COLUMN</b>	General Service - Oil, Natural Gas Refined Products Temp. range: -29 to +121 C, -20F to +200F	Low Temperature Service - Oil and Gas Sour Service Temp. range: -45C to +121 C, -50F to +200F	Mild Brine Service - Temp. range: -29 to +121 C, -20F to +200F	Severe or Sour Brine Service - Temp. range: -29 to +121 C, -20F to +200F	Severe Sour Service - Oil and Gas NACE S.S. Trim Temp. range: -29 to +121 C, -20F to +200F	Highly Corrosive Oil and Gas H2S/CO2 Sour Service- NACE Full S.S. Temp. range: -29 to +121 C, -20F to +200F	Highly Corrosive hydrocarbon and chemicals NACE Full S.S. Temp. range: -29 to +121 C, -20F to +200F
<b>Body, End Connections (1)</b>	Carbon A-216 WCC (Weld end connections)	Alloy Steel A-487 9A Q&T controlled hardness (Weld end connections A-216 WCC) RC-22 max	Carbon A-216 WCC (Weld end connections) Seat pockets overlaid with 316 S.S.	Carbon A-216 WCC (Weld end connections) RC-22 max. Seat pockets overlaid with 316 S.S.	Carbon A-216 WCC (Weld end connections) controlled hardness	CF8M Cast Stainless Steel	Duplex Stainless Steel
<b>Stem</b>	4130 alloy w/ ENP	4130 alloy steel w/ENP Controlled Hardness	4130 alloy w/ .003" ENP	17-4 PH S.S.	17-4 PH S.S. or 718 S.S.	17-4 PH S.S. or 718 S.S.	Duplex S.S.
<b>Seat Assembly</b>	Carbon Steel w/ Electroless Nickel Plate	Carbon Steel w/ Electroless Nickel Plate	Carbon Steel w/ .003" Electroless Nickel Plate	17-4 PH S.S.	17-4 PH S.S.	17-4PH S.S.	Duplex S.S.
<b>Ball</b>	Carbon Steel / Electroless Nickel Plate	Carbon Steel / Electroless Nickel Plate	Carbon Steel w/ .003" Electroless Nickel Plate	316 S.S.	316 S.S.	316 S.S.	Duplex S.S.
<b>Seat Insert</b>	PTFE / nylon	PTFE / nylon	PTFE / nylon	PTFE / nylon	PTFE / nylon	PTFE / nylon	PTFE / nylon
<b>Stem Seal (2)</b>	Viton	Viton	Viton	Viton	Viton	Viton	Viton
<b>Springs</b>	17-7 S.S.	Inconel X-750	17-7 S.S.	Inconel X-750	Inconel X-750	Inconel X-750	Inconel X-750
<b>O-Rings (3)</b>	Viton	low temp o-ring	Viton	Viton	Viton	Viton	Viton
<b>Bolting</b>	A193-B7	A193-L7M	A193-B7	A193-B7 fluropolymmer coated	A193-B7M	A193-B7M	A193-B7M
<b>Body fittings</b>	carbon steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
<b>NOTES:</b>	(1) C.R.A. Corrosion Resistant Alloys overlay on seat pockets can be added to any valve						
	(2) upper stem seals are self-energized viton seals with additional viton back up o-rings						
	(3) any o-ring material can be used depending on temperature range and service conditions.						
	(4) Fluorocarbon coating on bolting is optional.						





# Fire Test CERTIFICATION

## Fire Test Certification API 6FA 3<sup>rd</sup> Edition

Valve Manufacturer: Worldwide Oilfield Machine Inc.  
Test Number: WOM1000 Test Date: 9/18/03  
Valve Size: 6" Bore  
Valve Model: API 6D Trunnion Ball Valve  
Valve Serial No.: 10083-4

Pressure Class: ANSI 600 Trunnion

Test Pressure: 1080 psi

Test Start Time: 9:55:10

1400 Flame Time: 9:55:30

1200 Calorimeter Time:

Body: 9:57:20

Stem: 10:00:10

Back: 10:00:00

Test End Time: 10:25:10

Cool Down Start Time: 10:25:10 Gentle Force Cool

Cool Down End Time: 10:55:10

Through Leakage (High Test Pressure): 0 ml (72,000 ml - 400 ml/in/min allowed)

External Leakage (Closed Position) (High Test Pressure) During burn and Cool down: 0 ml (36000 @ 60min. - 100 ml/in/min allowed)

Low Test, Test Pressure: 105 psi

Through Leakage over 5 min: 0 ml (1200ml - 40 ml/in/min allowed)

External Leakage (Closed Position) over same 5 min: 0 ml (600ml - 20 ml/in/min allowed)

Raise Test Pressure:

Measure External leakage (Open Position) for 5 min: 0 ml (6000ml - 200 ml/in/min allowed)

Other Comments:

*This Valve PASSES the criteria set forth in API 6FA 3rd Ed.*

Performed By: Research Technologies Date: 9/18/03

Witnessed By: Robert Maki Date: 9/18/03



**Research Technologies LLC**  
Product Testing and Verification Services  
405-789-0402

*This Valve PASSES the criteria set forth in API 6FA 3rd Ed.*  
Valve Sizes and Pressures Qualified  
Valve Series:  
Sizes: 6", 8", 10", 12"  
Materials: Valve # 10083-4  
Pressures/Classes: 600/900



**RESEARCH TECHNOLOGIES LLC**



## VALVE FIRE TEST REPORT BALL VALVE PER API SPECIFICATION 6FA 3RD EDITION

Size - 6" - 600 API 6D Trunnion Ball Valve  
Valve Model - 10083-4  
RT test number - WOM1000  
Prepared for - Worldwide Oilfield Machine Inc.  
11809 Canemont Street  
Houston, Texas 77035

Research Technologies LLC  
100 North Rockwell Building 102  
Oklahoma City, OK 73127  
405-789-0402  
Http://www.researchtechllc.com  
Testing@researchtechllc.com

9/18/03

## 6" Dual-Seal Passed the 6FA Fire Test on First Attempt



Fire Test



Result of Fire Test



Complete Breakdown after Fire Test







# WOM Dual-Seal Ball Valve THE NEW OPTION FOR VALVE RELIABILITY



*6" 900 WOM Dual-Seal Ball Valve  
in use in the Middle East*



*8" 1500 WOM Dual-Seal Ball Valves installed on a natural gas leaching/  
storage well in Alabama.*



*16" DUAL-SEAL BALL  
VALVE IN UNLEADED  
GASOLINE SERVICE*



*16" 600 WOM DUAL-SEAL BALL  
VALVE W/ GEAR OPERATOR*

Until now, the hazardous liquids industry has traditionally used through-conduit gate valves or DBB plug valves to achieve a positive shut-off. Trunnion mounted ball valves have not been used because they only have a single seal. Your new option is the patented Dual-Seal™ Ball Valve, an innovative design created expressly for the rigorous demands of hazardous liquids.





WORLDWIDE OILFIELD MACHINE

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