

LADISH

Controlled Quality CORROSION RESISTANT

VALVES



TO MARK PROGRESS

Flanged Floating Ball Valve

CATALOG 421



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LADISH VALVES



Herman W. Ladish, Founder

OUR HISTORY

Herman W. Ladish was born in Milwaukee, Wisconsin in 1880 and began his career in the bustling malting industry at the age of 16. Herman quickly established himself in the business, climbing the corporate ladder and assuming the role of superintendent at The American Malting Company. Ladish folklore has it that Herman's interest in metalworking was born from a problematic crankshaft that consistently halted production. Herman's search for an alternative manufacturing method led him to metal forging and the birth of a metal working conglomerate of forgings, flanges, fittings, and industrial valves was born.

Today, **Ladish Valves** is proud to have a history dating back to 1961 in Cynthiana, Kentucky. After experiencing a crippling flood of the Ohio River and several changes in ownership, **Ladish Valves** moved its headquarters to Houston, Texas in 2007.

With a foundation of more than 60 years of industrial valve production, **Ladish Valves** continues to be the industry benchmark for stainless steel and high nickel alloy industrial valves. The **Ladish Valves** trademark symbolizes a reputation that is emblematic of the highest quality standards, unmatched design, and metalworking craftsmanship. Our history is important to us and we pay homage to it daily.

The **Ladish Valves** product line is specifically designed and manufactured to meet the stringent demands of the most corrosive service environments and high temperature applications. Our product is produced under rigorous metallurgical and manufacturing controls that assure a consistent, high degree of performance and dependability. The quality of the material we receive is critical to the quality of our product. With domestic source foundries and strictly monitored international vendors, **Ladish Valves** is relentless about the quality of materials sourced from its vendor community.

What It Means "To Mark Progress"

Ladish Valves is a *responsive* company that prides itself in being "local" with an exhaustive commitment to our customers and our product. This means that no matter where you are, our team in Houston will provide a customized, clear response in a timely manner. We pride ourselves in serving our customers and taking on the challenges of unconventional projects.

Ladish Complete Line of Products

Manufactured to the ultimate in quality standards

**GATE ■ GLOBE ■ CHECK
BALL ■ PRESSURE SEAL
BELLOW SEAL ■ CRYOGENIC**



CAST ■ FORGED
BAR STOCK

THREADED ENDS
SOCKET ENDS
FLANGED ENDS
BUTTWELD ENDS
FLAT FACE ENDS

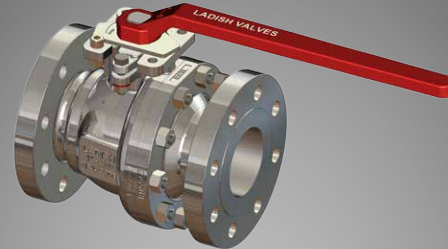
RISING HANDWHEEL
NON-RISING HANDWHEEL

SOLID WEDGE DISC
FLEX WEDGE DISC
SPLIT WEDGE DISC
PLUG DISC
TEFLON DISC

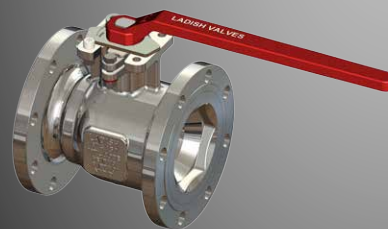
1/2 THRU 36"
CL150 THROUGH CL2500

CARBON STEEL
STAINLESS STEEL
ALLOY 20 ■ DUPLEX
HIGH NICKEL ALLOY
TITANIUM ■ ZIRCONIUM

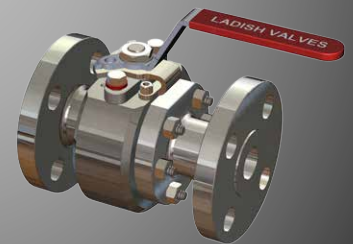
CATALOG 421 FLANGED FLOATING BALL VALVE



CAST, TWO-PIECE
FULL / STANDARD BORE
PACKING / O-RING STEM DESIGN



CAST, UNI-BODY
STANDARD BORE
PACKING / O-RING
STEM DESIGN



BAR-STOCK, TWO-PIECE
FULL BORE
PACKING STEM DESIGN

ALSO AVAILABLE:



CAST STEEL
CATALOG 821



FORGED STEEL
CATALOG 221



CRYOGENIC
CATALOG 321

Ladish Services & Why We're Different

One-stop Manufacturing, Controlled Quality

Ladish Valves is a premier manufacturer of multi-turn and quarter-turn valves. Our valves are widely used in the chemical and petrochemical markets spanning from upstream extraction through midstream transportation and downstream processing. Ladish has a long history of supplying products to these markets, in addition to the power and pulp & paper industries.

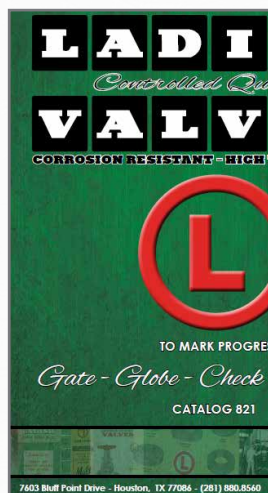
Ladish has a full complement of value-added services to address the many challenges that often delay projects. Our team specializes in quick turnaround deliveries (even on challenging orders), with the confidence of **controlled quality** through in-house design and manufacturing.

A Step Above the Competition...and Here's Why

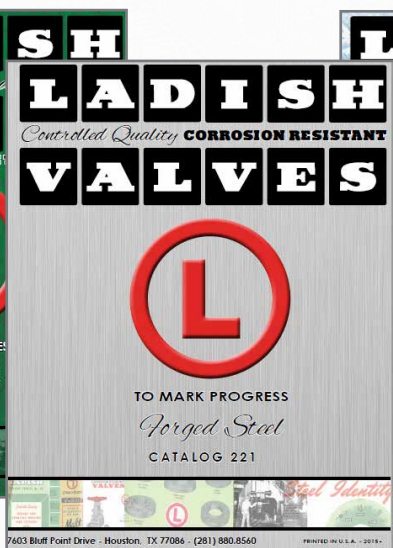
Ladish is local. Our manufacturing facility is located in Houston, Texas, giving us the flexibility to design, machine, assemble, test, verify, and expedite our customers' orders, setting us apart from everyone else. Our other differentiators include:

- One of the largest (stocked) stainless and exotic alloy inventories in the U.S.
- In-house machining: Cryo extensions, end connections, modifications, etc.
- Same-day deliveries available
- Custom valve solutions utilizing Ladish engineering & design teams
- Fully compliant clean room (oxygen, chlorine, hydrogen peroxide and others)
- Extensive in-house NDE capabilities

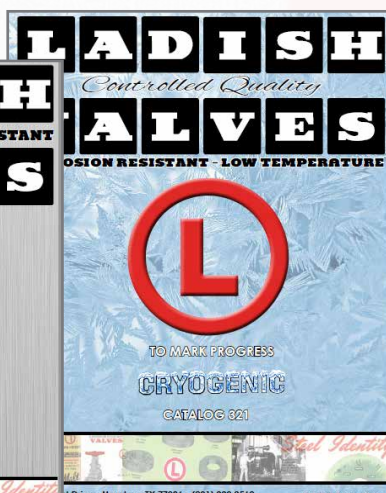
Ladish Product Line Catalogs



CATALOG 821



CATALOG 221



CATALOG 321



CATALOG 421

Flanged Floating Ball Valve

CATALOG 421



Flanged Quarter-Turn Products

Oil & Gas, Petrochemical & Chemical markets

Catalog 421 serves to highlight the **Ladish Valves** line of flanged floating ball valve products. The products featured within include our cast two-piece and uni-body flanged floating ball valve designs in both packing and o-ring stem designs as well as our bar-stock two-piece flanged packing stem design.

Ladish Valves stocks these valves in a variety of materials from carbon steel to exotic alloys and pressure classes ranging from 150 to 600. Our manufacturing facility allows for inventory storage, machining, product assembly, testing and material conformance control. With in-house non-destructive examination (NDE) capabilities and a fully integrated machine shop, quick deliveries and customer requirements are achieved in a timely, quality controlled manner.

The Ladish ball valve product line is designed to API 6D and API 608, and produced in conformance with API Q1 quality system. The facility carries an ISO 9001 quality system and is certified per PED 97/23/EC.

Ladish Valves designs and manufactures its flanged floating ball valves to the following industry standards:



Finished Parts CF8M (316 Stainless Steel) Inventory



API 607 Fire Test (certifications available upon request)

ITEM	INDUSTRY STANDARD
PRESSURE - TEMPERATURE RATINGS ⁽¹⁾	ASME B16.34
FACE-TO-FACE DIMENSIONS	ASME B16.10
END FLANGE DIMENSIONS	ASME B16.5
PRESSURE TEST	API 598 / API 6D
FIRESAFE TEST	API 607
DESIGN STANDARD	API 608, API 6D, ASME B16.34
ACTUATOR MOUNT	ISO 5211
CASTING QUALITY	MSS SP55, ASME B16.34 ⁽²⁾
QUALITY MANAGEMENT	API Q1, ISO 9001, CE-PED

1. For seat materials, see Ladish Valves pressure-temperature ratings on page 27.
2. ASME B16.34 used for evaluating NDT examinations of castings.

How to Order

Ladish Flanged Floating Ball Valve

The **Ladish Valves** figure number is comprised of 16 alpha numeric digits defining the required product in detail. Our aim is to provide you with precisely what you need. If you need assistance, give our knowledgeable sales staff a call at (281)880-8560 with the leading 4 digits and we can guide you through the rest.

EXAMPLE: P815-L053-GF03-A40M 4" CL150 RF BALL A351 CF8M TR 316 TFM GRF B8MCL1 FIRESAFE NACE

Valve Style	Construct & Valve Type	ANSI Class	End Connect	Oper.	Body/ Cap Mat'l	Trim	Packing & Gasket	Seat	Bolting & Nuts	Misc. Option	Size	Design Fire-Safe NACE
P	8	1	5	L	05	3	G	F	03	A	40	M
P - Packing R - Oring	8 - Cast Two Piece Full Bore 7 - Cast Two Piece Standard Bore 9 - Cast Unibody Standard Bore 2 - Bar Stock Two Piece Full Bore	1 - 150 3 - 300 6 - 600	5 - RF F - FF J - RTJ	A - Actuator B - Bare Stem G - Gear L - Lever O - Oval Handle	0 - Same as Body 3 - 316SS A - Alloy 20 C - Inc 600 M - Monel H - Hast C	A - Viton® A B - Buna N E - EPDM G - Graphoil H - HNBR (ED) R - Low Temp Buna T - PTFE W - Viton® B Y - Viton® GF (ED) Z - AFLAS® OTHER MATERIALS AVAILABLE UPON REQUEST	C - Carbon Filled TFM D - Delrin® F - TFM N - Nylon Devlon® P - PEEK® M - Metal V - Vespel®	01 - B8CL1/8 02 - B8CL2/8 03 - B8MCL1/8M 04 - B8MCL2/8M 05 - B7/2H 06 - B7M/2HM 07 - ALLOY 20 08 - MONEL 400 09 - GR660 10 - L7/7 11 - INC 800 12 - HAST C 13 - B6/6 14 - B16/16 15 - K500 16 - A320 B8CL2/8 17 - B8CL2/8A 18 - B16/7 20 - L7M/7M	A - N/A B - Cleaned C - Cryogenic L - Live Load O - Cryogenic Live Load V - Uni Directional W - Chain Wheel Operated	05 - 1/2" 07 - 3/4" 10 - 1" 15 - 1-1/2" 20 - 2" 30 - 3" 40 - 4" 60 - 6" 80 - 8" 81 - 10" 82 - 12"	M - API 608 Fire Safe NACE N - API 608 Fire Safe Non-NACE P - API 608 Non-Fire Safe NACE Q - API 608 Non-Fire Safe Non-NACE R - API 6D Fire Safe NACE S - API 6D Fire Safe Non-NACE T - API 6D Non-Fire Safe NACE U - API 6D Non-Fire Safe Non-NACE	

Materials of Construction

71 A216 WCB / WCC	16 A351 CK3MCUN	26 A494 N7M	37 A494 CZ100	60 B367 GRC2
72 A352 LCC / LCB	17 A351 CN3MN	30 A494 M35-1	38 A494 CY40 CL.2	61 B367 GRC3
05 A351 CF8M	20 A494 CW12MW	31 A494 M35-2	52 A995 CD4MCUN-GR1B	62 B367 GRC7
10 A351 CG8M	21 A494 CW6M	32 A494 M30C	53 A995 CE8MN-GR2A	63 B752 GR702C
11 A351 CG3M	22 A494 CW2M	33 A494 CY40	54 A995 CD6MN-GR3A	BAR STOCK EQUIVALENTS ALSO AVAILABLE
12 A351 CF8C	23 A494 CX2MW	34 A494 CW6MC	55 A995 CD3MN-GR4A	
15 A351 CN7M	24 A494 CX2M	35 A351 CT15C	56 A995 CE3MN-GR5A	
	25 A494 N12MV	36 A494 CU5MCUC	57 A995 CD3MWCUN-GR6A	



LADISH

FLOATING BALL VALVE

VALVES

Ladish flanged floating ball valves are designed to meet the most current industry standards and are manufactured in accordance with API Q1 quality system. Regular participation on standard committees including MSS and API assist in insuring our product is compliant. The Ladish Valves line of flanged floating ball valves has undergone extensive fire testing in accordance with API 607 and meet both API 608 and API 6D design standards.

Product Range: Packing Design

CLASS	MODEL	SEAL	BODY	BORE	ENDS	1/2"	3/4"	1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"
150	P8	PACKING	2 PIECE	FULL	RF	●	●	●	●	●	●	●	●	●	●	●
	P7	PACKING	2 PIECE	STANDARD	RF	-	-	-	-	●	●	●	-	-	-	-
	P9	PACKING	UNI-BODY	STANDARD	RF	-	-	-	-	●	●	●	●	●	●	●
300	P8	PACKING	2 PIECE	FULL	RF	●	●	●	●	●	●	●	●	●	●	●
	P7	PACKING	2 PIECE	STANDARD	RF	-	-	-	-	●	●	●	-	-	-	-
	P9	PACKING	UNI-BODY	STANDARD	RF	-	-	-	-	●	●	●	●	●	●	●
600	P8	PACKING	2 PIECE	FULL	RF	●	●	●	●	●	●	●	-	-	-	-
	P7	PACKING	2 PIECE	STANDARD	RF	-	-	-	-	●	●	●	●	-	-	-

● = Long Pattern ● = Short Pattern ● = Long / Short Pattern

Product Range: O-Ring Design

CLASS	MODEL	SEAL	BODY	BORE	ENDS	1/2"	3/4"	1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"
150	R8	O-RING	2 PIECE	FULL	RF	-	-	●	●	●	●	●	●	●	●	●
	R7	O-RING	2 PIECE	STANDARD	RF	-	-	-	-	●	●	●	-	-	-	-
	R9	O-RING	UNI-BODY	STANDARD	RF	-	-	-	-	●	●	●	●	●	●	●
300	R8	O-RING	2 PIECE	FULL	RF	-	-	●	●	●	●	●	●	●	●	●
	R7	O-RING	2 PIECE	STANDARD	RF	-	-	-	-	●	●	●	-	-	-	-
	R9	O-RING	UNI-BODY	STANDARD	RF	-	-	-	-	●	●	●	●	●	●	●
600	R8	O-RING	2 PIECE	FULL	RF	-	-	●	●	●	●	●	-	-	-	-
	R7	O-RING	2 PIECE	STANDARD	RF	-	-	-	-	●	●	●	●	-	-	-

● = Long Pattern ● = Short Pattern ● = Long / Short Pattern

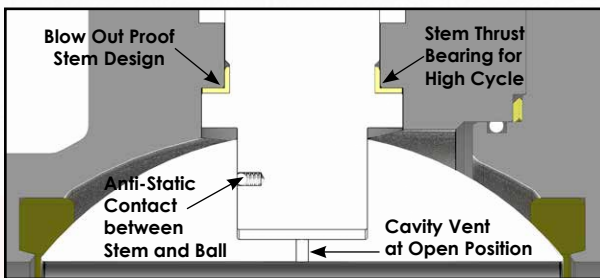
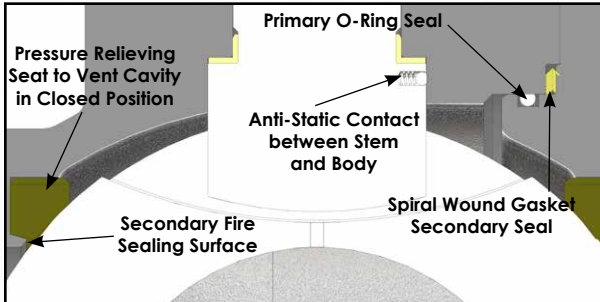
Product Range: Bar Stock Design

CLASS	MODEL	SEAL	BODY	BORE	ENDS	1/2"	3/4"	1"	1 1/2"	2"
150	P2	PACKING	2 PIECE BAR-STOCK	FULL	RF	●	●	●	●	●
300	P2	PACKING	2 PIECE BAR-STOCK	FULL	RF	●	●	●	●	●
600	P2	PACKING	2 PIECE BAR-STOCK	FULL	RF	●	●	●	●	●

● = Long Pattern ● = Short Pattern ● = Long / Short Pattern

Standard Design Features

These standard design features, coupled with the Ladish Valves product range and vast material selection combine to make us the premier choice for your quarter-turn product requirements.



Select Design Features

- Spiral wound gasket enhances protection in case of a fire event and for improved fugitive emissions performance.
- Anti-static feature enables electrical conductivity between both the stem and body and the stem and ball.
- Cavity vent at the top of the ball and proprietary seat design serve to maintain pressure equalization between the line and body cavity in both open and closed positions.
- Blow out proof stem and stem thrust bearing allow for safe and extended high-cycle operation.
- Encapsulated body bolting to prevent threads from corrosion.

Direct Actuator Mounting Capabilities

The Ladish ball valve design eliminates the need for a bracket and coupler when mounting an actuator, thus reducing cost while supporting any space constraints. The ISO 5211 actuator mounting pad is integral to the valve body and still allows operator to inspect packing and make adjustments as required.

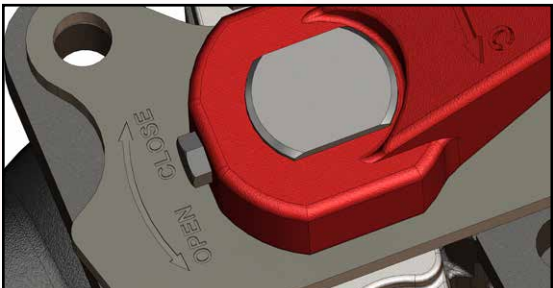


Ball Position Indicator

Double D stem design easily allows for quick identification of ball position even when handle has been removed. Locking provision and travel stops at both the closed and opened positions.

Live Load

All stem seals come "live loaded" with the addition of spring washers above the gland flange nut for improved sealing performance and quick adjustment without removal of operator.



Fire Safe Design Features

The Ladish Valves line of flanged floating ball valves are designed in-house by Ladish engineers. The product line is engineered for fire safety and has been fire tested to API 607 standards. The illustrations below depict the metal-to-metal contact achieved during a fire event for both stem packing (Figures 1, 2) and o-ring (Figures 3, 4) sealing designs. Ladish Valves fire safe certificates are available, upon request, for the complete product range. Please contact your Ladish Valves sales representative for further information.

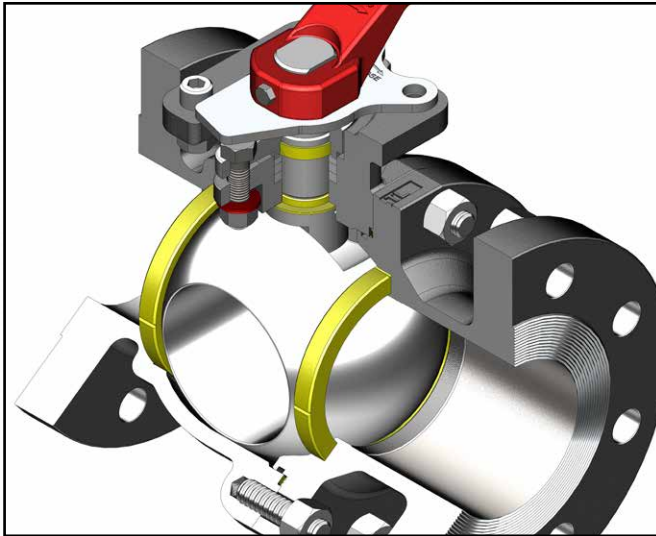


Figure 1: Stem Packing Design Before Fire

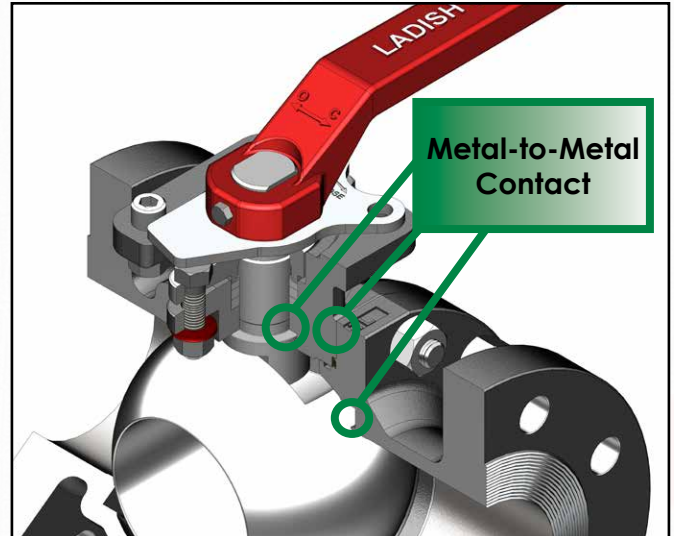


Figure 2: Stem Packing Design After Fire

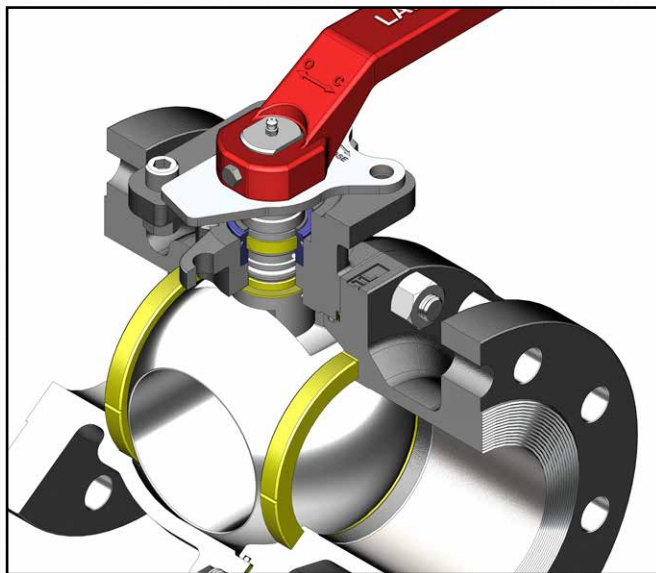


Figure 3: O-Ring Design Before Fire

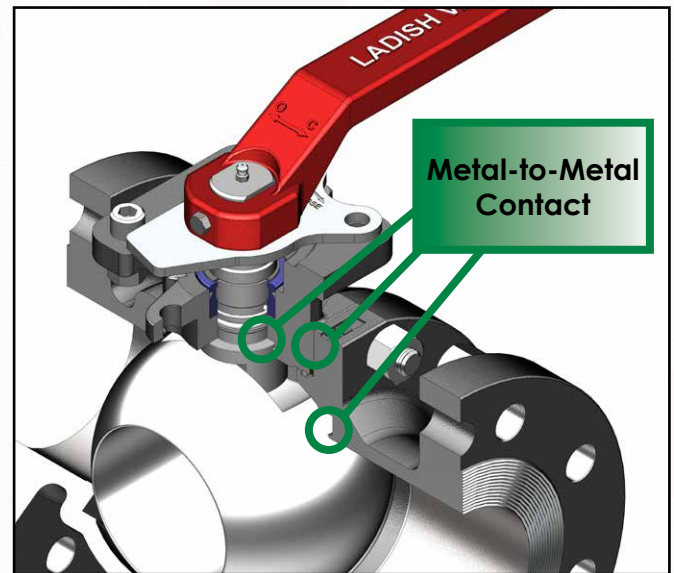


Figure 4: O-Ring Design After Fire

Standard Features

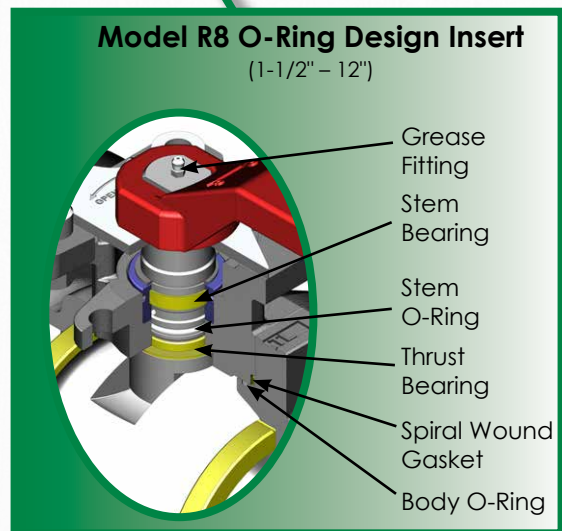
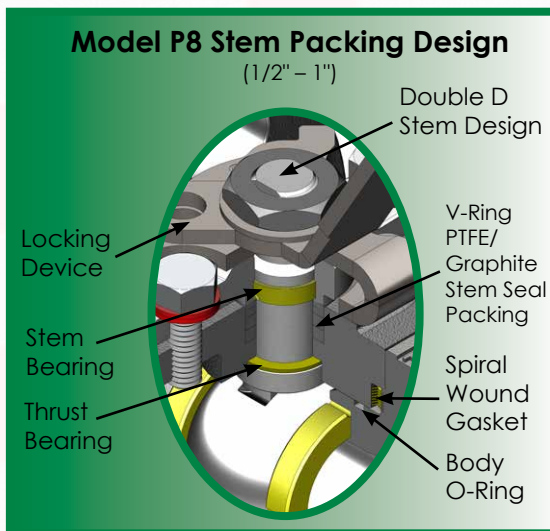
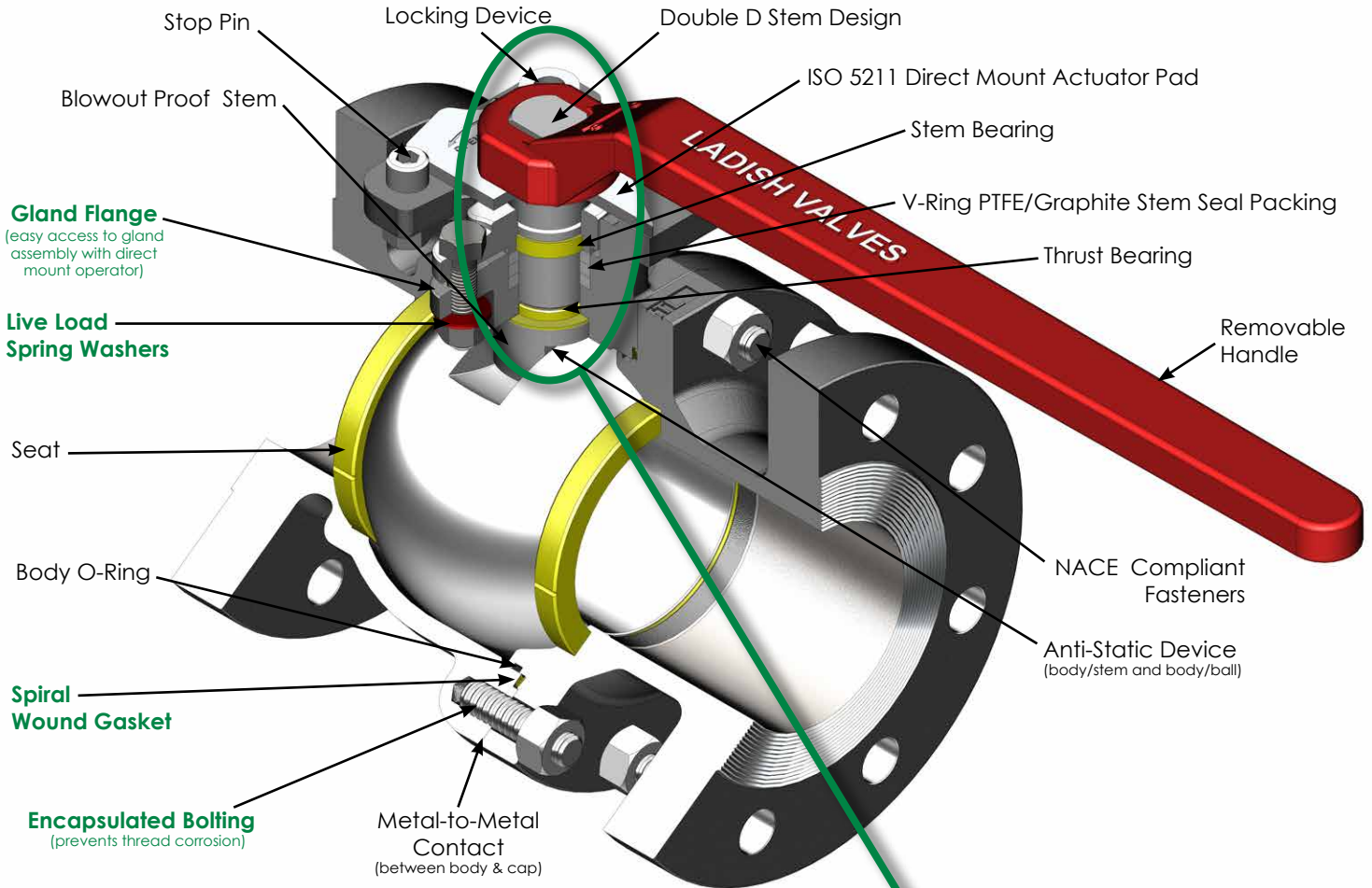
Model P8 Full Bore, Two-Piece Body, Stem Packing API 608/6D Design

Model R8 Full Bore, Two-Piece Body, O-Ring API 608/6D Design

Material of Construction: Cast

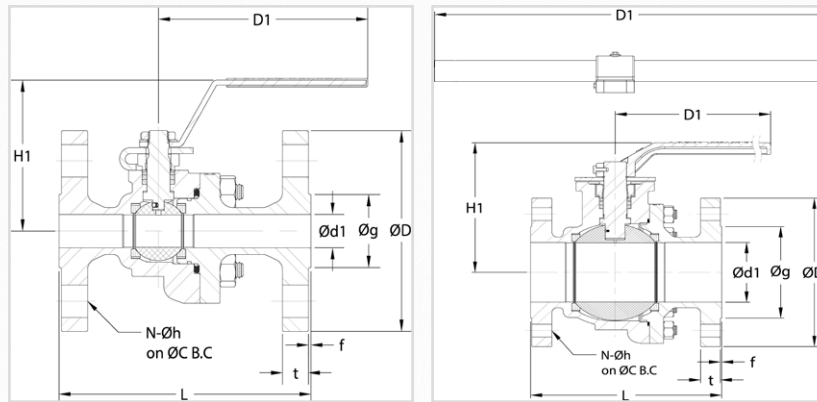
Model P8 Stem Packing Design

(1-1/2" - 12")



Dimensional Data

1/2" – 1": Model P8 Full Bore, Two-Piece Body, Pressure Classes: 150, 300, 600 (LEFT)
 1 1/2" – 12": Model P8/R8 Full Bore, Two-Piece Body, Pressure Classes: 150, 300, 600 (RIGHT)



150	Model P8, Class 150, 1/2" – 12" - Model R8, Class 150, 1" – 12"											WEIGHT LBS
	Ød1	L	D1	H1	ØD	ØC	Øg	t	f	N	Øh	
1/2"	0.50	4.25	5.00	3.42	3.50	2.38	1.38	0.31	0.06	4	0.63	4
3/4"	0.75	4.63	5.00	3.53	3.88	2.75	1.68	0.34	0.06	4	0.63	6
1"	1.00	5.00	6.25	4.39	4.25	3.12	2.00	0.38	0.06	4	0.63	8
1-1/2"	1.50	6.50	10.00	5.00	5.00	3.88	2.88	0.50	0.06	4	0.63	14
2"	2.00	7.00	16.56	6.13	6.00	4.75	3.63	0.56	0.06	4	0.75	25
3"	3.00	8.00	19.69	7.91	7.50	6.00	5.00	0.69	0.06	4	0.75	54
4"	4.00	9.00	19.69	8.74	9.00	7.50	6.19	0.88	0.06	8	0.75	87
6"	6.00	15.50	59.06	11.99	11.00	9.50	8.50	0.94	0.06	8	0.88	190
8"	8.00	18.00	63.00	15.38	13.50	11.75	10.62	1.06	0.06	8	0.88	362
10"	10.00	21.00	63.00	17.50	16.00	14.25	12.75	1.12	0.06	12	1.00	539
12"	12.00	24.00	63.00	20.50	19.00	17.00	15.00	1.19	0.06	12	1.00	646
300	Model P8, Class 300, 1/2" – 12" - Model R8, Class 300, 1" – 12"											WEIGHT LBS
	Ød1	L	D1	H1	ØD	ØC	Øg	t	f	N	Øh	
1/2"	0.50	5.50	5.00	3.42	3.75	2.62	1.38	0.50	0.06	4	0.63	6
3/4"	0.75	6.00	5.00	3.53	4.62	3.25	1.68	0.56	0.06	4	0.75	9
1"	1.00	6.50	6.32	4.39	4.88	3.50	2.00	0.63	0.06	4	0.75	12
1-1/2"	1.50	7.50	9.60	5.22	6.12	4.50	2.88	0.81	0.06	4	0.88	18
2"	2.00	8.50	16.56	6.13	6.50	5.00	3.63	0.81	0.06	8	0.75	32
3"	3.00	11.12	19.69	7.91	8.25	6.62	5.00	1.06	0.06	8	0.88	72
4"	4.00	12.00	19.69	8.74	10.00	7.88	6.19	1.19	0.06	8	0.88	120
6"	6.00	15.88	59.06	12.56	12.50	10.62	8.50	1.38	0.06	12	0.88	256
8"	8.00	19.75	63.00	15.38	15.00	13.00	10.62	1.56	0.06	12	1.00	475
10"	10.00	22.38	63.00	17.50	17.50	15.25	12.75	1.81	0.06	16	1.13	722
12"	12.00	25.50	63.50	20.50	20.50	17.75	15.00	2.00	0.06	16	1.25	866
600	Model P8, Class 600, 1/2" – 4" - Model R8, Class 600, 1" – 4"											WEIGHT LBS
	Ød1	L	D1	H1	ØD	ØC	Øg	t	f	N	Øh	
1/2"	0.50	6.50	5.00	3.42	3.75	2.63	1.38	0.63	0.25	4	0.63	8
3/4"	0.75	7.50	5.00	3.67	4.63	3.25	1.68	0.68	0.25	4	0.75	11
1"	1.00	8.50	6.32	4.39	4.88	3.50	2.00	0.68	0.25	4	0.75	15
1-1/2"	1.50	9.50	10.00	5.22	6.13	4.50	2.88	0.94	0.25	4	0.88	23
2"	2.00	11.50	16.56	6.42	6.50	5.00	3.63	1.00	0.25	8	0.75	42
3"	3.00	14.00	19.69	8.44	8.25	6.62	5.00	1.25	0.25	8	0.88	98
4"	4.00	17.00	59.06	11.18	10.83	8.50	6.19	1.56	0.25	8	1.00	194

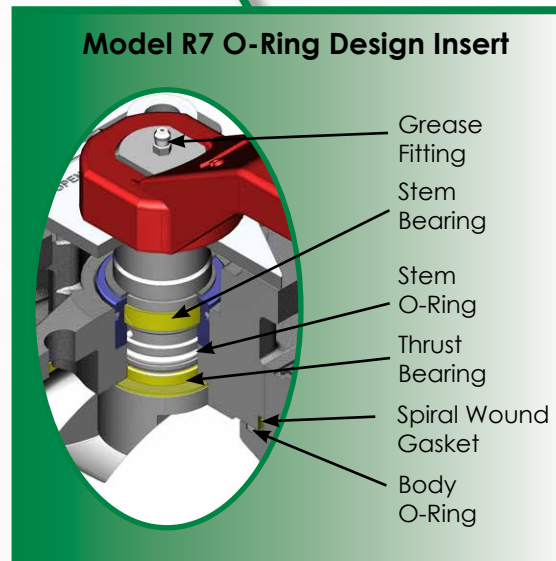
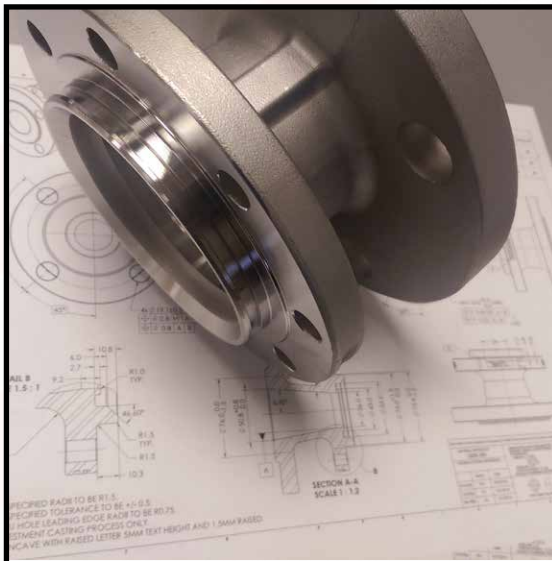
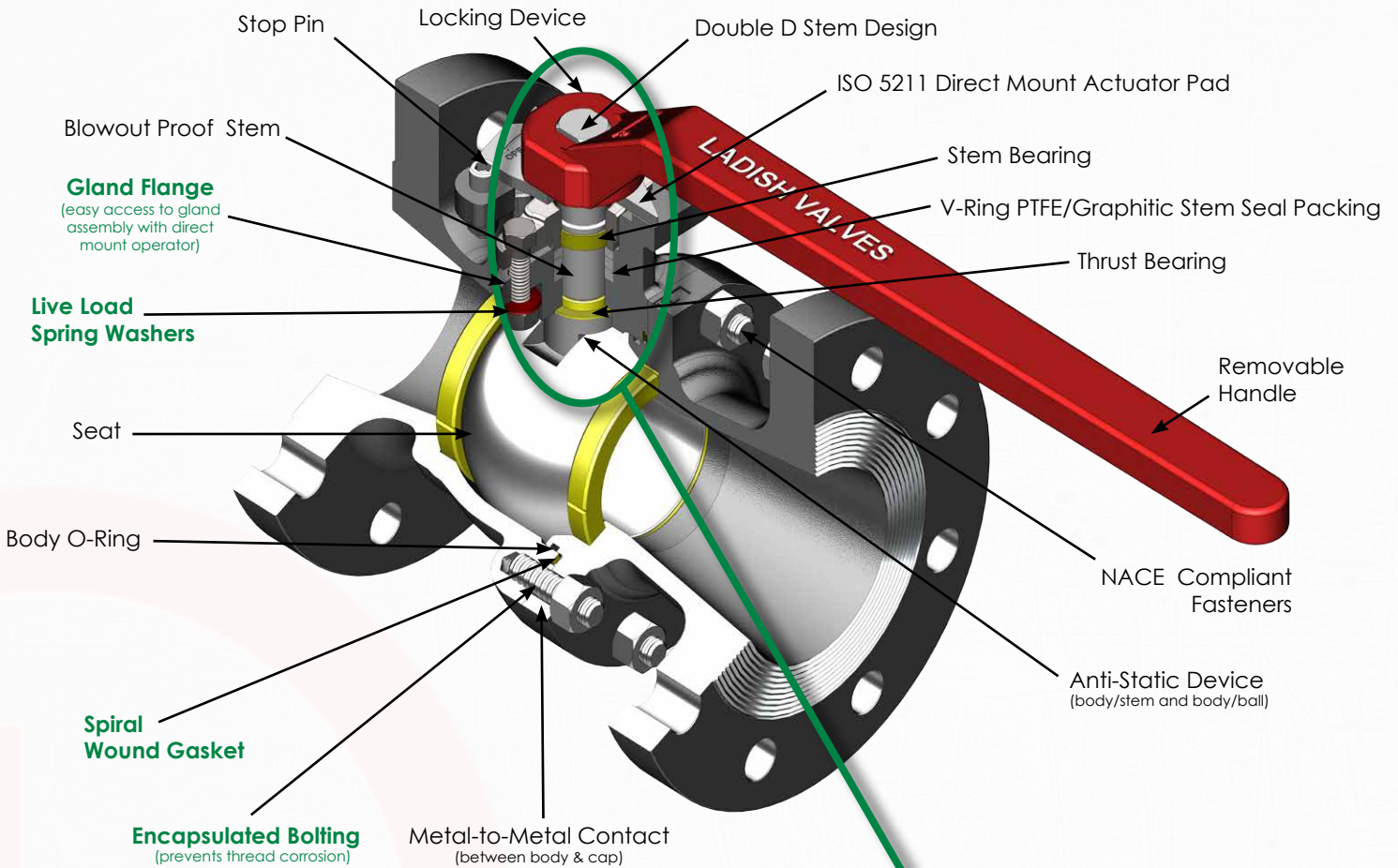
Standard Features

Model P7 Standard Bore, Two-Piece Body, Stem Packing API 608/6D Design

Model R7 Standard Bore, Two-Piece Body, O-Ring API 608/6D Design

Material of Construction: Cast

Model P7 Stem Packing Design

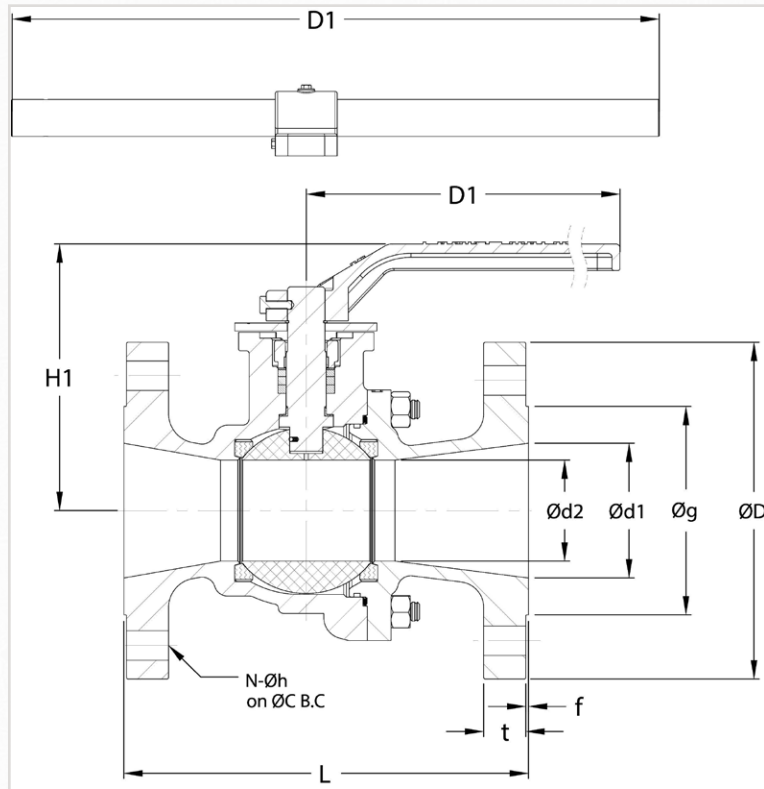


Dimensional Data

Model P7 Standard Bore, Two-Piece Body, Stem Packing API 608/6D Design

Model R7 Standard Bore, Two-Piece Body, O-Ring API 608/6D Design

Material of Construction: Cast



2" - 6" Model P7/R7 Standard Bore, 2 piece
Pressure classes 150, 300, 600

150	Model P7, Class 150, 2" - 4" - Model R7, Class 150, 2" - 4"												WEIGHT LBS
	Ød1	Ød2	L	D1	H1	ØD	ØC	Øg	t	f	N	Øh	
2"	2.00	1.50	7.00	10.00	5.22	6.00	4.75	3.63	0.56	0.06	4	0.75	21
3"	3.00	2.00	8.00	16.54	6.13	7.50	6.00	5.00	0.69	0.06	4	0.75	33
4"	4.00	3.00	9.00	19.69	7.92	9.00	7.50	6.19	0.88	0.06	8	0.75	65
300	Model P7, Class 300, 2" - 4" - Model R7, Class 300, 2" - 4"												WEIGHT LBS
	Ød1	Ød2	L	D1	H1	ØD	ØC	Øg	t	f	N	Øh	
2"	2.00	1.50	8.50	10.00	5.22	6.50	5.00	3.63	0.81	0.06	8	0.75	28
3"	3.00	2.00	11.12	16.54	6.13	8.25	6.62	5.00	1.06	0.06	8	0.88	48
4"	4.00	3.00	12.00	19.69	7.92	10.00	7.88	6.19	1.19	0.06	8	0.88	93
600	Model P7, Class 600, 2" - 6" - Model R7, Class 600, 2" - 6"												WEIGHT LBS
	Ød1	Ød2	L	D1	H1	ØD	ØC	Øg	t	f	N	Øh	
2"	2.00	1.50	11.50	10.00	5.22	6.50	5.00	3.63	1.00	0.25	8	0.75	36
3"	3.00	2.00	14.00	16.54	6.45	8.25	6.62	5.00	1.25	0.25	8	0.88	62
4"	4.00	3.00	17.00	19.69	8.45	10.75	8.50	6.19	1.50	0.25	8	1.00	138
6"	6.00	4.00	22.00	59.06	11.18	14.00	11.50	8.50	1.88	0.25	12	1.12	277

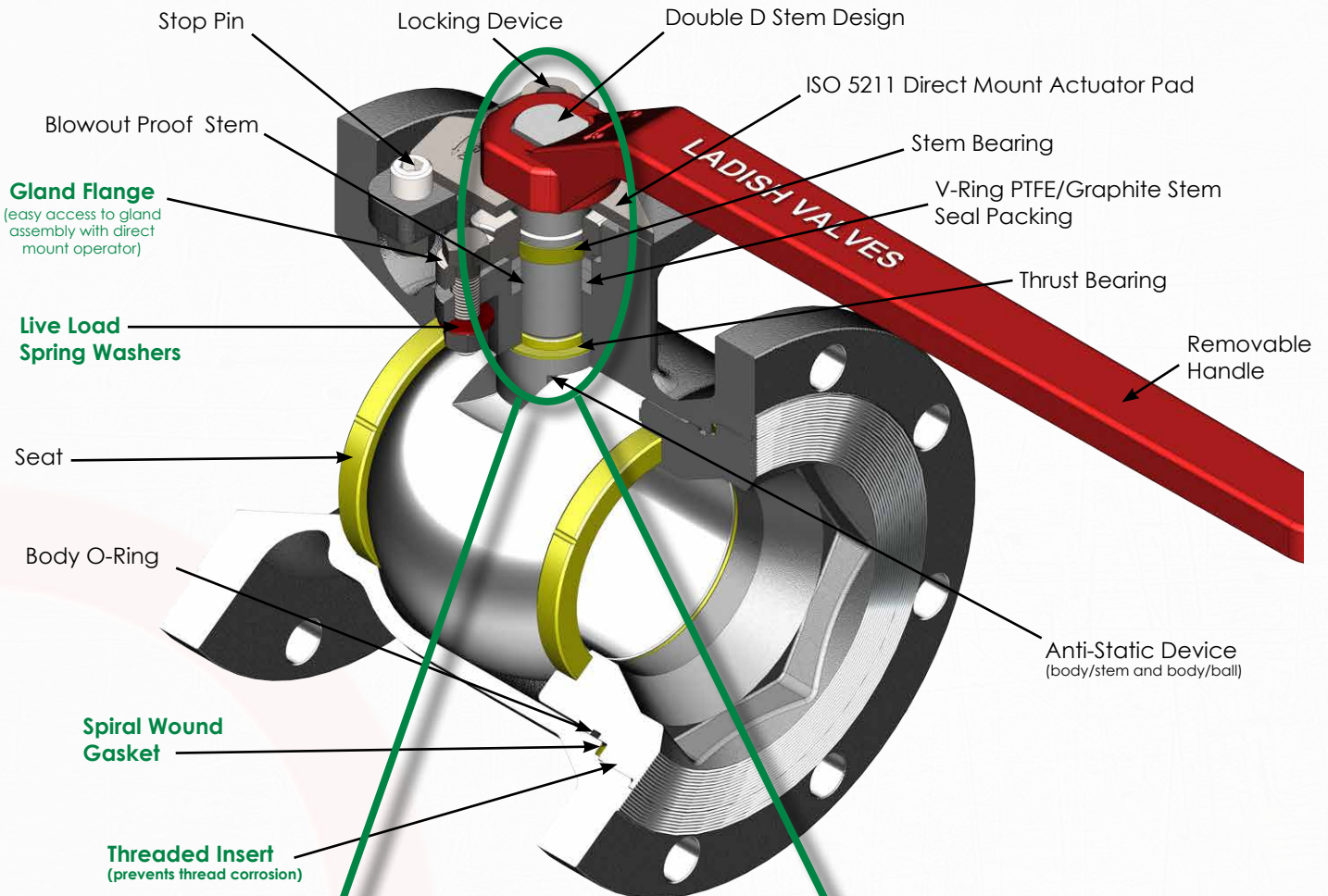
Standard Features

Model P9 Standard Bore, Uni-Body, Stem Packing API 608/6D Design

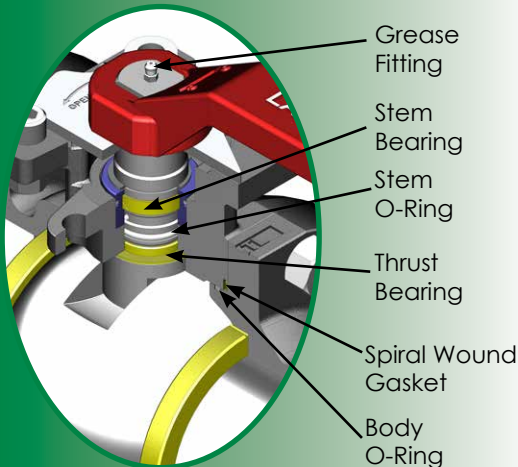
Model R9 Standard Bore, Uni-Body, O-Ring API 608/6D Design

Material of Construction: Cast

Model P9 Stem Packing Design



Model R9 O-Ring Design Insert

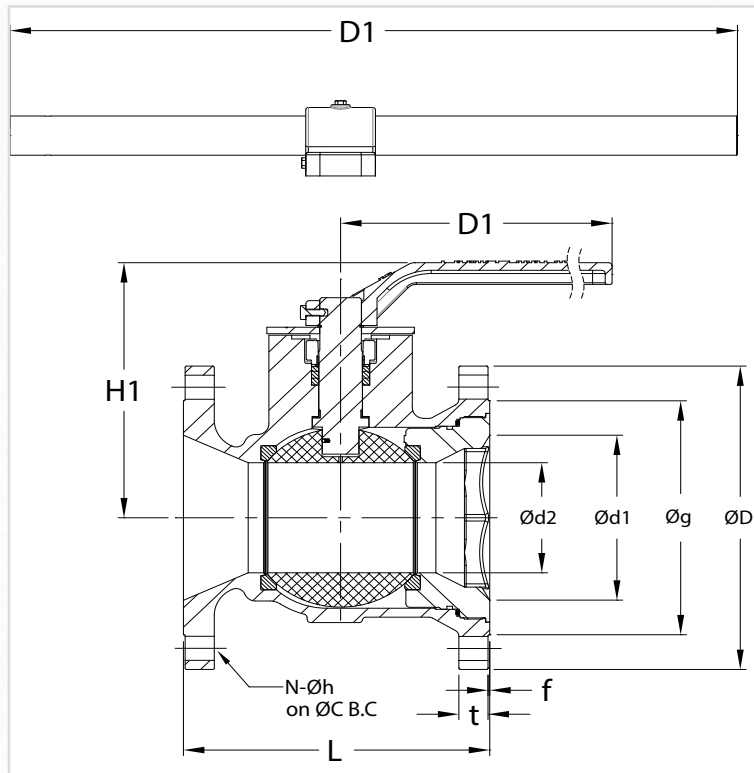


Dimensional Data

Model P9 Standard Bore, Uni-Body, Stem Packing API 608/6D Design

Model R9 Standard Bore, Uni-Body, O-Ring API 608/6D Design

Material of Construction: Cast



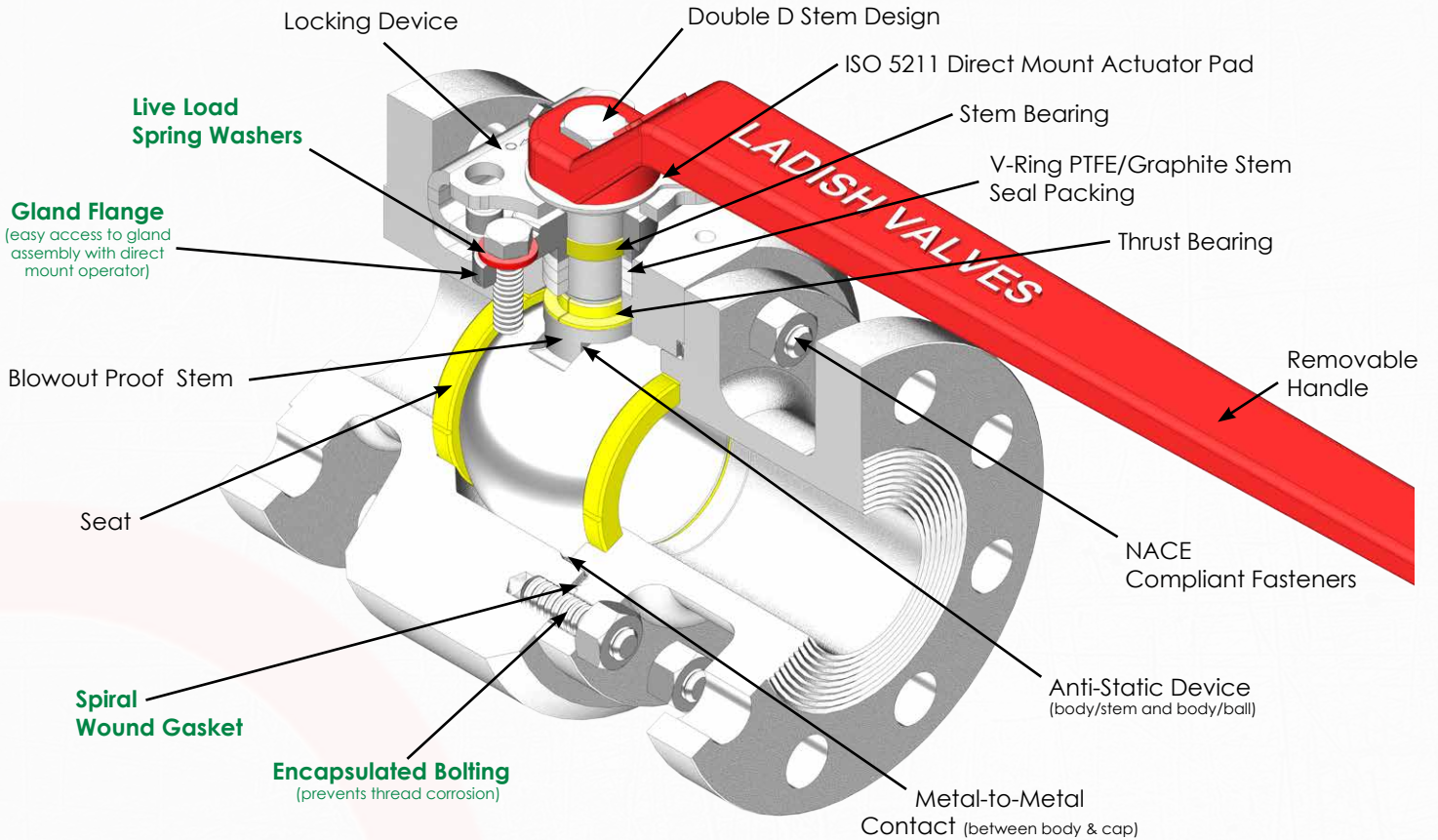
2" – 12" Model P9/R9 Standard Bore, Uni-Body
Pressure classes 150, 300

150	Model P9, Class 150, 2" – 12" - Model R9, Class 150, 2" – 12"												WEIGHT LBS
	Ød1	Ød2	L	D1	H1	ØD	ØC	Øg	t	f	N	Øh	
2"	2.00	1.50	7.00	16.56	6.13	6.00	4.75	3.63	0.56	0.06	4	0.75	20
3"	3.00	2.00	8.00	19.69	7.91	7.50	6.00	5.00	0.69	0.06	4	0.75	36
4"	4.00	3.00	9.00	19.69	8.74	9.00	7.50	6.19	0.88	0.06	8	0.75	55
6"	6.00	4.00	10.50	19.69	9.27	11.00	9.50	8.50	0.94	0.06	8	0.88	102
8"	8.00	6.00	11.50	59.00	12.00	13.50	11.75	10.62	1.06	0.06	8	0.88	192
10"	10.00	7.36	13.00	63.00	14.88	16.00	14.25	12.75	1.12	0.06	12	1.00	310
12"	12.00	9.00	14.00	63.00	16.44	19.00	17.00	15.00	1.19	0.06	12	1.00	362
300	Model P9, Class 300, 2" – 12" - Model R9, Class 300, 2" – 12"												WEIGHT LBS
	Ød1	Ød2	L	D1	H1	ØD	ØC	Øg	t	f	N	Øh	
2"	2.00	1.50	8.50	16.56	6.13	6.50	5.00	3.63	0.81	0.06	8	0.75	25
3"	3.00	2.00	11.12	19.69	7.91	8.25	6.62	5.00	1.06	0.06	8	0.88	52
4"	4.00	3.00	12.00	19.69	8.74	10.00	7.88	6.19	1.19	0.06	8	0.88	84
6"	6.00	4.00	15.88	19.69	9.27	12.50	10.62	8.50	1.44	0.06	12	0.88	150
8"	8.00	6.00	16.50	59.00	12.00	15.00	13.00	10.62	1.62	0.06	12	1.00	260
10"	10.00	7.36	18.00	63.00	14.88	17.50	15.25	12.75	1.88	0.06	16	1.12	411
12"	12.00	9.00	19.75	63.00	16.44	20.50	17.50	15.00	1.94	0.06	16	1.25	695

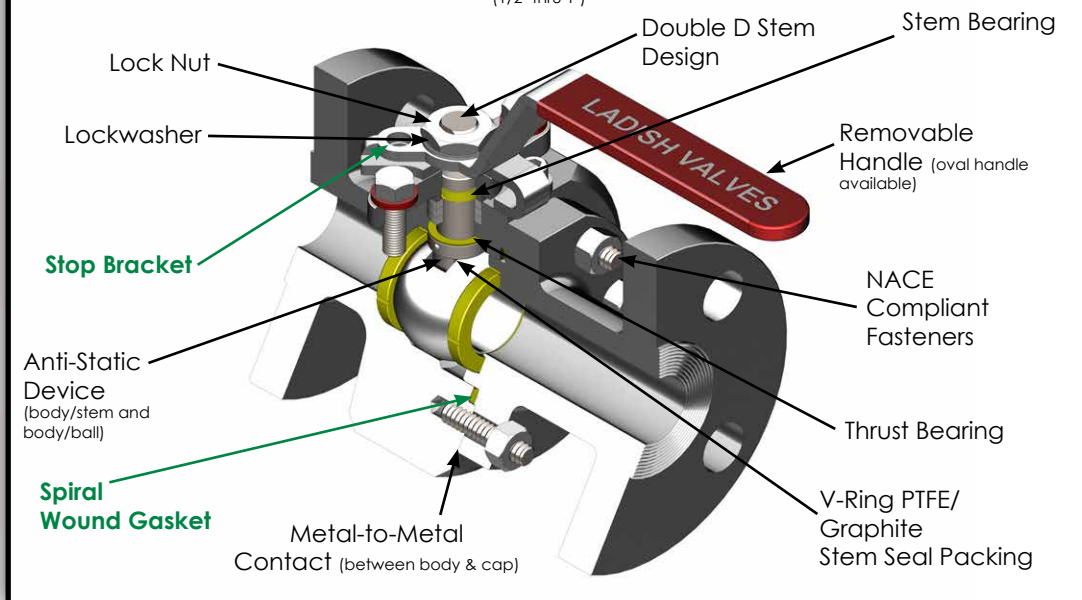
Standard Features

Model P2 Full Bore, Two-Piece, Stem Packing API 608
Material of Construction: Bar-Stock

Model P2 Stem Packing Design (1-1/2" thru 2")

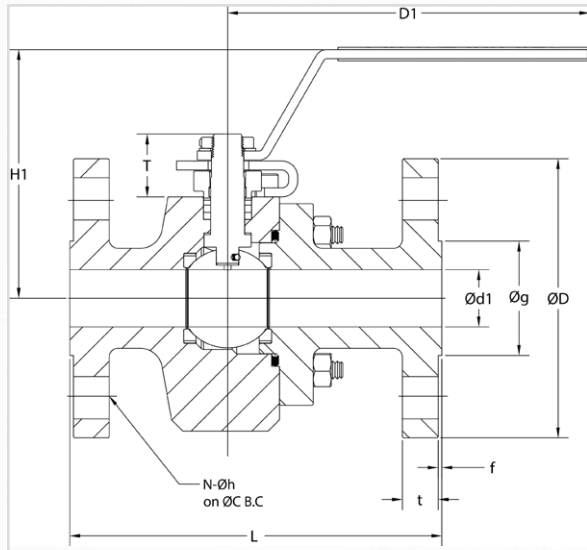


Model P2 Stem Packing Design (1/2" thru 1")

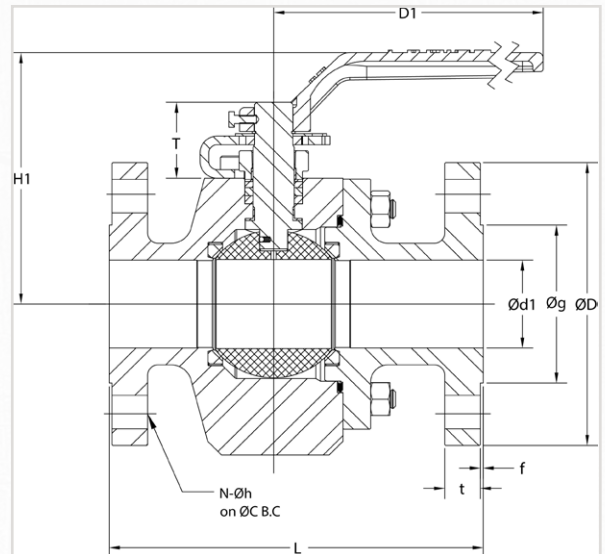


Dimensional Data

Model P2 Full Bore, Two-Piece, Stem Packing API 608
Material of Construction: Bar-Stock



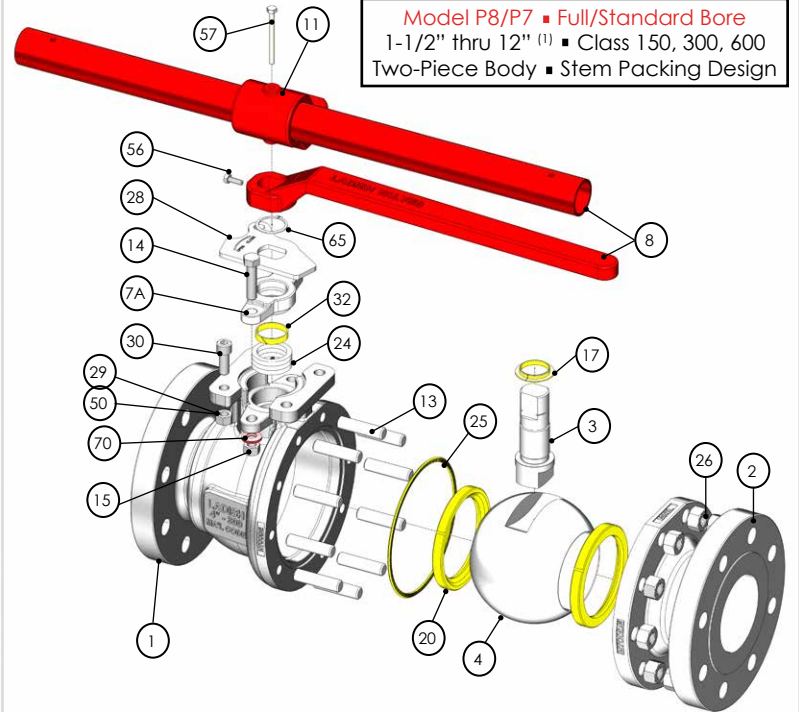
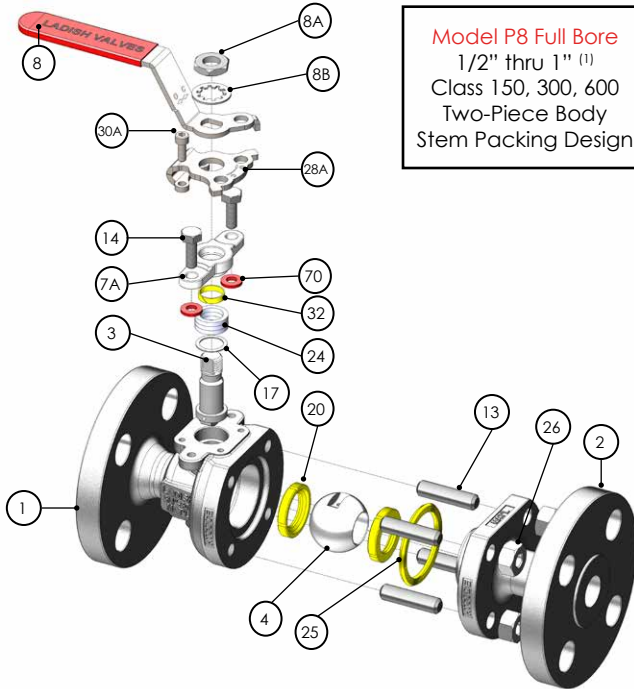
1/2" – 1" Model P2 Full Bore, 2 piece
Pressure classes 150, 300, 600



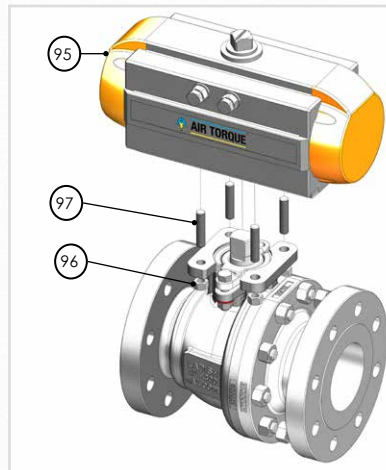
1-1/2" – 2" Model P2 Full Bore, 2 piece
Pressure classes 150, 300, 600

150	Model P2, Class 150, 1/2" – 2"											WEIGHT LBS
	Ød1	L	D1	H1	ØD	ØC	Øg	t	f	N	Øh	
1/2"	0.50	4.25	5.00	3.42	3.50	2.38	1.38	0.31	0.06	4	0.63	4
3/4"	0.75	4.63	5.00	3.53	3.88	2.75	1.68	0.34	0.06	4	0.63	6
1"	1.00	5.00	6.32	4.39	4.25	3.12	2.00	0.38	0.06	4	0.63	8
1-1/2"	1.50	6.50	10.00	5.22	5.00	3.88	2.88	0.50	0.06	4	0.63	18
2"	2.00	7.00	16.56	6.13	6.00	4.75	3.63	0.56	0.06	4	0.75	25
300	Model P2, Class 300, 1/2" – 2"											WEIGHT LBS
	Ød1	L	D1	H1	ØD	ØC	Øg	t	f	N	Øh	
1/2"	0.50	5.50	5.00	3.42	3.75	2.62	1.38	0.50	0.06	4	0.63	6
3/4"	0.75	6.00	5.00	3.53	4.62	3.25	1.68	0.56	0.06	4	0.75	9
1"	1.00	6.50	6.32	4.39	4.88	3.50	2.00	0.63	0.06	4	0.75	12
1-1/2"	1.50	7.50	10.00	5.22	6.12	4.50	2.88	0.81	0.06	4	0.88	25
2"	2.00	8.50	16.56	6.13	6.50	5.00	3.63	0.88	0.06	8	0.75	32
600	Model P2, Class 600, 1/2" – 2"											WEIGHT LBS
	Ød1	L	D1	H1	ØD	ØC	Øg	t	f	N	Øh	
1/2"	0.50	6.50	5.00	3.42	3.75	2.62	1.38	0.56	0.25	4	0.63	8
3/4"	0.75	7.50	5.00	3.67	4.62	3.25	1.68	0.62	0.25	4	0.75	11
1"	1.00	8.50	6.32	4.39	4.88	3.50	2.00	0.69	0.25	4	0.75	15
1-1/2"	1.50	9.50	10.00	5.22	6.12	4.50	2.88	0.88	0.25	4	0.88	32
2"	2.00	11.50	16.56	6.42	6.50	5.00	3.63	1.00	0.25	8	0.75	42

Parts & Materials: P7 and P8 Designs



Item No.	Description	Material ⁽²⁾
1	Body	WCB LCC CF8M
2	Cap	WCB LCC CF8M
3	Stem	ASTM A479 316
4	Ball	ASTM A351 CF8M
7A	Gland Flange	ASTM A351 CF8M
8	Handle	ASTM A47
8A	Stem Nut Locknut	STAINLESS STEEL
8B	Stem Nut Lockwasher	STAINLESS STEEL
11	Handle Adapter ⁽³⁾	ASTM A47
13	Body Stud	B7M L7M B8M
14	Gland Flange Bolt	ASTM A194 B8
15	Gland Flange Nut	ASTM A194 GR8
17	Thrust Bearing	G/F PTFE
20	Seat	TFM/TFMC
24	Packing	DIE-FORMED GRF/TFE V-RING
25	Gasket	SPW GRF/TFE
26	Body Nut	2HM L7 8M
28	Stop Plate	STAINLESS STEEL
28A	Stop Bracket	STAINLESS STEEL
29	Stop Nut	ASTM A194 GR8
30	Stop Bolt	ASTM A193 B8
30A	Bracket Bolt	STAINLESS STEEL
32	Stem Bearing	G/F PTFE
40	Name Plate (not shown)	STAINLESS STEEL
50	Stop Lock Washer	STAINLESS STEEL
56	Handle Bolt	STEEL+ZINC
57	Adapter Bolt ⁽³⁾	STEEL+ZINC
65	Snap Ring (Stop Plate)	STAINLESS STEEL
70	Spring Washer	STAINLESS STEEL

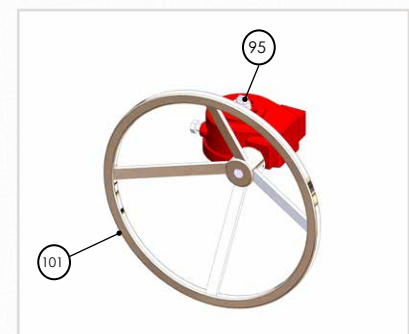
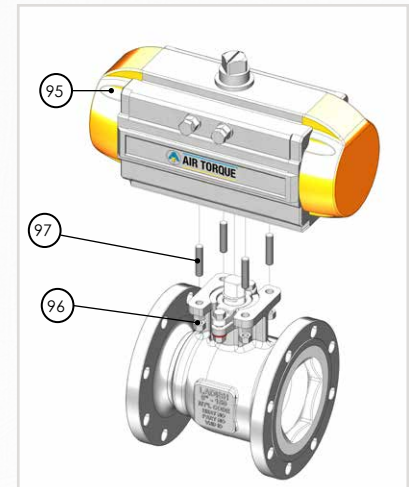
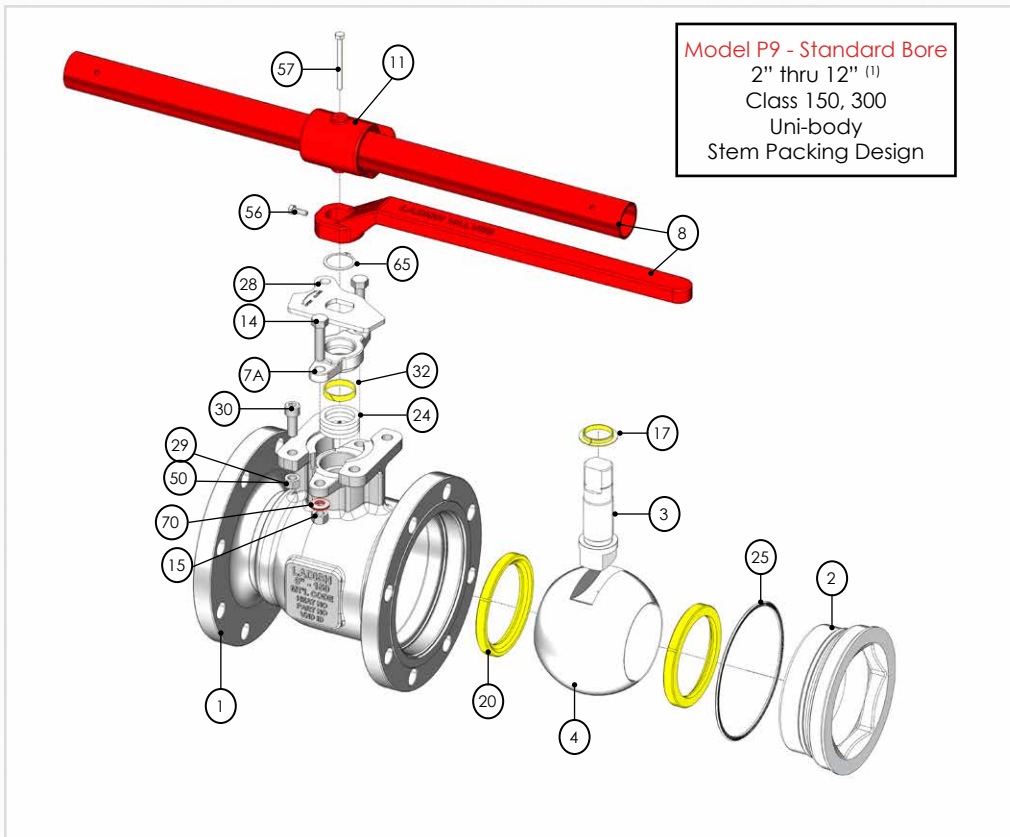


Item No.	Description
95	Gear
	Actuator
96	Mount Nut
97	Mount Stud
101	Handwheel

NOTES:

- P8 Full Bore Model** - 1/2" thru 12" class 150, 300; 1/2" thru 4" class 600
P7 Standard Bore Model - 2" thru 4" class 150, 300; 2" thru 6" class 600
- Standard materials for petrochemical service shown. Other materials readily available. See 'How-to-Order' on page 8 for listing of available options.
- Handle adapter used for class 150, 300 6" and above, and class 600 4" and above.

Parts & Materials: P9 Design



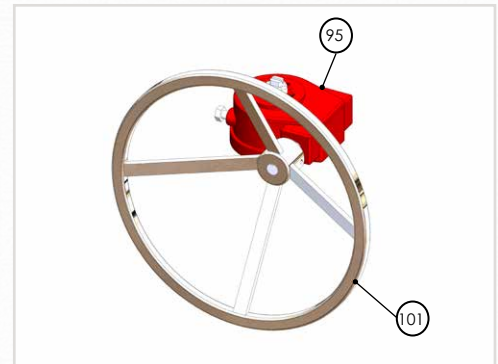
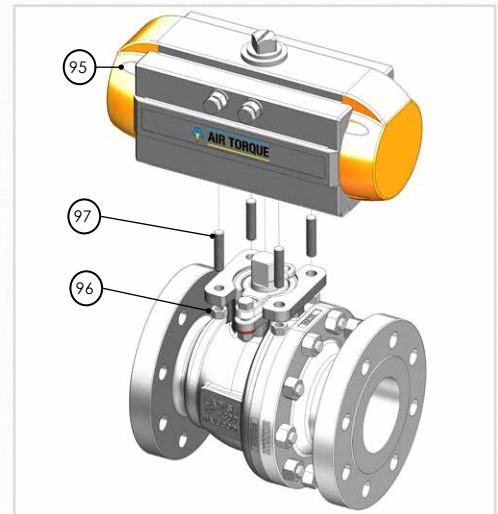
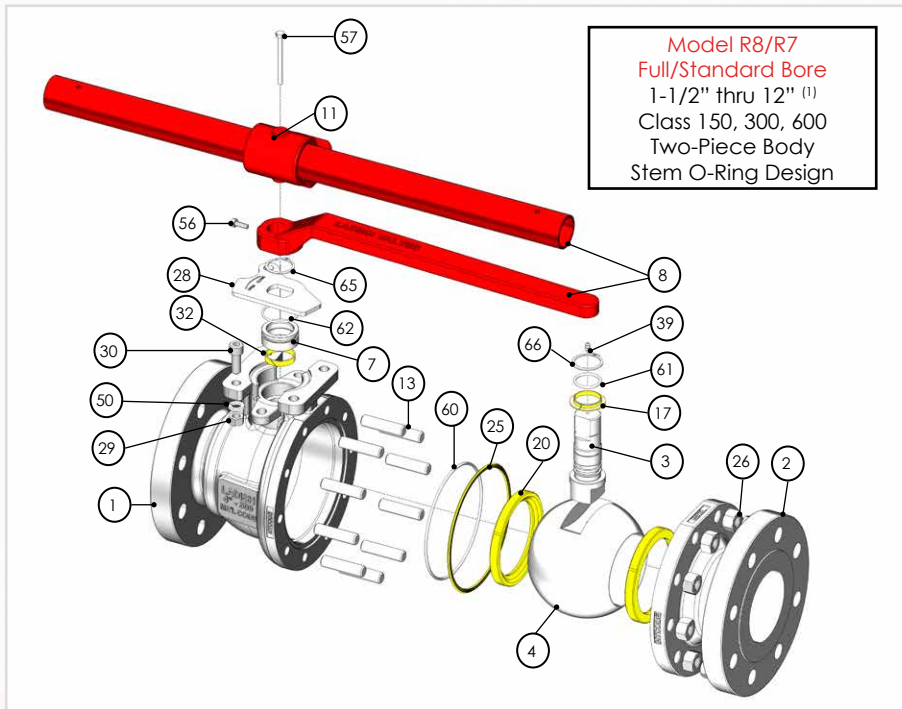
Item No.	Description	Material ⁽²⁾
1	Body	WCB LCC CF8M
2	Cap Insert	WCB LCC CF8M
3	Stem	ASTM A479 316
4	Ball	ASTM A351 CF8M
7A	Gland Flange	ASTM A351 CF8M
8	Handle	ASTM A47
11	Handle Adapter ⁽³⁾	ASTM A197
14	Gland Flange Bolt	ASTM A193 B8
15	Gland Flange Nut	ASTM A194 GR8
17	Thrust Bearing	G/F PTFE
20	Seat	TFM/TFMC
24	Packing	DIE-FORMED GRF/TFE V-RING
25	Gasket	SPW GRF/TFE
28	Stop Plate	STAINLESS STEEL
29	Stop Nut	ASTM A194 GR8
30	Stop Bolt	ASTM A193 B8
32	Stem Bearing	G/F PTFE
40	Name Plate (not shown)	STAINLESS STEEL
50	Stop Lock Washer	STAINLESS STEEL
56	Handle Bolt	STEEL+ZINC
57	Adapter Bolt ⁽³⁾	STEEL+ZINC
65	Snap Ring (Stop Plate)	STAINLESS STEEL
70	Spring Washer	STAINLESS STEEL

Item No.	Description
95	Gear
	Actuator
96	Mount Nut
97	Mount Stud
101	Handwheel

NOTES:

1. **P9 Standard Bore Model** - 2" thru 12" class 150, 300
2. Standard materials for petrochemical service shown. Other materials readily available. See 'How-to-Order' on page 8 for listing of available options.
3. Handle adapter used for class 150, 300 6" and above.

Parts & Materials: R7 and R8 Designs



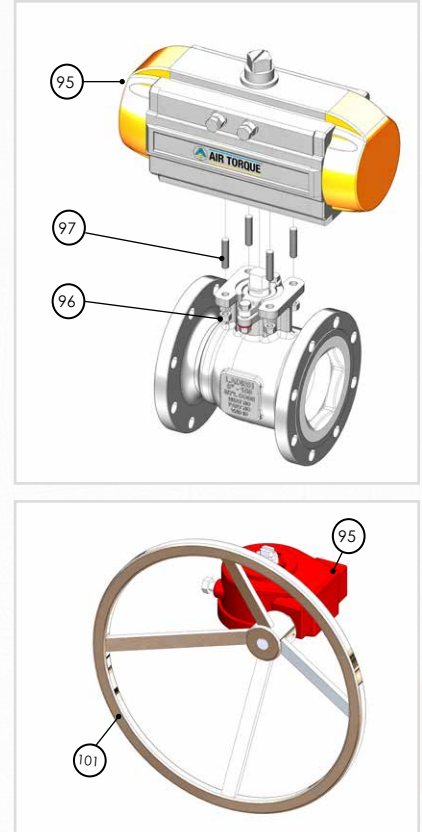
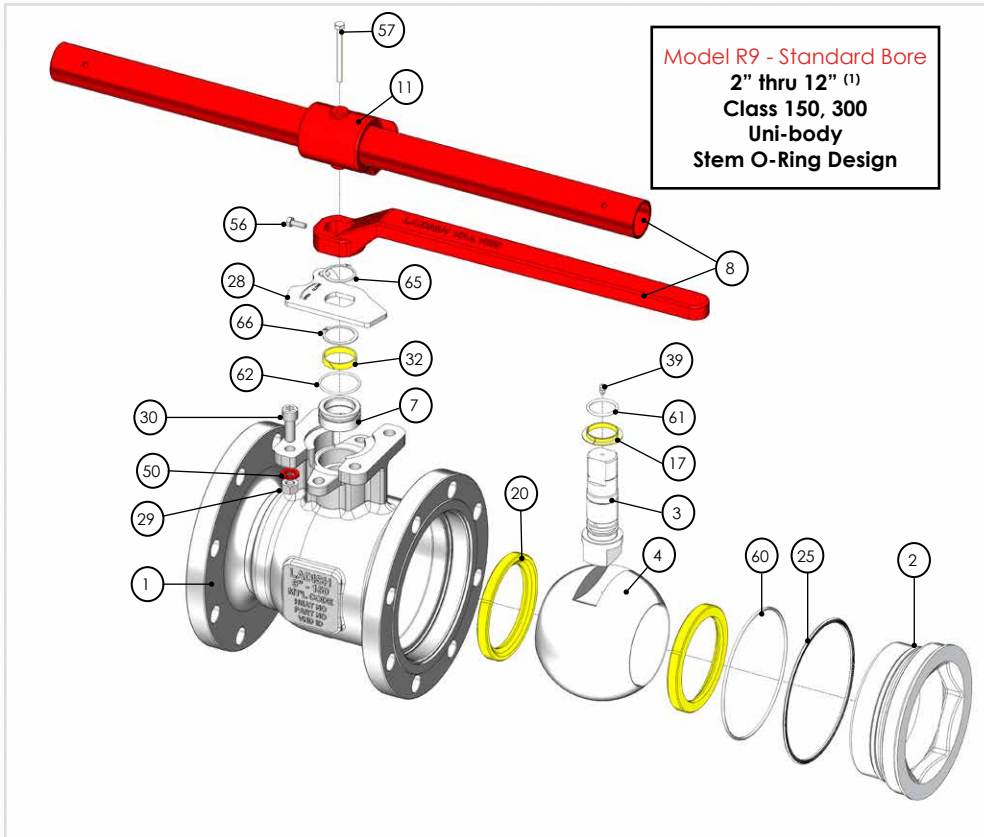
Item No.	Description	Material ⁽²⁾
1	Body	WCB LCC CF8M
2	Cap	WCB LCC CF8M
3	Stem	ASTM A479 316
4	Ball	ASTM A351 CF8M
7	Gland	ASTM A351 CF8M
8	Handle	ASTM A47
11	Handle Adapter ⁽³⁾	ASTM A47
13	Body Stud	B7M L7M B8M
17	Thrust Bearing	G/F PTFE
20	Seat	TFM/TFMC
25	Gasket	SPW GRF/TFE
26	Body Nut	2HM L7 8M
28	Stop Plate	STAINLESS STEEL
29	Stop Nut	ASTM A194 GR8
30	Stop Bolt	ASTM A193 B8
32	Stem Bearing	G/F PTFE
39	Grease Fitting	STAINLESS STEEL
40	Name Plate (not shown)	STAINLESS STEEL
50	Stop Lock Washer	STAINLESS STEEL
56	Handle Bolt	STEEL+ZINC
57	Adapter Bolt ⁽³⁾	STEEL+ZINC
60	O-Ring, Body	VITON® GF
61	O-Ring, Stem	VITON® GF
62	O-Ring, Gland	VITON® GF
65	Snap Ring (Stop Plate)	STAINLESS STEEL
66	Snap Ring (Gland)	STAINLESS STEEL

Item No.	Description
95	Gear Actuator
96	Mount Nut
97	Mount Stud
101	Handwheel

NOTES:

- R8 Full Bore Model** - 1" thru 12" class 150, 300; 1" thru 4" class 600 (*note: 1" design not pictured*)
R7 Standard Bore Model - 2" thru 4" class 150, 300; 2" thru 6" class 600
- Standard materials for oil & gas service shown. Other materials readily available. See 'How-to-Order' on page 8 for listing of available options.
- Handle adapter used for class 150, 300 8" and above and class 600 6" and above.

Parts & Materials: R9 Design



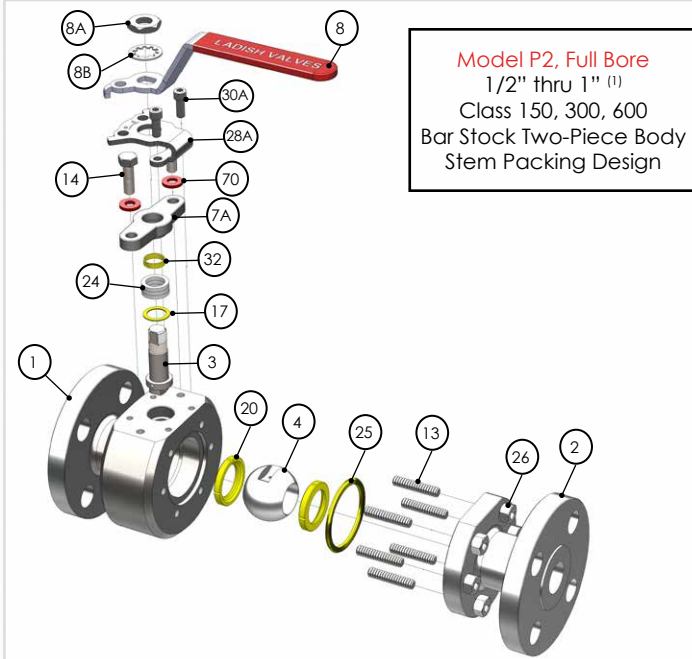
Item No.	Description	Material (2)
1	Body	WCB LCC CF8M
2	Cap Insert	WCB LCC CF8M
3	Stem	ASTM A479 316
4	Ball	ASTM A351 CF8M
7	Gland	ASTM A351 CF8M
8	Handle	ASTM A47
11	Handle Adapter (3)	ASTM A197
17	Thrust Bearing	G/F PTFE
20	Seat	TFM/TFMC
25	Gasket	SPW GRF/TFE
28	Stop Plate	STAINLESS STEEL
29	Stop Nut	ASTM A194 GR8
30	Stop Bolt	ASTM A193 B8
32	Stem Bearing	G/F PTFE
39	Grease Fitting	STAINLESS STEEL
40	Name Plate (not shown)	STAINLESS STEEL
50	Stop Lock Washer	STAINLESS STEEL
56	Handle Bolt	STEEL+ZINC
57	Adapter Bolt(3)	STEEL+ZINC
60	O-Ring, Body	VITON® GF
61	O-Ring, Stem	VITON® GF
62	O-Ring, Gland	VITON® GF
65	Snap Ring (Stop Plate)	STAINLESS STEEL
66	Snap Ring (Gland)	STAINLESS STEEL

Item No.	Description
95	Gear
	Actuator
96	Mount Nut
97	Mount Stud
101	Handwheel

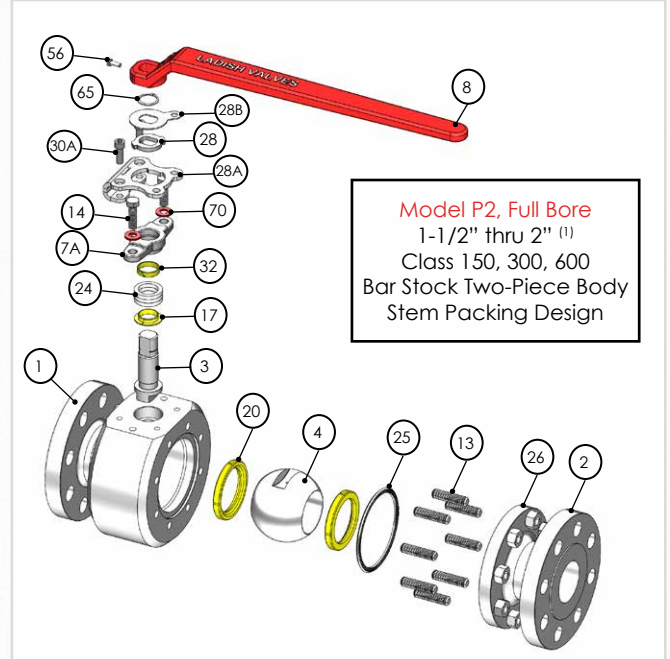
NOTES:

1. R9 Uni-body Model - 2" thru 12" class 150; 300
2. Standard materials for oil & gas service shown. Other materials readily available. See 'How-to-Order' on page 8 for listing of available options.
3. Handle adapter used for class 150, 300 8" and above.

Parts & Materials: P2 Designs



Model P2, Full Bore
 1/2" thru 1" ⁽¹⁾
 Class 150, 300, 600
 Bar Stock Two-Piece Body
 Stem Packing Design



Model P2, Full Bore
 1-1/2" thru 2" ⁽¹⁾
 Class 150, 300, 600
 Bar Stock Two-Piece Body
 Stem Packing Design

Item No.	Description	Material ⁽²⁾
1	Body	ASTM A479 316
2	Cap	ASTM A479 316
3	Stem	ASTM A479 316
4	Ball	ASTM A351 CF8M
7A	Gland Flange	ASTM A351 CF8M
8	Handle	ASTM A47
8A	Stem Nut Locknut	STAINLESS STEEL
8B	Stem Nut Lockwasher	STAINLESS STEEL
13	Body Stud	B8M
14	Gland Flange Bolt	ASTM A193 B8M
17	Thrust Bearing	TFM/TFMC
20	Seat	G/F PTFE
24	Packing	DIE-FORMED GRF/TFE V-RING
25	Gasket	SPW GRF/TFE
26	Body Nut	8M
28	Stop Plate	STAINLESS STEEL
28A	Stop Bracket	STAINLESS STEEL
28B	Lock Plate	STAINLESS STEEL
30A	Bracket Bolt	STAINLESS STEEL
32	Stem Bearing	G/F PTFE
40	Name Plate (not shown)	STAINLESS STEEL
56	Handle Bolt	STEEL+ZINC
65	Snap Ring (Stop Plate)	STAINLESS STEEL
70	Spring Washer	STAINLESS STEEL

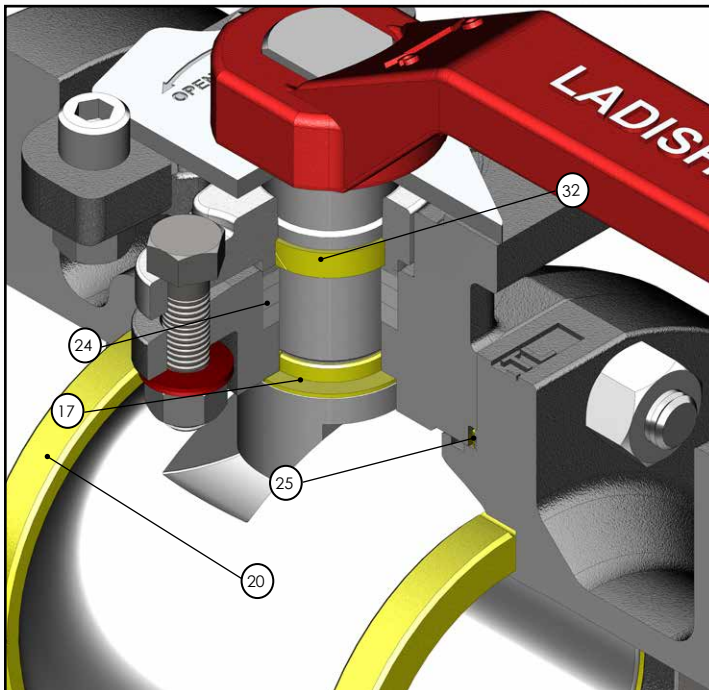
NOTES:

- P2 Full Bore Model** - 0.5" thru 2" class 150, 300, 600.
- Standard materials for oil & gas service shown. Other materials readily available. See 'How-to-Order' on page 8 for listing of available options.

Maintenance & Repair Kits

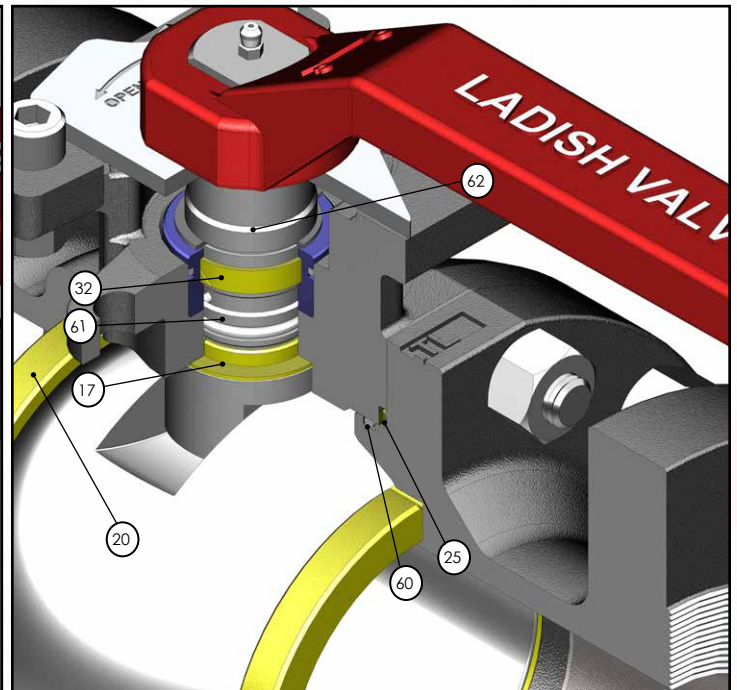
The Ladish ball valve is designed with features to extend valve life and minimize maintenance and repairs. For guidance on maintenance and repair, please visit our website and download the Flanged Floating Ball Valve Installation, Operation and Maintenance (IOM) manual.

For both the stem packing and O-Ring designs, Ladish has repair kits available. Below are standard components in each repair kit. Please call the Ladish team with figure number(s) so we can confirm component materials for repair kits.



Stem Packing Design – Model P2, P7, P8, P9

Item No.	Qty.	Description
17	1	Thrust Bearing
20	2	Seat
24	1	Packing
25	1	Gasket
32	1	Stem Bearing



Stem O-Ring Design – Model R7, R8, R9

Item No.	Qty.	Description
17	1	Thrust Bearing
20	2	Seat
25	1	Gasket
32	1	Stem Bearing
60	1	O-Ring, Body
61	1	O-Ring, Stem
62	1	O-Ring, Gland

In-house Engineering Capabilities

All Ladish Flanged Floating Ball Valves are designed by Ladish engineers located in Houston, Texas. In addition to ball valve designs, Ladish builds and performs all required testing per API specifications. This includes seat capacity ratings, lifecycle testing, and all fire testing as required by API 607.

Advanced Engineering Tools

- 3D Solid Modeling
- Finite Analysis (FEA)
- Flow Simulation Analysis

Rapid Prototyping of New Designs

- Compare design alternatives to meet customer demands and requirements

Active in API and MSS

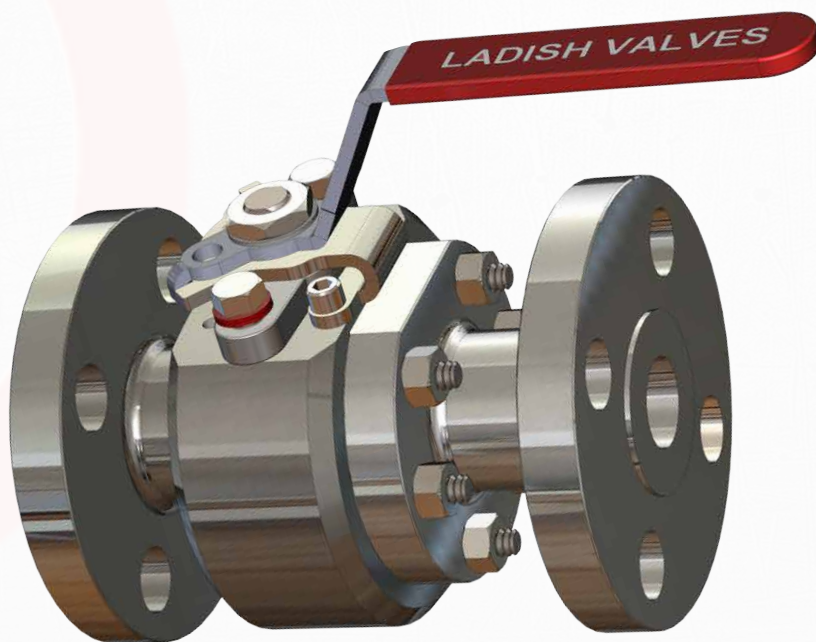
- Provides Ladish up-to-date access to the latest standard changes

Continuous Interaction with Foundry Vendors

- Communication enables quick execution of new pattern/tool changes
- Ensures the quality of the Ladish product from our Foundry vendors
- Casting simulation software provides product verification and casting quality

Specialty Ball Valves

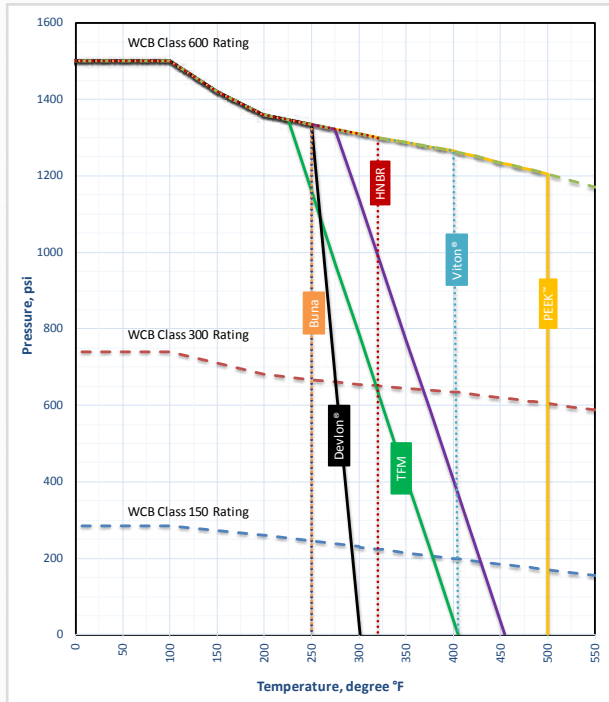
- Ladish ball valve design also offered in metal and graphite seats
- Cryogenic ball valve offered with one-piece stem and manufactured at our Houston facility.



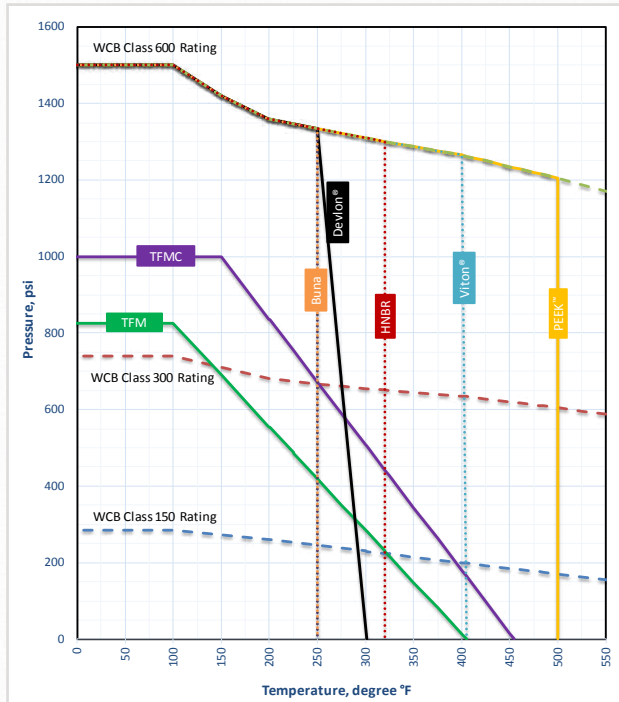
Pressure & Temperature Ratings

The pressure temperature ratings for the Ladish Valves ball valve product line are determined by a combination of the body, seal and seating material. The charts below serve to be representative of our most common seat materials. For ratings on other materials, please contact a Ladish team member.

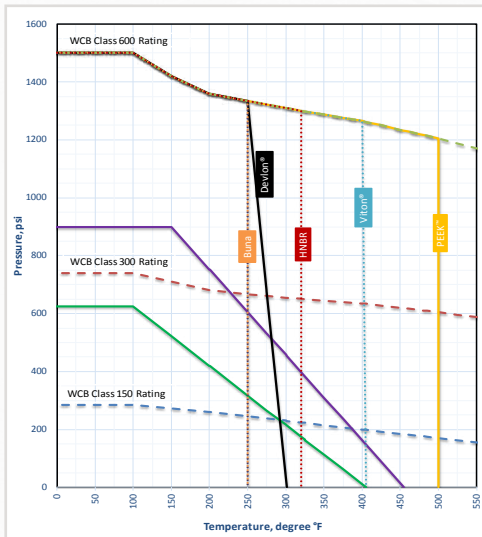
P8/R8 Model: ½" thru 1"
P2: ½" thru 1"



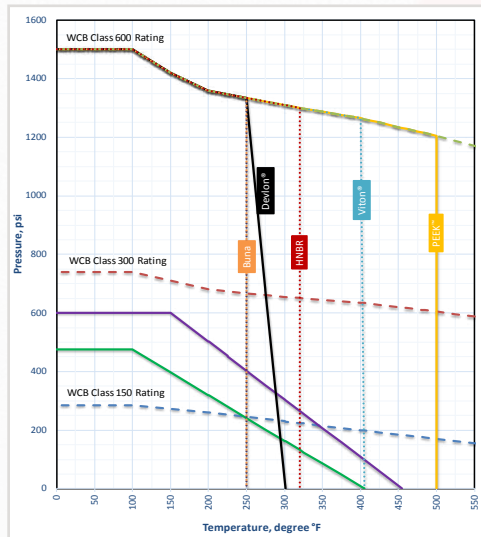
P8/R8 Model: 1 ½" thru 2"
P7/R7, P9/R9: 2" thru 3"
P2: 1 ½" thru 2"



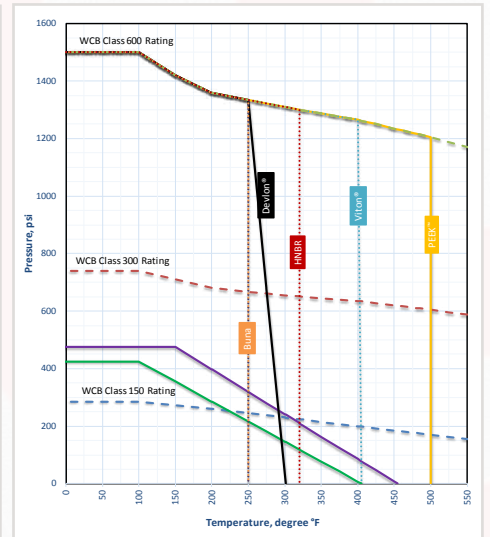
P8/R8 Model: 3" thru 4"
P7/R7, P9/R9: 4" thru 6"



P8/R8 Model: 6"
P9/R9: 8"



P8/R8 Model: 8" thru 10"
P9/R9: 10" thru 12"



NOTES:

1. Above class rating is for WCB - refer to the latest edition of ASME B16.34 for P/T of other material.
2. Metal seated valves P/T rating are equal to the body rating per ASME B16.34.

Actuator Mounting Data

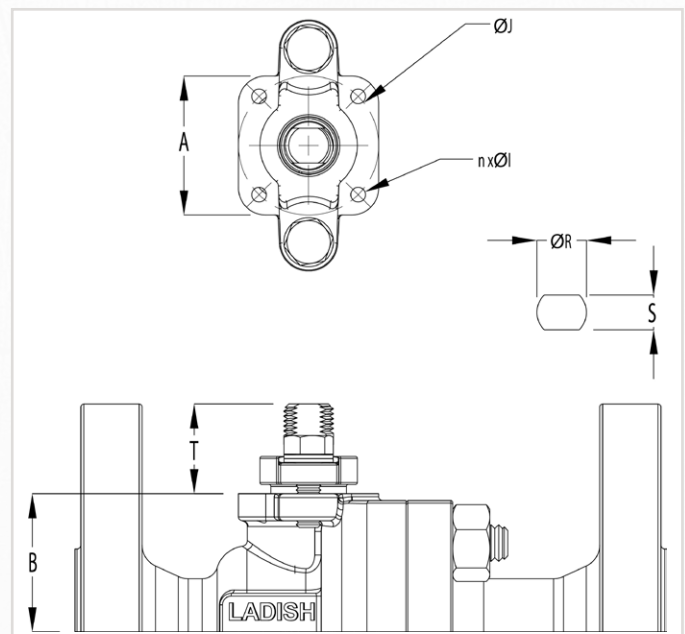
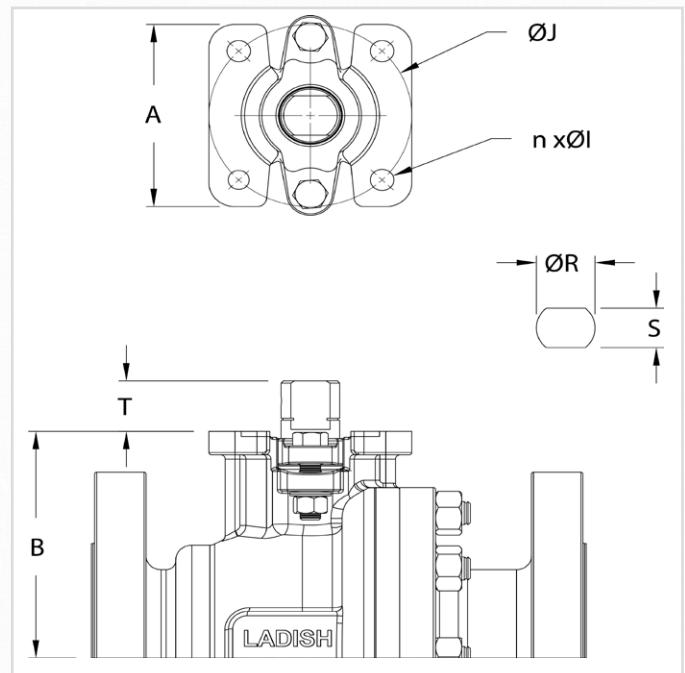
Valve Size	Model P8/R8 Class 150 / 300							
	A	B	n x ØI	ØJ	ØR	S	T	
	STEM DIMENSIONS							
1/2"	F03	1.42	1.29	4 x .150	1.417	0.500	0.354	0.915
3/4"	F03	1.42	1.45	4 x .150	1.417	0.500	0.354	0.915
1"	F05	1.97	1.77	4 x .201	1.969	0.562	0.433	1.099
1-1/2"	F07	2.76	3.68	4 x .374	2.756	0.874	0.669	0.728
2"	F07	3.86	4.07	4 x .374	2.756	0.870	0.669	0.809
	F10	3.86	4.07	4 x .453	4.016	0.870	0.669	0.809
3"	F10	4.02	5.3	4 x .453	4.016	1.110	0.866	1.348
4"	F12	4.91	6.12	4 x .571	4.921	1.425	1.063	1.363
6" (150)	F14	5.51	8.03	4 x .689	5.512	1.898	1.417	1.673
6" (300)	F14	5.51	8.62	4 x .689	5.512	1.898	1.417	1.673
8"	F16	11.81	10.79	4 x .807	6.496	2.370	1.811	1.951
	F25	11.81	10.79	8 x .689	10.000	2.370	1.811	1.951
10" (150)	F16	6.50	12.91	4 x .807	6.496	2.370	1.811	2.262
10" (300)	F16	11.73	12.91	4 x .807	6.496	2.370	1.811	2.262
	F19	11.73	12.91	8 x .689	7.500	2.370	1.811	2.262
	F25	11.73	12.91	8 x .689	10.000	2.370	1.811	2.262

Valve Size	Model P8/R8 Class 600							
	A	B	n x ØI	ØJ	ØR	S	T	
	STEM DIMENSIONS							
1/2"	F03	1.42	1.29	4 x .150	1.417	0.500	0.354	0.915
3/4"	F03	1.42	1.55	4 x .150	1.417	0.500	0.354	0.916
1"	F05	1.97	1.77	4 x .201	1.969	0.562	0.433	1.099
1-1/2"	F07	2.83	3.63	4 x .374	2.756	0.874	0.669	0.728
2"	F07	3.86	4.34	4 x .374	2.756	0.874	0.669	0.820
	F10	3.86	4.34	4 x .453	4.016	0.874	0.669	0.820
3"	F12	4.92	5.82	4 x .571	4.921	1.425	1.063	1.365
4"	F14	5.51	7.15	4 x .689	5.512	1.898	1.417	1.673

Valve Size	Model P7/R7 Class 150/300							
	A	B	n x ØI	ØJ	ØR	S	T	
	STEM DIMENSIONS							
2"	F07	2.76	3.63	4 x .374	2.756	0.874	0.669	0.728
3"	F07	3.86	4.07	4 x .374	2.756	0.870	0.669	0.809
	F10	3.86	4.07	4 x .453	4.016	0.870	0.669	0.809
4"	F10	4.02	5.30	4 x .453	4.016	1.110	0.866	1.348

Valve Size	Model P7/R7 Class 600							
	A	B	n x ØI	ØJ	ØR	S	T	
	STEM DIMENSIONS							
2"	F07	2.76	3.63	4 x .374	2.756	0.874	0.669	0.728
3"	F07	3.86	4.34	4 x .374	2.756	0.874	0.669	0.850
	F10	3.86	4.34	4 x .453	4.016	0.874	0.669	0.850
4"	F12	4.92	5.82	4 x .571	4.921	1.425	1.063	1.365
6"	F14	5.51	7.15	4 x .689	5.512	1.898	1.417	1.673

Valve Size	Model P9/R9 Class 150/300							
	A	B	n x ØI	ØJ	ØR	S	T	
	STEM DIMENSIONS							
2"	F07	2.76	3.63	4 x .374	2.756	0.874	0.669	0.728
3"	F07	3.86	4.07	4 x .374	2.756	0.870	0.669	0.809
	F10	3.86	4.07	4 x .453	4.016	0.870	0.669	0.809
4"	F10	4.02	5.30	4 x .453	4.016	1.110	0.866	1.348
6"	F12	4.92	6.63	4 x .571	4.921	1.425	1.063	1.363
8"	F14	5.51	7.95	4 x .689	5.512	1.898	1.417	1.673
10"	F16	6.69	10.29	4 x .807	6.496	2.370	1.811	1.959
12"	F16	11.81	10.79	4 x .807	6.496	2.370	1.811	1.959



Actuator Mounting Data: Flow Coefficients

Flow Coefficients (C_v) and Pressure Conversion Chart

SIZE	MODEL	Bore	PRESSURE CLASS		
			150	300	600
1/2"	P8/P2	FP	28	28	28
3/4"	P8/P2	FP	51	51	51
	P7	RP	18	18	18
	P9/DOWNSTREAM	RP	16	19	-
	P9/UPSTREAM	RP	14	17	-
1"	P8/P2	FP	97	97	92
	P7	RP	43	43	38
	P9/DOWNSTREAM	RP	29	34	-
	P9/UPSTREAM	RP	28	31	-
1-1/2"	P8/R8/P2	FP	260	255	250
	P7/R7	RP	80	75	70
	P9/R9 DOWNSTREAM	RP	110	132	-
	P9/R9 UPSTREAM	RP	105	126	-
2"	P8/R8/P2	FP	472	422	367
	P7/R7	RP	172	159	148
	P9/R9 DOWNSTREAM	RP	160	192	-
	P9/R9 UPSTREAM	RP	155	185	-
3"	P8/R8	FP	1245	1055	1000
	P7/R7	RP	428	428	390
	P9/R9 DOWNSTREAM	RP	335	400	-
	P9/R9 UPSTREAM	RP	320	378	-
4"	P8/R8	FP	2450	2140	1795
	P7/R7	RP	605	605	572
	P9/R9 DOWNSTREAM	RP	490	583	-
	P9/R9 UPSTREAM	RP	450	540	-
6"	P8/R8	FP	5350	5150	4950
	P7/R7	RP	1150	1150	925
	P9/R9 DOWNSTREAM	RP	975	1170	-
	P9/R9 UPSTREAM	RP	900	1100	-
8"	P8/R8	FP	10850	10315	-
	P7/R7	RP	3560	3375	-
	P9/R9 DOWNSTREAM	RP	1267	1598	-
	P9/R9 UPSTREAM	RP	1185	1410	-
10"	P8/R8	FP	15500	15500	-
	P7/R7	RP	6750	6750	-
	P9/R9 DOWNSTREAM	RP	2115	2598	-
	P9/R9 UPSTREAM	RP	2010	2370	-
12"	P8/R8	FP	24000	24000	-

FLOW COEFFICIENTS (C_v) FACTOR

Capacity factors for the series P2,P7,P8,P9,R7,R8, and R9 designs listed are to be used as a reference for correct valve sizing. C_v equals the volume of water in gallons per minute that will flow through a given opening with a pressure drop of one psi.

PRESSURE CONVERSION

Directions: Formulas below may be used for pressure conversions

psi x .06894757 = bar
 psi x .07030697 = Kg/cm²
 psi x 6894.757 = Pascal

bar x 14.50377 = psi
 Kg/cm² x 14.22334 = psi
 Pascal x .0001450377 = psi

NOTES





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