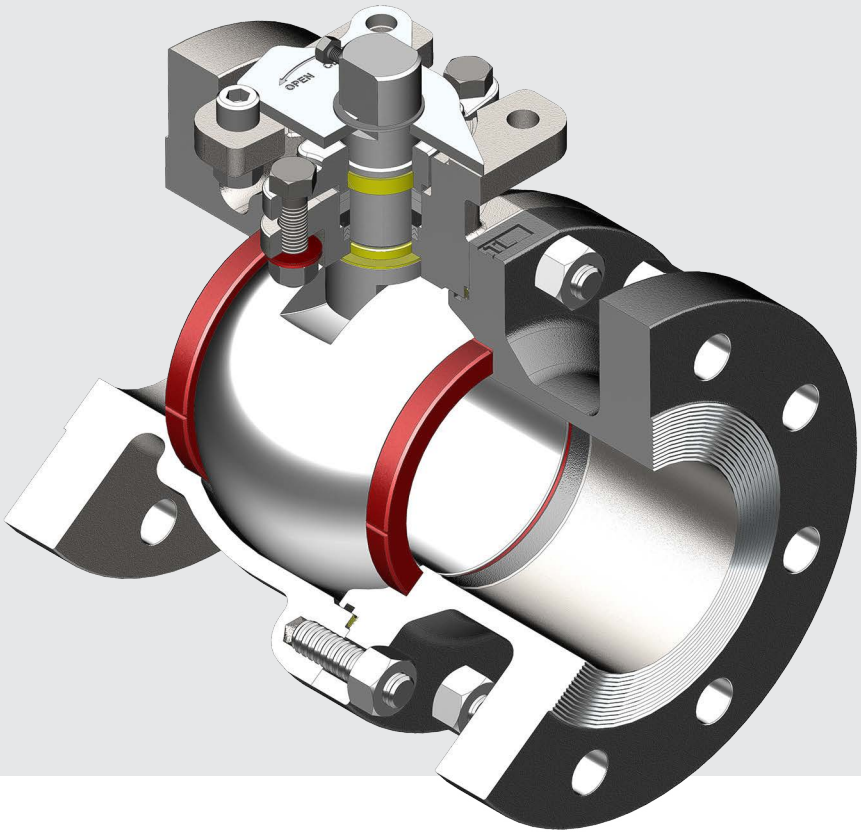
LADISH VALVES

CONTROLLED QUALITY • CORROSION RESISTANT

TO MARK PROGRESS

CATALOG 421

Flanged Floating Ball Valve



exida • CERTIFIED • IEC 61508 • SIL 3 CAPABLE •

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281.880.8560
ladishvalves.com
sales@ladishvalves.com

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LADISH MALT
LADISH MALTING CO
MILWAUKEE, WIS.
THERE IS
NO SUBSTITUTE
FOR FINE
Malt
LADISH
QUALITY
FLOUR
LADISH
VALVES

TO MARK PROGRESS

LADISH VALVES

A Heritage Brand

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 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

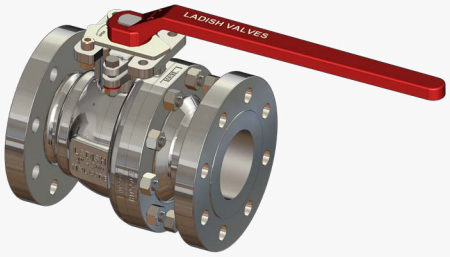
RISING HANDWHEEL
NON-RISING HANDWHEEL

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

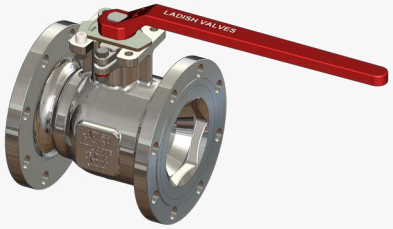
½"–36"
CL150 — CL2500

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

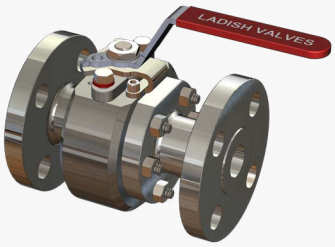
CATALOG 421
FLANGED FLOATING BALL VALVE



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

FORGED STEEL
CATALOG 221

CAST STEEL
CATALOG 821

CRYOGENIC
CATALOG 321

HIGH PRESSURE
CATALOG 231

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.

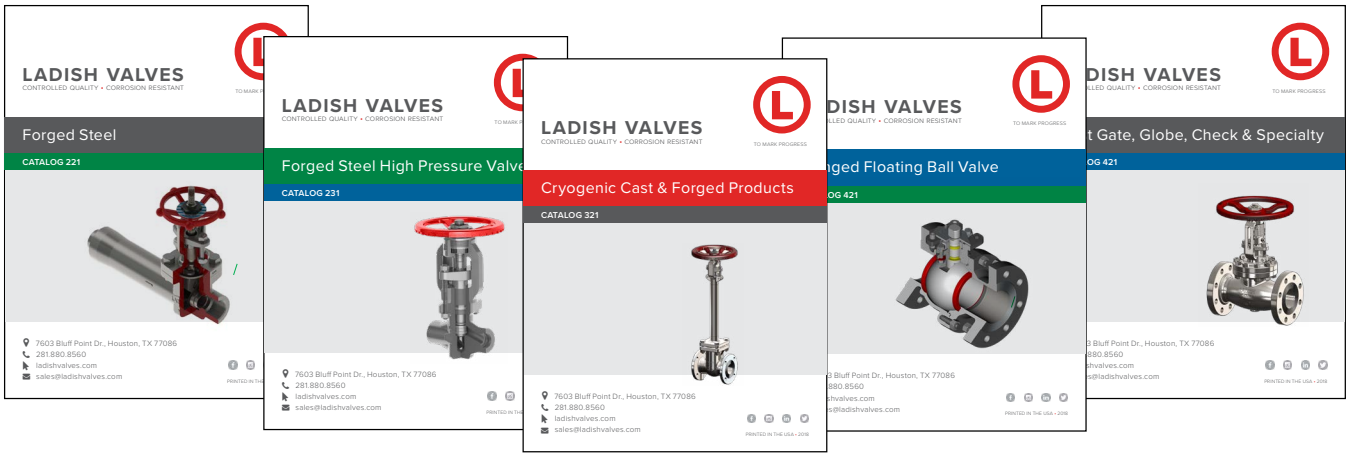
Ladish has a full complement of value-added services to address the many challenges that often delay projects. Our team specializes in quick turnaround deliveries—even on challenging orders—with the confidence of controlled quality through in-house design and manufacturing.

We're a Step Above the Competition. Here's Why.

Ladish is local. Our manufacturing facility is located in Houston, 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 using Ladish engineering & design teams
- Fully compliant clean room (oxygen, chlorine, hydrogen peroxide and others)
- Extensive in-house NDE capabilities

Ladish Product Line Catalogs



CATALOG 221 CATALOG 231 CATALOG 321 CATALOG 421 CATALOG 821

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 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.

Finished Parts CF8M (316 Stainless Steel) Inventory

API 607 Fire Test (certifications available upon request)

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:

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
FIRE-SAFE 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.*

LADISH VALVES

Floating Ball Valve

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 ensuring 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	½"	¾"	1"	1 ½"	2"	3"	4"	6"	8"	10"	12"	14"
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	—	—	—	—	◐	◐	◐	◐	—	—	—	—

Product Range: O-Ring Design

CLASS	MODEL	SEAL	BODY	BORE	ENDS	½"	¾"	1"	1 ½"	2"	3"	4"	6"	8"	10"	12"	14"
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	—	—	—	—	◐	◐	◐	◐	—	—	—	—

Product Range: Bar Stock Design

CLASS	MODEL	SEAL	BODY	BORE	ENDS	½"	¾"	1"	1 ½"	2"	3"	4"
150	P1/P2	PACKING	2 PIECE BAR-STOCK	FULL AND STANDARD	RF	◐	◐	◐	◐	◐	◐	◐
300	P1/P2	PACKING	2 PIECE BAR-STOCK	FULL AND STANDARD	RF	◐	◐	◐	◐	◐	◐	◐
600	P1/P2	PACKING	2 PIECE BAR-STOCK	FULL AND STANDARD	RF	◐	◐	◐	◐	◐	◐	◐

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

HOW TO ORDER

Ladish Flanged Floating Ball Valve

Ladish Valves are identified by a 16-digit alpha-numeric code, detailed in the table below. Our aim is to accurately fill your order, so if you need assistance, please contact our knowledgeable sales staff at 281.880.8560. Provide us with the leading four digits and we can guide you through the rest.

EXAMPLE:

P815-L15A-GG03-A40M = 4" CL150 RF BALL A351 CN7M TR A20 CARBON GRF B8MCL1 FIRE SAFE NACE

VALVE STYLE	CONSTRUCT & VALVE TYPE	ANSI CLASS	END CONNECT	OPER.	BODY/CAP MATERIAL	TRIM	PACKING & GASKET
P	**8**	**1**	**5**	**L**	**15**	**A**	**G**
P – Packing R - O-Ring	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 – Bar Stock Two Piece Standard Bore	1 – 150 3 – 300 6 – 600 5 - 1500	3 – NPT 4 – SWE 5 – RF 7 – THD-SWE A – BWE-SCH .5 B – BWE-SCH .10 C – BWE-SCH .40 D – BWE-SCH .80 E – BWE-SCH .160 F – BWE-SCH .180 G – BWE-SCH XXS F – FF J – RTJ	A – Actuator B – Bare Stem G – Gear L – Lever V – Oval Handle		0 – Same as Body 3 – 316SS A – Alloy 20 C – Inc 600 D - DUPLEX S32205 K - Monel 400/ K500 H – Hast C 7 - 316SS/ 17-4 8 - 316SS/ Nitronic 60 **OTHER MATERIALS AVAILABLE UPON REQUEST**	A – Viton® A B – Buna N E – EPDM G – Graphoil H – HNBR D – Dual R – Low Temp Buna T – PTFE W– Viton® B Y – Viton® GF (ED) Z – AFLAS® **OTHER MATERIALS AVAILABLE UPON REQUEST**

MATERIALS OF CONSTRUCTION

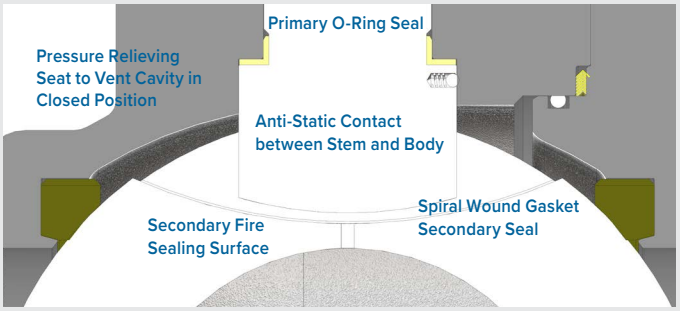
71	A216 WCB/WCC	**16**	A351 CK3MCUN	**26**	A494 N7M	**37**	A494 CZ100	**60**	B367 GRC2
72	A352 LCC/LCB	**17**	A351 CN3MN	**30**	A494 M35-1	**38**	A494 CY40 CL.2	**61**	B367 GRC3
05	A351 CF8M / A182 F316	**20**	A494 CW12MW	**31**	A494 M35-2	**52**	A995 CD4MCUN-GR1B	**62**	B367 GRC7
06	A351-CF3M	**21**	A494 CW6M	**32**	A494 M30C	**53**	A995 CE8MN-GR2A	**63**	B752 GR702C
10	A351 CG8M	**22**	A494 CW2M	**33**	A494 CY40	**54**	A995 CD6MN-GR3A	**65**	A351 CF8M
11	A351 CG3M	**23**	A494 CX2MW	**34**	A494 CW6MC	**55**	A995 CD3MN-GR4A	**69**	A216 WCB
12	A351 CF8C	**24**	A494 CX2M	**35**	A351 CT15C	**56**	A995 CE3MN-GR5A		**BAR STOCK EQUIVALENTS ALSO AVAILABLE**
15	A351 CN7M	**25**	A494 N12MV	**36**	A494 CU5MCuC	**57**	A995 CD3MWCUN-GR6A		

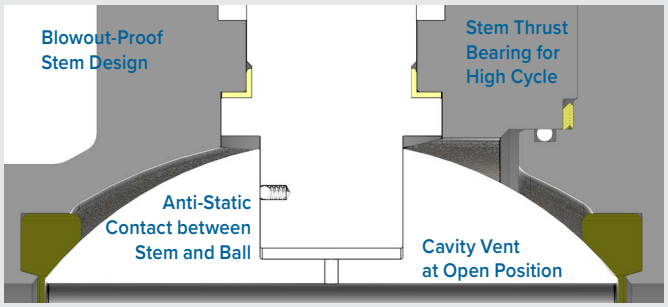
SEAT	BOLTING & NUTS	MISC. OPTION	SIZE	DESIGN FIRE-SAFE NACE
G	**03**	**A**	**40**	**M**
B - Stellite Seat, Colmonoy 69 HF Ball C - Carbon Filled TFMC D - Delrin® E - TFMC-HT (HIGH TEMP) F - VIRGIN TFM N - Nylon Devlon® P - PEEK® V - Vespel® R - Glass Filled PTFE T - Virgin PTFE K - Kel-F(PCTFE) G - Carbon Graphite U - HF HARD CHROME (BALL/SEAT) W - HF TUNGSTEN CARBIDE (BALL/SEAT) X - HF CHROME CARBIDE (BALL/SEAT) Y - HF CHROME OXIDE (BALL/SEAT) Z - HF NICKEL CHROME (BALL/SEAT)	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 (Vented Ball) D – Cryogenic (Non-Vented Ball) E – Extended Handle H – Fugitive Emission Extended Bonnet Lantern Ring (Chlorine Clean) L - External Steam Jacket V – Unidirectional (Vented Ball) W – Chain Wheel Operated	05 – ½" 07 – ¾" 10 – 1" 15 – 1½" 20 – 2" 30 – 3" 40 – 4" 60 – 6" 80 – 8" 81 – 10" 82 – 12" 83 – 14"	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

DESIGN FEATURES

Standard

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 (two piece design) enhances protection in case of a fire event and for improved fugitive emissions performance.
- 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.
- Anti-static feature enables electrical conductivity between the stem, body and ball.
- Blowout-proof stem and stem thrust bearing allow for safe and extended high-cycle operation.
- Encapsulated body bolting to prevent threads from corrosion.

A) DIRECT ACTUATOR MOUNTING CAPABILITIES

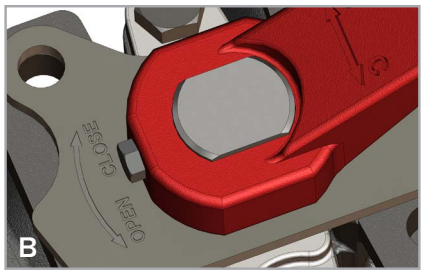
The Ladish ball valve design eliminates the need for a bracket and coupler when mounting an actuator, thus reducing cost while supporting any space constraints. The ISO 5211 actuator mounting pad is integral to the valve body and still allows operator to inspect packing and make adjustments as required.

B) 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.

C) LIVE LOAD

All stem seals come “live loaded” with the addition of spring washers for improved sealing performance and quick adjustment without removal of operator.



DESIGN FEATURES

Fire-Safe

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.

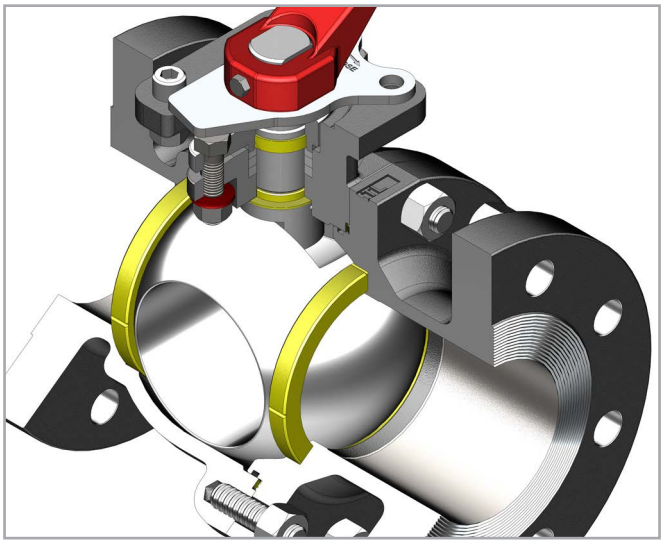


FIGURE 1: Stem Packing Design Before Fire

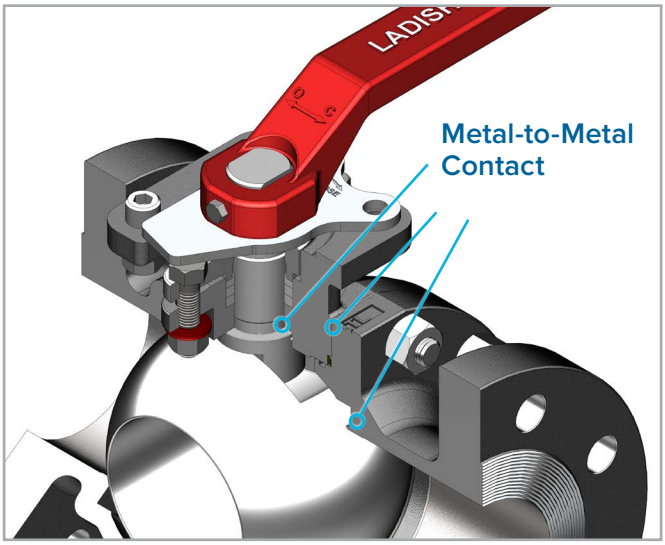


FIGURE 2: Stem Packing Design After Fire

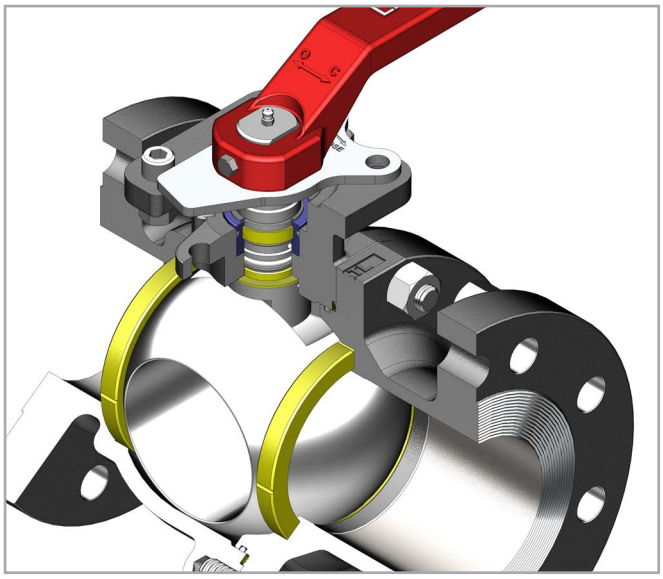


FIGURE 3: O-Ring Design Before Fire

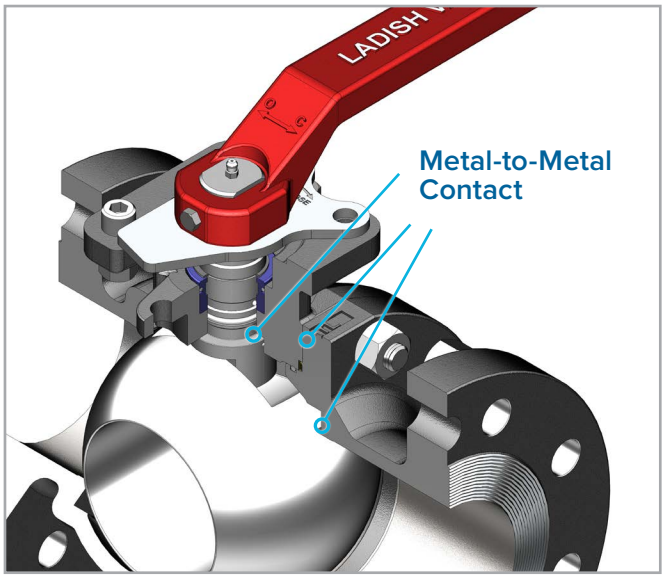


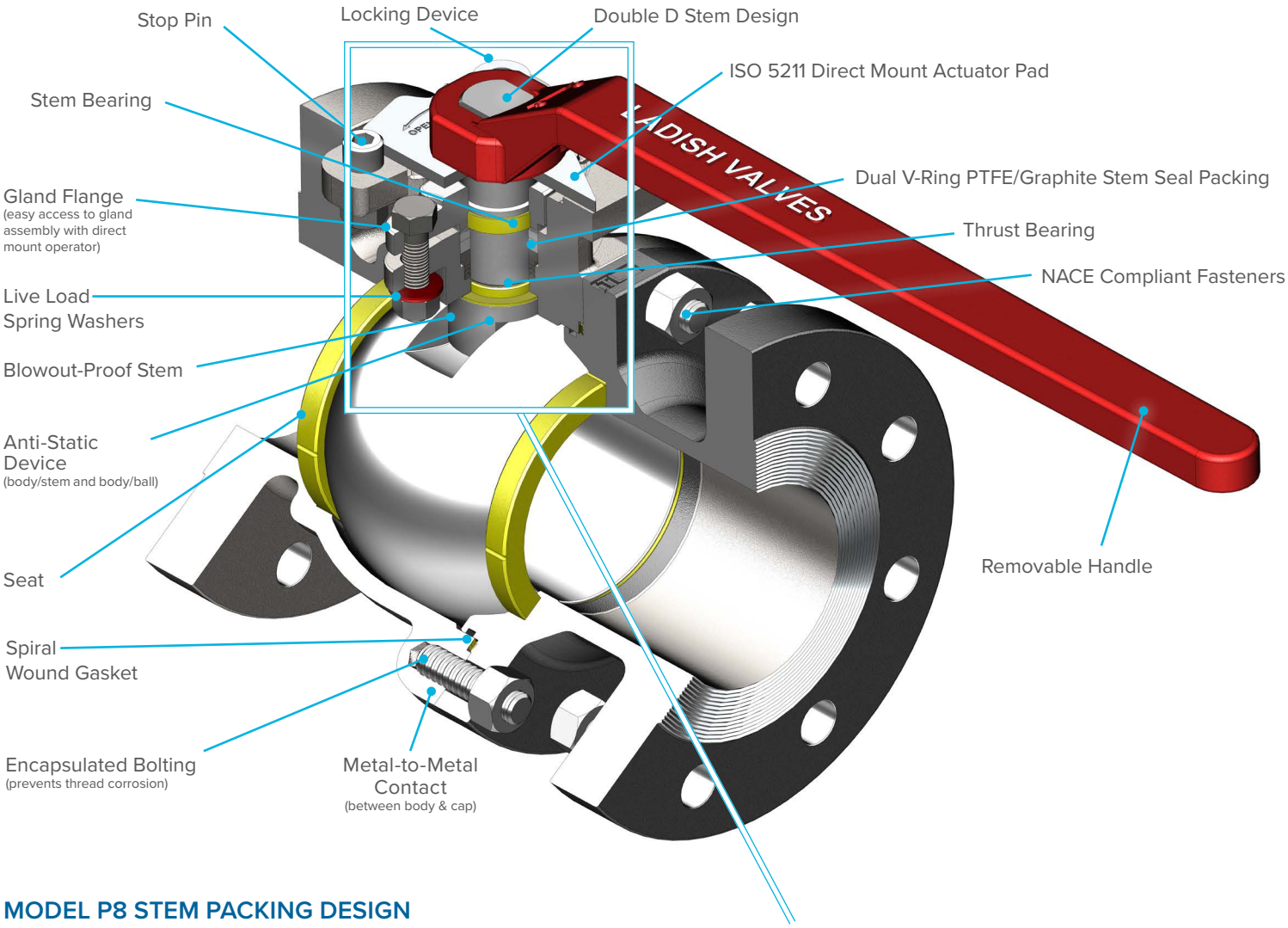
FIGURE 4: O-Ring Design After Fire

STANDARD FEATURES

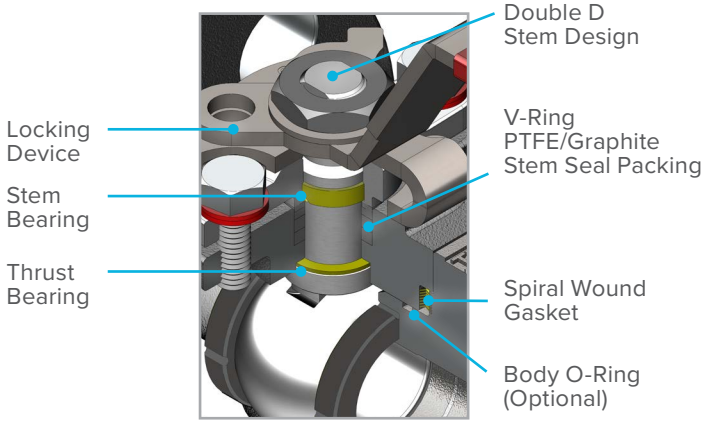
Model P8 Full Bore, Two-Piece Body, Stem Packing API 608/6D Design
Model R8 Full Bore, Two-Piece Body, O-Ring API 608/6D Design **Material of Construction: Cast**

MODEL P8 STEM PACKING DESIGN DUAL PACKING OPTION SHOWN BELOW

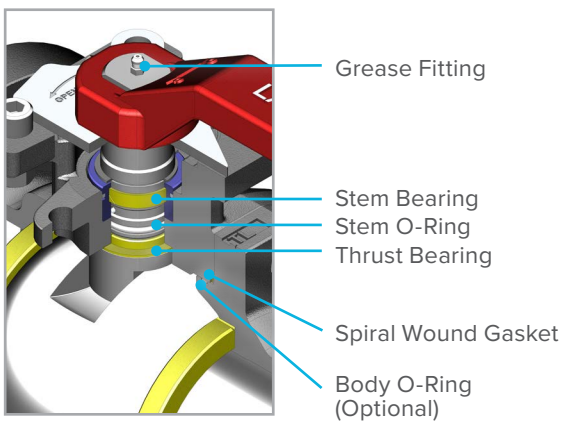
(1½"–14")



MODEL P8 STEM PACKING DESIGN SINGLE PACKING OPTION SHOWN BELOW



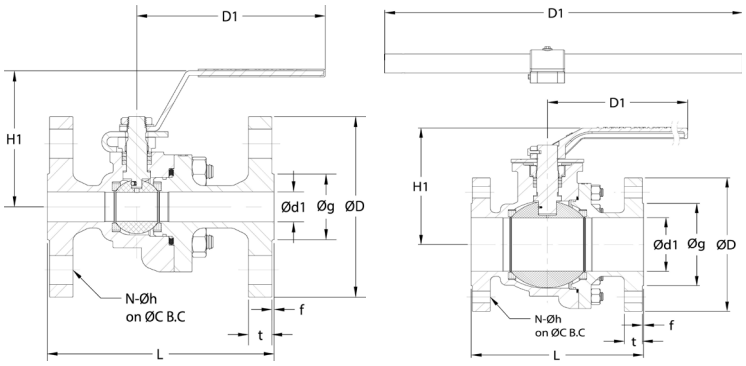
MODEL R8 O-RING DESIGN



DIMENSIONAL DATA

½"–1" Model P8 Full Bore, Two-Piece Body, Pressure Classes: 150, 300 & 600 (*left*)

1 ½"–14" Model P8/R8 Full Bore, Two-Piece Body, Pressure Classes: 150, 300 & 600 (*right*)



150	Model P8, Class 150, ½"–14"– Model R8, Class 150, 1"–14"											Weight
	Ød1	L	D1	H1	ØD	ØC	Øg	t	f	N	Øh	LBS
½"	0.50	4.25	7.53	3.42	3.50	2.38	1.38	0.31	0.06	4	0.63	4
¾"	0.75	4.63	7.53	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
1½"	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
14"	13.25	27.00	–	19.75	21.00	18.75	16.25	1.31	0.06	14	1.13	1907

300	Model P8, Class 300, ½"–14" - Model R8, Class 300, 1"–14"											Weight
	Ød1	L	D1	H1	ØD	ØC	Øg	t	f	N	Øh	LBS
½"	0.50	5.50	7.53	3.42	3.75	2.61	1.38	0.50	0.06	4	0.63	6
¾"	0.75	6.00	7.53	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
1½"	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	63.00	20.50	20.50	17.75	15.00	2.00	0.06	16	1.25	866
14	13.25	30.00	-	19.75	23.00	20.25	16.25	2.06	0.06	20	1.25	2579

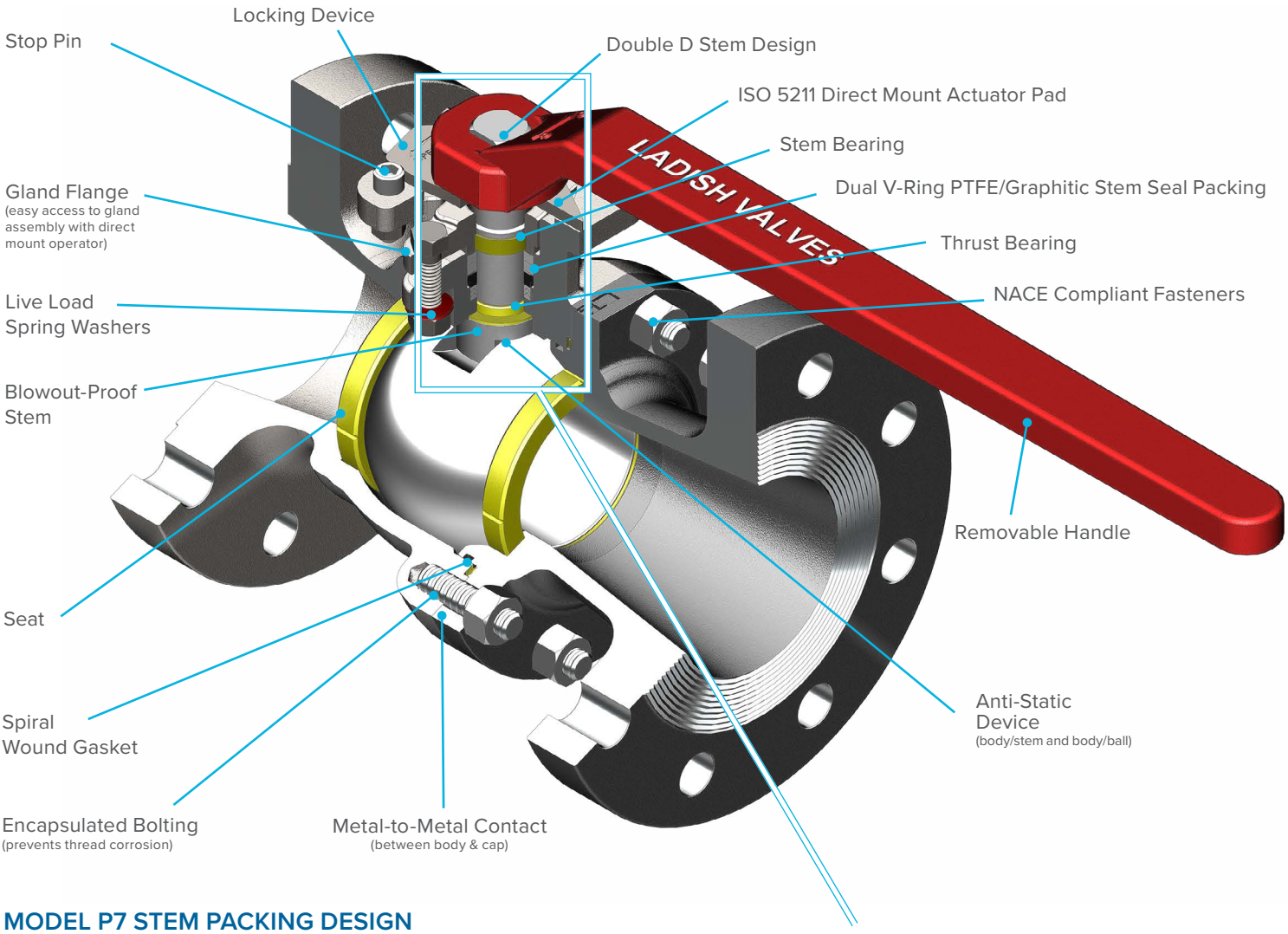
600	Model P8, Class 600, ½"–6"– Model R8, Class 600, 1"–6"											Weight
	Ød1	L	D1	H1	ØD	ØC	Øg	t	f	N	Øh	LBS
½"	0.50	6.50	7.53	3.42	3.75	2.63	1.38	0.63	0.25	4	0.63	8
¾"	0.75	7.50	7.53	3.67	4.63	3.25	1.68	0.68	0.25	4	0.75	11
1"	1.00	8.50	6.32	4.39	4.88	3.50	2.00	0.68	0.25	4	0.75	15
1½"	1.50	9.50	10.00	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
6"	6.00	22.00	63.00	13.95	14.00	11.50	8.50	1.88	0.25	12	1.13	443

STANDARD FEATURES

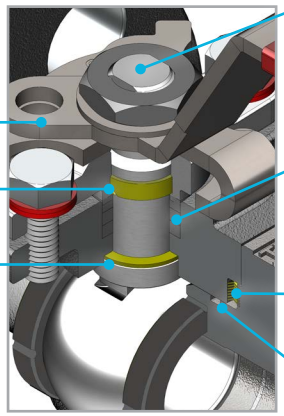
Model P7 Standard Bore, Two-Piece Body, Stem Packing API 608/6D Design
Model R7 Standard Bore, Two-Piece Body, O-Ring API 608/6D Design

Material of Construction: Cast

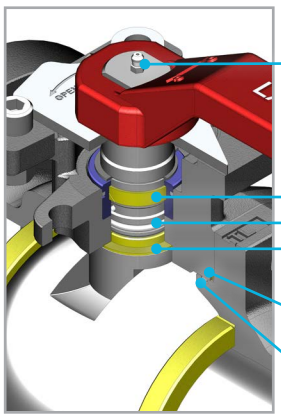
MODEL P7 STEM PACKING DESIGN DUAL PACKING OPTION SHOWN BELOW



MODEL P7 STEM PACKING DESIGN SINGLE PACKING OPTION SHOWN BELOW



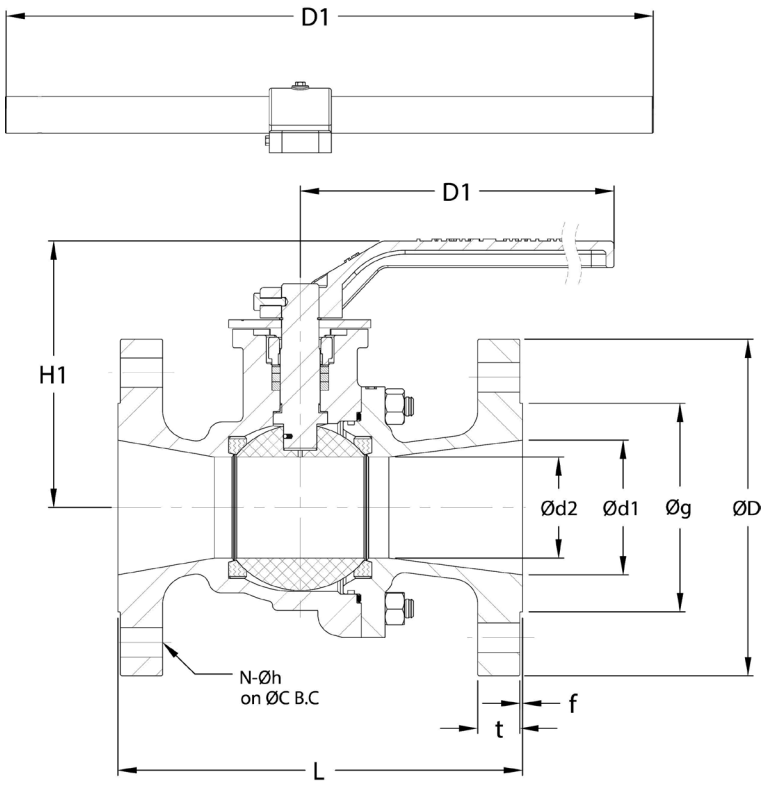
MODEL R7 O-RING DESIGN



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, Two Piece
Pressure Classes 150, 300 & 600

150	Model P7, Class 150, 2"–6"–Model R7, Class 150, 2"–6"												Weight
	Ød1	Ød2	L	D1	H1	ØD	ØC	Øg	t	f	N	Øh	LBS
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	34
4"	4.00	3.00	9.00	19.69	7.92	9.00	7.50	6.19	0.88	0.06	8	0.75	66
6"	6.00	4.00	15.50	19.69	8.76	11.00	9.50	8.50	1.00	0.06	8	0.88	112

300	Model P7, Class 300, 2"–6"–Model R7, Class 300, 2"–6"												Weight
	Ød1	Ød2	L	D1	H1	ØD	ØC	Øg	t	f	N	Øh	LBS
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	49
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
6"	6.00	4.00	15.87	19.69	8.76	12.50	10.62	8.50	1.38	0.06	12	0.88	162

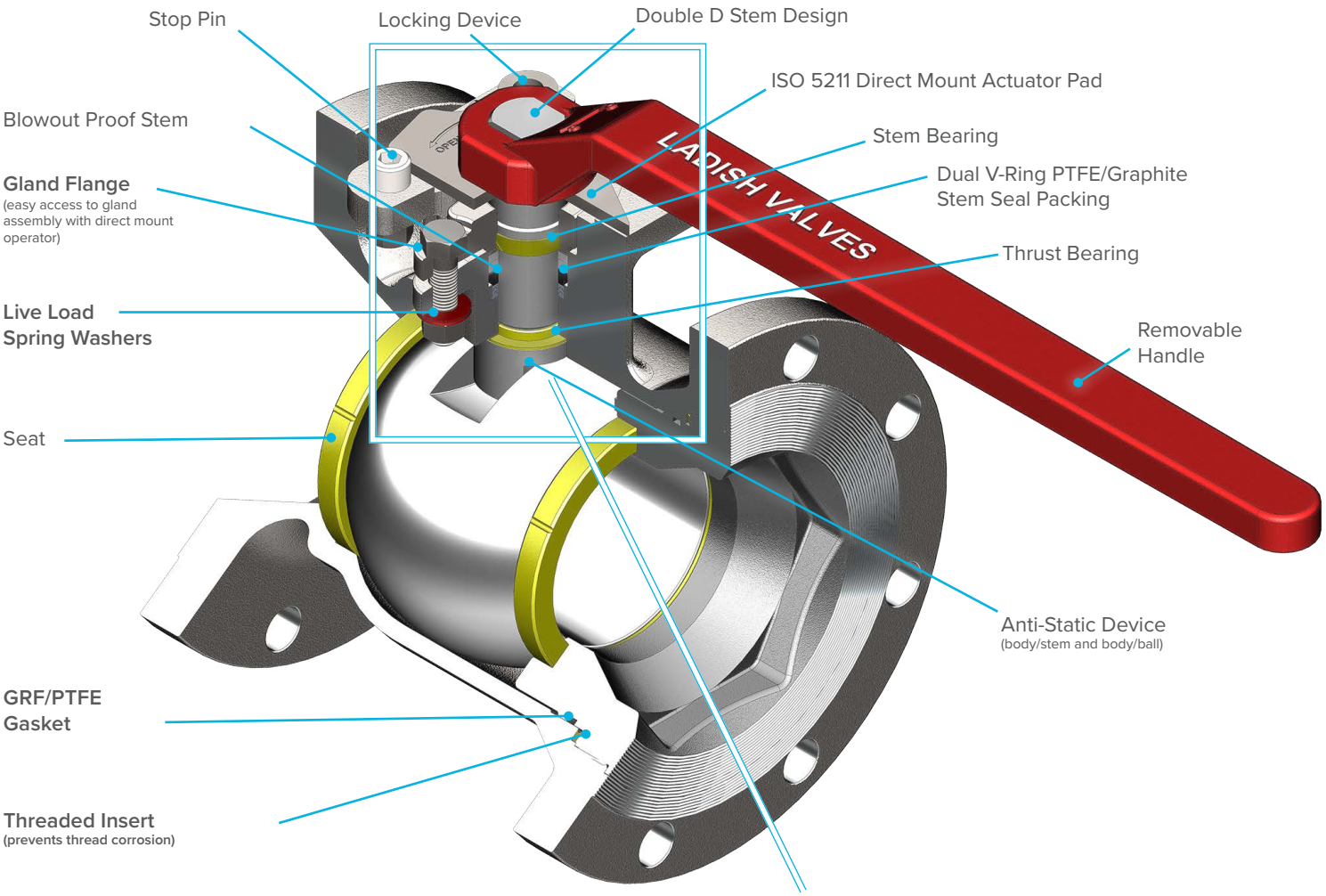
600	Model P7, Class 600, 2"–6"–Model R7, Class 600, 2"–6"												Weight
	Ød1	Ød2	L	D1	H1	ØD	ØC	Øg	t	f	N	Øh	LBS
2"	2.00	1.50	11.50	10.00	5.22	6.50	5.00	3.63	1.00	0.25	8	0.75	36
3"	3.00	2.00	14.00	16.54	6.45	8.25	6.62	5.00	1.25	0.25	8	0.88	62
4"	4.00	3.00	17.00	19.69	8.45	10.75	8.50	6.19	1.50	0.25	8	1.00	139
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

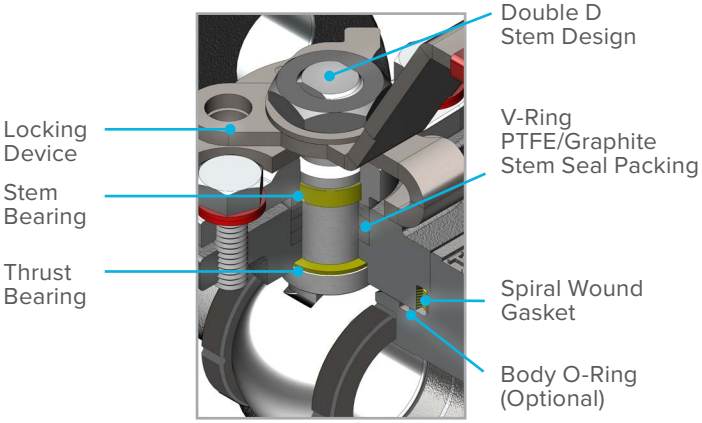
Model P9 Standard Bore, Uni-Body, Stem Packing API 608/6D Design
Model R9 Standard Bore, Uni-Body, O-Ring API 608/6D Design

Material of Construction: Cast

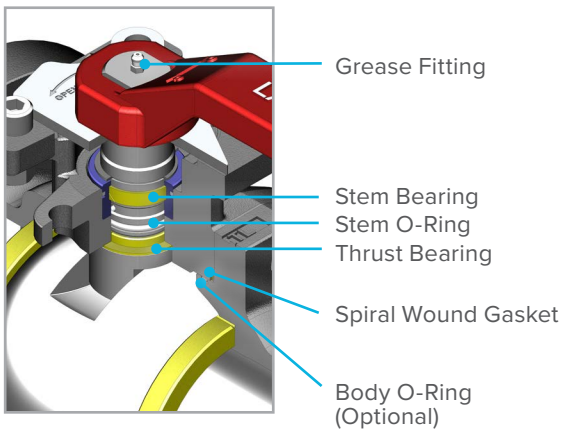
MODEL P9 STEM PACKING DESIGN



MODEL P9 STEM PACKING DESIGN SINGLE PACKING OPTION SHOWN BELOW



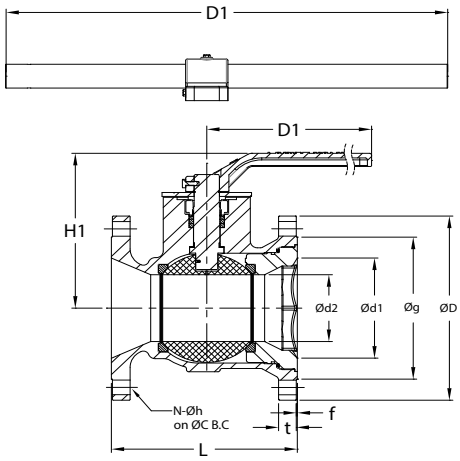
MODEL R9 O-RING DESIGN



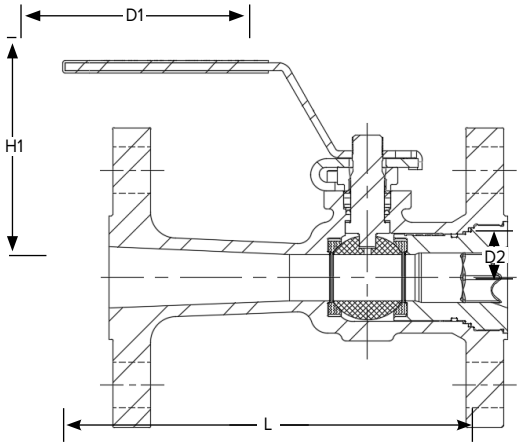
DIMENSIONAL DATA

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



½"–1½" Model P9/R9 Standard Bore, Uni-Body Pressure Classes 150 & 300

150	Model P9, Class 150, ½"–12" • Model R9, Class 150, 1" — 12"												Weight
	Ød1	Ød2	L	D1	H1	ØD	ØC	Øg	t	f	N	Øh	LBS
½"	0.50	0.38	4.25	5.00	2.91	3.50	2.38	1.38	0.31	0.06	4	0.63	3
¾"	0.75	0.50	7.53	5.00	3.42	3.88	2.75	1.69	0.34	0.06	4	0.63	4
1"	1.00	0.75	7.53	5.00	3.53	4.25	3.12	2.00	0.38	0.06	4	0.63	6
1½"	1.50	1.00	6.50	6.30	4.39	5.00	3.88	2.88	0.50	0.06	4	0.63	10
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

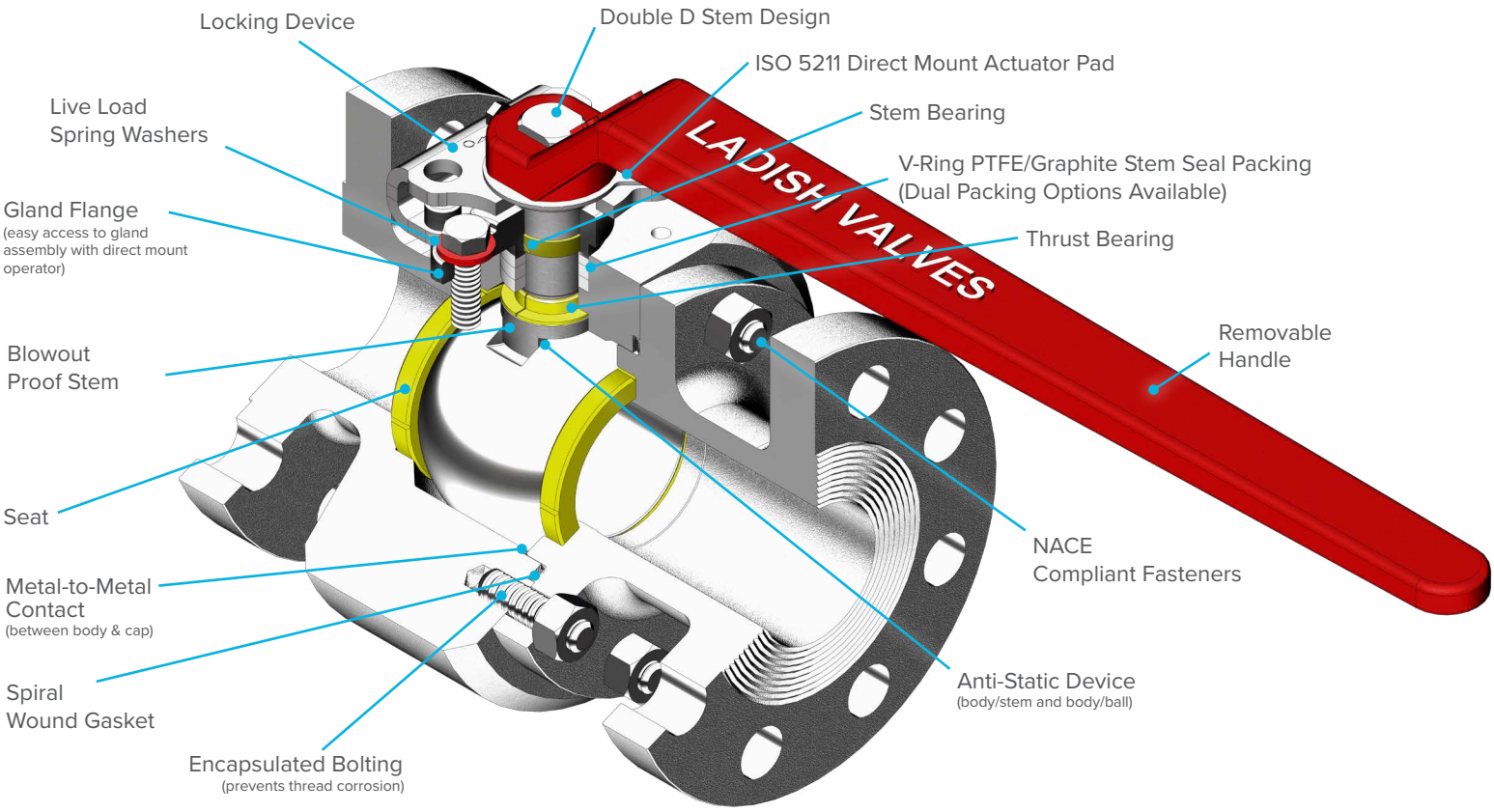
300	Model P9, Class 300, ½"–12" • Model R9, Class 300, 1"–12"												Weight
	Ød1	Ød2	L	D1	H1	ØD	ØC	Øg	t	f	N	Øh	LBS
½"	0.50	0.38	5.50	5.00	2.91	3.75	2.63	1.38	0.50	0.06	4	0.63	4
¾"	0.75	0.50	7.53	5.00	3.42	4.62	3.25	1.69	0.56	0.06	4	0.75	7
1"	1.00	0.75	7.53	5.00	3.53	4.88	3.50	2.00	0.62	0.06	4	0.75	9
1½"	1.50	1.00	7.50	6.30	4.39	6.12	4.50	2.88	0.75	0.06	4	0.88	16
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

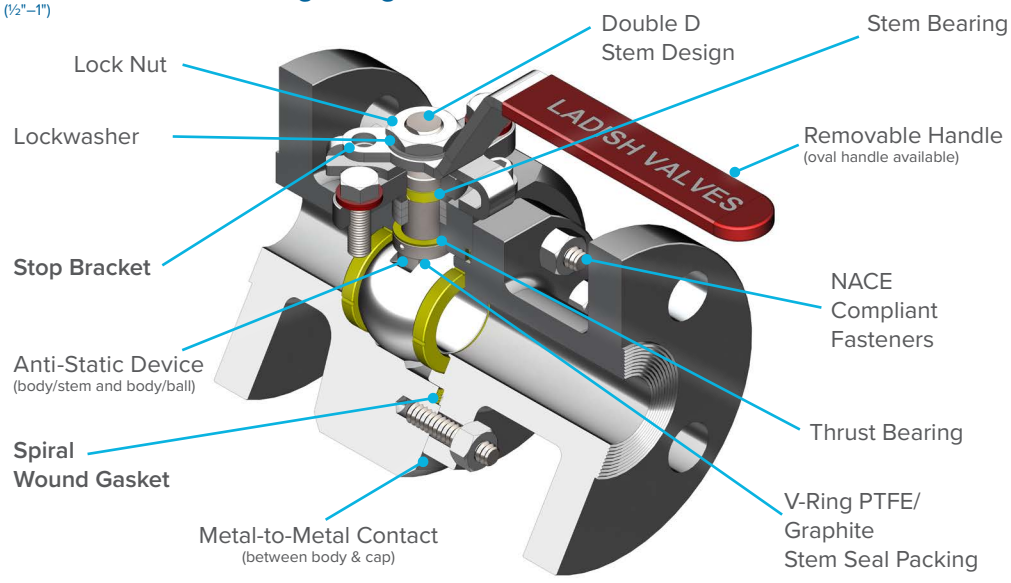
Model P2 Full Bore, Two-Piece, Stem Packing API 608
Model P1 Standard Bore, Two-Piece, Stem Packing API 608

Material of Construction: Bar-Stock

Model P2 Stem Packing Design
(1½"–4")



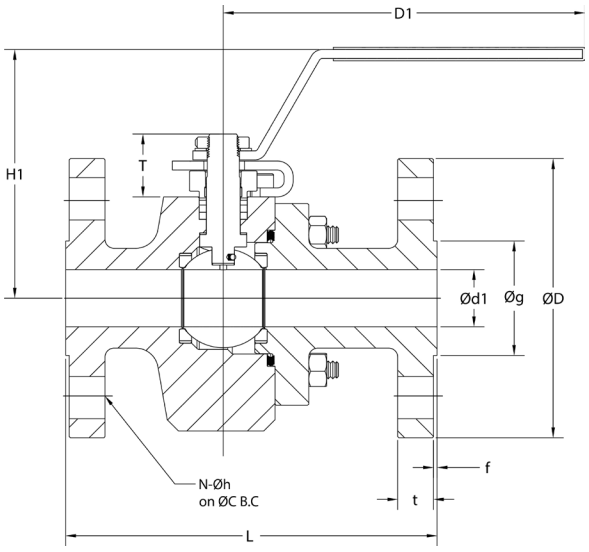
Model P2 Stem Packing Design
(½"–1")



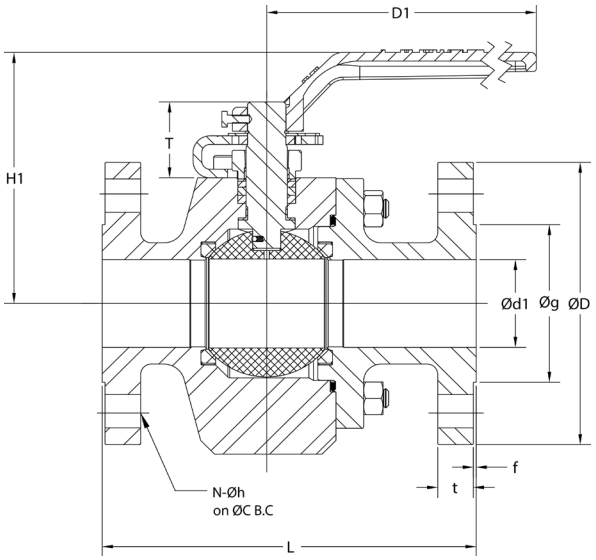
DIMENSIONAL DATA

Model P2 Full Bore, Two-Piece, Stem Packing API 608

Material of Construction: Bar-Stock



½"–1" Model P2 Full Bore, Two Piece
Pressure Classes 150, 300 & 600



1½"–4" Model P2 Full Bore, Two Piece
Pressure Classes 150, 300 & 600

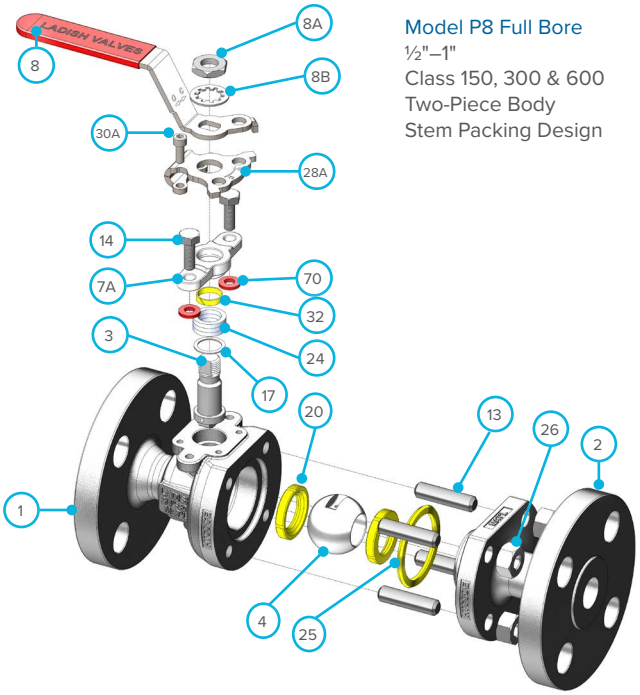
150	Model P2, Class 150, ½"–4"											Weight LBS
	Ød1	L	D1	H1	ØD	ØC	Øg	t	f	N	Øh	
½"	0.50	4.25	4.97	3.42	3.54	2.38	1.38	0.31	0.06	4	0.63	6
¾"	0.75	4.61	4.97	3.56	3.90	2.75	1.69	0.34	0.06	4	0.63	9
1"	1.00	5.00	6.32	4.39	4.25	3.12	2.00	0.38	0.06	4	0.63	13
1½"	1.50	6.50	10.00	5.23	5.00	3.88	2.88	0.56	0.06	4	0.63	30
2"	2.00	7.01	16.54	6.13	6.06	4.75	3.62	0.62	0.06	4	0.75	40
3"	3.00	8.00	19.69	7.66	7.50	6.00	5.00	0.69	0.06	4	0.75	78
4"	4.00	9.02	19.69	8.76	9.00	7.50	6.19	0.88	0.06	8	0.75	133

300	Model P2, Class 300, ½"–4"											Weight LBS
	Ød1	L	D1	H1	ØD	ØC	Øg	t	f	N	Øh	
½"	0.50	5.51	4.97	3.45	3.78	2.63	1.38	0.50	0.06	4	0.63	10
¾"	0.75	5.98	4.97	3.56	4.65	3.25	1.69	0.56	0.06	4	0.75	16
1"	1.00	6.50	6.32	4.39	4.88	3.50	2.00	0.63	0.06	4	0.75	21
1½"	1.50	7.48	10.00	5.01	6.12	4.50	2.88	0.81	0.06	4	0.88	38
2"	2.00	8.50	16.54	5.82	6.50	5.00	3.62	0.87	0.06	8	0.75	58
3"	3.00	11.13	19.69	7.66	8.25	6.62	5.00	1.06	0.06	8	0.88	112
4"	4.00	12.01	19.69	8.76	10.00	7.88	6.19	1.19	0.06	8	0.88	196

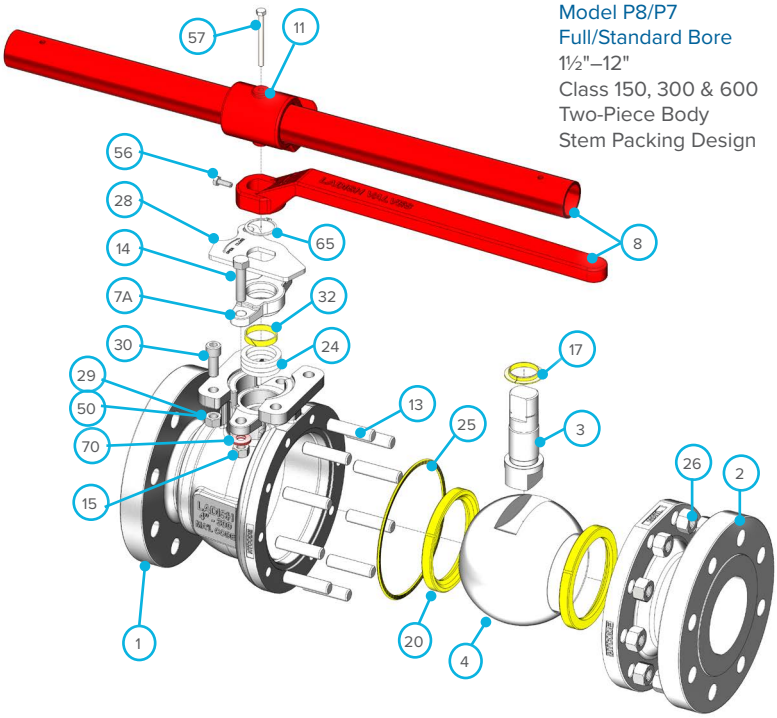
600	Model P2, Class 600, ½"–4"											Weight LBS
	Ød1	L	D1	H1	ØD	ØC	Øg	t	f	N	Øh	
½"	0.50	6.50	4.97	3.42	3.78	2.63	1.38	0.62	0.25	4	0.63	11
¾"	0.75	7.48	4.97	3.67	4.65	3.25	1.69	0.68	0.25	4	0.75	16
1"	1.00	8.50	6.32	4.39	4.88	3.50	2.00	0.69	0.25	4	0.75	25
1½"	1.50	9.49	10.00	5.22	6.12	4.50	2.88	0.94	0.25	4	0.88	47
2"	2.00	11.49	16.54	5.82	6.50	5.00	3.62	1.06	0.25	8	0.75	65
3"	3.00	14.00	19.69	6.84	8.25	6.62	5.00	1.25	0.25	8	0.88	143
4"	4.00	17.01	59.06	11.16	10.75	8.50	6.19	1.50	0.25	8	1.00	282

*NOTE: Dimensions for P1 Standard Bore available upon request

PARTS & MATERIALS: P7 & P8 Designs

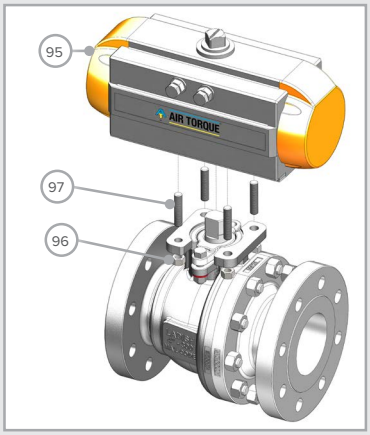


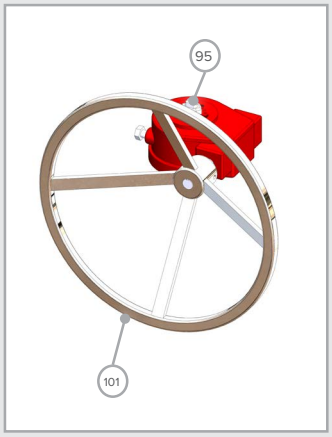
Model P8 Full Bore
½"–1"
Class 150, 300 & 600
Two-Piece Body
Stem Packing Design



Model P8/P7
Full/Standard Bore
1½"–12"
Class 150, 300 & 600
Two-Piece Body
Stem Packing Design

Item No.	Description	Material
1	Body	CF8M | WCB
2	Cap	CF8M | WCB
3	Stem	ASTM A176 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	ASTM A197
13	Body Stud	B7M | L7M | B8
14	Gland Flange Bolt	ASTM A193 B8M
15	Gland Flange Nut	ASTM A194 GR8
17	Thrust Bearing	PTFE
20	Seat	TFM
24	Packing	GRAPHOIL/TFE
25	Gasket	SPW GRAPHOIL/TFE
26	Body Nut	2HM | 7M | 8
28	Stop Plate	STAINLESS STEEL
28A	Stop Bracket	STAINLESS STEEL
29	Stop Nut	ASTM A194 GR8
30	Stop Bolt	ASTM A194 GR8
30A	Bracket Bolt	STAINLESS STEEL
32	Stem Bearing	GRAPHOIL/TFE
40	Name Plate (not shown)	STAINLESS STEEL
50	Stop Lock Washer	STAINLESS STEEL
56	Handle Bolt	STEEL + ZINC
57	Adapter Bolt	STEEL + ZINC
65	Snap Ring (stop plate)	STAINLESS STEEL
70	Spring Washer	STAINLESS STEEL



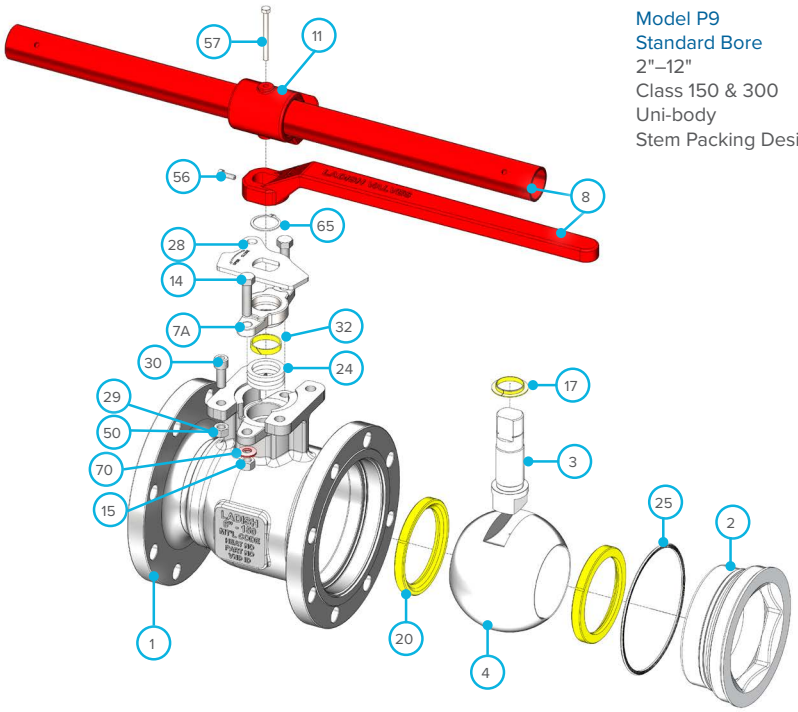


Item No.	Description
95	Gear
	Actuator
96	Mount Nut
97	Mount Stud
101	Handwheel

NOTES:

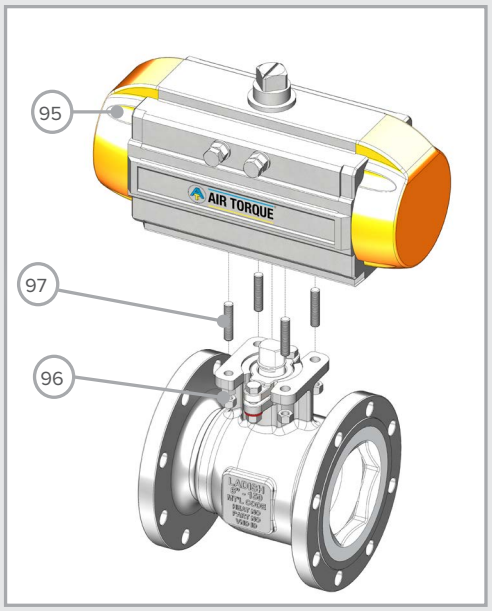
1. **P8 Full Bore Model** ½"–14", class 150 & 300;
   ½"–6" class 600
   P7 Standard Bore Model 2"–6", class 150 & 300;
   2"–6" class 600
2. Standard materials for petrochemical service shown. Other materials readily available. See 'How to Order' on page 8 for listing of available options.
3. Handle adapter used for class 150 & 300, 6" and above; class 600, 4" and above.

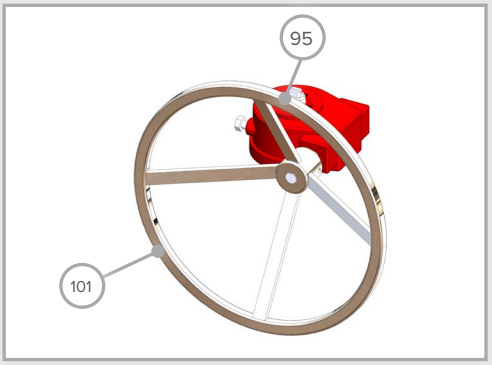
PARTS & MATERIALS: P9 Design



Model P9
Standard Bore
2"–12"
Class 150 & 300
Uni-body
Stem Packing Design

Item No.	Description	Material		
1	Body	CF8M		WCB
2	Cap	CF8M		WCB
3	Stem	ASTM A176 316		
4	Ball	ASTM A351 CF8M		
7A	Gland Flange	ASTM A351 CF8M		
8	Handle	ASTM A47		
11	Handle Adapter	ASTM A197		
13	Body Stud	B7M	L7M	B8
14	Gland Flange Bolt	ASTM A193 B8M CL1		
15	Gland Flange Nut	ASTM A194 GR8		
17	Thrust Bearing	TFM		
20	Seat	CARBON FILLED TFMC		
24	Packing	GRAPHOIL/TFE		
25	Gasket	GRAPHOIL/TFE		
26	Body Nut	2HM	7M	8
28	Stop Plate	STAINLESS STEEL		
29	Stop Nut	ASTM A194 GR8		
30	Stop Bolt	ASTM A193 B8 CL1		
32	Stem Bearing	GRAPHOIL/TFE		
40	Name Plate (not shown)	STAINLESS STEEL		
50	Stop Lock Washer	STAINLESS STEEL		
56	Handle Bolt	STEEL + ZINC		
57	Adapter Bolt	STEEL + ZINC		
65	Snap Ring (stop plate)	STAINLESS STEEL		
70	Spring Washer	STAINLESS STEEL		



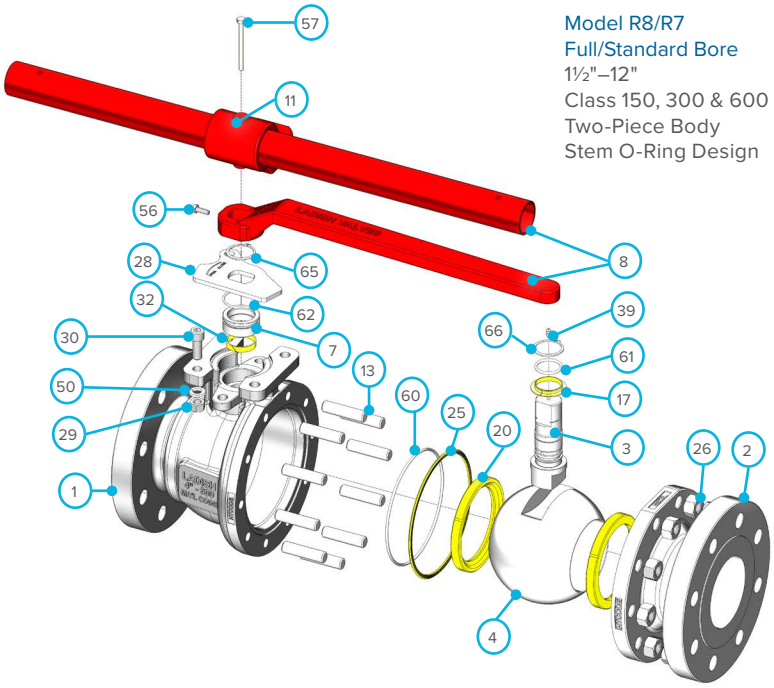


Item No.	Description
95	Gear
	Actuator
96	Mount Nut
97	Mount Stud
101	Handwheel

NOTES:

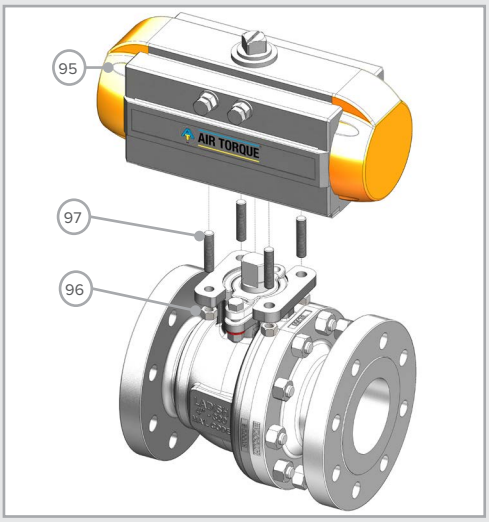
1. **P9 Standard Bore Model** ½"–12" class 150 & 300, (NOTE: ½" - 1.5"" design not pictured)
2. Standard materials for petrochemical service shown. Other materials readily available. See "How to Order" on page 8 for listing of available options.
3. Handle adapter used for class 150 & 300, 6" and above.

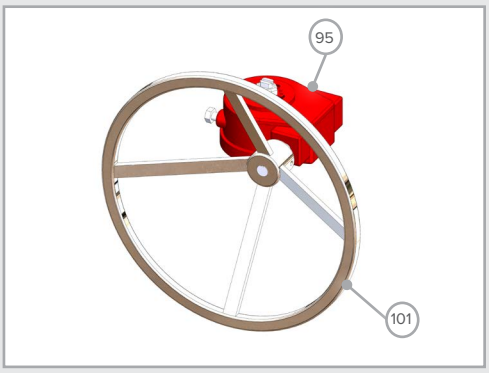
PARTS & MATERIALS: R7 & R8 Designs



Model R8/R7
Full/Standard Bore
1½"–12"
Class 150, 300 & 600
Two-Piece Body
Stem O-Ring Design

Item No.	Description	Material	
1	Body	CF8M	WCB
2	Cap	CF8M	WCB
3	Stem	ASTM A276 316	
4	Ball	ASTM A351 CF8M	
7	Gland	ASTM A351 CF8M	
8	Handle	ASTM A47	
11	Handle Adapter	ASTM A197	
13	Body Stud	ASTM A193 B8 CL 1	
17	Thrust Bearing	TFM	
20	Seat	TFM	
25	Gasket	SPW GRAPHOIL/TFE	
26	Body Nut	ASTM A194 GR8	
28	Stop Plate	STAINLESS STEEL	
29	Stop Nut	ASTM A194 GR8	
30	Stop Bolt	ASTM A193 B8	
32	Stem Bearing	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	ASTM A193 B8	
60	O-Ring, Body (Optional)	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	



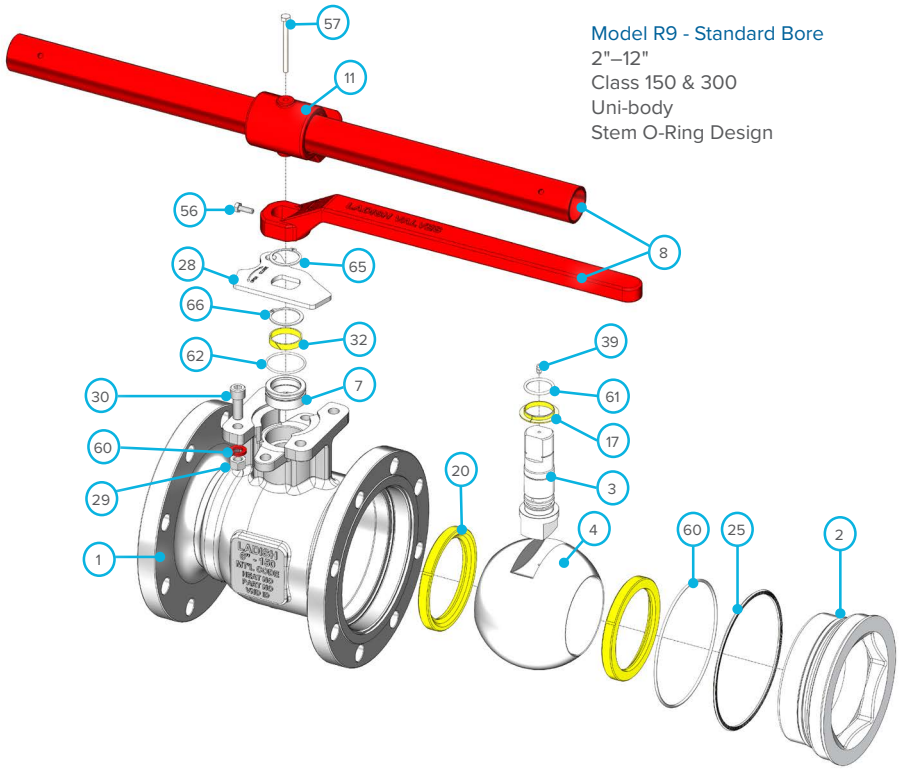


Item No.	Description
95	Gear
	Actuator
96	Mount Nut
97	Mount Stud
101	Handwheel

NOTES:

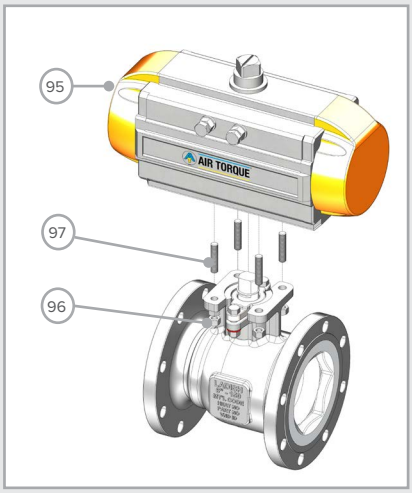
1. **R8 Full Bore Model** 1"–14", class 150 & 300; 1"–6", class 600 (NOTE: 1" design not pictured) **R7 Standard Bore Model** 2"–6", class 150 & 300; 2"–6", class 600
2. Standard materials for oil & gas service shown. Other materials readily available. See "How to Order" on page 8 for listing of available options.
3. Handle adapter used for class 150 & 300, 8" and above; class 600, 6" and above.

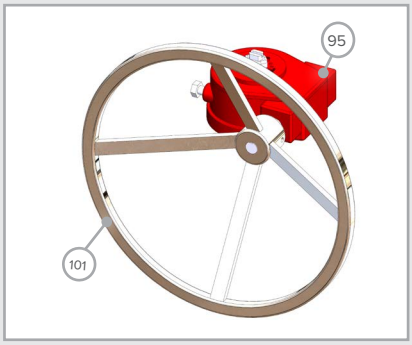
PARTS & MATERIALS: R9 Design



Model R9 - Standard Bore
2"–12"
Class 150 & 300
Uni-body
Stem O-Ring Design

Item No.	Description	Material	
1	Body	CF8M	WCB
2	Cap Insert	CF8M	WCB
3	Stem	ASTM A276 316	
4	Ball	ASTM A351 CF8M	
7	Gland	ASTM A351 CF8M	
8	Handle	ASTM A47	
11	Handle Adapter	ASTM A197	
17	Thrust Bearing	TFM	
20	Seat	TFM	
25	Gasket	GRAPHOIL/TFE	
28	Stop Plate	STAINLESS STEEL	
29	Stop Nut	ASTM A194 GR8	
30	Stop Bolt	ASTM A193 B8	
32	Stem Bearing	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	ASTM A193 B8	
60	O-Ring, Body (Optional)	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	





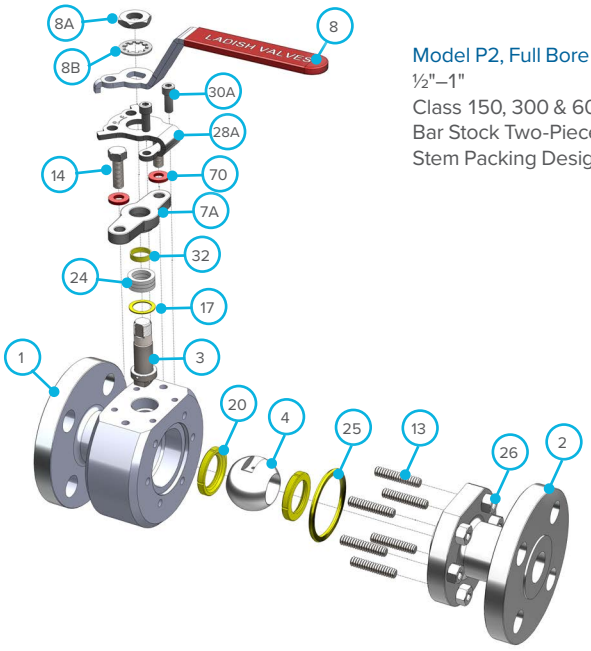
Item No.	Description
95	Gear
	Actuator
96	Mount Nut
97	Mount Stud
101	Handwheel

NOTES:

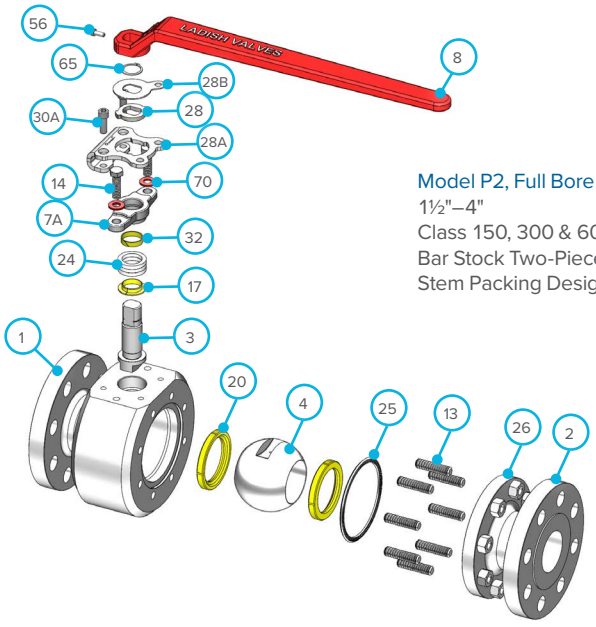
1. **R9 Uni-body Model** ¾"–12", class 150 & 300
2. Standard materials for oil & gas service shown. Other materials readily available. See 'How to Order' on page 8 for listing of available options.
3. Handle adapter used for class 150 & 300, 8" and above.

PARTS & MATERIALS: P1 & P2 Designs

Item No.	Description	Material
1	Body	316
2	Cap	316
3	Stem	ASTM A176 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	B7M | L7M | B8
14	Gland Flange Bolt	ASTM A193 B8M CL.1
17	Thrust Bearing	TFM
20	Seat	TFM
24	Packing	GRAPHOIL/TFE
25	Gasket	SPW GRAPHOIL/TFE
26	Body Nut	2HM | 7M | 8
28A	Stop Bracket	STAINLESS STEEL
30A	Bracket Bolt	STAINLESS STEEL
32	Stem Bearing	GRAPHOIL/TFE
40	Name Plate (not shown)	STAINLESS STEEL
70	Spring Washer	STAINLESS STEEL



Model P2, Full Bore
½"–1"
Class 150, 300 & 600
Bar Stock Two-Piece Body
Stem Packing Design



Model P2, Full Bore
1½"–4"
Class 150, 300 & 600
Bar Stock Two-Piece Body
Stem Packing Design

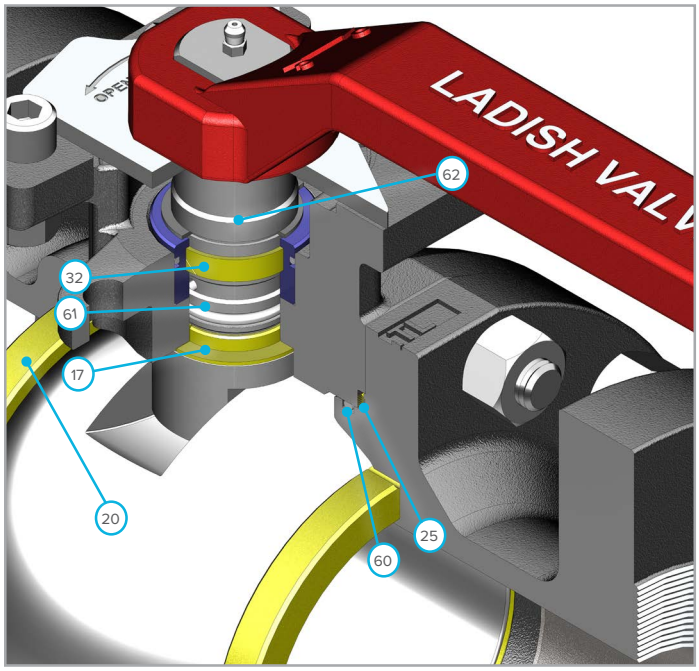
NOTES:

1. **P2 Full Bore Model** 0.5"–4", class 150, 300 & 600.
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. Parts for 1½"–4"
   - 28 Stop Plate
   - 28B Lock Plate
   - 56 Lever Bolt
   - 65 Snap Ring
4. P1 Standard Bore Model available upon request

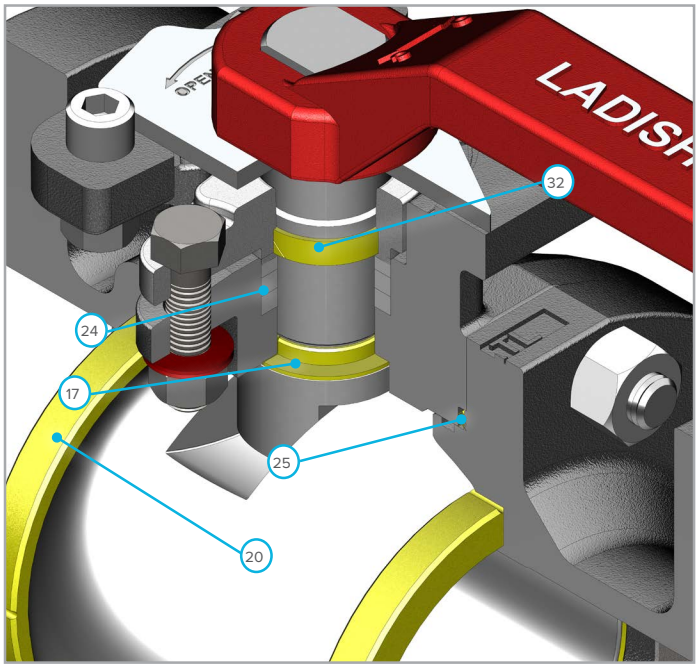
MAINTENANCE & REPAIR KITS

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.

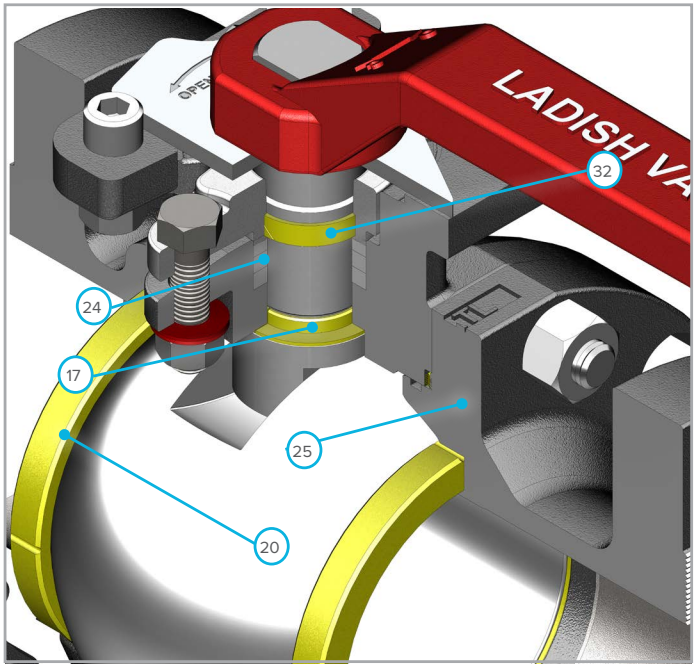
For both the stem packing and O-Ring designs, Ladish has repair kits available. Below are standard components in each repair kit. Please call the Ladish team with figure number(s) so we can confirm component materials for repair kits.



Stem O-Ring Design — Model R7, R8 & R9



Stem-Packing Design — Model P2, P7, P8, P9 & P1
Single-Packing Options Shown



Stem-Packing Design — Model P2, P7, P8 P9 & P1
Dual-Packing Options Shown

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

IN-HOUSE ENGINEERING CAPABILITIES

All Ladish Flanged Floating Ball Valves are designed by Ladish engineers located in Houston. 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

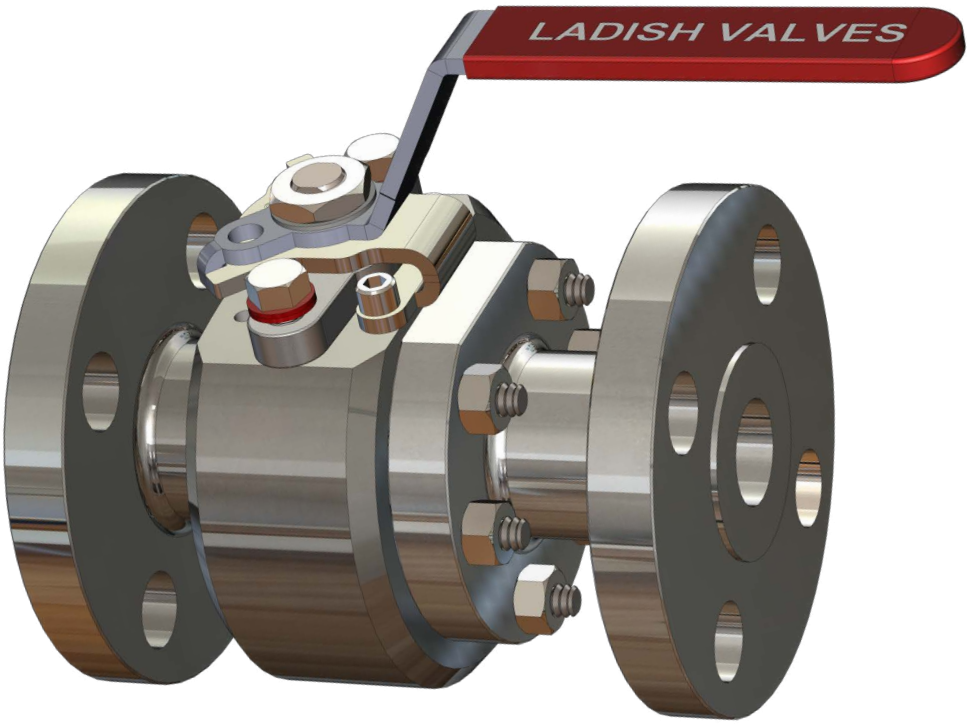
- Provides Ladish up-to-date access to the latest standard changes

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

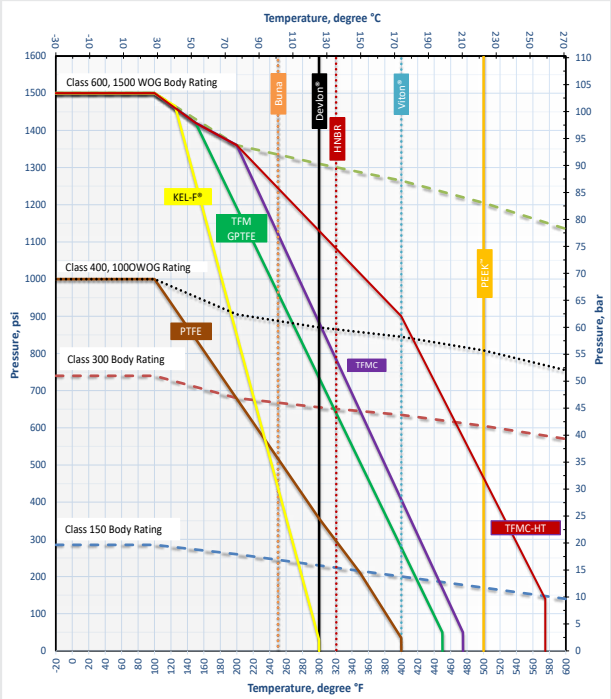
- Ladish ball valve design also offered in metal and graphite seats



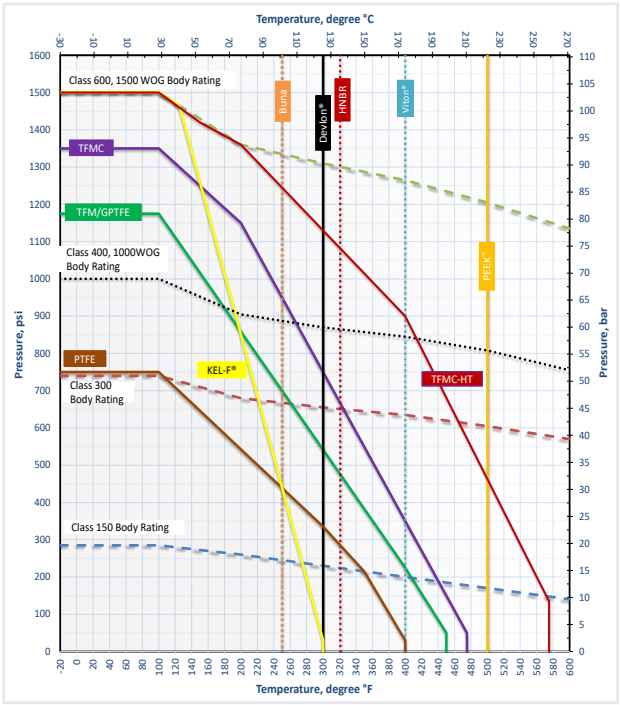
PRESSURE & TEMPERATURE RATINGS

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.

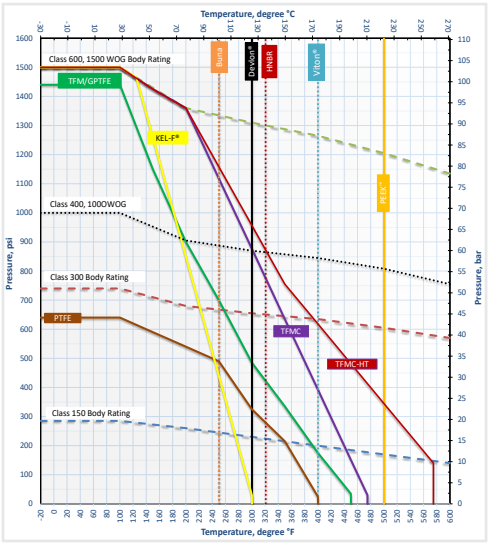
P8/R8 Model: ½"– 2"
P2: 2"



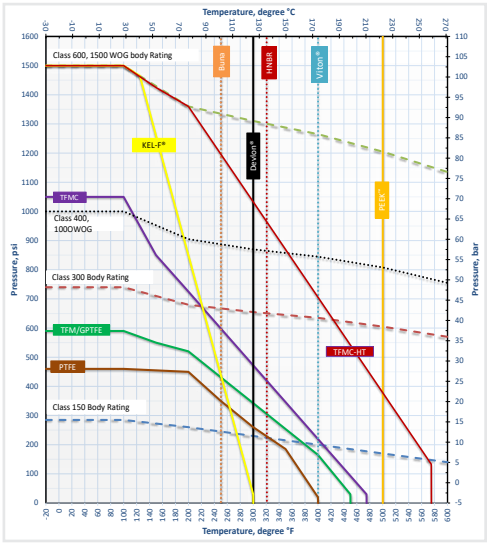
P8/R8 Model: 2"
P7/R7, P9/R9: 3"
P2: 2"



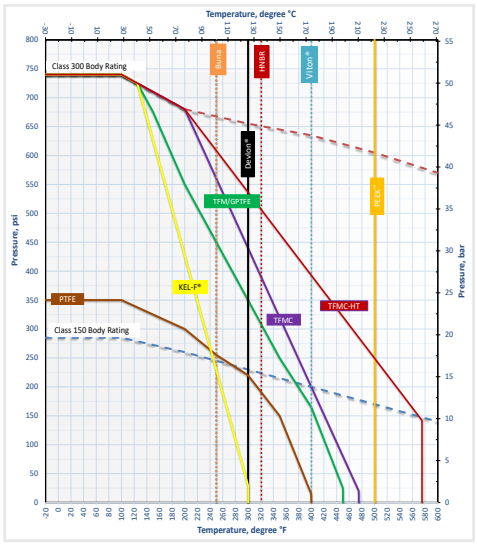
P8/R8 Model: 3"–4"
P7/R7, P9/R9: 4"–6"



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



P8/R8 Model: 8"–10"
P9/R9: 10"–12"



NOTES:

1. The body ratings shown are for A216 WCB and A351 CF8M. For other shell materials, refer to the latest edition of ASME B16.34
2. The body pressure rating of the valve at service temperatures below -20°F (-29°C) shall not exceed the ASME B16.34 pressure rating at -20°F (-29°C)
3. The seat and seal pressure ratings of the valve at service temperatures below -20°F (-29°C) shall not exceed the above pressure rating at -20°F (-29°C).

ACTUATOR MOUNTING DATA

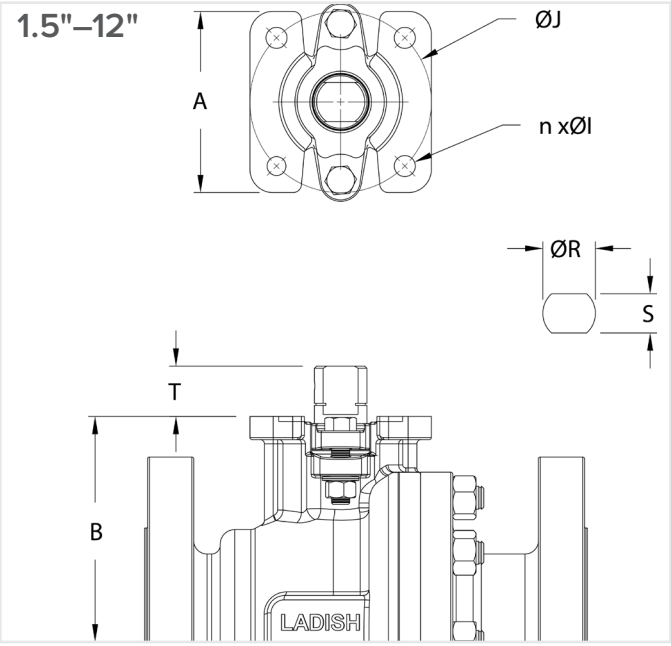
Valve Size	Model P8/R8 Class 150/300							
		A	B	n × ØI	ØJ	ØR	S	T
						STEM DIMENSIONS		
½"	F03	1.42	1.29	4 × 10-24UNC	1.417	0.500	0.354	0.915
¾"	F03	1.42	1.45	4 × 10-24UNC	1.417	0.500	0.354	0.915
1"	F05	1.97	1.77	4 × ¼-20UNC	1.969	0.562	0.433	1.099
1½"	F07	2.76	3.68	4 × 0.374	2.756	0.874	0.669	0.728
2"	F07	3.86	4.07	4 × 0.374	2.756	0.870	0.669	0.809
	F10	3.86	4.07	4 × 0.453	4.016	0.870	0.669	0.809
3"	F10	4.02	5.3	4 × 0.453	4.016	1.110	0.866	1.348
4"	F12	4.91	6.12	4 × 0.571	4.921	1.425	1.063	1.363
6" (150)	F14	5.51	8.03	4 × 0.689	5.512	1.898	1.417	1.673
6" (300)	F14	5.51	8.62	4 × 0.689	5.512	1.898	1.417	1.673
8"	F16	6.5	10.79	4 × 0.807	6.496	2.370	1.811	1.951
10" (150)	F16	6.50	12.91	4 × 0.807	6.496	2.370	1.811	2.262
10" (300)	F16	11.73	12.91	4 × 0.807	6.496	2.370	1.811	2.262
	F19	11.73	12.91	8 × 0.689	7.500	2.370	1.811	2.262
	F25	11.73	12.91	8 × 0.689	10.000	2.370	1.811	2.262
14" (150)	F25	13.78	6.12	8 × 0.689	10.000	1.425	1.063	1.363
	F30	13.78	6.12	8 × 0.812	11.732	1.425	1.063	1.363

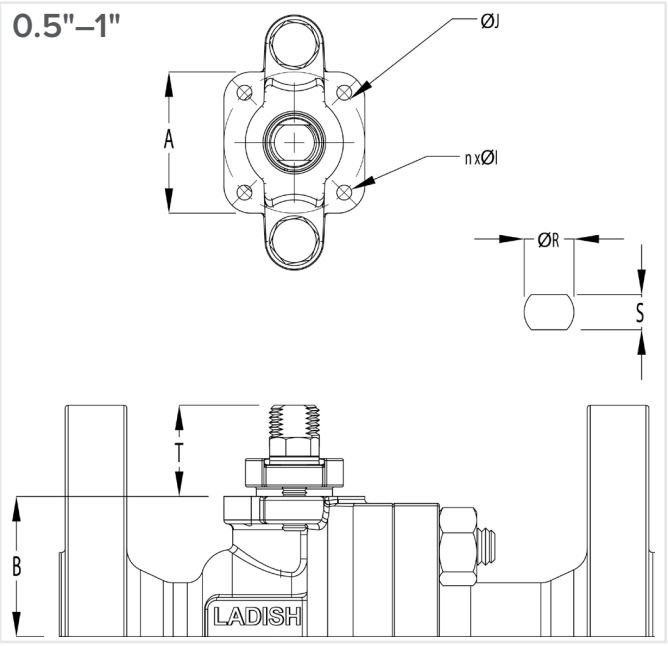
Valve Size	Model P8/R8 Class 600							
		A	B	n × ØI	ØJ	ØR	S	T
						STEM DIMENSIONS		
½"	F03	1.42	1.29	4 × 10-24UNC	1.417	0.500	0.354	0.915
¾"	F03	1.42	1.55	4 × 10-24UNC	1.417	0.500	0.354	0.916
1"	F05	1.97	1.77	4 × ¼-20UNC	1.969	0.562	0.433	1.099
1½"	F07	2.83	3.63	4 × 0.374	2.756	0.874	0.669	0.728
2"	F07	3.86	4.34	4 × 0.374	2.756	0.874	0.669	0.820
	F10	3.86	4.34	4 × 0.453	4.016	0.874	0.669	0.820
3"	F12	4.92	5.82	4 × 0.571	4.921	1.425	1.063	1.365
4"	F14	5.51	7.15	4 × 0.689	5.512	1.898	1.417	1.673
6" (600)	F16	6.69	9.547	4 × 0.807	6.496	2.370	1.811	1.951

Valve Size	Model P7/R7 Class 150/300							
		A	B	n × ØI	ØJ	ØR	S	T
						STEM DIMENSIONS		
2"	F07	2.76	3.63	4 × 0.374	2.756	0.874	0.669	0.728
3"	F07	3.86	4.07	4 × 0.374	2.756	0.870	0.669	0.809
	F10	3.86	4.07	4 × 0.453	4.016	0.870	0.669	0.809
4"	F10	4.02	5.30	4 × 0.453	4.016	1.110	0.866	1.348
6"	F12	4.92	6.12	4 × 0.571	4.921	1.425	1.063	1.363

Valve Size	Model P7/R7 Class 600							
		A	B	n × ØI	ØJ	ØR	S	T
						STEM DIMENSIONS		
2"	F07	2.76	3.63	4 × 0.374	2.756	0.874	0.669	0.728
3"	F07	3.86	4.34	4 × 0.374	2.756	0.874	0.669	0.850
	F10	3.86	4.34	4 × . 0.453	4.016	0.874	0.669	0.850
4"	F12	4.92	5.82	4 × 0.571	4.921	1.425	1.063	1.365
6"	F14	5.51	7.15	4 × 0.689	5.512	1.898	1.417	1.673

Valve Size	Model P9/R9 Class 150/300							
		A	B	n × ØI	ØJ	ØR	S	T
						STEM DIMENSIONS		
½"	–	1.14	0.78	4 × 8-32UNC	1.102	0.274	0.215	0.453
¾"	F03	1.42	1.29	4 × 10-24UNC	1.417	0.500	0.354	0.915
1"	F03	1.42	1.42	4 × 10-24UNC	1.417	0.500	0.354	0.906
1½"	F05	1.97	1.77	4 × ¼-20UNC	1.969	0.562	0.433	1.099
2"	F07	2.76	3.63	4 × 0.374	2.756	0.874	0.669	0.728
3"	F07	3.86	4.07	4 × 0.374	2.756	0.870	0.669	0.809
	F10	3.86	4.07	4 × 0.453	4.016	0.870	0.669	0.809
4"	F10	4.02	5.30	4 × 0.453	4.016	1.110	0.866	1.348
6"	F12	4.92	6.63	4 × 0.571	4.921	1.425	1.063	1.363
8"	F14	5.51	7.95	4 × 0.689	5.512	1.898	1.417	1.673
10"	F16	6.69	10.29	4 × 0.807	6.496	2.370	1.811	1.959
12"	F16	11.81	10.79	4 × 0.807	6.496	2.370	1.811	1.959





FLOW COEFFICIENTS

Flow Coefficients (C_v) and Pressure Conversion Chart						
Valve Size	SERIES		BORE	PRESSURE CLASS		
				150	300	600
½"	P8		FP	16	16	15
	P9		RP			
¾"	P8		FP	40	39	36
	P7		RP			
	P9	DOWNSTREAM		12	12	–
		UPSTREAM		13	13	–
1"	P8/R8		FP	78	74	70
	P7/R7		RP			
	P9/R9	DOWNSTREAM		29	29	–
		UPSTREAM		30	30	–
1½"	P8/R8		FP	189	179	171
	P7/R7		RP			
	P9/R9	DOWNSTREAM		48	50	–
		UPSTREAM		53	56	–
2"	P8/R8		FP	369	338	321
	P7/R7		RP	162	162	156
	P9/R9	DOWNSTREAM		125	119	–
		UPSTREAM		129	129	–
3"	P8/R8		FP	900	833	793
	P7/R7		RP	235	258	270
	P9/R9	DOWNSTREAM		191	185	–
		UPSTREAM		187	207	–
4"	P8/R8		FP	1652	1602	1511
	P7/R7		RP	634	634	634
	P9/R9	DOWNSTREAM		475	476	–
		UPSTREAM		465	524	–
6"	P8/R8		FP	3987	3943	–
	P9/R9	DOWNSTREAM	RP	768	784	–
		UPSTREAM		726	840	–
8"	P8/R8		FP	7730	7773	–
	P9/R9	DOWNSTREAM	RP	1301	1390	–
		UPSTREAM		1232	1291	–
10"	P8/R8		FP	12446	12760	–
	P9/R9	DOWNSTREAM	RP	2453	2618	–
		UPSTREAM		2273	2543	–
12"	P8/R8		FP	–	–	–
	P9/R9	DOWNSTREAM	RP	3169	3467	–
		UPSTREAM		3110	3698	–
14"	P8/R8		FP	20010	19950	–

FLOW COEFFICIENTS (C_V) FACTOR

Capacity factors for the series P2, P7, P8, P9. R7 and P9 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 × 0.06894757 = bar
bar × 14.50377 = psi

psi × 0.07030697 = Kg/cm^2
Kg/cm^2 × 14.22334 = psi

psi × 6894.757 = Pascal
Pascal × 0.0001450377 = psi

NOTES

NOTES

LADISH VALVES

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TO MARK PROGRESS

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