



S SERIES

**A SECOND GENERATION SEVERE SERVICE
METAL SEATED BALL VALVE LINE**



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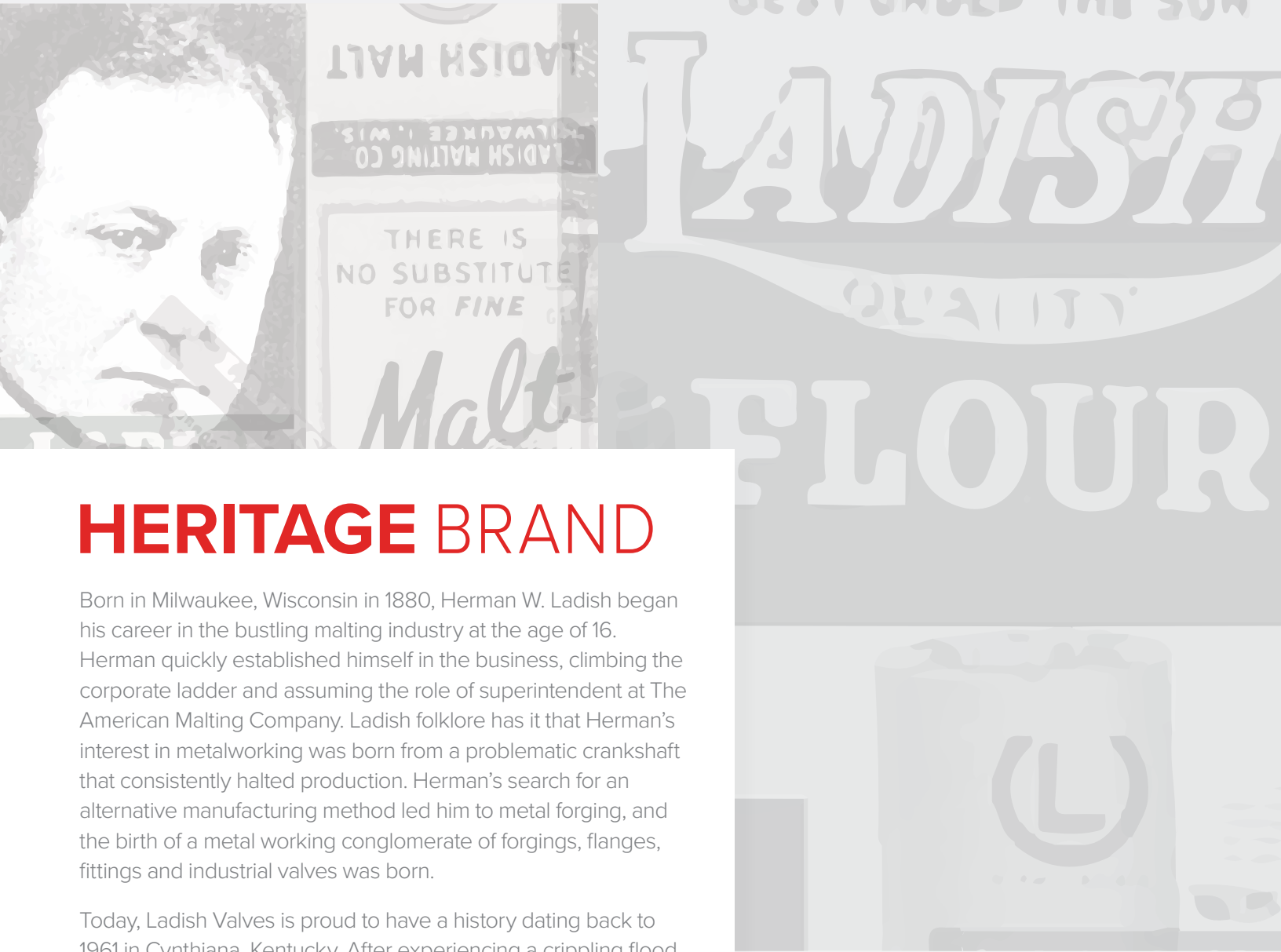


"LOW EMISSION REQUIREMENTS ARE A BASIS, NOT AN AFTERTHOUGHT."

CONTENTS

02 - 03	Ladish Valves - A Heritage Brand / Product Portfolio
04 - 05	S1 & S2 Series - Severe Service Ball Valves
06 - 07	Coating Technology, Quality Control & Applications
08 - 09	S1 Series Features & Dimensions
10 - 11	S2 Series Features & Dimensions
12 - 13	S1 & S2 Parts and Materials
14 - 15	Valve Components
16 - 17	How To Order: Severe Service Ball Valves
18	Ladish "T" Series Power Ball Valve
19 - 20	Material Reference Chart & Ladish Overview (Perforated)
21	Notes





HERITAGE BRAND

Born in Milwaukee, Wisconsin in 1880, Herman W. Ladish 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.



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

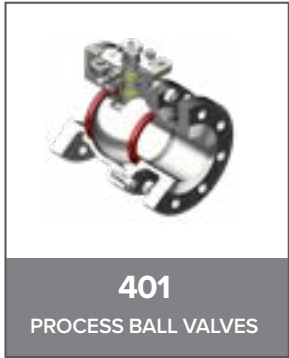
PRODUCT PORTFOLIO

Ladish is a premier manufacturer of stainless steel, duplex and nickel alloy gate, globe, check and ball valves. We take pride in our design, manufacturing, quality control & shipping team’s ability to deliver products on time, without defects and with personalized service.



SEVERE SERVICE BALL VALVES

Metal Seated



SEVERE SERVICE

LADISH BALL VALVES FOR PROCESS

Throughout its 75+ year history, Ladish has been a leader in developing products to meet the evolving needs of our customers. As an extension of this commitment to problem-solving in the Chemical, Petrochemical, Refining, Power and Mining / Minerals Processing industries, Ladish has developed the “S” Series, a “Second Generation” Severe Service Ball Valve line. This product is designed to bring the problem-solving ability of Severe Service Metal Seated Ball Valves to the core markets of Ladish. The design and coating technology offered by Ladish for manual, automated on-off and highly cycled process valves picks up where more traditional technology leaves off.

Ladish’s fully automated lapping technology ensures each severe service ball valve provides reliable and consistent tight shut-off to all recognized industry standards and your process conditions. Installed in a wide array of “high energy” services, this valve proves to stand the test of time. When performing under extreme conditions such as high temperature and pressure, corrosive service or erosive conditions, the S1 and S2 series ball valves should be your go-to choice.

As important as tight shutoff is to system reliability, meeting the Low Emission requirements of our customers is the top priority. This 2020 design was done with modern Low Emission requirements as a basis, not an afterthought. Stem Stabilization, multiple seals, extended bonnet systems, and new high-temperature materials are just a few of the options available to meet the requirements imposed on modern industry.



SERVICE REQUIRING TIGHT SHUT OFF

HIGH ENERGY ENVIRONMENTS (HIGH TEMP / PRESSURE)

LOW EMISSIONS IN SEVERE SERVICE

CORROSIVE / EROSIVE SERVICES

AUTOMATED ON/OFF & HIGH CYCLE APPLICATIONS

S1 SERIES

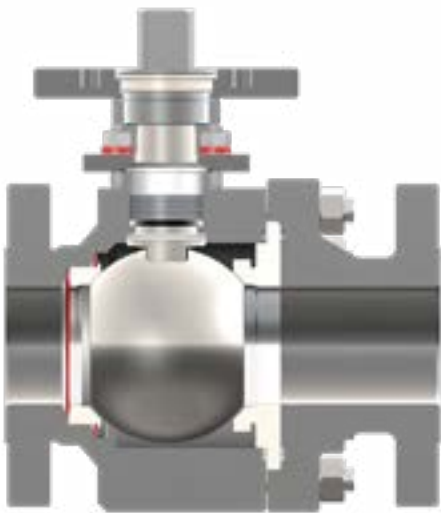
Compact and Economical Design with Removable / Replaceable trim, Low Emissions, and available in a wide range of material and coating options. Well suited for Manual Valve applications and those with bore sizes greater than 8”.



ENGINEERED SEVERE SERVICE METAL SEATED BALL VALVES

S2 SERIES

This “Second Generation” Metal Seated Ball Valve design provides only one through leak path, while retaining the feature of fully Removable / Replaceable Seats, Stem and Ball. The “Captured Flange Seat” allows exact thermal matching of all trim material for improved resistance to high temperatures and rapid temperature change. Designed for the most demanding Automated applications and where tight shutoff on gases is required.



COATING TECHNOLOGY

The term “Metal Seated Ball Valve” is widely used for this technology, but the ball and seat coatings that allow the valve to cycle without galling is the real heart of the valve. It is this same coating that is lapped for a Tight Shut-Off and must resist chemical and thermal attack from the process in which the valve is installed. The key to the reliability of the valves in your process is the selection of the right coating for your application, and Ladish engineers are expert in assisting with that selection. Some of the more standard options offered are:

SPRAY & FUSED

The ball and seat surfaces are coated with a relatively thick layer of hardening material, then the part is heated to “fuse” (similar to welding) the coating to the base material for the highest possible bond strength and lowest porosity.

- Complex Carbides and Borides
- Nickel/Cobalt Based Materials

PLASMA COATING

In the Plasma Coating process, the specialty coatings are brought to a very high temperature prior to being robotically applied to the metal. This again creates very good bond strength, and coupled with the ceramic-like materials applied, creates a very corrosion resistant surface.

- Chromium Oxide (Tantalum Base Layer is Optional)
- Titanium Dioxide

HP-HVOF PROCESS

Ladish utilizes a robotically controlled “gun” which applies the coatings at a velocity and energy level that creates a mechanical bond with the base metal.

- Chromium Carbide with Nickel, Chromium or Cobalt Binders
- Tungsten Carbide with Cobalt or Nickel Binders

QUALITY CONTROL

QUALITY

Controlled quality is more than a corporate Ladish slogan. It’s a daily activity that drives our processes to produce quality, long lasting valves. The Ladish trademark is a representation of the highest quality standards, fine engineering skills, craftsmanship, modern manufacturing & testing equipment that provides assurance of manufacturing responsibility, integrity and traceability.

TESTING

- Testing per API 598 as Standard
- Shell tests performed at 1.5 x Max Cold Working Pressure
- Seat Closure Tests performed at 1.1 x Max Cold Working Pressure (liquid)
- Seat Closure Test also performed at 80 psi (air)
- Helium Testing by request
- All valves meet API 641

ENGINEERING SERVICES

At Ladish, there is a wealth of valve knowledge, applications engineering and industry innovation. When custom requirements are requested, Ladish engineers find the best solution. Ladish is intricately involved in the engineering and manufacturing of metal seated ball valves for the most severe services. Our engineers are available to analyze tough applications and to design valves to meet those needs.



*HVOF Process



*Fully automated 360° lapping technology



*Spray & Fused Coatings Before & After Machining



*Monel Severe Service Ball Valve Assembly

PARTIAL APPLICATIONS LIST

PETROCHEMICAL

- VCM (Vinyl Chloride) Heater Isolation & Vents
- Ethanol/Methanol
- Heat Transfer Fluids
- Polypropylene/Ethylene/Ethylene Oxide/PDH Isolation
- Polyethylene Isolation/Withdrawal
- Phenol, Cumene, Butadiene Service

REFINING

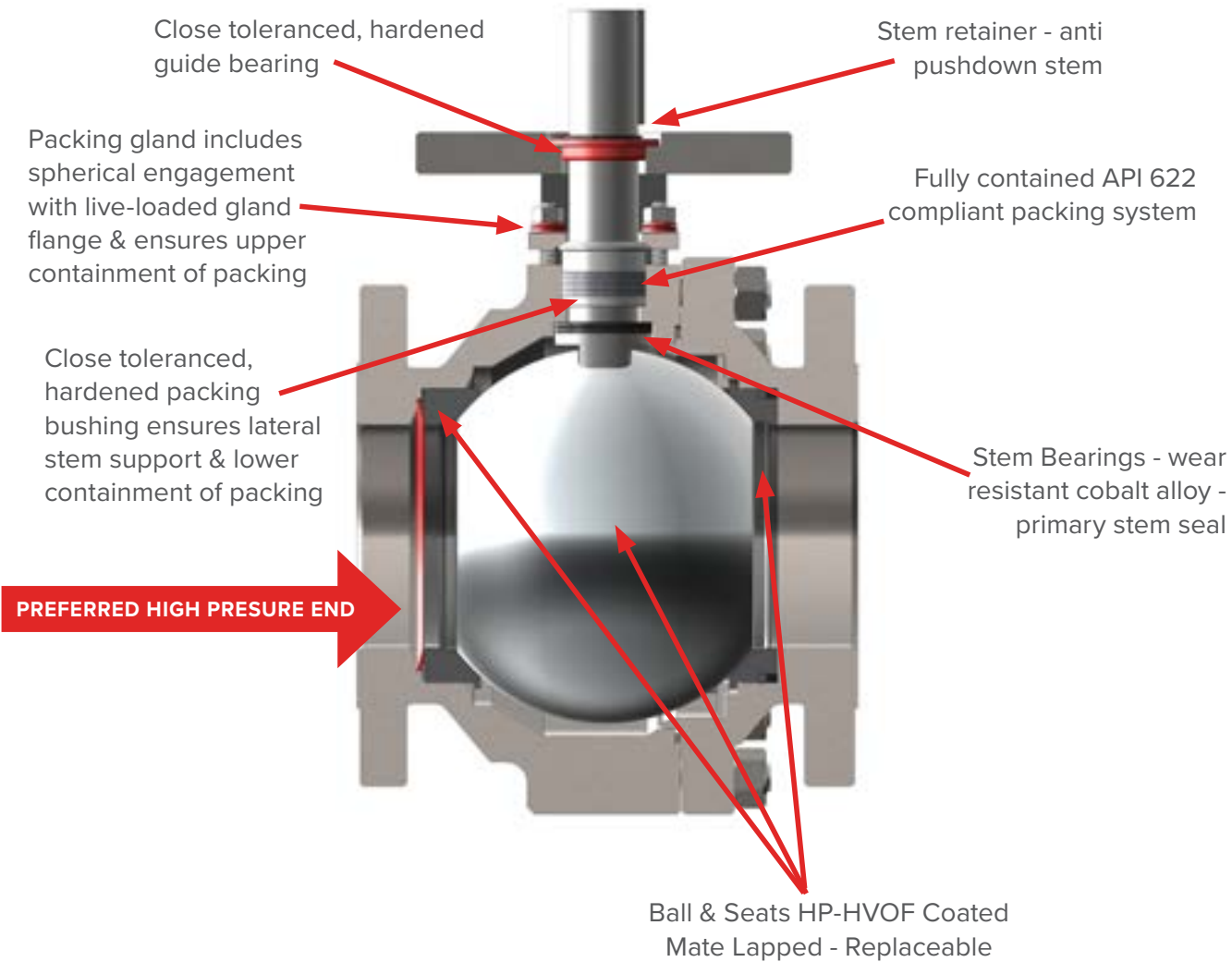
- High Temperature Catalyst Handling
- Slurry Oils
- Heavy Oil Units
- Hydrogen Service
- Cutting Water Isolation
- Delayed & Flexi-Coker Units Block Valves

CHEMICAL

- Acids in High Pressure (Organic or Inorganic)
- Oxidizers (Chlorine, Bromine, Phosgene)
- Chlorination Processes (Chlorosilane, Titanium Tetrachloride, etc.)
- Specialty Chemicals



S1 SERIES OVERVIEW



FEATURES & DESIGN ATTRIBUTES

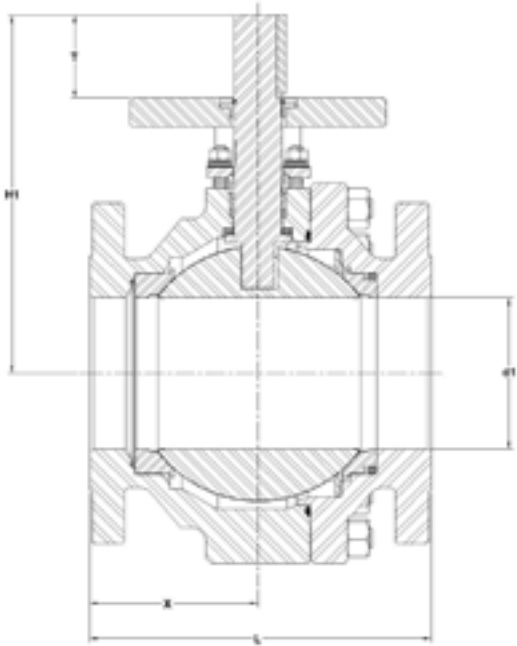
- Method of Construction: Forging & Bar
- Size Range: 3/4" - 16"
- Class: 150, 300, 600, 900, 1500
- End Connection:
 - RF, FF, RTJ, BWE, HUB-END
- Full Port, Reduced Port
- Low Emission Testing to API 641 & ISO 15848-1
- Certified to API 607 (Fire Tested)
- Designed to B16.34
- Pressure/Temperature Ratings as per B16.34 (Std. Class)
- Upstream assembly can have single or dual springs
- Preferred Direction Sealing Std. w/ Bi-Directional feature available

S1 SERIES DIMENSIONS

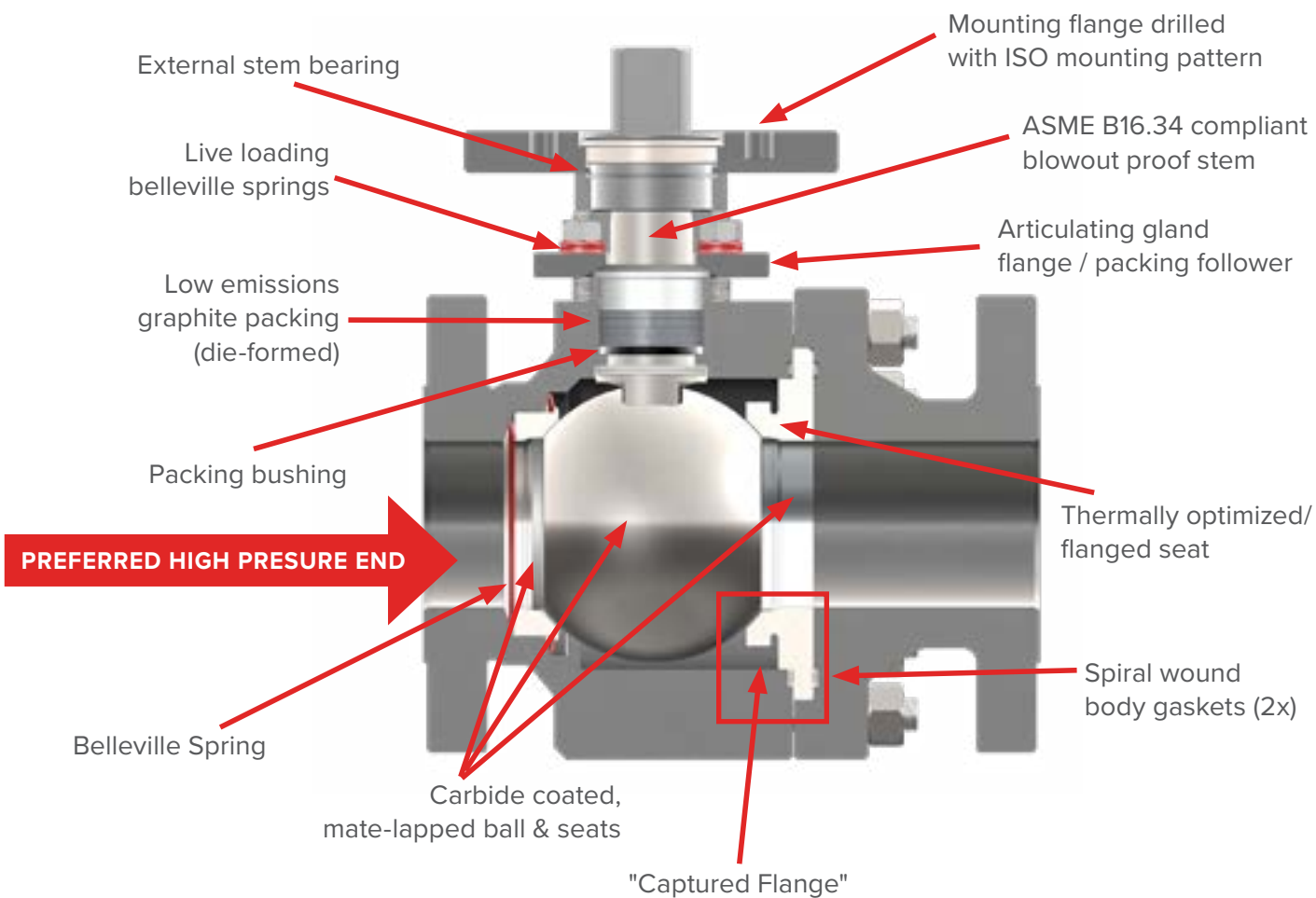
Pressure Classes 150 - 600: 3/4" thru 16"
Pressure Classes 900 - 1500: 3/4" thru 12"

NOM. SIZE	ANSI 150					ANSI 300					ANSI 600				
	ØD1	L	X	H1	T	ØD1	L	X	H1	T	ØD1	L	X	H1	T
¾	0.75	4.62	1.93	5.80	1.30	0.75	6.00	2.30	6.50	1.34	0.75	7.50	2.95	6.50	1.34
1	1.00	5.00	2.07	6.40	1.30	1.00	6.50	2.70	7.00	1.72	1.00	8.50	3.70	7.00	1.72
1 ½	1.50	6.50	2.75	7.20	1.60	1.50	7.50	2.90	7.30	1.72	1.50	9.50	4.00	7.30	1.72
2	2.00	7.00	3.06	7.60	1.60	2.00	8.50	3.20	7.70	1.50	2.00	11.50	4.50	7.70	1.50
3	3.00	8.00	3.73	7.30	1.70	3.00	11.12	4.10	8.60	1.50	3.00	14.00	5.60	8.60	1.50
4	4.00	9.00	4.44	9.50	2.20	4.00	12.00	5.00	9.80	2.10	4.00	17.00	6.90	11.70	2.50
6	6.00	15.50	7.75	12.90	3.10	6.00	15.88	6.60	13.30	3.40	6.00	22.00	8.90	13.40	2.20
8	8.00	18.00	9.00	14.30	2.30	8.00	19.75	9.88	16.40	2.80	8.00	26.00	13.00	17.60	3.40
10	10.00	21.00	10.50	17.10	2.60	10.00	22.38	11.19	19.30	3.30	10.00	31.00	15.50	21.70	4.10
12	12.00	24.00	12.00	20.60	3.20	12.00	25.50	12.75	22.80	4.10	12.00	33.00	16.50	24.70	4.30
14	13.25	27.00	13.50	23.90	3.50	13.25	30.00	15.00	24.20	4.10	13.25	35.00	17.50	25.90	4.20
16	15.25	30.00	15.00	25.90	4.20	15.25	33.00	16.50	26.70	4.80	15.25	39.00	19.50	28.50	5.00

NOM. SIZE	ANSI 900					ANSI 1500				
	ØD1	L	X	H1	T	ØD1	L	X	H1	T
¾	0.75	9.00	3.60	6.50	1.34	0.75	9.00	3.60	6.50	1.34
1	1.00	10.00	4.00	7.30	1.72	1.00	10.00	4.00	7.30	1.72
1 ½	1.50	12.00	4.60	9.60	1.72	1.50	12.00	4.60	9.60	1.72
2	2.00	14.50	6.00	9.90	2.10	2.00	14.50	6.00	9.90	2.10
3	2.62	15.00	5.80	10.90	2.10	2.62	18.50	7.50	10.90	2.10
4	3.44	18.00	6.50	12.40	3.50	3.44	21.50	8.20	12.40	3.50
6	5.19	24.00	9.20	18.00	4.50	5.19	27.75	10.50	18.00	4.50
8	6.81	29.00	14.50	20.00	4.00	6.81	32.75	13.00	20.90	5.00
10	8.50	33.00	16.50	20.70	3.30	8.50	39.00	19.50	21.90	4.50
12	10.13	38.00	19.00	21.00	4.50	10.13	44.50	22.30	22.70	4.50



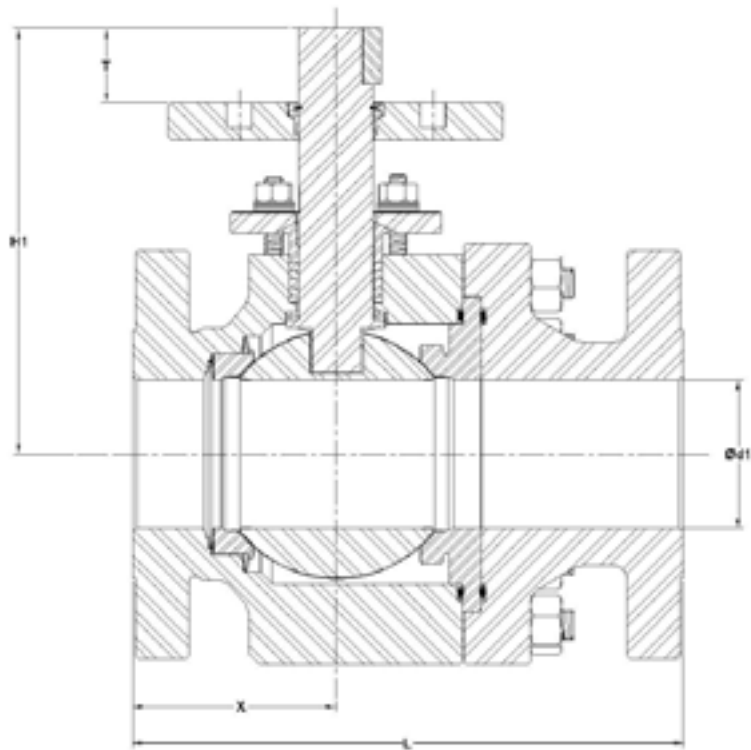
S2 SERIES OVERVIEW



FEATURES & DESIGN ATTRIBUTES

- Method of Construction: Forging & Bar
- Size Range: 3/4" - 6"
- Class: 300, 600, 900, 1500
- End Connection:
 - RF, FF, RTJ, BWE, HUB-END
- Full Port, Reduced Port
- Low Emission Testing to API 641 & ISO 15848-1
- Certified to API 607 (Fire Tested)
- Designed to B16.34
- Pressure/Temperature Ratings as per B16.34 (Std. Class)
- Upstream assembly can have single or dual springs
- Preferred Direction Sealing Std. w/ Bi-directional feature available

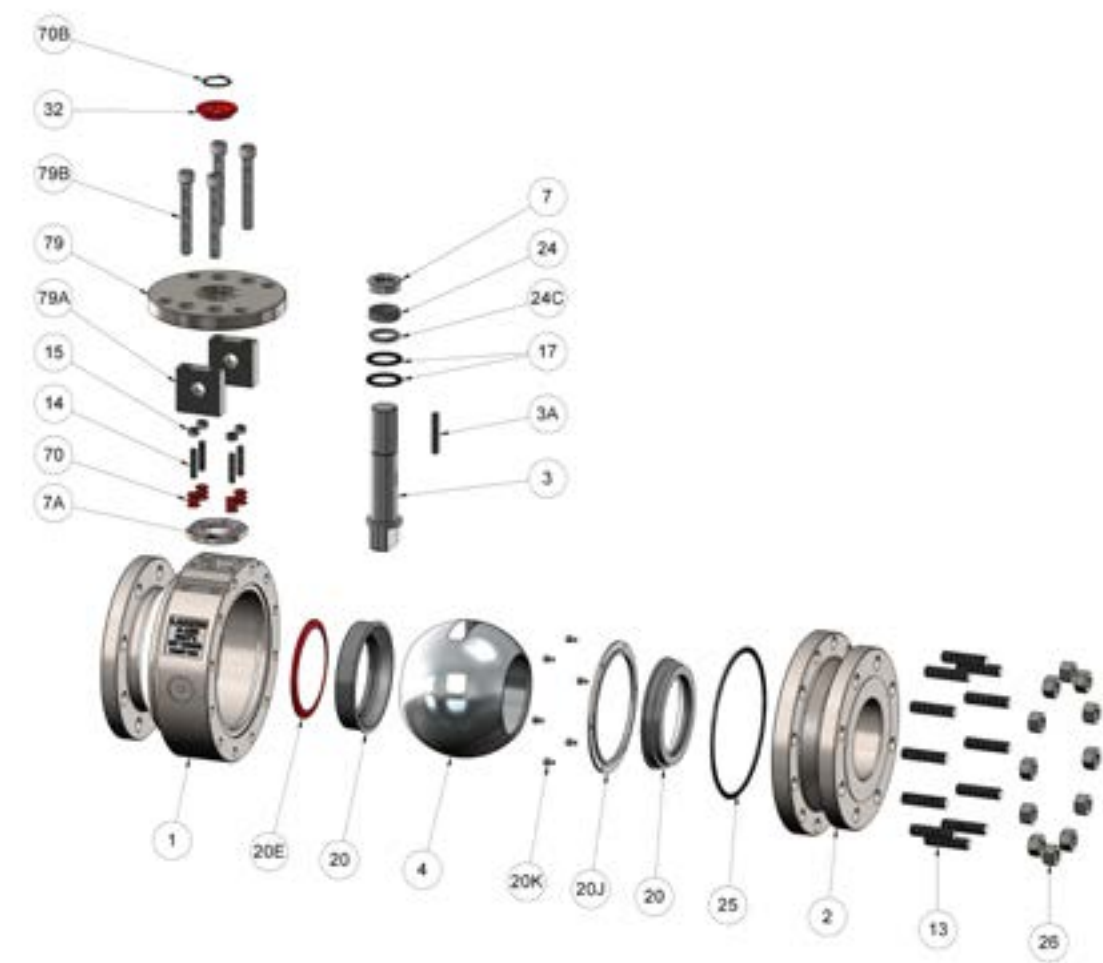
S2 SERIES DIMENSIONS



NOM. SIZE	ANSI 300					ANSI 600				
	Ød1	L	X	H1	T	Ød1	L	X	H1	T
¾	0.65	6.00	2.30	6.50	1.34	0.65	7.50	2.95	6.50	1.34
1	1.00	6.50	2.70	7.00	1.72	1.00	8.50	3.70	7.00	1.72
1 ½	1.50	7.50	2.90	7.30	1.72	1.50	9.50	4.00	7.30	1.72
2	2.00	8.50	3.20	7.70	1.50	2.00	11.50	4.50	7.70	1.50
3	3.00	11.12	4.10	8.60	1.50	3.00	14.00	5.60	8.60	1.50
4	4.00	12.00	5.00	9.80	2.10	4.00	17.00	6.90	11.70	2.50
6	6.00	15.88	6.60	13.30	3.40	6.00	22.00	8.90	13.40	2.20

NOM. SIZE	ANSI 900					ANSI 1500				
	Ød1	L	X	H1	T	Ød1	L	X	H1	T
¾	0.65	9.00	3.60	6.50	1.34	0.65	9.00	3.60	6.50	1.34
1	1.00	10.00	4.00	7.30	1.72	1.00	10.00	4.00	7.30	1.72
1 ½	1.50	12.00	4.60	9.60	1.72	1.50	12.00	4.60	9.60	1.72
2	2.00	14.50	6.00	9.90	2.10	2.00	14.50	6.00	9.90	2.10
3	2.62	15.00	5.80	10.90	2.10	2.62	18.50	7.50	10.90	2.10
4	3.44	18.00	6.50	12.40	3.50	3.44	21.50	8.20	12.40	3.50
6	5.19	24.00	9.20	18.00	4.50	5.19	27.75	10.50	18.00	4.50

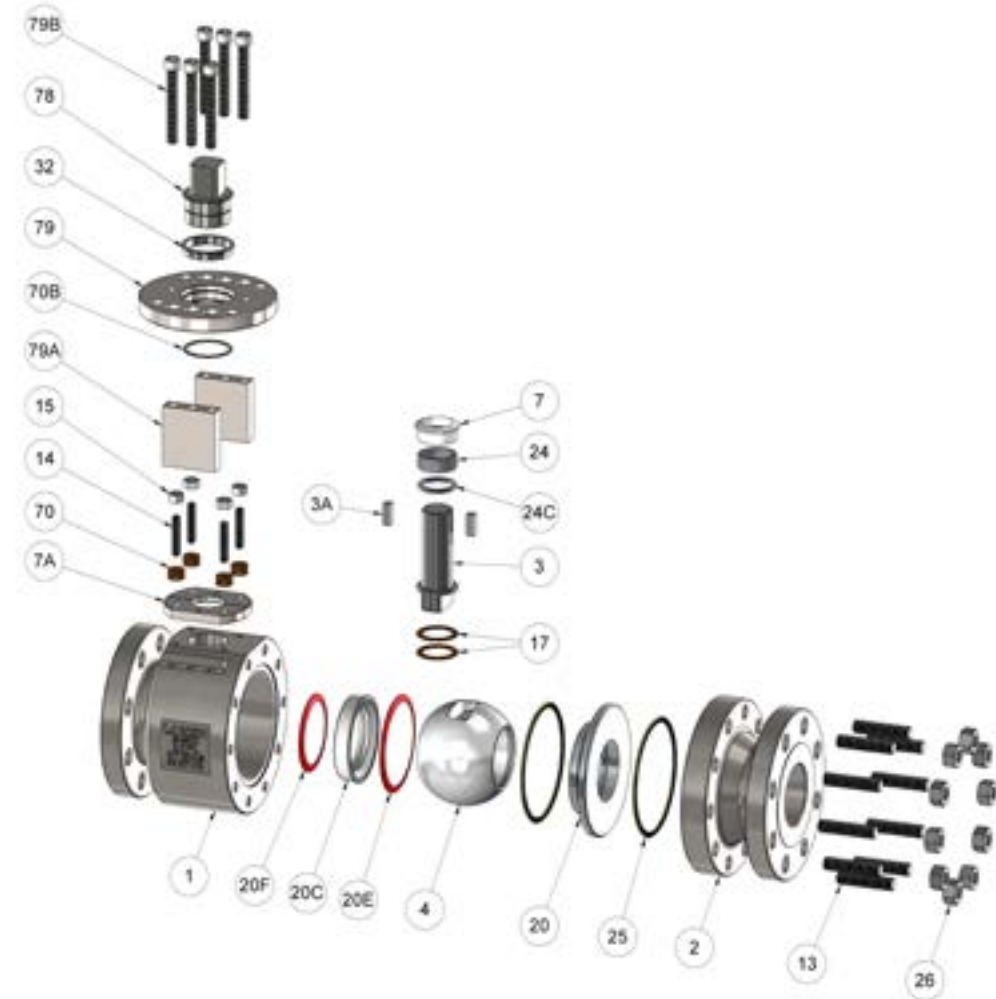
S1 PARTS & MATERIALS



Item No.	Description
1	BODY
2	CAP
3	STEM
3A	STEM KEY
4	BALL
7	GLAND
7A	GLAND FLANGE
13	STUD
14	STUD
15	HEX NUT
17	STEM BEARING
20	SEAT
20E	SEAT SPRING BELLEVILLE

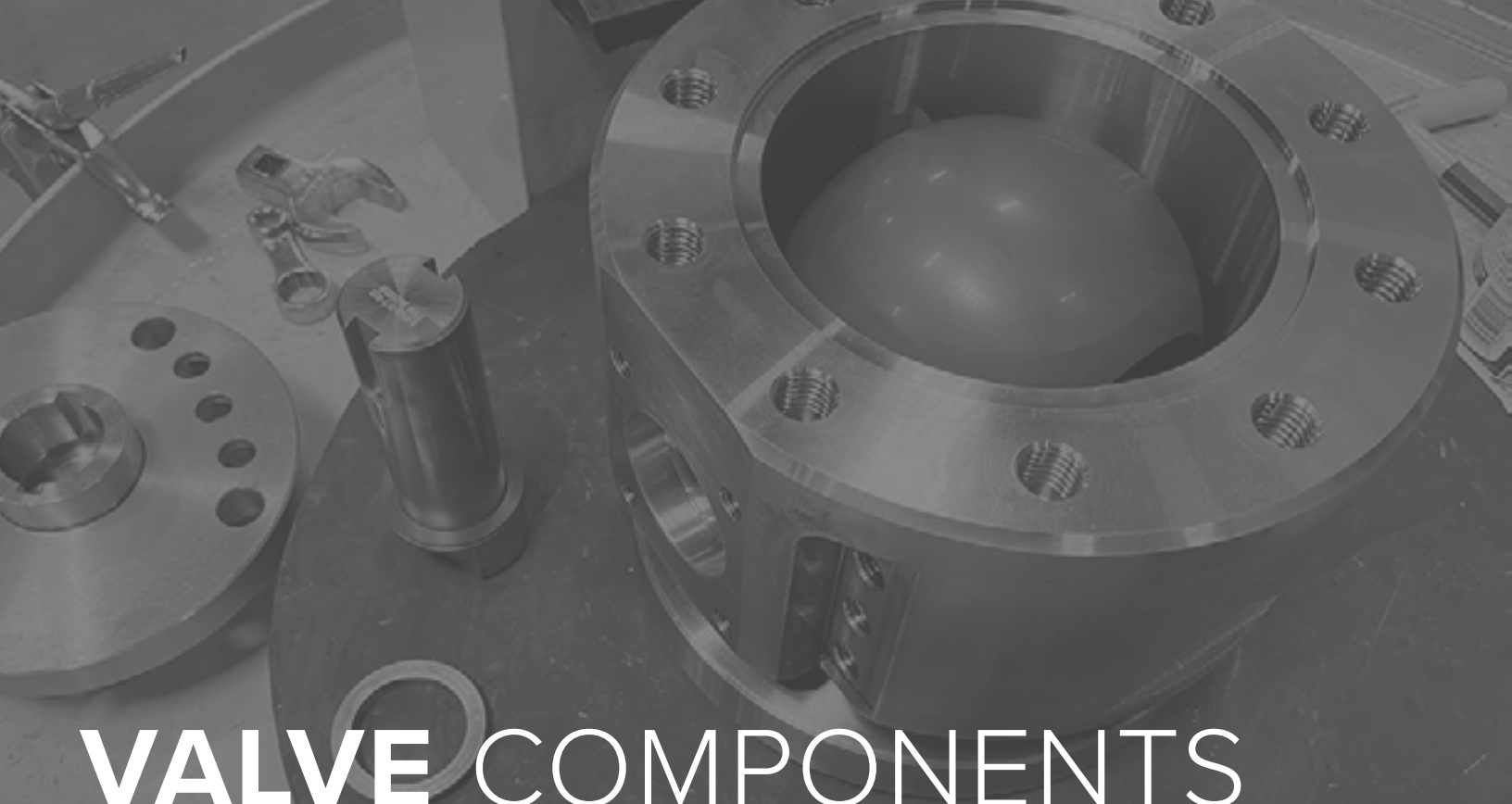
Item No.	Description
20J	SEAT RETAINING RING
20K	SEAT RETAINING RING, SCKT HD CAP
24	PACKING
24C	PACKING BUSHING
25	SPW BODY GASKET
26	HEX NUT
32	GUIDE BEARING
32B	STEM BEARING
70	SPRING WASHER
70B	SNAP RING
79	MOUNTING FLG
79A	MOUNTING LEG
79B	SOCKET HEAD BOLT

S2 PARTS & MATERIALS



Item No.	Description
1	BODY
2	CAP
3	STEM
3A	STEM KEY
4	BALL
7	GLAND
7A	GLAND FLANGE
13	STUD
14	STUD
15	HEX NUT
20	SEAT (CAPTURED FLANGE), DOWNSTREAM
20C	SEAT, UPSTREAM
20E	SEAT SPRING BELLEVILLE, INNER

Item No.	Description
20F	SEAT SPRING BELLEVILLE, OUTER
24	PACKING
24C	PACKING BUSHING
25	SPW BODY GASKET
26	HEX NUT
32	GUIDE BEARING
17	STEM BEARING
70	SPRING WASHER
70B	RETAINING RING
78	STEM, ADAPTER
79	MOUNTING FLG
79A	MOUNTING LEG
79B	SOCKET HEAD BOLT



VALVE COMPONENTS

BALL

Standard: 410SS/Chromium Carbide Coated, HVOF or S&F (optional) applied

Materials: 17-4PH, 347SS, 316SS, Inconel™, Incoloy™, Hastelloy™, Monel™, Alloy 20™, Titanium™

Ball Features:

- Mate lapped - Full 360°
- Every ball and seat are “blued” to assure that 100% contact is achieved across the entire seat face
- Coated to at least a hardness of 58 Rockwell “C”
- Each Ball and Seat set is Vacuum tested prior to assembly to assure tight shut-off of the valve

SEAT TECHNOLOGY

Ladish uses two different methods of holding the primary (downstream) seat in place. Both methods of installing the locked-in seat provide sealed seat protection and easy seat removal for repair. By trapping the seat in its proper place, debris cannot get behind the seat and cause leakage.

SEATS

Standard: 410SS/Chromium Carbide HVOF or S&F Coated (optional)

Materials: 17-4PH, 347SS., Stellite™, Inconel™, Hastelloy™, Monel™, Alloy 20™, Titanium™

Seats Features:

- A wide optimized sealing surface on each seat ring maintains positive shut-off & provides long service life
- Each seat is mate-lapped to the ball to ensure the integrity of the seals

STEM SEAL BEARINGS

Ladish utilizes hardened metal rings between the stem shoulder and the blowout proof pocket in the body. This creates a pressure energized stem seal internal to the valve. The lapped surfaces secure a tight seal that is enhanced by line pressure exerting additional vertical force. This seal saves the stuffing box from thermal shocks and particle migration.

PACKING CHAMBER

Ladish utilizes an industry preferred system of a minimum of four sandwiched rings of API 622 certified die-formed Grafoil. This is an optimum design which has enough Grafoil to affect a seal without having redundant rings. A heavy articulating gland follower energized by live-loading compresses the system. This ensures proper load strength and minimizes the possibility of uneven loading.

ACTUATOR MOUNTING FLANGES

Ladish utilizes a rigidly secured mounting bracket for actuators, wormgears and levers. The bracket, constructed of heavy plate steel, is welded or bolted to the valve body. The mounting plate is parallel to the bore, and perpendicular to the stem, so there is no misalignment of the operator. Ladish places a heavy metal brushing in the bracket of the valve to guide stem and ensure that the stem does not experience lateral movement if subjected to side loads during operation. If side load occurs, it is absorbed outside the packing chamber and does not deform packing. Deformation of packing caused by side loading is a major cause of stem leakage in quarter-turn valves.



**3" Monel Severe Service Ball Valve Mounted w/ Rack & Pinion Actuator*

GLAND ASSEMBLY

STANDARD PACKING

- Up to 850°F (456°C) - API 622 Packing
- Up to 1400°F (760°C) - Graphite or Thermiculite™

SPECIAL FEATURES

- Stainless Steel or Nickel Alloy studs and nuts – 100% Live Loaded
- Heavy duty gland flange
- Dual Stem Bearings (Hardened Steel, Stellite or PEEK)

DUAL STEM PACKING

- Up to 850°F (456°C) - API 622 Packing
- Up to 1200°F (654°C) - Graphite or Thermiculite™

SPECIAL FEATURES

- Includes all of the features of the standard stem packing
- Two sets die-formed Grafoil packing rings
- Hardened lantern ring situated between the two packing sets

HOW TO ORDER

Ladish Severe Service Ball Valve

The Ladish Valves figure number is comprised of 20 alpha numeric digits defining the required product in detail. 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. Our aim is to provide you with precisely what you need.

EXAMPLE:

S235-G053-3X03-A20A-A000 2", CL300, 316SS Ball Valve with 316SS Trim, Full Port, Graphite Packing, Fire Safe, Meets NACE MR0103 Material Requirements, Captured Flange Design, Chromium Carbide

VALVE STYLE	CONSTRUCT & VALVE TYPE	ANSI CLASS	END CONNECT	OPER.	BODY MAT.	STEM	BALL / SEAT MATERIAL
S	2	3	5	G	05	3	3
S - SEVERE SERVICE METAL SEATED BALL VALVE	1 - FORGED, 2PCS, SPLIT BODY, REDUCED PORT, CL150-CL2500	1 - 150 3 - 300 6 - 600 8 - 800 9 - 900 5 - 1500	0 - BLANK ENDS 3 - NPT 4 - SWE 5 - RF 7 - THD-SWE J - RTJ A - BWE-S5 B - BWE-S10 C - BWE-S40 D - BWE-S80 E - BWE-S160 G - BWE-XXS P - GRAYLOC R - R-CON	A - Actuator B - Bare Stem G - Gear L - Lever W - Chain Wheel Gear Operated S - Spring Return Handle		1 - 347DC 2 - 321SS 3 - 316SS 4 - 410SS 5 - 317SS 6 - SUPER DUPLEX S32750 7 - SUPER DUPLEX S32760 8 - 17-4PH 9 - 431SS A - ALLOY 20 D - DUPLEX 2205 G - HASTELLOY C22 H - HASTELLOY C276 J - INCONEL 718 K - MONEL K500 M - MONEL 400 R - Gr. 660 T - Titanium Gr. 5 V - Gr.660 +QPQ W - 410 + QPQ X - 431 + QPQ Y - 17-4PH + QPQ Z - Inconel 718 + QPQ	1 - 347DC 2 - 321SS 3 - 316SS 4 - 410SS 5 - 317SS 6 - SUPER DUPLEX S32750 7 - SUPER DUPLEX S32760 8 - 17-4PH A - ALLOY 20 D - DUPLEX 2205 G - HASTELLOY C22 H - HASTELLOY C276 J - INCONEL 718 K - MONEL K500 M - MONEL 400 R - Gr. 660 T - Titanium Gr. 5 U - 347H W - Titanium Gr. 12
	2 - FORGED, 2PCS, SPLIT BODY, FULL PORT, CL150-CL2500						

SAMPLE MATERIALS OF CONSTRUCTION

PLEASE REFER TO THE **MATERIAL REFERENCE CHART (PAGE 19)** FOR LADISH FIGURE NUMBER & AVAILABLE MATERIAL GRADES. OTHER MATERIALS AVAILABLE UPON REQUEST.

CARBON & CHROME STEELS

CARBON STEEL
LOW TEMP CARBON STEEL
5% AND 9% CHROME (PROCESS)
F11, F22, F91

STAINLESS STEELS

316SS, 304SS, 317SS
347SS & 321SS FOR SPECIAL APPLICATIONS
DUPLEX STAINLESS
SUPER DUPLEX

NICKEL ALLOYS

ALLOY 20
HASTELLOY
INCONEL & INCOLOY
MONEL

COATING	BOLT/NUT	PACKING & GASKET	SIZE	SEAT TYPE	OPTIONS	ADDT'L OPTIONS	SPECIAL BORE SIZE
X	03	A	20	A	A	00	0
0 - No Coating A - Tungsten WC Ni (10%Ni) B - Colmonoy 69 C - Tungsten WC-CoCr D - Colmonoy 88 E - WALLEX 50 F - Nitride-QPQ G - Titanium Dioxide H - Borozine T - Tantalum Coated Oxide W - Tungsten WC 88 12Co X - Chrome Carbide (20 Nickel Chrome) Z - Chrome Carbide (25 Nickel Chrome) Y - Chrome Oxide	01 – B8CL1/8 02 – B8CL2/8 03 – B8MCL1/8M 04 – B8MCL2/8M 05 – B7/2H 06 – B7M/2HM 07 – ALLOY 20 08 – MONEL400 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	A - GRF / SWG B - GRF / EBS C - GRF / GRF D - DUAL PACKING: TFE/GRF F - DUAL PACKING: GRF / GRF H - HIGH TEMP: GRF GRF S - GLASS FILLED PTFE GPTFE T - VIRGIN PTFE	00 - BLANK 05 - 1/2" 07 - 3/4" 10 - 1" 15 - 1 1/2" 20 - 2" 25 - 2 1/2" 30 - 3" 40 - 4" 60 - 6" 80 - 8" 81 - 10" 82 - 12" 84 - 14" 86 - 16"	A - Preferred Direction, FLNG Captured Seat *(Note 2) B - Preferred Direction, Inserted Seat C - Preferred Direction, Solids Proof, Dual Spring Seat 1 - Bi-Directional, Flange Captured Seat *(Note 2) 2 - Bi-Directional, Inserted Seat 3 - Bi-Directional, Solids Proof, Dual Spring Seat 2. Flange Capture Seat Available in 1"-6", CL300 and up	A - No Added Option B - Cleaned C - Cryo w/ Vented Ball D - Cryo w/out vented ball E - Extended Handle F - Fugitive Emission Ext. Bonnet Lantern Ring w/ Port (Ext. Handle Height) G - Cleaned / Packaged for Chlorine Service (per pamphlet 6), - Suitable for Vacuum Service (-14.25 psi), - No "300 series" fasteners for body or gland - Dye Penetrant testing on machined surfaces H - Fugitive Emission Extended Bonnet Lantern Ring (Chlorine Clean) J - Cryo (non- vented) Inc718 Bellville washer M - Acid Shield N - Cavity Filler PTFE R - 100% Critical Areas RT S - Square Stem V - Unidirectional (Vented-Ball - Standard Bonnet) 3 - Cavity Purge	00 - N/A	0 - N/A Bore diameter per ASME B16.34

LADISH T-SERIES POWER BALL VALVE



Applications: Isolation, Vents & Drains

- Available Sizes: 1/2" - 3"

A105, F22, F91, F92 & others

Available Classes: ASME 1500-4500 Limited Class

Two-Piece Construction

Uni-Directional

Available in: SWE, BWE, HUB-END
- Ball & Seat
 - Standard: 410SS, HP-HVOF (*Chrome Carbide Nickel Chrome*)
 - Optional: Inconel718 - Fused (*Chromium Boride Chrome Carbide*)
 - Bore Sizes
 - .65", 1.00", 1.50" (1500, 2500/3100)
 - .65", 1.00" (4500)

			PIPE SIZE (Max. Sch.)						
CLASS	Bore	L	0.50	0.75	1.00	1.50	2.00	2.50	3.00 **
1500	0.65"	8.25	● (xxs)	● (xxs)	● (xxs)	● (160)			
1500	1.00"	9.00				● (xxs)	● (xxs)		
1500	1.50"	11.00					● (xxs)	● (xxs)	● (160)
3100	0.65"	9.25	● (xxs)	● (xxs)	● (xxs)	● (xxs)			
3100	1.00"	10.25				● (xxs)	● (xxs)	● (160)	
3100	1.50"	13.00					● (xxs)	● (xxs)	● (xxs)
4500	0.65"	11.50	● (xxs)	● (xxs)	● (xxs)	● (xxs)	● (xxs)		
4500	1.00"	13.50				● (xxs)	● (xxs)	● (xxs)	● (xxs)

● Denotes Applicability

** 3.00 Size Available as STD. Class

"L": end-to-end

L MATERIAL REFERENCE CHART

Common	Elements	Forging			Bar		
		Ⓛ	ASTM	UNS	Ⓛ	ASTM	UNS
A105	C - Si	H0	A105	K03504	H0	A105	K03504
LF2	C - Mn - Si	H2	A350 LF2 CL.1	K03011	H2	A350 LF2 CL.1	K03011
F5a	5Cr - 1/2Mo	I0	A182 F5a	K42544	I0	A182 F5a	K42544
F5	5Cr - 1/2Mo	J5	A182 F5	K41545	J5	A182 F5	K41545
F11 CL2	1 1/4Cr - 1/2Mo - Si	J1	A182 F11 CL2	K11572	J1	A182 F11 CL2	K11572
F22 CL3	2 1/4Cr - 1Mo	J2	A182 F22 CL3	K21590	J2	A182 F22 CL3	K21590
F9	9Cr - 1Mo	J9	A182 F9	K90941	J9	A182 F9	K90941
F91 CL1	9Cr - 1Mo - V	J6	A182 F91 Type 1	K90901	J6	A182 F91 Type 1	K90901
F92	9Cr - 2W - V	J7	A182 F92	K92460	J7	A182 F92	K92460
304L	18Cr - 8Ni	A2	A182 F304L	S30403	02	A479 304L	S30403
304	18Cr - 8Ni	A1	A182 F304	S30400	01	A479 304	S30400
304H	18Cr - 8Ni	A3	A182 F304H	S30409	03	A479 304H	S30409
310H	25Cr - 20Ni	I1	A182 F310H	S31009	I1	A479 310H	S31009
316L	16Cr - 12Ni - 2Mo	A6	A182 F316L	S31603	06	A479 316L	S31603
316	16Cr - 12Ni - 2Mo	A8	A182 F316	S31600	05	A479 316	S31600
316H	16Cr - 12Ni - 2Mo	A7	A182 F316H	S31609	07	A479 316H	S31609
317L	18Cr - 13Ni - 3Mo	B1	A182 F317L	S31703	11	A182 317L	S31703
317	18Cr - 13Ni - 3Mo	B0	A182 F317	S31700	-	N/A	-
321	18Cr - 10Ni - Ti	B8	A182 F321	S32100	43	A479 321	S32100
321H	18Cr - 10Ni - Ti	I2	A182 F321H	S32109	I2	A479 321H	S32109
347	18Cr - 10Ni - Cb	B3	A182 F347	S34700	12	A479 347	S34700
347H	18Cr - 10Ni - Cb	B2	A182 F347H	S34709	B2	A479 347H	S34709
F44	20Cr - 18Ni - 6Mo	B6	A182 F44	S31254	16	A479 S31254	S31254
Duplex 2205	22Cr - 5Ni - 3Mo - N	F5	A182 F51	S31803	F5	A479 S31803	S31803
Super Duplex 2507	25Cr - 7Ni - 4Mo - N	F6	A182 F53	S32750	56	A479 S32750	S32750
F55	25Cr - 7.5Ni - 3.5Mo - N - Cu - W	F7	A182 F55	S32760	57	A479 S32760	S32760
Alloy 20	35Ni - 35Fe - 20Cr - Cb	B5	B462 N08020	N08020	15	B473 N08020	N08020
Monel 400	67Ni - 30Cu	D0	B564 N04400	N04400	30	B164 N04400	N04400
Hastelloy C276	54Ni - 16Mo - 15Cr	C0	B564 N10276	N10276	20	B574 N10276	N10276
Inconel 625	60Ni - 22Cr - 9Mo - 3.5Cb	D4	B564 N06625	N06625	34	B446 N06625	N06625
Incoloy 825	42Ni - 21.5Cr - 3Mo - 2.3Cu	D6	B564 N08825	N08825	36	B425 N08825	N08825
AL6XN	46Fe - 24Ni - 21Cr - 6Mo - Cu - N	B7	B462 N08367	N08367	17	B462 N08367	N08367
-	99 Ni	C2	B564 N02200	N02200	37	B160 N02200	N02200
-	99Ni - Low C		N/A	-	C7	B160 N02201	N02201
-	72Ni - 15Cr - 8Fe	D3	B564 N06600	N06600	33	B166 N06600	N06600
-	33Ni - 42Fe - 21Cr	D5	B564 N08800	N08800	D5	B408 N08800	N08800
Hastelloy B2	65Ni - 28Mo - 2Fe	C4	B564 N10665	N10665	C4	B462 N10665	N10665
Hastelloy B3	64Ni - 29.5Mo - 2Cr - 2Fe - Mn - W	C5	B564 N10675	N10675	27	B462 N10675	N10675
-	62Ni - 28Mo - 5Fe		N/A	-	25	B335 N10001	N10001
-	70Ni - 16Mo - 7Cr - 5Fe		N/A	-	C8	B573 N10003	N10003
-	61Ni - 16Mo - 16Cr		N/A	-	22	B574 N06455	N06455
-	55Ni - 21Cr - 13.5Mo	C3	B564 N06022	N06022	23	B462 N06022	N06022
-	55Ni - 23Cr - 16Mo - 1.6Cu	C6	B564 N06200	N06200	C6	B574 N06200	N06200
-	47Ni - 22Cr - 9Mo - 18Fe		N/A	-	D1	B572 N06002	N06002
HS 556	21Ni - 30Fe - 22Cr - 18Co - 3Mo - 3W		N/A	-	D2	B572 R30556	R30556
Inconel 800	42Ni - 2Fe - 21Cr	D8	B564 N08810	N08810	35	B408 N08810	N08810
Alloy 230	57Ni - 22Cr - 14W - 2Mo - La	D9	B564 N06230	N06230	D9	B572 N06230	N06230

NOTES



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LADISH PRODUCT PORTFOLIO

GATE VALVES

- **Cast (Catalog 82.1) & Forged (Catalog 221 & 231)**
 - Industry spec: API 600, API 602, API 603 & ASME B16.34
 - Size range: ½" – 36"
 - Pressure class: 150, 300, 600, 800, 900, 1500, 2500 & 4500
 - Port: standard & full
 - Construction: bolted, welded & pressure seal
 - End connection: RF, RTJ, BWE, THD & SWE
- ### GLOBE VALVES
- **Cast (Catalog 82.1) & Forged (Catalog 221 & 231)**
 - Industry Spec: API 623, API 602 & ASME B16.34
 - Size Range 1/2"–16"
 - Pressure Class: 150, 300, 600, 800, 900, 1500, 2500 & 4500
 - Port: Standard & Full
 - T-pattern & Y-pattern available
 - Construction: Bolted, Welded & Pressure Seal & Bonnetless
 - End Connection: RF, RTJ, BWE, THD & SWE

CHECK VALVES

- **Cast (Catalog 82.1) & Forged (Catalog 221 & 231)**
- Industry Spec: API 594, API 602 & ASME B16.34
- Piston check & swing check available
- Size Range: ½" – 36"
- Pressure Class: 150, 300, 600, 800, 900, 1500, 2500 & 4500
- Port: standard & full
- T-pattern & Y-pattern available
- Construction: bolted, welded & pressure seal
- End connection: RF, RTJ, BWE, THD & SWE

FLOATING BALL VALVES

- **Cast (Catalogs 401, 42.1) & Bar Stock (Catalog 451), MEGA Seal (Catalog 411), Chlorine Service (G2 Catalog), Instrument Isolation (Catalog 461), Severe Service (Catalog 431)**
- Industry spec: API 608, API 607, API 6D & ASME B16.34
- Size range: ½" – 14"
- Pressure class: 150, 300 & 600
- Port: standard & full
- Construction: 2-piece split & unibody design, soft seated, metal seated and graphite seated
- End Connection: RF, RTJ, BWE, THD & SWE

CRYOGENIC VALVES

- **Cast & forged construction (Catalog 32.1)**
- Industry spec: MSS SP134 & ASME B16.34
- Gate, globe, check & ball valves
- Size range: ½" – 36"
- Pressure class: 150, 300, 600, 800, 900, 1500 & 2500
- Port: standard & full
- End connection: RF, RTJ, BWE, THD & SWE
- Integral cast extensions available on select sizes

ENGINEERED VALVES & IN-HOUSE SERVICES

- Fully engineered valves per customer specifications
- Stop check & angle valves available
- Clean room for oxygen, chlorine & other applications
- Fugitive Emissions Testing (API 624 & 641)
- RT/Radiographic Testing
- Liquid Dye Penetrate Testing
- Inert Gas Testing
- P/T charts available for unlisted materials
- TFEA analysis available on request
- Other NDE including ferrite, hardness & PMI available



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