



LADISH FAMILY OF BRANDS

PRODUCT PORTFOLIO

CAST & FORGED VALVES • ACTUATORS • GEARS



Proudly owned and operated in Houston, TX • USA

LADISH VALVES

GATE • GLOBE • CHECK

LADISH VALVES

CRYOGENIC GATE • GLOBE • CHECK • BALL

LADISH VALVES

FLANGED FLOATING BALL VALVES

LADISH VALVES

METAL SEATED BALL VALVES

SMITH VALVES

FORGED GATE • GLOBE • CHECK

DIAMOND GEAR

WORM • BEVEL • DECLUTCH

ADVANCED IND. TECH

AIRTORQUE ACTUATORS • GEARS

MULTI-TURN HIGHLIGHTS



GATE VALVES

- Size Range: ½ - 36"
- Pressure Classes: 150 - 4500
- Specification: API 600, API 603 & API 602



GLOBE VALVES

- Size Range: ½ - 16"
- Pressure Classes: 150 - 4500
- Specification: API 623 & API 602



CHECK VALVES

- Size Range: ½ - 36"
- Pressure Classes: 150 - 4500
- Specification: API 594 & API 602



Ladish is proudly family-owned and operated in Houston, TX. Being local gives us the flexibility to design, machine, assemble, test, verify and expedite our customers' orders, setting us apart from everyone else.

The Ladish Difference

- One of the largest stainless and exotic alloy inventories in the U.S.
- In-house machining
- Same day deliveries available
- Custom valve solutions
- Fully complaint clean room
- Extensive in-house NDE testing



CRYOGENIC VALVES

IN-HOUSE TESTING & MACHINING



All Ladish cryogenic valves are tested in accordance to API 598. Our in-house test stands are capable of testing up to 24". Optional non-cold box and cold-box tests include:

- BS 6364
 - MSS SP-134
 - ISO 28921-1
-
- FULLY INTEGRATED MACHINE SHOP FOR EXPEDITED DELIVERY
 - MODIFIED ON-SITE TESTING PER CUSTOMER SPEC AVAILABLE

TESTING CAPABILITY TO 24"



The production, transport and storage of liquefied gases such as oxygen, nitrogen and natural gas demand a thoughtful solution.



GATE, GLOBE, CHECK VALVES

Class 150 - 1500

Sizes: ½" - 36"

- Forged & cast construction
- API 600, API 603, API 602, ASME B16.34, MSS SP-134, BS 6364
- API 622 and API 624 qualified packing for Low FE
- Customizable bonnet extension
- Bolted and welded bonnet configurations available
- Soft seat inserts available
- Custom integral gas column on select sizes



BALL VALVES

Class 150 - 1500

Sizes: ½" - 14"

- Forged & cast construction
- API 608, ASME B16.34, API 607, MSS-SP134
- Integrally cast extension on select sizes
- Double D or square stem available
- Dual V-Ring PTFE/Graphite stem packing to meet API 641
- Live load spring washer for packing adjustment
- Fire safe to API 607
- Welded bonnet configuration available



Ladish Valves stainless steel cryogenic valves are produced to the rigid "Controlled Quality" standards that assure dependable operating performance at **sub-zero temperatures**.



Flanged Floating Ball Valves

P1 SERIES BALL VALVES

Size Range: ½ - 14"

Pressure Classes: 150 - 600

Temperatures: -320F - 450F

Construction: Cast

R C P I

BAR STOCK BALL VALVES

Size Range: ½ - 2"

Pressure Classes: 150 - 600

Temperatures: -320F - 450F

Construction: Bar

R C P I

INSTRUMENT ISOLATION

Size Range: ½ - ¾"

Pressure Classes: 900

Temperatures: 100F - 450F

Construction: Cast / Bar

S SC

MEGA SEAL BALL VALVES

Size Range: ½ - 14"

Pressure Classes: 150 - 600

Temperatures: 100F - 800F

Construction: Cast

R C P I



API 608 • API 607 • API 6D

Our Floating Ball Valve line has all of the technical features needed for the most demanding industrial applications. Designed for **Safety, Low Emissions, Long Service Life, and ease of Maintenance**, our floating ball valves are available in Split-Body Full and Reduced Port styles as well as One-Piece (Uni-body) reduced port construction.

- **LONG SERVICE LIFE**
- **TIGHT SHUT-OFF FOR PROCESS RELIABILITY**
- **EASE OF AUTOMATION WHEN REQUIRED**
- **LOW CONSISTENT TORQUE REQUIREMENTS**
- **LOW EMISSIONS**
- **FLEXIBILITY TO MEET PROCESS REQUIREMENTS**

End Markets Legend

R Refining

P Petrochemical

S Sampling

C Chemical

I Industrial

SC Steam
Condensate

PRODUCT HIGHLIGHTS

CAST TWO-PIECE & UNI-BODY

The products include our cast two-piece and uni-body flanged floating ball valve designs in both packing and o-ring stem designs. Ladish stocks these in a variety of materials from **carbon steel to exotic alloys**.

BAR STOCK BALL VALVES

Ladish has an extensive inventory of nickel alloy bar ready to machine for quick deliveries or for customers that require forged bar stock valves. Ladish has a long history of designing and manufacturing bar stock ball valves in special materials such as **titanium, zirconium, hastelloy, alloy 20, nickel and inconel**.

INSTRUMENT ISOLATION BALL VALVES

In response to fugitive emissions concern for instrumentation valves in the industry, Ladish has designed the Instrument Isolation Valve line to meet the demand in the market. Instrument Isolation Valves can be used in a variety of applications including **vents, drains and block valves for instrument connections for pressure, level and flow measurement**.



CHLORINE SERVICE BALL VALVES

Specifically for this service, Ladish manufactures ball valves in compliance with The Chlorine Institute Pamphlet 6. **Self-relieving seats are standard, vented ball is optional**. Low-profile bonnets with dual Low E packing sets as well as extended bonnets are offered. An additional option would be a bolt-on stem extension.

All valves feature Live Loaded Dual Packing.

- CHLORINE
- ANHYDROUS HCL
- NITRIC ACID
- PHOSGENE
- ISOCYANATES
- AMMONIA

MEGA SEAL BALL VALVES

Size Range: ½ - 14"

Pressure Classes: 150 - 600

Temperatures: Up to 800F

Construction: Cast

R C P

S1 SERIES BALL VALVES

Size Range: ¾ - 16"

Pressure Classes: 150 - 1500

Temperatures: Up to 1500F

Construction: Cast or Forged

C Pa M

S2 SERIES BALL VALVES

Size Range: ¾ - 6"

Pressure Classes: 150 - 2500

Temperatures: Up to 1500F

Construction: Forged

C Pa M

FUSION BALL VALVES

Size Range: ½ - 2 ½"

Pressure Classes: 900 - 4500

Temperatures: Up to 1500F

Construction: Bar

Po

TL SERIES BALL VALVES

Size Range: ½ - 2"

Pressure Classes: 150 - 600

Temperatures: Up to 1500F

Construction: Cast

Po



Valves for Critical & Severe Service

API 608 • API 624 • API 641 • API 607



When performing under extreme conditions such as high temperature and pressure, corrosive service or erosive conditions, metal seated ball valves should be your go-to choice. Ladish's fully automated lapping technology ensures each metal seated ball valve provides **reliable and consistent tight shut-off** to all recognized industry standards and process conditions.

- 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

End Markets Legend

R Refining

P Petrochemical

Po Power

C Chemical

Pa Pulp & Paper

M Mining

MEGA Seal

- Split-body - full or reduced port
- Uni-body - reduced port
- Available in exotic alloys & more common materials
- Used where elastomeric seats & seals are impossible to use or limit system, reliability



“S” Series - Severe Service

- S1 or S2 Series - full or reduced port
- “Captured Flange Seat” allows exact thermal matching for resistance to high temperatures
- Low emissions testing to API 641 & ISO 15848-1
- Certified to API 607 (Fire Tested)



Fusion T-Series

- TA Series - Split-body
- TZ Series - Uni-body
- Oven-fused carbide coating
- Precision grinding followed by 360 degree lapping
- Captured flange
- Integral stem stabilization



COATING TECHNOLOGY



If uncoated metal balls and seats are in direct contact, they would be damaged due to galling when operated and would never seal well. It is the ball and seat coatings that provide the sealing and allow the

valve to cycle without galling. These coatings are generally lapped for tight shut-off and must resist chemical and thermal attack from the process in which the valve is installed.

Some of the most common technologies are:

- **SPRAY & FUSED**
- **PLASMA COATING**
- **HP-HVOF PROCESS**

EASE OF AUTOMATION



Ladish utilizes a rigidly secured mounting bracket for actuators, worm gears 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 bushing in the bracket of the valve to guide the stem and ensure that the stem does not experience lateral movement if subjected to side loads during operation. If a side load occurs, it is absorbed outside the packing chamber and does not deform the packing. Deformation of packing caused by side loading is a major cause of stem leakage in quarter-turn valves.

GATE VALVES

Size Range: ¼ - 3"

Pressure Classes: 150 - 2500

Construction: Bolted or Welded Bonnet

GLOBE VALVES

Size Range: ½ - 2"

Pressure Classes: 150 - 2500

Construction: Bolted or Welded Bonnet, Y-Pattern

CHECK VALVES

Size Range: ½ - 2"

Pressure Classes: 150 - 4500

Construction: Bolted or Welded Cap, Y-Pattern

CRYOGENIC

Size Range: ½ - 2"

Pressure Classes: 150 - 1500

Construction: Bolted or Welded Bonnet

BELLOWS SEAL (GATE / GLOBE)

Size Range: ½ - 2"

Pressure Classes: 150 - 800, 1500

Construction: Bolted or Welded Bonnet

Y-PATTERN (GLOBE / CHECK)

Size Range: ¼ - 2"

Pressure Classes: 800 / 1500 / 1690 / 2690

Construction: Bolted or Welded Bonnet



IN-HOUSE SERVICES

We conduct in-house testing with NDE capabilities and a fully integrated machine shop. This allows for **quick deliveries and unconventional customer requirements to be met in a timely, quality controlled manner.** On-site testing capabilities include bellows testing per MSS SP-117, cryogenic testing, API-598 pressure testing and liquid dye penetrant testing. With low emission requirements as a basis, Smith Valves offers our complete line of forged products with API 624 certification.

Our facility carries a certified ISO-9001 quality system, CE-PED certification and an API 602 designation.

- RT / Radiographic Testing
- Liquid Dye Penetrant
- Magnetic Particle Examinations
- Other NDE including ferrite, hardness & PMI available

End Markets Served

R Refining	P Petrochemical	Po Power
N Nuclear	Pa Pulp & Paper	M Mining

FORGED STEEL VALVES



GATE VALVES

- Standard gate
- Extended body
- Bellows seal
- Cryogenic

GLOBE VALVES

- Standard globe
- Y-Pattern globe
- Cryogenic globe

CHECK VALVES

- Piston check
- Ball check
- Swing check
- Y-Pattern check



API 602 • B16.34

- Bolted & Welded Bonnet Available
- Full & Reduced Port Available
- Threaded, Socketweld, Buttweld, Flanged Ends Available
- API 622 & API 624 Qualified Packing for Low Fugitive Emissions



DIAMOND GEAR

COMPANY OVERVIEW



DIAMOND GEAR is a provider of high quality industrial worm gears, bevel gears, declutchable override gears, and gear accessories. With a large inventory and customization capabilities, Diamond Gear is able to service a wide range of industries such as chemical, petrochemical, refineries, maritime and oil & gas.



IN-HOUSE MOD SHOP



Located at the manufacturing facility in Houston, TX, the specialized shop includes a team of experienced machinists along with certified welders and valve fitters who use calibrated, state-of-the-art equipment to ensure an outstanding finished product and exceptional service.

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- **PRECISION MACHINING**
 - **WELDING**
 - **INDUSTRIAL VALVE MODIFICATION**
 - **TESTING**

PRODUCT HIGHLIGHTS

WORM GEARS

- Valve Type: Quarter Turn
- Torque Range: Up to 8MM in-lbs
- Body Material: Ductile Iron / Stainless
- Seal Material: HNBR / Silicone / Viton

BEVEL GEARS

- Valve Type: Multi-Turn
- Torque Range: Up to 32,000 ft-lbs
- Body Material: Ductile Iron / Stainless
- Seal Material: HNBR / Silicone / Viton

DECLUTCH GEARS

- Valve Type: Quarter Turn
- Torque Range: Up to 400,000 in-lbs
- Body Material: Ductile Iron
- Seal Material: HNBR / Silicone / Viton



ACCESSORIES

- Miter Box
- Spur Box
- Handwheels
- Mounting Hardware



MANUAL GEAR OPERATORS

WORM GEARS

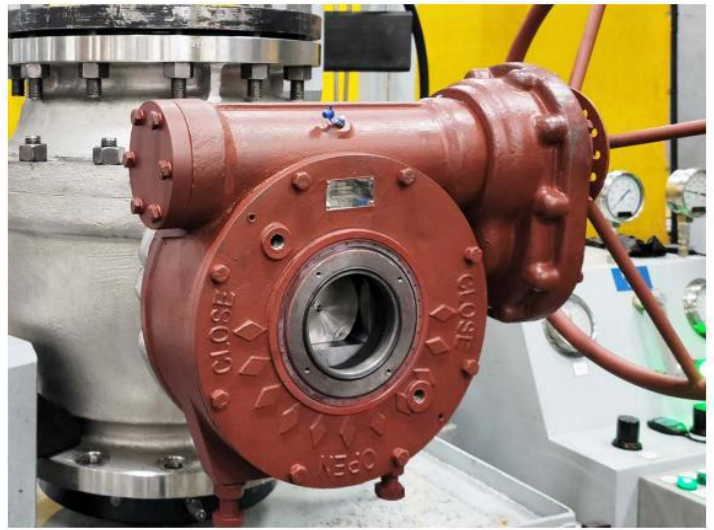
Valve Type: Quarter Turn
Torque Range: Up to 6MM in-lbs
Body Material: Ductile Iron
Seal Material: HNBR / Silicone / Viton

BEVEL GEARS

Valve Type: Multi-Turn
Torque Range: Up to 32,000 ft-lbs
Body Material: Ductile Iron
Seal Material: HNBR / Silicone / Viton

DECLUTCH GEARS

Valve Type: Quarter Turn
Torque Range: Up to 800,000 in-lbs
Body Material: Ductile Iron
Seal Material: HNBR / Silicone / Viton



Superior Product Offering Dedicated Service

OUR MISSION

AIT is a small business founded on small business values. This means our mission includes:

Superior Product Offerings

The strength of our relationships with our suppliers is based on trust and we pass that core value on to our customers. We ensure that there is transparent communication on every order and provide flexible, innovative solutions based on the specific need of each client.

Dedicated Service

Our service does not stop at the end of a sale. Working with AIT is a partnership and we are on stand-by to support our clients' business with not only continued product solutions, but fast turnaround shipping and same-day orders.





AIR TORQUE ACTUATORS

Located in Northern Italy, Air Torque is the leading manufacturer of pneumatic actuators. As the exclusive North American master distributor for Air Torque, AIT maintains a large inventory of rack & pinion and scotch yoke actuators, which allows us to meet quick deliveries. Between having the Air Torque line and top brands of solenoid valves, limit switches, and other actuator accessories, we can help meet deadlines with a high-quality & industry known brand.

SCOTCH YOKE

- Valve Type: Quarter Turn
- Torque Range: Up to 885,000 in-lbs for double acting, up to 531,000 in-lbs for spring return
- Body Material: Carbon Steel
- Seal Material: M-NBR
- Accessories: Limit Switches / Solenoids / Mounting Hardware
- Options: Manual Override, Fast-Acting
- Supply Medium: Air / Nitrogen / Sweet Gas

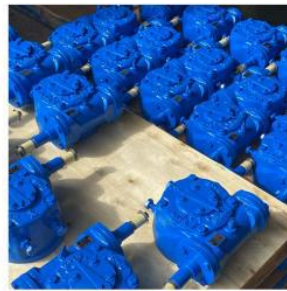


RACK & PINION

- Valve Type: Quarter Turn
- Torque Range: Up to 81,000 in-lbs for double acting, up to 36,000 in-lbs for spring return
- Body Material: Anodized Aluminum / Stainless Steel
- End Cap Coating: 3 different protection levels
- Seal Material: HNBR / Silicone / Viton
- Accessories: Limit Switches / Solenoids / Mounting Hardware
- Options: Fast Acting / 180° Travel / Partial Stroke



EXCLUSIVE NORTH AMERICAN
AIR TORQUE ACTUATOR DISTRIBUTOR



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