



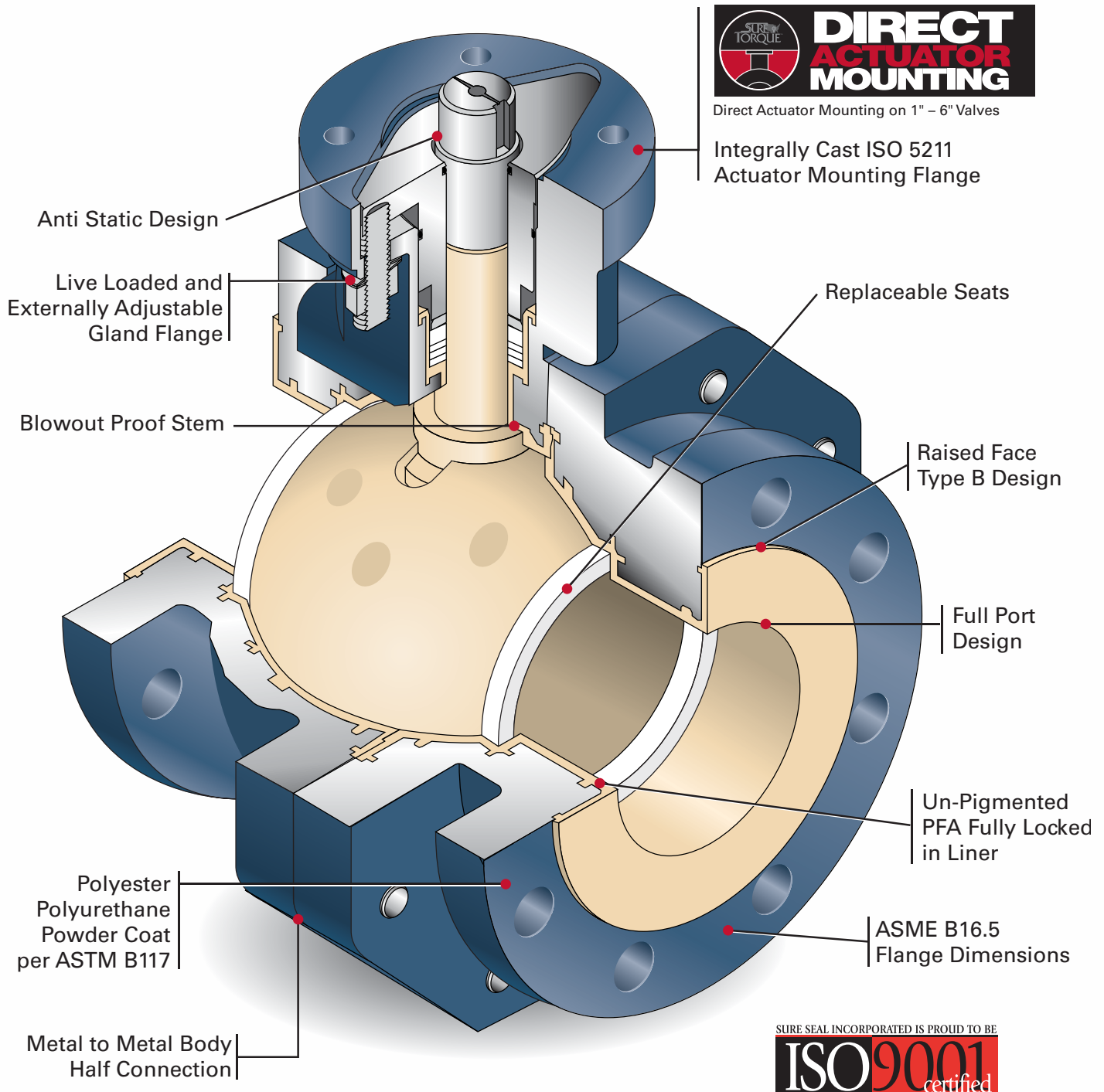
Sure Seal Full Port Lined Ball Valve

Sure Seal's LBV series lined ball valves are strictly produced under a company committed, statistical quality assurance process to assure defect-free products that are delivered to our customers on time. All valves are manufactured utilizing the latest computer aided production methods and molding technology, guaranteeing control of the manufacturing process and reduction of rework. Sure Seal, part of OPW Fluid Transfer Group, stands behind all of its industrial valve products sold and serviced.

Sure Seal's LBV Series Lined Ball Valve

DESIGN CRITERIA

All Sure Seal LBV Series 100 Ball Valves conform to the following specifications:
ASME B16.5, ASME B16.10, ASME B16.42, ISO 5211 and MSS SP-25.

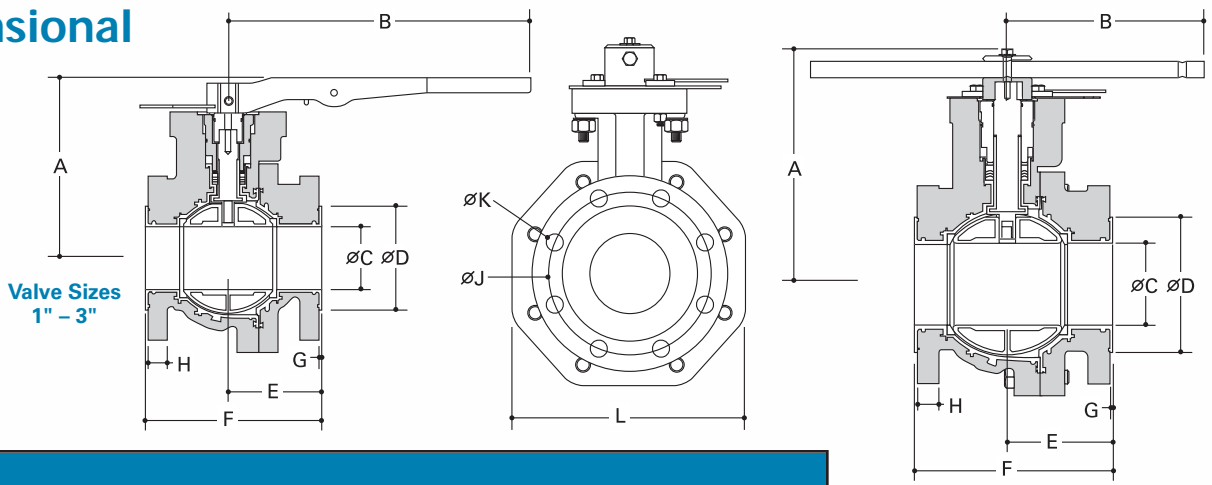


Sure Seal's Mission

Sure Seal specializes in the design and manufacture of industrial valves and components for any application requiring the safe and efficient processing, movement, control and storage of dry bulk and liquid materials. Sure Seal products are used in the chemical, food processing, pulp and paper, waste water, high-purity liquids, brewery, steel processing, marine barge, ship building, dry bulk transportation, and pharmaceutical industries, among others, and for pneumatic tank trailers, rail cars as well.

Known around the world for their quality, reliability and exceptional performance, Sure Seal products include: butterfly valves, lined ball valves, actuators, aeration systems, relief valves, hopper tees, couplers, bellows seal valves, high-purity butterfly valves, sample valves and sanitary valves.

Dimensional Data

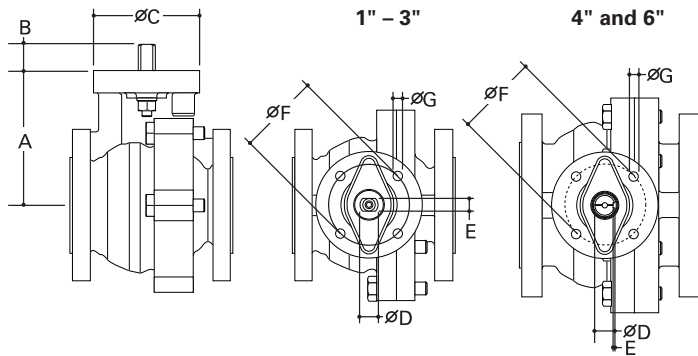


Valve Size	A	B	C	D	E	F	G	H	J	K	K1	L
1"	4.88	10.31	.91	2.00	2.73	5.02	.09	.52	3.13	.63	4	4.25
1.5"	5.75	10.31	1.42	2.88	3.50	6.51	.09	.63	3.88	.63	4	5.00
2"	6.15	10.31	1.85	3.63	3.74	7.02	.12	.69	4.75	.75	4	5.81
3"	8.10	13.75	2.85	4.75	4.22	8.02	.12	.82	6.00	.75	4	9.44
4"	10.75	9.00	3.70	6.19	4.76	9.02	.12	1.01	7.50	.75	8	10.63
6"	11.92	12.00	5.70	8.13	5.26	10.52	.12	1.07	9.50	.88	8	13.00

Valve Sizes 4" and 6"

NOTE: All dimensions are in inches, K1 is number of holes per flange

Actuator Mounting Dimensions



Valve Size	ISO Flange	A	B	C	D	E	F	G
1"	F07	3.69	1.13	3.56	.750	.500	2.76	.35
1.5"	F07	4.56	1.13	4.00	.750	.500	2.76	.35
2"	F07	4.97	1.13	4.00	.750	.500	2.76	.38
3"	F10	6.68	1.31	5.25	.875	.625	4.02	.44
4"	F10	8.48	.81	5.25	1.125	.125	4.02	.44
6"	F12	9.66	.81	6.00	1.125	.125	4.02	.56

Ordering Information

SAMPLE ORDERING CODE

LBV-1.5-D-P-P-P-05-EP-F

- Type of Valve
- Size
- Body Material
- Body Lining
- Ball
- Stem
- Operator
- Accessories (if applicable)
- Options (if applicable)

SIZE	BODY MATERIAL	BODY LINER
1"	D A395 Ductile Iron	A PFA
1.5"	· UNS F32800	X Other
2"	· ASTM A395	
3"	· ASME SA395	
4"	S CF8M Stainless Steel	
6"	· UNS J92900	
	· ASTM A351	
	· ASME SA351	

BALL

- P PFA Lined Carbon Steel
- S PFA Lined 316 Stainless Steel

STEM

- P PFA Lined Duplex Stainless Steel CD4MCu

OPERATOR

- 00 Bare Stem
- 01 Lever Locking Handle
- 02 Manual Gear
- 03 Double Acting Pneumatic Actuator
- 04 Fail Open Pneumatic Actuator
- 05 Fail Closed Pneumatic Actuator
- 06 Electric Actuator
- 07 Hydraulic Actuator

ACCESSORIES

- P Pneumatic Positioner
- EP Electro Pneumatic Positioner
- PS Proximity Switch Box
- LS Micro Limit Switches

OPTIONS

- S Solenoid Valve
- F Filter Regulator W/ Gauge
- M Manual Override

For additional options and materials contact your nearest Sure Seal distributor.

DIRECT ACTUATOR MOUNTING

The ISO 5211 mounting flange allows the direct mounting of actuators; thus eliminating costly automation hardware.

SEPARATE BALL AND STEM

A separate lined ball and stem allows the ball to float. This prevents side loading which creates stem leaks. Some manufacturers use a one piece ball and stem that fail under high pressure situations. The Series 100 valve design prevents this from occurring.

ANSI B16.10 FACE-TO-FACE

Standard take out dimensions allows the Series 100 valve to replace any standard ball, plug or gate valve.

METAL-TO-METAL BODY JOINT

The primary seal is a soft joint between the body halves. In addition to this seal there is a metal-to-metal body joint that prevents possible leakage from temperature changes or line stresses. Damage to the seal can not be caused by over tightening.

SERVICE CONDITIONS

The Series 100 valve can be used in service ranging from full vacuum up to 250 psi.

LOCKED IN LINER

Sure Seal's PFA liner is locked into machined dovetails and slots in the body halves and cast holes in the ball. This design prevents liner break down and blow out in high pressure or vacuum situations that include high temperature ranges.

PRE-LOADED SEATS

A true floating ball design does not seal well at low pressure. The Series 100 valve utilizes interference between the ball and the seats, which under low-pressure, results in a tight shut-off.

LIVE LOADED GLAND FLANGE

The packing is live loaded with Belleville spring washers. It is also externally adjustable so that even with an actuator attached the packing can be easily tightened.

LOCKABLE HAND LEVER

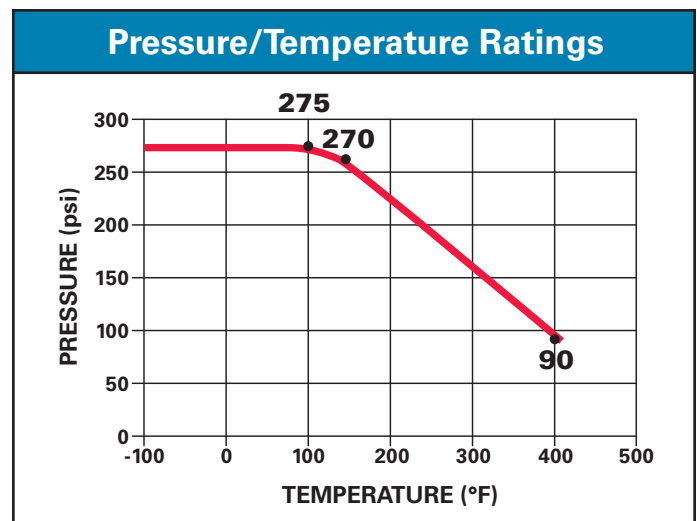
The Series 100 valve has a lockable hand lever which comes standard. This allows user to lock valve in open or closed position. **Sure Seal LBV Series valves can be supplied with an optional hand lever.**

Torque Values*			
Valve Size	Torque**	Cv	Approx. Wt. (lbs)
1"	120	55	14
1.5"	167	215	22
2"	298	290	32
3"	723	672	61
4"	1212	1410	107
6"	1809	2990	160

**Actual operating torques will be lower.*

When sizing actuator, multiply torque values by 1.25 safety factor.

***Torque values are in Inch-Pounds.*



Quality Assurance

Sure Seal's LBV series lined ball valves are strictly produced under a company committed, statistical quality assurance process to assure defect-free products that are delivered to our customers on time. All valves are manufactured utilizing the latest computer aided production methods and molding technology, guaranteeing control of the manufacturing process and reduction of rework. Each valve is individually tested in accordance with the API 598 and EN 12266-1 specifications and is spark tested with 30,000 volts to assure lining integrity. Each valve is individually designed and tested using applicable standards as a minimum requirement. A PMI process is performed on all critical components allowing total identification. Valves are also subject to visual and dimensional examinations as well as functional tests. Upon successfully completing all testing, each valve is assigned a stainless steel serial numbered identification plate that quickly identifies the valve and assures complete traceability. Mill Test Certificates are available upon request.

Sure Torque's Series ST Actuators



Sure Torque's Series ST is a proven winner in today's market. With over 14 sizes and 90°, 120°, 135°, 180°, 240° and 270° rotation, the Sure Torque actuator can accommodate any situation.

All Sure Torque actuators can be easily field converted from double acting to spring return by inserting the correct number of spring cartridges to the double acting unit, thus eliminating bulky housing extensions, saving weight and space. Specially designed, pre-loaded self-contained spring cartridges are completely contained before end cap screws release, ensuring the safest installation and removal.

The Sure Torque Series ST is an uncomplicated compact design. Internal porting eliminates the need for costly, external tubing. Accessory mounting is to

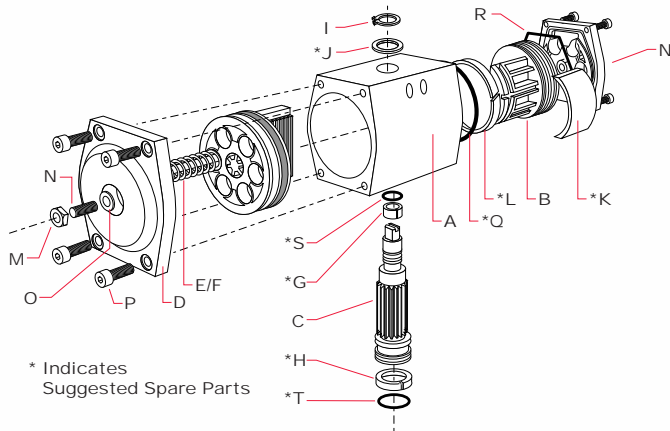
NAMUR standards. Solenoid mounting to NAMUR specifications is available, and is standard on sizes STU148 and above.

The Sure Torque Series ST is available with a variety of accessories. Direct mount solenoids are available in NEMA 4, 7, and 9 in standard and special voltages. Limit switches are available in NEMA 4, 7 and 9. Positioners can be supplied to receive 3–15 PSI or 4-20 mA input control signals. Declutchable manual gear overrides are available for all size actuators.

The actuator drive side directly mounts to Sure Seal Butterfly Valves. Available in ISO 5211 Dimensional Standards to meet your needs.

Safe, compact, versatile, rugged, long-lasting and economical. The Sure Torque Series ST is the best choice for your actuation needs. Call or write for further information.

Series ST Materials



Qty.	Description	Material	
A	1	body	anodized aluminum polyester epoxy coating
B	2	piston**	die cast aluminum
C	1	pinion	E.N.P. ASTM B656 Steel
D	2	end cap**	epoxy coated aluminum
E	Max 12	spring	epoxy coated steel
F	Max 12	spring cartridge	Delrin/brass
G	1	upper pinion bearing	Delrin 500
H	1	lower pinion bearing	Delrin 500
I	1	circlip	E.N.P. ASTM B656 Steel
J	1	pinion washer	Delrin 500
K	2	piston skate	Delrin 500
L	2	piston guide ring	Delrin 500
M	2	sealing nut	304 Stainless Steel
N	2	travel stop	304 Stainless Steel
O	2	travel stop O-ring	BUNA N
P	8	end cap screw	304 Stainless Steel
Q	2	piston O-ring	BUNA N
R	2	end cap O-ring	BUNA N
S	1	upper pinion O-ring	BUNA N
T	1	lower pinion O-ring	BUNA N

**ST10-ST20 utilize polyamide materials

Series ST Accessories

Limit Switches



Sure Seal's Watchman VPT Series are ruggedly designed to meet industrial process requirements for reliable cost effective feedback systems. Sure Seal's Sentinel VPT Series are ruggedly designed to keep up with today's advanced process control technology.

The Sentinel VPT is an accurate, versatile valve position transmitter.

Positioners

The Series SP/SE from Sure Torque is designed and manufactured to offer years of trouble free and economical operation. Every component has been field tested and field proven to exceed your expectations of performance and reliability. The Series SP/SE simply outperforms every other positioner in its class.



Solenoids

Sure Seal Solenoids are constructed with quality Anodized Aluminum for the body, phosphate treated black steel springs, copper shading coil and stainless steel core and core tube. We are committed to providing the strength and performance you demand.

OPW Fluid Transfer Group (OPWFTG), part of Dover Corporation (NYSE:DOV), is comprised of market-leading operating companies, each dedicated to designing, manufacturing and distributing world-class solutions for the safe handling and transporting of hazardous bulk products. In addition to these companies, OPWFTG has manufacturing plants in North America, Europe, Brazil and India; and sales offices in Singapore, and China.

Throughout the world, OPWFTG companies are hard at work ensuring the safe processing, loading, transporting and unloading of hazardous bulk products and safeguarding against costly petroleum and chemical spills, tank overfills and fugitive vapor emissions. Whether your need is in the chemical plant, at the terminal loading rack, or outfitting a fleet of rail tank cars, cargo tanks or dry-bulk trailers, OPWFTG systems set the standard for safety, performance and peace-of-mind assurance in the most rigorous and demanding applications. If the safe, profitable handling of hazardous liquids and dry bulk commodities such as gasoline and diesel, chlorine, chlor-alkali products, LPG, acids, cement, flour and starch, among others, is your concern, trust OPWFTG.

EXPERT SOLUTIONS FOR THE SAFE HANDLING & TRANSPORTING OF HAZARDOUS BULK PRODUCTS

	Applications	Processing	Load	Transporting		Unload
PETROLEUM	<ul style="list-style-type: none"> Gasoline Ethanol Alcohols Fuel Oil LPG Diesel Biodiesel 	<ul style="list-style-type: none"> Bellow Sealed Valves Sample Valves Lined Ball Valves Lined Butterfly Valves Industrial Valves ISO Rings Sight Flow Indicators Globe Valves Swivels Dry Disconnects 	<ul style="list-style-type: none"> Loading Arms Couplers Rack Monitors Dry Disconnects API Coupler Swivels 	<ul style="list-style-type: none"> Cargo Tanks Manholes Vapor Vents Electronics Internal Valves API Adaptors Sealed Parcel Pneumatic Controls Manifold Systems 	<ul style="list-style-type: none"> Rail Tank Cars Pressure Relief Valves Plug Valves Ball Valves Level Measurement Autoloks Kamvaloks Dryloks Rupture Disc Devices Angle Valves 	<ul style="list-style-type: none"> Drylok Couplers Adaptors Delivery Elbows Vapor Recovery Elbows Swivels
CHEMICALS	<ul style="list-style-type: none"> Chlorine Acids & Bases Amines Anhydrous Ammonia Propylene Butadiene Hazardous Liquids 	<ul style="list-style-type: none"> Bellow Sealed Valves Sample Valves Lined Ball Valves Lined Butterfly Valves Industrial Valves ISO Rings Sight Flow Indicators Globe Valves Swivels Dry Disconnects Quick Disconnects Epsilon 	<ul style="list-style-type: none"> Loading Arms Autoloks Kamvaloks Dryloks Loading Manholes Valves Actuators Swivels Epsilon 	<ul style="list-style-type: none"> Cargo Tanks Manholes Vapor Vents Electronics Internal Valves Sealed Parcel Epsilon 	<ul style="list-style-type: none"> Rail Tank Cars Safety Valves Plug Valves Ball Valves Level Measurement Autoloks Kamvaloks Dryloks Rupture Disc Devices Angle Valves Epsilon 	<ul style="list-style-type: none"> Loading Arms Autoloks Kamvaloks Dryloks Valves Actuators Safety Breakaways Swivels Epsilon
DRY BULK	<ul style="list-style-type: none"> Cement Flour/Starch Pharmaceuticals 	<ul style="list-style-type: none"> Industrial Valves Sight Flow Indicators Butterfly Valves Swivels 	<ul style="list-style-type: none"> Loading Arms Aerators Hatch Covers Swivels 	<ul style="list-style-type: none"> Cargo Tanks Manholes Check Valves Hopper Tees Butterfly Valves Aerators Weld Rings 	<ul style="list-style-type: none"> Rail Cars Manholes Hatches Access Ports Check Valves Hopper Tees Butterfly Valves Aerators Pressure Vacuum Valves 	<ul style="list-style-type: none"> Aerators Butterfly Valves Tank Hatches Pressure Relief Vacuum Relief Temperature Monitoring
INDUSTRIAL/GENERAL	<ul style="list-style-type: none"> Food Processing Pharmaceuticals Waste Water High-Purity Liquids Breweries Pulp and Paper Steel Processing 	<ul style="list-style-type: none"> Lined Ball Valves Lined Butterfly Valves Sample Systems Sight Flow Indicators ISO Rings Dry Disconnects Swivels Quick Disconnects High-Performance Butterfly Valves Epsilon 	<ul style="list-style-type: none"> Loading Arms Couplers Rack Monitors Swivels Dry Disconnects Quick Disconnects Butterfly Valves Epsilon 	<ul style="list-style-type: none"> Cargo Tanks Manholes Vapor Vents Electronics Weld Rings Hopper Tees Pneumatic Controls Sealed Parcel Dry Disconnects Epsilon 	<ul style="list-style-type: none"> Rail Tank Cars Safety Valves Plug Valves Ball Valves Level Measurement Autoloks Kamvaloks Dryloks Rupture Disc Devices Angle Valves Epsilon 	<ul style="list-style-type: none"> Loading Arms Couplers Rack Monitors Swivels Dry Disconnects Quick Disconnects Butterfly Valves Epsilon

Chemical & Industrial Processing Market Unit

- Food Processing
- Chemical Plants
- Petroleum Loading Stations
- Steel Processing, Pulp & Paper
- Waste Water Treatment
- Pharmaceutical
- Breweries
- High-Purity Liquids
- Ethanol Processing
- Biodiesel Processing

Rail Market Unit

- Pressure & General Purpose Rail Tank Cars
- Dry Bulk Rail Cars
- Ethanol Rail Tank Cars
- Diesel
- Biodiesel

Cargo Tank Market Unit

- Gasoline & Diesel
- Dry Bulk
- Ethanol
- Biodiesel



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