

MIDLAND™

PART OF OPW FLUID TRANSFER GROUP

A DOVER™ COMPANY



PRODUCTS for CHLORINE SERVICE RAILCARS

For the Safe Loading, Transport and Unloading
of Hazardous Materials



Midland's Mission

Since 1951, Midland has been dedicated to supplying the most reliable valves and level-measurement devices for the railroad market. With an innovative approach to engineering simple designs that meet the most demanding needs, Midland continuously leads the way in shaping the technological evolution of railroad tank car transportation equipment that's safe, reliable and easy to use and maintain.

A Legacy of Quality

Five decades of real-world experience have resulted in a manufacturing company that anticipates the industry's needs and delivers superior products that help protect workers and the environment. This is Midland's legacy of quality. It starts with intuitive product development that answers the needs of the market without compromise, and continues through Midland's innovative engineering design process.

Precision lean manufacturing, using only the highest quality materials, is employed in a flexible, world-class production environment, assuring on-time delivery of your product. Midland's rigid quality-control standards, utilizing statistical process control, promise reliable product performance. Every valve and level measurement device is thoroughly tested. After testing, critical components are serialized prior to shipping, making them easily traceable for life.

Midland is ISO 9001:2008 certified and an AAR Category F registered facility.

MIDLAND™

Enhanced Fittings Package for the Next Generation in Railroad Tank-Car Protection for Railcars in Chlorine Service

For more than 25 years, Midland has been an industry leader, providing high-quality valves for the safe transportation of Chlorine by rail, truck and barge. In that time, Midland Chlorine valves have become the standard valves for the North American Chlorine-transportation industry. Midland Chlorine valves are manufactured using corrosion-resistant materials proven to better withstand all of the operating environments typically found in the transportation of Chlorine.

Utilizing the more than 50 years of Midland expertise and input from a broad range of customers, our new Enhanced Fittings Package has been designed to minimize the number of potential leak paths. The enhanced fittings design was developed using the latest design techniques, including FMEA analysis, 3D modeling, Root Cause Analysis, and other Six Sigma processes. This revolutionary design will help to reduce the number of NARs



in Chlorine service, as well as provide greater protection from product loss in the event of rollover damage to the protective housing in an accident. The Enhanced Fittings Package is designed with all primary seals located at or below the surface of the

pressure plate, thus reducing the risk of product loss to the atmosphere in the event of catastrophic damage to the fittings. The new Enhanced Fittings Package also meets the requirements in proposed rulemakings from both the FRA (Federal Railway Administration) and AAR (Association of American Railroads) for improved packaging of Chlorine shipments.

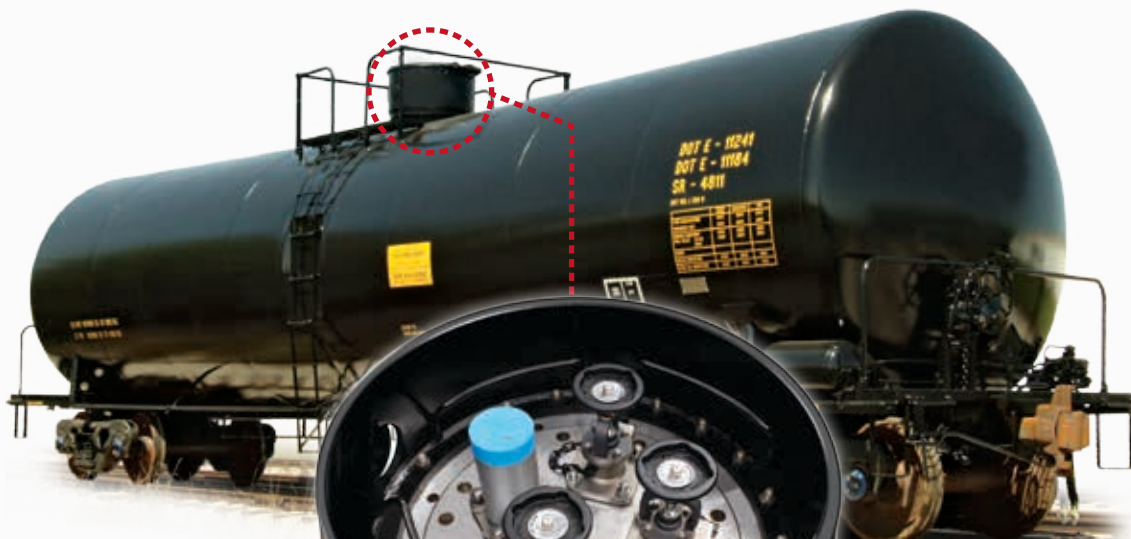
In addition to utilizing some of the latest design techniques to develop this new valve package, Midland worked very closely with a variety of railroads, regulators, Chlorine shippers, car owners and car manufacturers. By reaching out and working hand-in-hand with the companies that are manufacturing the newest railcars, as well as the end-user of the products, Midland has developed a new valve package that will set the standard for the safe transportation, loading and unloading of Chlorine for years to come.

Midland's dedication to customer responsiveness is a big part of its success. Its pride and commitment to consistently providing innovative solutions, knowledgeable technical and customer support, and other value-added services to customers go above and beyond expectations. Call today, specify Midland, and reduce your risk during the loading, transportation and unloading of railcars in Chlorine service.



Learn more about NARs. Go to midlandmfg.net and follow the link to <http://nar.aar.com>

Advanced Chlorine Railcar Assembly



- Designed to contain Chlorine lading if all valves are removed from the railcar in an accident
 - + All primary seals designed to be below the surface of the pressure plate

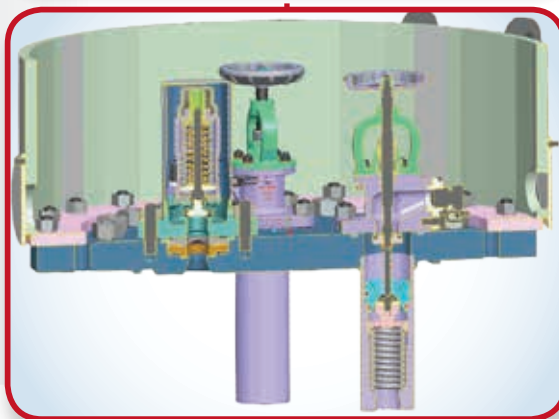
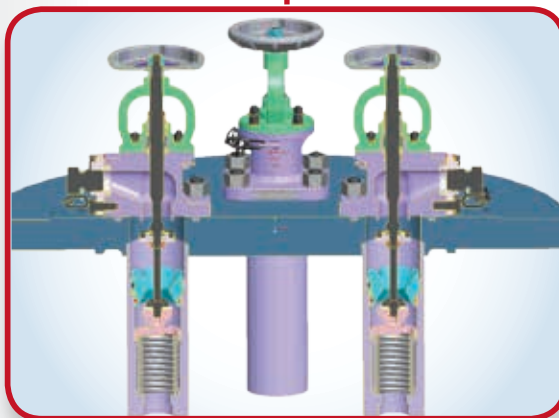
- The valves use superior corrosion-resistant metals, including Hastelloy® C, Stellite 21, Monel® and Inconel® X750

- Designed to be used with increased-diameter protective housings
 - + Increases security by securing bolting to the protective housing
 - + Creates more room for personnel to operate the valves

- Reduces total angle valves to three
 - + Two liquid valves and one vapor valve
 - + Eliminates one additional opening in the tank

- Can utilize current load-rack configuration or change to vertical loading and unloading
 - + Compatible with existing ESD (Emergency Shut Down) actuator systems

Next Generation Technology



- Valves can be capped with the existing Midland ERK Kit and Chlorine Institute C-Kit
- Positive action between the check valve and the angle valve
 - + New check valve eliminates accidental checking under offloading
 - + New angle valve allows verification of the integrity of the check valve seal
- PRV (Pressure Relief Valve) utilizes a tell-tale to allow verification of rupture-disc integrity
- Ease of maintenance
 - + PRV and angle valves can be removed for testing and maintenance without cleaning the car
 - + No need to remove the pressure plate to remove and inspect the check valve; all internal components can be removed through the pressure plate
- Improved flow characteristics for loading and unloading railcars

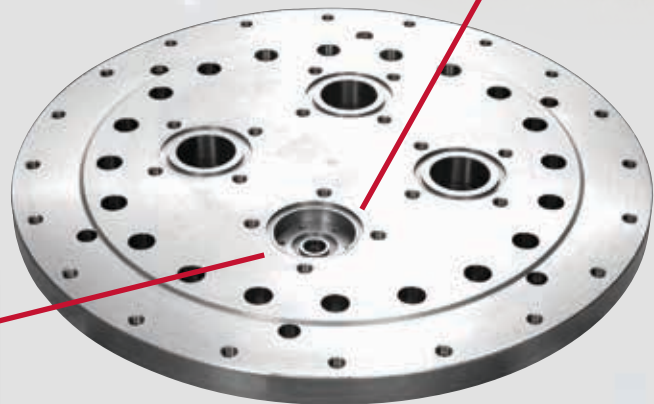
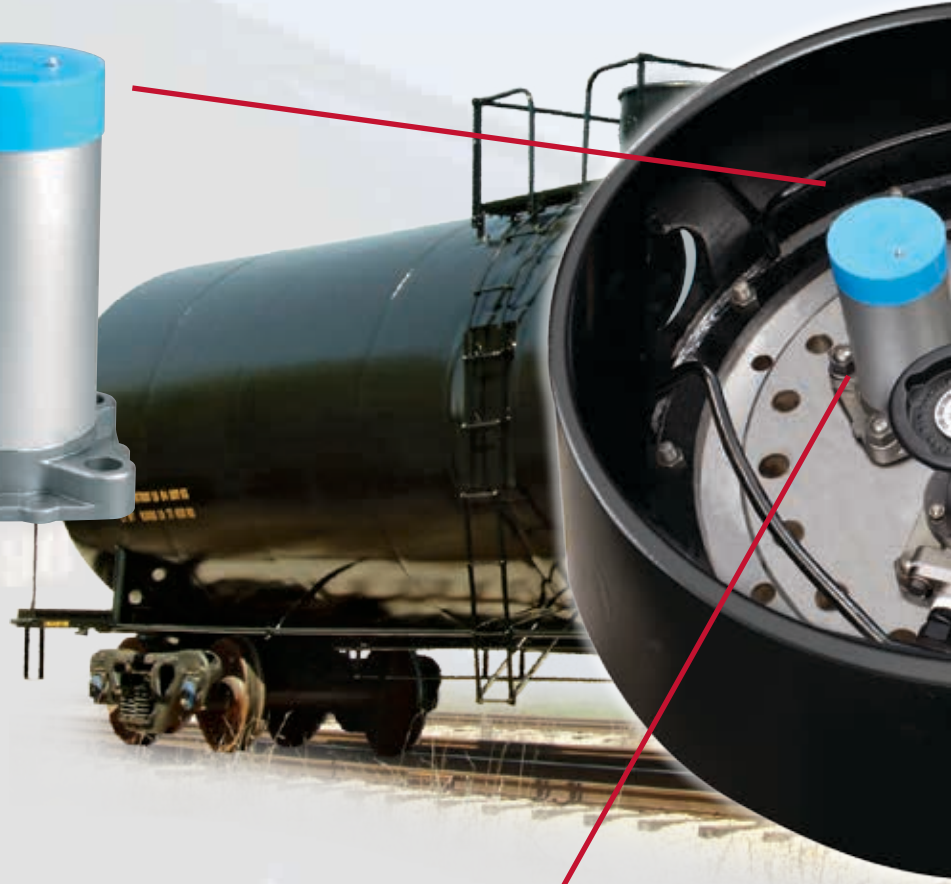
Call 847-677-0333 or visit www.midlandmfg.net for more information.

Midland Chlorine

Midland's AAR Approved Next Generation Enhanced Fittings package technology and the best available materials of construction

A-14378-ML-VL Pressure Relief Valve

- Redundant seals to atmosphere
 - + Soft-seated valves to ensure a more positive and consistent seal
- Rupture disc is embedded in the pressure plate
 - + Rupture disc "sandwich" and the pressure-relief device are independently mounted allowing the PRV to be removed for service without releasing any commodity to the atmosphere
- Made with Hastelloy® C and Monel® components
- New valve design based upon the current, proven Midland design for Chlorine service
- Cappable with both the Midland ERK Kit and the Chlorine Institute C-Kit
- The overall height of the PRV has been lowered to fit in the lower-profile protective housing

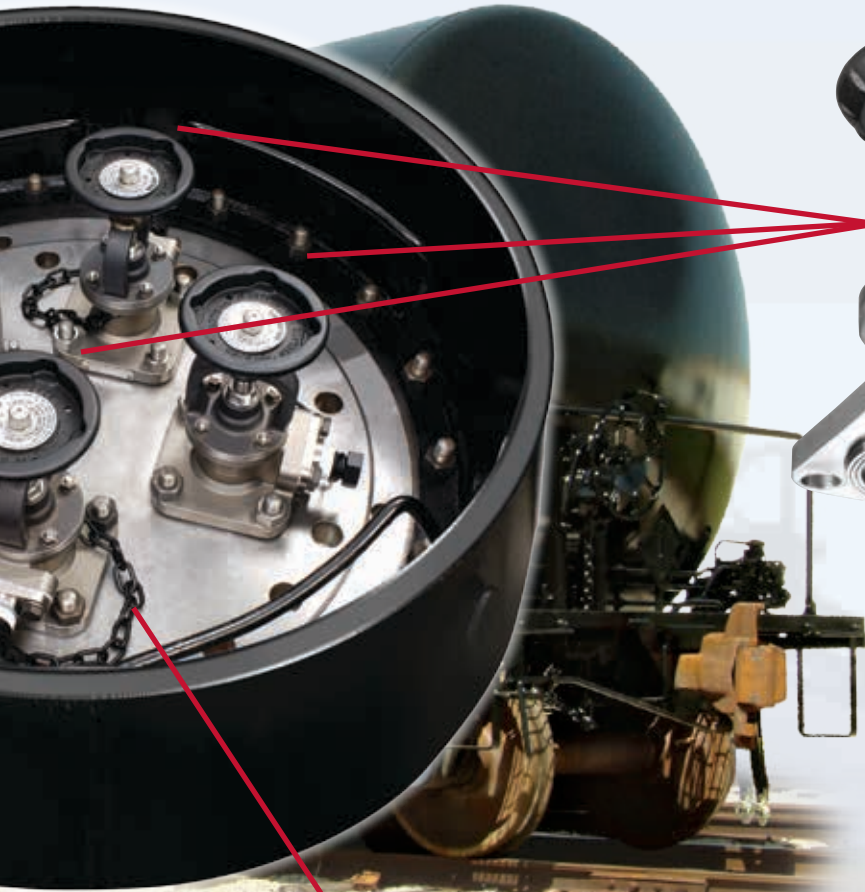


9100-CS Pressure Plate

- Approved in conjunction with the pressure relief valve design
- Standard 18" design ideal for retrofitting existing tank cars
- Design retains liquid valve location on the longitudinal centerline of the railcar

Railcar Products

helps reduce and eliminate NARs through superior design, proven construction for dry and wet Chlorine applications.



A-718C-ML Angle Valve

- Standard height valve body ideal for replacing existing Midland A-713, Eagle and ACF Chlorine service valves
- Operates the same as current angle valves
- Soft-seated valve for better sealing
- Triple O-ring protection
- Teflon coated Monel® pipe plug and Monel® outlet flange prevent thread galling
- Cappable with current Midland ERK Kit and the Chlorine Institute C-Kit
- Can use current loading and unloading equipment + Maintains the current A-713 hand wheel for connection to actuator systems
- Made with Hastelloy® C for improved corrosion resistance associated with moisture and humidity in Chlorine applications

A-180-ML-TG Check Valve

- Check valve provides primary seal to atmosphere
- Soft-seat design for positive shutoff
- Guided design of the seat retainer ensures the plug creates a positive seal every time
- Monel® body, Hastelloy® C, Inconel® X750 and Stellite® 21 components for better corrosion resistance
- Plug design creates improved flow characteristics over current designs
- Live loaded check valve provides constant force on the plug to ensure sealing integrity; also eliminates excess flow valve operation which can check during unloading
- All components can be removed through the top of the pressure plate, reducing the work necessary to maintain the valve for ease of maintenance

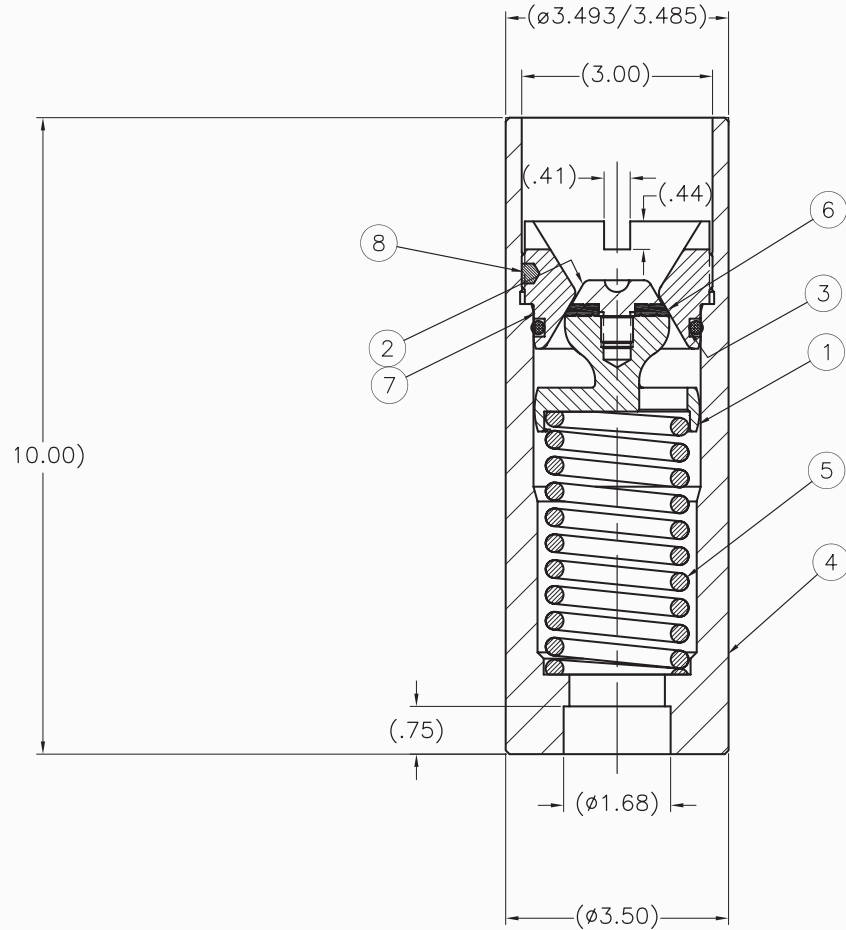


Ordering Specifications

A-180-ML-TG Check Valve

A-180-ML-TG Check Valve

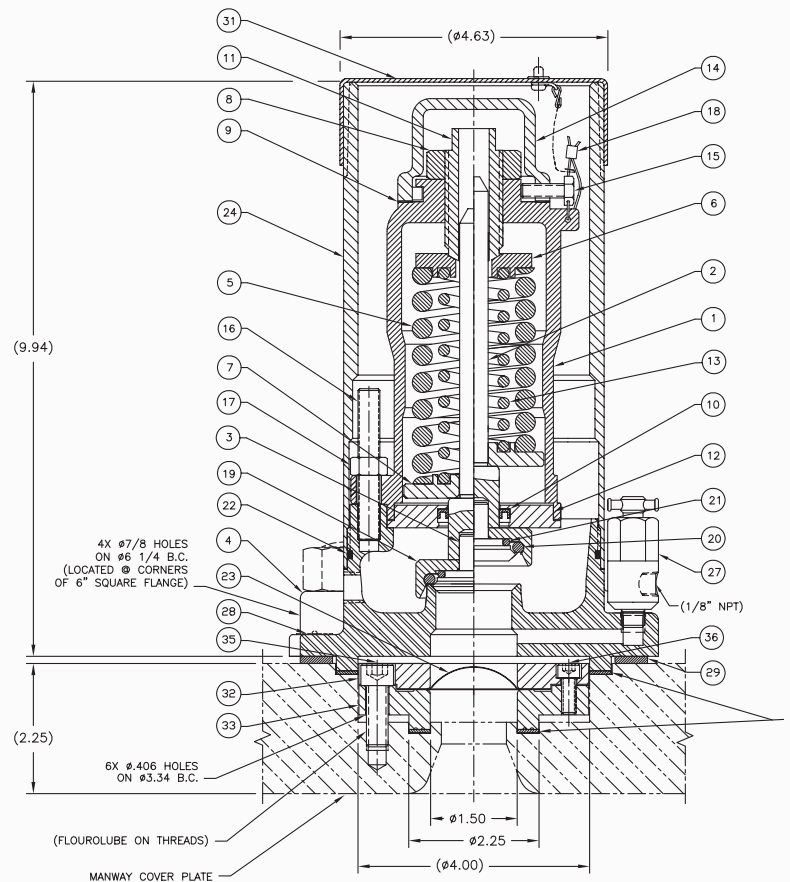
ITEM	DESCRIPTION
1	GUIDE
2	RETAINER
3	SEAT
4	BODY
5	SPRING
6	SEAT SEAL
7	O-RING (-331)
8	INSERT



A-14378-ML-VL Pressure Relief Valve

ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	TOP GUIDE	22	FLUE "O" RING
2	STEM	23	RUPTURE DISC
3	PLUG	24	FLUE
4	BODY	25	
5	OUTER SPRING	26	
6	FOLLOWER	27	1/8" VALVE
7	GUIDE	28	NAMEPLATE
8	TOP NUT	29	FLANGE GAP FILLER
9	TOP GASKET	30	
10	SHAFT SEAL	31	PROTECTIVE CAP/ CHAIN
11	ADJUSTIN SCREW	32	RUPTURE DISC HOLDER - TOP FLANGE
12	SEAL RETAINER	33	RUPTURE DISC HOLDER - BOTTOM FLANGE
13	INNER SPRING	34	
14	CAP	35	HEX SOCKET CAP SCREW - MOUNTING
15	SEAL SCREW	36	HEX SOCKET CAP SCREW - RUPTURE DISC HOLDER
16	STUD		
17	NUT		
18	WIRE SEAL		
19	RETAINER		
20	SEAT "O" RING		
21	PLUG "O" RING		

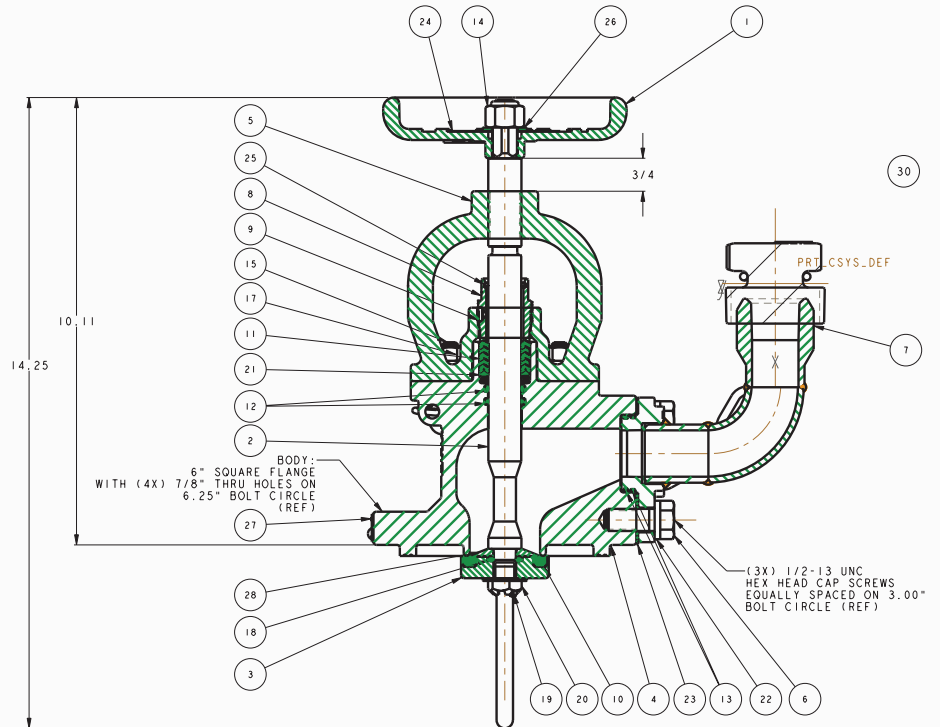
A-14378-ML-VL Pressure Relief Valve



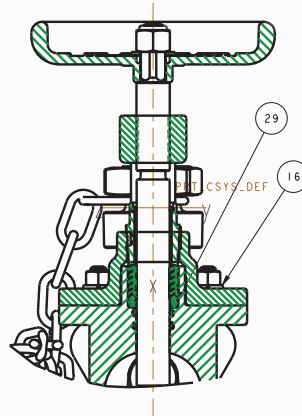
A-718C-ML Angle Valve

A-718C-ML Angle Valve

ITEM	DESCRIPTION
1	HAND WHEEL
2	STEM
3	SEAL RETAINER
4	BODY
5	1" BONNET
6	CAP SCREW
7	1" COUPLING WELDMENT ASSY (1)
8	PACKING SCREW WITH INSERT
9	PACKING INSERT
10	SEAT SEAL-V V
11	PACKING RING ASSY
12	O-RING
13	O-RING
14	LOCK NUT
15	STUD
16	3/8" SPLIT LOCK WASHER
17	HEX NUT
18	O-RING
19	RETAINING PIN
20	SLOTTED NUT
21	MALE PACKING ADAPTER
22	1/2" SPLIT LOCK WASHER
23	OUTLET FLANGE GASKET
24	INSTRUCTION PLATE
25	WIPER
26	WASHER
27	NAMEPLATE
28	RETAINER SEAL WASHER
29	PACKING SPRING
30	1" PIPE PLUG ASSEMBLY

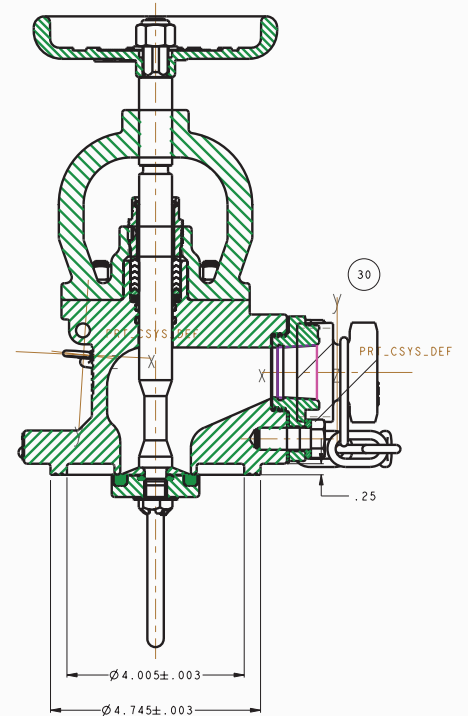


Closed Position of Angle Valve



Section AA

A-718C-ML Angle Valve
Horizontal Loading Option



NOTES:

- FOR HORIZONTAL LOADING OPTIONS, SPECIFY A-718C-ML.

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 	Cargo Tanks <ul style="list-style-type: none"> Manholes Vapor Vents Electronics Internal Valves API Adaptors Sealed Parcel Pneumatic Controls Manifold Systems 	Rail Tank Cars <ul style="list-style-type: none"> Pressure Relief Valves Plug Valves Ball Valves Level Measurement Autoloks Kamaloks 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 Kamaloks Dryloks Loading Manholes Valves Actuators Swivels Epsilon 	Cargo Tanks <ul style="list-style-type: none"> Manholes Vapor Vents Electronics Internal Valves Sealed Parcel Epsilon 	Rail Tank Cars <ul style="list-style-type: none"> Safety Valves Plug Valves Ball Valves Level Measurement Autoloks Kamaloks Rupture Disc Devices Angle Valves Epsilon 	<ul style="list-style-type: none"> Loading Arms Autoloks Kamaloks 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 	Cargo Tanks <ul style="list-style-type: none"> Manholes Check Valves Hopper Tees Butterfly Valves Aerators Weld Rings 	Railcars <ul style="list-style-type: none"> 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 	Cargo Tanks <ul style="list-style-type: none"> Manholes Vapor Vents Electronics Weld Rings Hopper Tees Pneumatic Controls Sealed Parcel Dry Disconnects Epsilon 	Rail Tank Cars <ul style="list-style-type: none"> Safety Valves Plug Valves Ball Valves Level Measurement Autoloks Kamaloks 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 Railcars
- Ethanol Rail Tank Cars
- Diesel
- Biodiesel

Cargo Tank Market Unit

- Gasoline & Diesel
- Dry Bulk
- Ethanol
- Biodiesel

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