



*Pioneer*  
INDUSTRIAL CORPORATION

# Pioneer Industrial Corporation

## Midstream Solutions 2022





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Summary

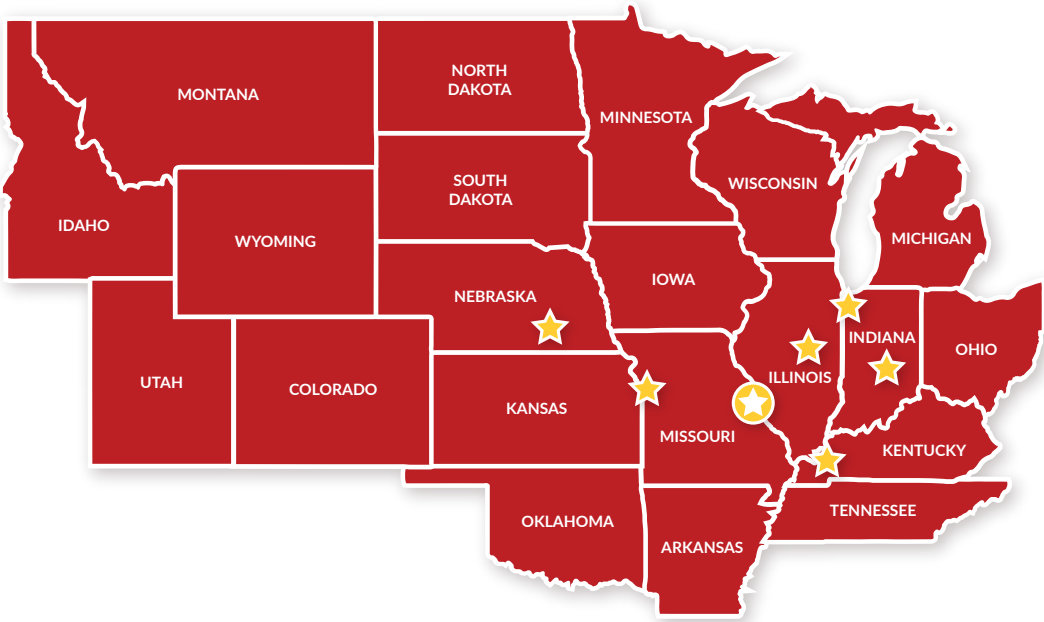
Pioneer Industrial is the premier midstream valve and actuation partner in North America. With over 30+ plus years in the valve industry, we have the experience and intrinsic knowledge to provide engineered solutions and service to the midstream market.

Pioneer partners with market leading equipment manufacturers for all of you midstream needs. These products are used throughout the midstream pipeline and terminal process. We provide fluid sealing gaskets and bolts, valve and instrumentation packages, pressure relief devices, rotating equipment, and processing monitoring. With our extensive portfolio of products, we can provide a wide variety of engineered quality solutions to our clients.

Pioneer also services everything we provide. We are authorized for actuator repair, control valve and safety valve repair, API 6A and 6D valve repair, among many other accreditations. Our goal is to be our midstream partners’ first and only call. We provide the products and services to keep our partners operating at their best!

Capabilities

- Actuator Supply & Repair
- Control Valve Supply & Repair
- API 6A/6D Repair
  - Gates
  - Globes
  - Checks
  - Plug & Ball Valves
- Pressure Relief/Overpressure Protection Supply & Repair
- Instrumentation & Measurement Supply
- HSE Supply
- Rotating Equipment Supply & Repair
- Mechanical Seal Supply & Repair
- Gasketing & Bolting

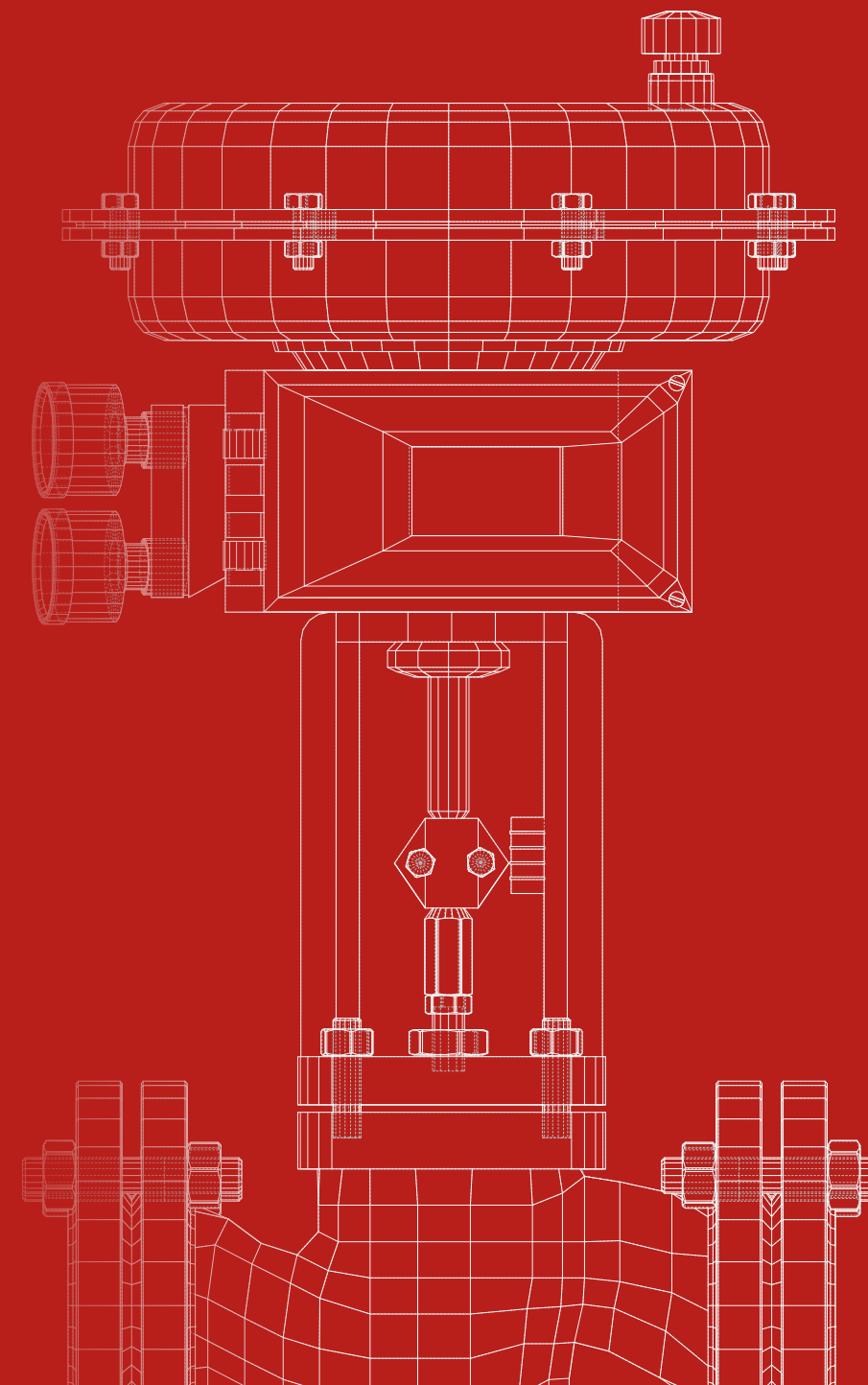


<b>St. Louis, Missouri</b> 400 Russel Blvd 63104 Office: 314-771-0700	<b>Decatur, Illinois</b> 1501 N. 22nd St. 62526 Office: 217-442-7900	<b>Indianapolis, Indiana</b> 9870 30th St. 46229 Office: 317-897-3099	<b>Crown Point, Indiana</b> 9450 Mississippi St. 46307 Office: 219-213-3692
<b>Calvert City, Kentucky</b> 700 Dr. Smith Lane 42029 Office: 270-909-1114	<b>Kansas City, Missouri</b> 2611 Southwest Blvd. 64109 Office: 816-753-6333	<b>Hastings, Nebraska</b> 113 S. Lincoln Ave. Office: 402-460-4735	



# Control Valves

Masoneilan





# Control Valves - Reciprocating

Masoneilan



**Masoneilan 10000 Series**  
Double Ported Valve

The 10000 Series double seated control valves are semibalanced designs, providing high allowable pressure drops, reduced actuator thrust requirements, and large flow areas to effectively handle dirty fluid applications. Standard features include: enhanced performance and reliability; high pressure drop capability; dirty service design; easy field maintenance; reduced emissions; and NACE compliance.



**Masoneilan 21000 Series**  
Single Port Valve

The 21000 Series single ported unbalanced trim, heavy top guided control valves are designed with built in versatility making them well-suited to handle a wide variety of process applications. Standard features include: top guided; single and double stage lo-db/anti-cavitation trim; reduced capacity and low flow trim; high pressure capability; tight shutoff; hardened trim; trim type; environmental packing; emissions free; NACE compliance.



**Masoneilan 41005 Series**  
Cage Guided Valve

The Masoneilan 41005 Series heavy duty control valve features balanced trim configurations. This product line offers efficient and stable operation under demanding process conditions, including applications with high-pressure drops and large temperature variations. Optional features include noise attenuation trim, anti-cavitation designs, and various balance seal options to meet a wide range of pressure and temperature requirements. The valve features: a balanced trim design; heavy cage-guided construction; low soft-goods parts; and standard solutions to control noise, cavitation, and valve leakage.



**Masoneilan 80000 Series**  
3-Way Control Valve

The 80000 Series is a heavy duty three-way control valve designed for either combining or diverting service. Standard features include: heavy guiding; high capacity; flow stability; wide operating range; reduced emissions; and NACE compliance.




# Control Valves - Reciprocating

Masoneilan

Masoneilan 10000 Series


Double Ported Valve



Sizes	2" through 24"
Ratings & Connections	Flanged: Class 150-1500; PN 10-250 Welded: BW or SW Screwed: NPT 3/4" through 2"
Body Materials	Carbon steel; stainless steel; chrome-moly
Actuators	Model 87/88 multi-spring diaphragm; cylinder
Trims	V-port or contoured plug; top and bottom guided
Inherent Characteristic	Linear, quick opeing or equal percentage

Masoneilan 21000 Series


Single Port Valve



Sizes	3/4" through 8"
Ratings & Connections	Flanged: Class 150-2500; PN 10-400 Welded: BW or SW Screwed: NPT 3/4" through 2"
Body Materials	Carbon steel; stainless steel; chrome-moly
Actuators	Model 87/88 multi-spring diaphragm; Model 51/52/53 piston cylinder
Trims	Single seat plug top guided; Lo-dB and anti-cavitation trims, single or double stage are available
Inherent Characteristic	Linear or equal percentage

Masoneilan 41005 Series


Cage Guided Valve



Sizes	2" through 24"
Ratings & Connections	Flanged: Class 150-2500; PN 10-400 Welded: BW or SW Screwed: NPT 2"
Body Materials	Carbon steel; stainless steel; chrome-moly
Actuators	Model 87/88 multi-spring diaphragm; Model 51/52/53 piston cylinder
Trims	Balanced cage-guided trim; Lo-dB, anti-cavitation and VRT (Variable Resistance Trim), single and multiple cages are available
Inherent Characteristic	Linear or equal percentage

Masoneilan 80000 Series

3-Way Control Valve

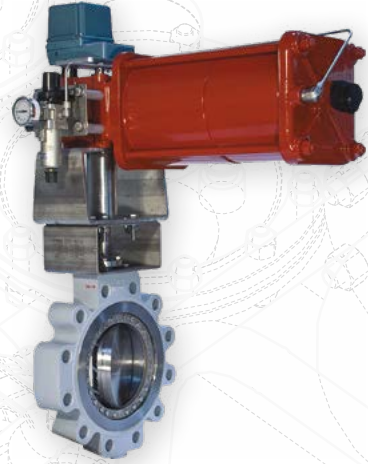


Sizes	1" through 10"
Ratings & Connections	Flanged: Class 150-600; PN 10-100 Welded: BW or SW; Class 900-2500 on request Screwed: NPT 3/4" through 2"
Body Materials	Carbon steel; stainless steel; chrome-moly
Actuators	Model 87/88 multi-spring diaphragm; Model 51/52/53 piston cylinder
Trims	V-port plug
Inherent Characteristic	Linear



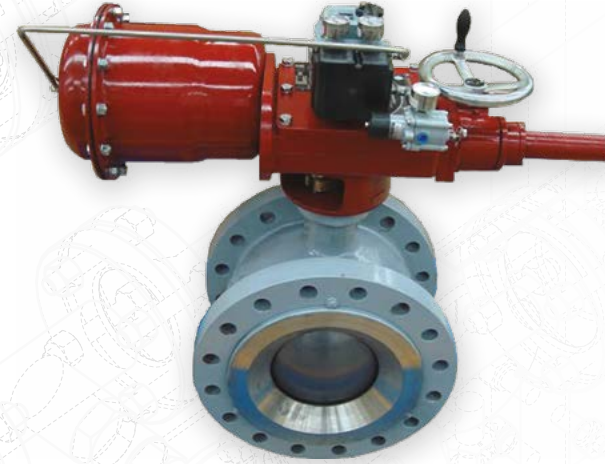
## Control Valves - Rotary

Masoneilan



**Masoneilan 33000 Series**  
Triple Offset Butterfly Valve

The 33000 Series incorporates patented design with advanced manufacturing to provide high performance, triple offset features that enables bi-directional, isolation tight shutoff under a wide range of pressures and temperatures for both control and on/off applications. The 3rd offset angle of the disc, along with a metal-to-metal seating surface, allows for minimal friction to enable isolation tight shutoff while used in both on/off, as well as high throttling, control valve applications. The valve provides the high degree of zero leakage performance, with a less costly design as compared to the larger gate, globe or ball valve technologies used in many isolation applications.



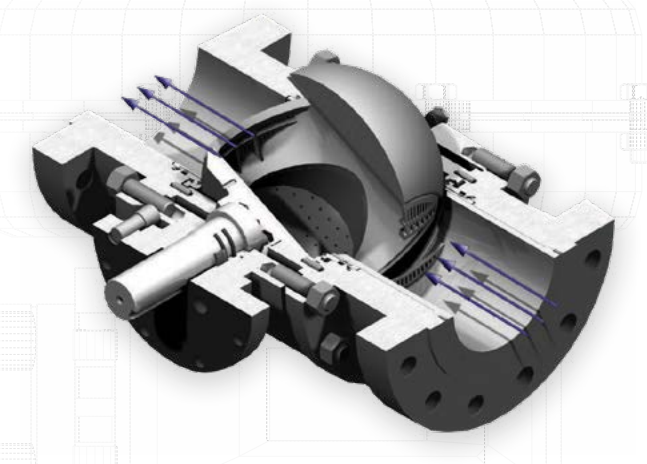
**Masoneilan 36005 Series**  
V-Max Control Ball Valve

The 36005 Series V-Max High Capacity Control Ball Valve is first and foremost a control valve. In other words, unlike other high-capacity ball valve designs, the V-Max control ball valve doesn't sacrifice control accuracy to achieve higher capacities. The V-Max control ball valve's patented dual characterized segmented ball design combines high Cv ratings with exceptional 500:1 turndown. It is an excellent solution for both high-viscosity fluid applications, found in the pulp and paper industry, as well as for processes requiring very high capacity along with accurate control.



**Masoneilan 35002 Series Camflex II**  
Eccentric Plug Rotary Control Valve

Unlike some valves in the industry, the Masoneilan 35002 Series Camflex II eccentric plug rotary control valve is not an automated valve pieced together in a valve automation shop. Its thoughtful design elevates overall product integrity and reduces the risk of component failure and process upset. Offering process plant owners and operators an exceptional control valve choice, Baker Hughes helps drive results on your key business metrics: process uptime, asset utilization, and control performance.



**Becker T-Ball**  
Control Valve

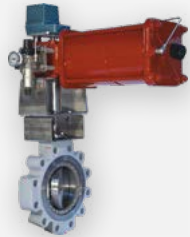
The T-Ball valve can be easily customized by our experienced engineers to suit your specific application requirements. Available in a full range of trim designs (FPCV-T0, QTCV-T1, QTCV-T2, and QTCV-T4), this valve can be configured to meet your precise flow rate and noise attenuation specifications. For example, applications that require high mass flow rates, and/or high turndown requirements without the need for noise attenuation are well suited to the conventional full port design of the FPCV-T0 mode.



# Control Valves - Rotary

Masoneilan 33000 Series

Triple Offset  
Butterfly Valve



Sizes	3" through 48"
Ratings & Connections	Wafer, Lugged, Double Flanged Short & Long Pattern; Class 150-600
Body Materials	Carbon steel; stainless steel; duplex
Actuators	Model 31/32 spring diaphragm; Model 33 spring diaphragm
Trims	Torqued butterfly
Inherent Characteristic	Equal percentage

Masoneilan 36005 Series

V-Max Control  
Ball Valve



Sizes	1" through 12"
Ratings & Connections	Flanged: Class 150-300
Body Materials	Carbon steel; stainless steel
Actuators	Model 33 spring diaphragm; Model 31/32 spring diaphragm; Model 34 scotch yoke cylinder
Trims	Dual characterized, v-ported segmented ball
Inherent Characteristic	Equal percentage

Masoneilan 35002 Series

Camflex II Eccentric Plug  
Rotary Control Valve



Sizes	1" through 16"
Ratings & Connections	Flanged: Class 150-600 Flangeless: Class 150-600; PN 10-100 Screwed: NPT 1" through 2"
Body Materials	Carbon steel; stainless steel; high nickel alloy
Actuators	Model 35 spring diaphragm; 70 Series cylinder
Trims	Eccentric rotary plug
Inherent Characteristic	Linear

Becker T-Ball  
Control Valve



Sizes	NPS 2 to NPS 42; 50mm to 1050mm
Pressure Ratings	ASME Class 150 to 2500
End Connections	RFFE, RTJ, Weld End
Temperature Range	-76°F to 349°F
Body Materials	ASTM A350 LF2/LF3/LF6 CS, Duplex, Inconel 625, 316/410 SS, 17-4PH
Ball & Seat Ring Material	ENP ASTM A350 LF2 CS, AISI 4140, Duplex, Inconel 625, Tungsten carbide overlay, 316 SS, 17-4PH
Throttling Trim & Stem Material	17-PH SS1, Duplex; AISI 41401, 17-4PH SS, 316 SS
Turndown	Up to 300:1
Noise Attenuation	Up to 25 dBa





# Isolation Valves

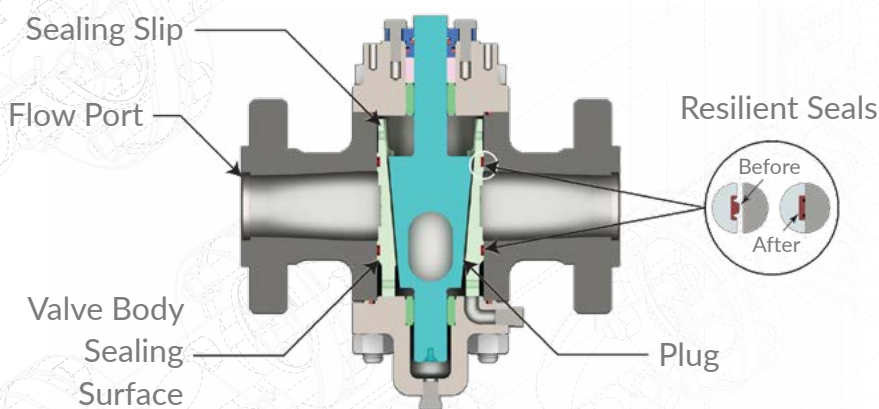
Western Valve  
Union Tech  
SCV



# Isolation Valves

## Western Valve

## Union Tech



### Western Valve DAN-EX

#### Double Isolation/Double Block and Bleed Valve

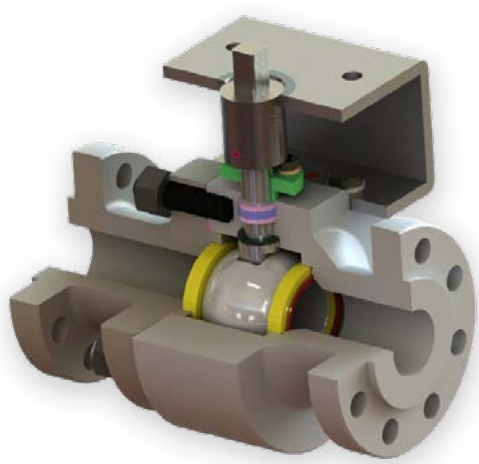
All DAN-EX Valves combine the upstream and downstream seals with a bleed cavity between the sealing slips. The use of a manual bleed valve verifies zero leakage in either direction—at any pressure—from atmospheric up to the full working pressure exerted on either side of the valve. The double block & bleed requires the use of two block valves separated by a spool. The bleed valve is used to drain the spool when both valves are closed, to prevent leakage from high pressure line into the lower pressure line. DAN-EX supplies the same function as the conventional block & bleed, but without loss through the open bleed.

#### Mechanical Perpendicular Seat Action

Mechanical operation of the DAN-EX Valve plug forces the seating slips into a perpendicular wedging action driving the seals against the valve body sealing surfaces. Upon opening, the plug dovetail connections retract the slips from the sealing surface in a perpendicular direction with no abrasive action on the seats.

#### Metal-to-Metal Seating & Replaceable Seals

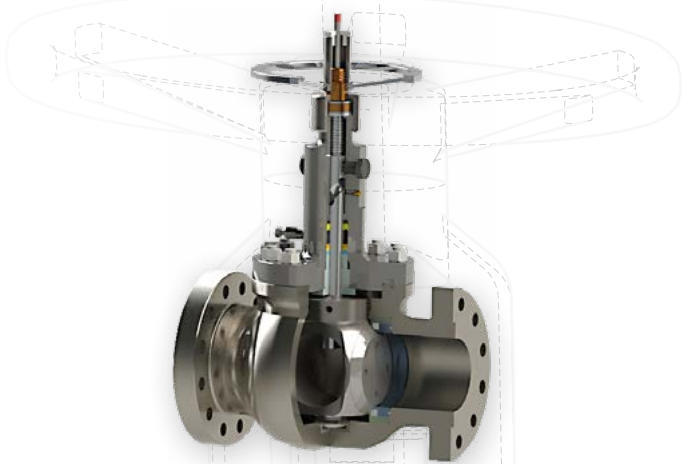
The resilient seals are compressed to provide a metal-to-metal seal between the slip and body providing a seal sufficient to prevent the line media from adding to a fire. The valve slips can be removed for seal inspection and changed in the line from either top or bottom, following line depressurization and drainage. Western Valve offers a slip exchange program.



### Union Tech Z2 Two-Piece

#### Metal-Seated Ball Valve

The Z2 Two-Piece Isolation Valve is a metal-seating ball valve engineered to be fully-customizable for specific applications in severe-service environments, including chemical/petro-chemical, refining, power, and mining that require dependable zero leakage performance. Features: live-loaded stem packing; two-piece die formed, two-piece anti-extrusion stem packing; blowout-proof stem design; field replaceable ball and seats; HVOF chrome carbide coated ball & seat; customizable end connections; ISO universal mounting bracket; in-house CNC machining; spring-loaded upstream seat; mate-lapped ball & seats.



### Union Tech Z4

#### Rising Stem Ball Valve

The design and performance advantages of the Z4 Rising Stem Ball Valve enable it to replace traditional ball, gate, and plug valves in applications, such as gas processing plants using molecular sieve systems for switching service, pipelines, gas transmission, and other high performance applications requiring frequent cycling with positive shutoff operation. Features: low torque operation; dual hardened stem slots & guide pins; injectable stem packaging material; top entry design; friction-free sealing; mechanical cam closure; self-cleaning; renewable ball design; and pressed-in seat.



# Isolation Valves


# Western Valve

# Union Tech

Western Valve DAN-EX

Double Isolation/Double

Block and Bleed Valve



Body	ASTM A-216 WCC/A-352 LCC Chrome Plated Seat Area
Bonnet & Lower Plate	ASTM A-216 WCC/ASTM A-36 Plate; ASTM A-352 LCC/ASTM A-516 GR70
Plug	ASTM A-216 WCC/A-352 LCC Electroless Nickel Plated
Slip/Seal	ASTM A536 GT 80-55-06/Viton or Low Temp Nitrile
Trunnion Bushings	ASTM A436 Type 1 NI-Resist
O-Rings	Viton; Low Temp Nitrile
Packing Gland	ASTM A-582 Stainless Steel/ASTM A-487 CA6NM
Stem Packing & Gaskets	Grafoil Rings & Grafoil
Studs	ASTM 193 B.7/L.7
Nuts	ASTM 194 2H/GR.7
Bleed System	Differential Thermal Relief/Manual Body Bleed



Union Tech Z2 Two-Piece

Metal-Seated Ball Valve



Bore Sizes	0.5" through 24"
ANSI Classes	150 through 2500#
Materials	A105; F22; F91; 316SS; others upon request
Ends	SW; BW; RFF; RTJ; Hub; NPT
Ports	Full or reduced
Direction	Uni- or Bi-directional
Fire-Safe Design	Meets API 607 or API 6FA

Union Tech Z4

Rising Stem Ball Valve



Bore Sizes	1" through 24"
ANSI Classes	150 through 1500#
Materials	WCC; WCB; LCC; LCB; CF8M; forgings and other materials available
Ends	SW; BW; RFF; NPT
Ports	Full or reduced
Direction	Uni- or Bi-directional
Design	ANSI/ASME B 16.10 and API Spec 6D; Enclosed or OS&Y bonnet designs; Manual, Electric, or Pneumatic
Flanges	Drilled per ANSI/ASME B 16.5
Testing Standards	Seat: ISO 5208 A Fugitive Emissions: ISO 15848-1A Fire: API 607, 7th Edition
Temperature Range	-50°F to 500°F (soft-seated) -50°F to 800°F (metal-seated)



## SCV Thru Conduit Gate

Slab & Expanding Gate Valves

SCV Valve manufactures some of the most dependable cast steel Thru Conduit Slab and Expanding Gate Valves in the industry. Both designs utilize flanged and butt-weld end connections, and are manufactured and tested in accordance with API 6D. The full port bi-directional flow capability minimizes pressure drop and turbulence. The SCV design offers many features and options beneficial for oil, gas, and liquid applications making it the most demanded Thru Conduit Gate on the market.



## SCV Wedge Gate

Wedge Gate Check Valves

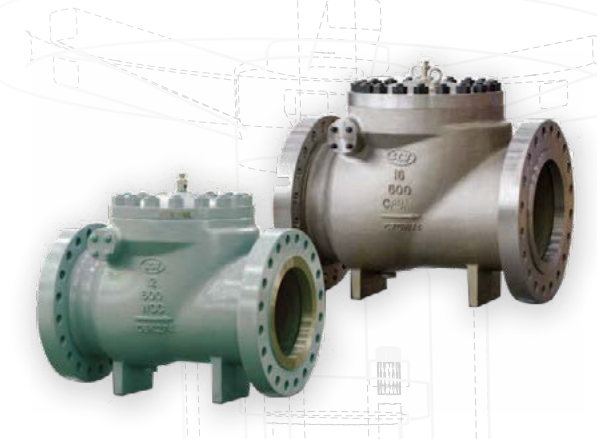
SCV VALVE manufactures superior cast body, bolted bonnet OS&Y gate valves in a variety of materials, trims, packing types, sizes (2" thru 48") and pressure classes (150 thru 2500). The mechanical characteristics make the SCV wedge gate valve are ideal for bi-directional "total flow system open/shut-off" applications with minimal turbulence and pressure drop. The valve design conforms to API 600 and B16.34. Face-to-face and end-to-end dimensions conform to ANSI B16.5 and B16.25.



## SCV Globe

Globe Valves

SCV VALVE manufactures superior cast body, bolted bonnet globe valves in a variety of materials, trims, packing types, sizes (2" thru 18") and pressure classes (150 thru 2500). The mechanical characteristics (moveable disc and stationary seat ring) make the SCV globe valve ideal for repeatable pipeline unidirectional throttling applications and frequent operation. The valve design conforms to API 598 and B16.34. Face-to-face and end-to-end dimensions conform to ANSI B16.5 and B16.25.



## SCV Full Port Swing Check

Full Port Swing Check Valves

SCV Full Port Swing Check Valves are all designed to operate without any assistance, reacting to dominate flow direction. Minimal forward flow will instantly open the valve disc, while zero flow closes the valve disc preventing backflow. Optional mechanical devices (manual lever or gear operators) are available to manually or remotely open or close the valve. The full port design results in lower turbulence and pressure drops than competitors. Full Port Swing Check Valves are fully "piggable" to accommodate inspection and cleaning devices. Available sizes range from 2" thru 36" in Classes 150 thru 2500.



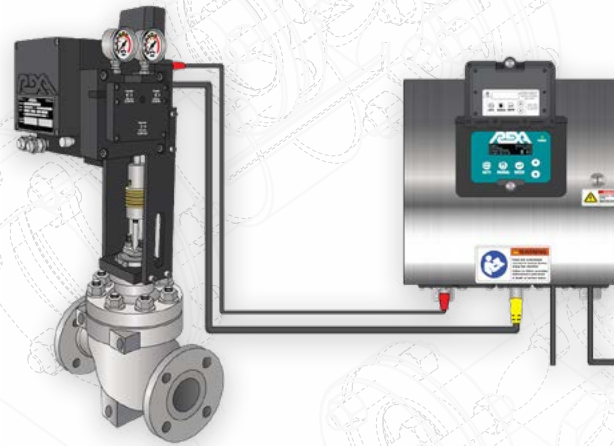
The background of the entire image is a red wireframe illustration of industrial machinery. On the left, there is a complex network of pipes, valves, and flanges. On the right, a large vertical structure is shown, featuring a cylindrical top section with a grid pattern, two circular openings, and a rectangular control panel or sensor array. The entire scene is rendered in a technical, schematic style.

# Automation

REXA  
Rotork  
Auma



## Mechanical Assembly



## Electric Assembly

### REXA Electraulic Actuation

#### Actuation Technology

Electraulic™ Actuation is a brand of electro-hydraulic actuation unique to REXA. It combines the simplicity of electric operation, the power of hydraulics, the reliability of solid state electronics, and the flexibility of user-configured control.

Electraulic™ Actuation consists of two major components: the mechanical sub-assembly and the electrical sub-assembly. Each component plays a critical role in combining the benefits of major actuator types (pneumatic, electric, hydraulic) while eliminating the drawbacks of each technology.

The foundation of our technology is the patented breakthrough in hydraulic circuitry called the Flow Matching Valve System. In conjunction with a bi-directional gear pump coupled to either a DC stepper or AC servo motor, this system is a highly efficient method of moving hydraulic fluid from one side of a double-acting cylinder to the other.

While monitoring travel and signal ranges set during calibration, the CPU converts the incoming control signal into a target position. An active feedback sensor directly mounted to one end of the cylinder output shaft determines the actuator's current position. The difference between the target and the current position interprets as an error (deviation). If the error exceeds the user-programmed deadband, the CPU will initiate corrective action by starting the motor.



### REXA Xpac Linear Series

#### Linear Actuator

Xpac Linear Series Actuators utilize a double acting hydraulic cylinder driven by one or more Electraulic™ Power Modules. The Linear Series is configurable to suit a wide variety of control and isolation applications across many industries. For both new equipment and retrofit scenarios, REXA manufactures the mounting bracket and stem adapter to fit any style valve, gate, damper or turbomachinery.

### REXA Xpac Rotary & Drive Series

#### Rotary & Drive Actuators

Xpac Rotary Series and Drive Series Actuators are designed with a rack and pinion hydraulic cylinder driven by one or more Electraulic™ Power Modules. The Rotary Series is commonly used on ball and butterfly valve applications across numerous industries. The Drive Series, which utilizes a mounting base and drive arm, is commonly used on fan and stack dampers, burner tilts and other combustion control applications. REXA manufactures the valve mounting bracket, stem adapter or drive base and drive arm to suit any valve or damper type.

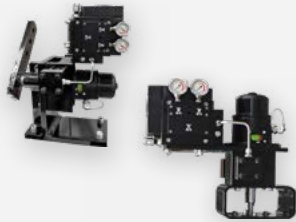


REXA Xpac Linear Series  
Linear Actuator



Features	Electraulic Power Module motor and pump system
	Double rod cylinder design allows even oil displacement
	Positive feedback sensor attached directly to cylinder shaft
	Valve, gate, or machinery adaptation hardware customized per application
Available Thrusts	2,000 lbf to 275,000 lbf
Stroke Ranges	3/4 inch to over 120 inches

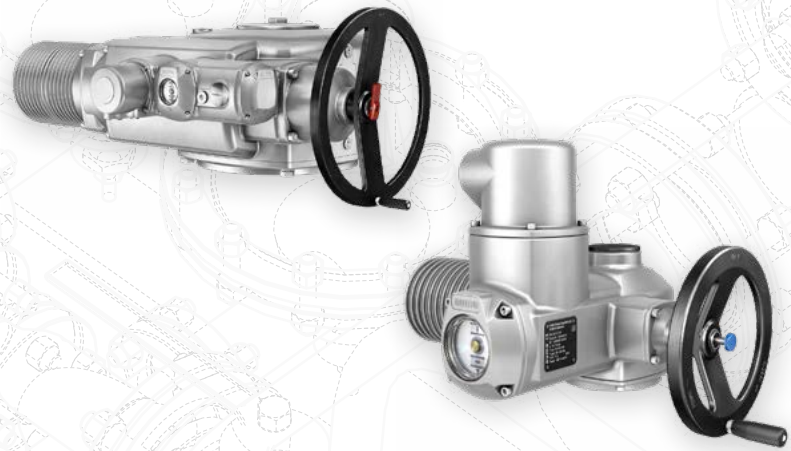
REXA Xpac Rotary & Drive Series  
Rotary & Drive Actuators



Features	Electraulic Power Module motor and pump system
	Dual opposed cylinders driving a rack and pinion assembly allows even oil displacement
	Position Feedback sensor is attached directly to cylinder pinion
	Valve or damper adaptation hardware customized per application
Available Torques	2,500 in-lbf to 1,500,000 in-lbf
Degrees of Rotation	90°, 120°, 180°, or 270°







## Auma SA/SAR

Electric Multi-Turn & Part Turn Actuators

In compliance with EN ISO 5210, a multi-turn actuator is capable of withstanding thrust applied to the valve and transmits torque to the valve for at least one revolution. In general, multi-turn actuators are required to perform more than one revolution. Consequently, gate valves are often equipped with rising valve stems. They are operated on the basis of several revolutions performed by the multi-turn actuator. Therefore, the multi-turn actuator is equipped with a hollow shaft housing the gate valve stem for these applications.



## Auma Tigron

Electric Multi-Turn Actuators

AUMA's new TIGRON actuators are designed to meet the exacting requirements of the global oil and gas industry. Building on AUMA's more than 50 years of experience as a leading electric actuator manufacturer, TIGRON combines the highest level of explosion protection, robust design, outstanding ease of operation, and the latest trends in digitalisation. The versatile all-rounder provides safe and reliable valve automation across all application sectors, including oil and gas production, pipelines, tank farms and refineries.

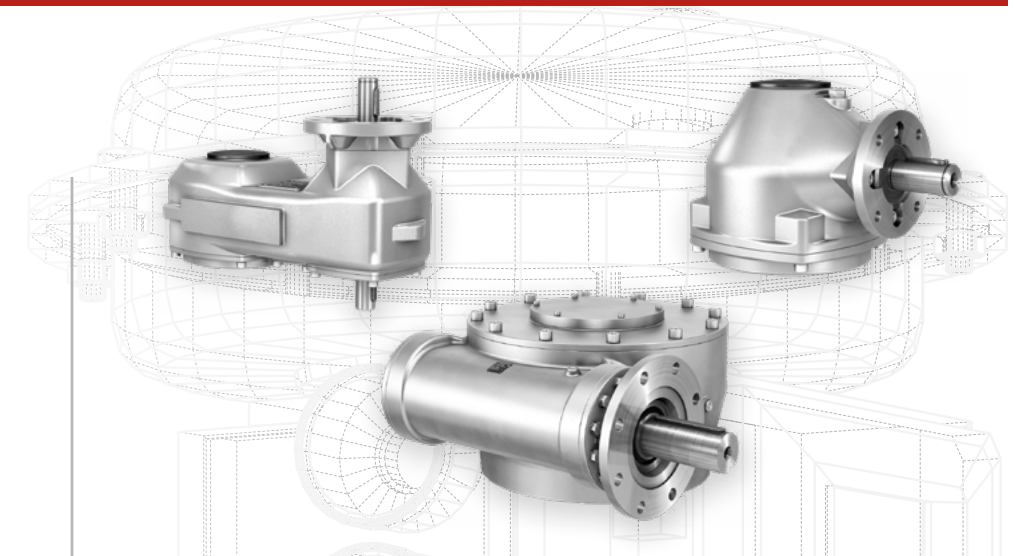


## Auma ProFox PF-Q

Electric Multi-Turn & Modulating Actuators

One solution for butterfly, ball/plug and globe valves. Compact actuators with intelligent functions as platform concept for tailored automation solutions.

Each PROFOX is equipped with a centrally located LED: The FOX-EYE. It provides clearly visible information about both actuator and valve status. The FOX-EYE display scheme can be configured by the user as required.



## Auma Gearboxes

Spur, Bevel, & Multi-Turn Gearboxes

Multi-turn gearboxes can be formed by combining multi-turn actuators SA with AUMA spur and bevel gearboxes to increase the torque or to reposition the output shaft. The gearboxes can of course also be used on manually operated valves.





## Rotork IQ3 Series

Electric Multi-Turn & Linear Actuators

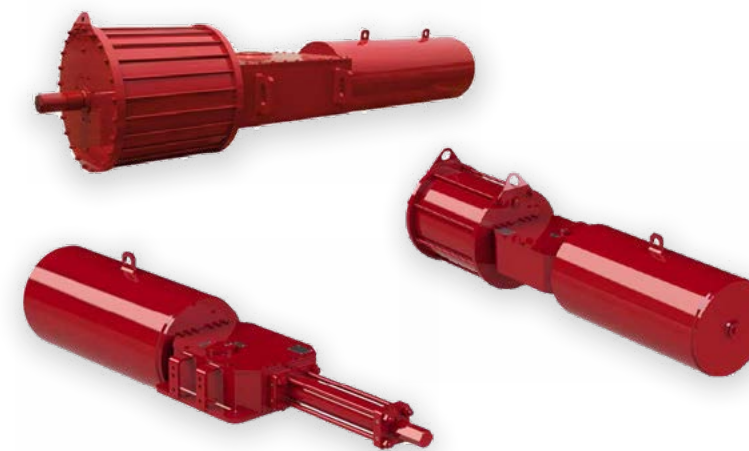
Continuing their ethos of evolving design, the next generation Rotork IQ multi-turn and IQT part-turn actuators are now available. Reliability standards have been set even higher, it is simpler to commission and use and is unrivalled in its ability to provide valve and process control operational data. With the revolutionary dual stacked display, information about your plant and process is available at your fingertips, allowing unparalleled data analysis of the condition and operational status of the valve; data analysis that enables accurate asset management of your plant. Rotork innovation at its best.



## Rotork CVA Series

Electric Linear & Part-Turn Modulating Actuators

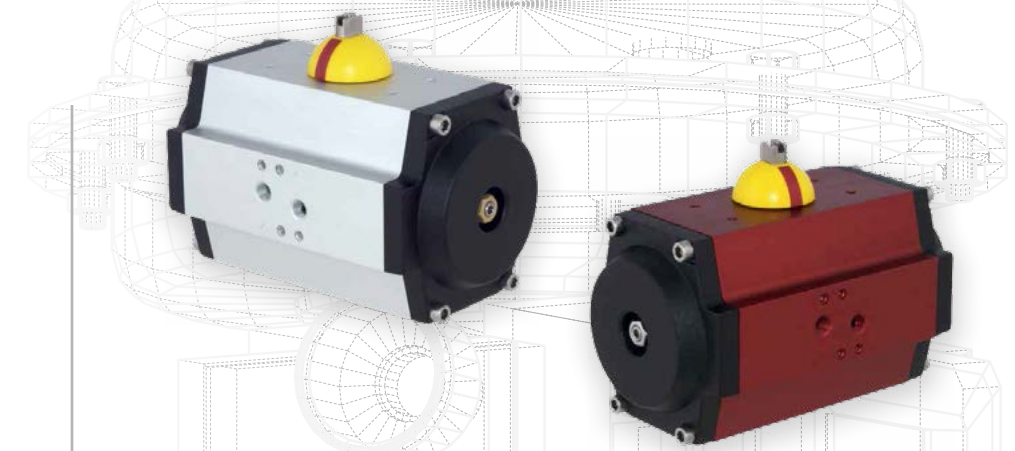
The CVA range of linear and quarter-turn actuators provide an electrically powered process control operator suitable for most control valve types and sizes. The CVA sets a new standard for process control and valve actuation. Rotork has proven expertise in applying new technologies in the automation of valves to bring enhanced performance and innovative features. This philosophy has now been applied to a new range designed specifically for the exacting demands of process control, specifically continuous modulating control valve applications.



## Rotork GP/GH Series

Pneumatic Heavy Duty Scotch Yoke Actuators

GP (pneumatic) and GH (hydraulic) range scotch yoke actuators are designed to provide a rotary, quarter-turn movement for either on/off or modulating duty. The rugged yet compact design is available with two different yoke designs. The classic symmetric yoke delivers peak torque at both ends of stroke. Alternatively, they can be supplied with canted torque arms designed to deliver peak torque at only one end of stroke. Use of canted arms can often reduce actuator size, weight and cost for valves with appropriate torque demand characteristics.



## Rotork GT/RCR Series

Pneumatic Rack & Pinion Actuators

The GT range of pneumatic rack & pinion actuators has been proven by a 30-year history of service in hundreds of thousands of installations encompassing a variety of diverse applications. There are a wide range of body sizes available in both double-acting and spring-return configurations. Units can be easily changed from one to the other—even in the field. In addition to the usual 90 degree rotation, 120, 180, and 240 rotations are also available. All models incorporate an anti-blowout design.





# Safety Relief & Overpressure Protection

Consolidated  
Groth  
Continental Disc Corporation





## Consolidated 1900 Series

Dual Media Safety Relief Valve (Conventional & Balanced)

The highly adaptable 1900 Series Safety Relief Valve with the Educator Tube Advantage is designed to meet a wide range of industrial applications and is certified for gas, liquid and steam media in conventional and balanced bellows designs. The 1900 Series design flexibility and parts interchangeability accommodate process changes through easy conversion to a variety of designs. The patented innovation of the Dual Media trim design makes it the first and only spring-loaded safety relief valve in the industry that is “dual certified”.



## Consolidated 19000 Series

Safety Relief Valve

The Consolidated 19000 Series valves are designed and manufactured in compliance with ASME B & PVC, Section VIII and Section III (Class I, II and III), and are CE compliant to the European Pressure Equipment Directive PED 2014/68/EU. Seat tightness, blowdown and capacity on all types of media meet industry needs for overpressure protection in chemical, petrochemical, refinery, power generation (nuclear and conventional) and other commercial applications.



## Consolidated 2900 Series Gen II

Pilot-Operated Safety Relief Valve

The 2900 Series Gen II is a full-nozzle pilot-operated safety relief valve matching API 526 direct-spring PRV dimensions. Its patented full-nozzle integral sense design allows for easy maintenance as well as simple spring-loaded to pilot-operated PRV conversions throughout the lifecycle of the valve. This valves uses the same pilot valve technology as the 3900 Series including the ‘True Zero Leakage’ modulating pilot, providing a modernized overpressure protection solution for reducing carbon footprint and emissions.



## Consolidated 3900 MPV Series

Pilot-Operated Safety Relief Valve

The Baker Hughes’ 3900 Series Pilot-Operated Safety Relief Valve design provides an optimized safety system that offers application versatility while providing cost-effective standardization. The unique pilot valve design combines enhanced performance, capabilities and features within an economical, modular assembly.


# Safety Relief & Overpressure Protection

Consolidated

Consolidated 1900 Series

Dual Media

Safety Relief Valve



Inlet Sizes	1" through 12"
Inlet Ratings	ASME Class 150 through 2500
Outlet Sizes	2" through 16"
Outlet Ratings	ASME Class 150 and 300
Orifice Sizes	D through W
Set Pressure Range	4 psig to 6250 psig
Temperature Range	-450°F to 1500°F
Materials	Cast carbon steel body with stain-less steel trim. Other materials available.
Standards & Regulations	ASME B & PVC, Section VIII; ASME B & PVC, Section I (Liquid); API 526; Pressure Equipment Directive; China Manufacturing License

Consolidated 19000 Series

Safety Relief Valve




Inlet Sizes	1/2" to 2"
Inlet Ratings	Threaded and ASME Class 150 to 2500
Outlet Sizes	1" to 2 ½"
Outlet Ratings	Threaded and ASME Class 150 to 300
Orifice Sizes	.096 sq. in. through 0.567 sq. in.
Set Pressure Range	5 psig to 8000 psig
Temperature Range	-425°F to 1100°F
Materials	Stainless/Carbon Steel with stain-less trim
Standards & Regulations	ASME B & PVC, Section VIII

Consolidated 2900 Series

Gen II

Pilot-Operated

Safety Relief Valve




Inlet Sizes	1" through 12"
Inlet Ratings	ASME Class 150 to 2500
Outlet Sizes	2" through 16"
Outlet Ratings	ASME Class 150 to 300
Orifice Sizes	D through W
Set Pressure Range	15 psig to 6250 psig
Temperature Range	-40°F to 505°F, above 505°F with heat exchanger
Materials	Stainless steel pilot with carbon steel main valve and stainless steel trim
Standards & Regulations	ASME B & PVC, Section VIII; ASME B & PVC, Section I (Liquid); API 526 centerline-to-face dimensions for Spring Loaded Safety Relief Valves; Pressure Equipment Directive; Chi-na Manufacturing License

Consolidated 3900 MPV Series

Pilot-Operated

Safety Relief Valve



Inlet Sizes	1" through 12"
Inlet Ratings	ASME Class 150 to 2500
Outlet Sizes	2" through 16"
Outlet Ratings	ASME Class 150 to 300
Orifice Sizes	D through T, Full Bores
Set Pressure Range	15 psig to 6250 psig
Temperature Range	-40°F to 505°F, above 505°F with heat exchanger
Materials	Stainless steel pilot with carbon steel main valve and stainless steel trim
Standards & Regulations	ASME B & PVC, Section VIII; API 526





## Groth 3011H & 3011L Series

### Blanket Gas Regulators

The Groth Blanket Gas Regulators ensure that a constant gas pressure is maintained in the vapor space of a storage tank. A blanket gas regulator supplies an inert gas to prevent a vacuum from developing when liquid is removed from a tank, to maintain the desired blanket pressure when the temperature drops and to prevent outside air from contaminating the tank or creating a flammable or explosive environment. Product conservation and a significant reduction in tank emissions are the final result.



## Groth 1200A

### Pressure/Vacuum Relief Valve

The Groth 1200 Series Pressure/Vacuum Relief Valves are designed to protect your tank from damage created by overpressure or excessive vacuum. Costly product evaporation losses due to normal tank “breathing” are greatly reduced. Because the 1200 Series products retain toxic vapors, atmospheric contamination is minimized which helps to provide increased fire protection and safety.



## Groth 2000A

### Emergency Pressure Relief Valve

The Groth Model 2000A is designed to provide emergency relief capacity beyond that furnished by the normal operating pressure relief valve on the tank. The valve protects the tank against rupture or explosion that could result from excessive internal pressures caused by fire. Removable stops can be provided which restrict the lift of the cover.



## Groth 2400A

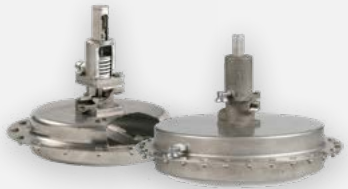
### Emergency Pressure Relief Valve

The Groth Model 2400A Emergency Pressure Relief Valve is designed to provide emergency relief capacity beyond that furnished by the normal operating pressure relief valve on the tank. The valve helps protect the tank against rupture or internal pressures caused by fire exposure and other emergency event. Model 2400A is designed to be self-closing. The valve can be offered in corrosion resistant materials throughout. Groth's special fluoropolymer “cushioned air” pallet and peripheral guiding insures proper alignment and integrity of seating.

# Safety Relief & Overpressure Protection

Groth 3011H & 3011L Series

Blanket Gas Regulators



Sizes	1/2" Adjustable Orifice Selector 25% to 100%; 1" Adjustable Orifice Selector 5% to 100%
Pressure Settings	0.5 InWC to 15 psig
Standards	API 2000; ISO 28300; EPA Publication AP-42; NFPA 69; OSHA Part 1910.110; ATEX Certified
Material:	316 Stainless Steel
Features	Variable orifice, field-adjustable flow capacity; Bubble-tight shut off; Single stage regulator; Modulating opening; Minimal lock up and droop
Options	Soft Goods: Buna-N, FFKM, EPDM, FKM

Groth 1200A

Pressure/Vacuum Relief Valve



Sizes	2" (DN 50) through 12" (DN 300)
Pressure Settings	0.5 oz/in2 to 15 psig (2.15 mbarg to 1.03 barg)
Vacuum Settings	0.5 oz/in2 to 12 psig (2.15 mbarg to 506 mbarg)
Material:	Aluminum, Carbon Steel, Stainless Steel, Fiberglass, special materials available upon request
Features	Modular construction; Cushioned air seating; Superior performing fluoropolymer diaphragms; Self draining housing body and drip rings; Peripheral Guiding and center stabilizing system for alignment; PED and ATEX Certified
Options	Buna-N, FKM; Steam Jacket Valve

Groth 2000A

Emergency Pressure Relief Valve



Sizes	16" (DN 400) , 20" (DN 500) and 24" (DN 600)
Pressure Settings	1.5 oz/in2 to 16 psig (6.46 mbarg to 68.9 mbarg)
Vacuum Settings	0.5 oz/in2 to 4 psig (2.15 mbarg to 17.2 mbarg)
Material:	Carbon Steel, Fiberglass, Stainless Steel, special materials upon request
Features	ATEX Certified; Manufactured in an ISO 9001 Certified Manufacturing Facility; Grounding Cable connects the head and flange; Cushioned Air pallet; Peripheral Guiding
Options	Steam Jacket; Buna-N, Fluoropolymer, FKM; ANSI 150# and API 650 drilling classes

Groth 2400A

Emergency Pressure Relief Valve



Sizes	16" (DN 400) , 20" (DN 500) and 24" (DN 600)
Pressure Settings	1.5 - 8 oz/in2 (6.46 mbarg to 34.5 mbarg)
Vacuum Settings	0.5 - 4 oz/in2 (2.15 mbarg to 17.2 mbarg)
Material:	Carbon Steel, Stainless Steel, special materials upon request
Features	Wide stainless steel seat and air-cushion seal prevents leakage; Hinged design with lift stop ensures positive re-seating; Easy access manway combined with emergency relief
Options	Steam Jacket; Buna-N, Fluoropolymer, FKM; ANSI 150# and API 650 drilling classes; Counter weights





**CDC HPX**  
Rupture Disc

The HPX is designed for a long and reliable service life, even at the high operating-to-burst pressure ratios of today's process industries. Advanced tooling processes and optimal material thickness ensure full openings and accurate burst ratings for a perfect rupture every time.



**CDC HPX-Ta**  
Rupture Disc

Recommended for applications involving bromine, chlorine, HCL, nitric acid, sulfuric acid or other media in corrosive concentrations, temperatures and moisture conditions, HPX-Ta is manufactured from highly corrosion-resistant tantalum. HPX holders can also be enhanced with a tantalum lining or coating of components.



**CDC SANITRX HPX**  
Rupture Disc

Ideal in a wide range of sanitary and hygienic applications, SANITRX HPX rupture discs fit between industry-standard sanitary ferrules, NA-CONNECT® flanges or SANITRX fittings. They are in compliance with the essential criteria of the ASME BPE standards of cleanability, traceability and sterilization, and are shipped in sanitary, environmentally friendly, nontoxic packaging.



**CDC SANITRX HPX II**  
Rupture Disc

Ideal in a wide range of sanitary and hygienic applications, SANITRX HPX II rupture discs fit between industry-standard sanitary ferrules, NA-CONNECT® flanges or SANITRX fittings. They are in compliance with the essential criteria of the ASME BPE standards of cleanability, traceability and sterilization, and are shipped in sanitary, environmentally friendly, nontoxic packaging.



**CDC 3/4" SANITRX HPX**  
Rupture Disc

The CDC 3/4" SANITRX HPX® Rupture Disc is a semicircular scored reverse acting rupture disc designed specifically for applications in the pharmaceutical, food & beverage and biotech industries. This rupture disc is available to fit between standard sanitary ferrules. The 3/4" SANITRX HPX rupture disc is shipped in sanitary, environmentally friendly, non-toxic packaging.



**CDC HPX-PT**  
Pre-Torqued Holder

Optimize flow, secure seals, ensure proper disc orientation and prevent disc fragmentation with an HPX-PT pre-torqued holder. The HPX-PT holder allows the disc to be correctly fitted in the workshop using recommended torque levels prior to installation of the complete assembly between the flanges in the process system relief stream.





# Instrumentation & Measurement

Panametrics  
Dräger  
Honeywell





## Panametrics Sentinel LCT4

Ultrasonic Flow Meter

The Sentinel LCT4 is a new addition to the Panametrics line of ultrasonic flow meters. Designed specifically for high accuracy measurement of crude oil, other liquid refined hydrocarbon products, and other non-hydrocarbon liquids, it delivers extremely reliable and repeatable results and meets the strict performance requirements of OIML R117-1 and API MPMS Chapter 5.8. The LCT4 refines the high-reliability characteristics of its predecessor, the Sentinel LCT, into an aesthetically designed, compact meter body with integral cables, no extended buffers and no junction boxes.



## Panametrics Sentinel LCT8

Ultrasonic Flow Meter

In an industry where reliability and performance are measured in terms of uncertainty, it's imperative to choose instrumentation that provides peace of mind. The Sentinel LCT8 is the newest addition to the Panametrics line of ultrasonic flow meters for high-accuracy metering applications. Used primarily for measuring hydrocarbon liquids and water for critical use, the eight-path design of the LCT8 enables the meter to maintain performance in unstable conditions. Its eight chordal paths provide a stratified field that cancels the effect of swirl and flow disturbances caused by changing fluid properties or installation effects.



## Panametrics PanaFlow Z3

Ultrasonic Flow Meter for Liquids

The PanaFlow Z3 represents the latest generation of Panametrics ultrasonic flow meters. It is a three-path meter designed specifically for dependable, accurate and repeatable flow measurement of process liquids. With a sleek industrial design and ultra-reliable electronics, it provides operators a cost-effective choice when measurement accuracy and reliability are critical. The capabilities of the PanaFlow Z3 make it the right meter for a number of industries and applications.



## Panametrics PanaFlow Z1 & Z2

Flow Meters for Gas

The PanaFlow Gas Meter System is a complete ultrasonic flow meter offering for gas applications with a unique combination of accuracy, rangeability, and reliability in a robust meter design.

The PanaFlow Gas Meter System consists of two models—the one-path PanaFlow Z1G and the two-path PanaFlow Z2G. Both meters offer a high-performance, yet affordable solution





**Panametrics DigitalFlow XGF868i**  
Flare Gas Mass Flow Ultrasonic Flowmeter

The DigitalFlow XGF868i ultrasonic flow meter uses the patented Correlation Transit-Time™ technique, digital signal processing, and an accurate method of calculating molecular weight. Add to these features the inherent advantages of ultrasonic flow measurement— reliability with no routine maintenance, high accuracy, fast response, and wide rangeability, the DigitalFlow XGF868i flow meter is the clear choice for flare gas applications.



**Panametrics Aurora Analyzer**  
Moisture Analyzer

Panametrics Aurora analyzer uses tunable diode laser absorption spectroscopy (TDLAS) to rapidly and accurately measure moisture in a variety of background gases. The analyzer is suitable for installation in hazardous areas and operates over a wide range of environmental conditions.

Aurora's fast response immediately alerts when moisture concentrations are out of compliance or natural gas dehydration process is upset; once corrected, gas can be quickly cleared for re-entry to pipeline or process.



**Panametrics TransPort Aurora Analyzer**  
Moisture Analyzer

Panametric's Aurora series of moisture analyzers uses tunable diode laser absorption spectroscopy (TDLAS) to rapidly and accurately measure moisture in a variety of background gases.

The Aurora TransPort, the latest addition to the series, is a battery operated, moveable analyzer that can be taken into the field to directly measure moisture content of natural gas and other process gases. The unit is assembled into a rugged and transportable case with a telescoping handle and wheels.



**Panametrics HygroPro**  
Aluminum Oxide Moisture Transmitter

The HygroPro moisture transmitter is an intrinsically safe, compact, loop-powered moisture transmitter designed specifically to meet the demands of rugged industrial applications. With certified intrinsically safe electronics (when installed with proper protection) packaged in an IP67/Type 4X housing, the HygroPro is ideal for use in pipeline natural gas, petrochemical, power generation and other industrial gas or non-aqueous liquid applications.





### Panametrics MIS Probe 2

Aluminum Oxide Trace Moisture Probe

Panametrics aluminum oxide moisture probes have set the standard of performance and value in industrial moisture measurement for more than 50 years.

In use, the Moisture Image Series probe is coupled to Panametrics hygrometer consoles by an interconnecting cable. Ease of use, wide measurement range and rigorous calibration standards make these systems the preferred choice for industrial moisture measurement worldwide.



### Panametrics Moisture.IQ

Moisture Analyzer

The moisture.IQ is the multichannel, multifunction flagship model in the IQ Series of Panametrics aluminum oxide-based moisture analyzers. The moisture.IQ measures trace moisture, pressure and temperature in non-aqueous liquids and gases. It accepts inputs from electrochemical sensors for measuring oxygen concentrations in gases. The auxiliary inputs can accept analog inputs from any transmitter with 0/4 to 20 mA or -1 to +4 V output, including a variety of Panametrics process control instruments, this feature makes the moisture.IQ a true multifunction analyzer, providing cost savings through system integration.



### Dräger X-pid 8500

Multi-Gas Detector

The selective PID gas measurement device is ideal for users who frequently test for hazardous toxic substances. Benzene, butadiene and other volatile organic compounds (VOCs) are carcinogenic even in the smallest concentrations. Selective measurement is necessary because other gases and vapors are often also present. The Dräger X-pid® 8500 allows for short test times and laboratory-quality results.



### Dräger X-dock 5300/6300/6600

Master Controller Station

The X-dock's engineered advantage all starts with intuitive touchscreen operation at the master controller station where up to three test routines can be configured. Testing is as simple as inserting your Dräger gas detection instrument and closing the lid. The X-dock immediately detects all sensor combinations and automatically tests and adjusts when all of the required test gases are connected. All generated data is documented in the database.



**Dräger X-am 8000**  
Multi-Gas Detector

Clearance measurement was never this easy and convenient: The Dräger X-am® 8000 measures up to seven toxic as well as flammable gases, vapors and oxygen all at once – either in pump or diffusion mode. Innovative signaling design and handy assistant functions ensure complete safety throughout the process.



**Dräger X-am 5000**  
1 to 5-Gas Detector

The smallest gas detection instrument for up to 5 gases. The Dräger X-am 5000 belongs to a new generation of gas detectors, developed especially for personal monitoring applications. This 1 to 5-gas detector reliably measures combustible gases and vapors as well as oxygen and harmful concentrations of CO, H<sub>2</sub>S, CO<sub>2</sub>, Cl<sub>3</sub>, HCN, NH<sub>3</sub>, NO<sub>2</sub>, PH<sub>3</sub> SO<sub>2</sub> and organic vapors.



**Dräger X-act 7000**  
Multi-Gas Detector

The innovative Dräger X-act® 7000 analysis system consists of Dräger MicroTubes and an opto-electronic analysis device that lets you precisely measure gases in the low ppb range. It gives you precise results right on site, replacing slow, expensive lab analyses. It's extremely easy to use: insert the Dräger MicroTubes, start measuring, then read out the test result.



**Dräger Pac 6000**  
Single-Gas Detector

The Dräger Pac® 6000 disposable personal gas detector measures CO, H<sub>2</sub>S, SO<sub>2</sub> or O<sub>2</sub> reliably and precisely, even in the toughest conditions. The robust design, quick sensor response times, and a powerful battery ensure maximum safety for up to two years with virtually no maintenance required.

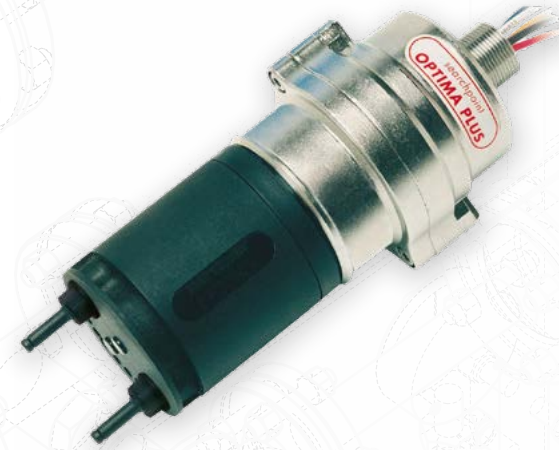




## Honeywell OELD Bluetooth

Local Display

The Optima Excel Local Display (OELD) is a smart junction box for the Searchpoint Optima Plus and Searchline Excel infrared detectors for flammable hydrocarbons. The OELD includes an LCD screen for gas information, a “traffic light” indicator for at-a-glance detector status, and Bluetooth® connectivity for simplified, non-intrusive maintenance. Simply pair the OELD with our intrinsically safe, ruggedized smartphone; then use the OELD smartphone app to interact with the gas detector from up to 10 meters (30 feet) away. For maximum flexibility, the gas detector can be mounted either directly or remotely to OELD to suit any situation.



## Honeywell Optima Plus

Advanced Infrared Point Gas Detector

Searchpoint Optima Plus is an infrared point Hydrocarbon gas detector certified for use in potentially explosive atmospheres. The unit’s infrared detection principle offers the fastest speed of response and fail-to-safe operation, ensuring that your plant is compliant, your personnel are protected and your production process can deliver maximum uptime. Reduced routine maintenance, when compared with conventional electro-catalytic based gas detectors, provides low ongoing cost of ownership.



## Honeywell Touchpoint Plus

Control System

The Touchpoint™ Plus Wireless is the command-and-control element of the Mesh system that gathers data and monitors alarms from Mesh-enabled toxic and flammable gas monitors. The built-in wireless modem automatically links with Mesh enabled monitors, and the controller has built-in security safeguards to resist tampering. The Touchpoint™ Plus Wireless does have additional 8 analogue 4-20 mA inputs for combination of traditional wired products and wireless products.



## Honeywell Fire Sentry FS24X

Flame Detectors

The Fire Sentry FS24X is the latest generation high technology Multi-Spectrum Triple IR (IR/IR/IR/Visible) Fire and Flame Detector, which is part of our FSX family of advanced technology Electro-Optical fire detectors. Using our patented\* WideBand IR™, WideBand 4.3 micron IR™, and Visible detection technology, the Fire Sentry FS24X is a quantum leap in flame and fire detection. Sophisticated software algorithms and dual microprocessors ensure that the Fire Sentry FS24X has the highest fire detection performance combined with optimal false alarm rejection.





**Honeywell Searchline Excel Long Range**  
Hydrocarbon Detector

Designed for long-range perimeter and fence line monitoring applications, the Searchline Excel™ Edge helps protect your people, facilities and processes from combustible gas leaks. When mounted at the edge/perimeter of your facility, it provides long-range monitoring and reliable detection in harsh and changing environments for protection and peace of mind. Features detection range of 196 to 1082 feet, multiple outputs, and responses to a wide range of hydrocarbon gases. Uses Bluetooth® connectivity for simplified, non-intrusive set-up and maintenance.



**Honeywell Searchzone Sonik**  
Gas Detector

Searchline Excel is a Hydrocarbon detector using open path infrared technology. Using a separate transmitter and receiver configuration, it provides a wide, dynamic range and maximum on-line time. Advanced digital signal processing and self checking ensures high integrity and availability. It has a stainless steel housing for robustness. Outputs are industry standard 4-20mA and optional Modbus RS485 multidrop. It is factory calibrated. Its robust sealed design with no moving parts and the solid-state sensor allow for mounting in any orientation, even in the harshest environments.



**Honeywell Meshguard EC**  
Wireless Gas Detector

The RAE Systems by Honeywell MeshGuard gas detection monitor is a key building block of the MeshGuard intelligent network of connected sensors for gas detection in industrial safety and oil and gas applications.

The MeshGuard system is designed for quick deployment in areas where low cost/high ROI solutions are required. MeshGuard is available with field-replaceable precision sensors specifically designed to sense toxic and flammable gases.

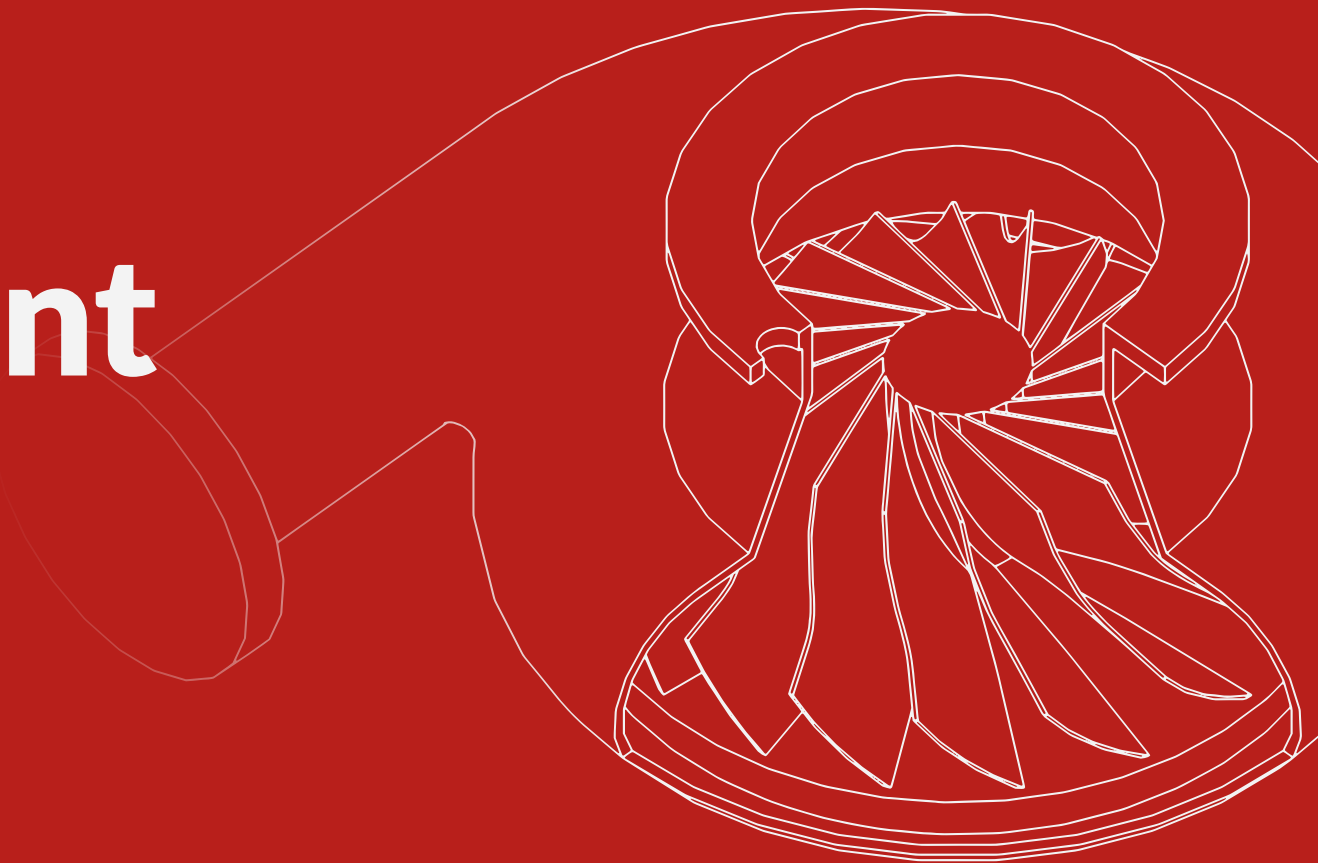






# Rotating Equipment


Chesterton  
Ruhrpumpen






# Chesterton® Solutions for Rotating Equipment

Whether advanced shaft sealing, gearbox protection or protective coatings, Chesterton provides the total solution for improved pump reliability.



**Advance Lubrication Technology**  
Chesterton's OBT technology. Extends bearing life. Resists wear, load and corrosion.



**Automatic Microprocessor Controlled Dispensing System**  
Delivers precise volumes of lubricant. Simple to use and install.

Other ARC Efficiency & Protective Coatings Products



**Machinable Composite**  
Rebuild and protect worn shafts



**Protective Coating for Concrete & Metals**  
Protect pump base plate, frame and pump base

Other Maintenance and Repair Products



**Cold Galvanizing Compound**  
Micronized particles of pure zinc protects against Galvanic Corrosion. Use on bolting, weld seams and supports.



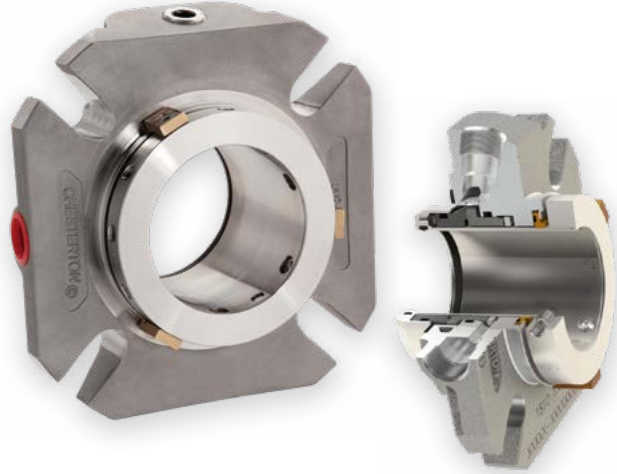
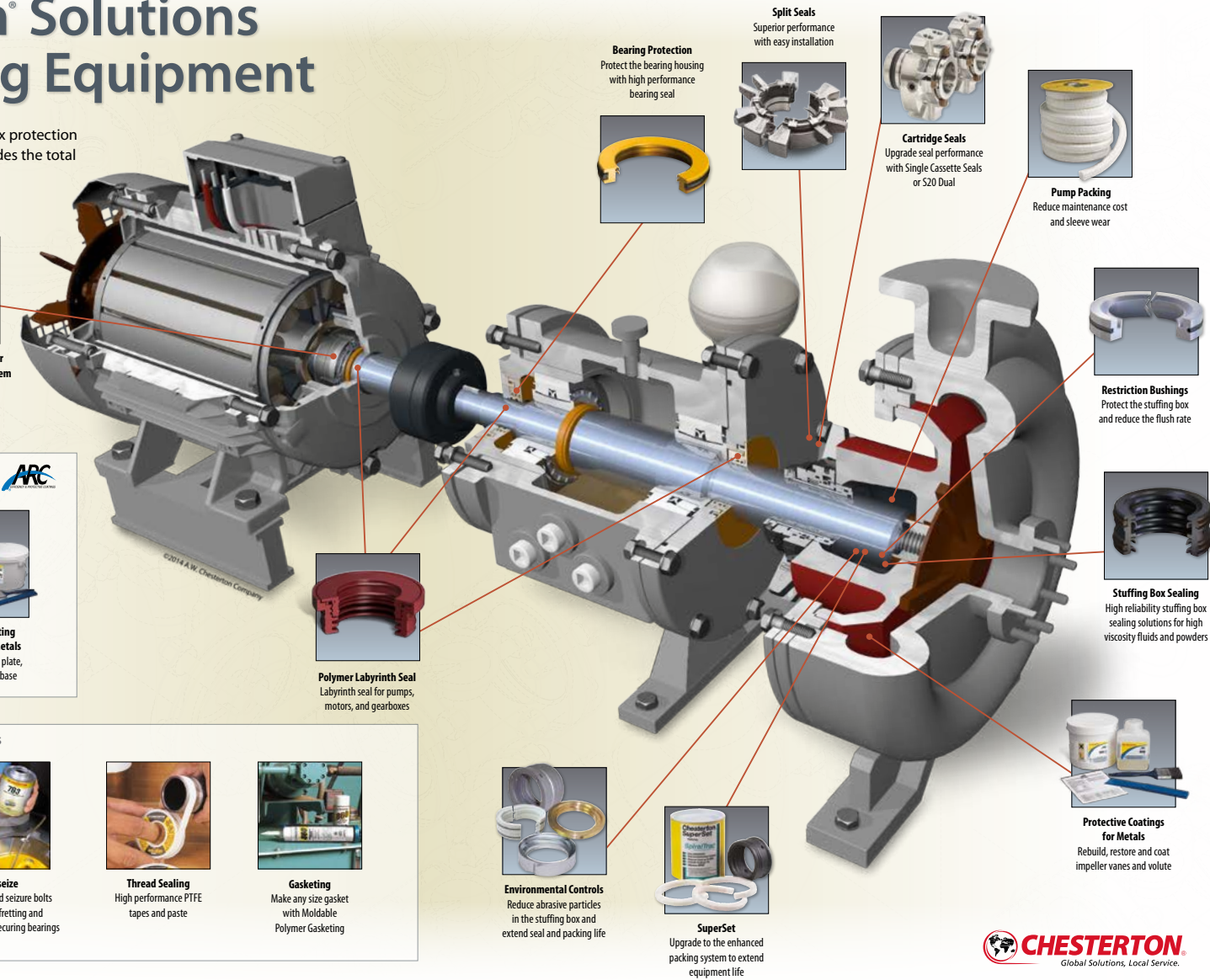
**Anti-seize**  
Prevent rust and seizure bolts and prevent fretting and corrosion while securing bearings



**Thread Sealing**  
High performance PTFE tapes and paste

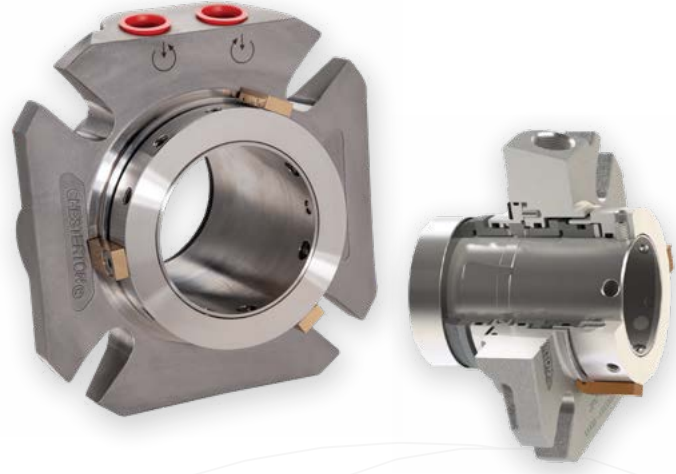


**Gasketing**  
Make any size gasket with Moldable Polymer Gasketing



**Chesterton 1810**  
Heavy Duty Modular Cartridge

Chesterton's 1810 is a scalable, plant-wide mechanical sealing solution that can be used in a variety of pumps. From standard applications to your most demanding processes, 1810 can be configured for maximum performance.



**Chesterton 2810**  
Heavy Duty Modular Cartridge

Chesterton's 2810 is a double seal with advanced features that provide superior emissions control, safety, and reliability. Ideal for sealing hazardous or dangerous process fluids, the 2810 offers a high degree of control over seal operating conditions. This ability improves the seal's operating condition and lifetime.





## Chesterton A182 & A2382

### Mechanical Seals

Chesterton A182 single and A2382 dual API seals are designed specifically for stringent refinery applications meeting Type A pusher seal requirements, delivering high reliability and emission control performance. The A182 single seal meets tough emissions requirements through advanced seal face design and low heat generation. The A2382 is a double balanced seal design accepting pressure reversals. This innovative design approach simplifies seal selection and improves standardization throughout the plant.



## Chesterton 783 ACR

### Corrosion-Resistant Anti-Seize Compound

Chesterton 783 ACR represents the newest generation of anti-seize compound. A proprietary blend of ultra-fine inorganic solid lubricants, 783 ACR can be used under extremely severe conditions of temperature and pressure. The ultra-fine particles spread evenly and fill surface profiles to prevent metal-to-metal contact and insure thorough coverage. 783 ACR protects assembled parts against corrosion and presents a barrier to the corrosive effects of moisture, steam, salt water, high temperatures, and corrosive chemicals.



## Chesterton 1622

### Low E Valve Packing

Chesterton 1622 Low E Valve Packing is designed to minimize valve emissions and exceeds current emissions requirements for the refinery, petrochemical, and chemical industries. The advanced construction provides superior emissions and leakage control under harsh process conditions. This construction results in a non-hardening, flexible packing that will not shrink or absorb moisture. The strands that make up the packing slide easily over one another in response to gland pressure, creating a secure and reliable seal.



## Chesterton Connect

### Monitoring Sensor

Chesterton Connect is a simple to use data acquisition tool that enables you to safely and conveniently monitor your process and equipment's operating conditions. Utilizing Bluetooth® technology and a robust design to withstand harsh environments, Chesterton Connect makes it easy to monitor equipment vibration, process & surface temperature, and process pressure. Easy to install, Chesterton Connect combined with the user-friendly app allows you to connect to multiple sensors providing you with a comprehensive view of your plant's equipment health.

# Rotating Equipment

Chesterton 1810

Heavy Duty

Modular Cartridge



Sizes	25 mm – 120 mm (1.00" – 4.75)  Rotary Faces: CB, SSC, TC
Pressure	711 mm or 28" Hg Vacuum to 40 bar g (600 psig*)  Stationary Faces: SSC, TC
Temperature	–55°C – 300°C (–67°F – 570°F) Temperature limits depend on actual elastomers used  Elastomers: FKM, EPDM, FEPM, FFKM
Speed	25 m/s (5000 fpm)  Metal Parts: 316 Stainless Steel (EN 1.4401)
Springs	Alloy C-276 (EN 2.4819)
Standards	ISO-3069C, ASME B73.1, B73.2

Chesterton 2810

Heavy Duty


Modular Cartridge



Sizes	25 mm – 120 mm (1.00" – 4.75")  Rotary Faces: CB, SSC, TC
Pressure	711 mm or 28" Hg Vacuum to 40 bar g (600 psig*) 17 bar g (250 psig) outboard  Stationary Faces: SSC, TC
Temperature	–55°C – 300°C (–67°F – 570°F) Temperature limits depend on actual elastomers used  Elastomers: FKM, EPDM, FEPM, FFKM
Speed	25 m/s (5000 fpm)  Metal Parts: 316 Stainless Steel (EN 1.4401)
Springs	Alloy C-276 (EN 2.4819)
Standards	ISO-3069C, ASME B73.1, B73.2, ATEX Category I, Group 2 approved

Chesterton A182 & A2382

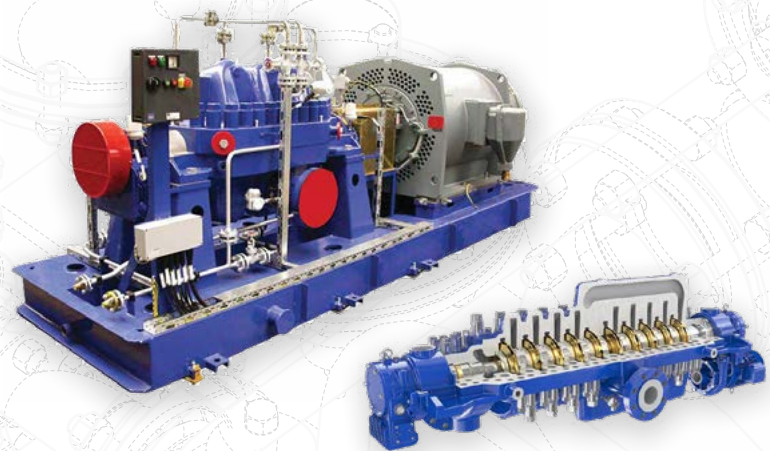
Mechanical Seals



Pressure	Meets requirements covered under API682
Temperature	–40°C to 260°C (–40°F to 500°F)
Speed	25 m/s, 5000 fpm
Size Range	20mm (.875") to 120mm (4.75")
Standards	Meets ISO 13709, cat. 2 and 3
Materials	Hardware: 316 Stainless Steel (EN 1.4401) Rotating Face: Premium grade carbon, TC, SC Stationary Face: SC Secondary Seals: FKM, FFKM Springs: Hastelloy™ C Throttle Bushing: Floating carbon design







## Ruhrpumpen SM

Horizontal Multi-Stage Pump

The Ruhrpumpen SM / SMI are heavy duty, horizontal volute, multi-stage, centrifugal pumps of the BB3 configuration according to API 610, latest edition. SM / SMI pumps with axial split casing are robust and reliable. Hydraulic balance is obtained by arranging the impellers in opposed groups. They are designed to withstand medium up to high pressure ranges. SM / SMI pumps are easy to inspect and maintain, due to the volute design which allows direct access to the rotor. The lower casing half will remain on the baseplate connected to the pipeworks during inspection and dismantling. This guarantees free access to the rotating assembly



## Ruhrpumpen VLT

Vertical Process Pump

The VLT / VMT pumps are vertical process pumps of the "double casing" type as defined by API-610. By multi-staging series stages in the medium specific speed design range, the VLT / VMT pumps provide outstanding efficiencies and low cost operation in high head applications. The special first stage allows operation with extremely low NPSH requirements while running at optimum speeds. Exclusive hydraulic and mechanical features provide continuing reliability with optimum performance.



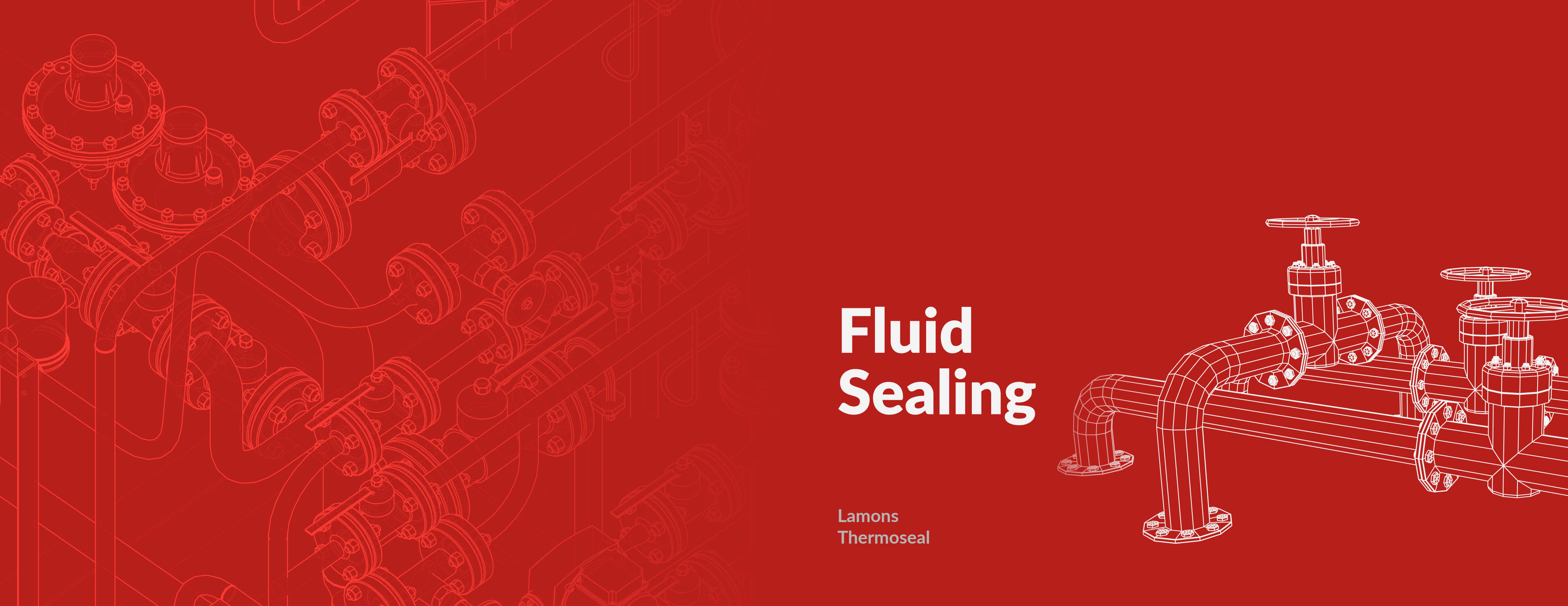
## Ruhrpumpen SWP

Self-Priming Pump

The SWP line is a self priming pump that can handle clear liquids or with solids. Its large volute design allows automatic repriming in a completely open system without the need for suction or discharge check valves. These type of pumps are designed to allow an simplified maintenance of the pump with the use of common hand tools and having easy access to its interior parts such as the impeller and the seal for asimple maintenance therefore reducing operating costs. These pumps are ideal for waste handling applications and sewage handling applications in industries such as paper, agricultural, construction, automotive, and many others.







# Fluid Sealing

Lamons  
Thermoseal





Lamons Isolation Kits  
Engineered Kit

Engineered kits are comprised of a fluid sealing/isolation gasket, sleeves, washers, fasteners, non-conductive lube, MTRs, and detailed installation instructions.

This engineered kit is designed to be a turnkey convenience option that gives operators all the correct products to complete the flange bolt-up with ease.

The gasket and fasteners provided can be any Lamons product that is equivalent to pipeline material specifications.



IsoTek Torque Calculator

Download the gasket torque calculator today for free on the App Store or Google Play.



Products Included:

- Gaskets: isolation, spiral wound, Kammprofile, sheet
- Fasteners: coated, non-coated, stainless, specials
- Lube: per design spec.

Innovative Engineering Solutions:

- Field support
- Technical services
- Online classes
- Torque calculator
- MTR data sheets
- Detailed drawings
- E-catalogue



Lamons Kammpro  
Kammprofile Gaskets

Lamons Kammpro gaskets are recognized as a problem solver for heat exchangers, large vessels, and equipment that experience excessive movement due to thermal expansion. The Kammpro provides one of the tightest seals combined with superior load bearing characteristics. Kammpro gaskets consist of a metal sealing core with or without a guide ring. The sealing core is a solid metal gasket with concentric serrations on both sealing surfaces and faced with a soft material such as flexible graphite, EPTFE, or a Lamons HTG configuration depending on operating conditions.



Lamons SpiraSeal  
Spiral Wound Gaskets

Spiral wound gaskets have become extremely popular due to the wide variety of available styles and sizes. Spiral wound gaskets can be fabricated of any metal which is available in thin strip and which can be welded; therefore, they can be used against virtually any corrosive medium dependent upon the choice of the metal and filler. They can be used over the complete temperature range from cryogenic to approximately 2000°F (1093°C). This type of gasket can be used in all pressures from vacuum to the standard 2500 pressure class flange ratings. Can be manufactured with variable densities.



## Fluid Sealing

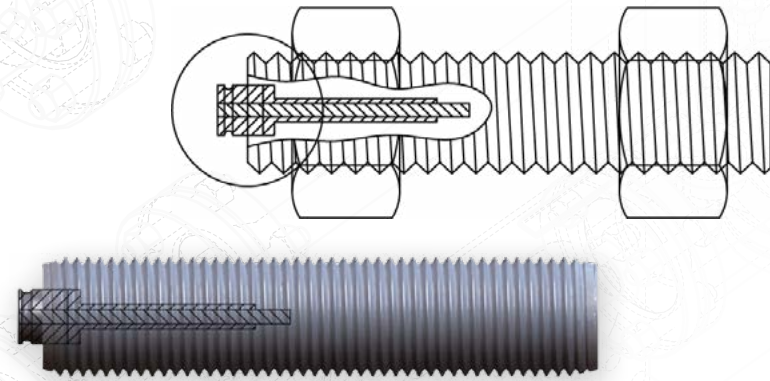


### Lamons Speciality Bolts

Teflon Coated Bolts

Available in a wide range of alloys and sizes, Lamons' fasteners are considered to represent the highest quality standard in the industrial market. Our large inventory of fasteners, stud bolts, threaded bar stock and related hardware allows us the ability to quickly respond to any customer requirement or demand. Alloy and Stainless supply representing all industrial standards – ASTM A193, A320, A453. Available in diameters between 1/2" to 4". Any industrial coating available: zinc, cadmium, and fluorocarbon.

## Lamons

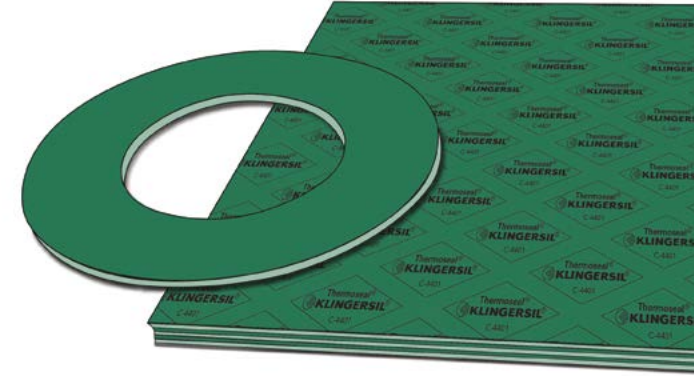


### Lamons SPC4

Load Indicating System

SPC4™ load indicating fastener technology allows installation of a bolted assembly with confidence. Users can monitor the clamp load of any SPC4™ bolted joint whether static or dynamic, by attaching an indicator datum disc located on the end of the fastener and reading the value with a user friendly mechanical indicator. The SPC4™ joint allows the end-user to retighten only the bolts or studs that have lost their clamp load, resulting in a tremendous saving of maintenance time, money, and replacement parts.

## Thermoseal



### Thermoseal C4401

Gasket Material

KLINGERSIL C-4401 is a universal gasket material for use in a wide range of applications. The general purpose gasket material has excellent sealability and chemical resistance.

This material is manufactured with aramid fiber reinforced with a nitrile binder.



### Klinger Graphite Laminate SLS

Gasket Material

KLINGER® Graphite Laminate SLS - the pure graphite gasket with smooth stainless steel insert. Combining pure exfoliated graphite with stainless steel foil reinforcement, this gasket material promises improved cutting and handling. Thanks to its graphite-based conformability characteristics, it is suitable for low bolt-load and damaged flange scenarios. Resistant to virtually any type of medium, it is also temperature-resistant (up to 450°C) and highly compressible.



## Services

- **API 6A/6D Valve Repair**

- General Twin Seal
- DAN-EX
- WKM
- Cameron
- M&J
- Grove
- Omni
- Etc.

- **Control Valve Repair**

- Masoneilan
- Fisher
- Metso
- Jamesbury & Neles

- **Actuator Repair**

- REXA
- Limitorque
- Rotork
- Auma
- EIM
- Bettis

- **Pressure Relief Valve Repair**

- Consolidated (GTC)
- Anderson Greenwood
- Crosby
- Farris, Lesser

- **Rotating Equipment Repair**

- Chesterton Service Centers
- Ruhrpumpen - pumping and repair

- **Fluid Sealing**

- Engineering support
- Torquing

- **Machining**

- **Welding**

- **Painting**





# Indianapolis Shop - API 6A/6D Capabilities

