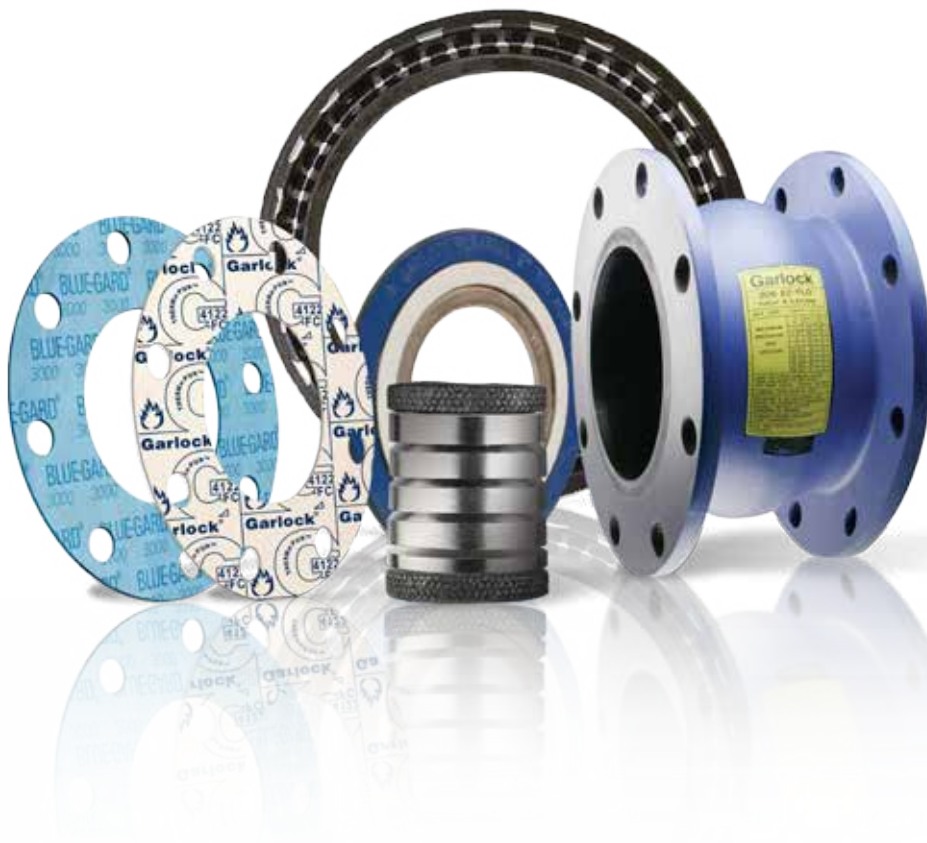


# Seals & Sealing Systems

Overview and Capabilities



# Leaders in Sealing Integrity

## **BROAD PRODUCT RANGE**

The Garlock family of companies has developed countless products including gaskets and sheet material, metallic gaskets, resilient metal seals, KLOZURE® oil seals, bearing isolators and mechanical seals, compression packing, expansion joints, elastomer seals, hydraulic components and tools to increase production in your plant, ensure safety and reduce hard costs.

## **PRODUCTS DESIGNED TO LAST**

Every Garlock product is specifically designed, constructed and tested to ensure a longer operating life, leading to lower cost, higher safety and real bottom-line savings consistent with Life Cycle Costing (LCC) programs.

## **DESIGN/ENGINEERING**

The Garlock family of companies application engineers have designed countless sealing solutions throughout the world, and provide on-site surveys, product recommendations and training.

## **TESTING/QUALITY ASSURANCE**

With the most complete in-house testing facilities in the industry, Garlock can provide test verification documentation for your sealing solution, based on your specifications, or any industry or government standard.

## **A PARTNER PRESENT EVERYWHERE**

Globally, Garlock proudly serves processing industries including:

- |                       |                                    |
|-----------------------|------------------------------------|
| » Chemical Processing | » Pulp & Paper                     |
| » Power Generation    | » Oil & Gas                        |
| » Primary Metals      | » Food and Pharmaceuticals         |
| » Mining              | » Marine                           |
| » Water/Wastewater    | » Original Equipment Manufacturers |

Garlock is acknowledged as the global leader in high-performance fluid sealing products, committed to a culture of safety by making the world safer, sustainable and more reliable.

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Globally, Garlock proudly serves processing industries including chemicals and petrochemicals, refining, pulp and paper, power generation, semiconductor, primary metals, food and pharmaceuticals, mining and original equipment manufacturers.

# Industries Served

### PROVIDING PERSONAL SAFETY AND INDUSTRY REASSURANCE

## Power Generation

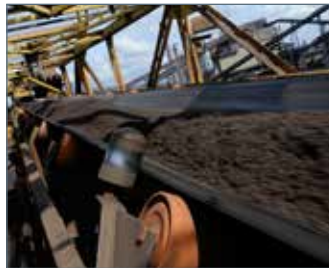
Garlock companies offer advanced sealing solutions for the varied needs of power generation industries, such as coal, natural gas, fossil fuel, gas turbines and more.



**POWER GENERATION**

## Mining

Garlock sealing products are built for heavy-duty performance and reliability in even the most formidable conditions. They are designed and constructed for superior erosion and corrosion resistance.



**MINING**

## Primary Metals

When down time is not an option, the Garlock family of companies provides sealing products that focus on the extreme requirements of the metals industry.



**PRIMARY METALS**

## Chemical Processing

Sealing products from the Garlock family of companies provide safety and reassurance like no others, each able to withstand temperature extremes and resist corrosion due to contact with aggressive materials.



**CHEMICAL PROCESSING**

## Marine

Garlock has been serving the commercial marine industry for the past 114 years. We offer mil-spec packings, gaskets, seals, and American Bureau of Ships approved products.



**MARINE**

## Food & Beverage, Brewing & Bottling

We manufacture sealing solutions with the specific needs of the food and beverage markets at the forefront.



**FOOD & BEVERAGE,  
BREWING & BOTTLING**

# Industries Served

## PROVIDING PERSONAL SAFETY AND INDUSTRY REASSURANCE

### Oil & Gas

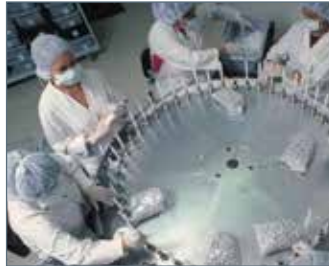
Garlock programs for the Oil & Gas industry include solutions for on-site maintenance, turnkey emission monitoring and repair programs, Integrated Pollution Prevention Control reporting, comprehensive plant sealing, specialty projects and low emissions.



**OIL & GAS**

### Pharmaceutical

The Garlock family of companies continues to seek out and work with operations and maintenance staff, as well as process engineers to develop sealing solutions in static and dynamic applications common to the pharmaceutical industry, including hygienic pipework, blenders and mixers, fluid bed dryers, valves and pumps.



**PHARMACEUTICAL**

### Pulp & Paper

Reduced downtime and increased efficiency are at the top of every manufacturer's priority list, especially those in the Pulp & Paper industry. Also critical on that list are reducing water consumption and minimizing environmental impact in a cost-effective manner. The Garlock family of companies offers solutions for all of those challenges and more.



**PULP & PAPER**

### Nuclear

Health and safety outweigh all other factors in nuclear plants. Therefore, failure is never an option when it comes to the sealing products used in these plants.



**NUCLEAR**

### Water/Waste Water

Once a commodity, fresh water is now recognized as one of the most valuable resources we have on earth. Garlock companies offer sealing solutions that help meet these stringent requirements, as well as withstand the strenuous demands of various processes.



**WATER/WASTE WATER**

### Garlock NSF 61



Garlock proudly offers four different gasketing products that are NSF/ANSI 61 certified: GYLON® 3505, MULTI-SWELL™ 3760-U, STRESS SAVER® XP and Rubber Sheet 98206 (EPDM).

### ABS Type Approved



Garlock works to ensure our products are certified to the highest standards the American Bureau of Shipping requires for rigorous marine requirements.

Look for the ABS logo throughout this brochure for our certified products.

# Gaskets & Sheet

Offering a complete range of gasket materials that comply with the most stringent environmental regulations.

**OUR SOLUTIONS ARE CUSTOMIZED TO YOUR EXACT SPECIFICATIONS**

## THERMa-PUR™ Style 4122

This unique new gasket material is designed for use in high temperature sealing applications, is able to withstand continuous and thermal cycling temperature up to 1,832°F (1,000°C). Its proprietary formulation is oxidation resistant, provides electrical insulation and has the ability to resist absorption of water and other liquids.



**THERMa-PUR™ STYLE 4122**

## Multi-Swell™ Style 3760

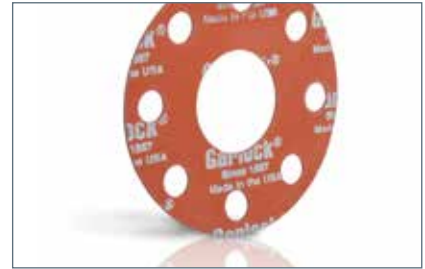
Fiber sheet gasket with a proprietary binder creates a tight seal by swelling in water or oil service. Higher compressibility makes this an excellent gasket for less than perfect flanges. Seals light weight and under-bolted flanges on pipes, gear boxes and more.



**STYLE 3760**

## Rubber Sheet

Premium grade elastomer (rubber) sheet products for applications where the low load requirements of rubber are necessary.



**RUBBER SHEET**

## GRAPH-LOCK®

Pure exfoliated graphite material handles extreme temperatures, resists nearly all non-oxidizing chemicals, and offers excellent compressibility and low creep relaxation. Available in homogeneous material, or with metallic or non-metallic inserts.



**GRAPH-LOCK®**

## HOCH-DRUCK® Style 3128 Style 9900

High performance multi-layer graphite with 316SS inserts provides high compressive strength, blow-out resistance, excellent handling properties and improved tightness.



**STYLE 3128**



**STYLE 9900**



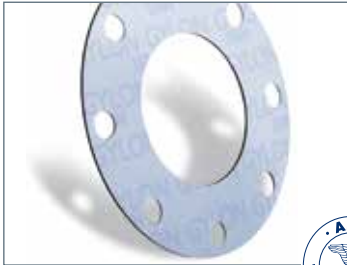
# Gaskets & Sheet

Offering a complete range of gasket materials that comply with the most stringent environmental regulations.

**OUR SOLUTIONS ARE CUSTOMIZED TO YOUR EXACT SPECIFICATIONS**

## Garlock GYLON®

Restructured PTFE gasketing with excellent chemical resistance. Significantly reduces creep relaxation problems typical of conventional PTFE.



**GYLON®**



## Style 5500

Inorganic fiber gasketing with excellent thermal stability and torque retention for optimal sealability in temperatures up to 550°F (290°C) continuous.



**STYLE 5500**

## Style 706

Heat and oxidation-resistant inorganic fibers for superior performance in saturated and superheated steam. Range of applications in power generation, chemical and hydrocarbon processing industries.



**STYLE 706**



## BLUE-GARD®

Gasketing material made from a unique blend of fibers, fillers, and a choice of several elastomeric binders. Excels in a wide range of industrial applications.

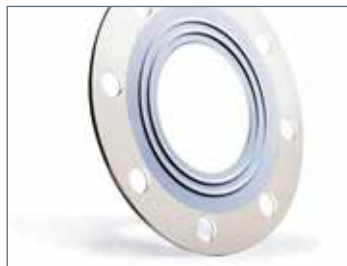


**BLUE-GARD®**



## STRESS SAVER®

Super low torque gasket for non-metallic flanges in chemical and ultra-pure applications. Available in EPDM, EPDM with a PTFE envelope (jacket), and a proprietary fluoroelastomer for aggressive chemical service.



**STRESS SAVER®**

## STRESS SAVER® GYLON® Style 3504

The molded raised ribs help to create a tighter seal by concentrating the compressive load, ideal for lightweight piping.



**GYLON® STYLE 3504**

# Metallic Gaskets

Innovative metal gaskets designed to standard and customer configurations. Incorporating a wide range of quality materials to suit all process applications.

## THE GARLOCK ADVANTAGE

### FLEXSEAL® Spiral Wound

Made by winding alternating strips of metal and soft filler material such as flexible graphite or PTFE. Ideal for standard flanges, heat exchangers, boiler handholes, manholes and other high temperature, high pressure applications.



**FLEXSEAL® Spiral Wound**

### EDGE®

Innovative spiral wound gasket design, eliminates the radial buckling problems typical of traditional spiral wound gaskets.



**EDGE®**

### GRAPHONIC® Series

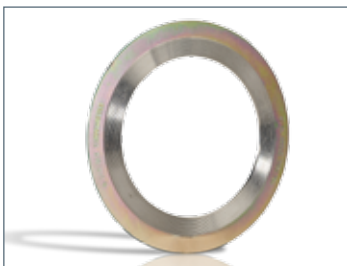
Corrugated metal core encapsulated by soft sealing elements. Excellent for high temperatures and corrosive chemicals. Works well in less-than-perfect flanges and thermocycling applications.



**GRAPHONIC® Series**

### Kammprofile™

Serrated solid metal core for rigidity coupled with a deformable sealing material for compressibility. Ensures tight, reliable sealing even under low bolt loads. Durable and tight in extreme temperature and pressure fluctuations.



**KAMMPROFILE™**

### Heat Exchanger Gaskets

Custom configurations available in a wide range of materials and gasket styles. Solutions for almost any application.



**HEAT EXCHANGER GASKETS**

### THERMa-PUR™ Spiral Wound

In addition to our existing line of THERMa-PUR offerings, we are now adding a high temperature THERMa-PUR Spiral Wound. The THERMa-PUR Spiral Wound gasket is designed for use in extreme temperature and aggressive chemical applications.



**THERMa-PUR™ SPIRAL WOUND**





# Compression Packing

Our compression packings are rigorously tested to ensure dependable, cost-effective sealing in valves, pumps, agitators, and other rotary equipment.

### THE GARLOCK ADVANTAGE

## Style 212-ULE™

Better performance than an engineered set in a convenient spool product. Style 212-ULE is easy to cut and install with color coded instructions. Cut inventory dollars and reduce outage schedules without sacrificing performance. Outage planning is easier than ever.



**STYLE 212-ULE™**

## Style 1303-FEP

Braided packing combines flexible graphite with a non-scoring filament jacket for high temperature and pressure applications in the chemical, petrochemical and power generation industries. Fire-safe and compliant with stringent VOC and VHAP emissions regulations.



**1303-FEP**

## Style 9000 EVSP

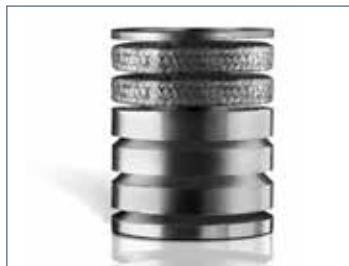
The ultimate solution for environmental protection through reduced VOC emissions. Patented “cup and cone” design permits selective component compression and controlled radial flow, creating an effective seal against both valve stem and bore.



**9000 EVSP**

## Style 8093 DSA

Innovative pump packing set engineered for dry running and reduced flush water consumption.



**STYLE 8093 DSA**

## PTFE

High density, non-porous PTFE continuous fiber resists chemical attack and prevents leakage through the braid. Ideal for valves and pumps in the chemical and food processing industries.



**STYLE 5888, 5889, 5904**

## SYNTHEPAK®

Lubricated, braided synthetic fiber packing performs well with minimal shaft and sleeve wear. Excellent for general service applications.



**STYLE 8909, 8913, 8921-K, 8922**

# Expansion Joints

Expansion joints are engineered to absorb movement and dampen vibration, reducing stress on pumps, pipes and anchoring systems.

### SPECIFICALLY ENGINEERED PRODUCTS FOR RIGID PIPING SYSTEMS

## Style 204, 204HP, 204EPS

Industry standard spool-type joints with single or multiple arch configuration withstand full vacuum and excessive movement. Available in a variety of elastomers to handle a wide range of temperature, pressure and media combinations.



**STYLE 204, 204HP, 204EPS**

## Style 206 EZ-FLO®

Featuring a unique self-flushing arch, this joint is the perfect choice for difficult slurry applications. The lightweight design is economical and easy to install.



**STYLE 206 EZ-FLO®**



## GUARDIAN® 200

The mechanically bonded, high-density FEP liner, high pressure and full vacuum capabilities make this abrupt arch style expansion joint an excellent choice for a wide variety of chemical applications. Available in 2" to 30" I.D.



**GUARDIAN® 200**

## GUARDIAN® 306 EZ-FLO®

This expansion joint flowing arch design prevents media buildup and reduces turbulence. The FEP liner resists corrosive attack at elevated temperatures and pressures, making it ideal for the chemical processing and pulp and paper industries.



**GUARDIAN® 306 EZ-FLO®**

## Style 214/215

PTFE flexible couplings reduce noise and compensate for expansion and contraction in air conditioning and heating systems. Superior corrosion resistance for use in the chemical processing industry.



**STYLE 214/215**

## GARFLEX® 8100

Features rugged yet flexible nylon cord reinforcement in a molded, spherical bellows design that ensures an exceptional burst pressure rating. The streamlined flowing arch design reduces turbulence and allows smooth, quiet flow—no need to fill the arch and restrict its movement.



**GARFLEX® 8100**

## KLOZURE®

By retaining lubricants, excluding contamination or separating fluids, KLOZURE Oil Seals and Bearing Isolators protect bearings and keep processes moving in the most demanding applications. KLOZURE Mechanical Seals provide reliable sealing for most types of rotating equipment throughout the processing industry.

### OIL SEALS

#### Model 23

The original split seal has saved thousands of downtime hours. More than 300,000 sizes in Mill-Right® N available in 24 hours or less. (Requires a cover plate)



**MODEL 23**

#### Model 26

Versatile rubber O.D. seal, available in shaft sizes from 0.750" to 60" in solid and split configurations. (Split seal does not require a cover plate)



**MODEL 26**

#### Model 59

Metal O.D. large-bore seal for moderate to severe operating conditions. Reverse bevel lip allows installation in either direction without rollover.



**MODEL 59**

#### P/S®-I

The exclusive Garlock GYLON® lip material provides outstanding resistance to chemicals and high temperatures, with greatly reduced creep and cold flow as compared to standard PTFE. Runs dry up to 800 fpm.



**P/S®-I**

#### Model 64®

Fifty years of proven success in severe service, large-bore applications. Accommodates the highest speed (7,000 fpm) and misalignment/runout (0.125") in the industry.



**MODEL 64®**

#### Model 87

Combines the sealing and installation ease of a rubber O.D. seal with the rigidity of metal. The top choice for many primary metals and pulp and paper applications.



**MODEL 87**

# KLOZURE®

## BEARING ISOLATORS

### ISO-GARD® Bearing Isolator

Unitized PTFE construction of this non contacting, two-piece seal provides excellent chemical and temperature resistance. The ideal alternative to lip seals in non-flooded, oil or grease applications.



**ISO-GARD®**

### GUARDIAN™ Metallic Bearing Isolator

Bronze bearing isolator for non-flooded applications with patented cam-lock system and internal PTFE unitizing seal feature. Surpasses all test requirements as specified by IEEE 841-2001.



**GUARDIAN™**

### Micro-Tec® II

Metallic bearing isolator, designed for applications that require bearing protection in highly contaminated environments. Utilizes microcellular technology to block out airborne contamination. Performance meets NEMA MG 1-2003 as required in IEEE 841-2001.



**MICRO-TEC® II**

### SGI™

The ultimate protection for your bearings! The Garlock SGI incorporates the proven GUARDIAN™ technology with the only maintenance-free shaft voltage mitigation technology, the AEGIS™ SGR.



**SGI™**

### EnDuro™

The bearing isolator you have been waiting for. The EnDuro is the first and only bearing isolator designed for oil mist and flooded conditions. The patent pending EnDuro seal is a unique blend of traditional labyrinth seal technology and new revolutionary sealing technology.



**ENDURO™**

### Surface Mounted

The next member to the innovative maintenance friendly Klozure bearing isolator family. Surface Mounted bearing isolator designs eliminate the need to machine bearing housings. When bearing protection is required and time to repair equipment is critical, Garlock Klozure Surface Mounted Bearing Isolators provide an ideal sealing solution.



**SURFACE MOUNTED**

# KLOZURE®

## MECHANICAL SEALS

### GMP-I & II Seals

Single or double cartridge seal fits all standard ANSI pumps; especially well-suited for centrifugal pumps.



**GMP-I & II SEALS**

### P/S®-II Multiple Lip Seal

Cartridge seal with multiple sealing elements offers excellent performance in thick, viscous fluids; especially effective in positive displacement pumps.



**P/S®-II MULTIPLE LIP SEAL**

### PK™ Seal

Economical design features a single spring and rubber bellows protected by stainless steel outer shell. Excellent choice for centrifugal pumps.



**PK™ SEAL**

### Syntron®

Syntron® RP Mechanical Shaft Seals are designed to eliminate the leakage of gases and fluids around the rotating shafts of pumps, compressors, mixers and similar equipment. RP Shaft Seals are compact, cartridge-type double seals.



**SYNTRON**

# Hydraulic Components

Heavy-duty seals for reciprocating and rotating equipment in a wide range of applications.

### EXPERIENCE AND TECHNOLOGY TO MEET YOUR NEEDS

## CHEVRON® Set

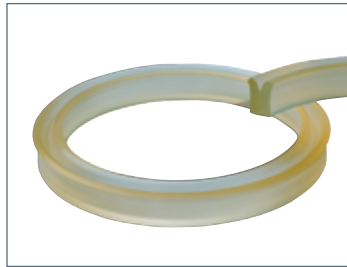
V-ring packing with unique multiple lip design automatically responds to changes in system pressure; exceptionally reliable seat for rods, rams, pistons and plungers. Also available in Deep V-ring design for large diameter, deep stuffing box applications.



**CHEVRON® SET**

## GARTHANE® U-Seal

Tough urethane seal with excellent tear and abrasion resistance; withstands a wide range of temperatures, pressures and chemicals. Ideal for plungers, pistons, rams and rods.



**GARTHANE® U-SEAL**

## Polytop Set

Combining the strength and flexibility of CHEVRON® rings with the abrasion resistance of GARTHANE® U-Seals, the unique Polytop Set offers maximum sealing performance and reliability.



**POLYTOP SET**

## LUBRIKUP® Cone Packing LUBRIKUP® Fluid-Seal Cone Packing

LUBRIKUP® has the quality and experience to satisfy your Cone Packing needs. Cone Packing is available in a wide range of materials: Regular, TEFLON® Flake, DURAGOLD™ (Brass Flake) Impregnated, a Blended DURAGOLD and TEFLON® Flake, or DURATUFF®.

The sensational performance of Fluid-Seal Rod Packing in a cone-type stuffing box. Lip-type sealing action and space between each ring creates a perfect, nonbinding fluid seal.



**LUBRIKUP® CONE PACKING**



**LUBRIKUP® FLUID-SEAL™ CONE PACKING**

## Blue DURATUFF® Well Service Packing

Blue DURATUFF® was designed to provide maximum sealability for high pressure well service pumps. The propriety material was developed to eliminate extrusion and provide excellent abrasion resistance for fracturing, acidizing and cementing pumps.



**BLUE DURATUFF® WELL SERVICE PACKING**



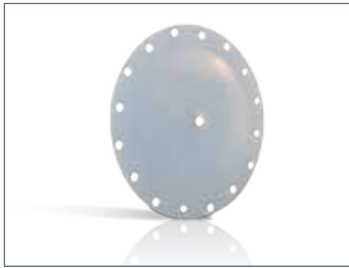
# Diaphragms

Engineered products for pumps and valves.

**PROVIDING THE HIGHEST PERFORMANCE PTFE AND RUBBER SOLUTIONS FOR YOUR INDUSTRIAL AND SANITARY NEEDS**

## GYLON® Style 3522 Diaphragm Material

Exclusive to Garlock, this time proven product is made using a proprietary process which optimizes quality and uniformity. Using the best available technology GYLON® PTFE diaphragms offer the longest cycle life in the industry, and continue to outperform all competitive materials.



**GYLON® STYLE 3522**

## Garlock® ONE-UP®

GARLOCK® ONE-UP® Pump Diaphragms are durable and versatile. Containing high performance PTFE GORE® sheet on the wetted side, they last significantly longer than other conventional PTFE diaphragms. These diaphragms provide a dramatic improvement in service life and are considerably stronger, with greater flex life.



**GARLOCK® ONE-UP®**

## High Performance Rubber Diaphragms

The trusted solution for more reliable and longer lived pump and valve diaphragms. Offered in a variety of high performance rubber compounds; we also have the ability to design compounds to meet customer specific requirements.



**HIGH PERFORMANCE RUBBER DIAPHRAGMS**

## GYLON® ONE-UP®

Your solution for sanitary applications in air operated diaphragm pumps. For years the industrial ONE-UP® pump diaphragm has been the first choice for the most demanding industrial applications. We are now introducing the new GYLON® ONE-UP for the most demanding sanitary applications.



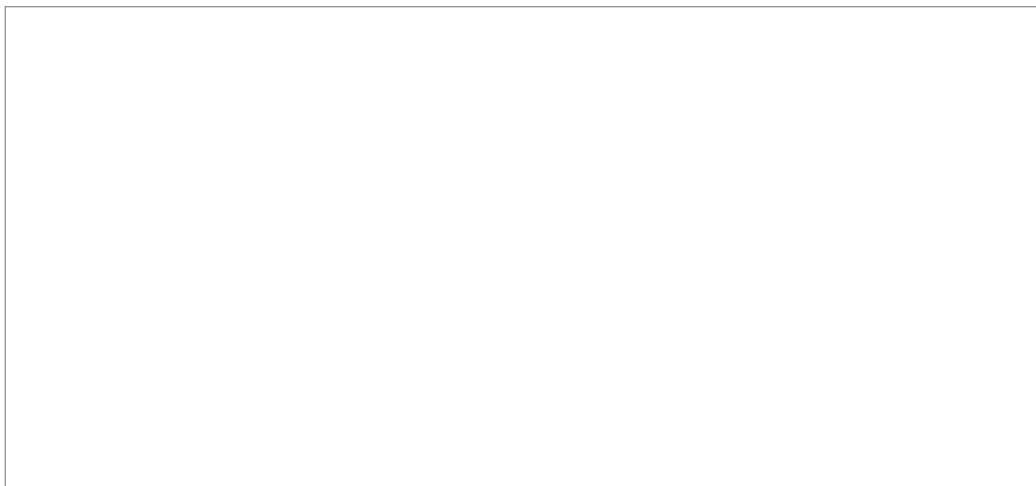
**GYLON® ONE-UP®**

Beyond offering you the widest available range of products for packing and sealing, Garlock enhances the value of its products with technical services and comprehensive training programs.

- » ISO 9001:2000 registration for Industrial Gasketing, Industrial Packing, KLOZURE® Oil Seals, Bearing Protectors, Expansion Joints, Hydraulic Components, Mechanical Seals and Industrial Rubber Products.
- » A global network of stocking Authorized Garlock Distributors.
- » Factory sales representatives and application engineers available for problem solving when and where it is needed.
- » Toll-free telephone and fax numbers for immediate product information.
- » In-plant surveys of equipment and processes, providing the customer with recommendations to identify and eliminate sealing and packing problems before they occur.

- » 10 CFR 50 Appendix B supplier
- » The most sophisticated and most comprehensive test facilities available.
- » Technical field seminars on all Garlock products.
- » Factory-sponsored product training programs, including hands-on seminars, to ensure that Garlock representatives and their distributor personnel are the best in the industry.
- » Technical Bulletins to keep you up-to-date on product enhancements and changes.

*Customers who specify Garlock fluid sealing products get, at no extra cost, the high quality support needed to run a profitable and safe operation.*



ENG-1GL Rev B