Topcast

Greene Tweed

Seals and Bearings

**Connecting**
**A Better World.**

At Topcast, we pride ourselves as one-stop-shop for spare parts, components, raw materials and consumables sourcing service provider with our extensive network of business partners, global sourcing team and decades of experience servicing a vast and diverse customer base. We are a global connector, ultimately, we connect the world.

# Exclusive Distributor of Aerospace OEM for Asia Pacific & South America Region

## Materials

### ELASTOMERS

**NBR** — or nitrile rubber (also commonly referred to as buna-N rubber or perbunan), is a synthetic rubber copolymer of acrylonitrile (ACN) and butadiene. NBR seals with a medium ACN content (approximately 30-45%) are the most commonly used because of their balanced attributes (i.e, flexibility in low-temperature applications and better resistance to hydrocarbon oils).

**HNBR** — or hydrogenated nitrile butadiene rubber, has a higher temperature rating than standard NBR, and also exhibits high tensile strength and great resistance to oil and chemicals.

**EPM or EP** — Ethylene propylene rubber is a form of non-polar synthetic rubber. EPDM consists of an additional monomer, diene, and can be cured using peroxide- or sulfur-based chemistries. EPM and EPDM seals only differ slightly in performance. Both present outstanding resistance to phosphate ester fluids, along with excellent ozone resistance.

**AU | PU** — Polyurethane rubber is most commonly formed by reacting a polyol with di- or poly-isocyanate. Polyurethane seals have high-wear, high-abrasion resistance, as well as great permeation resistance.

**FEPM | Fluoraz®** — FEPM is the ASTM designation for a range of alternating copolymers of tetrafluoroethylene (TFE) and propylene. FEPM offers great heat and excellent chemical resistance against acids and bases such as methanol, amines, ammonia, urea, hydrochloric acid, and steam at temperatures up to 450°F (232°C).

**FVMQ** — Fluorosilicone is the common shorthand for fluorovinylmethyl silicone. Fluorosilicone elastomers perform well in a wide range of temperatures, from as low as -73°C (-100°F), and as high as 177°C (350°F). Because of limited tear strength and abrasion resistance, however, they are generally only used in static applications.

**FKM | Fusion®** — Fluoroelastomer. FKM (commonly referred to as FKM rubber) has impressive heat resistance, allowing FKM seals to withstand temperatures greater than 200°C (392°F). FKMs also exhibit extraordinary levels of resistance to high pressures, chemicals, and other fluids (including several fuels).

**FFKM | Chemraz®** — Perfluoroelastomer, contains higher amounts of fluorine than standard FKM, and features higher temperature ratings, up to approximately 325°C (617°F). FFKM also has improved chemical resistance, with nearly universal chemical compatibility. This combination of high-performance capabilities makes FFKM seals the premium choice for the most challenging applications.

**Xyfluor®** — A proprietary, highly fluorinated elastomer with a chemical compatibility which surpasses that of an FKM and can handle amines, ketones, and hydrofluoric acid for static applications in temperatures ranging from -60°C to 232°C (-76°F to 450°F). Size limitations may apply.

### ENGINEERED PLASTICS

**PEEK | PEK | PEKK | Arlon®** — Polyaryletherketone: semi-crystalline engineering polymers, with outstanding high-temperature performance, harsh chemical resistance, good toughness, and excellent mechanical strength and dimensional stability.

**PTFE | Avalon®** — Polytetrafluoroethylene is a fluoropolymer engineering thermoplastic that has exceptional friction/wear properties in addition to outstanding chemical resistance and electrical insulation performance.

**Note:** Characteristic metrics are provided as generally accepted industry ranges. Actual ranges may vary, depending on specific Greene, Tweed & Co. material, such as additives, formulations, curatives used, etc.

# ACT® Ring



STATIC

DYNAMIC ●

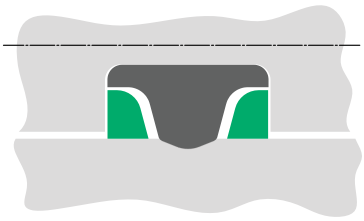
Greene Tweed has taken the concept behind our renowned AGT® seal, optimized the design of the elastomer and anti-extrusion rings, and developed an Advanced Concept T-ring (ACT®).

The ACT® ring is designed with converging sides in order to promote lubrication for reduced friction and wear, with an apex for force concentration under low-pressure conditions to optimize sealing.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | ● | Piston | ● | Aero & Defense | ● |
| Avalon® | ● | Rod | ● | Energy | ● |
| Elastomers | ● | Face | | Semiconductor | ● |
| Metal | | Reciprocating | ● | Industrial | ● |
| Other | | Oscillating | ● | Life Sciences | ● |
| | | Rotary | | | |

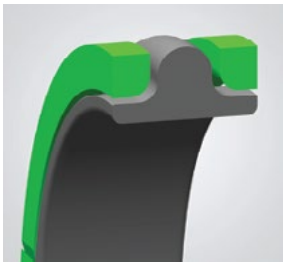
| OD MIN (in) | OD MAX (in) |
|---|---|
| 0.24 | 16.05 |

| CX MIN (in) | CX MAX (in) |
|---|---|
| 0.06 | 0.28 |



# AGT® Ring





STATIC ●

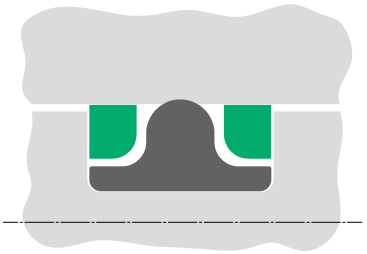
DYNAMIC ●

A double-acting rod or piston seal that provides the quality and reliability the Aerospace industry requires. The AGT® ring offers an outstanding combination of easy installation, low leakage and long service life for exceptional performance in many static and dynamic sealing applications. The seal design helps to resist roll and spiral failure.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | ● | Piston | ● | Aero & Defense | ● |
| Avalon® | ● | Rod | ● | Energy | |
| Elastomers | ● | Face | ● | Semiconductor | |
| Metal | | Reciprocating | ● | Industrial | |
| Other | | Oscillating | ● | Life Sciences | |
| | | Rotary | | | |

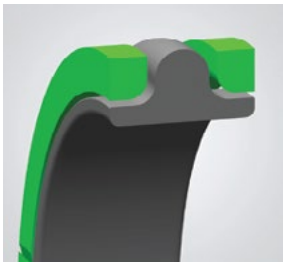
| OD MIN (in) | OD MAX (in) |
|---|---|
| 0.18 | 32 |

| CX MIN (in) | CX MAX (in) |
|---|---|
| 0.06 | 0.50 |



# G-T® Ring





STATIC ●

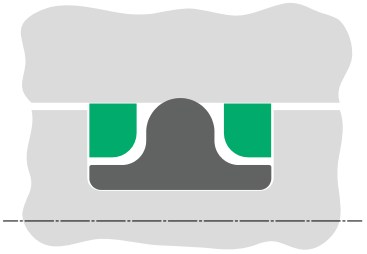
DYNAMIC ●

A double-acting rod or piston seal with an outstanding combination of easy installation, low leakage and long service life for exceptional performance in many static and dynamic sealing applications. The G-T® ring offers better extrusion resistance and eliminates spiral failure when compared to an O-ring and Back-up ring assembly.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | ● | Piston | ● | Aero & Defense | |
| Avalon® | ● | Rod | ● | Energy | ● |
| Elastomers | ● | Face | ● | Semiconductor | ● |
| Metal | | Reciprocating | ● | Industrial | ● |
| Other | | Oscillating | ● | Life Sciences | ● |
| | | Rotary | | | |

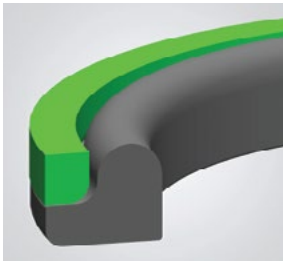
| OD MIN (in) | OD MAX (in) |
|---|---|
| 0.18 | 32 |

| CX MIN (in) | CX MAX (in) |
|---|---|
| 0.06 | 0.50 |



# Static Face™ Seal





STATIC ●

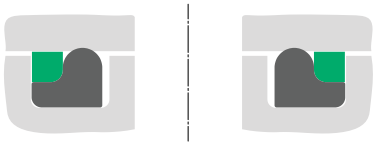
DYNAMIC

Static Face™ Seals are designed to eliminate sealing problems in face-mounted assemblies where large clearances can occur and/or pressures up to 10,000 psi (690 bar) are encountered. Engineered as a “drop-in” replacement for O-ring seal glands, the Static Face™ Seal consists of an L-shaped elastomeric sealing element with a hydromechanically energized mating back-up ring.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | ● | Piston | | Aero & Defense | ● |
| Avalon® | ● | Rod | | Energy | ● |
| Elastomers | ● | Face | ● | Semiconductor | ● |
| Metal | | Reciprocating | | Industrial | ● |
| Other | | Oscillating | | Life Sciences | ● |
| | | Rotary | | | |

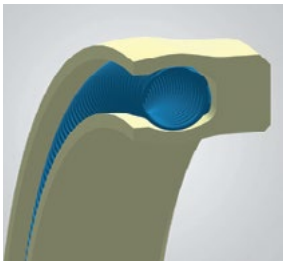
| OD MIN (in) | OD MAX (in) |
|---|---|
| 0.25 | 32 |

| CX MIN (in) | CX MAX (in) |
|---|---|
| 0.07 | 0.21 |



# Canted Coil Spring MSE® Seal

METAL SPRING ENERGIZED



STATIC ●

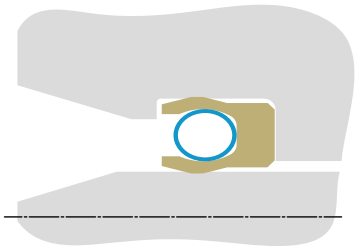
DYNAMIC

Canted Coil Spring Energized MSE® seals allow for lower seal friction at low pressure. The Canted Coil Spring has a flatter spring rate curve compared to finger and regular coil springs, allowing for more consistent spring force throughout its deflection. The Extended Heel Series is preferred for high-temperature/high-pressure applications. Rod and piston types use one Extended back-up gland width. The Canted Coil spring is intended for temperatures from -270°F to 550°F.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | | Piston | ● | Aero & Defense | ● |
| Avalon® | ● | Rod | ● | Energy | ● |
| Elastomers | | Face | ● | Semiconductor | ● |
| Metal | ● | Reciprocating | | Industrial | ● |
| Other | | Oscillating | | Life Sciences | ● |
| | | Rotary | | | |

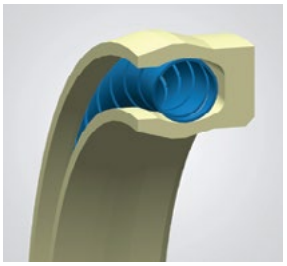
| OD MAX (in) |
|---|
| 35 |

| CX MAX (in) |
|---|
| 0.50 |



# Coil Spring MSE® Seal

METAL SPRING ENERGIZED



STATIC ●

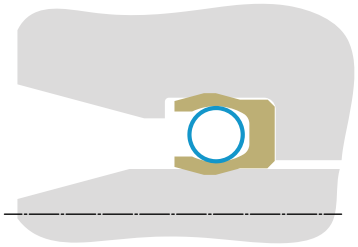
DYNAMIC

Coil Spring MSE® seals consist of a PTFE seal jacket energized by a high-loading coil spring and are intended for temperatures from -270°F to 550°F (-168°C to 288°C). These seals are mainly designed for static applications but will also work under dynamic conditions with surface speeds up to 100 ft/min.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | | Piston | ● | Aero & Defense | ● |
| Avalon® | ● | Rod | ● | Energy | ● |
| Elastomers | | Face | ● | Semiconductor | ● |
| Metal | ● | Reciprocating | | Industrial | ● |
| Other | | Oscillating | | Life Sciences | ● |
| | | Rotary | | | |

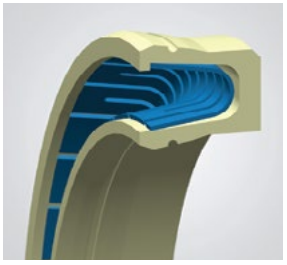
| OD MAX (in) |
|---|
| 35 |

| CX MAX (in) |
|---|
| 0.50 |



# Finger Spring MSE® Seal

METAL SPRING ENERGIZED



STATIC ●

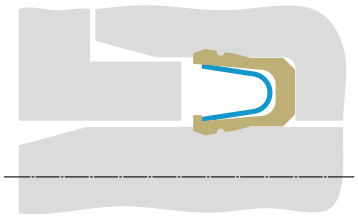
DYNAMIC ●

The MSE® seal's superior designed dual-lip body offers improved sealing performance in virtually unlimited media service and the widest temperature range. Finger Seal MSE® seals use a cantilever-type stainless steel spring to act as an energizer during low pressure situations. The spring compensates for seal wear in dynamic applications as well as overcoming the nonresilient nature of PTFE materials.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | | Piston | ● | Aero & Defense | ● |
| Avalon® | ● | Rod | ● | Energy | ● |
| Elastomers | | Face | ● | Semiconductor | ● |
| Metal | ● | Reciprocating | ● | Industrial | ● |
| Other | | Oscillating | ● | Life Sciences | ● |
| | | Rotary | ● | | |

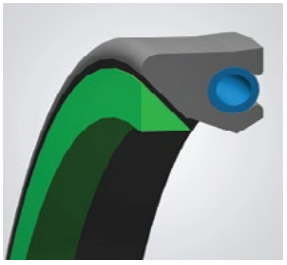
| OD MAX (in) |
|---|
| 35 |

| CX MAX (in) |
|---|
| 0.50 |



# CSA Seal

METAL SPRING ENERGIZED



STATIC ●

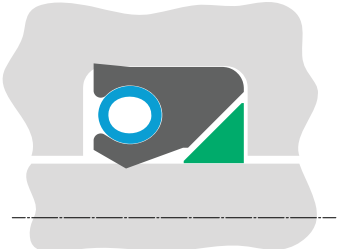
DYNAMIC ●

The CSA seal consists of an elastomer jacket, for outstanding sealing, energized by a coil spring. The coil spring overcomes sealing problems caused by high application ovality, excessive side forces, or high temperature compression set.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | ● | Piston | ● | Aero & Defense | ● |
| Avalon® | ● | Rod | ● | Energy | ● |
| Elastomers | ● | Face | ● | Semiconductor | ● |
| Metal | ● | Reciprocating | ● | Industrial | ● |
| Other | | Oscillating | | Life Sciences | ● |
| | | Rotary | | | |

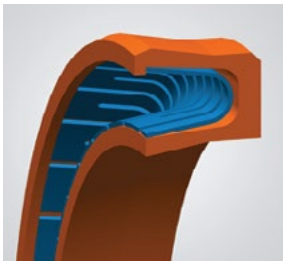
| OD MIN (in) | OD MAX (in) |
|---|---|
| 3.5 | 15 |

| CX MIN (in) | CX MAX (in) |
|---|---|
| 0.14 | 0.30 |



# MSE® Scraper





STATIC

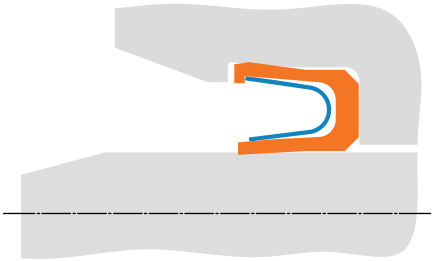
DYNAMIC ●

The scraper lip design is best suited for non-lubricated applications where abrasive media are present and where space is limited. The scraper lip keeps abrasive media from getting between the seal and the hardware, thus decreasing abrasion. Available in rod and piston designs.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | | Piston | ● | Aero & Defense | ● |
| Avalon® | ● | Rod | ● | Energy | ● |
| Elastomers | | Face | | Semiconductor | ● |
| Metal | ● | Reciprocating | ● | Industrial | ● |
| Other | | Oscillating | ● | Life Sciences | ● |
| | | Rotary | | | |

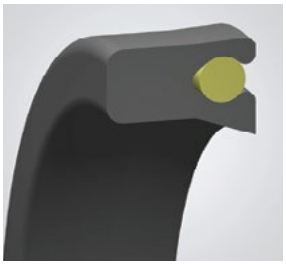
| OD MAX (in) |
|---|
| 35 |

| CX MAX (in) |
|---|
| 0.50 |



# RSA Scraper





STATIC

DYNAMIC ●

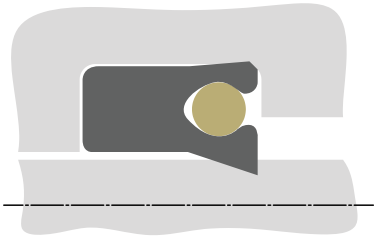
The RSA (Rubber Spring Actuated) scraper provides superior contaminant exclusion in the most rugged service conditions. A compression-activated device, the RSA scraper uses a low compression set rubber O-ring “spring” to maintain the constant radial compression that results in continual contact with both the rod and gland diameter—even in extreme cold, under high linear speeds and during heavy side loading. The RSA scraper’s unique radial design virtually eliminates rod wear and prevents rolling or twisting while retaining sufficient upstream fluid to assure lubrication of the primary seal, resulting in extended service life.

Additionally, the RSA scraper can be wave cut for ease of installation for nonstandard applications.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | | Piston | | Aero & Defense | ● |
| Avalon® | | Rod | ● | Energy | ● |
| Elastomers | ● | Face | | Semiconductor | |
| Metal | | Reciprocating | ● | Industrial | ● |
| Other | | Oscillating | ● | Life Sciences | |
| | | Rotary | | | |

| OD MIN (in) | OD MAX (in) |
|---|---|
| 0.60 | 16 |

| CX MIN (in) | CX MAX (in) |
|---|---|
| 0.11 | 0.40 |



# 5460 Scraper



STATIC

DYNAMIC ●

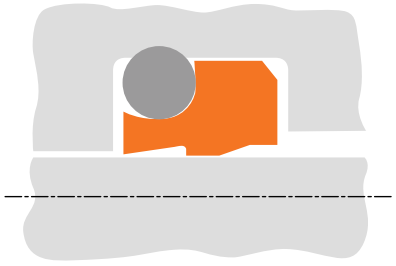
A self-venting o-ring energized scraper designed to provide maximum exclusion capabilities for elimination of contamination ingression. The 5460 series is a uni-directional acting scraper intended for use in Type I or Type II gland configurations of SAE AS4088 and AS4052. For bi-directional acting scrapers, see the 2280 series.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | | Piston | | Aero & Defense | ● |
| Avalon® | ● | Rod | ● | Energy | |
| Elastomers | ● | Face | | Semiconductor | |
| Metal | | Reciprocating | ● | Industrial | |
| Other | | Oscillating | ● | Life Sciences | |
| | | Rotary | | | |

| OD MIN (in) |
|---|
| 0.18 |

| OD MAX (in) |
|---|
| 35 |

| CX MAX (in) |
|---|
| 0.50 |



# 2280 Scraper



STATIC

DYNAMIC ●

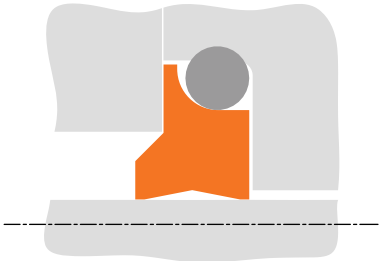
A bidirectional, dual lip scraper design utilizing an O-ring energizer with increased gland stability. These designs fit the same grooves as the BACS34A (Boeing) scraper. Maximum exclusion capabilities for elimination of contamination ingression.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | | Piston | | Aero & Defense | ● |
| Avalon® | ● | Rod | ● | Energy | |
| Elastomers | ● | Face | | Semiconductor | |
| Metal | | Reciprocating | ● | Industrial | |
| Other | | Oscillating | ● | Life Sciences | |
| | | Rotary | | | |

| OD MIN (in) |
|---|
| 0.18 |

| OD MAX (in) |
|---|
| 35 |

| CX MAX (in) |
|---|
| 0.50 |



# 2285/2286 Scraper



STATIC

DYNAMIC ●

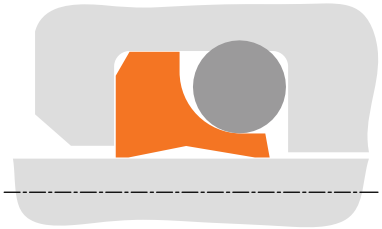
These “self-venting” O-ring energized scrapers are designed to provide maximum exclusion capabilities and increased gland stability when used in Type I or Type II gland configurations of SAE AS4088 and AS4052.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | | Piston | | Aero & Defense | ● |
| Avalon® | ● | Rod | ● | Energy | |
| Elastomers | ● | Face | | Semiconductor | |
| Metal | | Reciprocating | ● | Industrial | |
| Other | | Oscillating | ● | Life Sciences | |
| | | Rotary | | | |

| OD MIN (in) |
|---|
| 0.18 |

| OD MAX (in) |
|---|
| 35 |

| CX MAX (in) |
|---|
| 0.50 |





# AR® Bearing/Bushing/Wear Ring



STATIC

DYNAMIC ●

The AR® materials consists of compression molded PEEK and PTFE-based materials specially formulated for prolonged life while operating in abrasive-containing fluids. AR® materials are primarily used in centrifugal pumps and offer the best-in-class abrasive resistance for bearings, bushings, and wear rings.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | ● | Piston | ● | Aero & Defense | ● |
| Avalon® | ● | Rod | ● | Energy | ● |
| Elastomers | | Face | | Semiconductor | |
| Metal | | Reciprocating | ● | Industrial | ● |
| Other | ● | Oscillating | ● | Life Sciences | ● |
| | | Rotary | ● | | |

# Back-up Ring



STATIC ●

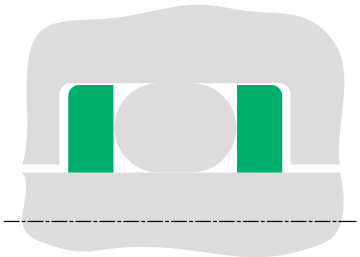
DYNAMIC ●

Greene Tweed’s back-up ring series has been specifically designed for use in different gland configurations as anti-extrusion devices in conjunction with O-rings, packings or other elastomeric seal types. A variety of high-performance materials can be provided and specifically targeted to meet the customer’s application requirements. Back-up rings are available either solid or scarf-cut (split) for ease of installation.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | ● | Piston | ● | Aero & Defense | ● |
| Avalon® | ● | Rod | ● | Energy | ● |
| Elastomers | | Face | ● | Semiconductor | ● |
| Metal | ● | Reciprocating | ● | Industrial | ● |
| Other | | Oscillating | ● | Life Sciences | ● |
| | | Rotary | | | |

| OD MIN (in) | OD MAX (in) |
|---|---|
| 0.08 | 35 |

| CX MIN (in) | CX MAX (in) |
|---|---|
| 0.05 | 0.50 |



# Bearing



STATIC

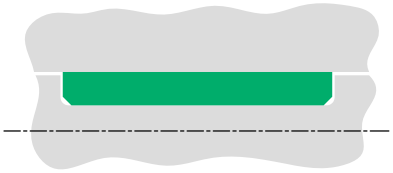
DYNAMIC ●

Greene Tweed has developed a unique range of thermoplastic bearing materials that provide excellent tribological properties. Our bearings are machined to ensure ease of assembly, protect against particle contaminants, and provide cost-effective bearing solutions.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | ● | Piston | ● | Aero & Defense | ● |
| Avalon® | ● | Rod | ● | Energy | ● |
| Elastomers | | Face | | Semiconductor | ● |
| Metal | | Reciprocating | ● | Industrial | ● |
| Other | ● | Oscillating | ● | Life Sciences | ● |
| | | Rotary | | | |

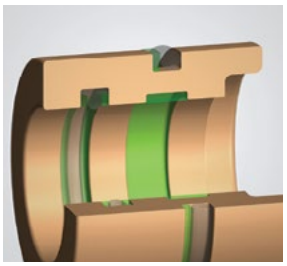
| OD MAX (in) |
|---|
| 35 |

| CX MAX (in) |
|---|
| 0.50 |



# Seal Carrier





STATIC ●

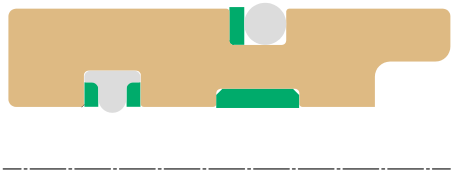
DYNAMIC ●

The Greene, Tweed Seal Carrier offers a unique blend of light weight and corrosion resistance to provide an alternative to standard metal seal and bearing carriers. Additionally, the seal carrier can incorporate a wear surface, eliminating the need for an additional wear component in the assembly.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | ● | Piston | ● | Aero & Defense | ● |
| Avalon® | | Rod | ● | Energy | ● |
| Elastomers | | Face | ● | Semiconductor | ● |
| Metal | ● | Reciprocating | ● | Industrial | ● |
| Other | | Oscillating | ● | Life Sciences | ● |
| | | Rotary | ● | | |

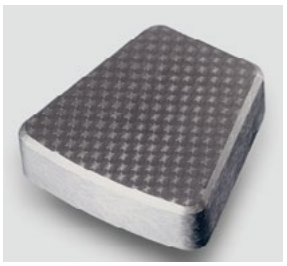
| OD MAX (in) |
|---|
| 35 |

| CX MAX (in) |
|---|
| 0.50 |



# Thrust Pad/Thrust Ring





STATIC

DYNAMIC ●

Greene Tweed's WR® 575 carbon fiber thermoplastic composite is ideal for wear/thrust pads or rings for hydrodynamic bearings. Used in high-speed machinery such as pumps, compressors, and turbines, WR® 575 provides high stability for axial load and an ideal replacement for metal, carbon, ceramic, and bronze pads.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | ● | Piston | | Aero & Defense | ● |
| Avalon® | | Rod | | Energy | ● |
| Elastomers | | Face | ● | Semiconductor | |
| Metal | | Reciprocating | ● | Industrial | ● |
| Other | | Oscillating | ● | Life Sciences | |
| | | Rotary | ● | | |

# WR® Bearing/Bushing/Wear Ring



STATIC

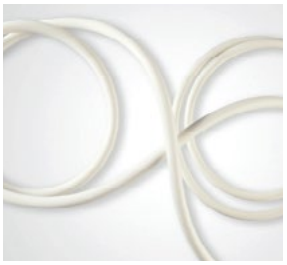
DYNAMIC ●

The WR® family of materials consists of compression molded and fiber placed composites and thermoplastics. These materials are carbon fiber reinforced PEEK and PFA-based for superior performance when compared to metallic or other polymeric materials. WR® materials are primarily used in centrifugal pumps and offer the best-in-class wear and chemical resistance for wear rings, bearings, and bushings.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | ● | Piston | ● | Aero & Defense | ● |
| Avalon® | ● | Rod | ● | Energy | ● |
| Elastomers | | Face | | Semiconductor | |
| Metal | | Reciprocating | ● | Industrial | ● |
| Other | ● | Oscillating | ● | Life Sciences | |
| | | Rotary | ● | | |

# Large Diameter O-ring





STATIC •

DYNAMIC

Large equipment can sometimes require elastomeric seals that exceed the size limitations of conventional compression molding presses. Our patented Extensis® spliced and vulcanized process or our continuously vulcanized horseshoe molding process offer unique solutions for various application needs. Greene Tweed has molded o-rings as large as 98 inches (2,489 mm) but there is no maximum diameter limit.

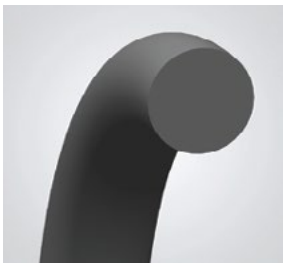
| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | | Piston | • | Aero & Defense | • |
| Avalon® | | Rod | • | Energy | • |
| Elastomers | • | Face | • | Semiconductor | • |
| Metal | | Reciprocating | • | Industrial | • |
| Other | | Oscillating | • | Life Sciences | • |
| | | Rotary | | | |

| OD MIN (in) |
|---|
| 28 |

| CX MAX (in) |
|---|
| 0.315 |

# O-ring





STATIC •

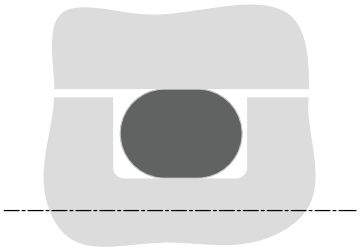
DYNAMIC •

O-rings are one of the oldest and most widely used styles of seal geometries. This uncomplicated design provides a suitable, cost-effective solution to a variety of sealing applications. O-rings can be used either as a seal itself or as the energizing element in a variety of PTFE, cap-type seals.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | | Piston | • | Aero & Defense | • |
| Avalon® | • | Rod | • | Energy | • |
| Elastomers | • | Face | • | Semiconductor | • |
| Metal | | Reciprocating | • | Industrial | • |
| Other | | Oscillating | • | Life Sciences | • |
| | | Rotary | | | |

| OD MIN (in) | OD MAX (in) |
|---|---|
| 0.18 | 43 |

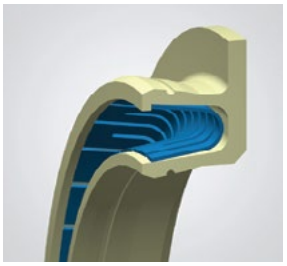
| CX MIN (in) | CX MAX (in) |
|---|---|
| 0.06 | 0.38 |





# Flanged MSE® Seal





STATIC

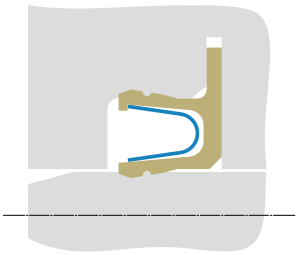
DYNAMIC •

The dual-lip body offers improved sealing performance in virtually unlimited media service and the widest temperature range. Finger spring MSE® seals use a cantilever-type stainless steel spring to act as an energizer during low pressure situations. The flanged series dual lip seal is intended for use in rotary applications. The flange helps prevent seal rotation, a major cause in rotary seal failure. Designed for maximum surface speed of 250 ft/min (1.27 m/s) and 4000 psi (276 bar).

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | | Piston | | Aero & Defense | • |
| Avalon® | • | Rod | • | Energy | • |
| Elastomers | | Face | | Semiconductor | • |
| Metal | • | Reciprocating | | Industrial | • |
| Other | | Oscillating | | Life Sciences | • |
| | | Rotary | • | | |

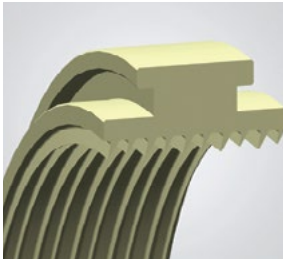
| OD MAX (in) |
|---|
| 35 |

| CX MAX (in) |
|---|
| 0.50 |



# Labyrinth Seal





STATIC

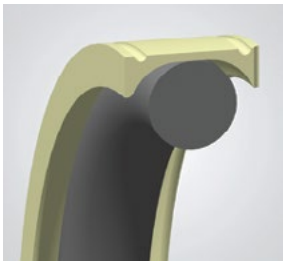
DYNAMIC •

Greene Tweed's Arlon® 4020 labyrinth seals deliver superior performance by combining custom-engineered tooth designs and high-performance thermoplastic materials. Arlon® 4020's excellent tribological properties reduce friction and wear during contact, eliminating gall to extend seal life. The material's enhanced corrosion and erosion resistance make it ideally suited to severe sealing applications. The superior thermal expansion of Arlon® 4020 allows for tight clearances at operating temperatures increasing efficiency and reliability for longer run times.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | • | Piston | | Aero & Defense | |
| Avalon® | | Rod | | Energy | • |
| Elastomers | | Face | | Semiconductor | |
| Metal | | Reciprocating | | Industrial | • |
| Other | | Oscillating | | Life Sciences | |
| | | Rotary | • | | |

# Advancap™





STATIC

DYNAMIC ●

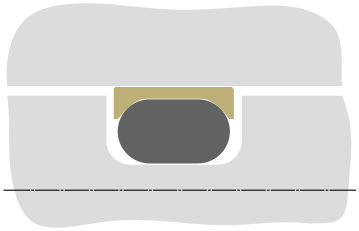
The Advancap™ rod and piston seals are designed to provide a cost-effective cap seal solution that prevents extrusion and eliminates O-ring spiral failure in dynamic applications. Each seal combines a cap made from Avalon®, our PTFE material, and an elastomeric O-ring energizer.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | | Piston | ● | Aero & Defense | ● |
| Avalon® | ● | Rod | ● | Energy | ● |
| Elastomers | ● | Face | | Semiconductor | ● |
| Metal | | Reciprocating | ● | Industrial | ● |
| Other | | Oscillating | ● | Life Sciences | ● |
| | | Rotary | | | |

| OD MIN (in) |
|---|
| 0.18 |

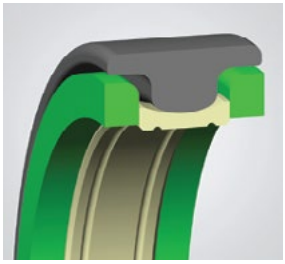
| OD MAX (in) |
|---|
| 35 |

| CX MAX (in) |
|---|
| 0.50 |



# ACGT™-HP/CGT™ Ring





STATIC

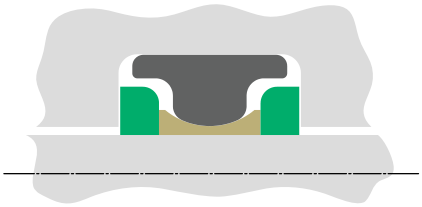
DYNAMIC ●

The ACGT™-HP/CGT™ is a bi-directional cap seal. The cap-to-elastomer interface creates a large contact area for uniform load distribution over the entire circumferential length of the cap thus enhancing seal performance. A critical part of the seal's outstanding performance is the division of the sealing and anti-extrusion components. Because the functionality of the components is separated, material selection can be targeted specifically for particular application requirements (e.g., modulus, shear strength and friction), allowing for the optimal sealing solution to be achieved.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | ● | Piston | ● | Aero & Defense | ● |
| Avalon® | ● | Rod | ● | Energy | ● |
| Elastomers | ● | Face | | Semiconductor | |
| Metal | | Reciprocating | ● | Industrial | ● |
| Other | | Oscillating | ● | Life Sciences | |
| | | Rotary | | | |

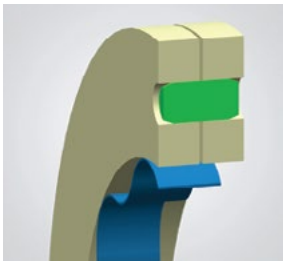
| OD MIN (in) | OD MAX (in) |
|---|---|
| 0.18 | 32 |

| CX MIN (in) | CX MAX (in) |
|---|---|
| 0.06 | 0.50 |



# Dual Piston Ring





STATIC

DYNAMIC ●

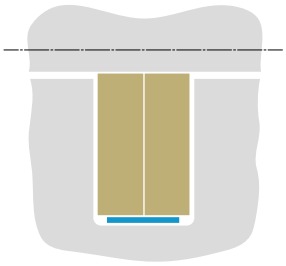
Greene Tweed's 3356 Dual Piston Rings series is intended for hydraulic service in piston applications where very low friction is desired and some controlled leakage can be tolerated. Piston rings are step cut for ease during installation. The step cuts are 180° apart and secured in place by an engineered thermoplastic anti-rotation pin. The pin eliminates the need for a specially designed wave spring, reducing the chance of installation challenges and stress cracking of the spring.

Greene Tweed's 3356 Dual Piston Ring series is designed to be used in bores in accordance with MIL-G-5514 and AS4716 specifications.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | ● | Piston | ● | Aero & Defense | ● |
| Avalon® | ● | Rod | | Energy | |
| Elastomers | | Face | | Semiconductor | |
| Metal | ● | Reciprocating | ● | Industrial | |
| Other | | Oscillating | ● | Life Sciences | |
| | | Rotary | | | |

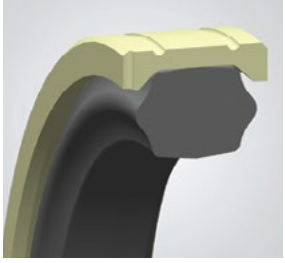
| OD MAX (in) |
|---|
| 35 |

| CX MAX (in) |
|---|
| 0.50 |



# Ener-Cap® II/Ener-Cap® II HP





STATIC

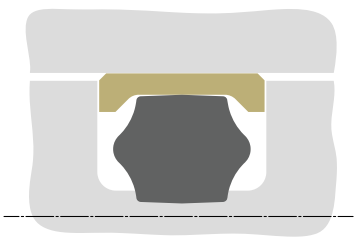
DYNAMIC ●

A self-actuaring and pressure-activated hydraulic seal that optimizes cap seal performance. The cap seal design results in low breakout and running friction and minimal leakage over an extended service life, making this seal design ideal for dynamic service. The PTFE-type sealing element and advanced-design elastomeric energizer provide optimum radial squeeze and evenly distributed radial loading. The addition of circumferential cap grooves will improve the lubrication and reduce outboard leakage.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | ● | Piston | ● | Aero & Defense | ● |
| Avalon® | ● | Rod | ● | Energy | |
| Elastomers | ● | Face | | Semiconductor | |
| Metal | | Reciprocating | ● | Industrial | ● |
| Other | | Oscillating | ● | Life Sciences | ● |
| | | Rotary | | | |

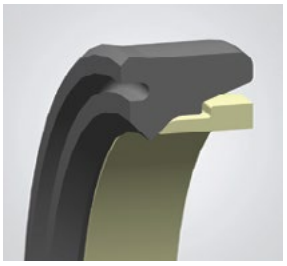
| OD MIN (in) | OD MAX (in) |
|---|---|
| 0.22 | 43 |

| CX MIN (in) | CX MAX (in) |
|---|---|
| 0.05 | 0.28 |



# Enerlip®





STATIC

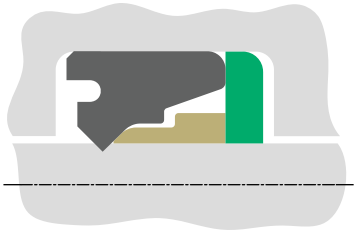
DYNAMIC ●

High-performance, low leakage, pressure-variable seal developed to combine low breakaway friction with ease of installation. The unidirectional seal consists of a specially shaped elastomeric energizer with a mating PTFE-type heel bearing. At low pressure the Enerlip® functions as a partially capped, single-acting elastomer lip seal. As pressure increases, the elastomeric element is forced up the ramp of the PTFE element, reducing the elastomeric footprint length to provide lower friction and wear. At high pressure the Enerlip® acts as an activated PTFE seal.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | | Piston | ● | Aero & Defense | ● |
| Avalon® | ● | Rod | ● | Energy | ● |
| Elastomers | ● | Face | | Semiconductor | |
| Metal | | Reciprocating | ● | Industrial | ● |
| Other | | Oscillating | | Life Sciences | ● |
| | | Rotary | | | |

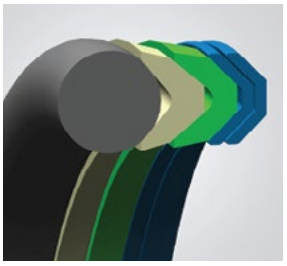
| OD MIN (in) | OD MAX (in) |
|---|---|
| 0.24 | 16 |

| CX MIN (in) | CX MAX (in) |
|---|---|
| 0.07 | 0.28 |



# FPH Seal™





STATIC ●

DYNAMIC

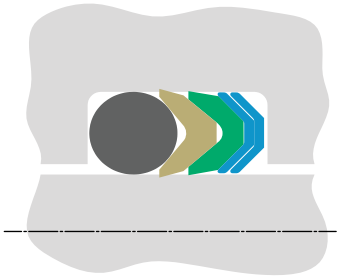
Greene Tweed's Fireproof Hydraulic Seal (FPH Seal™) provides excellent high- and low-hydraulic pressure sealing in static applications for fireproof-rated equipment (1093°C/2000°F minimum average for 15 minutes).

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | ● | Piston | ● | Aero & Defense | ● |
| Avalon® | ● | Rod | ● | Energy | ● |
| Elastomers | ● | Face | ● | Semiconductor | |
| Metal | ● | Reciprocating | | Industrial | |
| Other | | Oscillating | | Life Sciences | |
| | | Rotary | | | |

| OD MIN (in) |
|---|
| 0.18 |

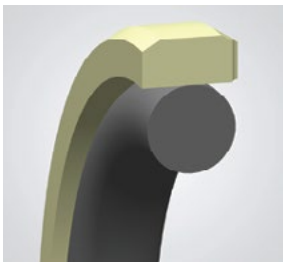
| OD MAX (in) |
|---|
| 35 |

| CX MAX (in) |
|---|
| 0.50 |



# Glidetec™





STATIC

DYNAMIC ●

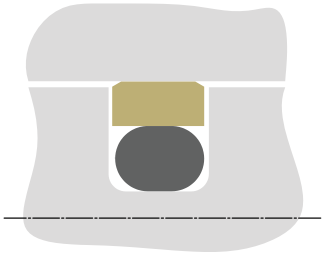
O-ring energized PTFE cap seal offers simplicity and low cost. The Glidetec seal offers bidirectional sealing, low friction and easy installation in compact single-piece glands.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | | Piston | ● | Aero & Defense | ● |
| Avalon® | ● | Rod | ● | Energy | ● |
| Elastomers | ● | Face | | Semiconductor | ● |
| Metal | | Reciprocating | ● | Industrial | ● |
| Other | | Oscillating | ● | Life Sciences | ● |
| | | Rotary | | | |

| OD MIN (in) |
|---|
| 0.18 |

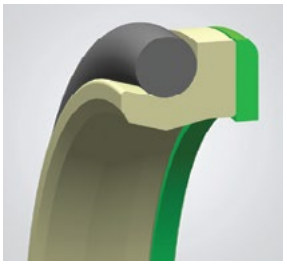
| OD MAX (in) |
|---|
| 35 |

| CX MAX (in) |
|---|
| 0.50 |



# L-Cap® Seal





STATIC

DYNAMIC ●

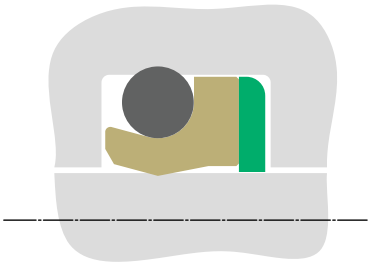
The L-Cap® provides superior performance in either single or tandem rod seal applications. Its unidirectional, "pressure relief" design makes it easily installable into "closed-groove" configurations for most sizes while offering low operating friction and superior leakage control along a wide operational temperature range.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | ● | Piston | ● | Aero & Defense | ● |
| Avalon® | ● | Rod | ● | Energy | ● |
| Elastomers | ● | Face | | Semiconductor | ● |
| Metal | | Reciprocating | ● | Industrial | ● |
| Other | | Oscillating | ● | Life Sciences | ● |
| | | Rotary | | | |

| OD MIN (in) |
|---|
| 0.18 |

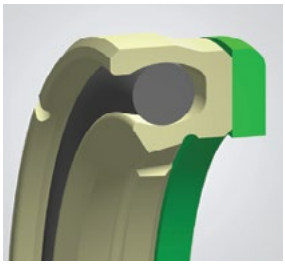
| OD MAX (in) |
|---|
| 35 |

| CX MAX (in) |
|---|
| 0.50 |



# ESE Seal





STATIC

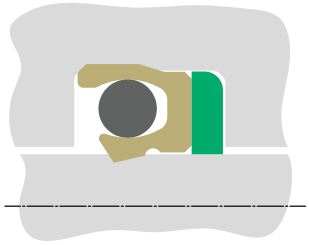
DYNAMIC ●

A unidirectional, “self-venting” seal design consisting of a PTFE jacket and an elastomer O-ring energizer. The seal design and energizer allow installation into “closed-groove” configurations for most sizes. The seal can also be complemented with a high modulus backup ring for higher pressures or larger sealing gaps. Along with the “self-venting” capability, the ESE design offers low operating friction along a wide operational temperature range.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | ● | Piston | ● | Aero & Defense | ● |
| Avalon® | ● | Rod | ● | Energy | ● |
| Elastomers | ● | Face | ● | Semiconductor | ● |
| Metal | | Reciprocating | ● | Industrial | ● |
| Other | | Oscillating | ● | Life Sciences | |
| | | Rotary | | | |

| OD MIN (in) | OD MAX (in) |
|---|---|
| 0.18 | 35 |

| CX MIN (in) | CX MAX (in) |
|---|---|
| 0.06 | 0.38 |



# RSA Seal®



STATIC

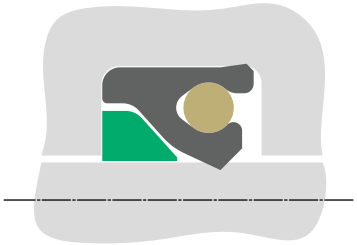
DYNAMIC ●

Greene Tweed’s RSA Seal® (Rubber Spring Actuated) offers low compression set, high tear resistance, modulus and abrasion resistance, and long life in rugged operating conditions. The RSA seal® with full heel bearing is a compact, pressure-compensating U-type seal made from a proprietary high-molecular weight elastomer formulated for low-temperature performance. It incorporates an O-ring energizer to apply uniform radial loading on the seal’s back-beveled lip. The Avalon® heel bearing serves as a low friction, high-shear strength stabilizer to maintain exact lip-point interference between the seal and sealing surface.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | | Piston | | Aero & Defense | ● |
| Avalon® | ● | Rod | ● | Energy | ● |
| Elastomers | ● | Face | | Semiconductor | |
| Metal | | Reciprocating | ● | Industrial | ● |
| Other | | Oscillating | ● | Life Sciences | |
| | | Rotary | | | |

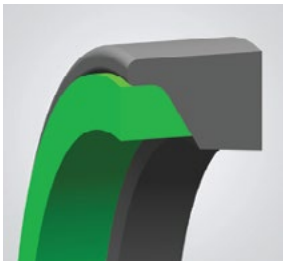
| OD MIN (in) | OD MAX (in) |
|---|---|
| 0.60 | 16 |

| CX MIN (in) | CX MAX (in) |
|---|---|
| 0.11 | 0.40 |



# RSR™ Seal





STATIC

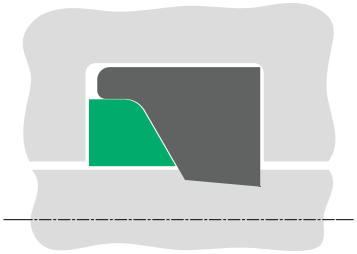
DYNAMIC ●

The RSR™ seal features a specially engineered elastomer profile that provides exceptional “dry rod” sealing under dynamic conditions. The RSR™’s endless, trapezoidal wedge-shaped back-up ring has an exceptionally wide shear section to ensure excellent resistance to extrusion. In addition, the back-up ring’s shape generates a force vector under pressure, thereby eliminating the extrusion gap.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | | Piston | ● | Aero & Defense | ● |
| Avalon® | ● | Rod | ● | Energy | ● |
| Elastomers | ● | Face | | Semiconductor | |
| Metal | | Reciprocating | ● | Industrial | ● |
| Other | | Oscillating | | Life Sciences | |
| | | Rotary | | | |

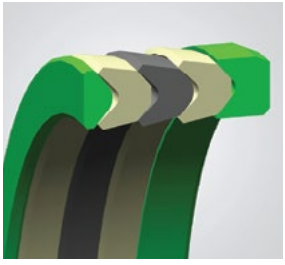
| OD MIN (in) | OD MAX (in) |
|---|---|
| 0.37 | 32 |

| CX MIN (in) | CX MAX (in) |
|---|---|
| 0.07 | 0.50 |



# Seal Stack





STATIC ●

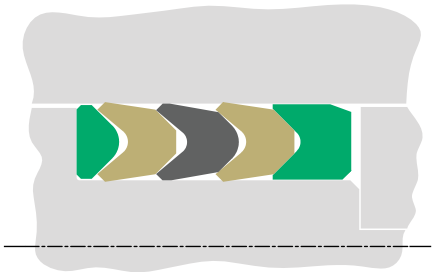
DYNAMIC ●

Seal stacks are a custom-designed sealing solution for complex applications, with multiple redundant sealing elements including v-rings, adapters, load rings, and MSE®s. Greene Tweed’s extensive portfolio of elastomeric and thermoplastic materials enables us to balance requirements for wear resistance, low friction, extrusion resistance, and other challenges to design a customized sealing solution.

| MATERIALS | | APPLICATIONS | | MARKETS | |
|---|---|---|---|---|---|
| Arlon® | ● | Piston | ● | Aero & Defense | |
| Avalon® | ● | Rod | ● | Energy | ● |
| Elastomers | ● | Face | | Semiconductor | |
| Metal | ● | Reciprocating | | Industrial | ● |
| Other | ● | Oscillating | | Life Sciences | ● |
| | | Rotary | | | |

| OD MAX (in) |
|---|
| 20 |

| CX MAX (in) |
|---|
| 0.50 |



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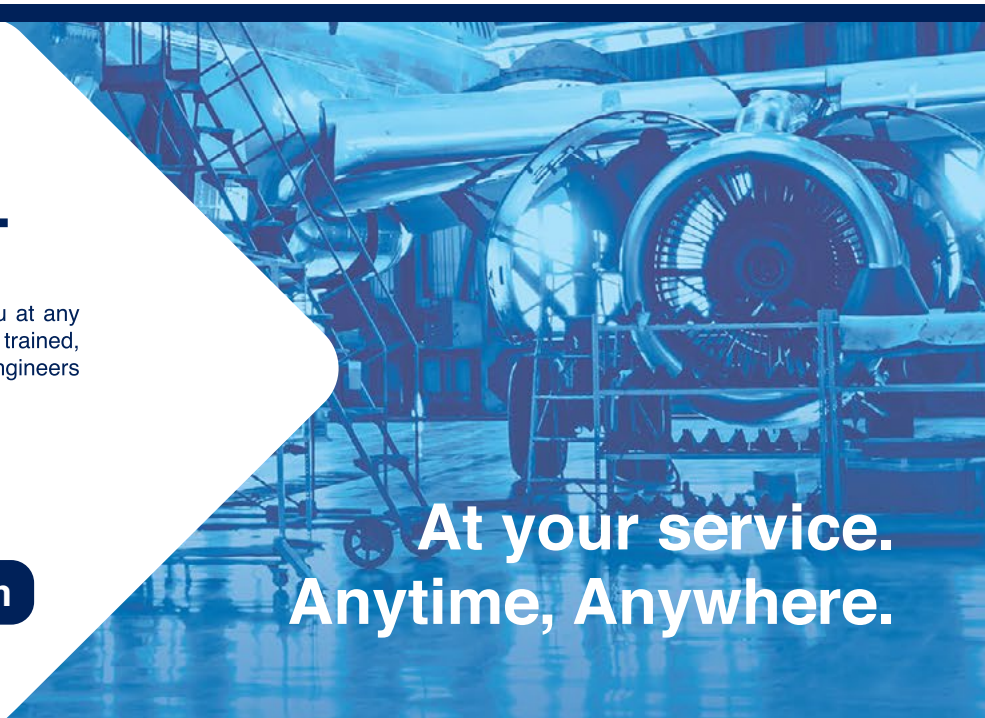
## 24/7 AOG SUPPORT

We are committed to providing our support to you at any location worldwide, with a team of highly skilled, trained, and experienced aircraft maintenance licensed engineers as soon as possible.

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