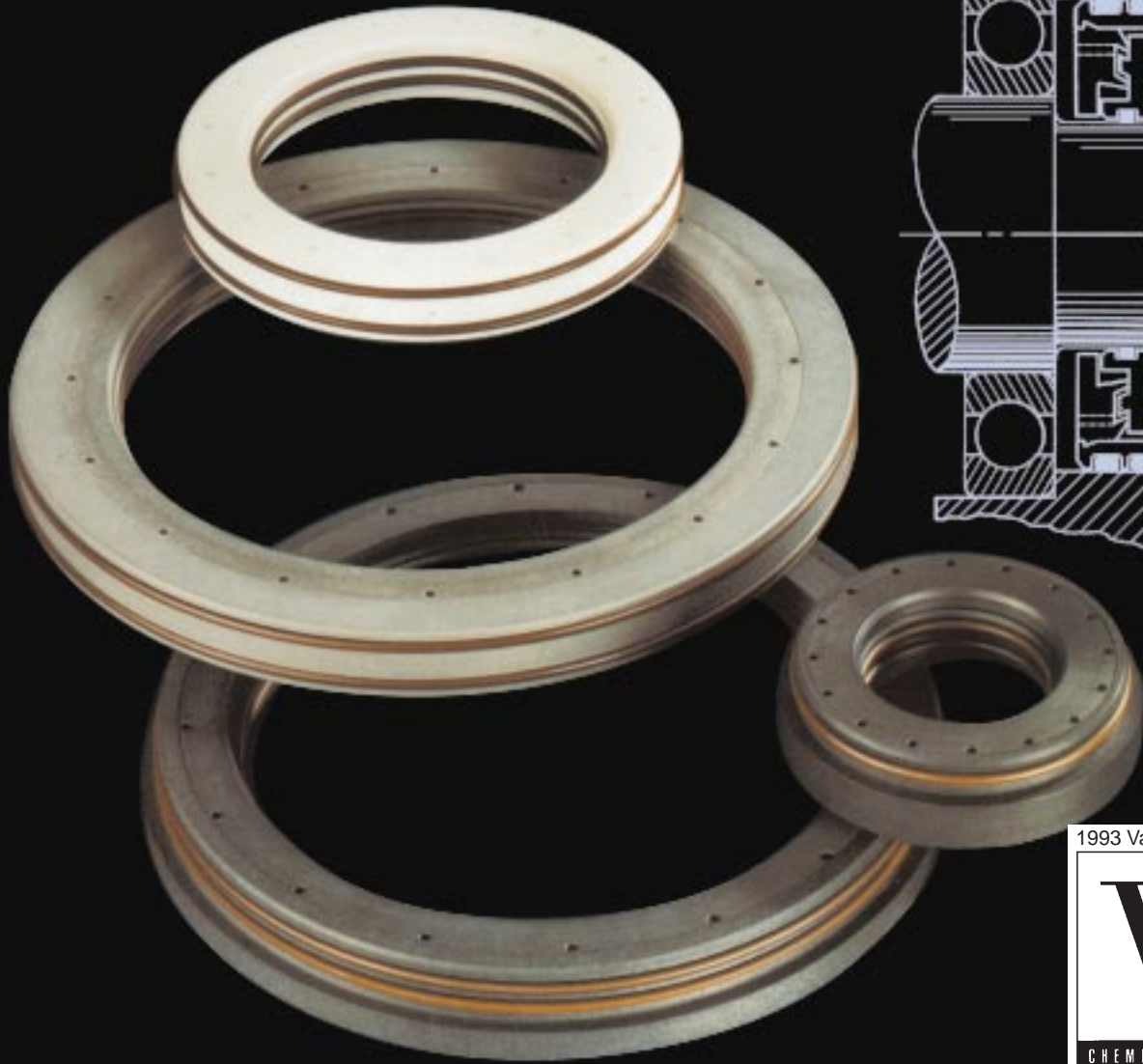


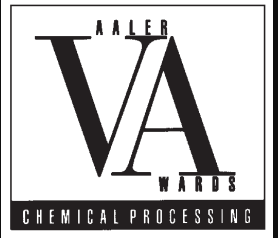
Garlock Sealing Technologies®

The Garlock Equalizer

The Ultimate Bearing Protector



1993 Vaaler Award Winner



Garlock

SEALING TECHNOLOGIES®

The Garlock Equalizer™

The ONE seal that protects bearings in ALL your rotating equipment in EVERY operating environment.

The Problem

Over 90% of bearing failures are caused by contamination. The conventional lip seal fails to exclude water and other contaminants from entering into the lubricant. Lip seals also have an unpredictable life, generate frictional heat, score the shaft surface and cause increased energy consumption due to the drag on the shaft.

The Solution

The Patented* Garlock EQUALIZER™ is a revolutionary breakthrough in bearing protection. The EQUALIZER™ even goes beyond the advantages of labyrinth type seals. As illustrated in Figure 1, the EQUALIZER™ operates as a miniature pump, retaining lubricants and expelling contaminants. The EQUALIZER™ requires no lubrication and exerts no drag on the shaft, resulting in unlimited life under standard conditions. The EQUALIZER™ handles temperatures from -40°F (-40°C) up to 400°F (204°C) and shaft speeds in excess of 4,500 RPM's.

Superior Design Technology

Unitized Assembly... guarantees valuable benefits not found with two-piece seals. The EQUALIZER™ components cannot separate like other labyrinth seals, thus maintaining high performance. This unitized construction also reduces the chance of misalignment during installation and makes changeover fast and easy.

Flanged Design... allows for easy seal installation and removal. It requires as little as 1/4" housing depth, while many other labyrinth seals require 1/2".

Radial Sealing... allows for greater variances in misalignment and runout up to a combined total of 0.015". Most other labyrinths and isolators seal axially and can only withstand approximately 0.005" misalignment and runout; more than this will damage the seal and the bearing.

Unsurpassed Performance

Multi-Position Capability... Unlike labyrinth seals, the EQUALIZER™ has no top and bottom and can be installed in any rotational position. This is extremely important on any equipment that requires adjustments that could disorient a labyrinth type seal (i.e. impeller adjustments on certain bearing frames).

Unique Pumping/Fanning Action... Works to dry out moisture laden air through the fanning action of the seal rotor. Water and other contaminants are eliminated before they can destroy bearings.

Centrifugal Force/Gravity... While equipment is running, lubricants and contaminants are expelled out of the expulsion ports due to centrifugal force created by the pumping action. When the equipment is stopped, any lubricants and contaminants remaining in the EQUALIZER™ will gravity drain and exit out the lower expulsion ports.

The Widest Range of Applications

Whatever your equipment... whatever your operating conditions... there is a Garlock EQUALIZER™ to protect your expensive bearings. The EQUALIZER™ can help you reach the full design life of all your rotating equipment: pumps, electric motors, mixers, pillow blocks, blowers, compressors, and turbines.



*EQUALIZER Patents: #4,817,966, #4,852,890, #5,024,451

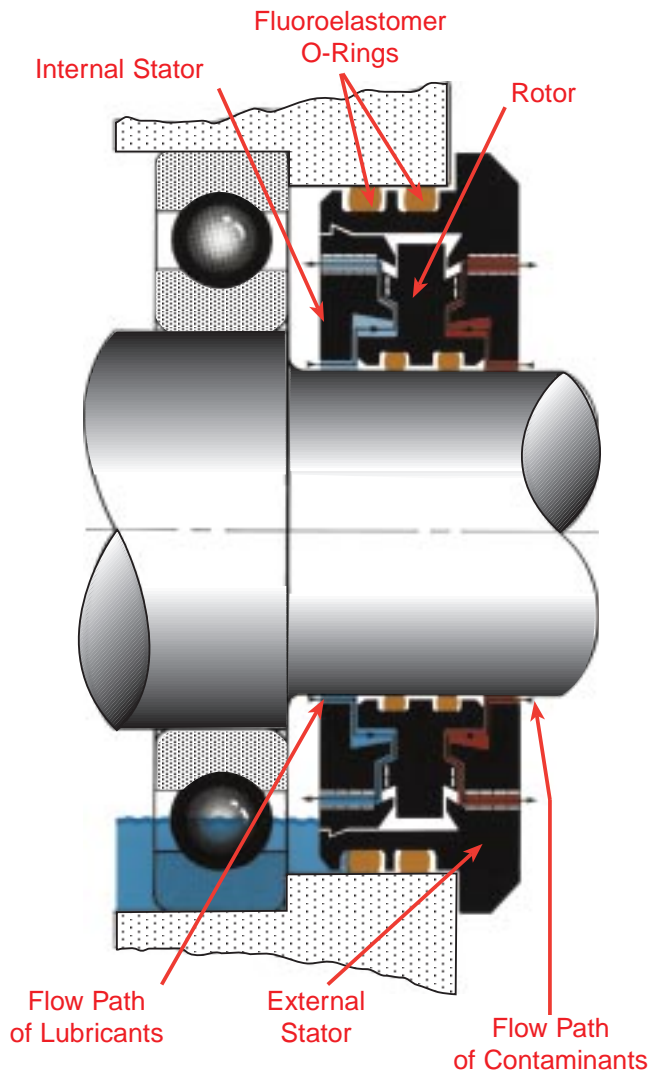
EQUALIZER is a trademark of Garlock Inc.

Bearing Protector Seal

Specifications

Material:	Graphite-filled PTFE
Temperature:	-40°F to +400°F (-40°C to 204°C)
Shaft speed:	To 4,500 fpm (22.9 m/s)
Axial motion:	±0.015" (0.38 mm)
Misalignment and runout:	±0.015" (0.38 mm)
Pressure:	Ambient

Figure 1 EQUALIZER® Cross-section



WARNING:

Properties/applications shown throughout this brochure are typical. Your specific application should not be undertaken without independent study and evaluation for suitability. For specific application recommendations consult Garlock. Failure to select the proper sealing products could result in property damage and/or serious personal injury. Performance data published in this brochure has been developed from field testing, customer field reports and/or in-house testing. While the utmost care has been used in compiling this brochure, we assume no responsibility for errors. Specifications subject to change without notice. This edition cancels all previous issues. Subject to change without notice.

A Choice of Seal Materials

The standard EQUALIZER™ material is graphite-filled PTFE . It resists high temperatures and is impervious to most chemicals. Because of the lubricity of PTFE, sticky materials will not cake on the face of the seal.	<ul style="list-style-type: none"> • 10% graphite, 90% virgin PTFE • Color: gray/black • O-rings are brown fluoroelastomer*
A calcium-filled PTFE material is available to meet or exceed the stringent requirements of the food processing industry regulation 21CFR177.1550.	<ul style="list-style-type: none"> • 15% calcium silicate, 85% virgin PTFE • Color: white • O-rings are red/orange FDA compliant silicone*
A stainless steel-filled PTFE is available for larger shaft sizes where the radial cross-section is narrow and standard material may be too flexible. Offers strength and rigidity.	<ul style="list-style-type: none"> • 50% 316SS, 50% virgin PTFE • Color: gray • O-rings are brown fluoroelastomer*
A bronze-filled PTFE is offered when a non-sparking material is required for compliance to API 610.	<ul style="list-style-type: none"> • 55% bronze, 5% moly, 40% PTFE • Color: bronze metallic • O-rings are brown fluoroelastomer*

* Alternate o-ring materials are available where required for chemical compatibility or temperature extremes.

Features	Benefits
Graphite-filled PTFE construction standard	<ul style="list-style-type: none"> • Handles high temperatures • Resists most chemicals • Alternate materials available
One-piece assembled design	<ul style="list-style-type: none"> • Cannot come apart during installation or operation
Highest misalignment and runout allowed	<ul style="list-style-type: none"> • Standard design accepts 0.015" total misalignment and runout
Sixteen expulsion ports	<ul style="list-style-type: none"> • Seal installs in any rotational position, eliminating installation errors
Narrow cross-section design available	<ul style="list-style-type: none"> • 3/16" minimum cross-section eliminates the need to rebores housings

The Garlock EQUALIZER™

Impressive Savings

With the Garlock EQUALIZER™ you save in many ways...

Save... the EQUALIZER™ can be installed in minutes—no tools required. The unitized construction eliminates the chance of damage or misalignment.

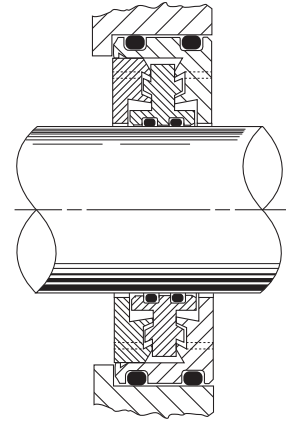
Save... maintenance and service time and expense. The superior protection and performance offered by the EQUALIZER™ eliminates the need for constant monitoring of equipment and lubrication and reduces unscheduled maintenance and downtime. Changeovers, when required, are fast and easy.

Save... costly equipment failure, damage or replacement. The unsurpassed reliability of the EQUALIZER™ means your bearings are protected and last longer, giving you maximum productivity from every piece of equipment.

Save... on lower energy costs. The advanced, non-contact design of the Garlock EQUALIZER™ eliminates heat build-up and drag on shafts, thereby reducing equipment energy consumption.

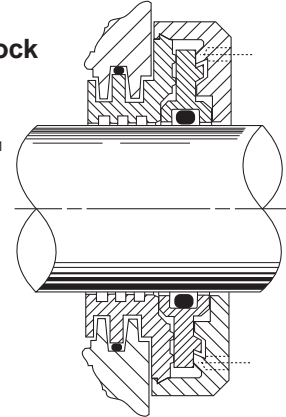
No Flange Design

Available for application where flush mounting is required.



Split Pillow Block Design

All pillow block EQUALIZER's™ are custom designed and manufactured, ensuring a precision fit.



AUTHORIZED DISTRIBUTOR



ISO 9002-94
Cert. #001762

WARNING:

Properties/applications shown throughout this brochure are typical. Your specific application should not be undertaken without independent study and evaluation for suitability. For specific application recommendations consult Garlock. Failure to select the proper sealing products could result in property damage and/or serious personal injury.

Performance data published in this brochure has been developed from field testing, customer field reports and/or in-house testing.

While the utmost care has been used in compiling this brochure, we assume no responsibility for errors. Specifications subject to change without notice. This edition cancels all previous issues. Subject to change without notice.

GARLOCK is a registered trademark for packings, seals, gaskets, and other products of Garlock.

© Garlock Inc 2000. All rights reserved worldwide.

Garlock

Sealing Technologies®

Garlock Sealing Technologies
1666 Division Street
Palmyra, New York 14522 USA
1-315-597-4811
1-800-448-6688
Fax: 1-800-543-0598
1-315-597-3216

Visit the Garlock network
www.garlock.net

Other Garlock facilities are located in:

Paragould, AR, USA 1-870-239-4051
Columbia, SC, USA 1-803-783-1880
Houston, TX, USA 1-281-459-7200
Sydney, Australia 61-2-9793-2511
São Paulo, Brazil 55-11-884-9680
Oakville, Canada 1-905-829-3200
Berkshire, England 44-1635-38509
Saint-Étienne, France 33-4-7743-5100
Neuss, Germany 49-2131-3490
Seoul, Korea 822-554-6341
Mexico City, Mexico 52-5-567-7011
Singapore 65-254-7372

Fax: 1-870-239-4054
Fax: 1-803-783-4279
Fax: 1-281-458-0502
Fax: 61-2-9793-2544
Fax: 55-11-884-9680
Fax: 1-905-829-3333
Fax: 44-1635-569573
Fax: 33-4-7743-5151
Fax: 49-2131-349-222
Fax: 822-554-6343
Fax: 52-5-368-0418
Fax: 65-254-6708