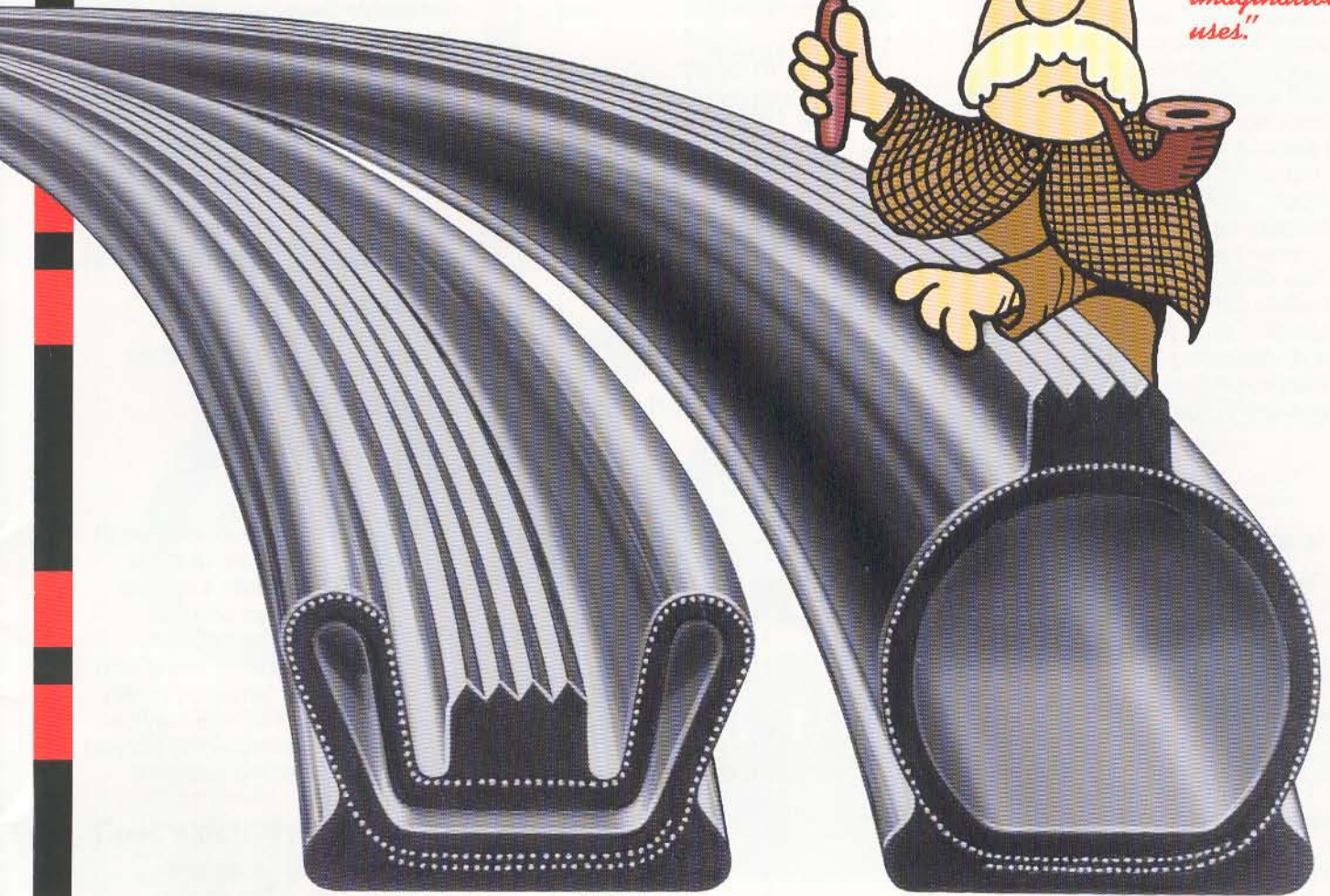


SEALMASTER®

INFLATABLE SEALS

Custom Designed
Precision Built
Fabric Reinforced
Fully Molded



*"They're
duncedly
clever...
for so many
imaginative
uses."*

SEAL IT



LIFT IT



PUSH IT



STOP IT



HOLD IT



SQUEEZE IT





"Look to the versatility of inflatable seals."

Solve Difficult Design Problems... Help Control & Protect the Environment... Improve Production & Testing Efficiency!

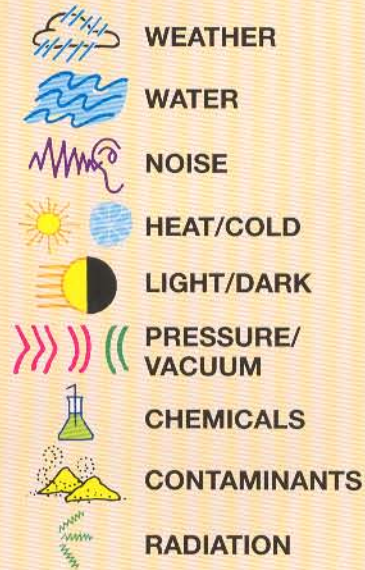
SEAL MASTER — SPECIALISTS IN A VERY SPECIALIZED FIELD

As inflatable seal usage and rubber technology has developed in recent decades, Seal Master has been in the forefront of product development and engineering advances.

In serving design, process and manufacturing engineers, architects, environmentalists, the military and other government agencies, the firm has designed some 6,000 distinctly different elastomeric seal products since its founding in 1974.

It's an experience unmatched in the industry.

OVERCOMING SEALING CHALLENGES



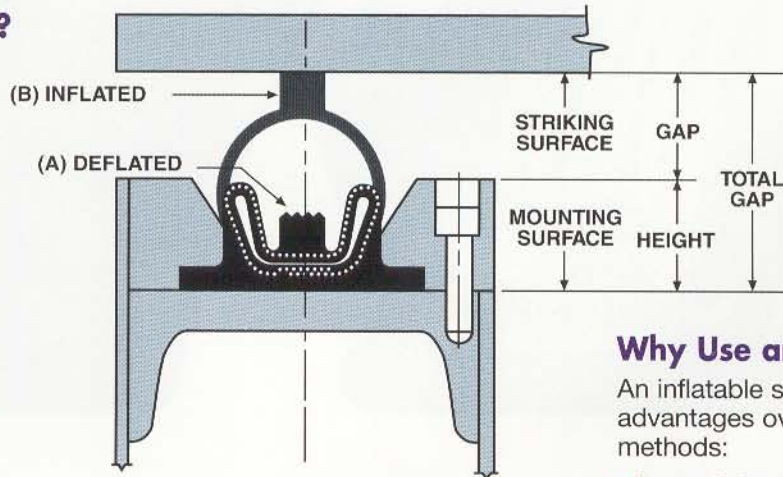
MEETING OTHER INDUSTRY NEEDS CREATIVELY

As flexible pressure vessels, Seal Master Inflatable Seals are used to apply forces in a more effective manner than common mechanical methods. This principle can be used for the following:

- Actuators
- Brakes
- Couplers
- Cushions
- Gripping Devices
- Laminators
- Lifters
- Plugs
- Separators

What is an Inflatable Seal?

An inflatable seal is a fabric-reinforced elastomeric tube custom molded in a concave, convoluted or flat configuration. It is designed to round out with the introduction of an inflation medium to form a tight barrier between a mounting and striking surface. For example, see the cross section illustration at right. Position A shows the molded configuration and Position B depicts the inflated configuration.



medium is through a stem which is usually a flexible hose secured to an integrally molded fitting with a ferrule. A variety of fittings may be attached to the end of the hose.

How Does an Inflatable Seal Work?

Upon introduction of the inflation medium, it quickly expands to the striking surface, effecting a positive seal. When the inflation medium is removed, the seal retracts naturally to the deflated molded configuration. This position provides clearance for free movement of one or both surfaces.

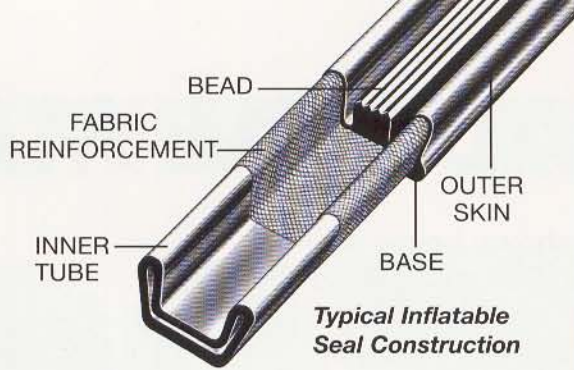
How is an Inflatable Seal Inflated?

The most common inflation medium is regulated air. The specific parameters of the application determine the optimum operating pressure. In some applications, liquid or gel may be used as the inflation medium. Introduction of the inflation

Why Use an Inflatable Seal?

An inflatable seal has several advantages over other sealing methods:

- It provides a leak-proof closure, yet allows clearance when needed.
- It simplifies the design of the structure and hardware.
- It minimizes the need for close machining and/or fabricating tolerances.
- It is not subject to compression set which negates effectiveness of other seals.



Fabric Reinforcement Provides Strength and Structural Integrity

Seal Master Inflatable Seals are not simple rubber extrusions. They are custom built and molded specifically to fit your particular application. This ensures optimum performance for long-term inflating/deflating operations.

Seal Materials

Depending on your special environmental requirements, Seal Master will recommend one of the following elastomers:

- Butyl
- Chloroprene (Neoprene)
- Epichlorohydrin
- Ethylene Propylene Fluorinated Hydrocarbon (Viton)
- Natural Rubber
- Nitrile (Buna N)
- Polyurethane
- Silicone
- Styrene Butadiene (Buna S)

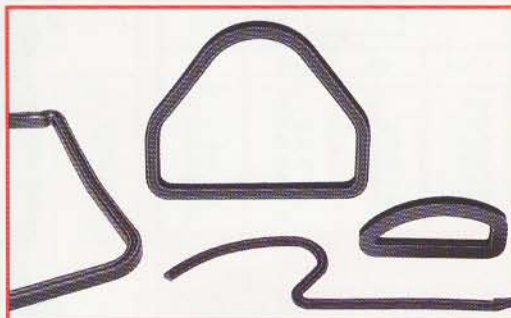
Reinforcement for maximum strength, durability and shape retention is provided by a variety of fabrics including: • Dacron • Kevlar • Nomex • Nylon

Inflatable Seal Geometry



Various bend radii are available, and if a design calls for sharp or right angle mitered corners, the seal can be molded to the exact configuration.

The versatility of Seal Master custom seals permits an unlimited number of sizes, configurations, irregular and odd shapes — all tailored to design demands.



Broad Acceptance

Seal Master Inflatable Seals are now being used successfully in the following applications and industries.

BY APPLICATION:

- Actuating Devices
- Attenuation Devices
- Bins
- Brake Devices
- Canopies
- Chambers
- Clamping Devices
- Clutch Devices
- Clean Rooms
- Computers
- Containers
- Conveyors
- Cushioning Devices
- Domes
- Doors
- Filters
- Gates
- Hatches
- Hoppers
- Pulverizers
- Plugs
- Robotics
- Roofs
- Shafts
- Sifters
- Sterilizers
- Test Equipment
- Valves
- Windows
- Wipers

BY INDUSTRY:

- Aerospace
- Aircraft
- Aluminum
- Appliance
- Architectural
- Automotive
- Chemical Processing
- Construction
- Electric Power
- Electronic
- Fabricated Metal
- Farm Equipment
- Food Processing
- Government Agencies
- Laundry
- Lumber/Logging
- Marine
- Medical
- Military
- Mining
- Nuclear
- Paper
- Petroleum
- Pharmaceutical
- Railroad
- Rubber
- Shipping
- Steel
- Telecommunications
- Textile
- Transportation
- Utility
- Waste Disposal

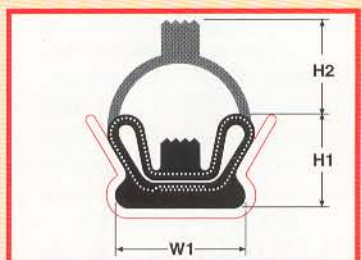
TYPICAL SEAL MASTER INFLAT

The cross sections shown below are typical inflatable seal designs. Details of each design may vary from the illustrations shown. Some particular sizes and shapes are identified by the code listings. Many different types of mountings may be employed. The red lines in the illustrations indicate some of the more common.

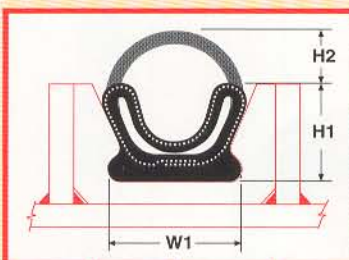
NOTE: When properly installed the seals will compensate for variation in the gap up to the maximums indicated by the H2 (inflated height) dimensions.



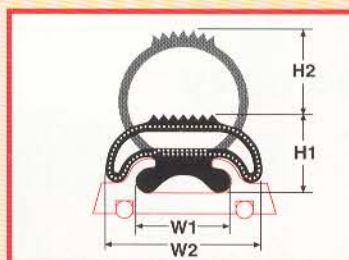
Photo above shows cut sections of various seals with width (W1 dimension) ranging from .56 to 3.06 inches.



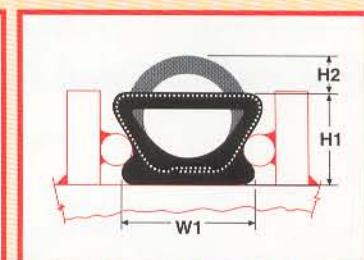
CODE	W1	H1	H2
G-1	.88	.60	.65
G-2	.88	.50	.50
G-5	.69	.50	.50
G-8	.63	.50	.35
G-12	1.75	1.20	1.30
G-14	.88	.31	.25
G-15	.56	.38	.38
G-21	3.06	2.13	2.25
G-31	.75	.63	.63
G-32	.75	.44	.44
G-38	1.53	.72	.75



CODE	W1	H1	H2
G-25	.63	.50	.25
G-26	.68	.50	.25
G-27	.88	.50	.25
G-28	.88	.60	.35
G-29	1.75	1.20	.85
G-30	.56	.38	.22



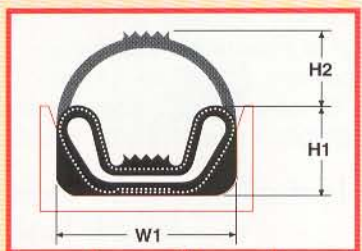
CODE	W1	W2	H1	H2
G-6	.75	1.25	.63	.68
G-23	.50	1.13	.44	.50



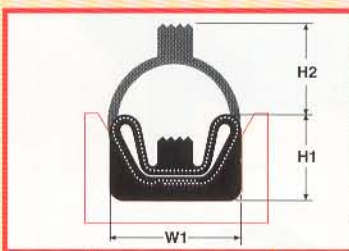
CODE	W1	H1	H2
G-13	.88	.60	.20
G-24	.88	.50	.20

SNAP-IN TYPE

This type uses a popular dove-tail design in which the seal simply "snaps" into a matching groove that provides support and protection. Installation and replacement is quick and easy.



CODE	W1	H1	H2
G-7	.88	.56	.44
G-34	2.00	1.00	.78
G-35	2.75	1.38	1.12
G-36	1.38	1.19	.70
G-40	.63	.50	.21

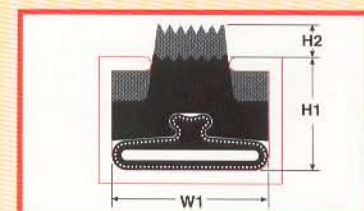


CODE	W1	H1	H2
G-3	.54	.44	.44
G-4	.69	.46	.54
G-10	1.75	1.38	1.25
G-22	1.38	1.13	1.00
G-41	.39	.30	.04
G-42	.30	.30	.03
G-43	.51	.34	.12

BOND-IN TYPE

This system takes advantage of an easily machined or fabricated straight-wall groove that allows the seal to be positioned and bonded into place.

"They're deucedly clever."



CODE	W1	H1	H2
S-1	1.38	1.00	.28
S-2	2.00	1.00	.44
S-3	2.75	.88	.81

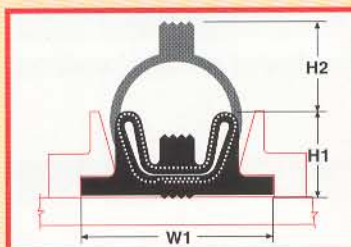
ENCAPSULATED TYPE

This design "captures" the seal in a groove by securing bar stock over the edges of the groove. The same effect is realized by trapping the seal in a specially formed channel. This type employs an inflatable tube actuating a solid rubber shoe to the striking surface.

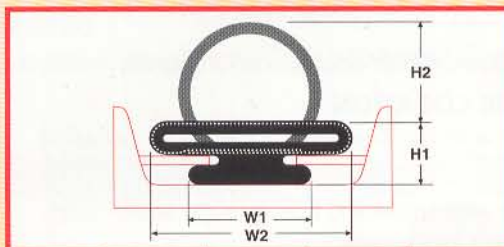
ABLE SEAL CONFIGURATIONS



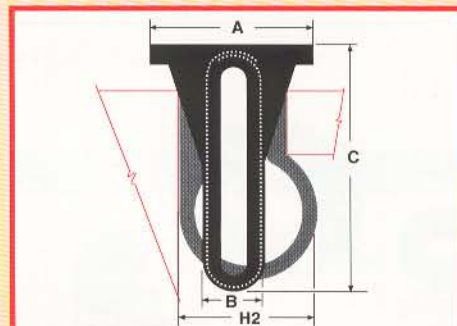
Photo above shows cut sections of various seals with width (W2 dimension) ranging from .75 to 9.00 inches.



CODE	W1	H1	H2
G-9	2.75	1.50	1.43
G-11	3.63	2.00	1.75
G-16	5.88	1.25	.75
G-17	5.38	1.25	.75
G-18	3.88	1.25	.75
G-39	1.75	.80	.95



CODE	W1	W2	H1	H2
P-1	1.00	1.25	.63	.38
P-2	1.75	2.00	.88	.75
P-3	2.00	3.25	1.00	1.63
P-4	3.25	4.00	1.13	2.00
P-10	4.25	7.25	2.06	3.00
P-12	.50	.75	.56	.10
P-22	3.00	4.00	1.63	1.75
P-23	.75	1.00	.50	.31
P-26	5.00	9.00	2.38	4.00
P-30	2.00	3.00	1.25	1.25
P-50	3.25	5.00	1.25	2.63



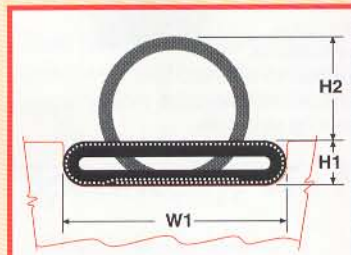
CODE	A	B	C	H2
P-5	4.00	1.50	6.50	3.50
P-25	2.00	.75	3.60	1.75

DROP-IN TYPE

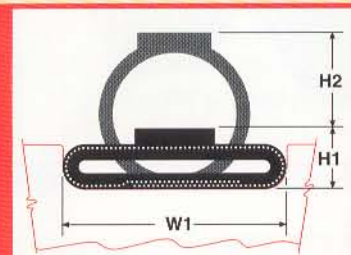
First used in the nuclear industry, this unique design does not require the help of any extraneous "hold down" or "hold in" devices for retention. The seal is simply dropped into a groove or gap and is held in position by gravity and its own geometry.

FASTEN TYPE

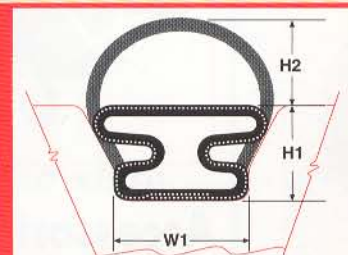
This versatile system uses a variety of metal fasteners such as bars, pins and clips which can be tack welded or screwed down to the mounting surface. The seal can then be "snaked" or "fed" into this mounting system.



CODE	W1	H1	H2
P-6	1.50	.50	.50
P-7	2.00	.50	.63
P-8	2.25	.75	.75
P-9	2.25	.50	.90
P-13	6.00	1.50	2.50
P-14	.94	.31	.19
P-15	3.00	.75	1.00
P-20	3.25	.50	1.25
P-21	4.00	.50	1.75
P-24	1.25	.38	.25
P-33	1.00	.25	.25
P-51	1.88	.25	1.04



CODE	W1	H1	H2
C-13	1.00	.50	.20
C-20	1.00	.53	.21
C-37	1.25	.44	.20
C-40	1.50	.75	.39
C-44	1.38	.50	.32
C-62	6.00	1.75	2.23
C-80	.44	.25	.09

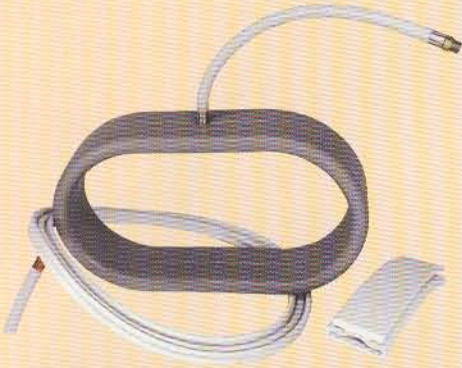


CODE	W1	H1	H2
C-7	.50	.83	.06
C-42	.75	1.13	.19
C-58	1.75	1.25	1.13
C-63	.44	.58	.07
C-64	.60	.62	.02

RECESSED GROOVE TYPE

This type, generally used with smaller diameter seals in a radially in or radially out mode, holds the seal in place by its own tension or force. If larger diameters are needed, studs can be used.

Specialty Seals



FDA-Approved Compounds

For food and pharmaceutical applications, Seal Master compounds are available with FDA-approved ingredients in food-grade white and gray as well as black.



Small Ring Seals

Examples of ring seals which are used for laboratory testing and production line fixtures. Seal shown at right above has an outside diameter of only one inch.

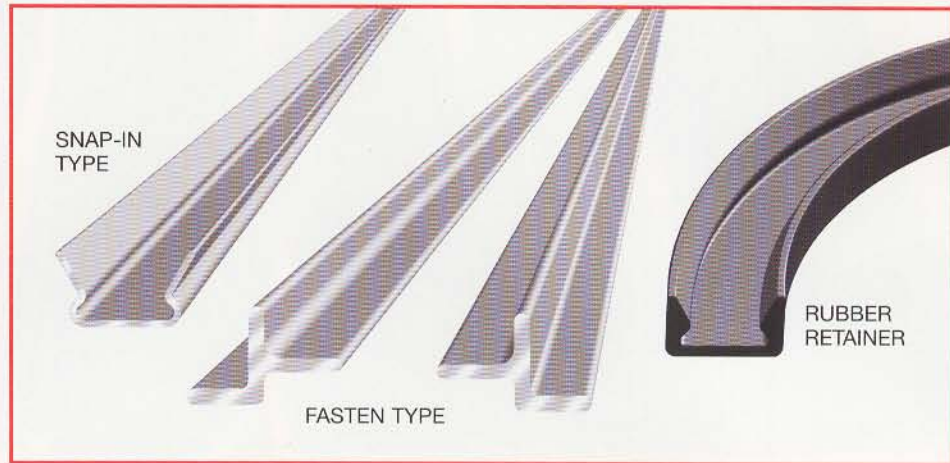


Plug-Together Seals

Unique design seal wraps around shafts to provide a 360° sealing capability. This type is used in many marine applications.

Retaining Systems

Proper installation is essential to the function and longevity of the seal. The retainer must hold the seal in place, allow it the freedom to inflate and deflate and protect it from damage. To facilitate the installation of seals, Seal Master can provide metal, rubber, or plastic retainers in strip or circular form as illustrated.



Typical Air Connections

Every Seal Master seal has an integrally molded fitting in one of three locations:

A. BASE LOCATION

Shown with open-ended hose (most popular).

B. END LOCATION

Shown with threaded fitting (strip seals only).

C. SIDE LOCATION

Shown with hose with adaptor fitting attached.



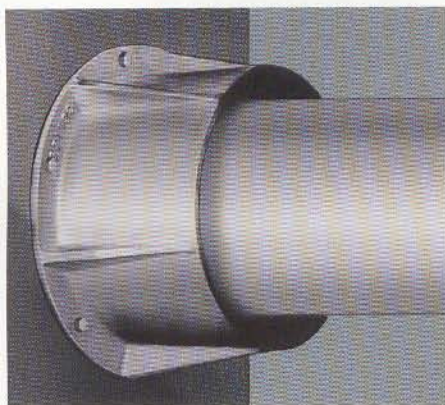
Accessories

Seal Master offers accessory products designed to facilitate the use of inflatable seals. They include:

- Extruded metal retainers
- Machined metal retainers
- Extruded, molded or formed rubber retainers
- Extruded, molded or formed plastic retainers
- Fasteners
- Inflation control devices, including boxes, valves, regulators, gauges, alarms, compressors, plumbing fittings and hoses

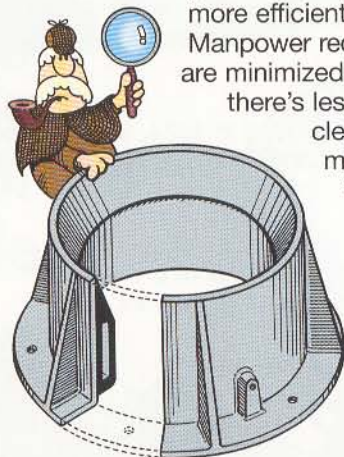
Inflatable Couplers For Air-Tight Bulk Materials Handling Efficiency

Here's an easy, cost-efficient method of fastening hoses for moving materials. Seal Master's fabric-reinforced, elastomeric "New-Matic" Coupler in a steel or aluminum housing requires only seconds to attach and inflate to provide an air-tight seal around worn and bent intake and discharge pipes.



Ideal for Hopper Cars, Trailers & Storage Bins

Its value and effectiveness is quickly realized through savings in materials that otherwise might be lost. Plus, there are additional energy savings because conveying systems will operate more efficiently. Manpower requirements are minimized because there's less material clean-up and maintenance required.



Because potential contaminants are effectively controlled, adherence to EPA and OSHA standards is made easier. The coupler will accommodate pipes ranging from 5" to 6-3/8" and requires only 10 psi* to seal. Its durable, construction makes the Seal Master "New-Matic" Couplers ideal for almost any materials handling application. Other sizes and shapes available upon request.

*Pressure requirements may vary depending upon application.

Prevent Material Loss ... Reduce Clean-Up Costs ... Meet Regulatory Requirements!

RSVP

DESIGN ASSISTANCE PROGRAM

Seal Master recognizes the uniqueness of each customer's application and will provide

design and engineering assistance for new applications or troubleshoot old sealing problems. Our questionnaire (illustrated at right), when completed, allows us to analyze your sealing application. From the information you provide, we can determine and recommend the most effective solution for your sealing problems and subsequently provide a quote. This information is critical in getting the project started.



"We invite your sealing project questions... we'll offer fitting solutions."

Specifically, We Need to Know the Following:

- What is being sealed
- Dimensions of gap to be sealed
- Length of seal required
- Seal to be strip or continuous loop
- Surrounding environment
- Temperature range
- Pressures across seal
- Is inflation radially in, radially out or axial
- Inflation source

Note: For copies download R.S.V.P. form at www.sealmaster.com or call 1-800-477-8436

For a "Deucedly Clever" solution, send us your sealing problem.

We offer design assistance on new applications or "troubleshoot" old problems. You will be able to recommend the best possible solution, including a color and delivery procedure, if we understand the problem. Please use this form to give us as much information as you can.

RSVP DESIGN ASSISTANCE PROGRAM

YOUR NAME: _____ DATE: _____
 COMPANY NAME: _____ COMPANY ADDRESS: _____
 COMPANY TELEPHONE NO. _____ FAX NO. _____
 PLEASE DESCRIBE YOUR APPLICATION: _____

Refer to the typical cross-section below, please answer the following questions:

What is the medium to be sealed? _____
 What is the pressure on side 1? _____
 What is the pressure on side 2? _____
 What is the seal material used? _____
 How wide is the seal? _____
 How long is the seal? _____
 What is the seal's length? _____
 What is the seal's width? _____
 What is the seal's thickness? _____
 What is the seal's diameter? _____
 What is the seal's circumference? _____
 What is the seal's length? _____
 What is the seal's width? _____
 What is the seal's thickness? _____
 What is the seal's diameter? _____
 What is the seal's circumference? _____

Use the space below to sketch a plan view or side or any other pertinent information.

SEAL MASTER CORPORATION 388 MARTIN L. DRIVE, KENT, OH 44240-4368 U.S.A.
 800-477-8436 • 330-673-8410 • FAX 330-673-8442
 www.sealmaster.com • E-mail: info@sealmaster.com

About Seal Master

This 8-acre site in Kent, Ohio is the home of the Seal Master Corporation. Located in America's "Polymer Valley" between Akron and Cleveland and near the world-renowned University of Akron Polymer Research Center and College of Engineering, this complex serves as headquarters for design, engineering, research, manufacturing, sales and administration for the firm's global marketing activity. Founded in 1974, Seal Master is widely recognized for its expertise and resourcefulness as a consultant, designer and producer of inflatable seals and other rubber products.



The Seal Master Quality Pledge

All materials used by Seal Master are laboratory tested. All products are inspected and pressure tested a minimum of two times prior to shipment. Functional testing is performed if required. Seal Master maintains an in-depth, formal Quality Assurance Program in compliance with the following standards:

- Military — MIL I 45208
- Nuclear — NQA 1 (USA)-Z299.3 (Canada)

"Over the years we've been proud to serve prestigious customers worldwide. Here's a partial list."



Other Seal Master Rubber Products

- Bags
- Compression Seals
- Couplers
- Covers
- Diaphragms
- Gaskets

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ABBOTT LABORATORIES
AEROJET
AEROQUIP
ALD VACUUM TECHNOLOGIES
ALKAR
ALLIANCE LAUNDRY SYSTEM
ALLIS CHALMERS
ALCOA
AMERICAN STEAMSHIP
ARMOUR FOOD
ARMSTRONG WORLD
ASEC MANUFACTURING
ATOMIC ENERGY CANADA
BASF
BAY SHIPBUILDING
BECHTEL POWER CORP.
BELOIT
BETHLEHEM STEEL CORP.
BOEING COMPANY
BRIDGESTONE FIRESTONE
BUHLER
CANADAIR
CANADIAN GENERAL ELECTRIC
CAROLINA POWER & LIGHT
CATERPILLAR
COMBUSTION ENGINEERING
COMMONWEALTH EDISON
COOPER TIRE & RUBBER
COORSTEK
CRC EVANS PIPELINE
CRESCENT WASHINGTON HARBOUR
DAIMLER CHRYSLER CORPORATION
DELPHI COMPONENTS
DOOR ENGINEERING & MFG.
DOW CHEMICAL

DYNAMIC AIR
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EASTMAN KODAK
E.G. & G.
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ELLIS DON LTD.
ENERTEC S.A.
ENVIRONMENT CANADA
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ONTARIO POWER GENERATION
OSCAR MAYER
OWENS CORNING FIBERGLAS
PAN AMERICAN WORLD SERVICES
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PHILLIPS 66
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