Standard and Custom Applications

Boots
Bellows
Waycovers
Protective Covers
Flexible Connectors
Air Bladders
Liquid Reservoirs
Boots, Bellows, Waycovers, Air Bladders, Liquid Reservoirs, Flexible Connectors

For over 45 years, GAGNE, Inc. has developed, manufactured, and marketed a line of high quality, low cost, dependable products for the engineering and industrial field by incorporating their unique manufacturing processes.

Among the list are Bellows, Boots, Waycovers, Air Bladders and Liquid Reservoirs. These high quality GAGNE products are tough, durable, and will experience a very high cycle life.

GAGNE, Inc. uses two different manufacturing methods for their bellows. The original Heat Sealed method completely seals out moisture and dust. These bellows are constructed of a specially formulated high quality polyurethane known for its flexibility, abrasion and tear resistance, and very long cycle life. (See material specification data comparison chart). Generally speaking, these are the most economical.

Recently added to the GAGNE line are sewn Bellows. This manufacturing process allows for the use of several different materials whose characteristics may be better suited for your particular application. Some examples of this are high heat resistance, applications where acid content is high, or where other agents may be present requiring special resistance characteristics. This process will also allow for the use of thicker materials for heavier duty applications.

You can be sure of the very highest quality from GAGNE—whichever material and manufacturing process is chosen. All of these products are completely made in the U.S.A.

Bellows are used in a wide range of varied applications wherever the need to exclude dust, dirt, moisture, chips and other environmental contaminants exist. Bellows are used to protect machine operators from pinch points and other dangers from moving parts. They are also used extensively for aesthetic purposes, covering moving and stationary components.

Typical applications for GAGNE bellows would include: Cylinder Rods, Linear Ways, Expansion Joints, Traverse Screws, Guide Rods, Air Bladders and Liquid Reservoirs.

Please call our Application Department to discuss the particulars of your application. We will recommend the material and manufacturing process that will offer the greatest resistance, the longest cycle life, and the most economical cost for your needs.

Heat Sealed Bellows

These are completely sealed using RF welding. They can be made in round, square, rectangular, or special shapes to accommodate the requirements of your applications. The materials available in this method are PVC and Polyurethane in a variety of material thickness ranging from .005 to .040 thick. These materials are especially noted for their resistance to ozone, UV light, and are extremely flexible and light in weight.

Tab Corner Sealed Bellows

GAGNE has developed and perfected its unique Tab Corner Sealed Bellows. This is especially useful on long, vertical applications. The design allows for the more even distribution of convolution expansion where standard round bellows become hyperextended (contorted).

Options

- Foam Breather Vents
- Screen Breather Vents
- Eyelet Grommets
- Ball Screw Guides – Nylon, Metal or Plastic
- Stiffeners – Nylon, Metal or Plastic
- Vinyl Valves, Air Connectors
- Split Bellows
- Notched Bellows
- Flanges (other than OD Diameter)
- Tab Corner Sealed Bellows (see description)
- Special Inspection (Bagging, Tagging, etc.)
- Rubber V Rings/Quad Rings (sealed inside)
- Velcro/Seal Tabs for Joining Split Bellows
- Metal Flange Plates
- Hose Clamps – Nylon or Metal
- Steel, Stainless, Aluminum, PVC Flange Plates
- Zippers

Materials

Polyurethane: Comes in material thickness from .005 to .040. Temp. Range -60°F to +225°F. Very resistant to oils, water, ozone, ultraviolet. Very high abrasion resistance and has high tensile strength.

Polyurethane Coated Nylon: Comes in material thickness of .022 in black. Has all the resistance characteristics of Polyurethane with added reinforcement of nylon for additional strength.

PVC: Comes in material thickness from .008 to .020. Temp. Range from +32 to +250°F. Better resistance to acid.

Polyurethane is an excellent material for clean room applications and FDA Food Standards.
GAGNE custom manufactures a wide variety of Air Bladders and Liquid Reservoirs. These would include scientific, industrial, and commercial applications. Because of the requirement that these be completely sealed, they are manufactured using the die cut and heat sealed process.

We also make special products using the Heat Sealed method. Send your drawings to our application department to begin application discussions. We will work closely with you from the design phase right through to manufacture and delivery.

Flange Plates
GAGNE will custom manufacture Flange Plates to your specification in a variety of material thickness in Aluminum, Steel, PVC and Stainless Steel. Contact our applications department for details.

Hose Clamps and Tie Straps
GAGNE stocks a wide range of Stainless Hose Clamps and Nylon Tie Straps. Our application engineers will assist you in selecting what method of attachment will best serve your application.

This line of bellows is ideal in the harshest environments where hot chips or a heavy accumulation of chips is present. By the nature of this sewn construction, these bellows are not air/liquid tight. They do have an excellent open to closed ratio. The GAGNE Sewn Bellows are ideal for bedway or wayscovers as well as circular rod or screw covers.

These are die cut and sewn using Neoprene coated Nylon, Hypalon coated Nylon, Aluminum coated Nomex, Aluminum coated Fiberglass, Teflon coated Fiberglass and Silicone impregnated Fiberglass. (see materials chart)

Benefits of Gagne Bellows
- Prompt Quote Turnaround
- Knowledgeable Application Assistance
- No Minimum Order Quantities
- Made to your Specification
- Extensive In-House Tooling
- Only the Highest Quality Materials Used
- Increases Life of Rods and Ways
- Increases Performance and Life of Lead Screws
- Their Use Helps Prevent Expensive Down Time
- Many Options and Accessories (see chart)
- Very High Quality Customer Service
- Economical
- Made in the U.S.

Materials
- Neoprene Coated Nylon: Temp. Range -60°F to +250°F. Resistance to oil and water.
- Hypalon Coated Nylon: Temp. Range -60°F to +300°F. Resistance to a wide range of chemicals.
- Aluminum Coated Fiberglass: Temp. Range -100°F to +550°F. Used in applications where specific chemical attack makes other materials unsuitable.
- Teflon Coated Fiberglass: Temp. Range -100°F to +500°F. Comes in material thickness of .010 in white. High abrasion resistance and tensile strength.

Options
- Eyelet Grommets, Screen Vents
- Ball Screw Guides – Nylon, Metal or Plastic
- Flappers – Nylon, Metal or Plastic
- Vinyl Valves, Air Connectors
- Split Bellows
- Notched Bellows
- Flanges (other than OD Diameter)
- Special Inspection (Bagging, Tagging, etc.)
- Velcro/Seal Tabs for Joining Split Bellows
- Steel, Stainless, Aluminum, PVC Flange Plates
- Hose Clamps – Nylon or Metal
- Zipper

Quotation
To get a quotation, please complete and fax or mail the appropriate specification sheet or drawing with all dimensional values directly to our applications department. We also have specification sheets on our website for online quote requests at www.gagneinc.com. Also, please feel free to contact us by phone if you are in need of any assistance.

Whichver style bellows you choose, you can be sure it will be of the highest American Made Quality. We look forward to serving your requirements.
With our experience, a wide range of materials and processes such as polyurethane, neoprene, Teflon, PVC, stainless steel, powder coating, plating or welding can be incorporated into your design.

### Bellows Material

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neoprene Coated Nylon Black</td>
<td>.022 - .040</td>
</tr>
<tr>
<td>Hypalon Coated Nylon Black</td>
<td>.022</td>
</tr>
<tr>
<td>Aluminum Coated Fiberglass</td>
<td>.020</td>
</tr>
<tr>
<td>Teflon Coated Fiberglass</td>
<td>.010</td>
</tr>
<tr>
<td>Silicone Impregnated Fiberglass</td>
<td>.010 - .018</td>
</tr>
<tr>
<td>PVC Translucent</td>
<td>.008 - .012 - .016 - .020</td>
</tr>
<tr>
<td>Polyurethane Translucent</td>
<td>.005 - .010 - .020 (High Temp)</td>
</tr>
<tr>
<td>Polyurethane Black</td>
<td>.010 - .010 (High Temp) - .015 - .020 - .040 - .022 (Poly Coated Nylon)</td>
</tr>
<tr>
<td>Polyurethane Red</td>
<td>.022 (High Temp)</td>
</tr>
</tbody>
</table>

### Operating Conditions:

- Check applicable
- Dust
- Dirt
- Oil [What kind]
- Water
- Ceramic Dust or Powder
- Chemicals [What kind]
- Bellows must be completely air or moisture tight
- Venting is possible
- # of strokes/minute
- Possible mechanical abuse
- Operating temp. limits: Max.      Min.
- Please list any special conditions:

### Application:

- Horizontal
- Vertical
- Smooth Rod
- Threaded Rod

### Qty.(s) of Bellows:

<table>
<thead>
<tr>
<th>Qty.</th>
<th>Bellow</th>
<th>Waycover</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

### Dimensional Data:

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>Stroke</th>
<th>Closed Height</th>
</tr>
</thead>
</table>

### Specify Popular Options:

- Zipper
- Breather Vents
- Ball Screw Guide
- Hose Clamps
- Stiffeners
- Flange Plates
- Other

### Operating Conditions:

- Dust
- Dirt
- Oil
- Water
- Ceramic Dust or Powder
- Chemicals
- Bellows must be completely air or moisture tight
- Venting is possible
- # of strokes/minute
- Possible mechanical abuse
- Operating temp. limits: Max.      Min.
- Please list any special conditions:
■ Round Bellows

Bellows Material

- Neoprene Coated Nylon Black
  - 0.02
- Hypalon Coated Nylon Black
  - 0.02
- Aluminum Coated Fiberglass
  - 0.02
- Teflon Coated Fiberglass
  - 0.10
- Silicone Impregnated Fiberglass
  - 0.01 0.016
- PVC Translucent
  - 0.08 0.12 0.16 0.20
- Polyurethane Translucent
  - 0.05 0.06 0.10 0.020 (High Temp)
- Polyurethane Black
  - 0.10 0.10 (High Temp)
  - 0.15 0.20 0.40
- Polyurethane Red
  - 0.022 (Poly Coated Nylon)
- Polyurethane Red
  - 0.022 (High Temp)

Operating Conditions:
Check applicable
- Dust
- Dirt
- Oil What kind
- Water
- Ceramic Dust or Powder
- Chemicals What kind

Bellows must be completely air or moisture tight
- Venting is possible
- # of strokes/minute
- Possible mechanical abuse

Operating temp. limits:
- Max.
- Min.

Please list any special conditions:

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Specify Popular Options:

Zipper
Breather Vents
Ball Screw Guide
Hose Clamps
Stiffeners
Flange Plates
Other

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Qty.(s) of Bellows:

Dimensional Data:
A. Rod Dia. _______________
I.D. _______________
B. Max.* OD _______________
Length Open _______________
Length Closed _______________

*For lowest cost, specify largest possible O.D.

Please specify cuff or flange information directly on diagrams.

Application:
- Horizontal
- Vertical
- Smooth Rod
- Threaded Rod

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Company ___________________________
Street ______________________________
City __________________ State _______ Zip __________
Contact ____________________________
Tel _________________________________
Fax _________________________________
**Function**

Where air or hydraulic cylinders are designed to drive a machine slide, this question should always be asked: If the machine deflects under load, or the installation or maintenance is ideal, does a less than perfect job of alignment, what will this do to side action?

The answer is usually "Nothing" for clevis or trunion mounted cylinders. But where space, mounting requirements or length of stroke rule out the clevis type mount, trouble can develop. Installation inaccuracy, subsequent wear of side bearings, or deflection under gravity and operating loads can throw a heavy side load on the cylinder rod as it passes through the gland. Results are likely to be:

- **Rebounding of rod, with jerk action or starting under load**
- **Excessive wear of gland, causing leaks**
- **Excessive downtime**

The Gagne Rod-End Coupling is designed to correct this problem at the source by transmitting the push-pull cylinder force but relieving all side forces (under usual conditions).

**Lateral Displacement:** The Coupling is designed to accept up to 1/32 inch error in the smaller sizes, more in the larger sizes.

**Angular Displacement:** The Coupling will operate freely even though misaligned as much as 1 degree.

**Costs**

Many designers recognize this 4-bearing problem during design and provide their own special automatic adjusting device. But costs of the "homemade" product will include design and provide their own special automatic adjusting device.

**Costs eliminated by purchased couplings:**

- **Design and detailing time**
- **High shear costs for a custom machined device**
- **Excessive debugging and maintenance if the new design has been less than perfect**
- **Reduces downtime**

**Thrust Capacity**

All parts in Gagne couplings are steel, and the couplings will accept in "push" the full shear strength of the cylinder rod thread. The "pull" strength of the Type "C" Flange Coupling is determined by other components, such as the maximum bolts or the cylinder rod thread (normally this is many times the force which the fluid can exert on the piston). The "pull" strength of the Type "B" and "C" Couplings is determined by the shear strength of the hot-dipped snap ring, which is listed in the chart at right.

**Sizes**

Thread sizes are regularly offered to fit all standard air and hydraulic cylinders within the range of ordinary use. Larger sizes or special lengths will be quoted on request, including metric threads and stainless steel couplings.

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**STYLE "A"**

**FLANGE COUPLING**

**APPLICATION:**

Bolts to a flat surface

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**STYLE "B"**

**2-TAP COUPLING**

**APPLICATION:**

Two threaded rods in line, or threaded rod and tapped hole

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**STYLE "C"**

**MALE-FEMALE COUPLING**

**APPLICATION:**

Female connects to threaded rod on cylinder – Male connects to driven component

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**ALL SIZES AND STYLES AVAILABLE IN STAINLESS OR TITANIUM**

**Thread sizes given in green not recommended for hydraulic cylinders – use next size coupling.**

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**SIZES 4, 2-TAP COUPLING**

**APPLICATION:**

Bolts to a flat surface

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**SIZES 4, 2-TAP COUPLING mounted on 2½" air cylinder**

**APPLICATION:**

Two threaded rods in line, or threaded rod and tapped hole

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**SIZES 4, FLANGE COUPLING**

**APPLICATION:**

Bolts to a flat surface
Our Pledge to You

- We’re positive we offer competitive prices.
- We’re positive we’ll always be on time with your order.
- We’re positive we have a high quality product.
- We’re positive no order is too big or too small for us to handle.
- We’re positive you’ll keep coming back.
- In fact, we’re even positive about our competition. (Positive we’re better than they are)