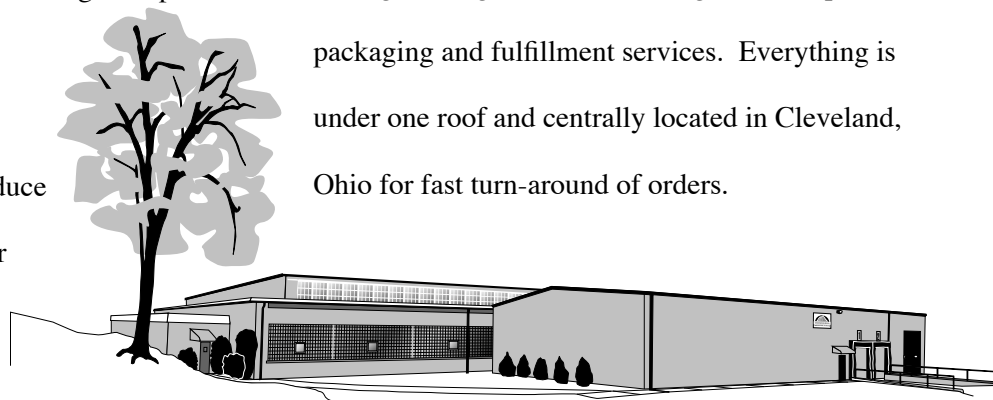


# Bellows & Covers





**Forest City Industrial Sewing** specializes in fabricating custom-designed bellows and covers that insulate and protect machinery and components, while increasing worker safety. We're also a leading fabricator of insulated covers and high temperature products for industrial and military applications. A sampling of products we produce are detailed on the back cover of this literature.



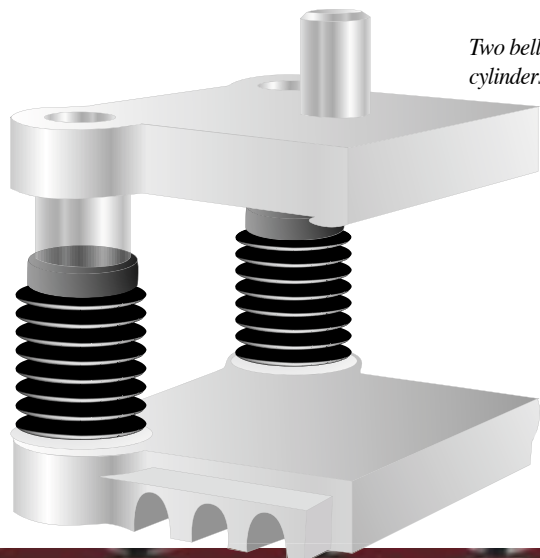
Forest City Industrial Sewing is ideally suited to handle your bellows and covers applications. A 42,000 square-foot facility houses our industrial sewing operation, along with die-cutting, strip-cutting, slitting and laser marking services, plus packaging and fulfillment services. Everything is under one roof and centrally located in Cleveland, Ohio for fast turn-around of orders.

## Bellows

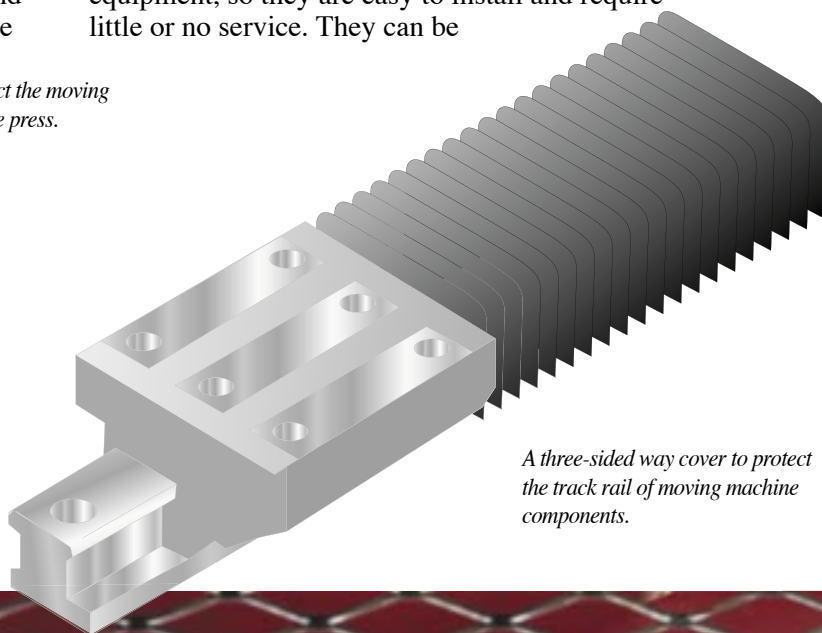
Accordion-style expanding and contracting bellows have a broad range of applications. Bellows are typically fastened on cylinder rods, jack screws and robotic arms. They extend service life of equipment and components by shielding out dirt, moisture, metal particles and chips, chemicals and high temperatures. Bellows can also retain grease

or lubricants and improve worker safety by protecting against dangerous pinch points on expanding and contracting equipment.

Forest City bellows are custom designed to fit your equipment, so they are easy to install and require little or no service. They can be

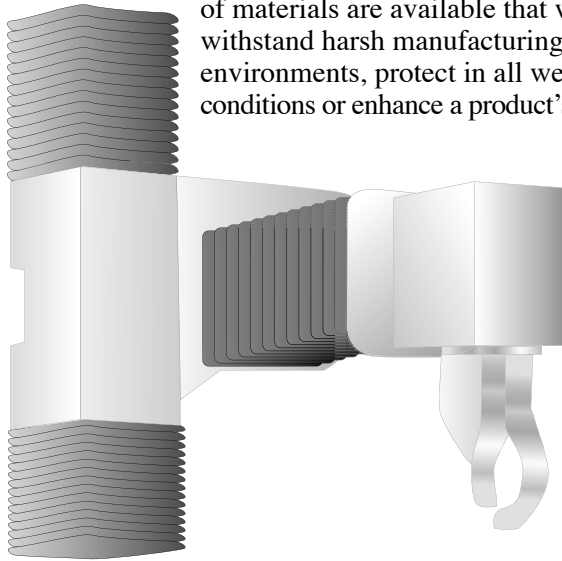


*Two bellows protect the moving cylinders of a large press.*



*A three-sided way cover to protect the track rail of moving machine components.*

manufactured to have 2, 3, or 4 sides or can be round, depending on your specific needs. A broad range of materials are available that will withstand harsh manufacturing environments, protect in all weather conditions or enhance a product's design.



*A typical square bellows to protect a shaft or screw rod from chips or other abrasive materials.*

*Another round bellows, this time with a zipper for easy installation.*



## Fabric Materials

**Vinyl Coated Nylon 18 oz. per square yard (VCN 18)** – A strong, very inexpensive black fabric that can be used in ambient temperature situations where no chemical resistance is needed. Good weathering.

**Neoprene Coated Nylon (16 oz.) (NCN16)** – A strong inexpensive black fabric with good abrasion resistance; temperature resistance to 225° F; good outdoor weathering; decent against oils and greases.

**Neoprene Coated Nylon (40 oz.) (NCN40)** – The same as #16 but thicker, giving extra strength and abrasion resistance.

**Neoprene Coated Fiberglass (16 oz.) (NCF16)** – Identical to NCN #16, but with a fiberglass base cloth. This allows it to contact hot chips and slag, and still not burn through the base fabric. Safety orange color.

**Hypalon Coated Nylon (17 oz.) (HCN17)** – Slightly better abrasion and weather resistance than neoprene, but more costly; temperature to 250° F. Decent against oils and greases. Forest green.

**Silicone Coated Fiberglass (17 oz.) (SCF17)** – An inexpensive gray fabric that can take 500° F. The fiberglass base fabric allows it to contact hot chips and slag, and still not burn through the cloth. Only fair against oils and poor abrasion; but excellent weathering and good chemical resistance.

**Silicone Coated Fiberglass (33 oz.) (SCF33)** – Same as SCF #17, but thicker, giving extra strength and abrasion resistance. Red color.

**Fluorocarbon Coated Fiberglass (17 oz.) (FCF17)**– The best for chemical resistance; good abrasion resistance and weathering, temperature to 500° F. Grey one side, tan on the other side.

**Aluminized Kevlar (13 oz.) (AK13)** – The ultimate in strength and abrasion resistance, with temperature resistance to 600°F. Fair chemical resistance, poor weathering (UV sensitive), and expensive. Yellow one side with aluminum coating on the other side.

**Aluminized Fiberglass (19 oz.) (AF19)** – Temperature resistance to 1000° F, but only with fair strength, abrasion resistance, and weathering. Good chemical resistance. Tan one side with aluminum coating on the other side.

**Aluminized Silica (36 oz.) (AS36)** – The best temperature resistance (1800° F), but the worst strength/abrasion resistance, and the most expensive. Tan one side with aluminum coating on the other side.

**NCN16**



**HCN17**



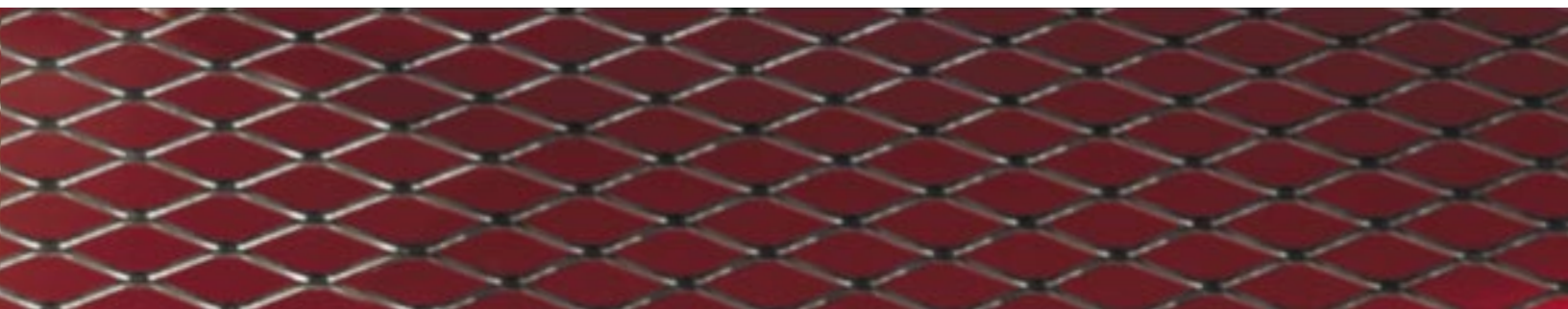
**SCF17**



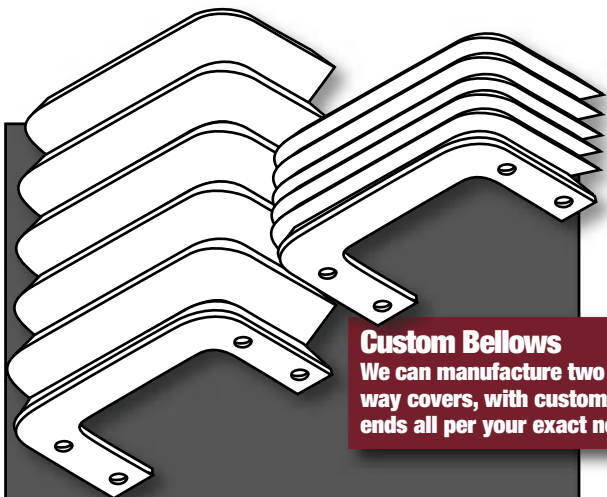
**AF19**



**NCF16**

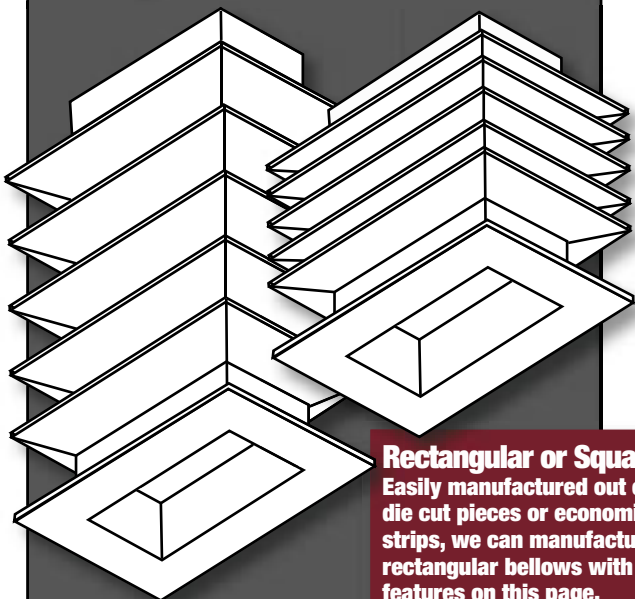


# Bellows Styles



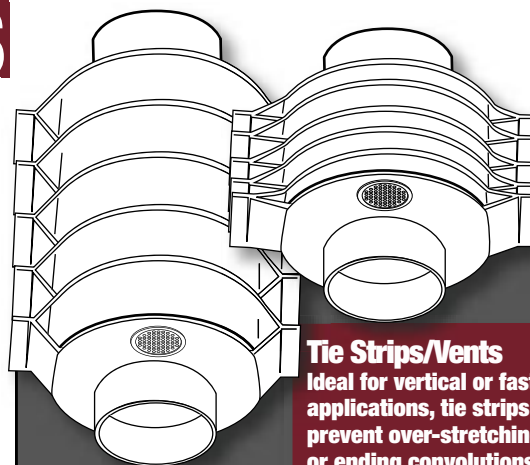
## Custom Bellows

We can manufacture two or three sided way covers, with custom fastening ends all per your exact needs.



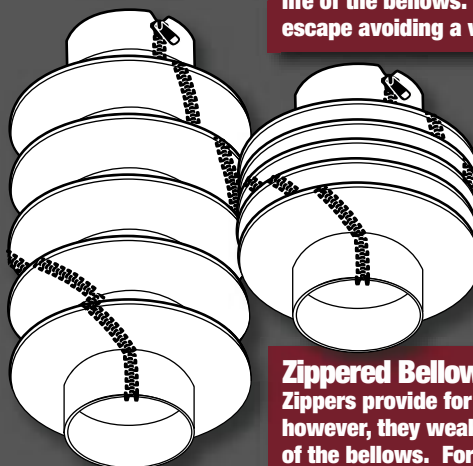
## Rectangular or Square Bellows

Easily manufactured out of precision die cut pieces or economical fabric strips, we can manufacture square or rectangular bellows with any of the features on this page.



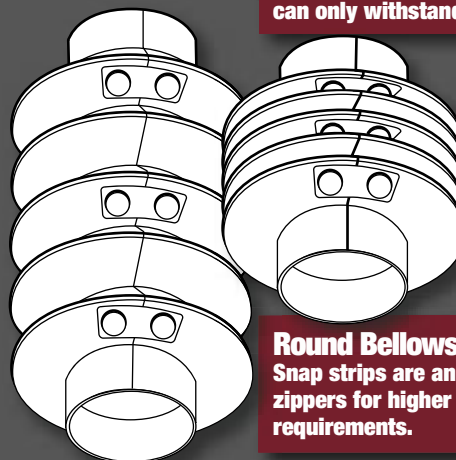
## Tie Strips/Vents

Ideal for vertical or fast moving horizontal applications, tie strips on two sides prevent over-stretching of the beginning or ending convolutions; extending the life of the bellows. Vents allow air to escape avoiding a vacuum effect.



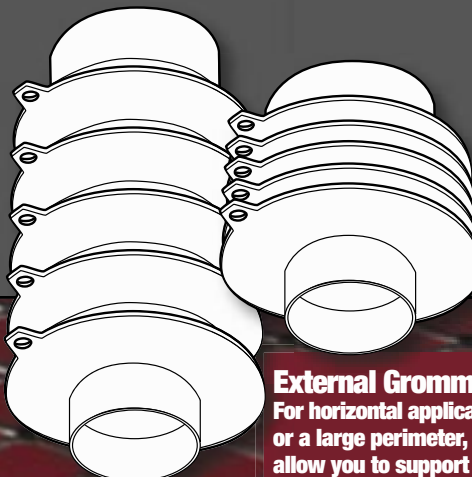
## Zippered Bellows

Zippers provide for easy installation, however, they weaken the overall strength of the bellows. For aluminized fiberglass and silica bellows, a zipper weakens temperature resistance, since zipper tape can only withstand 500° F.



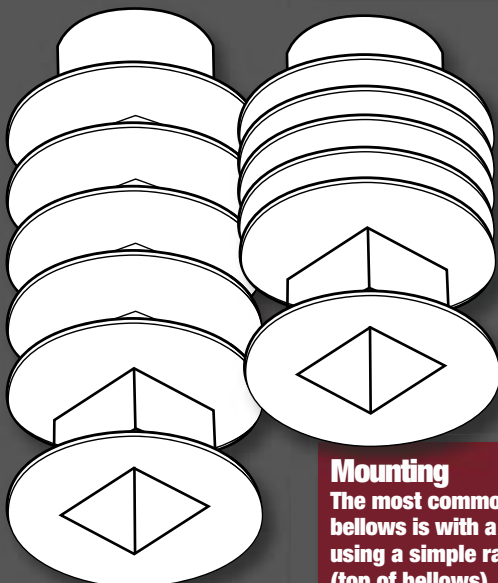
## Round Bellows with Snap Strips

Snap strips are an alternative to zippers for higher temperature/strength requirements.



## External Grommet Bellows

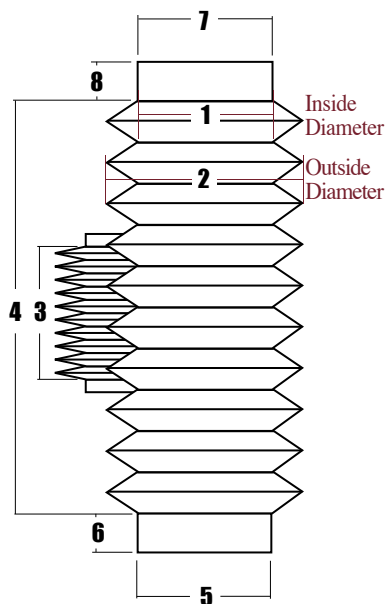
For horizontal applications with a long travel or a large perimeter, tabs with grommets allow you to support the bellows on a wire or rod to prevent sagging and internal contact between the bellows and the shaft.



## Mounting

The most common way to mount a bellows is with a round collar, typically using a simple radiator style clamp (top of bellows). A bellows flange can also be mounted using bolts (bottom).

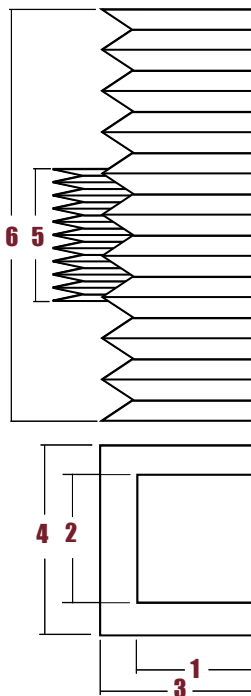
# Dimensions



## Round Bellows

- 1 Inside Diameter \_\_\_\_\_
- 2 Outside Diameter \_\_\_\_\_
- 3 Retracted Length \_\_\_\_\_
- 4 Extended Length \_\_\_\_\_
- 5 Collar Diameter \_\_\_\_\_
- 6 Collar Length \_\_\_\_\_
- 7 Collar Diameter \_\_\_\_\_
- 8 Collar Length \_\_\_\_\_

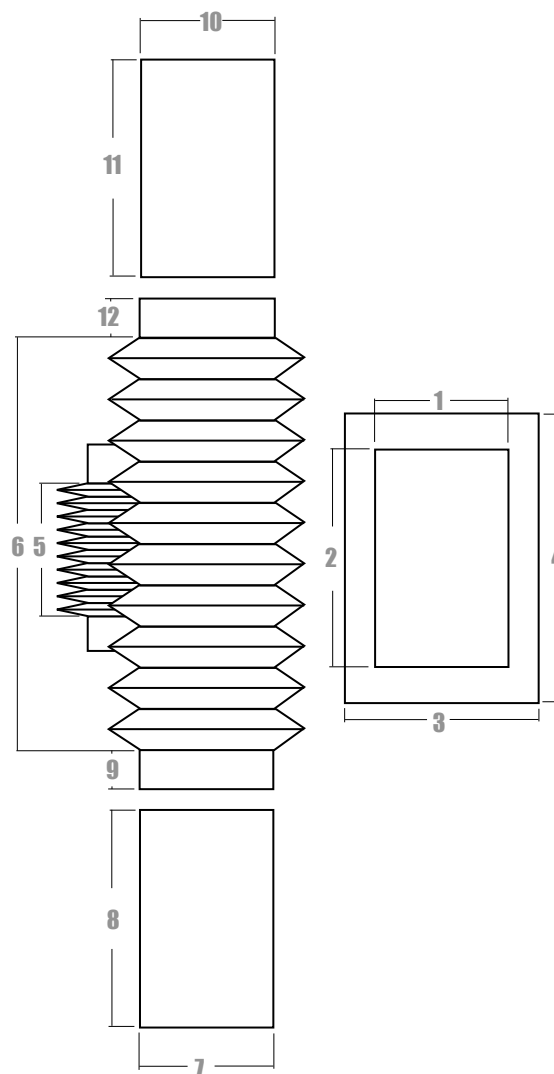
If flange ends are required please sketch them on a separate sheet.



## Cover/Hooded Bellows

- 1 Inside Height \_\_\_\_\_
- 2 Inside Width \_\_\_\_\_
- 3 Outside Height \_\_\_\_\_
- 4 Outside Width \_\_\_\_\_
- 5 Retracted Length \_\_\_\_\_
- 6 Extended Length \_\_\_\_\_

If flange ends of a different size are required please sketch them on a separate sheet.



## Rectangular/Square Bellows

- 1 Short Inside Dimension \_\_\_\_\_
- 2 Long Inside Dimension \_\_\_\_\_
- 3 Short Outside Dimension \_\_\_\_\_
- 4 Long Outside Dimension \_\_\_\_\_
- 5 Retracted Length \_\_\_\_\_
- 6 Extended Length \_\_\_\_\_
- 7 Short Collar Dimension \_\_\_\_\_
- 8 Long Collar Dimension \_\_\_\_\_
- 9 Collar Length \_\_\_\_\_
- 10 Short Collar Dimension \_\_\_\_\_
- 11 Long Collar Dimension \_\_\_\_\_
- 12 Collar Length \_\_\_\_\_

# Customer Information

Name \_\_\_\_\_ Title \_\_\_\_\_  
 Company \_\_\_\_\_ Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 Phone \_\_\_\_\_ Fax \_\_\_\_\_ Email \_\_\_\_\_

Fabric Preference \_\_\_\_\_

☐ Stainless Steel Clamps Provided

☐ External Grommets for Guide Wire

☐ Snap Strips

☐ Zipper Full Length of Boot

☐ Tie Strips Full Length of Boot

☐ Vents as Required

☐ Vents as Required



# Specialty Covers

Forest City Industrial Sewing has extensive experience producing insulating covers, temperature maintenance blankets, weathering covers and other specialized products used in high-temperature or outdoor environments. Die-cutting, strip-cutting and slitting capabilities allow us to fabricate all types of rubber materials and textiles.



*Solvent Recycling Reservoir Cover  
– Insulates 650° F  
solvent recycling tank*

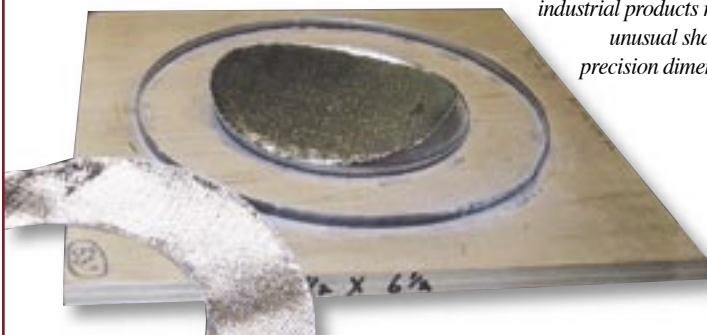
## High Temperature Products

Forest City Industrial Sewing has extensive experience in fabricating high temperature products such as insulating covers, furnace curtains, heat blankets and protective pads.

## Specialty Products

Many industrial products require unusual shapes or precision dimensions. Our specialty capabilities include die cutting, and hot and cold strip cutting of narrow fabrics.

*Die cutting – Many industrial products require unusual shapes or precision dimensions.*



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Toll-Free 866.272.5161  
Phone 216.634.9000  
Fax 216.634.0101  
tgalang@forestcityco.com  
www.forestcityco.com



*Insulated Cover for Round Poly Chemical Tank*

## Insulated Covers

Forest City Industrial Sewing produces a variety of products with insulating properties. Many products are designed to maintain temperatures of liquid containers, usually for sensitive chemicals. Astrofoil® insulation, with a tough FR-reinforced vinyl on the exterior, is lightweight and compact for shipping and storage, and delivers excellent long-term insulation performance – even after exposure to rain. It's also easier to fabricate so customization is limitless. Specialized tops, cut-outs for stacking lugs, inlet and outlet valves, and sight valves are just a few applications.



*Night vision military ship-mounted binocular cover.*

## Military & Government

Forest City Industrial Sewing has extensive expertise and capabilities with the military and meeting government specifications. No job is too complicated or too small for us to consider. We specialize in small runs and complex specifications.