



**SIGMA-  
NETICS**

*Innovation in Sensing*



# METAL BELLOWS & ASSEMBLIES





# YOUR BELLOWS SOURCE

## HYDROFORMED METAL BELLOWS



- 1/4" to 4" OD
- 0.003" wall or thicker
- 100% leak check
- Wide range of metals
- Seamless and seam-welded designs
- Medium—high volume applications
- Many sizes in stock

### **METALS:**

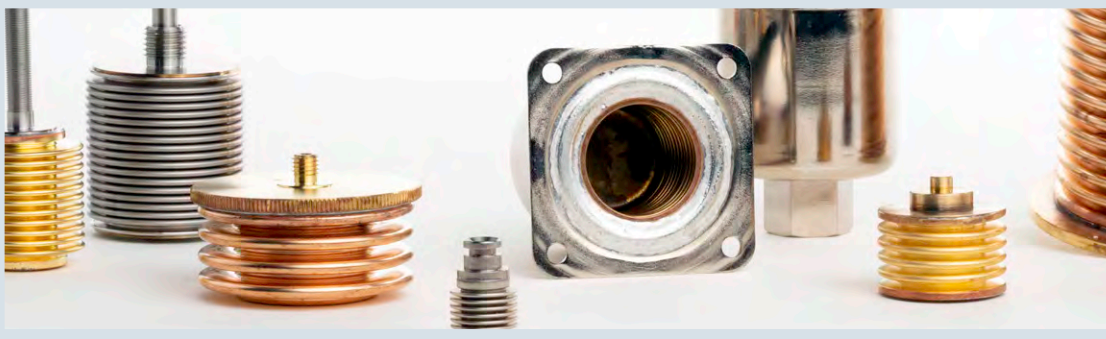
- Monel
- Bronze
- Brass
- Stainless Steel
- Beryllium Copper

## ELECTROFORMED NICKEL BELLOWS



- 0.030" to 6" OD
- Ultra-low spring rates available
- Dual metal construction available
- Low—mid volume applications available
- Ideal for unique geometries
- Lowest tooling costs

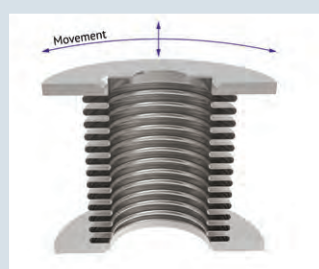
## BELLOWS ASSEMBLIES



- Brazed, soldered, welded and epoxied options
- Wide thermal ranges
- High cycle life
- High purity
- Custom designs

# USES & APPLICATIONS

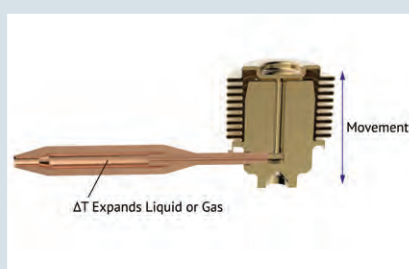
## SEALING



Bellows create a sealed, flexible connector capable of multi-axis movement.

- Electrical Interrupters
- Expansion Joints

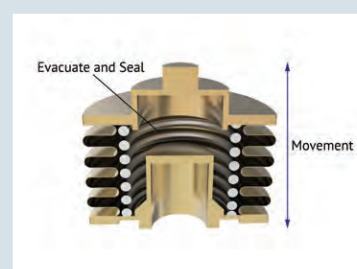
## TEMPERATURE



Liquid-filled bellows assemblies expand and contract in response to temperature changes.

- Control Valves
- Temperature Switches

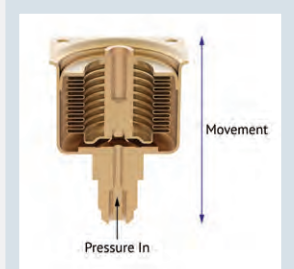
## EVACUATION



The aneroid will expand or contract due to changes in altitude.

- Fuel to Air Mixture
- Pilot Oxygen Masks

## PRESSURE



When pressurized, bellows exhibit a linear response.

- Pressure Switches
- Gauges

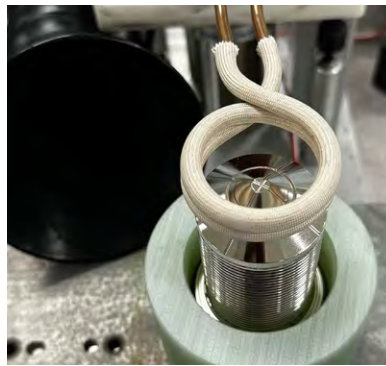


# MANUFACTURING & ASSEMBLY

## HIGH VOLUME PRODUCTION

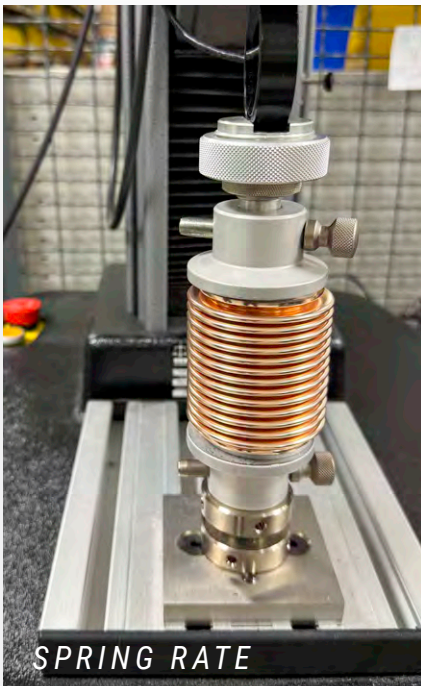


## ASSEMBLY: SOLDERING, BRAZING, WELDING, BONDING



# EXTENSIVE TESTING

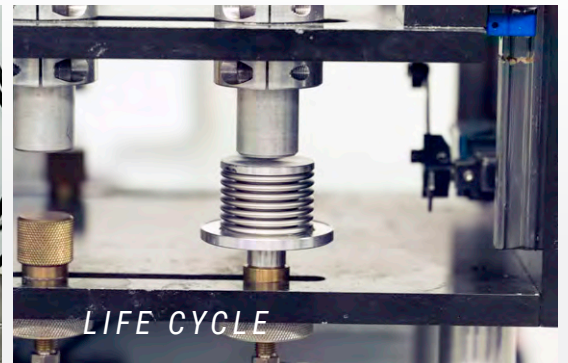
## TESTING: SPRING RATE, LEAK CHECK, LIFE CYCLE



SPRING RATE



LEAK CHECK



LIFE CYCLE

### LEAK CHECK:

- Bubble Detection
- Pressure Decay
- Helium Mass Spectrometry
- Extended Pressure Exposure

### LIFE CYCLE:

- Mechanically Stroked
- Pressure Cycled





**ISO9001**  
CERTIFIED



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From ruggedized pressure switches and sensors to metal bellows assemblies, Sigma-Netics designs and manufactures sensing elements for the world's most demanding industrial, military and aerospace applications. Sigma-Netics is a privately held corporation founded in 1966, headquartered in a 30,000 square foot facility in Riverdale, NJ, USA.



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