

Your Engineering Resource for Bellows Solutions

senior
Metal Bellows

ABOUT SENIOR METAL BELLOWS

We've built a 60+ year legacy of solving the toughest challenges in demanding industries, creating precision components that function under the harshest conditions.

Senior Metal Bellows was founded on a breakthrough process for creating welded diaphragm metal bellows in 1955. Our customers represent the top innovators in aerospace, defense, oil & gas, medical and semiconductor markets.

Metal Bellows operates in a 120,000 square foot engineering and manufacturing facility in Sharon, Massachusetts. This is a vertically integrated plant incorporating all aspects of metal fabricating and joining as well as electromechanical fabrication and assembly. All metal joining processes are maintained in the facility with particular attention to our core competency, fusion welding technologies. This allows us to completely control the quality of the innovative solutions we offer our clients.



Aerospace



Airline
Aftermarket



Defense



Semiconductor



Oil & Gas



Medical



Industrial



Off-the-Shelf
Products

NEW PRODUCT DEVELOPMENT

Senior Metal Bellows applies our core welded metal bellows technology to solve our customers' unique challenges.

We can provide customized engineered solutions in one of our existing product technology areas or we can create entire new products.

Our engineers work closely with our customers' engineers to ensure that we meet or exceed all of your technical and commercial requirements.

Our core competencies are:

- » problem solving and new product development
- » designing for harsh environments
- » designing for high reliability and high cycle life
- » rapid proof of concept to production design cycle

We apply our welded metal bellows technology to address performance and/or reliability issues with conventional solutions.

AREAS SENIOR EXCELS



High Reliability

- » 1,000,000,000 cycle capability
- » zero friction and zero wear
- » zero contamination
- » redundant and double containment systems with fault indication



Zero Leakage

- » candidate for zero leakage replacement of dynamic elastomeric seals
- » movement across a vacuum boundary
- » noxious gases
- » corrosive liquids



High Pressure

- » pressure to 37,000 psi and higher
- » zero leakage pneumatics & hydraulics
- » unique HIPRES® bellows
- » patented high pressure bellows technology



Temperature Extremes

- » cryogenic to extreme heat
- » designs to 1800°F or higher
- » automatic thermal actuators to 1100°F plus

Senior Metal Bellows has the engineering staff, the design and analysis tools and the test lab facilities to rapidly bring your custom solution from concept to product.

PRODUCTS



ACCUMULATORS & RESERVOIRS

- » all welded metal construction — no elastomeric seals
- » maintenance and service free for the life of the program
- » most accurate sizing using “real gas” sizing analysis considering isothermal and adiabatic operation
- » suited for hydraulic, fuel, oil and cooling systems applications



THERMAL VALVES / ACTUATORS

- » all welded, hermetically sealed stainless steel construction — no elastomers
- » capable of 1,000,000+ thermal cycles
- » operating and actuation temperatures to 1,000°F
- » accurate, repeatable performance — no performance drift over time



PRIME MOVER ACTUATORS

- » no elastomers for smooth continuous motion across the vacuum boundary
- » integrated position sensing with automatic temperature compensation
- » precision guiding for accuracy and repeatability
- » individually tuned for synchronous motion
- » very wide operating temperature range
- » 1,000,000+ lifecycle



MEDICAL IMPLANT BELLOWS

- » extremely thin gauge titanium construction
- » low spring rate
- » high cycle life
- » zero leakage



COMPLEX ASSEMBLIES

- » engineering and manufacturing capability to offer higher level assemblies integrating welded metal bellows



VACUUM PUMPS & COMPRESSORS

- » hermetically sealed — employs welded bellows that provides positive containment and contamination free sampling
- » stainless steel construction — all wetted surfaces are corrosion resistant stainless steel except for valve assembly gaskets that are either teflon or viton
- » long life — capable of a minimum of 10,000 hours continuous operation
- » no maintenance — no wearing surfaces and no lubrication required



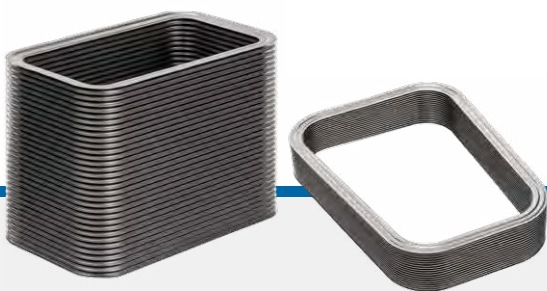
MICROLITER PRECISION DISPENSING PUMPS

- » all metal construction is suitable for corrosive and caustic fluids
- » no elastomeric seals to wear
- » friction-free operation eliminates “sticktion” issues
- » compact form can bolt onto a manifold
- » integrated bidirectional check valves allow for continuous unidirectional flow



FEEDTHROUGHS

- » axial or rotary feedthroughs
- » all-metal construction eliminates elastomeric seal
- » high cycle life
- » operates at temperature extremes
- » suitable for vacuum chamber applications and aircraft engine firewall applications



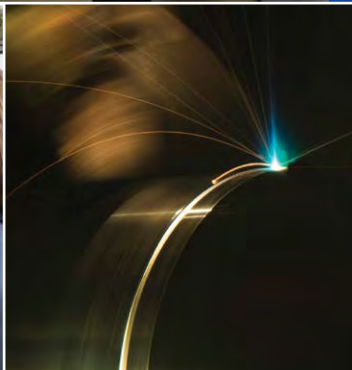
NON-ROUND BELLOWS

- » non-round bellows can be manufactured in all shapes to meet any geometric requirement



WELDED METAL BELLOWS

- » welded metal bellows provide for a zero leakage dynamic seal capable of operation in extreme environments



WHAT CAN WE DESIGN FOR YOU?

Innovative Product Design Solutions

Specializing in Demanding Requirements

Extreme Temperature & Extreme Pressure

Reliable in Any Environment

Zero Leakage, High Cycle Life

CONTACT US TODAY TO DISCUSS YOUR APPLICATION

781-784-1400 | marketing@metalbellows.com

CERTIFICATIONS

QUALITY

ISO 9001:2008 and EN/ JISQ/AS9100:2009

REPAIR

FAA Repair Station

PMA Authority for Several Airline Parts

European Aviation Safety Agency (EASA) Repair Station

NADCAP

AC7110 for Welding

AC7102 for Heat Treating

AC7102/1 for Brazing

AC7101/3 for Mechanical Testing

AC7101/4 for Metallographic and Micro Hardness Testing

AC7101/5 for Hardness Testing

AC7114 for Non Destructive Testing Dye Penetrant

AC7108 for Chemical Processing

ENVIRONMENTAL HEALTH AND SAFETY

ISO 14001:2004 Certified — Environmental Management System

BSI — OHSAS 18001 Certified — Occupational Health and Safety Management

EHS Policy Statement 10-19-17

DEFYING THE IMPOSSIBLE



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