

**Flexible  
Metal, Inc**



EXPANSION JOINT DIVISION

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**Design-Engineered Solutions  
for Flexible Metal  
Applications**

## OUR VISION

FMI is built on a tradition of  
integrity, trust, leadership,  
teamwork and passion.

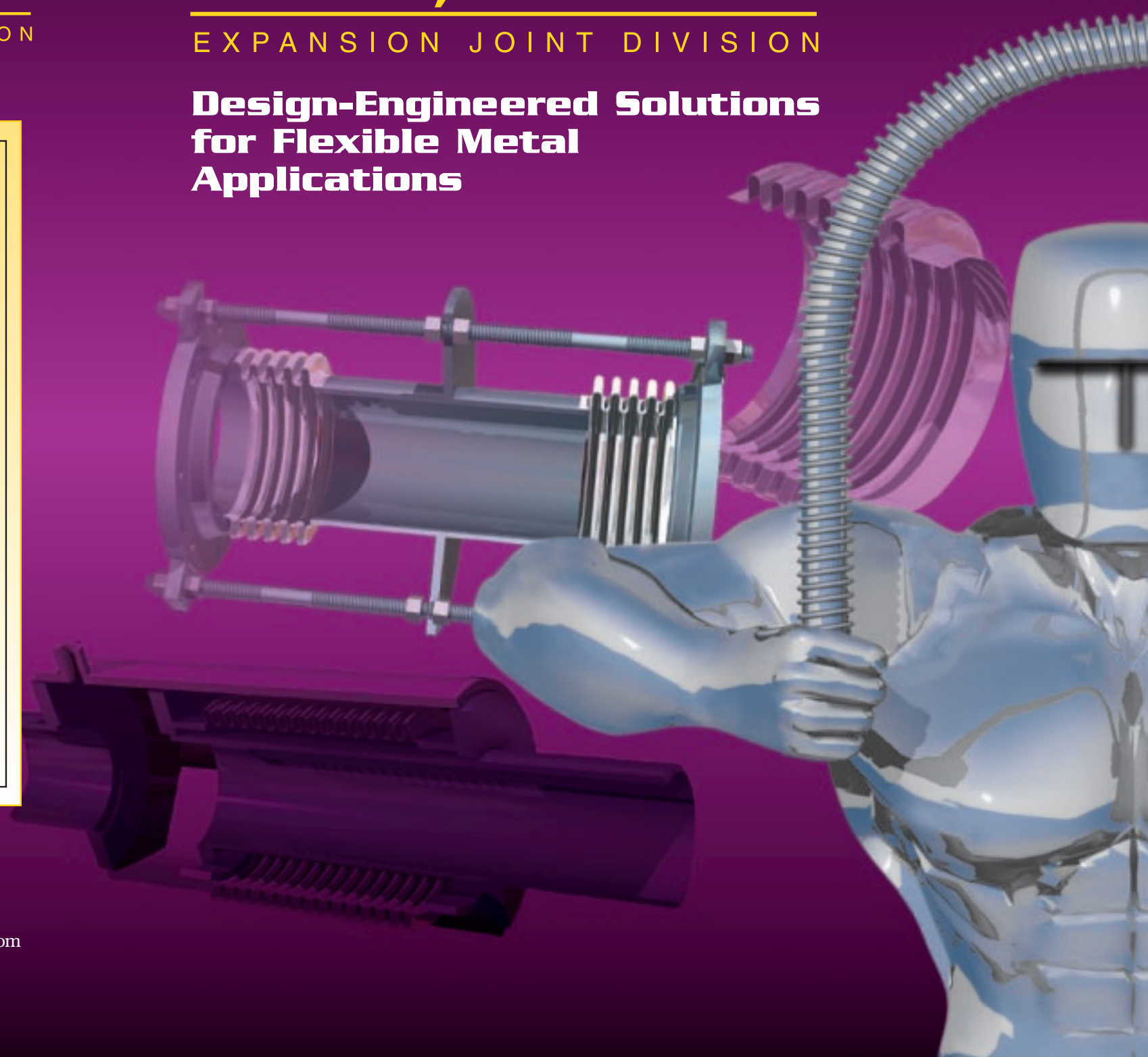
We design and manufacture  
high quality bellows, expansion joints  
and fabricated assemblies  
for gas and fluid conveyance.

Our work results in:

- enthusiastic and loyal customers
- employee fulfillment
- success for our company and partners

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FMI/EJ 5/02



## Overview

The FMI Expansion Joint Division is dedicated to designing and manufacturing high quality metal expansion joints. Building on a successful tradition, the new FMI brings "world-class" skills and technology to the expansion joint industry. Our customers cover a broad spectrum of industries from Power Generation, Utilities, Gas Turbine, and Marine, to Petrochemical and Pulp & Paper. We work closely with Architectural & Engineering Firms to provide design-engineered solutions for expansion joint applications.

## Background

Flexible Metal, Inc. (FMI), is located in Tucker (Atlanta), GA. FMI manufactures metal expansion joints, metal bellows, corrugated tubing, braid and fabricated assemblies for a wide array of applications and industries. As an industry leader, FMI delivers design-engineered solutions for flexible metal applications that provide superior value in terms of reliability and performance. FMI is a Dormont Manufacturing Company. Dormont is the inventor and world's largest manufacturer of flexible stainless steel gas appliance connectors. With over 50+ million assemblies successfully installed throughout the world, Dormont Manufacturing has earned a reputation as a leader in flexible metal technology!

## Design & Technical Support

The FMI Design & Engineering Team is composed of talented, highly skilled individuals with extensive industry experience who are dedicated to helping provide value-added solutions for our customers. The FMI Team works directly with architects and engineers to ensure that each expansion joint design meets specific customer needs, as well as quality and cost targets. We take great pride in providing rapid, real-time technical support. Our goal is to become an extension of your engineering team, delivering a unique set of skills, knowledge and experience.



## Quality Systems

FMI is committed to providing superior quality products that are manufactured in accordance with internationally recognized quality systems standards. FMI has been an ISO 9001 Registered Firm since 1993 and earned QS 9000 Registration in 2002. These internationally recognized quality standards help assure our customers of our commitment to continually upgrading and improving our processes.

## Manufacturing Capabilities

FMI Expansion Joints range in size from from 1" through 144" I.D. They are fabricated using a variety of materials, including 300-series Stainless Steel, and other specialty alloys such as Inconel, Hastalloy, Aluminum, and Monel for applications requiring higher corrosion resistance and/or oxidation protection at very high temperatures.

FMI is implementing a long range plan to upgrade our operations to "world-class" status. We utilize Lean Manufacturing principles and statistical techniques to provide continuous improvement in all areas. We continue to invest in new, proprietary equipment and our Supply Chain Optimization initiatives help ensure that we meet our customers' demanding requirements through flawless execution of the fundamentals.



## FMI Expansion Joints

FMI manufactures a wide range of metal expansion joints. Pictured below are several examples that depict our range of expansion joint products. Please contact us with your requests or for additional information.



### Single Unrestrained

The most fundamental of expansion joints, the Single Unrestrained consists of a single bellows element with end connections.

### Hinged

Utilizing a pair of pins through hinge plates that are attached to the expansion joint ends, this joint contains a single bellows element and is designed to permit angular rotation in one plane only.



### Tied Single

A Single expansion joint with the addition of tie rod hardware. Tie rods are added to restrain the system pressure thrust and prevent over extension of the bellows.

### Gimbaled

Using two pairs of hinges connected to a common central floating ring or box, this expansion joint contains a single bellows element and is designed to permit angular rotation in any plane.

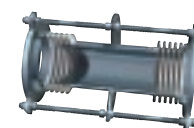


### Universal Unrestrained

Contains two bellows elements separated by a center pipe section or spool. This design can accommodate large amounts of lateral deflection, as well as axial and angular movements.

### Pressure Balanced

A unique design that not only restrains the pressure thrust, but also balances this thrust force so that main anchoring of the pipe and adjacent equipment is not necessary. Can be designed as a single or universal expansion joint.



### Tied Universal

A Universal Expansion Joint with the addition of tie rod hardware. Because the tie rods are added to restrain pressure thrust, these joints cannot accept axial movements.

### Externally Pressurized

The Externally Pressurized Expansion Joint is an exceptional product for absorbing large amounts of axial movement in long straight lengths of pipe.



## Accessories

Certain expansion joint applications and operating conditions require the addition of accessories to the joint to prevent damage or failure. The FMI engineering team is experienced in both recognizing the conditions that require these accessories, and in designing the expansion joint to accommodate them. Some common accessories are listed below:

**Tie rods** - Ties rods are devices, usually in the form of bars or rods, attached to the expansion joint assembly and are designed to absorb pressure loads and other extraneous forces such as dead weight.

**Purge connections** - Purge connections are used in conjunction with internal liners to lower the skin temperature of the bellows in high temperature applications such as catalytic cracker bellows.

**Liners** - (Internal Sleeves) In addition to preventing erosion caused by abrasive media, internal sleeves are used to protect the bellows from resonant vibration caused by high flow velocity.

**Covers** - (Shrouds) Covers are used to protect the bellows from external damage.

## End Connections

FMI Expansion Joints can be designed with a variety of standard, custom, and customer-specified end fittings. Standard options include weld ends, forged flanges, plate flanges, and vanstone ends.

