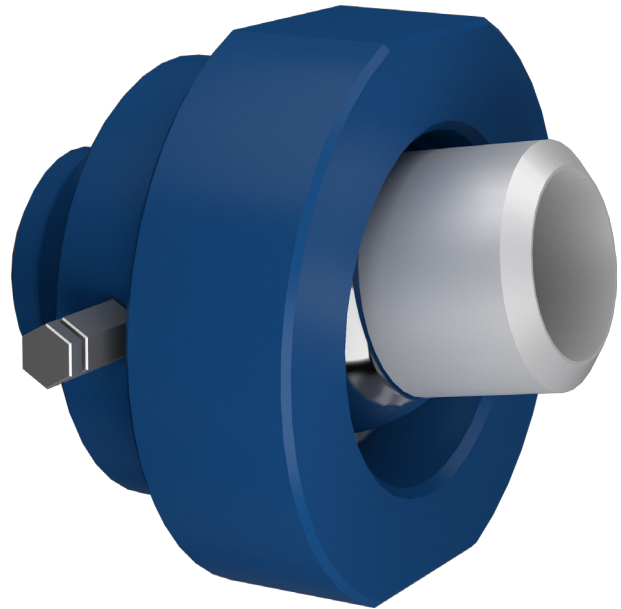


# Universal Ball Joint

## Flexible Pipe Connector

High integrity connectors that add flexibility to piping spools in static and dynamic applications



### FEATURES

**360° continuous rotation and up to 30° axial pivot**

**Engineered contact surfaces for superior wear and reduced friction**

**Simple, tool free, in-line maintenance**

# Universal Ball Joint

## Flexible Pipe Connector

Our universal ball joint\* is a high-integrity, flexible pipe connection suitable for both dynamic and static applications. A reliable high-temperature, high-pressure Graphoil® seal is incorporated in the design and is easily serviced with the field injection port. All ball joints are shipped assembled, tested, and ready for installation.

### Applications

- » Thermal oil extraction processes:
  - » SAGD (Steam Assisted Gravity Drainage)
  - » CSS (Cyclic Steam Stimulation)
  - » SAP (Solvent-aided process)
  - » THAI (Toe-to-heel air injection)
- » Thermal expansion in piping systems
- » Solar energy piping systems
- » Storage tank settlement
- » Marine loading piping systems



\*Formerly the SMX universal ball joint.

#### Design Parameters

Nominal pipe size (NPS)	1 to 24 in
Design pressure rating	Suitable for ANSI Class 150 up to 10,000 psig
Hydrostatic test pressure (minimum)	1.5 times design pressure rating rounded up to nearest 25 psig
Design temperature range	Up to 1,000°F (556°C)

#### Material Specifications

Body	Carbon, low-alloy, stainless, and duplex stainless steels
Ball	Carbon, low-alloy, stainless, and duplex stainless steels
Ball coating	Contact Grayloc® Products
Packing	Graphoil®
Injection port	Type 316 stainless steel or 4140 low-alloy steel
External coating	Per customer specifications

#### Applicable Design Codes, Standards, and Specifications (latest editions)

ASME B31.1, Power Piping
ASME B31.3, Process Piping
ASTM F1298, Standard Specification for Flexible, Expansion-Type Ball Joints for Marine Applications
API 6FA, Specification for Fire Test for Valves
ISO 9001:2008

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