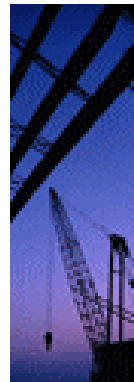
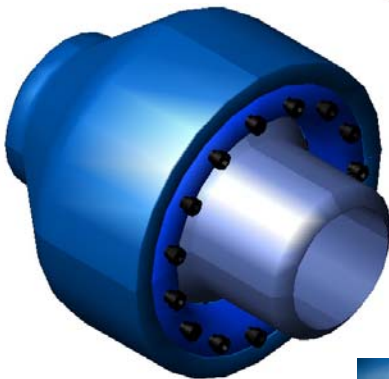


FlexBall and RotaBall Joints



FlexBall and RotaBall Joints

BlueSky's flexible piping connectors have been developed to meet industry's need for high quality, cost effective flexible piping connectors with enhanced mechanical and sealing properties. BlueSky's flexible piping connectors have been designed to provide reliable service in the most severe applications.

design features

BlueSky's FlexBall and RotaBall flexible connectors are an effective solution to provide piping systems with the flexibility required to compensate for thermal growth, vibration or motion of equipment in the piping system. Standard design features:

- Absorbs thermal growth and mechanical movement in single and multiple plane displacements including rotation
- Engineered to eliminate thermal expansion stresses and bending loads in piping systems
- Compensates for misalignment in piping systems
- Joints can be used in combination for optimal results
- Alternative to large pipe loops
- Advanced & reliable sealing technology
- Hardfaced bearing surface to reduce friction and wear
- Low torque
- Robust, compact and light weight design
- Field adjustable packing
- Inline maintenance

pressure & temperature

ANSI 150# to 1500#
High temperature design available to 1000 °F
Higher available per application

quality materials

Carbon steel
Stainless steel
Advanced materials
titanium, duplex, inconel

sizes

Standard size range - 3/4" to 6"
Other sizes available

end connections

Buttweld
Socketweld
BlueSky clamp connector
RF or RTJ flange
Special to suit application



4" Carbon Steel FlexBall

design options

Depending on the requirements of the specific application, BlueSky's flexible piping connectors can be outfitted with a variety of options. Contact BlueSky for additional information or technical support for your application. Available design options include:

- Purging
- Injectable packing
- Enhanced live loaded seal packing design
- Seal monitoring ports

codes & standards

Designed to meet the requirements of the following codes and standards

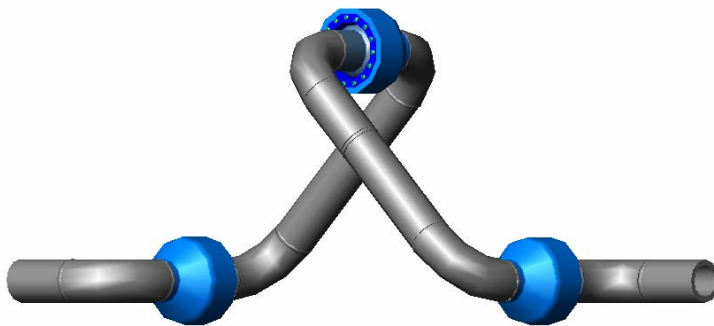
- ASME Boiler and Pressure Vessel Code, Section VIII
- ANSI B31.X
- API 6A, 6H
- NACE as required

quality & service

Factory engineered, manufactured and tested within ISO 9000 registered quality program. BlueSky's significant experience and background ensures our customers of getting the best and most reliable equipment for their applications. Pre-assembled and shop tested joints.

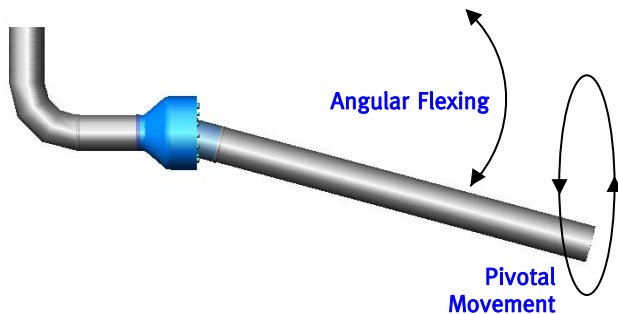
applications

- High temperature piping systems
- Steam assisted gravity drainage (SAGD) systems
- Steam piping systems
- Thermal injection of oil well heads
- Rotary digesters in paper mills (rotational movement)
- Marine loading applications



3 Joint System

Provides maximum capability to accommodate significant piping system movements. This configuration is typical for SAGD applications.



Thermal Cycling

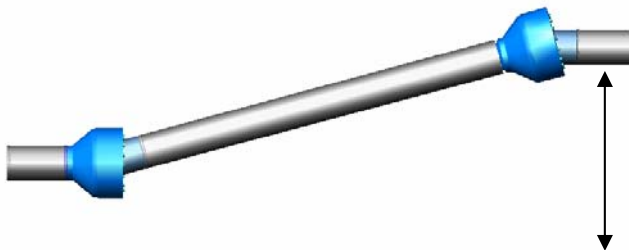
FlexBalls are an effective way of accommodating expansion and contraction in piping systems due to thermal expansion at elevated operating temperatures.

Moving Piping or Equipment

FlexBalls and RotaBalls can be used to accommodate linear or rotational movements to ensure potential damage as a result of reactive forces imposed on the system is eliminated.

Settlement of Tanks, Vessels & Equipment

FlexBalls can be used to accommodate equipment settlement during loading or over time to eliminate the potential of piping or equipment nozzles damage.



Pipe Alignment

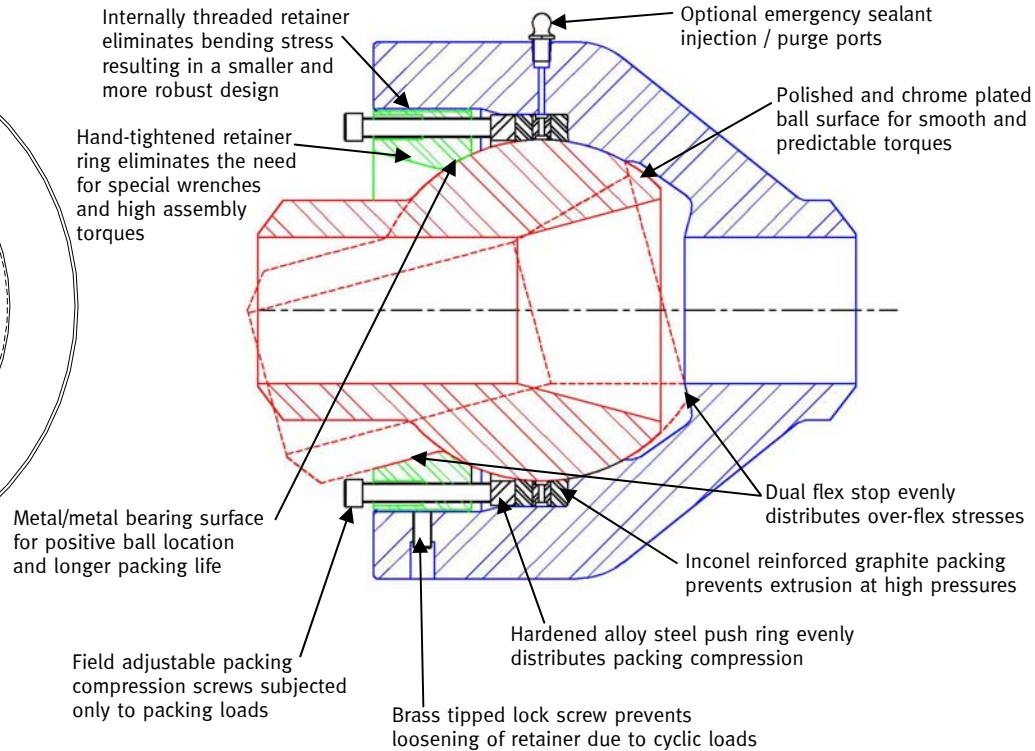
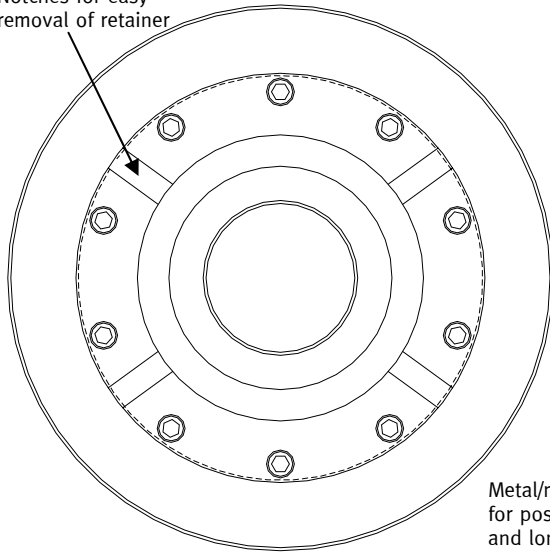
FlexBalls can provide effective joining of improperly aligned or offset piping systems.

FlexBall Features

flex & rotation

360° rotational degree of freedom
15° to 30° of angular flex

Notches for easy removal of retainer



RotaBall Features

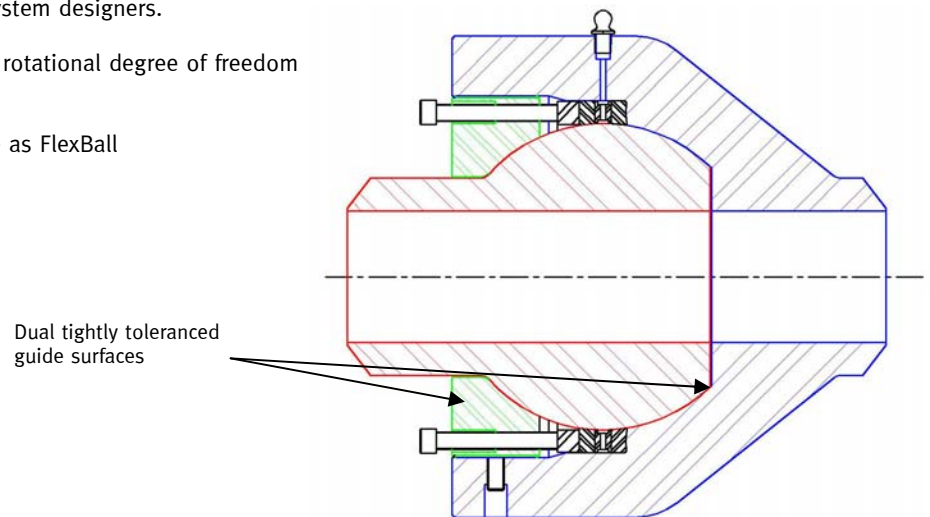
For applications which do not require angular flex or in which angular flex should be limited, the RotaBall joint is an excellent alternative for piping system designers.

rotation

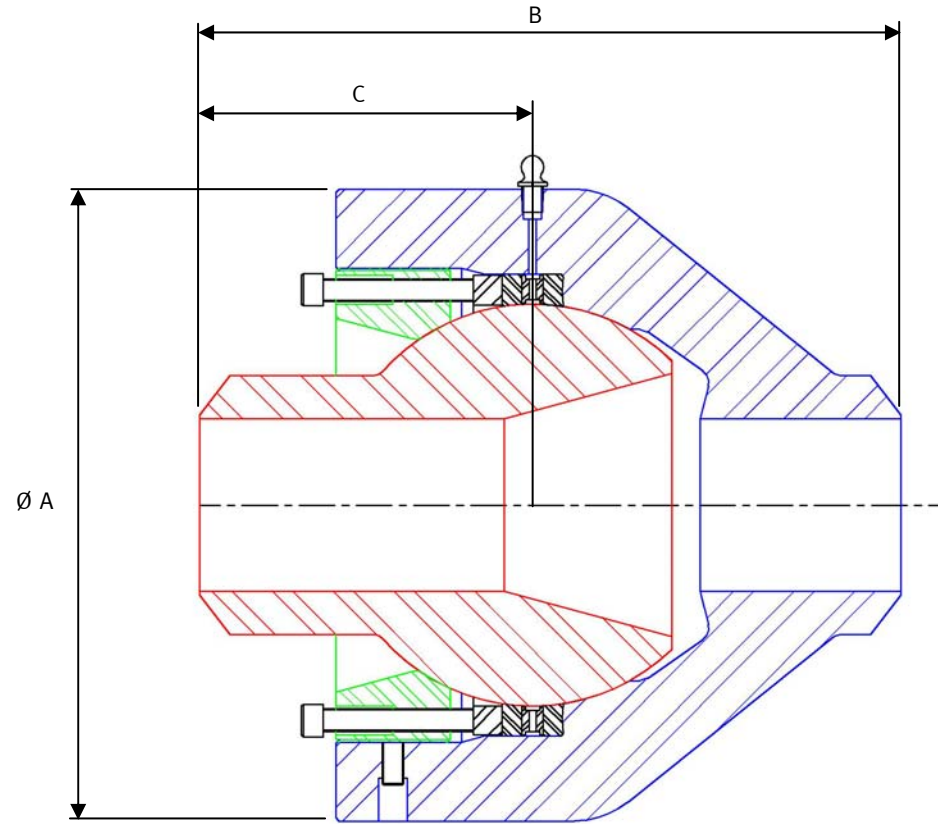
360° rotational degree of freedom only

other

same as FlexBall



FlexBall and RotaBall Dimensions



NPS	Up to 1500# ANSI Dimensions			Weight	
	A	B	C	FlexBall	RotaBall
	Inches	Inches	Inches	Lbs.	Lbs.
1	3.00	4.25	2.333	4.7	4.7
2	5.38	7.63	4.21	20	21
3	7.63	9.75	4.83	54	58
4	10.50	12.88	6.44	143	153
6	13.60	14.75	7.46	268	287
8 *	16.00	15	7.56	326	374

* 8" FlexBall and RotaBall rated to 600# ANSI max.

additional info

Please contact BlueSky for the following information which is available on request
 Installation and maintenance instructions
 Engineering technical reference information (Torque Data)