

Original Chiksan[®] Swivel Joints

Steamlined bore minimizes flow restrictions

Smooth, round bore design minimizes turbulence and pressure drop, Longsweep and TripleStep swivel joints have extra-long radius elbows that optimize flow characteristics and extend life in the ball race areas when handling abrasives at extremely high pressures.

Bearings key to rotation, strength

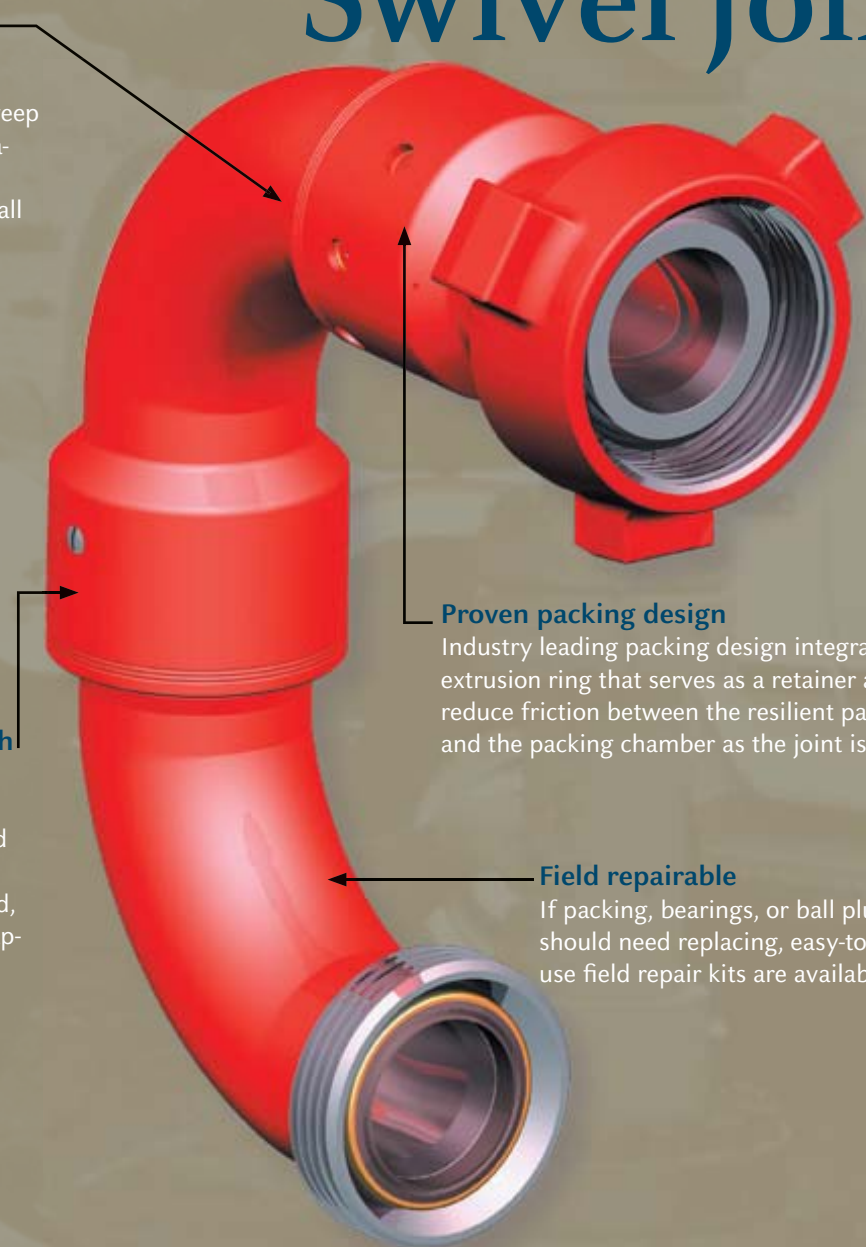
To assure long, dependable service, Chiksan dual and tri-race ball bearing swivels are designed to meet or exceed load capacities and service conditions. All ball races are either flame hardened, carburized and hardened, or have "snap-in" stainless steel ball races.

Proven packing design

Industry leading packing design integrates an anti-extrusion ring that serves as a retainer and bearing to reduce friction between the resilient packing material and the packing chamber as the joint is rotated.

Field repairable

If packing, bearings, or ball plugs should need replacing, easy-to-use field repair kits are available.



Chiksan swivel joints deliver significantly longer life, superior performance, and reduced maintenance. Designed for standards and sour gas services, these world proven fittings come in $\frac{3}{8}$ to 12-inch sizes and can handle pressures from vacuum to 20,000 psi. Many different Chiksan assembly configurations are available. These styles can be combined in an unlimited variety of ways to suit practically any installation. Available end connections are threaded, integral Weco[®] wing union, beveled for welding, or flanged. Like all pressure containing products, Chiksan swivels require special handling (see inside back cover for Warnings and Cautions).

Figure Number	Color Coding	Cold Working Pressure psi (bar)	Material	End Connections	Nominal Sizes, in.										Notes						
					3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	4		6	8	10	12		
Low-Pressure Swivel Joints	Dark Green	175 (12)	Ductile Iron	Flanged											✓						1,2,3
	Blue	285 (20)	Carbon Steel	Flanged							✓				✓	✓					1,3,4
	Dark Green	600 (41)	Ductile Iron	NPT		✓		✓		✓					✓						2,3
	Blue	1,000 (69)	Carbon Steel	NPT Beveled for welding							✓				✓	✓					3
High-Pressure Swivel Joints	Olive Green (Sour Gas)	6,000 (414)	Carbon Steel	Weco figure 602 union							✓			✓							5
	Silver	6,000 (414)	Carbon Steel	Female line pipe threads		✓		✓		✓				✓							3,6,8
Extra High-Pressure Swivel Joints	Black	10,000 (690)	Carbon Steel	Female line pipe threads							✓										3,6
	Olive Green (Sour Gas)	7,500 (517)	Alloy Steel	Weco figure 1002 union											✓						5
Longsweep® Swivel Joints	Olive Green (Sour Gas)	10,000 (690)	Alloy Steel	Weco figure 1502 union				✓						✓							5
	Black	10,000 (690)	Alloy Steel	Female line pipe threads				✓			✓										3,6,7
	Olive Green (Sour Gas)	15,000 (1034)	Alloy Steel	Weco figure 2202 union											✓						6
	Red	15,000 (1034)	Alloy Steel	Weco figure 1502 union				✓			✓										3
TripleStep Swivel Joints	Black	10,000 (690)	Alloy Steel	Weco figure 1002 union											✓						3
	Red	15,000 (1034)	Alloy Steel	Weco figure 1502 union											✓						3
	Brown	7,500 (517)	Alloy Steel	Female line pipe threads																	3,6
	Light Blue	20,000 (1379)	Alloy Steel	Weco figure 2002 union											✓						3

Notes

- All body materials meet ASTM or AISI standards.
 - Consult factory for special sizes, styles, end connections, or packing units.
 - Flanged ends faced and drilled to Class 150 flange specifications, unless otherwise specified.
 - Not available in Styles 80, 10, or other styles requiring more than two swivel connections.
 - 3/8 - to 4-inch sizes furnished with nitrile packing and brass or stainless steel anti-extrusion ring.
 - 6 - to 12-inch sizes furnished with nitrile packing and stainless steel anti-extrusion ring.
 - Furnished with Fluoroelastomer or HNBR packing and stainless steel anti-extrusion ring. FMC Technologies does not warrant the performance of any elastomer seal for sour gas service.
 - Power make-up must be used for line pipe threaded connections to achieve rated cold working pressure.
 - 3-inch size rated at 10,000 psi could working pressure with integral Weco 1002 union ends only.
 - 5-inch size available with threaded or beveled ends; limited to 3,000 psi could working pressure.
- Sour gas service
- FMC Technologies manufactures Chiksan sour gas swivel joints in accordance with the National Association of Corrosion Engineers (NACE) Standard MR-01-75 and the American Petroleum Institute's (API) Standard RP-14-E. These swivel joints are specially heat-treated and inspected for controlled hardness. Because the specially heat treated steel required for sour gas service does not provide a strong enough bearing surface, Chiksan sour gas swivel joints use patented snap-in ball races to assure extra strength and high load-bearing capacity. Fluoroelastomer or HNBR packing is used to isolate the races from the line fluid.

TripleStep Swivel Joints

Advanced material selection

The TripleStep swivel joint is manufactured from forged alloy steel with a closely controlled, proprietary chemical composition and heat treatment to ensure superior toughness, ductility, case depth, case hardness, and core strength.

Instream packing for long seal life

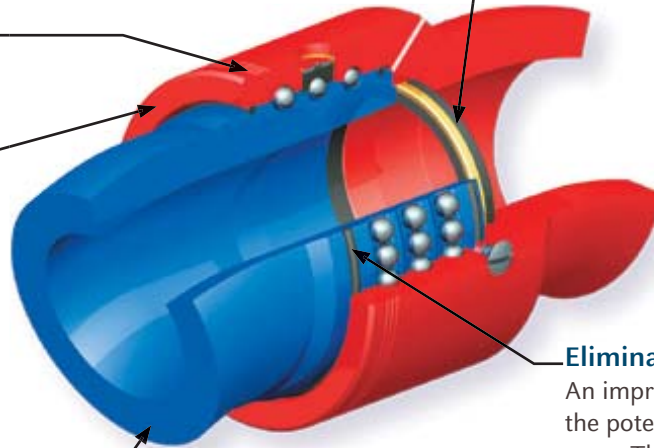
World proven instream packing technology provides unsurpassed sealability and reliability in the harshest oilfield conditions. An integral anti-extrusion ring serves as a retainer and bearing to reduce friction between the resilient packing material and the packing chamber as the joint is rotated.

Exclusive design delivers longer life, lower cost

TripleStep swivel joints deliver the highest bending and axial load capacities in the industry. They also eliminate rejections from excessive wear in the ball race areas as well as swivel seizures due to corrosion and brinnelling of the ball races.

Unmatched erosion allowance

Patented three step design coupled and bearing race geometry adds significant wall thickness under the male races and bearing load capacity without increasing swivel joint size or weight.



Eliminates routine maintenance

An improved environmental seal reduces the potential for corrosion in the ball race area. The integrity of the seal and the use of a high-performance grease during initial assembly virtually eliminates the need for periodic greasing.

Competitive Hype VS. Proof Positive

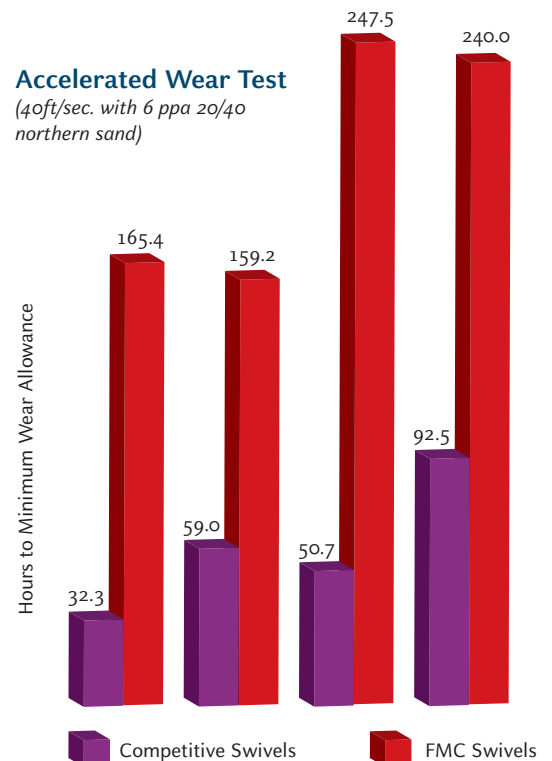
Designed especially for abrasive, high pressure well servicing applications, TripleStep swivel joints have been proven against competitive swivels in customer-witnessed flow loop tests and field applications. The patented three step ball race design provides significantly greater erosion allowance without increasing swivel joint size or weight. The result: TripleStep swivel joints deliver increased life, superior performance, and reduced maintenance...lasting 1.7 to 5 times longer than competitive swivels.

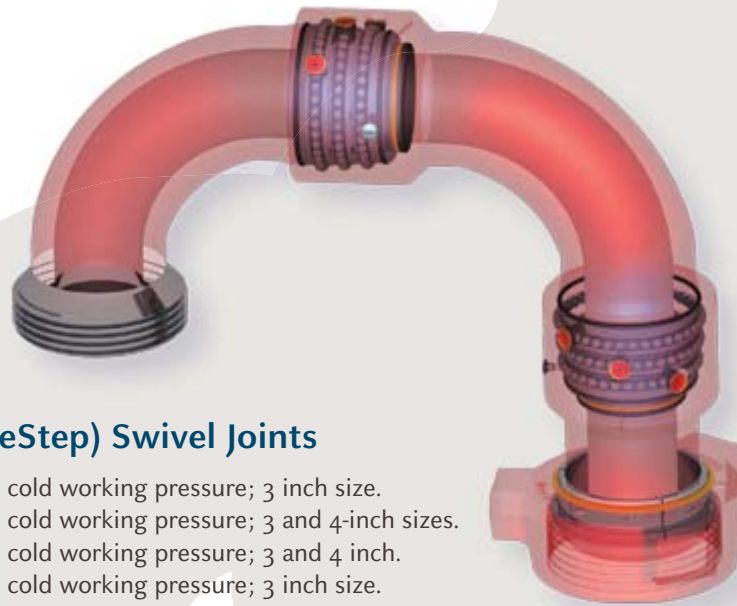
Thicker Where it Counts

Competitive swivels wear out first in the ball races, meaning they must be disassembled for inspection. TripleStep swivels wear in the elbows, meaning they can be inspected and returned to service without disassembly. The TripleStep design places more material under the male ball race - a location that computational flow dynamics analysis and field testing shows to be a high erosion area.

Accelerated Wear Test

(40ft/sec. with 6 ppa 20/40 northern sand)





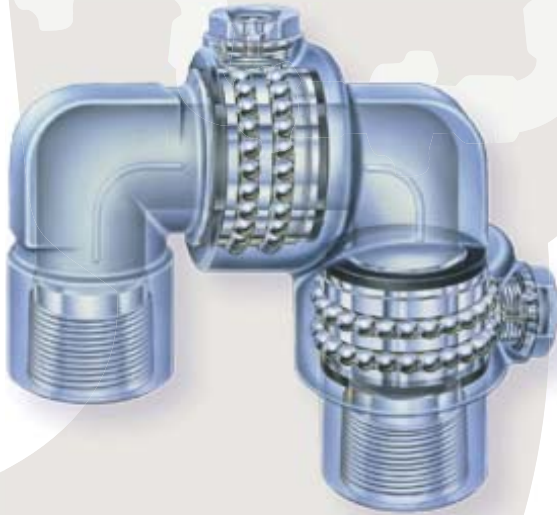
TSi (TripleStep) Swivel Joints

- 6,000 psi cold working pressure; 3 inch size.
- 10,000 psi cold working pressure; 3 and 4-inch sizes.
- 15,000 psi cold working pressure; 3 and 4 inch.
- 20,000 psi cold working pressure; 3 inch size.

For Longsweep swivels and sizes or pressures not shown, consult factory

Recommended service

Long-radius elbows designed especially for high-pressure abrasive applications such as fracturing, choke-and-kill lines, cementing and circulating hoses, acidizing, and test lines



HP (High-Pressure) Swivel Joints

6,000 psi cold working pressure; 3/8 to 4-inch sizes

Recommended service

Hydraulic control lines, mud lines, rotary line connections, BOP lines, test lines, offshore wellhead connections, cementing and circulating hoses, and choke-and-kill lines



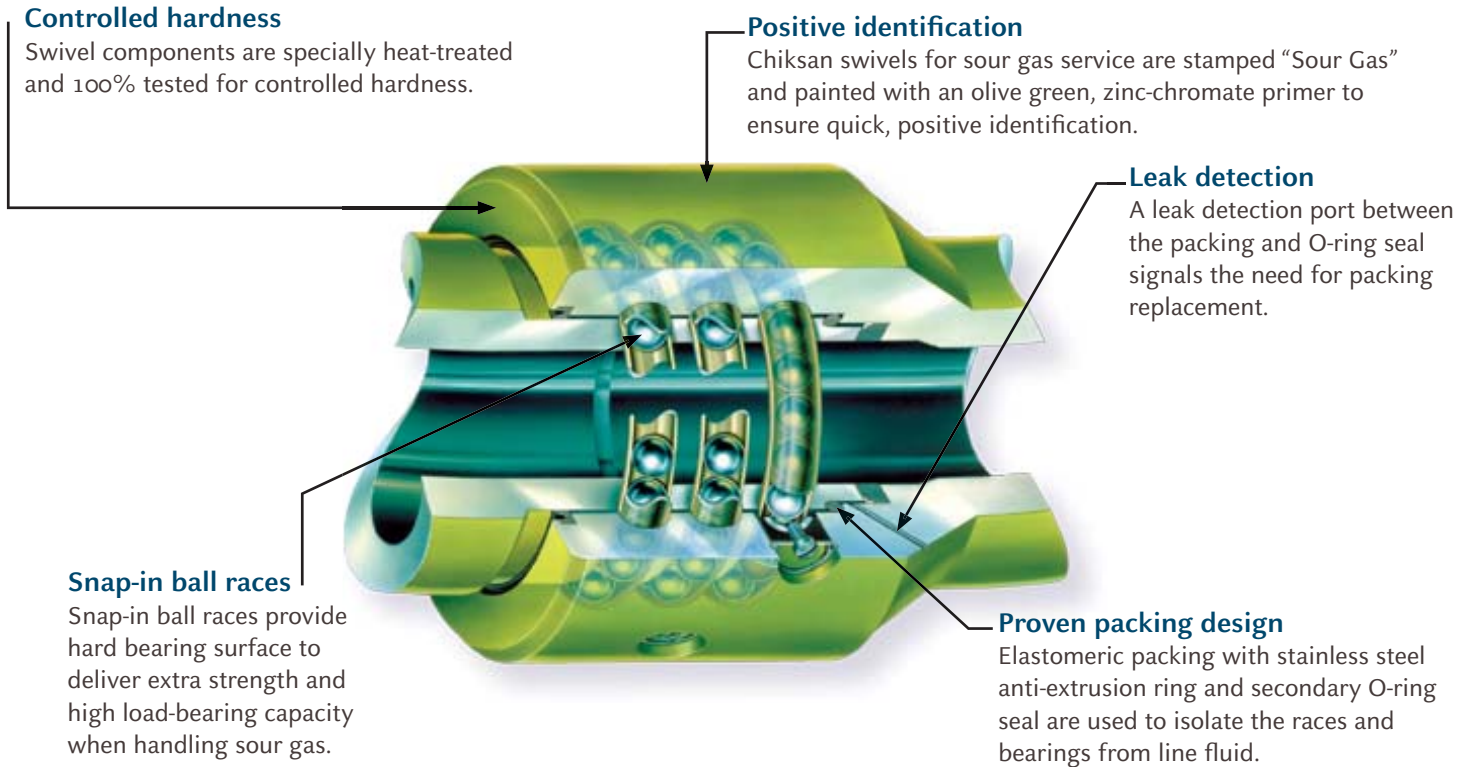
Low-Pressure Swivel Joints

175 psi to 1,000 psi cold working pressure; 3/4 to 12-inch sizes.

Recommended service

Transfer lines, temporary flow lines, discharge lines, auxiliary flow lines, water lines, and other general-service oilfield applications.

Chiksan Sour Gas Swivel Joint



Sour Gas Service

FMC Technologies manufactures Chiksan sour gas swivel joints in accordance with the National Association of Corrosion Engineers (NACE) Standard MR-01-75 and the American Petroleum Institute's (API) Standard RP-14-E. These swivel joints are specially heat-treated and inspected for controlled hardness. Because the specially heat-treated steel required for sour gas does not provide a hard enough bearing surface, Chiksan sour gas swivel joints use snap-in ball races for extra strength and high load-bearing capacity. Sour gas swivel joints come standard with integral Weco wing union end connections. They also have a leak-detection port between the packing and the O-ring seal. If leakage past the packing should occur, it is forced through the port, signaling the need for packing replacement. For positive identification, all Chiksan sour gas swivel joints are stamped "Sour Gas" or "NACE MR-01-75" using low-stress dot stamping and painted with an olive green, zinc-chromate primer that is unique to sour gas equipment.

Chiksan Swivel Joints for Sour Gas Service:

High-Pressure Swivel Joints

6,000 psi cold working pressure, 2 and 3-inch sizes; Weco Figure 602 wing union end connections

Longsweep Swivel Joints

7,500 psi cold working pressure, 3-inch size; Weco Figure 1002 wing union end connections

10,000 psi cold working pressure, 1,2,3 and 4-inch sizes; Weco Figure 1502 wing union end connections

15,000 psi cold working pressure, 2 and 3-inch sizes; Weco Figure 2202 wing union end connections

Chiksan Swivel Joint Styles

Chiksan swivel joints are available from stock in nine basic styles or configurations. These styles permit 360-degree rotation and movement in one, two, or three planes. They can be combined in an unlimited variety of ways to suit practically any installation. All Chiksan swivel joints are assembled using two or more standard pieces.

Warning

Although Chiksan swivel joints can be rotated while under fluid pressure, they are not recommended for service requiring continuous rotary motion. See inside back cover for additional Warnings and Cautions.



Style 20



Style 30



Style 40



Style 50



Style 60



Style 70



Style 80



Style 10



Style 100