

Chiksan® Original Swivel Joints

*A complete line of swivel joints for drilling,
production, and well servicing*

Also cementing/circulating hoses,
mud guns, circulating heads

Catalog SJ-11/96



Quick Reference Chart

Chiksan Models	Color Code	Cold Working Pressure, psi	Material	End Connections	Sizes, in.										Notes		
					¾	1	1¼	1½	2	2½	3	4	6	8		10	12
Low-Pressure Swivel Joints	Dark Green	175	Ductile Iron	Flanged								✓					1,2,3
	Blue	275	Carbon Steel	Flanged				CF				✓	CF	CF	CF		1,3,4
	Dark Green	600	Ductile Iron	NPT		✓		✓			✓	✓					2,3
	Blue	1,000	Carbon Steel	NPT				✓			✓	✓					3
High-Pressure Swivel Joints	Olive Green (Sour Gas)	6,000	Carbon Steel	Beveled for welding				✓			✓						3,4,5
	Silver	6,000	Carbon Steel	Female line pipe threads	✓	✓		✓		✓	✓						6
Extra High-Pressure Swivel Joints	Black	10,000	Carbon Steel	Female line pipe threads				✓									3,7
	Olive Green (Sour Gas)	7,500	Alloy Steel	Weco figure 1002 union							✓						6
Longsweep® Swivel Joints	Olive Green (Sour Gas)	10,000	Alloy Steel	Weco figure 1502 union		✓		✓			✓						6
	Olive Green (Sour Gas)	15,000	Alloy Steel	Weco figure 2202 union				✓			✓						6
	Black	10,000	Alloy Steel	Female line pipe threads		✓		✓									7
	Red	15,000	Alloy Steel	Weco figure 1502 union		✓		✓				✓					
Longsweep TripleStep Swivel Joints	Light Blue	20,000	Alloy Steel	Weco figure 2002 union				✓				✓					
	Red	15,000	Alloy Steel	Weco figure 1502 union								✓					

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 150 lb flange specifications unless otherwise noted.
 - Not available in Styles 80 or 10.
 - 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.
 - 2- and 3-inch sizes available in Styles 30 and 40. 6- to 12-inch sizes available in all Styles except Style 20.
 - Furnished with fluoroelastomer packing and stainless steel anti-extrusion ring. FMC 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.
 - 5-inch size available with threaded or beveled ends; limited to 3,000 psi cold working pressure.

Sour gas service

FMC 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. Elastomeric packing is used to isolate the races and bearings from line fluid.

Why you should standardize with Chiksan Original Swivel Joints

Widest selection in the oilfield

Chiksan swivel joints come in 3/8- to 12-inch sizes and can handle pressures to 20,000 psi. Sour gas models (see page 6) are limited to 15,000 psi. Eight Chiksan styles or assembly configurations are available from stock. These styles (see page 4) can be combined in an unlimited variety of ways to suit practically any installation. End connections are threaded, integral Weco® wing union, beveled for welding or flanged. Sour gas swivel joints have Weco wing union end connections.

Pressure-tight seals protect bearings from line fluid

Chiksan swivel joints come standard equipped with nitrile packing and bonded, brass anti-extrusion ring. 6- to 12-inch sizes have stainless steel anti-extrusion ring. The 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 turned. These dynamic-seal

packing units protect ball races and bearings from line fluid through the stated pressure range, including vacuum or suction service, to 225°F. Longsweep® TripleStep models have a secondary O-ring seal which prevents minor leakage past the primary seal from contacting the bearings. These swivel joints also have a leak detection port between the packing and O-ring seal. If leakage past the packing should occur, it is forced through the leak-detection port, signalling the need for packing replacement.

Bearings key to rotation, strength

To assure long, dependable operation, Chiksan ball bearings are matched to loading and service conditions. Although the size, type, and number of bearings vary, Chiksan low-pressure, high-pressure, and extra high-pressure swivel joints all have two rows of bearings in each swivel and flame-hardened ball races. Longsweep and Longsweep

TripleStep swivel joints have three rows of bearings in each swivel for improved load capacities. All Longsweep and Longsweep TripleStep swivel joints for standard service have carburized and hardened ball races.

Smooth, round bore minimizes flow restrictions

Chiksan swivel joints have smooth, round bores to minimize turbulence and keep pressure drop low. Longsweep and Longsweep TripleStep swivel joints have extra-long radius elbows for even better flow characteristics and reduced chance of washout when handling abrasives at extremely high pressures.

Simple maintenance

Only occasional light greasing with a small, hand-held grease gun is required to keep Chiksan swivel joints on the job. If packing, bearings, or ball plugs should need replacing because of leakage, field repair kits are available. Easy-to-follow instructions come with each repair kit.

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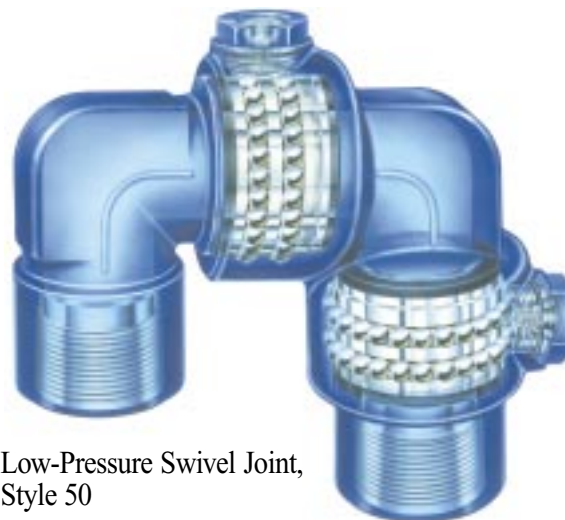
Chiksan Original Swivel Joints

Low-Pressure Swivel Joints

175 psi (12 bar) to 1,000 psi (70 bar) 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



Low-Pressure Swivel Joint, Style 50

High-Pressure and Extra High-Pressure Swivel Joints

6,000 psi (414 bar) cold working pressure; 3/8- to 4-inch sizes

10,000 psi (690 bar) cold working pressure; 2-inch size

Recommended service

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

NOTE: Available for sour gas service at 6,000 psi (414 bar) cold working pressure; integral Weco wing union end connections; consult factory for other end connections, dimensions, and weights.



High-Pressure Swivel Joint, Style 50

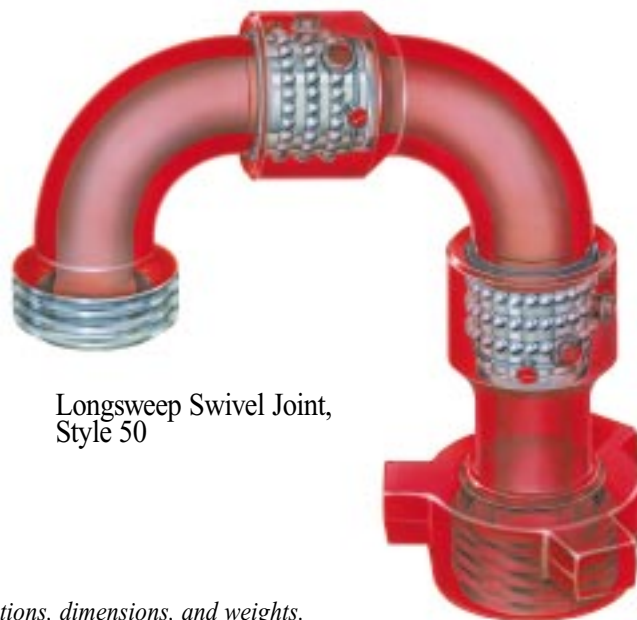
Longsweep Swivel Joints

7,500 psi (517 bar), 10,000 psi (690 bar), 15,000 psi (1034 bar), and 20,000 psi (1380 bar) cold working pressure; 1- to 4-inch sizes

Recommended service

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

NOTE: Available for sour gas service at 7,500 psi (517 bar), 10,000 psi (690 bar), and 15,000 psi (1034 bar) cold working pressure; 1, 2, 3, and 4-inch sizes; integral Weco wing union end connections only.



Longsweep Swivel Joint, Style 50

See Specifications Table (pages 7, 8, and 9) for styles, sizes, end connections, dimensions, and weights.

Longsweep TripleStep Swivel Joints

**15,000 psi (1034 bar) cold working pressure;
3-inch size**

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

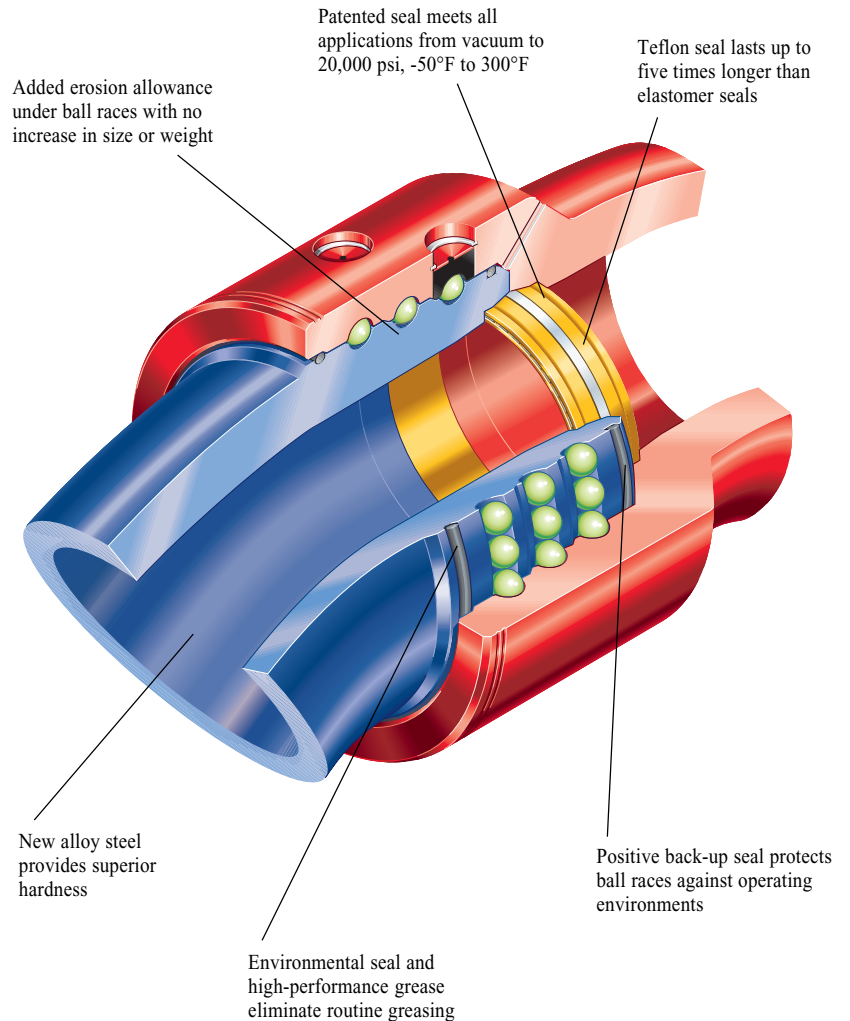
Features & Benefits

“Stepped” ball race design: A patent pending “stepped” ball race design significantly increases bending and axial load capacities for greater strength, safety, and life. Additionally, the stepped design adds considerable wall thickness under the male ball races to increase erosion allowance.

Patented Teflon seal: FMC’s world proven Straight-Bore Teflon* Seal (SBTS) provides unsurpassed sealability and lasts up to five times longer than elastomer seals. The SBTS is compatible with all known oilfield fluids from vacuum to 20,000 psi, -50°F to 300°F (-46°C to 149°C) and is impervious to chemical attack and explosive gas decompression.

Advanced material selection: The TripleStep swivel joint is manufactured from forged alloy steel with a closely controlled, proprietary chemical composition and heat treatment to assure superior toughness, ductility, case depth, case hardness, and core strength with no increase in 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 eliminates the need for periodic greasing.



Longsweep TripleStep Swivel Joint



See Specifications Table (page 9) for styles, sizes, end connections, dimensions, and weights.

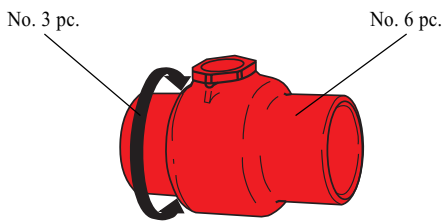
Chiksan Styles and Component Parts

Chiksan swivel joints are available from stock in eight 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.

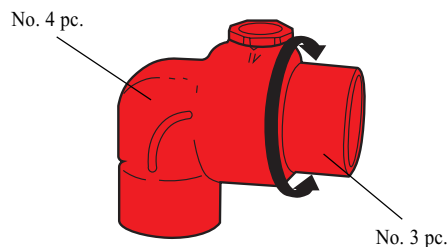
All Chiksan swivel joints are assembled using two or more standard pieces. Component piece numbers are shown here with the various Chiksan swivel joint styles.

NOTE: Although Chiksan swivel joints can be rotated while under fluid pressure, they are not recommended for services requiring continuous rotary motion.

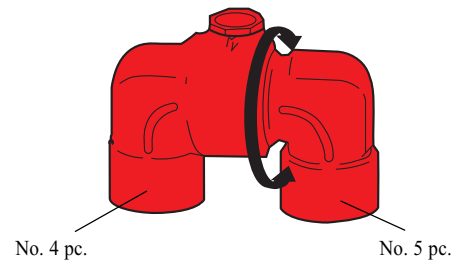
Low-Pressure and High-Pressure Swivel Joints



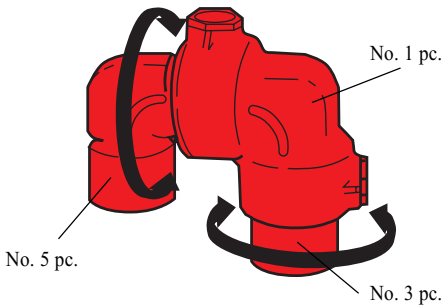
Style 20
Single swivel coupling



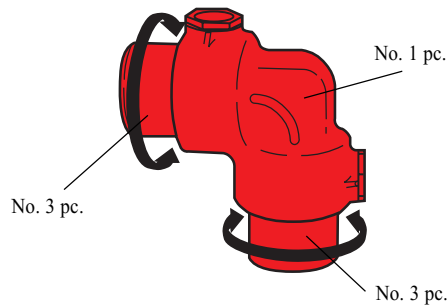
Style 30
Single swivel with one elbow



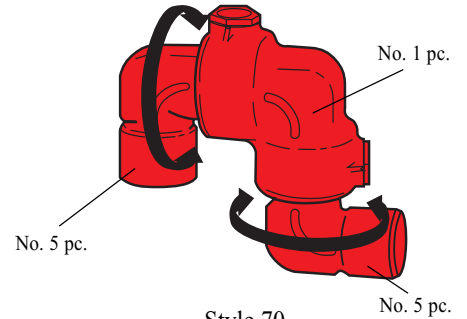
Style 40
Single swivel with two elbows



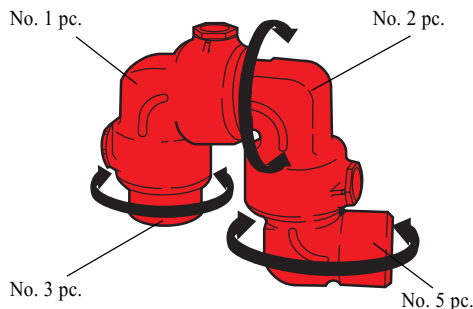
Style 50
Two swivels with two elbows



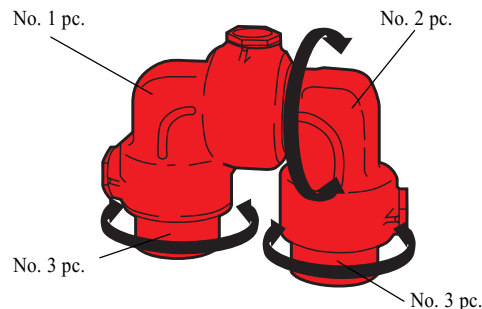
Style 60
Two swivels with one elbow



Style 70
Two swivels with three elbows

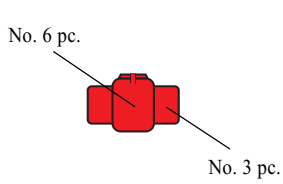


Style 80
Three swivels with three elbows

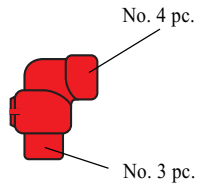


Style 10
Three swivels with two elbows

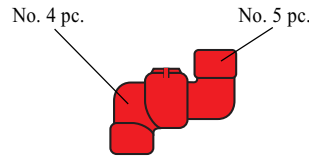
Extra High-Pressure Swivel Joints



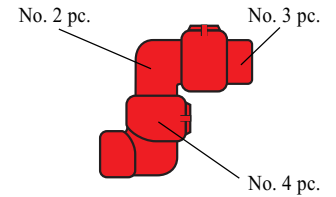
Style 20
Single swivel coupling



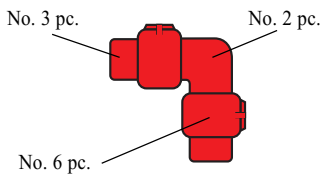
Style 30
Single swivel with one elbow



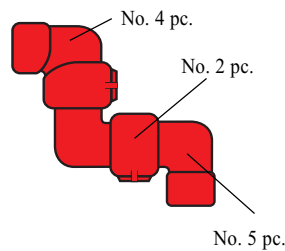
Style 40
Single swivel with two elbows



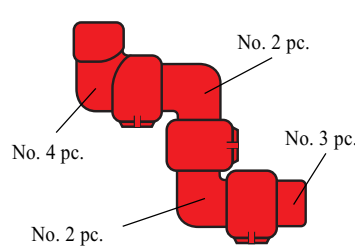
Style 50
Two swivels with two elbows



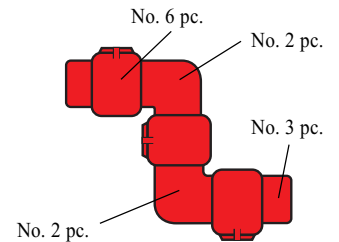
Style 60
Two swivels with one elbow



Style 70
Two swivels with three elbows

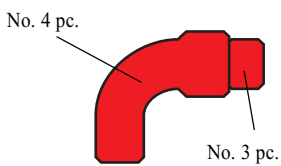


Style 80
Three swivels with three elbows

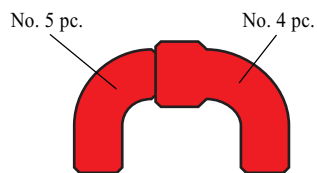


Style 10
Three swivels with two elbows

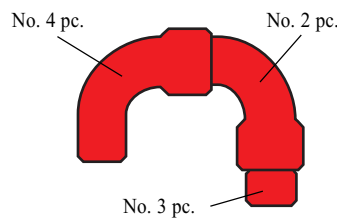
Longsweep and TripleStep Swivel Joints



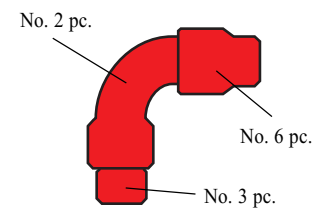
Style 30
Single swivel with one elbow



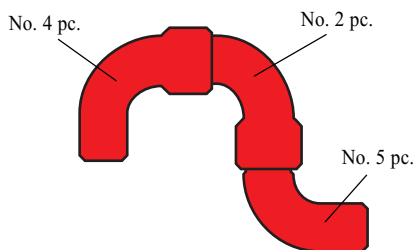
Style 40
Single swivel with two elbows



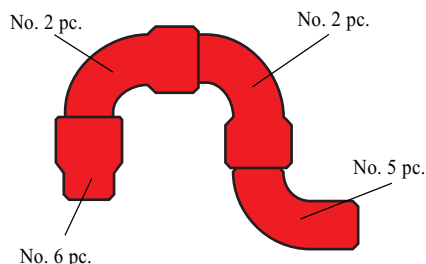
Style 50
Two swivels with two elbows



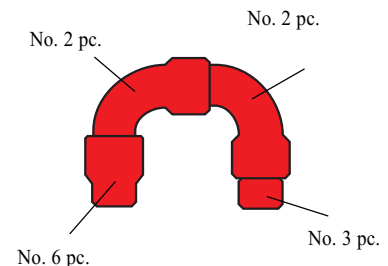
Style 60
Two swivels with one elbow



Style 70
Two swivels with three elbows



Style 80
Three swivels with three elbows



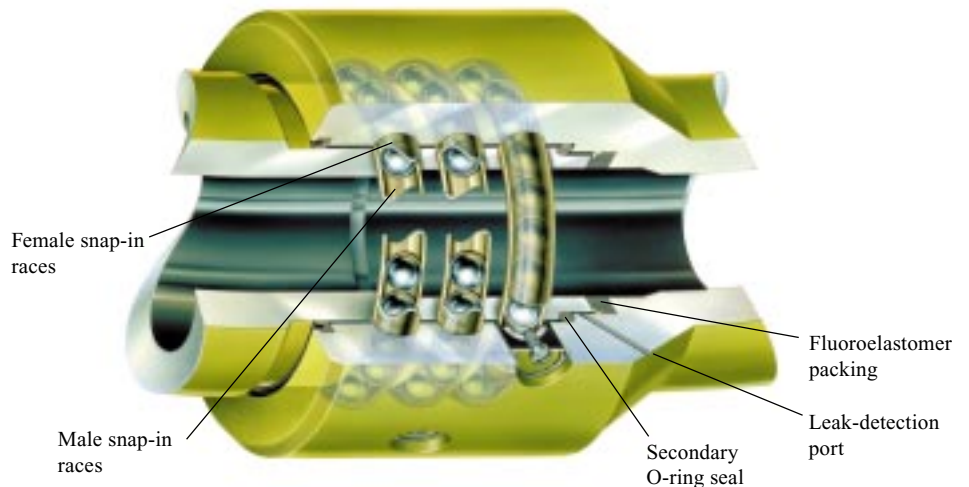
Style 10
Three swivels with two elbows

Sour Gas Service

FMC 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 (shown at right) for extra strength and high load-bearing capacity. Elastomeric packing with stainless steel anti-extrusion ring and secondary O-ring seal are used to isolate the races and bearings from line fluid. Sour gas swivel joints 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, signalling the need for packing replacement. For positive identification, all Chiksan sour gas swivel joints are stamped "Sour Gas"

using low-stress dot stamping and painted with an olive green, zinc-chromate primer that's unique to sour gas equipment.



Chiksan Longsweep sour-gas swivel joint

Lubricants for Chiksan Swivel Joints

Lubricants for Chiksan swivel joints are formulated for year-round use in harsh, often severe oilfield applications. Only occasional light greasing with a small, hand-held grease gun is required to keep Chiksan swivel joints on the job.

NOTE: Excessive lubrication can cause swivel to bind, distort the anti-extrusion ring, displace the packing, and expose the bearing cavities to line pressure. Use only enough lubricant to obtain smooth rotation.

Standard lubricant

- Petroleum-base grease without synthetic or mineral fillers
- Assures continual lubrication of bearings at temperatures of -50°F to 212°F
- Available in 14 1/2-ounce cartridge for use with grease gun; also comes in 2-, 5-, 7 1/2-, 25-, and 50-pound cans

High-temperature lubricant

- Noncorrosive grease for high-temperature services
- Maintains stability at temperatures ranging from 0°F to 400°F
- Available in 2-, 5-, 7 1/2-, 25-, and 50-pound cans

Chiksan Swivel Joint Specifications

High-pressure swivel joints

Sizes (inches) (mm)	Style 20			Style 30			Style 40			Style 50			Style 60			Style 70			Style 80						Style 10												
	End Connectors	A	B	C	Wt. (lb) (kg)	A	B	C	Wt. (lb) (kg)	A	B	C	D	Wt. (lb) (kg)	A	B	C	Wt. (lb) (kg)	A	B	C	D	E	F	Wt. (lb) (kg)	A	B	C	D	Wt. (lb) (kg)	A	B	C	D			
3/8 - 1/2	Threaded	3/8	1 1/2	3 1/2	1 1/2	1 1/2	2 1/2	4 3/4	1 1/4	2 1/8	3 1/8	1 1/2	2 1/8	3 1/4	1 1/2	2 1/8	3 1/8	1 1/2	2 1/8	3 1/8	1 1/2	2 1/8	3 1/8	4 3/4	1 1/2	2 1/8	3 1/8	1 1/2	2 1/8	3 1/8	1 1/2	2 1/8	3 1/8	1 1/2	2 1/8	3 1/8	4
3/8 - 1	Threaded	1/2	2 1/8	5 1/8	2 1/4	2 1/4	4 1/8	7 1/8	2 1/4	4 1/8	5 1/8	2 1/4	4 1/8	5 1/8	2 1/4	4 1/8	5 1/8	2 1/4	4 1/8	5 1/8	2 1/4	4 1/8	5 1/8	7 1/8	2 1/4	4 1/8	5 1/8	2 1/4	4 1/8	5 1/8	2 1/4	4 1/8	5 1/8	2 1/4	4 1/8	5 1/8	9
1 1/2 - 1 1/2	Threaded	1 1/2	5 1/2	13 1/2	5 1/2	5 1/2	10 1/2	18 1/2	5 1/2	10 1/2	13 1/2	5 1/2	10 1/2	13 1/2	5 1/2	10 1/2	13 1/2	5 1/2	10 1/2	13 1/2	5 1/2	10 1/2	13 1/2	18 1/2	5 1/2	10 1/2	13 1/2	5 1/2	10 1/2	13 1/2	5 1/2	10 1/2	13 1/2	5 1/2	10 1/2	13 1/2	10
2	Threaded	2	7 1/2	19 1/2	7 1/2	7 1/2	14 1/2	25 1/2	7 1/2	14 1/2	19 1/2	7 1/2	14 1/2	19 1/2	7 1/2	14 1/2	19 1/2	7 1/2	14 1/2	19 1/2	7 1/2	14 1/2	19 1/2	25 1/2	7 1/2	14 1/2	19 1/2	7 1/2	14 1/2	19 1/2	7 1/2	14 1/2	19 1/2	7 1/2	14 1/2	19 1/2	33
2 1/2	Threaded	2 1/2	9 1/2	23 1/2	9 1/2	9 1/2	18 1/2	31 1/2	9 1/2	18 1/2	23 1/2	9 1/2	18 1/2	23 1/2	9 1/2	18 1/2	23 1/2	9 1/2	18 1/2	23 1/2	9 1/2	18 1/2	23 1/2	31 1/2	9 1/2	18 1/2	23 1/2	9 1/2	18 1/2	23 1/2	9 1/2	18 1/2	23 1/2	9 1/2	18 1/2	23 1/2	48
3	Threaded	3	11 1/2	28 1/2	11 1/2	11 1/2	22 1/2	35 1/2	11 1/2	22 1/2	28 1/2	11 1/2	22 1/2	28 1/2	11 1/2	22 1/2	28 1/2	11 1/2	22 1/2	28 1/2	11 1/2	22 1/2	28 1/2	35 1/2	11 1/2	22 1/2	28 1/2	11 1/2	22 1/2	28 1/2	11 1/2	22 1/2	28 1/2	11 1/2	22 1/2	28 1/2	71
4	Threaded	4	13 1/2	33 1/2	13 1/2	13 1/2	26 1/2	41 1/2	13 1/2	26 1/2	33 1/2	13 1/2	26 1/2	33 1/2	13 1/2	26 1/2	33 1/2	13 1/2	26 1/2	33 1/2	13 1/2	26 1/2	33 1/2	41 1/2	13 1/2	26 1/2	33 1/2	13 1/2	26 1/2	33 1/2	13 1/2	26 1/2	33 1/2	13 1/2	26 1/2	33 1/2	110

Notes

- Where dimensions are critical, consult factory.
- Consult factory for sour gas swivel joint dimensions.
- Standard joints have female line pipe threads. Male threads available on special order; beveled for weld, consult factory

Extra high-pressure swivel joints

Sizes (inches) (mm)	Style 20			Style 30			Style 40			Style 50			Style 60			Style 70			Style 80						Style 10															
	End Connectors	A	B	C	Wt. (lb) (kg)	A	B	C	Wt. (lb) (kg)	A	B	C	D	Wt. (lb) (kg)	A	B	C	Wt. (lb) (kg)	A	B	C	D	E	F	Wt. (lb) (kg)	A	B	C	D	Wt. (lb) (kg)	A	B	C	D						
2	Threaded	2 1/8	6 3/8	14	3 1/4	6 1/8	8 1/4	28	3 1/4	6 1/8	8 1/4	28	36	7 1/2	6 3/8	29	4 1/8	7 1/8	11 1/8	44	4 1/8	7 1/8	11 1/8	44	7 1/2	6 3/8	29	4 1/8	7 1/8	11 1/8	44	7 1/2	6 3/8	29	4 1/8	7 1/8	11 1/8	47		
50	Threaded	4 3/8	11 1/8	28 1/2	14	14	28	40	14	28	40	40	50	19 1/2	14 1/8	13.1	105	187	292	20.0	105	187	292	20.0	105	187	292	20.0	105	187	292	20.0	105	187	292	20.0	105	187	292	368

Notes

- Where dimensions are critical, consult factory.
- Standard joints have female line pipe threads. Male threads available on special order; beveled for weld, consult factory

Chiksan Cementing and Circulating Hoses

Chiksan cementing and circulating hoses can handle a complete range of fluids at cold working pressures up to 20,000 psi. These rugged, all-steel hoses are available in sizes and configurations to meet virtually any need. All materials meet ASTM or AISI standards.

Recommended Service

High-pressure discharge lines, water lines, temporary flow lines, well testing lines, and cementing and circulating lines, and other high-pressure applications.

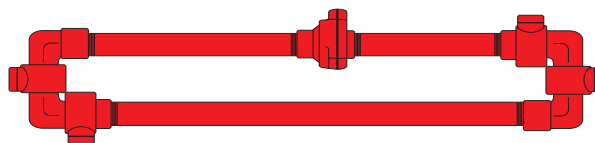
Features & Benefits

Chiksan swivel joints: FMC all steel hoses feature Chiksan swivel joints which provide flexibility, absorb shock and vibration, and maximize flow characteristics.

Weco wing union connections: Weco wing union end connections insure fast, pressure-tight make-up and break-out without threading, welding, or special connections.

Simplifies transportation and layout: Chiksan hoses fold up easily and quickly for transportation and storage.

Available for sour gas service: Chiksan cementing and circulating hoses are available for sour gas services at cold working pressures up to 15,000 psi.



High-pressure hose
One Weco union and two Style 50 or Style 10 Chiksan swivel joints with threaded ends



TS-15 Longsweep hose
Four Weco unions and two Style 50 or Style 10 TripleStep swivel joints with integral Weco union ends



LS-15 Longsweep hose
One Weco union and one each Style 50 and Style 10 Longsweep swivel joints with integral Weco union ends



LSG-10 Longsweep hose
Four Weco unions and two Style 50 or Style 10 Longsweep swivel joints

Quick Reference Chart

Chiksan Models	Color Code	Method of Construction				Cold Working Pressure, psi	Sizes, in.					Weco fig. no.
		Threaded	NPS	Integral	Welded		1	1½	2	3	4	
High-Pressure Swivel Joints	Olive Green (Sour Gas)		✓			6,000				✓	✓	602
	Silver	✓				6,000	✓	✓	✓	✓		602
Extra High-Pressure Swivel Joints	Black	✓				10,000			✓			1502
Longsweep Swivel Joints	Olive Green (Sour Gas)		✓			7,500				✓		1002
	Olive Green (Sour Gas)		✓	✓	✓	10,000			✓	✓	✓	1502
	Olive Green (Sour Gas)				✓	15,000			✓	✓		2202
	Black	✓				10,000	✓	✓	✓			1502
	Black		✓			10,000				✓	✓	1002
	Red		✓	✓	✓	15,000	✓	✓	✓		✓	1502
	Light Blue				✓	20,000			✓	✓		2002
Longsweep TripleStep Swivel Joints	Red		✓	✓	✓	15,000				✓		1502

Chiksan Mud Mixing Guns



Chiksan mud mixing guns are used to blend and agitate drilling mud in either tanks or pits. All models feature Chiksan swivel joints for smooth rotation and durability. Chiksan mud guns are also equipped with replaceable tungsten-carbide nozzles. Materials meet ASTM and AISI standards.

Chiksan Nonspin Mud Mixing Guns

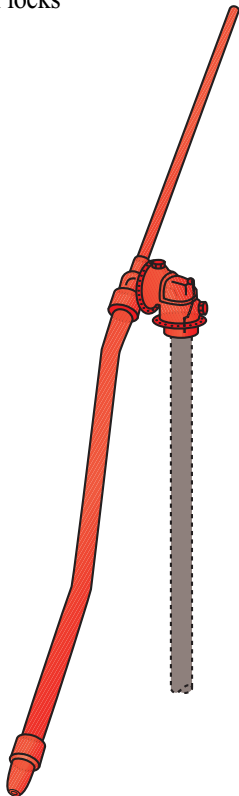
**2,000 psi (138 bar) cold working pressure;
2-inch size**

Recommended service

Top of tank or pit use where large volumes of mud must be mixed; jetting mud from one tank to another

Features

- Suitable for stationary or hand-guided operation; may be left unattended
- Moves freely in horizontal and vertical directions; locks securely in position with pin locks



Nonspin-type

Chiksan Spinner Mud Mixing Guns

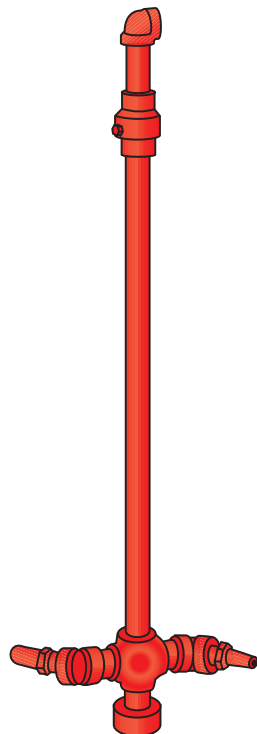
**2,000 psi (138 bar) cold working pressure;
2-inch size**

Recommended service

Bottom of tank use where constant agitation is required

Features

- Self-rotating design
- Available for any depth tank
- Mounts in center of tank



Spinner-type

Chiksan Bottom-Type Mud Mixing Guns

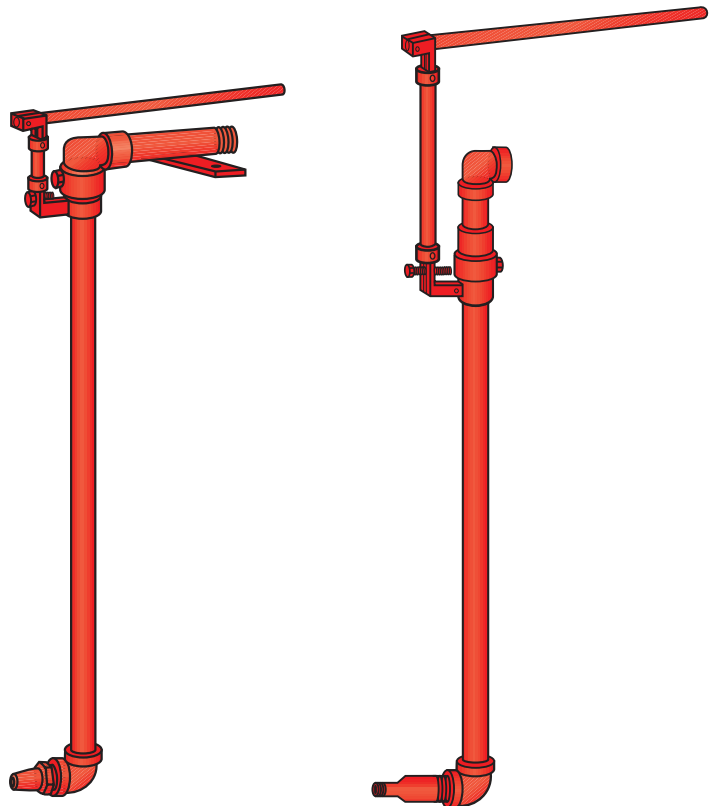
**2,000 psi (138 bar) cold working pressure;
2-inch size**

Recommended service

Bottom of tank where large volumes of mud must be mixed

Features

- Maintains uniform mixture, prevents heavy material from settling
- Available with extra-large 3-inch bore at 300 psi (21 bar) cold working pressure
- Adaptable to any tank depth
- Mounts at side of tank; can be directed by hand



Bottom-type, 2-in.

Bottom-type, 3-in.

Chiksan Circulating Heads

The Chiksan all-steel circulating head makes it possible to circulate fluid and rotate drill pipe with the rotary table while drilling is interrupted for wireline operations. Circulation and rotation minimize the risk of stuck drill pipe. The ability to circulate mud also provides additional pressure control in case of a well kick. Adapters are available for connecting this 6,000 psi, field-proven tool to tubing, drill pipe, casing, or tool joint. Wireline stuffing box can be mounted on top of the circulating head. All body materials meet ASTM or AISI standards.



Recommended service

Wireline coring operations, fishing jobs, and directional surveys

How To Order

Chiksan products for drilling and production applications are available through recognized oilfield supply stores. To order Chiksan products for other applications or services, consult FMC Fluid Control Division.

Because Chiksan products vary to meet particular service conditions, it is necessary to include the following information when placing an order.

Chiksan swivel joints

1. Swivel joint type (low pressure, Longsweep, etc.)
2. Pipe size
3. Style number of swivel joint (see page 4)
4. Material of construction
5. End connections
6. Product being handled (if acid, give concentration)
7. Cold working pressure and maximum pressure
8. Operating temperature and maximum temperature

Chiksan cementing and circulating hoses

1. Size (diameter and length)
2. Product being handled (if acid, give concentration)
3. Cold working pressure and maximum pressure
4. Operating temperature and maximum temperature
5. Swivel joint configuration (50/50, 10/10, 50/10)
6. End connections

Chiksan mud mixing guns

1. Mud gun type (nonspin, spinner, bottom-type)
2. Pipe size
3. Length

Chiksan circulating heads

1. Pipe size
2. Adapter type (standard, female line pipe threads, male line pipe threads)

Chiksan lubricants

1. Type of lubricant
2. Size of container

Replacement packing

1. Pipe size and type of joint
2. Code number on casting or forging
3. Type of product being handled (if acid, give concentration)
4. Maximum operating pressure
5. Operating temperature

Warnings and Safety Instructions



FMC can not anticipate all of the situations a user may encounter while installing and using FMC products. Therefore, the user of FMC products **MUST** know and follow all applicable industry specifications on the safe installation and use of these products. Refer to FMC product catalogs, product brochures and installation, operating and maintenance manuals for additional product safety information or contact FMC at 800/772-8582.

WARNINGS

FAILURE TO FOLLOW THESE WARNINGS COULD RESULT IN SERIOUS INJURY OR DEATH!

1. Do not mix or assemble components, parts or end connections with different pressure ratings. Mismatched parts may fail under pressure.
2. Do not use or substitute non FMC components or parts in FMC products and assemblies.
3. Do not strike, tighten or loosen pressurized components or connections.
4. Do not exceed the rated working pressure of the product.
5. Complete and proper make-up of components and connections is required to attain rated working pressure.
6. Do not use severely worn, eroded or corroded products. Contact FMC for more information on how to identify the limits of erosion and corrosion.
7. Follow safe practices when using products in overhead applications. Products not properly secured could fall.
8. Select only appropriate product and materials for the intended service:
 - Do not expose standard service products to sour gas fluids. (Refer to NACE MR-0175.)
Do not interchange sour gas components with standard service components.
 - Use appropriate safety precautions when working with ferrous products in below freezing temperatures. Freezing temperatures lower the impact strength of ferrous materials.
9. Follow manufacturers instructions and Material Safety Data Sheet directions when using solvents.
10. Make certain that personnel and facilities are protected from residual hazardous fluids before disassembly of any product.
11. If any leakage is detected from FMC products, take them from service immediately to prevent potential damage and personal injury.

SAFETY INSTRUCTIONS

The applications of FMC products are in working environments where general personnel safety procedures and policies **MUST** be followed. Always use appropriate protective equipment in high pressure, extreme temperature or severe service applications.



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