DIXON

The Right Connection®

Swivel Joints

dixonvalve.com

Customer Service
877.963.4966

About Us

Dixon® entered the industrial swivel market in 1985 with the purchase of the Le-Hi Andrews Division of Parker Hannifin. Over the years, working with our foundry and machine shop, Dixon has refined our swivel product line. Our unique set of manufacturing abilities enables us to continue to service our customers with high quality products while remaining true to our value proposition.

Dixon's Value Proposition

Dixon is committed to delighting our customers by being the easiest company they do business with every day.

Service

Customer service that supports our customers before, during, and after the sale.

Quality Manufacturing

Innovative manufacturing that continues to build the Dixon brand recognized by our customers as "The Quality Line."

Product Mix

Broad product offering that provides our customers with market based solutions supported by extensive customer training.

Safety

Dixon's couplings and retention devices are designed to work safely for their intended use. The selection of the proper hose, coupling and retention device, and the proper application of the coupling to the hose are of utmost importance.

Users must consider the size, temperature, application, media, pressure and hose and coupling manufacturer's recommendations when selecting the proper hose assembly components. Dixon recommends that all hose assemblies be tested in accordance with the Association for Rubber Products Manufacturer's (ARPM) recommendations and be inspected regularly (before each use) to ensure that they are not damaged or have become loose. Visit ARPMINC.com for more information.

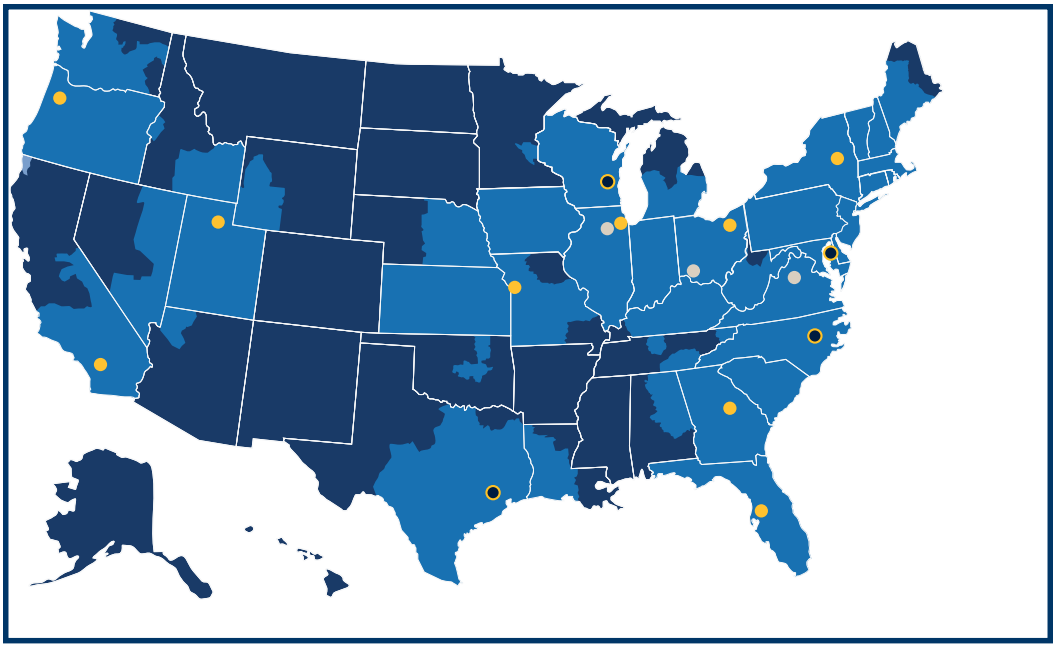
Where safety devices are integral to the coupling, they must be working and utilized. The use of supplementary safety devices such as safety clips or safety cables are recommended.

If any problem is detected, couplings must be removed from service immediately.

Dixon is available to consult, train and recommend the proper selection and application of all fittings we sell. We strongly recommend that distributors and end users make use of Dixon's Testing and Recommendation Services. Call 877.963.4966 or visit dixonvalve.com to learn more.

North American Manufacturing and Warehouse Locations

- Distribution Center
- Factory
- Distribution Center / Factory



Swivel Joints

Applications

- Used wherever a leak-proof swivel connection is needed in pipelines or in combination with hoses to eliminate hose twisting
- Industries range from petroleum, petrochemical, refining, mining, distilling, paint, farm irrigation and fertilizing, wastewater treatment plants, and food and beverage process equipment. Dixon® swivel joints are found in blending plants, drum filling applications, fluid and dry bulk transfer, vacuum trucks, oil and gas trucks and water trucks. Larger swivels can be found in the steel industry, marine bulk transfer, and many more applications.

Features

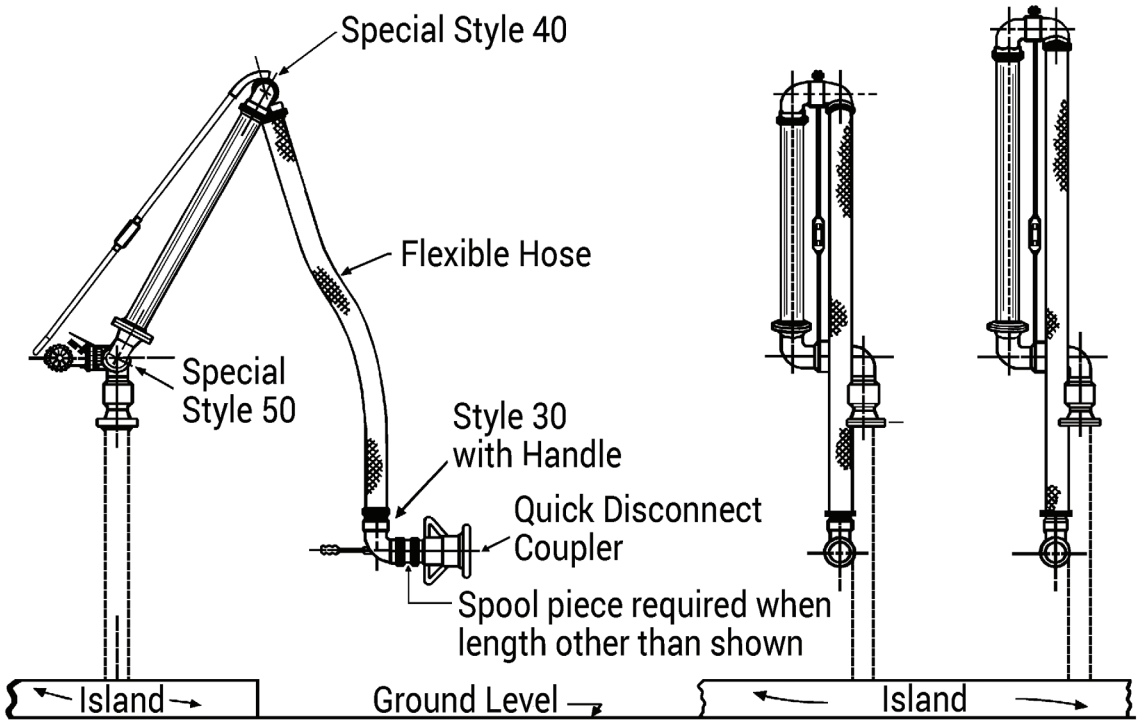
- Full 360° rotational movement
- Wide spacing between dual ball bearing raceways ensures greater load bearing capacity
- Precision-machined design ensures alignment and years of trouble-free service
- O-ring dust seal protects the ball races and seals chamber from outside elements
- Radius elbow design ensures a smooth flow pattern
- Hydrostatic testing is performed on all swivels before shipment

Options Available

- End configurations: female NPT, 150# flanges, TTMA flange, grooved, weld end, and many other variations
- Seal options: nitrile rubber, FKM, PTFE, EPDM, FDA nitrile rubber, and FFKM
- Ball bearing materials: carbon steel, 440 stainless steel, and 316 stainless steel
- Grease materials: Lithium, FDA approved/food grade, and silicone
- Swivels that include oxygen, steam or submerged service can be specifically designed for unique applications (special order)
- 100% full penetration weld
- Re-build kits available
- Custom swivel options available; contact Dixon at 888.226.4673

Swivel configurator available dixonvalve.com

Typical Applications



Operation / Service

Dixon® swivels are recommended for use at the following maximum Non-Shock Cold Working Pressures (NSCWP) provided in **PSI** at ambient temperature **70°F (21°C)** for 1" – 12" sizes:

- Aluminum: **150 PSI**
- Brass: **300 PSI**
- Malleable iron: **600 PSI**
- Carbon steel: **1000 PSI**
- Stainless steel: **1000 PSI**

- When using flanged ends, the pressure rating will be reduced to coincide with that of the flange being used. Carbon steel and stainless steel 150# flanges are recommended for use at **275 PSI** maximum and 300# flanges at **740 PSI** at ambient temperature **70°F (21°C).**
- Lubrication should be performed periodically, depending on service and operation conditions. Biannually is normally sufficient.
- All dimensions are approximate. Where critical, consult Dixon.

Use with Hose

The use of swivel joints to compensate for twist in hose (i.e. Style 20 or Style 60) should be carefully reviewed, since the hose must be sufficiently stiff to generate the torque needed to actuate the swivel before it kinks.

In many installations, the twist is caused by lateral movement that can be eliminated by the use of a swivel joint (i.e. Style 40 or Style 30).

Where this is not possible, the use of hose swivels may be a solution. Hose swivels are generally non-ball bearing designs that require less torque to initiate rotation; hose swivels are not designed for load bearing service.

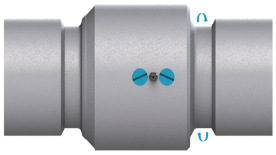
Some hoses are unable to generate even the low torque required for a hose swivel, many metal hoses fall into this group. Other hoses are stiff enough to turn almost any swivel, many armored hoses fall into this group.

Pricing

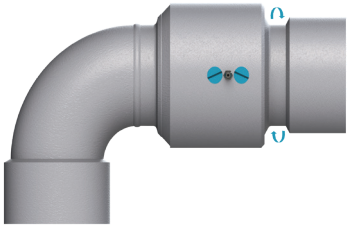
All pricing available upon request. Please contact Dixon for pricing and proper equipment selection for the correct application.

Every swivel joint is built to order, due to this, they are not generally returnable. Return requests will be reviewed on a case by case basis. Restocking charges will be applicable on the accepted returns. Restocking charges include 15%, plus any additional costs incurred.

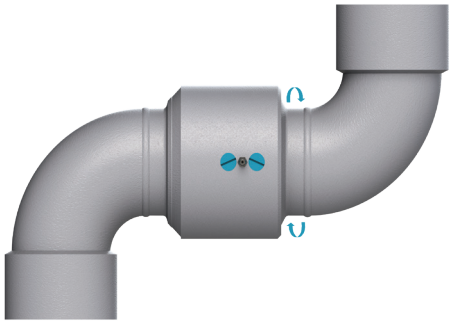
Use with Hose



style 20

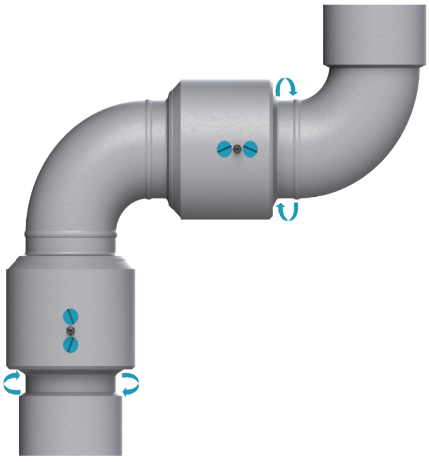


style 30

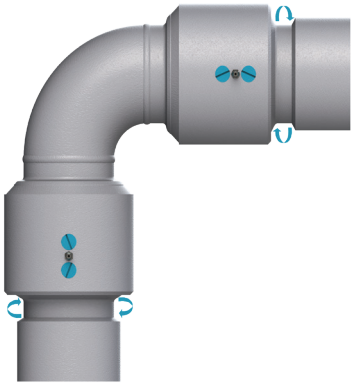


style 40

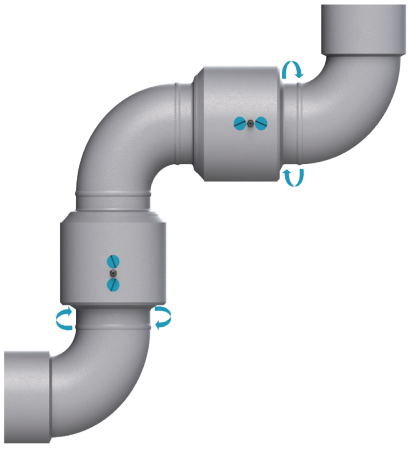
Double Plane



style 50

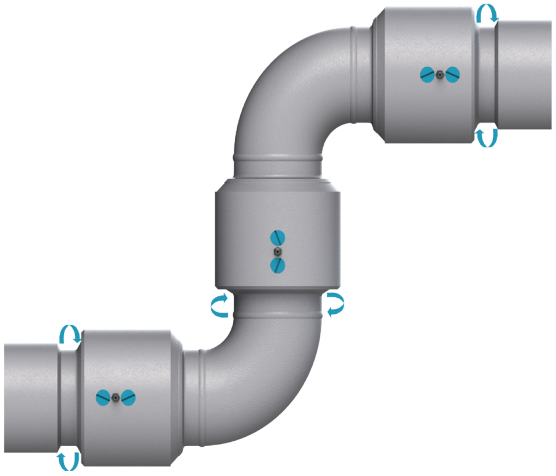


style 60

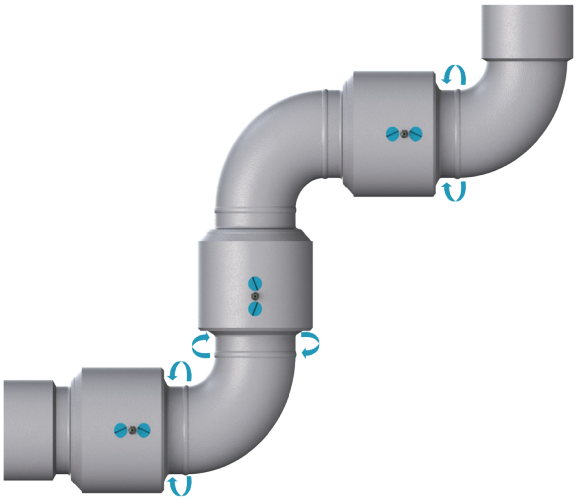


style 70

Triple Plane



style 10



style 80

O-Ring and V-Ring Swivel Joint Numbering System

2	20	F x F			CS	0	0	1	0	0
Sizes Inches	Style	End Connection	x	End Connection	Material	Pressure Seal	Dust Seal	Retainers	Ball Bearings	Grease
1 = 1"	20	F (FNPT)	x	F (FNPT)	OC = O-ring carbon steel	0 = nitrile rubber	0 = nitrile rubber	0 = No retainer	0 = CS carbon steel	0 = lithium
125 = 1.25"	30	W (weld)	x	W (weld)	OS = O-ring 316 stainless steel	1 = FKM	1 = FKM	1 = Aluminum standard in CS	1 = 440 stainless steel	1 = food grade
150 = 1.5"	40	FG (150#)	x	FG (150#)	CS = V-ring carbon steel	2 = PTFE	2 = PTFE	2 = PTFE standard in SS	2 = 316 stainless steel	2 = silicone
2 = 2"	50	PF (300#)	x	PF (300#)	SS = V-ring 316L stainless steel	3 = EPDM	3 = EPDM			3 = Tribolube
3 = 3"	60	TF (TTMA)	x	TF (TTMA)	AL = Aluminum	4 = FDA nitrile rubber	4 = FDA nitrile rubber			4 = low temperature
4 = 4"	70	BP (BSPP)	x	BP (BSPP)	MI = Malleable iron	5 = No seal	5 = No seal			5 = no grease
6 = 6"	80	BT (BSPT)	x	BT (BSPT)	BR = Brass					
8 = 8"	10									
10 = 10"										
12 = 12"										

NOTE: Other ends or seals are available upon request.

- O-ring: 1" - 4"
- V-ring: 2" - 12"
- Brass and malleable iron only O-ring: 1-1/2" - 3"
- Standard issue grease zerk without check ball. Ask for check ball if required.

Split Flange Swivel Joint Numbering System

SF	2	20	F	x	F	CS	1	1
Split Flange	Sizes Inches	Style	End Connection	x	End Connection	Nose Piece	Seal Material	Welding
	2 = 2"	20	F (FNPT)	x	F (FNPT)	CS = V-ring carbon steel	0 = Baylast	0 = standard
	3 = 3"	30	W (weld)	x	W (weld)	SS = V-ring 316L stainless steel	1 = FKM	1 = full penetration
	4 = 4"	40	FG (150#)	x	FG (150#)		2 = PTFE	
		50	PF (300#)	x	PF (300#)		3 = EPDM	
		60	TF (TTMA)	x	TF (TTMA)		4 = FDA nitrile rubber	
		70	BP (BSPP)	x	BP (BSPP)			
		80	BT (BSPT)	x	BT (BSPT)			
		10						

NOTE: Other ends or seals are available upon request.

Split Flange Swivels

Applications
- For use in industries from petroleum, blending plants, petrochemical, refining, mining, distilling, paint plants, farm irrigation and fertilizing, wastewater treatment, food and beverage process equipment, marine, and many more

Sizes
- 2", 3", 4"

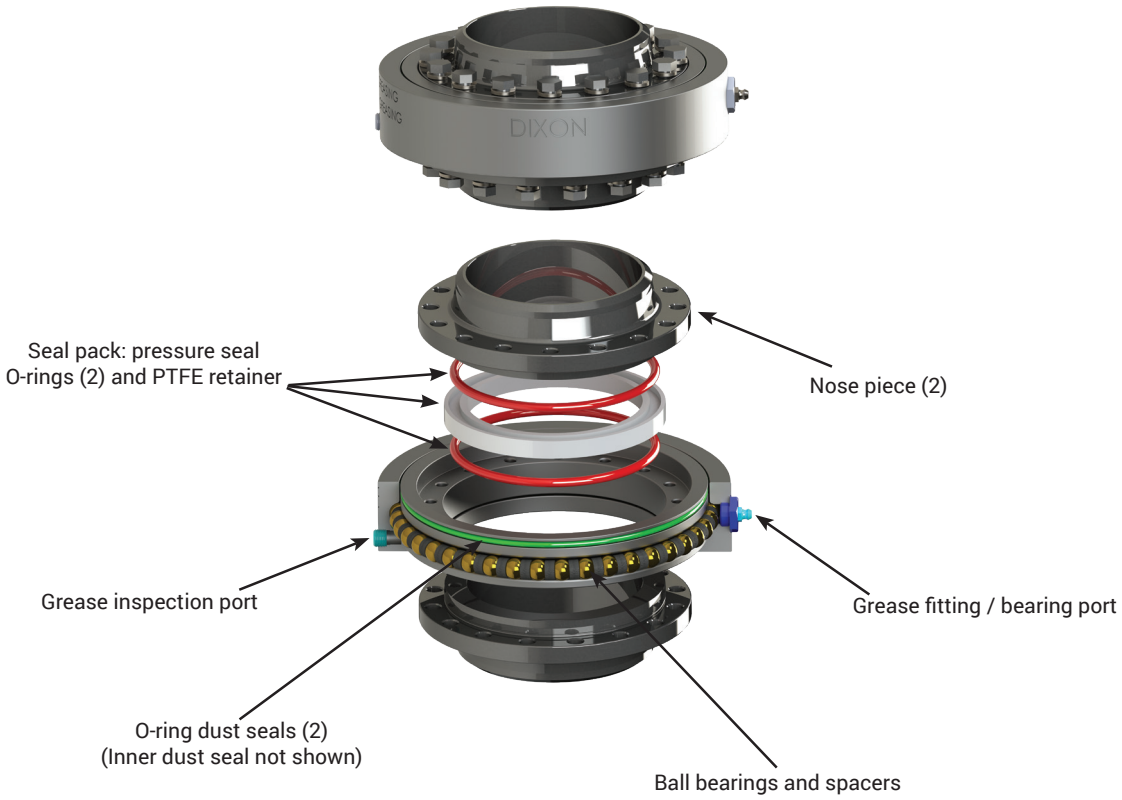
Features
- Bearing pack design allows easy seal change without removing the ball bearings
- Simple maintenance: remove one nose piece, replace seal pack, and reinstall with little downtime
- In-stream seal separates the wetted area from the ball bearings, allowing for longer bearing pack life compared to conventional swivels
- Wide-set bearing race for higher moment loads
- Compact design for low-profile applications
- Full penetration weld

Materials
- Bearing pack: through hardened forged high-carbon alloy
- Material contact surfaces: stainless steel, carbon steel nose pieces, or aluminum
- Seals: FKM-A, PTFE, and more upon request

Specifications
- Pressure rating: up to **600 PSI**
- Standard temperature range is **-40°F** to **250°F (-40°** to **121°C)**; other temperature ranges can be met upon request, depending on seal material (with standard nitrile rubber seals: **250°F (121°C)**)

Available options
- Swivel end configurations: 150 lb. and 300 lb. flanges, FNPT, MNPT, butt weld, TTMA, and others upon request

Split Flange Swivels Expanded View



Split Flange Swivels

Applications
- Used in petroleum, blending plants, petrochemical, refining, mining, distilling, paint plants, farm irrigation and fertilizing, wastewater treatment, food and beverage process equipment, and marine

Features
- Bearing pack design allows easy seal change without removing the ball bearings
- Simple maintenance: remove one nose piece, replace seal pack, reinstall with little down-time
- Instream seal separates wetted area from ball bearings allowing for longer bearing pack life over conventional swivels
- Wide set bearing race for higher moment loads
- Compact design for low profile applications

Materials
- Bearing pack: through hardened forged high carbon alloy
- Material contact surfaces: stainless steel or carbon steel nose pieces

Specifications
- Pressure rating: up to **600 PSI**
- Temperature: **-40°F** to **450°F (-40°C** to **232°C)** depending on seal material (with standard seals: **350°F (177°C)**

Available options
- Stock end configurations: 150 lb. and 300 lb. flanges, FNPT, butt weld, others per request
- Stock seals: Baylast™, FKM, PTFE, others per request
- Full penetration weld
- Contact Dixon® at 888-226-4673 for additional materials and configurations

Size	Carbon Steel Weld x Weld with Baylast Pressure Seals Part #	Carbon Steel Weld x Weld with FKM Pressure Seals Part #	Carbon Steel 150# Flange x 150# Flange with Baylast Pressure Seals Part #	Carbon Steel 150# Flange x 150# Flange with FKM Pressure Seals Part #
2"	SF220WXWCS00	SF220WXWCS10	SF220FGXFGCS00	SF220FGXFGCS10
3"	SF320WXWCS00	SF320WXWCS10	SF320FGXFGCS00	SF320FGXFGCS10
4"	SF420WXWCS00	SF420WXWCS10	SF420FGXFGCS00	SF420FGXFGCS10

Split Flange Swivel Components

Split Flange Bearing Packs

Size	Carbon Steel Part #
2"	2SFBP
3"	3SFBP
4"	4SFBP

Split Flange Nose Pieces

Feature
- 2 required per bearing pack

Size	Carbon Steel Part #	316 Stainless Steel Part #
2"	2SFNPCS	2SFNPSS
3"	3SFNPCS	3SFNPSS
4"	4SFNPCS	4SFNPSS

Seal Kits

Features
- Kits contains: seal, PTFE retainer, carbon steel bolts
- 1 required per bearing pack

Size	Baylast Part #	FKM Part #	PTFE Part #
2"	2SFSK-BAYLAST	2SFSK-VI	2SFSK-TES
3"	3SFSK-BAYLAST	3SFSK-VI	3SFSK-TES
4"	4SFSK-BAYLAST	4SFSK-VI	4SFSK-TES

V-Ring Swivel Joints

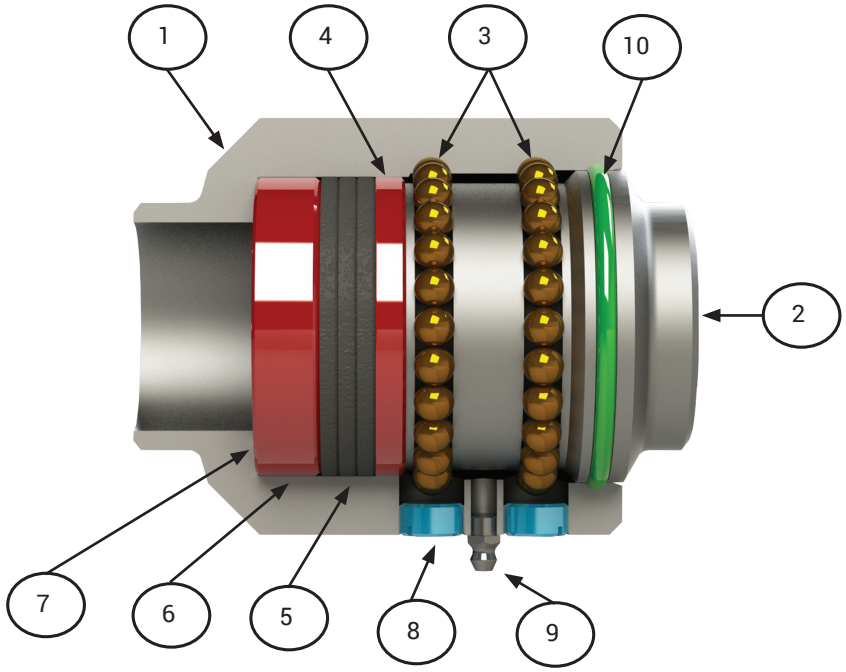
Applications
- V-ring, also known as chevron packing, is a multiple lip seal known for its reliability and long life
- Designed to seal even under misalignment caused by race wear from years of service

Sizes
- 2" - 12"

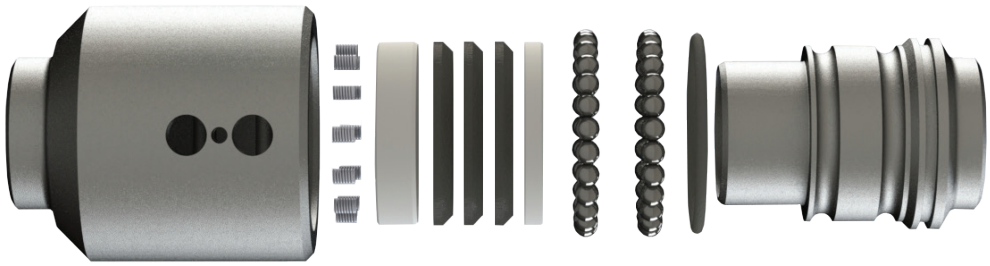
Features
- Three lip seals and the ability to seal even if the unit is in misalignment result in longer time between service periods, increasing up-time efficiencies, and lowering maintenance costs
- Spring-loaded triple V-ring sealing system ensures a leak-proof seal at high or low pressure and extends seal life
- Swivels are shipped standard with the following:
  - Nitrile rubber pressure seals and dust seals
  - Carbon steel ball bearings
  - PTFE retainers in V-ring swivels

Materials
- Carbon steel, 316L stainless steel, and aluminum

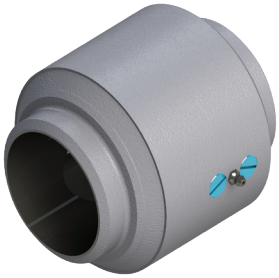
Specification
- Available working pressure ratings up to **1,000 PSI**

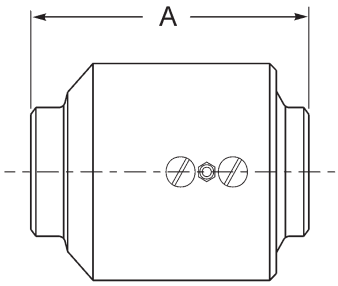


Bill of Materials
1. Body
2. Sleeve
3. Ball bearings
4. Seal retainer
5. V-ring (pressure) seal
6. Spring retainer
7. Spring
8. Ball retainer screw
9. Grease fitting
10. O-ring (dust seal)



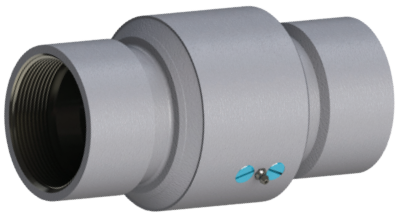
Single Plane V-Ring Style 20 - Weld End x Weld End

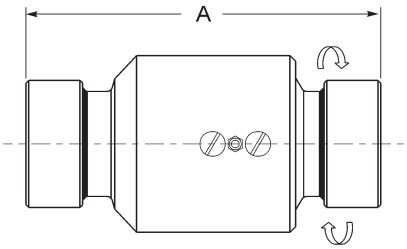




Size	Part #	Material	Weight (lbs)	Dimension A
2"	220WXW	CS - carbon steel	9.2	5-5/16"
		SS - stainless steel	9.2	
3"	320WXW	CS - carbon steel	12.9	5-3/4"
		SS - stainless steel	13.1	
4"	420WXW	CS - carbon steel	24.4	7"
		SS - stainless steel	25.1	
6"	620WXW	CS - carbon steel	54.5	8-3/8"
		SS - stainless steel	56.5	
		AL - aluminum	21.6	
8"	820WXW	CS - carbon steel	78.3	8-5/8"
		SS - stainless steel	92.3	
		AL - aluminum	35.3	
10"	1020WXW	CS - carbon steel	190.4	11-5/8"
		SS - stainless steel	192.8	
12"	1220WXW	CS - carbon steel	208.2	11-11/32"
		SS - stainless steel	210.9	

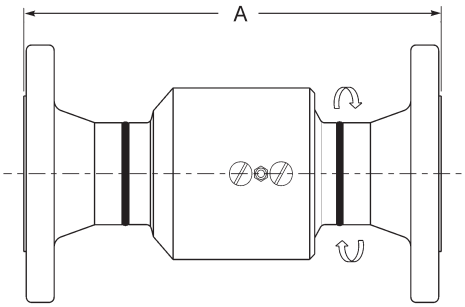
Single Plane V-Ring Style 20 - Female NPT x Female NPT

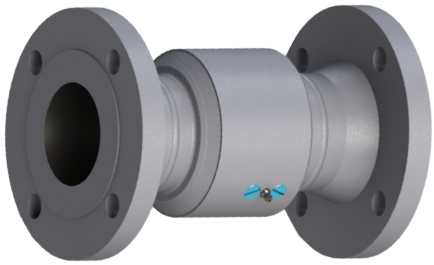




Size	Part #	Material	Weight (lbs)	Dimension A
2"	220FXF	CS - carbon steel	12.7	8-11/16"
		SS - stainless steel	12.2	
3"	320FXF	CS - carbon steel	17.0	10"
		SS - stainless steel	18.4	
4"	420FXF	CS - carbon steel	36.7	11-3/4"
		SS - stainless steel	37.7	
6"	620FXF	CS - carbon steel	67.5	12-1/8"
		SS - stainless steel	69.5	
		AL - aluminum	25.8	

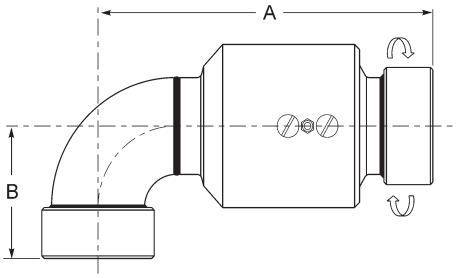
Single Plane V-Ring Style 20 - 150# ASA Flange x 150# ASA Flange





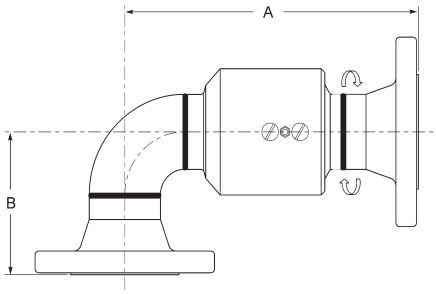
Size	Part #	Material	Weight (lbs)	Dimension A
2"	220FGXFG	CS - carbon steel	21.7	10-5/16"
		SS - stainless steel	21.1	
3"	320FGXFG	CS - carbon steel	36.0	11-1/4"
		SS - stainless steel	35.3	
4"	420FGXFG	CS - carbon steel	57.4	13"
		SS - stainless steel	58.1	
6"	620FGXFG	CS - carbon steel	104.2	15-3/8"
		SS - stainless steel	106.2	
		AL - aluminum	39.0	
8"	820FGXFG	CS - carbon steel	162.3	16-5/8"
		SS - stainless steel	170.3	
		AL - aluminum	61.0	
10"	1020FGFG	CS - carbon steel	295.7	19-5/8"
		SS - stainless steel	299.5	
12"	1220FGFG	CS - carbon steel	369.0	20-11/32"
		SS - stainless steel	373.7	

Single Plane V-Ring Style 20 - Female NPT x Female NPT



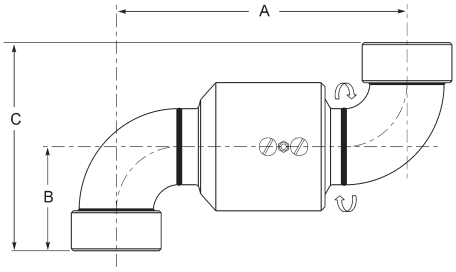
Size	Part #	Material	Weight (lbs)	Dimensions A	Dimensions B
2"	230FXF	CS - carbon steel	12.1	9"	3-11/16"
		SS - stainless steel	12.1		
3"	330FXF	CS - carbon steel	20.6	10-7/8"	5-1/8"
		SS - stainless steel	21.3		
4"	430FXF	CS - carbon steel	42.4	13-3/8"	6-3/8"
		SS - stainless steel	44.4		
6"	630FXF	CS - carbon steel	84.3	16-1/4"	7-7/8"
		SS - stainless steel	84.2		
		AL - aluminum	31.5		

Single Plane V-Ring Style 30 - 10# ASA Flange x 150# ASA Flange



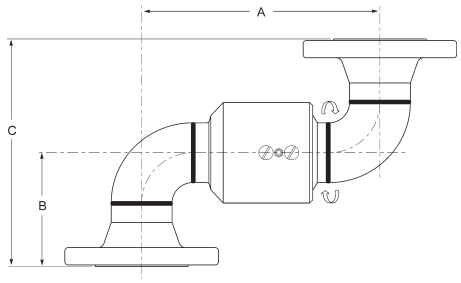
Size	Part #	Material	Weight (lbs)	Dimensions	
				A	B
2"	230FGXFG	CS - carbon steel	22.7	9-13/16"	4-1/2"
		SS - stainless steel	22.1		
3"	330FGXFG	CS - carbon steel	39.4	11-1/2"	5-3/4"
		SS - stainless steel	38.2		
4"	430FGXFG	CS - carbon steel	63.6	14"	7"
		SS - stainless steel	64.8		
6"	630FGXFG	CS - carbon steel	121.0	17-7/8"	9-1/2"
		SS - stainless steel	120.9		
		AL - aluminum	44.7		
8"	830FGXFG	CS - carbon steel	196.3	20-5/8"	12"
		SS - stainless steel	207.9		
		AL - aluminum	76.6		
10"	1030FGFG	CS - carbon steel	342.6	25-27/32"	14"
		SS - stainless steel	347.0		
12"	1230FGFG	CS - carbon steel	451.0	27-27/32"	16-1/2"
		SS - stainless steel	456.7		

Single Plane V-Ring Style 40 - Female NPT x Female NPT



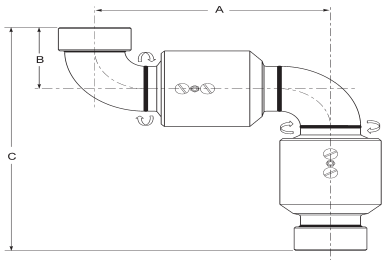
Size	Part #	Material	Weight (lbs)	Dimensions		
				A	B	C
2"	240FXF	CS - carbon steel	13.1	9-5/16"	3-11/16"	7-3/8"
		SS - stainless steel	13.1			
3"	340FXF	CS - carbon steel	24.0	11-3/4"	5-1/8"	10-1/4"
		SS - stainless steel	24.2			
4"	440FXF	CS - carbon steel	48.6	15"	6-3/8"	12-3/4"
		SS - stainless steel	51.1			
6"	640FXF	CS - carbon steel	101.1	20-3/8"	7-7/8"	15-3/4"
		SS - stainless steel	98.9			
		AL - aluminum	39.0			

Single Plane V-Ring Style 40 - 150# ASA Flange x 150# ASA Flange



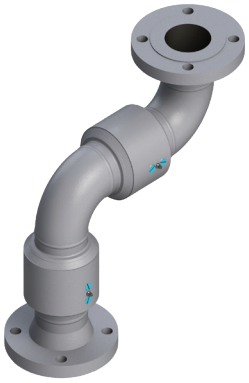
Size	Part #	Material	Weight (lbs)	Dimensions		
				A	B	C
2"	240FGXFG	CS - carbon steel	23.7	9-5/16"	4-1/2"	9"
		SS - stainless steel	23.1			
3"	340FGXFG	CS - carbon steel	42.8	11-3/4"	5-3/4"	11-1/2"
		SS - stainless steel	41.1			
4"	440FGXFG	CS - carbon steel	69.8	15"	7"	14"
		SS - stainless steel	71.5			
6"	640FGXFG	CS - carbon steel	137.8	20-3/8"	9-1/2"	19"
		SS - stainless steel	135.6			
		AL - aluminum	52.2			
8"	840FGXFG	CS - carbon steel	230.3	24-5/8"	12"	24"
		SS - stainless steel	245.5			
		AL - aluminum	92.2			
10"	1040FGFG	CS - carbon steel	394.6	31-1/16"	14"	28"
		SS - stainless steel	400.0			
12"	1240FGFG	CS - carbon steel	533.0	35-11/32"	16-1/2"	33"
		SS - stainless steel	540.0			

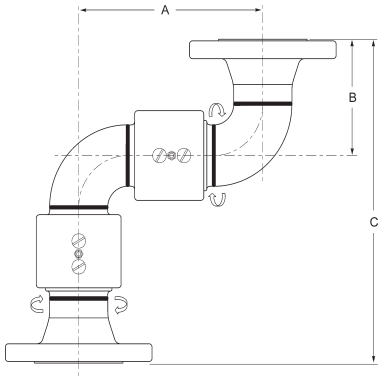
Double Plane V-Ring Style 50 - Female NPT x Female NPT



Size	Part #	Material	Weight (lbs)	Dimensions		
				A	B	C
2"	250FXF	CS - carbon steel	22.8	9-5/16"	3-11/16"	12-11/16"
		SS - stainless steel	23.3			
3"	350FXF	CS - carbon steel	36.9	11-3/4"	5-1/8"	16"
		SS - stainless steel	37.3			
4"	450FXF	CS - carbon steel	73.0	15"	6-3/8"	19-3/4"
		SS - stainless steel	76.2			
6"	650FXF	CS - carbon steel	155.6	20-3/8"	7-7/8"	24-1/8"
		SS - stainless steel	155.4			
		AL - aluminum	60.6			

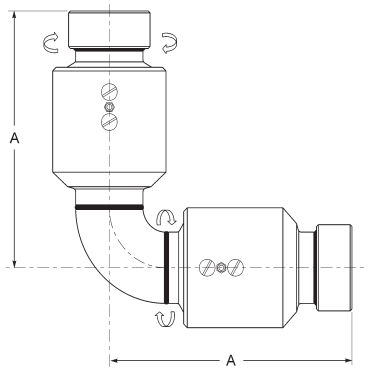
Double Plane V-Ring Style 50 - 150# ASA Flange x 150# ASA Flange





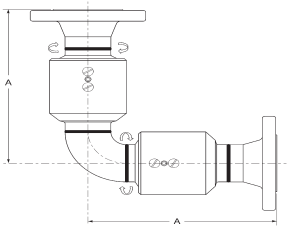
Size	Part #	Material	Weight (lbs)	Dimensions		
				A	B	C
2"	250FGXFG	CS - carbon steel	32.8	9-5/16"	4-1/2"	14-5/16"
		SS - stainless steel	32.2			
3"	350FGXFG	CS - carbon steel	55.7	11-3/4"	5-3/4"	17-1/4"
		SS - stainless steel	54.3			
4"	450FGXFG	CS - carbon steel	94.2	15"	7"	21"
		SS - stainless steel	96.6			
6"	650FGXFG	CS - carbon steel	192.3	20-3/8"	9-1/2"	27-3/8"
		SS - stainless steel	192.1			
		AL - aluminum	73.8			
8"	850FGXFG	CS - carbon steel	308.6	24-5/8"	12"	32-5/8"
		SS - stainless steel	337.8			
		AL - aluminum	127.5			
10"	1050FGFG	CS - carbon steel	585.0	31-27/32"	14"	39-5/8"
		SS - stainless steel	592.4			
12"	1250FGFG	CS - carbon steel	741.2	35-11/32"	16-1/2"	44-11/32"
		SS - stainless steel	750.6			

Double Plane V-Ring Style 60 - Female NPT x Female NPT



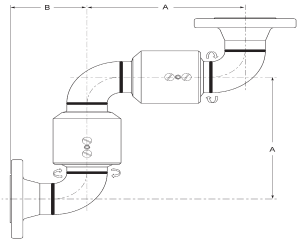
Size	Part #	Material	Weight (lbs)	Dimension A
2"	260FXF	CS - carbon steel	21.40	9"
		SS - stainless steel	21.50	
3"	360FXF	CS - carbon steel	34.30	10-7/8"
		SS - stainless steel	34.30	
4"	460FXF	CS - carbon steel	72.00	13-3/8"
		SS - stainless steel	72.00	
6"	660FXF	CS - carbon steel	118.00	16-1/4"
		SS - stainless steel	140.40	
		AL - aluminum	55.54	

Double Plane V-Ring Style 60 - 150# ASA Flange x 150# ASA Flange



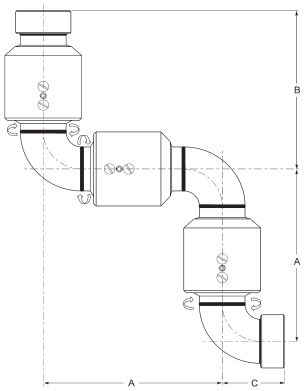
Size	Part #	Material	Weight (lbs)	Dimension A
2"	260FGXFG	CS - carbon steel	42.00	9-13/16"
		SS - stainless steel	42.00	
3"	360FGXFG	CS - carbon steel	83.00	11-1/2"
		SS - stainless steel	83.00	
4"	460FGXFG	CS - carbon steel	106.00	14"
		SS - stainless steel	106.00	
6"	660FGXFG	CS - carbon steel	172.00	17-7/8"
		SS - stainless steel	172.00	
		AL - aluminum	68.74	
8"	860FGXFG	CS - carbon steel	312.00	20-5/8"
		SS - stainless steel	312.00	
		AL - aluminum	117.34	
10"	1060FGFG	CS - carbon steel	534.90	25-27/32"
		SS - stainless steel	541.70	
12"	1260FGFG	CS - carbon steel	659.20	27-27/32"
		SS - stainless steel	667.58	

Double Plane V-Ring Style 70 - 150# ASA Flange x 150# ASA Flange



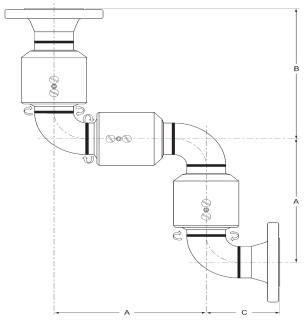
Size	Part #	Material	Weight (lbs)	Dimensions A	Dimensions B
2"	270FGXFG	CS - carbon steel	33.8	9-5/16"	4-1/2"
		SS - stainless steel	33.2		
3"	370FGXFG	CS - carbon steel	59.1	11-3/4"	5-3/4"
		SS - stainless steel	57.2		
4"	470FGXFG	CS - carbon steel	100.4	15"	7"
		SS - stainless steel	103.3		
6"	670FGXFG	CS - carbon steel	209.1	20-3/8"	9-1/2"
		SS - stainless steel	206.8		
		AL - aluminum	81.5		
8"	870FGXFG	CS - carbon steel	342.6	24-5/8"	12"
		SS - stainless steel	375.4		
		AL - aluminum	143.0		
10"	1070FGFG	CS - carbon steel	637.0	31-27/32"	14"
		SS - stainless steel	645.1		
12"	1270FGFG	CS - carbon steel	823.2	35-11/32"	16-1/2"
		SS - stainless steel	833.7		

Triple Plane V-Ring Style 80 - Female NPT x Female NPT



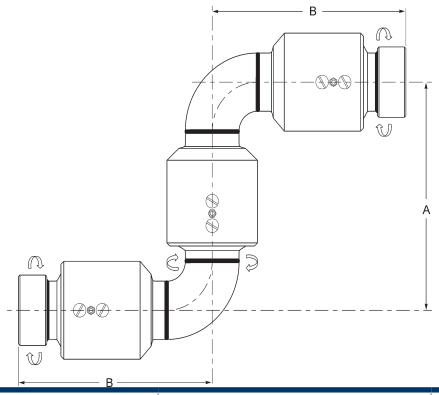
Size	Part #	Material	Weight (lbs)	Dimensions		
				A	B	C
2"	280FXF	CS - carbon steel	33.0	9-5/16"	9-9/16"	3-11/16"
		SS - stainless steel	33.5			
3"	380FXF	CS - carbon steel	53.2	11-3/4"	10-7/8"	5-1/8"
		SS - stainless steel	53.3			
4"	480FXF	CS - carbon steel	103.6	15"	13-3/8"	6-3/8"
		SS - stainless steel	108.0			
6"	680FXF	CS - carbon steel	226.9	20-3/8"	16-1/4"	7-7/8"
		SS - stainless steel	226.6			
		AL - aluminum	89.4			

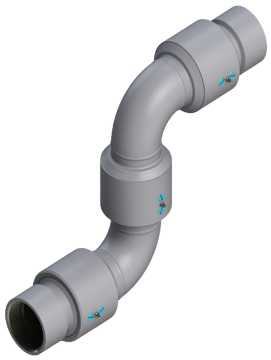
Triple Plane V-Ring Style 80 - 150# ASA Flange x 150# ASA Flange



Size	Part #	Material	Weight (lbs)	Dimensions		
				A	B	C
2"	280FGXFG	CS - carbon steel	43.1	9-5/16"	9-13/16"	4-1/2"
		SS - stainless steel	42.4			
3"	380FGXFG	CS - carbon steel	72.0	11-3/4"	11-1/2"	5-3/4"
		SS - stainless steel	70.3			
4"	480FGXFG	CS - carbon steel	124.8	15"	14"	7"
		SS - stainless steel	128.4			
6"	680FGXFG	CS - carbon steel	263.6	20-3/8"	17-7/8"	9-1/2"
		SS - stainless steel	263.3			
		AL - aluminum	102.2			
8"	880FGXFG	CS - carbon steel	420.9	24-5/8"	20-5/8"	12"
		SS - stainless steel	467.6			
		AL - aluminum	178.0			
10"	1080FGFG	CS - carbon steel	827.4	31-19/32"	25-19/32"	14"
		SS - stainless steel	837.9			
12"	1280FGFG	CS - carbon steel	1031.8	35-11/32"	27-27/32"	16-1/2"
		SS - stainless steel	1044.9			

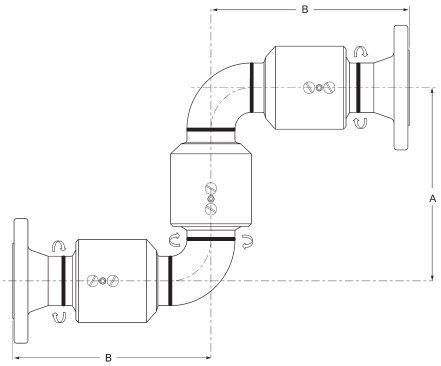
Triple Plane V-Ring Style 10 - Female NPT x Female NPT





Size	Part #	Material	Weight (lbs)	Dimensions	
				A	B
2"	210FXF	CS - carbon steel	32.0	9-5/16"	9"
		SS - stainless steel	32.5		
3"	310FXF	CS - carbon steel	49.8	11-3/4"	10-7/8"
		SS - stainless steel	50.4		
4"	410FXF	CS - carbon steel	97.4	15"	13-3/8"
		SS - stainless steel	101.3		
6"	610FXF	CS - carbon steel	210.2	20-3/8"	16-1/4"
		SS - stainless steel	200.0		
		AL - aluminum	68.6		

Triple Plane V-Ring Style 10 - 150# ASA Flange x 150# ASA Flange



Size	Part #	Material	Weight (lbs)	Dimensions	
				A	B
2"	210FGXFG	CS - carbon steel	42.1	9-5/16"	9-13/16"
		SS - stainless steel	41.4		
3"	310FGXFG	CS - carbon steel	68.6	11-3/4"	11-1/2"
		SS - stainless steel	67.4		
4"	410FGXFG	CS - carbon steel	118.6	15"	14"
		SS - stainless steel	121.7		
6"	610FGXFG	CS - carbon steel	222.1	20-3/8"	17-7/8"
		SS - stainless steel	233.9		
		AL - aluminum	97.2		
8"	810FGXFG	CS - carbon steel	386.9	24-5/8"	20-5/8"
		SS - stainless steel	430.1		
		AL - aluminum	162.8		
10"	1010FGFG	CS - carbon steel	775.4	31-1/16"	25-27/32"
		SS - stainless steel	785.3		
12"	1210FGFG	CS - carbon steel	949.4	35-11/32"	27-27/32"
		SS - stainless steel	961.5		

O-Ring Swivel Joints

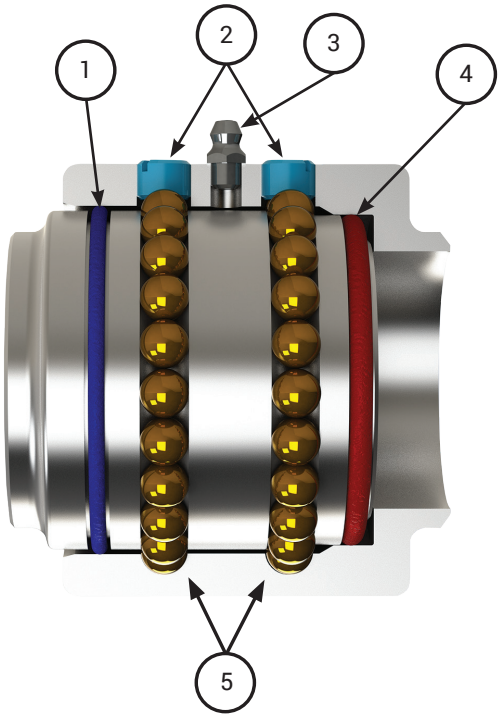
Applications
- Commonly used in aluminum loading/unloading arm applications

Sizes
- 1" - 4"

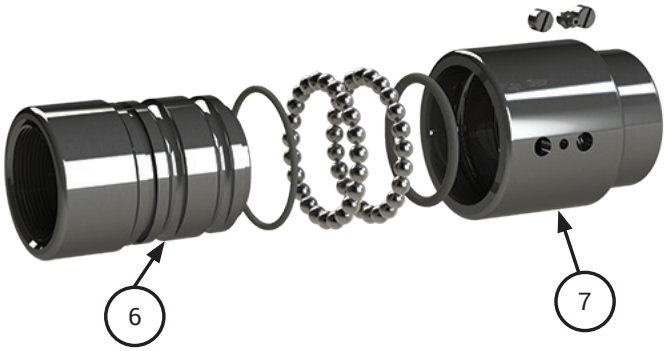
Features
- O-ring pressure seal ensures a leak-proof seal and smooth rotation with lower torque
- Smooth moving seal for high-volume drum and tote loading
- Swivel end configurations: 150 lb. and 300 lb. flanges, FNPT, MNPT, butt weld, TTMA, and others upon request

Materials
- Available in carbon steel, 316L stainless steel, aluminum, brass, and malleable iron

Specification
- Available working pressure ratings up to **1,000 PSI**



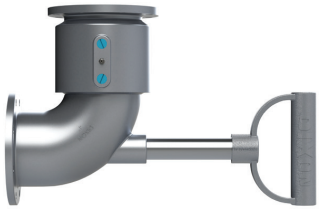
Bill of Materials
1. O-ring (dust) seal
2. Ball retainer screw
3. Grease fitting
4. O-ring (pressure) seal
5. Ball bearings
6. Sleeve
7. Body



Loading Arm Swivels

Features

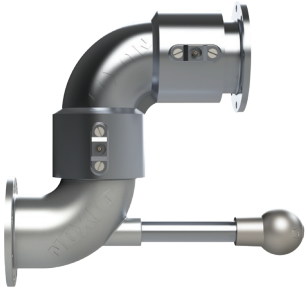
- TTMA-flanged loading arm swivel with heavy-duty D-style shovel handle
- Shovel handle is used to guide the connection of the API load coupler to the adapter on the tank truck
- Long radius elbow improves the flow into the API load coupler and provides spacing between the load arm and the tank truck
- FKM-A swivel seals are compatible with ethanol blended fuel
- Can be used with flange extensions
- TTMA flanges on both ends



style 30, short radius

Description	Handle	Seal	3" Part #	4" Part #
style 20	no handle	Nitrile rubber	320TFXTFAL00000	420TFXTFAL00000
		FKM-A	320TFXTFAL11000	420TFXTFAL11000
style 30 short radius	D-handle	Nitrile rubber	33HTFXTFAL00000	43HTFXTFAL00000
		FKM-A	33HTFXTFAL11000	43HTFXTFAL11000
	ball handle	Nitrile rubber	33BTFXTFAL00000	43BTFXTFAL00000
		FKM-A	33BTFXTFAL11000	43BTFXTFAL11000
	no handle	Nitrile rubber	330TFXTFAL00000	430TFXTFAL00000
		FKM-A	330TFXTFAL11000	430TFXTFAL11000
style 30 long radius	D-handle	Nitrile rubber	---	43HTFTFLAL00000
		FKM-A	---	43HTFTFLAL11000
	ball handle	Nitrile rubber	---	43BTFTFLAL00000
		FKM-A	---	43BTFTFLAL11000
	no handle	Nitrile rubber	---	430TFTFLAL00000
		FKM-A	---	430TFTFLAL11000
style 40	D-handle	Nitrile rubber	34HTFXTFAL00000	44HTFXTFAL00000
		FKM-A	34HTFXTFAL11000	44HTFXTFAL11000
	ball handle	Nitrile rubber	34BTFXTFAL00000	44BTFXTFAL00000
		FKM-A	34BTFXTFAL11000	44BTFXTFAL11000
	no handle	Nitrile rubber	340TFXTFAL00000	440TFXTFAL00000
		FKM-A	340TFXTFAL11000	440TFXTFAL11000
style 50	D-handle	Nitrile rubber	35HTFXTFAL00000	45HTFXTFAL00000
		FKM-A	35HTFXTFAL11000	45HTFXTFAL11000
	ball handle	Nitrile rubber	35BTFXTFAL00000	45BTFXTFAL00000
		FKM-A	35BTFXTFAL11000	45BTFXTFAL11000
	no handle	Nitrile rubber	350TFXTFAL00000	450TFXTFAL00000
		FKM-A	350TFXTFAL11000	450TFXTFAL11000

style 30, long radius



style 50

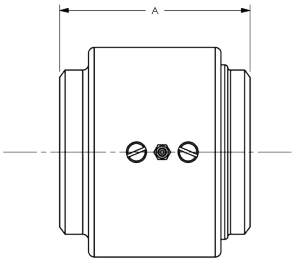
Type 35 Loading Arm Swivel Replacement Parts

Description	Part #
4" schedule 80 aluminum nipple	ATN100X7
ball-style handle	100BHAN-AL
D-Style heavy-duty shovel handle	100DHAN-AL
Nitrile rubber seal kit	4RKOBU
FKM-A seal kit	4RKOVIVI

Typical Application for Top Loading Arm

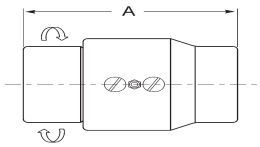
Typical Application for Bottom Loading Arm

Single Plane O-Ring Style 20 - Weld x Weld



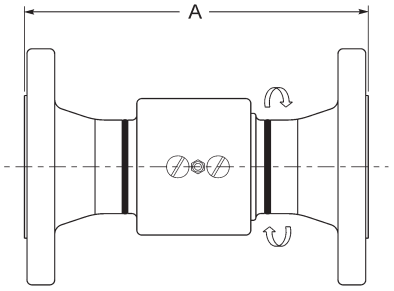
Size	Part #	Material	Weight (lbs)	Dimension A
1"	120WXW	OC - carbon steel	2.56	2-14/16"
		OS - stainless steel	2.57	
1-1/2"	15020WXW	OC - carbon steel	3.19	3-3/16"
		OS - stainless steel	3.19	
		AL - aluminum	1.43	3-13/16"
2"	220WXW	OC - carbon steel	4.60	3-9/16"
		OS - stainless steel	4.60	
		AL - aluminum	2.67	5-6/16"
3"	320WXW	OC - carbon steel	7.07	4-2/16"
		OS - stainless steel	7.08	
		AL - aluminum	3.93	5-11/16"
4"	420WXW	OC - carbon steel	20.30	6"
		OS - stainless steel	21.20	
		AL - aluminum	7.10	7-5/16"

Single Plane O-Ring Style 20 - Female NPT x Female NPT



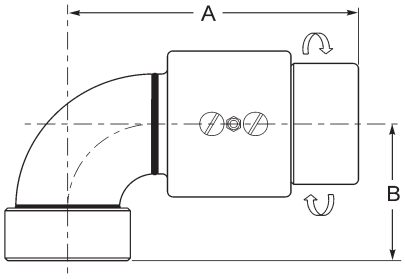
Size	Part #	Material	Weight (lbs)	Dimension A
1"	120FXF	OC - carbon steel	2.80	3-15/16"
		OS - stainless steel	2.50	
		AL - aluminum	1.10	
1-1/4"	12520FXF	AL - aluminum	1.40	3-31/32"
1-1/2"	15020FXF	OC - carbon steel	3.55	4"
		OS - stainless steel	3.55	
		AL - aluminum	1.40	
		BR - brass	4.30	
		MI - malleable iron	3.80	
2"	220FXF	OC - carbon steel	6.30	5-9/16"
		OS - stainless steel	6.80	
		AL - aluminum	3.50	
		BR - brass	8.50	
		MI - malleable iron	7.50	
3"	320FXF	OC - carbon steel	8.60	5-7/8"
		OS - stainless steel	9.00	
		AL - aluminum	4.00	5-29/32"
		BR - brass	11.10	
		MI - malleable iron	9.70	
4"	420FXF	AL - aluminum	7.30	7-5/8"

Single Plane O-Ring Style 20 - 150# ASA Flange x 150# ASA Flange



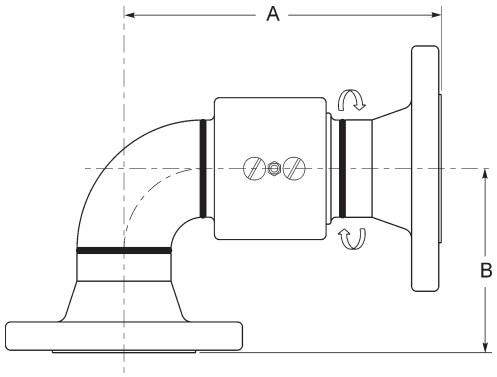
Size	Part #	Material	Weight (lbs)	Dimension A
1"	120FGXFG	OC - carbon steel	7.80	7-9/32"
1-1/2"	15020FGXFG	OC - carbon steel	11.60	8-1/16"
		OS - stainless steel	11.60	
		AL - aluminum	4.04	8-11/16"
2"	220FGXFG	OC - carbon steel	16.60	8-17/32"
		OS - stainless steel	16.60	
		AL - aluminum	7.50	10-3/8"
3"	320FGXFG	OC - carbon steel	30.60	9-5/8"
		OS - stainless steel	30.60	
		AL - aluminum	10.00	11-5/32"
4"	420FGXFG	AL - aluminum	13.00	13-5/16"

Single Plane O-Ring Style 30 - Female NPT x Female NPT



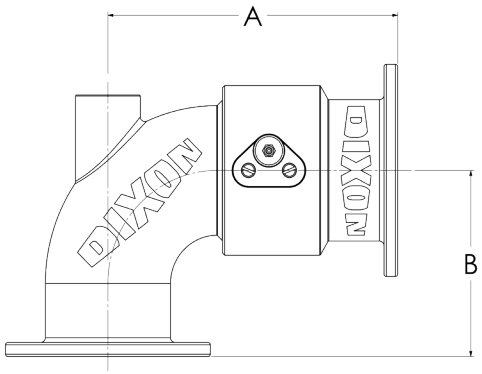
Size	Part #	Material	Weight (lbs)	Dimensions A	Dimensions B
1"	130FXF	OC - carbon steel	3.6	4-13/32"	2-3/16"
		OS - stainless steel	3.0	5-29/32"	2-11/16"
1-1/2"	15030FXF	OC - carbon steel	5.0	5-7/16"	3-15/32"
		OS - stainless steel	5.6		
		AL - aluminum	1.7	4-11/16"	3"
		BR - brass	5.2		
		MI - malleable iron	4.6		
2"	230FXF	OC - carbon steel	7.6	6-21/32"	3-1/4"
		OS - stainless steel	6.3		
		AL - aluminum	4.1	6-3/16"	2-7/8"
		BR - brass	9.9		
		MI - malleable iron	8.8		
3"	330FXF	OC - carbon steel	13.4	8-9/64"	4-13/16"
		OS - stainless steel	13.2		
		AL - aluminum	5.2	7-1/16"	3-7/8"
		BR - brass	15.4		
		MI - malleable iron	13.0		
4"	430FXF	AL - aluminum	9.2	9-1/8"	4-3/4"

Single Plane O-Ring Style 30 - 150# ASA Flange x 150# ASA Flange



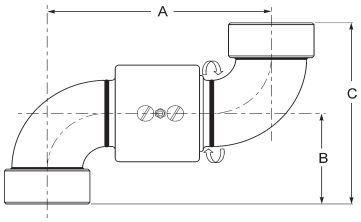
Size	Part #	Material	Weight (lbs)	Dimensions	
				A	B
1"	130FGXFG	OC - carbon steel	8.00	6-3/32"	3-3/16"
		OS - stainless steel	8.00	6-19/32"	3-11/16"
1-1/2"	15030FGXFG	OC - carbon steel	12.13	7-7/8"	4-11/16"
		OS - stainless steel	12.13		
		AL - aluminum	4.22	7-1/32"	5-11/32"
2"	230FGXFG	OC - carbon steel	20.20	8-1/32"	4-1/2"
		OS - stainless steel	20.20		
		AL - aluminum	7.83	8-5/8"	5-9/32"
3"	330FGXFG	OC - carbon steel	32.90	9-7/8"	5-3/4"
		OS - stainless steel	32.90		
		AL - aluminum	12.80	9-11/16"	6-15/32"
4"	430FGXFG	AL - aluminum	14.00	11-31/32"	7-19/32"

Tank Truck Flange x Tank Truck Flange



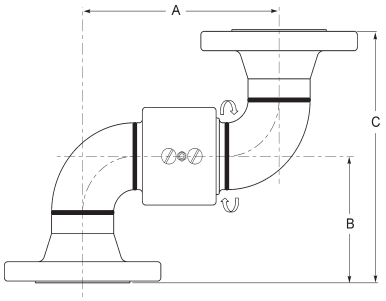
Size	Part #	Material	Weight (lbs)	Dimensions	
				A	B
2"	230TFXTF	OC - carbon steel	8.10	5-5/8"	5-1/8"
		OS - stainless steel	6.80		
		AL - aluminum	4.60	5-5/8"	5-1/8"
3"	330TFXTF	OC - carbon steel	14.40	8-1/2"	4-3/8"
		OS - stainless steel	14.75		
		AL - aluminum	6.21	7-3/4"	4-15/16"
4"	430TFXTF	AL - aluminum	12.00	8-7/8"	5-17/32"

Single Plane O-Ring Style 40 - Female NPT x Female NPT



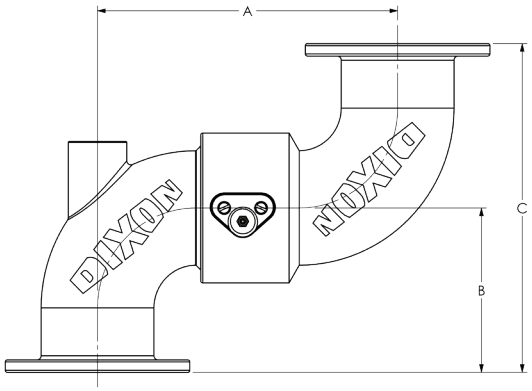
Size	Part #	Material	Weight (lbs)	Dimensions		
				A	B	C
1"	140FXF	OC - carbon steel	3.73	4-59/64"	2-3/16"	4-3/8"
		OS - stainless steel	3.82	5-59/64"	2-11/16"	5-3/8"
1-1/2"	15040FXF	OC - carbon steel	6.83	7-11/16"	3-15/32"	6-15/16"
		OS - stainless steel	7.0			
		AL - aluminum	2.3	6-1/8"	3"	6"
		BR - brass	6.8			
		MI - malleable iron	6.2			
2"	240FXF	OC - carbon steel	8.5	7-17/32"	3-1/4"	6-1/2"
		OS - stainless steel	8.71			
		AL - aluminum	4.5	6-11/16"	2-7/8"	5-3/4"
		BR - brass	11.2			
		MI - malleable iron	9.1			
3"	340FXF	OC - carbon steel	17.7	10-1/8"	4-13/16"	9-5/8"
		OS - stainless steel	18.14			
		AL - aluminum	5.9	8-1/4"	3-7/8"	7-3/4"
		BR - brass	18.0			
		MI - malleable iron	15.0			
4"	440FXF	AL - aluminum	10.2	10-5/8"	4-3/4"	9-1/2"

Single Plane O-Ring Style 40 - 150# ASA Flange x 150# ASA Flange



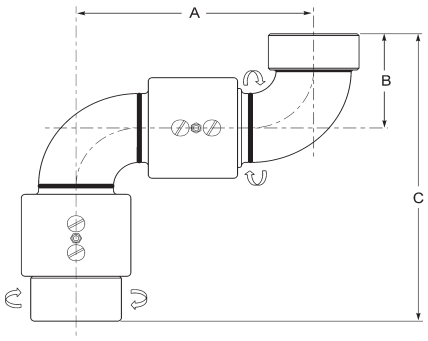
Size	Part #	Material	Weight (lbs)	Dimensions		
				A	B	C
1"	140FGXFG	OC - carbon steel	8.90	4-59/64"	3-3/16"	6-3/8"
		OS - stainless steel	8.90	5-59/64"	3-11/16"	7-3/8"
1-1/2"	15040FGXFG	OC - carbon steel	12.66	7-11/16"	4-11/16"	9-3/8"
		OS - stainless steel	12.66			
		AL - aluminum	4.40	6-1/8"	5-11/32"	5-11/16"
2"	240FGXFG	OC - carbon steel	21.10	7-17/32"	4-1/2"	9"
		OS - stainless steel	21.10			
		AL - aluminum	8.16	6-11/16"	5-9/32"	10-9/16"
3"	340FGXFG	OC - carbon steel	39.70	10-1/8"	5-3/4"	11-1/2"
		OS - stainless steel	39.70			
		AL - aluminum	11.00	8-1/4"	6-5/8"	13-1/4"
4"	440FGXFG	AL - aluminum	15.91	10-5/8"	7-9/16"	15-1/8"

Tank Truck Flange x Tank Truck Flange



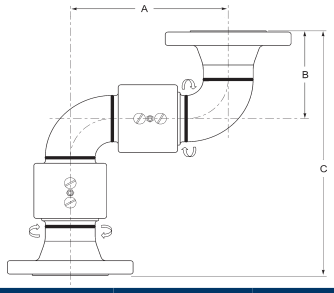
Size	Part #	Material	Weight (lbs)	Dimensions		
				A	B	C
2"	240TFXTF	OC - carbon steel	8.35	7-17/32"	5-1/8"	10-1/4"
		OS - stainless steel	8.36			
		AL - aluminum	3.96	6-11/16"	5-1/8"	10-1/4"
3"	340TFXTF	OC - carbon steel	17.31	10-1/8"	4-3/8"	8-3/4"
		OS - stainless steel	17.73			
		AL - aluminum	7.30	9-9/64"	4-15/16"	9-7/8"
4"	440TFXTF	AL - aluminum	17.00	10-5/8"	6-9/16"	13-1/8"

Female NPT x Female NPT



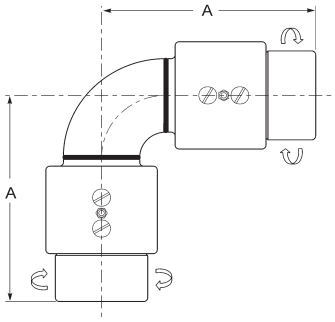
Size	Part #	Material	Weight (lbs)	Dimensions		
				A	B	C
1"	150FXF	OC - carbon steel	7.30	4-59/64"	2-3/16"	6-3/32"
		OS - stainless steel	7.30	5-59/64"	2-11/16"	7-19/32"
1-1/2"	15050FXF	OC - carbon steel	9.00	7-11/16"	3-15/32"	8-29/32"
		OS - stainless steel	9.00			
		AL - aluminum	3.18	6-1/8"	3"	7-11/16"
2"	250FXF	OC - carbon steel	14.04	7-17/32"	3-1/4"	9-29/32"
		OS - stainless steel	14.04			
		AL - aluminum	7.80	6-11/16"	2-7/8"	9-1/16"
		BR - brass	14.90			
		MI - malleable iron	13.20			
3"	350FXF	OC - carbon steel	21.80	10-1/8"	4-13/16"	12-61/64"
		OS - stainless steel	21.80			
		AL - aluminum	9.40	8-1/4"	3-7/8"	10-29/32"
		MI - malleable iron	21.50			
4"	450FXF	AL - aluminum	15.00	10-5/8"	4-3/4"	13-7/8"

Double Plane O-Ring Style 50 - 150# ASA Flange x 150# ASA Flange



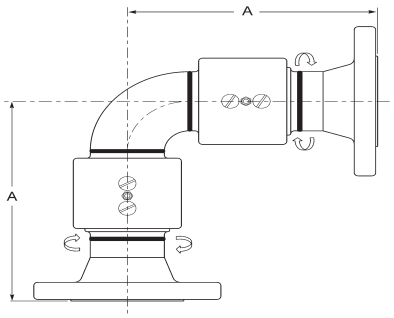
Size	Part #	Material	Weight (lbs)	Dimensions		
				A	B	C
1"	150FGXFG	OC - carbon steel	10.79	4-59/64"	3-3/16"	9-19/64"
		OS - stainless steel	10.79	5-59/64"	3-11/16"	10-19/64"
1-1/2"	15050FGXFG	OC - carbon steel	13.92	7-11/16"	4-11/16"	12-9/16"
		OS - stainless steel	13.92			
		AL - aluminum	5.72	6-1/8"	5-11/32"	12-3/8"
2"	250FGXFG	OC - carbon steel	22.36	7-17/32"	4-1/2"	12-17/32"
		OS - stainless steel	22.36			
		AL - aluminum	11.62	6-11/16"	5-9/32"	13-29/32"
3"	350FGXFG	OC - carbon steel	37.58	10-1/8"	5-3/4"	15-5/8"
		OS - stainless steel	37.58			
		AL - aluminum	16.72	8-1/4"	6-15/32"	16-3/32"
4"	450FGXFG	AL - aluminum	2.52	10-5/8"	7-19/32"	19-9/16"

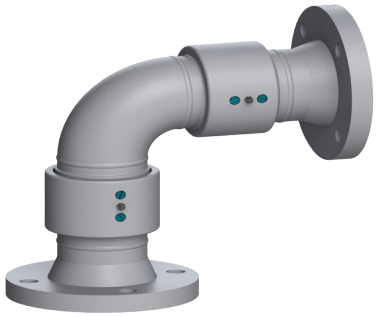
Double Plane O-Ring Style 60 - Female NPT x Female NPT



Size	Part #	Material	Weight (lbs)	Dimension A
1"	160FXF	OC - carbon steel	6.30	4-13/32"
		OS - stainless steel	6.30	4-29/32"
1-1/2"	15060FXF	OC - carbon steel	9.36	5-7/16"
		OS - stainless steel	9.36	
		AL - aluminum	2.90	4-11/16"
2"	260FXF	OC - carbon steel	12.95	6-21/32"
		OS - stainless steel	12.96	
		AL - aluminum	6.90	6-7/32"
		BR - brass	14.30	
		MI - malleable iron	12.60	
3"	360FXF	OC - carbon steel	22.60	8-9/64"
		OS - stainless steel	22.65	
		AL - aluminum	8.60	7-1/32"
		MI - malleable iron	18.60	
4"	460FXF	AL - aluminum	13.40	9-1/8"

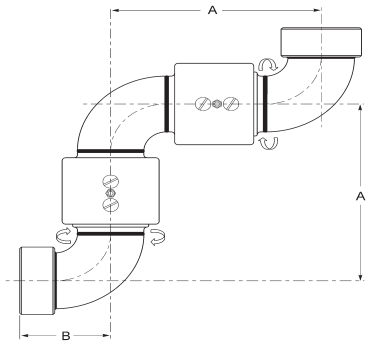
Double Plane O-Ring Style 60 - 150# ASA Flange x 150# ASA Flange





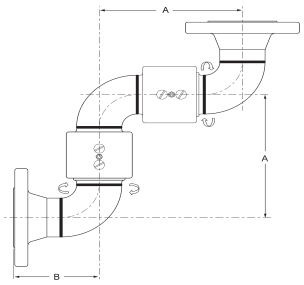
Size	Part #	Material	Weight (lbs)	Dimension A
1"	160FGXFG	OC - carbon steel	10.57	6-7/64"
		OS - stainless steel	10.57	6-39/64"
1-1/2"	15060FGXFG	OC - carbon steel	13.40	7-7/8"
		OS - stainless steel	13.40	
		AL - aluminum	5.54	7-1/32"
2"	260FGXFG	OC - carbon steel	24.90	8-1/32"
		OS - stainless steel	24.90	
		AL - aluminum	11.30	8-5/8"
3"	360FGXFG	OC - carbon steel	34.65	9-7/8"
		OS - stainless steel	34.65	
		AL - aluminum	1572.0	9-5/8"
4"	460FGXFG	AL - aluminum	23.29	11-31/32"

Double Plane O-Ring Style 70 - Female NPT x Female NPT



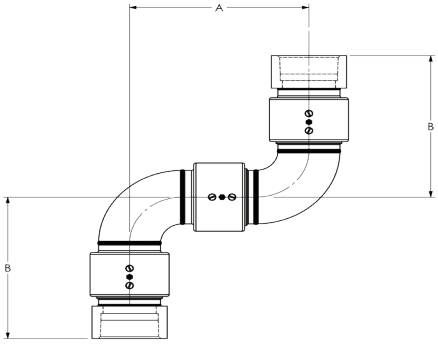
Size	Part #	Material	Weight (lbs)	Dimensions	
				A	B
1"	170FXF	OC - carbon steel	7.52	4-59/64"	2-3/16"
		OS - stainless steel	7.52	5-59/64"	2-11/16"
1-1/2"	15070FXF	OC - carbon steel	9.53	7-11/16"	3-15/32"
		OS - stainless steel	9.53		
		AL - aluminum	3.36	6-1/8"	3"
2"	270FXF	OC - carbon steel	14.99	7-17/32"	3-1/4"
		OS - stainless steel	14.99		
		AL - aluminum	8.13	6-11/16"	2-7/8"
		BR - brass	15.92		
		MI - malleable iron	14.08		
3"	370FXF	OC - carbon steel	24.73	10-1/8"	4-13/16"
		OS - stainless steel	24.73		
		AL - aluminum	10.10	8-1/4"	3-7/8"
4"	470FXF	AL - aluminum	16.70	10-5/8"	4-3/4"

Double Plane O-Ring Style 70 - 150# ASA Flange x 150# ASA Flange



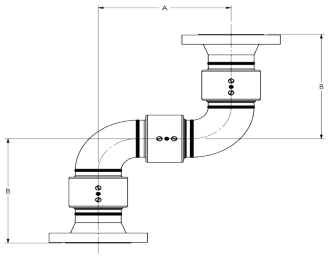
Size	Part #	Material	Weight (lbs)	Dimensions	
				A	B
1"	170FGXFG	OC - carbon steel	11.01	4-59/64"	3-3/16"
		OS - stainless steel	11.01	5-59/64"	
1-1/2"	15070FGXFG	OC - carbon steel	14.45	7-11/16"	4-11/16"
		OS - stainless steel	14.45		
		AL - aluminum	5.90	6-1/8"	5-11/32"
2"	270FGXFG	OC - carbon steel	23.31	7-17/32"	4-1/2"
		OS - stainless steel	23.31		
		AL - aluminum	11.95	6-11/16"	5-9/32"
3"	370FGXFG	OC - carbon steel	40.51	10-1/8"	5-3/4"
		OS - stainless steel	40.51		
		AL - aluminum	17.73	8-1/4"	6-15/32"
4"	470FGXFG	AL - aluminum	27.11	10-5/8"	7-19/32"

Triple Plane O-Ring Style 10 - Female NPT x Female NPT



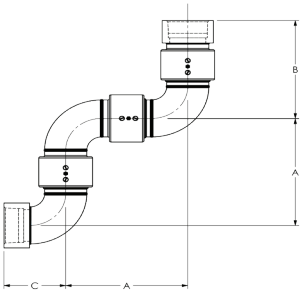
Size	Part #	Material	Weight (lbs)	Dimensions	
				A	B
1"	110FXF	OC - carbon steel	9.08	5"	5"
		OS - stainless steel	9.09		
1-1/2"	15010FXF	OC - carbon steel	13.08	6-1/5"	6-1/4"
		OS - stainless steel	13.09		
		AL - aluminum	5.35	6-4/5"	6-7/8"
2"	210FXF	OC - carbon steel	18.49	7-1/2"	7-2/9"
		OS - stainless steel	18.51		
		AL - aluminum	9.89	9-3/8"	9"
3"	310FXF	OC - carbon steel	32.64	10-1/8"	9-1/4"
		OS - stainless steel	32.67		
		AL - aluminum	17.66	11-2/3"	10-7/9"
4"	410FXF	OC - carbon steel	82.31	14"	12-3/8"
		OS - stainless steel	82.40		
		AL - aluminum	32.47	15-1/3"	13-2/3"

Triple Plane O-Ring Style 10 - 150# ASA Flange x 150# ASA Flange



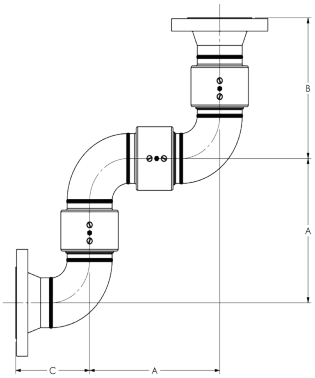
Size	Part #	Material	Weight (lbs)	Dimensions	
				A	B
1"	110FGXFG	OC - carbon steel	12.56	5"	6"
		OS - stainless steel	12.58		
1-1/2"	15010FGXFG	OC - carbon steel	18.00	6-1/5"	7-1/8"
		OS - stainless steel	18.02		
		AL - aluminum	6.76	6-4/5"	7-3/4"
2"	210FGXFG	OC - carbon steel	26.81	7-1/2"	8"
		OS - stainless steel	26.84		
		AL - aluminum	10.82	9-3/8"	9-7/8"
3"	310FGXFG	OC - carbon steel	48.41	10-1/8"	9-7/8"
		OS - stainless steel	48.46		
		AL - aluminum	17.36	11-2/3"	11-2/5"
4"	410FGXFG	OC - carbon steel	104.02	14"	13"
		OS - stainless steel	104.13		
		AL - aluminum	29.33	15-1/3"	14-1/3"

Triple Plane O-Ring Style 80 - Female NPT x Female NPT



Size	Part #	Material	Weight (lbs)	Dimensions		
				A	B	C
1"	180FXF	OC - carbon steel	9.29	4-73/81"	5-4/45	2-3/16
		OS - stainless steel	9.30			
1-1/2"	15080FXF	OC - carbon steel	13.60	6-2/11"	6-12/49"	3-1/16"
		OS - stainless steel	13.62			
		AL - aluminum	5.69	6-21/26"	6-67/77"	3-1/16"
2"	280FXF	OC - carbon steel	19.43	7/17/32"	7-7/32"	3-11/16"
		OS - stainless steel	19.45			
		AL - aluminum	9.94	9-3/8"	9-1/16"	3-11/16"
3"	380FXF	OC - carbon steel	35.56	10-1/8"	9-1/4"	5-1/8"
		OS - stainless steel	35.60			
		AL - aluminum	16.72	11-21/32"	10-25/32"	5-1/8"
4"	480FXF	OC - carbon steel	87.89	14"	12-23/63"	6-3/8"
		OS - stainless steel	87.98			
		AL - aluminum	29.80	15-5/16"	13-11/16"	6-3/8"

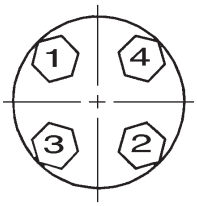
Triple Plane O-Ring Style 80 - 150# ASA Flange x 150# ASA Flange



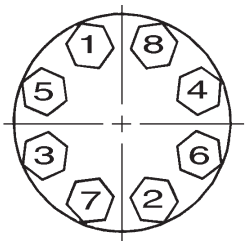
Size	Part #	Material	Weight (lbs)	Dimensions		
				A	B	C
1"	180FGXFG	OC - carbon steel	12.78	5"	6"	3-1/5"
		OS - stainless steel	12.79			
1-1/2"	15080FGXFG	OC - carbon steel	18.52	6-1/5"	7-1/8"	4"
		OS - stainless steel	18.54			
		AL - aluminum	7.37	6-4/5"	7-3/4"	4"
2"	280FGXFG	OC - carbon steel	27.76	7-1/2"	8"	4-1/2"
		OS - stainless steel	27.79			
		AL - aluminum	12.80	9-3/8"	9-7/8"	4-1/2"
3"	380FGXFG	OC - carbon steel	51.34	10-1/8"	9-7/8"	5-3/4"
		OS - stainless steel	51.39			
		AL - aluminum	22.14	11-2/3"	11-2/5"	5-3/4"
4"	480FGXFG	OC - carbon steel	109.60	14"	13"	7"
		OS - stainless steel	109.71			
		AL - aluminum	37.25	15-1/3"	14-1/3"	7"

Flange Bolt Tightening Sequence

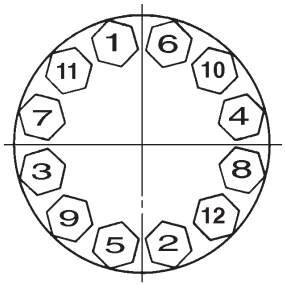
(Use appropriate gaskets and bolts)



4 Bolt



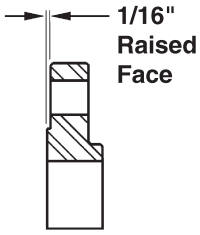
8 Bolt



12 Bolt

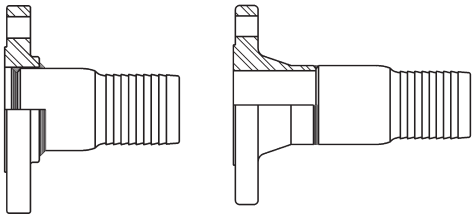
Flange Diagrams

Threaded Applications



Threaded flange with raised face

Welded Applications

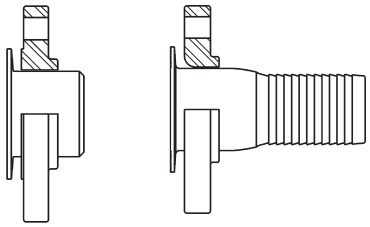


Slip-on flange with raised face

Weld neck flange with raised face

Floating Applications

(flange free to swivel)



Slip-on flange with raised face

Lap-joint flange

Dimensions of 150 LB. ASA Steel Flanges

Nominal Pipe Size	Flange O.D.	Thickness[1]	O.D. of Raised Face	Diameter of Bolt Circle	Number of Bolts	Diameter of Bolt Holes	Diameter of Bolts
1"	4-1/4"	9/16"	2"	3-1/8"	4	5/8"	1/2"
1-1/4"	4.62"	5/8"	2-1/2"	3-1/2"	4	5/8"	1/2"
1-1/2"	5"	11/16"	2-7/8"	3-7/8"	4	5/8"	1/2"
2"	6"	3/4"	3-5/8"	4-3/4"	4	3/4"	5/8"
2-1/2"	7"	7/8"	4-1/8"	5-1/2"	4	3/4"	5/8"
3"	7-1/2"	15/16"	5"	6"	4	3/4"	5/8"
4"	9"	15/16"	6-3/16"	7-1/2"	8	3/4"	5/8"
5"	10"	15/16"	7-5/16"	8-1/2"	8	7/8"	3/4"
6"	11"	1"	8-1/2"	9-1/2"	8	7/8"	3/4"
8"	13-1/2"	1-1/8"	10-5/8"	11-3/4"	8	7/8"	3/4"
10"	16"	1-3/16"	12-3/4"	14-1/4"	12	1"	7/8"
12"	19"	1 1/4"	15"	17"	12	1"	7/8"

[1] 1/16" raised face is included in the thickness

Dimensions of Tank Truck Flanges (TTMA Drilling)

Nominal Pipe Size	Flange O.D.	Thickness[1]	Diameter of Bolt Circle	Number of Bolts	Diameter of Bolt Holes	Diameter of Bolts
3"	5-5/8"	3/8"	4-7/8"	8	7/16"	3/8"
4"	6-5/8"	3/8"	5-7/8"	8	7/16"	3/8"
6"	8-7/8"	3/8"	8-1/8"	12	7/16"	3/8"

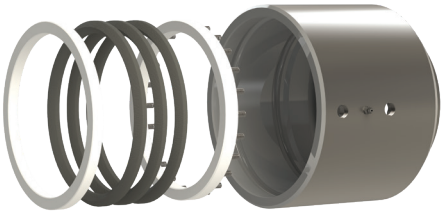
[1] Listed thickness is for aluminum flanges

V-Ring Swivel Seal Replacement Procedure

1 Remove the ball retainer screws. Add a sufficient amount of solvent into each raceway to flush out the lubricant. Rotate the sleeve, catching the balls as they fall out. When all the balls have been removed, the body and sleeve can be separated. Discard old seals. Thoroughly clean the body, sleeve retainer, spring retainer, and springs.

2 Lubricate the body unit with a moly lubricant or equivalent.

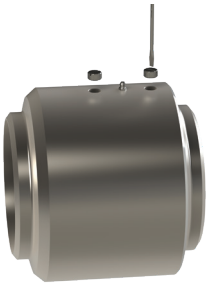
3 Place the assembled spring retainer unit (spring end first) into the body. Place the set of V-rings onto the spring retainer. Be sure V-rings are installed with the sealing lips facing toward the retainer. Lubricate the body and seals with a moly lubricant or equivalent.



4 Set the dust seal into O-ring groove on the sleeve. Place the seal retainer on the sleeve with the grooved end facing the V-rings. Lubricate the sleeve with grease.

5 Insert sleeve into body, compressing swivel joint together until ball races or body and sleeve are in alignment (do not rotate either unit while compressing). Care should be taken to avoid pinching or scoring of V-rings. Drop balls into raceway holes, rotating the sleeve slowly as you load. To make space for all the balls, insert a screw driver into the raceway while continuing to rotate the sleeve in one direction (be careful not to damage the threads). This will cause the balls to jam up, making room for the remaining balls. Now reverse the rotation of the sleeve and insert the remaining balls.

6 Reinstall ball retainer screws until tight. If this interferes with the smooth rotation of the ball bearings, then back off 1/8 - 1/4 turn. A thread locking sealant is recommended to prevent screws from backing off. After pressure testing, the unit is ready for installation.



* The last coil of the springs has been upset (O.D. slightly larger). When upset end is inserted into the holes provided in the spring retainer, the springs remain secure.

⚠ Body and sleeve are matched during manufacturing. Do not mix components with other units.

Optional Seals for V-Ring Swivels

V-Ring - Pressure Seals

- V-ring pressure seal material: FKM, PTFE (SS), PTFE (CS and AL) which includes changing to PTFE retainers, EPR and nitrile rubber, nitrile rubber is standard
- V-ring pressure seals available in 2", 3", 4", 6", and 8"

O-Ring - Dust Seals

- Dust seal material: FKM, EPR and nitrile rubber, nitrile rubber is standard
- O-ring dust seals are available in 2", 3", 4", 6", and 8"
- Carbon steel V-ring swivels come standard with aluminum retainers. These must be compatible with the material flowing through the swivel. PTFE retainers are available.

Rebuild Kits for V-Ring Swivels

V-ring swivel rebuild kit - each kit contains 3 V-rings in the material indicated, 1 nitrile rubber dust seal, 2 ball retainer screws, 1 grease plug and 10 ball bearings. The spring retainer and seal retainer are not included in the V-ring swivel rebuild kits.

Size	Nitrile rubber	FKM	PTFE	EPR
2"	2RKVBU	2RKVVI	2RKVTF	2RKVEP
3"	3RKVBU	3RKVVI	3RKVTF	3RKVEP
4"	4RKVBU	4RKVVI	4RKVTF	4RKVEP
6"	6RKVBU	6RKVVI	6RKVTF	6RKVEP
8"	8RKVBU	8RKVVI	8RKVTF	---
10"	10RKVBU	10RKVVI	10RKVTF	---
12"	12RKVBU	12RKVVI	12RKVTF	---

NOTE: All rebuild kits are per plane of rotation

Optional Ball Bearings for V-Ring Swivels

- Materials: 440 stainless steel or 316 stainless steel
- Ball bearings available in 2", 3", 4", 6", and 8"

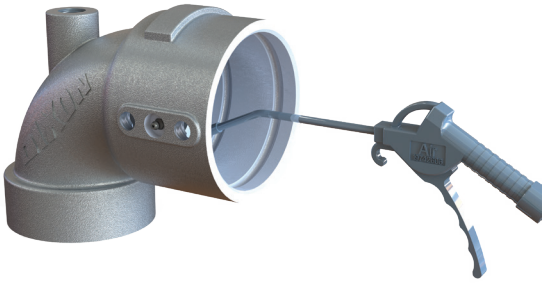
Replacement Ball Bearings for V-Ring Swivels

Size	Quantity Per Plane of Rotation	Carbon Steel (standard) Part #	440 Stainless Steel Part #	316 Stainless Steel Part #
2"	50	38CSBA	38SSBA	38SSBA-316
3"	62	38CSBA	38SSBA	38SSBA-316
4"	84	38CSBA	38SSBA	38SSBA-316
6"	96	12CSBA	12SSBA	12SSBA-316
8"	84	34CSBA	34SSBA	34SSBA-316
10"	74	1CSBA	1SSBA	1SSBA-316
12"	85	1CSBA	1SSBA	1SSBA-316

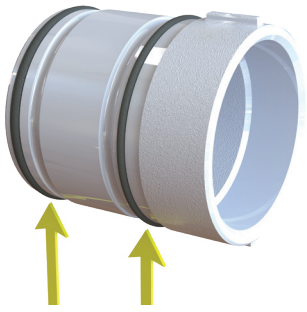
O-Ring Swivel Seal Replacement Procedure

NOTE: Instructions are not for assembly with spring-loaded PTFE pressure seal, consult Dixon®.

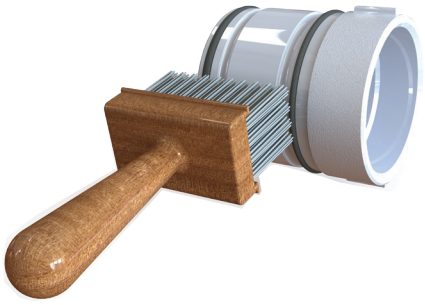
1 Remove the ball retainer screws. Add a sufficient amount of solvent into each raceway to flush out the lubricant. Rotate the sleeve, catching the balls as they fall out. When all the balls have been removed, the body and sleeve can be separated. Discard old seals. Thoroughly clean the body and sleeve.



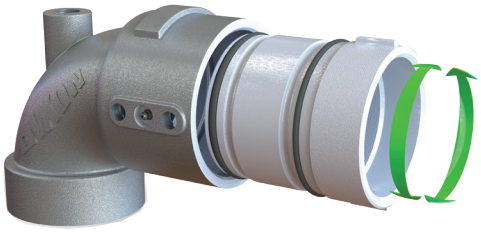
2 Install the new O-rings on the sleeve, dust seal to the rear, product (pressure) seal up front.



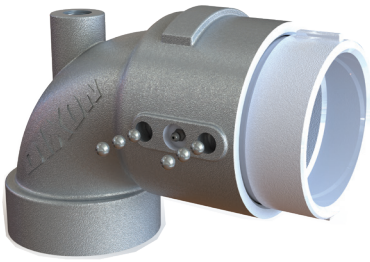
3 Lubricate the body and the sleeve with grease.



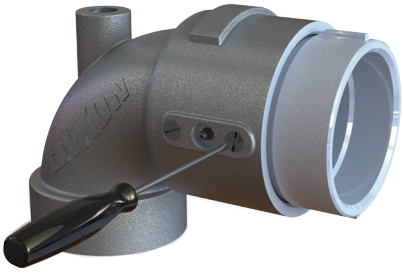
4 Insert the sleeve into the body, slowly rotate the sleeve while inserting into the body.



5 When the sleeve is fully inserted, feed the ball bearings into the raceways while rotating the sleeve. To make space for all the balls, insert a screw driver into the raceway, while continuing to rotate the sleeve in one direction (be careful not to damage the threads). This will cause the balls to jam up, making room for the remaining balls. Now reverse rotation of sleeve and insert the remaining balls.



6 Reinstall ball retainer screws until tight. If this interferes with the smooth rotation of the ball bearings, then back off 1/8 - 1/4 turn. A thread locking sealant is recommended to prevent screws from backing off. After pressure testing, the unit is ready for installation.



Body and sleeve are matched during manufacturing. Do not mix components with other units.

Optional Seals for O-Ring Swivels

O-Ring - Pressure Seals

- Materials: FKM, spring-loaded PTFE, EPR, food grade nitrile rubber and nitrile rubber, nitrile rubber is standard
- Available in 1", 1-1/4", 1-1/2", 2", 3", and 4"

O-Ring - Dust Seals

- Materials: FKM, EPR and nitrile rubber , nitrile rubber is standard
- Available in 1", 1-1/4 , 1-1/2", 2", 3", and 4"

NOTE: When a change of seals is ordered, only the pressure seal is changed unless specifically requested by the customer.

Rebuild Kits for O-Ring Swivels

Each kit contains:
- 1 O-ring (pressure seal) in the material indicated
- 1 nitrile rubber dust seal
- 2 ball retainer screws
- 1 grease plug
- 10 ball bearings

NOTE: All rebuild kits are per plane of rotation

Size	Nitrile rubber	FKM	PTFE	EPR
1"	1RKOBU	1RKOVI	1RKOTF	---
1-1/4 and 1-1/2"	150RKOBU	150RKOVI	150RKOTF	150RKOEP
2"	2RKOBU	2RKOVI	2RKOTF	2RKOEP
3"	3RKOBU	3RKOVI	3RKOTF	3RKOEP
4"	4RKOBU	4RKOVI	---	4RKOEP

Optional Ball Bearings for O-Ring Swivels

- Materials: 440 stainless steel or 316 stainless steel
- Available in 1", 1-1/4",1-1/2", 2", 3", and 4"

Replacement Ball Bearings for O-Ring Swivels

Size	Quantity Per Plane of Rotation	Carbon Steel (standard) Part #	440 Stainless Steel Part #	316 Stainless Steel Part #
1"	40	14CSBA	14SSBA	14SSBA-316
1-1/4" and 1-1/2"	56	14CSBA	14SSBA	14SSBA-316
2"	46	38CSBA	38SSBA	38SSBA-316
3"	60	38CSBA	38SSBA	38SSBA-316
4"	80	38CSBA	38SSBA	38SSBA-316

Swivels are shipped standard with the following components:
- Nitrile rubber for pressure seals and dust seals
- Carbon steel for ball bearings

Corrosion Resistance of Coupling Material

⚠WARNING

The data on the following pages has been compiled from generally available sources and should not be relied upon without consulting and following the specific recommendations of the manufacturer regarding particular coupling materials. This chart is also available under Interactive Tools at dixonvalve.com.

Ratings

Metal	Non-Metal	Gasket/Seal Material
1 = Excellent 2 = Good 3 = Fair X = Not Recommended - = Contact Dixon®	A = Acceptable X = Not Recommended - = Contact Dixon®	T = PTFE V = FKM E = EPDM, EPR N = Neoprene B = Nitrile Rubber

1. Ratings given are based at **70°F (21°C)**. Chemical compatibility varies greatly with temperature. For applications at temperatures other than **70°F (21°C)**, contact Dixon for recommendations at 800.355.1991.
2. Gasket / seal materials are not necessarily listed in order of preference.
3. Chemical resistance of a material does not necessarily indicate the suitability of a fitting in a given application due to variables such as improper clamp and coupling application, special hose construction, gasket material, etc.

Special caution should be taken when handling hazardous materials.

Material Selection

AGENT	Aluminum	Brass	Bronze	Hastelloy, C-276	Malleable Iron Carbon Steel	Monel	Stainless Steel, 304	Stainless Steel, 316	Nylon	Polypropylene	Seal Material
Acetate Solvents (Crude)	1	X	X	1	2	2	1	1	A	X	T
Acetate Solvents (Pure)	1	1	1	1	X	1	1	1	A	X	T
Acetic Acid (80%)	3	X	X	1	X	1	1	1	X	X	TEVNB
Acetic Acid (50%)	2	X	X	1	X	2	2	1	X	X	TEVNB
Acetic Acid (20%)	2	X	X	1	X	2	2	1	X	X	TEVNB
Acetic Acid (10%)	2	X	2	1	X	2	1	1	X	X	TEVNB
Acetic Anhydride	2	X	2	1	2	2	2	2	X	X	TNB
Acetone	1	2	2	1	2	1	1	1	A	X	TE
Acetylene	1	X	X	2	2	2	1	1	X	X	TEVNB
Alcohols											
Amyl Alcohol	2	2	2	2	2	1	2	2	A	A	TEVNB
Benzyl Alcohol	2	2	2	2	2	1	1	1	X	A	TVB
Butyl Alcohol	1	2	1	2	2	1	1	1	A	A	TEVN
Diacetone Alcohol	1	1	2	1	2	1	2	2	X	A	TE
Ethyl Alcohol	1	2	2	1	2	2	2	2	X	A	TEVNB
Hexyl Alcohol	-	-	-	1	-	-	-	-	A	-	-
Isobutyl Alcohol	-	-	-	-	-	-	-	-	A	-	-
Isopropyl Alcohol	2	2	2	2	2	2	2	2	A	A	TEVNB
Methyl Alcohol (Methanol)	2	2	2	1	2	2	2	2	A	A	TENB
Octyl Alcohol	-	-	-	-	-	-	-	-	A	-	-
Propyl Alcohol	2	2	2	1	2	2	1	1	X	A	TEVNB
Aluminum											
Aluminum Chloride (Aqu.)	X	X	X	1	X	X	X	X	A	A	TEVNB
Aluminum Fluoride (Sat.)	2	-	-	-	X	2	X	2	X	A	TEVNB
Aluminum Nitrate (Sat.)	3	X	-	-	X	-	2	2	A	A	TEVNB
Aluminum Potassium Sulfate (Alum)	2	2	2	2	X	2	X	2	X	A	TEVNB
Aluminum Sulfate (Sat.)	X	X	2	2	X	2	-	2	A	A	TEVNB
Ammonia											
Ammonia Anhydrous	1	X	X	2	1	1	2	1	A	X	TENB
Ammonia Gas	X	X	X	1	1	X	1	1	A	X	TENB
Ammonia Nitrate	-	-	-	-	-	-	-	-	X	-	-
Ammonium											
Ammonium Biflouride	-	X	-	2	X	2	-	-	X	A	TEVB
Ammonium Carbonate (Sat.)	2	X	X	2	2	2	2	2	A	A	TEVNB
Ammonium Casenate	-	-	-	-	-	-	-	-	A	-	-
Ammonium Chloride (Sat.)	X	X	2	2	X	2	X	X	A	A	TEVNB
Ammonium Hydroxide (Sat.)	2	X	X	2	1	X	2	2	A	A	TEVNB
Ammonium Nitrate	2	X	X	-	X	X	-	-	A	A	TENB
Ammonium Phosphate (10-40%)	X	X	X	-	X	2	1	2	A	A	TEVNB
Ammonium Sulfate (10-40%)	X	X	3	2	X	2	X	2	A	A	TEVNB
Aniline	-	X	2	2	X	2	1	1	X	X	TV
Arsenic Acid	X	X	2	2	X	X	2	2	X	A	TEVNB
Asphalt	-	-	-	-	2	-	-	2	X	X	TV
Barium											
Barium Carbonate (Sat.)	X	2	2	2	2	2	2	2	A	A	TEVNB
Barium Chloride (Sat.)	-	2	2	1	-	2	X	-	A	A	TEVNB
Barium Hydroxide (Sat.)	X	2	X	2	2	1	2	2	A	A	TEVNB
Barium Sulfate	2	2	2	-	X	2	2	2	A	A	TEVNB
Barium Sulfide	X	X	X	-	2	X	2	2	A	A	TEVNB
Beer	1	2	2	1	2	1	1	1	A	A	TEVNB
Benzaldehyde	2	2	2	2	X	2	2	2	X	X	TE
Benzene, Benzol	1	2	2	2	2	2	2	2	A	X	TV
Benzine	-	-	-	-	-	-	-	-	A	X	-
Benzoic Acid	2	2	2	-	X	2	2	2	X	X	TVN
Black Liquor	X	X	X	X	-	2	2	2	X	A	TEVNB
Bleach (12.5% Active Chlorine)	X	-	-	1	X	-	-	X	X	A	TEVN
Borax	X	2	2	1	2	1	1	1	X	A	TEVNB
Boric Acid	1	X	2	1	X	2	-	-	X	A	TEVNB
Brine Acid	-	2	2	1	-	-	-	-	X	A	TEVNB
Bromic acid	X	X	X	-	-	X	-	-	X	A	TEVN
Bromine Liquid	2	-	-	-	-	-	X	X	X	X	TV
Butadiene, Butylene	2	2	2	2	2	1	2	2	X	X	TVNB
Butane	2	2	2	2	1	1	2	2	X	X	TV
Butyl Acetate	1	2	2	2	2	2	2	2	A	X	T
Butyric Acid	2	2	X	1	X	2	2	2	A	A	TV

Ratings given are based at **70°F (21°C)**.

Material Selection

AGENT	Aluminum	Brass	Bronze	Hastelloy, C-276	Malleable Iron Carbon Steel	Monel	Stainless Steel, 304	Stainless Steel, 316	Nylon	Polypropylene	Seal Material
Calcium											
Calcium Bisulfate	X	-	X	-	X	X	X	2	X	A	T
Calcium Bisulfide	-	-	-	-	-	2	-	2	A	A	TVB
Calcium Bisulfite	X	X	2	2	X	X	-	2	X	A	TVNB
Calcium Bromide	X	2	2	-	X	2	1	X	X	X	T
Calcium Carbonate	X	2	2	2	2	2	1	2	A	A	TEVB
Calcium Chloride (Sat.)	-	2	-	1	2	2	-	-	A	A	TEVNB
Calcium Hydroxide (Sat.)	X	2	X	-	2	2	2	2	A	A	TEVNB
Calcium Hypochlorite (Sat.)	X	X	X	-	X	X	X	2	X	A	TEV
Carbon											
Carbon Bisulfide	1	X	2	2	2	X	2	2	A	X	TV
Carbon Dioxide (Dry)	1	1	2	1	2	1	2	2	A	A	TENB
Carbon Dioxide (Wet)	1	X	-	2	3	-	2	2	X	A	TENB
Carbon Disulfide	1	X	2	2	2	X	2	2	A	X	TV
Carbon Monoxide	1	1	1	1	2	1	1	1	A	A	TEVNB
Carbon Tetrachloride	X	-	1	1	2	1	1	-	A	X	TV
Carbonic Acid	1	2	2	1	2	3	2	2	X	A	TEVNB
Castor Oil	2	2	2	1	2	1	2	2	A	A	TEVNB
Caustic Potash	X	-	-	1	X	-	-	2	A	A	TEVNB
Caustic Soda (see Sodium Hydroxide)											
Cellosolves	2	2	2	2	2	2	2	2	X	A	TE
Chlorine (Liquid)	-	-	-	1	2	2	-	3	X	X	TV
Chloroform	-	-	-	2	X	1	-	-	X	X	TV
Chlorosulfonic Acid	-	X	X	1	2	2	X	X	X	X	T
Clorox (Bleach, 5.5% CL)	X	-	-	-	X	-	-	2	X	-	TEVB
Chromic Acid (50%)	2	X	X	2	X	X	3	-	X	X	TVNB
Citric Acid	3	X	X	1	X	2	-	-	X	A	TEVNB
Coke Oven Gas	2	3	3	-	2	2	2	2	X	X	TEVN
Copper											
Copper Chloride	X	X	X	2	X	X	X	X	A	A	TEVNB
Copper Cyanide	X	X	X	1	-	X	2	2	X	-	TEVNB
Copper Sulfate	X	X	X	1	X	X	-	2	A	A	TEVNB
Crysylic Acid (Conc.)	2	2	X	-	2	3	2	2	X	X	TEV
Cyclohexane	2	2	2	2	2	1	2	2	A	X	TVB
Detergents	2	2	2	1	2	-	1	2	A	A	TEVNB
Dextrose	2	-	-	2	-	2	-	-	A	A	TEVNB
Diesel Fuels	1	1	1	2	2	-	1	1	A	X	TVB
Diethylamine	2	-	X	-	X	1	2	2	X	A	TN
Disodium Phosphate	-	-	-	-	1	-	-	1	A	A	TEV
Ethers	2	2	2	2	2	2	1	1	A	X	TB
Ethyl											
Ethyl Acetate	-	-	2	2	2	2	2	2	A	X	T
Ethyl Chloride	-	-	2	2	2	2	-	1	A	X	TEVB
Ethylene											
Ethylene Chloride	-	-	-	-	2	2	-	-	A	X	TV
Ethylene Dichloride	-	2	X	2	2	1	2	2	A	X	TV
Ethylene Glycol	1	2	2	1	2	2	2	2	A	X	TEVNB
Ethylene Oxide	X	X	X	1	3	2	2	2	X	X	T
Fatty Acids	1	3	3	1	X	2	-	1	A	A	TVNB
Ferric											
Ferric Chloride	X	X	2	2	X	X	X	X	X	A	TEVNB
Ferric Hydroxide	-	-	-	1	-	2	1	1	A	-	TEVNB
Ferric Nitrate (10-50%)	X	X	X	-	X	X	2	2	X	A	TEVNB
Ferric Sulfate	X	X	X	-	X	2	-	-	X	A	TEVNB
Ferrous											
Ferrous Chloride (Sat.)	X	X	2	2	-	X	X	X	X	A	TEVNB
Ferrous Sulfate	2	2	2	2	X	2	2	-	X	A	TEVNB
Fluboric Acid	X	-	-	1	1	2	-	-	X	A	TEVNB
Formaldehyde (50%)	-	2	2	2	X	2	1	1	X	A	TEN
Formic Acid (Anhyd.)	1	X	2	1	X	2	-	-	X	A	TEVN
Freon											
Freon 11	2	2	2	-	X	1	2	2	X	X	TVNB
Freon 12	2	2	2	1	X	2	2	2	X	X	TVNB
Freon 22	2	2	2	2	X	2	2	2	X	X	TN
Fruit Juices	2	2	3	1	X	1	2	2	A	A	TVNB
Fuel Oil	2	2	2	2	2	2	2	2	A	X	TVNB
Furfural	2	2	2	2	2	2	2	2	A	X	TEN

Ratings given are based at **70°F (21°C)**.

Material Selection

AGENT	Aluminum	Brass	Bronze	Hastelloy, C-276	Malleable Iron Carbon Steel	Monel	Stainless Steel, 304	Stainless Steel, 316	Nylon	Polypropylene	Seal Material
Gasoline											
Refined Gasoline	2	2	2	2	2	2	2	2	A	X	TVNB
Sour Gasoline	X	2	2	2	2	X	2	2	A	X	TVNB
Gelatin	2	2	2	-	X	2	2	2	A	A	TEVNB
Glucose	2	2	2	-	2	2	2	2	A	A	TEVNB
Glue	2	2	2	1	2	2	-	2	-	A	TEVNB
Glycerine	1	1	2	1	2	1	1	1	A	A	TEVNB
Glycols	2	2	2	-	2	2	2	2	A	A	TEVNB
Green Liquor	-	-	-	-	2	-	-	-	-	A	TEVNB
Heptane	2	2	2	1	2	2	2	2	A	X	TVNB
Hexane	2	2	2	1	2	2	1	1	A	X	TVNB
Hydrobromic Acid (50%)	X	X	X	2	X	X	X	X	X	A	TEV
Hydrobromic Acid (20%)	X	X	X	1	X	X	X	X	X	A	TEV
Hydrochloric Acid (20%)	X	X	X	1	X	3	X	X	X	A	TEVNB
Hydrochloric Acid (38%)	X	X	X	1	X	X	X	X	X	A	TEVN
Hydrocyanic Acid	2	X	X	2	2	2	2	2	X	A	TEVN
Hydrofluosilicic Acid (10-50%)	X	2	X	2	X	2	X	2	X	-	TEVNB
Hydrogen											
Hydrogen Peroxide (50%)	-	X	X	2	X	2	-	-	X	A	TEV
Hydrogen Sulfide (Aqu.)	-	-	-	2	-	2	X	2	X	A	TE
Hydrogen Chloride (Dry Gas)	X	2	-	1	2	1	-	-	X	A	TEVN
Hydrogen Gas	1	1	1	1	-	1	1	1	X	A	TEVNB
Hypochlorous Acid	X	X	X	2	X	X	X	X	X	X	TEV
Iodine	1	X	X	-	X	1	X	X	X	A	TEV
Isopropyl Ether	-	2	2	-	-	2	1	2	A	X	T
Jet Fuel (JP4, JP5)	2	1	2	1	2	2	2	2	X	X	TV
Kerosene	2	2	2	2	2	2	2	2	X	X	TVNB
Ketones	2	2	2	1	2	2	2	2	A	X	T
Lactic Acid (25%)	3	2	2	1	X	X	-	-	A	A	TEVN
Lactic Acid (80%)	2	2	X	2	X	-	-	-	A	A	TEVN
Lard Oil	2	-	2	1	3	2	2	2	A	A	TVB
Lead											
Lead Acetate	X	X	X	2	X	2	2	2	X	A	TENB
Lead Chloride	X	-	-	2	-	-	2	2	X	-	TVNB
Lead Sulfate	X	-	-	2	X	2	2	2	X	-	TEVNB
Lime Sulphur	X	X	X	-	X	2	2	2	X	A	TEVN
Linoleic Acid	2	X	3	2	X	2	2	2	X	A	TVB
Linseed Oil	2	2	2	2	2	2	2	2	A	A	TVNB
Lubricants (Oil)	2	1	-	-	2	2	2	2	A	X	TVNB
Magnesium											
Magnesium Carbonate	2	-	-	-	-	2	2	2	X	A	TEVNB
Magnesium Chloride	X	X	2	1	-	-	-	-	X	A	TEVNB
Magnesium Hydroxide	2	2	2	1	2	2	1	1	X	A	TEVNB
Magnesium Nitrate	2	2	2	1	2	2	2	2	X	A	TEVNB
Magnesium Oxide	-	-	-	-	-	-	-	-	X	-	-
Magnesium Sulfate	2	-	2	-	-	1	2	2	X	A	TEVNB
Maleic Acid	-	2	3	2	X	-	-	2	X	A	TEV
Mercuric											
Mercuric Chloride	X	X	X	-	X	X	X	-	X	A	TEVB
Mercuric Cyanide	X	X	X	2	X	2	2	2	X	A	TEVB
Mercury	X	X	X	1	2	-	1	1	A	A	TEVNB
Methane	1	1	2	1	2	1	1	1	A	X	TEVNB
Methanol	2	2	2	1	2	2	2	2	A	A	TENB
Methyl											
Methyl Bromide	X	-	-	-	2	-	2	2	X	X	TV
Methyl Ethyl Ketone	2	2	2	2	2	2	2	2	A	X	TE
Methyl Isobutyl Ketone	2	2	2	2	2	2	2	2	A	X	T
Methyl Methacrylate	2	-	-	-	X	-	2	2	X	A	T
Methylene Chloride	-	2	2	X	2	-	-	-	A	X	T
Milk	1	X	X	1	2	X	1	1	A	A	TEVNB
Mineral Oil	2	1	-	-	2	1	1	2	A	A	TVNB
Muriatic Acid	X	-	-	1	-	X	X	X	X	A	TV
Napthalene	2	2	2	2	2	2	1	1	A	A	TV
Naptha	2	2	2	2	2	2	2	2	A	X	TVB

Ratings given are based at **70°F (21°C)**.

Material Selection

AGENT	Aluminum	Brass	Bronze	Hastelloy, C-276	Malleable Iron Carbon Steel	Monel	Stainless Steel, 304	Stainless Steel, 316	Nylon	Polypropylene	Seal Material
Nickel											
Nickel Chloride	X	X	X	-	X	2	-	-	X	A	TEVNB
Nickel Sulfate	X	X	-	2	-	-	2	2	X	A	TEVNB
Nitric											
Nitric Acid (100%)	1	X	X	2	X	X	2	-	X	X	TV
Nitric Acid (50%)	X	X	X	1	X	X	2	-	X	X	TV
Nitric Acid (30%)	X	X	X	1	X	X	1	-	X	X	TV
Nitrobenzene	1	2	2	-	2	2	2	2	A	A	T
Oils											
Castor Oil	2	2	2	1	2	1	2	2	A	A	TEVNB
Coconut Oil	2	-	2	-	3	2	2	2	A	A	TVB
Corn Oil	2	2	2	-	2	2	-	2	A	A	TVNB
Cotton Seed Oil	2	2	2	-	2	1	2	2	A	A	TVNB
Fuel Oil	2	2	2	2	2	2	2	2	A	X	TVNB
Linseed Oil	2	2	2	2	2	2	2	2	A	A	TVNB
Mineral Oil	2	1	-	-	2	1	1	2	A	A	TVNB
Silicon Oil	2	1	2	-	2	-	2	2	A	A	TEVB
Vegetable Oil	2	2	2	1	2	1	1	1	A	X	TVNB
Oleic Acid	2	3	2	2	2	1	-	1	A	X	TB
Oleum	2	X	X	-	2	X	2	2	X	X	TV
Oxalic Acid (Sat.)	2	-	2	2	X	2	X	X	X	A	TEV
Oxygen	2	2	2	-	2	2	2	2	X	X	TEVNB
Palmitic Acid (Sat.)	2	3	2	-	3	2	2	2	X	A	TVB
Paraffin	2	2	2	2	2	2	2	2	A	A	TVNB
Perchloroethylene	2	2	2	2	2	1	-	-	X	X	TV
Petrolatum	2	-	2	-	3	2	2	2	A	-	TVNB
Phenol (Carbolic Acid)	1	1	X	1	2	1	-	1	X	X	TV
Phosphoric Acid											
Phosphoric Acid (25-50%)	X	X	2	1	X	X	-	-	X	A	TEVN
Phosphoric Acid (50-85%)	X	X	X	1	X	3	-	-	X	A	TEV
Photographic Solutions	-	-	-	-	X	1	1	1	X	X	TVNB
Phthalic Anhydride	-	2	2	1	2	1	1	1	X	X	TEV
Picric Acid	1	X	X	2	X	X	2	2	X	-	TEVNB
Plating Solutions											
Brass Plating Solution	-	-	-	1	-	-	-	2	X	A	TEVNB
Cadmium Plating Solution	-	-	-	1	-	-	-	2	X	A	TEVNB
Chrome 40% Plating Solution	X	2	2	1	X	X	2	2	X	A	TEVN
Copper (Cyanide) Plating Solution	-	-	-	1	-	-	-	-	X	A	TEVNB
Gold Plating Solution	-	-	-	1	-	-	-	1	X	A	TEVNB
Iron Plating Solution	-	-	-	-	-	-	-	-	X	A	TEVB
Lead Plating Solution	-	-	-	-	-	-	1	1	X	A	TEVNB
Nickel Plating Solution	-	-	-	1	-	-	1	1	X	A	TEVNB
Silver Plating Solution	-	-	-	1	-	-	1	1	X	A	TEVNB
Tin Plating Solution	-	-	-	1	-	-	-	3	X	A	TEVNB
Zinc Plating Solution	-	-	-	1	-	-	-	-	X	A	TEVNB
Potassium											
Potassium Acetate	X	X	X	-	2	-	-	-	A	A	TEVB
Potassium Bicarbonate (30%)	X	2	-	2	2	2	1	1	A	A	TEVNB
Potassium Carbonate (50%)	X	2	X	2	2	2	1	1	A	A	TEVNB
Potassium Chlorate (30%)	2	X	X	-	2	2	2	1	X	A	TEVNB
Potassium Chloride (30%)	X	X	2	-	2	1	-	-	A	A	TEVNB
Potassium Chromate (30%)	2	2	2	2	-	2	2	2	X	A	TEVB
Potassium Cyanide Solution (30%)	X	X	X	2	2	2	2	2	X	A	TEVNB
Potassium Dichromate (30%)	1	2	2	2	2	2	1	1	X	A	TEVB
Potassium Hydroxide (90%)	X	X	X	2	-	2	X	-	X	A	TENB
Potassium Nitrate (80%)	1	2	2	2	2	2	2	2	X	A	TEVNB
Potassium Permanganate (20%)	2	2	2	1	2	2	2	2	X	A	TEVN
Potassium Sulfate (10%)	1	2	2	1	2	1	1	1	A	A	TEVNB
Propane	1	1	1	2	2	1	2	2	X	X	TVB
Propylene Gylcol	2	2	2	2	2	2	2	2	A	A	TVNB
Propylene Oxide (90%)	-	-	-	-	-	-	1	1	X	X	TE
Pyridine	2	2	2	-	2	2	2	2	A	X	T
Pyrogallic Acid	2	2	2	2	2	2	2	2	X	X	TVNB
Silver Nitrate	X	X	X	-	X	X	2	1	X	A	TEVNB
Soap Solutions	2	2	2	1	2	2	2	2	A	A	TEVNB

Ratings given are based at **70°F (21°C)**.

Material Selection

AGENT	Aluminum	Brass	Bronze	Hastelloy, C-276	Malleable Iron Carbon Steel	Monel	Stainless Steel, 304	Stainless Steel, 316	Nylon	Polypropylene	Seal Material
Sodium											
Sodium Acetate	1	2	2	-	X	2	2	2	A	A	TEN
Sodium Bicarbonate (20%)	2	2	2	1	3	1	1	1	A	A	TEVNB
Sodium Bisulfate	X	-	2	2	2	-	-	-	A	A	TEVNB
Sodium Bisulfite	X	2	X	2	X	-	-	-	A	A	TEVNB
Sodium Borate	2	2	2	2	3	2	2	2	A	A	TEVNB
Sodium Perborate (10%)	2	X	2	2	2	2	2	2	X	A	TEVNB
Sodium Carbonate	X	2	-	2	2	1	-	2	A	A	TEVNB
Sodium Chlorate (50%)	2	2	2	1	X	1	2	2	X	A	TEVNB
Sodium Cyanide	X	X	X	2	2	X	-	-	A	A	TEVNB
Sodium Dichromate	2	X	X	1	2	-	2	2	X	A	TE
Sodium Hydroxide (70%)	X	X	X	1	3	1	2	2	X	A	TENB
Sodium Hydroxide (50%)	X	X	3	1	3	1	1	-	X	A	TENB
Sodium Hydroxide (30%)	X	2	3	2	2	1	1	1	X	A	TENB
Sodium Chloride (30%)	X	2	2	2	2	1	-	-	X	A	TEVNB
Sodium Hypochlorite	X	X	X	-	X	X	-	-	X	A	TEV
Sodium Metaphosphate	X	X	2	-	X	2	2	2	X	X	TEVNB
Sodium Nitrate (40%)	1	2	-	-	2	2	1	1	A	A	TENB
Sodium Perborate (10%)	2	X	2	2	2	2	2	2	X	A	TEVNB
Sodium Peroxide (10%)	2	X	X	2	2	2	2	2	X	A	TEVNB
Sodium Silicate	1	2	2	2	2	2	2	2	A	A	TEVNB
Sodium Sulfate	-	2	2	2	2	-	-	1	A	A	TEVNB
Sodium Sulfide (50%)	X	X	X	2	2	2	-	2	X	A	TEVNB
Sodium Thiosulphate	2	X	X	2	X	2	2	2	A	A	TEVNB
Stannic Chloride	X	X	X	-	X	X	X	X	X	A	TEVNB
Stannous Chloride	X	X	X	2	X	-	X	-	X	X	TEVNB
Steam	-	-	-	-	-	-	-	-	X	-	-
Stearic Acid	2	3	2	1	3	3	2	1	A	A	TVNB
Stoddard's Solvent	2	2	2	1	2	2	2	2	X	A	TVB
Sugar Liquors (Cane)	1	2	1	-	2	2	2	2	A	A	TEVNB
Sugar Liquors (Beet)	1	2	1	-	2	1	1	1	A	A	TEVNB
Sulfate Liquors	2	X	X	2	3	2	-	2	X	A	TVNB
Sulfite Liquors	X	X	-	1	X	X	2	2	X	X	TVNB
Sulfur Chloride	X	-	X	2	X	X	-	-	X	X	TV
Sulfur Dioxide (Dry)	2	2	2	2	1	2	-	2	X	A	TE
Sulfur Trioxide	2	2	X	2	2	2	-	2	X	X	TEV
Sulfuric Acid (TO 10%)	X	2	X	1	X	X	X	X	X	A	TEVNB
Sulfuric Acid (100%)	X	X	X	1	2	X	-	-	X	X	TV
Sulfurous Acid	2	2	X	-	X	X	X	-	X	A	TV
Tannic Acid	X	-	X	-	X	2	2	2	X	A	TEVNB
Tanning Liquors	1	-	2	1	-	-	1	1	X	A	TVNB
Tartaric Acid	-	-	2	2	-	-	1	1	A	A	TVNB
Titanium Tetrachloride	X	X	X	2	2	2	-	2	X	X	TV
Toluene	1	1	1	1	1	1	1	1	A	X	TVB
Tetrahydrofuran	X	-	2	1	1	-	1	2	A	X	T
Tomato Juice	2	-	3	2	3	2	2	2	X	A	TEVNB
Trichloroethylene	1	-	2	1	2	-	-	-	A	X	TV
Triethanolamine	2	X	2	2	2	2	2	2	A	X	TEVN
Triethylamine	-	-	-	-	-	2	2	2	A	X	TVB
Trisodium Phosphate (10%)	X	2	-	1	2	2	1	1	A	A	TVNB
Turpentine	2	X	2	2	2	1	1	1	X	X	TVB
Urea (50%)	2	-	2	-	2	2	2	2	A	A	TEVNB
Urine	-	-	-	-	2	-	1	1	X	A	TEVNB
Vinegar	X	X	2	2	2	2	2	2	X	A	TEVN
Water Acid (Mine)	X	X	X	1	X	-	-	-	X	A	TEVNB
Water (Distilled)	X	2	2	1	X	X	2	2	A	A	TEVNB
Water (Sea)	2	2	2	1	X	2	2	2	A	A	TEVNB
Whiskey	X	2	2	1	2	2	1	1	X	A	TEVNB
White Liquor (Pulp)	2	-	X	2	X	X	2	2	X	A	TEVNB
Wine	X	2	2	1	X	2	1	1	X	A	TEVNB
Xylene	2	2	2	1	2	2	2	2	A	X	TV
Zinc											
Zinc Chloride	X	X	X	2	X	-	X	2	A	A	TEVNB
Zinc Nitrate	-	-	-	-	-	-	2	2	X	A	TEVNB
Zinc Sulfate (50%)	X	2	2	2	X	2	1	1	X	A	TEVNB

Ratings given are based at **70°F (21°C)**.

Notes

Limited Warranty

DIXON VALVE AND COUPLING COMPANY, LLC (herein called "Dixon") warrants the products described herein and manufactured by Dixon to be free from defects in material and workmanship for a period of one (1) year from date of shipment by Dixon under normal use and service. Its sole obligation under this warranty being limited to repairing or replacing, as hereinafter provided, at its option any product found to Dixon's satisfaction to be defective upon examination by it, provided that such product shall be returned for inspection to Dixon's factory within three (3) months after discovery of the defect. The repair or replacement of defective products will be made without charge for parts or labor. This warranty shall not apply to: (a) parts or products not manufactured by Dixon, the warranty of such items being limited to the actual warranty extended to Dixon by its supplier; (b) any product that has been subject to abuse, negligence, accident, or misapplication; (c) any product altered or repaired by others than Dixon; and (d) to normal maintenance services and the replacement of service items (such as washers, gaskets, and lubricants) made in connection with such services. To the extent permitted by law, this limited warranty shall extend only to the buyer and any other person reasonably expected to use or consume the goods who is injured in person by any breach of the warranty. No action may be brought against Dixon for an alleged breach of warranty unless such action is instituted within one (1) year from the date the cause of action accrues. This limited warranty shall be construed and enforced to the fullest extent allowable by applicable law.

Other than the obligation of Dixon set forth herein, Dixon disclaims all warranties, express or implied, including but not limited to any implied warranties of merchantability or fitness for a particular purpose, and any other obligation or liability. The foregoing constitutes Dixon's sole obligation with respect to damages, whether direct, incidental, or consequential, resulting from the use or performance of the product.

Some products and sizes may be discontinued when stock is depleted or may require a minimum quantity for ordering.

About This Brochure and Our Products

This brochure is intended as a product offering. It is not a user or technical manual. Information in this brochure is subject to change without notice. We may modify product design and specification without notice and without any obligation to modify or substitute products previously purchased. All users and distributors of products sold through this brochure are strongly encouraged to contact Dixon with questions on use, compatibilities, coupling procedures, and life of product. Our full-time engineering and test staff are always available to recommend uses and to assist distributors and users with questions.

Safety

Safety logos, which appear throughout our brochure, are used as a reminder that the user should carefully review for the appropriateness of the product for the media, application, and environment in which it will be used.

NOTE: Because of the health hazards associated with contamination and lead content in drinking water systems, Dixon couplings, unless otherwise specifically approved, are not recommended for potable water service and should not be used in applications where drinking water will contact the wetted surfaces of the coupling.

All Dixon products are shipped in cartons with the following warning:
"**WARNING:** This product contains lead, a chemical known to the State of California to cause cancer and birth defects or other reproductive harm."

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The Right Connection®

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