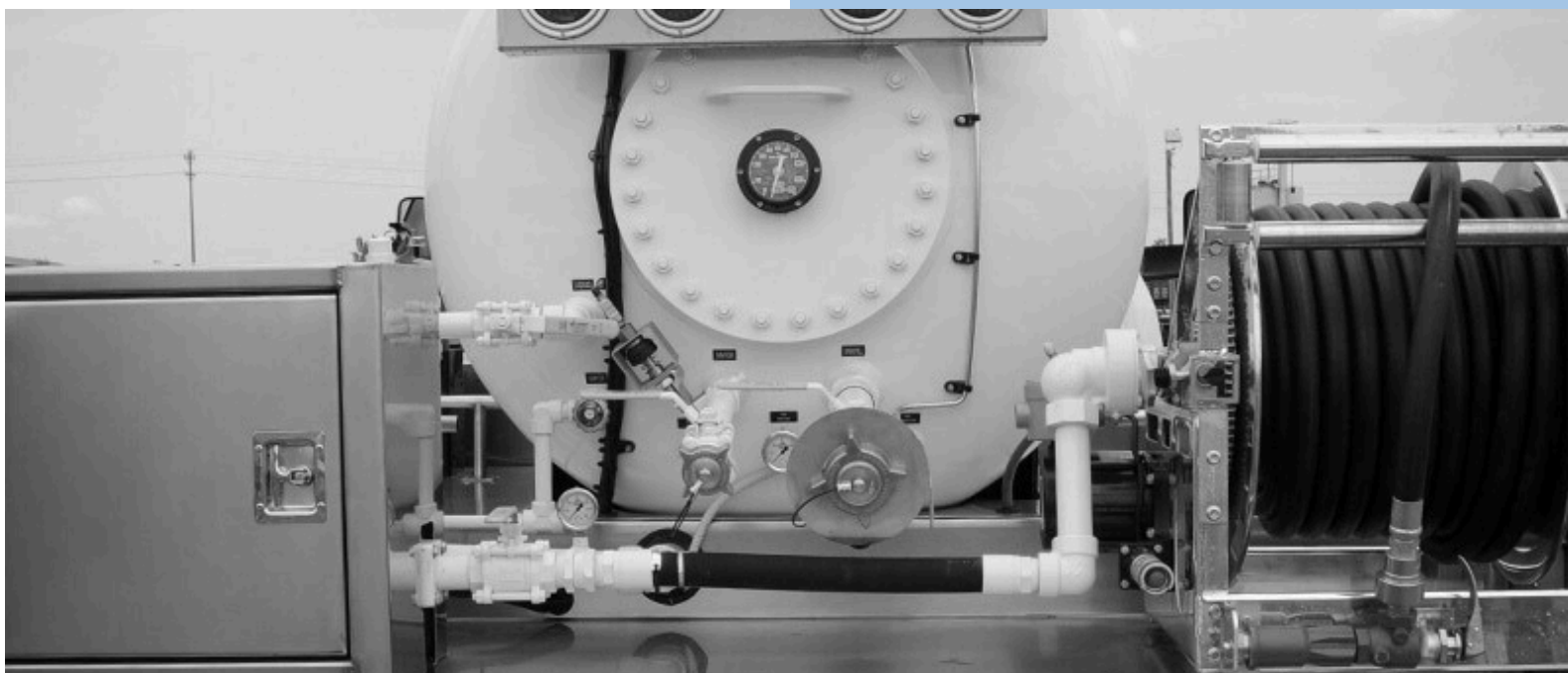




**The Leading Manufacturer  
of Swivels for Liquefied  
Gas Transfer**



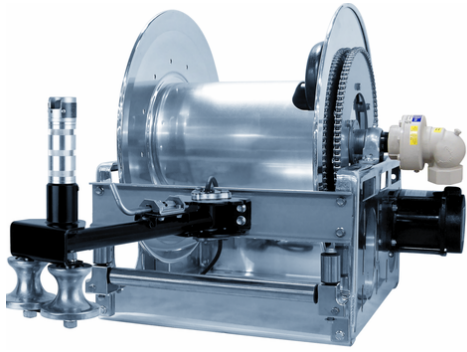
## **Swivel Connectors**

for thin to viscous liquids  
and liquefied gases



Fullcircleswivels.com  
1299 Lawrence Drive  
Newbury Park, CA 91320 USA  
Telephone: 805/498-2589  
Fax: 805/499-2867

# APPLICATIONS



HOSE REELS



FILLER VALVES



RAILROAD LOADING ARMS  
AND BULKHEADS

## LIQUID SERVICES

- LP-gas
- Anhydrous Ammonia (NH<sub>3</sub>)
- Natural Gas
- Refined Fuels
- Diesel Exhaust Fluid
- Other hydrocarbons/liquefied gases

Temperature Range: -40 °F to +250 °F (-40 °C to 120°C)  
Hydrostatic Test Pressure: 2000 psi (138 bar)  
Maximum Allowable Working Pressure: 400 psi (28 bar)

*General specifications listed above. Please contact our engineering department for your specific application*

## APPROVALS



Full-Circle's Quality Management System is registered to meet the requirements of ISO 9001:2015 Certified by NQA. In addition, our LP-gas, natural gas, anhydrous ammonia, and refined fuel products comply with the applicable UL and EU/UK approvals as follows:

- UL 567
- ATEX/UKEX Directives
- Pressure Equipment Directive/Pressure Equipment Safety Regulations (PE(S)R)
- Machinery Directive/Machinery (Safety) Regulations

## PASSING THE TEST

Our main housing casings used for swivel joints are pressure tested before being used in the assembly process. Once a swivel is fully assembled, every swivel is pressure tested using sensitive manometers. The typical swivel is tested at low, medium, and high pressure. It is rotated during the test. Then, pressure is relieved slowly, and the swivel is monitored as the pressure relaxes the seal package. This ensures the product to maintain high quality while meeting all necessary safety standards.



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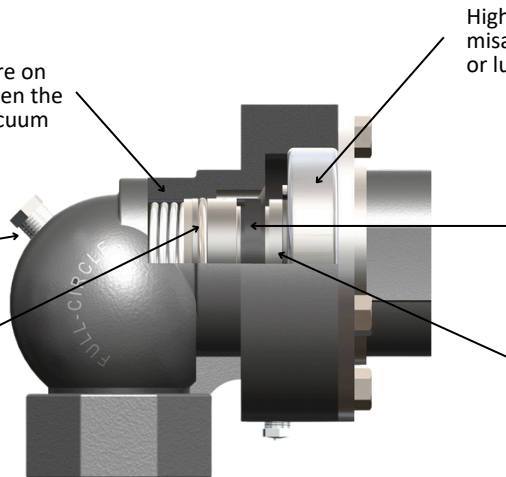


# DESIGN FEATURES

The spring maintains a constant pressure on the seal package to prevent leakage when the swivel is exposed to low pressure or vacuum environment.

Predrilled and plugged for safety relief valve.

Static o-ring; no u-cups, rubbing discs, or rubber lip seals to wear-out due to swivel rotation.



High load-rated ball bearing minimizes misalignment problems. No external greasing or lubrication is ever required.

Seal ring moves in three directions and rotates at one-half the swivel speed, continually compensating for wear.

Tri-directional movement of the seal package continually compensates for eccentric loading to minimize misalignment problems.

**SMAC- 112LN; 1-1/2 inch FNPT 90-degree swivel**

**FULL-CIRCLE** offers a complete line of swivel connectors designed for use with thin to viscous liquids and liquefied gases.

Straight-through hose end swivels allow the filler valve to rotate 360-degrees. This enables the driver to make tank connections without fighting the hose. It also prevents hose twisting upon reel-up.

For bulk-head use, the 90-degree swivel allows for the use of a shorter transfer hose and enables the operator to safely sweep the hose to one side for proper, out of the way for stowage.

The design is ideally suited for hose reel use as the sealed high load ball bearing can tolerate misalignment problems that could cause product leakage in other swivel types. The tri-directional movement of the three-piece seal package continually compensates for eccentric movement.

The ZERO maintenance design is of critical importance, especially for loading/unloading arms that must be constructed high in the air for railroad tankcar transfer operations.

## **SAFETY FIRST**

All swivels produced by FULL-CIRCLE for LP-GAS, Ammonia, and Flammable liquids are Listed by the Underwriters Laboratories and are designed and tested in accordance with the U.L.-567 Standard, your assurance that the product has been tested to a Standard of Safety.

## **NO MAINTENANCE DESIGN**

All FULL-CIRCLE swivels utilize a sealed high load ball bearing. No greasing or lubrication is ever required.

## **NO ROTATING RUBBER SEALS**

FULL-CIRCLE swivels incorporate the SUPERSEAL™ mechanical seal. This PATENTED design allows the seal ring to "float" between two metallic seals. While in operation, the seal ring rotates at one-half the swivel rotational speed. The tri-directional movement of the seal components allows for continuous adjustment due to vibration, misalignment, and temperature extremes. Upon depressurization, the seal spring maintains a constant force on the seal package, preventing product leakage in ZERO to low pressure environments.

## **MISALIGNMENT MINIMIZED**

All FULL-CIRCLE swivels utilize a radial contact ball bearing with extremely high load ratings. The bearing is sealed for life and requires NO periodic lubrication. The ball bearing completely supports the rotating portion of the swivel to ensure smooth and easy movement.

## **FIELD REPLACEABLE COMPONENTS**

All FULL-CIRCLE swivels are designed so that replacement parts can be installed simply and easily in the field with no special tools required.

## **EXPERIENCE**

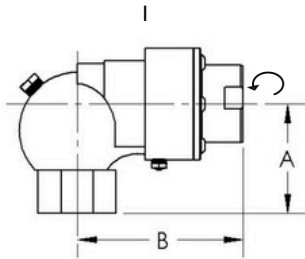
FULL-CIRCLE's depth of product engineering is the result of over 85 years of design and manufacturing expertise in the high pressure, rotating equipment field, for thin liquids and liquefied gases.

*Full Circle has worldwide distribution partners. To order, contact us for your nearest distributor.*

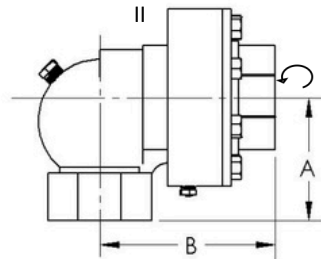


# HOSE REEL, BULKHEAD, LOADING ARM

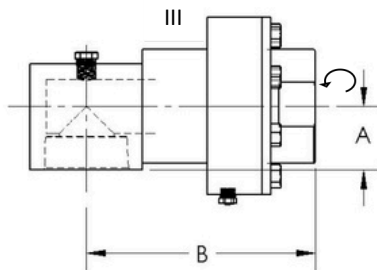
## 90-Degree Type Swivels



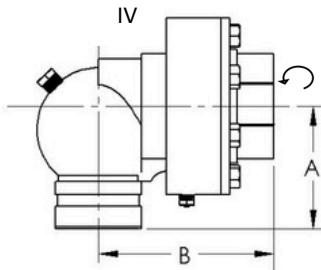
$\frac{3}{4}$ ", 1", & 1- $\frac{1}{4}$ " Type



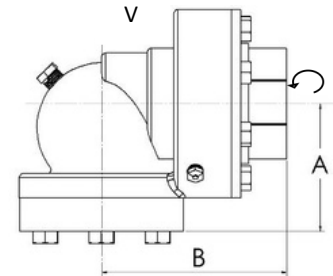
1- $\frac{1}{2}$ " & 2" Standard Type



1- $\frac{1}{2}$ " & 2" Stainless Steel Type



1- $\frac{1}{2}$ " & 2" Victaulic Type



1- $\frac{1}{2}$ " & 2" Flanged Type

All dimensions in inches  
All weights in pounds All  
threads FNPT

MODEL	Illustration	SIZE (FNPT)	A	B	WEIGHT
SMAC-3490LN	I	$\frac{3}{4}$ X $\frac{3}{4}$	3	4- $\frac{5}{8}$	6- $\frac{3}{4}$
SMAC-190LN	I	1 X 1	3	4- $\frac{5}{8}$	6- $\frac{3}{4}$
SMAC-114LN	I	1- $\frac{1}{4}$ X 1- $\frac{1}{4}$	3	4- $\frac{5}{8}$	6- $\frac{3}{4}$
SMAC-112LN	II	1- $\frac{1}{2}$ X 1- $\frac{1}{2}$	3- $\frac{1}{4}$	4- $\frac{1}{4}$	13-1/8
SMAC-112FLN*	V	1- $\frac{1}{2}$ or 2 X 1- $\frac{1}{2}$	3- $\frac{1}{4}$	4- $\frac{1}{4}$	13-1/8 (less flange)
SMAC-200LN	II	2 X 2	3- $\frac{1}{4}$	4- $\frac{1}{4}$	13-1/8
SMAC-200FLN*	V	1- $\frac{1}{2}$ or 2 X 2	3- $\frac{1}{4}$	4- $\frac{1}{4}$	13-1/8 (less flange)
SMAC-112SS	III	1- $\frac{1}{2}$ X 1- $\frac{1}{2}$	1- $\frac{1}{4}$	6- $\frac{9}{32}$	15- $\frac{1}{2}$
SMAC-200SS	III	2 X 2	1- $\frac{1}{4}$	6- $\frac{9}{32}$	15- $\frac{1}{2}$
SMAC-34190LN	I	$\frac{3}{4}$ X 1	3	4- $\frac{5}{8}$	6- $\frac{3}{4}$
SMAC-190340LN	I	1 X $\frac{3}{4}$	3	4- $\frac{5}{8}$	6- $\frac{3}{4}$
SMAC-34114LN	I	$\frac{3}{4}$ X 1- $\frac{1}{4}$	3	4- $\frac{5}{8}$	6- $\frac{3}{4}$
SMAC-114340LN	I	1- $\frac{1}{4}$ X $\frac{3}{4}$	3	4- $\frac{5}{8}$	6- $\frac{3}{4}$
SMAC-190114LN	I	1 X 1- $\frac{1}{4}$	3	4- $\frac{5}{8}$	6- $\frac{3}{4}$
SMAC-114190LN	I	1- $\frac{1}{4}$ X 1	3	4- $\frac{5}{8}$	6- $\frac{3}{4}$
SMAC-112200LN	II	1- $\frac{1}{2}$ X 2	3- $\frac{1}{4}$	4- $\frac{1}{4}$	12- $\frac{3}{4}$
SMAC-200112LN	II	2 X 1- $\frac{1}{2}$	3- $\frac{1}{4}$	4- $\frac{1}{4}$	12- $\frac{3}{4}$
SMAC-112200SS	III	1- $\frac{1}{2}$ X 2	1- $\frac{1}{4}$	6- $\frac{9}{32}$	15- $\frac{1}{4}$
SMAC-200112SS	III	2 X 1- $\frac{1}{2}$	1- $\frac{1}{4}$	6- $\frac{9}{32}$	15- $\frac{1}{4}$
SMAC-2V112FC**	IV	2 X 1- $\frac{1}{2}$	3- $\frac{1}{4}$	4- $\frac{1}{4}$	12- $\frac{1}{2}$
SMAC-2V200FC**	IV	2 X 2	3- $\frac{1}{4}$	4- $\frac{1}{4}$	12- $\frac{1}{2}$

For Combination threads, (Inlet X Outlet), Rotating End is Outlet

 Designates Rotating End

\*Flanged swivels available in threaded, socket-weld, or butt-weld versions. Flanged end is located on non-rotating end of swivel \*\*Victaulic swivels are intended for gasoline, kerosene, fuel oils, and diesel fuels not exceeding 50 psi. Victaulic connections are located on non-rotating end of swivel.

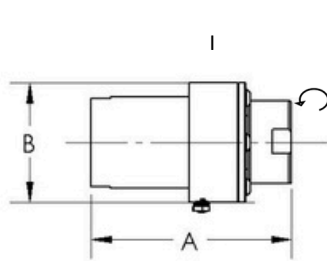
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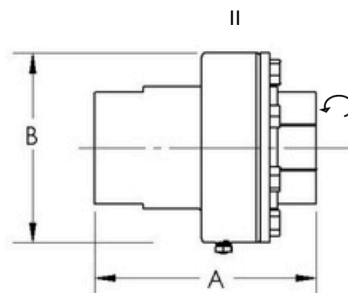
# HOSE REEL, BULKHEAD, LOADING ARM

## Straight-Through Type Swivels

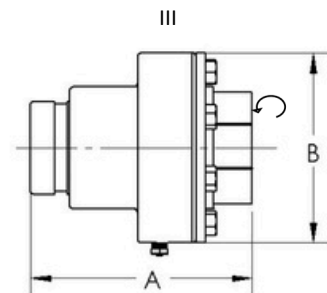


⅓", 1", & 1- ½" Type

All dimensions in inches  
All weights in pounds  
All threads FNPT



1- ½" & 2" Standard and Stainless Steel Type



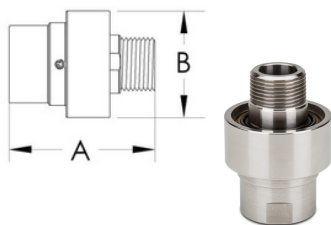
1- ½" & 2" Victaulic Type

MODEL	Illustration	SIZE (FNPT)	A	B	WEIGHT
SMAC-34STLN	I	¾ X ¾	5- ¼	3- 1/16	4- ½
SMAC-1STLN	I	1 X 1	5- ¼	3- 1/16	4- ½
SMAC-114STLN	I	1- ¼ X 1- ¼	5- ¼	3- 1/16	4- ½
SMAC-112STLN	II	1- ½ X 1- ½	5- 11/16	4- 7/8	11-3/4
SMAC-200STLN	II	2 X 2	5- 11/16	4- 7/8	11-3/4
SMAC-112STSS	II	1- ½ X 1- ½	5- 11/16	4- 7/8	11-3/4
SMAC-200STSS	II	2 X 2	5- 11/16	4- 7/8	11-3/4
SMAC-341STLN	I	¾ X 1	5- ¼	3- 1/16	4- ½
SMAC-1340STLN	I	1 X ¾	5- ¼	3- 1/16	4- ½
SMAC-34114STLN	I	¾ X 1- ¼	5- ¼	3- 1/16	4- ½
SMAC-11434STLN	I	1- ¼ X ¾	5- ¼	3- 1/16	4- ½
SMAC-1114STLN	I	1 X 1- ¼	5- ¼	3- 1/16	4- ½
SMAC-1141STLN	I	1- ¼ X 1	5- ¼	3- 1/16	4- ½
SMAC-112200STLN	II	1- ½ X 2	5- 11/16	4- 7/8	11- ½
SMAC-200112STLN	II	2 X 1- ½	5- 11/16	4- 7/8	11- ½
SMAC-112200STSS	II	1- ½ X 2	5- 11/16	4- 7/8	11- ½
SMAC-200112STSS	II	2 X 1- ½	5- 11/16	4- 7/8	11- ½
SMAC-2V112STFC**	III	2 X 1- ½	5- 11/16	4- 7/8	11- ½
SMAC-2V200STFC**	III	2 X 2	5- 11/16	4- 7/8	11- ½

For Combination threads, (Inlet X Outlet), Rotating End is Outlet

↻ Designates Rotating End

## HOSE END (ALLOWS FILLER VALVE TO ROTATE 360-DEGREES)



MODEL	SIZE	THREADS	A	B	WEIGHT
JO-34	¾ X ¾	FEMALE X MALE	3- 3/8	2- ½	1- ½
JO-1	1 X 1	FEMALE X MALE	3- 3/8	2- ½	1- ½
JO-114	1- ¼ X 1	FEMALE X MALE	3- 3/8	2- ½	1- ½

\*\* Victaulic swivels are intended for gasoline, kerosene, fuel oils, and diesel fuels not exceeding 50 psi. Victaulic connections are located on non-rotating end of swivel.

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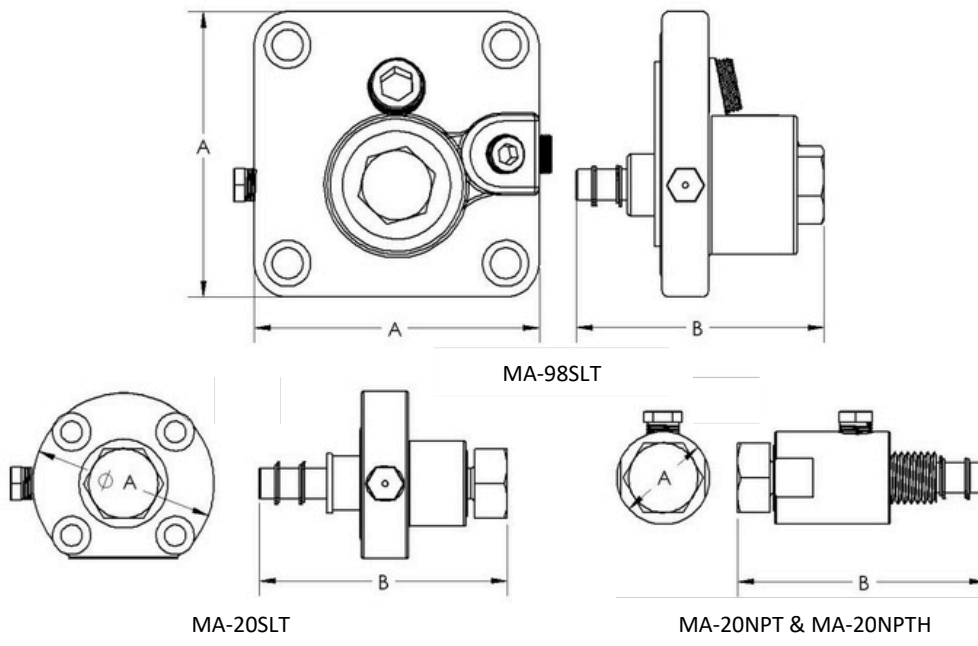


# QUICK-VENT™ VENT DEVICES



The Quick-Vent products are designed to safely and efficiently purge, evacuate, or isolate a meter or other equipment in the pipework.

Available for 2", 1" or ¾" flanged version to replace the blind strainer screen on a meter casing. Also available in ¾" NPT version for installation in a tee for a convenient location in the pipework.



All dimensions in inches  
All weights in pounds  
All threads NPT

MODEL	ILLUSTRATION	METER SIZE	A	B	WEIGHT
MA-98SLT	I	2	4- 5/8	3- 7/8	6
MA-20SLT	II	¾ & 1	3	3- 7/8	2
MA-20NPT	III	¾ (THREAD SIZE)	1- ½	3- 7/8	1
MA-20NPTH*	III	¾ (THREAD SIZE)	1- ½	3- 7/8	1

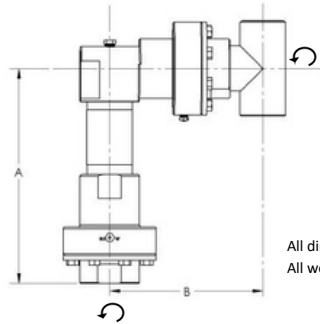
\*MA-20NPTH includes a port for hydrostatic relief application

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# LOADING ARMS

For loading/unloading arm such as a railroad tankcar loading/unloading operation where swivel action in two different planes is required. Combinations shown are shipped assembled for 1- inch male counterbalance.



All dimensions in inches  
All weights in pounds

## LOADING/UNLOADING ARM COMBINATION

MODEL	SIZE	THREAD	A	B	WEIGHT
SMAC-112LA	1- 1/2 X 1- 1/2	FEMALE X FEMALE	9- 1/2	11	38
SMAC-200LA	2 X 2	FEMALE X FEMALE	9- 1/2	11	38

## MODEL NUMBER EXPLANATION

SMAC prefix symbol model numbers shown in the catalogue may end with the letters LN. The letters at the end of the model number categorize the swivel according to the liquid/liquefied gas it is designed for. For other liquids/liquefied gases, please refer to the table below to determine the correct model number by adding the appropriate letters to the end of the model number.

### Letters at end of SMAC-series model number

Recommended for	LN	N	SS	FC	LA	SSD
<b>LP- Gas, Natural Gas</b>	X					
<b>Anhydrous Ammonia</b>		X				
<b>LP-Gas, Natural Gas, Refined Fuels</b>			X*		X*	
<b>Refined Fuels Only</b>				X		
<b>Diesel Exhaust Fluid (DEF)</b>						X
<b>Other liquids/liquefied gases</b>	<i>Contact our engineering department</i>					

\*SS option swivels contain corrosion resistant materials recommended where swivel may be exposed to moisture-laden air or systems routinely blown down; cannot be used for Anhydrous Ammonia. Loading arm combinations are SS type swivels. After selecting the correct model swivel for type of liquid/liquefied gas, add letters SS to the end of model number.

Refined Fuels include heating oil, jet fuel, gasolines, and diesel fuels.

JO-series swivels shown in catalogue are for LP-GAS. Add letters LN to end of model number for Anhydrous Ammonia and FC for refined fuels.

Swivels ending in SSD are for diesel exhaust fluid only.



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