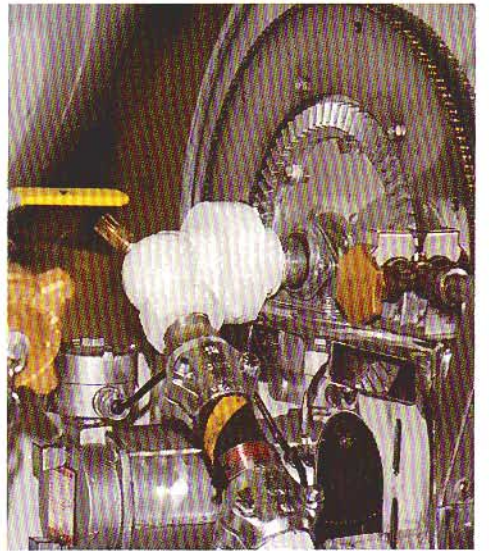
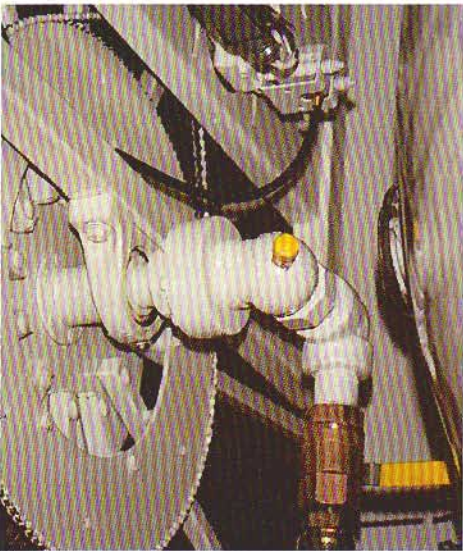
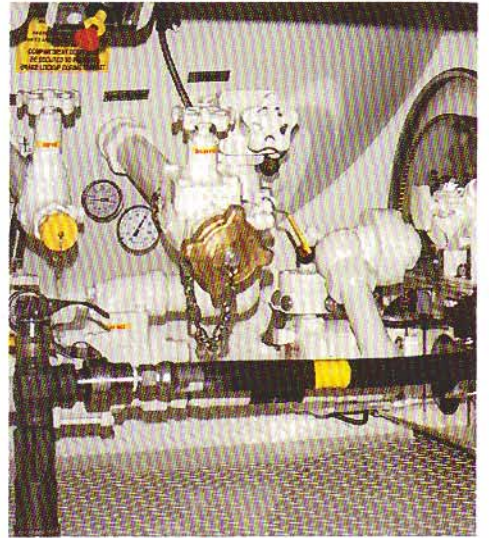
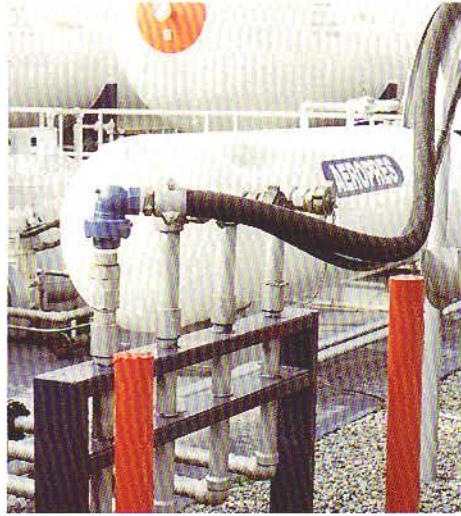
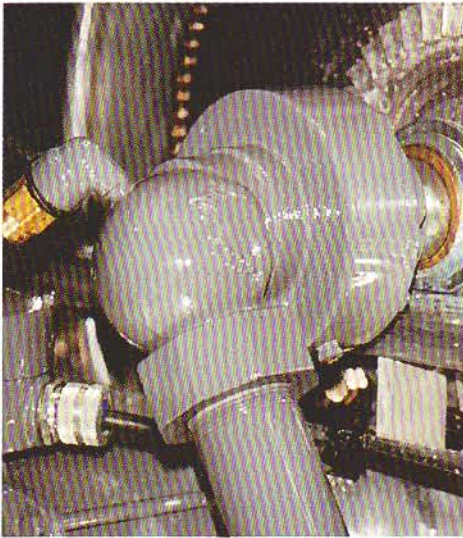


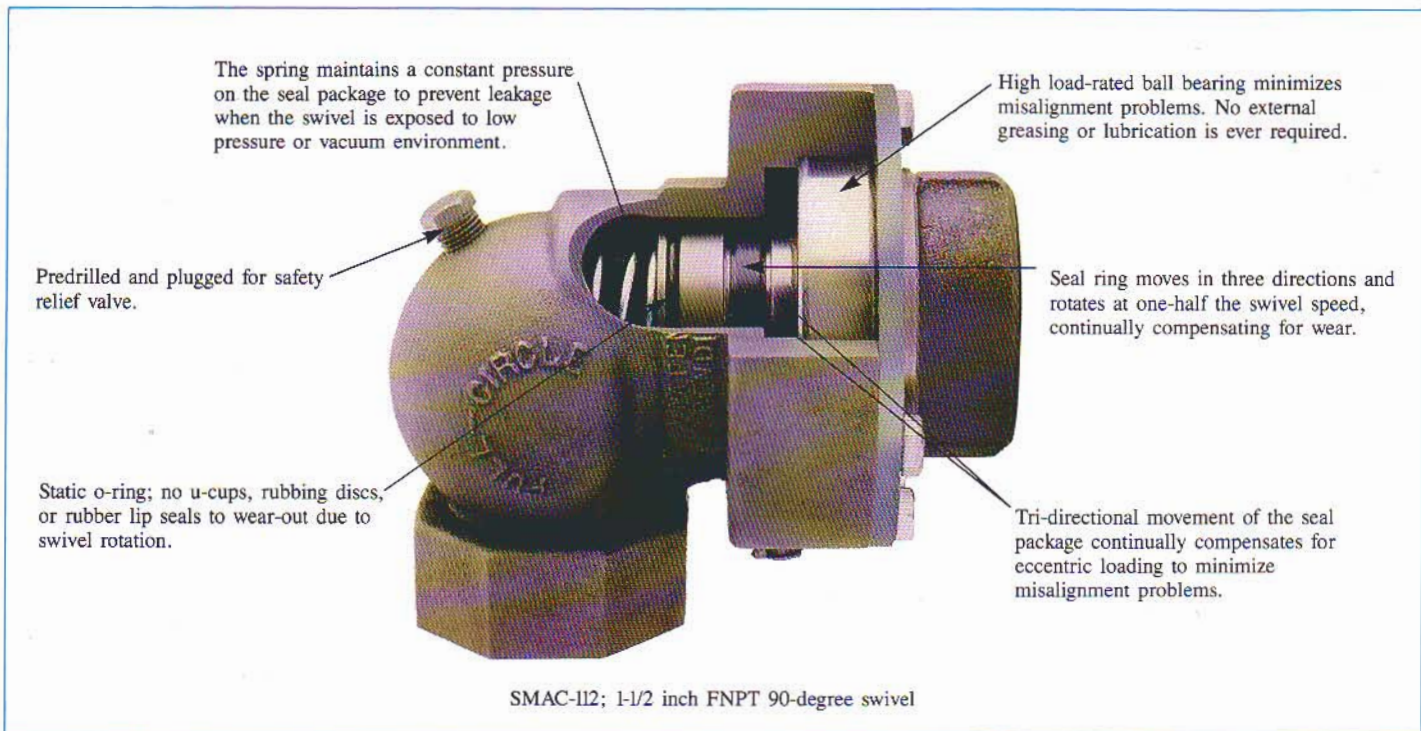
FULL  CIRCLE

SWIVEL CONNECTORS

for thin to viscous liquids and liquefied gases



DESIGN FEATURES



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 storage.

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

All 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.

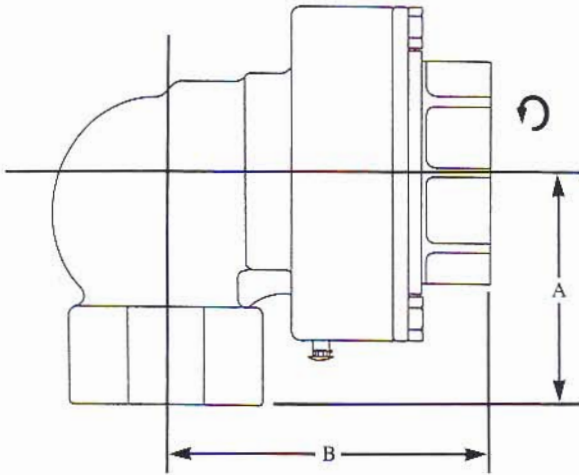
FIELD REPLACEABLE COMPONENTS

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 58 years of design and manufacturing expertise in the high pressure, rotating equipment field, for thin liquids and liquefied gases.

90-degree type



90-DEGREE TYPE

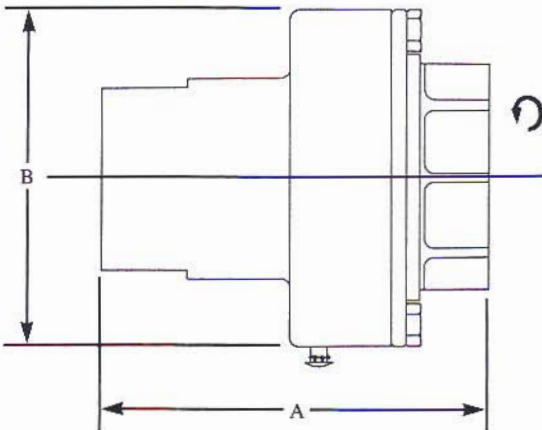
MODEL	SIZE	THREAD	A	B	WEIGHT
SMAC-3490	3/4 x 3/4	FEMALE x FEMALE	3	4-5/8	6 3/4
SMAC-190	1 x 1	FEMALE x FEMALE	3	4-5/8	6 3/4
SMAC-114	1 1/4 x 1 1/4	FEMALE x FEMALE	3	4-5/8	6 3/4
SMAC-112	1 1/2 x 1 1/2	FEMALE x FEMALE	3 1/4	4 3/4	13-1/8
SMAC-200	2 x 2	FEMALE x FEMALE	3 1/4	4 3/4	12 1/4

All dimensions in inches
All weights in pounds

APPLICATIONS:

Hose reel, loading arms, bulk-head.

Straight-through type



STRAIGHT-THROUGH TYPE

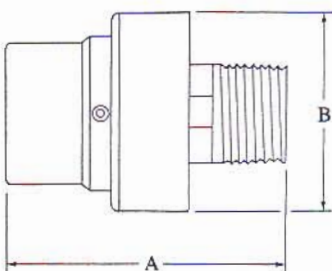
MODEL	SIZE	THREAD	A	B	WEIGHT
SMAC-34ST	3/4 x 3/4	FEMALE x FEMALE	5 1/4	3-1/16	4 1/2
SMAC-1ST	1 x 1	FEMALE x FEMALE	5 1/4	3-1/16	4 1/2
SMAC-114ST	1 1/4 x 1 1/4	FEMALE x FEMALE	5 1/4	3-1/16	4 1/2
SMAC-112ST	1 1/2 x 1 1/2	FEMALE x FEMALE	5-11/16	4-7/8	11 3/4
SMAC-200ST	2 x 2	FEMALE x FEMALE	5-11/16	4-7/8	11

All dimensions in inches
All weights in pounds

APPLICATIONS:

Hose reel, loading arms, bulk-head.

Straight-through hose end filler valve type



STRAIGHT-THROUGH HOSE END FILLER VALVE TYPE

MODEL	SIZE	THREAD	A	B	WEIGHT
SMAC-34	3/4 x 3/4	MALE x FEMALE	4-1/8	2-7/16	1 1/2
SMAC-1	1 x 1	MALE x FEMALE	6-3/8	3	2 3/4
JO-34	3/4 x 3/4	MALE x FEMALE	3-3/8	2 1/2	1 1/2
JO-1	1 x 1	MALE x FEMALE	3-3/8	2 1/2	1 1/2

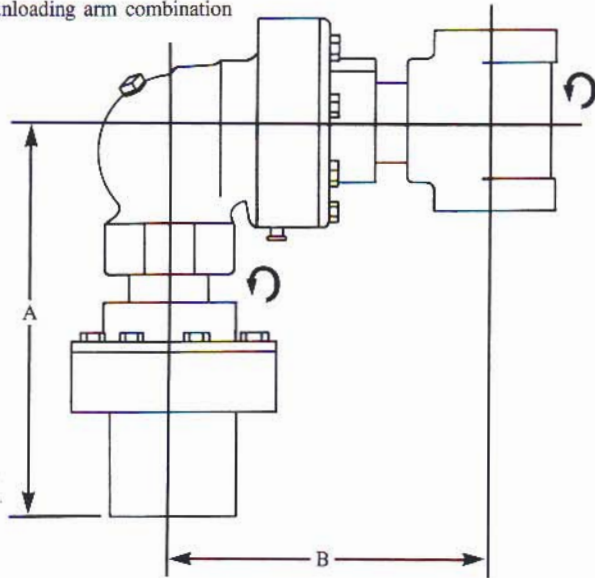
NOTE: SMAC PREFIX HOSE END SWIVELS UTILIZE AIRCRAFT QUALITY ALUMINUM HOUSINGS.
JO PREFIX HOSE END SWIVELS UTILIZE STAINLESS STEEL HOUSINGS AND MALE NIPPLE.

All dimensions in inches
All weights in pounds

APPLICATIONS:

For hose end only; to allow filler valve to rotate 360-degrees.

Loading/unloading arm combination



APPLICATION:

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

LOADING/UNLOADING ARM COMBINATION

MODEL	SIZE	THREAD	A	B	WEIGHT
SMAC-34LA	3/4 x 3/4	FEMALE x FEMALE	9	6 3/4	16
SMAC-1LA	1 x 1	FEMALE x FEMALE	9	6 3/4	16
SMAC-114LA	1 1/4 x 1 1/4	FEMALE x FEMALE	9	6 3/4	16
SMAC-112LA	1 1/2 x 1 1/2	FEMALE x FEMALE	10 1/2	7 1/2	30
SMAC-200LA	2 x 2	FEMALE x FEMALE	10 1/2	7 1/2	30

All dimensions in inches
All weights in pounds

ADDITIONAL NOTES

Temperature range: MINUS 40-degrees Fahrenheit to PLUS 350-degrees Fahrenheit

Hydrostatic test pressure: 2000 psi for Ammonia swivels, 1750 psi for other liquid/liquefied gases

Maximum working pressure: 400 psi for Ammonia swivels, 350 psi for other liquid/liquefied gases

Maximum rotational speed: 1000 RPM

Maximum load on ball bearing at 33 RPM: 5000 pounds for 1-1/2 and 2-inch sizes, 2000 pounds for other SMAC prefix swivels, and 1000 pounds for JO prefix swivels**

U.L. Standard: 567

DISTRIBUTED BY:



Swivel model numbers shown in the catalogue are for LP-GAS service. For Ammonia service swivels, add the suffix NH3 to the model number shown. For Flammable and Combustible liquids*, add the suffix FC to the model number shown in the catalogue. For other liquids or liquefied gases such as most Freons®, CO2, N2O, contact our Engineering Department for the recommended model type.

For maximum corrosion resistance where the swivel may be exposed to moisture laden air, specify the CR option by adding the letters "CR" after the model number. Loading arm swivel combinations include the CR option.

*The Underwriters Laboratories classifies Flammable and Combustible liquids as gasolines, diesel fuels, heating oils, jet fuels, and alcohol blends.

**The Maximum Permissible Load varies with the rotational speed. As the speed decreases, the MPL increases. The converse is also true.

FULL-CIRCLE, INC.

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