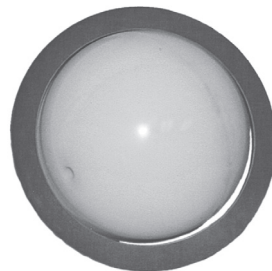
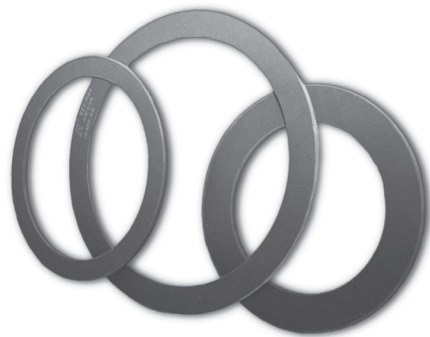
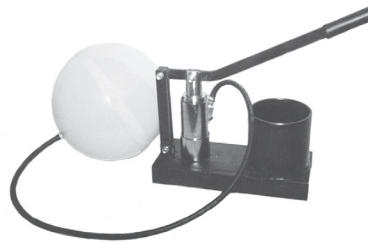


SPHERE PUMPS & SIZING RINGS

TYPE SP-101 SPHERE PUMP

- Quick disconnect tool and hose
- All steel construction including reservoir
- Precision machined pump cylinder
- Easy to use



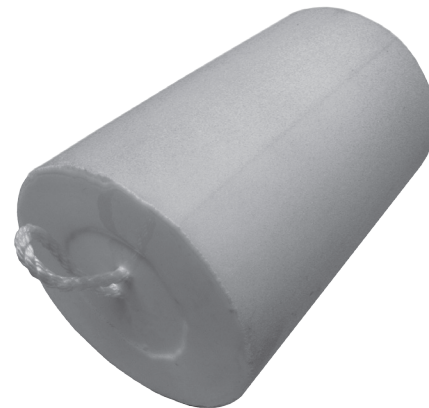
SIZING RINGS

- Custom made to your exact requirements
- 24 hour shipment
- Precision laser cut from 1/4" Micarta (advise pipe size, schedule and percent oversize required)

CLEANING PIGS

BI-DIRECTIONAL FOAM PIG WITH PULL LOOP

- Clean meter prover
- Water draw preparation



SPHERE AND PIG HANDLING EQUIPMENT

SPHERE REMOVAL TOOLS

- Model LSH
- Type SRT-M 12" through 18"
- Type SRT-L 20" and larger
- Durable, heavy metal construction
- Replaceable suction cups

*Lightweight Sphere Handler
Model LSH*

PRESSURE PUMPS FOR PIPELINE AND PROVER SPHERES

The pressure pump that is required to facilitate the filling and sizing of pipeline and prover spheres is a single acting, positive displacement, hand operated pump. The effective volume of the pressure pump should be approximately four cubic inches per stroke. The suction and discharge sides of a pump should be equipped with check valves,

and a manual pressure relief valve on the discharge side. The suction side of the pump should be piped with standard ¼ inch IPS threads and a removable filling reservoir. The complete pump unit will include a pump, reservoir, filling hose with coupling, and a coupling adapter that will fit the sphere filling adapters.

The following filling and sizing recommendations are to be used as a guide only. For efficient operation, spheres must be filled with liquid and sized to proper line diameter.

Sphere filling recommendations:

- Remove valve cap with valve wrench.
- Remove valve body with valve wrench.
- Hand tighten filling adapter to sphere valve.
- Use a filling spout or a small funnel to fill the sphere completely with the desired liquid filler. During this step, it may be necessary to tap the sphere in order to remove trapped air.
- Disconnect filler hose from sphere.
- Replace valve body and cap with valve wrench. *Do not over-tighten.*

Sphere sizing recommendations:

Actual operational experience with the spheres will allow more accurate sizing for any given pipeline or meter power.

- Urethane – 1% larger than pipe ID.
- All other compounds – 2% larger than pipe ID.

Sizing instructions:

- Remove quick coupling from pressure hose end and thread it into filling adapter.
- Fill reservoir on pump with suggested liquid and operate pump until all air is removed from the pump and the hose before connecting filling adapter to sphere.
- Connect hose filling adapter and proceed to size sphere to proper diameter.
- After reaching proper size, pressure may be relieved from filler hose with small hand valve.
- Remove filling adapter from sphere valve.
- Firmly replace valve cap.
- Precautions necessary when sizing spheres:

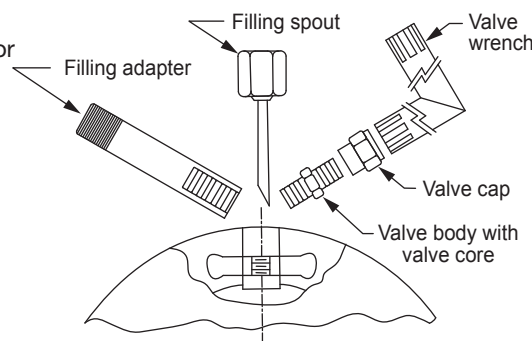
- Insure all air is evacuated from the sphere during filling and sizing.
- Tighten all valve and valve caps firmly, but do not force threads.
- If valve leakage occurs, replace entire sphere valve assembly if necessary.

Tools & accessories for filling and sizing of spheres:

Pressure pump, Filling adapter, Valve wrench, Filling spout, Core extractor

Optional tools, parts and accessories for the maintenance, filling and sizing of spheres:

- Replacement valve cores.
- Replacement valve s for inflatable spheres (complete with valve body, core, cap).
- Replacement caps.
- Sizing rings.



Suggested liquid fillers for pipeline and meter prover spheres

Temperature range	Liquid filler
Below 32°F	50% Ethylene glycol & water Water Glycerol
32°F to 150°F	
Above 150°F	

CAUTION Do not use hydrocarbon filling liquids

SUGGESTED SERVICE APPLICATIONS

Sphere Material	Suggested Operating Temperature		Suggested Application
	Minimum	Maximum	
NATURAL	30°F	250°F	Water. Alcohols. Low temperatures. Refrigerated propane @ 40°F to water 50°F/ (maximum exposure of 6 hours). Not recommended for exposure to hydrocarbons.
NEOPRENE	20°F	280°F	General purpose. Pipeline. Hydrocarbon and chemical service.
POLYURETHANE (softer durometers)	20°F	170°F (in oil) 140°F (in water)	Meter prover service, low temperature distillate removal service.
POLYURETHANE (firmer durometers)	0°F	170°F (in oil) 140°F (in water)	Gas distillate removal at greater than 600 PSI, long line distillate removal service where temperatures are 60°F or greater.