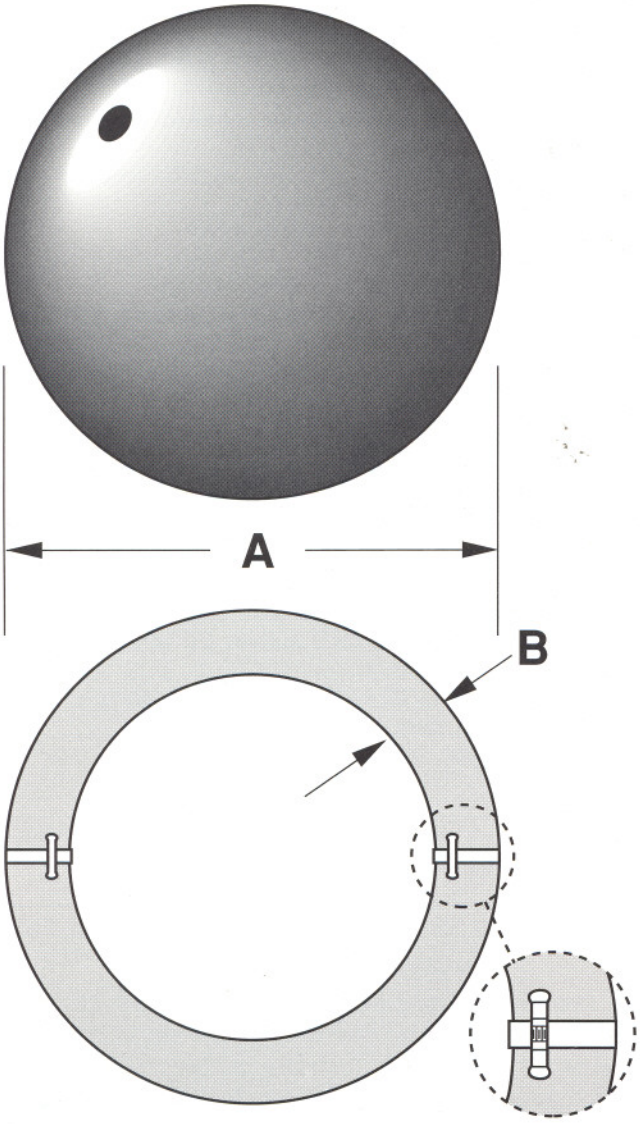
S.U.N. Engineering, Inc.

SUPER SPHERES

- ***One Piece Construction***
- ***Solids, 2" - 6" Diameter***
- ***Inflatable Sizes, 6" - 24" Diameter***
- ***Truer Diameters for Meter Prover Operations***



S.U.N. Engineering, Inc's., unique sphere manufacturing process allows the Super Sphere to be made without a seam. This unique process eliminates concern over seam splitting or delaminating and also permits valve bodies to be firmly imbedded in the wall of the sphere to prevent leakage from around the valve. In addition, Super Sphere's have a more consistent wall thicknesses that will offer truer diameters, uniform wear and constant wall contact in prover and pipeline operations. Made of ultra strength LN-10 polyurethane, Super Spheres provide greater flexibility for adapting to changing line conditions and better abrasion and blister resistance across a broad range of chemical and product environments. Depending on your application, Super Sphere is the ideal sphere for meter proving and measurement services and when used in pipelines designed for running spheres they are the ideal choice for hydrostatic line testing, two phase flow operations, product batching, separation or the control of hydrate and distillate formation in natural gas lines.

Super Spheres are available in solid diameters from 2" - 6" and inflatable diameters from 6" - 24" inches. Super Spheres are also available in the above diameters with magnet cartridges for use with the S.U.N. Engineering, Inc., Magna-Sygg® detector.

PIPE SIZE	A		B	
	in.	mm	in.	mm
2"	2.1	53.3	SOLID	SOLID
3"	3.1	78.7	SOLID	SOLID
4"	4.1	104.1	SOLID	SOLID
6"	6.1	154.9	SOLID	SOLID
6"	5.9	149.9	1.5	38.1
8"	7.9	200.7	1.75	44.5
10"	10.0	254.0	2.0	50.8
12"	12.1	307.3	2.0	50.8
14"	13.1	332.7	2.25	57.2
16"	15.3	388.6	2.5	63.5
18"	17.3	439.4	2.5	63.5
20"	19.3	490.2	3.0	76.2
24"	23.0	584.2	3.0	76.2

SUPER PIG! ®

S.U.N. Engineering, Inc.

GENERAL INFORMATION REGARDING SPHERES

Manufacturers of: SUPER PIG® • SUPERCAST PIG • SUPER SPHERE • MAGNA-SYGG® Detector

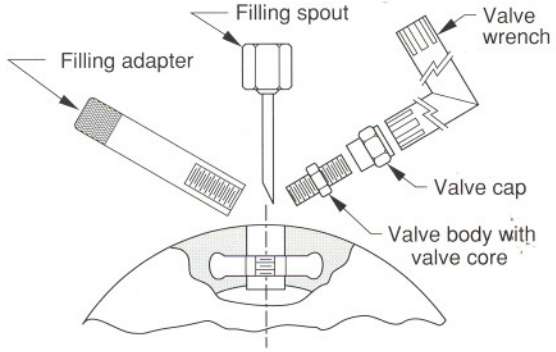
Pressure Pumps for Pipeline and Prover Spheres

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 1/4 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.*



Suggested liquid fillers for pipeline and meter prover spheres	
Temperature range	**Liquid filler**
Below 32° F.	50% Ethylene glycol & water
32° F. to 150° F.	Water
Above 150° F.	Glycerol
CAUTION Do not use hydrocarbon filling liquids	

SPHERE SIZING RECOMMENDATIONS:

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

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

SUGGESTED SERVICE APPLICATIONS			
	SUGGESTED OPERATING TEMPERATURE		
SPHERE MATERIAL	**MINIMUM**	**MAXIMUM**	**SUGGESTED APPLICATION**
NATURAL	30° F.	250° F.	Water. Alcohols. Low Temperatures. Refrigerated Propane @ 40° F. to 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.