

Unidirectional Sphere Type Prover

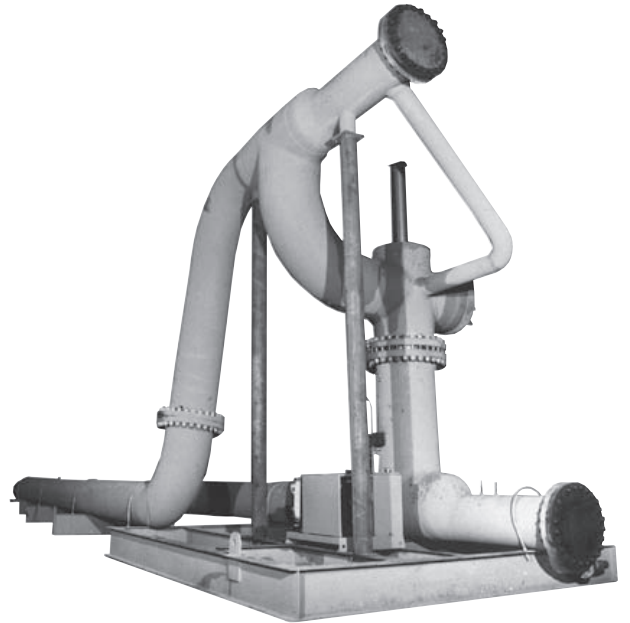
Bulletin SS0V003 Issue/Rev. 0.0 (4/87)

Smith Meter® Provers

Smith Meter® Bidirectional Provers are stationary or portable displacement-type meter proving devices. When connected in series with a meter, the number of meter pulses generated during the displacement of the prover-calibrated (water drawn) volume yields accurate meter factor.

Features

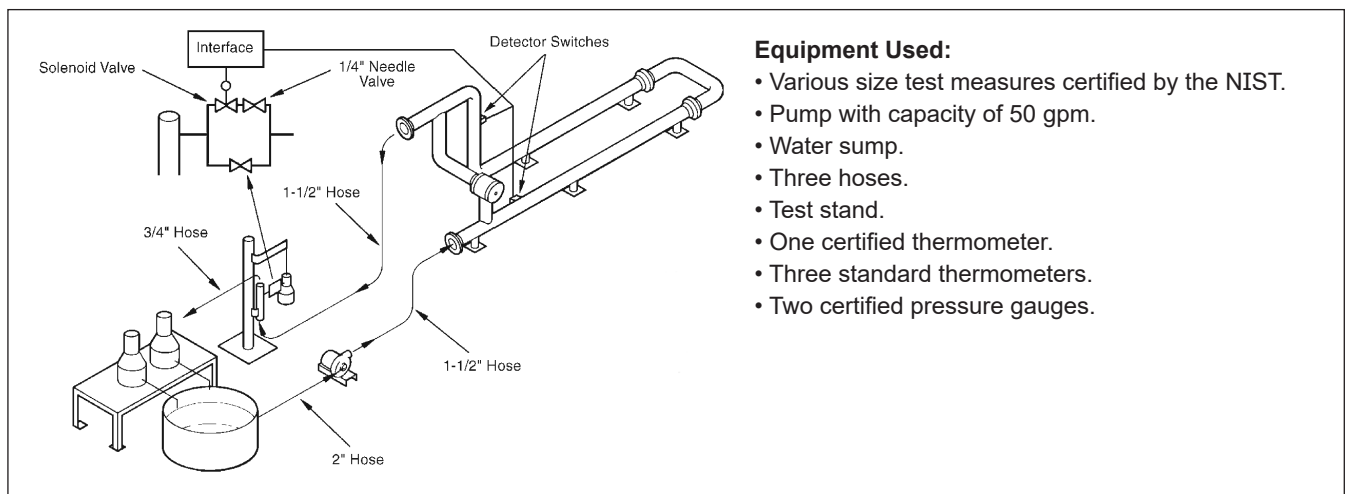
- **Precisely Calibrated Volume** – Traceable to NIST (Formerly NBS).
- **Highly Compatible Materials of Construction** – For use on a wide range of products.
- **Unique Transfer Valve Design** – It has only two moving parts: the main valve and the transfer hemisphere.
- **Local or Remote Control** – Instrument duplication is eliminated.



transfer hemisphere blocks flow across the main valve. After the main valve closes, the transfer hemisphere releases the spheroid into the flow stream. As the spheroid passes the first detector switch, the meter prover counter (totalizer) is triggered to totalize meter pulses until the second detector switch is triggered. The number of pulses accumulated on the prover counter while the spheroid moves between the detector switches is compared to the calibrated volume of the prover section to obtain meter factor. After the spheroid passes the second detector switch, it drops back into the receiving chamber ready for another proving run.

Principle of Operation

With the prover in the idle state, flow passes through the meter and through the prover. The spheroid is held in the receiving chamber by the main prover valve. When proving is initiated, the main valve is opened. The spheroid drops to the transfer hemisphere. With the main valve open, the



Water Draw System

Equipment Used:

- Various size test measures certified by the NIST.
- Pump with capacity of 50 gpm.
- Water sump.
- Three hoses.
- Test stand.
- One certified thermometer.
- Three standard thermometers.
- Two certified pressure gauges.

Calibration

Prover calibration is accomplished using water draw equipment and procedures in accordance with the API Manual of Petroleum Measurement Standards, Chapters 4 and 12 and volumetric measures that are traceable to and certified by the National Institute of Standards and Technology.

Prover volume accuracy is certified within 0.02% per the preceding standards.

Applications

The Smith Meter® Unidirectional Prover may be used to calibrate positive displacement or turbine meters in virtually any application including loading rack installations, pipelines, barge loading/unloading systems, etc. These provers may be used on most liquid petroleum products such as LPG, gasolines, and crude oils which have varying viscosities and lubricating qualities.

Specifications

Connections

12" through 30", ANSI Class 150 through 600 flanged.

Maximum Working Pressure

To 1,480 psi (10,204 kPa) at 100°F (38°C).

Temperature Range

Standard: -20°F to 200°F (-31°C to 94°C).

Optional: Consult factory.

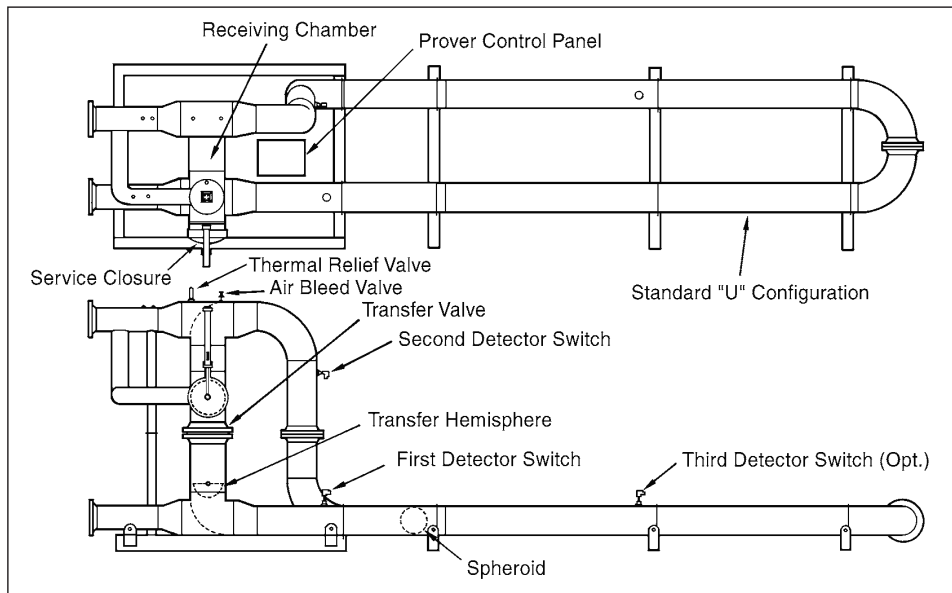
These provers meet the following standards:

- ANSI B31.4 - Liquid Petroleum Transportation Piping Systems
- ANSI B31.3 - Petroleum Refinery Piping
- API Chapters 4 and 12 - Manual of Petroleum Measurement Standards, Proving Systems.
- API Chapter 5 - Manual of Petroleum Measurement Standards.
- NEMA 7 and 9 - Class I, Group D, Division 1 and 2 Areas (Explosion-Proof).

Standard equipment:

The following items are provided as standard features. For special requirements, please consult the factory.

- Transfer valve.
- Self-contained, closed-loop integrated hydraulic system.
- Proving control panel with provisions for remote control.
- Detector switches (2).
- Elastomeric sphere (1).
- Pressure gauges, 1/2" NPT with 1/2" NPT isolating valve (2).
- Thermometers equipped with 3/4" stainless steel thermowells (2).
- Vent valves (1).
- Thermal relief valve, 1" NPT (1).
- Drain connections (2) equipped with R.F.W.N. flanges as outlet connections.
- Instruction manuals (3)



Typical Unidirectional Prover Installation

Revisions included in SS0V003 Issue/Rev. 0.0 (4/87):

March 2019 - Updated branding and contact information.

The specifications contained herein are subject to change without notice and any user of said specifications should verify from the manufacturer that the specifications are currently in effect. Otherwise, the manufacturer assumes no responsibility for the use of specifications which may have been changed and are no longer in effect.

TechnipFMC.com

© TechnipFMC 2019. All rights reserved. SS0V003 Issue/Rev. 0.0 (4/87)

TechnipFMC
FMC Technologies
Measurement Solutions, Inc.
13460 Lockwood Road
Building S01
Houston, Texas 77044 USA
P:+1 281.591.4000

USA Operation
1602 Wagner Avenue
Erie, Pennsylvania 16510 USA
P:+1 814.898.5000

Germany Operation
Smith Meter GmbH
Regentstrasse 1
25474 Ellerbek, Germany
P:+49 4101 304.0