

HYVAC PRODUCTS, INC.

MAIL: P.O. BOX 389 • PHOENIXVILLE, PA • 19460-0389 • U.S.A.

PLANT: 201 NORTH 5TH AVENUE • ROYERSFORD, PA • 19468 • U.S.A.

610-792-0500 PHN • 610-792-0600 FAX

EMAIL jeff@hyvac.com

INTERNET [HTTP://WWW.HYVAC.COM](http://WWW.HYVAC.COM)

HYVAC OIL MCLEOD GAUGE

A McLeod gauge is an absolute pressure standard to which many other vacuum gauges are calibrated. It will accurately measure the total pressure of non-condensable permanent gases (i.e. hydrogen, nitrogen, oxygen, etc.) in a vacuum system, but will not correctly measure condensable vapors if present. Many condensable vapors will be condensed during compression of the gas sample in the capillary tube and not contribute to depression of the gauge liquid.

The calibration of the gauge for non-condensables is based upon Boyles' physical chemistry gas law $P_1 \cdot V_1 = P_2 \cdot V_2$ and therefore measurement of the volume of the glass bulb and the volume per unit length or bore of the capillary tubes is made with high precision. It is based upon dimensions during manufacture so that once it is correct, very little can go wrong to change its calibration, and so it can be reliably used as a reference standard.

If condensable vapors may be present while calibrating a vacuum gauge against the McLeod gauge, then a liquid nitrogen cold trap should be used to ensure that only non-condensables are being measured.

The HyVac Oil McLeod Gauge consists of a borosilicate glass cylinder mounted on an aluminum base. The bottom of the cylinder acts as a reservoir for 6cc of mercury covered by 100cc of special low vapor pressure oil. Within this cylinder is positioned a glass bulb with two capillaries, one of which is attached to a metal sleeve with a small magnet at the end. A rectangular scale with graduations from 0.1 to 50 microns (millitorr) is attached to the two glass capillaries. This internal plunger assembly with scale can be raised or lowered into the liquid reservoir by use of an external ring magnet, which is magnetically coupled to it. As the ring magnet is slid up or down on the exterior of the hollow cylindrical metal tube at the top of the glass cylinder, the internal plunger

moves in unison without any relative movement between the two.

O-rings are used for sealing the stainless steel and aluminum plug at the glass cylinder.



HYVAC PRODUCTS, INC.

MAIL: P.O. BOX 389 • PHOENIXVILLE, PA • 19460-0389 • U.S.A.
PLANT: 201 NORTH 5TH AVENUE • ROYERSFORD, PA • 19468 • U.S.A.

610-792-0500 PHN • 610-792-0600 FAX

EMAIL jeff@hyvac.com

INTERNET [HTTP://WWW.HYVAC.COM](http://WWW.HYVAC.COM)

McLeod Gauge Cont.

FEATURES

The HyVac Oil McLeod Gauge has the following features when compared to other McLeod gauges:

- Because the 6cc of mercury are covered by 100cc low vapor pressure diffusion pump oil, the amount of mercury vapor exposed to the environment is virtually negligible compared to a conventional mercury McLeod gauge, thus avoiding the mercury vapor health hazard.
- The quantity of oil required to be outgassed is small which reduces the outgassing time.
- Better definition between readings in this range than mercury McLeod gauges.
- Light weight and compact.

SPECIFICATION

HyVac Part No.	94163-001
Measuring Range	0-60 microns (millitorr)
Sensitivity	0-05 microns
Liquid charge	110cc approx, including 6cc of Mercury
Weight of Gauge	4.5 lbs
Dimensions	5.5" x 7.5" x 19

Optional Equipment

Extended base for added stability.
Shutoff / Isolation valve with valve support.
This option isolates gauge from system / pump. Includes extended base.
Vacuum hose.

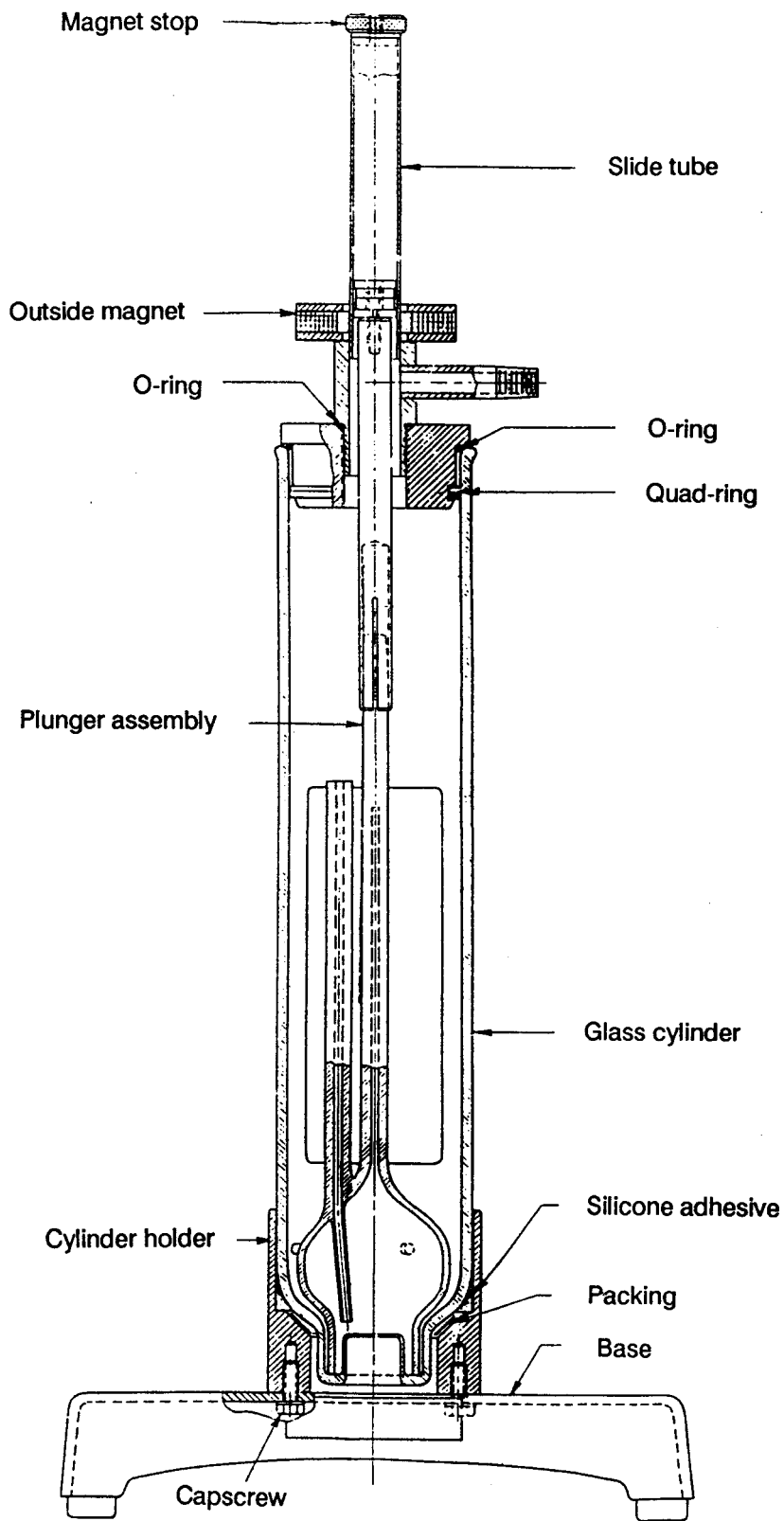


Figure 2: Oil McLeod Gauge Assembly