

Instructions for 8726 & 8728 Gauges

The McLeod gauge is useful for measuring pressures of true gases only. Water vapor and other condensable vapors should not be permitted to enter the gauge, as they can cause erroneous readings. Gases corrosive to mercury and "dirt" should likewise be avoided; therefore, appropriate traps should be installed without restricting flow to and from the gauge.

Pressures between 0.5 micron and 15 mm can be measured with a series of four gauges covering the individual ranges shown below:

Designation	Pressure Range, mm Hg	Lowest Reading, mm	Volume (Vi)*
A	0 – 1.0	0.0005	7.8 mL, ±3%
B	0 – 5.0	0.005	5.5
C	0 – 10.0	0.010	6.5
D	0 – 15.0	0.050	4.5

*Vi = Original volume; V2 – compressed volume contained within the precision bore capillary

Accuracy

Gauge volumes are adjusted to ±3% of theoretical value; capillaries are Trubore® tubing so that direct reading scales can be replaced without recalibration. The 8728 ranges C & D have the same capillaries; therefore, the volumetric legs can be used interchangeably on the same body. Scales also must be changed. A "B" volumetric leg in a C or D body will cause a 20% error.

All gauges have the same joint size and can be interchanged on one stand. The outer member does not rotate, so a direct seal can be made to the system.

Lubrication

Grease the joint of the gauge with a good, high-vacuum grease, such as ACE No. 8116-10.

Apply two streaks to opposite sides of the inner member, insert into the socket, and turn back and forth using pressure to distribute the grease uniformly.

To Fill The Gauge

Add approximately 20 mL of triple distilled mercury to either gauge, then reassemble and pump for several minutes with the gauge in a horizontal position, but so that the mercury does not trap air in the lower bulb.

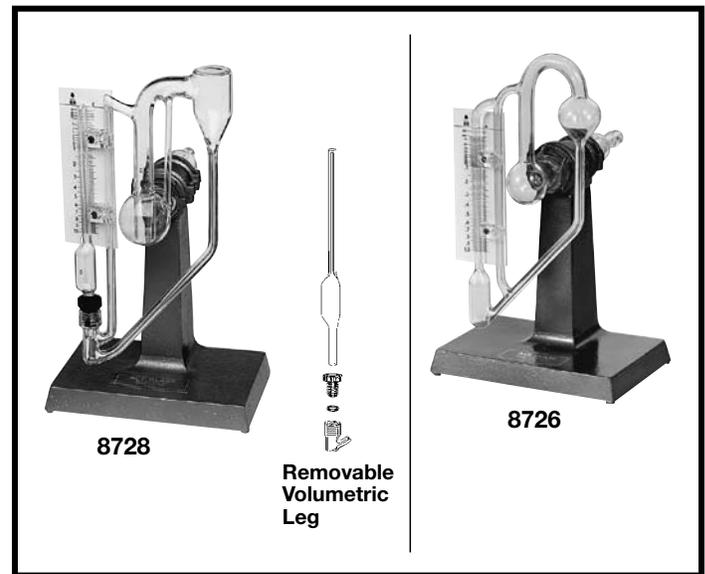
Rotate counterclockwise to a vertical position and then open the system to atmospheric pressure; this will force mercury to the end of the closed capillary (for all practical purposes).

8726 Gauge

The inside of the closed capillary (end of lumen) is the zero point of the scale. Adjust the graduated scale so that the long zero line is directly behind the end of the lumen. Now tilt further counterclockwise so that excess mercury will flow into the central bulb. This is done by inspection until the mercury levels in the open capillary and the right hand reservoir bulb are on the same plane as the zero line with the gauge in a vertical position. Remove excess mercury from the center bulb and replace the gauge which is now ready for operation.

Operation

Place the gauge in a horizontal position with the scale on top by turning clockwise. Mercury must not trap gas in the reservoir bulb. Allow about 30 seconds for the gauge to reach equilibrium



and then turn counterclockwise to the vertical position. Turn the gauge slowly enough for the mercury to close the bulb opening smoothly; mercury "hammer" should be avoided because this tends to pump extra gas into the bulb.

Adjust the mercury height in the reference leg to the zero line of the scale and read the pressure directly as indicated on the scale behind the level of mercury in the closed capillary. Be sure the zero line of the scale coincides with the top of the closed capillary. If the gauge is not vertical (8726 Type) tilt the gauge further counterclockwise and allow some of the mercury to spill over into the central bulb the return the gauge to a vertical position by going a little past vertical and approaching from below as before.

With the 8728 Type, place the gauge in a vertical position so that the mercury overflows into the central bulb and read the pressure in a similar manner.



P.O. Box 688 • Vineland, NJ 08362-0688 • 856-692-3333 • Fax: 856-692-8919

TOLL-FREE: 1-800-223-4524 • FAX: 1-800-543-6752

www.aceglass.com email: sales@aceglass.com

The mercury should run freely in the gauge. If it does not, either the mercury or the gauge is contaminated. If the humidity is high when the gauge is filled, the presence of a moisture film sometimes can be detected; generally, this can be removed by continuous pumping and hastened with an infrared lamp, first removing the plastic scale. Several hours of pumping may be required before the gauge reads correctly after placing new mercury in the gauge.

If the gauge is frequently returned to atmospheric pressure, a black oxide of mercury will be formed sooner and may obscure readings. It is good practice to provide an isolation stopcock for the gauge so that it can be kept at reduced pressure when idle. A large bore, such as 8201, 6mm, is preferable in order to keep pressure drop low.

Cleaning

The 8726 Type gauge can be cleaned without too much difficulty with the aid of a water aspirator. After removing the mercury, introduce a few c.c. of nitric acid into the gauge, evacuate and return to atmospheric pressure. The nitric acid is forced up into the closed capillary. Do not stopper the gauge when it contains active acid. To remove the acid, evacuate as before and flush with several rinsings of water. Finally, rinse with acetone, evacuate to boil it off and bake in an oven at 110°C for one hour, or until dry.

The 8728 Type is readily cleaned by loosening the plastic bushing and removing the volumetric leg.

Gauges With PTFE-Clad Joint, 8726

Grease can be eliminated by using a PTFE-Clad joint (call for quotation). The PTFE conforms to the contour of the mating part and forms a seal which can be pumped to at least 10^{-4} after being rotated under vacuum (50 turns is usually sufficient during a period of ½ hour).

The joint thereafter will not need to be disturbed except when it is necessary to clean the gauge. The seal will improve with use as compared to a greased ground joint which slowly loses grease and begins to seize. If desired, the initial dry seating may be eliminated by very lightly greasing the PTFE; the seal will be maintained by the grease until the joint "makes," after which it never needs regreasing.

O-Rings

The O-Rings, size -003, are FETFE®, a fluoroelastomer with special TFE additives. They are especially resistant to ozone and should last indefinitely. If it should become necessary to clean the plug, use a detergent solution, do not remove the O-Rings, rinse in clean water and dry in an oven at 110°C for one hour and replace when cool. Do not use acetone to dry the plug, as the O-Rings will disintegrate. The O-Rings can also absorb other organic solvents to some extent with swelling; O-Rings in such a condition will out gas and cause erroneous readings.



ACE GLASS INCORPORATED

P.O. Box 688 • Vineland, NJ 08362-0688 • 856-692-3333 • Fax: 856-692-8919

TOLL-FREE: 1-800-223-4524 • FAX: 1-800-543-6752

www.aceglass.com email: sales@aceglass.com