

Models:-

PVU3. Non Bakeable Pirani Gauge

PVB3. Bakeable Pirani Gauge Model

USER INSTRUCTIONS Issue 1.05

Model PVU3 is a general-purpose constant voltage Pirani gaugehead. Model PVB3 is a 200°C bakeable, constant voltage Pirani gaugehead. They are designed for use with AML NGC and PGC series of Pressure Gauge Controllers.

INSTALLATION.

For best results and maximum operating life the gaugehead should be mounted as close to vertical as possible, with the mounting flange at the bottom. Gauge heads can be mounted in any orientation, but there may be a risk of particle contamination, filament sag and unusual convection effects. Choose a position that is shielded from sources of heat.

If using a PVB3 gaugehead, the DIN connector must be outside the bakeout zone. If the integral leads are not long enough they may be extended by 10 metres with an AML model PVX10 extension cable. Using the PVX10 extension cable will not affect the gauge calibration.

OPERATION.

Refer to the control unit operating instructions for details of gauge connection.

AML gauges are pre-calibrated for Nitrogen but Pirani gauge calibration is sensitive to the gas species being measured.

Some relative sensitivities are given below.

True Pressure = Indicated Pressure/Relative Sensitivity

Gas Species	Relative Sensitivity to Nitrogen
Air	1.0
Argon	0.66
Carbon Dioxide	1.1
Carbon Monoxide	1.0
Helium	1.0
Hydrogen	1.3
Methane	1.64
Neon	0.9
Nitrogen	1.0
Sulphur Dioxide	1.0
Water Vapour	1.5
Xenon	0.35

CALIBRATION.

The gauge is calibrated before shipping which will normally be adequate for roughing or backing pump operation, but it is advisable to carry out the calibration procedure to ensure optimum set-up.

The gauges are supplied calibrated for Nitrogen. To adjust the calibration the gauge needs to be connected to a system that will readily produce a pressure below 1×10^{-3} millibar. Pierce the label on the DIN connector housing at the locations marked + adjacent to the VAC and ATM text. This exposes the adjustment potentiometers. Both potentiometers are single-turn devices: use an instrument screwdriver to adjust them and do not force them past the end stops.

1. Connect to an operating controller and expose the gaugehead to atmosphere. Allow the gauge to stabilise for 5 minutes.
2. Rotate "ATM" so that the controller reads atmospheric pressure.
3. Expose the gaugehead to a pressure below 1×10^{-3} millibar and wait 5 minutes for the gauge to stabilise.
4. Adjust "VAC" until a reading of 1×10^{-3} millibar is obtained. Back off the adjustment to the point where the controller is about to increase the reading.
5. Expose the gaugehead to atmosphere, allow time to stabilise and repeat steps 2 through 4 in order to get consistent readings at atmosphere and vacuum.

Users of AML controllers who have access to a DVM can perform a slightly more accurate calibration by adjusting the voltage on test points V1 and V2 on PGCs or VP1 and VP2 on NGCs (for Pirani 1 and 2 respectively) on the main PCB assembly of the instrument with respect to 0VA. The voltage should be between 0v and +0.020v at atmosphere and between +4.99 and +5.01v at below 1×10^{-3} millibar. **N.B.** Gross mis-calibration of the "VAC" control may cause an AML controller to report an open-circuit filament at low pressures.

WARNING. Do not plug a Pirani gauge into the 'Auxiliary ' socket of a PGC, as this will damage the filaments. Do not attempt to remove the backshell/cable clamp from the gaugehead as this may cause a leak.

MAINTENANCE. No routine maintenance is required. The most likely cause of a shift in calibration is contamination of the measuring filament by exposure to hydrocarbons. Calibration may sometimes be restored by filling half the gauge space with Isopropyl alcohol, covering the end and shaking along the axis. Limit the time exposure of the gaugehead to a few minutes. Any attempt to clean the filament by mechanical means will probably break it. Filament replacement is not possible.