

## Digital Pressure Gauges

DPG1000AD, DPG1001AD, DPG1000ADBL, DPG1100AD, DPG1100ADBL



DPG1000AD, DPG1001AD, DPG1000ADBL

DPG1100AD, DPG1100ADBL

DPG1000AD, DPG1000ADBL Ranges 2000 and up

DPG1100AD, DPG1100ADBL Ranges 2000 and up

INSTRUCTION SHEET

M3361/0818

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- DPG1000AD Low Voltage AC/DC Powered
- DPG1001AD Low Voltage AC/DC Powered, High Accuracy
- DPG1000ADBL Low Voltage AC/DC Powered w. Backlighting
- DPG1100AD Low Voltage AC/DC Powered, NEMA 4X
- DPG1100ADBL Low Voltage AC/DC Powered w. Backlighting, NEMA 4X

### Ranges and Resolution

Resolution is fixed as indicated in table.

Resolution is limited by number of display digits. 2, 20, 200, and 2000 ranges display 1.999, 19.99, 199.9, and 1999.

**Bold** Standard ranges. Contact Omega Engineering to order other ranges listed below.

**G** Gauge reference pressure

**VAC** Vacuum gauge, minus sign not used unless specified

**A** Absolute reference (normally reads atmospheric pressure, reads zero at full vacuum)

‡ DPG1001B not available in 3 psi, 5 psi, vacuum, bipolar ranges, and ranges with insufficient digits.

\* 4 digit range. All others 3-1/2 digit.

### Power

Operates on 8 to 24 VAC 50/60 Hz or 9 to 32 VDC

AD: Approximately 5 mA

ADBL: Approximately 80 mA

3 ft long, 2-conductor 22 AWG cable

Optional wall mount power supply to operate on 115VAC

All models are designed for continuous operation

**Dimensions** (see drawing on next page)

DPG1000, DPG1001

3.38" W x 2.88" H x 1.65" D housing

Add approx. 0.75" to height for pressure fitting

DPG1100

3.5" W x 3.0" H x 2.0" D NEMA 4X housing

Add approx. 0.75" to height for pressure fitting

**Weight** (approximate)

Gauge: 9 ounces

Shipping weight: 1 pound

**Housing Material & Color**

DPG1000, DPG1001

Extruded aluminum case, light gray epoxy powder coated, black ABS/polycarbonate bezel, front and rear gaskets, polycarbonate label

DPG1100

Light gray ABS/polycarbonate NEMA 4X case, rear gasket, polycarbonate label

**Overpressure, Burst, Vacuum**

Ranges using 3000 psig sensor: 5000 psig

Ranges using 5000 psig sensor: 7500 psig

All others:

2 X pressure range

4 X sensor burst pressure rating, or 10,000 psi, whichever is less

3000 psi, 5000 psi, and 4 digit ranges 112.5% full scale out-of-range display: 1---- or 1-.-.-.

Under-range display (non-vacuum sensors): -Err

Vacuum service: ±15 psig, 15 psig, 15 psia, 30 psia, 100 psig, 100 psia, 200 psig sensors.

**Environmental**

Storage temperature:

-40 to 203°F (-40 to 95°C)

Operating (3.5 digit versions):

-40 to 185°F (-40 to 85°C)

Operating (4 digit versions):

-4 to 185°F (-20 to 85°C)

Compensated range:

32 to 158°F (0 to 70°C)

| PSI                      | Res | inHg/PSI            | Res | mmH2O                   | Res  |
|--------------------------|-----|---------------------|-----|-------------------------|------|
| 3PSIG‡                   | .01 | -30V15PSIG‡         | .1  | 2000MMH2OG‡             | 1    |
| <b>5PSIG‡</b>            | .01 | <b>-30V100PSIG‡</b> | .1  | 3500MMH2OG‡             | 1    |
| 15PSIA                   | .01 | -30V200PSIG‡        | .1  | <b>cmH2O</b>            | Res  |
| <b>15PSIVAC‡</b>         | .01 | <b>inH2O</b>        | Res | 200CMH2OG‡              | .1   |
| ±15PSIG‡                 | .1  | 85INH2OG‡           | .1  | 350CMH2OG‡              | 1    |
| <b>15PSIG</b>            | .01 | 140INH2OG‡          | .1  | 1000CMH2OA              | 1    |
| 30PSIA                   | .1  | 400INH2OA           | 1   | 1000CMH2OVAC‡           | 1    |
| <b>30PSIG‡</b>           | .1  | 400INH2OVAC‡        | 1   | ±1000CMH2OG‡            | 1    |
| 60PSIG                   | .1  | ±400INH2OG‡         | 1   | 1000CMH2OG              | 1    |
| 100PSIA                  | .1  | 400INH2OG           | 1   | 2000CMH2OA              | 1    |
| -15V100PSIG‡             | .1  | 850INH2OA           | 1   | 2000CMH2OG              | 1    |
| <b>100PSIG</b>           | .1  | 850INH2OG           | 1   | <b>kPa</b>              | Res  |
| -15V200PSIG‡             | .1  | <b>ftH2O</b>        | Res | 20KPAG‡                 | .01  |
| 200PSIG                  | .1  | 7FTH2O‡             | .01 | 35KPAG‡                 | .1   |
| <b>300PSIG‡</b>          | 1   | 12FTH2O‡            | .01 | 100KPAA                 | .1   |
| <b>500PSIG</b>           | 1   | 35FTH2O‡            | .1  | 100KPAVAC‡              | .1   |
| <b>1000PSIG</b>          | 1   | 70FTH2O             | .1  | ±100KPAG‡               | .1   |
| <b>2000PSIG</b>          | 1   | 140FTH2O            | .1  | 100KPAG                 | .1   |
| <b>3000PSIG</b>          | 1   | 230FTH2O‡           | 1   | 200KPAA                 | .1   |
| <b>5000PSIG</b>          | 1   | 480FTH2O            | 1   | 200KPAG                 | .1   |
| <b>oz/in<sup>2</sup></b> | Res | 700FTH2O            | 1   | 400KPAG                 | 1    |
| 50ZING‡                  | .1  | 1150FTH2O           | 1   | 700KPAA                 | 1    |
| 80ZING <sup>V</sup>      | .1  | 2300FTH2O*          | 1   | 700KPAG                 | 1    |
| 240ZINA‡                 | 1   | 4600FTH2O*          | 1   | -100V700KPAG‡           | 1    |
| 240ZINVAC‡               | 1   | 6900FTH2O*          | 1   | 1400KPAG                | 1    |
| ±240ZING‡                | 1   | <b>mmHg</b>         | Res | -100V1400KPAG‡          | 1    |
| 240ZING‡                 | 1   | 150MMHGG‡           | .1  | 2000KPAG                | 1    |
| 480ZINA                  | 1   | 260MMHGG‡           | 1   | 3500KPAG*               | 1    |
| 480ZING                  | 1   | 760MMHGA            | 1   | 7000KPAG*               | 1    |
| <b>inHg</b>              | Res | 760MMHGVAC‡         | 1   | <b>MPa</b>              | Res  |
| 6INHGG‡                  | .01 | ±760MMHGG‡          | 1   | 1.4MPAG                 | .001 |
| 10INHGG‡                 | .01 | 760MMHGG            | 1   | -0.1V1.4MPAG‡           | .001 |
| 30INHGA‡                 | .1  | 1600MMHGA           | 1   | 2MPAG                   | .001 |
| <b>30INHGVAC‡</b>        | .1  | 1600MMHGG           | 1   | 3.5MPAG‡                | .01  |
| ±30INHGG‡                | .1  | <b>Torr</b>         | Res | 7MPAG                   | .01  |
| 30INHGG‡                 | .1  | 760TORRA            | 1   | 14MPAG                  | .01  |
| 60INHGA                  | .1  | 760TORRVAC‡         | 1   | 20MPAG                  | .01  |
| 60INHGG                  | .1  | 1600TORRA           | 1   | 35MPAG‡                 | .01  |
| 120INHGG                 | .1  | <b>mbar</b>         | Res | <b>g/cm<sup>2</sup></b> | Res  |
| 200INHGA                 | .1  | 200MBARG‡           | .1  | 200GCMG‡                | .1   |
| -30V200INHGG‡            | .1  | 350MBARG‡           | 1   | 350GCMG‡                | 1    |
| 200INHGG                 | .1  | 1000MBARA           | 1   | 1000GCMMA               | 1    |
| -30V400INHGG‡            | 1   | 1000MBARVAC‡        | 1   | 1000GCMVAC‡             | 1    |
| 400INHGG                 | 1   | ±1000MBARG‡         | 1   | ±1000GCMG‡              | 1    |
| 600INHGG                 | 1   | 1000MBARG           | 1   | 1000GCMG                | 1    |
| 1000INHGG                | 1   | 2000MBARA           | 1   | 2000GCMMA               | 1    |
| 2000INHGG                | 1   | 2000MBARG           | 1   | 2000GCMG                | 1    |
| 4000INHGG*               | 1   |                     |     |                         |      |

| atm        | Res  | bar        | Res  | kg/cm <sup>2</sup> | Res  |
|------------|------|------------|------|--------------------|------|
| 1ATMA      | .001 | 1BARA      | .001 | 1KGCMMA            | .001 |
| 1ATMVAC‡   | .001 | 1BARVAC‡   | .001 | 1KGCMVAC‡          | .001 |
| ±1ATMG‡    | .001 | ±1BARG‡    | .001 | ±1KGCMG‡           | .001 |
| 1ATMG      | .001 | 1BARG      | .001 | 1KGCMG             | .001 |
| 2ATMA      | .001 | 2BARA      | .001 | 2KGCMMA            | .001 |
| 2ATMG      | .001 | 2BARG      | .001 | 2KGCMG             | .001 |
| 4ATMG      | .01  | 4BARG      | .01  | 4KGCMG             | .01  |
| 7ATMA      | .01  | 7BARA      | .01  | 7KGCMMA            | .01  |
| 7ATMG      | .01  | 7BARG      | .01  | 7KGCMG             | .01  |
| -1V7ATMG‡  | .01  | -1V7BARG‡  | .01  | -1V7KGCMG‡         | .01  |
| 14ATMG     | .01  | 14BARA     | .01  | 14KGCMMA           | .01  |
| -1V14ATMG‡ | .01  | -1V14BARG‡ | .01  | -1V14KGCMG‡        | .01  |
| 20ATMG     | .01  | 20BARA     | .01  | 20KGCMMA           | .01  |
| 34ATMG‡    | .1   | 35BARG‡    | .1   | 35KGCMG‡           | .1   |
| 70ATMG     | .1   | 70BARG     | .1   | 70KGCMG            | .1   |
| 140ATMG    | .1   | 140BARG    | .1   | 140KGCMG           | .1   |
| 200ATMG    | .1   | 200BARG    | .1   | 200KGCMG           | .1   |
| 340ATMG‡   | 1    | 350BARG‡   | 1    | 350KGCMG‡          | 1    |

**Accuracy** (linearity, hysteresis, repeatability)

±0.25% of full scale ±1 least significant digit

DPG1001: ±0.10% of full scale ±1 least significant digit

**Display** (update rate, type, size)

3 readings per second nominal display update

Ranges up to 1999: 3½ digit LCD, ½" digit height

Ranges 2000 and up: 4 digit LCD, 0.4" H digits, alphanumeric display of units

BBL: Red LED display backlighting

**Controls & Functions**

Ranges up to 1999: Front pushbutton turns gauge on/off and starts shutoff timer. Turns on backlighting for 1 minute on BBL models.

Ranges 2000 and up: Front pushbutton turns gauge on/off, starts shutoff timer. Pressing and holding front button zeros gauge. The zero feature is not used on absolute reference gauges.

**Calibration**

Ranges up to 1999: Front potentiometers, non-interactive zero & span, ±10% range

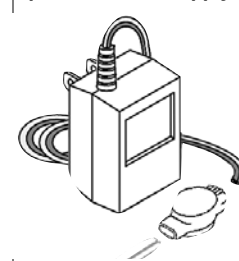
Ranges 2000 and up: Internal pushbuttons, non-interactive zero, midpoint, span, ±10% range. Calibration information stored in non-volatile memory.

**Connection and Material**

1/4" NPT male fitting, 316L stainless steel

All wetted parts are 316L stainless steel

### Optional Power Supply Kit DPG1000-PS



Includes a UL/CSA listed 115 VAC (50/60 Hz) to 12 VDC, 200 mA output wall-mount power supply with U.S.-style 2-prong plug and a moisture-resistant connector, 6 ft long two-conductor wire with stripped wire ends. Use pliers to crimp gauge and power supply wires together.

**CAUTION:****Installation and Precautions**

- ✓ Read these instructions before using the gauge. Contact the factory for assistance.
- ✓ These products do not contain user-serviceable parts. Contact us for repairs, service, or refurbishment.
- ✓ Gauges must be operated within specified ambient temperature ranges.
- ✓ Outdoor or wash down applications require a NEMA 4X gauge or installation in a NEMA 4X housing.
- ✓ Use a pressure or vacuum range appropriate for the application.
- ✓ Use fittings appropriate for the pressure range of the gauge.
- ✓ Due to the hardness of 316 stainless steel, it is recommended that a thread sealant be used to ensure leak-free operation.
- ✓ For contaminated media use an appropriate screen or filter to keep debris out of gauge port.
- ✓ Remove system pressures before removing or installing gauge.
- ✓ Install or remove gauge using a wrench on the hex fitting only. Do not attempt to turn gauge by forcing the housing.
- ✓ Good design practice dictates that positive displacement liquid pumps include protection devices to prevent sensor damage from pressure spikes, acceleration head, and vacuum extremes.
- ✗ Avoid permanent sensor damage! Do not apply vacuum to non-vacuum gauges or hydraulic vacuum to any gauges.
- ✗ Avoid permanent sensor damage! NEVER insert objects into gauge port or blow out with compressed air.
- ⚠ Gauges are not for oxygen service. Accidental rupture of sensor diaphragm may cause silicone oil inside sensor to react with oxygen.
- ✗ NEVER connect the gauge wires directly to 115 VAC or permanent damage will result.



**WARNING:** This product can expose you to chemicals including lead, nickel and chromium, which are known to the State of California to cause cancer or birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

**Power**

The AD series is powered by 8-24 VAC 50/60 Hz or 9-32 VDC.

The type and magnitude of the supply voltage have negligible effects on the gauge calibration as long as it is within the voltage ranges stated above. No polarity needs to be observed when connecting a power supply. An inexpensive unregulated low voltage AC or DC power supply can be used.

After the gauge is installed, route the wires away from heat sources and moving equipment and connect the low-voltage power source to the gauge wires.

Ensure that the gauge supply voltage does not fall below 8 VACRMS if AC power is used, or 9 VDC if DC power is used. Operation with less than these values may cause erratic or erroneous readings.

When operating multiple gauges from the same power supply, refer to the mA rating in the specifications to ensure adequate power.

Note that standard 24 VAC transformers often operate at voltages well over the gauge's 24 VAC limit.

**Absolute Reference Gauges**

These models have engineering units shown on the rear label such as PSIA, INHGA, INH2OA, BARA, MBARA, KPAA, TORR or TORRA, MMHGA, KGCMA, ATMA. The "A" indicates absolute reference. These ranges display atmospheric pressure when the gauge port is open to the atmosphere. They display zero at high vacuum.

When the gauge port is open to the atmosphere, it is normal for the reading to constantly change in response to atmospheric pressure changes. Do not adjust the calibration controls!

**Display Backlighting (ADBL models)**

Red LED display backlighting on ADBL models is on whenever the gauge is on. Backlighting may not be apparent under bright lighting conditions.

**Operation – Ranges up to 1999**

Press the button on the front of the gauge to activate the display.

The gauge can be shut off at any time by pressing the button again.

If the gauge is in the power-on state and the power is disconnected, the gauge will turn on when power is reapplied.

The display indicates the pressure reading updated approximately 3 times per second. The gauge can be left on continuously or turned off when not in use.

Display backlighting for BL models is on whenever the gauge is on. The backlighting will not be apparent under bright lighting conditions.

**Operation – Ranges 2000 and up including 3000 psi, 5000 psi**

Press and hold the front button for approximately 1 second if the gauge does not turn on when power is applied.

When the supply voltage is applied, the gauge will go through a power-up sequence. The full-scale range is indicated, display segments are tested, and then the reading and units are displayed.

The gauge may be zeroed at power-up by following the procedure below. This feature corrects small deviations from zero due to temperature changes. Absolute reference gauges do not use the zero feature since they normally read atmospheric pressure.

The gauge port must be exposed to normal atmospheric pressure with no pressure applied. The zero function is only used at power-up and the stored zero correction is erased when the gauge is shut off.

Press and hold the front button.

The full-scale range is indicated and the display is tested.

Continue to press the button until 0000 is displayed and then release the button.

The gauge is now zeroed and ready for use with the actual pressure is displayed.

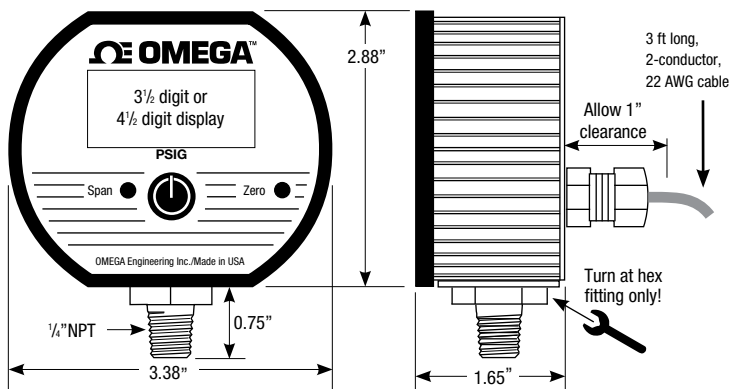
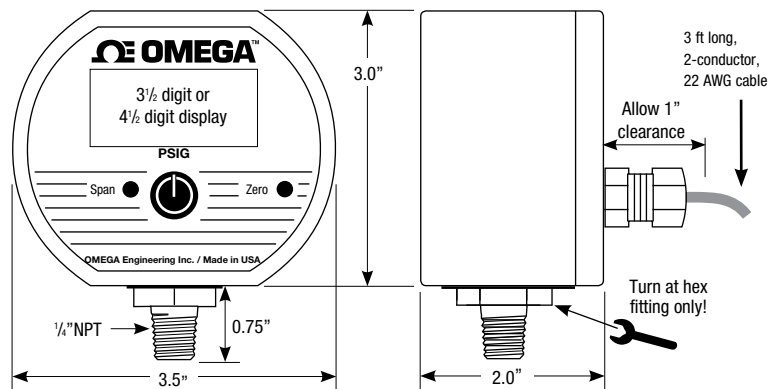
Attempting to zero the gauge with pressure greater than approximately 3% of full-scale applied will result in an error condition, and the display will alternately indicate Err0 and the actual measured pressure. The gauge must be powered down to reset the error condition.

Following the start-up initialization, the display indicates the pressure reading updated approximately 3 times per second.

If excessive vacuum is applied to a pressure-only gauge, the display will indicate -Err until the vacuum is released. Applying vacuum to a gauge designed for pressure may damage the pressure sensor. If excessive pressure is applied (112.5% over range), an out-of-range indication of 1 - - - or 1 - . - . - will be displayed depending on model.

Display backlighting for BL models is on whenever the gauge is on. The backlighting will not be apparent under bright lighting conditions.

To shut off the gauge at any time, press and hold the button until the display indicates OFF (about 5 seconds) and then release.

**1000AD, 1001AD, 1000ADBL****1100AD and 1100ADBL (NEMA 4X)**

**NOTE:**

**Calibration Information**

All gauges are factory calibrated on NIST traceable calibration equipment. No calibration is required before placing the gauge into service.

Gauges can be returned to Omega Engineering for factory certified recalibration. NIST traceability is available. Gauges can also be recalibrated by any metrology lab with pressure calibration equipment at least four times more accurate than the gauge.

Absolute reference models display atmospheric pressure if the gauge port is open to the ambient. It is normal for the reading to constantly change in response to atmospheric pressure changes. Vacuum generation and atmospheric pressure measurement equipment for accurate calibration and thus these are more difficult to calibrate in the field.

**Calibration Preparation – All Models**

All gauges are factory calibrated using NIST traceable calibration equipment. Calibration is not required before using the gauge. Calibration intervals depend on your quality standards, but annual re-calibration is customary.

Calibration equipment is not required to zero gauge reference ranges. Absolute reference ranges may be zeroed with application of full vacuum.

Span calibration should only be performed using appropriate calibration procedures with calibration standards that are at least four times more accurate than the gauge being calibrated.

The calibration system must be able to generate and measure pressure/vacuum over the full range of the gauge. A vacuum pump able to produce a vacuum of 100 microns (0.1 torr or 100 millitorr) or lower is required for vacuum and absolute gauges.

Connect gauge to a 8-24 VAC 50/60 Hz or 9-32 VDC power supply.

Allow the gauge to equalize to normal room temperature for approximately 20 minutes before calibration.

**Calibration of Ranges up to 1999**



DPG1000, DPG1001

DPG1100

For DPG1000AD and DPG1100AD models remove the front covers to access the zero and span calibration potentiometers.

For DPG1100AD models unscrew the nylon cover screws to access the zero and span calibration potentiometers.

Gauges may be re-zeroed without affecting the span calibration. For gauge reference models the gauge port must be open to the ambient. For absolute reference models full vacuum must be applied.

Adjust the zero control until the gauge reads zero with the minus (-) sign occasionally flashing.

Zero calibration must be done before span calibration.

Using the appropriate pressure standards, record readings at three to five points over the range of gauge and adjust span control to minimize error and meet specifications.

**Calibration of Ranges 2000 and up including 3000 psi, 5000 psi**



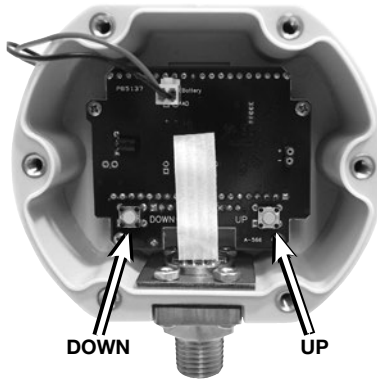
DPG1000AD, DPG1001AD, DPG1000ADBL Ranges above 2000



DPG1100AD, DPG1100ADBL Ranges above 2000

**Entering Calibration Mode**

Remove the rear cover to gain access to the UP and DOWN buttons located near the lower right and left corners of the circuit board.



With the gauge off, press and hold the DOWN calibration button, and also press the front button.

The full-scale pressure range and display test is shown, and then CAL is displayed to indicate that the calibration mode is enabled.

Release all buttons. The gauge enters and remains in the calibration mode until restarted manually or power is removed. Features not related to calibration are disabled. If the power is removed during calibration, settings will not be saved.

The display will indicate the current pressure reading, updating approximately 3 times per second.

Each press of the UP or DOWN button makes a small correction, which may not always be indicated on the display. Press and hold the button for one second or longer to make larger corrections. The gauge's display is adjusted to match the calibrator's reading.

**Gauge Reference Ranges (3 Points)**

With the gauge port open to atmosphere, the character display will alternate between ZERO and CAL. Press the UP and DOWN buttons to obtain a display indication of zero.

Apply full-scale pressure (or vacuum for vacuum gauges). The character display will alternate between +SPAN and CAL. Press the UP and DOWN buttons to obtain a display indication equal to full-scale pressure.

Apply 50% of full-scale pressure. The character display will alternate between +MID and CAL. Use the UP and DOWN buttons to obtain a display indication equal to 50% of full-scale pressure.

**Absolute Reference Ranges (3 Points)**

Apply full vacuum to the gauge. The character display will alternate between ZERO and CAL. Press the UP and DOWN buttons to obtain a display indication of zero.

Apply full-scale pressure. The character display will alternate between +SPAN and CAL. Press the UP and DOWN buttons to obtain a display indication equal to full-scale pressure.

Apply 50% of full-scale pressure. The character display will alternate between +MID and CAL. Press the UP and DOWN buttons to obtain a display indication equal to 50% of full-scale pressure.

**Bipolar (±) and Compound Ranges (4 or 5 Points)**

With the gauge port open to atmosphere, the character display will alternate between ZERO and CAL. Press the UP and DOWN buttons to obtain a display indication of zero.

Apply full-scale positive pressure. The character display will alternate between +SPAN and CAL. Press the UP and DOWN buttons to obtain a display indication equal to full-scale pressure.

Apply 50% of full-scale positive pressure. The character display will alternate between +MID and CAL. Press the UP and DOWN buttons to obtain a display indication equal to 50% of full-scale pressure.

Apply full vacuum. The character display will alternate between -SPAN and CAL. Press the UP and DOWN buttons to obtain a display indication equal to the full vacuum reading.

Gauges using a ±15 psig sensor have a -MID calibration point. Apply 50% of the full-scale vacuum range (for example, -7.4 psi for a ±15 psi gauge). The character display will alternate between -MID and CAL. Press the UP and DOWN buttons to obtain a display indication equal to 50% of full-scale vacuum.

**Exit Calibration Mode and Verify Calibration**

Exit the calibration mode and save the calibration data by pressing and holding the front button until the display indicates OFF.

Verify readings at 0%, 25%, 50%, 75%, and 100% of full scale.

Replace the rear cover and screws, taking care not to pinch the wires between the case and the rear cover.

## WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

**OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.**

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

## RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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