

# ROBINAIR



## OWNERS MANUAL

RA VG-1 · Digital Micron Gauge

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Robinair  
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In order to ensure proper performance, keep instrument away from sources of Electro-Magnetic Interference.

## SET UP:

### Battery Installation

1. Remove the rubber cover from the gauge by lifting it at the top and gently pulling it back to expose the cover on the unit.
2. Remove the battery cover by unscrewing the single, small screw at the top of the battery cover and lifting the cover away.
3. Insert three (3) size "AAA" Alkaline batteries, **TAKING CARE TO NOTE THE BATTERY POLARITY** marked on the inside of the case.
4. Replace the battery cover, re-install and tighten the screw and replace and the rubber boot.



FIG. 1

### Choosing Your Connection:

Your RA VG-1 comes with a standard 1/8" NPT Male fitting. This can be mounted directly into most manifolds or panel assemblies. In the event you wish to connect the gauge directly in-line to an evacuation circuit, 2 accessory fittings are included.



Do not  
turn by hand.



- A.** Fitting A is a Tee with 1/8" NPT female branch and two 1/4" SAE Male Flare legs. This allows the gauges to be connected between two standard hoses directly in-line.



Always  
use a  
wrench.

- B.** Fitting B is a Tee with 1/8" NPT Female leg, 1/4" SAE Male Flare branch, and 1/4" SAE Female Flare Swivel leg. This allows connection directly to a male flare fitting such as a system service port.

When using either adapter A or B, it is critical to assemble the RA VG-1 into the 1/8" NPT female side of the adapter with Teflon™ type sealing tape, and tighten with a wrench. This is necessary to ensure a leak free connection and prevent false readings of system vacuum.

### Using the Magnetic Hook Assembly

The RA VG-1 comes with a unique Magnetic Hook Assembly which allows you to 'hang' the gauge during operation or storage. It is possible to use either the magnet alone or in combination with the hook.

1. To attach the gauge with the magnet only, simply place the back of the unit against any ferrous surface. The powerful magnet will attach and hold the gauge.
2. To use the hook assembly, align the peg on the round disk attached to the hook with the keyhole in the back of the gauge. Insert the disk into the keyhole and now the traditional hook is attached, and the gauge can be hung from a secure location.

## OPERATING INSTRUCTIONS:

### To Turn the Gauge On:

1. Press "ON/OFF" button on the lower right of the gauge front once.

The gauge will begin a start up sequence: first displaying all characters of the LCD and then a 10 second countdown.

*NOTE:* The backlight *always* remains off during this process.

After the countdown, the backlight will switch on. If you wish to turn it off, simply press the yellow button above the display.

2. Once the gauge is ready to use it will display a nominal indication of atmospheric pressure; as well as the enunciator 'ATM'. Depending on the units of measure selected the display will show the theoretical value of 1 Atmosphere:

Microns: 76 000 (x10); inHg: 30.00; mBar: 1013; mmHg: 760.0; Pa: 10130; Torr: 760.0

*NOTE:* These values are simply *indications* of atmospheric pressure (0 gauge pressure) to show that the gauge is not detecting a vacuum. The RA VG-1 cannot be used as a measure of true atmospheric pressure.

This nominal indication of vacuum will be displayed as long as atmospheric pressure is above 650 Torr – so even when operating the gauge at high elevations, nominal sea level pressure is displayed.

### Setting the Units of Measure

The RA VG-1 can display vacuum, or negative pressure, in any one of 6 units of measure: Microns (of Mercury), Inches of Mercury (inHg), Millibars (mBar), Millimeters of Mercury (mmHg), Pascals (Pa) or Torr.

1. To change the units of measure: Press the "UNIT" button on the lower left of the gauge front. Each time the button is pressed the unit of measure is changed. The selected unit is indicated by the enunciators along the bottom of the display (see Figure 2).



FIG. 2 –  
Examples  
of different  
units of  
measure



The unit will start up in whatever scale it was in when switched off. The factory setting is Microns.

### Measuring Vacuum

1. Connect the gauge to a system in which the vacuum is to be measured.

*NOTE:* The ideal location is as close to the refrigeration or air-conditioning unit as possible. This will provide the most accurate indication of system pressure.

The gauge should be positioned so that during evacuation it is at least 50cm above the vacuum pump. Connecting the gauge directly to a vacuum pump will lead to falsely low readings of system pressure, and expose the gauge unnecessarily to vacuum pump oil draw-back when the pump is shut off (possibly voiding warranty).

2. Start the vacuum pump, open service manifold valves and system valves, if applicable.
3. The RA VG-1 may be switched on at anytime before or after evacuation has begun. As the gauge measures true pressure, it does not need to be switched on at atmospheric pressure.
  - a. The gauge will display the system pressure according to the following table:

From 'atmosphere' (see Note on page 3) to 50 Torr (50K Microns)	Unit will display 'atmosphere' (see Note on page 3)
From 50 Torr to 15 Torr	Unit will display bar segments moving from Left to Right, see Fig 3.
From 15 Torr to 5 Torr	True values with 250 micron resolution
From 5 Torr to 2 Torr	True values with 50 micron resolution
From 2 Torr to 10 mTorr	True values with 5 micron resolution

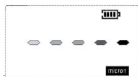


FIG. 3 Indicator of Vacuum below atmosphere, but above 15 Torr

4. In most cases, it is only necessary to switch on the gauge at the beginning of the evacuation process to verify that pressure is decreasing. Unless it is a very small system being evacuated, it is better to switch off the gauge to conserve the battery until your analog gauges indicate that a deep vacuum has been reached.
5. Once the system has reached a deep vacuum, switch on the RA VG-1 to read the precise vacuum level in high resolution.

### Color Changing Display

The RA VG-1 has a unique tri-color display. When the backlight is activated the display will turn green when an acceptable system vacuum level has been reached (below 275 Microns). As long as the measured pressure remains below 500 microns, the display will remain green unless the backlight is switched off.

**Leak Check Feature** – In the event that the Green display has been activated but the pressure level rises above a preset level (500 Microns for European models) the display will begin *flashing Red*. This indicates that moisture or a leak is present in the system – as pressure has decreased, but is now rising again. The display will continue to flash red unless:

- pressure drops below 275 microns again
- pressure rises above 25 Torr
- the backlight is switched off

### Backlight operation:

1. To turn on the backlight, press the YELLOW button above the LCD button.
2. To turn off the light, press the YELLOW button again.
3. The backlight button can also be used to switch on or off the color changing display as described above.

### Low Battery:

The RA VG-1 includes a battery level indicator in the upper right of the display. See Figure 4.

This graphic battery has 4 segments, approximately representing the remaining charge:

- 4 segments – 75-100% charge
- 3 segments – 50-75% charge
- 2 segments – 25-50% charge
- 1 segment – less than 25% charge



The battery should be replaced when no segments are visible inside the indicator.

### **Auto Shut-Off Feature**

Your RA VG-1 is equipped with an Auto Shut-off feature which will switch the gauge OFF in the event no changes in pressure are sensed within a consecutive 15 minute period.

This feature will prevent unnecessary drain on the batteries.

It is not possible to disable this feature.

### **Pressure Overload**

The RA VG-1 is designed measure ONLY negative pressure (from atmospheric to zero absolute). It should NOT be exposed to positive pressure. Applying pressure above atmospheric to the gauge may cause failure and void your warranty.

Nevertheless, the gauge has been designed to withstand gradual and temporary application of up to 27,5 Bar Gauge pressure without sustaining any functional damage.

In the event positive pressure is applied to the gauge, no change in display will be noted.

## **SPECIFICATIONS**

### **Measurement Units**

Microns (of Mercury), Inches of Mercury (inHg), MilliBars (mbar), Millimeters of Mercury (mmHg), Pascals (Pa), Torr

### **Measuring Range:**

From 15 Torr to Zero Absolute Pressure

### **Accuracy:**

Above 5 Torr -  $\pm 10\%$  of reading, below 5 Torr -  $\pm 5\%$  of reading

### **Resolution:**

From 15-5 Torr = 150 Microns/0.01inHg/0.333mbar/0.25mmHg/  
33.33Pa/0.25Torr

From 5-2Torr = 50 Microns/0.002inHg/0.07mbar/0.05mmHg/  
6.66Pa/0.05Torr

Below 2 Torr = 5 Microns/0.002inHg/0.007mbar/0.005mmHg/  
0.66Pa/0.005Torr

**Overpressure**

Max. 27,5 Bar

**Display:**

Display type: High Contrast STN type LCD with LED backlight.  
LCD size: 50 x 30mm

**Sensor:**

Proprietary MEMS (MST) Pirani Sensor

**Power supply:**

Battery type: 3 x1.5V size "AAA" Alkaline Batteries

Battery Life: Approximately 50 hours without backlight activated.

**ROBINAIR Products General Warranty Statement**

THIS WARRANTY IS EXPRESSLY LIMITED TO ORIGINAL RETAIL BUYERS OF BOSCH AUTOMOTIVE SERVICE SOLUTIONS AIR CONDITIONING AND REFRIGERATION SERVICE TOOLS AND EQUIPMENT. THIS WARRANTY IS NOT ASSIGNABLE OR TRANSFERRABLE. BOSCH AUTOMOTIVE SERVICE SOLUTIONS MAKES NO WARRANTY TO ANYONE ELSE, INCLUDING OTHER PURCHASERS AND/OR USERS, AND NONE SHALL BE APPLIED.

Products are warranted against defects in materials and workmanship for one year (with certain exceptions noted below) from the date of purchase, except for rebuilt items which are warranted for 90 days from the date of purchase. The sole and exclusive remedy for any product found to be defective is repair or replacement at the option of Bosch Automotive Service Solutions. This warranty does not cover any product that has been abused, altered, worn out, used for a purpose other than that for which it was intended, or used in a manner inconsistent with Service Solutions instructions. Information is also available through our Technical Support Department at 800-822-5561, or 800-327-5060.



The meter may be affected by static electricity interference. Please turn off wait a few minutes to start this function.

Design specifications and material are subject to change without notice.

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