

## SENSOR MAINTENANCE

Oil mist and other contaminants extracted during the evacuation process will inevitably build-up on the VG100A's sensor. The VG100A incorporates an easy to clean thermistor sensor that can withstand up to 400psi of positive pressure and the presence of oil mist without permanent damage. To clean the unit's sensor please follow the steps below:

1. Remove the valve core depressor (VCD): The VCD is fully adjustable and can be removed by turning it counter-clockwise with a pair of needle nose pliers.
2. Remove the rubber gasket: Grip the gasket with a pair of needle nose pliers and pull it out. Inspect the gasket for damage and replace if necessary.
3. Invert the unit with the female knurl nut fitting facing upwards. Use an eye dropper or syringe to inject any household water based degreaser (i.e. Fantastic®, 409® directly into the sensor housing (inside the hollow tube that the knurl nut is attached to). **NOTE: DO NOT USE A SOLVENT BASED CLEANER.** Be careful not to spill the cleaner into the plastic housing that holds the electronics-use a rag to protect the rest of the unit from the cleaner. Gently swirl the cleaner inside the sensor to produce movement and effectively remove contaminants. Then, pour the cleaner out. Repeat this procedure at least twice or until the cleaner being dispersed from the sensor appears clear and free of contaminants.
4. Next, rinse the sensor with clean warm water in the same manner as described above in step 3.
5. Finally, rinse the sensor with isopropyl alcohol (household rubbing alcohol) in the same manner as described in step 3.
6. Pull a vacuum on the VG100A to ensure that the sensor is dried completely. **NOTE: DO NOT BLOW DRY THE SENSOR.**

## SPECIFICATIONS

Sensor:	Self-heated thermistor bridge with integral temperature compensation from 32 to 122°F / 0 to 50°C.
Vacuum Range:	Atmospheric pressure to 25 microns
Indicating Accuracy:	Each illuminated LED represents a specific achieved micron level as measured by the VG100A's sensor. An LED will flash when the vacuum level is within $\pm 10\%$ of the next LED indicator. For example, the 2000 micron LED will begin to flash from 2200 to 1800 microns (from 32 to 122°F / 0 to 50°C).
Operating Temperature:	-22 to 158°F / 30 to 70°C
Power:	9-volt alkaline battery
Battery Life:	Approximately 18 hours of continuous use. Auto-off feature after 5 minutes.
Low Battery Indicator:	The 500 microns LED illuminates when approximately 60 minutes of battery life remains.

## TROUBLE SHOOTING

The VG100A's rugged design and operating simplicity virtually eliminates the possibility of field failures. If the unit appears to be operating erratically please follow the steps listed below.

1. Follow the sensor cleaning procedure listed in the Sensor Maintenance heading of this manual.
2. Replace the unit's battery.

If the steps listed above do not solve the problem, please contact your local CPS distributor or call our CUSTOMER HOTLINE: at 1-800-277-3808 (USA only).

## WARNING!



Follow good safety practices when working with refrigerants. Safety goggles should be worn at all times. Refrigerant and lubricant vapor or mist may cause injury, frostbite, irritate eyes, nose and throat. Avoid breathing or contact with skin. This equipment is intended for use by experienced professional service technicians who are familiar with a/c systems. Review the (MSDS) provided by the manufacturer for safe and proper handling information as well as emergency instructions.

## WARRANTY AND REPAIR POLICY

CPS guarantees that all instruments are free of manufacturing and material defects. If an instrument should fail during the guarantee period it will be repaired or replaced (at our option) at no charge. This guarantee does not apply to instruments that have been altered, misused, or returned solely in need of field service maintenance. All repaired instruments will carry an independent 90-day warranty. This repair policy does not include instruments that are determined to be beyond economical repair. An instrument being returned to CPS for repair must be accompanied by an original bill of sale and customer contact information.

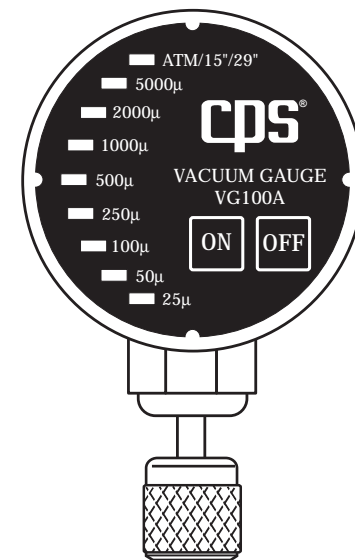


**cps**



70-893 REV.C

# cps<sup>®</sup> **VACROMETER<sup>®</sup>** ELECTRONIC VACUUM GAUGE VG100A / VG100AK



## OWNER'S MANUAL

1.800.561.8187

www.itm.com

information@itm.com

## DESCRIPTION

The VG100A is an easy to use, reliable digital electronic vacuum gauge designed to monitor the entire evacuation process from start to finish. The unit incorporates 9 discrete high intensity LEDs that have been strategically calibrated to average industry standards ranging from 1 ATM down to 25 microns. An advanced temperature compensating design automatically corrects for varying temperature conditions with no manual adjustments needed. Included: gauge hook, adapter "T-fitting" and a padded vinyl case.

## OPERATION

1. Attach the VG100A in one of the three recommended configurations:
  - a) directly to the service manifold,
  - b) directly to one of the A/C system's service ports
  - c) or, directly to the vacuum pump.
2. Depress the ON key to activate the unit. The top (green) LED will blink rapidly during a sensor warm-up period. Once the sensor warm-up period is over, the blink rate will slow indicating that the unit is ready. If the 500 micron LED illuminates at this time, then the battery is low and we recommend that it be changed before pulling a vacuum.
3. Next, begin the evacuation process. Periodically check the unit's LED display until the desired evacuation level is achieved. NOTE: The VG100A incorporates an automatic power-off feature that will automatically turn the instrument off after approximately 5 minutes of use. This feature is designed to extend battery life and WILL NOT affect the unit's ability to accurately measure vacuum at any point of the evacuation process. When you are ready to measure the state of the system, simply depress the ON key and view the LED display.
4. Once you have achieved your desired evacuation level, initiate a "Pressure Rise Test" as described in this manual.

## PRESSURE RISE TEST

Once you have achieved the necessary micron level, we recommend that you initiate a "pressure rise test". This test will determine if moisture is still present in the system or if a leak exists. Follow the following steps:

1. Close the pumps blank-off valve to isolate the pump from the VG100A and the system. Wait approximately 5 minutes to allow the system pressure to equalize. The micron level indicated by the unit at the end of the waiting period will be very close to the actual evacuation level achieved in the system.
2. If the VG100A indicates a rapid increase to atmospheric pressure then a leak exists. Check all evacuation connections including gaskets used on the evacuation equipment (i.e. hose gaskets). If the gaskets appear deformed or worn, replace and try evacuating again. If you again experience a rapid increase to atmospheric pressure then the system itself may be the source of the leak.
3. If you experience a slower rise that stops at the 1000 or 2000 micron level, then moisture is still present in the system. Continue the evacuation process. NOTE: Refrigeration oil has a vapor pressure (it boils) between 200 and 250 microns. To get a system below this level, all of the oil would have to be "boiled out", which is not likely to happen.

## VACUUM PUMP CHECK

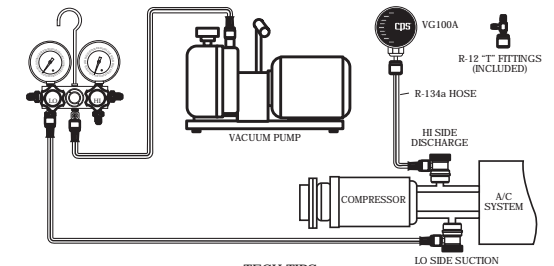
Contaminants are quickly trapped in the oil of a vacuum pump during the evacuation process. The contaminated oil can severely inhibit the performance of a pump resulting in lower evacuation capabilities and will eventually damage the pump itself. The VG100A is designed to check the performance of a vacuum pump BEFORE it is used to evacuate the system. Simply attach the VG100A directly to the pump and watch the display as it measures the pump's performance. NOTE: Different pump sizes and manufacturer brands of vacuum pumps will produce varied results. Check the specifications published by the pump manufacturer to determine the ultimate vacuum level your pump is designed to achieve. Many published manufacturer specifications state that pumps rated between 2 & 8 CFM should achieve an ultimate vacuum between 15 and 50 microns.

## VACUUM LEVEL INDICATORS

ATM/15"/29"	Tri-color LED illuminates green, orange and red in color: GREEN: This color will blink rapidly when the unit is first turned on indicating a sensor warm-up period. After the warm-up period it will continue to blink at a slower rate indicating atmospheric pressure. ORANGE: This color will illuminate when the sensor sees 15" of vacuum. RED: This color illuminates when the sensor sees 29" of vacuum. If the Orange or Red levels are not achieved a large leak is present.
5000 microns	A leak exists if this level is not achieved. Re-check all evacuation connections to ensure proper sealing.
2000 microns	Minimum evacuation level as required by certain European authorities. A leak exists if this level is not achieved.
1000 microns	(A/C systems)-High end of industry average.
500 microns	(A/C systems)-Low end of industry average. (Refrigeration systems)-High end of industry average.
250 microns	(Refrigeration systems)-Low end of industry average.
100 microns	Minimum acceptable performance level of vacuum pump. If not achieved, change oil in vacuum pump or time for pump replacement.
50 microns	Used to test the performance of vacuum pump. Simply attach the VG100A directly to the pump and monitor its performance.
25 micron	

## AUTOMOTIVE – VG100AK

1. Complete the refrigerant recovery process, component replacement or new system installation.
2. Connect the VG100A to the HI side service fitting on the car's A/C system using the included quick coupler. Turn the VG100A on and open the coupler valve.
3. Connect the vacuum pump to the manifold and the manifold's LO side hose to the LO side service port of the car's A/C system. Open the LO side valves and begin evacuation.
4. Periodically check the VG100A LED display during the evacuation process. As the vacuum in the system increases the corresponding micron level, as indicated on the LED display, will decrease.
5. When the 500 micron LED illuminates, close off the pumps blank-off valve and turn the pump off.
6. Initiate a pressure rise test (refer to pressure rise test heading in this manual). If the VG100A LED display does not rise above 1000 microns then the evacuation was successful.
7. Remove the VG100A and attach the manifold's HI side hose to the HI side service port of the car's A/C system.
8. Open the HI side valves and run the vacuum pump for 1 minute to remove any air that was introduced during the coupler change.
9. The system is now ready for charging.  
NOTE: Be careful not to introduce air into the system while you are adding PAG oil.



### TECH TIPS:

- Check the charging hose gaskets and R-134a coupler o-rings before every job
- A warm car evacuates faster than a cold one
- A vacuum pumps ability to quickly and completely evacuate a system is improved by frequent oil changes