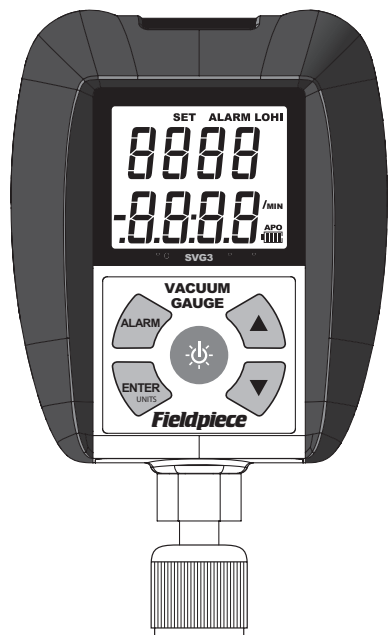


# Fieldpiece

## Easy View Vacuum Gauge

### OPERATOR'S MANUAL

Model SVG3



## Quick Start

1. Power on your SVG3 by holding the button for 1 second.
2. Connect to system directly to an unused service port, a Schrader core removal tool (SCRT), or via hoses.
3. View your vacuum measurement on the top line and rate of change ( $\pm$ microns per minute) on the bottom line.

## Certifications

- C-Tick (N22675)
- CE
- WEEE
- RoHS Compliant

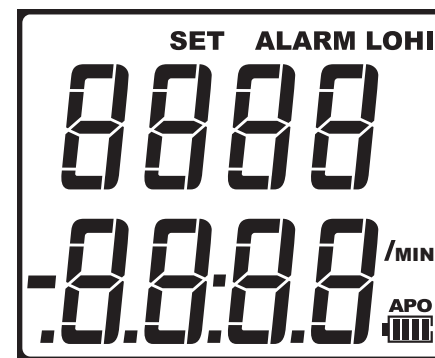
## Description

Proper evacuation of any system exposed to atmosphere is critical to ensure the system is dry and tight. SVG3 is the right tool to help HVACR professionals verify they reach proper vacuum levels. See your vacuum measurement clearly and easily with the newly designed easy-view hook and backlight. SVG3 is built for field use with its ruggedized rubber case.

SVG3 has a female 1/4" flare fitting with schrader valve depressor so you can connect it directly to a service port or your Schrader core removal tool (SCRT) reducing connections and minimizes leaks

Be alerted when you've reached your desired vacuum levels with built in Hi and Lo Alarm functions. Check for leaks with rate indication in microns per minute. The HVACR professional can do more with confidence that he is doing the job right the first time.

## Display



Top Line: Live Vacuum Measurement in Units selected  
Bottom Line: Rate of Change or Alarm Stopwatch

- APO Auto Power Off
- Battery Life
- SET ALARM** Alarm Set Mode
- ALARM LO** Low Alarm Mode
- ALARM HI** High Alarm Mode
- /MIN** Rate of Change ( $\pm$ Units Selected Per Minute)

## Controls

- Hold 1 second to power SVG3 on/off. Press <1 second to toggle backlight.
- Press to activate Alarm Lo, Alarm Hi, and return to real time mode. Hold 1 second to enter or exit Alarm Set mode.
- Press to lock in selected digit and move to next digit in Alarm Set Mode. Press and hold >1 second to Change Units.
- Increase or decrease blinking digit in Alarm Set Mode. Toggle to display stopwatch or rate of change when an alarm is activated in real time mode.
- Increase or decrease blinking digit in Alarm Set Mode. Toggle to display stopwatch or rate of change when an alarm is activated in real time mode.

**BACKLIGHT NOTE:** The backlight timer is automatically extended for 1 min when any button is pressed. A short press of toggles backlight on and off.

## Specifications

Operating temperature: 32°F (0°C) to 122°F (50°C) at <75%RH  
Storage temperature: -4°F to 140°F (-20°C to 60°C), 0 to 80% RH (with battery removed)  
Temperature coefficient: 0.1 x (specified accuracy)/°C (<18°C or >28°C)  
Over range: "OL" is displayed  
Power: 4 x AAA batteries, NEDA 24A, JIS UM4, IEC R03  
Auto power off: after 15 minutes of readings more than 10,000 microns if APO is active.  
Battery life: 40 hours standard use (alkaline) without backlight use.  
Low battery indication: is displayed when the battery voltage drops below the operating level.

**Vacuum Pressure**  
Units of measure: microns ( $\mu$ m) of mercury, mmHg, mbar, mTorr, Torr, and Pascals  
Connector type: Standard 1/4" female flare fitting, "T" fitting included (3 male flare ports)  
Range: 0 to 9999 microns of mercury (9.999 mmHg, 13.33 mbar, 9999 mTorr, 9.999 Torr, 1333 Pa)  
Accuracy:  $\pm$ (5% of reading + 5 microns), 50 to 1000  
Resolution: 1 micron (50 to 2000 microns), 250 microns (2001 to 5000 microns), 500 microns (5001 to 8000 microns), 1000 microns (8001 to 9999 microns)  
Rate: Units selected per minute  
Refresh rate: 0.5 seconds  
Atmospheric pressure: "OL" will be displayed  
Maximum overload pressure: 500 psig

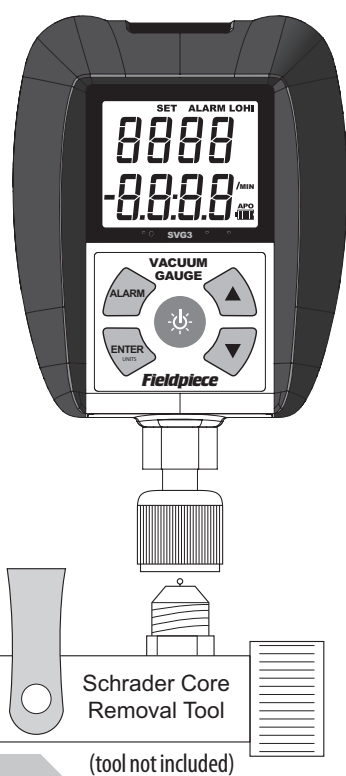
## How to Use Normal Mode

Measure deep vacuums to monitor your system evacuations. Deep vacuums remove moisture and non-condensable gases that can cause problems in a system.

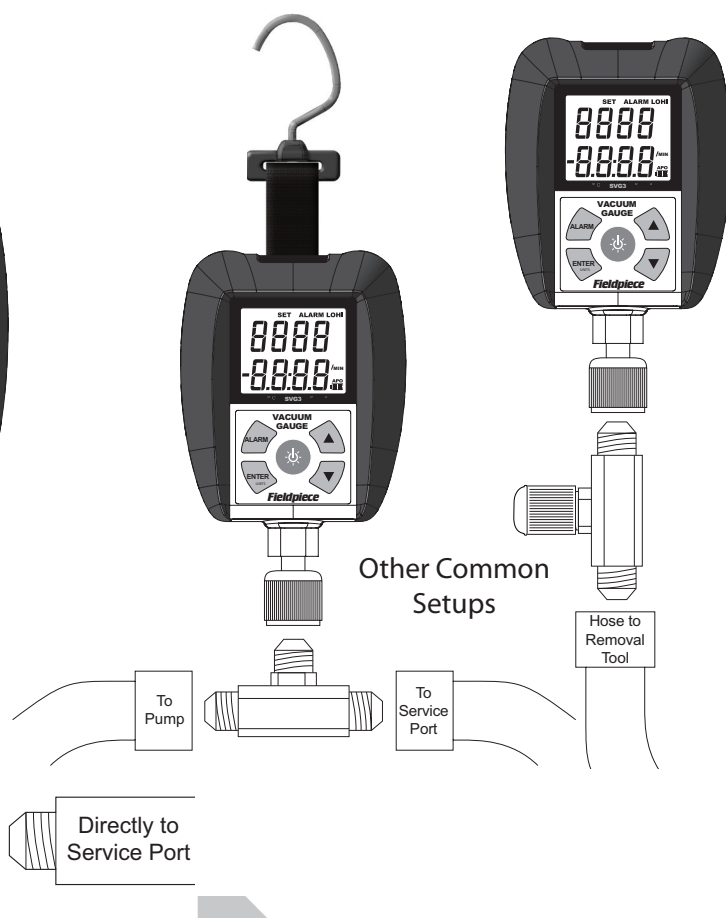
There are many ways to connect to the system, Fieldpiece recommends using a SCRT and the shortest vacuum rated hoses possible. Fewer connections reduce the potential for leaks.

1. Connect to system. Techs typically prefer connecting to the Schrader Core Removal Tool (SCRT) or an unused service port.
2. Hold for 1 second to power ON the SVG3.
3. The top display shows the vacuum in microns of mercury.
4. The bottom display shows how fast the measurement is increasing or decreasing ( $\pm$  microns of mercury per minute).

### Recommended Setup



### Other Common Setups



## Low and High Alarms

Be alerted when you've reached your desired vacuum levels. Work on other tasks at the jobsite and let SVG3 alert you when the system is ready.

Activate the low alarm (default 500 microns) to alert when the vacuum has dropped to your desired micron level.

Activate the high alarm (default 1000 microns) to see how long it takes the system to stabilize after the vacuum pump has been isolated. If the system does not stabilize over time, you may have a leak in the system or your connections.

The stopwatch will start when an alarm is activated. It will restart when the low alarm has been reached to show how long you've pulled a vacuum after reaching your desired micron level. The stopwatch will stop when the high alarm has been reached to show how long it took to rise to your high alarm value.

When an alarm is activated the UP or DOWN ARROW toggles the stopwatch and rate of change ( $\pm$  microns per minute) display.

## How to Activate the Alarms

1. Press ALARM to activate low alarm.
2. Press ALARM again to deactivate low alarm and activate high alarm.
3. Press ALARM again to deactivate high alarm and return to real time mode.

## How to Set the Alarms

The default low (500 microns) and high (1000 microns) alarm values can easily be set to whatever you want.

1. Hold ALARM for 1 second to enter Alarm Set Mode. The first digit of LO alarm will blink.
2. Use ARROWS to change the blinking number. Press ENTER to lock in a digit and move to the next digit. Repeat for all LO alarm digits.
3. When LO alarm is complete, the first digit of HI alarm will blink. Use ARROWS to change the blinking number. Press ENTER to lock in a digit and move to the next digit. Repeat for all HI alarm digits.
4. When all digits of HI alarm are locked in you will automatically exit Alarm Set Mode and your customized alarm values will be saved.

Note: Anytime while in Alarm Set Mode, you can press ALARM to toggle between alarm HI set and alarm LO set. Hold ALARM to exit Alarm Set Mode and save at any time.

Note: "Err" will show if you try to set the HI alarm lower than the LO alarm, or the LO alarm higher than the HI alarm.

## How to Change Units

1. Press and hold ENTER (>1 sec) to enter Change Units mode. Current units selected will be displayed.
2. Press UP or DOWN arrow to toggle the list of available units. Microns-mmHg-mbar-mTorr-Torr-Pascals. Stop on the units you want to select.
3. Press ENTER to save units selection and return to real time mode.



## Vacuum Tips

Follow all manufacturer's evacuation procedures over those in this manual in regards to specifications on how to evacuate systems. To achieve a deep vacuum efficiently Fieldpiece recommends the following practices.

1. Remove Schrader valves from the system service ports using a valve core removal tool (purchased separately).
2. Use the shortest vacuum rated hoses with the largest diameter available.
3. Inspect rubber seals at both ends of your hoses for damage that may result in leakage.
4. Avoid using hoses with low loss fittings when evacuating a system.
5. Avoid over-tightening the female flare fitting of the SVG3. Over-tightening may cause the rubber gasket to wear more quickly and create leaks. It is not necessary to over tighten SVG3 to the extreme to create a good seal.

## Maintenance

Clean the exterior with a dry cloth. Do not use liquid.

### Battery Replacement

Power off SVG3. Unscrew battery cover, and replace the 4 AAA batteries.



### Cleaning the Sensor

1. Turn off your SVG3.
2. Remove the Schrader valve depressor and rubber gasket. A small pair of needle nose pliers can easily pull out the depressor and the gasket at the same time. Be careful not to puncture or tear the gasket.
3. Fill the cavity halfway with isopropyl (rubbing) alcohol.
4. Use your index finger to cover female flare fitting and gently swirl and shake the alcohol within the cavity for about 15 to 30 seconds.
5. Pour out the alcohol and let the vacuum sensor dry with the flare fitting facing down.
6. Install rubber gasket and valve depressor using Replacement Parts section instructions.

Note: Do not use an object such as a cotton swab to clean the sensor. This may damage the sensor.

## Replacement Parts

The rubber gasket and Schrader valve depressor are user-replaceable. Worn out rubber gaskets can cause leaks due to a bad seal. Over-tightening of the SVG3 female flare fitting may cause the rubber gasket to wear more quickly or damage the fitting itself. Replace if the rubber gasket becomes worn. The rubber gasket (standard 1/4" gasket used in refrigerant hoses) can easily be found at your local HVACR distributor.

1. Remove both the Schrader valve depressor and rubber gasket from the SVG3 cup. Dispose of worn rubber gasket. A small pair of needle nose pliers may be used to pull out the valve depressor and the gasket. Be careful not to damage the Schrader valve depressor.
2. Position the new rubber gasket into the top of the cup. Push in with your finger until rubber gasket is at the bottom of the cup.
3. Insert Schrader valve depressor into the rubber gasket hole. Push Schrader depressor to the bottom of the cup with your finger. You may use a pocket SCRT to "screw" in the Schrader valve depressor if needed.

## A/C Basics

The Evaporator, Condenser, Restrictor (Throttling valve) and Compressor are the four basic components of an air conditioner. Following one pound of refrigerant through the system shows the function of each component.

Subcooled liquid refrigerant at high pressure enters the restrictor and is throttled to saturated refrigerant at a lower pressure. The restrictor can be either a fixed or TXV/EXV type. The fixed type must be charged to a target superheat that varies with indoor and outdoor conditions. TXV/EXV systems must be charged to subcooling.

The evaporator capacity varies with the indoor heat load on a fixed restrictor. The TXV/EXV regulates the size of the restriction to maintain a constant superheat. This essentially adjusts the capacity of the evaporator responding to the indoor heat load.

After the restrictor, refrigerant enters the evaporator at a low temperature and pressure, and boils (evaporates) into a gas by absorbing heat from the

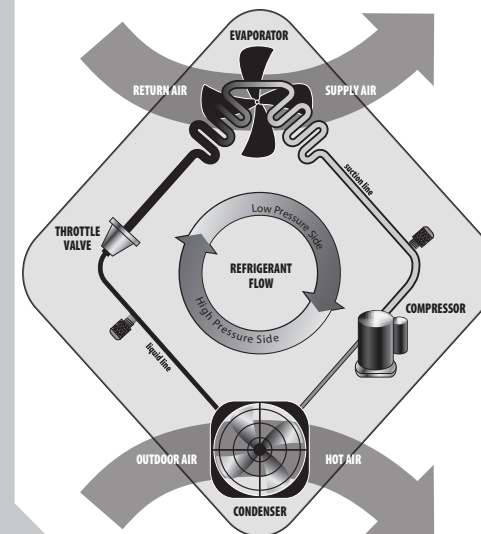
indoor air. The refrigerant stays at the same temperature and pressure until all the refrigerant evaporates into a gas. After the refrigerant becomes a gas, it will continue to absorb heat and become superheated at which point its temperature will change. The Superheat measurement is the best indication of refrigerant charge level in a fixed restrictor system. A TXV/EXV system will keep the superheat constant. There must be superheat present to ensure liquid does not flood the compressor.

Superheat measurements are taken on the suction line between the evaporator and compressor.

The compressor takes this low temperature, low pressure, slightly superheated refrigerant and compresses it to a much higher temperature and pressure.

The highly superheated gas enters the condenser and rejects heat into the outside air. The refrigerant condenses back into a liquid. Once all of the gas is condensed into a liquid,

additional removal of heat causes a temperature drop that is known as subcooling. TXV/EXV systems are charged to subcooling since superheat is controlled by the throttle valve. Subcooling measurements are taken on the liquid line between the condenser and TXV/EXV. Finally, the subcooled liquid enters the restrictor and the cycle starts again.



## Limited Warranty

This meter is warranted against defects in material or workmanship for one year from date of purchase. Fieldpiece will replace or repair the defective unit, at its option, subject to verification of the defect.

This warranty does not apply to defects resulting from abuse, neglect, accident, unauthorized repair, alteration, or unreasonable use of the instrument.

Any implied warranties arising from the sale of a Fieldpiece product, including but not limited to implied warranties of merchantability and fitness for a particular purpose, are limited to the above. Fieldpiece shall not be liable for loss of use of the instrument or other incidental or consequential damages, expenses, or economic loss, or for any claim of such damage, expenses, or economic loss.

State laws vary. The above limitations or exclusions may not apply to you.

## For Service

In the USA, call Fieldpiece Instruments for one-price-fix-all out of warranty service pricing. Send check or money order for the amount quoted. Send the meter freight prepaid to Fieldpiece Instruments. Send proof of date and location of purchase for in-warranty service. The meter will be repaired or replaced, at the option of Fieldpiece, and returned via least cost transportation.

For international customers, warranty for products purchased outside of the U.S. should be handled through local distributors.

**Fieldpiece**  
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MADE IN TAIWAN

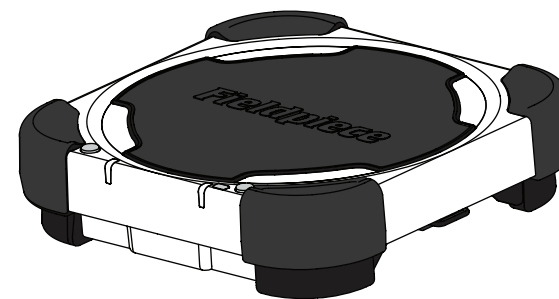
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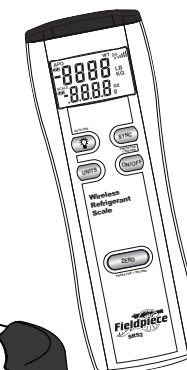
## More Great Tools from Fieldpiece



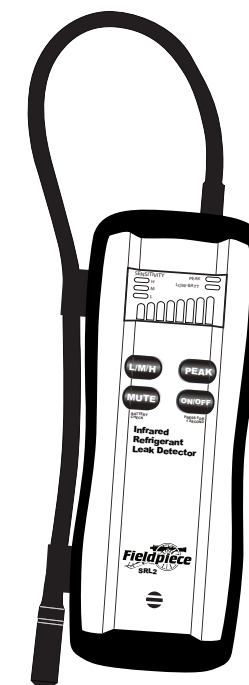
Wireless 4-Port Manifold  
Model ISMAN460



Wireless Refrigerant Scale  
Model SRS2C



Infrared Refrigerant Leak Detector  
Model SRL2K7



Dual In-Duct Psychrometer  
Model SDP2