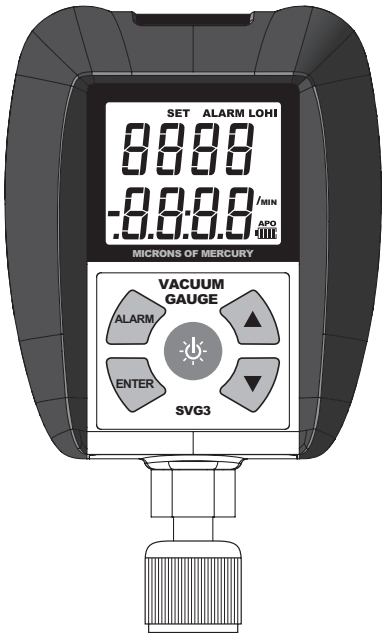# Fieldpiece

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 vacuum in microns of mercury on the top line and rate of change (±microns per minute) on the bottom line.

Certifications

C-Tick (N22675)

CE

WEEE

RoHS Compliant

Description

Proper evacuation of any system that has been exposed to atmosphere is critical to ensure proper operation and the SVG3 is the Right Tool to help HVACR Professionals verify that they reach proper vacuum levels. The easy-view hook and backlight make the SVG3 display easy to see in low visibility situations and the ruggedized case is built to withstand the rigors of field use.

To minimize leaks by reducing connections, the SVG3 has a schrader depressor so you can connect it directly to the service port or your valve core removal tool.

With the built in Hi and Lo Alarm functions and the Rate Indication on the bottom display to help the user, the HVACR Pro can do more because he can be confident that he is doing the job right the first time.

Display
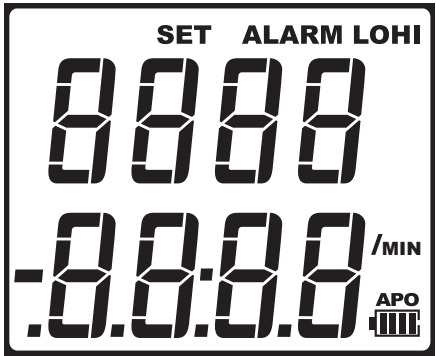
Top Line: Live Vacuum Measurement in Microns of Mercury (Hg)
Bottom Line: Rate of micron change or Alarm stopwatch

APO	Auto Power Off Enabled
▥	Battery Life
SET ALARM	Alarm Set Mode
ALARM LO	Low Alarm Mode
ALARM HI	High Alarm Mode
/MIN	Rate of Micron Change (±Microns Per Minute)

Controls

☼ Hold 1 second to power SVG3 on/off. Press <1 second to toggle backlight.

ALARM Press to activate Alarm Lo, Alarm Hi, and return to normal mode. Hold 1 second to enter or exit Alarm Set mode.

ENTER Lock in selected digit and move to next in alarm set mode.

▲ ▼ Arrow keys used to increase or decrease blinking digit in alarm set mode. Toggle to display stopwatch or rate of change when an alarm is activated.

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

Specifications

General
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 (µm) of mercury
Connector type: Standard 1/4" female flare fitting. "T" fitting included (3 male flare ports)
Range: 0 to 9999 microns of mercury
Accuracy: ±(5% of reading + 5 microns), 50 to 1000 microns
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: Microns per minute
Refresh rate: 0.5 seconds
Atmospheric pressure: "OL" will be displayed
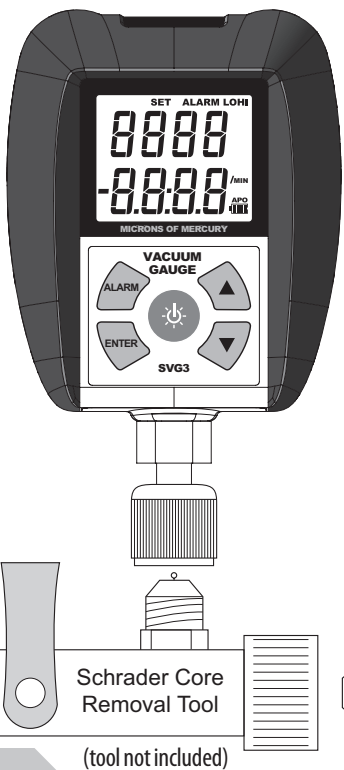Maximum overload pressure: 500 psig

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How to Use

Normal Mode

Measure deep vacuums to monitor your system evacuations. Deep vacuums help remove non-condensable gases that can cause problems in a system.
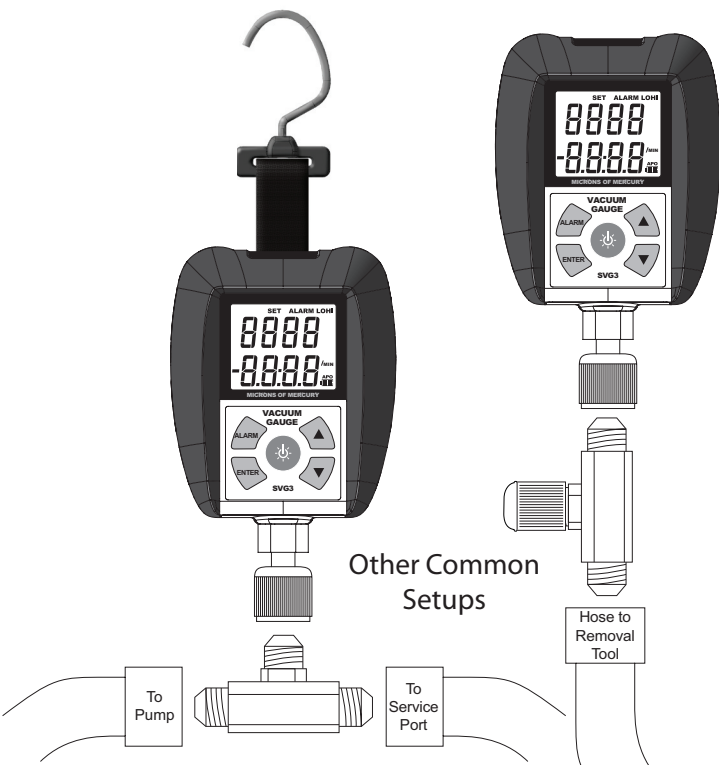
There are many ways to hook up to the system, Fieldpiece recommends using a SCRT and the shortest vacuum rated hoses possible. Fewer connections reduce the potential for leaks.

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

Recommended Setup

Hose To Pump

Schrader Core Removal Tool

(tool not included)

Directly to Service Port

Other Common Setups

To Pump

To Service Port

Hose to Removal Tool

Low and High Alarms

Use low and high alarms to monitor the SVG3 while working on other tasks.

Activate the low alarm (default 500 microns) to alert you when the system 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 from the system. If the system does not stabilize, 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 use up or down arrow key to toggle between stopwatch and rate of change (± microns per minute).

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 normal mode.

How to Set the Alarms

The default low (500 microns) and high (1000 microns) alarm values can easily be set to your desired levels.

1. Hold ALARM for 1 second to enter alarm set mode. The first digit of LO alarm will blink.
2. Use arrow buttons to change value. 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 arrow buttons to change value. 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.

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 cores and core depressors from the 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.

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 core depressor and O-ring. This can be done by hooking under core depressor and pulling both out. Be careful to not puncture or tear the O-ring.
3. Fill the cavity halfway with isopropyl (rubbing) alcohol.
4. Use index finger to cover hose fitting and gently swirl and shake the alcohol within the cavity for about 15 seconds.
5. Pour out the alcohol and let the vacuum sensor dry with the hose fitting facing down.
6. Re-insert core depressor and O-ring. Screw in T-fitting (included) tight to lock in O-ring.

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

Replacing the O-ring

Just like refrigerant hoses, if the O-ring gets severely worn and will not hold a seal, it can be easily replaced.

1. Remove both the Schrader depressor and O-ring from the flare fitting. Dispose of worn O-ring.
2. Re-insert and center the Schraeder depressor into the flare fitting.
3. Drop in and position of the new O-ring (standard O-ring hose replacement part) around the Schraeder depressor. Push in with your finger.
4. Lock O-ring into place by securely screwing in the included 3-male brass T-fitting.

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.
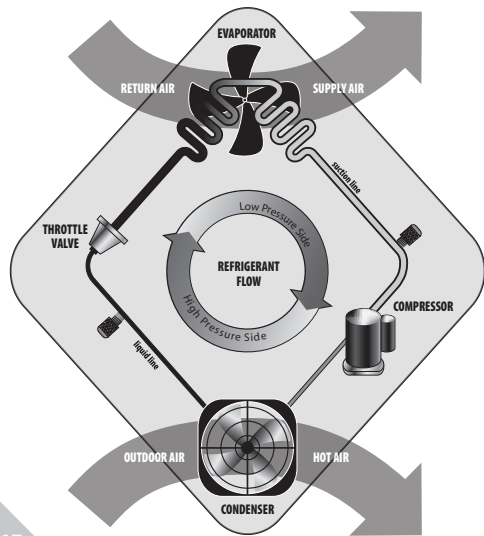
Limited Warranty

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. Outside of the USA, please visit www.fieldpiece.com for service contact information.

Fieldpiece
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MADE IN TAIWAN

www.fieldpiece.com
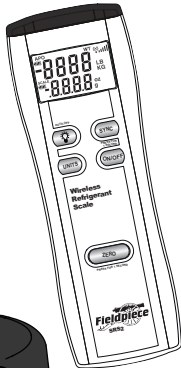© Fieldpiece Instruments, Inc 2013; v17

More Great Tools from Fieldpiece
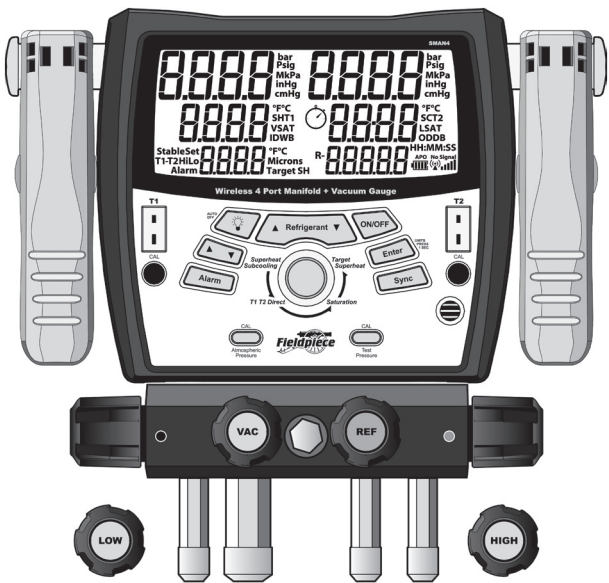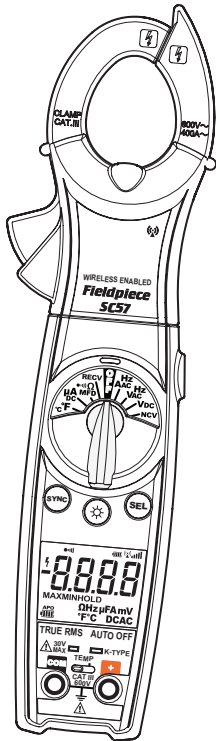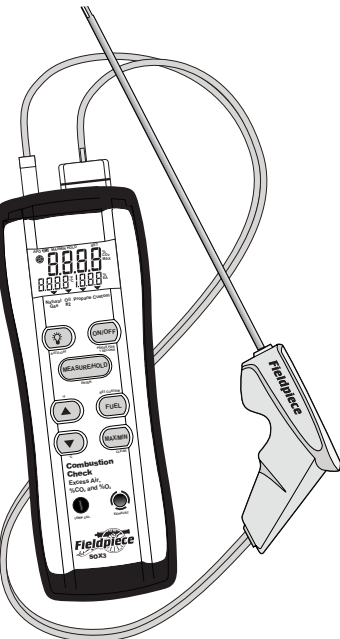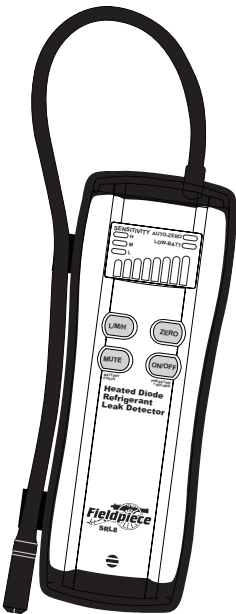

Wireless 4-Port Manifold
Model SMAN4
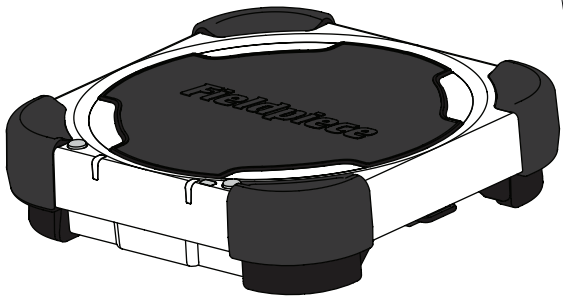
Wireless Refrigerant Scale
Model SRS2C

Heated Diode Refrigerant Leak Dectector
Model SRL8

Combustion Check with AutoPump
Model SOX3

Wireless Clamp Meter
Model SC57