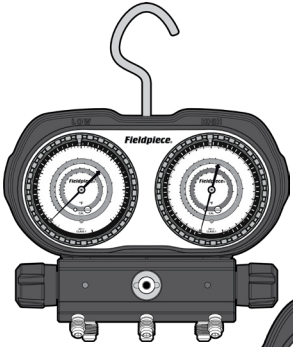
Fieldpiece®

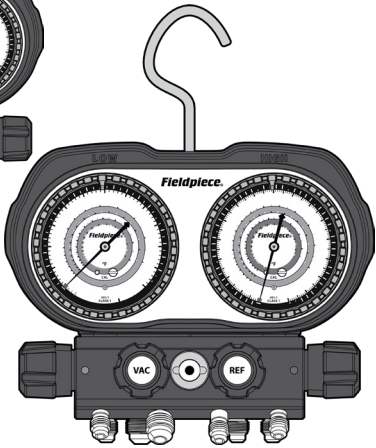
Analog Gauge Set

OPERATOR'S MANUAL

Models GS322F, GS422F,
GS334F, GS434F



3-Port



4-Port

Contents

Important Notice

This is not a consumer product. Only qualified personnel trained in service and installation of A/C and/or refrigeration equipment shall use this product.

Read and understand this operator's manual in its entirety before using your Analog Gauge Set to prevent injury or damage to you or equipment.

For use only by qualified and certified technicians in the safe use, handling, and transporting of refrigerants.

Please refer to flammable refrigerant safety guides, regional codes and legislation for more information.

Read operator manual.

Wear safety glasses.

Wear hearing protection.

Safety First!

RISK OF EXPLOSION. DANGER: This instrument is for use only by qualified and certified technicians in the safe use, handling, and transporting of refrigerants. Please refer to flammable refrigerant safety guides, regional codes and legislation for more information. Read and understand this operator's manual in its entirety before using to prevent injury or damage to you or equipment.

⚠ WARNING – Failure to heed these hazards and actions while using this device can result in serious injury or death:

1. Always wear Personal Protective Equipment (PPE), including gloves, safety glasses and earplugs.
2. Know and understand the correct safety and handling requirements of the refrigerant, including those specified in the Safety Data Sheet (SDS).
3. Avoid breathing refrigerant and oil vapors. Inhalation of high concentrations of refrigerant vapor can block oxygen to the brain causing injury or death.
4. Handle hoses and equipment carefully as refrigerant may be under high pressure. Exposure to refrigerant can cause frostbite.
5. Perform leak detection in accordance with recommended practice to verify working environment is free from leaking refrigerant, as it can be toxic and/or flammable.
6. Only work in well-ventilated areas (minimum of 4 air exchanges per hour).

⚠ WARNING: EXPLOSION HAZARD. This device is intended to be used strictly as a refrigerant manifold. Below are additional safety instructions for handling A2L & A3 refrigerants in conjunction with other equipment.

1. When using a vacuum pump or recovery machine, always use a correctly grounded outlet. Plug and lock the supplied AC cord to the unit first. Plug into any extension cord and then plug into the mains outlet last. Follow in reverse for safe removal.
2. When using a vacuum pump or recovery machine, ensure power and extension cords are in good working condition to prevent shock and spark hazards.
3. When an extension cord outlet is within the Temporary Hazardous Zone, it is recommended that users use a cord cover, or similar device, to reduce / eliminate the possibility of accidentally unplugging the vacuum pump or recovery machine from the extension cord while the circuit is live.
4. Do NOT operate vacuum pumps or recovery machines in excessively dusty environments or environments where conductive dust is to be expected.
5. Do NOT connect or disconnect the power cord from the vacuum pump, recovery machine, or extension cord when energized.
6. Ensure area around the vacuum pump or recovery machine is free of debris that could enter air vents or fan and cause accidental sparking.
7. Risk of electrostatic shock. When handling A3 or A2L refrigerants, make sure the equipment and user are appropriately grounded to dissipate any built-up charge and prevent accumulation of static charge on isolated metal parts.
8. Do not impact the equipment when utilized with flammable refrigerants. Impacts may cause sparking which can result in a risk of explosion. Only use the equipment as intended and follow all instructions. Make sure the equipment is protected from impacts during use.
9. Adhere to local occupational safety codes and possess detailed knowledge and skills when handling flammable refrigerants.
10. Have emergency, evacuation, and fire protection plans.
11. Always remain in attendance and observant when equipment is operating.
12. Do NOT mix flammable refrigerants with air.
13. Use an evacuated recovery tank that complies with local regulations.
14. Avoid overfilling recovery tanks by following refrigerant manufacturer's filling instructions and using a refrigerant scale.
15. After recovery, purge system with 100% nitrogen before opening system for repair.

⚠ CAUTION – Failure to heed these conditions can cause equipment damage.

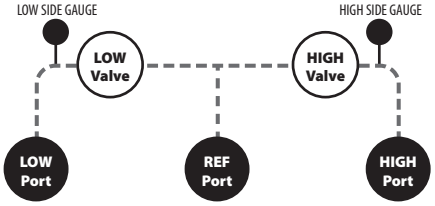
1. Ensure that all equipment is in good working condition.
2. Prevent prolonged exposure to direct sunlight. Store indoors.
3. The unit must be protected against severe impact. Solid objects must NOT be allowed to fall onto the unit.

Specifications

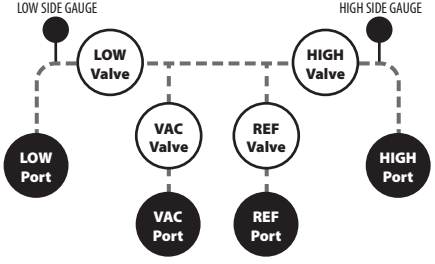
Maximum Manifold Pressure: 800 Psig (55 Bar)
High Side Gauge Range: 0 to 800 psi (0 to 55 Bar)
Low Side Gauge Range: 30 inHgV to 500 psi, f.s. (-1 to 34 Bar)
Low Side Overpressure Retard: 300 psi (20 Bar)
Gauge Accuracy: +/- 1% Full Scale, Class 1A
Operating / Storage Environment: -40°F to 158°F (-40°C to 70°C)
< 90% RH, non-condensing
Weight: 3-Port: 3.25 lbs (1.47kg); 4-Port: 3.95 lbs (1.79kg)
Port Type: (3) 1/4" Standard SAE Male Flare Fittings,
(1) 3/8" Standard SAE Male Flare Fitting (4-Port versions only)
US Patents: www.fieldpiece.com/patents

Manifold Diagrams

3-Port



4-Port



Certifications

RoHS

Restriction of Hazardous Substances Compliant

Description

The Fieldpiece 3-Port and 4-Port Analog Gauge Sets are designed to give you reliable, accurate measurements of refrigerant pressures and saturation temperatures with precision control of the refrigerant flow so you can have confidence in performing your HVACR system diagnostics, charging, recovery, and evacuation jobs right the first time, every time.

Each analog gauge set includes high resolution faceplates with four dedicated PT rings in Fahrenheit/PSI units for most common refrigerants used in Residential, Commercial, A2L, Blends, and Refrigeration applications.

The rubberized housing protects gauges that take a beating - on the job, in the van, and everywhere in between. Its rugged, armored design shields your gauges from impacts, bumps, and daily wear so they stay accurate and ready for the next call.

Use the pressure marker to mark your starting pressure during a test. Just rotate the outer dial's arrow to match the needle, and you'll know at a glance if the system drops pressure over time making pressure checks clearer, and more reliable.

The sight glass lets you visually check the condition of the refrigerant as it flows through the manifold. It helps you confirm proper refrigerant movement, identify the presence of bubbles or moisture, and verify that the system is charging or recovering smoothly.

Utilize the heavy-duty swiveling hook to hang the gauge set in your work vehicle.

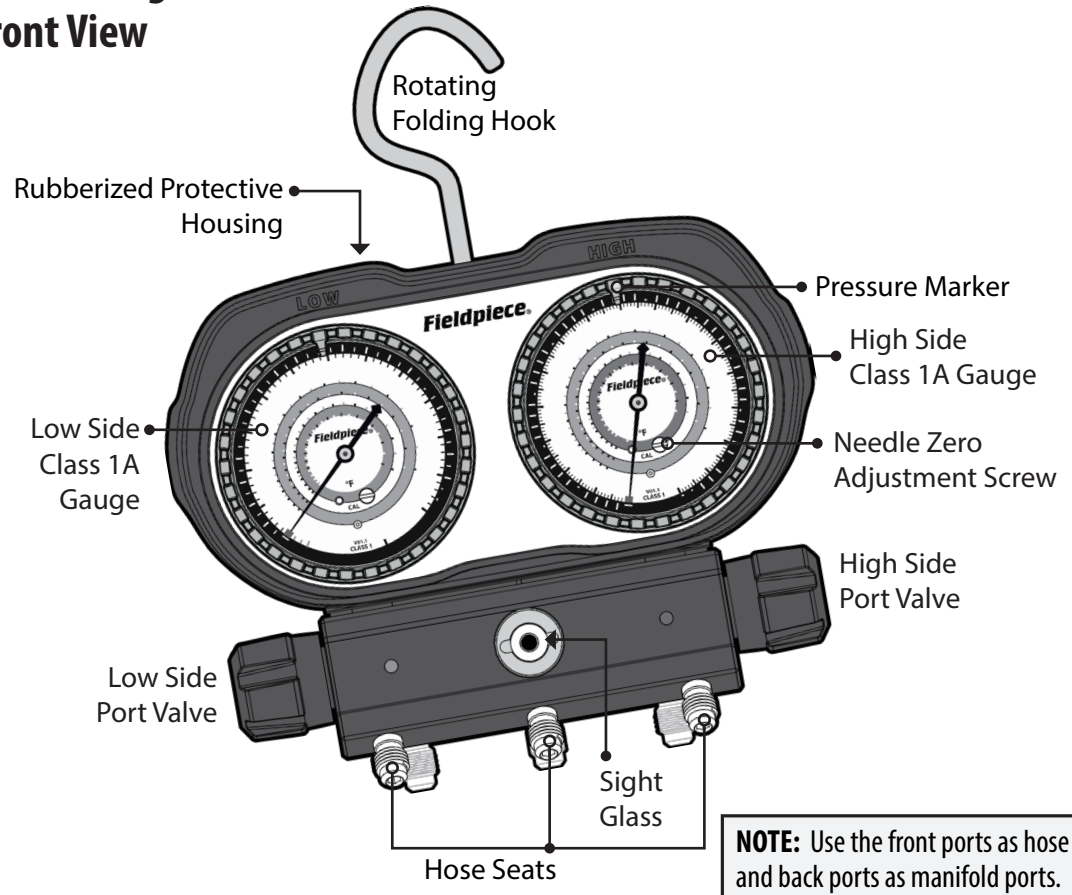
Features

Class 1A, 1% Accuracy Gauge Set
4-Ring High Resolution PT Faceplates
Available for Most Common Refrigerants
Rubberized Protective Housing
Pressure Marker
Sealed Sight Glass
Sure-Grip Knobs
Folding Hanging Hook

What's Included

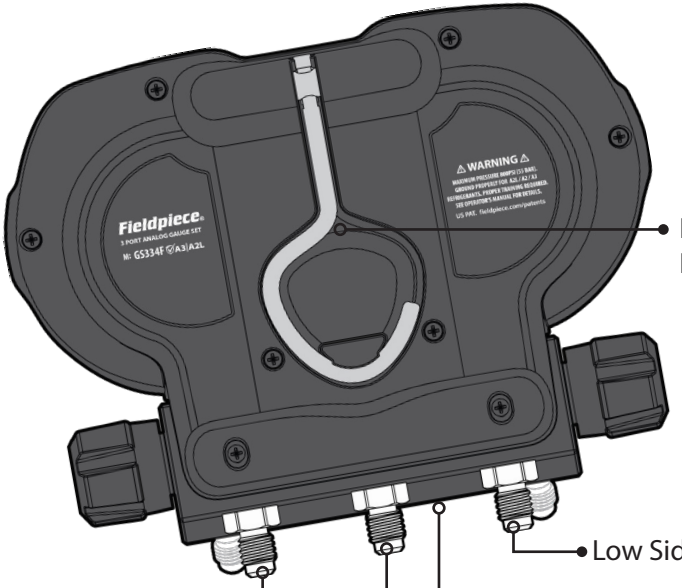
- Analog Gauge Set (3-Port), or Analog Gauge Set (4-Port)
- (1) Year Warranty
- Operator's Manual

3-Port Gauge Set
Front View



NOTE: Use the front ports as hose seats and back ports as manifold ports.

3-Port Gauge Set
Rear View



Folding
Hook Storage

Low Side Port

High Side Port

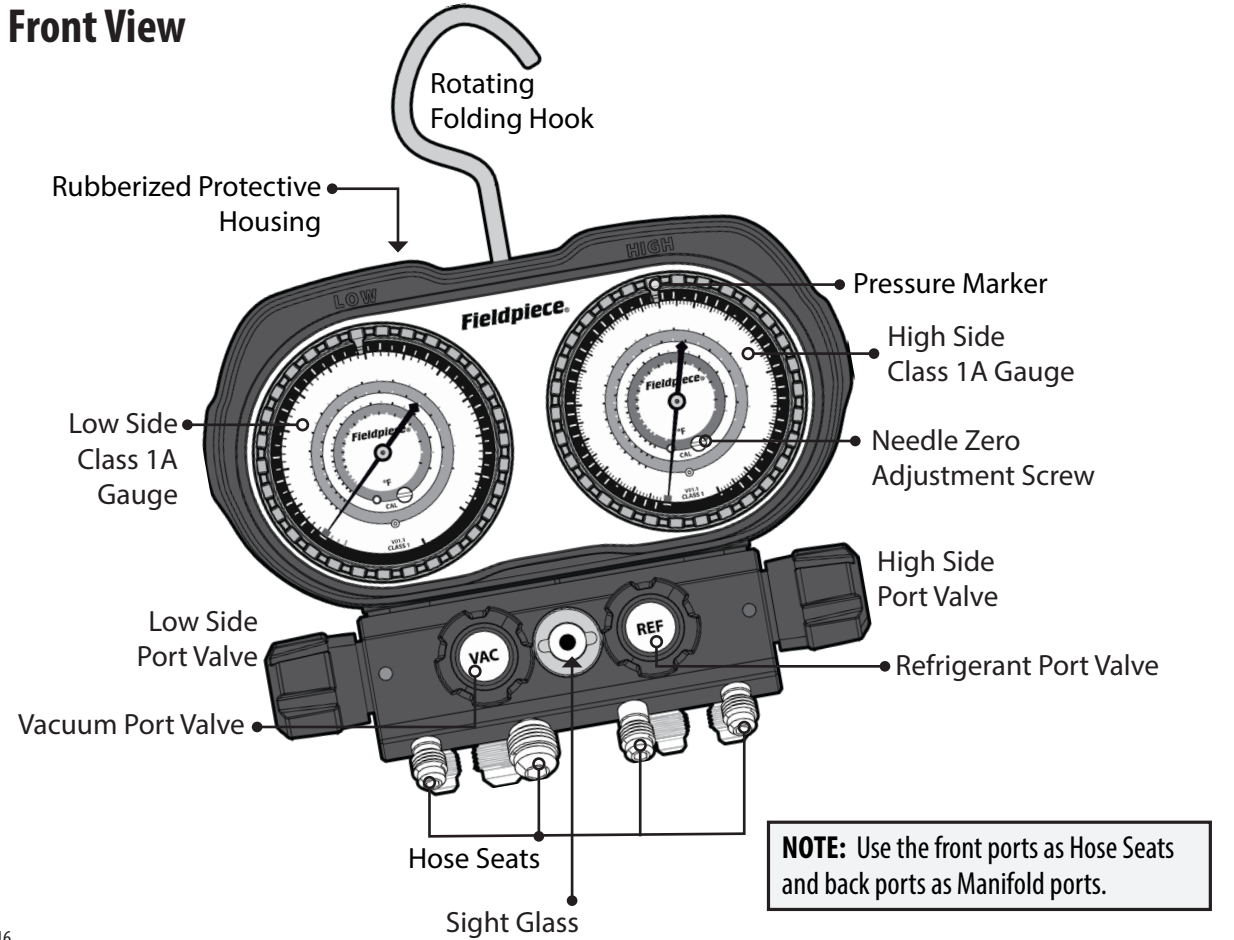
Serial Number

Refrigerant Port

Connect to a refrigerant cylinder directly, to a recovery machine, or to a vacuum pump.

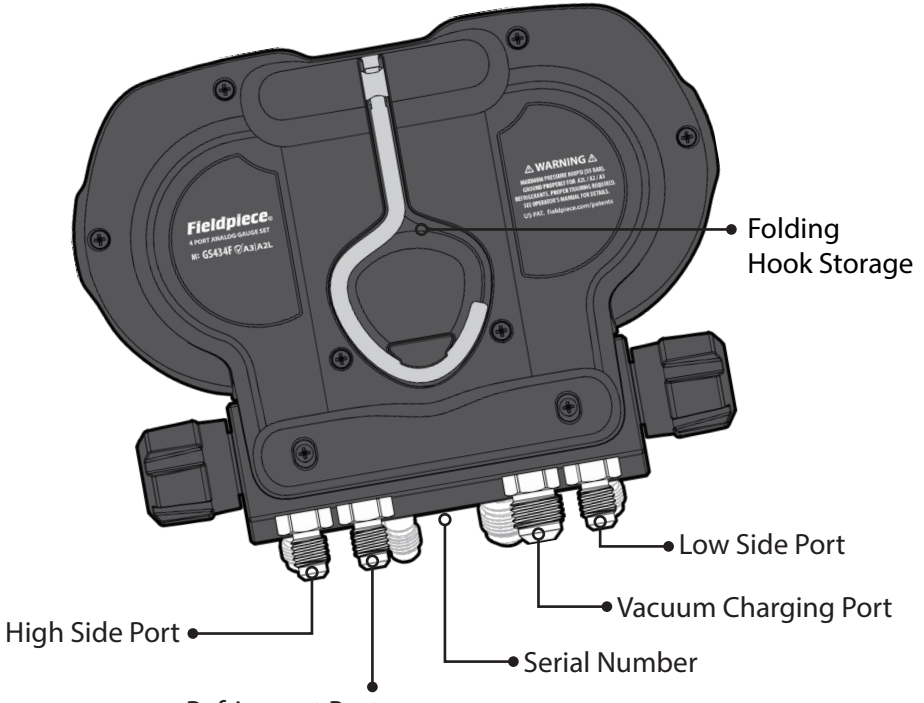
NOTE: Use the front ports as hose seats and back ports as manifold ports.

4-Port Gauge Set
Front View



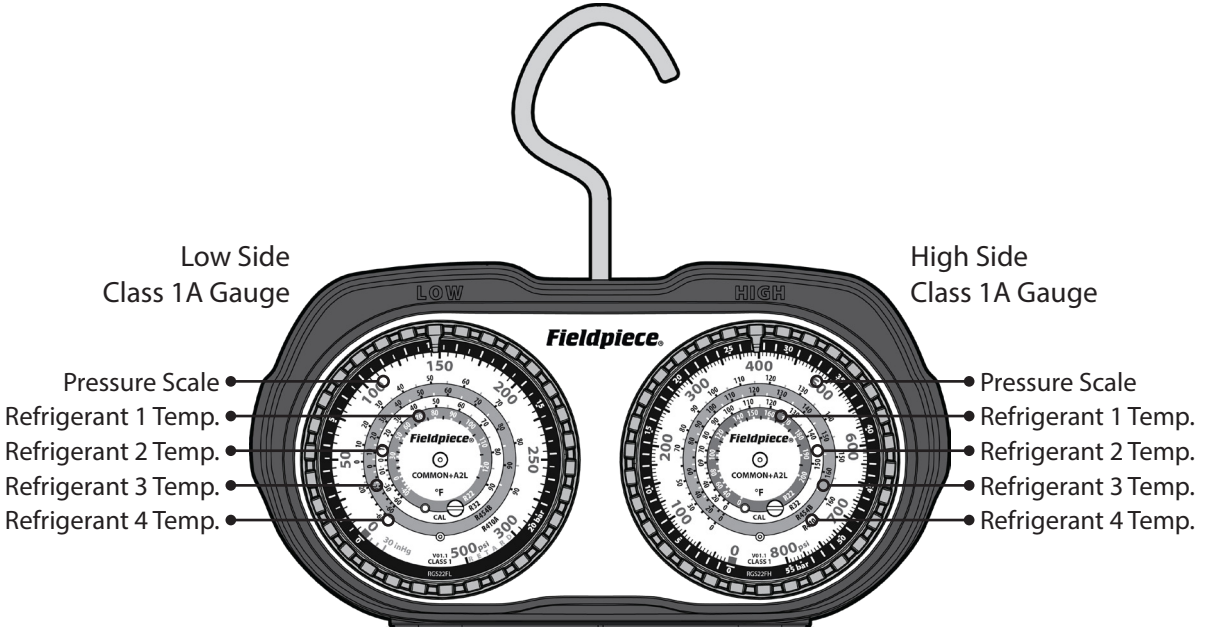
NOTE: Use the front ports as Hose Seats and back ports as Manifold ports.

4-Port Gauge Set
Rear View



NOTE: Use the front ports as Hose Seats and back ports as Manifold ports.

Available Gauge Configurations



3-Port Options

SKUs	Application	Units	Faceplate Refrigerants			
			Ring 1	Ring 2	Ring 3	Ring 4
GS322F	Common Res/ Commercial	Fahrenheit/ PSI	R22	R32	R454B	R410A
GS334F	Refrigeration		R448A	R404A	R407C	R134a

4-Port Options

SKUs	Application	Units	Faceplate Refrigerants			
			Ring 1	Ring 2	Ring 3	Ring 4
GS422F	Common Res/ Commercial	Fahrenheit/ PSI	R22	R32	R454B	R410A
GS434F	Refrigeration		R448A	R404A	R407C	R134a

Operation

General

To operate an analog gauge set complete the following steps.

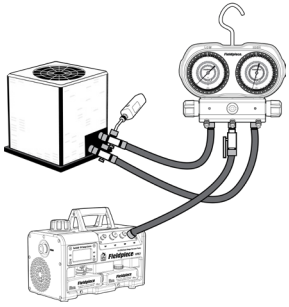
1. Prepare your equipment and choose the correct gauge set for your refrigerant type.
2. Turn off the A/C system. Ensure all manifold valves are closed, and connect your hoses to the manifold ports before connecting the gauges to the system.
3. Start the A/C system and set it to the coldest setting. Interpret the readings for low pressure (suction side). Note: The ideal pressure varies based on the refrigerant type and ambient temperature.
4. Recharge or troubleshoot as needed.

Vacuum

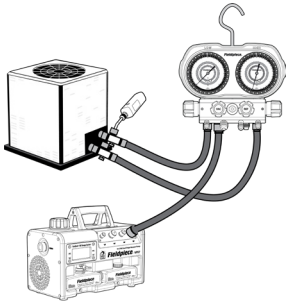
Follow recommended evacuation practices from equipment manufacturer and training. To be able to read vacuum you must use a vacuum gauge.

1. Close all manifold valves.
2. Setup your tools and equipment (see diagram).
   Connect manifold 1/4" HIGH port to liquid line service port.
   Connect manifold 1/4" LOW port to suction line service port.
   For 3-Port Gauges, connect manifold 1/4" middle port to vacuum pump with a shutoff valve in between.
   For 4-Port Gauges, connect manifold 3/8" VAC port to vacuum pump.
3. Turn on your vacuum pump.
4. Open shutoff or VAC valve.
5. Open HIGH and LOW manifold valves.
6. Close your shutoff or VAC valve to isolate the pump.
   Do NOT close HIGH and LOW valves or you'll block the system and measure just the manifold!
7. Turn off your vacuum pump.
8. Close HIGH and LOW manifold valves.

Vacuum Setup - 3-Port Gauges



Vacuum Setup - 4-Port Gauges



Tips for Better Evacuations

- Remove Schrader valve cores & depressors with a core removal tool.
- Place vacuum gauge at furthest point from the vacuum pump.
- Use shortest vacuum rated hoses with largest diameter available.
- Do NOT evacuate through hoses with low loss fittings.
- Inspect the rubber seals at both ends of your hoses for damage.
- Apply a light amount of vacuum oil to the service port fittings before attaching hoses to help maintain a vacuum-tight seal.
- Change pump oil before and during the job. Change pump oil on-the-fly without losing vacuum with Fieldpiece vacuum pumps.
- When the vacuum pump is blocked, a slow rise that stabilizes may signify moisture is still present in the system. A continuous rise to atmosphere indicates a leak. Check hoses, tools, or the system itself.
- Measurements are less representative of the entire system when the vacuum pump is on because pumping creates a pressure gradient. Block the pump and allow the system to stabilize before assuming the measurement is of the entire system.

Pressure Marker Tips

The pressure marker lets you visually track any pressure change without guessing the starting point.

Align the pressure marker to the gauge needle to mark the starting pressure of a pressure test. After your pressure test is complete, you can quickly see if the needle has moved, indicating a change of pressure. Remember to account for any temperature changes that would affect the pressure during the test.

Needle Zero Adjustment

It is important to calibrate your manifold gauge regularly so you can be sure that it will continue to provide accurate readings.

Zero the Gauges

1. Remove any hoses on the High Side or Low Side and open the valve to release any pressure.
2. On the gauge itself, remove the faceplate access plug above the needle zero adjustment screw. Secure the plug in a safe place.
3. Set the flathead screwdriver in and rotate the adjustment screw counterclockwise to move the needle down or clockwise so it moves up until you see that the pointer is at zero.
4. Tap the gauge with the palm of your hand to see if the needle moves from zero. Make any required needle adjustments and tap the gauge again.
5. When the needle does not move from zero, you can push the access plug back into the gauge faceplate.
6. Repeat on the other gauge if needed.

Accuracy Verification using a Tank of Refrigerant

1. With the valves closed, connect your hose on the High Side or Low Side of your analog gauge set to a canister with refrigerant.
2. Pick up the hose, open the valves on the manifold gauge and the tank. Turn the tank upside down to get the pressure of the liquid inside the tank. The line should be led out and all the air that was in the line should be removed. Now the gauge is reading the proper pressure in the tank.
3. Point an IR thermometer at the liquid that is contained in the tank.
4. After measuring the temperature use a P/T chart to verify the result against your manifold gauge set. If the gauge is operating outside the correct range, it may need servicing or replacement. Refer to page 31 for further details.
5. Close the manifold and tank valves, and repeat on the other gauge if needed.

Maintenance

Cleaning

Wipe with damp cloth to clean the exterior. Do NOT use solvents.

Over time, the manifold may become contaminated with dirt, oil, and other contaminants. If you are frequently flowing refrigerant through the manifold, we recommend that users flush or clean their manifold every 2 to 4 weeks to extend the life of the manifold by avoiding contaminants from building up.

1. Purge your hoses and manifold with 100% nitrogen. Remove hoses.
2. Open all valves and cap all the ports except for the VAC port on a 4-Port manifold or the center port on a 3-Port manifold. Turn the manifold over such that the manifold ports (NOT hose seats) are facing up.
3. Drop enough isopropyl (rubbing) alcohol (minimum 70% alcohol content) into the VAC/center port using an eye dropper or funnel so that it can flush out contaminants (Roughly 7 mL). CAUTION: Do NOT spill rubbing alcohol onto the lenses of the gauges. Doing so may cause damage to the lenses.
4. Cap off the VAC/center port and gently shake your manifold while upside down to clean. (Approximately 30 to 60 seconds.)
5. Turn right side up. Uncap one of the ports and pour out the rubbing alcohol. Uncap and open all ports to allow the unit to dry out. Drying usually takes about an hour.
6. Purge your manifold again with 100% nitrogen before reconnecting any hoses.

Using Different Refrigerants

You can use different refrigerants, but be sure to purge your manifold block and hoses with nitrogen before connecting to a system with a different refrigerant. Cross-contamination can hurt system performance and cause damage.

Spare Parts List

Model #	Description
RGS22FH	Spare Analog Gauge, High, A2L (R22 / R32 / R454B / R410A), Fahrenheit
RGS22FL	Spare Analog Gauge, Low, A2L (R22 / R32 / R454B / R410A), Fahrenheit
RGS34FH	Spare Analog Gauge, High, Refrig (R448A / R404A / R407C / R134a), Fahrenheit
RGS34FL	Spare Analog Gauge, Low, Refrig (R448A / R404A / R407C / R134a), Fahrenheit
RGSK6	Analog Gauge Set - 3-Port Replacement Valves & Knobs
RGSK8	Analog Gauge Set - 4-Port Replacement Valves & Knobs
RGSH7	Analog Gauge Set - Replacement Hose Seats
RGSB2	Replacement Housing Assembly with Hook

Hose Seat Replacement

If you want to change a hose seat or replace a damaged hose seat, please complete the following. (RGSH7 Analog Manifold Replacement Hose Seats)

1. Lay your manifold face up on a non-abrasive, flat surface.
2. Insert a 4mm allen wrench into the desired hose seat. Turn the hose seat counterclockwise to loosen and remove.
3. Remove all debris and clean up the threaded hose seat mounting hole.
4. Apply medium strength threadlocker to the replacement hose seat and insert it into the mounting hole.
5. Using the 4mm allen wrench, turn clockwise and torque hose seat 5N*m (4ft*lb) onto the manifold block. Do NOT overtighten.
6. Clean off any excessive threadlocker.
7. Allow to fully cure per threadlocker manufacturer's recommendations.

Valve and Knob Replacement

If you are experiencing vacuum leaks through your valve(s), gauges are inaccurate, or there is physical damage, please complete the following to rebuild. (RGSK6 3-Port Replacement Valves or RGSK8 4-Port Replacement Valves)

1. Lay your manifold face up on a non-abrasive, flat surface.
2. On the valve(s) you are replacing, pry, lift and remove the knob's label to expose the knob's screw.
3. With a Phillips screwdriver, turn the screw counterclockwise to loosen and remove the knob. Do NOT re-use the old screw.
4. Using a 20mm wrench, loosen the old valve by turning it counterclockwise. Once loose, pull straight up to remove.
5. On the replacement valve, apply a thin layer of silicone grease to the piston and o-rings. Push the new valve back in, tighten by hand, and complete with your wrench until tight to 5N*m (4ft*lb) torque. Do NOT overtighten. Use medium strength threadlocker if desired. CAUTION: Do NOT apply an excessive amount of threadlocker. Ensure excess doesn't leak into the block.
6. Put on the new knob and twist until tight. Use the new screw and turn clockwise until tight, to 0.5ft*lb torque, onto the valve stem. Use threadlocker if desired. Do NOT overtighten.
7. Stick on the correct replacement label depending on which valve you replaced.
8. Depending on how many valves you are replacing, repeat steps 2-7 as needed.
9. Allow to fully cure per threadlocker manufacturer's recommendations.
10. Perform valve functional test to verify opening / closing sealing performance.

Limited Warranty

This product is warranted against defects in material or workmanship for one year from date of purchase from an authorized Fieldpiece dealer. 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 product.

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 product or other incidental or consequential damages, expenses, or economic loss, or for any claim of such damage, expenses, or economic loss.

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

Obtaining Service

Visit **www.fieldpiece.com/rma** for the latest information on how to obtain service.

For customers outside of the U.S., warranty for products should be handled through your local distributor.

GS322F
GS422F
GS334F
GS434F

Scan the QR code to visit your Fieldpiece website and register your product.

US, CA, MX

Document: Opman AnalogGauges