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Agilent Technologies

Thermocouple Gauge Replacement for VS Series Leak Detectors

*FIELD INSTALLATION
INSTRUCTIONS*

Part Number 699909995

Rev. B

March 2006

Varian Field Instruction Sheet

Thermocouple Gauge Replacement for VS Series Leak Detectors

Preface

Documentation Standards

This manual uses the following documentation standards:

NOTE

Notes contain important information.



CAUTION

Cautions appear before instructions, which if not followed, could cause damage to the equipment or data loss.



WARNING

Warnings appear for a particular procedure or practice which, if not followed correctly, could lead to serious injury or death.



Hazard and Safety Information

The common international symbols used in this manual and on the equipment are defined below.



OFF Supply (Power)



ON Supply (Power)



AC – Alternating Current



Warning, Risk of danger



Frame or chassis Terminal



Earth (Ground) Terminal



Caution, Hot Surface



Caution, Risk of Electrical Shock



Protective Conductor Terminal



Operators and service personnel must be aware of all hazards associated with this equipment. They must know how to recognize hazardous and potentially hazardous conditions, and know how to avoid them. The consequences of unskilled, improper, or careless operation of the equipment can be serious. Every operator or service person must read and thoroughly understand operation/maintenance manuals and any additional information provided by Varian. All warning and cautions must be read carefully and strictly observed. Consult local, state, and national agencies regarding specific requirements and regulations. Address any safety, operation, and/or maintenance questions to your nearest Varian office.

Solvents

WARNING



The mechanical components of leak detectors may be cleaned with one of the recommended solvents. When heated, sprayed, or exposed to high-temperature equipment, these solvents become flammable and explosive, causing serious injury or death. Do not use these solvents near a high-temperature source. Ventilate the working area with a blower and work in a large, well-ventilated room.

Solvents are irritants, narcotics, depressants and/or carcinogens. Their inhalation and/or ingestion may produce serious side effects. Prolonged or continued contact with the skin results in absorption through the skin and moderate toxicity. Always ensure that cleaning operations are carried out in large, well-ventilated rooms, and wear eye shields, gloves, and protective clothing.

Due to the effective cleaning nature of VacuSolv solvent and its residue-free properties, Varian' Component and Spectrometer Cleaning Kit (Part Number 670029096), used in accordance with the kit instructions, is recommended for cleaning spectrometer components. The kit can also be used for fine cleaning of other parts in the leak detector's vacuum system such as valves and fittings. No rinsing steps or high-temperature drying is required following cleaning with VacuSolv. Although appropriate precautions are advised, VacuSolv is compatible with most materials and does not contain toxic chemicals or CFCs (chlorofluorocarbons). Other acceptable solvents are isopropyl alcohol (IPA) or Dow Corning® OS-20.

To clean the leak detector plastic enclosure, the LCD display and Front Panel buttons, use only a soft cloth slightly dampened with water or a mild soap.

Do NOT use excess water or cleaning solvents of any kind.

Avoid splashing any cleaning solvents into the unit through the ventilation openings or Front Panel buttons. Wipe the surface with a dry lint-free cloth.

Vacuum Equipment and Cleanliness

Cleanliness is vital when servicing the leak detector or any vacuum equipment. There are some techniques that are more important in leak detector servicing than in general vacuum work:

CAUTION



Wear non-powdered, ESD-safe Nitride or equivalent gloves to prevent skin oils from getting on spectrometer internal components.



O-ring Care

When removing, checking or replacing O-rings, keep in mind the following:

NOTE



Varian recommends replacing all O-rings during routine maintenance or during any maintenance procedure requiring that O-rings be removed.

CAUTION



Remove O-rings carefully with your fingers. Do not use metal tools for this task; this prevents scratching of any sealing surfaces.

- Wipe all O-rings clean with a lint-free cloth before installation to ensure that no foreign matter is present to impair the seal.
- Do not use grease or any other substance on O-rings that will come in contact with the vacuum surfaces.
- Do not use alcohol, methanol or other solvents on O-rings. Doing so causes deterioration and reduces their ability to hold a vacuum.
- Varian does not recommend the use of vacuum grease. If applicable, apply a small amount of Apiezon[®] L grease and wipe the O-rings shiny dry.

Metal Seal Care

CAUTION



Metal Seals must be replaced any time a spectrometer is opened. All fasteners must be installed and torqued per assembly procedure specifications. Remove Metal Seals carefully with your fingers or a soft tool. Metal tools scratch sealing surfaces.

- Metal Seals are supplied in pre-cleaned condition. No cleaning is required. If necessary, Metal Seals can be cleaned using the recommended solvents. Wipe Metal Seals clean with a lint-free cloth before installation to ensure that no foreign matter impairs the seal.
- Do not use grease or any other substance on Metal Seals that will come in contact with the spectrometer.

Spectrometer

CAUTION



Store the Ion Source/Preamplifier sub-assembly in a cool, dry area in a tightly sealed, ESD protected container. Wear non-powdered, ESD-safe Nitride or equivalent gloves when handling the spectrometer. Wash hands thoroughly after handling the spectrometer filaments and especially before smoking or eating.

The spectrometer and PCB's are static sensitive devices. Wear a grounding strap when performing any maintenance on these units and especially when performing maintenance of static sensitive parts.

CAUTION



The spectrometer operates at a very high vacuum produced by the high vacuum turbomolecular pump. Service of the spectrometer requires that this vacuum be vented to the atmosphere.

Equipment Required

- Extended Length M5 Allen Wrench
- Metric Allen Wrench Set

Installation Procedure

For clarity, some items have been omitted from views.

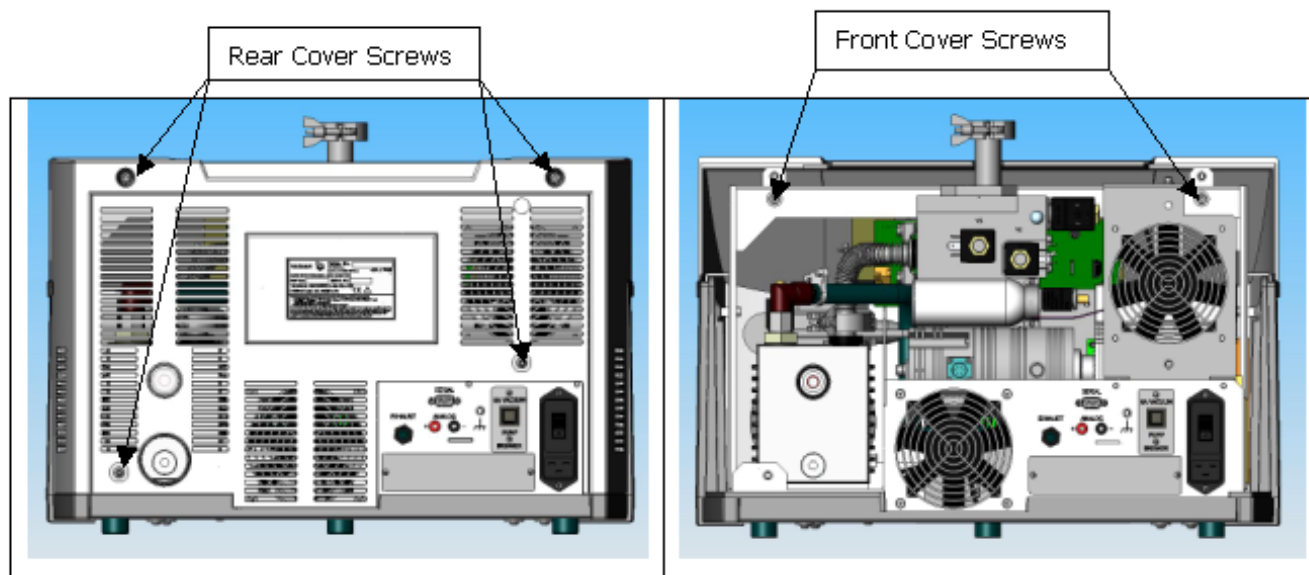


Figure 1: Rear and Front Cover Screws

WARNING



Disconnect power from the unit before performing any maintenance procedure that requires physically disconnecting any part of the system.

1. Turn off the power switch located on the back of the unit and unplug.
2. Wait 30 seconds for the high voltage to dissipate.
3. Using an extended length M5 Allen wrench, remove the four screws holding the rear plastic cover (Figure 1: Rear and Front Cover Screws) and detach the rear plastic cover from the unit.
4. Remove the four screws holding the front plastic cover and detach the cover from the unit. Two screws are situated at the front of the unit (not shown) and two screws are positioned inside the unit (Figure 1: Rear and Front Cover Screws).

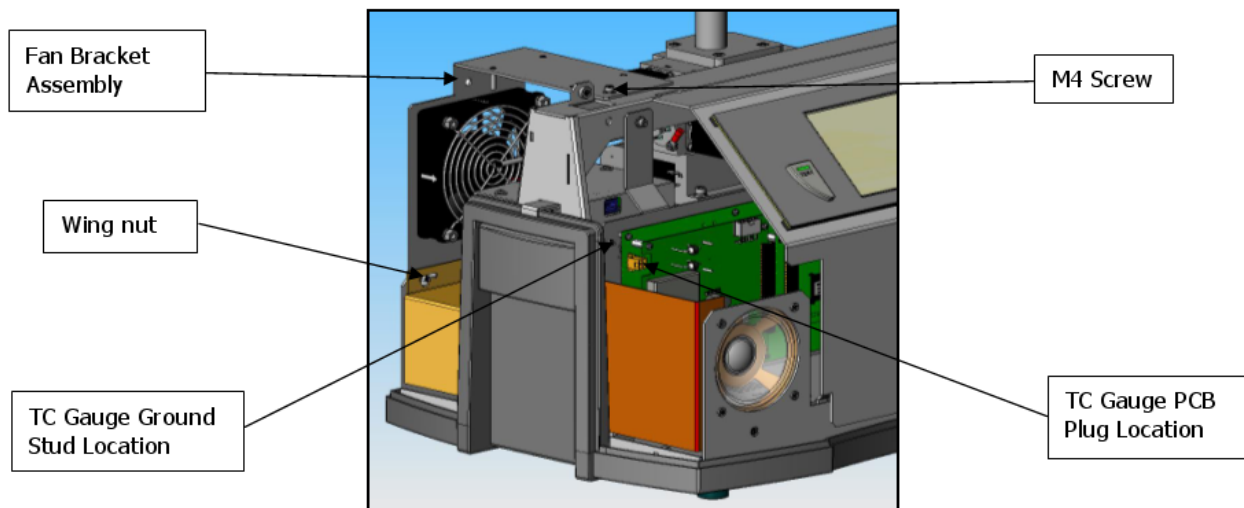


Figure 2: Fan and TC Gauge Assemblies

NOTE

Cables not shown for clarity.



5. Disconnect the fan cable and remove the fan assembly by unfastening two wing nuts and one M4 socket head cap screw (Figure 2: Fan and TC Gauge Assemblies).
6. Detach the TC gauge cable plug from the mother board PCB and disconnect the ground cable from the chassis.
7. Remove the TC gauge cable from the cable ties.

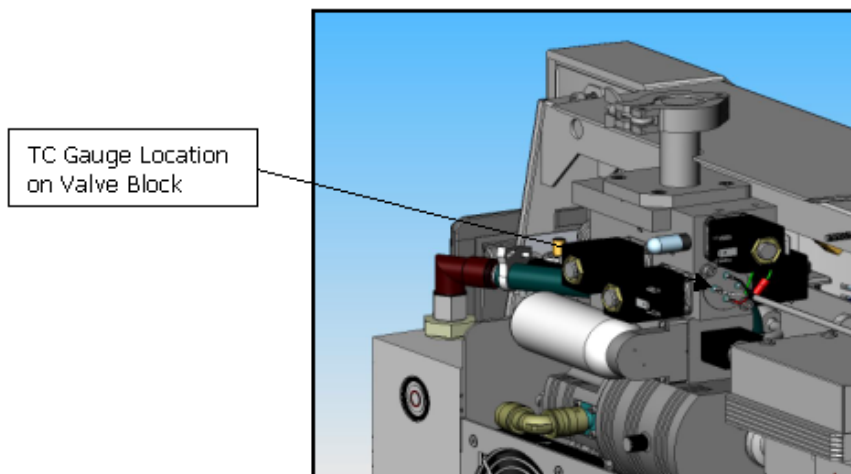


Figure 3: TC Gauge Location

8. Using an M4 Allen wrench remove the TC gauge and cable assembly from the valve block. Retain the two screws and the two washers. Discard the TC gauge and cable assembly (Figure 3: TC Gauge Location).

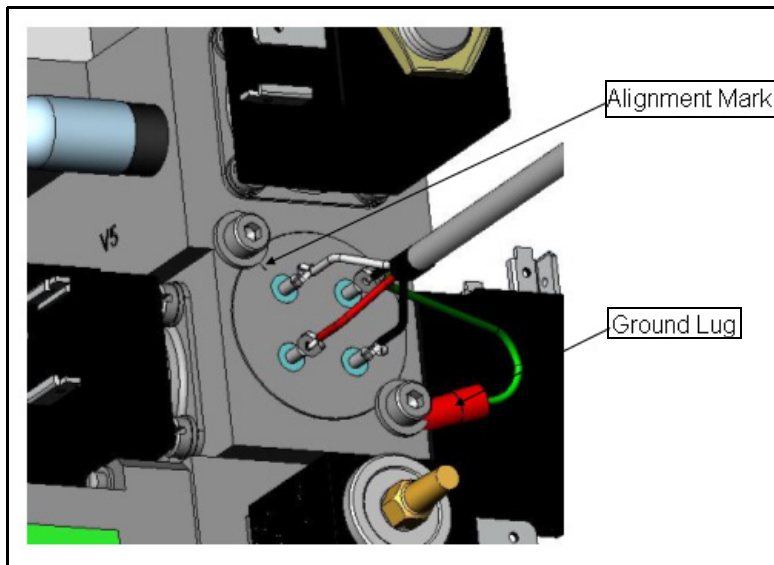


Figure 4: Alignment Mark and Ground Lug

CAUTION



Take extreme care to avoid damaging the TC GAUGE when handling and installing the device.

9. Install the replacement TC gauge and O-ring in the valve block and loosely install existing hardware.
10. Install the ground lug between the washer and the screw (Figure 4: Alignment Mark and Ground Lug).
11. Ensure that the alignment mark is positioned to the center of the screw as shown in Figure 4: Alignment Mark and Ground Lug, then tighten the two screws.
12. Route the TC cable back through the assembly in the same position as the removed cable.
13. Attach the TC gauge cable plug and chassis ground to the location shown in Figure 2: Fan and TC Gauge Assemblies.
14. Attach the fan assembly (Figure 2: Fan and TC Gauge Assemblies) by fastening the two wing nuts and one M4 socket head cap screw. Then connect the fan cable to the unit.
15. Attach the front cover and secure to the frame using existing hardware.
16. Leak test the TC gauge to ensure a leak free joint.
17. Attach the rear cover and secure to the frame using existing hardware.
18. Connect the power cord and power up the unit.
19. Watch the Home screen to verify that the *Spectube Pressure Wait* message progresses to *Stabilization Wait* and *System Ready* within ten minutes.
Refer to the operator's manual if the system fails to reach the System Ready mode.
20. Refer to the TC gauge calibration section of the user's manual for the correct calibration procedure for the TC gauge.
21. Varian recommends a full calibration of the unit prior to leak test operations.

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