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Agilent Technologies

I/O Board for VS Series Leak Detectors (VSFLDIO)

FIELD INSTALLATION INSTRUCTIONS

Part Number 699910001
Rev. A
October 2006

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I/O Board 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
- M3 Philips Head Screw Driver

Installation Procedure

For clarity, some items have been omitted from views.

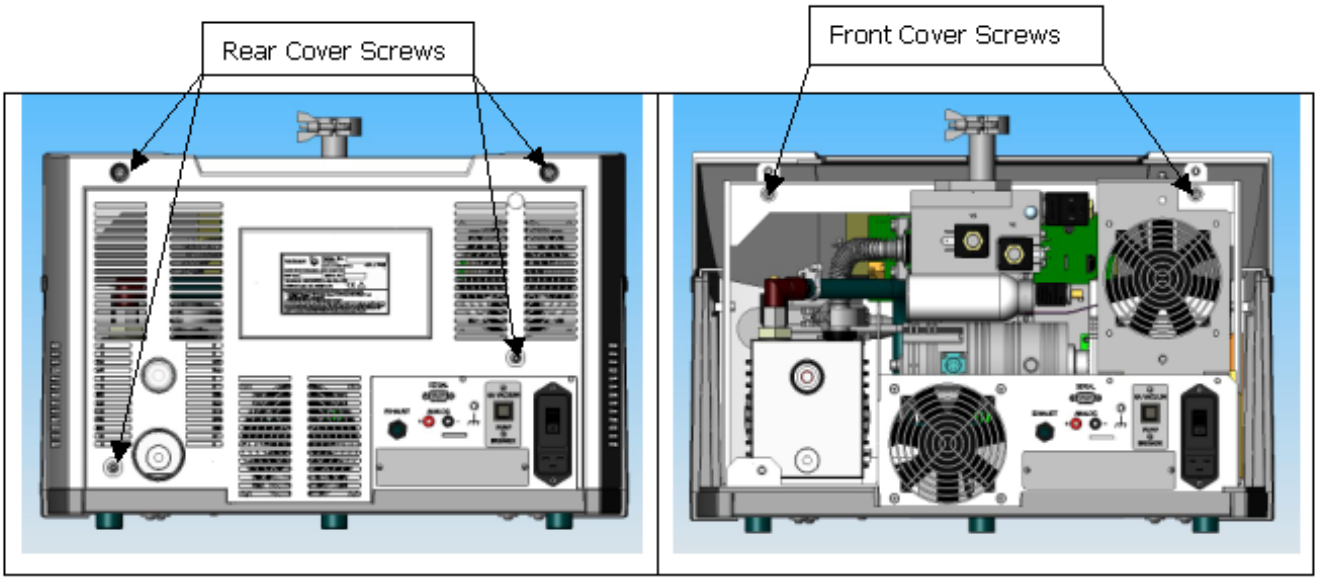

Figure 1: Rear and Front Cover Screws

WARNING

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

NOTE

Prior to I/O installation, ensure that the software revision is 2.0 by navigating from the *Home* screen menu to *System Information*. If not, contact Varian customer services, see the back cover of this manual for a listing of our sales and service offices.

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).

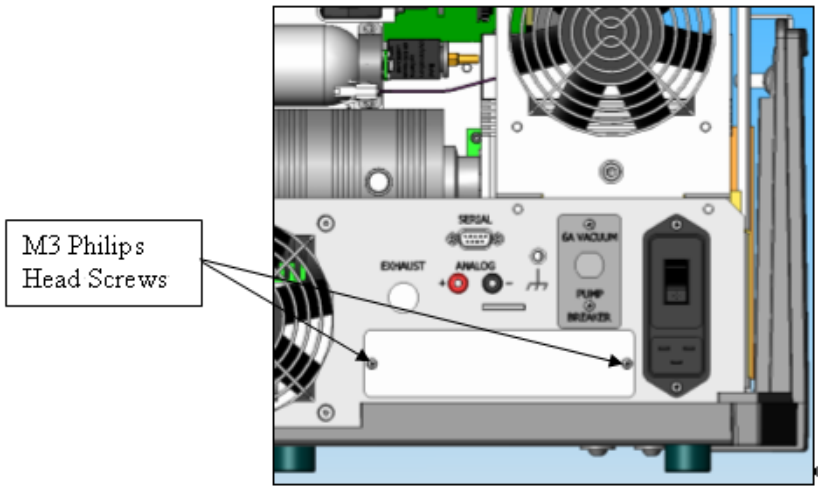

Figure 2: Back Plate with Screws

5. Remove the two back plate Philips head screws w/lock washers (Figure 2: Back Plate with Screws) and pull the blank back plate off and discard.

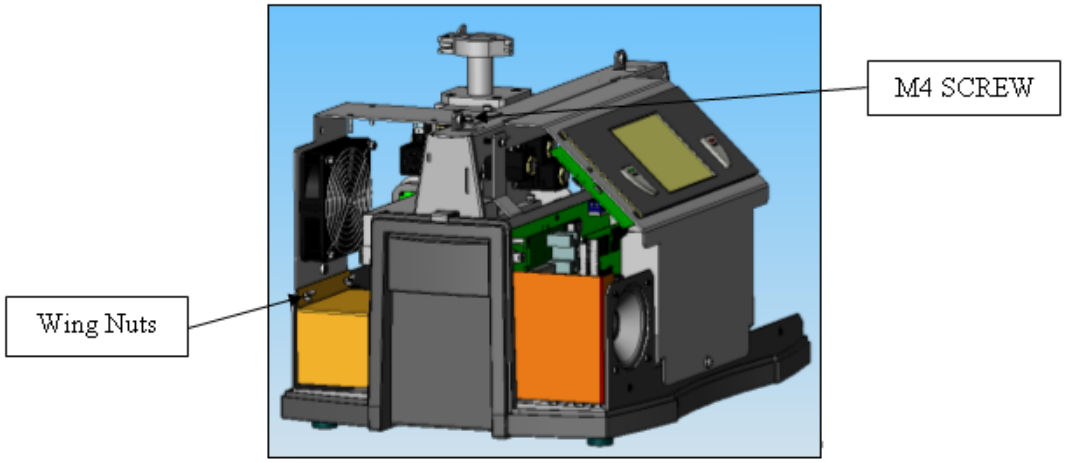

Figure 3: Plastic Shield

6. Remove the two wing nuts holding the plastic shield around the power input area inside the leak detector and remove the shield (Figure 3: Plastic Shield).
7. Remove the fan assembly by loosening the M4 socket head cap screw (Figure 3: Plastic Shield).

CAUTION **Use proper ESD safety techniques when performing a PCB card install.**

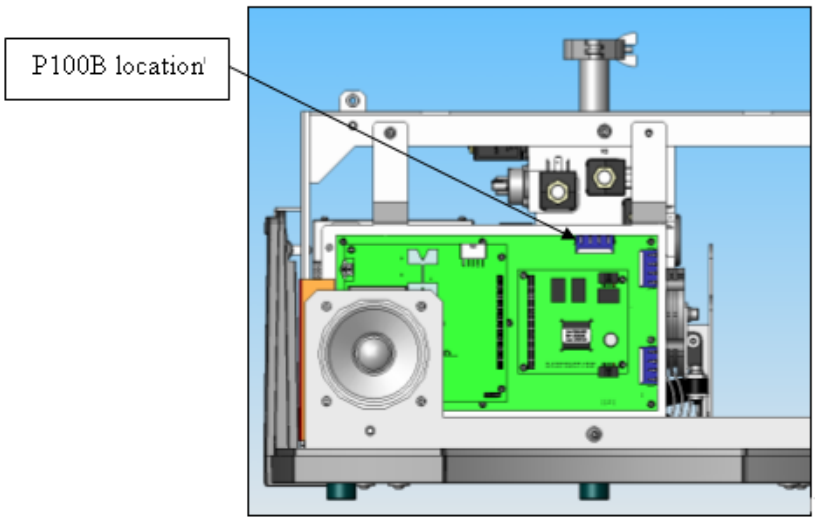

Figure 4: I/O Cable to Mother Board

8. Connect the I/O cable end labeled P100B, provided with the kit, to J100 (marked Yellow) on the mother board PCB (Figure 4: I/O Cable to Mother Board). Then run the cable along the base of the leak detector to the I/O board location.

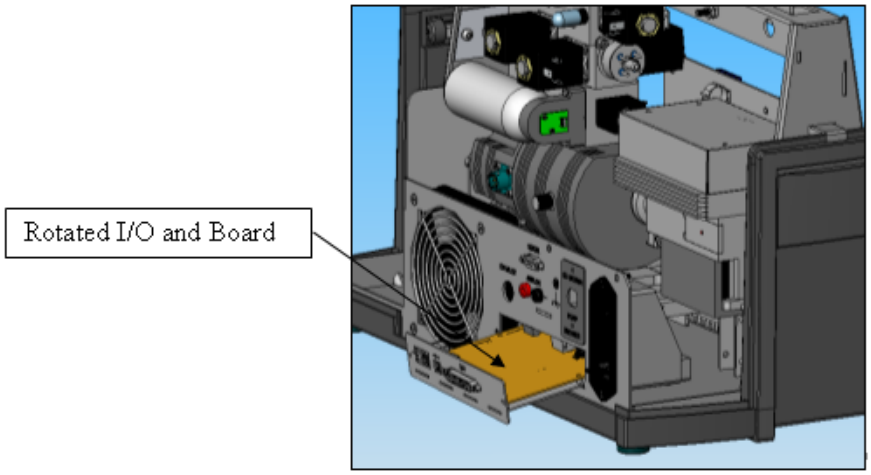

Figure 5: I/O Bracket Installation

9. Rotate the I/O bracket and board to approximately a 30° angle and insert into the leak detector (Figure 5: I/O Bracket Installation).

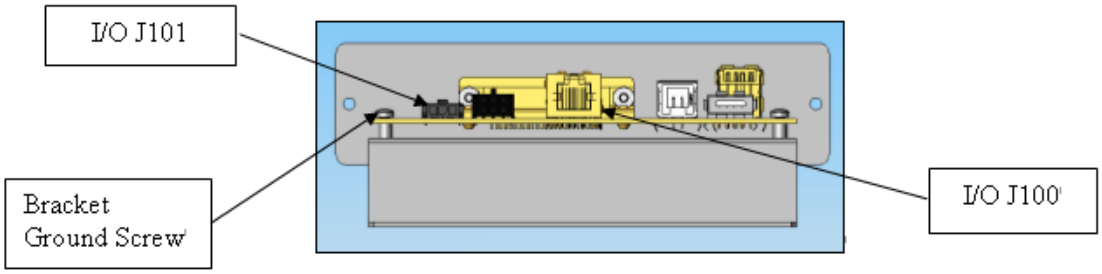

Figure 6: I/O Bracket

10. Connect the (Figure 6: I/O Bracket):

- Opposite end of the cable labeled P1 to J100 on the I/O board.
- 24 V plug labeled P101, which is tie rapped at the base of the leak detector, to the connector labeled J101 on the I/O board.
- 24 V lug as a ground to one of the bracket screws.

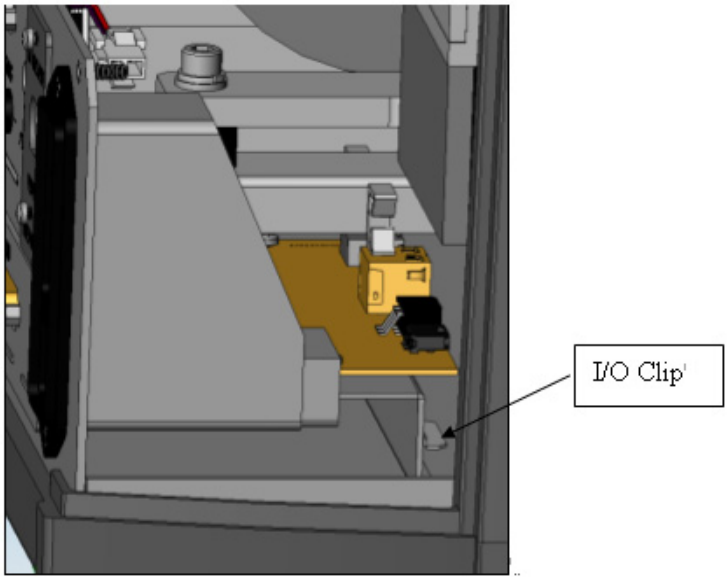

Figure 7: I/O Clip

11. Slide the I/O assembly into the leak detector and ensure that the I/O bracket engages the clip at the base of the leak detector (Figure 7: I/O Clip).
12. Reinstall the two back plate Philips head screws w/lock washers (Figure 2: Back Plate with Screws).
13. Reinstall the (Figure 3: Plastic Shield):

- Fan assembly by tightening the M4 socket head screw.
- Reinstall the plastic shield using the two wing nuts.

14. Attach the front cover and secure to the frame using existing hardware.
15. Attach the rear cover and secure to the frame using existing hardware.
16. Connect the power cord and power up the unit.

17. Watch the home screen to verify 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.
18. Varian recommends a full calibration of the unit prior to leak test operations.
19. Connect operators 25-pin cable to the I/O connector and verify the connection. Refer to Section A.3 of the users manual for the I/O pin connector signals.

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