Vacuum Products Division

VS C15 Calibrated Leak Installation

FIELD INSTALLATION INSTRUCTIONS

Part Number 699910008
Rev. B
March 2011

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VS C15 Calibrated Leak Installation

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

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 Agilent. 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 Agilent 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.

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.

O-ring Care

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

NOTE

Agilent 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.**
- **Agilent 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.**

Equipment Required

- M4 Allen Wrench
- 12 mm Open End Wrench

Installation Procedure

WARNING

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

1. Disconnect the power to back of the unit and unplug.
2. Wait 30 seconds for the high voltage to dissipate.
3. Using an M4 Allen wrench, remove the two screws on the unit's top and open the unit (Figure 1: Unit Top Screws).

Figure 1: Unit Top Screws

4. Remove the vent screw from the turbo pump (Figure 2: Turbo Pump Vent Screw).

Figure 2: Turbo Pump Vent Screw

5. Remove the clamp from the calibrated leak assembly and remove the turbo pump flange (Figure 3: Turbo Pump Flange).

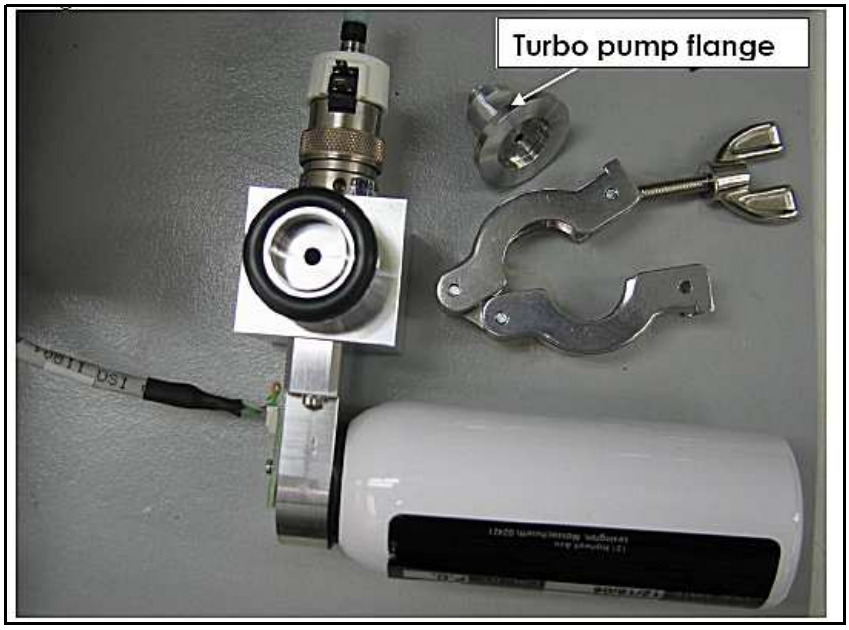
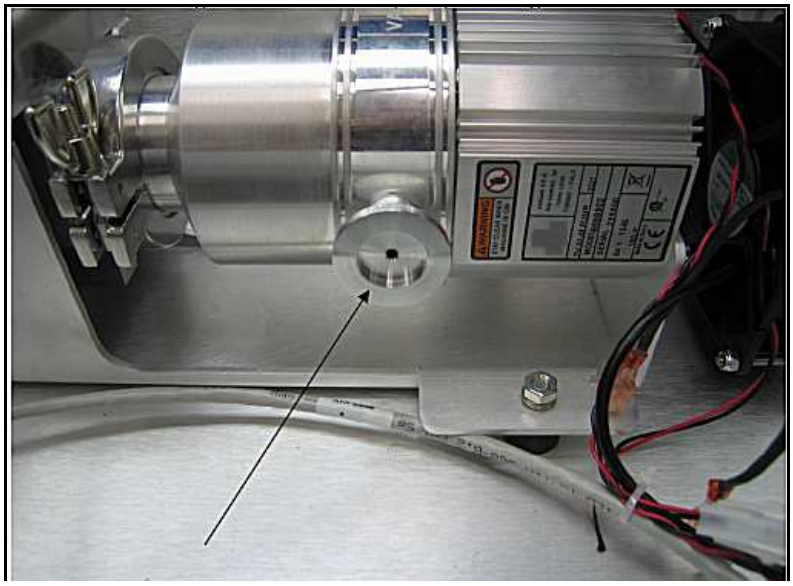


Figure 3: Turbo Pump Flange

6. Verify the installation of the O-ring into the turbo pump flange. Then screw the turbo pump flange onto the turbo pump and tighten ¼ turn (Figure 4: Turbo Pump Flange in Place) using a 12 mm open end wrench. Do not over tighten the flange as the threads in the turbo body can be damaged.



O-ring in place

Figure 4: Turbo Pump Flange in Place

7. Connect the calibrated leak temperature cable end labeled P1A to the leak assembly board connector J1A (Figure 5: Leak Assembly Board Connection).

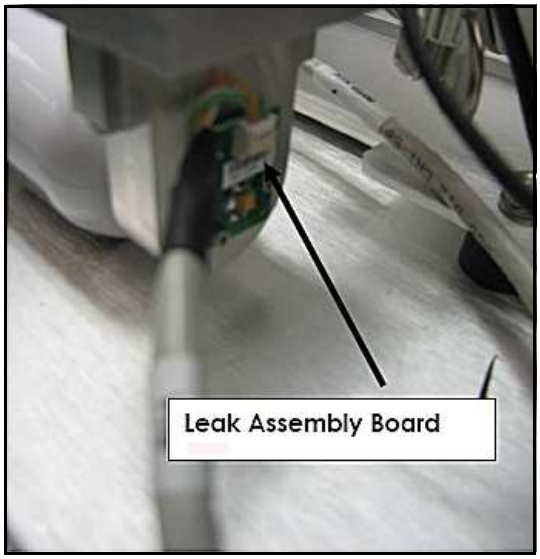


Figure 5: Leak Assembly Board Connection

8. Attach the calibrated leak assembly in the orientation shown using the clamp (Figure 6: Calibrated Leak in Place).

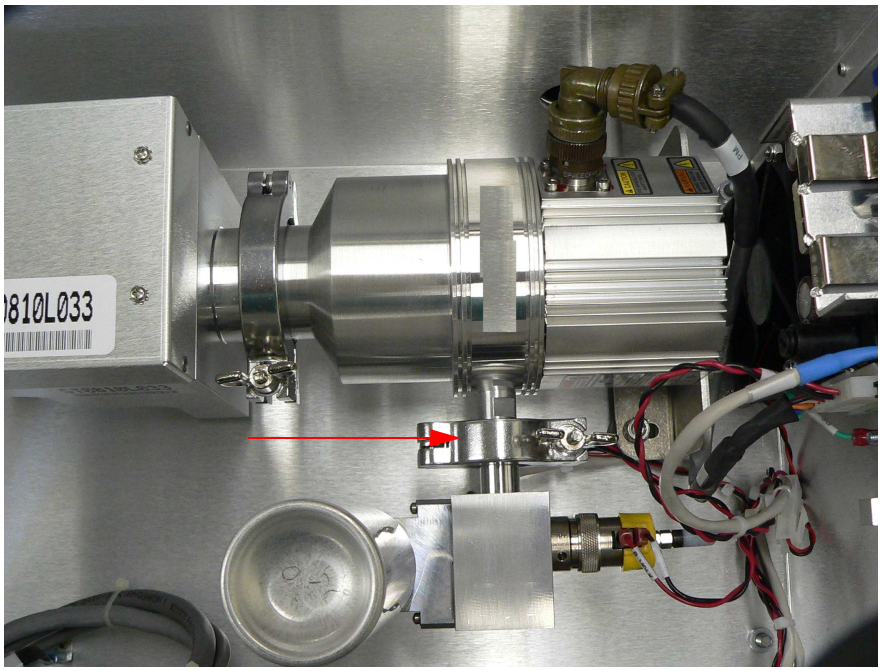


Figure 6: Calibrated Leak in Place

9. Install the valve control cable to the valve and route it to the discrete I/O board J7 connector (Figure 7: J7 Connector and Valve and Figure 8: J7 Connector on Discrete I/O Board).

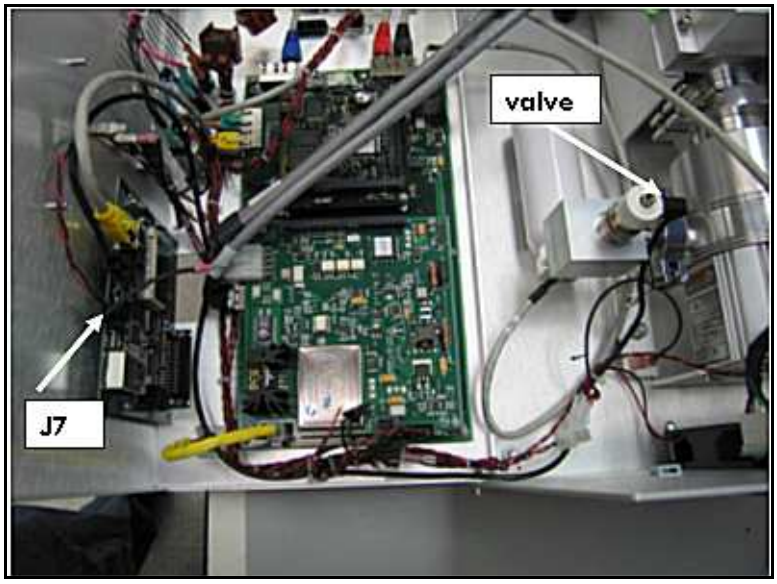


Figure 7: J7 Connector and Valve

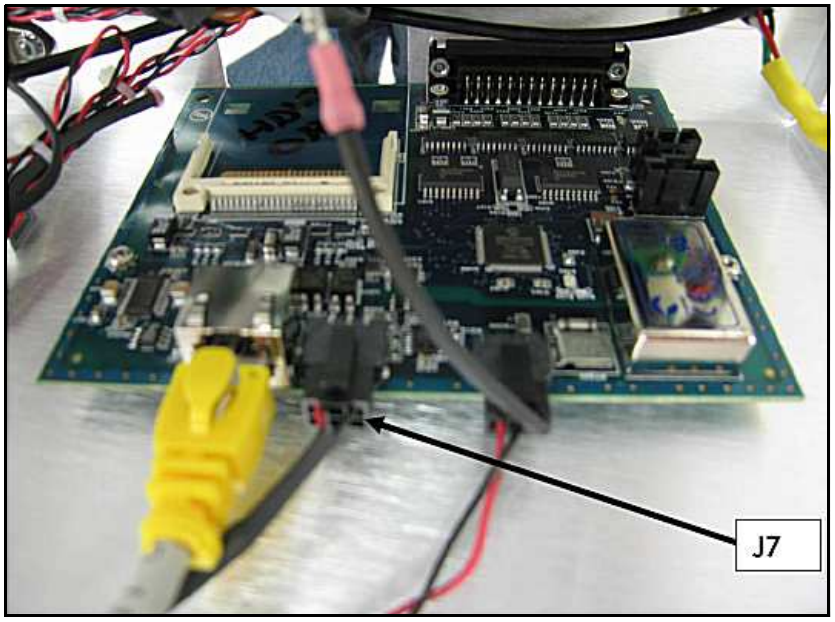


Figure 8: J7 Connector on Discrete I/O Board

10. Connect the end labeled P301 to the motherboard connector labeled J301 (Figure 9: Motherboard Connection and Figure 9: Motherboard Connection).

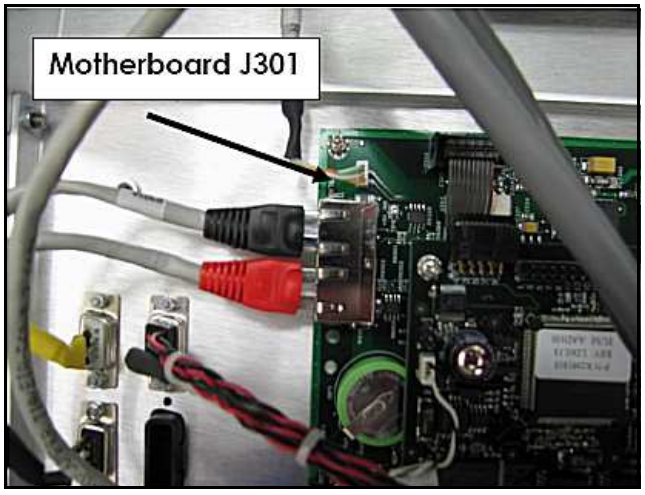


Figure 9: Motherboard Connection

11. Power up the VS C15 component leak detector.
12. Set up the Internal Calibrated Leak Option via the front panel display by:
    a. Select *Advanced Parameters* > *Internal Type* and select *STD LEAK*.
    b. Select Maintenance > Internal Calibrated Leak and input the calibration data from the Calibration Certificate for the internal calibrated leak including:
    - *Internal Leak Value*
    - *Temperature*
    - *Temperature coefficient factor*
    - *Cal Leak - Date of Expiration*

c. Validate the setup using the *Calibration Set Up* menu: the temperature compensated leak value, internal calibrated leak temperature and date of expiration.

13. Set up the *Internal Calibrated Leak Option* via the RS232 serial communications port (see the operation manual for communicating via the RS232 serial port).
14. Enter the following commands:
    - *1 INIT-INTERANL-TYPE*
    - *X.XE-0X INIT-STDLEAK* (Enter the leak rate value from the calibration certificate ex. *1.8E-07 INIT-STDLEAK*).
    - *XX.X INIT-LEAKTEMP* (Enter the temperature from the calibration certificate ex. *23.5 INIT-LEAKTEMP*).
    - *-/+XX INIT-TEMPFACTOR* (Enter the temperature coefficient from the calibration certificate ex. *-7 INIT-TEMPFACTOR*).
    - *mm dd yyyy INIT-LKEXPIRE* (Enter the date of expiration from the calibration certificate ex. *12 22 2008 INIT-LKEXPIRE*).
15. Validate that the correct internal leak data was inputted (data from the Calibration Certificate):
    - *?STDLEAK* (reports back the value of the internal calibrated leak).
    - *?LEAKTEMP* (reports back the temperature of the calibrated leak from the factory calibration).
    - *?TEMPFACTOR* (reports back the temperature coefficient).
    - *?LKEXPIRE* (reports back the date of expiration).
16. Perform an internal calibration (via the I/O, Front Panel Display or RS232) to validate a successful installation of the internal calibrated leak.
17. Leak check the calibrated leak module to ensure a leak free joint between the atmosphere and vacuum space inside.
18. Attach the cover and secure using existing hardware.

The calibrated leaks are certified for one year. Agilent recommends that calibrated leaks be replaced or recertified on an annual basis. The replacement calibrated leak is P/N# VSFLDCL.

Vacuum Products Division
Instructions for returning products

Dear Customer:

Please follow these instructions whenever one of our products needs to be returned.

1) Complete the attached Request for Return form and send it to Agilent Technologies (see below), taking particular care to identify all products that have pumped or been exposed to any toxic or hazardous materials.

2) After evaluating the information, Agilent Technologies will provide you with a Return Authorization (RA) number via email or fax, as requested.
   Note: Depending on the type of return, a Purchase Order may be required at the time the Request for Return is submitted. We will quote any necessary services (evaluation, repair, special cleaning, eg).

3) Important steps for the shipment of returning product:
   - Remove all accessories from the core product (e.g. inlet screens, vent valves).
   - Prior to shipment, drain any oils or other liquids, purge or flush all gasses, and wipe off any excess residue.
   - If ordering an Advance Exchange product, please use the packaging from the Advance Exchange to return the defective product.
   - Seal the product in a plastic bag, and package product carefully to avoid damage in transit. You are responsible for loss or damage in transit.
   - Agilent Technologies is not responsible for returning customer provided packaging or containers.
   - Clearly label package with RA number. Using the shipping label provided will ensure the proper address and RA number are on the package. Packages shipped to Agilent without a RA clearly written on the outside cannot be accepted and will be returned.

4) Return only products for which the RA was issued.

5) Product being returned under a RA must be received within 15 business days.

6) Ship to the location specified on the printable label, which will be sent, along with the RA number, as soon as we have received all of the required information. Customer is responsible for freight charges on returning product.

7) Return shipments must comply with all applicable Shipping Regulations (IATA, DOT, etc.) and carrier requirements.

Vacuum Products Division
Request for Return Form
(Health and Safety Certification)

Please read important policy information on Page 3 that applies to all returns.

1) CUSTOMER INFORMATION

Company Name:	**Contact Name:**
Tel: **Email:**	**Fax:**
Customer Ship To:	**Customer Bill To:**
Europe only: **VAT reg. Number:**	USA/Canada only: ☐ **Taxable** ☐ **Non-taxable**

2) PRODUCT IDENTIFICATION

Product Description	Agilent P/N	Agilent S/N	Original Purchasing Reference

3) TYPE OF RETURN (**Choose one from each row** and supply Purchase Order if requesting a billable service)

3A. ☐ Non-Billable ☐ Billable ➡ New PO # (hard copy must be submitted with this form):

3B. ☐ Exchange ☐ Repair ☐ Upgrade ☐ Consignment/Demo ☐ Calibration ☐ Evaluation ☐ Return for Credit

4) HEALTH and SAFETY CERTIFICATION

AGILENT TECHNOLOGIES CANNOT ACCEPT ANY PRODUCTS CONTAMINATED WITH BIOLOGICAL OR EXPLOSIVE HAZARDS, RADIOACTIVE MATERIAL, OR MERCURY AT ITS FACILITY.
Call Agilent Technologies to discuss alternatives if this requirement presents a problem.

The equipment listed above (check one):

☐ **HAS NOT** pumped or been exposed to any toxic or hazardous materials. OR
☐ **HAS** pumped or been exposed to the following toxic or hazardous materials. If this box is checked, the following information must also be filled out. Check boxes for all materials to which product(s) pumped or was exposed:

☐ Toxic ☐ Corrosive ☐ Reactive ☐ Flammable ☐ Explosive ☐ Biological ☐ Radioactive

List all toxic/hazardous materials. Include product name, chemical name, and chemical symbol or formula:

_____

NOTE: If a product is received at Agilent which is contaminated with a toxic or hazardous material that was not disclosed, **the customer will be held responsible** for all costs incurred to ensure the safe handling of the product, and **is liable** for any harm or injury to Agilent employees as well as to any third party occurring as a result of exposure to toxic or hazardous materials present in the product.

Print Name: **Authorized Signature: .....** **Date:**

5) FAILURE INFORMATION:

Failure Mode (REQUIRED FIELD. See next page for suggestions of failure terms):
Detailed Description of Malfunction: (Please provide the error message)
Application (system and model):

I understand and agree to the terms of Section 6, Page 3/3.
Print Name: **Authorized Signature: .....** **Date:**

Vacuum Products Division
Request for Return Form
(Health and Safety Certification)

Please use these Failure Mode to describe the concern about the product on Page 2.

TURBO PUMPS and TURBO CONTROLLERS

APPARENT DEFECT/MALFUNCTION		POSITION	PARAMETERS	
- Does not start	- Noise	- Vertical	Power:	Rotational Speed:
- Does not spin freely	- Vibrations	-Horizontal	Current:	Inlet Pressure:
- Does not reach full speed	-Leak	-Upside-down	Temp 1:	Foreline Pressure:
- Mechanical Contact	-Overtemperature	-Other:	Temp 2:	Purge flow:
- Cooling defective	-Clogging	.....	OPERATING TIME:	

ION PUMPS/CONTROLLERS

- Bad feedthrough	- Poor vacuum
- Vacuum leak	- High voltage problem
- Error code on display	- Other

VALVES/COMPONENTS

- Main seal leak	- Bellows leak
- Solenoid failure	- Damaged flange
- Damaged sealing area	-Other

LEAK DETECTORS

- Cannot calibrate	-No zero/high backround
- Vacuum system unstable	- Cannot reach test mode
- Failed to start	- Other

INSTRUMENTS

- Gauge tube not working	- Display problem
- Communication failure	- Degas not working
- Error code on display	- Other

SCROLL AND ROTARY VANE PUMPS

- Pump doesn't start	- Noisy pump (describe)
- Doesn't reach vacuum	- Over temperature
- Pump seized	- Other

DIFFUSION PUMPS

- Heater failure	- Electrical problem
- Doesn't reach vacuum	- Cooling coil damage
- Vacuum leak	- Other

Section 6) *ADDITIONAL TERMS*

Please read the terms and conditions below as they apply to all returns and are in addition to the Agilent Technologies Vacuum Product Division – Products and Services Terms of Sale.

- Customer is responsible for the freight charges for the returning product. Return shipments must comply with all applicable **Shipping Regulations** (IATA, DOT, etc.) and carrier requirements.
- Customers receiving an Advance Exchange product agree to return the defective, rebuildable part to Agilent Technologies **within 15 business days**. Failure to do so, or returning a non-rebuildable part (crashed), will result in an invoice for the non-returned/non-rebuildable part.
- Returns for credit toward the purchase of new or refurbished Products are subject to prior Agilent approval and may incur a restocking fee. Please reference the original purchase order number.
- Units returned for evaluation will be evaluated, and a quote for repair will be issued. If you choose to have the unit repaired, the cost of the evaluation will be deducted from the final repair pricing. A Purchase Order for the final repair price should be issued within 3 weeks of quotation date. Units without a Purchase Order for repair will be returned to the customer, and the evaluation fee will be invoiced.
- A Special Cleaning fee will apply to all exposed products per Section 4 of this document.
- If requesting a calibration service, units must be functionally capable of being calibrated.