



Agilent Technologies

Vacuum Products Division



***TriScroll™ 300 Series
Dry Scroll
Vacuum Pump***

*MODULE REPLACEMENT
MANUAL*

Manual No. 699904285

Revision F

September 2014

TriScroll™ 300 Dry Scroll Vacuum Pump



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Loctite and PST are registered trademarks of Loctite Corporation.

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TriScroll 300 Dry Scroll Vacuum Pump

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Preface

This manual provides the information you need to successfully perform replacement of the entire module of your Agilent TriScroll™ Dry Vacuum Pump. Module replacement is performed as an alternative to performing a complete overhaul and rebuild (Major Maintenance) and is sold as one of the options recommended when the pump base pressure has risen to an unacceptably high level for your application. If you have questions that are not addressed in this manual, please contact the nearest Agilent service facility listed on the rear cover of this manual.

Safety Considerations

READ THE FOLLOWING INSTRUCTIONS. TAKE ALL NECESSARY PRECAUTIONS.

The following format is used in this manual to call attention to hazards:

WARNING



The warning messages are for attracting the attention of the operator to a particular procedure or practice which, if not followed correctly, could lead to serious injury.

CAUTION



The caution messages are displayed before procedures, which if not followed, could cause damage to the equipment.

NOTE



The notes contain important information taken from the text.

Maintenance 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 work performed by unskilled or improperly trained maintenance personnel, or careless operation of the equipment employed in the specified maintenance procedures can be serious. Every maintenance person must read and thoroughly understand the materials discussed and the instructions provided in this manual, as well as any additional information provided by Agilent.

All warnings and cautions must be read carefully, fully understood, and strictly observed. Consult local, state/province, and national agencies regarding specific requirements and regulations. Address any safety, operation, and/or maintenance questions to the nearest Agilent location.

TriScroll 300 Dry Scroll Vacuum Pump

WARNING



Disconnect power from the TriScroll 300 before performing any maintenance procedure.

Allow the pump to cool before performing any maintenance procedure. Approximate cool-down time is one to two hours.

CAUTION



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 alcohol, methanol or other solvents on O-rings. To do so causes deterioration and reduces their ability to hold a vacuum.

If applicable, apply a small amount of Krytox[®] GPL 224 grease and wipe the O-rings “shiny” dry.

NOTE



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

Unless otherwise stated, apply Loctite[®] 242 or Loctite PST[®] 567 to the first few threads only. Apply just enough to obtain a seal.

WARNING



The TriScroll 300 weighs 26.4 kg (58 lbs). To avoid injury, use proper lifting techniques when moving the pump.

TriScroll 300 Dry Scroll Vacuum Pump

Related TriScroll Manuals

Manuals related to the installation and operation, tip seal replacement, and major maintenance for the TriScroll 300 series pumps are listed in the following table:

Title	Applicable TriScroll Model	Part Number
Major Maintenance Manual	All TriScroll 300 Series Models	699904260
Tip Seal Replacement Manual	All TriScroll 300 Series Models	699904280
Installation and Operation Manual	All TriScroll 300 Series Models	699904265

Maintenance and Tool Kits

Material and tooling required to perform maintenance on TriScroll pumps is provided in kit form. A description of each kit and ordering information is provided in the following table:

Description	Contents	Applicable TriScroll Model	Part Number
Major Maintenance Kit	All bearings, bearing seals, bearing lubricant, O-rings, and tip seals required to rebuild TriScroll 300 Series pumps.	All TriScroll 300 Series models	PTSS0300MK
Maintenance Tooling Kit	All fixtures and tools required to perform any maintenance on TriScroll 300 Series pumps.	All TriScroll 300 Series models	PTSS0300TK
Replacement Tip Seal Set	Replacement tip seals and static O-rings for TriScroll 300 Series pumps. <i>NOTE: The Maintenance Tool Kit is also required for tip seal replacement.</i>	All TriScroll 300 Series models	PTSS0300TS

TriScroll 300 Dry Scroll Vacuum Pump

Factory Service Options

Agilent offers factory-rebuild service or advance exchange of complete TriScroll Pumps or TriScroll Pump Modules. Contact your nearest Agilent sales office for price and availability information. Select your preferred service option from the table below.

Factory Service Options	Part Number
Advance Exchange TriScroll 300 Single Phase	EXPPTS03001
Advance Exchange TriScroll 300 Three Phase	EXPPTS03003
Advance Exchange TriScroll 310 Single Phase	EXPPTS03101
Advance Exchange TriScroll 310 Three Phase	EXPPTS03103
Advance Exchange TriScroll 300 Pump Module Only	EXPTS0300SC
Advance Exchange TriScroll 310 Pump Module Only	EXPTS0310SC
Service/Rebuild TriScroll 300 Pump (Single or Three Phase)	PTS0300KMA
Service/Rebuild TriScroll 310 Pump (Single or Three Phase)	PTS0310KMA
Service/Rebuild TriScroll 300 Pump Module Only	PTS0300SCR
Service/Rebuild TriScroll 310 Pump Module Only	PTS0310SCR

Serial Numbers Notes

This manual applies to TriScroll 300 series with serial numbers beginning with LP, and ascending from LPB80124. For service on TriScroll series pumps with serial numbers J7000001 to A8000108, contact your nearest Agilent office.

TriScroll 300 series pumps with serial number above LPC80250 have 1/4-18 National Pipe Threads in the bearing purge, gas ballast, and exhaust ports. Pumps with serial numbers below LPC80250 were manufactured with 1/4-19 British Standard Pipe Threads. Contact your nearest Agilent office if mating hardware is required.

Contacting Agilent

In the United States, you can contact Agilent Customer Service at 1-800-882-7426. See the back cover of this manual for a listing of our sales and service offices.

Visit our web site at:

<http://www.chem.agilent.com/en-US/Products/Instruments/vacuum/pages/default.aspx>.

General Information

Agilent TriScroll 300 series pumps are designed to provide years of trouble-free service if maintenance procedures and intervals are observed. Bearing grease replenishment and tip seal replacement is recommended when the pump base pressure has risen to an unacceptably high level for your application. Bearings, rotary seals and O-rings should also be replaced if the pump exhibits humming or grinding noises from the bearings. Main bearing life may be shortened if your application requires the pumping of high quantities of water vapor. Use of the bearing purge will keep this water from impacting bearing life.

Equipment Required to Install Pump Module

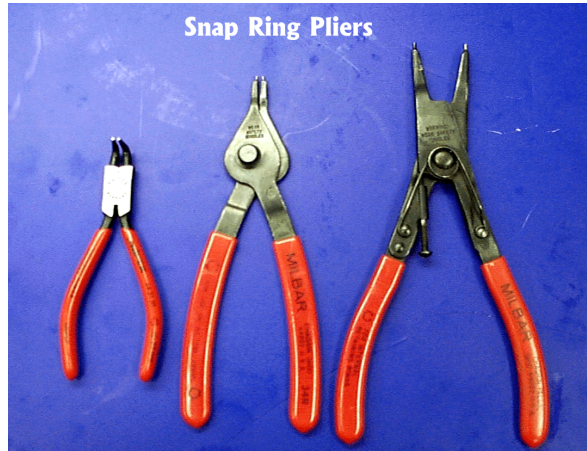
- ❑ Pump Module

Tools Required to Install Pump Module

- ❑ 4 MM Hex key
- ❑ 5 MM Hex key
- ❑ 6 MM Hex key

Included in **Maintenance Tool Kit: #PTSS0300TK** (page 2)

Maintenance Tool Kit



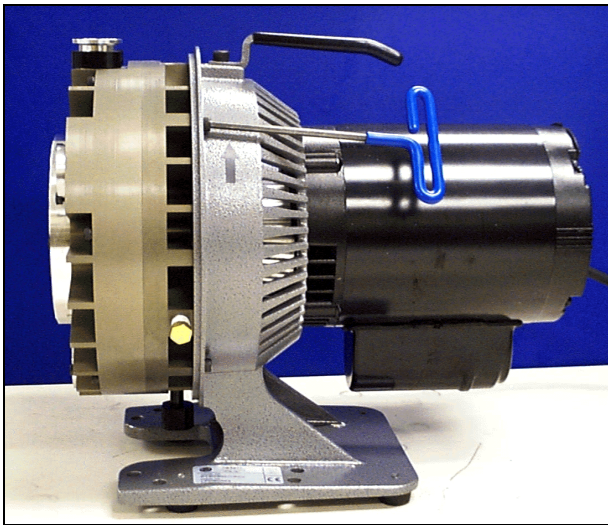
Maintenance Tool Kit (continued)



TriScroll Disassembly

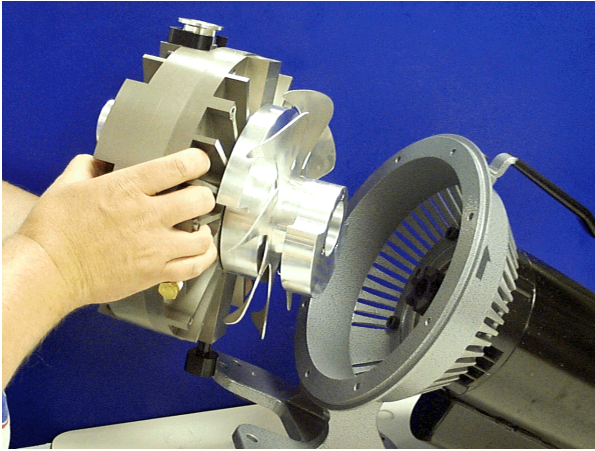


1. Remove three M5x16 screws attaching cowling to module.
2. Remove cowling.

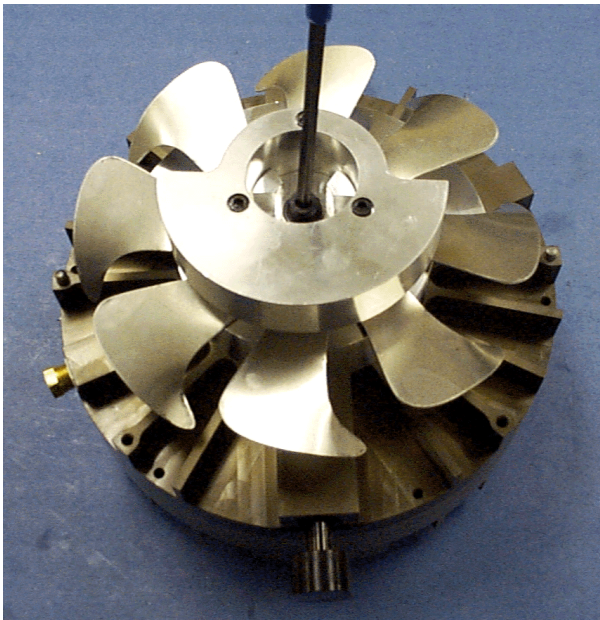


3. Remove the four M6x16 screws attaching pump module to the frame.

TriScroll Disassembly (continued)

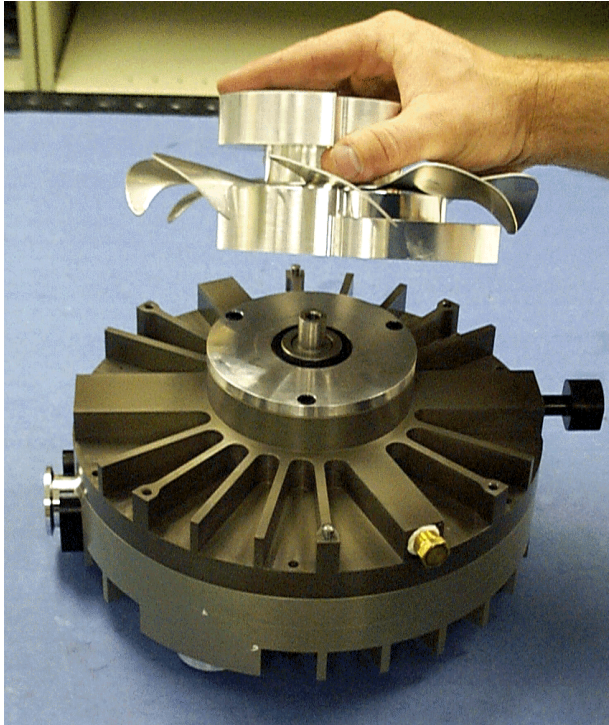


4. Remove pump module from the frame.



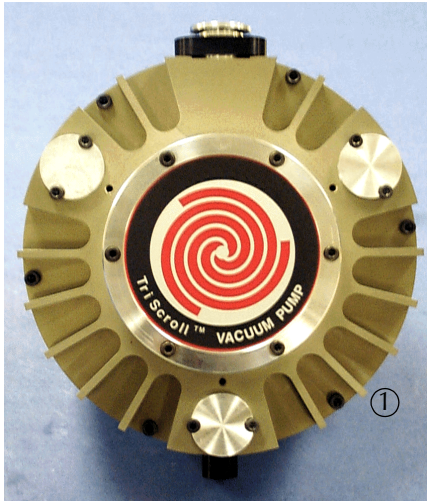
5. Remove M8x12 screw and washer attaching fan assembly to crankshaft.

TriScroll Disassembly (continued)



6. Remove fan assembly from crankshaft.
7. Remove key from slot in crankshaft.

TriScroll Reassembly

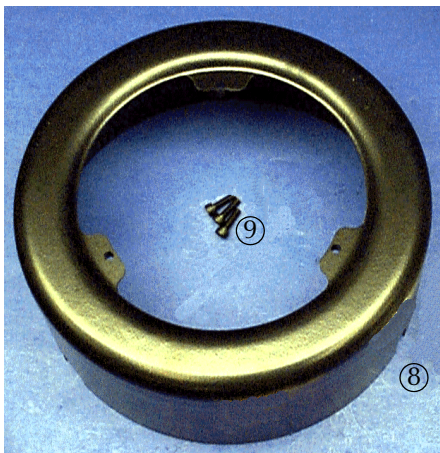
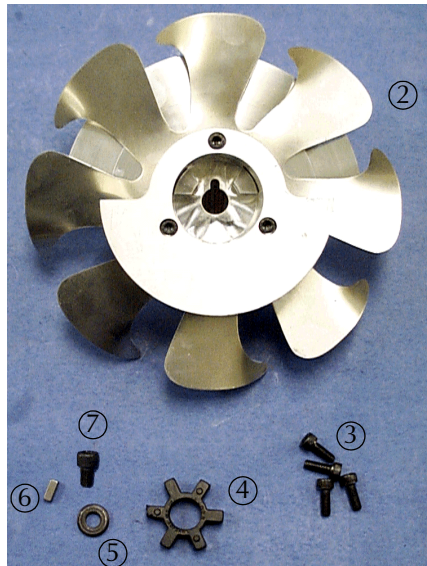


Tool required:

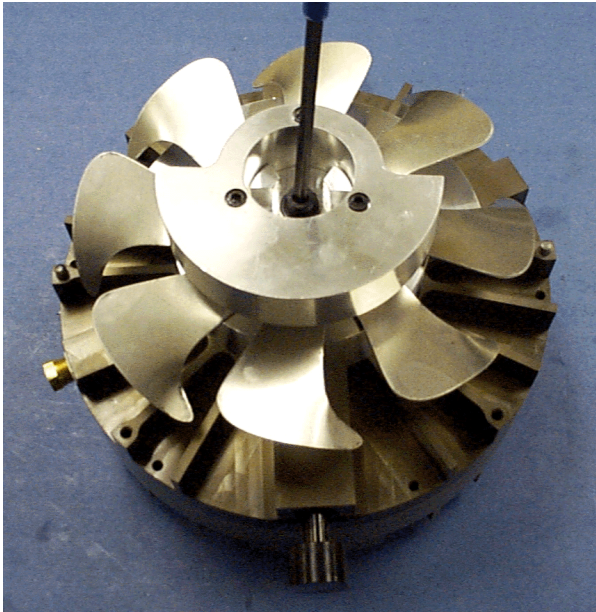
Allen wrench

Locate the following items shown in the photos on the left:

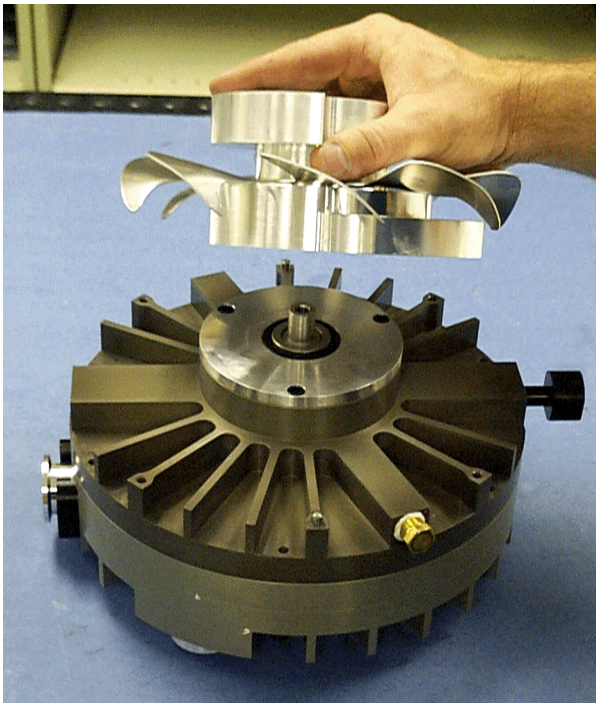
- ① Pump Module Assembly
- ② Fan Assembly
- ③ M6x16 screws (4)
- ④ Spider Coupling
- ⑤ Washer
- ⑥ Key
- ⑦ M8x12 screw
- ⑧ Cowling
- ⑨ M5x16 screws (3)



TriScroll Reassembly (continued)



1. Install key in slot on crankshaft.



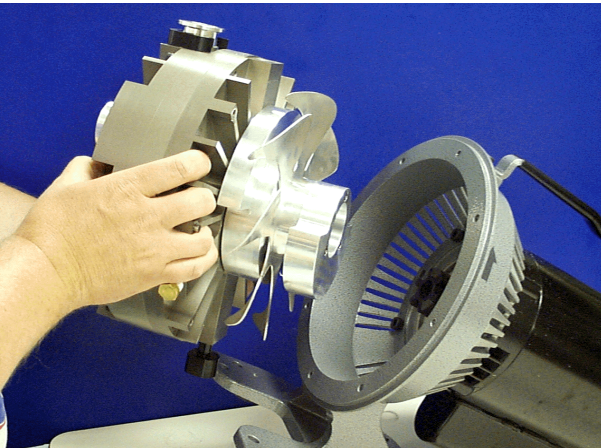
2. Slide fan assembly onto crankshaft engaging key and against seal spacer.

3. Secure fan assembly to crankshaft with M8x12 screw and washer previously removed in step 5 on page 5.

TriScroll Reassembly (continued)



4. Insert spider in motor coupling.



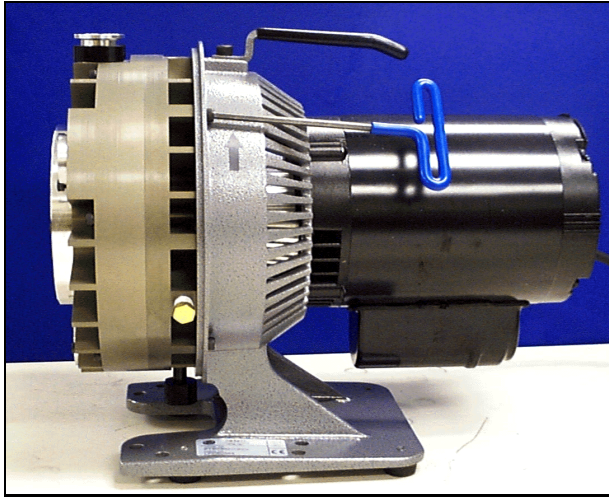
5. Install pump module on frame, aligning fingers on fan assembly with fingers on coupling. Assure proper fit of dowel pins on mating holes in frame.

NOTE



Exhaust fitting in the downward position.

TriScroll Reassembly (continued)



6. Secure pump module to frame with four M6x16 screws.



7. Install cowling over pump module. Secure with three M5x16 screws.

TriScroll Reassembly (continued)



This figure illustrates a fully reassembled TriScroll 300 Series Pump.

Pump Conditioning and Performance Verification

Pump Module conditioning and performance verification has been performed at Agilent factory. Further conditioning or performance verification is not necessary.

TriScroll 300 Dry Scroll Vacuum Pump

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**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.

RETURN THE COMPLETED **REQUEST FOR RETURN** FORM TO YOUR NEAREST LOCATION:

EUROPE:

Fax: 00 39 011 9979 330
Fax Free: 00 800 345 345 00
Toll Free: 00 800 234 234 00
vpt-customer@agilent.com

NORTH AMERICA:

Fax: 1 781 860 9252
Toll Free: 800 882 7426, Option 3
vpl-ra@agilent.com

PACIFIC RIM:

please visit our website for individual office information
<http://www.agilent.com>



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: <input type="checkbox"/> Taxable <input type="checkbox"/> 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 - Does not spin freely - Does not reach full speed - Mechanical Contact - Cooling defective	- Noise - Vibrations - Leak - Overtemperature - Clogging	- Vertical - Horizontal - Upside-down - Other: Power: Rotational Speed: Current: Inlet Pressure: Temp 1: Foreline Pressure: Temp 2: Purge flow: OPERATING TIME:

ION PUMPS/CONTROLLERS

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

VALVES/COMPONENTS

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

LEAK DETECTORS

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

INSTRUMENTS

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

SCROLL AND ROTARY VANE PUMPS

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

DIFFUSION PUMPS

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

TriScroll 300 Dry Scroll Vacuum Pump

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Pacific Rim:
Please visit our website for individual
office information <http://www.agilent.com>

Worldwide Web Site, Catalog and Order

On-line:
www.agilent.com
Representatives in most countries



Agilent Technologies



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