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vacuum technologies

CE

TriScroll™ 600 Inverter Dry Scroll Vacuum Pump

INSTALLATION AND OPERATION MANUAL

Manual No. 699904360
Revision A
May 2006

TriScroll™ 600 Inverter
Dry Scroll Vacuum Pump

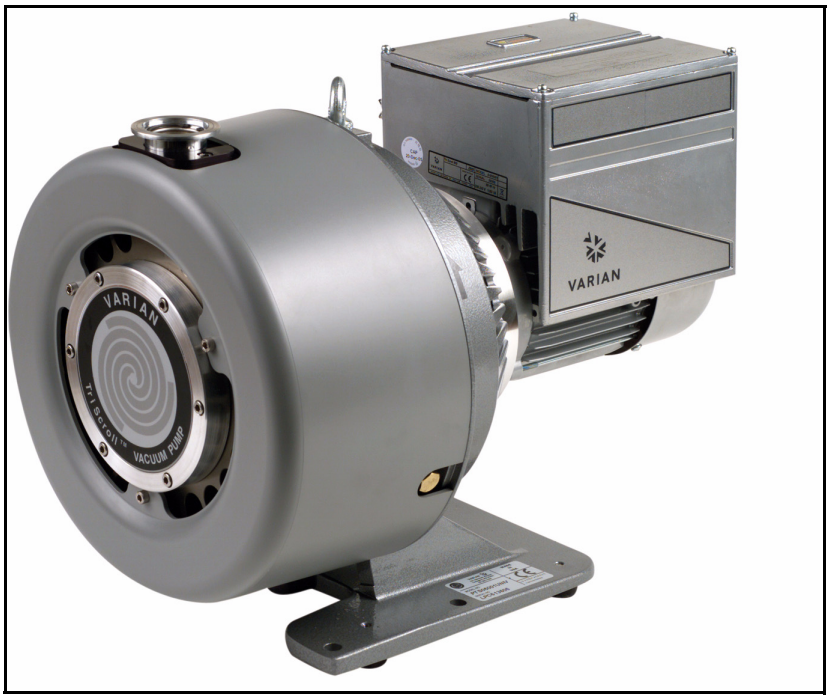

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Table of Contents

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List of Figures

List of Tables

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Declaration of Conformity
Konformitätserklärung
Déclaration de Conformité
Declaración de Conformidad
Verklaring de Overeenstemming
Dichiarazione di Conformità

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121 Hartwell Avenue
Lexington, MA, 02421-3133 USA

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TriScroll Inverter Vacuum Pumps (PTS03001INV, PSS06001INV)

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98/37/EEC, Machinery Directive

EN 1012-2:1996	Compressors and vacuum pumps safety reqmts; Part 2 vacuum pumps
EN 1050:1996	Safety of machinery - principles for risk assessment
EN 60204-1	Electrical equipment of industrial machines; general requirements

73/023/EEC, Low Voltage Directive

EN 60034 part 1	Rotating electrical machines - Part 1: Rating and performance
EN 61010-1:2001	Safety requirements for electrical equipment for measurement, control and laboratory use

89/336/EEC, Electromagnetic Compatibility Directive

EN 61000-4-2	Testing and measurement techniques - Electrostatic discharge immunity test
EN 61326:1997/A3:2003	Electrical equipment for measurement, control and laboratory use

Frederick C. Campbell

Frederick C. Campbell
Operations Manager
Varian, Inc.
Lexington, Massachusetts, USA

March 2003

CE

Warranty

Products manufactured by Seller are warranted against defects in materials and workmanship for twelve (12) months from date of shipment thereof to Customer, and Seller's liability under valid warranty claims is limited, at the option of Seller, to repair, to replace, or refund of an equitable portion of the purchase price of the Product. Items expendable in normal use are not covered by this warranty. All warranty replacement or repair of parts shall be limited to equipment malfunctions which, in the sole opinion of Seller, are due or traceable to defects in original materials or workmanship. All obligations of Seller under this warranty shall cease in the event of abuse, accident, alteration, misuse, or neglect of the equipment. In-warranty repaired or replaced parts are warranted only for the remaining unexpired portion of the original warranty period applicable to the repaired or replaced parts. After expiration of the applicable warranty period, Customer shall be charged at the then current prices for parts, labor, and transportation.

Reasonable care must be used to avoid hazards. Seller expressly disclaims responsibility for loss or damage caused by use of its Products other than in accordance with proper operating procedures.

Except as stated herein, Seller makes no warranty, express or implied (either in fact or by operation of law), statutory or otherwise; and, except as stated herein, Seller shall have no liability under any warranty, express or implied (either in fact or by operation of law), statutory or otherwise. Statements made by any person, including representatives of Seller, which are inconsistent or in conflict with the terms of this warranty shall not be binding upon Seller unless reduced to writing and approved by an officer of Seller.

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All claims under warranty must be made promptly after occurrence of circumstances giving rise thereto, and must be received within the applicable warranty period by Seller or its authorized representative. Such claims should include the Product serial number, the date of shipment, and a full description of the circumstances giving rise to the claim. Before any Products are returned for repair and/or adjustment, written authorization from Seller or its authorized representative for the return and instructions as to how and where these Products should be returned must be obtained. Any Product returned to Seller for examination shall be prepaid via the means of transportation indicated as acceptable by Seller. Seller reserves the right to reject any warranty claim not promptly reported and any warranty claim on any item that has been altered or has been returned by non-acceptable means of transportation. When any Product is returned for examination and inspection, or for any other reason, Customer shall be responsible for all damage resulting from improper packing or handling, and for loss in transit, notwithstanding any defect or non-conformity in the Product. In all cases, Seller has the sole responsibility for determining the cause and nature of failure, and Seller's determination with regard thereto shall be final.

If it is found that Seller's Product has been returned without cause and is still serviceable, Customer will be notified and the Product returned at its expense; in addition, a charge for testing and examination may be made on Products so returned.

3/1/00

Instructions for Use

General Information

This equipment is designed for use by professionals. The user should read this instruction manual and any other additional information supplied by Varian before operating the equipment. Varian will not be held responsible for any events that occur due to non-compliance with these instructions, improper use by untrained persons, non-authorized interference with the equipment, or any action contrary to that provided for by specific national standards.

The TriScroll™ 600 is a dry scroll vacuum pump. This pump is suitable for pumping air or inert gases. The pump is not intended to pump toxic, corrosive, explosive, or particulate-forming gases.

The following paragraphs contain all the information necessary to guarantee the safety of the operator when using the equipment. Detailed information is supplied in "Technical Information" on page 5.

This manual uses the following standard safety protocol:

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.

Storage

When transporting and storing the pump, the following environmental requirements should not be exceeded:

Temperature:	–20 °C to 60 °C (–4 °F to 140 °F)
Relative humidity:	0 to 95% (non-condensing)

Unpacking and Inspection

The shipping container is a double carton.

1. After opening the outer box, remove the foam packing.
2. Slit open the inner box.
3. Lift the pump with the plywood base out of the inner box.
4. Remove the four bolts securing the pump frame to the plywood base.
5. Locate the NW25 exhaust fitting and set it aside.
6. Inspect the pump for damage.

   If there is shipping damage, contact the freight carrier and your local Varian sales office immediately.
7. Save the carton and packing materials.

Total weight of the package, including the pump, is approximately 39 kg (85 lbs).

WARNING

When unpacking the pump, be sure not to drop it, and avoid any kind of sudden impact or shock vibration to it.

WARNING

The TriScroll 600 weighs 31 kg (68 lbs). To avoid injury, use proper lifting techniques when moving the pump.

NOTE

Normal exposure to the environment cannot damage the pump. Nevertheless, it is advisable to keep the pump inlet closed until the pump is installed in the system.

Installation Requirements

Safety

Do not remove or modify any safety or insulating equipment from the pump. To do so may create a serious safety hazard and may void the warranty.

WARNING

- ❑ *This pump is designed to pump air and inert gases only; it is not designed to pump explosive, flammable, toxic, or corrosive gases. They can cause bodily injury, explosion, or fire.*
- ❑ *Install in an area that is not exposed to rain, steam, or excessive humidity. They can cause electric shock, short circuits, and severe bodily injury.*
- ❑ *Before inspecting or servicing the pump, be sure the electrical supply is disconnected.*
- ❑ *Consult a qualified electrician whenever wiring the pump.*

CAUTION

Although the pump can pump trace particulates normally found in the atmosphere, it is not designed for process solids, chemicals, powders, solvents, condensates, or other particulates. They can damage the equipment, degrade its performance, or shorten its useful life.

The pump operates in a clockwise direction when viewed from the motor end. (Note the arrow on the pump frame.) Improper rotation can cause permanent damage to the pump.

During operation, the following environmental conditions should not be exceeded:

Temperature:	+5 °C to +40 °C (41 °F to 104 °F)
Relative humidity:	0 to 95% (non-condensing)

CAUTION

Do not block the fan ducts because the pump can become overheated. A pump surface temperature in excess of 55 °C (131 ° F) is potentially damaging. If such conditions are observed, turn pump off and allow to cool. Disassemble, inspect for damage, and repair if necessary.

CAUTION

The pump operates only with 200 - 240 ±10% VAC, 50 or 50 Hz power.

Power Cord

Several power cord options are available from your Varian dealer. Descriptions of the available power cords and their ordering numbers are given in Table 1.

NOTE

The pump must be connected to the power supply using a high voltage IEC-320 type power cord of at least 10 A capacity.

Table 1 Power Cord Selection

Country	Power Cord Specification	Order
Europe	10 A / 220-230 VAC, 2.5 m	656494220
Denmark	10 A / 220-230 VAC, 2.5 m	656494225
Switzerland	10 A / 230 VAC, 2.5 m	656494235
UK/Ireland	13 A / 230 VAC, 2.5 m	656494250
India	10 A / 220-250 VAC, 2.5 m	656494245
Israel	10 A / 230 VAC, 2.5 m	656494230
North America	10 A / 230 VAC, 2.5 m	656494255

Grounding Instructions

This product should be grounded. In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current. This pump is equipped with a power cord that has a grounding wire with an appropriate grounding plug. The plug must be inserted into an outlet that is properly installed and grounded in accordance with all local codes and ordinances.

WARNING

Check with a qualified electrician or serviceman if the grounding instructions are not completely understood, or if you are in doubt as to whether the product is properly grounded.

Do not modify the plug provided; if it does not fit the outlet, have the proper outlet installed by a qualified electrician.

Connect the product only to an outlet that has the same configuration as the plug.

Do not use an adapter with this product.

Extension Cords

If you must use an extension cord with this product:

- ❑ Varian recommends using only extension cords with a minimum of 16-gauge wire and a maximum length of 25′ (7.6 m).
- ❑ Use only a 3-wire extension cord that accepts the plug.
- ❑ Ensure the extension is in good condition.
- ❑ Ensure the extension cord is rated high enough to carry the current the products draws. An undersized cord causes a drop in line voltage, resulting in loss of power and overheating.

Circuit Breakers

WARNING

Protect against short circuits by installing a circuit breaker of the proper capacity.

Table 2 lists the circuit breaker capacity required for the pump. Locate the switch or circuit breaker near the pump.

Table 2 Circuit Breaker Requirements

PTS06001INV	200-240 VAC 50/60 Hz
Breaker capacity	10 Amperes

Operation

In order to reach ultimate vacuum, the pump must be left running for about one hour with the inlet sealed.

Unlike conventional oil-sealed pumps, Varian's dry scroll pumps do not have fluid to cleanse them of accumulated dust and debris. Run the pump periodically at atmosphere for a minute or two to flush out the pump. Flush the pump regularly and adjust this schedule according to your specific conditions.

Startup Procedure

1. Be sure that the vacuum system isolation valve is closed.
2. Turn on power to the pump.

NOTE

Pump operation is interlock dependent. The provided mating connector must be plugged into P1 to start the pump.

NOTE

When the controller is switched on, an electronic self-test occurs, during which an orange LED illuminates for one second and the turns off for two seconds. During this time, the pump will not start.

This self-test time is not required if the pump is already powered, as when remotely or serially operated.

3. Open the isolation valve.

Shutdown Procedure

1. Close the vacuum system isolation valve. This prevents debris in pump from being transported into the vacuum system.
2. Turn off power to the pump.

Maintenance

Personnel responsible for pump operation and maintenance must be well-trained and aware of the accident prevention rules.

WARNING

- ❑ *Death may result from contact with high voltages. Always take extreme care and observe the accident prevention regulations in force.*
- ❑ *When the machine is powered up, be careful of moving parts and high voltages.*
- ❑ *If you have to perform maintenance on the pump after a considerable time in operation, allow the pump to cool as the temperature of the outer surface may be in excess of 55 °C (131 °F).*
- ❑ *Always disconnect your power supply to the pump before beginning maintenance work.*

NOTE

Before returning the pump to the factory for repair, the "Health and Safety" sheet attached to this instruction manual must be completed and sent to the local sales office. A copy of the sheet must be inserted in the pump package before shipping.

If a pump is to be discarded, it must be disposed of in accordance with specific national and local standards.

Technical Information

Table 3 Specifications

Model	TriScroll™ 600 Inverter Dry Scroll Vacuum Pump (PTS06001INV)
Interface dimensions	See Figure 1
Peak pumping speed	500 l/m, 30 m^3/hr (17.7 cfm) See Figure 2
Media	Clean air. No toxic, corrosive, explosive or particulate forming gases
Ultimate pressure (Torr)	7.0×10^{-3} Torr (9.3×10^{-3} mbar)
Maximum inlet pressure	1.0 atmosphere (0 psig)
Maximum outlet pressure	1.1 atmosphere (1.5 psig)
Inlet connection	NW40
Exhaust connection	Female 3/8" National Pipe Thread (NW25 adapter provided)
Gas ballast	Female 1/4" National Pipe Thread (40 Micron sintered filter provided)
Ambient operating temperature	5 °C to 40 °C (41 °F to 104 °F)
Storage temperature	–20 °C to 60 °C (–4 °F to 140 °F)
Motor rating	0.67 HP (0.5 kW)
Operating voltage	50-60 Hz:200-240 VAC Single-phase
Maximum line current	200 VAC; 5 A 240 VAC: 4.2 A
Motor thermal protection	Automatic
Operating speed	40-62 Hz Factory setting: 62 Hz, 1800 RPM
Cooling system	Air-cooled
Weight	Pump only: 31 kg (68 lbs) Shipping weight: 39 kg (85 lbs)
Noise level (per ISO 11201)	Variable with frequency, 55-68 dB(A)
Vibration level at inlet (per ISO 10816-1)	Variable with frequency
Main fuse	Type H; 10 A, 250 V (Littlefuse 0216010.HxP or equivalent)
Installation category	2
Pollution degree	2
CSA/CUS compliance	CAN/CSA-C22.2 No. 61010-1-04 U/L 61010-1, second edition
Altitude	2000 m

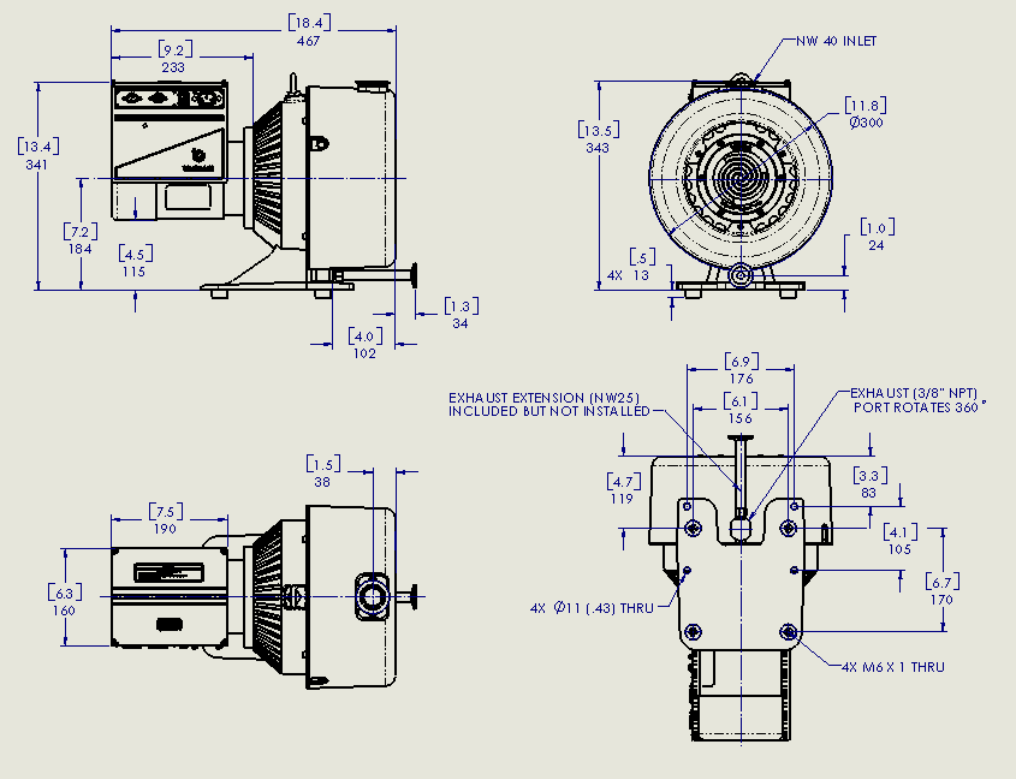


Figure 1 Interface Drawing with Dimensions

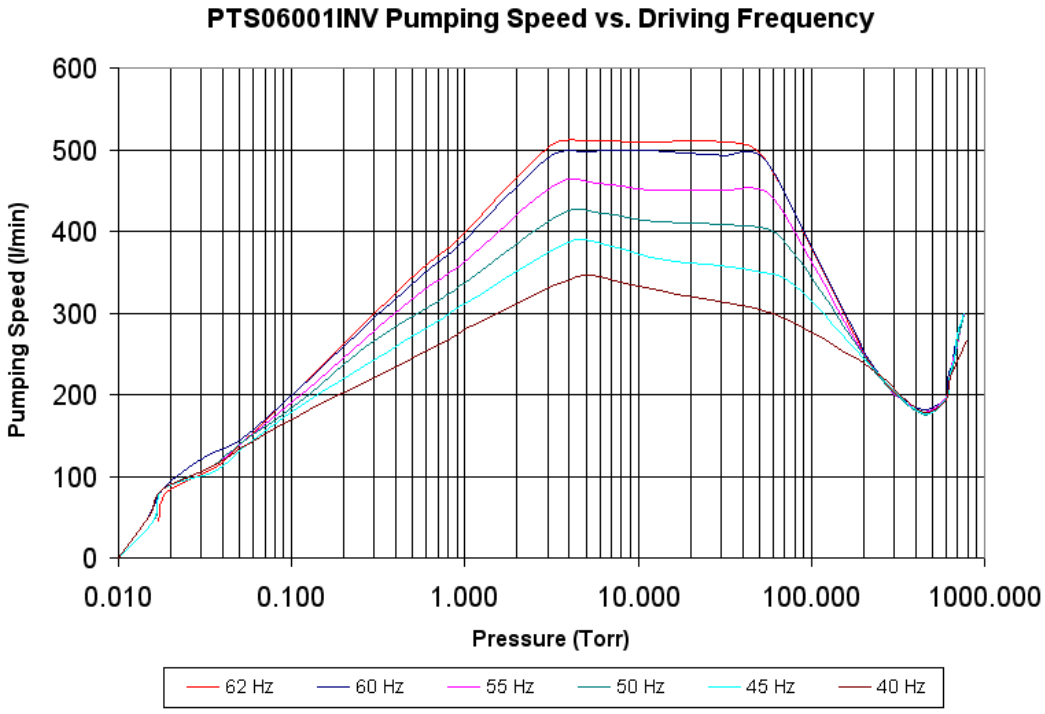
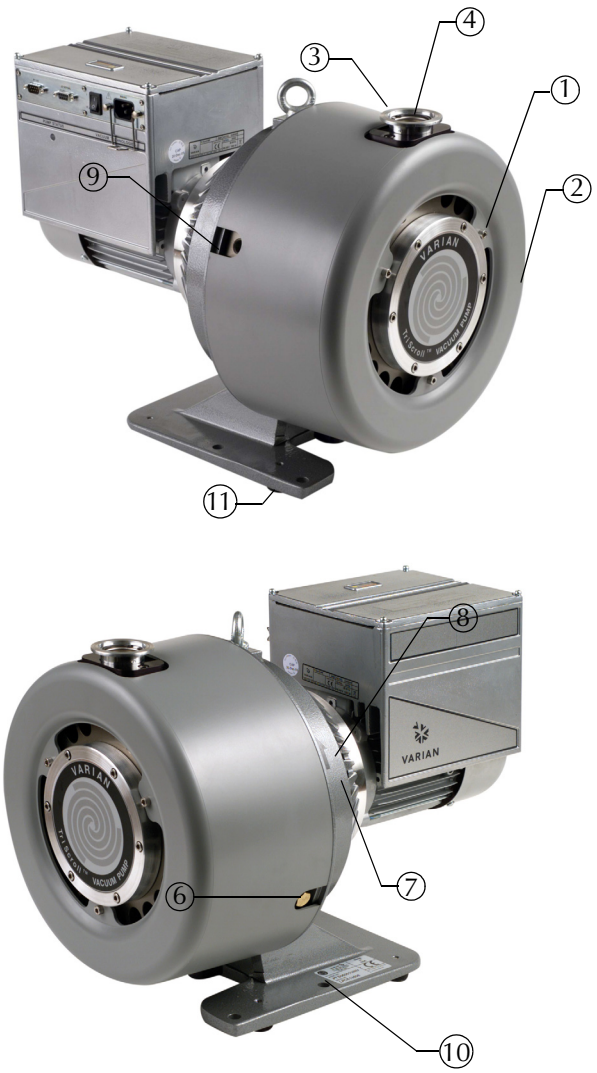
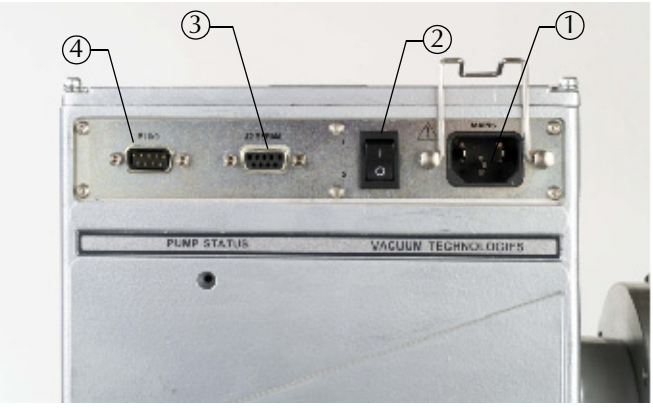


Figure 2 Pumping Speed Curves



1. Cowling Screws; M5 (3)
2. Cowling
3. Inlet (NW40)
4. Inlet Screen
5. NW25 Exhaust Adapter (Not shown)
6. Bearing Purge Port (1/4" National Pipe Thread)
7. Pump Frame
8. Frame Screws; M6 (4)
9. Gas Ballast Port (1/4" National Pipe Thread)
10. Mounting Holes; 11 mm diameter thru (8)
11. Rubber Feet (4)

Figure 3 TriScroll 600 Inverter Vacuum Pump



1. Power Connector (IEC 320)
2. On/Off Switch
3. Serial Port J2
4. Interlock Port P1

Figure 4 Inverter Interface

Pump Electrical Controller

The pump is powered by an inverter that converts single phase line power into 3-phase power that drives an induction motor at a user selectable frequency.

Several operational variables are modifiable through the J2 serial port when using Varian T-Plus software. A number of additional system variables are also viewable.

Pump operation is interlocked through the P1 connector. Pins 4 and 5, and Pins 8 and 9, must be connected together to enable operation. A prewired connector is supplied with the pump and should be plugged into P1. The maximum power output of the inverter is 750 Watts. At pump inlet pressures above approximately 50 Torr, the pump will be power limited and the output frequency will be reduced. This mode is known as *autotuning*.

At pump start, the drive frequency is ramped up over several seconds. This provides for smooth starting and eliminates large in-rush currents.

Technical Specifications

- ❑ Input voltage: 200 V-240 V / 50-60 Hz
- ❑ Max frequency: 62 Hz (factory setting)
- ❑ Normal Operation maximum power: 750 W
- ❑ Protection level: IP 20

Table 4 P1 Interlock

PIN #	SIGNAL NAME	IN/OUT
1	No Connection	
2	No Connection	
3	No Connection	
4	Start (-) - Connect to Pin 5	In
5	Groundout	Out
6	No Connection	
7	No Connection	
8	Start (+) - Connect to Pin 9	In
9	24 V	Out

NOTE

Pump operation is interlock dependent. The provided mating connector must be plugged into P1 to start the pump.

Serial Interface Specification RS485 and RS232

Table 5 J2 - Serial Port

PIN #	SIGNAL NAME
1	+ 5 V out
2	TX (RS232)
3	RX (RS232)
4	Spare
5	GND
6	A+ (RS485)
7	Spare
8	B- (RS485)
9	Spare

Physical level: RS232 or RS485
Maximum baud: 9600, 8 data bit, no parity, 1 stop bit.

Table 6 T-Plus Software Variables

WIN	TYPE	DESCRIPTION
000	Logical	Start/Stop (1=START; 0=STOP)
001	Logical	Low Speed [0=OFF / 1=ON]
008	Logical	Remote/Serial Configuration (1=REMOTE; 0=SERIAL)
102	Numerical	Set Point Value (Hz)
105	Numerical	Set Point Hysteresis (%) [0-100]
108	Numerical	Baud Rate (0-4) [600-1200-2400-4200-9600]
117	Numerical	Low Speed Adjust (Hz)
120	Numerical	Rotational Frequency Setting [Hz] (High speed adjust)

Table 6 T-Plus Software Variables (Continued)

WIN	TYPE	DESCRIPTION
200	Numerical	Bus Current [mA]
201	Numerical	3 Phase Voltage [Vrms]
202	Numerical	Power [W]
203	Numerical	Driving Frequency [Hz]: (current driving frequency)
205	Numerical	Status: ❑ 0=stop ❑ 2=ramp ❑ 3=autotuning ❑ 5=normal ❑ 6=fail
206	Numerical	Error Code: ❑ Bit 7: motor block ❑ Bit 6: short circuit ❑ Bit 5: undervoltage ❑ Bit 4: spare ❑ Bit 3: power fail ❑ Bit 2: controller overt ❑ Bit 1: pump overt ❑ Bit 0: spare
211	Numerical	Controller Temperature [°C]
216	Numerical	Environment Temperature [°C]
300	Numerical	Cycle Time [min]
301	Numerical	Cycle Number
302	Numerical	Pump Life [h]
319	Alphanumeric	Controller Model
323	Alphanumeric	Controller Serial Number
325	Alphanumeric	Electrical Modification Level
500	Logical	Monitor Mode (write only)

Table 6 T-Plus Software Variables (Continued)

WIN	TYPE	DESCRIPTION
503	Numerical	RS485 Serial Address Setting [0-31]
504	Logical	Serial Type Select (0=RS323; 1=RS485)

Table 7 Status LEDs

LED STATUS	CONTROLLER STATUS
Off	Stop
Green flashing	Ramp or Autotuning
Green	Normal Operation
Red	Fail
Orange + Off	Reset + selftest

NOTE

When the controller is switched on, an electronic self-test occurs, during which an orange LED illuminates for one second and the turns off for two seconds. During this time, the pump will not start.

This self-test time is not required if the pump is already powered, as when remotely or serially operated.

Using T-Plus Software To Change The Target Frequency

1. Install T-Plus software on your PC by running setup.exe.
2. Using a 9-pin serial cable, connect your PC to the J2 serial port on the inverter (Figure 4).
3. Start the pump using the On/Off switch. The provided Interlock Connector must be installed in P1.
4. Start the T-Plus software and Figure 5 appears.

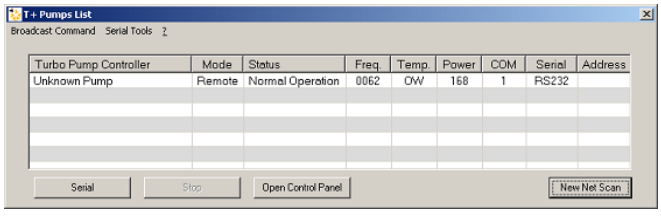


Figure 5 T+ Pumps List

5. Click **Open Control Panel** and Figure 6 appears.

6. Open the *Speed Settings* directory, and click **Target Frequency**.

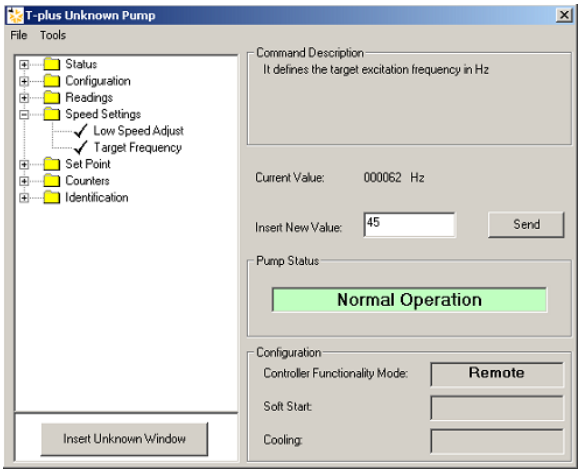


Figure 6 T-Unknown Pump

7. Enter the desired operating frequency into *Insert New Value*. This must be an integer between *40* and *62*.
8. Click **Send**. The pump immediately tries to change to the new target frequency. If the pump requires more than 750 Watts to attain the target frequency, the pump is power limited and will run at a lower frequency (auto-tuning mode). This condition continues until the power required drops below 750 Watts.

   The target frequency is stored in the inverter even when power to the pump is removed.

Gas Ballast

The pump incorporates an automatic gas ballast to prevent water and other condensates from accumulating within the pump. The standard configuration is a sintered filter installed in the 1/4" National Pipe Thread gas ballast port (item 9 on Figure 3 on page 7). This allows enough atmospheric air to enter the pump in order to purge condensates while not affecting pump ultimate pressure or pumping speed.

For applications where the ingress of atmospheric air is undesirable, dry nitrogen at a flow rate of ≈5 lpm can be bled into the gas ballast port. See “Purge Kit” below. Blocking of the gas ballast port is not recommended.

Bearing Purge

A 1/4" National Pipe Thread bearing purge port (item 6 on Figure 3 on page 7) protects the main crankshaft bearings in applications where large amounts of water are being pumped. In the standard configuration, this port is sealed.

To enable the bearing purge, dry nitrogen at a flow rate of ≈5 lpm can be bled into the bearing purge port. This gas supply should be maintained at 2 psig or less and must be kept below 5 psig. See “Purge Kit” below.

Purge Kit

A purge kit (Varian part number PTSPURGEKIT) is available to properly purge either the bearing purge or the gas ballast. This kit contains a flowmeter and all necessary valving and tubing.

Troubleshooting

Table 8 contains a list of possible problems, their probable causes, and corrective actions.

Table 8 Troubleshooting Chart

Problem	Probable Cause	Corrective Action
Pump won't start	P1 interlock missing	Plug in connector (provided).
	Wrong input voltage	Plug inverter into 200-240 VAC 50/60 Hz.
	Circuit breaker open	Close breaker. Identify cause of overload.
	Motor thermal protector open	Allow motor to cool. Identify cause of overload.
	Main fuse open	Inspect and replace fuse (Type H, 10 A, 250 V (Littlefuse 0216010.HxP or equivalent)).
	Wiring loose or cut	Repair or replace.
	Excessive voltage drop	Check size and length of power supply cable.
	Defective motor	Inspect. Contact Varian.
Poor ultimate pressure	System leak	Locate and repair leak.
	Water in pump	Flush pump with air or dry nitrogen.
	Gas ballast plugged	Replace breather vent. Contact Varian.
	Solvent in pump	Flush pump with air or dry nitrogen. Install trap or filter.
	Seals worn out	Replace tip seals. (Table 9 and Table 10 on page 13 list maintenance kits and service options.)
	Poor conductance to pump	Replumb with shorter and/or larger diameter tubing.
Pump makes hammering noise	Pump overheated	Check ambient temperature. Check ventilation to pump.
	Debris in pump	Check inlet screen. Flush pump. Disassemble pump and inspect. (Table 9 and Table 10 on page 13 list maintenance kits and service options.)

Maintenance

General Information

Varian TriScroll 600 Inverter pump is 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 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 kit (PTSPURGEKIT) mentioned earlier will keep this water from impacting bearing life.

Maintenance should be performed in accordance with procedures, tooling and materials specified in the manuals listed below.

Related TriScroll Manuals

Other manuals related to tip seal replacement, pump module replacement, and major maintenance of the TriScroll 600 Inverter pump are listed in Table 9.

Table 9 Other Related Manuals

Title	Applicable TriScroll Model	Part Number
Tip Seal Replacement Manual	All TriScroll 600 Series models	699904310
Pump Module Replacement Manual	All TriScroll 600 Series models	699904305
Major Maintenance Manual	All TriScroll 600 Series models	699904300

Maintenance and Tooling 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 Table 10.

Table 10 Maintenance and Tooling Kits

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 600 series pumps.	All TriScroll 600 Series models	PTSS0600MK
Maintenance Tool Kit	All fixtures and tools required to perform any maintenance on TriScroll 600 Series pumps.	All TriScroll 600 Series models	PTSS0600TK
Tip Seal Tool Kit	All tools required to change the tip seals on the TriScroll 600 Series pumps.	All TriScroll 600 Series models	PTSTSTKIT
Replacement Tip Seal Set	Replacement tip seals and static O-rings for TriScroll 600 Series pumps.	All TriScroll 600 Series models	PTSS0600TS

NOTE

After tip seal replacement, the TriScroll 600 Inverter pump may require up to 100 hours run time to achieve full rotational speed.

Factory Service Options

Table 11 lists the lists the service options that Varian offers for the TriScroll 600 Inverter pump.

Table 11 Factory Service Options

Factory Service Options	Part Number
Advance Exchange TriScroll 600 Inverter Pump Module Only	EXPTS0600SC
Service/Rebuild TriScroll 600 Inverter Pump	PTS0600KMA

Accessories

The accessories listed in Table 12 are available for use with the TriScroll 600 Inverter pump. Contact your local Varian office to place an order. A list of offices is included on the rear cover of this manual.

Table 12 Accessories

Purge Kit	PTSPURGEKIT
Exhaust Extension	S4807001
Exhaust Filter Kit	PTS600EXFIL

Contacting Varian

In the United States, you can contact Varian Customer Service at 1-800-8VARIAN. See the back cover of this manual for a listing of our sales and service offices.

Internet users:

- ❑ Send email to Customer Service & Technical Support at vpl.customer.support@varianinc.com
- ❑ Visit our web site at www.varianinc.com/vacuum
- ❑ Order on line at www.evarian.com

VARIAN

Request for Return
Health and Safety Certification

ISO 9001 REGISTERED

1. Return authorization numbers (RA#) **will not** be issued for any product until this Certificate is completed and returned to a Varian, Inc. Customer Service Representative.
2. Pack goods appropriately and drain all oil from rotary vane and diffusion pumps (for exchanges please use the packing material from the replacement unit), making sure shipment documentation and package label clearly shows assigned Return Authorization Number (RA#) VVT cannot accept any return without such reference.
3. Return product(s) to the nearest location:

North and South America	**Europe and Middle East**	**Asia and ROW**
Varian, Inc. 121 Hartwell Ave. Lexington, MA 02421 Fax: (781) 860-9252	Varian S.p.A. Via F.lli Varian, 54 10040 Leini (TO) – ITALY Fax: (39) 011 997 9350	Varian Vacuum Technologies Local Office

For a complete list of phone/fax numbers see www.varianinc.com/vacuum

4. If a product is received at Varian, Inc. in a contaminated condition, **the customer is held responsible** for all costs incurred to ensure the safe handling of the product, and **is liable** for any harm or injury to Varian, Inc. employees occurring as a result of exposure to toxic or hazardous materials present in the product.

CUSTOMER INFORMATION

Company name: .....

Contact person: Name: ..... Tel: .....

Fax: ..... E-mail: .....

Ship method: Shipping Collect #: ..... P.O.#: .....

Europe only: VAT Reg Number: ..... *USA only:* ❒Taxable ❒Non-taxable

Customer ship to: ..... Customer bill to: .....

....

....

PRODUCT IDENTIFICATION

Product Description	**Varian, Inc. Part Number**	**Varian, Inc. Serial Number**

TYPE OF RETURN (check appropriate box)

❒ Paid Exchange	❒ Paid Repair	❒ Warranty Exchange	❒ Warranty Repair	❒ Loaner Return
❒ Credit	❒ Shipping Error	❒ Evaluation Return	❒ Calibration	❒ Other

HEALTH and SAFETY CERTIFICATION

VARIAN, INC. CANNOT ACCEPT ANY BIOLOGICAL HAZARDS, RADIOACTIVE MATERIAL, ORGANIC METALS, OR MERCURY AT ITS FACILITY. CHECK ONE OF THE FOLLOWING:

❒ I confirm that the above product(s) has (have) **NOT** pumped or been exposed to any toxic or dangerous materials in a quantity harmful for human contact.

❒ I declare that the above product(s) has (have) pumped or been exposed to the following toxic or dangerous materials in a quantity harmful for human contact (Must be filled in):

Print Name..... Signature ..... Date .....

PLEASE FILL IN *THE FAILURE REPORT SECTION* ON THE NEXT PAGE

Do not write below this line

Notification (RA) #: ..... Customer ID #: ..... Equipment #: .....

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FAILURE REPORT
(Please describe in detail the nature of the malfunction to assist us in performing failure analysis):

TURBO PUMPS AND TURBOCONTROLLERS

Claimed Defect		**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		Operation Time:	
Describe Failure:				
Turbocontroller Error Message:				

ION PUMPS/CONTROLLERS

❒ Bad feedthrough	❒ Poor vacuum
❒ Vacuum leak	❒ High voltage problem
❒ Error code on display	❒ Other .....
Describe failure:	
Customer application:	

VALVES/COMPONENTS

❒ Main seal leak	❒ Bellows leak
❒ Solenoid failure	❒ Damaged flange
❒ Damaged sealing area	❒ Other .....
Describe failure:	
Customer application:	

LEAK DETECTORS

❒ Cannot calibrate	❒ No zero/high background
❒ Vacuum system unstable	❒ Cannot reach test mode
❒ Failed to start	❒ Other .....
Describe failure:	
Customer application:	

INSTRUMENTS

❒ Gauge tube not working	❒ Display problem
❒ Communication failure	❒ Degas not working
❒ Error code on display	❒ Other .....
Describe failure:	
Customer application:	

ALL OTHER VARIAN, INC.

❒ Pump doesn't start	❒ Noisy pump (describe)
❒ Doesn't reach vacuum	❒ Overtemperature
❒ Pump seized	❒ Other .....
Describe failure:	
Customer application:	

DIFFUSION PUMPS

❒ Heater failure	❒ Electrical problem
❒ Doesn't reach vacuum	❒ Cooling coil damage
❒ Vacuum leak	❒ Other .....
Describe failure:	
Customer application:	

Sales and Service Offices

Canada
Central coordination through:
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Representatives in most countries

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