



**VARIAN**   
*vacuum technologies*

# ***TV 141 Navigator Vent Valve***

**Model 969-9834**

*MANUALE ISTRUZIONI*

*BEDIENUNGSHANDBUCH*

*NOTICE DE MODE D'EMPLOI*

*INSTRUCTION MANUAL*

## ***TV 141 Navigator Vent Valve***



**VARIAN**



*vacuum technologies*

*Dear Customer,*

*Thank you for purchasing a VARIAN vacuum product. At VARIAN Vacuum Technologies we make every effort to ensure that you will be satisfied with the product and/or service you have purchased.*

*As part of our Continuous Improvement effort, we ask that you report to us any problem you may have had with the purchase or operation of our product. On the back side you find a Corrective Action Request form that you may fill out in the first part and return to us.*

*This form is intended to supplement normal lines of communications and to resolve problems that existing systems are not addressing in an adequate or timely manner.*

*Upon receipt of your Corrective Action Request we will determine the Root Cause of the problem and take the necessary actions to eliminate it. You will be contacted by one of our employees who will review the problem with you and update you, with the second part of the same form, on our actions.*

*Your business is very important to us. Please, take the time and let us know how we can improve.*

*Sincerely,*

**Sergio PIRAS**

*Vice President and General Manager  
VARIAN Vacuum Technologies*

*Note: Fax or mail the Customer Request for Action (see backside page) to VARIAN Vacuum Technologies (Torino) - Quality Assurance or to your nearest VARIAN representative for onward transmission to the same address.*

**CUSTOMER REQUEST FOR CORRECTIVE / PREVENTIVE / IMPROVEMENT ACTION**

TO : VARIAN VACUUM TECHNOLOGIES TORINO - QUALITY ASSURANCE

FAX N° : XXXX - 011 - 9979350

ADDRESS: VARIAN S.p.A. - Via F.lli Varian, 54 - 10040 Leinì (Torino) - Italy

E-MAIL : marco.marzio@varianinc.com

NAME _____	COMPANY _____	FUNCTION _____
<p>ADDRESS : _____</p> <p>TEL. N° : _____ FAX N° : _____</p> <p>E-MAIL : _____</p>		
<p>PROBLEM / SUGGESTION :</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>		
<p>REFERENCE INFORMATION (model n°, serial n°, ordering information, time to failure after installation, etc.) :</p> <p>_____</p> <p>_____</p> <p>_____</p> <p style="text-align: right;">DATE _____</p>		

<p>CORRECTIVE ACTION PLAN / ACTUATION (by VARIAN VTT)</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>LOG N° _____</p>
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XXXX = Code for dialing Italy from your country ( es. 01139 from USA; 00139 from Japan, etc.)



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**PROCEDURA PER L'INSTALLAZIONE DEL KIT TV 141 NAVIGATOR VENT VALVE**

**GENERALITÀ**

Il kit "TV 141 Navigator Vent Valve" comprende un'unità di controllo ed una valvola, che realizzano un sistema completo per la ventilazione automatica della pompa nella fase di spegnimento o nel caso si verifichi una caduta di tensione. La valvola in condizioni di riposo (senza alimentazione) è normalmente aperta. L'attivazione avviene in modo elettromagnetico, mentre il fissaggio (Viton-sealed) viene realizzato tramite un raccordo di tipo M8 con relativo O-ring sul foro per alto vuoto della pompa. L'aria di ingresso nella valvola, viene filtrata tramite un opportuno filtro presente sull'ingresso aria della valvola stessa.

L'unità di controllo viene alimentata dal governo Turbo-V che non è predisposto per il montaggio su rack.

L'unità di controllo viene attivata con un ritardo prefissato di circa 0,8 secondi per evitare ventilazioni inopportune durante una caduta di tensione temporanea e per permettere la chiusura delle valvole di sistema prima della ventilazione.

**CARATTERISTICHE TECNICHE**

**Unità di controllo**

- Tensione di ingresso 24 Vdc ± 10%
- - potenza (max) 2,5 W
- Tensione di uscita (max) 24 Vcc ± 10%
- - potenza (max) 1,2 W
- Ritardo circa 0,8 secondi
- Temperatura operativa da 0 a 40 °C
- Temperatura di immagazzinamento da -20 a 50 °C

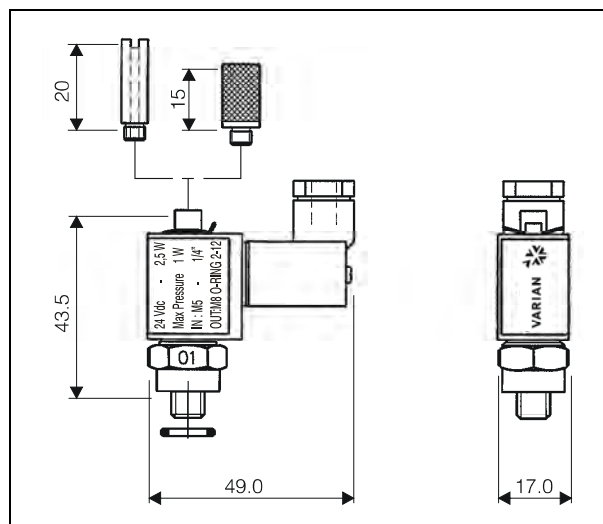
**Cavi di connessione**

- Ingresso 120 mm (4,72 inch)
- Uscita dalla valvola 200 mm (7,87 inch)

**Vent valve**

- Stato valvola Normalmente aperta (chiusa quando viene alimentata)
- Connessione di vuoto Raccordo M8
- Filtro ingresso aria Bronzo sinterizzato
- Dimensione foro 0,8 mm (0,03 inch)
- Gamma di pressioni da 10<sup>-6</sup> mbar a 1 bar (da 10<sup>-7</sup> Torr a 760 Torr)
- Adattatore ingresso aria Ø 6,35 mm (¼ inch)
- Leak rate ≤ 1x10<sup>-7</sup> mbar l/s
- Vita 1 milione di cicli
- Tensione di ingresso 24 Vdc ± 10%
- Potenza 2,5 W
- Temperatura di bakeout 60 °C
- Peso 140 g (0,3 lbs)

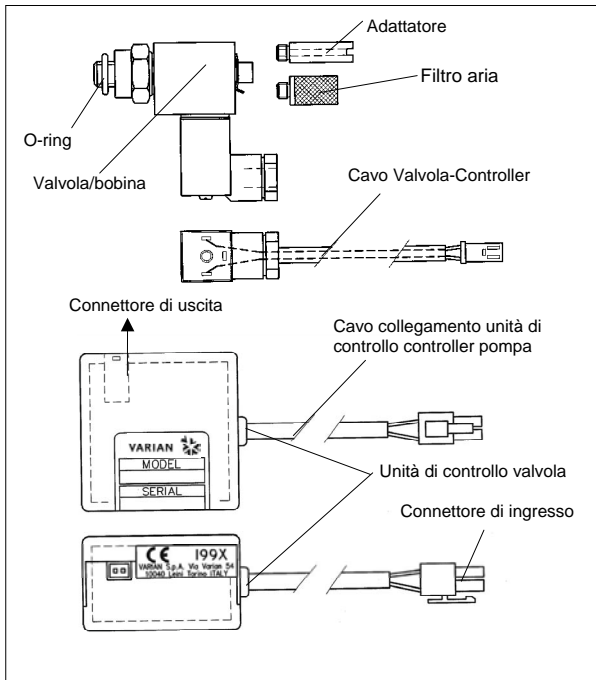
La figura seguente riporta le dimensioni di ingombro della valvola.



*Dimensioni in mm*

**INSTALLAZIONE**

In figura sono riportati i vari componenti presenti nel Kit TV 141 Navigator Vent Valve. Tali componenti sono forniti disassemblati; sarà quindi cura del cliente provvedere all'assemblaggio del Kit.



Componenti del Kit



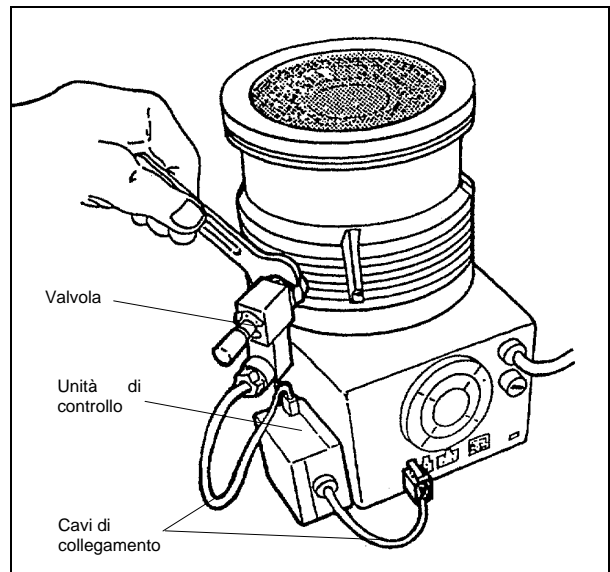
**ATTENZIONE**

**Durante la fase di assemblaggio del kit, fare attenzione a non svitare la ghiera ed il dado di fissaggio della bobina interna alla valvola.**

Completato l'assemblaggio, procedere con l'installazione

Rimuovere il tappo a vite presente sulla pompa, quindi fissare la valvola alla pompa utilizzando una chiave esagonale da 16 mm, avendo cura di serrare il dado con una coppia pari a 2,5 Nm.

La figura seguente riporta un esempio d'installazione.



Installazione



**ATTENZIONE**

**Per evitare danneggiamenti della pompa, non serrare il dado con una coppia maggiore a 2,5 Nm.**

Dopo aver completato l'installazione meccanica, collegare il cavo di collegamento dalla valvola all'unità di controllo, ed il cavo di collegamento dall'unità di controllo dell'elettrovalvola al controller della pompa.

Per fissare la scatola del controller, utilizzare il velcro in dotazione.

**ANLEITUNG ZUR INSTALLATION DER BAUGRUPPE TV 14 NAVIGATOR VENT VALVE**

**ALLGEMEINES**

Die Baugruppe "TV 141 Navigator Vent Valve" umfaßt eine Steuereinheit und ein Ventil, die ein komplettes System zur automatischen Belüftung der Pumpe beim Ausschalten oder bei Spannungsabfall darstellen. In Ruhestellung (ohne Versorgung) ist dieses Ventil normalerweise geöffnet. Es wird elektromagnetisch betätigt, während die Befestigung (Viton-sealed) durch einen Anschluß Typ M8 mit entsprechendem O-Ring an der Bohrung für Hochvakuum der Pumpe erfolgt. Die Eintrittsluft in das Ventil wird durch einen entsprechenden Filter am Lufteinlauf des Ventils gefiltert.

Die Steuereinheit wird durch eine Turbo-V-Steuerung versorgt, die nicht zur Montage auf dem Baugruppenträger vorgesehen ist.

Die Steuereinheit wird mit einer auf ca. 0,8 Sekunden voreingestellten Verzögerung eingeschaltet, um eine unerwünschte Belüftung bei zeitweisem Spannungsabfall zu verhindern und um das Schließen der Ventile des Systems vor der Belüftung zu ermöglichen.

**TECHNISCHE DATEN**

**Steuereinheit**

- Eingangsspannung 24 Vdc ± 10%
- - Leistung (max) 2,5 W
- Ausgangsspannung (max) 24 Vcc ± 10%
- - Leistung (max) 1,2 W
- Verzögerung ca. 0,8 Sekunden
- Betriebstemperatur von 0 bis 40 °C
- Lagerungstemperatur von -20 bis 50 °C

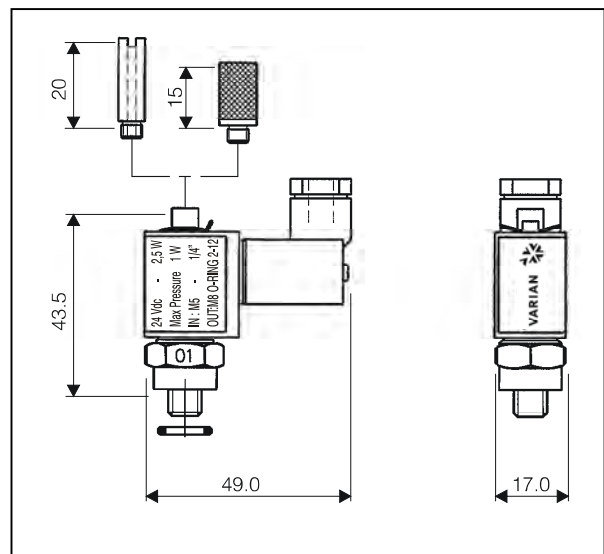
**Anschlußkabel**

- Eingang 120 mm (4,72 inch)
- Ausgang vom Ventil 200 mm (7,87 inch)

**Vent valve**

- Ventilzustand Normalerweise offen (bei Versorgung geschlossen)
- Vakuumbzuleitung M8-Anschluß
- Lufteingangsfiter Sinterbronze
- Bohrungsdurchmesser 0,8 mm (0,03 inch)
- Druckwerte von  $10^{-6}$  mbar bis 1 bar (von  $10^{-7}$  Torr bis 760 Torr)
- Adapter Lufteintritt  $\varnothing$  6,35 mm ( $\frac{1}{4}$  inch)
- Leak rate  $\leq 1 \times 10^{-7}$  mbar l/s
- Lebensdauer 1 Million Zyklen
- Eingangsspannung 24 Vdc ± 10%
- Leistung 2,5 W
- Bakeout-Temperatur 60 °C
- Gewicht 140 g (0,3 lbs)

Aufnachstehender Abbildung sind die Abmessungen des Ventils angegeben.

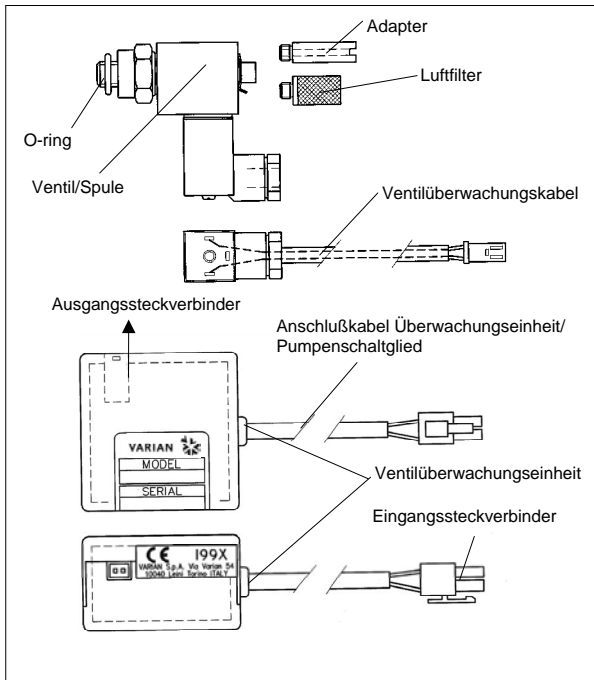


Abmessungen in mm



**INSTALLATION**

In der Abbildung sind die verschiedenen Bauteile der Baugruppe TV 141 Navigator Vent Valve dargestellt. Diese Bauteile werden lose geliefert und müssen daher vom Kunden zusammengebaut werden.



Bauteile der Baugruppe

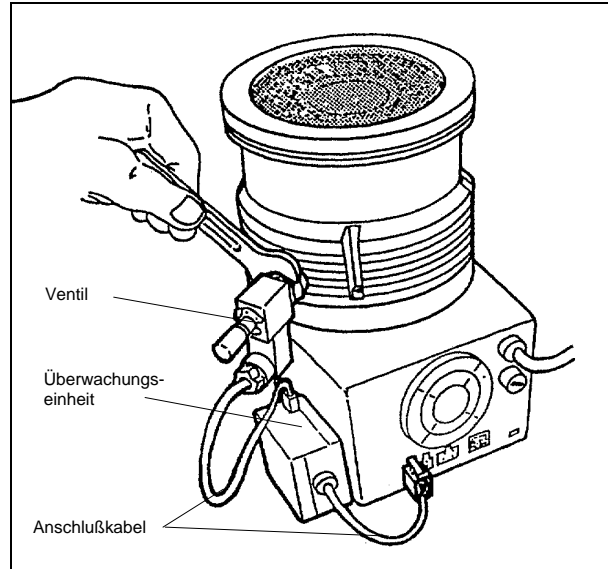


**ACHTUNG**

Beim Zusammenbau der Baugruppe dürfen der Gewinding und die Befestigungsmutter der Spule im Ventilinneren nicht losgeschraubt werden.

Nach dem Zusammenbau, Installation vornehmen. Verschlussschraube an der Pumpe entfernen, danach Ventil unter Verwendung eines Imbusschlüssels zu 16 mm an der Pumpe befestigen, indem darauf zu achten ist, daß die Mutter mit einem Anziehmoment von 2,5 Nm festgezogen wird.

Nachfolgende -Abbildung stellt ein Installations-beispiel dar.



Installation



**ACHTUNG**

Um Beschädigungen der Pumpe zu vermeiden, die Mutter nicht mit einem Anziehmoment höher als 2,5 Nm festziehen.

Nach Abschluß der mechanischen Installation, Verbindungskabel vom Ventil zur Überwachungseinheit, sowie Verbindungskabel von der Überwachungseinheit des Elektroventils zum Schaltglied der Pumpe anschließen.

Zum Befestigen des Schaltgehäuses, beigefügtes Klettband verwenden.

**PROCÉDURE POUR L'INSTALLATION DU KIT TV 141 NAVIGATOR VENT VALVE**

**GÉNÉRALITÉS**

Le kit "TV 141 Navigator Vent Valve" est composé d'une unité de commande et d'une valve qui forment un dispositif complet pour la ventilation automatique de la pompe pendant la phase d'extinction ou en cas de chute de tension. La valve en état de repos (non alimentée) est normalement ouverte. L'activation est réalisée d'une manière électromagnétique, alors que la fixation (Viton-sealed) est réalisée au moyen d'un adaptateur de type M8 doté d'un joint torique situé sur l'orifice pour vide poussé de la pompe. L'air en entrée de la valve est filtré au moyen d'un filtre monté sur l'entrée d'air de la valve même.

Le dispositif de commande Turbo-V, qui n'est pas conçu pour le montage sur support, alimente l'unité de commande du système.

L'unité de commande est activée avec un retard prédéfini de 0,8 secondes environ, pour éviter toute ventilation inopportune en cas de chute de tension temporaire et pour permettre la fermeture des valves de système avant la ventilation.

**CARACTÉRISTIQUES TECHNIQUES**

**Unité de commande**

- Tension en entrée 24 Vdc ± 10%
- puissance max. 2,5 W
- Tension de sortie max. 24 Vcc ± 10%
- puissance max. 1,2 W
- Retard 0,8 secondes environ
- Température de service 0 à 40 °C
- Température de stockage -20 à 50 °C

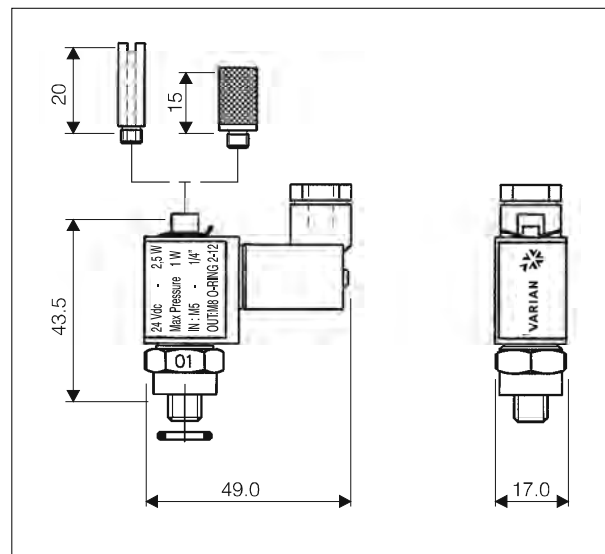
**Câbles de connexion**

- Entrée 120 mm (4,72 inch)
- Sortie de la valve 200 mm (7,87 inch)

**Vent Valve**

- Etat de la valve Normalement ouverte (fermée lorsqu'elle est alimentée)
- Connexion de vide Adaptateur M8
- Filtre entrée d'air Bronze fritté
- Dimension orifice 0,8 mm (0,03 inch)
- Plage de pression 10<sup>-6</sup> mbar à 1 bar (10<sup>-7</sup> Torr à 760 Torr)
- Adaptateur entrée d'air Ø 6,35 mm (¼ inch)
- Leak rate ≤ 1x10<sup>-7</sup> mbar l/s
- Durée de vie 1 million de cycles
- Tension d'entrée 24 Vdc ± 10%
- Puissance 2,5 W
- Température de "bakeout" 60 °C
- Poids 140 g (0,3 lbs)

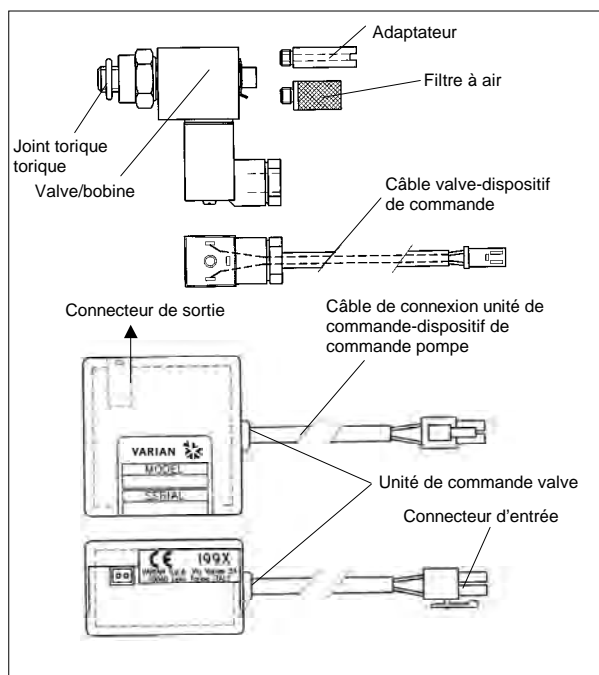
Les dimensions d'encombrement de la valve sont indiquées sur la figure ci-après.



Dimensions en mm

## INSTALLATION

Les éléments composant le kit TV 141 Navigator Vent Valve sont illustrés sur la figure ci-après. Ces éléments sont livrés désassemblés; par conséquent le client devra effectuer l'assemblage du kit.



Eléments du kit



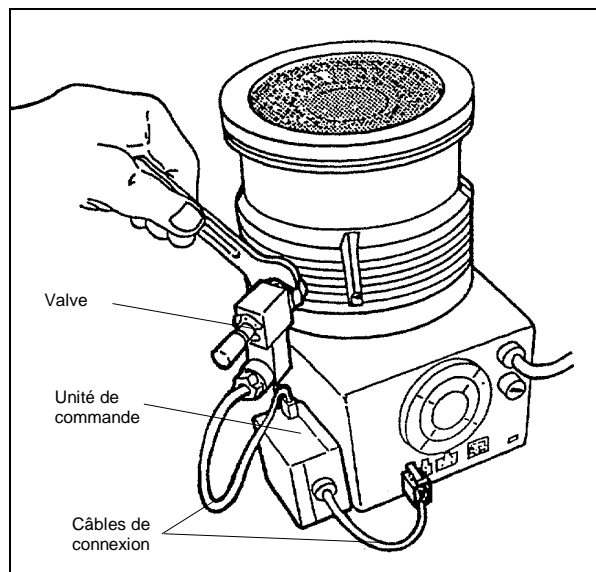
### ATTENTION

**En cours d'assemblage du kit faire attention à ne pas dévisser la douille et l'écrou de fixation de la bobine interne de la valve.**

Après avoir terminé l'assemblage, installer le kit.

Déposer le bouchon à vis situé sur la pompe, puis fixer la valve à la pompe au moyen d'une clé à six pans de 16 mm et serrer l'écrou au couple de 2,5 Nm.

La figure ci-après illustre un exemple d'installation.



Installation



### ATTENTION

**Pour éviter tout endommagement de la pompe ne pas serrer l'écrou à un couple supérieur à 2,5 Nm.**

Après avoir terminé l'installation mécanique, brancher le câble de connexion de la valve sur l'unité de commande et le câble de connexion de l'unité de commande de l'électrovanne sur le dispositif de commande de la pompe.

Pour fixer le boîtier du dispositif de commande utiliser le velcro livré avec le kit.

**TV 141 NAVIGATOR VENT VALVE KIT INSTALLATION PROCEDURE**

**OVERVIEW**

The “TV 141 Navigator Vent Valve” kit, consisting of a control unit and valve, is a complete unit for automatic pump venting when the pump is switched off or during a power failure. The valve is normally open during power off conditions, is electromechanically activated and secured (Viton-sealed) by means of an M8 thread with related O-ring on the high vacuum port. The air input into the valve is filtered by means of a specific filter located on the valve’s own air inlet.

The control unit is powered by the Turbo-V controller which is not suitable for rack mounting.

The control unit is activated with a preset delay of approximately 0.8 seconds to avoid undesired venting during a temporary power failure and to allow the closure of the system valves before venting.

**TECHNICAL CHARACTERISTICS**

**Control Unit**

- Input voltage 24 Vdc ± 10%
- power (max) 2.5 W
- Output voltage (max) 24 Vcc ± 10%
- power (max) 1.2 W
- Delay Approx. 0.8 seconds
- Operating temperature 0 to 40 °C
- Storage temperature -20 to 50 °C

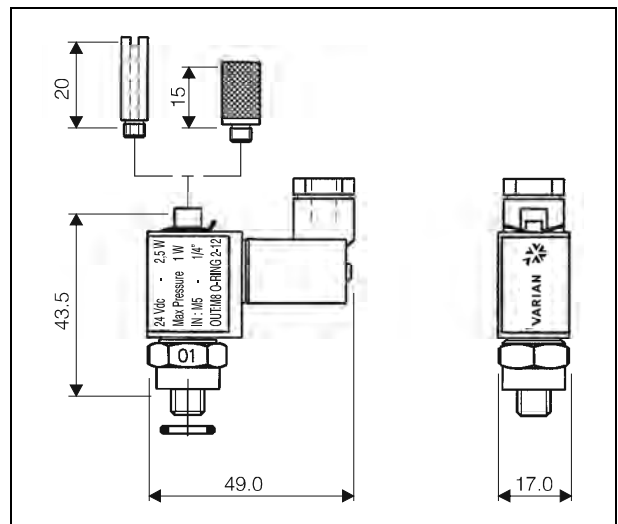
**Connection Cables**

- Input 120 mm (4.72 inches)
- Output from valve 200 mm (7.87 inches)

**Vent valve**

- Valve status Normally open (closed when power is applied)
- Vacuum connection M8 thread
- Air intake filter Sintered bronze
- Hole dimension 0.8 mm (0.03 inch)
- Pressure ranges 10<sup>-6</sup> mbar to 1 bar (10<sup>-7</sup> Torr to 760 Torr)
- Air intake adapter Ø 6.35 mm (¼ inch)
- Leak rate ≤ 1x10<sup>-7</sup> mbar l/s
- Life span 1 million cycles
- Input voltage 24 Vdc ± 10%
- Power 2.5 W
- Bakeout temperature 60 °C
- Weight 140 g (0.3 lbs)

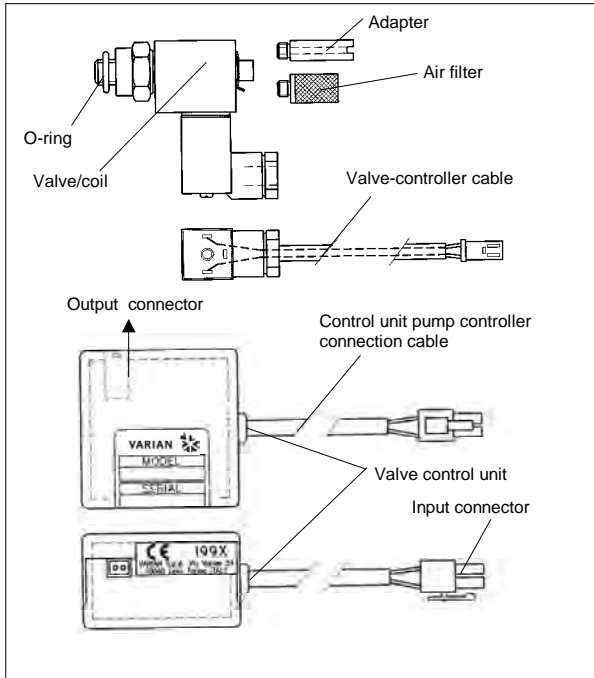
The following figure shows the valve’s overall dimensions.



*Dimensions in mm*

**INSTALLATION**

The following figure shows the various components of the TV 141 Navigator Vent Valve kit. These components come disassembled and it is therefore up to the customer to assemble the kit.



*Kit Components*



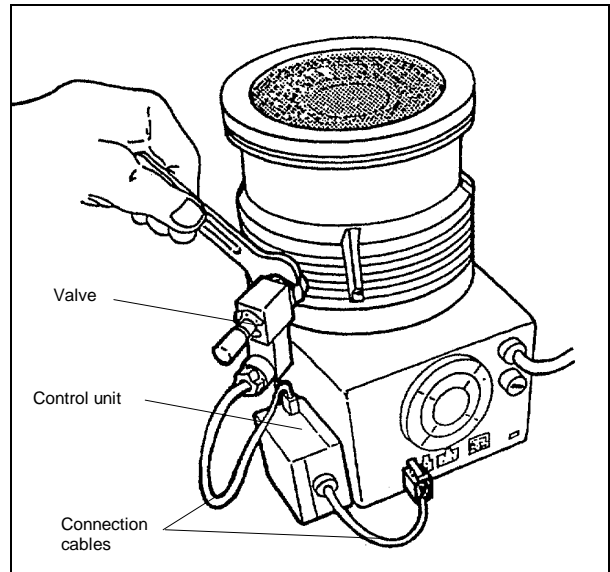
**WARNING**

**When assembling the kit be careful not to unscrew the coil securing ring and nut inside the valve.**

Once the kit is assembled, install it on the pump.

Remove the screw cap from the pump, then secure the valve to the pump using a 16 mm wrench making sure to tighten the nut with a torque equivalent to 2.5 Nm.

The following figure shows an example of installation.



*Installation*



**WARNING**

**To avoid damaging the pump, do not tighten the nut with a torque greater than 2.5 Nm.**

Upon completion of the mechanical installation, attach the connection cable between the valve to the control unit, and the connection cable between the electrovalve control unit to the pump's controller.

Use the velcro provided to secure the controller box.



# Request for Return



1. A Return Authorization Number (RA#) **WILL NOT** be issued until this Request for Return is completely filled out, signed and returned to Varian Customer Service.
2. Return shipments shall be made in compliance with local and international **Shipping Regulations** (IATA, DOT, UN).
3. The customer is expected to take the following actions to ensure the **Safety** of workers at Varian: (a) Drain any oils or other liquids, (b) Purge or flush all gasses, (c) Wipe off any excess residues in or on the equipment, (d) Package the equipment to prevent shipping damage, (for Advance Exchanges please use packing material from replacement unit).
4. Make sure the shipping documents clearly show the RA# and then return the package to the Varian location nearest you.

### North and South America

Varian Vacuum Technologies  
 121 Hartwell Ave  
 Lexington, MA 02421  
 Phone : +1 781 8617200  
 Fax: +1 781 8609252

### Europe and Middle East

Varian SpA  
 Via Flli Varian 54  
 10040 Leini (TO) – ITALY  
 Phone: +39 011 9979111  
 Fax: +39 011 9979330

### Asia and ROW

Varian Vacuum Technologies  
 Local Office

### **CUSTOMER INFORMATION**

Company name: .....	
Contact person: Name: .....	Tel: .....
Fax: .....	E-Mail: .....
Ship Method: .....	Shipping Collect #: ..... P.O.#: .....
<u>Europe only:</u> VAT reg. Number: .....	<u>USA only:</u> <input type="checkbox"/> Taxable <input type="checkbox"/> Non-taxable
Customer Ship To: .....	Customer Bill To: .....
.....	.....
.....	.....

### **PRODUCT IDENTIFICATION**

Product Description	Varian P/N	Varian S/N	Purchase Reference

### **TYPE OF RETURN** (check appropriate box)

<input type="checkbox"/> Paid Exchange	<input type="checkbox"/> Paid Repair	<input type="checkbox"/> Warranty Exchange	<input type="checkbox"/> Warranty Repair	<input type="checkbox"/> Loaner Return
<input type="checkbox"/> Credit	<input type="checkbox"/> Shipping Error	<input type="checkbox"/> Evaluation Return	<input type="checkbox"/> Calibration	<input type="checkbox"/> Other .....

### **HEALTH and SAFETY CERTIFICATION**

Varian Vacuum Technologies **CAN NOT ACCEPT** any equipment which contains **BIOLOGICAL HAZARDS** or **RADIOACTIVITY**. Call Varian Customer Service to discuss alternatives if this requirement presents a problem.

The equipment listed above (check one):

**HAS NOT** been exposed to any toxic or hazardous materials

OR

**HAS** been exposed to any toxic or hazardous materials. In case of this selection, check boxes for any materials that equipment was exposed to, check all categories that apply:

Toxic  Corrosive  Reactive  Flammable  Explosive  Biological  Radioactive

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

.....

Print Name: ..... Customer Authorized Signature: .....

Print Title: ..... Date: ...../...../.....

**NOTE:** If a product is received at Varian 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 Varian employees as well as to any third party occurring as a result of exposure to toxic or hazardous materials present in the product.

Do not write below this line

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



# Request for Return



## FAILURE REPORT

### TURBO PUMPS and TURBOCONTROLLERS

<input type="checkbox"/> Does not start <input type="checkbox"/> Does not spin freely <input type="checkbox"/> Does not reach full speed <input type="checkbox"/> Mechanical Contact <input type="checkbox"/> Cooling defective	<input type="checkbox"/> Noise <input type="checkbox"/> Vibrations <input type="checkbox"/> Leak <input type="checkbox"/> Overtemperature	<b>POSITION</b> <input type="checkbox"/> Vertical <input type="checkbox"/> Horizontal <input type="checkbox"/> Upside-down <input type="checkbox"/> Other: .....	<b>PARAMETERS</b> Power:                      Rotational Speed: Current:                     Inlet Pressure: Temp 1:                      Foreline Pressure: Temp 2:                      Purge flow: <hr/> <b>OPERATION TIME:</b>
<b>TURBOCONTROLLER ERROR MESSAGE:</b>			

### ION PUMPS/CONTROLLERS

<input type="checkbox"/> Bad feedthrough <input type="checkbox"/> Vacuum leak <input type="checkbox"/> Error code on display	<input type="checkbox"/> Poor vacuum <input type="checkbox"/> High voltage problem <input type="checkbox"/> Other
Customer application:	

### VALVES/COMPONENTS

<input type="checkbox"/> Main seal leak <input type="checkbox"/> Solenoid failure <input type="checkbox"/> Damaged sealing area	<input type="checkbox"/> Bellows leak <input type="checkbox"/> Damaged flange <input type="checkbox"/> Other
Customer application:	

### LEAK DETECTORS

<input type="checkbox"/> Cannot calibrate <input type="checkbox"/> Vacuum system unstable <input type="checkbox"/> Failed to start	<input type="checkbox"/> No zero/high background <input type="checkbox"/> Cannot reach test mode <input type="checkbox"/> Other
Customer application:	

### INSTRUMENTS

<input type="checkbox"/> Gauge tube not working <input type="checkbox"/> Communication failure <input type="checkbox"/> Error code on display	<input type="checkbox"/> Display problem <input type="checkbox"/> Degas not working <input type="checkbox"/> Other
Customer application:	

### PRIMARY PUMPS

<input type="checkbox"/> Pump doesn't start <input type="checkbox"/> Doesn't reach vacuum <input type="checkbox"/> Pump seized	<input type="checkbox"/> Noisy pump (describe) <input type="checkbox"/> Over temperature <input type="checkbox"/> Other
Customer application:	

### DIFFUSION PUMPS

<input type="checkbox"/> Heater failure <input type="checkbox"/> Doesn't reach vacuum <input type="checkbox"/> Vacuum leak	<input type="checkbox"/> Electrical problem <input type="checkbox"/> Cooling coil damage <input type="checkbox"/> Other
Customer application:	

## FAILURE DESCRIPTION

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

**NOTA:** Su richiesta questo documento è disponibile anche in Tedesco, Italiano e Francese.

**REMARQUE :** Sur demande ce document est également disponible en allemand, italien et français.

**HINWEIS:** Auf Anfrage ist diese Unterlage auch auf Deutsch, Italienisch und Französisch erhältlich.

## Sales and Service Offices

### Argentina

#### Varian Argentina Ltd.

Sucursal Argentina  
Av. Ricardo Balbin 2316  
1428 Buenos Aires  
Argentina  
Tel: (54) 1 783 5306  
Fax: (54) 1 786 5172

### Australia

#### Varian Australia Pty Ltd.

679-701 Springvale Road  
Mulgrave, Victoria ZZ 3170  
Australia  
Tel: (61) 395607133  
Fax: (61) 395607950

### Benelux

#### Varian Vacuum Technologies

Rijksstraatweg 269 H,  
3956 CP Leersum  
The Netherlands  
Tel: (31) 343 469910  
Fax: (31) 343 469961

### Brazil

#### Varian Industria e Comercio Ltda.

Avenida Dr. Cardoso de Mello 1644  
Vila Olimpia  
Sao Paulo 04548 005  
Brazil  
Tel: (55) 11 3845 0444  
Fax: (55) 11 3845 9350

### Canada

#### Central coordination through:

Varian Vacuum Technologies  
121 Hartwell Avenue  
Lexington, MA 02421  
USA  
Tel: (781) 861 7200  
Fax: (781) 860 5437  
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