



# MANUAL

**INSTALLATION OPERATION MAINTENANCE**

**Cleansweep Medical Vacuum Filters**

**T100V, T250V, T600V, T851V, T1210V & T1810V**

# INSTRUCTION MANUAL - Cleansweep Medical Vacuum

## Product identification and sale record

Owner's name	:	
Address	:	
Product	:	Cleansweep Medical Vacuum
FilterModel (refer to name plate)	:	
Serial number	:	
Date of manufacture	:	
Maximum Vacuum	:	Full Vacuum
Maximum temperature	:	80°C
Date of delivery	:	
Date of installation	:	
Dealer's name/code	:	
Dealer's signature and stamp	:	

Products of Trident Pneumatics Pvt Ltd are guaranteed to be free from defects in materials and workmanship when installed and operated in accordance with the instructions outlined in the Instruction Manual.

Trident Pneumatics Pvt. Ltd.'s obligation under this warranty shall be limited to repair or replacement (at the discretion of Trident) of defective goods returned to Trident's plant within one (1) year from the date of commissioning or 18 months from the date of invoicing whichever is occurs earlier.

Product	:	
Model	:	<b>Refer Name Plate</b>
Serial No.	:	
	:	

# WARRANTY

Products of Trident Pneumatics Pvt Ltd are guaranteed to be free from defects in materials and workmanship when installed and operated in accordance with the instructions outlined in the Instruction Manual.

Trident Pneumatics Pvt. Ltd.'s obligation under this warranty shall be limited to repair or replacement (at the discretion of Trident) of defective goods returned to Trident's plant within one (1) year from the date of commissioning or 18 months from the date of invoicing wherever is occurs earlier.

Product	:	
Model	:	<b>Refer Name Plate</b>
Serial No.	:	
	:	

-----  
Quality Assurance Dept.

## **Trident Pneumatics Pvt Ltd**

5/232, K.N.G Pudur Road, Somayampalayam,  
Coimbatore 641 108. Ph : 0422 2400492, 2401373  
Fax : 0422 2401376 e-mail : sales@tridentpneumatics.com  
Website : www.tridentpneumatics.com

## Table of contents

Intended use	05
Unpacking the filter	06
Using this manual	07
Before installation	10
Installation	11
Operation	12
Maintenance	15
Troubleshooting	18

## Intended use

Cleansweep Medical Vacuum Filters are Vacuum filtration equipment manufactured for medical use.

Contaminants found in Vacuum lines include hospital waste and other Biological fluids. Cleansweep Medical Vacuum Filters remove all these contaminants.

## Unpacking the filter

Your Cleansweep Vacuum Filter is shipped fully assembled in one Cardboard Box. When you are ready to install the filter, take it out of the carton it was shipped in. Remove the plastic wrapping.

The carton is made of cardboard and is biodegradable.

The plastic wrapping is made of polyethylene and is not recyclable. It must be disposed of in accordance with prevailing environmental laws.

You will find the following,

1. Filter Assembly with connectors.
2. User Manual
3. Drain Flask assembly

If any of the expected items is missing, please contact your dealer or Trident Pneumatics with details of your purchase.

The unpacked filter must be installed according to the procedure described in this manual (Installation).

## **Using this manual**

This manual has been specially designed so that you can use your Trident Cleansweep Medical Vacuum Filter optimally and safely. Before you start using the filter, go through this manual thoroughly. It contains vital information regarding the installation and maintenance of the filter.

All the information, illustrations and specifications in this manual are based on the latest product information at the time of preparation of the manual. Trident reserves the right to make changes in the product at any time without notice.

Ensure that this manual is available at all times to the personnel operating your Medical Vacuum system.

## Functional description

**Vacuum Inlet.** Vacuum from the system enters into the filter through inlet port. You can identify the inlet using the arrow symbol marked on the filter.



**Vacuum outlet.** Vacuum free of impurities and contaminants is delivered by the filter through this port. The arrow symbol points towards the air outlet.

**Head.** This unit houses the Vacuum inlet and outlet of the filter. A Differential Vacuum gauge is also mounted on the head.

**Vacuum gauge.** This gauge indicates the pressure drop across the filter. The gauge is provided with two dials for convenience. When there is a flow of compressed air through the filter, the needle of the gauge indicates the pressure drop qualitatively. If the filter element within the Cleansweep Medical vacuum Filter is clean, the pressure drop across it is low, and the needle is in the green region. With use impurities from incoming vacuum accumulate within the filter element, and the pressure drop increases. When the needle is in the red region, the pressure drop is high, and the filter element needs to be changed. To ensure that required filtration level can be met.

**Housing.** It protects the filter element. The housing may be detached from the head while changing the filter element.

**Dummy caps.** These are provided on the inlet and outlet for protection during storage and transport, and must be removed during installation.

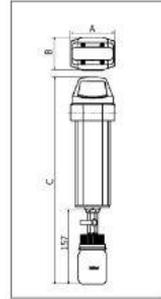
**Water outlet.** Biological fluids in the Vacuum, collect in the filter, along with oil, during operation. The oil and fluid are discharged periodically through the outlet into the flask by opening the ball valve.

**Drain flask.** The Drain flask can be easily detached from the system by closing the Ball valve. It can then be autoclaved and used again.

## Technical specifications

### Physical dimensions

DIMENSIONS								
Model	Air side connections	Flow rate		NPT	A	B	C	Spare kit item code
		(CFM)	(l/s)	(Item code)				
T100V	1/2"	60	25	PFV01	87	294	50	AS701
T250V	1"	150	70	PFV02	114	399	50	AS693
T600V	1 1/2"	350	165	PFV03	114	474	50	AS697
T851V	2"	500	235	PFV04	148	666	50	AS717
T1210V	2"	710	335	PFV05	148	736	50	AS721
T1810V	3"	1065	500	PFV06	211	761	50	AS913



### Operating conditions

Maximum Vacuum : Full Vacuum

Rated operating temperature: 80°C

### Capacity

Model	Nominal inlet flow (cfm)
T 100V	6
T 250V	19
T 600V	55
T 851V	70
T 1210V	105
T 1810V	145

### Performance

Filter type (element grade)	Micron rating (µm)
Super fine filter (Y)	0.01

## Before installation

### General

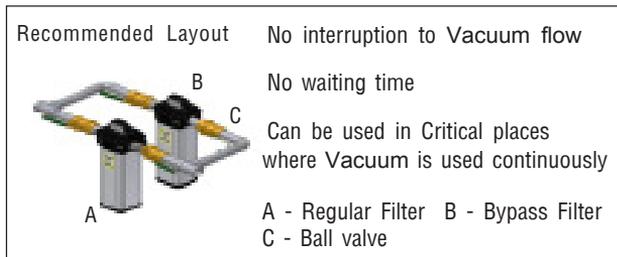
1. Verify that the needle of the differential pressure (DP) gauge lies within the green region of the dial. This indicates that the filter element is clean.
2. Verify that the filter element replacement sticker is pasted on the filter housing.

### Location

1. The filter should be installed in a location that is not exposed to direct sunshine or rain.
2. There should be a clear space of 500mm all around the filter after it is installed.
3. The filter should be installed at least 1000mm above the ground for ease of removal of the filter element during servicing.

### Layout

The filter should preferably be installed in parallel with a bypass filter as shown in the accompanying illustration:



### Vacuum Line

1. The filter may be installed on a 0.5 inch Vacuum line.
2. Verify that the Vacuum line does not have any leaks.
3. Switch off the vacuum line before installing the filter. There should be no flow of Vacuum in the line during installation.

## Installation

The Trident Cleansweep Vacuum Filter may be installed using standard hand tools.

 Ensure that the end connector of the filter is a BSP or NPT connector.

1. The filter must be installed in the vertical position (fig B) along with the connectors.



2. The filter should be connected so that the Vacuum flow is in the direction indicated by the arrow (fig A).



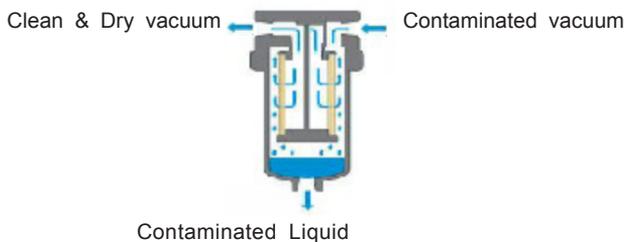
3. To remove or assemble the EA connector and then install the drain valve. Use Loctite.243 as a sealant to seat threads of the EA connector

4. Ensure that the air inlet temperature to the filter is less than 80°C



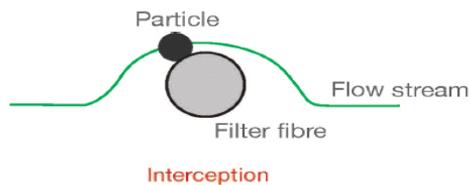
## Operation

Within the housing of each Cleansweep Medical Vacuum Filter is a filter element. This element has a specially designed multi-layered structure. Vacuum from your supply passes through the various layers sequentially, moving outwards from the centre of the element. Typically, Vacuum contains oil, condensed water and solid particles, including rust.



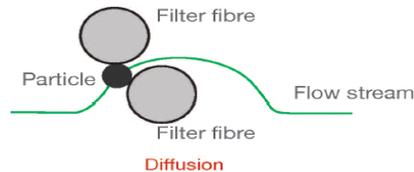
As the air passes through a Cleansweep filter element, the contaminants are removed through three mechanisms:

Interception-larger contaminant particles, of size around 10 microns or more, are blocked by a fine-pore medium.

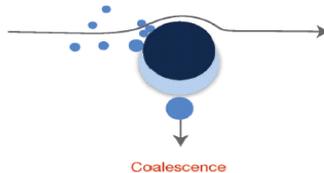


## INSTRUCTION MANUAL - **Cleansweep Medical Vacuum**

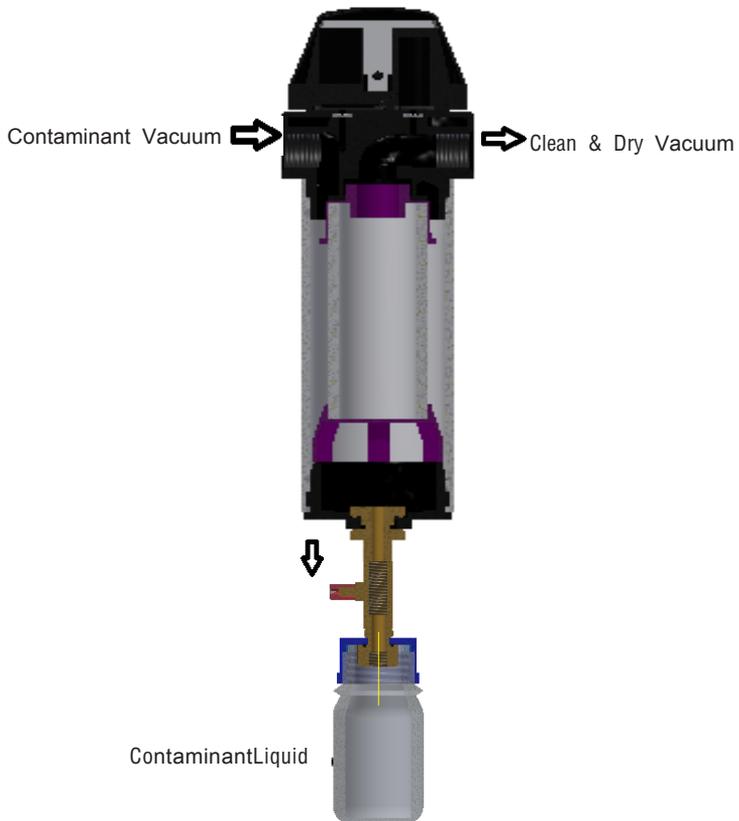
Diffusion-finer (submicron) particles that are carried further into the filter element are enmeshed in fibres. The fibres are made of borosilicate. The trapping action is the result of the labyrinthine passages through the fibrous medium.



Coalescence-water and oil droplets adhere initially to the fibres upon impinging on them. They merge to form larger drops and are held in the fibrous medium by surface tension.



The contaminant particles are trapped both at the inner surface of the filter element and within the medium. The liquid drops that coalesce in the element flow down, accumulating at the bottom of the housing. A drain valve is provided to discharge the liquids. Cleansweep Submicron are fitted with drain valve, discharging the accumulated liquid.



Clean, contaminant-free Vacuum flows out of the Cleansweep Vacuum Filter to your application.

## Drain Flask



While Disconnecting Drain flask From the Filter Assembly, Shut off the Hand shutoff valve.

## **Maintenance**

The following checks must be carried out on the Cleansweep vacuum Filter on a monthly basis:

1. Filter element replacement check
2. Drain valve function check

### **Tools required**

4 mm Allen key - for assembling Differential vacuum gauge  
20 □ 22 box spanner and Loctite 243 - to connect the EA connector  
30, 32 spanner - to remove the bottom  
Belt wrench - removing and fixing the bottom housing

Only experienced and licensed electricians who are appropriately trained in working with compressed air systems should service or repair Trident products.

Before starting up the system or performing any maintenance on any Trident filter, drain system or other equipment, you must turn off the mains supply and disconnect the equipment from the compressed air line.

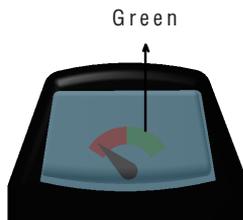
Bypass the filter and depressurize it to 0 PSIG before performing any maintenance.



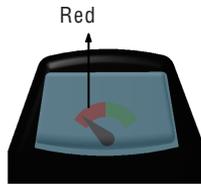
Failure to follow these instructions can lead to serious injury or death.

### **Filter element replacement check**

Note the position of the needle of the pressure gauge when there is a flow in the air line.



If the needle is in the green region, the filter element is in good condition and no action required.



If the needle is in the red region, impurities are clogging the filter element, affecting the performance of the filter. The filter element needs to be replaced.

Steps involved in replacing the filter element

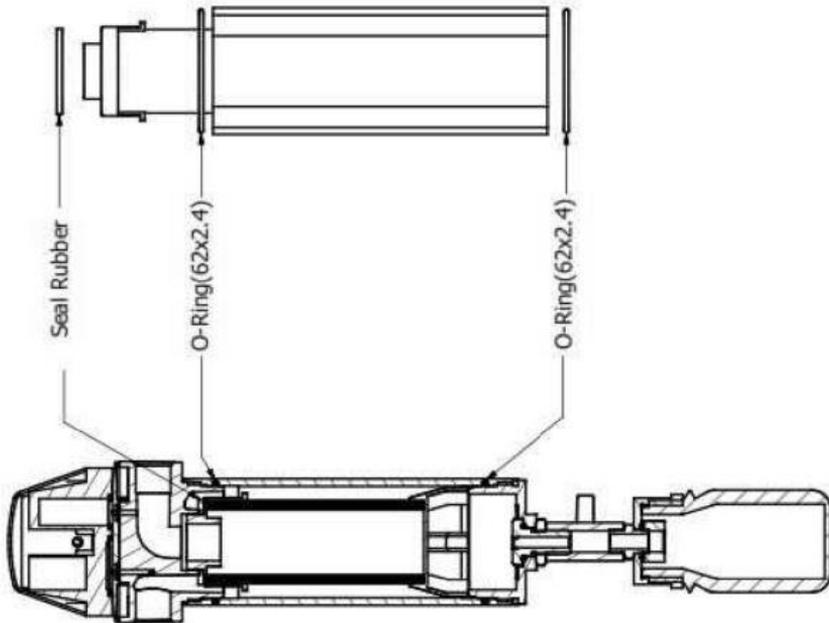


1. Cut off the flow of Vacuum through the Cleansweep filter.
2. Detach the housing from the pressure gauge by unscrewing it by hand.
3. Remove the dirty filter element from the housing.
4. Place a new, clean filter element in the housing. Note that the filter element must be of the grade appropriate for the air quality required by you (refer to the performance table in the technical specifications).

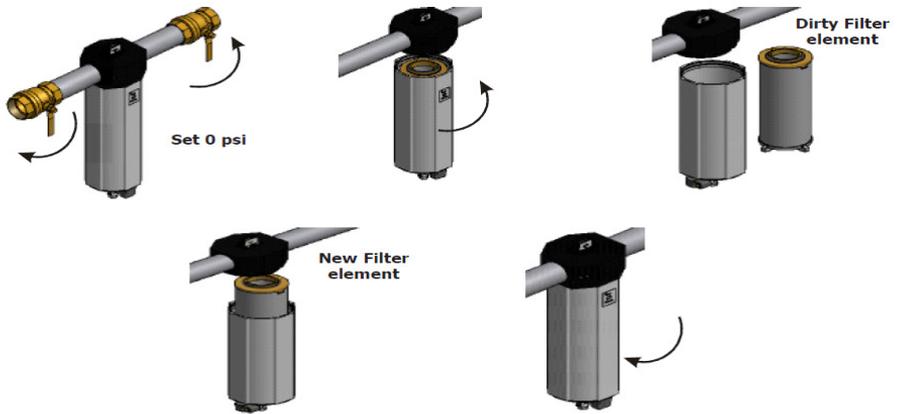
Contact Trident (Trident Sales and Service Network) and specify the item code to order a new element. Identify the appropriate item code from this table:

Element grade	T 100V	T 250V	T 600V	T 851V	T 1210V	T 1810V
Y	AS701	AS693	AS697	AS717	AS721	AS913

5. Fasten the housing with the filter element to the pressure gauge by hand.



Spare kit	
Model	Item code
T100V	AS701
T250V	AS693
T600V	AS697
T851V	AS717
T1210V	AS721
T1810V	AS913



If the drain valve is found to be not functioning, address the problem by referring to the troubleshooting section in this manual (Troubleshooting).

## Troubleshooting

Trouble	Root cause	Solution
Pressure drop	Clogged filter element: the needle of the pressure gauge is in the green region	Remove the dust in the filter by separating the head and the housing.
	Clogged filter element: the needle of the pressure gauge is in the red region	Change the filter element as described in the maintenance section of this manual.
Air leakage	Housing not assembled properly	Ensure that the head, housing and end cap are seated properly.
	Damaged O-ring	Remove the damaged O-ring and clean the groove using a cloth or compressed air. Stretch the new O-ring and fix it in the groove. Apply a small amount of grease on the O-ring and assemble the housing.
<b>Drain valve not working</b>		
	Valve not working	Replace new valve

---

**V.O.L. Industries**

sales@volindustries.com

Ph: 519-453-2777

Fax: 519-453-2778

5-15875 Robin's Hill Rd., London, ON N5V 0A5