COMWELD
MEDICAL

THERMADYNE

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TWIN-O-VAC SUCTION/THERAPY UNIT OPERATING INSTRUCTIONS

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1.0 INTRODUCTION

These instructions are intended to provide users with information on the features, use and care of the Twin-O-Vac Suction/Therapy Unit.
It is important that these instructions are read and fully understood by every intending user before any attempt is made to use the Twin-O-Vac on a patient.

2.0 GENERAL DESCRIPTION

The Twin-O-Vac is a venturi actuated suction unit which features two self sealing oxygen supply sources to facilitate multiple therapy applications.
The Twin-O-Vac may be connected directly to an oxygen pipeline or a cylinder regulator with a pre-set delivery pressure. Flowmeters and other accessories should be ordered separately.
A vacuum gauge fitted to the head of the Twin-O-Vac indicates the vacuum generated by the unit.
Two basic models are available, one with a high suction capability up to approximately -400 mmHg (-53 kPa) and the other with a lower suction performance pre-set to provide a maximum of -200 mmHg (-26 kPa).

Suction Control Knob
Nylon plastic, colour coded yellow.

Oxygen Flow Performance
Minimum flow rate from oxygen outlets: 125 L/min

Bacteria Filter
A Standard Millipore brand filter, number AAWP03700 (0.8 micron) acts as a bacteria filter between the jar contents and room air. Nominal diameter 37mm (1 7/16").

Other Materials
Head Casting - anodised aluminium.
Suction valve - brass
Venturi - brass
Jars - High heat polyphthalate carbonate.
Handwheels - Colour coded Nylon plastic with brass insert.
Outlet Connections - Chrome plated brass.

Weight
Twin-O-Vac without gauge 620g.
Twin-O-Vac with gauge 720g.

11.0 SERVICING RECOMMENDATIONS

A Twin-O-Vac is a piece of life saving emergency equipment. To ensure that the unit is always in a reliable, useable condition it is recommended that the unit be placed on a preventative maintenance program (every 6 to 12 months depending on usage) with your local service centre. This will provide more detailed checks of internal components such as the venturi and suction control valve assembly.

12.0 WARRANTY

Comweld Group Pty. Ltd. warrants the purchaser that this equipment is free from defects in material and workmanship for a period of six years from the date of purchase (conditions apply).

10.0 SPECIFICATIONS

	TM117G	TM118	518632	518633
Inlet Pressure	400 kPa	50 psi	400 kPa	50 psi
Inlet Connection	SIS	DISS	SIS	DISS
Outlet Connection (Suction)	Tubing connection nominal 8mm I.D. (5/16″ I.D.)			
Outlet Connection (Oxygen)	SIS	DISS	SIS	DISS
Developed negative pressure at max setting. (mmHg)	400 min	350 min	150-200 min	150-200 min
Free air displacement (L/min)	16	14	16	16
Gas consumption (L/min)	22	20	22	20

NOTE:
SIS - Sleeve Indexed System as per AS2896
DISS - Diameter Indexed Safety System as per CGA V-5
CGA - Compressed Gas Association

The following specifications apply to all models:-

Capacity
Receiver Jar Large - 400 ml

3.0 SAFETY PRECAUTIONS

The Twin-O-Vac should only be used if all of its parts are in good condition.

When using the Twin-O-Vac and accessory equipment, ensure:

- No smoking, naked flames or sources of ignition nearby.
- Use no oil or greases.
- Open cylinder valve slowly and fully.
- Turn off cylinder valve when not in use.
- Keep cylinders cool.
- Do not dump or drop cylinders.

Do not block the suction venturi outlet located at the rear of the Twin-O-Vac. If the outlet is blocked a positive pressure could be delivered to the patient.

Do not allow liquid in the Twin-O-Vac jar to fill past the 400 ml level.

Always empty the Twin-O-Vac jar before removing the unit from the oxygen source.

If the bacteria filter becomes wet from the liquids in the jar the available suction pressure will be seriously restricted.

Always fit a new bacteria filter to the Twin-O-Vac after use with each patient.

4.0 PARTS IDENTIFICATION

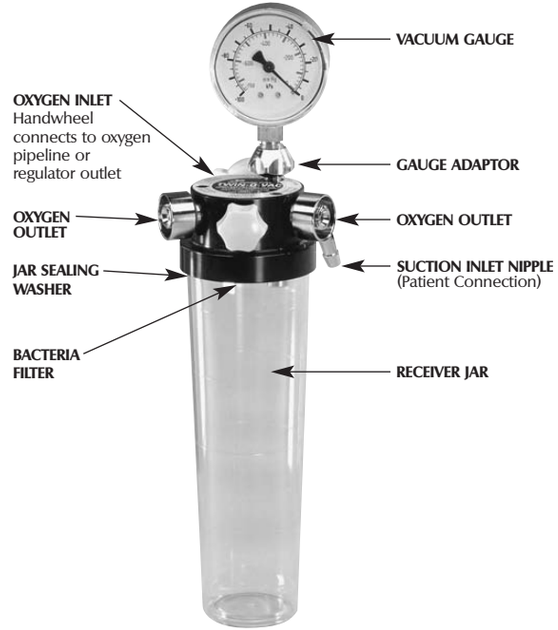


Figure 1

5.0 PRINCIPLE OF OPERATION

Suction - The oxygen source gas is controlled by a needle valve which permits adjustable flows to be directed to a venturi. Flow through the venturi generates a negative pressure in the jar which is transferred via suction tubing to a catheter or handpiece.
A bacteria filter is fitted in the Twin-O-Vac head and all entrained air is discharged via this filter.

Oxygen Outlet - The source gas is supplied to two self sealing outlet valves which are opened automatically by the attachment of therapy equipment.
Oxygen flows are not controlled on the Twin-O-Vac itself but are instead controlled via the added therapy equipment such as a flowmeter.
Each service is independent of the other, therefore, one or two oxygen applications can be carried out in addition to one suction application.

6.0 OPERATIONAL CHECK

Remove the Twin-O-Vac plastic jar and turn the lid upside down.

Remove the domed filter cover plate by swinging the clip to one side and check that a clean, dry bacteria filter has been installed.

The filter consists of two parts, a thin filter disc which is placed against the wire mesh screen and a thicker backing disc which is placed on top of the filter.
See *Figure 2*.

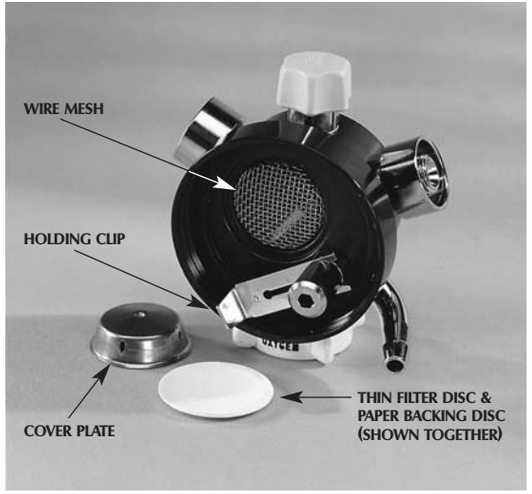


Figure 2.

9.1 Twin-O-Vac Accessories

Listed below are some of the accessories suitable for use with the Twin-O-Vac. It is recommended that if any other accessories are intended to be used with a Twin-O-Vac your nearest authorised distributor should be contacted to check the compatibility of the accessory.

Description	Part No.
Series-O Oxygen Regulator - Type 10 Handwheel inlet, SIS Outlet	518800
Series-O Oxygen Regulator - Pin Index Yoke inlet, SIS Outlet	518804
EZI-FLOW Oxygen Flowmeter - 0-15 l/min, SIS Handwheel Inlet	515800
EZI-FLOW Oxygen Flowmeter - 0-2.5 l/min, SIS Handwheel Inlet	515824
Flowmeter Gauge Type - 0-14 l/min, SIS Handwheel Inlet	TM17
Humidifier - 1/4" BSP female Inlet	TM11
Suction Tubing	
Suction Catheter	
Suction Handpiece	

9.2 User Replacement Parts

Listed below are the items that are considered to be user replaceable parts. It is recommended that the user keep stock of items such as filters, o-rings and the sealing washer to ensure that the Twin-O-Vac is quickly replenished after any items are used.

Item	Part No.
O-ring (oxygen inlet SIS handwheel)	552088 (10 Pack)
O-ring (gauge adaptor)	515754 (Kit)
Sealing washer for jar	515754 (Kit)
Receiver Jar 400 ml	554024
Gauge Vacuum (-100kPa)	522501
Bacteria Filter, Millipore AAWP03700 (Pack of 100)	554050 (100 Pack)

8.0 CLEANING AND DISINFECTION

The Twin-O-Vac and its accessories must be thoroughly cleaned after each use. When cleaning use only legally marketed commercially available disinfectants or sterilising agents. Disinfectants and sterilising agents must only be used in accordance with their manufacturers instructions.

The exterior of the Twin-O-Vac should be cleaned by wiping over with a mild soap solution. Care should be taken that none of the cleaning solution enters the gas passages of the Twin-O-Vac.

Note:

1. For all cleaning and sterilisation procedures the vacuum gauge and the bacteria filter must be removed. After sterilisation, a clean, dry, bacteria filter should be fitted.

2. Always sterilise the domed metal filter cover.

3. Do not immerse the Twin-O-Vac head in any fluid.

4. The use of chemical disinfectants is not recommended.

8.1 Autoclaving

The Twin-O-Vac may be autoclaved but repeated applications may reduce the life of the product. Remove the vacuum gauge. Autoclave temperatures must not exceed 134˚C (280˚F).

8.2 Ethylene Oxide

After thorough cleaning in accordance with standard hospital procedures, the Twin-O-Vac may be disinfected in ethylene oxide gas. After disinfection, ensure that adequate purging and aeration is carried out before placing the unit back into service.

9.0 USER MAINTENANCE

At monthly intervals carry out the following checks:-

1. Inspect for cleanliness

2. Check that a clean, dry filter is fitted and that filters are being changed regularly.

3. Check that inlet and outlet connections are tight. Check that the gauge connection is tight. If loose fittings are discovered, contact your local service centre.

4. Carry out the checks described in Sections 6.0 and 7.5 of this manual.

Replace the filter cover over the backing disc and slide the clip into place.

Check that the sealing washer for the plastic jar is in place and is undamaged. Replace the plastic jar and screw up tightly to avoid leaks.

Check the pressure gauge to ensure that the pointer reads zero when there is no suction present.

Check the condition of the inlet and outlet gas specific connectors.

Check for any other damage that may have occurred to the Twin-O-Vac, especially the condition of the collection jar.

7.0 EQUIPMENT APPLICATION

7.1 Applications

Emergency:
- Resuscitation carts
- Portable Resuscitation kits
- In the event of a power failure, as a standby suction unit.

Ward:
- Routine airway aspiration.

Paediatrics/Neonatal Ward:
- The adjustable suction control, in conjunction with the suction gauge makes the Twin-O-Vac ideally suited to infant applications.(Use low suction unit for this application).

7.2 Items Supplied with the Twin-O-Vac

- Millipore Filter
- Receiver Jar
- Adaptor for Vacuum Gauge
- Vacuum Gauge
- Operating Instruction Manual

7.3 Installation of Vacuum Gauge

Check that the gauge adaptor rotates freely and that the o-ring is seated in its groove inside the base of the adaptor. Insert the vacuum gauge into the adaptor, holding the gauge so that the face points to the front of the Twin-O-Vac or the best position for viewing. Tighten the adaptor onto the gauge by turning counterclockwise.

Note: Use only finger pressure to tighten the adaptor onto the gauge as the o-ring will seal against the gauge inlet. Do not use tools to tighten.

To change the angle of the gauge at any time, loosen the adaptor, turn the gauge and re-tighten the adaptor.

7.4 Connecting Twin-O-Vac to Oxygen Supply

Ensure that the suction control knob is turned off fully clockwise and connect the handwheel to an oxygen pipeline or fixed pressure regulator. (Turn handwheel clockwise).

Tighten the handwheel firmly, but do not use excessive force or any tools because the o-ring will form an effective seal.

7.5 Suction Check

If connected to a cylinder regulator, ensure that the cylinder valve is turned on and that the regulator gauge indicates the contents. Block the end of the metal suction inlet nipple, and slowly open the suction control knob fully counter clockwise. Observe that suction pressure builds up gradually and that the gauge pointer does not stick at any position on the dial. Check that adequate maximum suction is generated when the control knob is fully open. (See specifications, Section 10.0). If the suction reading is low, recheck that the jar is tight, that the jar and washer are in good condition and that the gauge connection is tight.

7.6 Suction Operation

Turn off the suction control clockwise and check that there is no flow at this setting. (Listen for the hiss of escaping oxygen at the venturi outlet). If oxygen continues to flow contact your local service centre.

Attach the appropriate suction tubing and catheter or handpiece to the suction inlet nipple. Adjust the suction control knob counter clockwise, restrict the suction tubing by hand, and select the desired suction flow. The vacuum gauge will indicate the suction level developed by the Twin-O-Vac.

7.7 Oxygen Administration

The Twin-O-Vac provides dual oxygen supply facilities from a single oxygen pipeline outlet or fixed pressure cylinder regulator.

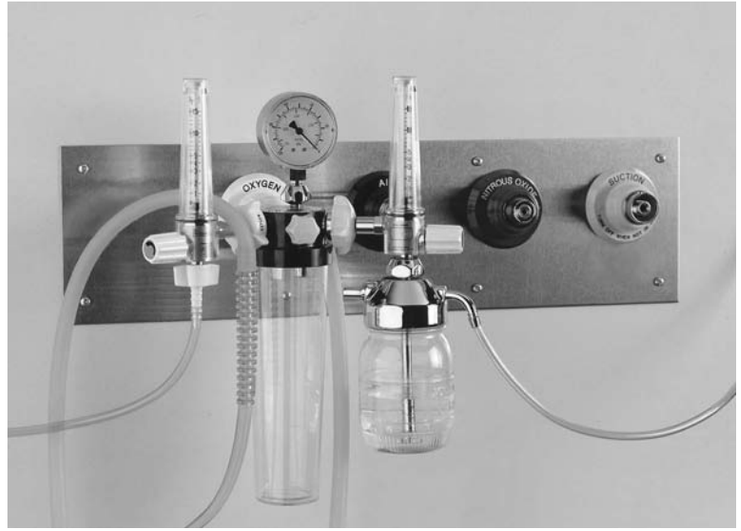
The oxygen outlets are self sealing fittings which will accept flowmeters or other standard oxygen administration equipment.

If connected to a cylinder regulator, ensure that the cylinder valve is turned on.

Attach a flowmeter to the self sealing oxygen outlet.

Open the flowmeter flow control and check that operation is satisfactory through the full range of flows.

Repeat this action on the second self sealing oxygen outlet if dual administration is required.



Twin-O-Vac fitted with two flowmeters, humidifier suction tubing and catheter

Figure 3