

MANUFACTURERS AND DISTRIBUTORS OF:

CPR Bio-Barrier® Face Shields
Universal Pocket Ventilators
Rescue Breather® CPR Protective Barriers
Demand Valve Resuscitators
Oxygen Demand & BVM Oxygen Supply Refill Valves
CAREvent® Range of Automatic Transport Ventilators
SQ Unibody Regulators
SQ^B "Aluminum Free" Unibody Regulators
EasyGrip® Bag-Valve-Mask Resuscitators
SMART BAG® Bag-Valve-Mask Resuscitators
SMART BAG MO® Bag-Valve-Mask Resuscitators
Burn Relief® Burn Kits and Dressings
Genesis® II IDLH Rescue Resuscitators
Equinox® 50% Nitrous Oxide / 50% Oxygen
Administration Systems

Your Representative is:

O-TWO MEDICAL TECHNOLOGIES INC.
"Innovation in Resuscitation"

CE 0543
EU Representative:
Marcel Houben
Rue Vinàve, 32
4030 LIEGE
Belgique

7575 Kimbel Street
Mississauga, Ontario
Canada L5S 1C8



Tel. (905) 677-9410 Fax (905) 677-2035

Website: www.otwo.com **E-mail:** resuscitation@otwo.com

**For your nearest Authorized O-Two Distributor
In North America Toll Free 1-800-387-3405**



CAREvent® DRA

AUTOMATIC RESCUE VENTILATOR



USER MANUAL

STANDARD



G05



Made in Canada by
O-Two Medical Technologies Inc.
Part Number 15PL2150 - Rev B. June 2006

TABLE OF CONTENTS

CHAPTER	TITLE	PAGE
1	THE CAREvent® DRA HANDHELD AUTOMATIC RESCUE VENTILATOR	
	1.1 Introduction	1
	1.2 Warranty Information	1
	1.3 The CAREvent® DRA Features	2
	1.4 Performance Specifications	3
	1.5 Safety Precautions	4
2	OPERATING PROCEDURE	
	2.1 Connecting the Supply Hose	5
	2.2 Manual Ventilation and Cardiac Compressions	5
	2.3 Automatic Ventilation	6
	2.4 Action to be Taken if Patient Vomits During Resuscitation	7
	2.5 Demand Breathing and Automatic Circuit Shut Off	8
3	SERVICING	
	3.1 Routine Maintenance	8
	3.2 Cleaning and Sterilization	9

CHAPTER 1

1.1 Introduction

The **CAREvent® DRA Automatic Rescue Ventilator** provides trained individuals with a safe and effective means of providing demand breathing, artificial ventilation during respiratory and/or cardiac arrest.

The **CAREvent® DRA Automatic Rescue Ventilator** is lightweight, portable, and extremely durable. Designed for the demands of the emergency medical and rescue environment, they can be operated anywhere a medical oxygen or breathing air supply is present.

NOTE: An Automatic and Manually Triggered Resuscitator is considered a critical device, and its components considered critical components. Only those individuals trained in Cardio-Pulmonary Resuscitation and the operation of oxygen-powered ventilators should use this equipment. Thoroughly review this instruction manual before use.

Indications For Use:

The **CAREvent DRA** is a pneumatically powered, time/volume cycled ventilator used to provide ventilatory support to normal adults in confined space rescue or IDLH (Immediately Dangerous to Life and Health) environment.

The ventilator is suitable for use in:

- Pulmonary resuscitation during respiratory and/or cardiac arrest.
- Short term ventilatory support in the confined space rescue in IDLH (Immediately Dangerous to Life and Health) environment, pre-hospital, Intra-hospital, inter-hospital and air ambulance transport of non-breathing patients, and underground mining.

Caution: Federal law restricts this device to sale by or on the order of a physician.

1.2 Warranty

This equipment is manufactured from the finest quality materials. Each individual part is subject to strict quality control tests to ensure exceptionally high standards. The manufacturer warrants to the purchaser of the **CAREvent® DRA Automatic Rescue Ventilator** that its component parts are free from defects in material and workmanship for a period of two years from the date of purchase. The manufacturer will replace and/or repair all parts of the resuscitator at its option for two years from the date of purchase at no cost to the purchaser, upon the notification of the defects, in writing by the purchaser. All shipping costs shall be borne by the purchaser. The manufacturer shall be liable under this warranty only if the resuscitator and its parts have been used and serviced in the normal manner described in the instruction manual. There are no other expressed or implied warranties. This warranty gives no specific legal rights. You may also have other rights that may vary according to local regulations.

3.2 Cleaning the CAREvent® DRA Automatic Rescue Ventilator and Accessories

NOTE: THE RESUSCITATOR MUST BE THOROUGHLY CLEANED AFTER EACH PATIENT USE.

Routine cleaning of the equipment should be undertaken to maintain the equipment in a clean condition.

Reusable patient valve swivel housing and diaphragm can be cleaned using a mild soap solution and disinfected using a legally marketed commercially available disinfectant suitable for the application.

All other components should be wiped clean with a mild soap solution. Under no circumstances should the complete unit be allowed to be soaked or immersed in cleaning solutions.

Cleaning Procedure:

1. Operate **CAREvent® DRA Automatic Rescue Ventilator** to blow out any contaminant from the patient valve.
2. Ensure **CAREvent® DRA Automatic Rescue Ventilator** is disconnected from the gas supply source.
3. Remove the full facemask from the resuscitator .
4. Remove the patient connector from the body of the resuscitator, being careful to ensure that the diaphragm is retained.
5. Shake out any foreign material.
6. Wash the patient valve, diaphragm and facemask thoroughly in a mild soap solution and disinfect as required.
7. The resuscitator can be wiped over with a soft cloth and mild soap solution.
8. Dry all components thoroughly.
9. Reassemble unit, connect to an air or oxygen supply to check operation prior to packaging for emergency use.

1.3 Features

The **CAREvent® DRA Automatic Rescue Ventilator** is a pneumatically powered, time/volume cycled ventilatory resuscitator. It features a Manually Actuated, Automatic Ventilation Override Button (Manual Button) to allow the operator to control the ventilations manually at a rate and volume they desire. The ventilator allows the breathing patient to “Demand Breathe” on 100% oxygen while their inspiratory efforts causes the automatic cycling to cease. Should they stop breathing, the ventilator will automatically restart cycling in the setting selected.

For user/patient safety, **the CAREvent® DRA Automatic Rescue Ventilator** shall be used with a sealed full face mask only in the underground mining environment.

The “pneumatic logic circuit” can be run on either approved, compressed, breathing air or medical oxygen. The unit is self contained and only requires its attachment to a regulated oxygen or air supply (as specified) for immediate use.

The CAREvent® DRA Automatic Rescue Ventilator:

- . Delivers 100% oxygen during resuscitation (when attached to an oxygen source).
- . Meets the ERC and American Heart Association Guidelines 2000 (G2K®) recommendations for C.P.R. (Standard Model)
- . Meets the ERC and American Heart Association Guidelines 2005 recommendations for C.P.R. (G05 Model)
- . Provides physiologically normal adult respiratory rate and volume.
- . Has an Audible Airway Pressure Limiting System.
- . Is lightweight and extremely durable.
- . Is designed for emergency resuscitation in potentially toxic atmospheres
- . Has a Manually Actuated, Automatic Ventilation Override Button (Manual Button) with a 10 second delay to re-start of automatic cycling to allow the provision of 15 chest compressions. (Standard Model)
- . Has a Manually Actuated, Automatic Ventilation Override Button (Manual Button) with a 20 second delay to re-start of automatic cycling to allow the provision of 30 chest compressions. (G05 Model)
- . Complies with the requirements of the ERC and AHA Guidelines 2000 (G2K®) for the provision of a 15:2 compression:ventilation ratio. (Standard Model)
- . Complies with the requirements of the ERC and AHA Guidelines 2005 for the provision of a 30:2 compression:ventilation ratio. (G05 Model)
- . Has a preset, automatic flowrate for adult patients with a tidal volume and frequency of ventilation in line with established guidelines.
- . Provides “Demand Breathing” with automatic cycling shut off and restart.

1.4 Performance Specifications

TIDAL VOLUME:	0.8 litres (STANDARD) 0.5 litres (G05)
BREATHS PER MINUTE:	12 (STANDARD) 10 (G05)
I:E RATIO:	1 : 2
AUTOMATIC FLOW RATE:	28.8 L/Min (STANDARD) 15 L/Min (G05)
MANUAL FLOW RATE:	28.8 L/Min (STANDARD) 15 L/Min (G05)
DELAY TO AUTOMATIC CYCLING RE-START AFTER MANUAL BUTTON DEPRESSION	10 Sec. (STANDARD) 20 Sec. (G05)
DEMAND BREATHING FLOWRATE:	0-120 L/Min
DEMAND BREATHING TRIGGERING PRESSURE @ 100 L/Min	- 5 cm H ₂ O
INPUT PRESSURE:	50 PSI 3.5 Bar
MAXIMUM AIRWAY PRESSURE:	60cm H ₂ O 58.8 mBar
OPERATING TEMPERATURE:	-18°C to + 50°C 0°F to +122°F
STORAGE TEMPERATURE:	- 40°C to + 60°C - 40°F to + 140°F
INPUT CONNECTION:	9/16" DISS
PATIENT CONNECTION:	Unique Fitting
WEIGHT:	13 OZ 0.74 KG
SIZE:	105 x 63 x 139 MM 5.5x 2.5 x 2.9IN.

2.5 Demand Breathing and Automatic Circuit Shut Off

Should the patient commence spontaneous breathing at a flowrate of greater than 30 lpm for more than 1 second the **CAREvent® DRA Automatic Rescue Ventilator** will sense the patient's inspiratory effort and will stop cycling automatically allowing the patient to "Demand Breathe" at their own rate and volume on 100% oxygen (if connected to an oxygen supply). If they cease spontaneous breathing the ventilator will recommence automatic cycling after a delay of 10 seconds (depending on the depth of the patients previous respiration) without intervention by the rescuer.

CHAPTER 3 SERVICING

3.1 Routine Maintenance

WARNING: The CAREvent® DRA Automatic Rescue Ventilator is designed to provide respiratory support in emergency situations. Failure to follow the maintenance and inspection routines properly could result in incorrect operation of the resuscitator.

To ensure proper operation of the resuscitator regular inspection and checking of the resuscitator and accessories for correct function should be undertaken by a responsible member of staff on a routine basis. This check is to ensure that all of the accessories and resuscitator components are present, the air or oxygen cylinder is full and that the resuscitator is in working order.

Regulator working pressure, suction (if equipped), and ventilator limiting pressures should be checked at least every six months, and more frequently in high use applications. Units with test pressures outside of the ranges listed in the product specifications should not be used. The product is **not** designed for field disassembly or service outside that indicated in this manual. Any malfunctioning units should be returned to the manufacturer or an Authorised Dealer. Unauthorised repairs will nullify the product warranty.

NOTE: Units with test parameters outside of their ranges listed in the product specifications, should not be used. Any units not meeting performance criteria should be returned to the Manufacturer or an authorized repair centre.

NOTE: For one person CPR the use of the manual override provides a 10 (20 for G05) second delay to automatic cycling re-start allowing for the provision of 15 (30 for G05) chest compressions at the recommended rate of 100 compressions/minute.

WARNING: **Automatic ventilation of the patient does not mean that the patient is safe to be left unattended and constant observation of the patient's pulse and chest movement must be continued.**

WARNING: **The use of gas pressure regulators that do not maintain a minimum output pressure and flowrate in line with the requirements of the specification may cause the device to fail resulting in the patient not being ventilated.**

2.4 Action to be taken if patient vomits during resuscitation

Should the patient vomit into the mask during resuscitation the following steps should be followed to clear the foreign material:

1. Remove the mask from the patient's face and clear any foreign material from the patient's airway. Depress the manual button or allow the resuscitator to cycle automatically for a few breaths to clear the mask and valve of foreign material.
2. If depressing the manual button repeatedly or automatically cycling the resuscitator does not clear the foreign material from the patient valve, turn the regulator OFF, remove the Carevent DRA from the facemask and unscrew patient valve swivel housing (e) from the resuscitator body being careful to ensure that the diaphragm is retained (Fig.3).
3. Shake out any foreign material from the resuscitator, diaphragm, face mask and patient valve swivel housing.
4. Reassemble the patient valve and diaphragm and attach the resuscitator.
5. Restart ventilation.

1.5 Safety Precautions

The CAREvent® DRA Automatic Rescue Ventilator is designed to provide emergency ventilatory support to patients suffering from shortness of breath respiratory and/or cardiac arrest.

The CAREvent® DRA Automatic Rescue Ventilator is intended for use by suitably trained and qualified personnel. The following precautions should always be observed:

1. WHEN NOT IN USE, ALWAYS TURN OFF THE CYLINDER.
2. NEVER ALLOW OIL OR GREASE TO COME INTO CONTACT WITH ANY PART OF THE CYLINDER, REGULATOR OR RESUSCITATOR.
3. DO NOT DISASSEMBLE ANY PART OF THE RESUSCITATOR EXCEPT WHERE DESCRIBED IN THIS MANUAL, AS ANY UNAUTHORIZED DISASSEMBLY WILL INVALIDATE THE WARRANTY.
4. AFTER USE, ALWAYS ENSURE THAT ALL COMPONENTS ARE CLEANED IN ACCORDANCE WITH THE INSTRUCTIONS PROVIDED IN THIS MANUAL.
5. ENSURE THAT ALL COMPONENTS ARE REASSEMBLED CORRECTLY AND THAT ALL ITEMS ARE REPLACED IN THE CARRYING CASE.
6. AFTER USE, ALWAYS ENSURE THAT A FULL AIR OR OXYGEN CYLINDER IS ATTACHED BEFORE RETURNING THE UNIT TO ITS NORMAL STORAGE POSITION.
7. IT IS RECOMMENDED THAT AN ALTERNATIVE MEANS OF VENTILATING THE PATIENT BE AVAILABLE IN CASE OF GAS SUPPLY FAILURE.

CHAPTER 2 OPERATING PROCEDURE

2.1 Connecting the supply hose.

The supply hose provided is attached to the oxygen inlet on the rear of the resuscitator and is tightened “finger tight”.

WARNING: The use of excessive force in tightening the supply hose may damage the seal and /or thread.

The Carevent DRA is attached to the full facemask by simply pushing the mask connector onto the full face mask.

2.2 Manual ventilation and cardiac compressions.

The CAREvent® DRA Automatic Rescue Ventilator has a Manually Actuated, Automatic Ventilation Override Button (Manual Button) with a 10 (20 for G05) second delay to automatic cycling re-start to assist in the timing of ventilations in conjunction with external cardiac compressions.

By using the “Manual Button”, the operation of the ventilator can be easily timed with the chest compressions so as to avoid the potential problem of the aspiration of stomach contents due to gastric distension which may occur if overlap of chest compression and inflation occurs. The flowrate provided is equivalent to the preset automatic flowrate.

1. If no respiratory effort is observed, position yourself above the patient’s head. Turn on the gas supply.
2. Allow the device to cycle once and then apply the full facemask or attach the Carevent DRA to patients full facemask. A tilt action is used to hyperextend the neck and move the jaw forward. This helps displace the tongue away from the back of the throat and maintains an open airway.
3. If manual Ventilation is to be used, depress the manual button and observe the rise of the patient’s chest. Release the button when chest rise is adequate.
4. If the patient’s chest does not rise or gas escapes around the mask or the pressure relief system operates, reposition the patients head and adjust your hand position to obtain an effective mask seal and an open airway.

5. Monitor the patient’s skin, nailbed and lip colour.
6. If mask indicates signs of vomitus, remove immediately and clear the airway. Ensure the mask and valve are free from obstruction. Restart ventilation immediately after clearing airway. (See also 2.4)
7. Continue ventilation until relieved or until spontaneous breathing returns.

2.3 Automatic Ventilation

1. If no respiratory effort is observed, position yourself above the patient’s head. Turn on the gas supply.
2. Allow the device to cycle once and then apply the full facemask or attach the Carevent DRA to patients full facemask. A tilt action is used to hyperextend the neck and move the jaw forward. This helps displace the tongue away from the back of the throat and maintains an open airway.
3. Continue ventilation at an appropriate rate until relieved or until spontaneous breathing returns.