



## Creating a Safer Environment with our New Single use Patient Circuits!

- Reduced risk of cross-infections
- Reduced risk of re-assembly error
- Same great Quality!

Designed to meet the increasing clinical demands for infection control, Smiths Medical announces the launch of a new range of single use patient circuits to complement the Pneupac® range of transport and emergency ventilators. The full range of disposable circuits is designed to meet the stringent performance characteristics required of a patient circuit used in the ambulance, military, industrial and hospital environments. Fully compatible with the Pneupac® ventilator range, the disposable circuits offer a wide variety of options, including PEEP or the option to display Expiratory pressure on the ventilator. The circuits can be connected to all standard Airway Management devices with a 15/22mm connector. (BS EN ISO 5356-1:2004)

The use of single-use circuits minimises the risk of cross-contamination, whilst reducing expensive re-sterilisation procedures. Provided fully assembled and "ready to use", these new circuits also prevent possible errors in circuit assembly, and provide an instant solution to patient ventilation.



THE DETAILS GIVEN IN THIS LEAFLET ARE CORRECT AT THE TIME OF GOING TO PRESS. THE COMPANY RESERVES THE RIGHT TO IMPROVE THE EQUIPMENT SHOWN

### Smiths Medical International Ltd

Enterprise Way, Luton, Bedfordshire, LU3 4BU, UK  
Tel: +44 (0)1582 430000 Fax: +44 (0)1582 430001  
[www.smiths-medical.com](http://www.smiths-medical.com)

Smiths Medical, part of the global technology business Smiths Group

Portex, Soft-Seal, Pneupac, VR1, paraPAC, transPAC, ventiPAC, babyPAC and the Smiths Medical Design Mark are trademarks of the Smiths Medical family of companies. © 2007 Smiths Medical family of companies. All rights reserved. Coopdech is a registered trademark of Daiken Medical.  
Literature No. LIT/AV2750

Autorizované zastoupení pro ČR:

**DARTIN**

DARTIN, spol. s r.o.  
Suchbátova 688, 25262 Horoměřice  
Tel./fax: 241 470 361, 261 216 076  
[www.dartin.cz](http://www.dartin.cz)  
e-mail: [info@artin.cz](mailto:info@artin.cz)

Autorizované zastúpenie pre SR:

**DARTIN**

DARTIN Slovensko, spol. s r.o.  
L. Podjavorinskej 25, 08005 Prešov  
Tel./fax: 051/7734403, 7723634  
[www.dartin.sk](http://www.dartin.sk)  
e-mail: [info@artin.sk](mailto:info@artin.sk)

# Pneupac<sup>®</sup> Ventilators for Emergency, Transport, MRI and Toxic Environments



**PNEUPAC VENTILATION**

**Pneupac**<sup>™</sup>

## Life support, where you need it



**Pre-Hospital**  
(Advanced Life Support)



**Hospital**



**Neonatal/  
Paediatric**



**Difficult & Taxing  
Environments**

The causes of breathing failure are many, but commonly include:

- Cardiac Arrest
- Trauma (lung injuries)
- Airway Obstruction (including anaphylaxis)
- Late stage lung disease or pneumonia
- Opioid or alcohol overdose
- Electrocution
- Exposure to toxic gases or smoke inhalation

Often, the onset of breathing failure will take place in difficult environments for the administration of emergency care, however it is essential that some form of artificial breathing is begun immediately to maintain oxygenation of the patient and sustain life.

Common approaches include:

- Mouth-to-mouth resuscitation
- BVMs (bag valve masks)
- PGPVs (portable gas powered ventilators)

Although mouth-to-mouth requires no specialised equipment, its value can be limited by; risk of infection transfer, limited oxygen content of expired air and constant attention on respiration management from the care-giver. BVMs offer a higher level of oxygen and a greater ability to observe more aspects of the patient's care (as well as protection from infection transfer) but require special training to ensure only appropriate pressure is applied, good seal is maintained and the correct respiration rate is delivered.

PGPVs benefit from an enhanced degree of automation, in that they not only safely and consistently regulate flow or pressure and respiratory cycles but also allow the percentage of oxygen to be increased above that contained in normal air – which can be crucial where patients have not been breathing for some time before artificial respiration begins.

The Smiths Medical Pneupac® range of ventilators provide the ideal solution to the demanding requirements of portable ventilation both inside and outside the hospital environment.



# Meeting the challenges of tomorrow, today

## New! CBRN Circuit



VR1AIRNGB and CBRN circuit (Shown without bag)



Small Carrying bag for cylinder and deployment kit 520-1154  
CBRN Circuit and filter kit (Red bag) 520A1222NGB  
UK VR1™ AIR MIX Version VR1AIRNGB



## CBRN Circuit

When faced with fire, industrial accidents, even terrorist attacks or biological warfare - the challenge of artificial respiration is exacerbated by the continuing threat presented by the air the patient is still breathing. In today's world the environment in which an emergency ventilator is used can be as dangerous to the patients as their injuries. To meet the challenges of today and tomorrow, Smiths Medical has designed the new CBRN Patient circuit for use with the VR1™ range of ventilators. To protect the casualty from their environment the mixture of oxygen and contaminated air delivered to the patient is filtered using a special circuit which includes a NATO standard chemical agent filter to ensure that the gas delivered to the patient contains no toxic agents.

## VR1™

The CBRN Circuit has been designed to function in conjunction with the VR1™ ventilator. The VR1™ is a simple, safe, portable ventilator configured as a lightweight palm sized unit - ideal for managing airway respiratory emergencies in any location. Quick to set up and easy to use it can be taken into extreme environments such as an MRI scanner and extremely low temperatures. The Pneupac® VR1™ has been designed as a first response ventilator for emergency personnel in the ambulance, fire and police services and also applicable in industrial and commercial markets. The nature of the environment in which first responders have to operate requires the product to perform reliably in demanding conditions and circumstances.

The key attributes of the Pneupac® VR1™ are:

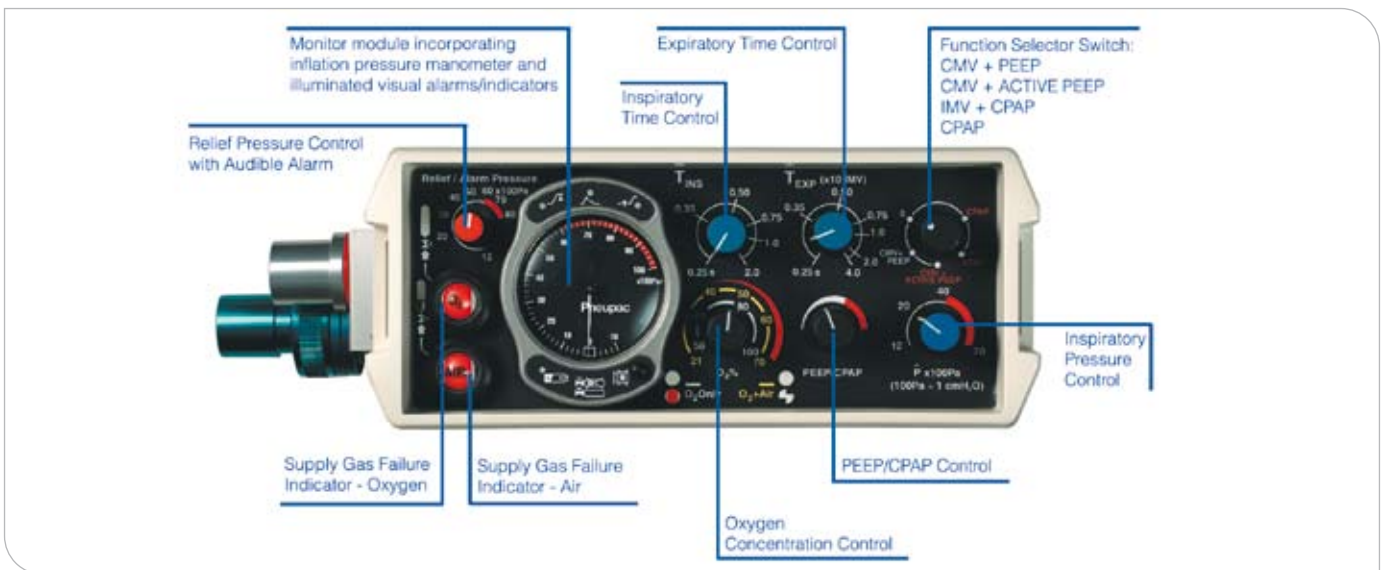
- Simplicity
- Portability
- Safety
- Robustness

The CBRN circuit allows the VR1™ to be taken everywhere where casualties are in most need of the life saving functions of a ventilator.

### Features

- Tidal Volume/Frequency Control
- Auto/Manual Control
- Air Mix Switch
- Patient DEMAND System
- MRI Compatible
- Relief Valve
- Linked Manual Controls
- Ergonomically designed
- Extremely portable
- Robust
- IP class 56

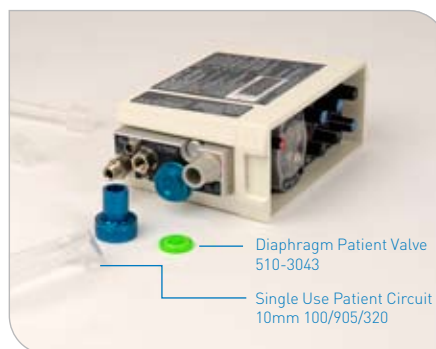
# Flexibility, for those who need it most



## babyPAC™

babyPAC™ is specifically designed for the ventilation of neonates and infants up to 20kg. Gas driven, it is ready for use without delay and offers extended usage time for long transport situations. For use in the hospital, it is both MRI compatible and designed to be attached to incubators.

Whether in situ or during transportation, the compact unit provides all the features required to fully control ventilation parameters for delicate neonate and infant lungs.



- Unique variable oxygen concentration gas mixing system (21%-100% F<sub>I</sub>O<sub>2</sub>)
- Inspiratory pressure control
- Separate controls for inspiratory and expiratory time
- IMV expiratory time control
- PEEP/CPAP control
- Four operating modes:
  - CMV + PEEP
  - CMV + ACTIVE PEEP
  - IMV + CPAP
  - CPAP

# Arrive prepared...

## Bags



PAC and Cylinder Bag - W1230



PAC Bag - W1231



Rucksack - W1228

## Brackets



Ambulance Mounting System - 510A1710



Mini Carry PAC - 510A2406  
(Ventilator and Accessories not included)



Rail and Pole Mounting Brackets - 500-A4843 (Rail)  
- 500-A4844 (Pole)

## Oxygen Cylinders, Regulators and Oxygen Supply Hoses



O2 Pin Index Regulator - 500-A162/CE  
For other configurations please contact your local supplier



D size Aluminium Cylinder - W6838  
For other variants please contact your local supplier



Probes  
For part numbers refer to user manual

### Instant Action Bags

In a critical situation where seconds count, it is essential that all of your equipment is easily accessible and undamaged when you need it most.

Our bags are ergonomically designed and provide instant access in emergency situations. They can be either hand carried or worn as a rucksack or over the shoulder.

Reflective strips for easy identification and visibility in the dark and neatly arranged compartments make them a valuable part of your ventilation package.

During patient transport they offer integrated metal hooks to enable them to be hung onto a hospital bed or ambulance trolley.

### Brackets

Ventilators need to be mobile but at the same time there need to be safe and secure means by which to attach them to rails, stands or to the interior of an ambulance.

The Pneupac® range offers a variety of fixation accessories that will keep the ventilator secure when it's not in use - even when you're on the move. These brackets have been tested to ensure safety even in the unlikely event of a collision.

### Oxygen Cylinders, Regulators and Oxygen Supply Hoses

Our range of accessories, which includes Oxygen bottles (Aluminium), High Pressure Regulators and input hoses completes the list of vital components to enable the most efficient use of Pneupac® ventilators.

For specific requests such as extra length input hoses or specific Oxygen probes to conform to local/national requirements, please contact your local Pneupac® supplier.



# ...Take control...

## paraPAC™



### Features

- Unique CMV/DEMAND feature (Continuous Mandatory Ventilation)
- Ventilation powered by gas
- Lightweight & robust for use in the toughest of situations
- Click-stop CPR setting (protected airway)
- DEMAND feature
- Inflation pressure monitor
- Low gas supply indicator
- MRI compatible (check manual and label)

## transPAC™



## ventiPAC™



Note: Models shown are P200D, T200D, V200DEP. EP versions showing expiratory pressure (PEEP) are available upon request

### paraPAC™

Designed specifically for use by paramedics and trained emergency personnel, with dual controls to allow easy selection of tidal volume and frequency to match your patient's ventilatory requirements. Suitable for ventilation during CPR and the emergency transportation of patients down to 5kg body weight.

- Separate controls for tidal volume and frequency
- Optional CMV/DEMAND feature: continuously monitors and automatically responds to patients inspiratory efforts
- Adjustable pressure relief with audible alarm
- Air mix facility - selection of 100% or 45% O<sub>2</sub>
- Optional PEEP facility
- Optional DEMAND feature: allows administration of 100% oxygen therapy
- Optional integrated alarm system

### transPAC™

For minute by minute control during emergency & transport ventilation both outside and inside the hospital, transPAC™ provides dual controls for minute volume and frequency, whilst responding to your patients breathing efforts through the CMV/DEMAND feature.

- Separate controls for minute volume and frequency
- Optional CMV/DEMAND feature: continuously monitors and automatically responds to patients inspiratory efforts
- Adjustable pressure relief with audible alarm
- Air mix facility - selection of 100% or 45% O<sub>2</sub>
- Optional PEEP facility
- Optional DEMAND feature: allows administration of 100% oxygen therapy
- Optional integrated alarm system

### ventiPAC™

The ventiPAC™ is designed to give an accompanying physician the ability to maintain quality of patient oxygenation whilst maximising their comfort during transport.

The range also includes a model suitable for anaesthesia and all models are appropriate for ventilation of patients down to 5kg body weight.

- Separate controls for inspiratory time, expiratory time and flow
- CMV/DEMAND feature: continuously monitors and automatically responds to patients inspiratory efforts
- Adjustable pressure relief with audible alarm
- Air mix facility - selection of 100% or 45% O<sub>2</sub>
- Optional PEEP facility
- DEMAND feature: allows administration of 100% oxygen therapy
- Integrated alarm system

# ...Stay connected

## Single Use Circuits



100/905/300



100/905/301



100/905/310



100/905/311



100/905/302



100/905/320

For description please see page 9.

## Reusable Circuits



Hose W1730 - Valve 510A2957 for DEMAND type ventilator



Exhaust Collector W195-004 - PEEP Valve W195-005



Hose W7486 (Silicone) Valve - 510A2957 for DEMAND type ventilator



Exhaust Collector W1434 - PEEP Valve W1433

## Disposable/Reusable Circuits

Although traditionally breathing circuits for emergency use were supplied as reusable (sterilised by autoclave), increasing concerns regarding the transmission of infection have produced a changing trend. In response to these concerns, and to ensure the protection of both patients and healthcare professionals, we now offer a full range of single use patient circuits and accessories in addition to the original reusable options.

The Pneupac® ventilators are built for ease of use, reliability and to enable the fastest possible response in an emergency situation. We carry that philosophy through to the design of circuits and accessories to ensure that no time is lost in achieving a stable condition for the patient. This combines with a portfolio of circuits and accessories which support the broad choice of therapeutic protocols delivered by our range of ventilators.

## Airway Products



For details on airways products please refer to Difficult Airways and Intubation Catalogue

In recognition that the ventilation of the patient doesn't stop at the end of the patient valve, we can also offer the proven high quality airway products from the Portex® range, including; endotracheal tubes, tracheostomy tubes, the Portex® Soft-Seal® Laryngeal Mask or the unique Portex® Cricothyrotomy Kit (PCK).

For detailed information please contact your local Smiths Medical supplier.



## Technical Specification

Product	VR1™	transPAC™	paraPAC™	ventiPAC™	babyPAC™
Supply Gas	Oxygen @ 276 - 1034kPa	Oxygen @ 305 - 600kPa	Oxygen @ 305 - 600kPa	Oxygen @ 305 - 600kPa	Oxygen & Air @ 305 - 600kPa
Single control for Freq & Tidal Volume	10 -25 bpm 1050-150 Tv				
Control for Frequency		8 - 40 bpm	8 - 40 bpm	7 - 60 bpm	10 -120 bpm
Control for Minute Volume		2 - 20 Lts/min			
Control for Tidal Volume			70 - 1570 mls	50 - 1500 mls	
I:E Ratio	1:2 fixed	1:1.6 nominal	1:3 @ 8 bpm 1:1.3@40 bpm	Variable via Ti & Te controls	Variable via Ti & Te controls
Control for Inspiratory Time				0.5 - 2.0 secs	0.25 - 2.0 secs
Control for Expiratory Time				0.5 - 6.0 secs	0.25 - 4.0 secs
Control for Flow				0.1 - 0.75 Lt/sec	
Control for Pressure					12 - 70 cmH <sub>2</sub> O
Air Mix	VR1™AIR Only 50% or 100%	45% or 100%	45% or 100%	45% or 100%	45% to 100% O <sub>2</sub> supply only
					21% to 70% O <sub>2</sub> & Air supply
CPAP Mode					Yes
IMV - CPAP Mode					Yes - Exp Time 40 secs
O <sub>2</sub> Failure Eyeball		Yes pneumatic	Yes pneumatic	Yes pneumatic	Yes pneumatic
Air Failure Eyeball					Yes pneumatic
Manual Control	Yes				
Airway Pressure Manometer		-10 to 100 cmH <sub>2</sub> O	-10 to 100 cmH <sub>2</sub> O	-10 to 100 cmH <sub>2</sub> O	-10 to 100 cmH <sub>2</sub> O
Pressure Relief valve	Fixed @ 40 cmH <sub>2</sub> O	Variable 20 - 80 cmH <sub>2</sub> O	Variable 20 - 80 cmH <sub>2</sub> O	Variable 20 - 80 cmH <sub>2</sub> O	Variable 12 - 80 cmH <sub>2</sub> O
DEMAND, CMV - DEMAND	VR1STD VR1AIR	T20D T200D T200DEP	P20D P200D P200DEP	V200D V200DEP	
Electronic Alarms		T200 T200D T200DEP	P200 P200D P200DEP	V200D V200DEP	Yes
Passive PEEP	Optional	Optional	Optional	Optional	Yes
Active PEEP					Yes
MRI Compatible (3 Tesla)	Yes	Yes	Yes	Yes	Yes
CBRN* Circuit	Optional				
Patient Hose & Valve	Optional	Yes	Yes	Yes	Yes
Supply Hose	Yes	Yes	Yes	Yes	Yes
IP Rating	IP 56	IPX 4	IPX 4	IPX 4	IPX 4
Dimensions (mm)	170(L) x 100(H) x 95(D)	92(H) x 220(W) x 162 (D)	92(H) x 220(W) x 162 (D)	92(H) x 220(W) x 162 (D)	92(H) x 220(W) x 162 (D)
Weight (kg)	0.465	From: 2.4 To: 3.1	From: 2.4 To: 3.1	3.1	3.75
Build Standard	ASTM F 920-93	EN794-3 1999	EN794-3 1999	EN794-3 1999	EN794-3 1999

\* CBRN for use in toxic atmospheres

Pneupac™ Bags and Carrying Cases	
520-1150	VR1™ Large carrying bag for cylinder & ventilator
520-1154	VR1™ Small carrying bag for cylinder & ventilator
W1228	Rucksack, Heavy Duty Cordura
W1230	PAC & cylinder bag, Heavy Duty Cordura
W1231	PAC bag, Heavy Duty Cordura
Mounting Options	
510A2406	Mini carryPAC
510A1710	Quick Release Mounting Bracket
500-A4843	Medi-Rail Mounting Bracket
500-A4844	Pole Mounting Bracket (0-1")
W7140	Shoulder strap Unit
Regulators and Vari flow selectors	
500-A162/CE	O <sub>2</sub> pin index single outlet
500-A162/Z19	O <sub>2</sub> pin index twin outlets & vari flow 0-15L/min
500-A162CE/Z43	O <sub>2</sub> pin index single outlet & vari flow 0-15L/min
500-A162CE/Z28	Air pin index single outlet
Cylinders	
(all cylinders are supplied empty)	
W6834	Pin Index, O <sub>2</sub> , Aluminium, Size C 230L
W6838	Pin Index, O <sub>2</sub> , Aluminium, Size D 365L
W1298	Pin Index, Air, Aluminium, Size D 365L
Ventilators	
Note: the code shown is standard UK version. For country specific codes please check with your Pneupac® dealer.	
VR1STDNGB	VR1™ Standard version with DEMAND feature
VR1AIRNGB	VR1™ Air mix version, with DEMAND feature and Air Mix function
P20CE	paraPAC™ with Air Mix-, Tidal Volume-, Frequency- and Relief Pressure-Control
P20DCE	paraPAC™ with Air Mix-, Tidal Volume-, Frequency- and Relief Pressure-Control + CMV/DEMAND function
P200CE	paraPAC™ as model P20CE with additional built-in Alarms
P200DCE	paraPAC™ as model P20DCE with additional built-in Alarms
P200DEP	paraPAC™ as model P200DCE with ability to display expiratory pressure (PEEP)
T20CE	transPAC™ with Air Mix-, Minute Volume-, Frequency- and Relief Pressure-Control
T20DCE	transPAC™ with Air Mix-, Minute Volume-, Frequency- and Relief Pressure-Control + CMV/DEMAND function
T200CE	transPAC™ as model T20CE with additional built-in Alarms
T200DCE	transPAC™ as model T20DCE with additional built-in Alarms
T200DEP	transPAC™ as model T200DCE with ability to display expiratory pressure (PEEP)
V200D	ventiPAC™ with Air Mix-, Ti, Te and Flow controls and Relief Pressure-Control + CMV/DEMAND function
V200DEP	ventiPAC™ as model V200DCE with ability to display expiratory pressure (PEEP)

Reusable Circuits and Patient Valves		
W7130	Patient hose (lightweight 1.2M) Polyester	
W7385	Patient hose (lightweight 1.5M) Polyester	
W7486	Patient hose (heavy duty 1.2M) Silicone	
W7486/2.0	Patient hose (heavy duty 2M) Silicone	
510A2957	Patient Valve for use on PAC's with DEMAND feature, Green	
510A2958	Patient Valve for use on PAC's without DEMAND feature, Green	
510A2667	Patient Valve for use on PAC's with DEMAND feature, Blue	
510A2668	Patient Valve for use on PAC's without DEMAND feature, Blue	
W1433	PEEP Valve (VBM) 0-20cmH <sub>2</sub> O, Blue	
W1434	Exhaust collector, Blue	
W195-005	PEEP valve assembly 0 -20 cms/H <sub>2</sub> O, Green	
W195-004	Exhaust Collector, Green	
Disposable Patient Circuits and Valves		
100/905/300	Single limb circuit for Pneupac® ventilators with DEMAND feature	
100/905/301	Single limb circuit for Pneupac® ventilators with DEMAND feature, with PEEP valve	
100/905/302	Single limb circuit for Pneupac® EP type ventilators, with PEEP valve and pressure monitoring line with in-line filter	
100/905/310	Single limb circuit for Pneupac® ventilators w/o DEMAND feature	
100/905/311	Single limb circuit for Pneupac® ventilators w/o DEMAND feature, with PEEP valve	
100/905/320	Single use, dual limb circuit for babyPAC™ ventilators, 10mm ID	
510-3043	Disposable diaphragm patient valve for B100, green	
Airway Products		
Note: For Airway products please refer to our Portex® literature.		
Reusable Facemasks		
W6803	Paediatric	Size 0
W6804	Paediatric	Size 1
W6806	Child/Small Adult	Size 2
W6807	Adult	Size 4
VR1™ CBRN Circuit		
520A1222NGB	CBRN Circuit and Filter Kit complete with Filter adaptor, Patient Valve Hose, exhaust collector, PEEP Valve 2off CBRN Filters	
W7266	CBRNF12CE Filter Canister (AVON)	
MRI Compatible Regulators		
500A162CEMRIZ46	Oxygen pin index single outlet BS4272 vari flow 0-15L/min MRI Compatible	
500A162CEMRIZ37	Oxygen pin index single outlet BS4272 MRI Compatible	
MRI Compatible Oxygen supply hoses		
500A4987	White hose assembly 1.5 metre G 1/4 to BS4272 probe (UK)	