



**Ventrain[®] starts a
new era in ventilation**

>ventrain<



ventrain

What is new?

- › full ventilation through a 2 mm catheter
- › active expiration
- › up to 7 litres minute volume
- › connection for capnometry

ventrain® star



completely

obstructed

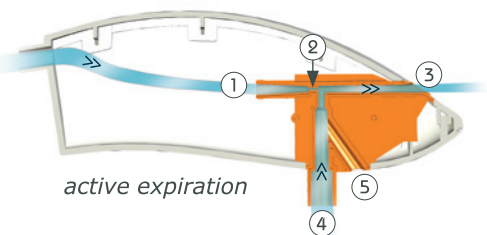
upper airway

Ventrain[®] is the first ventilation device that provides adequate ventilation through a narrow-bore catheter, even in case of a completely obstructed upper airway. Ventrain[®], a product specifically designed for 'cannot intubate, cannot ventilate' emergencies, will make airway management in such life-threatening situations easier and safer.

Full ventilation through only a 2 mm catheter

Ventrain[®] not only insufflates oxygen, but also provides active removal of gas from the lungs: expiratory ventilation assistance, or in short EVA. EVA shortens the expiration time, increases the achievable minute volume and prevents air trapping. Therefore, Ventrain[®] considerably reduces the chance of intrapulmonary pressure build-up and the associated risks of barotrauma and circulatory collapse.

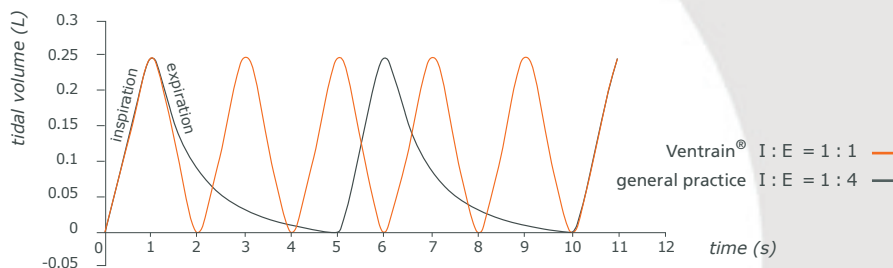
Active expiration is created by the special design that optimizes a balance between the Venturi effect and jet entrainment. As shown in the cross section, the gas flows via the inlet ① through a very narrow nozzle ② and exhaust pipe ③ to the outside. It entrains gas from port ④, which is connected to a catheter: active expiration. Insufflation occurs by closing the exhaust pipe. The bypass ⑤ functions as an on/off switch. When opened, there is no significant positive or negative pressure at the catheter tip: equilibration/safety mode.



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In case of a completely obstructed upper airway, this design enables an inspiration : expiration ratio of about 1 : 1.



easy

to use

The oxygen supply system should be a high pressure source, i.e. a pressure compensated flow regulator on the wall or on an oxygen bottle, because speeding up the gas flow in the nozzle takes about 2 bar at 15 L/min. However, the pressure at the distal end of the catheter connected to Ventrain® will not be higher than needed to provide for the inspiration flow as set on the flow regulator: Ventrain® is a flow regulated device. Whereas jet ventilation depends on high inspiration pressures to obtain an effective gas exchange in the lungs, with Ventrain® this is accomplished by reversing the gas flow each ventilation cycle.

Up to 7 litres minute volume ventilation

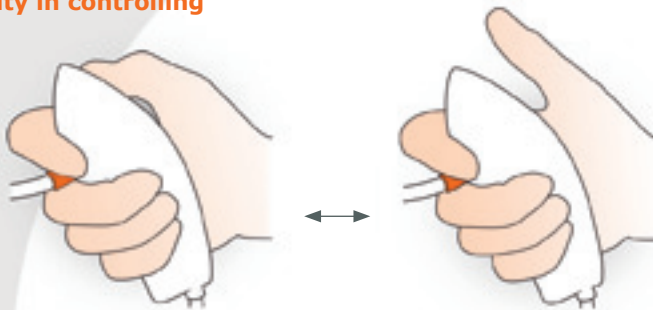
With a flow set at 15 L/min, Ventrain® can obtain a minute volume ventilation of up to 7 L/min through a 2 mm catheter in a patient with a completely obstructed upper airway. Currently available ventilators can only provide up to 4 L/min in this situation, while at least 6 L/min is needed for normoventilation of an adult.

n ve ntilation



expiratory
ventilation
assistance

Simplicity in controlling



insufflation

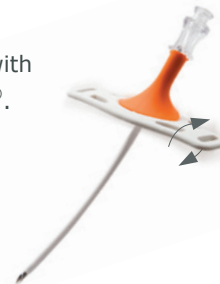
assisted expiration

Possibility for capnometry

Active expiration of Ventrain[®] through the ventilation lumen enables side port capnometry via the additional male luer connector. Also when the upper airway is not completely obstructed and therefore the expiratory gases are mixed with bypass gases, at least a relative trend of the CO₂ level can be monitored.

Catheter with adjustable connection

We are developing a new transtracheal catheter, Cricath[®], with an inner diameter of 2 mm, also to be used with Ventrain[®]. Following the standard procedure, the airway is accessed by inserting the needle through the cricothyroid membrane. The flange of the catheter can then easily be adjusted to the anatomical characteristics of each patient.



*Ventrain[®] is protected by patent applications
and a registered European Community Design.*

ventrain



D. van Asseldonk, CEO Dolphys and Dr. D. Enk, MD



The creators

The credit for the invention of Ventrain[®] goes to Dr. D. Enk, MD, an anaesthesiologist specialised in airway management for more than fifteen years. Dr. Enk's initial idea has been further developed in close cooperation between Dolphys and Dr. Enk's research group at the Maastricht University Medical Centre. This collaboration resulted in Ventrain[®].

Ordering information

Ventrain[®]

Art. code: 2618200

Ventrain[®] emergency kit will contain:

- Ventrain[®]
- Cricath[®]

Specifications:

- single use
- sterile

More information can be found on www.ventrain.eu.

For a direct link to download our interactive animation app, you can also use the QR code.



Your distributor

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