Ventimask®

Ventimask is an alternative for patients who are unsuitable for a High Flow Nasal Cannula (HFNC), such as those with blocked nasal passages or following trauma/surgery to the nasopharanyx. Attaching Ventimask to a humidified Single Limb Heated Wire Breathing System, and either an oxygen blender or Flexicare's Humidity Adaptor and Venturi barrel, humidified HFOT using a face mask can easily be set up to meet the patient's needs.

Clinically proven that "only the Ventimask is able to provide a fixed and predictable oxygen concentration under conditions of the changing ventilatory patterns found in clinical practice."[1] Ventimask is the accepted standard for controlled oxygen therapy for exact oxygen concentration delivery, optimum clinical performance and greater patient acceptability.

Ventimask

| 037-10-007 | Ventimask without Venturi Barrel | 50 |

Ventimask with Venturi Barrel

037-10-004	Ventimask with 40% Red Venturi Barrel (10 litres/minute)	50
037-10-005	Ventimask with 60% Green Venturi Barrel (15 litres/minute)	50
037-10-009	Ventimask High O_2 Concentration Set with 40% & 60% Venturi Barrels	50

Humidity Adaptor

The Humidity Adaptor is connected to a humidified Single Limb Heated Wire Breathing System. Humidified air is then entrained by the Venturi barrel to deliver the fixed concentration oxygen to the patient. Use of a humidity adaptor is the most accurate method of giving fixed concentration humidified oxygen to the patient.

| 5506 | Humidity Adaptor 22mm | 10 |

[1] Fixed performance oxygen masks. Hypoxic hazard of low-capacity designs. D Cox & C Gillbe. Anaesthesia, 1981, Volume 36, pages 958-964

BREATHING FILTERS

The range includes Adult and Mini Electrostatic Breathing Filters and HMEF's, plus Adult and Paediatric Pleated Paper Hydrophobic Bacterial / Viral Filters.

Breathing Filters

Breathing filters help eliminate the risk of cross-infection by preventing the transfer of bacteria and viruses to and from the patient. Electrostatic filters retain micro-organisms through the static electric charge in the medium. The tightly packed layers of mixed fibre strands in pleated paper filters, also known as mechanical filters, physically prevent bacteria and viruses from passing through.

Properties of Filters and HMEF's
When considering filters a number of important properties should be taken into account:

Filtration Efficiency
In Critical Care as many as 10-15% of invasively ventilated patients develop pneumonia at a rate of 1-3% per day of intubation. These infections may prolong hospital stays by 4-9 days and contribute to as many as 15% of all hospital deaths.

From this, it is evident that filtration efficiency is paramount to protect the patients and ventilators from cross contamination. Flexicare filters maintain protection against bacteria and viruses at a very high level of efficiency, confirmed by independent testing by the Health Protection Agency at Porton Down, Salisbury, UK. Flexicare filters maintain their high level of efficiency during the recommended period of use.

Minimal Dead Space and Minimal Pressure Drop
The filter housing must present the smallest dead space possible whilst at the same time allowing high gas flow with minimal resistance (pressure drop) through the filter media. Flexicare Filters and HMEF's incorporate a balance between these critical requirements to create a filter with minimal resistance to flow combined with a low dead space.

Lightweight and Ergonomically Shaped
The rounded ergonomic shape of Flexicare Filters and HMEF's prevent pressure marks or discomfort for the patient. The lightweight design reduces drag on breathing systems and the clear material permits visual examination for potential occlusion or accumulation of secretions.

Humidification Abilities
The passive humidification provided by the use of an HMEF helps counteract the risk of actelectasis, epithelial damage and impairment of the mucocilary transport system in intubated patients, resisting the onset Ventilator Associated Pneumonia.

It is recommended[1] that HMEF humidification levels should be at least 30mg/L H_2O at an inspired air temperature of 30°C. Independent testing by the Medical Devices Agency (MDA) verifies that Flexicare HMEF's exceed this minimum moisture output performance.

[1] AARC Clinical Practice Guideline: Humidification During Invasive and Noninvasive Mechanical Ventilation: 2012

Without port

Tethered cap

LuerSafe connection

LuerSafe monitoring line

LuerSafe

LuerSafe improves patient safety by eliminating erroneous misconnections with standard luer connections that have been reported to result in adverse events and patient deaths.

The unique cap-less self-sealing LuerSafe port only accepts the corresponding colour coded LuerSafe monitoring line. This non-interchangeability with any standard luer means the misconnection risk is eliminated.

Cap-less Design
The self-sealing valve automatically prevents gas flow in or out of the filter when a monitoring line is not connected, eliminating the need to manually open and close a cap. The cap-less design avoids possible leaks or air entrainment around a loose or poorly fitted cap.

Colour Coded Valve
The distinctive orange colour coding of the LuerSafe valve and LuerSafe monitoring line clearly indicates the correct corresponding connectors.

Unique Design Luer Port
LuerSafe eliminates the risk of misconnection to standard luer connectors, such as IV tubing, ensuring the connection is to the monitoring line only.

Connecting the CO_2 monitoring line to the LuerSafe port

Insert the colour coded monitoring line connector into the LuerSafe Port, pressing down and rotating in a clockwise direction.

Check the LuerSafe is securely locked and verify the capnography trace.

To remove, unscrew the monitoring line and the valve will self-seal.

VentiShield

Electrostatic Filters

Electrostatic filter media of permanently charged split fibres capture airborne bacteria and viruses, and are ideal for use in anaesthetic and ventilator breathing systems where high efficiency and low pressure drop is required.

The adult VentiShield range of filters provide 99.999% efficiency within a compact, lightweight rounded design ideal for patient end use with an ET Tube or Laryngeal Mask Airway.

Universal Connections

VentiShield connectors prevent fitting in the wrong direction, and comply with current ISO standards, making them suitable for use with all anaesthetic and ventilator breathing systems and airways.

Lightweight Construction

The light weight of Ventishield filters reduces drag on the breathing system.

Sterile

Available as a sterile packed product for additional reassurance.

Reduced Risk of Pressure Marks

The rounded shape, with no sharp edges, reduces the risk of leaving pressure marks on the patient.

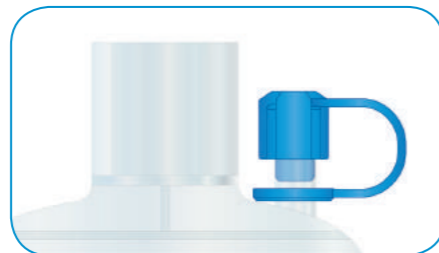### Wide choice available with LuerSafe port, standard luer lock port or without port.

LuerSafe

Tethered Cap

Without Port

Adult VentiShield Filter

	038-41-360	038-41-340	038-41-365	038-41-345	038-41-365LS	038-41-345LS	038-41-366	038-41-366LS

	038-41-360	038-41-340	038-41-365	038-41-345	038-41-365LS	038-41-345LS	038-41-366	038-41-366LS
Efficiency	99.999%	99.999%	99.999%	99.999%	99.999%	99.999%	99.999%	99.999%
Resistance 30L/min	1.2cm H_2O	1.4cm H_2O	1.2cm H_2O	1.4cm H_2O	1.2cm H_2O	1.4cm H_2O	1.5cm H_2O	1.5cm H_2O
Dead Space	66ml	52ml	66ml	52ml	66ml	52ml	76ml	76ml
Min VT*	198ml	156ml	198ml	156ml	198ml	156ml	228ml	220ml
Weight	30g	31g	32g	33g	33g	31g	38g	38g
CO$_2$ Port	None	None	Tethered	Tethered	LuerSafe	LuerSafe	Tethered	LuerSafe

038-41-360	Adult Bacterial / Viral Filter	50
038-41-340	Adult Angled Bacterial / Viral Filter	50
038-41-365	Adult Bacterial / Viral Filter (with tethered cap port)	50
038-41-345	Adult Angled Bacterial / Viral Filter (with tethered cap port)	50
038-41-365LS	LuerSafe Adult Bacterial / Viral Filter (with self-sealing port)	50
038-41-345LS	LuerSafe Adult Angled Bacterial / Viral Filter (with self-sealing port)	50
038-41-366	Adult Bacterial / Viral Filter (with tethered cap port) + Low Profile Elbow (22M/15F)	50
038-41-366LS	LuerSafe Adult Bacterial / Viral Filter (with self-sealing port) + Low Profile Elbow (22M/15F)	50

Mini VentiShield Filter

	038-42-360	038-42-365	038-42-365LS	038-42-366	038-42-366LS

	038-42-360	038-42-365	038-42-365LS	038-42-366	038-42-366LS
Efficiency	99.99%	99.99%	99.99%	99.99%	99.99%
Resistance 30L/min	1.9cm H_2O	1.9cm H_2O	1.9cm H_2O	2.2cm H_2O	2.2cm H_2O
Dead Space	25ml	25ml	25ml	35ml	35ml
Min VT*	75ml	75ml	75ml	105ml	105ml
Weight	19g	20g	21g	28g	29g
CO$_2$ Port	None	Tethered	LuerSafe	Tethered	LuerSafe

038-42-360	Mini Bacterial / Viral Filter	50
038-42-365	Mini Bacterial / Viral Filter (with tethered cap port)	50
038-42-365LS	LuerSafe Mini Bacterial / Viral Filter	50
038-42-366	Mini Bacterial / Viral Filter (with tethered cap port) + Low Profile Elbow (22M/15F)	50
038-42-366LS	LuerSafe Mini Bacterial / Viral Filter (with self-sealing port) + Low Profile Elbow (22M/15F)	50

HMEF's

The combination of an electrostatic filter and HME media in an HMEF not only provides protection against cross-infection, but also uses heat and humidity from the patient's expired breath to warm and humidify anaesthetic gases during inspiration. When the upper airway is bypassed, such as by intubation, cold and dry gases are delivered to the lungs, causing adverse physiological effects. Using an HMEF to passively warm and humidify the gases helps counteract the risk of atelectasis, epithelial damage and reduction of mucocillary transport.

ThermoShield HMEF's provide a high moisture output protecting patients against the adverse effects of prolonged dry gas exposure.

Universal Connections

ThermoShield connectors prevent fitting in the wrong direction, and comply with current ISO standards, making them compatible for use with all breathing systems and airways.

Reduced Risk of Pressure Marks

The rounded shape with no sharp edges, reduces the risk of leaving pressure marks on the patient.
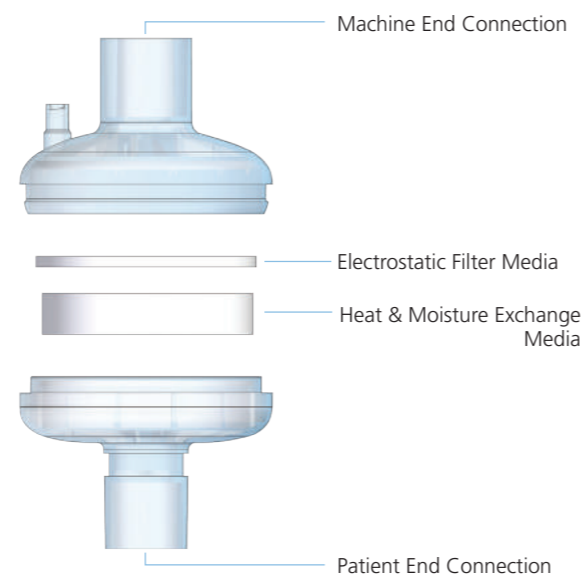
Secure Luer Lock

The easy to operate push-fit tethered luer lock cap is secured with a strap, eliminating the risk of misplacement or accidental loss. ThermoShield is also available with LuerSafe, Flexicare's unique self-sealing cap-less luer port.

Sterile

Available as a sterile packed product for additional reassurance.

Construction of Adult Electrostatic Breathing Filter + HME

- Machine End Connection
- Electrostatic Filter Media
- Heat & Moisture Exchange Media
- Patient End Connection

Adult ThermoShield HMEF's

	038-41-350	038-41-330	038-41-355	038-41-335	038-41-355LS	038-41-335LS	038-41-356	038-41-357	038-41-359
Efficiency	99.999%	99.999%	99.999%	99.999%	99.999%	99.999%	99.999%	99.999%	99.999%
Humidification	33.6mg/l air	33.6mg/l air	33.6mg/l air	33.6mg/l air	33.6mg/l air	33.6mg/l air	33.6mg/l air	33.6mg/l air	33.6mg/l air
Resistance 30L/min	1.4cm H_2O	1.7cm H_2O	1.4cm H_2O	1.7cm H_2O	1.4cm H_2O	1.7cm H_2O	2.0cm H_2O	2.0cm H_2O	3.1cm H_2O
Dead Space	66ml	52ml	66ml	52ml	66ml	52ml	76ml	96ml	87-105ml
Min VT*	198ml	156ml	198ml	156ml	198ml	156ml	228ml	288ml	261ml
Weight	39g	38g	41g	40g	41g	40g	45g	55g	59g
CO_2 Port	None	None	Tethered	Tethered	LuerSafe	LuerSafe	Tethered	Tethered	Tethered

038-41-350	Adult Bacterial / Viral Filter + HME	50
038-41-330	Adult Angled Bacterial / Viral Filter + HME	50
038-41-355	Adult Bacterial / Viral Filter + HME (with tethered cap port)	50
038-41-335	Adult Angled Bacterial / Viral Filter + HME (with tethered cap port)	50
038-41-355LS	LuerSafe Adult Bacterial / Viral Filter + HME (with self-sealing port)	50
038-41-335LS	LuerSafe Adult Angled Bacterial / Viral Filter + HME (with self-sealing port)	50
038-41-356	Adult Bacterial / Viral Filter + HME (with tethered cap port) + Low Profile Elbow (22M/15F)	50
038-41-357	Adult Bacterial / Viral Filter + HME (with tethered cap port) + Catheter Mount + Low Profile Elbow (22M/15F)	50
038-41-359	Adult Bacterial / Viral Filter (with tethered cap port) + Expandable Catheter Mount with Double Swivel Elbow & Elastomeric Cap	50

Mini ThermoShield HMEF's

	038-42-350	038-42-355	038-42-355LS	038-42-356	038-42-356LS	038-42-357
Efficiency	99.99%	99.99%	99.99%	99.99%	99.99%	99.99%
Humidification	30.3mg/l air	30.3mg/l air	30.3mg/l air	30.3mg/l air	30.3mg/l air	30.3mg/l air
Resistance 30L/min	2.9cm H_2O	2.9cm H_2O	2.9cm H_2O	3.1cm H_2O	3.1cm H_2O	4.0cm H_2O
Dead Space	25ml	25ml	25ml	35ml	35ml	46-64ml
Min VT*	75ml	75ml	75ml	105ml	105ml	138ml
Weight	22g	25g	25g	32g	32g	45g
CO_2 Port	None	Tethered	LuerSafe	Tethered	LuerSafe	Tethered

038-42-350	Mini Bacterial / Viral Filter + HME	50
038-42-355	Mini Bacterial / Viral Filter + HME (with tethered cap port)	50
038-42-355LS	LuerSafe Mini Bacterial / Viral Filter + HME (with self-sealing port)	50
038-42-356	Mini Bacterial / Viral Filter + HME (with tethered cap port) + Low Profile Elbow (22M/15F)	50
038-42-356LS	LuerSafe Mini Bacterial / Viral Filter + HME (with self-sealing port) + Low Profile Elbow (22M/15F)	50
038-42-357	Mini Bacterial / Viral Filter (with tethered cap port) + Expandable Catheter Mount with Double Swivel Elbow & Elastomeric Cap	50

*Recommended

Adult Pleated Hydrophobic Bacterial / Viral Filters

Hepashield Adult & Paediatric pleated hydrophobic bacterial / viral mechanical filters contain paper media specifically packed to maximise gas flow through the filter ensuring the surface area is fully utilised to provide superior 99.99999% filtration efficiency.

Universal Connection
HepaShield connectors prevent fitting in the wrong direction, and comply with current ISO standards, making them compatible for use with all breathing systems.

Secure Luer Lock
The easy to operate push-fit tethered luer lock cap is secured with a strap, eliminating the risk of misplacement or accidental loss.

Reduced Drag
The light weight of HepaShield reduces drag on Breathing Systems.

Reduced Risk of Pressure Marks
The rounded edges of the filter housing reduces the risk of leaving pressure marks on the patient.

Sterile
Available as a sterile packed product for additional reassurance.

	038-41-370	038-41-375	038-41-376	038-42-380	038-42-385	038-42-386
Efficiency	99.99999%	99.99999%	99.99999%	99.99999%	99.99999%	99.99999%
Humidification	25.3mg/l air	25.3mg/l air	25.3mg/l air	25.3mg/l air	25.3mg/l air	25.3mg/l air
Resistance 30L/min	1.4cm H_2O	1.4cm H_2O	1.4cm H_2O	2.7cm H_2O	2.7cm H_2O	2.8cm H_2O
Dead Space	47ml	47ml	74-85ml	35ml	35ml	56-74ml
Min VT*	141ml	141ml	222ml	105ml	105ml	168ml
Weight	42g	43g	61g	26g	29g	47g
CO_2 Port	None	Tethered	Tethered	None	Tethered	Tethered

Adult Pleated Hydrophobic Bacterial / Viral Filter

038-41-370   038-41-375   038-41-376

038-41-370	Adult Pleated Hydrophobic Bacterial / Viral Filter	50
038-41-375	Adult Pleated Hydrophobic Bacterial / Viral Filter (with tethered cap port)	50
038-41-376	Adult Pleated Hydrophobic Bacterial / Viral Filter (with tethered cap port) + Expandable Catheter Mount with Double Swivel Elbow + Elastomeric Cap	50

Paediatric Pleated Hydrophobic Bacterial / Viral Filter

038-42-380   038-42-385   038-42-386

038-42-380	Paediatric Pleated Hydrophobic Bacterial / Viral Filter	50
038-42-385	Paediatric Pleated Hydrophobic Bacterial / Viral filter (with tethered cap port)	50
038-42-386	Paediatric Pleated Hydrophobic Bacterial / Viral Filter (with tethered cap port) + Catheter Mount with Plain Elbow (22M/15F)	50

	038-43-150
Humidification	25.2mg/l air
Resistance 7.5L/min	0.3cm H_2O
Dead Space	2ml
Weight	3.6g

	038-43-355
Humidity output	31mg/H2O @ VT 50ml
Filtration efficiency	99.999%
Resistance @7.5LPM	83 pa
Dead space	11ml
Tidal volume	>35ml
Connections	15F – 15M/8.5M
Weight	9g
Patient weight	3-8kg

038-43-150	Neonatal HME Sterile	25
038-43-355	Neonatal Bacterial / Viral Filter and HME with Luer Lock Port and Tethered Cap	50

ThermoTrach™ Heat and Moisture Exchanger
Heat Moisture Exchanger (HME) for spontaneously breathing patients fitted with a tracheostomy tube.

15mm Female Connector
The standard 15mm connector is compatible with all tracheostomy tubes.

Anatomical Curved Design
The curved design follows the contour of the neck.

Self-sealing Suction Port & Integral Cough Vent
The airway can be cleared by inserting a suction catheter through the integrated self-sealing suction port. The port also acts as a vent that can open during vigorous coughing to allow thick mucosal secretions to be expelled, avoiding blocking of the airway.

Clear Construction
Clear housing permits visual examination for potential occlusion or accumulation of secretions which could block the airway.

Swivel Oxygen Connector
Supplementary oxygen can be provided by attachment to the ThermoTrach swivel oxygen connector which can be angled to the most convenient and comfortable position, reducing the risk of disconnection, kinking and drag against the patient.
The oxygen flows through the HME to be warmed and humidified before reaching the patient.

SUPPLEMENT OXYGEN
WARM HUMIDIFIED AIR
EXPIRED/AMBIENT AIR

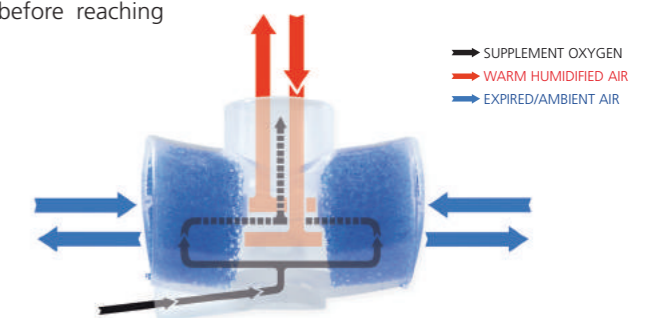| Moisture Return 15 breath/min	32.0mg H_2O
Volume/Dead Space	17ml
Resistance 30L/min	0.08cm H_2O
Weight	5.1g

Diagram representing the Heat & Moisture exchange process.

038-41-250	ThermoTrach Heat and Moisture Exchanger	50

Other Filters

Pulmonary Function Test Filter

Protecting both patient and pulmonary function testing equipment, the PFT Filter reduces the risk of cross-contamination between patients and equipment with minimal resistance to ensure that the test results are as accurate as possible. Reducing the risk of transmitting respiratory pathogens with the use of the Flexicare PFT Filter during normal breathing or forced vital capacity testing meets the American Thoracic Society recommendations for resistance in PFT equipment.

Efficiency	99.99%
Resistance 30L/min	0.4cm H_2O
Volume/Dead Space	135ml
Height	250ml
Weight	41g

038-41-395	Pulmonary Function Test Filter	50
038-41-394	Nose Clip for use with Pulmonary Function Test Filter	50

Sterile Filters

To minimise the risk of cross-infection and provide clinicians with additional reassurance that their patient is receiving the best possible care, Flexicare offers a range of sterile packed VentiShield™, HepaShield™ and ThermoShield™ filters.

VentiShield Sterile

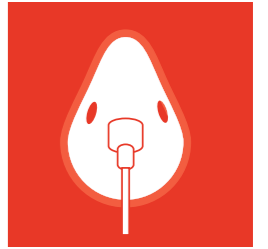| 038-42-365STR	Mini Bacterial / Viral Filter with tethered cap port	50
038-41-360STR	Adult Bacterial / Viral Filter	50
038-41-365STR	Adult Bacterial / Viral Filter with tethered cap port	50
038-41-340STR	Adult Angled Bacterial / Viral Filter	50
038-41-345STR	Adult Angled Bacterial / Viral Filter with tethered cap port	50

HepaShield Sterile

038-42-380STR	Paediatric Pleated Hydrophobic Bacterial / Viral Filter	50
038-42-385STR	Paediatric Pleated Hydrophobic Bacterial / Viral filter with tethered cap port	50
038-42-386STR	Paediatric Pleated Hydrophobic Bacterial / Viral Filter with tethered cap port + Catheter Mount with Plain Elbow (22M/15F)	50
038-41-370STR	Adult Pleated Hydrophobic Bacterial / Viral Filter	50
038-41-375STR	Adult Pleated Hydrophobic Bacterial / Viral Filter with tethered cap port	50
038-41-376STR	Adult Pleated Hydrophobic Bacterial / Viral Filter with tethered cap port + Expandable Catheter Mount with Double Swivel Elbow + Elastomeric Cap	50

ThermoShield Sterile

038-42-355STR	Mini Bacterial / Viral Filter + HME with tethered cap port	50
038-41-350STR	Adult Bacterial / Viral Filter + HME	50
038-41-330STR	Adult Angled Bacterial / Viral Filter + HME	50
038-41-355STR	Adult Bacterial / Viral Filter + HME with tethered cap port	50
038-41-335STR	Adult Angled Bacterial / Viral Filter + HME with tethered cap port	50
038-41-355LSSTR	LuerSafe Adult Bacterial / Viral Filter + HME with self-sealing port	50
038-41-335LSSTR	LuerSafe Adult Angled Bacterial / Viral Filter + HME with self-sealing port	50
038-41-357STR	Adult Bacterial / Viral Filter + HME with tethered cap port + 15mm tube + Low Profile Elbow (22M/15F)	50
038-41-359STR	Adult Bacterial / Viral Filter with tethered cap port + Expandable Catheter Mount with Double Swivel Elbow & Elastomeric Cap	50

OXYGEN & AEROSOL THERAPY

Flexicare's Oxygen and Aerosol Therapy products include Variable and Fixed Concentration Oxygen Masks, Nasal Cannulae, End Tidal CO_2 Monitoring and Post-Operative Oxygen Therapy consumables, Nebulisers and Nebuliser Kits