The route to humidification

A range of products to help you along the way

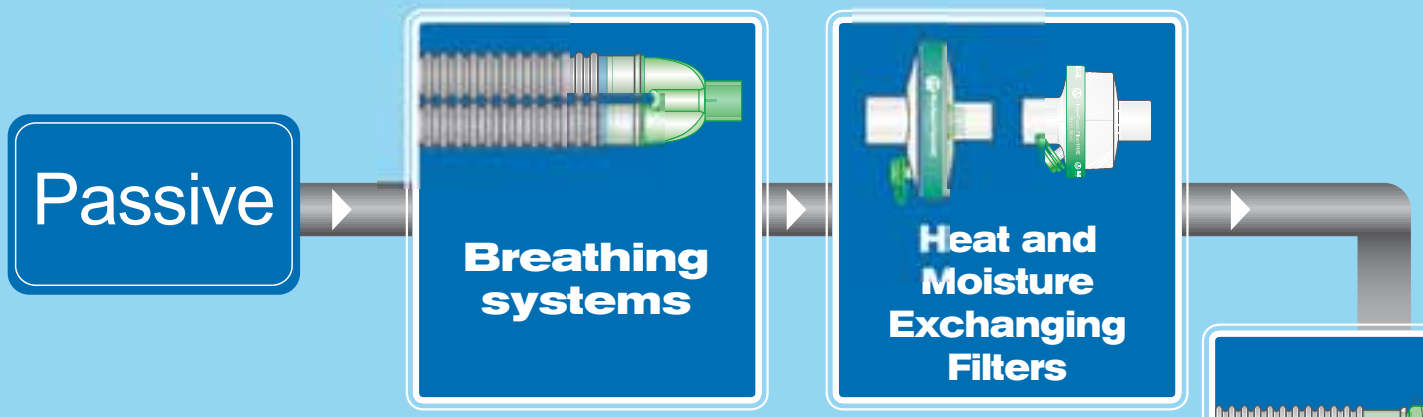
The route to humidification - your choice

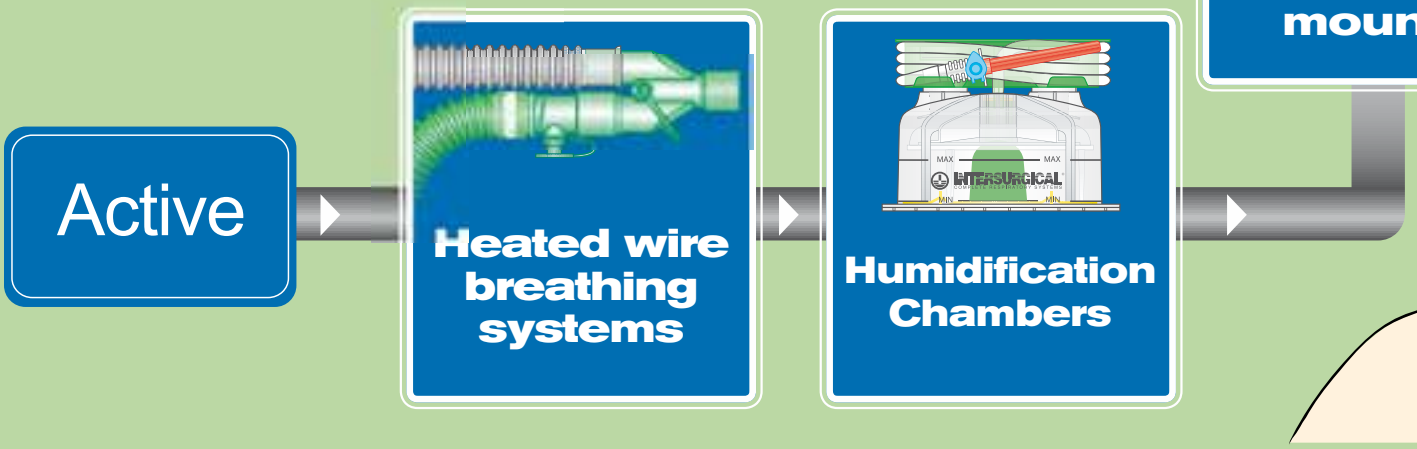
At Intersurgical we understand that each patient and clinical situation is different. Our aim is to provide a solution for all of your humidification requirements, active or passive, for both ventilated and spontaneously breathing patients.

Ventilated

Passive humidification

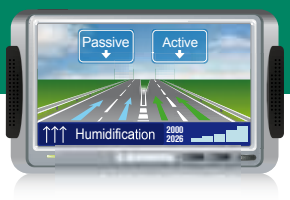
Passive Humidification requires a heat and moisture exchanger to be positioned at the patient connection of a basic two limb breathing system. This is designed to replicate the functions of the upper airway conserving the patient's own expired heat and moisture and returning these to the patient during inspiration.



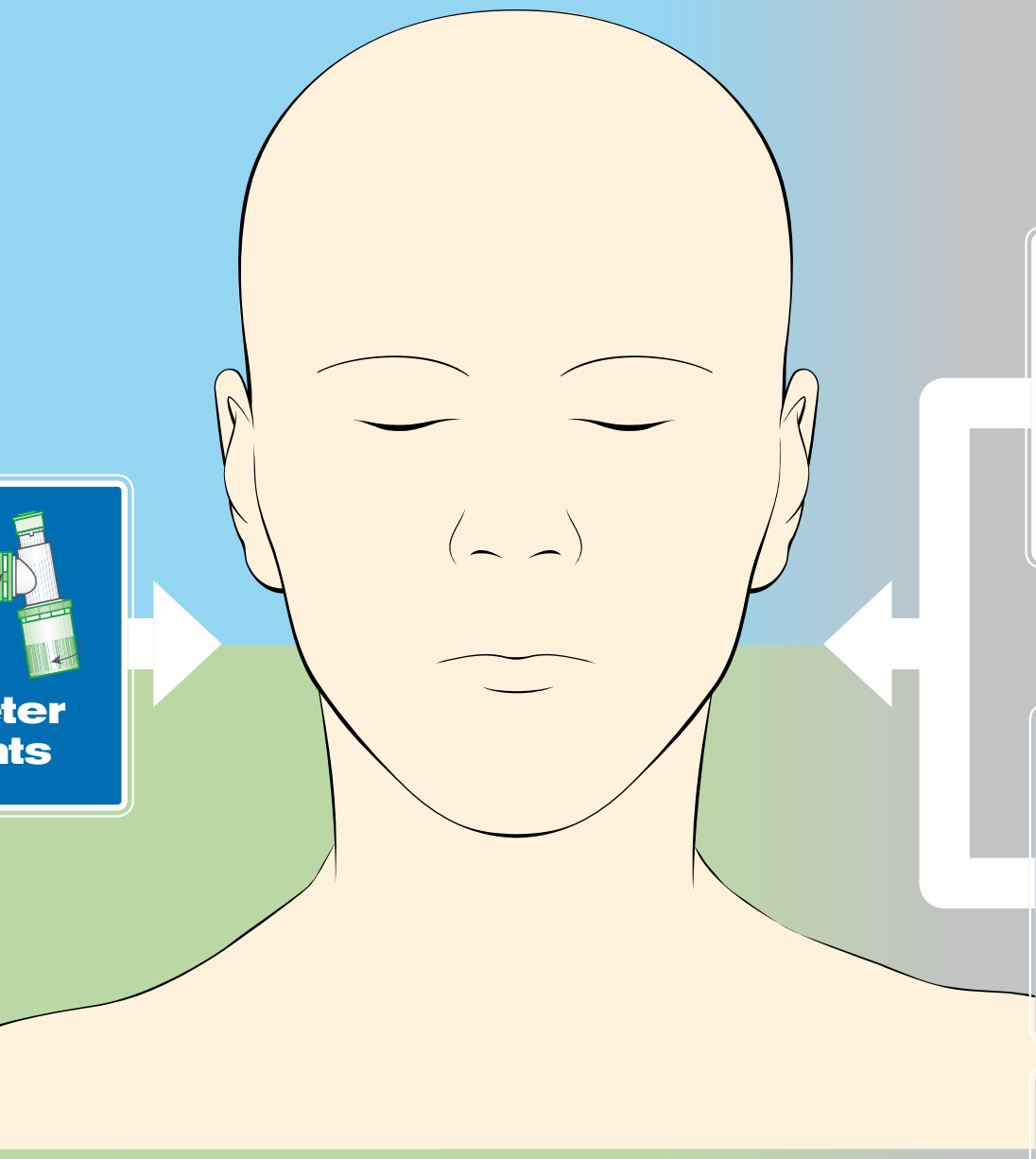


Active humidification

Active humidification requires a water bath humidifier, humidification chamber and either a heated wire breathing system or water traps within the system. This technique is also designed to replicate the functions of the upper airway by the addition of heat and moisture from the humidifier. This provides a higher level of humidity than an HME and should be selected depending on the clinical requirements of the patient.

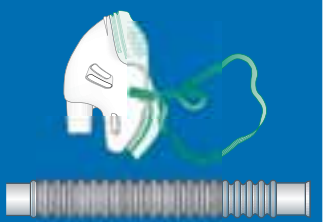


Spontaneous



ter
nts

Tracheostomy HME



Aerosol mask

Humidifiers
Humidifier nebuliser and bubble humidifier

hy is Humidification needed

In normal respiration the upper airway helps to warm and humidify inspired air, and to retain the warmth and moisture contained in expired air. During inspiration even cold or dry air is typically heated to 37 C and fully saturated, containing 44mg H_2O per litre.

In mechanical ventilation the patient's upper airway may be bypassed by the introduction of a tracheal tube. As a result the patient's lungs may be confronted with dry inspired gas.

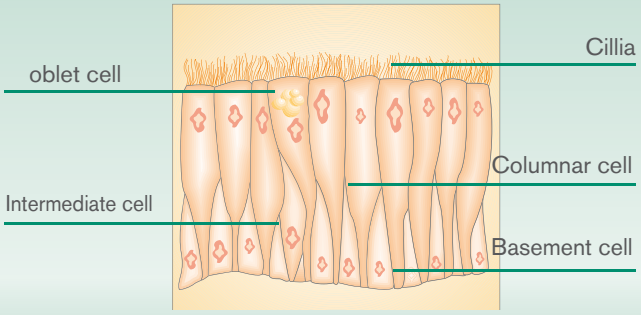
The drying and cooling effect is exacerbated by the presence of the tracheal tube, the normal process of re-absorption of heat and moisture by the upper airway during expiration is lost.

Prolonged exposure to dry ventilatory gases can lead to a number of problems as highlighted below.

Prolonged exposure to dry ventilatory gases can lead to

- Localised inflammation of the trachea.
- A reduction in ciliary function
- etention and thickening of secretions
- Lowering of patient temperature
- eduction in Cardiopulmonary function
- Increased risk of tracheostomy tube occlusion

- espiratory Epithelium adversely affected by heat moisture loss



hich routes are available

There are two options for patient humidification, **passive** or **active**.

assive humidification conserves the patient's own heat and moisture whilst **active humidification** adds additional heat and moisture via a humidifier.

We have a full range of products for both options to suit your patients requirements.

Passive Humidification

If your ventilated patient requires passive humidification then we have a wide range of basic breathing systems and heat and moisture exchangers.

In this brochure are a selection of options however, for the full range please refer to our website www.intersurgical.com or our product catalogue.

Heat and Moisture Exchangers

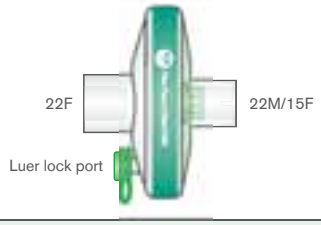
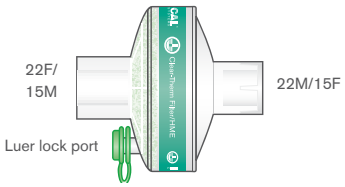
Heat and moisture exchangers are designed to be used at the patient connection of a breathing system to prevent heat and moisture loss when the upper airway is by passed.

We can provide both HME only options and a range combined with filters, HMEFS. These provide the performance of a dedicated HME with the filtration efficiency of a breathing filter.

Filta-Therm Plus and Clear-Therm HMEFs

ilta-Therm lus acterial and Viral iltration efficiency	**Moisture return at: VT500ml**	**Resistance to flow**		**Compressible volume**	**Weight**	**Minimum tidal volume**
		30L/min	60L/min			
99.999	31.5mg H_2O/L	1.3cm H_2O	3.0cm H_2O	66ml	44g	200ml

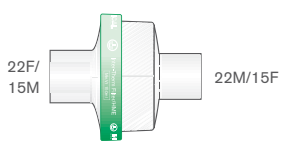
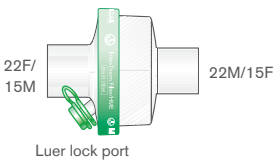
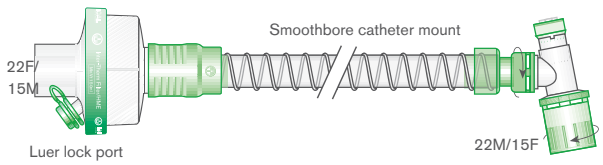
Clear-Therm acterial and Viral iltration efficiency	**Moisture return at: VT500ml**	**Resistance to flow**		**Compressible volume**	**Weight**	**Minimum tidal volume**
		30L/min	60L/min			
99.99	32mg H_2O/L	1.0cm H_2O	2.4cm H_2O	61ml	32g	200ml

1941001	70	**1841000**	35
			
Filta-Therm Plus + luer lock port		Clear-Therm + luer lock port	

nter-Therm HMEF®

The Inter-Therm HMEF provides both high filtration efficiency and heat and moisture performance and is provided **sterile**.

Inter-Therm acterial and Viral iltration efficiency	**Moisture return at: VT500ml**	**Resistance to flow**		**Compressible volume**		**Weight**		**Minimum tidal volume**
		30 L/min	60 L/min	Without port	With port	Without port	With port	
99.999	32mg H_2O/L	1.6cm H_2O	3.0cm H_2O	56ml	57ml	30g	31g	150ml

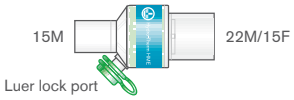
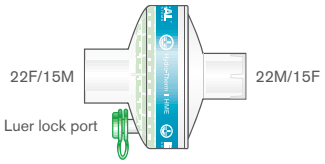
1341007S	125	**1341000S**	125	**1341580S**	50
					
Inter-Therm HMEF		Inter-Therm HMEF + luer lock port and elbow		Inter-Therm HMEF + luer lock port and Smoothbore catheter mount with double swivel elbow and double 'flip top' cap	

Passive

Hydro-Therm® HME

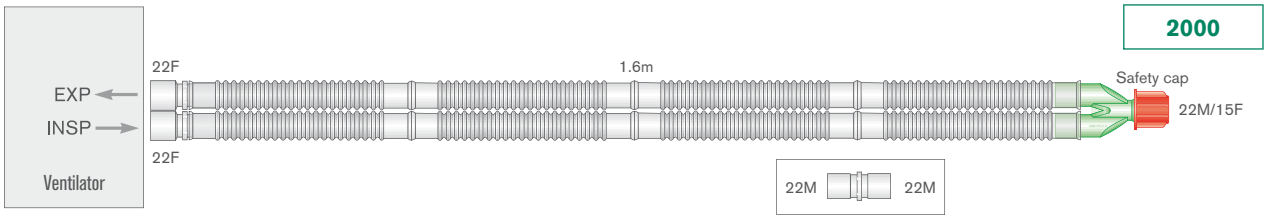
A range of dedicated HME's where filtration is not required

Moisture return at: VT 500ml HME only	Resistance at: HME only		Compressible volume HME only		Weight HME only		Minimum tidal volume HME only
	30L/min	60L/min	Without port	With port	Without port	With port	
Hydro-Therm 30mg H_2O/L	0.7cm H_2O	1.9cm H_2O	15ml	16ml	11g	12g	50ml
Hydro-Therm II 33mg H_2O/L	0.3cm H_2O	1.4cm H_2O	N/A	60ml	N/A	33g	200ml

1850	20	**1855**	20	**1860**	35
					
Hydro-Therm		Hydro-Therm + luer lock port		Hydro-Therm II + luer lock port	

Flextube® and Smoothbore basic breathing systems

A range of basic two limb breathing systems in both Flextube and Smoothbore tubing for use with HME's or HMEF's for a passive humidification solution.



2000		Breathing system, 1.6m length	20
2000100		Anti-microbial breathing system, 1.6m length	20
2200		Breathing system with detachable limb, 1.6m length (for insertion of a nebuliser or MDI)	20
2006		Breathing system, 2.0m length	15
2001		Breathing system, 2.4m length	15
2002		Breathing system, 1.6m length with 0.8m limb	20
2003		Breathing system, 2.4m length with 0.8m limb	15
2004		Breathing system with ported Y-piece, 1.6m length with 0.8m limb	10
5000	**500000S**	Smoothbore breathing system 1.6m length	12

Active

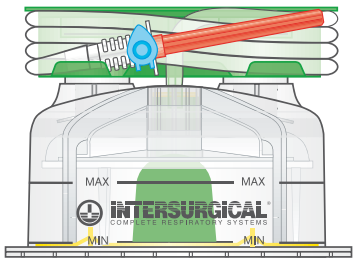
Active Humidification

If your ventilated patient requires active humidification then our range of humidification chambers combined with a choice of breathing systems in Flextube or Smoothbore are available.

Humidification Chambers

The humidification chambers are an integral part of the breathing system and allow the system to interface with the heated humidifier base. The range consists of three chamber options which can be used with humidifier bases commonly used in intensive care units.

The chamber simply slides into position on the hot plate of the base controller allowing the inspiratory gas to pass over the heated water. These are available with breathing systems for convenience or individually if required.

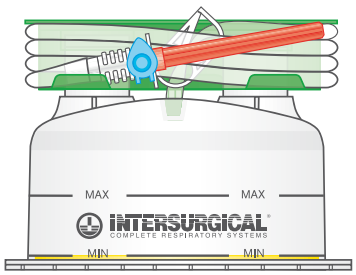


Auto-fill humidification chamber

The auto-fill humidification chamber offers a fixed level of water within the chamber, ensuring a constant system volume. This, coupled with the strong polycarbonate body and non compressible float, ensures that adverse changes in system compliance are reduced to a minimum.

The auto-fill chamber provides optimum humidification output without compromising resistance to flow. The new dual-float, dual-valve design provides further assurance of reliability.

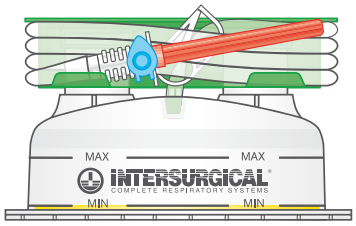
2310	Auto-fill humidification chamber	30



Manual fill humidification chamber

The manual fill humidification chamber offers a cost effective option in all areas of ventilation. This product is supplied complete with fill set and clamp in order to manually control the water level in the chamber.

2320	Manual fill humidification chamber	30



Low volume humidification chamber

The low volume humidification chamber is suitable for use with high frequency ventilation and many neonatal applications. The product is supplied with a fill set and clamp for manually controlling the water level in the chamber.

2330	Low volume manual fill humidification chamber	30

Features and benefits of the auto-fill humidification chamber

Inline ilter
Prevents any debris entering the chamber.

rotective cassette
Protects the chamber from contamination and conveniently stores the fill set before use.

Dual valve
For added security.

Strong olycarbonate clear material
Improved compliance characteristics. Allows for easy visual assessment of the fluid level at all times.

Clearly visible water level indicator
Easy to see for instant accurate fluid level assessment.

Advanced dual oat design
The closed cell material of the primary float ensures a totally reliable unsinkable rigid mechanism. Whilst the secondary float provides added security.

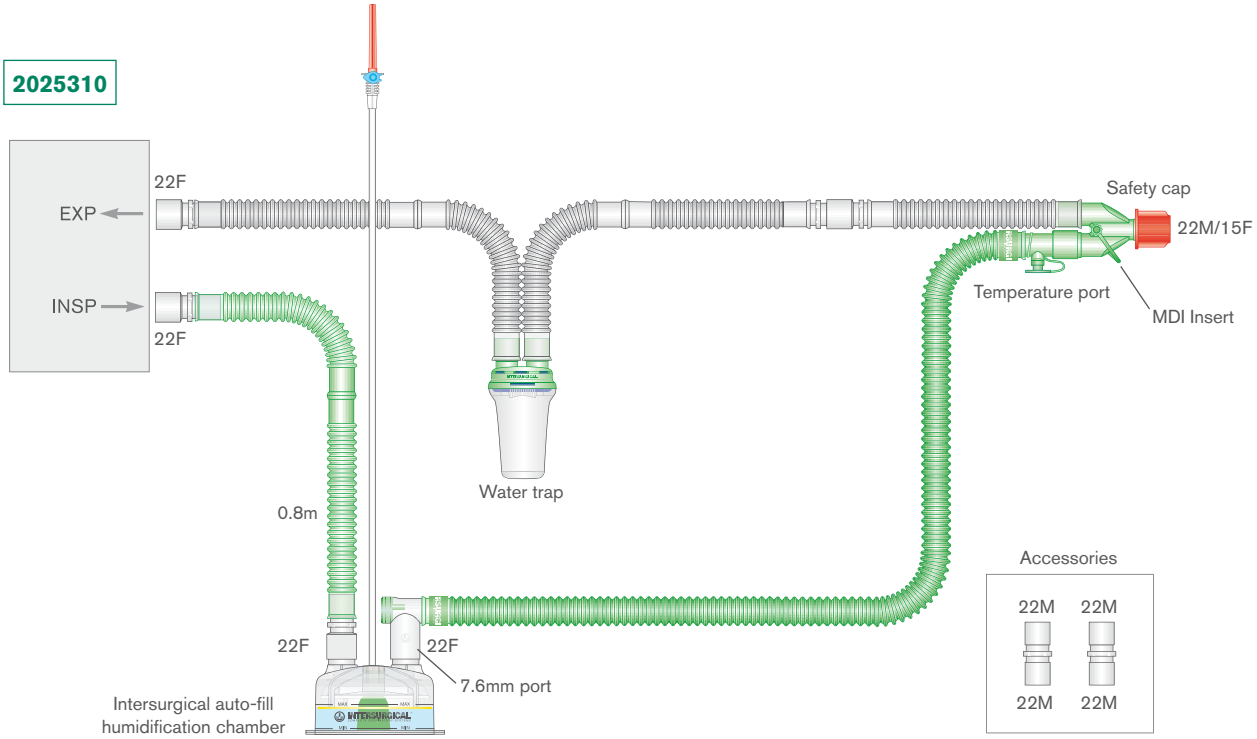
Shrouded heated plate cover
Prevents accidental burns when removing the chamber from the heater base.

Active

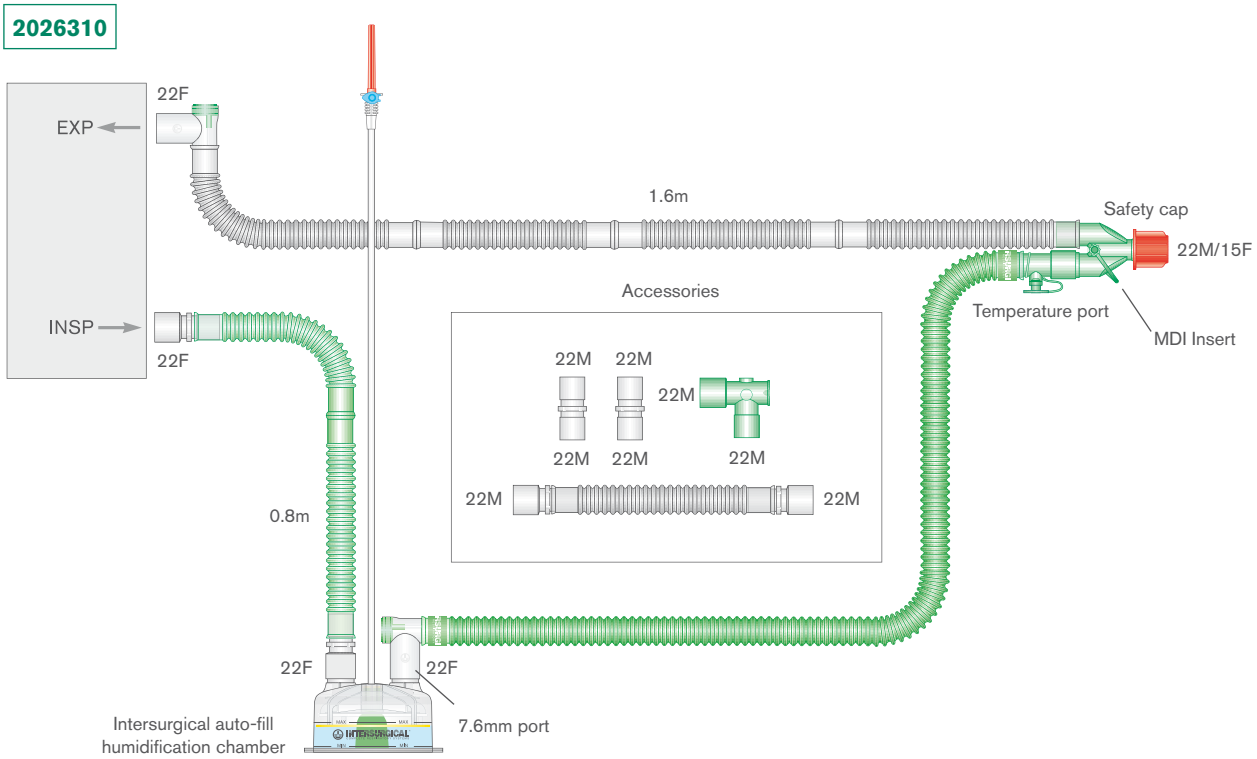
Flextube® heated wire breathing systems

Systems are available with single or dual heated wires and can be supplied complete with an auto-fill humidification chamber if required

2025310



2026310



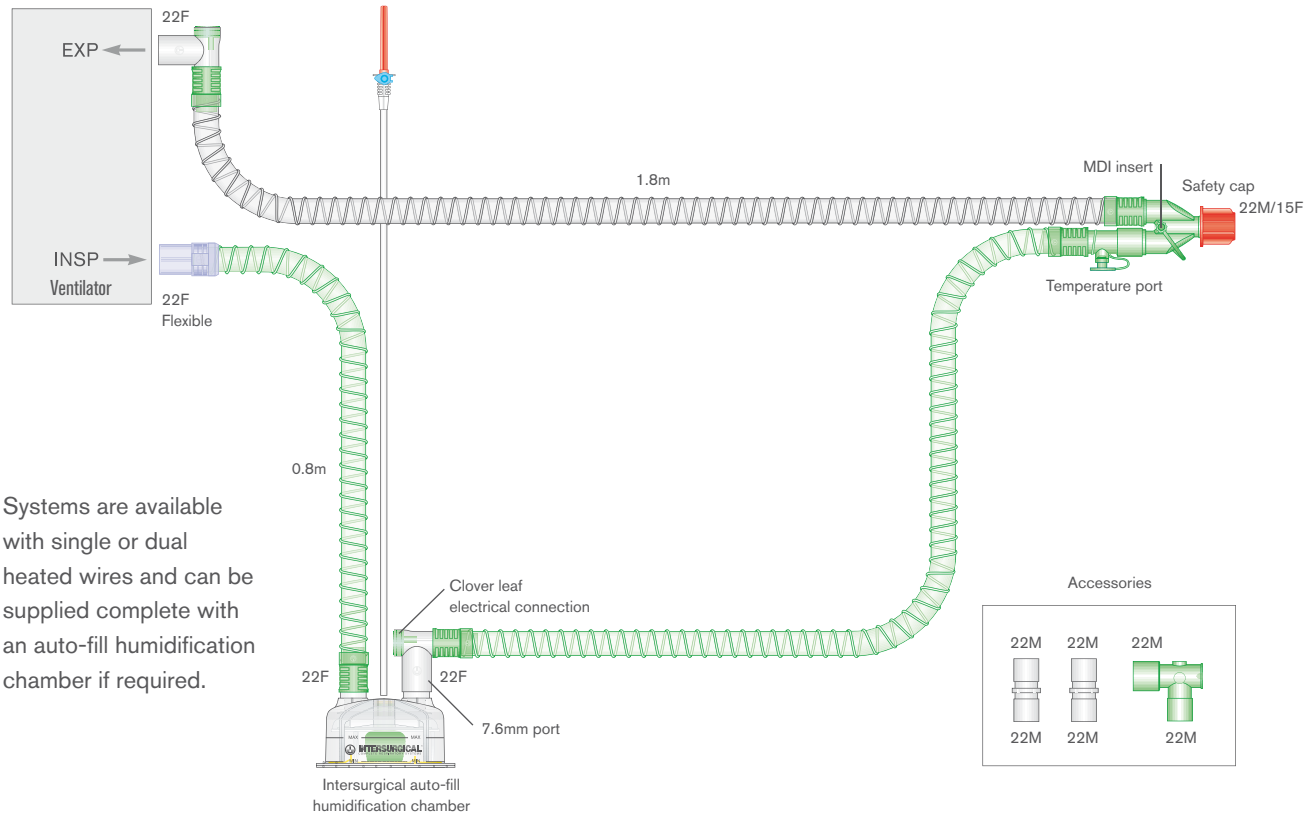
2025	**Single** heated wire breathing system, 1.6m length with 0.8m limb	10
2025310	**Single** heated wire breathing system with **auto-fill chamber**, 1.6m length and 0.8m limb	8
2026	**Dual** heated wire breathing system, 1.6m length with 0.8m limb	10
2026310	**Dual** heated wire breathing system with **auto-fill chamber**, 1.6m length and 0.8m limb	8

Active

Smoothbore breathing systems for active humidification

Systems are available with single or dual heated wires and can be supplied complete with an auto-fill humidification chamber if required

5026310



Systems are available with single or dual heated wires and can be supplied complete with an auto-fill humidification chamber if required.

5025	**Single** heated wire breathing system, 1.6m length with 0.5m limb	10
5025310	**Single** heated wire breathing system **with auto-fill chamber**, 1.6m length with 0.5m limb	8
5026	**Dual** heated wire breathing system, 1.6m length with 0.5m limb	10
5026310	**Dual** heated wire breathing system **with auto-fill chamber**, 1.6m length with 0.5m limb	8

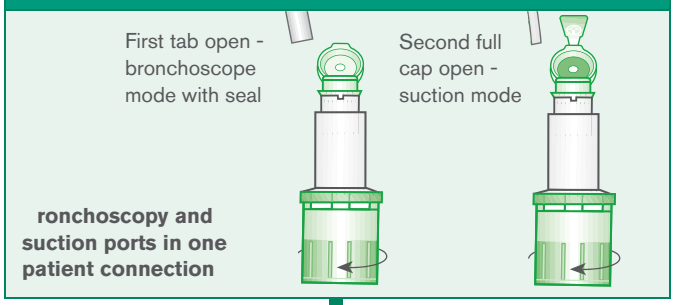
Passive Active

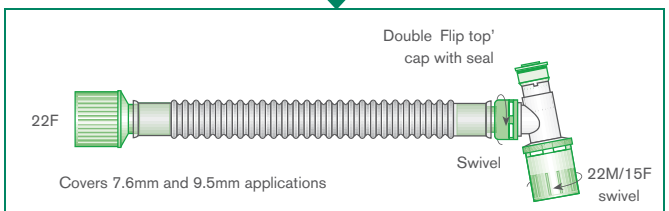
Patient connections

A wide range of patient connections are available in Flexible, Superset and Smoothbore tubing, see our product catalogue for the full range.

All port caps are retained to ensure they cannot be misplaced in use. Two varieties of flip top cap are available to allow for suctioning and the use of a fibre optic bronchoscope.

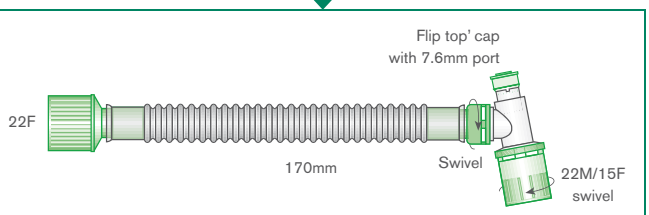
Double Flip top' cap with seal



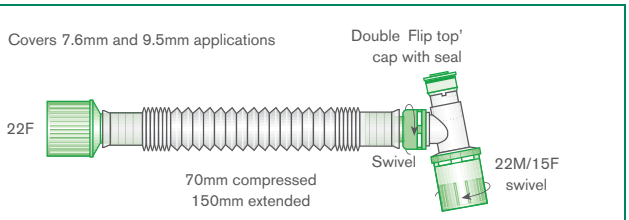


3505	Swivel elbow and double flip top cap	50

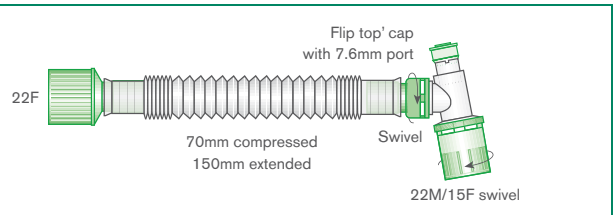
Flip top cap with 7.6mm port



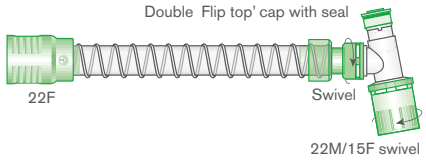
3516	Swivel elbow and flip top cap	50



3521	Superset with swivel elbow and double flip top cap	75



3520	Superset with swivel elbow and flip top cap	75



5180	**Smoothbore** with swivel elbow with double flip top cap, 180mm	50
5180000S	**Sterile Smoothbore** with swivel elbow with double flip top cap, 180mm	85

3521

Passive

Passive Humidification

For the spontaneously breathing patient with a tracheostomy or receiving oxygen therapy, both passive and active humidification options are available.

Hydro-Trach® T Mk

The Hydro-Trach T Mk.II is a heat and moisture exchange device designed for use with spontaneously breathing patients in order to reduce loss of heat and moisture during respiration.

When a patient has a tracheostomy, the normal system of temperature and moisture maintenance is bypassed by the insertion of the tracheal tube and can lead to serious complications.

The Hydro-Trach T Mk.II has a number of unique features which make it an ideal product for prolonged use with spontaneously breathing patients - available sterile if required.

Features and benefits

Clear housing
for easy visual inspection for possible secretion build up

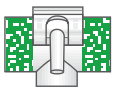
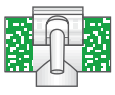
Anti cclusion mechanism
allowing the HME element to partially dislodge in the event of total occlusion or vigorous cough

Clipped suctioning port
To allow for easy suctioning without removal of the device

An integral swivel o ygen connector
allowing for connection of the oxygen tube without the need of a separate oxygen adapter, which can be easily folded away when not in use

Small and lightweight
reducing the pull on the patient connection

Moisture return at: VT 500ml HME only	Resistance at: HME only		Compressible volume HME only	Weight HME only	Minimum tidal volume HME only
	30L/min	60L/min			
26mg H_2O/L	0.2cm H_2O	0.7cm H_2O	19ml	8g	50ml

1873	25	**1874**	40
1873000S - sterile	100	**1874000S - sterile**	30
 15M		 15M  O2 tube not to scale	
Hydro-Trach T Mk.II		Hydro-Trach T Mk.II + O_2 tube	

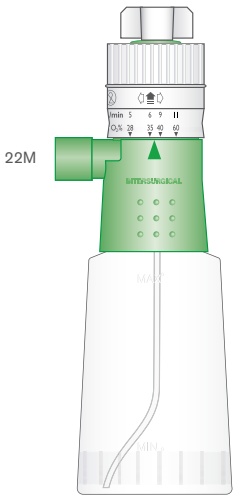
Active

Aquamist™ humidifier nebulisers

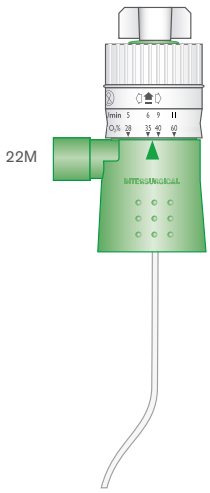
For the spontaneously breathing patient receiving long term oxygen therapy humidification is essential in order to bring dry oxygen gas to ambient levels of humidity.

A number of options are available. Aerosol masks, tracheostomy masks and T-pieces provide an ideal interface for the Aquamist humidifier nebuliser which has been designed to deliver accurate concentrations of humidified oxygen quietly.

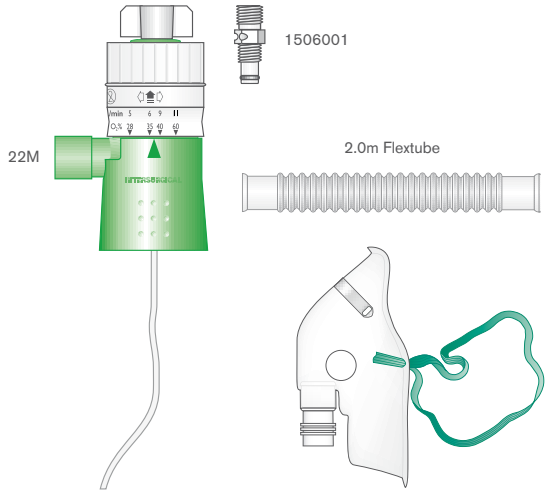
1509



1508



1500001



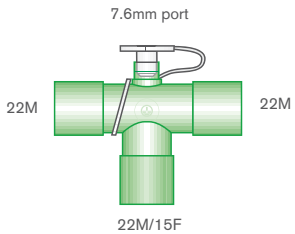
1508	Humidifier nebuliser without bottle	24
1509	Humidifier nebuliser with bottle	25
1500	Humidifier nebuliser + BOC adaptor without bottle	24
1502	Humidifier nebuliser + BOC adaptor with bottle	25
1500001	Humidifier nebuliser + adult aerosol mask kit without bottle + BOC adaptor + 2.0m Flextube	15

Tracheostomy mask and T-pieces

1200

1200	Adult tracheostomy mask	30
1206	Paediatric tracheostomy mask	35

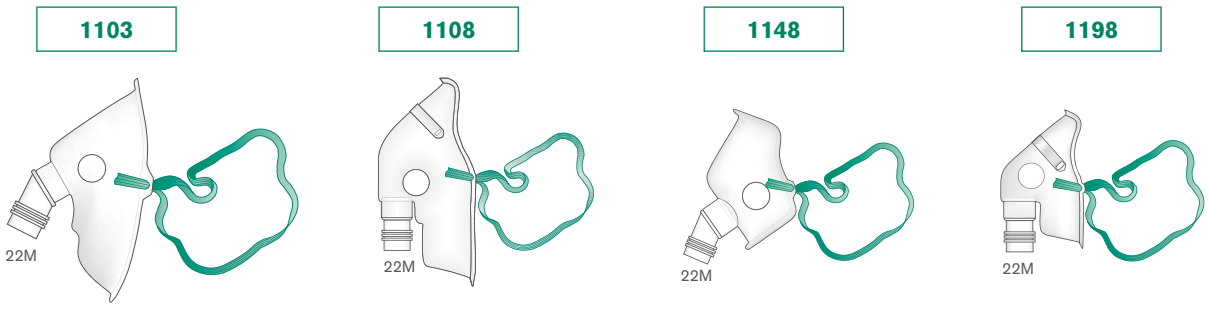
1984



1980	Tracheostomy T-piece	25
1984	Tracheostomy T-piece with 7.6mm port	25

Active

Aerosol masks

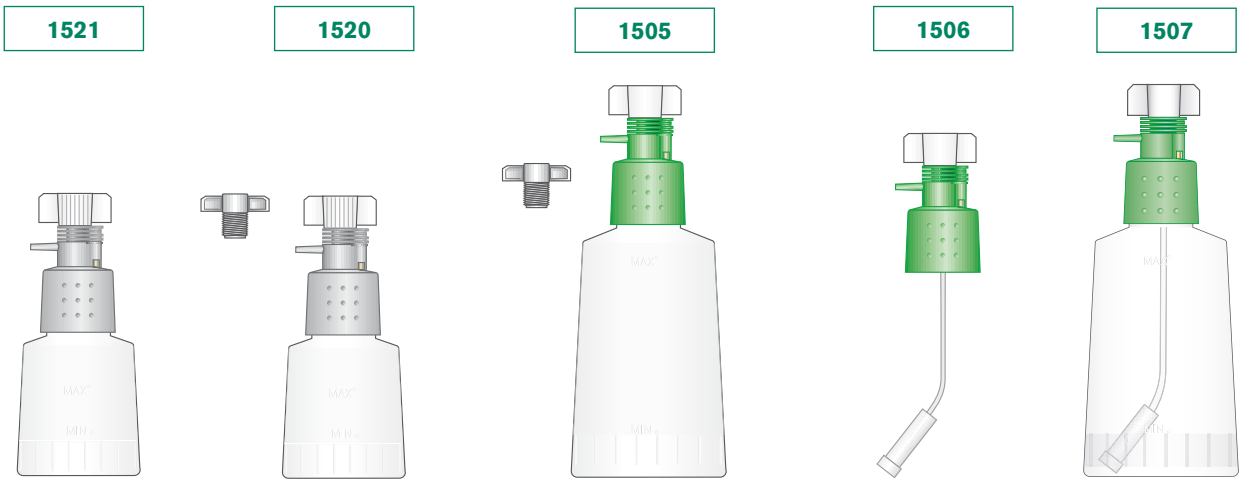


1103	Adult aerosol mask	70
1101	Small adult aerosol mask	70
1148	Paediatric aerosol mask	35
1108	Adult aerosol mask with nose clip	70
1198	Paediatric aerosol mask with nose clip	50

AquaFlow™ oxygen bubble humidifiers

Patient's receiving variable oxygen concentrations delivered via mask, or nasal cannulae can be humidified using the Intersurgical AquaFlow. This uses the bubble-through humidification process.

The dry gas from the flowmeter is directed into the water bottle where it is broken up into small bubbles which gain humidity as they rise to the surface of the water.

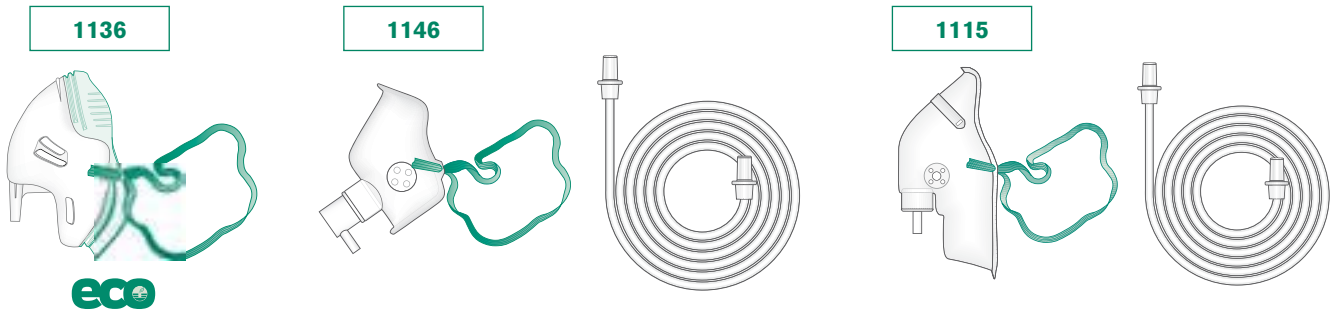


1506	Oxygen bubble humidifier without bottle	30
1505	Oxygen bubble humidifier with bottle + M12 adaptor	20
1507	Oxygen bubble humidifier with bottle	20
1521	Homecare bubble humidifier with bottle	20
1520	Homecare bubble humidifier with bottle + M12 adaptor	20

Active

Oxygen masks

Medium concentration oxygen masks



1135	Adult Eco oxygen mask with 2.1m oxygen tube	eco	40
1136	Adult Eco oxygen mask	eco	55
1104	Adult oxygen mask		70
1104001	Adult oxygen mask with ear loops		70
1105	Adult oxygen mask with oxygen tube		50
1106	Small adult oxygen mask		70
1115	Adult oxygen mask with nose clip and oxygen tube		50
1116	Adult oxygen mask with nose clip		70
1140	Paediatric oxygen mask		50
1146	Paediatric oxygen mask with oxygen tube		50

Nasal cannulae

Straight prong, curved prong, flared prong and curved flared prong options

1161	Adult straight prong with tube, 1.8m length	50
1162	Adult straight prong with tube, 5.0m length	20
1169	Adult straight prong headset, 0.5m length	100
1165	Adult curved prong with tube, 1.8m length	50
1167	Adult curved/flared prong with tube, 1.8m length	50
1168	Adult curved/flared prong headset, 0.5m length	100
1166	Adult flared prong with tube, 1.8m length	50
1163	Paediatric curved prong with tube, 1.8m length	50
1164	Neonatal curved prong with tube, 1.8m length	50

IS1.14 • Issue 1 08.09

INTERSURGICAL
COMPLETE RESPIRATORY SYSTEMS
Crane House, Molly Millars Lane,
Wokingham, Berkshire, RG41 2RZ
www.intersurgical.com
info@intersurgical.co.uk

Deutschland info@intersurgical.de
France info@intersurgical.fr
España info@intersurgical-es.com
Portugal info@intersurgical.pt
Lietuva info@intersurgical.lt
Nederland info@intersurgical.nl
Россия info@intersurgical.ru
Česká Republika info@intersurgical.cz
South Africa info@intersurgical.co.za
Philippines info@intersurgical.ph
USA info@intersurgicalinc.com
Japan info@intersurgical.co.jp
Taiwan info@intersurgical.com.tw
Italia info@intersurgical.it