F&P 810 System

Heated humidification for noninvasive ventilation (NIV) in the home

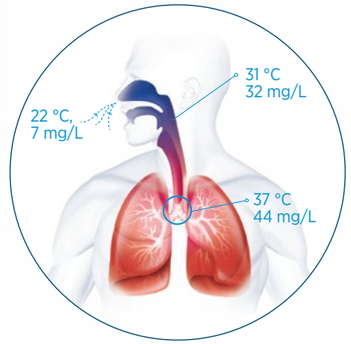
Heated humidification for NIV in the home

The benefits of heated humidification for NIV patients in the home

NORMAL ADULT AIRWAY

The respiratory system is a highly balanced mechanism reliant on humidity.[1] During normal inspiration, as air travels down the airway, heat and moisture are drawn from the airway mucosa to the point where the gas reaches 37 °C, 44 mg/L close to the carina.[2,3]

It is important for the airway mucosa to retain a balance of heat and moisture to maintain a fully functioning mucociliary transport system and act as an efficient line of defense. This plays an important role in efficient gas exchange by maintaining clear and open airways with effective mucus clearance.[3]



INCREASE COMFORT AND TOLERANCE TO NIV

The gas leak, high-flow rate and unidirectional flow that occurs with NIV therapy can dry the oral and nasal mucosa.[4,5,6] Therefore, every effort should be made to maximize patient comfort as it is critical to the tolerance of NIV therapy.

Heated humidification is highly suggested for NIV therapy to improve comfort.[7]

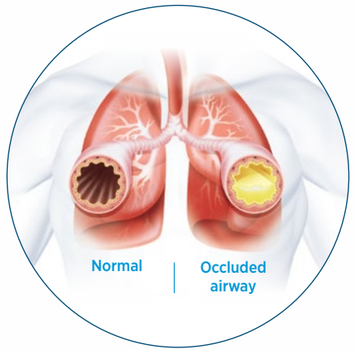
ASSIST NATURAL DEFENSE MECHANISMS IN THE AIRWAY

Persistent airway inflammation and mucus retention are clinical issues for patients with chronic respiratory diseases. These patients commonly have clinical care provided in a homecare setting where humidity therapy can be used to improve secretion clearance.[8,9]

PROMOTE EFFICIENT GAS EXCHANGE AND VENTILATION

Secretion clearance is fundamental to limiting airway occlusion and promoting efficient ventilation and gas exchange. Humidification is integral to secretion management in mechanically ventilated patients[10] and it assists with secretion mobilization and removal.[7,10]

Insufficient respiratory humidification can result in diminished cilia activity, decreased cilia beat frequency, ciliary destruction and cellular damage. This can lead to increased mucus viscosity and impaired mucociliary clearance, resulting in secretion retention followed by airway occlusion and atelectasis.[11]



MR810 Humidifier

900MR810 Evatherm™ Heated Breathing Tube

The F&P 810™ Respiratory Humidifier incorporating the MR810 Humidifier and the Evatherm Heated Breathing Tube.

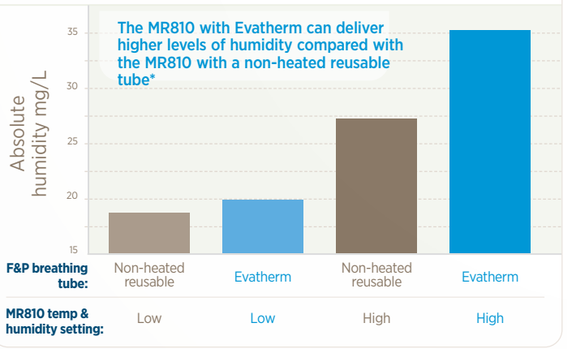
DELIVERING HUMIDITY

The graph on the right illustrates the synergies between these two key F&P 810 Respiratory Humidifier components. The MR810 Humidifier, when used with the Evatherm Heated Breathing Tube, provides higher levels of humidity than the MR810 does when used with a non-heated reusable breathing tube.*
The MR810 Heaterbase can operate at three temperature and humidity levels.

**Based on Fisher & Paykel internal testing results, this graph compares MR810 used with Evatherm and MR810 used with a non-heated reusable breathing tube.*

When the MR810 is used with a non-heated breathing tube it is often set on the low setting to mitigate excessive condensate.

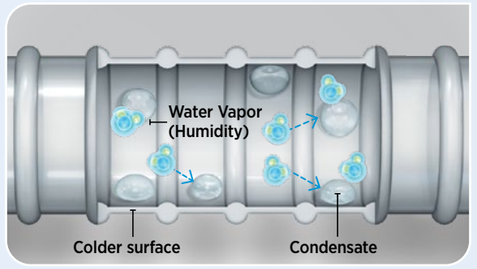
Humidity performance



Evatherm Heated Breathing Tube

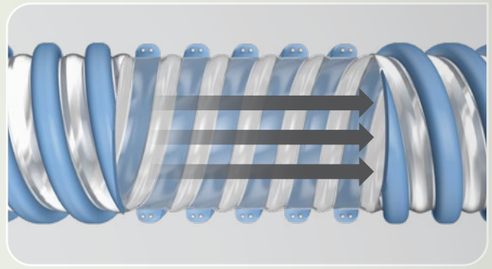
When used with the F&P 810 Humidifier, the Evatherm Heated Breathing Tube has a lower level of condensate and delivers higher levels of humidity than a non-heated reusable circuit.

NON-HEATED BREATHING CIRCUIT



Humidified gas cools when passing through non-heated breathing circuits. This can cause condensation, which reduces the amount of humidity being delivered to the patient.

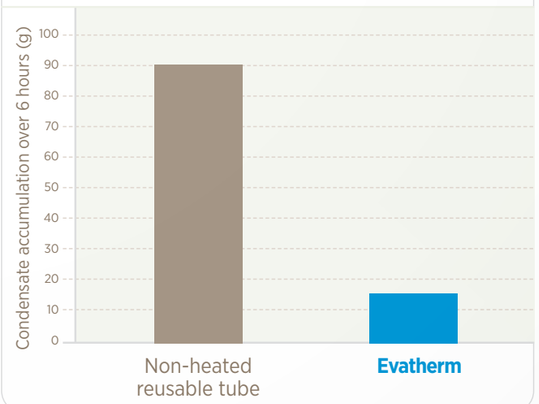
EVATHERM



Evatherm has a heater wire embedded in the wall of the breathing tube. This wire maintains the tube wall at a higher temperature than the humidified gas passing through, reducing the potential for condensation.

Condensate is decreased by up to four times when the MR810 Heaterbase is used with Evatherm compared with when it is used with a non-heated reusable breathing tube.*

F&P MR810 Respiratory Humidifier condensate performance on the high setting*



** Based on Fisher & Paykel Healthcare internal testing results on F&P Evatherm heated breathing tube vs. F&P Non-heated breathing tube, flow of 15 L/min at 22 °C.*

MR810 Humidifier

An active, heated humidifier designed for use with artificial-ventilation systems to provide therapeutic levels of warm, humidified gas to patients.

There are three incremental temperature levels (low, medium and high), which enable temperature and humidity adjustment.

An Ambient Temperature Sensor monitors room temperature to enable the humidifier to manage condensation.

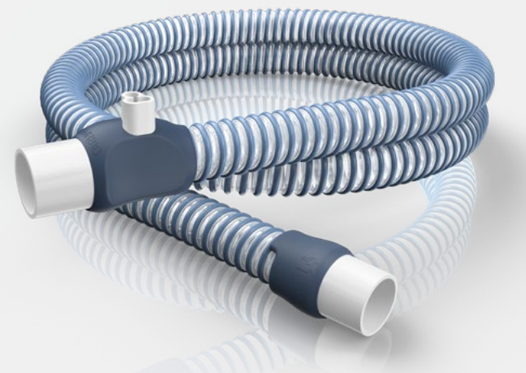
The Heater-wire Adapter is permanently attached to the MR810 Humidifier, ensuring it cannot be thrown away by mistake.

F&P Evatherm Heated Breathing Tube

Evatherm has a heater wire embedded in the wall of the breathing tube. This wire maintains the tube wall at a higher temperature than the humidified gas passing through, reducing the potential for condensation.

A fully assembled breathing tube, which does not require additional temperature probes.

Designed to be cleaned and reused.



MR810 HUMIDIFIER

COMPONENTS AND COMPOSITION

Pack components (model dependent)	MR810 Humidifier User Instructions, may contain breathing tubes
Packaging dimensions and weight (model dependent)	Packaging size is model dependent Weight: 3.1 kg–3.6 kg (6.8 lb–7.9 lb)
Manufacturing mode	Produced in a controlled working environment
Humidifier dimensions (without chamber)	94 mm x 154 mm x 125 mm

PERFORMANCE SPECIFICATIONS

Supply voltage	AXX: 230 V~ ; GXX: 100 V~ ; JXX: 115 V~
Frequency	All models: 50/60Hz
Supply current (model dependent)	AXX: 0.8 A Max; GXX: 1.6 A Max; JXX: 1.8 A Max
Flow range	5–60 L/min (> 10 mg/L H_2O)
Temperature and humidity settings	Low, medium and high
Heater-plate capacity	150 W at nominal mains voltage
Heater-plate thermal cutout	93 ± 6 °C
Heater-wire supply	22 V~, 1.36 A, 30 W max
Humidifier weight	2.0 kg
Warm-up time	< 60 minutes
Maximum heater-plate temperature	70 °C
Electrical classification	Class I, Type BF

900MR810 EVATHERM BREATHING TUBE

COMPONENTS AND COMPOSITION

Pack components	900MR810 Evatherm 1.5 m adult heated-wall inspiratory limb, dry line, 22mm male to male connector
Packaging dimensions and weight	Length: 390 mm (15.4") Width: 210 mm (8.3") Height: 425 mm (16.7") Weight: 2.8 kg (6.2 lb)
Manufacturing mode	Produced in a controlled working environment
Predominant materials	Polyethylene elastomer, Polypropylene, Polysulfone and Styrene-Ethylene-Butylene-Styrene (S-EB-S) block thermoplastic elastomer. Not made with natural rubber latex

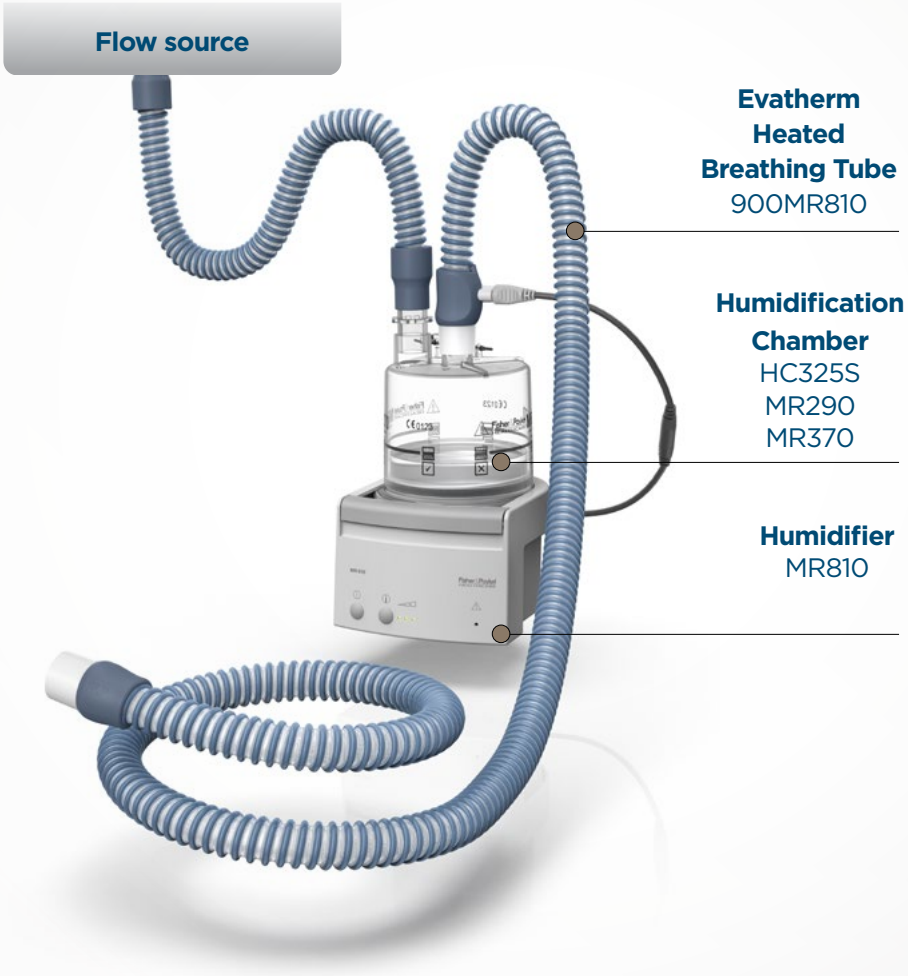
PERFORMANCE SPECIFICATIONS

Resistance to flow at rated flow	0.4 cmH_2O @ 60 ± 1 L/min
Internal diameter	19 mm
Ambient range	18–26 °C
Compliance	4.6 mL/kPa/m
Humidifier compatibility	Compatible with MR810 Humidifier
Compressible volume	640 mL
Duration of use	Discard tubes and all circuit components after 20 cleaning cycles or six months after first use, whichever occurs first
Recommended gas source	Air, oxygen or a mix of both
Carton quantity	Box of 10
Interface connections	ISO 5356-1 Conical Connectors

REGULATORY

Classification	Au IIa, Canada II, USA II. For further regulatory information visit: www.fphcare.com/regulatory
Country of origin	New Zealand

NIV SETUP EXAMPLE



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For more information please contact your local Fisher & Paykel Healthcare representative.

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