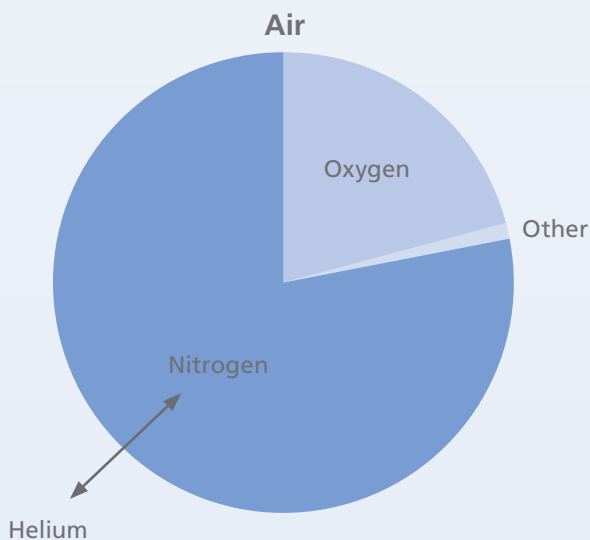


Heliox option (159135)

Heliox therapy is gaining acceptance as a temporary measure in cases of acute and life-threatening upper airway obstruction. With the heliox option, your HAMILTON-G5 helps you to successfully reduce the patient's work of breathing while treating the cause of the obstruction.

About heliox therapy

Administering heliox, a special gas mixture of helium and oxygen, aims to reduce airway resistance by changing the physical characteristics of inspired gas. It is considered clinically beneficial for patients suffering from resistive diseases such as acute occlusion of the upper airway, COPD, and asthma.



Gas mixture	Gas density (g/l)
Air	1.29
O ₂	1.43
Heliox 80/20	0.43

Biologically inert, helium has the lowest density among all gases except hydrogen. With helium replacing the nitrogen in the air, while keeping the oxygen portion unchanged, heliox has a lower overall density than that of air. The greater the helium content in the inspiratory gas, the greater is the potential benefit.

Creative clinicians have administered heliox for years using makeshift equipment. Because a change in gas density influences the gas delivery and volume monitoring functions of ventilators, however, such heliox therapy can be complicated and harmful to the patient. The HAMILTON-G5 takes the risk out of heliox administration by correcting the ventilator's gas delivery and volume monitoring.

Possible effects of heliox use

Respiratory:

- Reduced work of breathing
- Reduced peak and mean airway pressure
- Reduced intrinsic PEEP
- Improved oxygenation
- Improved CO₂ clearance
- Reduced gas trapping and dynamic hyperinflation
- Reduced atelectasis
- Reduced inflammatory cell infiltration

Cardiovascular:

- Increased cardiac index
- Decreased right atrial pressure
- Increased pulse pressure
- Decreased pulse pressure variation
- No change in heart rate
- Increased pulmonary blood flow



Blue alarm lamp on top of ventilator lights to indicate heliox is being administered.

Specifications Heliox Option (159135)

Device requirements:

Heliox software option, HAMILTON MEDICAL heliox inlet adapter DISS (incl. pressure reducer)

Applicability:

All modes in adult, pediatric, and neonatal applications. Heliox administration can be activated and deactivated at any time in Stand-by mode.

Gas requirements:

Heliox of 78 (He)/22 (O₂) at 2.5 to 6 bar/2.5 to 6 kPa/ 29 to 87 psi. Administered in place of air through the high-pressure air inlet.

Visual indicator:

Blue alarm lamp on top of ventilator lights to indicate heliox is being administered.

Gas delivery and volume monitoring correction:

Automatic at all set levels of FiO₂.

Calibration:

Flow Sensor calibration required whenever source gas (air or heliox) is changed.

Further reading

Hess DR et al. The history and physics of Heliox. *Respir Care* 2006;51(6): 608-12.

Venkataraman ST. Heliox during mechanical ventilation. *Respir Care* 2006;51(6): 632-9.

Calzia E et al. The place of helium in the management of severe acute respiratory failure. *Int J Intensive Care* 2004 Summar: 2-5.

Tassaux D et al. Calibration of seven ICU ventilators for mechanical ventilation with Helium-Oxygen mixtures. *Am J Respir Crit Care Med* 1999; 160: 22-32.



Swiss
Quality