

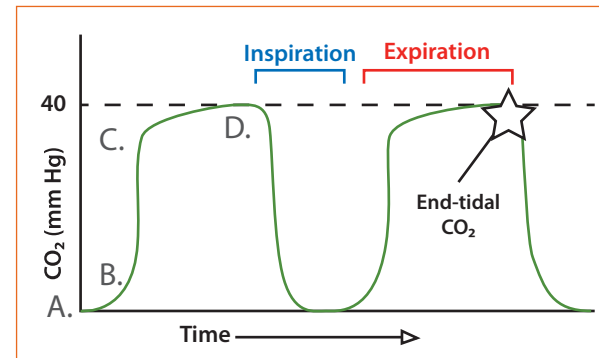
NORMAL AND ABNORMAL ETCO₂ WAVEFORM PATTERNS



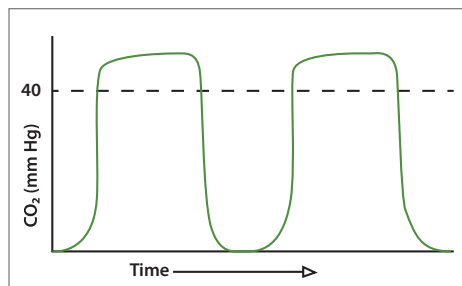
NORMAL

A normal capnogram consists of 4 phases. The baseline represents inspiration as the CO₂ levels are normally zero.

- A. Phase 1 is the start of exhalation and represents exhaled gas from the upper airways.
- B. Phase 2 is displayed by a rapid rise as alveolar gas replaces anatomical deadspace.
- C. Phase 3, the Alveolar Plateau, represents alveolar gas during the end of expiration. This causes the waveform to flatten. The end point of this phase is referred to as EtCO₂. This is the numerical value displayed on the capnography. A normal EtCO₂ value is between 35 -45 mm Hg.
- D. Phase 4. The beginning of inspiration and marked by a rapid downstroke to baseline.

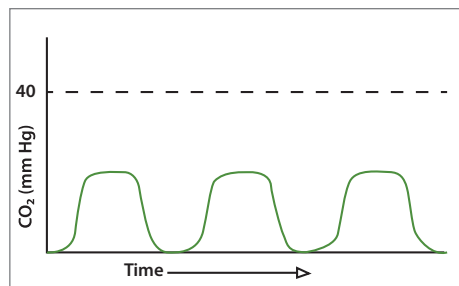


ABNORMAL



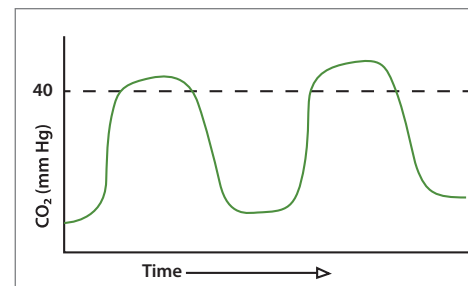
HYPOVENTILATION

The trademark sign for hypoventilation is an elevated CO₂ level above 45 mm Hg in the presence of normal circulation and metabolism.



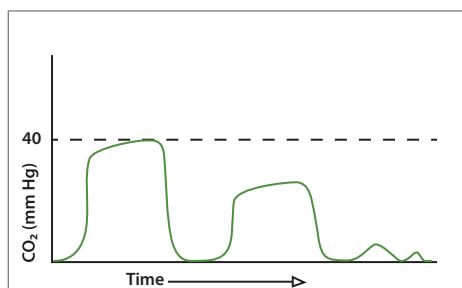
HYPERVENTILATION

The primary indicator of hyperventilation is a decreased CO₂ level below 35 mm Hg in the presence of normal circulation and metabolism.



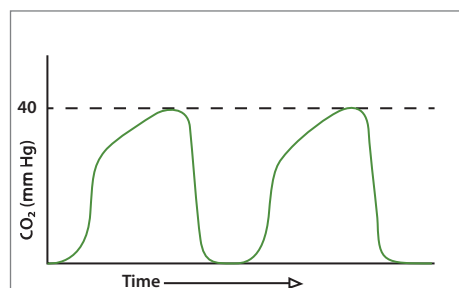
REBREATHING OF CO₂

The pattern for rebreathing CO₂ is a gradual rise in the baseline.



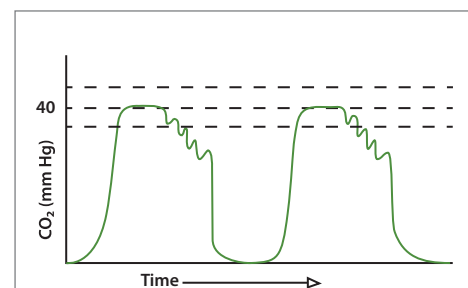
APNEA

Waveform quickly falls to baseline. No breath for 10 seconds or longer.



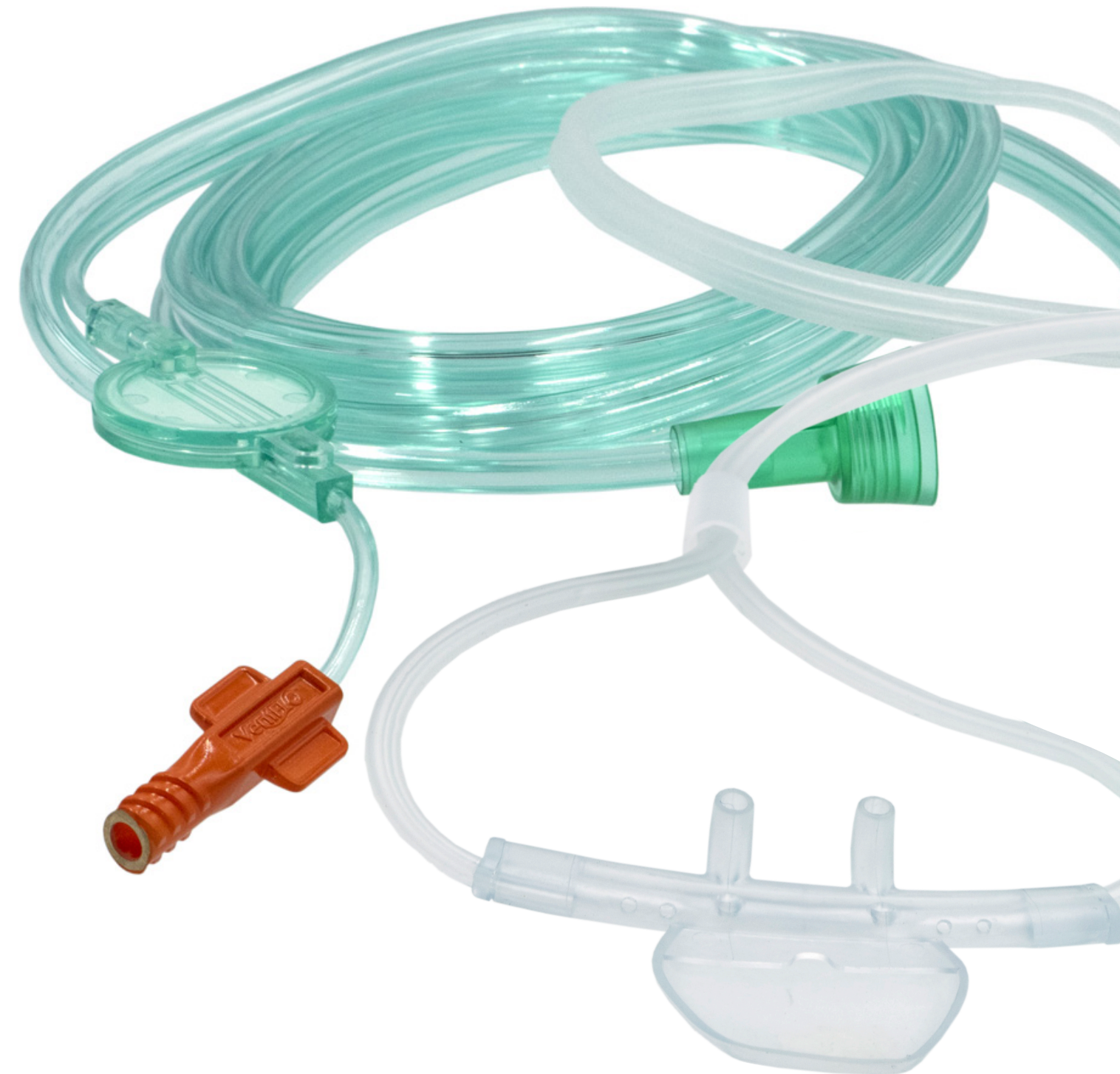
AIRWAY OBSTRUCTION

A common sign of airway obstruction is indicated by a shark fin shaped waveform while occurring normally once every three seconds or less.



CARDIOGENIC OSCILLATIONS

Downslope of waveform creates a ripple effect during low frequency ventilation.



BRO-10002 Rev.3

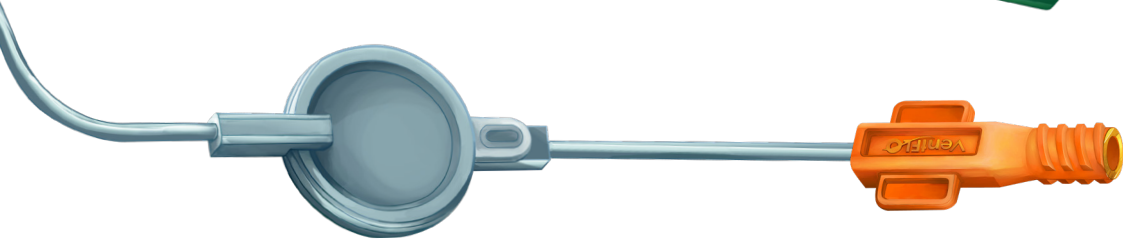


ETCO₂/O₂ SAMPLING CANNULAS WITH INLINE FILTER

SunMed's VentFLO™ ETCO₂/O₂ sampling cannulas capture the exhaled CO₂ while simultaneously delivering oxygen. These ETCO₂/O₂ cannulas also feature a bright reflective style connector, compatible with Microstream™, Capnostream™ and Oridion™ capnography monitors.



Fits-All Connector



Reflective connector with ergonomic grip for standard cannulas



Yellow reflective connector with ergonomic grip indicates the VentFLO extended line with Nafion tubing

Hydrophobic filter helps minimize moisture from being pulled into the monitor at the sampling port



What makes VentFLO™ ETCO₂/O₂ sampling cannulas the right choice in capnography sampling?

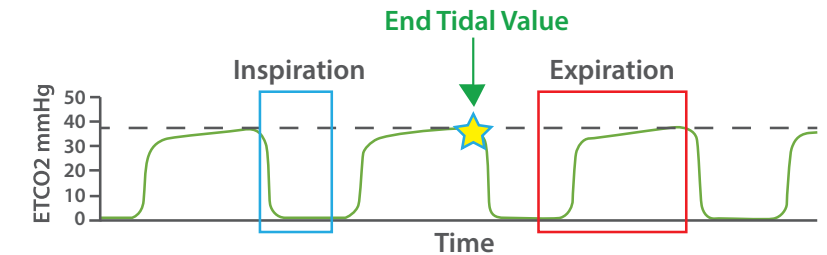
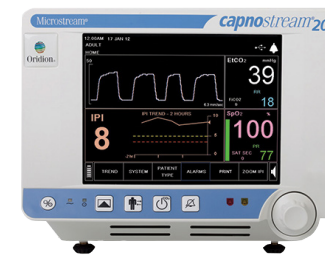
Sidestream capnography sampling with an O₂/EtCO₂ nasal cannula can be susceptible to blockage from water vapor or secretions - but risk can be reduced when a filter is introduced.

SunMed's VentFLO™ ETCO₂/O₂ cannulas feature a **hydrophobic filter**. The use of this filter helps minimize the potential that water vapor or secretions can have on the capnography waveform output. The result is a waveform that is as close to textbook standard as possible.

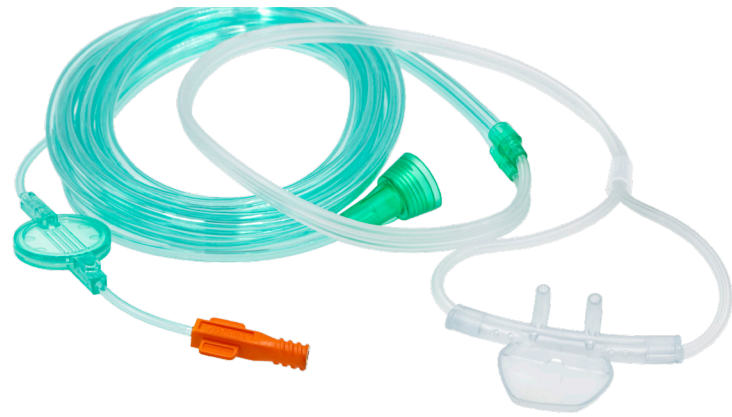
THE IMPORTANCE OF THE WAVEFORM IN CAPNOGRAPHY

End-tidal carbon dioxide (EtCO₂) monitoring provides valuable information about CO₂ production and ventilation. Also called capnography, this monitoring provides a breath-by-breath analysis and continuous reading of ventilatory status including early signs of respiratory compromise, cardiac perfusion changes, proper placement of endotracheal tube, and ventilator circuit integrity. Each of these is translated by the capnography waveform.

The normal capnography should be a rectangle with rounded corners. Different waveform shapes can indicate different conditions. When a patient is exhaling CO₂, the graph inclines. When a patient inhales, the graph declines. The waveform should return to the baseline, and frequency should match the patient's respiratory rate. The height of the waveform should be between 35 mm Hg and 45 mm Hg, which is a normal EtCO₂ reading.



ETCO₂ CANNULAS

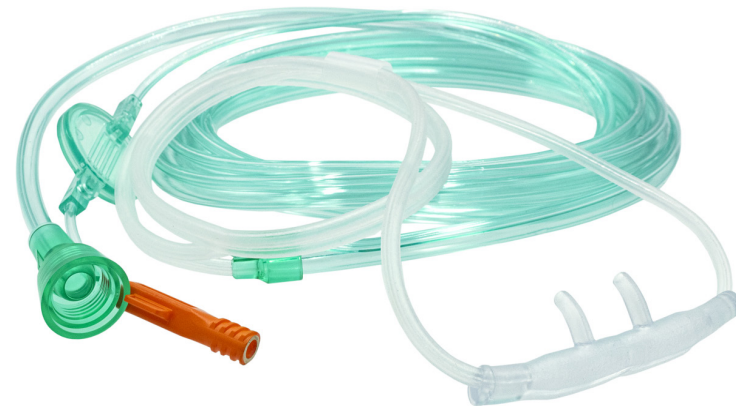


- Hydrophobic filter minimizes moisture ingress into monitor
- Simultaneously delivers oxygen while obtaining CO₂ sampling during spontaneous breathing
- Compatible with capnography monitors that utilize Microstream™ technology, e.g. Medtronic Capnostream™ 35
- Soft-Ears™ material helps ensure superior patient comfort
- Designed to prevent mixing of fresh oxygen with CO₂
- 3-Channel tubing prevents kinking
- Available in three tubing lengths, each with Fits-All O₂ connector

Microstream, Capnostream and Oridion are trademarks of Medtronic, related to products marketed by Medtronic.

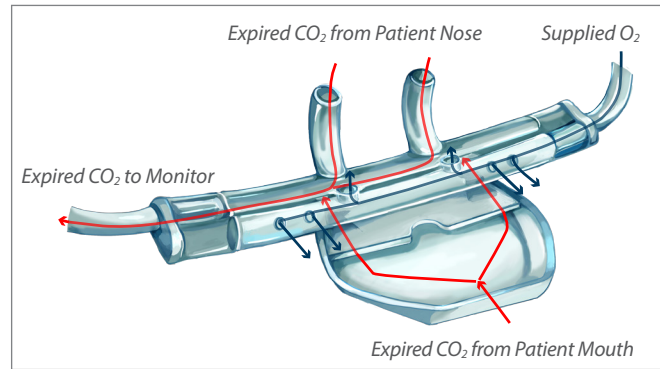
ETCO₂/O₂ ORAL-NASAL SAMPLING CANNULA

ITEM	DESCRIPTION	LENGTH	PK
5707F-SE	Adult EtCO ₂ /O ₂ Oral/Nasal Cannula	7'	25
5710F-SE	Adult EtCO ₂ /O ₂ Oral/Nasal Cannula	10'	25
5714F-SE	Adult EtCO ₂ /O ₂ Oral/Nasal Cannula	14'	25

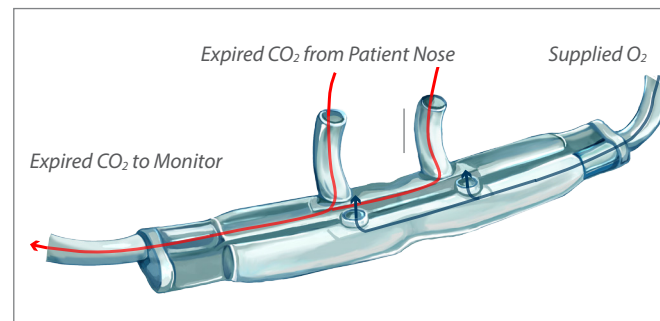


ETCO₂/O₂ NASAL SAMPLING CANNULA

ITEM	DESCRIPTION	LENGTH	PK
5107F-SE	Adult EtCO ₂ /O ₂ Nasal Cannula	7'	25
5110F-SE	Adult EtCO ₂ /O ₂ Nasal Cannula	10'	25
5114F-SE	Adult EtCO ₂ /O ₂ Nasal Cannula	14'	25
5207F-SE	Pediatric EtCO ₂ /O ₂ Nasal Cannula	7'	25
5210F-SE	Pediatric EtCO ₂ /O ₂ Nasal Cannula	10'	25
5214F-SE	Pediatric EtCO ₂ /O ₂ Nasal Cannula	14'	25



Innovative scoop design enables effective CO₂ capture from mouth-breathing patients



Curved nares made of ultra-soft material

EXTENDED ETCO₂ CANNULAS

VentFLO™ EtCO₂ Extended devices serve the same purpose as the standard VentFLO EtCO₂: to supply O₂ to the patient and to collect and sample patient breath exhaled through the nose to monitor and report patient FiO₂ & EtCO₂ levels, respiratory rate, and more. However, the VentFLO™ Extended devices are fitted with an additional section of Nafion tube that allows the cannula to function longer and in higher-humidity conditions than their standard counterparts.



EXTENDED ETCO₂/O₂ ORAL-NASAL SAMPLING CANNULA

ITEM	DESCRIPTION	LENGTH	PK
5107GS-E	Extended EtCO ₂ /O ₂ Gas Sampling Line	7'	25
5107ET-E	Extended EtCO ₂ /O ₂ Gas Sampling Line with ET Tube Adapter	7'	25
5107-SE-E	Adult Extended EtCO ₂ /O ₂ Nasal Cannula	7'	25
5110F-SE-E	Adult Extended EtCO ₂ /O ₂ Nasal Cannula	10'	25
5114F-SE-E	Adult Extended EtCO ₂ /O ₂ Nasal Cannula	14'	25
5207F-SE-E	Pediatric Extended EtCO ₂ /O ₂ Nasal Cannula	7'	25
5210F-SE-E	Pediatric Extended EtCO ₂ /O ₂ Nasal Cannula	10'	25
5214F-SE-E	Pediatric Extended EtCO ₂ /O ₂ Nasal Cannula	14'	25



EXTENDED ETCO₂/O₂ NASAL SAMPLING CANNULA

ITEM	DESCRIPTION	LENGTH	PK
5707F-SE-E	Adult Extended EtCO ₂ /O ₂ Oral/Nasal Cannula	7'	25
5710F-SE-E	Adult Extended EtCO ₂ /O ₂ Oral/Nasal Cannula	10'	25
5714F-SE-E	Adult Extended EtCO ₂ /O ₂ Oral/Nasal Cannula	14'	25

