(HMEFs) are a good choice since they preserve airway humidity, and are designed so that sampled gas is filtered before it enters the gas analyzer. It is possible to use a filter at the airway that is not also a heat and moisture exchanger. If a filter only is used, lower fresh gas flows (1-2 L/min or less) are desirable during maintenance of anesthesia to preserve humidity in the circuit.

Preferred Filter Configuration

VFE > 99.99% for each filter. Gas sampling on machine side of filter. (Courtesy Draeger Medical)

It is also recommended to add an effective viral filter between the expiratory limb of the circle system and the machine. Not only is this second filter a reasonable backup to protect the machine from any particles that pass the primary filter, but it significantly amplifies the effectiveness of the first filter. Given the fact that the primary filter can become less effective if soiled, the backup filter is a good recommendation. Adding another filter between the machine and the inspiratory limb is also done sometimes but is not necessary to protect the machine from the patient, nor protect the patient if the machine is kept clean. The main reason to add an inspiratory limb filter is to eliminate the chance of error by placing a single filtered limb on the inspiratory rather than expiratory port.
- NO -

sampling line

HMEF (Heat-Moisture Exchange Filter) or B/V Filter

- YES -

↑ Inspiratory Limb

↑ Expiratory Limb

Bacterial/Viral Filter

- YES -

↑ Inspiratory Limb

↑ Expiratory Limb

B/V Filter

Note: HME not adequate. Must be HMEF or B/V filter

- NO -

↑ B/V Filter

B/V Filter

* Because sampling line is before filter