

MAV4 Anaesthesia-Ventilator



MAV4 D



MAV4 E

The **Multimode-Anaesthesia-Ventilator MAV4** applies a new high standard for pneumatically driven precision ventilators. It offers new features like additional respiratory modes, graphic display with a colour touch screen, integrated multi-gas monitoring and an option for extension to neonatal application. The simple and intuitive dialogue handling simplifies the ventilator's operation for the user. The **MAV4** is also recommended to be used for upgrades and conversions according to the latest technology of anaesthesia machines that are already installed.

Functions:

- Respiratory parameters:
 - CMV (volume controlled ventilation)
 - PCV (pressure controlled ventilation)
 - SIMV (synchronous intermitten mandatory ventilation)
 - MMV (mandatory minute ventilation)
 - ASB (pressure support ventilation)
 - MAN./SPONT. (manual, spontaneous)
 - spontaneous breathing with apnea securing
- Display of the measured values as curves and numeric values, trend function
- Configurable basic adjustments, specific for each respiratory mode
- Automatic leakage test
- Detection of the system compliance
- Dynamic compliance compensation
- Dialogue handling at the screen
- Touch screen with central rotary button
- Integrated Monitor for volume, pressure, O₂, anaesthetic agents, N₂O, CO₂
- Electronic PEEP
- For neonatal, paediatric and adult application
- Error state and service information logging
- Best optic and acoustic visualising of the alarms
- Pressure outlet for switching to manual / automatic ventilation for already installed ISO-circuit systems

Technical Specifications:

Ventilation parameters:

CMV-Mode:

Tidal volume: 20 - 1500 ml
Frequency: 6 - 60 min⁻¹
I:E-ratio: 2:1-1:4 at Ti 0,3 – 10 s
Pressure limitation P_{MAX}: (PEEP +5) to 80 hPa

PCV-Mode:

Inspiratory volume: 20 - 1500 ml
Frequency: 6 - 60 min⁻¹
I:E-ratio: 2:1-1:4 at Ti 0,3 – 10 s
Pressure limitation P_{MAX}: (PEEP +5) to 80 hPa

SIMV-Mode (option):

Tidal volume: 20 - 1500 ml
Frequency: 4 - 60 min⁻¹
I:E-ratio: 2:1-1:4 at Ti 0,3 – 10 s
Pressure limitation P_{MAX}: (PEEP +5) to 80 hPa
Flow trigger: 3 L/min

MMV-Mode (option):

in preparation
Frequency: 4 - 60 min⁻¹
I:E-ratio: 2:1-1:4 at Ti 0,3 – 10 s
Pressure limitation P_{MAX}: (PEEP +5) to 80 hPa
Flow trigger: 3 L/min

ASB-Mode (option):

in preparation

Neonatal-Mode (option):

in preparation
Tidal volume: 5 - 350 ml
Frequency: 15 - 150 min⁻¹

For all ventilation modes:

PEEP (integrated): 0 - 20 hPa
Inspiratory pause: 0 - 50% Ti

General Data:

Driving gas: compressed air or oxygen
Driving gas pressure: 2 - 10 bar
Driving gas flow: max. 180 l/min
Driving gas consumption: approx. equal to the respective minute volume
Patient system: „bellows in bottle“ upright
Display: coloured, TFT-LCD 6,4"
Power supply internal: accumulator 12V, 3,2 Ah (tightly installed)
external: 100-240V, 50/60Hz
Power consumption: approx. 40 VA
Operating temperature: 15 - 35 °C
Dimensions MAV4 D: 340x300x170 mm (D x W x H)
Dimensions MAV4 E: 265x250x185 mm (D x W x H)
bellows-in-bottle: 185x220x215 mm
Weight: approx. 11 kg

Monitoring:

Pressure measurement:

Measuring range: -10 - 90 hPa
Accuracy: ± 4% or ± 1hPa
Resolution: 1 hPa

Volume measurement:

Measures: tidal volume, minute volume, frequency
Tidal volume: 0 - 2000 ml
Accuracy: ± 8%
Minute volume: 0 - 99 l/min
Accuracy: ± 8%
Frequency: 3 - 150 min⁻¹
Accuracy: ± 1 min⁻¹
Resolution: 1 min⁻¹

Anaesthetic agent measurement (option):

(automatic agent identification only available for MAV4 D)

Anaesthetic agents: Halothane, Enflurane, Isoflurane, Sevoflurane, Desflurane
Measuring ranges: HAL, ISO: 0 - 8.5 Vol%, ENF, SEV: 0 - 10 Vol%, DES: 0 - 22 Vol%
Accuracy: ± (0.15 Vol% + 15% rel.)
Resolution: 0.1 Vol%
MAC calculation: minimum alveolar concentration

N₂O-measurement (option):

Measuring range: 0 - 100 Vol%
Accuracy: ± (2 Vol% + 8% rel.)
Resolution: 1 Vol%

CO₂-measurement (option):

Measuring range: 0 - 10 Vol%
Accuracy: ± 0.5 Vol% or ± 12% rel.
Resolution: 0.1 Vol%

Oxygen measurement Galvanic Cell (option):

Measuring principle: Galvanic Cell
Measuring range: 0 - 100 Vol%
Accuracy: ± 1 Vol% or ± 2% rel.
Resolution: 1 Vol%
T₉₀: approx. 14 seconds
Sensor life time: approx. 1 - 4 years, depending on the measured oxygen concentration

Oxygen measurement paramagnetic (option):

Measuring principle: paramagnetic
Measuring range: 0 - 100 Vol%
Accuracy: ± 1 Vol% or ± 2% rel.
Resolution: 1 Vol%
T₉₀: 500 ms
Note: only available with gas bench for anaesthetic agents and/or CO₂

Alarms:

For all measurements lower and upper alarm limits are adjustable (inspiratory and expiratory values for anaesthetic agents, N₂O, CO₂, paramagnetic O₂-measurement, inspiratory value only for O₂-measurement by galvanic cell).

Above listed data are subject of change without further notice.