



FLOWMETER UNITS

DEVICES FOR ANESTHESIA
AND HIGH FLOW DEVICES

FLOWMETER DEVICES, BY-PASS SYSTEMS AND HIGH FLOW DEVICES

The range of **anesthesia flowmeter units** series FM, SF and RM, available in different configurations, makes it possible to offer many options to meet various requirements in the operating theatre, mobile units and field hospitals.

SAFETY

flow-meter™ anesthesia flowmeters are manufactured in total compliance with all relevant EU standards and meet the requirements of the Regulation (EU) MDR 2017/745, ensuring that they can be relied upon for total safety even in the most stressful situations.



hospitals



emergency



home care

FM

Flowmeters

The FM flowmeters are devices for the supply of medical gases having from two to six antistatic and graduated tubes and completed with an integrated dosage unit.

STRUCTURE

The body is made of anodized aluminum and the inlet connections for O₂, Air and N₂O at the bottom of the flowmeter are arranged to be connected to hospital centralized gas plants or to cylinders complete with pressure regulators.

WORKING PRINCIPLE AND SAFETY

The gas feeding unit includes a safety valve automatically blocking the N₂O supply when the feeding pressure of O₂ drops below the value of approximately 0.4 bar. The mixtures of O₂ and N₂O can be supplied to the patient through a dosage unit. An incorporated mixing device proportions the N₂O in such a way that a minimum of at least 30% of O₂ is always present in the gas mixture. At the outlet of the dosage unit, an anesthesia evaporator can be connected or the gas mixture can be supplied directly to the patient through the gas feeding unit. The O₂+ flush button can be used for a quick supply of O₂ directly at the outlet of the mixture on the gas feeding unit.

Main information



The FM flowmeter can be supplied from two to six tubes.



The O₂+ flush button can be used for a quick supply of O₂ directly at the outlet of the mixture on the gas feeding unit.

Related products



Hoses and probes for various gases from p. 155

	FM 2200	FM 2300	FM 2500	FM 2800	FM 2900
SIZES (LxWxH)	148x143x318 mm	148x143x318 mm	148x143x318 mm	148x143x318 mm	148x190x318 mm
WEIGHT	5.52 Kg	5.57 Kg	5.64 Kg	5.69 Kg	7.20 Kg
DOSAGE RANGE	O ₂ 0.2 - 15 L/min. N ₂ O 0.2 - 12 L/min.	O ₂ 0.1 - 1 L/min. 0.2 - 15 L/min. N ₂ O 0.1 - 1 L/min. 0.2 - 12 L/min.	O ₂ 0.2 - 15 L/min. Air 0.2 - 15 L/min. N ₂ O 0.2 - 12 L/min.	O ₂ 0.1 - 1 L/min. 0.2 - 15 L/min. Air 0.2 - 15 L/min. N ₂ O 0.1 - 1 L/min. 0.2 - 12 L/min.	O ₂ 0.1 - 1 L/min. 0.2 - 15 L/min. Air 0.2 - 15 L/min. N ₂ O 0.1 - 1 L/min. 0.2 - 12 L/min. CO ₂ 0.1 - 2 L/min. (limited at 1 L/min.)
ACCURACY	±10% read value between 10% (or ±0.3 L/min. if greater) and 100% E.O.S. and ±0.15 L/min for flow < 10% E.O.S (±0.1 L/min for flow E.O.S. ≤ than 2 L/min.)				
INLET PRESSURES	3.5 - 5 bar ±20%				
N₂O BLOCKING DEVICE	the supply of N ₂ O is blocked when the O ₂ pressure drops below 0.4 bar ±0.2 bar.				
CHARGE LOSS LEVEL, SIDE UNDER PRESSURE (BEFORE THE ADJUSTING NEEDLE VALVES)	less than 25 ml/min. in normal pressure conditions (ISO 5358)				
CHARGE LOSS LEVEL, LOW PRESSURE SIDE (AFTER THE ADJUSTING NEEDLE VALVES, VAPORIZER EXCLUDED)	less than 25 ml/min. at 30 cm H ₂ O				
HYPOXYGUARD SYSTEM	at least 30% -3% O ₂ is guaranteed in the mixture with N ₂ O opening value equal to 0.4 L/min. (with inlet pressures of 3.5 bar)				
MIXED GASES OUTLET CONNECTION	conical connection 23 mm F ISO DIN 5356/1				
GASES INLET CONNECTIONS	hose connector Ø 6 mm				
O₂ QUICK DOSAGE (IF FORESEEN)	when pushed it can supply more than 45 L/min. O ₂				

- 1 Gas selector.
- 2 O₂+ flush button.
- 3 Gas adjusting knob.



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SF

Flowmeters

The SF flowmeters are devices for the supply of medical gases particularly suitable in respiratory therapy.

STRUCTURE

They are made of anodized aluminum body, and they are available with one or more graduated tubes and a built-in dosage unit. The inlet connections are at the bottom of the unit and arranged to be connected to the hospitals centralized gas plants or to cylinders complete with pressure regulators. For veterinary use, an anesthesia evaporator can be connected at the outlet of the dosage unit.

Main information



The SF flowmeter can be supplied with 1 or more graduated tubes.

Related products



Hoses and probes for various gases from p. 155



O₂+ flush device p. 136

	SF 1	SF 2	SF 3	SF 4
SIZES (LxWxH)	117x76x300 mm	117x116x300 mm	117x140x300 mm	117x172x300 mm
WEIGHT	1.19 Kg	1.63 Kg	2.05 Kg	2.47 Kg
DOSAGE RANGE	O₂	0.1 - 1 L/min. 0.1 - 8 L/min. 0.2 - 15 L/min.		
	Air	0.2 - 15 L/min.		
	N₂O	0.1 - 1 L/min.		
		0.2 - 12 L/min.		
ACCURACY	±10% read value or ±0.15 L/min. if greater (±10% E.O.S. value for flow E.O.S. ≤ than 1 L/min.)			
INLET PRESSURES	max 5 bar			
CHARGE LOSS LEVEL, SIDE UNDER PRESSURE (BEFORE THE ADJUSTING NEEDLE VALVES)	less than 25 ml/min. in normal pressure conditions (ISO 5358)			
CHARGE LOSS LEVEL, LOW PRESSURE SIDE (AFTER THE ADJUSTING NEEDLE VALVES)	less than 25 ml/min. at 30 cm H ₂ O			
MIXED GASES OUTLET CONNECTION	Ø 22 M. - 15 F. ISO DIN 5356-1 or conical connection 23 mm F ISO DIN 5356/1 (for veterinary use only)			
GASES INLET CONNECTIONS	hose connector Ø 6 mm			

- 1 Gas adjusting knobs.
- 2 Inlet hose connectors, detail.



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EasyMIX®

Oxygen/air mixer



Excellence in **INNOVATION**
Breakthrough **TECHNOLOGY**
Intelligent **DESIGN**

The oxygen/air mixer type EasyMIX® is a single device that can be used in oxygen therapy, aerosol therapy and CPAP therapy with the possibility to constantly monitor the oxygen concentration present in the supplied mixture through an on-line oxygen analyzer (optional).

STRUCTURE

The device is composed by two variable area flowmeter groups, one for oxygen with a dual scale 2-10 L/min. and 10-50 L/min. and one for medical air with scale 6-50 L/min, both assembled in a single body made of anodized aluminium equipped with a clamp for rail 30x10 mm with locking knob. The two independent inlet threads NIST EN ISO 5359, made of chrome-plated brass, allows a connection to the supply source through low pressure hose assemblies fitted with probes according to the user's plant and fixed in an unmovable way.

POSSIBLE APPLICATIONS

The 2-in-1 connector for the mixture outlet offers several solutions:

- the thread 9/16" UNF EN 13544-2 M. allows to screw a reusable, single patient or prefilled humidifier;
- a connector with diameter 22 M. ISO DIN 5356-1 allows the connection to a system for the CPAP therapy, through a corrugated hose;
- a metal hose connector $\varnothing 6.0 \div 8.5$ mm, already supplied with the device, for a direct connection to the patient hose (nose catheter or hose with mask).

A single device able to satisfy different use requirements in the field of the respiratory therapy.

Main information



The optional analyser allows to constantly monitor the oxygen concentration present in the supplied mixture.



The EasyMIX® is a single device able to satisfy different use requirements in the field of the respiratory therapy.

Related products



Low pressure hoses
p. 161



Humidifiers
from p. 47

SIZES (LxWxH)	110x136x157 mm
WEIGHT	1.0 Kg 1.2 Kg with Oxygen Analyzer (optional)
SUPPLY MAX PRESSURE	600 kPa (6 bar)
GASES OPTIONS	O ₂ · Air
STANDARD SCALES - 400 kPa (4 bar)	O ₂ dual scale 2-10 L/min. - 10-50 L/min. Air 6-50 L/min.
ACCURACY	±10% read value or ±0.5 L/min. if greater
SUPPLY CONNECTIONS	independent NIST EN ISO 5359
MIXED GASES OUTLET CONNECTION	9/16" UNF EN 13544-2 M. - $\varnothing 22$ M. ISO DIN 5356-1 + an incorporated metal outlet hose connector $\varnothing 6.0 \div 8.5$ mm

- 1 Detail of **outlet with hose connector** (supplied with the device).
- 2 Detail of **outlet with corrugated hose**.
- 3 Detail of **EasyMIX®** with humidifier.
- 4 Detail of **dual scale for oxygen**.



▶ WATCH THE VIDEO



EasyMIX®



EasyMIX®
with oxygen analyzer



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Technical specifications | Oxygen analyzer

SENSOR TYPE	electrochemical
RANGE OF MEASUREMENT	0÷99% Vol. oxygen
DISPLAY INDICATION	1% Vol.
MEASUREMENT TIME	1 sec.
RESPONSE TIME	< 5 sec.
ACCURACY	±3% read value





EasyMIX® oxygen/air mixer
with OXITER® oxygen therapy
single-patient
humidifiers

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EasyVEE®

Flow driver "jet"

The Jet device (Venturi unit) works as an high flow driver (booster) for high flow oxygen therapy through the use of HFNC or for CPAP, and it requires the gas supply from an Oxygen source only.

STRUCTURE

The EasyVEE® Jet device is equipped with an inlet connection to be mounted on the outlet of the variable area flowmeter, working as a "driver" source for Venturi. The intake ambient air regulator, complete with connector Ø 22 F. - according to ISO DIN 5356-1, allows the adjustment of the oxygen concentration value (FiO₂) of the mixture supplied to the patient. The Jet device gives the possibility to monitor constantly the oxygen concentration present in the supplied mixture through an on-line oxygen analyser (optional), connected to the FiO₂ monitor port. On the head of the device a quick dial nut allows the operator to select the function O₂-Air (MIX) or 99% O₂, this last one is foreseen to ventilate patient with high flows of Oxygen only. The mixture outlet connector (Ø 22 M - 16 F) made in accordance with Standard ISO DIN 5356-1 enables to add an on-line antimicrobial filter assuring a protection for the patient and reducing the noise of the system, thus giving a higher comfort during the therapy.

APPLICATIONS

- **Application for single high flow flowmeter:** flow range 50 L/min. with double scale: 2÷10 L/min. and 10÷50 L/min.
- **Application for twin high flow flowmeter:** flowmeter [A] with end of scale 30 L/min.; flowmeter [B] with end of scale 15 L/min. or 30 L/min.

SIZES (LxWxH)	150x107x50 mm
WEIGHT	0.45 Kg 0.65 Kg with oxygen analyzer (optional)
SUPPLIED GAS	O ₂
SUPPLIED STANDARD PRESSURE	400 kPa (4 bar) +/- 10%
FI₂ ADJUSTMENT	from 35% to max 99%
OXYGEN SUPPLY CONNECTION	9/16" UNF EN 13544-2 F.
INLET CONNECTION FOR THE INTAKE AMBIENT AIR	Ø22 F. ISO DIN 5356-1
OUTLET CONNECTION	Ø22 M. - 16 F. ISO DIN 5356-1



Excellence in **INNOVATION**
Breakthrough **TECHNOLOGY**
Intelligent **DESIGN**

Main information



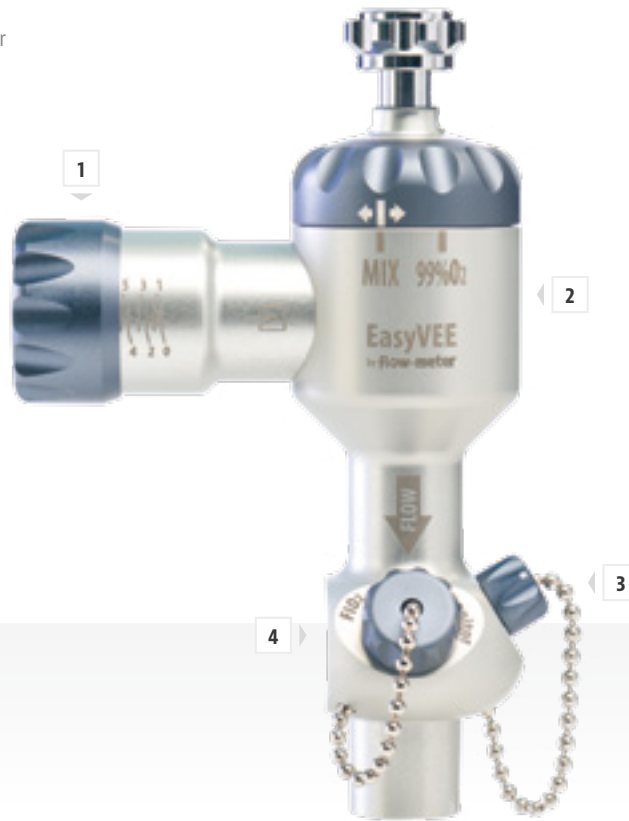
For CPAP application, this device must be used only for the ventilation with the specific mask or with hood. It requires a PEEP valve placed on the outlet of the expiratory side.

Related products



Rs
variable area oxygen
flowmeters
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- 1 Intake ambient air inlet with adjustable knob.
- 2 Quick dial nut allows the operator to select the function O₂-Air (MIX) or 99% O₂.
- 3 FiO₂+ port.
- 4 FiO₂ monitor port with analyzer (see next page).



▶ WATCH THE VIDEO



Download the app **EasyVEE®**



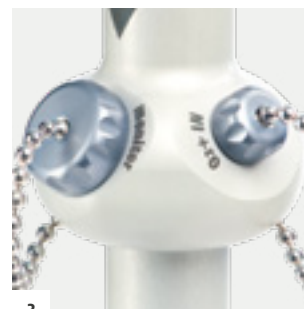
The App provides the healthcare professional with all guidelines to set the required flows for the ongoing respiratory therapy.



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Technical specifications | Oxygen analyzer

SENSOR TYPE	electrochemical
RANGE OF MEASUREMENT	0÷99% Vol. oxygen
DISPLAY INDICATION	1% Vol.
MEASUREMENT TIME	1 sec.
RESPONSE TIME	< 5 sec.
ACCURACY	±3% read value

CLINICAL APPLICATION

The aim of the pressure gradient is to:

- Ensure a greater opening of the alveoli during inspiration
- Prevent alveolar collapse at the end of expiration, by maintaining a PEEP level
- Reduce the effort necessary to breathe, thus avoiding hypoxemia, hypercapnia, metabolic and respiratory acidosis typical of IRDS.

The JET system is mainly indicated for:

- Acute respiratory distress syndrome (ARDS)
- Severe respiratory distress
- Post-surgery hypoxemia
- Asthma
- Chronic obstructive pulmonary disease (COPD)
- Thoracic trauma
- Prophylaxis and treatment of acute apnoea attacks
- Pulmonary oedema and atelectasis of varying origins, and for weaning from a mechanical ventilator.

CPAP respiration, applied with any method, requires the patient's efficient spontaneous respiration (cases with frequent apnoea, or severe respiratory failure, require ventilator support).

To the patient is administered a gaseous mixture, with an appropriate concentration of O₂, metered in L/min. by one or two oxygen flow meters, and the CPAP is obtained by discharging through a respiratory circuit terminal (PEEP valve), the expired gases.



EasyVEE®
twin flowmeter



EasyVEE® single flowmeter

- | | |
|--|----------|
| Single high flow flowmeter driver (flow range 50 L/min. with double scale: 2÷10 L/min. and 10÷50 L/min.) | A |
| Jet Device (Venturi): works as a high flow driver (booster) for the non-invasive ventilation | B |
| Quick dial nut to select the function O ₂ -Air (MIX) or 99% O ₂ | C |
| The connector for the intake ambient air with adjustable knob | D |
| On-line oxygen analyzer (optional) | E |

OTHER SUPPLIER:

- | | |
|--------------------------------|----------|
| Antimicrobial filter | F |
| Hood (or facial mask) for CPAP | G |
| PEEP valve | H |



EasyVEE® twin flowmeter with oxygen analyzer



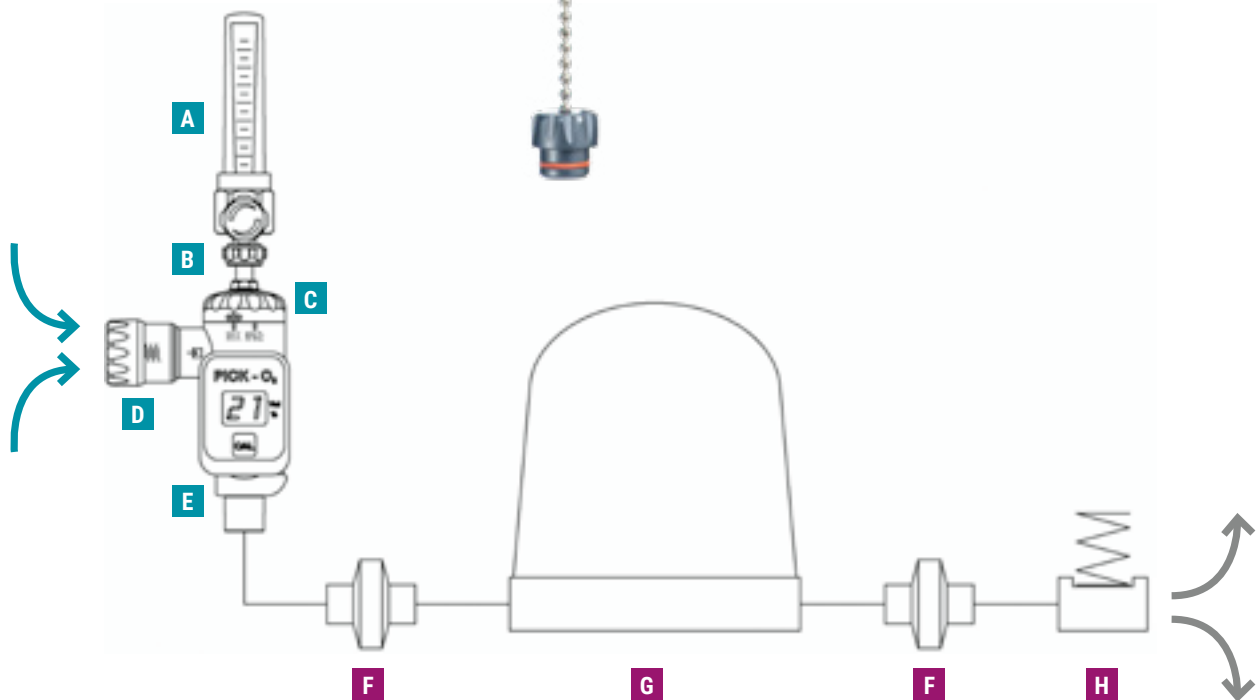
EasyVEE® single flowmeter with oxygen analyzer



Download the app **EasyVEE®**



The App provides the healthcare professional with all guidelines to set the required flows for the ongoing respiratory therapy.







EasyVEE®
flow driver "jet"

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RM

Flowmeters

The flowmeters type RM/185-2 are devices for the supply of medical gases with two meters suitable in respiratory therapy.

STRUCTURE

The measurement tubes are made in the body of the unit and the inlet connections are at the bottom of the units and arranged to be connected to the hospitals centralized gas plants or to gas cylinders completed with pressure regulators. For veterinary use, an anesthesia evaporator can be connected at the outlet of the dosage unit.

Related products



Hoses and probes
for various gases
from p. 155

SIZES (LxWxH)	93x86x205 mm
WEIGHT	0.73 Kg
DOSAGE RANGE O₂ · N₂O · Air	5 L/min. · 15 L/min. · 30 L/min. · 40 L/min.
ACCURACY	±10% read value or ±0.5 L/min. if greater
INLET PRESSURES	3.5 - 5 bar ±20%
CHARGE LOSS LEVEL, SIDE UNDER PRESSURE (BEFORE THE ADJUSTING NEEDLE VALVES)	less than 25 ml/min. in normal pressure conditions (ISO 5358)
CHARGE LOSS LEVEL, LOW PRESSURE SIDE (AFTER THE ADJUSTING NEEDLE VALVES, VAPORIZER EXCLUDED)	less than 25 ml/min. at 30 cm H ₂ O
MIXED GASES OUTLET CONNECTION	Ø 22 M. - 15 F. ISO DIN 5356-1 or conical connection 23 mm F ISO DIN 5356/1 (for veterinary use only)
GASES INLET CONNECTIONS	hose connector Ø 6 mm

1 Adjusting knobs.



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O₂+

Flush device

The O₂+ flush device is suitable for a quick oxygen supply directly at the mixed gases outlet at the end of an anesthesia circuit.

STRUCTURE

Made of anodized aluminum, it is equipped with an anesthetic mixture inlet connection, an oxygen enriched mixture outlet connection, an O₂ feeding connection and a supply button. Different constructions can be made on request.

Related products



SF
flowmeters
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SIZES (LxWxH) 93x63x80 mm

WEIGHT 0.34 Kg

MIXED GASES INLET CONNECTION conical connection 23 mm M. ISO DIN 5356/1

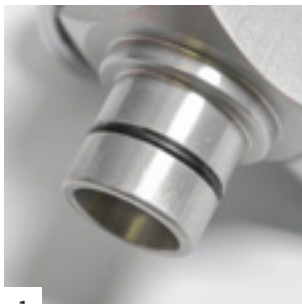
MIXED GASES OUTLET CONNECTION conical connection 23 mm F. ISO DIN 5356/1

FEEDING 3.5 - 5 bar ±20%

O₂ FEEDING CONNECTION automatic type for Ø 6 mm PA hose

O₂ QUICK SUPPLY when pushed it can supply more than 45 L/min. O₂ (at 3.5 bar)

- 1 Inlet connection in detail.
- 2 O₂+ flush button, detail.
- 3 Outlet and O₂+ feeding connectors, detail.



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