

Intensive Care Ventilator

SU:M SERIES



Innovative Technology

- Advanced Proportional Solenoid Technology(PSOL)
- Active exhalation valve
- Block type pneumatic system
- Multi-safety mechanism
- Tube-Piston HFV(High Frequency Ventilation)

User Friendly

- User friendly pop-up menu with rotary encoder & touch screen
- Smart calculation of setting parameters (IBW)
- Emergency start up with IBW
- Quick Calibration (PC software)

High Resolution Graphic Interface

- Allows set & monitored parameters to be viewed on a single screen
- Simultaneous display of 5-Waveforms & Loops
- Comprehensive alarm monitoring
- Graphical & Tabular trends up to 72 hours
- 12.1" touch screen LCD Display

Advanced Features

- Apnea back-up
- Manual / Auto Nebulizer
- Lung Mechanics functions-Compliance and Resistance, Auto PEEP
- Heated Exhalation Valve
- Mask (Non-Invasive) Ventilation
- Measurement of Atmosphere and Temperatures (BTSP)
- Maintenance, System Check & Monitoring with an unique program

Optional Features

- Mode : AutoVent®, SHFV, DHFV, tBiLevel , PRVC, O₂ Stream®
- Module : Hemo-Dynamics with SpO₂ and EtCO₂
- Accessory : Proximal sensor

Intelligent Ventilator for ICU

The intelligent Ventilator has its functions to be adaptable for ICU. However, MEK ICS's ICU Ventilator, SU:M series, is compatible to cover all ages from an Adult to a Neonate in an Intensive Care Unit. All in One.

Intelligent Technology

System Mechanism

■ Block Type Pneumatic System

High performance Block type pneumatics and microprocessor controlled electronic hardware system, allows sensitive and precise breath delivery for critically ill patients.

■ Advanced Proportional Solenoid Valve (PSOL) Technology

Ensures faster, safer and accurate gas delivery which also reduces the Work of Breathing and helps in improving Synchrony.

■ Active Exhalation Valve

Actively controls and maintains the target pressure. It allows unrestricted breathing during both inspiratory as well as expiratory phases of the breathing cycles. This valve also vents excess pressure due to Pressure overshoot, patient's cough, etc. This promotes better Patient - Ventilator Synchrony and potentially decreases the need for sedation.

■ Differential Type Flow Sensor

Sensor is very rugged and reliable offering exceptional response, as well as, accurate monitoring, even when used with a Nebulizer. Designed with a high end pneumatic base, and using a Differential Type Flow Sensor, the **SU:M series** assures the user of long service time intervals, The low cost of spares and very few consumables provides the customer with very affordable cost of ownership.



■ Trend

Trend mode simultaneously displays the past records of patient's statuses in numeric, as well as, graphical form. By adjusting the cursor, the user can review the monitored data for any specific time, in the past 72 hours. The built in trend function record up to 11 parameters such as Volume, Pressure, Flow etc, with a selectable time interval if 1/10/30/60 breaths.

▽ Standby



▽ Trend



Advanced Technology

Optimize System

Automatic Measurement of both Altitude and Temperature: An Artificial Intelligence internal sensor to measure Altitude and Temperature.

- The volume of atmosphere is changeable depending on Height, Humidity and Temperature. Its measurement result is relative considering the environments condition. Most conventional Ventilators measures Temperature and Altitude by each users, which can be inaccurate, however with MEKICS's internal acute Altimeter and Thermometer, a volume for each patient will have absolute precision.

Auto Peak Flow: Automatic setup for its convenience.

- Every person has a different weight, lung capacity and breathing period. Until now, **SU:M series** has its auto measurement function to calculate Ideal Body Weight, Breathing Volume and Inspiration period for each patient to indicate a Auto Peak Flow data. Just touch the screen for results.

Maintenance and System Check with an unique program: Susceptible Maintenance Program for Technical Support.

- Due to its feature, life-saver, the accuracy is the most significant fact to handle. For a fine data adjustment, MEK ICS provides the strong maintenance program for easy access and control.

Mask Ventilator

Mask Ventilation is the most basic, yet the most essential, skill in airway management. It is the primary technique of ventilation tracheal intubation or insertion of any airway device. Its most unique role, however, is as a rescue technique for ventilation should tracheal intubation fail or prove difficult. MEK Mask Ventilation on/off mode maximizes its leakage compensation up to 50LPM.

Additional Options

- O2 Stream
- Proximal Sensor
- Hemo-Dynamic function



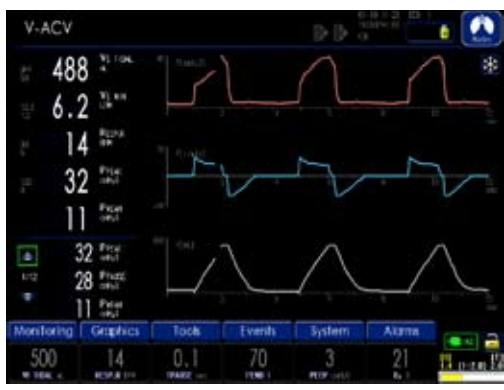
Proximal Sensor port
EtCO₂ and SpO₂ port



◀ Vent Mode



Vent Setting ▶



◀ Vent Run



X-Y Graph ▶

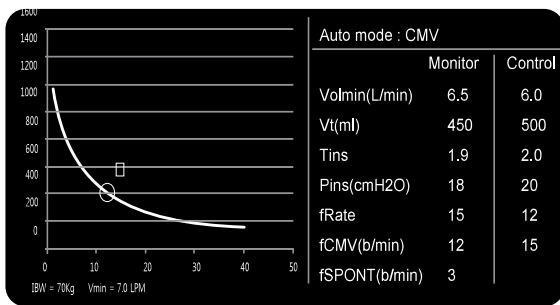
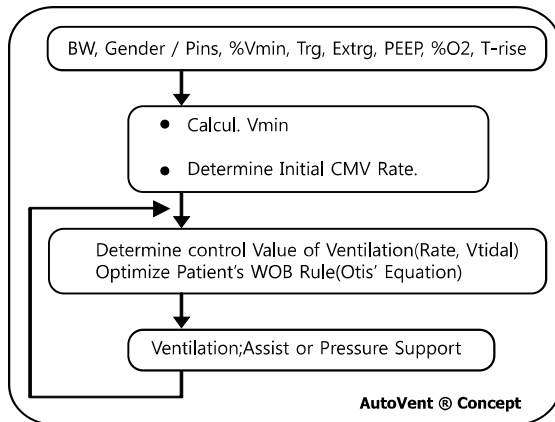
Advanced mode

AutoVent®

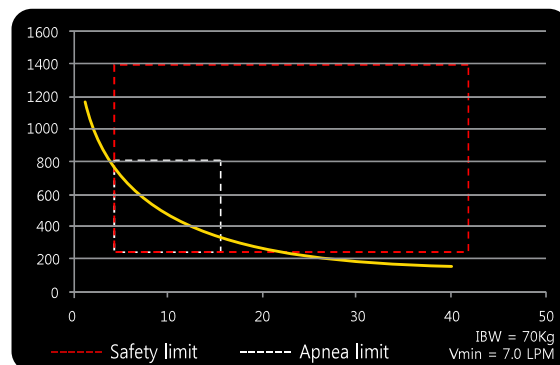
Patient Safety: It employs lung-protective rules and adjusts the ventilator pattern based on the patient's pulmonary mechanics and spontaneous respiratory activity to maintain preset minute ventilation.

Patient comfort: AutoVent® mode promotes free breathing for patients in all ventilation modes and phases. It encourages spontaneous activity right from the start of ventilation and promotes weaning from first deployment.

AutoVent® delivers the optimal tidal volume safely at the lowest pressure possible, combining the benefits of pressure-controlled ventilation with a volume guarantee. It optimizes and synchronizes with lung compliance and airway resistance allowing the clinician to concentrate on the patient rather than on the device.



AutoVent® mode searches by itself for monitoring a graphic for target and current breathing to synchronize on the patient.



It preserves the low Alveolar Ventilation limit when the breathing time decrease to control apnea limit automatically for 10 seconds.

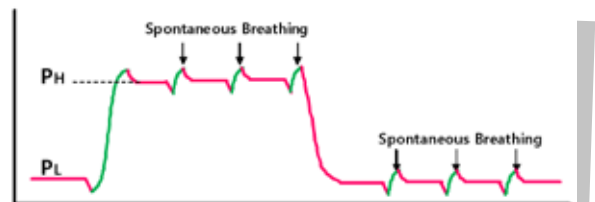
tBi-Level

tBi-Level Mode is a true mixed mode of ventilation that combines the attributes of mandatory and spontaneous breathing in which the patient has the ability to breathe spontaneously at two levels of PEEP(PL and PH) with or without Pressure Support. Due to its ability to allow unrestricted spontaneous breathing at any moment of the ventilation phase, it improves Patient Ventilator Synchrony.

This feature enables efficient cost management and quick recovery of the patient by reducing sedation. **SU:M series** also provides Pressure Support, if required. This assures a more comfortable environment to the patient by providing Pressure Support Ventilation, to all spontaneous breaths.



Spontaneous Breath with Pressure Support



Spontaneous Breath without Pressure Support

PRVC (Pressure Regulated Volume)

The PRVC mode provides adaptive response and the stable volume to patient in changing patient's compliance and airway resistance.

- TCPL (Time- Cycled Pressure Limited) for minute volume ventilator.
- Adaptive support to patient's change compliance.

High Frequency Ventilator

Single and Dual High Frequency Ventilation

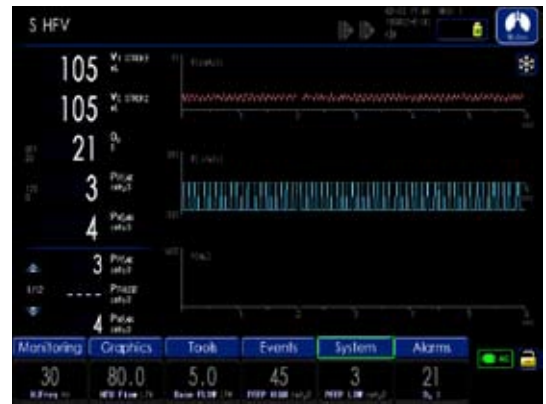
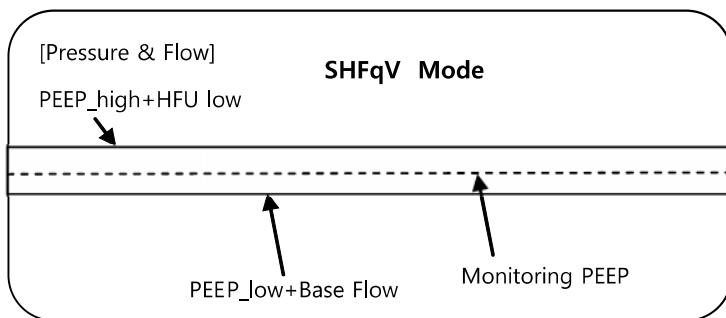
SHFV and DHFV:

The Safest Respiratory Care Process in High Frequency Ventilation.

For a immature baby who has a tiny lung, the universal ventilator has not been developed well to give them a proper treatment. However, with MEKICS's single and dual high frequency ventilation, it reduces lung injury, proved by medical research.

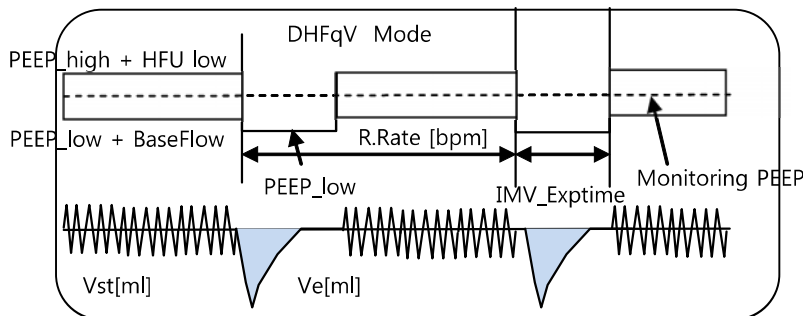
Wide range

Single High Frequency Ventilation mood covers from neonate to adult patients with a wide range of frequency (5-30Hz, 2-1800bpm) unlike the conventional ventilators.

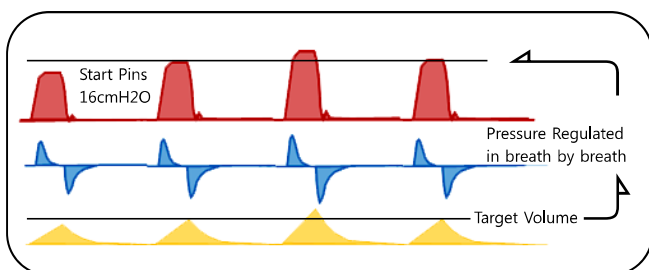


Assist the shortage on the device

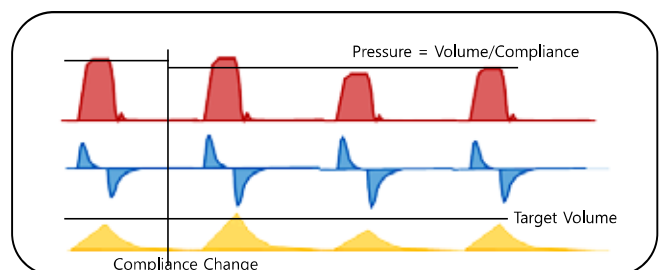
Leak compensating capabilities differ markedly between ventilators but pressure-targeted ventilators are preferred for noninvasive positive pressure ventilation in patients with substantial air leaking. Adequate inspiratory flows and durations should be used. Dual High Frequency Ventilation mode prevents the air leakage to compensate between the actual breathing volume to a patient and the setup tidal volume providing by the exhalation period.



Volume Ventilator)



Initial operation of PRVC (1st Breathing)



Pressure Regulation operation at Compliance change of Patient

Additional Options

O2 Stream®

This function is similar to Nasal CPAP and controls a micro-miniature flow along with adjusting O2 flow. The conventional CPAP must be used with a humidifier in order to a patient' breathing air should be moisture but O2 Stream® flows O2 at the same time with air, the breathing air will be easy for a patient's nasal and lung. O2 Stream® supports a positive airway pressure on the control flow to reduce the dead space at a patient's lung.

Hemo-Dynamic function

EtCO2 and SpO2

The partial CO2 rebreathing technique has been demonstrated to accurately measure the effective pulmonary capillary blood flow (PCBF) in different clinical situations. Usually, PCBF is calculated from changes in CO2 elimination (VCO2) and end-tidal partial pressure of CO2 (PetCO2), which can be obtained noninvasively. The performance of the partial CO2 rebreathing technique can be improved by means of arterial blood gas sampling and an algorithm that takes in account the effects of non-equilibration of PetCO2 during rebreathing and the variation of PccO2 to PetCO2 differences from the on rebreathing to the rebreathing period. Such an algorithm may prove useful under moderately increased alveolar dead space and normal to hypo-dynamic cardiac output states.

Proximal Sensor

Proximal flow measured at the patient's air way can be substantially different from flow measured inside or at the ventilator. Many Ventilators measure flow, not at the proximal airway, but close to the ventilator. This can result in a substantial difference between what is delivered to the patient and what the ventilator reports as delivered due to the wasted compression volume and differences due to humidification. Thus for more accurate monitoring of delivered volume and of the patient's expired volume, the flow sensor should be placed between the breathing circuit wye and the endotracheal tube. MEK proximal sensor has its essential functions for a patient, especially for both premature and neonate, to use an accurate flow measurement and tube compensation needs. Its assist safest breathing is up to 200ml.

Air Compressor Unit - MC200

MC200 is originally designed to use our ICU ventilators. In case of using other manufacturer's ventilator to MC200, it is recommended to check the maximum capacity of flow consumption of the connected ventilator and the maximum capacity of flow production of MC200.

- Compact size
- Portable type for easy install and move
- Low noise by double silencer system
- Absorption of vibration & dust-protection applied structure enable MC200 to perform superior vibration coefficient with extremely quiet operation
- User convenient display
- Total used time display enable timely effective maintenance efforts
- Easy maintenance by cartridge type replacement of service parts
- Parallel connection to WALL AIR is available
- Safety solution useful for preventive maintenance (e.g. Temperature warning system & manual shut down is available)
- Available to operate in connection with maximum 2 units of ventilator simultaneously (Use on MEKICS ICU ventilator series)





SU:M Series features

	SU:M1	SU:M2	SU:M3
MODE	VACV	●●●	●●●
	PACV	●●●	●●●
	SIMV	●●●	●●●
	SPONT	●●●	●●●
	Apnea Backup	●●●	●●●
	Mask Ventilation (Non-Invasive)	●●●	●●●
	PRVC		●●●
	tBi-Level		●●●
	AutoVent®		●●●
	HFV (SHFV/DHFV)		●●●
Trend	Trend (72 hrs) (Graphic & Tabular)	●●●	●●●
Nebulizer	Auto Nebulizer	●●●	●●●
Optional	O2 Stream® (with Nasal Cannular)	●●●	●●●
	Hemo-Dynamics (with SpO2 & EtCO2)	●●●	●●●
	Proximal Sensor (Adult & Neonate)		●●●

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