SAR-830/AP Ventilator

rodent ventilator

The SAR-830/AP Small Animal Ventilator is a versatile and easy-to use ventilator for a variety of laboratory animals. It can operate in volume or pressure-cycled modes. Volume mode delivers a fixed tidal volume on each breath, and pressure mode causes inflations to stop at a preset airway pressure. A built-in air pump provides completely self-contained operation. These ventilators are suitable for use with animals in the mouse to Guinea pig range of body weights, and can be expanded to larger animals using simple plug-in external valves.

Fixed volumes are generated by gating a known airflow into the lungs for a set inspiratory time: the well-known flow-time principle. Only three controls — respiratory rate, inspiratory time, and flow rate are necessary to produce tidal volumes, respiratory rates, and I/E ratios over a wide range. A bar-graph display shows airway pressure in any mode of operation and an analog output voltage is available for external recording.

Operation

Respiratory rate in breaths/min is directly dialed in and shown on the digital display. Inspiration time in seconds is set with a 10-turn dial. Inspiratory flow is adjusted using the front-panel flowmeter. In pressure mode, the end-inspiratory pressure is set in cmH_2O. During inspiration, airflow is introduced into the lungs until this pressure is reached, at which point inspiration is terminated. Pressure mode is especially useful for very small animals, where hyperinflation of the lungs can be a problem. Pressure or volume mode is selected with a single switch.

Expandability

These units can easily be expanded to ventilate multiple small animals simultaneously by adding external valve assemblies. A metered flow source is required for each external valve assembly. These external valves are available for animals ranging from mice to cats in size. Refer to the accessories list for details.

The SAR-830/AP is easily connected to anesthesia sources. A built-in data port can be used to provide remote-control of ventilator operation.

External Valve Assemblies

External valve assemblies (CTP-VA-x series) are used to expand the number of animals being ventilated, or to ventilate larger animals than can be accommodated with the standard SAR-830. The valve assembly connects to the ventilator through a supplied cable and acts as an extension to the SAR-830. The CTP-VA-1 is equivalent to the standard SAR-830 internal valves, and is used to create one or more additional ventilator stations. To connect more than one valve assembly, an MVA-4 electrical adapter is required. A controlled flow source is required for each external valve assembly. Tubing and connectors are supplied.

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Flowmeter/Regulators

A regulated flow source is required for each external valve assembly attached to an SAR-830. Flowmeters are available as single units or as four-flowmeter manifolds. The flowmeter manifolds can be used to mix anesthetic gasses, or as independent flowmeters for multiple valve assemblies. Digital mass flowmeters are also available where the highest accuracy is required.

Adapters and Miscellaneous

The MVA-4 Multi-Valve Adapter allows up to four CTP-VA-1 valve assemblies to be attached to one SAR-830 series ventilator, for a total of five ventilator stations. Up to four CTP-VA-1 valve assemblies can be powered by one SAR-830 ventilator or one CTP-VA-3, due to power supply constraints.

Anesthesia

Connecting an anesthesia system to the SAR-830 is straight-forward and the SAR-830/AP is compatible with virtually any anesthesia system on the market. The recommended method is to the blow-by method, which is illustrated in the instruction manual.

Every SAR-830 series ventilator has a built-in remote control port that operates with a few TTL logic inputs, which allows for simple user designed remote control protocols.

SPECIFICATIONS

Respiratory rate range	5 - 200 breaths/min
Tidal volume range	0.2 - 35ml
Inspiratory time range	0 - 5.00 seconds
Inspiratory flow range	100 - 1000ml/min
DATA PORT remote INPUTS	HOLD (suspends inspiration), MAN (manual inflation)
Analog pressure output voltage	50mV/cmH$_2$O
Logic Sync Out voltage	5V (TTL)
Dimensions, main unit	9W x 5.5H x 9D in. (23 x 14 x 23cm)
SYNC OUT connector	BNC
PRESSURE OUT connector	BNC
Data Port connector	DB-25S
Power requirements	120/240V (switchable), 100VA

ORDERING INFORMATION

Part No.:	Model:	Description:
12-02100	SAR-830/AP	Volume / Pressure cycled Ventilator with internal air pump
12-01020	Mouse Kit	Includes flowmeter & tubing set for body weight 10—100g
12-04000	CTP-VA-1	External Valve Assembly, rodent size for adding 1 additional mouse or rat
12-05000	CTP-VA-3	External Valve Assembly, rabbit size
12-10010	MVA-4	Electrical cable adapter for adding up to 4 CTP-VA-1 Valve Assemblies
12-10020	EFM-1	Flowmeter/ regulator w/ stand, specify range: 1, 2.5, 5, 10, or 20 l/min
12-10021	EFM-4	Flowmeter / regulator manifold w/ 4 flowmeters on stand, specify range
13-21031	TRACH-1	Endotracheal tube, flexible Teflon w/ Luer connector (mouse), pack of 5
13-21032	TRACH-2	Endotracheal tube, flexible Teflon w/ Luer connector (rat), pack of 5

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