

MEDICAL APPLICATION

ANESTHESIA MACHINES

What are Anesthesia Machines?

It is a medical apparatus for administering inhalation anesthetic gases and vapors and for controlling ventilation.

Although there are many different models, all have the following features: a delivery system for medical gases, a mechanism to measure gas flow, vaporizers for volatilizing and combining the anesthetic agents with oxygen and carrier gases, a circuit for delivering the gas to the patient, monitoring equipment or gauges, a ventilator, and a scavenging system to collect and discharge excess gas.

How do they work?

Most modern Anesthesia Machines are essentially a ventilator that uses pressure to move air, oxygen, and nitrous oxide (anesthesia gas) into the lungs of the patient. This pressure is known as positive pressure.

You usually exhale (breathe out) the air on your own, but in some situations the ventilator portion of the machine may have to perform this function for the person. Therefore as shown in the below diagram another branch showing the path of nitrous oxide has been added to the overall anesthesia delivery system.

The ventilator portion of the machine can be programmed to "breathe" a specific number of times over a certain time frame, usually minutes.

And it can also be programmed to trigger the ventilator to force air into the lungs. But, if you fail to trigger it within a certain amount of time, the machine automatically supplies air to keep you breathing.

Where are pressure sensors used on Anesthesia Machines?

Not all Anesthesia Machines are the same but the common areas where pressure sensors are being used are as follows and as shown in the below diagram.



1. Measurement of pressure between the filter and regulator from the initial Nitrous Oxide, Air and Oxygen inputs.
2. After the Oxygen sensor, which measures the Air/Oxygen mix, a pressure sensor is used to measure pressure applied to the patient (inhalation) and in some ventilator system designs gases leading to an external humidifier are also measured.
3. Pressure measurement is also taken from the patient when breathing back (exhalation) into to the ventilator portion of the machine.
4. Dependent on the physical location of where the Anesthesia Machine is being used barometric pressure measurement is taken to offset any elevation changes.
5. Pressure measurement of air and oxygen to the Patient.

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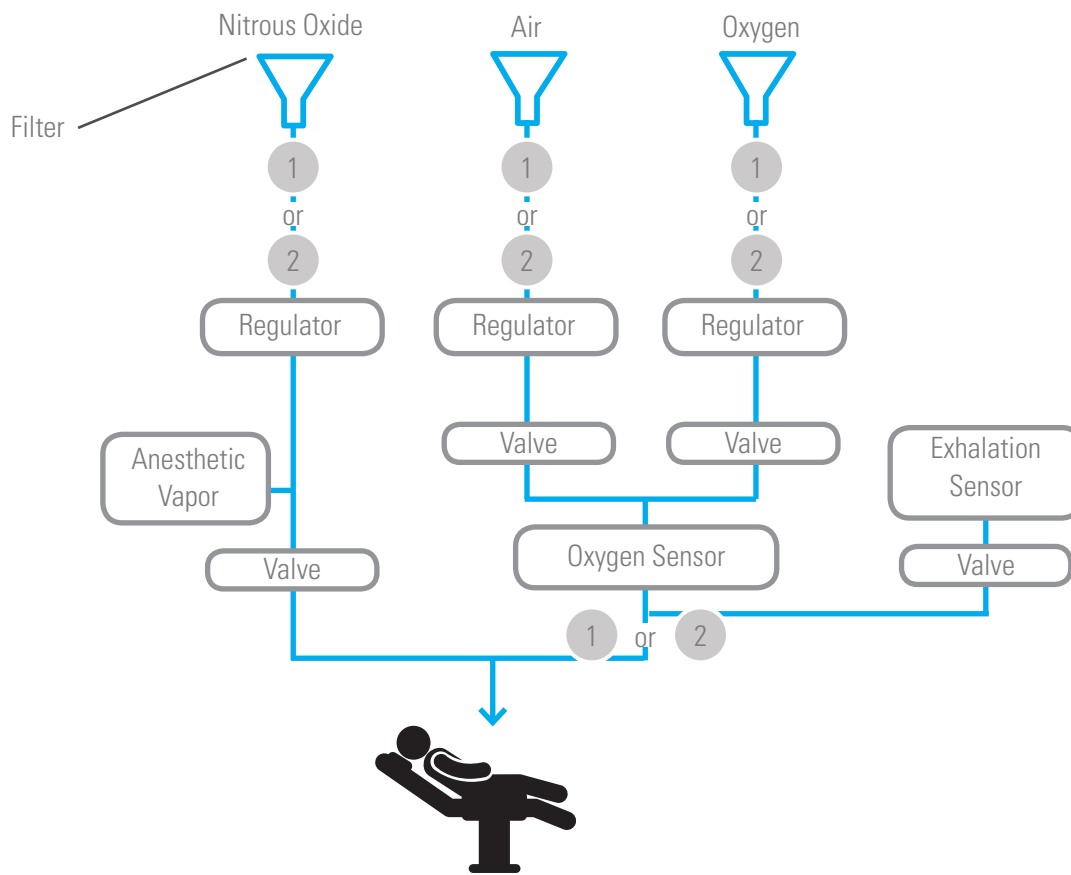


RECOMMENDED PRODUCTS

Reference on Diagram	Product Series	Type	Features	Function	Brand
1	 P1K	PCB Mount	<ul style="list-style-type: none"> • 5V input • Ratiometric output • 0-2" to 0-10" H₂O range 	Differential Low Pressure Sensor	Kavlico
2	 P1J	PCB Mount	<ul style="list-style-type: none"> • 2.7-5.5V input • Digital output (I²C or SPI) • 0-2" to 0-10" H₂O range • Low power (<2.5mA) 	Differential Low Pressure Sensor	Kavlico



DIAGRAM



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