

Anesthe

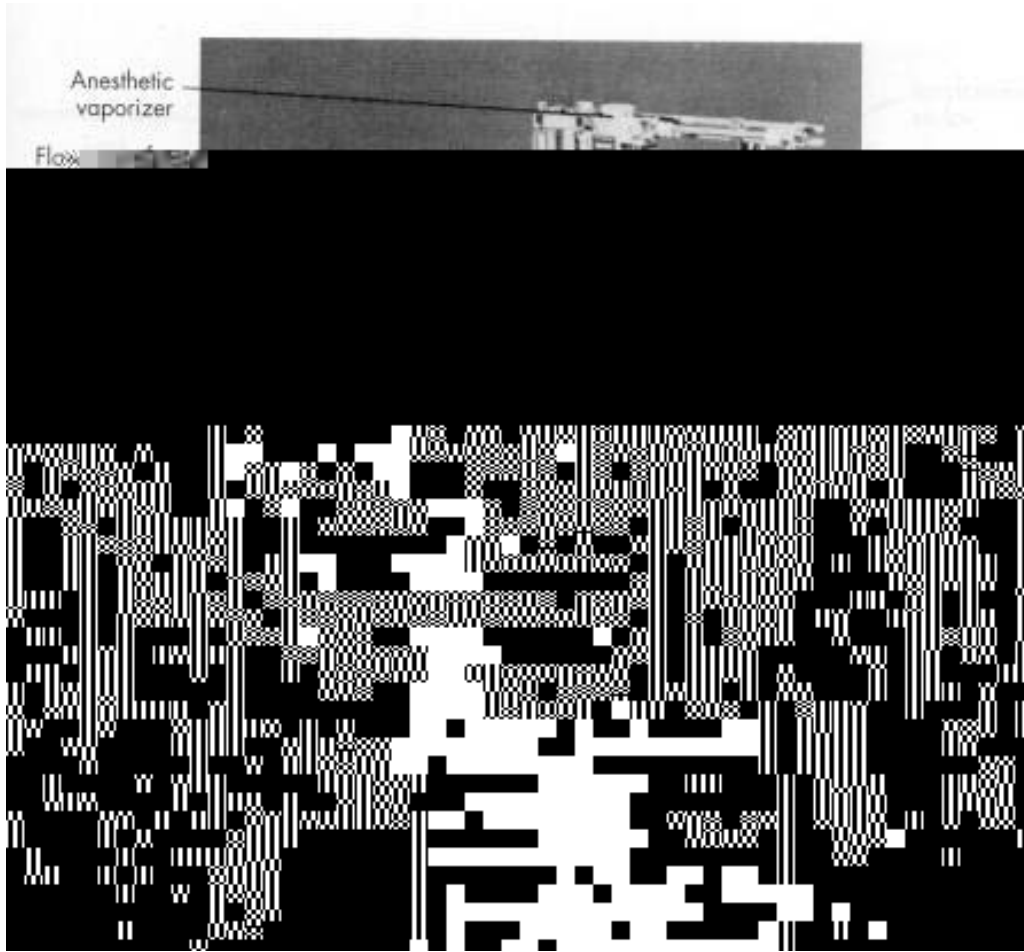


Figure 1. Anesthetic machine and its parts

Carrier gases

- x The carrier gases are used to supply a minimum of 20% oxygen, and vaporize volatile anesthetics and to dilute them
- x They come in color-coded compressed cylinders (see table)

Table 1: Color coding of medical gas cylinders and their pressure when full

AGENT	FORMULA	UNITED STATES	INTERNATIONAL	STATE IN CYLINDER	FILLING PRESSURE (P.S.I.)
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- x For central pipeline gas delivery, G tanks may be arranged in series banks and used away from the operating room.
- x A full E size oxygen cylinder contains approximately 660 L volume of oxygen at 2,200 psi (pound per square inch). The pressure gauge reading can be used to estimate

If the gas is powered through the vaporizer by the compressed cylinder gases, the resistance is not critical but where the power comes from the patient breathing (i.e. the vaporizer is in the breathing circuit) specially designed low resistance draw-over vaporizer (e.g, the Ohio No. 8, Komasarof, Goldman) must be used.

- x Many types of vaporizers are available and simple classification is not possible. Table 2 summarizes the classification of vaporizers.

Table 2. Classification of vaporizers

CHARACTERISTICS & CLASSIFICATION	TYPES
Precision of control of the output concentration	1. Precision 2. Non-precision
Method of regulating output concentration	1. Concentration calibrated or variable bypass 2. Measured flow or Kettle type
Method of vaporization	1. Flow over 2. Bubble through 3.

Figure 2. Schematic diagram of a precision vaporizer

Monitoring the anesthetic machine

- x In modern human anesthesia a large variety of monitors of the anesthetic machine function are considered essential, and are set to “fail safe” (i.e. the machine cannot be used at all if the monitor is not functioning).
- x Examples of monitors are;
 - o oxygen pressure warning alarms and nitrous oxide cut off devices (both of which should also be used on veterinary machines)
 - o inspired and expired pressure measurements (to detect if tubing is blocked)
 - o inspired oxygen concentration
 - o inspired and expired carbon dioxide concentrations
 - o volatile anesthetic concentrations
 - o disconnection alarms

Further References:

1. Veterinary Anesthesia Hall, Clarke and Trim. WB Saunders 2001
2. Veterinary Anesthesia Thurmon, Tranquilli and Benson. Williams & Wilkins 1996
3. Handbook of Veterinary Anesthesia Muir, Skarda, Hubbel. Mosby 2000