Anesthesia Apparatus Checkout Recommendations, 1993

This checkout, or a reasonable equivalent, should be conducted before administration of anesthesia. These recommendations are only valid for an anesthesia system that conforms to current and relevant standards and includes an ascending bellows ventilator and at least the following monitors: capnograph, pulse oximeter, oxygen analyzer, respiratory volume monitor (spirometer) and breathing system pressure monitor with high and low pressure alarms. This is a guideline which users are encouraged to modify to accommodate differences in equipment design and variations in local clinical practice. Such local modifications should have appropriate peer review. Users should refer to the operator’s manual for the manufacturer’s specific procedures and precautions, especially the manufacturer’s low pressure leak test (step #5).

Emergency Ventilation Equipment
* 1. Verify Backup Ventilation Equipment is Available & Functioning

High Pressure System
* 2. Check Oxygen Cylinder Supply
a. Open cylinder and verify at least half full (about 1000 psi).
b. Close cylinder.

* 3. Check Central Pipeline Supplies
a. Check that hoses are connected and pipeline gauges read about 50 psi.

Low Pressure System
* 4. Check Initial Status of Low Pressure System
a. Close flow control valves and turn vaporizers off.
b. Check fill level and tighten vaporizers’ filler caps.

* 5. Perform Leak Check of Machine Low Pressure System
a. Verify that the machine master switch and flow control valves are OFF.
b. Attach "Suction Bulb" to common Fresh gas outlet.
c. Squeeze bulb repeatedly until fully collapsed.
d. Verify bulb stays fully collapsed for at least 10 seconds.
e. Open one vaporizer at a time and repeat ‘c’ and ‘d’ as above.
f. Remove suction bulb, and reconnect fresh gas hose.

* 6. Turn On Machine Master Switch
and all other necessary electrical equipment.

* 7. Test Flowmeters
a. Adjust flow of all gases through their full range, checking for smooth operation of floats and undamaged flowtubes.
b. Attempt to create a hypoxic \( O_2/N_2 \)0 mixture and verify correct changes in flow and/or alarm.

Scavenging System
* 8. Adjust and Check Scavenging System
a. Ensure proper connections between the scavenging system and both APL (pop-off) valve and ventilator relief valve.
b. Adjust waste gas vacuum (if possible).
c. Furn open APL valve and occlude Y-Teece.
d. With minimum \( O_2 \) flow, allow scavenger reservoir bag to collapse completely and verify that absorber pressure gauge reads about zero.
e. With the \( O_2 \) flush activated allow the scavenger reservoir bag to distend fully, and then verify that absorber pressure gauge reads < 10 cm H2O.

Breathing System
* 9. Calibrate \( O_2 \), Monitor
a. Ensure monitor reads 21% in room air.
b. Verify \( O_2 \) alarm is enabled and functioning.
c. Reinstall sensor in circuit and flush breathing system with \( O_2 \).
d. Verify that monitor now reads greater than 90%.

* 10. Check Initial Status of Breathing System
a. Set selector switch to "Bag" mode.
b. Check that breathing circuit is complete, undamaged and unobstructed.
c. Ensure that \( CO_2 \) absorber is adequate.
d. Set all gas flows to zero (or minimum).

* 11. Perform Leak Check of the Breathing System
a. Set all gas flows to zero (or minimum).
b. Check fill level and tighten vaporizers’ filler caps.
c. Pressurize breathing system to about 30 cm \( H_2O \) with \( O_2 \) flush.
d. Set \( O_2 \) flow to minimum, other gas flows to zero.
e. Verify \( O_2 \) flow to about 5 L/min.

* 12. Test Ventilation Systems and Unidirectional Valves
a. Place a second breathing bag on Y-piece.
b. Switch to automatic ventilation (Ventilator) mode.
c. Fill bellows and breathing bag with \( O_2 \) flush and then turn ventilator ON.
d. Set all gas flows to zero (or minimum).
e. Ensure that pressure remains fixed for at least 10 seconds.

* 13. Check, Calibrate and/or Set Alarm Limits of all Monitors
Capnometer Pulse Oximeter Oxygen Analyzer Respiratory Volume Monitor (Spirometer)
Pressure Monitor with High and Low Airway Alarms

Monitors

* 14. Check Final Status of Machine
a. Vaporizers off d. All flowmeters to zero
b. AFL valve open e. Patient suction level adequate
c. Selector switch to "Bag" f. Breathing system ready to use

* If an anesthesia provider uses the same machine in successive cases, these steps need not be repeated or may be abbreviated after the initial checkout.