

## **Check list for usage of anaesthesia devices for long-term ventilation**

The aim of this check list is to provide medical staff a short overview of what to observe and ensure when using an anaesthesia machine for long term ventilation.

- Using anaesthesia machines for long term ventilation is not included in the "Intended Use" as stated in the Instructions for Use and therefore is an "Off Label" use.
- The user has to weigh the risks of this Off Label use against the benefit for the patient. Dräger cannot and may not generally recommend long term ventilation on anaesthesia machines.
- This check list does not substitute the requirement of reading and understanding the Instructions for Use nor does it substitute for any required training on the device
- This check list is only valid for Dräger anaesthesia machines that are currently available for sale.
- The paper "COVID-19: Usage of Dräger anaesthesia devices for long-term ventilation" [A LongVent] as the more detailed document has to be observed and prevails over this short check list.
- In general, the usage of ICU ventilators is preferable for long term ventilation compared to using anaesthesia machines.

### **Basics:**

1. Staff must have been introduced to working with the machine and must know the functions of an anaesthesia machine
2. An experienced anaesthesia user (e.g. OR nurse) must be available 24/7. In case of clinical issues or troubleshooting requirements, ask for assistance immediately.
3. Before connecting a patient verify readiness of machine and accessories according to point 13
4. A separate resuscitator must be available at all times. It has to be used in case of technical machine difficulties to assure patient ventilation
5. For NIV-like modes, it is preferable to maintain with the ICU ventilator.
6. Remove the anaesthetic agent dosage devices (vaporizers or DIVAs). Even the smallest amounts of anaesthetic agent may cause malignant hyperthermia with the patient, and also even among the staff. To avoid oxygen accumulation a proper scavenging should be ensured, check [A-LongVent].
7. Make sure that no N2O is connected and an O2 backup cylinder is available
8. The mode Man/Spon must only be used after an adequate introduction of staff
9. Usage of modes "Ext. fresh gas outlet" [FGO], "Pause", "Monitoring" is not recommended, check [A-LongVent] for Fabius with installed [FGO]
10. In volume controlled modes leakages will not be compensated automatically. In case of large leakages, pressure controlled modes should be utilised to ensure proper minute ventilation .
11. A lack of fresh gas may be caused by large leakages and can be identified by an empty manual breathing bag. In this case take immediate action: Reduce leakages, depress the O2-flush button to immediately fill the system with 100% oxygen, increase fresh gas flow. Removing the manual breathing bag in this case allows room air to be taken in.
12. Stay in reach of the anaesthesia machine
  - The alarm management is designed such that a user is always in reach (<4m)
  - Turn alarm sound level to maximum volume (100%)
  - Alarm messages will disappear from the screen when the alarm condition is gone
  - Check alarm history for missed past alarms
13. Check accessories regularly, at least once every 12 hours
  - Check the CO2 absorber. An exhausted absorber can be identified by rising inspiratory CO2, an insp. CO2 high alarm or by a colour change of the soda lime (less than 1/3 of the substance is still white). Despite the high fresh gas flows the soda lime vessel shall always be connected to the machine. Nevertheless exchange absorber every 7 days.

- Check the water trap of the gas analyser. If more than half full, take it out and use a single use syringe (without needle) to draw the water out of the blue connector. Re-insert the water trap. Change if necessary
  - Check the hoses. Remove the water regularly. If possible, use hoses with water traps; empty those regularly. If possible, use a large manual breathing bag (3l).
  - Change wet or soaked filters. Use only mechanical filters, if possible in combination with passive humidification (HME) close to the patient (Y-piece).
14. Follow your hospital guidelines for infection prevention
  15. The sample gas line must always be connected. This is important for the FiO<sub>2</sub> and etCO<sub>2</sub> measurement.
  16. Check the measured values for etCO<sub>2</sub> and FiO<sub>2</sub>. Because of re-breathing, this is essential. The measured FiO<sub>2</sub> might differ from the set O<sub>2</sub> concentration in the fresh gas.
  17. The manual breathing bag on the device shall always be well filled and move synchronously with the breaths
  18. For suctioning in a closed system, reduce negative strength of the suction system or disconnect patient from anaesthesia device. Alternatively, disconnect the manual breathing bag and reconnect it after the suctioning
  19. Nebulized drugs or aerosols may not be used with anaesthesia machines; if you plan use aerosolized medications, please refer to the cautions listed on reference document [A-LongVent]

#### **When actually starting a case:**

1. Restart the device by switching off and on again and perform a system test
2. Check the correct fit of breathing hoses, the manual breathing bag and the sample gas line. Perform a short device check before connecting the patient (Check if pressure and flow can be administered at the Y-piece)
3. Set the fresh gas flow to approx. 1.5 times the anticipated minute volume (for lower fresh gas flows it is mandatory to check [A-LongVent])
4. Check the alarm volume to be on 100%
5. Adjust the alarm limits appropriately for the patient. Of special importance are: FiO<sub>2</sub> low, MV high / low, etCO<sub>2</sub> high / low, insp. CO<sub>2</sub> high
6. Adjust P<sub>max</sub> when using volume controlled modes
7. Turn the APL valve to "Spont" or to the appropriate PEEP level
8. Make sure that a separate manual ventilation bag is available

#### **System test after 24 hours (72 hours latest)**

1. After 72 hours a full system test is due to assure proper functioning, e.g. for the flow / volume measurement. If prompted by the device switch the anaesthesia device off and on again at the normal user interface before starting the system test. The system test may take up to 8 minutes and should be done by an experienced member of the OR team. Always perform the manual as well as the automatic part of the system test.
2. The patient must be disconnected prior to the test. During the test sufficient patient ventilation has to be guaranteed, e.g. with another ventilator or a resuscitator



Please visit the Dräger COVID-19 website  
[https://www.draeger.com/en\\_corp/Corporate/Coronavirus-COVID-19](https://www.draeger.com/en_corp/Corporate/Coronavirus-COVID-19)  
for updates and other useful information