**Open Source Ventilator**

**Anti-Asphyxia Module**

V1.0; Sem Lampotang, March 18, 2020; Department of Anesthesiology, Center for Safety, Simulation & Advanced Learning Technologies, University of Florida, Gainesville, Florida, USA

In an intubated patient, the patient will not be able to draw in a breath in periods other than the times during which mechanical inspiration occurs or if the gas supply fails, among others, that is 2/3 of the time if we use an inspiratory to expiratory time ratio of 1:2. An anti-asphyxia valve is a valve that opens when there is sub-ambient (below atmospheric pressure) pressure in the breathing circuit from the patient trying to breathe and not receiving gas. Anti-asphyxia valves typically crack open when the pressure in the breathing circuit is 3 cm H2O below atmospheric pressure. The anti-asphyxia valve module is placed using a T-connection in pneumatic connection with the patient.

|  |  |  |  |
| --- | --- | --- | --- |
| **Physical Input**  | **Data/Control Input** | **Physical Output**  | **Status**  |
| **Design** Pressure in breathing circuit  | Open the anti-asphyxia valve when breathing circuit pressure drops below -3 ± 1 cm H2O. Accuracy of ± 1 cm H2O  | Room air is pulled by the patient via the anti-asphyxia valve as long as the breathing circuit pressure is below – 3 cm H2OResistance to flow must be minimal. When open, resistance to flow through anti-asphyxia valve must be low (≤ 3 cm H2O/l/s)Design and build/3D print the anti-asphyxia valve and verify it is accurate within ± 1 cm H2O  | Not claimed; No one working on it yet |
|  |  |  |  |
|  |  |  | Not claimed; No one working on it yet |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |