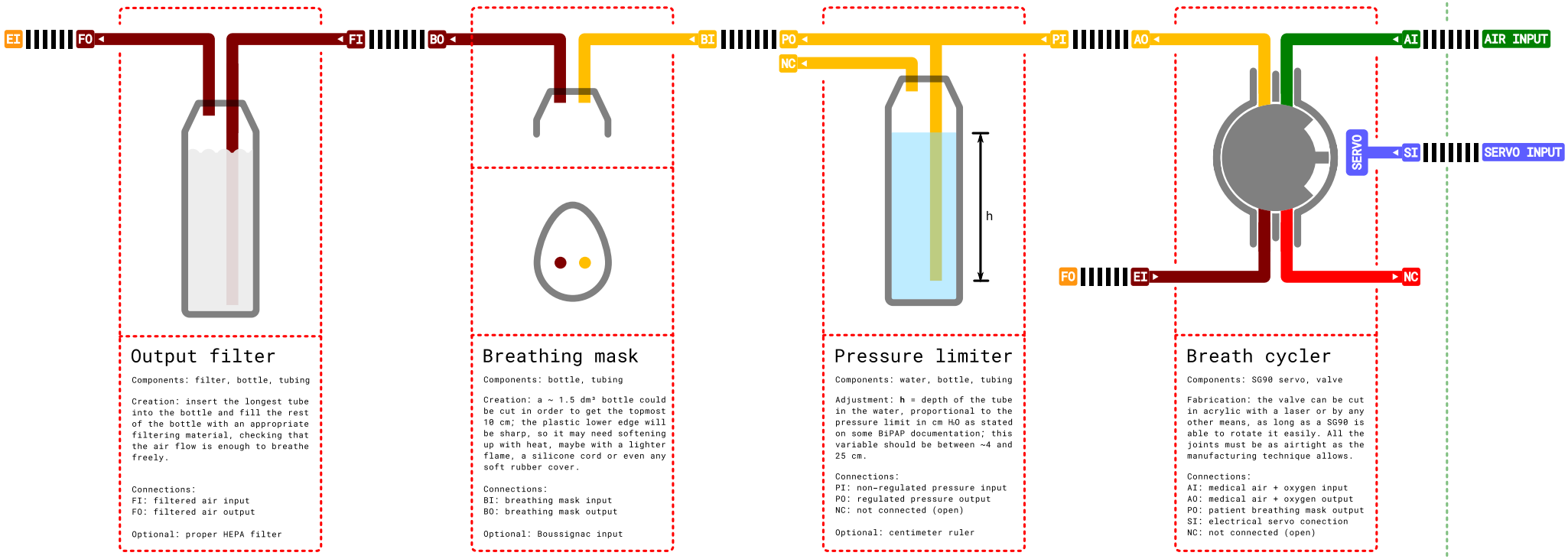


Output filter

Components: filter, bottle, tubing

Creation: insert the longest tube into the bottle and fill the rest of the bottle with an appropriate filtering material, checking that the air flow is enough to breathe freely.

Connections:
FI: filtered air input
FO: filtered air output

Optional: proper HEPA filter

Breathing mask

Components: bottle, tubing

Creation: a ~ 1.5 dm^3 bottle could be cut in order to get the topmost 10 cm; the plastic lower edge will be sharp, so it may need softening up with heat, maybe with a lighter flame, a silicone cord or even any soft rubber cover.

Connections:
BI: breathing mask input
BO: breathing mask output

Optional: Boussignac input

Pressure limiter

Components: water, bottle, tubing

Adjustment: **h** = depth of the tube in the water, proportional to the pressure limit in cm H_2O as stated on some BiPAP documentation; this variable should be between ~4 and 25 cm.

Connections:
PI: non-regulated pressure input
PO: regulated pressure output
NC: not connected (open)

Optional: centimeter ruler

Breath cycler

Components: SG90 servo, valve

Fabrication: the valve can be cut in acrylic with a laser or by any other means, as long as a SG90 is able to rotate it easily. All the joints must be as airtight as the manufacturing technique allows.

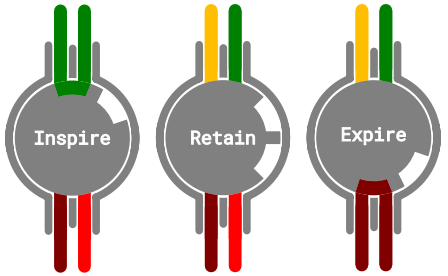
Connections:
AI: medical air + oxygen input
AO: medical air + oxygen output
PO: patient breathing mask output
SI: electrical servo conection
NC: not connected (open)

Low-tech emergency ventilator (draft)

This ventilator, made mostly with readily available parts, takes pressurized medical air and oxygen from the hospital central system and injects it into a breathing mask, tube or similar apparatus through a low-tech system that allows a somewhat precise pressure control, can be configured for volume control through the duty cycle of the valve inspiration phase by using a microcontroller with input section and pressure information, and would filter the output stream to some extent.

Advantages: all the components are readily available, and only one microcontroller, 16 servos, 48 water bottles and some tubes are enough for 16 patients, taking air from the the medical air outlet of the hospital room using a round-robin scheduling method optimized to manage the pressure changes during the valve opening.

Disadvantages: the suggested materials and procedures are all but orthodox and safe; as far as possible, the listed items should be ignored.



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