Horse-Lite 3D Instructions

2018-12-17 V1.0/JPS

Materials

1) 3D Print of Horse-Lite (Stereolithography SLS Material PA2200 surface finished and sealed,). For example www.rapidobject.com

2) Full metal Luer dispenser or needle 13G (2.26mm/0.089“) 1” long (female Luer) https://www.amazon.de/gp/product/B00YTNLPOO/ref=oh_aui_detailpage_o00_s00?ie=UTF8&psc=1

3) Bell connector of a broken Cook tube (preferably 30 inner dia, but smaller can also be used. Cut accordingly. Remove gently the glued silicone tube by separating it with a blunt needle

4) 2 pcs headless screws stainless steel A2, M5 x 12 (DIN 913)

5) Wax to seal the screws

6) Superglue

Tools

Drill 2mm dia, extra long (or standard drill with small drill chuck)

Machine screw tap M5

Instruction

Channels have to be reworked / opened with a 2mm drill. Be careful not to drill through walls. Can be done also by hand (not by drilling machine)

Re-cut the two threads.

Cut Luer dispenser to about 15mm. Glue it into the centre hole. It is for the gas sampling line

Insert screws to inner surface of the sensor. Volume multiplier is then about 6.2 times to D-Lite.

In case you do not have a calibration syringe. Turn both screws in that they come out about 3mm on the inner surface. The volume multiplier then is close to 6.

Attach the cook connector and check for leaks. Silicone glue is not necessary.

Calibration

When the monitor is dedicated to be used only with a Horse-Lite then you can calibrate the monitor to have an integer multiplier of 6.0 . That means volume reading needs multiplication by 6.0 and compliance reading has to be divided by 6.0. However when the monitor has to be used also with the standard D - Lite it is appropriate to tune the Horse -Lite to a factor of 6.0 with a D- Lite calibrated monitor. To do this calibration syringes are needed.

For less precision, the native calibration factor (screws end plane to inner surface) is 6.2 +/- 10 %

To do precise calibration, first calibrate the monitor with a new D- Lite sensor (1L). Attach the Horse-Lite and calibrate with cal syringe (http://www.rudolphkc.com/products/calibration_equipment)

adjusted to 6L to 1L reading on the monitor. Both screws should be inserted equally deep. Turning screws in reduces the multiplier by adding resistance.