

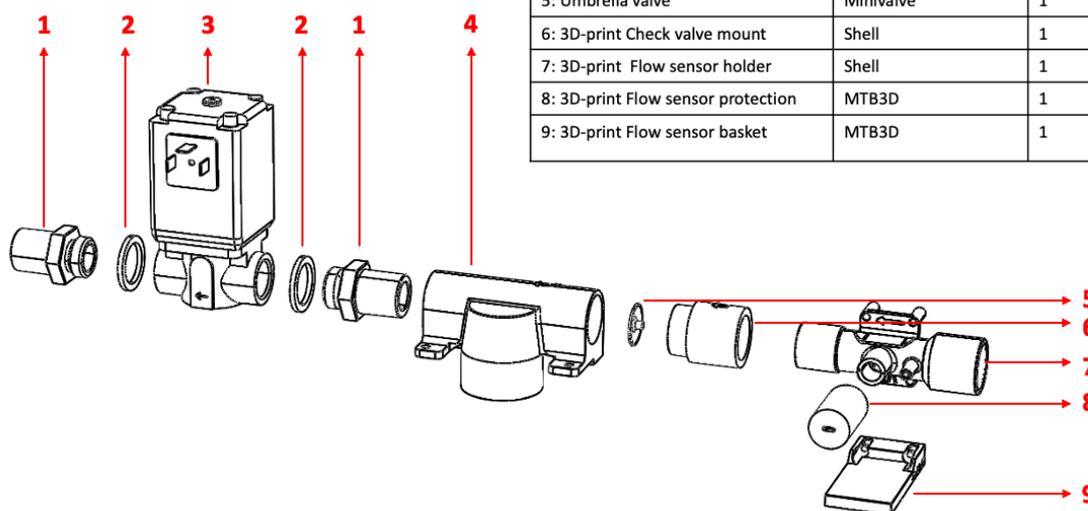
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TITLE: SUB-ASSEMBLY #5 – Expiratory track

Revision	Date	Modifications	Author
V1.0	08-04-2020	Setup First Version	Guusje Jans
V1.1	14-04-2020	Images and elaboration	Jeroen Roest/ Bart Spel
V1.2	16-04-2020	Overview materials	Jeroen Roest/ Bart Spel
V1.3	23-04-2020	Translation Dutch - English	Tessa Kos
V1.4	27-04-2020	Final check + translation images	Josephine Dumas

This sub-assembly describes the montage between the tube mounting and the discharge of air to the ambient air. **Caution: not all pressure relief valves are set at 80 mbar. Before adding the valve to the assembly, the settings should be checked and, if necessary, corrected. The product name of each Swagelok component will be mentioned per montage step to ensure the correct components are used. As mentioned previously, the flow sensor should be turned 90 deg. This quarter turn has not been included in all the images of the sub-assemblies.**

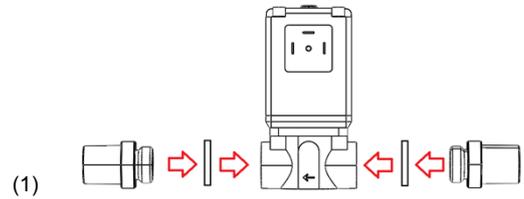
Part	Supplier	Quantity
1: Connector G 1/2" - 22M	Heemskerk	2
2: G1/2" gasket	Swagelok	2
3: Solenoid control valve	Bürkert	1
4: 3D-print Patient OUT	Shell	1
5: Umbrella valve	Minivalve	1
6: 3D-print Check valve mount	Shell	1
7: 3D-print Flow sensor holder	Shell	1
8: 3D-print Flow sensor protection	MTB3D	1
9: 3D-print Flow sensor basket	MTB3D	1



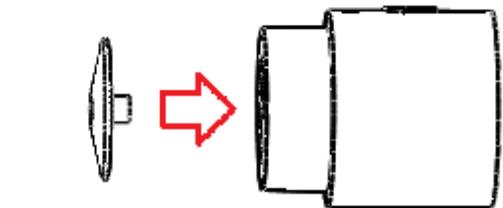
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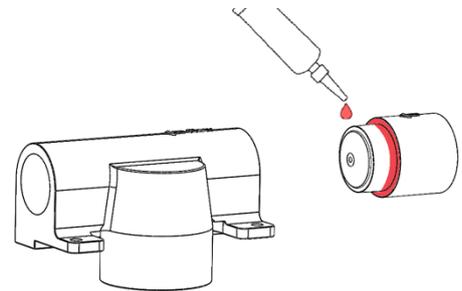
1.
 - The solenoid control valve has an entrance and exit size of G1/2". Connectors from G1/2" to 22mm should be placed on both sides. These connectors are produced by Heemskerk (See figure 1).
 - In between the connectors, a G1/2" gasket rubber should be placed.
 - G1/2" gasket: SS-8-RS-2V.



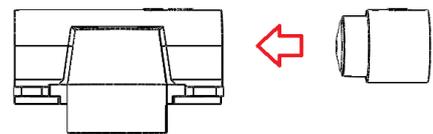
2.
 - Before connecting the other pieces, a 3D complex of the umbrella valve, the 3D print Check valve mount and 3D print Patient OUT is composed.
 - First place the umbrella valve on the small circular shaft (see figure 2.1).
 - The 3D print Patient OUT and the 3D print Check valve mount should be connected. For ensuring proper connection, use of biocompatible glue is mandatory (Loctite 4601).
 - Cover the highlighted parts with a thin glue layer (see figure 2.2).
 - Then, connect the two compartments (see figure 2.3).



(2.1)



(2.2)

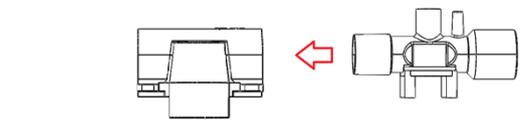


(2.3)

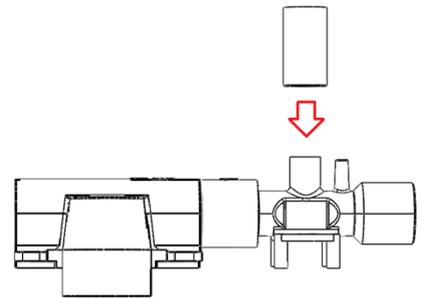
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- 3.
- Connect the 3D print Flow sensor holder to the remaining opening of 3D print Check valve mount (step 2). The 3D print Flow sensor holder is a smaller part which already contains the flow sensor (see figure 3.1).
 - In the actual assembly, the flow sensor is to be turned a quarter turn in the direction of the inspiratory tract. If the part is not turned, the flex cable which is added later, will be too short and the connection will be susceptible to swiveling motions.
 - Press the connecting pieces together firmly!
 - Proceed to placing the 3D print Flow sensor protection on the flow sensor (see figure 3.2). This protective cap will be removed later, so make sure it is not firmly pressed onto the sensor.

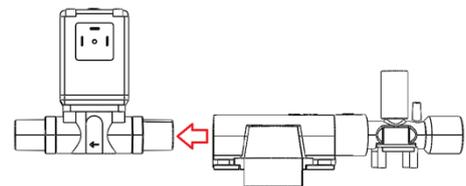


(3.1)



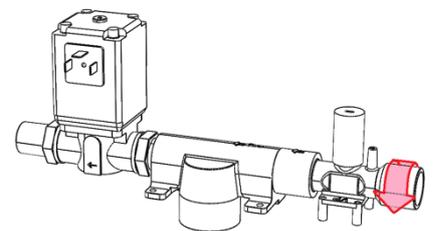
(3.2)

- 4.
- The complex assembled in step 2 should be connected to the solenoid control valve on the side opposing the flow through the valve (indicated by the arrow, see figure 4)
 - Firmly press the connecting pieces together!

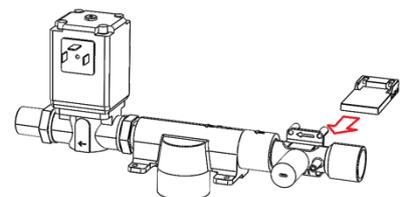


(4)

- 5.
- In the previous steps, the flow sensor has been displayed upright. To allow connection of the correct cable further on in the assembly, turn the flow sensor a quarter turn (see figure 5.1).
 - Proceed to add the 3D print Flow sensor basket to provide stability for the flow sensor (see figure 5.2).



(5.1)



(5.2)

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If this sub-assembly has been put together correctly, the result will be identical to the figures below. The first two figures display a realistic representation of the parts and the third figure displays the correct orientation.

