

Decathlon Easybreath 1 mask

Upgrade

Parma
04.04.2020

Azienda Ospedaliero - Universitaria di Parma
Dallara Automobili SPA

0. Warning

Dear friends,
what we designed all together is not a medical device.

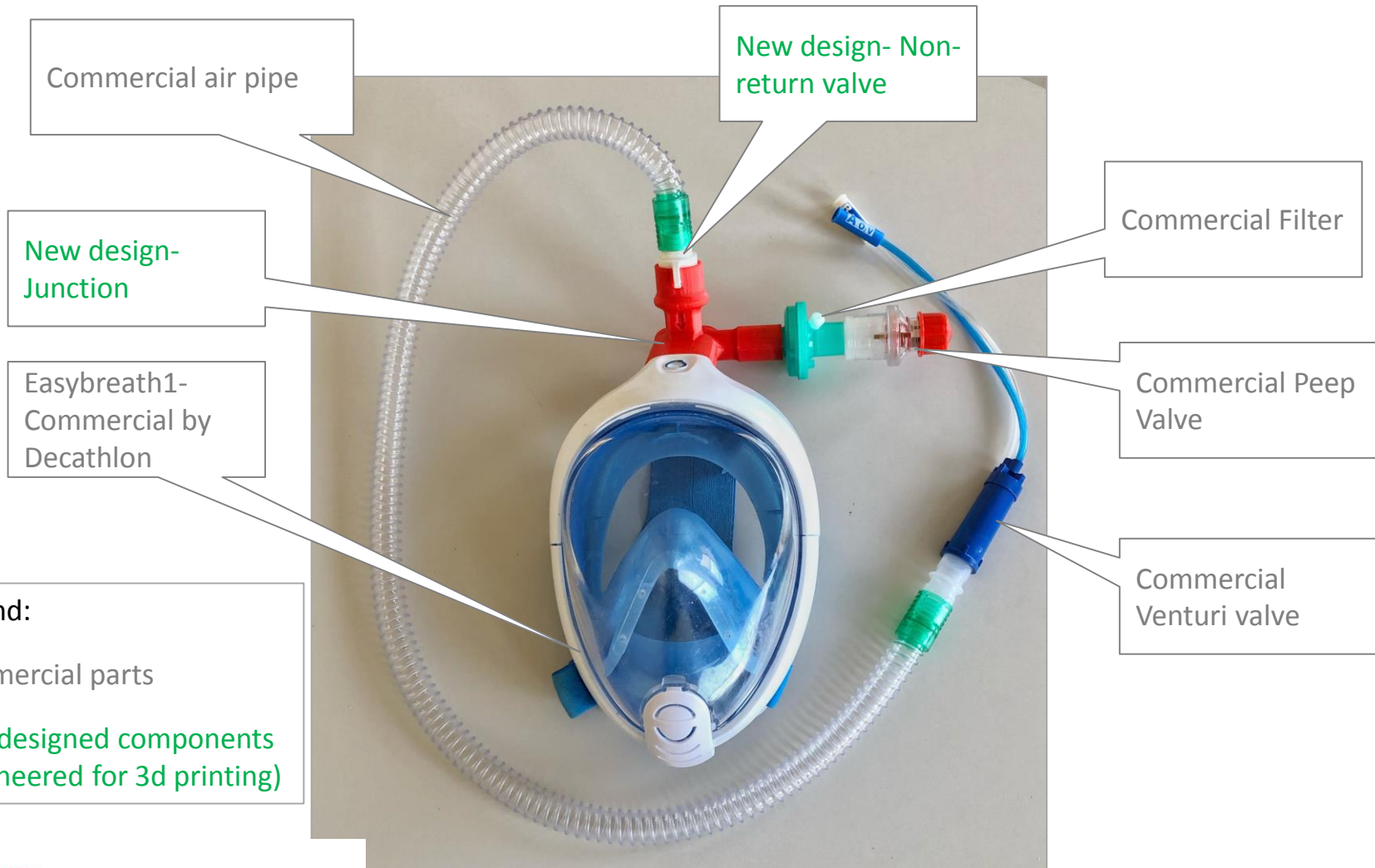
It is just a simple way to use a sport device commercialized by Decathlon (hoping that it can be purchased and modified all around the world) during this medical emergency, as a respirator ; the designed components, to be assembled on the original mask, can be 3d printed everywhere.

The basic idea, coming from Dott. Renato Favero, to use the mask as a respirator was really ingenious.

We simply made our best to fight against Covid19 all together.

We are grateful to Dott. Francesco Minardi, Dott. Luciano Bortone and to the Azienda Ospedaliero - Universitaria di Parma.

1. General overview- New parts and commercial ones



1. General overview

Released Cad data:

20200402Flange.stp/.stl

20200402Membrane.stp/.stl

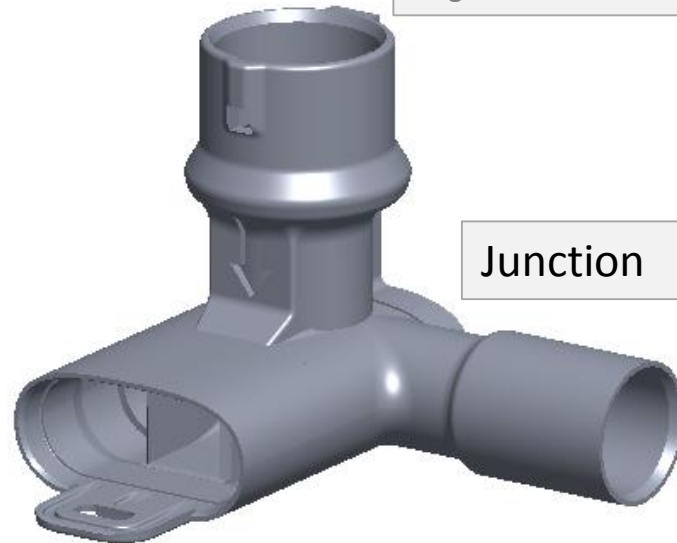
20200402Junction.stp/.stl



Flange
(non-return valve)

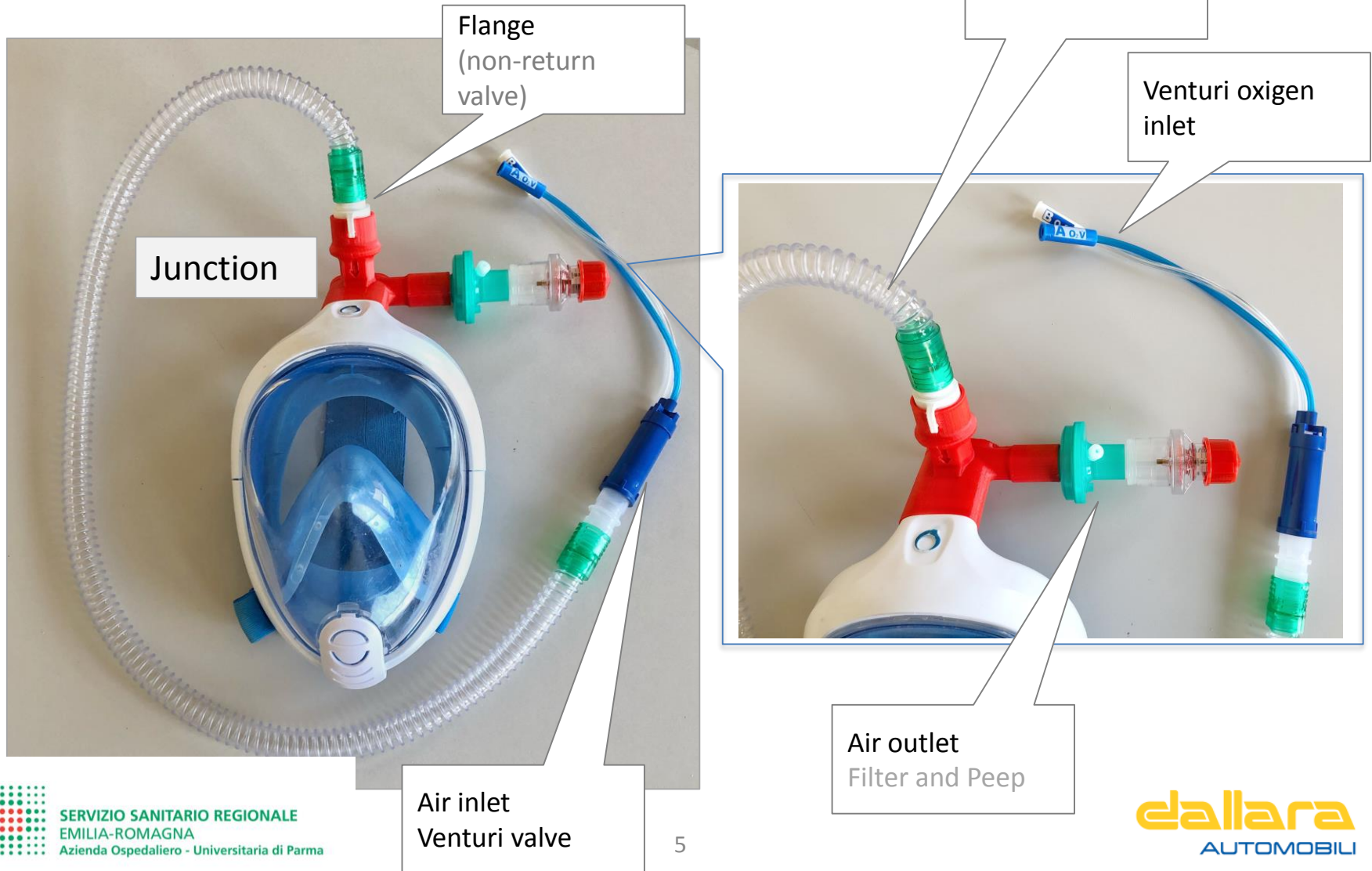


Membrane- COP- carry over part of the
original Decathlon Mask



Junction

1. General overview- Lay out 1



1. General overview- Lay out 2

Lay out with the Venturi valve connected to the Junction

Venturi oxigen inlet

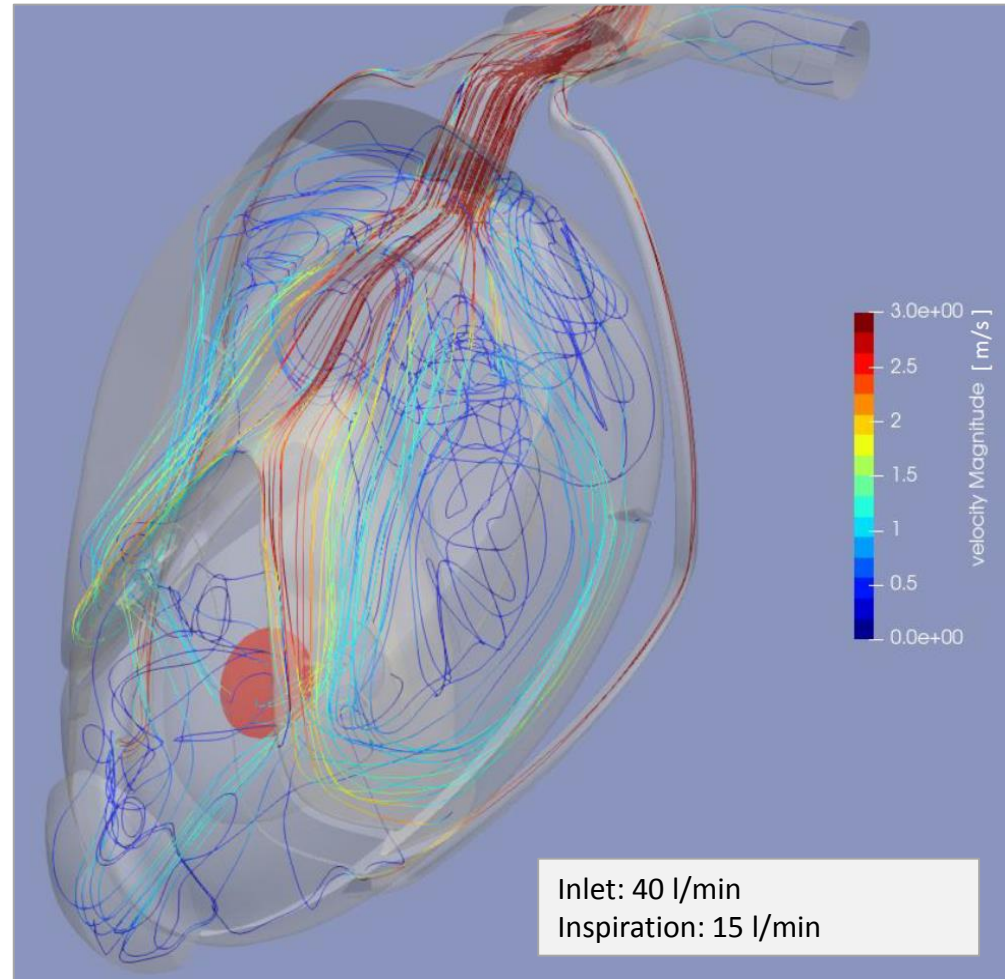
Air inlet
Venturi valve

Flange
(non-return valve)

Junction

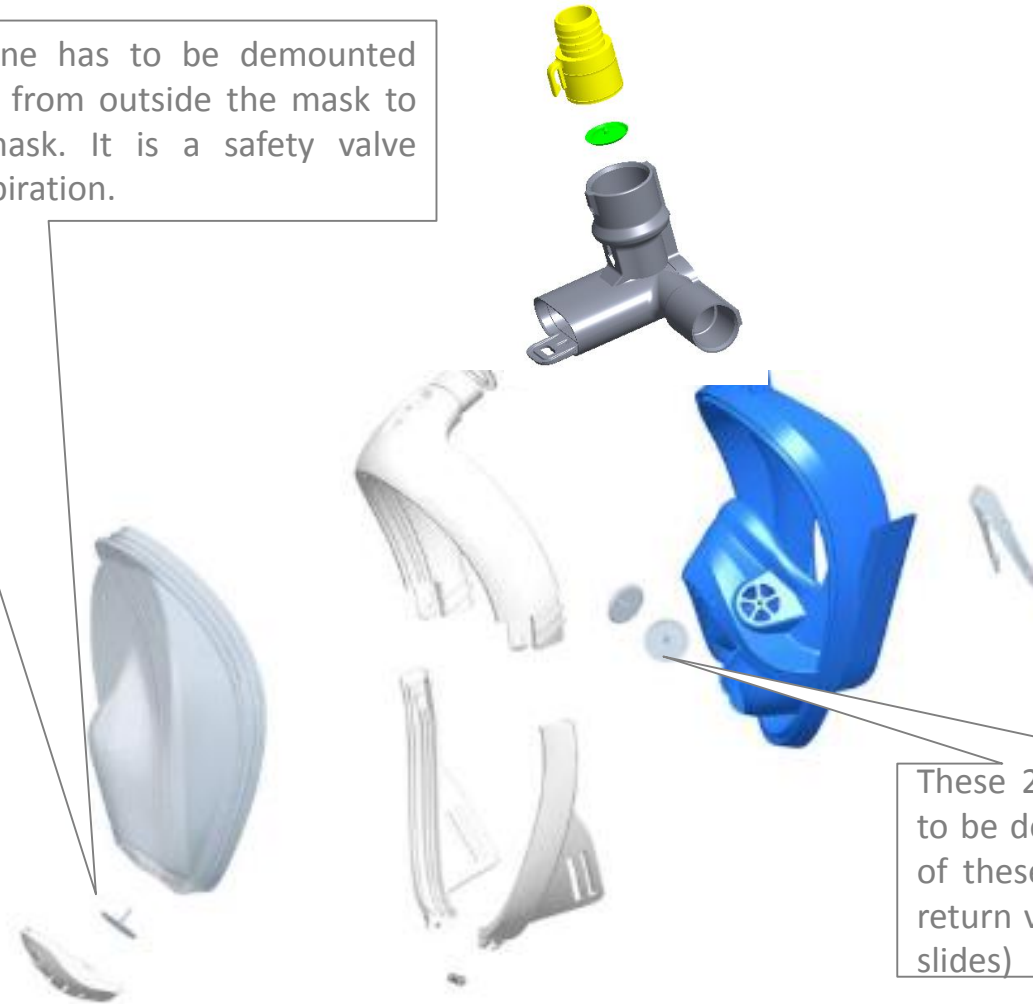
Air outlet
Filter and Peep

Internal flow CFD simulation



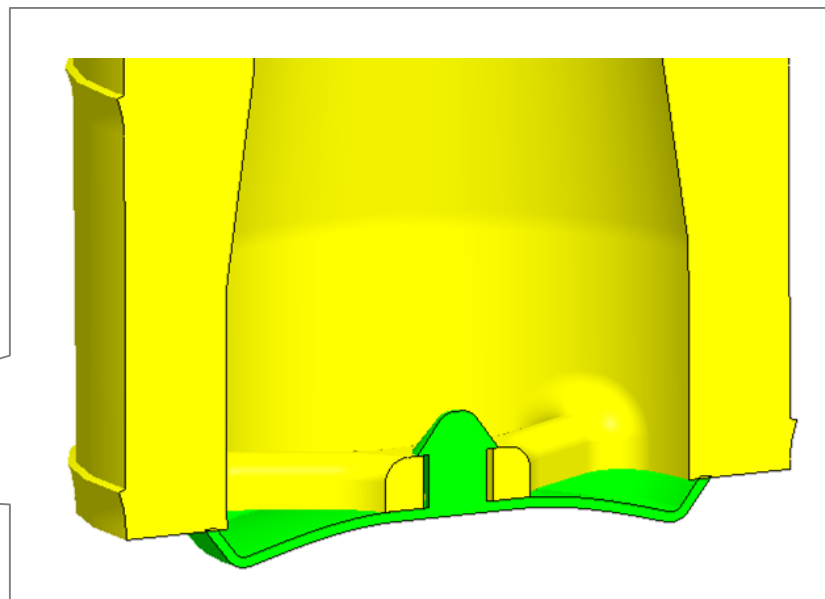
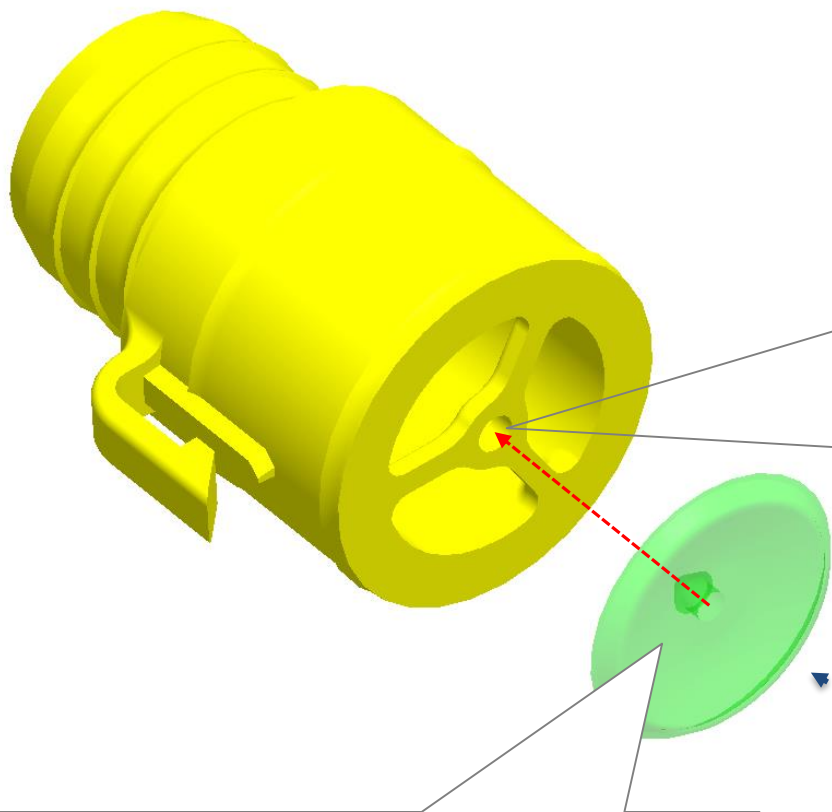
Assembly instructions- Membrane

This membrane has to be demounted and switched from outside the mask to inside the mask. It is a safety valve during air inspiration.



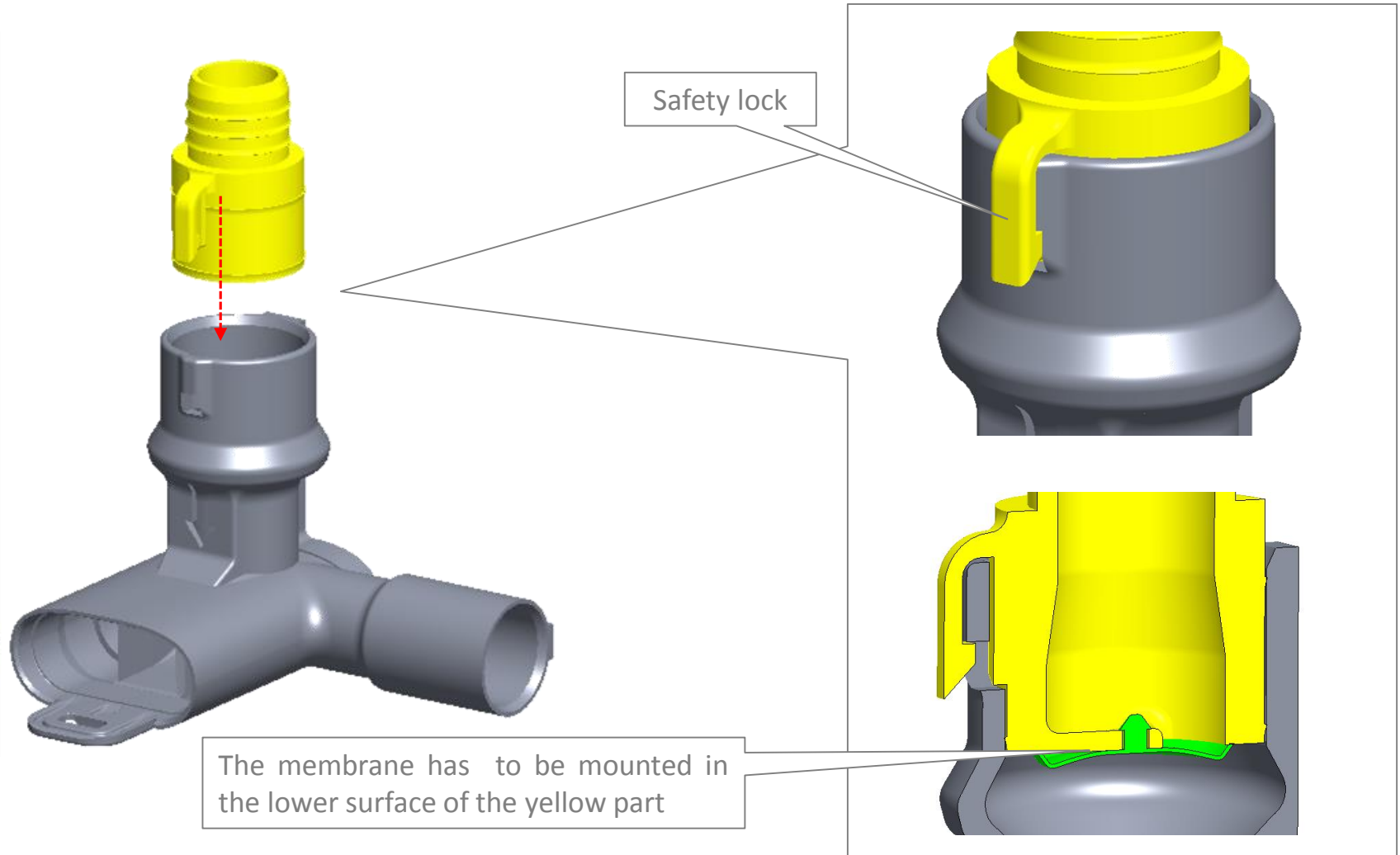
These 2 membranes are not needed to be demounted from the mask. One of these has to be mounted in the non-return valve. (as described in the next slides)

Assembly instructions- Step 1



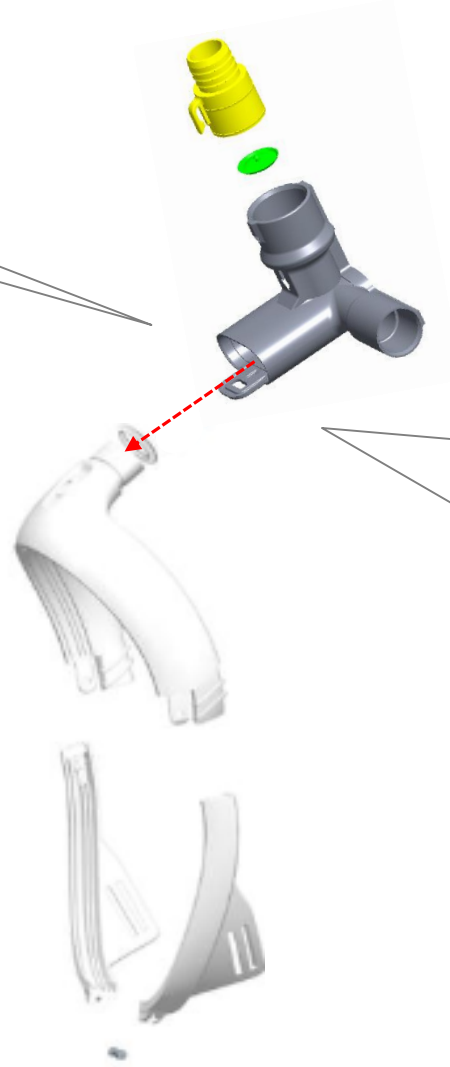
Remove the membrane from the mask and assembly on the yellow part, as described in the pictures above.

Assembly instructions- Step 2



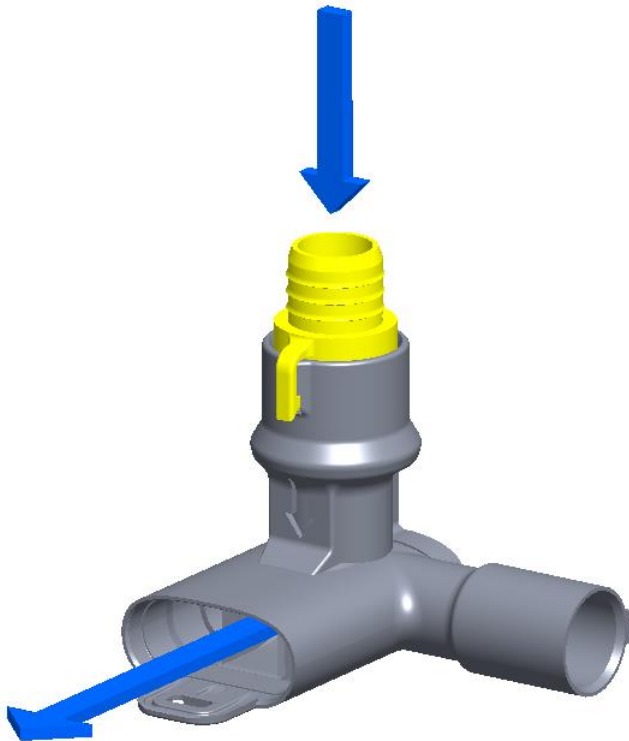
Assembly instructions- Step 3

Mount the assembly on the mask

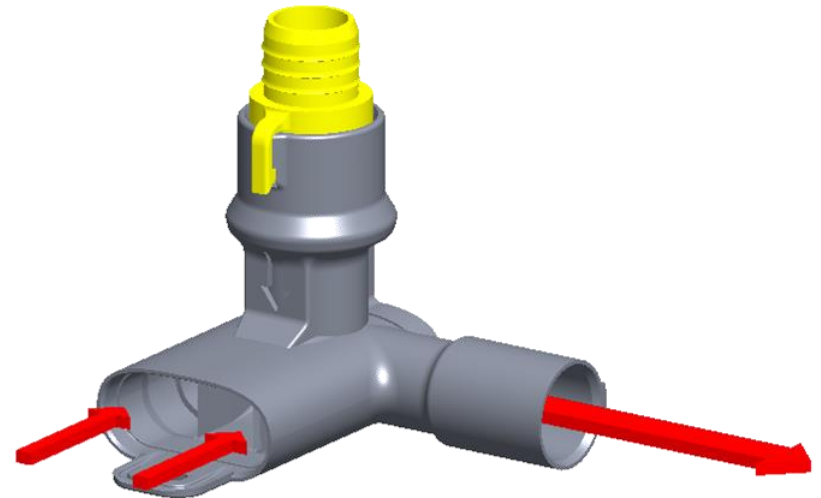


Assembly instructions

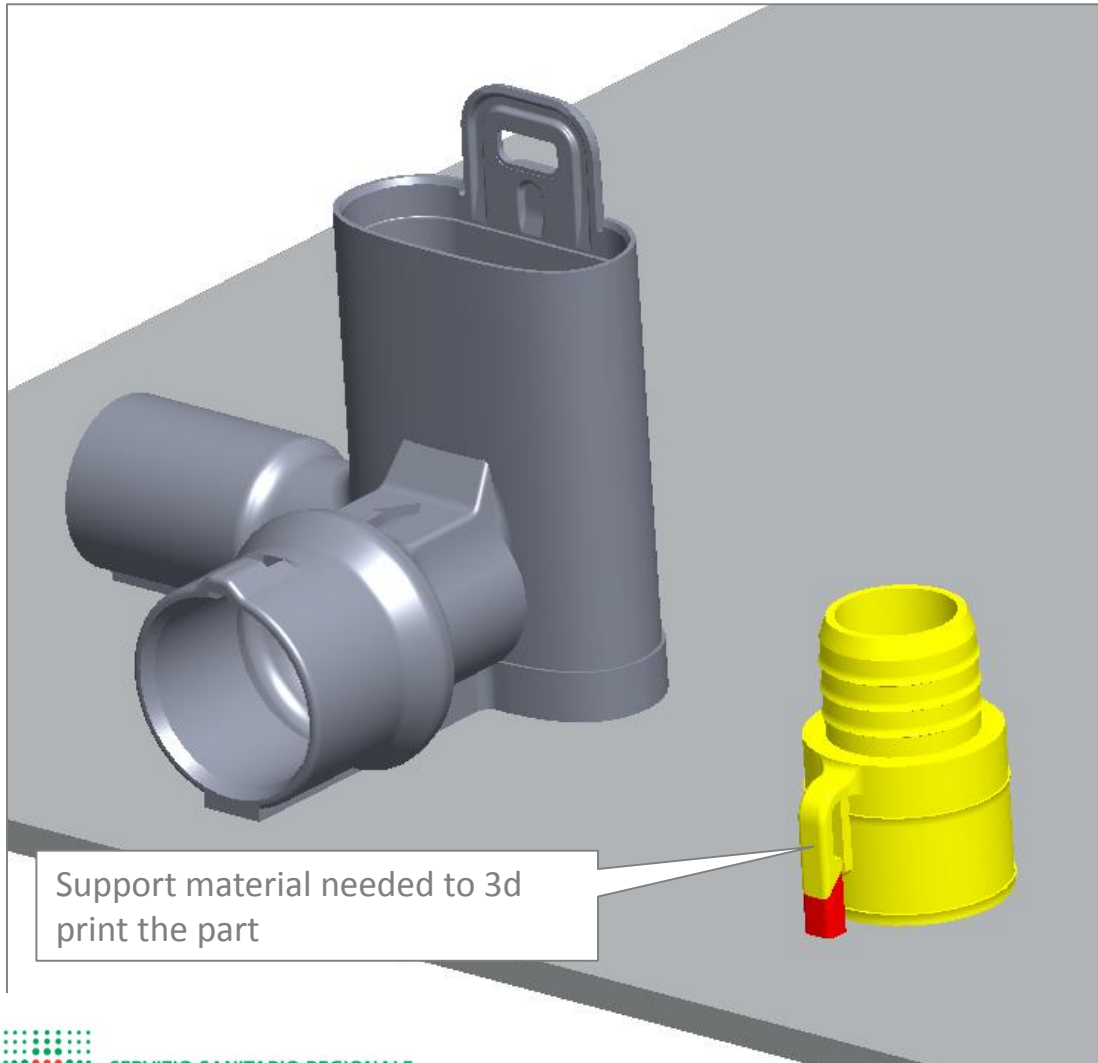
Air inlet to the mask



Air outlet from the mask



Product instructions- placement



FDM placement to reproduce the parts tested @ Parma Hospital

Reference: dott **Francesco Minardi**
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e-mail: fminardi@ao.pr.it

Materials: PLA, Peek, PA

Keep in mind: material availability,
possibility to cold/hot sterilize,
dimensional stability

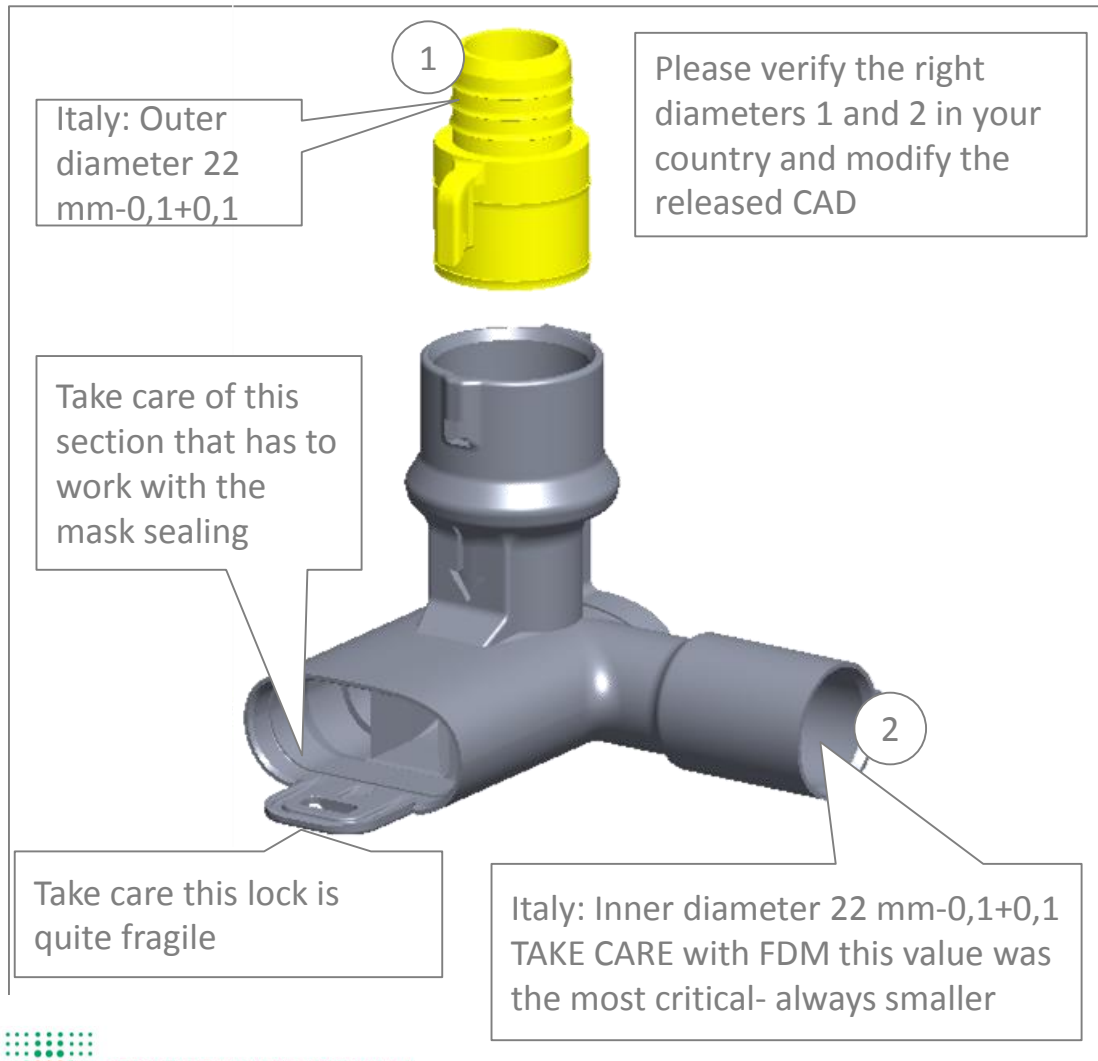
References:

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Product instructions- tolerances



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Greetings for the incredible friendship and collaboration:

3dpr snc- www.3dpr.it- *Francesco Soncini*

Fip spa- www.fipspa.eu- *Luca Monici, Giovanni Mazzocchi*

Formartis srl- www.formartis.com- *Gianluca Namaziano*

Lmi srl- www.lmi-italia.it- *Roberto Rancati, Giovanni Losi*

Roboze spa- www.roboze.com- *Alessio Lorusso*

Isinnova- www.isinnova.it

The rain will stop, the night will end, the hurt will fade. Hope is never so lost that it can't be found.

E. Hemingway

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