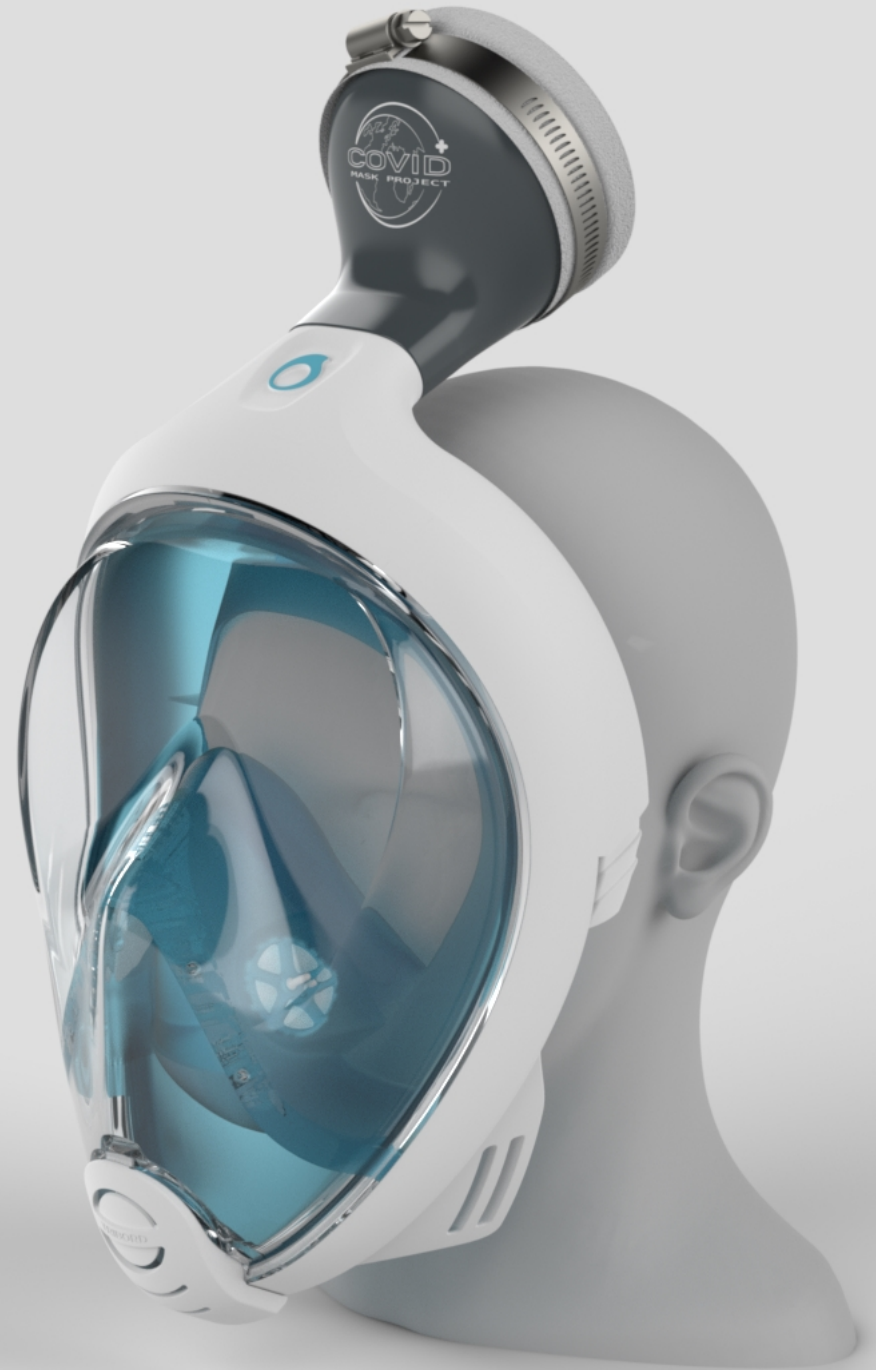




COVID Mask Project

Universal Filter
Cartridge



April 22, 2020
RD.006 REV A

The **Universal Filter Cartridge** is an injection molded attachment that converts snorkel masks into full face respirators compatible with any filtration media.

COVID Mask Project is an open-source effort to provide designs, test results, and continued engineering support to any organization with the resources and drive to donate respirators at scale, such as [MasksOn.org](https://maskson.org).

Our project builds off lessons learned by several other groups working to develop emergency PPE, including the [Pneumask Project](#) by the Prakash Lab at Stanford and the [CV19 Filter Adapter](#) by Dominion Engineering.



Uses Any Filter Material

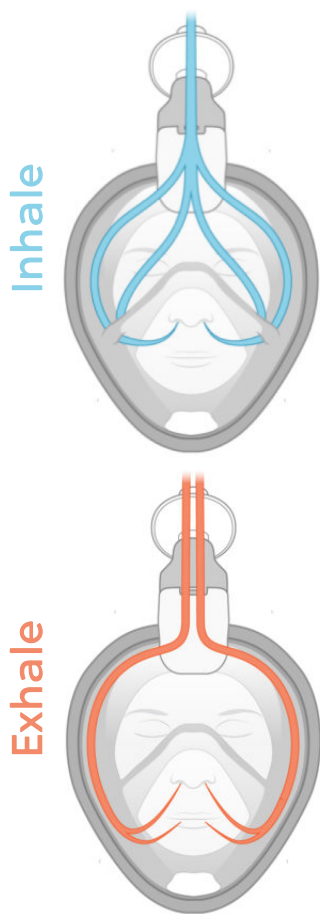
Easily create filters of **any material**:
cut to size and fasten with a **hose clamp** or **mason jar lid**.

Filter Materials



Repurposes Snorkel Masks

Full-face snorkel masks are **readily available** in multiple sizes, have **great visibility**, and make a **tight face seal**.

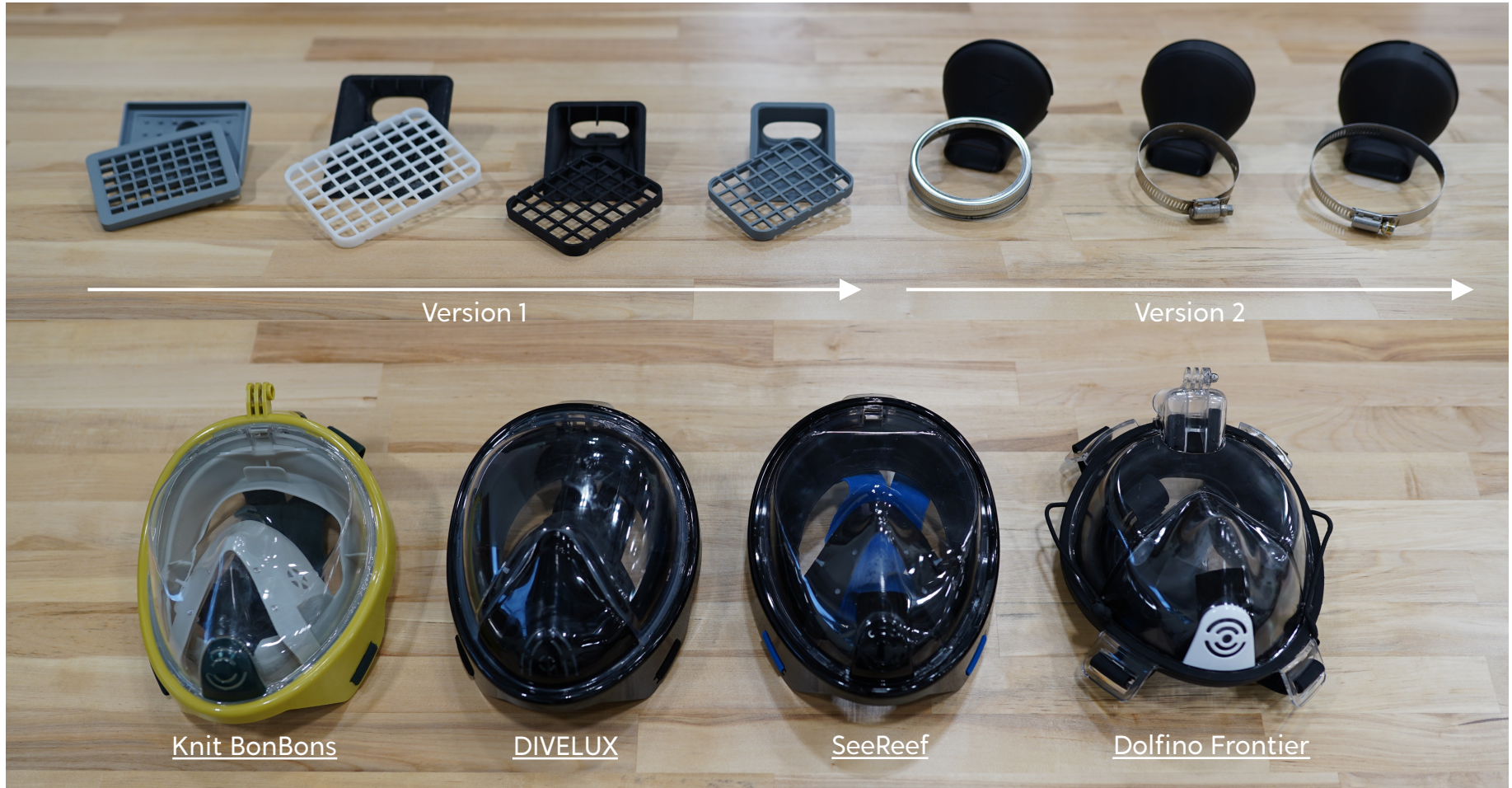


REF: [Pneumask](#)



Assembled Filter

The Universal Filter Cartridge has been **iteratively designed** and tested with several different snorkel masks.



Mask Leakage

Visualizing leak paths through masks with e-cigarette vapor.



Dolphino Frontier snorkel mask had the fewest leak paths so is best suited for retrofitting as a respirator.

More info: [RD.007 \(Mask Testing\)](#)

Filter Media Testing

Measuring filter breathability and visualizing filtration efficiency.



Single PM2.5 filter or 2 layers MERV 15 filter effectively remove vapor and offer low breathing resistance.

More info: [RD.008 \(Filter Testing\)](#)

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