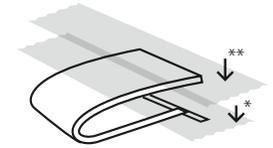


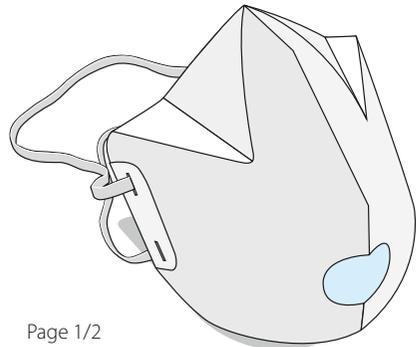
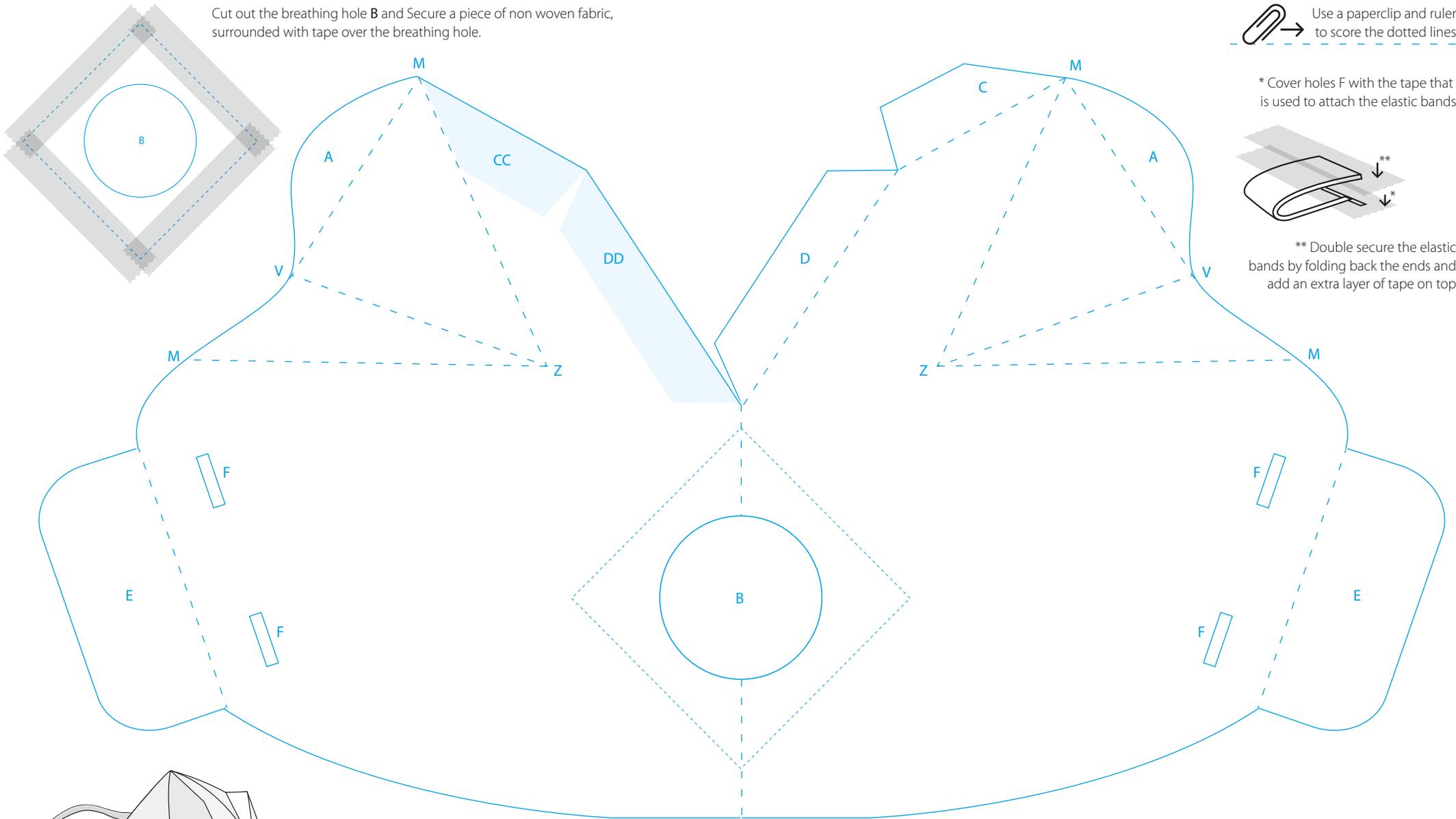
Cut out the breathing hole **B** and Secure a piece of non woven fabric, surrounded with tape over the breathing hole.

 Use a paperclip and ruler to score the dotted lines

\* Cover holes **F** with the tape that is used to attach the elastic bands



\*\* Double secure the elastic bands by folding back the ends and add an extra layer of tape on top



### Paper face mask V2.4

03-25-2020  
Mask size: 0  
Paper sheet size: A4

JP Leconte  
www.paperpaul.com

### Materials needed

- This mask works best made out 160 g/m paper
- Two elastic bands and a nonwoven paper fabric
- Clear tape or masking tape (recommended)
- Glue or two sided tape (recommended)
- A ruler for scoring lines
- A scoring tool like a paperclip or a blunt knife

### Building guide

- Cut out the solid blue lines and hole **B** with a knife
- Score the dotted lines - - - - -
- Fold and glue the two tabs **E** to the other side
- Cut out the four holes **F** (double layered with **E**)
- Fold and glue tabs **C** and **D** to **CC** and **DD**
- Attach the elastic bands and fabric

### Before putting on the mask:

- Carefully pinch the diagonal folds **M** and **V** towards **Z**
- **M** stands for Mountain fold, **V** stands for Valley fold
- Make sure to fold tabs **A** inwards

Mountain fold  Valley fold 

## Introduction

The idea to create a paper version of a protective face mask came up when I saw people contributing by sewing fabric masks. I think it's great how everybody gets involved by sharing ideas and templates and how this helps to fill in the needs and shortage of professional equipment.

My approach to this is simple: I wanted to see what I could develop with my skills as a Paper Engineer. It's my hobby to design complex paper pop-up structures. Paper has great advantages like availability, it's cheap, simple to work with, easy to stack and also very strong and flexible if you use it the right way.

The design I'm sharing is "open source" and I hope that this can be a base to improve or modify into a usable and better tool that prevents people from being infected by others.

## What about false sense of security?

I think it's important to mention this subject because it's essential that we all use effectively and reliable equipment while we fight the outbreak of COVID-19. It should be clear that initiatives like this paper mask are experimental, have not been tested and do not meet the strict standards of professional healthcare.

The main goal of this project is to see if this can contribute and help people who don't have anything to work with.

## Vacuum testing

This is the first prototype to see how it works and for others to test. Not all heads have the same proportions and it's possible to make more sizes and shapes in the future. One way to test if this mask fits and seals correct is by covering the breathing hole and inhale at the same time. When the mask sucks onto the face and creates a vacuum then it's the right fit.

## Paper vs fabric

Both paper and fabric have their benefits and downsides. Paper is cheap, easy to handle with low-cost tools, can be printed and is very cheap. Fabric is reusable and can be washed after usage but it's also harder to create a good seal with fabric. I'm no specialist and I also don't have the equipment to test how much this paper mask leaks or seals compared to fabric masks.

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## #Papermask

I would like to track any developments and testing with this design. If you can, please share your post with #Papermask on social media so I can find it.

Feel free to adjust or improve my design.  
The main goal is to see if this can turn into something useful.

Thank you!

Special thanks to David and Salvy from the N-M-V-C group

## Paper mask benefits and features

- Paper is a cheap material
- Paper is easy and fast to work with (this is a 5 minute build)
- Low-cost tools, no professional tools or machines needed
- The template is easy to print on paper
- The design fits onto a single A4 size sheet of paper
- It's a paper disposable and recyclable
- Close skin to paper seal fit
- Creates an almost complete vacuum
- The design can be resized into any size
- It's foldable in half, easy and compact to stack, carry or send

## Paper mask downsides

- It hasn't been tested or doesn't meet professional health care standards
- Paper can't handle moist for a long time
- A metal clip for the nose is missing (but can be added)
- It's less comfortable to wear this for a longer time
- Normal printing paper isn't good enough. 160 g/m paper is needed
- There's breath leaking out of the eye gaps when you exhale

## Side note

I've visited the intensive care on a daily base in January 2020 for two weeks straight. My mother was fighting for her life because of a viral infection. As a visitor, I had to wear a face mask. I've used three different models available in the hospital. From my own experience, I can tell that this paper mask works and isolates better than two of the three masks I've used. This experience made me decide to continue working on this project and improve its functionality.

