

## Breathing and talking with CPAP mask and ventilator

I'm Adolf Ratzka and I want to show you how I adapted a CPAP mask and configured my ventilator so I can talk with the mask.

I had polio over half a century ago. Most of my muscles were affected, including the breathing muscles such as the diaphragm. As a result, I have needed mechanical breathing machines ever since.

I show these machines in my other YouTube video "Mechanical ventilation: my journey from Iron Lung to CPAP mask".

Since January 2016, I have been using the Philips Respironics Dreamwear mask, a CPAP mask and designed for people who lie in bed. It's not meant for sitting upright.

I liked the mask for sleeping, for lying down. But could not use it while sitting up. Then, the hose is on top of the head, moves around at the slightest movement of the head and leaks easily. But if I turn the mask upside down, the hose is in the back of my head and out of the way.

When the mask is turned upside down, the nose piece will not cover the nostrils and will leak. That's why the nose piece – and only the nose piece - needs to be flipped back again.

The mask comes in different frame sizes. I first had frame size Medium which fit me fine when lying down. But when turned upside down, this size was much too small and hurt my nose. I had to get frame size Large. As to the size of the nose piece I have Medium both for lying down (sleeping) and sitting up.

I also had to make a couple of other modifications to the mask. The Dreamwear mask is designed for continuous positive air pressure – that's what snorers need. The air leaves the mask through air vents that are located on the nose piece, up front, and at the hose connector on top of the head. People who need breathing masks because they are underventilated not only will not need the holes. The air rushing through the ventilation holes will make undesirable noise. Thus I had the ventilation holes in the nose piece and the hose connector plugged up with glue and office tape.

I use the Philips Respironics Dreamwear mask together with the Resmed Astral 150 ventilator. My Astral uses its built-in exhalation valve.

For speaking, eating or brushing my teeth I run the ventilator in PS mode where PS stands for Pressure Support. Here are my settings

Resmed Astral 150 ventilator in PS mode (Pressure Support)

Pressure	15 cm CO <sub>2</sub>
Safety Vt	OFF
PEEP	OFF
Ti Min	0.3 sec
Ti Max	0.7 sec
Resp Rate	OFF
Trigger	Very High
Cycle	30%

Keep in mind that these are my settings, for my optimum health and comfort, given my vital capacity of about 800 cc. I am 6'2" or 187 cm tall, weigh about 53 kg or 115 lbs. I am 74 years old and have a slight scoliosis. Other persons, of course, will need other settings.

I get air by first taking a small breath on my own. This triggers the ventilator to push a bigger breath into my lungs. But I need to practice more. Often, my timing is off and the ventilator gives me a breath at the wrong time, as you may have noticed.

I'm getting a lot of benefits from using the mask in this way. With the mask I can do a lot more, I feel a lot better and I don't get exhausted in such situations as eating, brushing my teeth and especially when I talk. I hope other people in my situation will also start experimenting with nose masks. Just make sure to have your blood gases checked. I wish you good luck. Have fun!

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