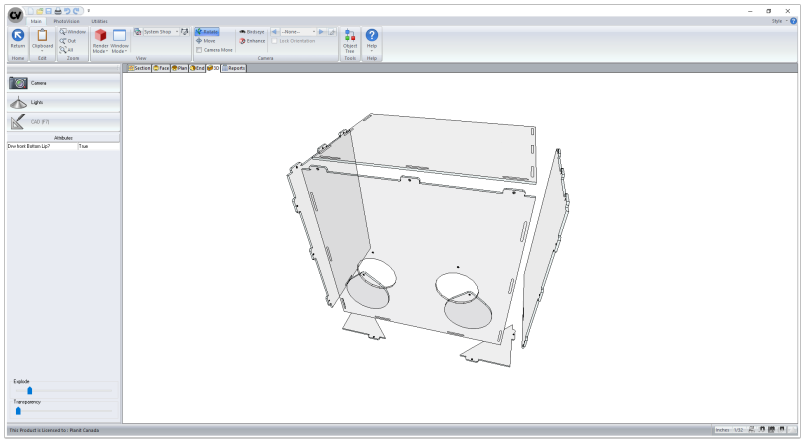
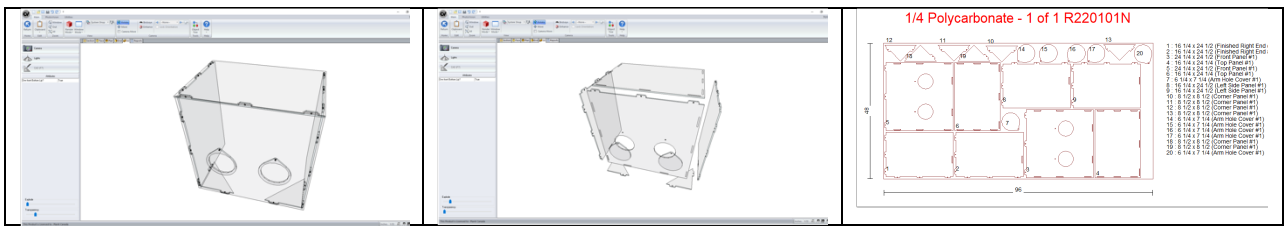
Planit Canada Shares Tips for Cutting Acrylic and Making a COVID Box Using Cabinet Vision



Manufacturers are answering the call to help protect our medical workers by dedicating their manpower and their machines to construct personal protective equipment that will help stop the spread of COVID-19. For woodworkers, navigating these uncharted waters presents some challenges. Knowing what to make, who to make it for and how to apply for government funding is all new. Learning how to cut acrylic, using their CNC router and Cabinet Vision, is the part of the equation that Planit Canada can help with.

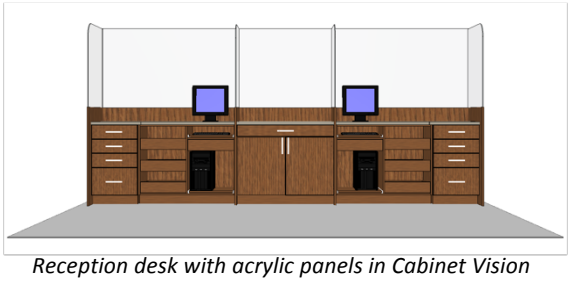
The COVID box, or intubation box, is designed, built, tested and distributed to Canadian hospitals by a Toronto-based team of volunteer physicians and engineers. The CAD drawings and parts list is available on their website (www.covidbox.org). Planit Canada Senior Software Specialist, Christopher Manclière, created the box in Cabinet Vision and is giving them to any manufacturer interested in making it. If you have a CNC Router and can get a ¼ tool to cut Acrylic (Polycarbonate), then you can start building these flat-packed boxes.

We caution all manufacturers against getting stuck with product they can't move. Please ensure you've gone through the correct channels before producing any personal protective equipment for medical workers. If you aren't sure where to turn, our industry associations are hard at work collecting and sharing relevant and up-to-the-minute information and can help direct you to Provincial and Federal resources.

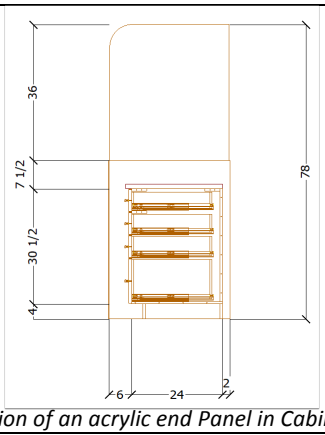


Working with plastic materials requires a little bit more care than cutting wood. The following are some basics you need to know in order to ensure success with Cabinet Vision.

9 Tips for Cutting Acrylic Using Cabinet Vision



Reception desk with acrylic panels in Cabinet Vision



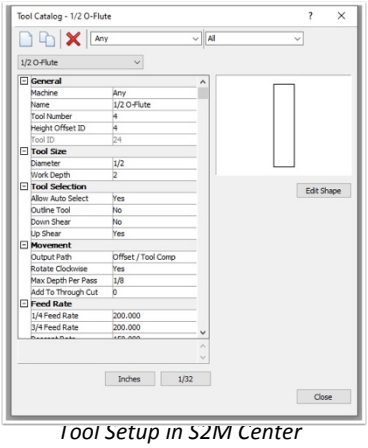
Cross Section of an acrylic end Panel in Cabinet Vision

1. **Material Manager.** In Cabinet Vision you create the acrylic as a Panel Stock material in the material manager. It's really similar to a glass material in terms of finishes and texture.
2. **Assigning a tool.** You'll need to assign a tool to this material to make sure it doesn't use the same tool as your typical wood panels.
3. **Selecting the right bit.** You need to use a bit designed for acrylic cutting; an up-shear tool is recommended for this type on material. The O-Flute Bit is a good choice:

Example of a solid carbide O-Flute up shear bit for plastics

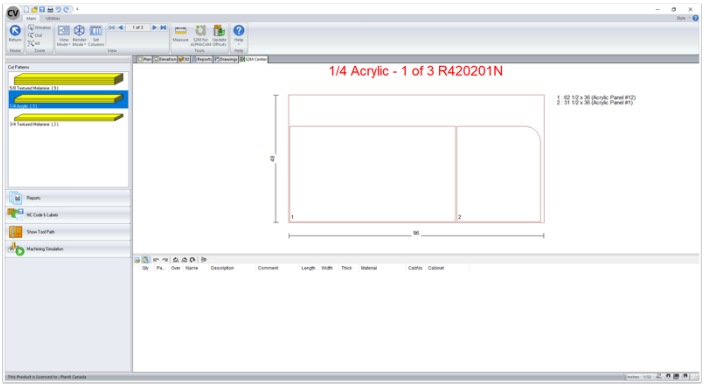
4. **Bit diameter.** If you cut large panels, it's better to use the largest diameter of bit possible to be able to cut deeper in a single pass and have a better finish. A good rule to determine the cut depth, is to cut half of the tool diameter in a single pass (for a 1/2 bit you will have a 1/8 pass depth).
5. **Feed Rate.** The feed rate would be slower than when you cut wood. For an 1/2 bit you could try a feed rate of 200 inch per minute (5 meter per minute)

6. **Spindle Speed.** The spindle speed (Rotation Per Minute) would be on the high end (18000 RPM)



Tool Setup in S2M Center

7. **Run Tests.** You need to run some test parts and find the optimal cutting feed rate and spindle speed for your machine. The settings above are just a starting point. The idea is to get a good clean cut without melting the plastic as it's being cut.
8. **Suction.** You need good suction on the CNC machine table to secure the acrylic parts. Excess vibration can result in poor finish.
9. **Protective film.** You can leave the protective film on the bottom surface on the acrylic panel while cutting.



Optimization of acrylic panels in S2M Center

Planit Canada is providing complimentary technical assistance for projects contributing to the effort to slow the spread of the COVID-19 virus. If your team is producing personal protective equipment (PPE) and requires help setting up for production with Cabinet Vision, our team is here to help - free of charge. Reach out to us at tech@planitcanada.ca to talk about designing and engineering for the COVID-19 effort.

For more information on the intubation box itself, visit https://www.covidbox.org/home, or visit this article from the New England Journal of Medicine https://www.nejm.org/doi/full/10.1056/NEJMc2007589