GUIDE 1 OF 6

Start Here: Carvio, your machine and where to get help

You have a CNC router and a copy of Carvio, and you are not sure what to do first. This guide gives you the big picture, shows you around the Carvio window and tells you where help lives.

IN THIS GUIDE

- Safety first
- How a CNC job works, start to finish
- Starting Carvio and a tour of the window
- Getting help: mouse-over cards, F1, the Help window and its search
- Choosing mm or inches
- Practising with the demo machine

YOU WILL NEED

- A computer with Carvio installed (Windows, macOS or Linux)
- A CNC router with a Grbl 1.1 or grblHAL controller and its USB cable
- A few router bits (a 6 mm or 1/4" end mill and a V-bit are a good start)
- Clamps, a scrap board, a ruler or calipers
- Optional: a touch plate for setting Z zero

Safety first

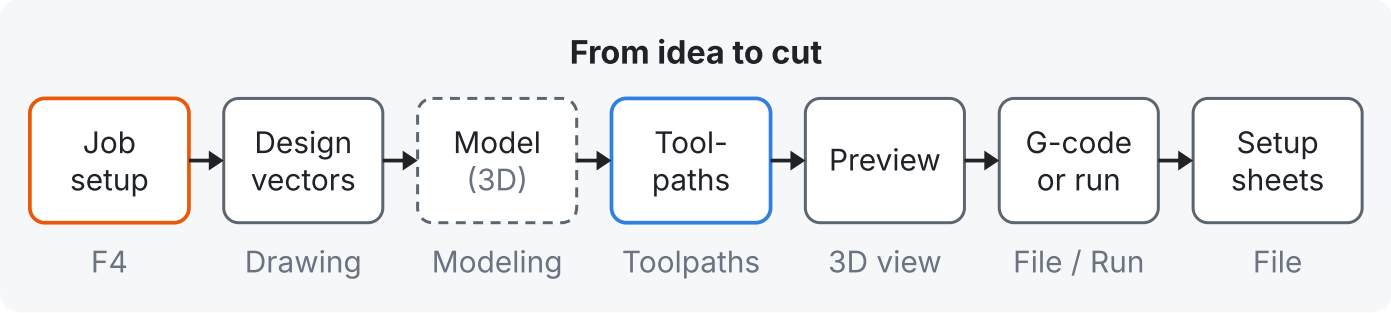
A CNC router can injure you, start a fire and wreck itself.

Carvio only writes the instructions. The machine carries them out, and you are the one in charge of it. Read your machine's own manual before anything in these guides.

- [ ] Know where the **emergency stop** is and keep it in reach. The buttons in Carvio are not an emergency stop.
- [ ] Wear **eye and hearing protection**. Tie back hair, no loose sleeves or gloves near the spindle.
- [ ] **Clamp the board down hard**, and keep the clamps out of the tool's way.
- [ ] Make sure the **bit is tight** in the collet and the collet nut is done up.
- [ ] **Check every job in the preview** before you run it, and run a new job in the air first (Guide 6 shows how).
- [ ] **Stay with the machine** while it runs. Never leave a running machine alone.
- [ ] Use **dust collection** or a mask: fine wood dust is harmful.
- [ ] Never use router bits with a **guide bearing** on a CNC. They are made for hand-held routers and can seize or break apart.

How a CNC job works

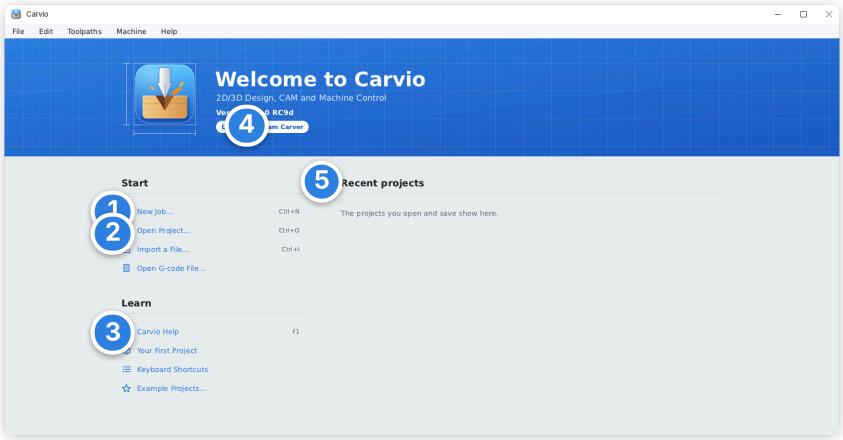
Every project follows the same road, and the Carvio window is laid out along it from left to right. You do not have to learn everything at once: the six guides walk the road one step at a time.



Step	What it means in plain words	Guide
Set up your machine	Tell Carvio which controller you have, how big the machine is and how fast it may jog. Once, for each machine.	Guides 2 and 3
Set up your tools	Describe the bits you own: type, diameter, angle, and sensible speeds. Once, for each bit.	Guide 4
Job setup	How big is the board, how thick, and where is its zero point? Every project starts here.	Guide 6
Design	Draw shapes and text, or import a drawing. These lines are called **vectors**.	Guide 6
Toolpaths	Pick a vector, pick a bit, say how deep. Carvio works out where the bit goes.	Guide 6
Preview	Watch the toolpaths cut a virtual block, and catch mistakes before they cost you wood.	Guide 6
Run	Connect to the machine, set its zero on the board, and press Start. Or save a G-code file for another sender.	Guides 5 and 6

Starting Carvio

Download Carvio from **carviocnc.com** and install it like any other program. When it starts you see the **welcome page**: nothing is open yet, and you choose what to do.



The welcome page. It comes back whenever you close a job with **File > Close Job**.

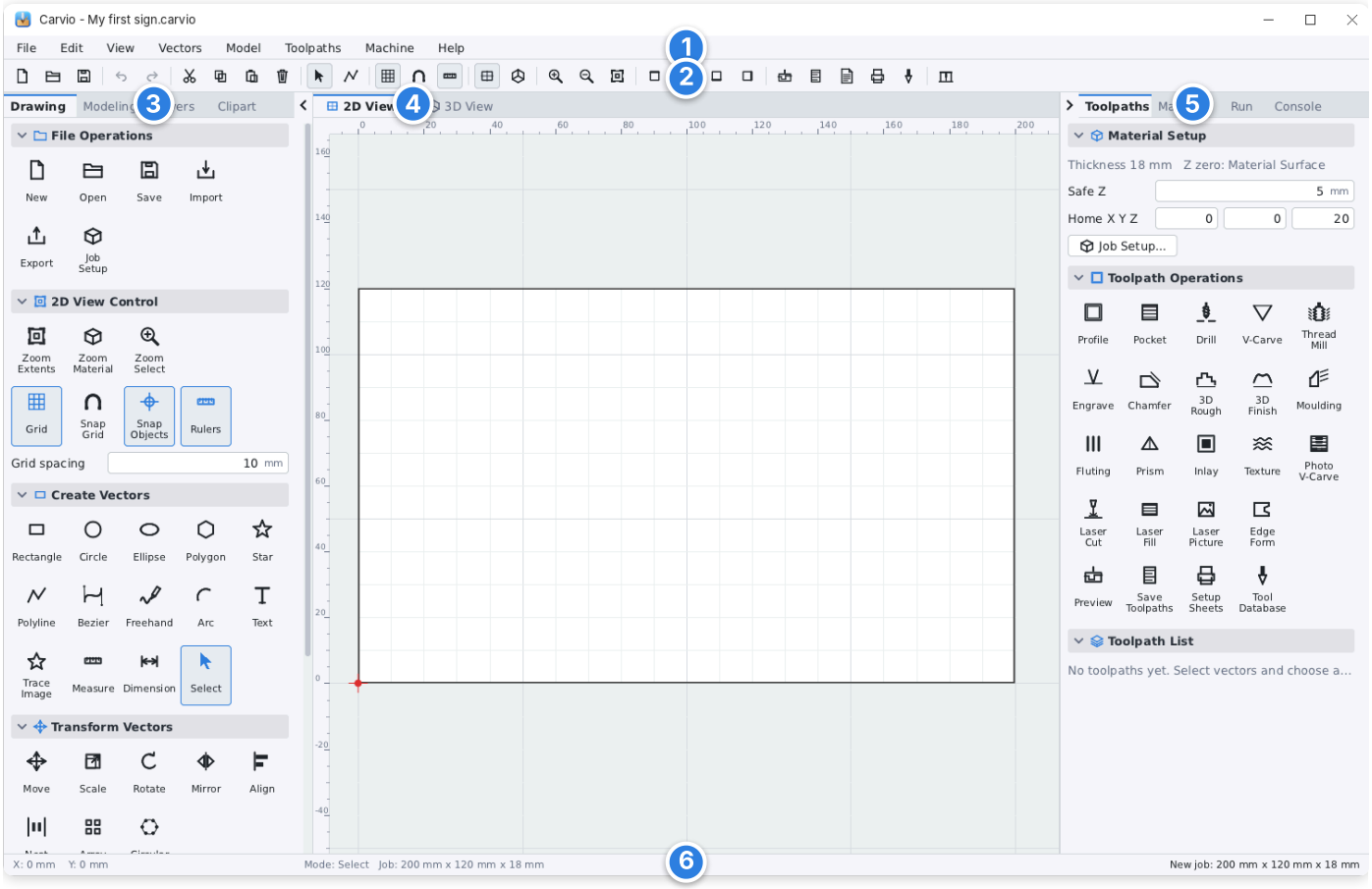
1. **New Job...** starts a project from a blank board (Guide 6).
2. **Open Project...** opens a saved `.carvio` file.
3. **Carvio Help**, **Your First Project** and **Keyboard Shortcuts** open the help at those topics.
4. The banner shows your Carvio version and whether it is licensed or on the free trial.
5. Recent projects and example projects appear here once you have some.

Free trial or licence?

Without a licence Carvio runs as a free trial with no time limit: you can design, make toolpaths, preview them, and run jobs on the built-in demo machine. A licence switches on saving, G-code output and running a real machine. The trial is a fine place to practise everything in Guides 1 to 5. **Help > Licence...** is where you sign in once you have bought one.

A tour of the window

Start a new job (**File > New Job...**, then **OK**) and you are in the workspace. It always has the same five parts.



A new 200 × 120 mm job. The white rectangle in the middle is your board, and the small red cross at its corner is the job's zero point.

1. **Menu bar**: File, Edit, View, Vectors, Model, Toolpaths, Machine, Help. Everything is in here somewhere.
2. **Toolbar**: one-click buttons for the commands you use most (open, save, undo, zoom, preview...).
3. **Left panel**: the **Drawing** tab (create and edit shapes), **Modeling** (3D reliefs), **Layers** and **Clipart**. For your first jobs you only need Drawing.
4. **Views**: the **2D View** is where you draw; the **3D View** shows the board as a block and plays the preview. A **Machine** tab appears here while a machine is connected.
5. **Right panel**: **Toolpaths** (where cuts are made), **Machine** (connect, jog, zero), **Run** (start a job) and **Console** (the conversation with the controller).
6. **Status bar**: the pointer position, the job size and messages such as "Connected" or "Saved".

Moving around the views

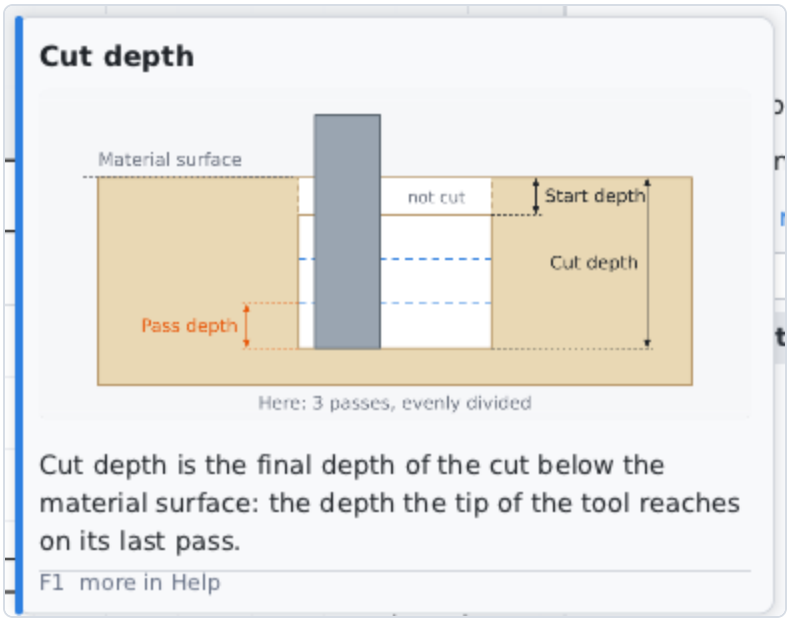
To	In the 2D view	In the 3D view
Zoom in and out	Turn the mouse wheel (it zooms towards the pointer)	Turn the mouse wheel
Move the picture (pan)	Drag with the middle or right mouse button, or hold Space and drag	Drag with the middle or right button
Turn the picture (orbit)	-	Drag with the left button on an empty spot
See everything again	Press F (**View > Zoom Extents**)	Press F
Switch views	F2 for the 2D view, F3 for the 3D view, or click the tabs above the view	
Undo a mistake	Ctrl+Z (Cmd+Z on a Mac). Esc closes a form or puts a tool away.	

Lost the panels, or made a mess of the layout?
View > Reset to Default View puts every tab and section back where it was when Carvio was new.

Getting help

You never have to guess what a setting does. Help is built into Carvio in three layers, from a one-line hint to the whole manual.

1. Rest the pointer on anything



The pointer resting on **Cut depth** in a toolpath form.

Let the mouse pointer rest on a field, a button or a checkbox for a moment and a **help card** pops up: a short explanation, often with a picture. Move the pointer and it goes away.

Toolbar buttons show their name and keyboard shortcut the same way.

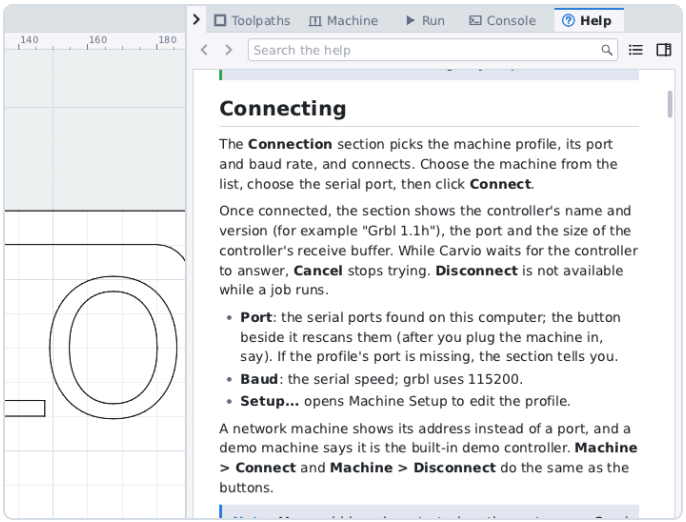
If no cards appear, the option **Show help when the pointer rests on an option** in **Edit > Preferences...** has been switched off.

2. Press F1 for the whole topic

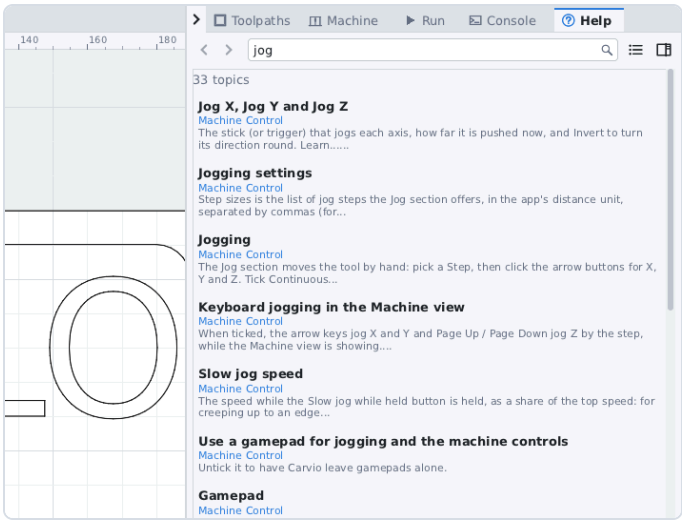
While a card is showing, press F1 and the Help opens at that option's full topic. Every form also has a small **?** button beside its title, which opens the help for that whole form.

3. The Help window: contents and search

Press F1 anywhere, or choose **Help > Carvio Help**, to open the manual. It opens in a window of its own that you can put beside Carvio, or you can keep it in a tab of the side panel (the button at the right end of its bar chooses).



The manual in the side panel: the contents button, the back and forward arrows and the search box along the top.



Type a word in the search box (Ctrl+F). Every topic that mentions it is listed; click one to read it.

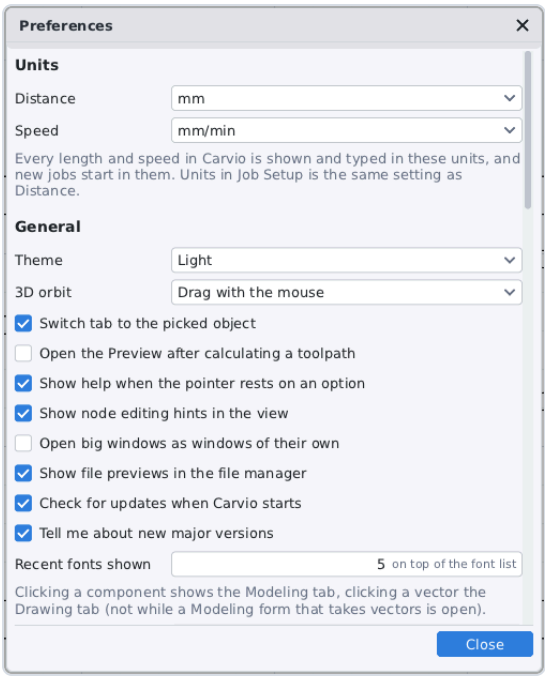
- **Contents** (the list button) shows every chapter. Click a chapter or a topic to jump there.
- **Search** looks through every topic. Try the name of a setting, a button or a word from an error message.
- **Links** in the text jump between topics. The arrows go back and forward.
- **Help > Print Manual...** gives you the whole manual to print or save as a PDF, handy next to the machine.
- Still stuck? The forum at **carviocnc.com** is where to ask. Say what you expected, what happened, and your Carvio version (**Help > About Carvio**).

Choosing mm or inches

Carvio works in millimetres or inches, your choice. The setting is in **Edit > Preferences...** under **Units**: **Distance** sets every length you see and type, and **Speed** sets feed rates (mm/min or inch/min). New jobs start in these units, and the Units box in Job Setup is the same setting.

Pick the units your bits and your board are measured in, and stay with them. You can still type the other unit in any box: `1in` in a mm job gives 25.4 mm.

> **Not sure?**
> Most bits sold in North America are inch sizes (1/4", 1/8"), most elsewhere are metric. Carvio converts either way, so the choice is only about which numbers you find easier to read.



Preferences: the units are at the top.

Practise with the demo machine

Carvio comes with two machines that exist only in software: **Demo CNC** and **Demo Laser**. They answer like a real Grbl controller, so you can connect, jog, home, set zero, probe and run a whole job and watch it cut in the Machine view, with no hardware and no risk. Guide 5 uses the demo machine for every step before you do it on your own machine.

> **Where the demo machine is**
> On the **Machine** tab, open the machine list in the **Connection** section and pick **Demo CNC**, then click **Connect**. If the demo machines are missing, **Edit > Preferences... > Add the demo machines** puts them back.

⚠ If something goes wrong

What you see	What to do
Carvio will not start, or the window is black or garbled	Carvio draws with your graphics card. Install the latest graphics driver from the computer maker or the chip maker (Intel, NVIDIA, AMD), then try again.
The window opened on a screen you cannot see, or is tiny	Drag it by its title bar, or maximise it with the button at the top right. The panels come back with **View > Reset to Default View**.
The help says *Loading the help...*	Carvio reads the manual in the background when it starts. Wait a few seconds and open it again.

No help cards pop up	Turn on **Show help when the pointer rests on an option** in **Edit > Preferences...**, and hold the pointer still for a moment.
Everything is in inches but your bits are metric (or the other way round)	Change **Distance** in **Edit > Preferences...**. Nothing you drew changes size; only the numbers do.
A message says something needs a licence	You are on the free trial, which cannot save, print or run a real machine. Click **Continue trial** to carry on designing, or **Help > Licence...** to sign in.

Next: Guide 2, Know Your Machine: axes, zero and which way is which.

The Carvio Beginner Guides: 1 Start Here · 2 Know Your Machine · 3 Set Up Your Machine in Carvio · 4 Set Up Your Tools · 5 Connect, Jog, Home and Set Zero · 6 Your First Job and Test Cuts