

Follow every phase in order. The most common mistake is opening the G-code file in the ShopSabre controller BEFORE setting Z-zero. Always set Z-zero first — you cannot do it after the file is open.

## WORKFLOW OVERVIEW

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<b>1</b> Get File on USB	<b>2</b> Check Feeds & Speeds	<b>3</b> Save G-Code	<b>4</b> Set Z-Zero	<b>5</b> Open File in Controller	<b>6</b> Check Boundary	<b>7</b> Run the Job
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## PHASE 1 — PREPARE YOUR FILE

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### 1 Get Your VCarve File on a USB Drive

#### Bring your .vcarve file on a USB drive to the CNC computer

- Save your VCarve project file (.vcarve) to a USB drive before coming to the CNC
- Plug the USB drive into the CNC computer
- Open VCarve on the CNC computer
- Go to File ▶ Open and navigate to your USB drive
- Open your .vcarve file in VCarve — do NOT open it in the ShopSabre controller



#### WARNING

Open your file in VCarve only. Do not open it in the ShopSabre controller yet — Z-zero must be set first.

## PHASE 2 — VERIFY FEEDS, SPEEDS & CUT DEPTH

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### 2 Check Your Feeds, Speeds & Cut Depth

#### Verify all toolpath settings before saving G-code

- In VCarve, open your toolpaths and review each one
- Check the feed rate, plunge rate, and cut depth for every toolpath
- Cross-reference the Feed & Speed / Cut Depth chart to confirm your settings are correct
- Do not proceed until all settings match the chart



#### CAUTION

Wrong feeds, speeds, or cut depth can break bits, burn material, or damage the machine. Always check the chart.

## PHASE 3 — SAVE G-CODE

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### 3 Save Your Toolpath as G-Code

### Calculate and save your toolpath file to the computer

- In VCarve, go to the Toolpaths panel
- Click Save Toolpaths (or Calculate and Save)
- Make sure the post-processor is set correctly for the ShopSabre
- Save the G-code file to the Desktop or Documents folder on the CNC computer
- Note the filename so you can find it easily in the next step

#### INFO

Save to Desktop or Documents only. Do not run G-code directly from the USB drive.

## PHASE 4 — SET Z-ZERO ⚠ DO THIS BEFORE OPENING YOUR FILE

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### 4 Drive the CNC & Set Z-Zero

This must happen before you open your G-code file in the ShopSabre controller. Once the file is open, you can no longer set Z-zero.

#### Use the keyboard to jog the CNC and set Z-zero

- Open the ShopSabre controller (do NOT load your file yet)
- Use the arrow keys (left/right/up/down) to jog the CNC head over your board
- Position the head over the top surface of your material where you want X/Y zero
- Use Page Up and Page Down to slowly lower the Z axis toward the material surface
- Slide a piece of paper under the bit as you lower it
- Stop when the bit just grips the paper — you should feel slight resistance when pulling the paper
- Set Z-zero at this position in the controller
- Drive Z back UP before doing anything else — do not leave the bit at the surface

#### WARNING

Always drive Z back UP after setting Z-zero. Leaving the bit at the surface risks breaking the bit when you jog the machine.

#### WARNING

**MOST COMMON MISTAKE:** Do not open your G-code file before setting Z-zero. If you open the file first, Z-zero cannot be set and your job will cut at the wrong depth.

## PHASE 5 — OPEN YOUR FILE IN THE CONTROLLER

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### 5 Load Your G-Code File

#### Open your saved G-code file in the ShopSabre controller

- In the ShopSabre controller, open your G-code file from the Desktop or Documents folder
- The toolpath will appear on screen
- Zoom in to inspect the toolpath and confirm it looks correct

#### INFO

Z-zero must already be set before this step. If you skipped Phase 4, go back and set Z-zero now before continuing.

## PHASE 6 — CHECK THE BOUNDARY

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### 6 Jog the CNC to Verify It Stays on the Board

### Manually jog the CNC around the perimeter of your toolpath

- Use the arrow keys to drive the CNC head to each corner of your toolpath
- Confirm the head stays over your board at every corner — it should not go past the edge
- Confirm the head does not go past the hold-down clamps or board holders
- If anything looks off, stop and see Mr. Semler before proceeding



If the toolpath runs off the board or into a clamp, the bit will break and the job will be ruined. Take your time on this step.

## PHASE 7 — RUN THE JOB

### 7 Set Speed & Start the Cut

#### Reduce speed, start the job, and stay ready to stop it

- Find the speed slider in the ShopSabre controller software
- Set the speed slider down to about 15% before starting
- Press the green button (top left corner of the screen) to start the job
- The first press will zoom the view out to show the full job — this is normal
- Press the green button a second time to actually begin cutting
- Watch the cut carefully — keep your hand near the spacebar
- Press the spacebar immediately if anything looks wrong — it will pause the job
- Once you are confident the cut looks correct, you can raise the speed to between 30–60%



Never walk away while the CNC is running. Keep your hand near the spacebar at all times so you can pause instantly if something goes wrong.



Start at 15% speed. Only increase to 30–60% once you have confirmed the first pass looks correct.



The spacebar pauses the job. Pressing the green button again will resume from where it stopped.

## STUDENT CHECKPOINT

### Full Run Checklist — Check Every Step

<input type="checkbox"/>	<b>VCarve file saved to USB drive</b>
<input type="checkbox"/>	<b>File opened in VCarve on the CNC computer</b> <i>NOT in the ShopSabre controller</i>
<input type="checkbox"/>	<b>Feeds, speeds, and cut depth verified against the chart</b>
<input type="checkbox"/>	<b>G-code saved to Desktop or Documents folder</b>
<input type="checkbox"/>	<b>ShopSabre controller opened — file NOT loaded yet</b>

<input type="checkbox"/>	<b>CNC jogged over the board using arrow keys</b>
<input type="checkbox"/>	<b>Z-zero set using paper method — bit just grips paper</b>
<input type="checkbox"/>	<b>Z axis driven back UP after setting Z-zero</b>
<input type="checkbox"/>	<b>G-code file loaded into ShopSabre controller</b>
<input type="checkbox"/>	<b>Toolpath visually inspected on screen</b>
<input type="checkbox"/>	<b>CNC jogged to all corners — stays on board, clears clamps</b>
<input type="checkbox"/>	<b>Speed slider set to 15% before starting</b>
<input type="checkbox"/>	<b>Green button pressed once — view zoomed out</b>
<input type="checkbox"/>	<b>Green button pressed second time — cutting started</b>
<input type="checkbox"/>	<b>Hand kept near spacebar throughout the job</b>
<input type="checkbox"/>	<b>Speed raised to 30–60% only after confirming first pass is correct</b>