Rotary on Laguna Swift Workflow

Add Laguna CNC Turner post processor	Update VCarve's Machine Configuration	* Select Machine > Machine Configuration from the menu, drop down and select Swift machine and press the **edit icon** (box with pencil in it) to show Machine Configuration Management * Under the Associated Post-Processors press the **circle-plus icon** to bring up the Post-Processor Management list * In the list select “Laguna CNC Turner (mm) (*.NC)” post processor and press **Select** button * Back on Machine Configuration Management press the **Apply** and **OK** buttons * Note: Rebooting any Asmbly computer resets it back to only the standard “Laguna Swift CNC (mm) (*.mmg)” post processor and requires you to reinstall the “Laguna CNC Turner (mm) (*.NC)” post processor again
Design, Save and Convert Toolpath	Save Toolpath to USB Drive	* In VCarve: **Save Toolpaths** with **Machine**: Swift and **Post Processor**: Laguna CNC Turner * In VCarve: Select toolpath(s) and press **Save** to store on USB drive. (**Tip:** Combine if same tool)
	Convert NC to mmg and copy to USB	* Drag and Drop each NC file to http://1fifoto.com/asmbly/rotary-converter which converts and downloads an mmg file for each file * Copy all converted mmg files from Downloads to USB drive
	Eject USB Drive	* In Windows File Explorer, right press USB, and **Eject** USB drive
Stock Preparation	Cut and Mount Stock on Adaptor	* Calculate stock size (height, width, length) based on design * Add 5-10mm to stock height and width as allowance. SQRT(H**2+W**2) < 60mm otherwise the stock collides with the rotary base * Add 25-30mm on both left & right ends to stock length as allowance. Otherwise the spindle collet may collide with the stock adapter plate. Mark left & right end extension on stock * Cut stock * Mark diagonals on both head and tail ends * Using stock adapter plate, mark with circles where the holes on the diagonals are to be drilled * Drill holes into the stock where there are the adapter plate circles. * Screw adapter plate onto stock
Startup CNC	Power on CNC	* Clear sides of machine of any obstructions * Turn rotary switch on front of cabinet to ON to turn on CNC * Turn key to “1” and press green button to turn on controller * Turn on dust collector
	Initialize CNC	* Select “All axis home” on controller and press REF/OK to home * Press MODE until “Continuous” selected (“Continuous”→”Step”→”Distance”)
Rotary Setup	Move and Mount Rotary	* Put bench dogs in CNC Home on spoil board * Move Rotary to CNC Home and align with dogs * Screw down rotary onto spoil board
	Plugin Rotary	* Plug in rotary cable into A-Axis port on the side of the CNC Controller. Note: The rotary's stepper motor is now energize and can no longer be turned by hand
Install Pointed End Mill	Prepare to set work origins	* Tighten by hand a pointed end mill (such as an engraving bit) into spindle with 1/8” collet. This is just for accurately setting the X/Y origin. Otherwise mount your first end mill
Set Y Work Origin	Set Y Work Origin	* Slide tailstock near headstock (1-2 inches) with no stock mounted * Move tip of pointed tool bit (**X+/-**, **Y+/-** or **Z+/-**) to tip of tailstock assembly, focus on getting the Y axis set, although you'll probably move the X & Z too – align tool tip to tailstock tip * Press **XY->0** to set both X & Y to 0 (although only Y = 0 is important at this time)
Mount Stock	Mount Stock between headstock and tailstock	* Slide the tailstock to the right moving it away from the headstock to allow room for the stock * Insert stock and its mount adapter plate into the chuck and tighten very lightly with the chuck key. Just enough to hold it so the tailstock can be adjusted

		* Move the tailstock towards the stock to aligned it with the center of the diagonals on the end and press it into the stock about 1mm. * Tighten the tailstock assembly hold-downs onto the bed * Turn the tailstock adjustment wheel to push the point into the stock at the center of the diagonals about 2-3mm * Tighten the tailstock adjustment wheel hold-down so it can't twist * Tighten the stock adapter plate securely into the chuck using the chuck key
Set X Work Origin	Set X Work Origin	* Move tip of tool bit (**X+/-** or **Z+/-**) to just above left end extension mark on stock. Only move X & Z; do not move Y, that is, keep Y at 0. This is where cutting is to begin and go to the right * Make sure Y is already 0 and press **XY->0** to set X & Y to 0
Set C Work Origin	Set C Work Origin	* Borrow the circular saw angle measurement tool and place it on flat of the stock * Rotate stock (**C+/-**) until the angle tool shows an angle of 0 degrees * Press **ZC->0**, Use **Y+/-** to select **Clear A**, Press **REF/OK** * Remove the angle tool and return it to the circular saw
Install End Mill	Secure End Mill	* If present, remove [pointed] end mill and collet from spindle * Mount [ball nose roughing or finishing] end mill into spindle with collet
Set Z Work Origin and Spindle Speed	Set Z Work Origin	* Raise Z (**Z+**) to its maximum to clear the rotary, and move X to the right beyond the tailstock assembly. Move Y (**Y+/-**) to be above the outer bed of the rotary (not the center of the rotary bed) * Place the Z-height sensor puck on the outer bed, Press **Toolset** to set the Z to 0. When complete the Z automatically moves up to about 75mm * Move Z (**Z+/-**) to **65mm** (this is the distance from the outer bed to the rotary axis of revolution) * Press **ZC->0**, Use **Y+/-** to select **Clear Z**, Press **REF/OK**
	Set Spindle Speed	* Reference Frequency-to-RPM tablet & set red Frequency display for RPM
Load and Select File	Insert USB	* Insert USB drive into top right of Laguna controller
	Load File	* Press **Files**, On the **SelectWorkFile** menu press **Y+/-** to select **UDisk File** and press **REF/OK** to choose USB drive * Press **Y+/-** to select file and press **REF/OK** to load file
Run Selected File	Run File	* Move tool to near stock to insure tool does not collide with headstock or tailstock while getting to its start location * Press **RUN/PAUSE/DELETE** to see the **SetWorkParam** popup * Press **REF/OK** to start the Spindle, then the GCODE starts running and tool starts moving
	While Running	* Press **RUN/PAUSE/DELETE** to pause (spindle runs), press again to continue * While running, press **STOP/CANCEL** to immediately stop the running GCODE and raise the spindle up and away from the stock. Press **Y+/-** buttons to select “Discard Breakpoint” and press **REF/OK**
	Run Ends	* Spindle raises and stops * Another same tool, but new file? Goto **Load and Select File** * Another new tool and new file? Goto **Install End Mill**
Shutdown CNC	Tools, Stock and Power	* Reset spindle speed, remove end mill, return collet and chuck to tool box, remove USB drive, remove stock, unplug and move rotary to end of bed, turn oă dust collector, turn oă controller and CNC
Clean Up	Sweep and Vacuum	* Clean up and sweep entire work area for next member, ratchet and empty dust collector