Projects

The Golf Ball Setter

Compatible with the Current Version of

VCarve | PRO & DESKTOP

Welcome to this episode of NextWave Automation monthly project. This month's project we are going to make a unique but complex project a golf ball setter. It has 6 glue ups, 42 operations, mostly two-sided machining. This project has seven parts. It has two sides, two fronts halves, a bottom, arm, and a pivot. The operation of the golf ball setter does not require, Power nor Electricity. Simply push the lever to automatically place the ball on the tee. Easy to use for right both right & left handed players.

The samples were made using Butternut and Baltic Birch however, you might use woods of your own choosing. We recommend using any suitable hardwood. This is a nice project to give as a gift or make for yourself.

The Instructions, crv. files and videos are found on Nextwave's Automation Website nextwaveautomation.com
This project is aimed at the woodworker with moderate to advanced skills. You will need access to the current version of V-Carve with updates, The tools are listed below.

The main topics today are:

- Project Materials
- Designing
- Machining
- Finishing and Assembly

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Project material list for Golf Ball Setter:

The materials you will need for this project are:

1. two pieces of Baltic Birch plywood 16” x 16” x ¾”
2. two pieces of hardwood 16” x 16” x 0.25 of an “
3. two pieces of 6” x 26”x ¾”
4. one piece 12” x 14” by ¾” hardwood
5. a laminated piece of PVC vinyl 3” x 6” x 22”

Project Tool List:

Tools that you will need for this project are:

1. ¼ “up spiral bit
2. ¼ “up spiral ball nose bit
3. ½ “up spiral bit
4. 1-” ball bit
5. 60° v-carve bit
6. 1 ½ “spoil board bit
7. 3/8 “up spiral bit
8. 1-” half round bit

Project CNC Files:

- Golf setter trough2.crv
- Golf Setter Back2.crv
- Golf Setter Front2.crv
- Golf Setter Side.crv
- Golf Setter Bottom.crv
- Golf Setter Parts.crv

Video Files: found on nextwaveautomation.com

- Golf Setter file Setup.mp4
- Ball Setter Machining.mp4
- Ball Setter finishing and assembly1.mp4
- Ball Setter finishing and assembly Part 2.mp4

Creating the Tap Files:

With the V-Carve software, open the project CNC files. Carefully review all the toolpaths and make necessary changes to suit your tools and machine. The toolpaths are currently set with tool, feeds and speeds that were used in designing the original project. Be sure to review them for your machine. Edit the tools and change the settings to fit you own machine and requirements. It is very important to recalculate all toolpaths after making any changes. Once having made the necessary recalculations for your own machine and tools, reset the preview, and then preview all toolpaths, again, to visually verify the project outcome. Create the tap files for your machine by using the correct post processor. Once satisfied with your settings, save the tool paths using the appropriate post processor for your machine. Check tool paths by air cutting the project or use rigid foam board to run a sample tool path. Now you're ready to make your own Golf Ball Setter!

Material and prep

To prep the material of this particular project you will need to assemble:

1) piece of Baltic birch plywood 16" x 16" x ¾" and a piece of 16" x 16" x ¼" hardwood of your choice. You will need two of these blanks.
2) You will need to glue up 12" x 14" x ¾ "hardwood of your choice.
3) You will need to laminate together three pieces of PCV vinyl 1" x 6" x 22".
4) You would need to glue up ¾ "x 6" x 26" hardwood of your choice. You will need 2 of these.

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Step 1

Set up file prep first you will have to go to nextwaveautomation.com then go to projects and go to golf ball setter and download the files for this project. After you've downloaded the files you should have seven files golf setter back, golf setter front, golf setter trough, golf setter bottom, golf setter side, and golf setter parts. Now you will open each file and save the tool tap file for that file in the appropriate post processor for your machine. Make sure you save all these tool tap file as unique filenames so you don't get confused of what file goes to what part. Again, I can't stress enough to make sure you save all of your tool paths in the correct post processor.

Step 2 Trough Machining

The trough is made out of PCV vinyl. Remember we had the create the appropriate blank that was 3" x 6" x 22". Now mount this blank on your spoil board. Machine the top side first. First install a 1" up cut bit, and run the top pocket tap file. Install the 1" ball bit, and run the roughing and finishing tap files. Install your ½" up cut bit, run your whole pocket tap file. Install your ¼" up cut bit, and do your alignment holes, rear pocket, and kick finish, tap files. Now remove your blank and prepare spoil board for side two of the trough. Mount your ¼" up cut bit and run your spoil board alignment tap file, you now should have two holes that match side one of your PVC blank. Install the PCV blank aligning it with alignment holes and securing to the spoil board. Remember all of your Z height positions are now done from the top of the spoil board. Mount your 1" ball bit and do your roughing and finishing tap files. Then install a ¼" ball nose bit and run your roughing finishing and pocket tap files. And finally mount your ½" spiral up cut bit and run your profile cut.

Step 4 Bottom Machining

In this step we are going to do the bottom and the top. Again, this is a two-sided operation. Mount your blank to the spoil board. We are going to do side one first. Install your ¼" up cut bit, and run your alignment holes tap file. Install your 1" ball bit, and run the golf setter 3-D groove. Install your 3/8" up cut bit, and run the golf setter bottom profile tap file. Install your round over bit, and run the golf setter half round tap file. Remove your blank from the spoil board and prepare the spoil board for side 2. Install your ¼" up cut spiral bit, and perform the spoil board holes tap file. Install your three eights round over bit, and run the golf setter back form tap file. Install a 3/8" spiral up cut bit, and run the golf setter side 2 tap file.

Step 5 Sides Machining

In this step we are going to do the sides. Again, this is a two-sided operation. Mount your blank to the spoil board. We're going to do side one first. Install a ¼" up cut spiral bit, and run the golf setter's side holes tap file. Install a 3/8" up cut spiral bit, and run the golf setter's side pocket and golf setter profile tap file. Remove your blank. Now to prepare the spoil board for side 2. Install a ¼"up cut spiral bit, and run site spoil board tap file. Install a 60° v-carve bit, and run the golf setter side v-carve 2 tap files.

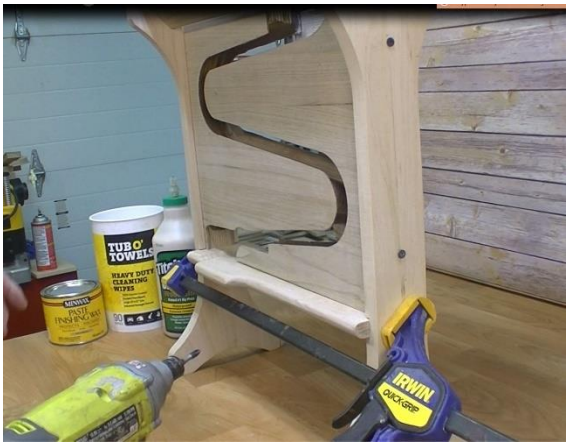
Step 6 and 7 front and back Machining

Machining of the front and back are probably the most critical machining operations of this project. You have four basic tool changes. One is for the ½" up cut bit up cut bit, for the 1" ball nose bit, spoil board cutter bit, and a ¼" up cut bit. The datum position Z0 is the top of the material. You start out the machining operation by installing the 1 ½" spoil board cutter bit and running the front golf setter leveling tap file, only if you have to mill down your board to thickness. Then install the quarter inch up cut bit and running the front golf setter alignment pocket tap file. Then install the ½" up cut bit and running the front golf setter half inch profile tap file. Then load your 1" ball nose bit and run the front golf setter ball profile combination tap file. You will have to do this for the machining of the back and the front parts of the main body.

Step 8 Parts Machining

Machining the golf setter parts is a one-sided operation relatively simple. Load a ¼" up cut bit, and run the golf setter parts tap files. Cut out the tabs and the parts are ready for final assembly.

Step 9 Dry Assembly



During dry assembly this is when we make sure all of our parts are well sanded and operate correctly. Always dry assembly project this is when you'll find out all your bugs need to be rectified. Also, you learn what clamps you will need for your final assembly glue up. After you are satisfied with your dry final assembly, then you can tear it apart and ready it for sanding and final assembly.

Visit the video for more detail information.

Step 10 Final Assembly

glue up and final assembly for this project is pretty straightforward, the things you really have to pay attention to is the alignment of the parts so that the are golf balls go down the trough smoothly and easily. I build this on its side to make it easier to align the parts clamp and let dry. After the main body is dried, add all of the supports in their appropriate places. Remember make sure to periodically check that golf balls go down the trough easily and smoothly. Now you're ready to go on to the finishing of the parts.

Visit the video for more detail information.

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Step 11 Sanding and Finishing

For this project we used Crystalac sanding sealer, and their Extreme Protection Polyurethane. Sanding and finishing this project is like any other project, I usually Sand everything down to 220 grit put a couple sealer coats on. Sanding between coats. Apply 4 coats of CrystaLac Extreme Protection Polyurethane. Now you can take the metal parts and the arm and spray them with a coat of gloss black.

Now we are ready to assemble the arm, the arm holder and the pivot to the main assembly.

Now you're ready to go to the practice site and try out your golf ball setter. This is been a somewhat challenging project but the outcome really works well. Hope you've had fun building this project. Till next project keep on carving.

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Rick Frazier

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