

Internship Report

Premier Paint Roller LLC

July – August 2018

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I. Introduction

During my internship at Premier Paint Roller from July – August 2018, I was tasked with many projects, most including custom CADs and designs. The major projects I worked on were the printing press guides, nailing table extension, and side trimmer CAD. Of these three projects, I was able to complete the nailing table extension and side trimmer CAD. The printing press guides will need to be assembled once we receive the parts from H&W. Other smaller projects are also included and explained in this report as are future projects that I was not able to start or complete during my time here.

II. Projects

Printing Press Guides

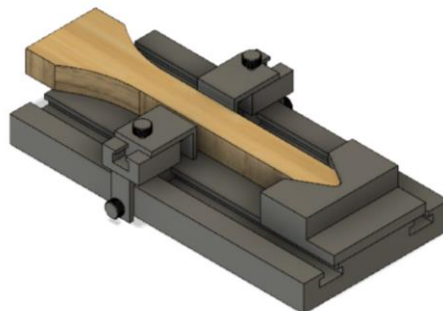
Product Specifications

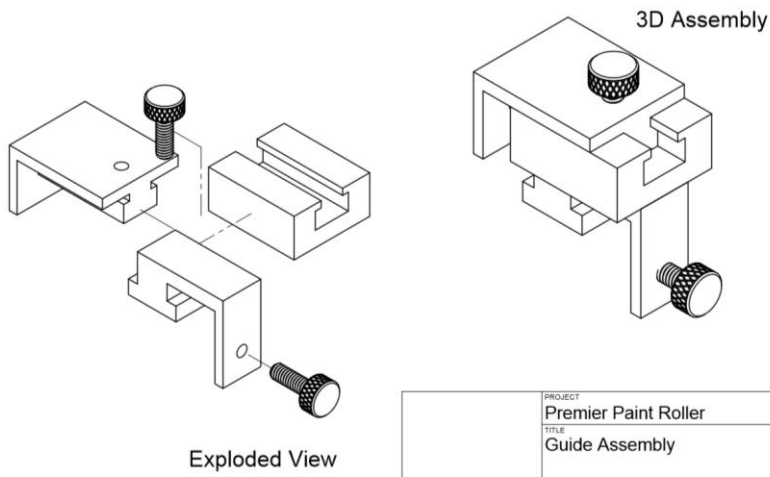
The purpose of these guides was to replace the ones currently on the printing press in order to make the press more efficient and easier to work with. The guide is made up of three components that allows for movement in both the x and y axes, thus letting the operator adjust the guides to the exact measurements of the handle. The bottommost piece will be slotted into the already existing plate. Two knurled knobs will be used in order to lock the guides into place. In addition, a new handle guide will be made at a steeper angle to ensure the handle is straight.

Design Process

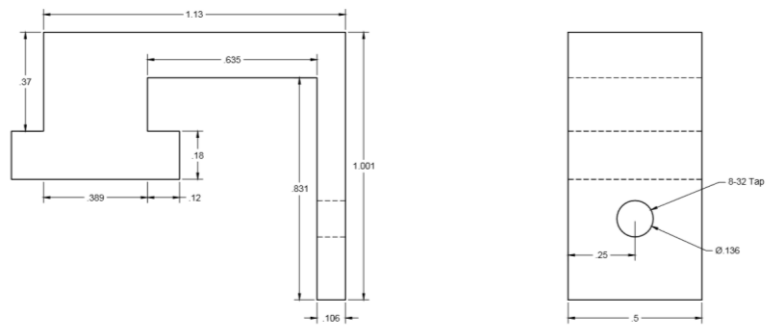
When designing this, I wanted to keep the functions simple without losing the ability to make various adjustments. By giving them dual-axis movement and locking mechanisms, the operator should be able to easily move and lock the guides snug against the handle, making sure that the stamp will be placed in the same spot for every handle.

Drawings



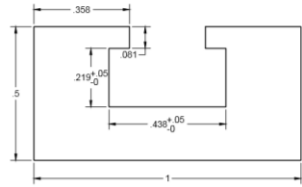
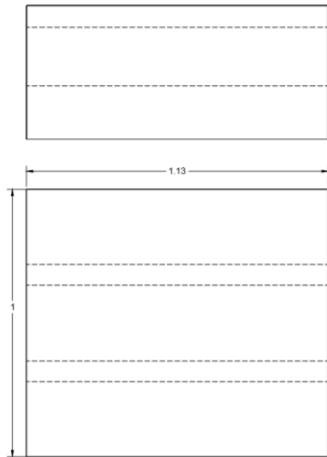


PROJECT				
Premier Paint Roller				
TITLE				
Guide Assembly				
APPROVED	SIZE	CODE	DWG NO	REV
CHECKED	B			
DRAWN	Lngh LJ	7/29/2018	SCALE 2:1	WEIGHT
			SHEET 1/1	



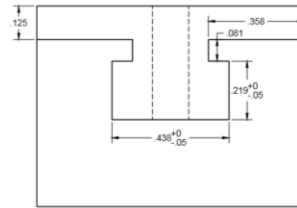
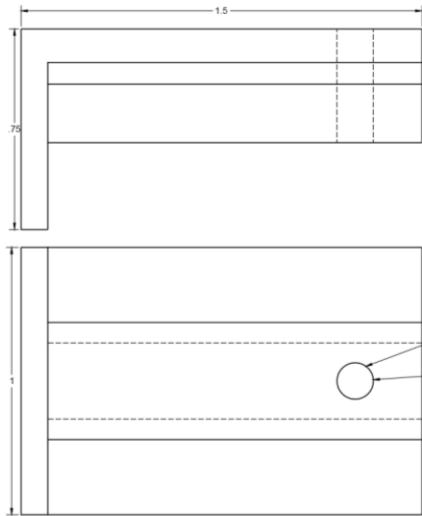
10-18 Cold Rolled Steel
1.25 x 0.5 x 1 stock
Quantity: 2

PROJECT				
Premier Paint Roller				
TITLE				
Guide Base				
APPROVED	SIZE	CODE	DWG NO	REV
CHECKED	B			
DRAWN	Lngh LJ	7/18/2018	SCALE 5:1	WEIGHT
			SHEET 1/3	



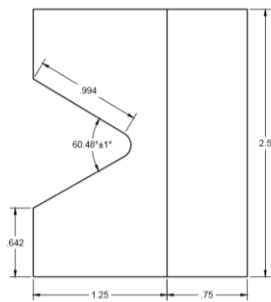
10-18 Cold Rolled Steel
1.25 x 1 x 0.5 stock
Quantity: 2

PROJECT				
Premier Paint Roller				
TITLE				
Bottom Track				
APPROVED	SIZE	CODE	DWG NO	REV
CHECKED	B			
DRAWN	LH8 LI	7/18/2018	SCALE 5:1	WEIGHT
				SHEET 2/3

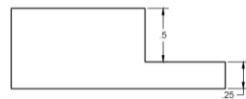


10-18 Cold Rolled Steel
1.5 x 1 x 0.75 stock
Quantity: 2

PROJECT				
Premier Paint Roller				
TITLE				
Bottom Track				
APPROVED	SIZE	CODE	DWG NO	REV
CHECKED	B			
DRAWN	LH8 LI	7/18/2018	SCALE 5:1	WEIGHT
				SHEET 3/3



10-18 Cold Rolled Steel
2 x 2.5 x 0.75 stock
Quantity: 1



PROJECT				
Premier Paint Roller				
TITLE				
Brush Guide				
APPROVED	SIZE	CODE	DWG NO	REV
CHECKED	B			
DRAWN	LING LI	7/19/2018	SCALE 5:1	WEIGHT
			SHEET	1/1

Assembly

Using the full assembly and exploded drawings, assembly should be straightforward once the pieces are machined from H&W. The top two pieces will slot together and attach to the base guide which will be inserted into the T-slots on the base plate of the printing press.

Nailing Table Extension

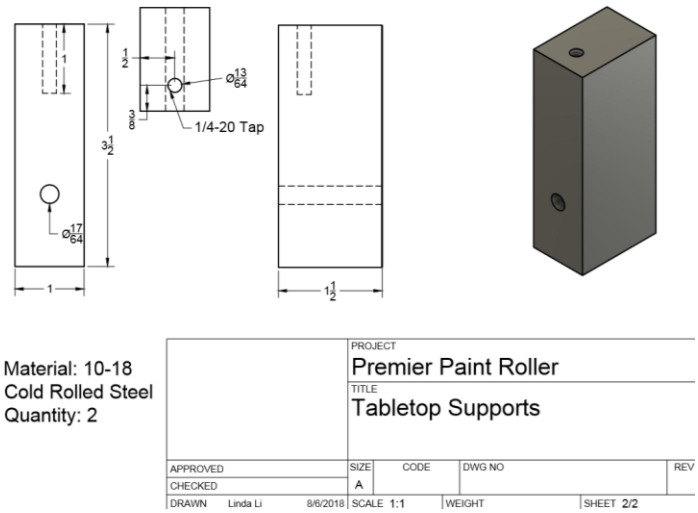
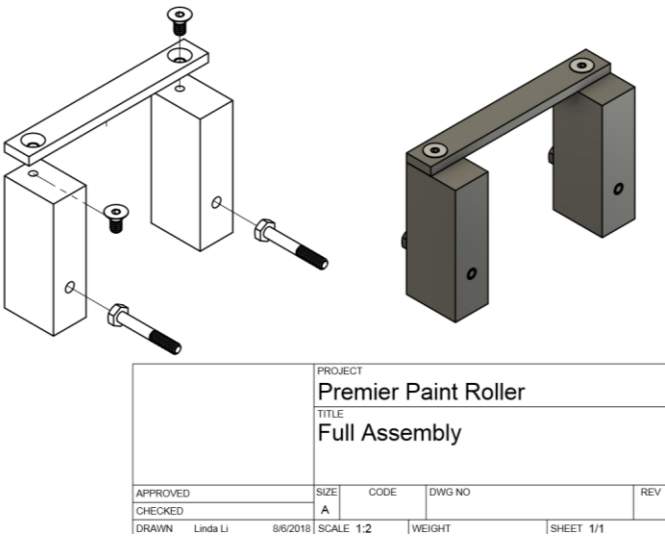
Product Specifications

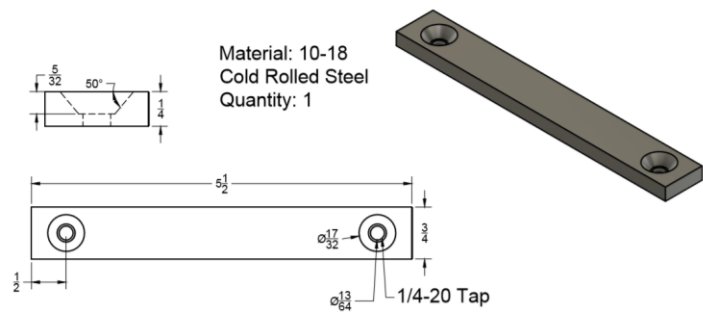
The purpose of this is to have a base for the operator to rest the handle on to ensure the handle is completely flat when nailing brush heads in. The extension is made up of two components; two supports and a table. These components will be simply screwed together and attached using screws and nuts to T-slots on the nailing machine.

Design Process

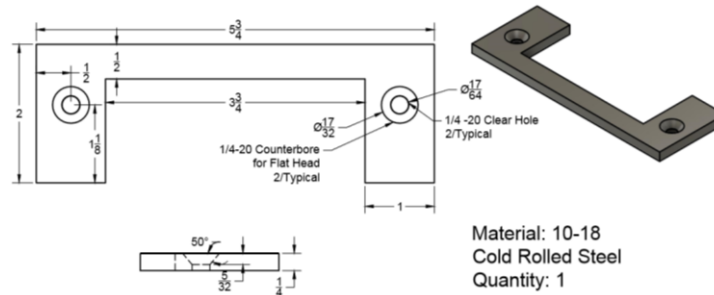
When first receiving the machined parts from H&W, I quickly saw that my original tabletop design would not work with the nailing machine as I intended. I did not realize that the nailing guns opened when the machine was in use to push the nail through, so I had initially designed the table to sit right next to it. This resulted in the entire extension failing as the table would rock back and forth as the nailer was used, erasing the entire purpose of using the extension in the first place. To compensate for this, I redesigned the tabletop into a U shape to allow for more clearance between the tabletop and the nailing guns.

Drawings





PROJECT				
Premier Paint Roller				
TITLE				
Tabletop				
APPROVED	SIZE	CODE	DWG NO	REV
CHECKED	A			
DRAWN Linda Li	8/6/2018	SCALE 1:2	WEIGHT	SHEET 1/2



PROJECT				
Premier Paint Roller				
TITLE				
Tabletop v2				
APPROVED	SIZE	CODE	DWG NO	REV
CHECKED	A			
DRAWN Linda Li	8/13/2018	SCALE 1:1	WEIGHT	SHEET 1/1

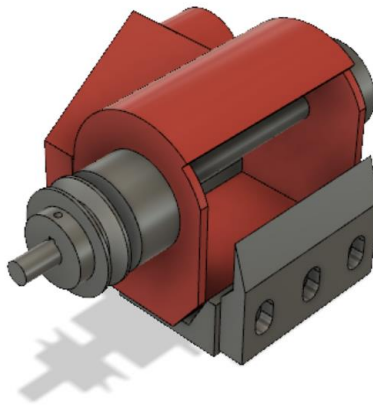
Assembly

Assembling the table extension is very easy with only two 1/4-20 flat head screws attaching the tabletop to the supports. Attaching the table to the nailing machine will be done with 2" screws and standard square nuts slotted into the existing plate.

Side Trimmer

The purpose of this project was to create a highly detailed CAD of the side trimmer in so that we could manufacture our own parts for the machine rather than buying new parts. This will allow us to save money and more easily modify parts in the future if needed. The filament table is not included in this CAD because Chuck already has it drawn up. In addition, the rotary assembly is only roughed out since I was not able to take it apart to measure every component.

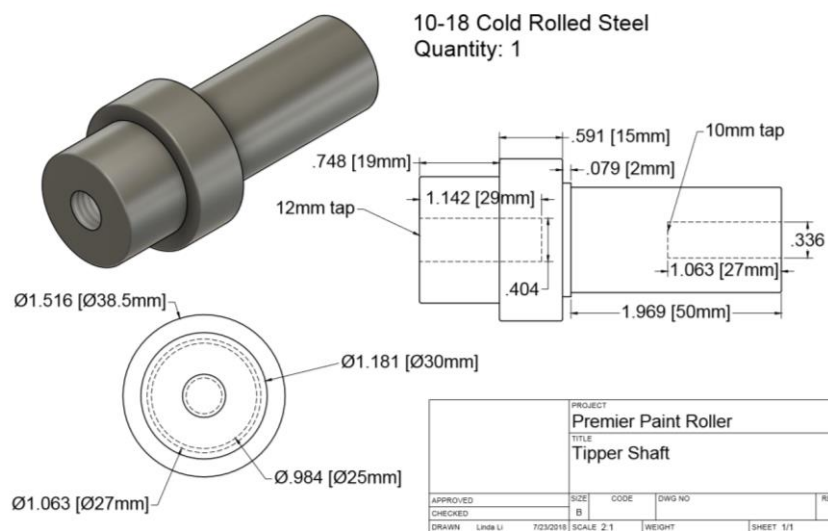




A&K Tipper

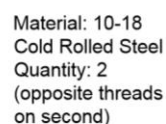
Tipper shaft

This drawing is for the offset gear shaft. It is used in conjunction with four bearings that are inserted into the gear itself.



One major project on the A&K tipper machine was switching out the flagging drum that we did not use, and replacing it with a second sanding drum. After this, the tipper would go from sanding, to carding, back to sanding. The hope for this switch was that doubling the amount of sanding the filaments receive will allow them to have a deeper and finer tip.

These are used on the ends of the drums within the tipper to attach them to the machine frame. We currently do not have any spare supports and as they are very tedious and time consuming to take off, having backups will allow for the process of replacing drums to be more streamline.



	PROJECT Premier Paint Roller			
	TITLE Bearing Holder			
APPROVED	SIZE	CODE	DWG NO	RE
CHECKED				
DRAWN 1 inch 1:1	SCALE 1:1 5	WEIGHT	SHEET 1/1	

Handle Pusher

After receiving all parts from McMaster and H&W, assembling it together was pretty easy to do with Stephen's help. All that is left to do is to mount it onto a baseplate. There are some variables that we may need to modify once the handle pusher is mounted such as whether the rail carriages will be able to withstand the force of the air slide without moving. If we find that they are not able to lock properly onto the railing during use, we may need to purchase external locks to keep the carriages steady. One that I found online that looks promising can be found [here](#). Not only that, but, the handle support on the air slide may need to be extended in order to keep the handle straight throughout use. The final thing that needs to be done on the handle pusher is to create some acrylic guards around where the air slide is so the operator's hands can maintain a safe distance at all times.

III. Future Projects/Tasks

- Figure out why the carding drum stops turning with heavy loads (Install a manual torque adjustment?)
- Standardize tipping settings for filament lengths and types
- Create a more space efficient way to store rollers as they cool
- Manufacture a top for the epoxy drums to filter gases
- Test and integrate the handle press into brush production
- Create safety guards for handle press
- Build/install tipper vacuum guard
- Reorganize storage to make it more efficient
- Install printing press guides
- Install set screws for brush head joggers (already ordered)
- Finish CADing internal components of the side trimmer
- Integrate gocator sensors into roller production
- Make clear acrylic doors for tipper
- Design a sharpening stone attachment for carding drum