

# Maintenance - Tech Ready

Maintenance tasks that do not require special training on a given piece of equipment.

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  - Oil slip roll rollers
- Maintenance Task Automation - For New Tasks, Start Here!

# Air Compressor

# Air Compressor Maintenance (Weekly)

Wiki page: [https://prothaven.org/wiki/tools/air\\_compressor#maintenance\\_schedule](https://prothaven.org/wiki/tools/air_compressor#maintenance_schedule)

Service manual: [https://drive.google.com/file/d/1XzDx7dxhe-dacSaEM6lDuwz62\\_uSK6YC/view](https://drive.google.com/file/d/1XzDx7dxhe-dacSaEM6lDuwz62_uSK6YC/view)

## Task List

1. Wear safety glasses and hearing protection
2. Check for proper oil level (within the two marks on the gauge)
3. Check tank for moisture by barely cracking the valve on the bottom of the tank. If water is coming out, file a report as the air dryer (box at the top of the unit) may not be operating.
4. Check for any unusual noise or vibration
5. Clean all external parts of compressor and dryer with a damp cloth
6. Vacuum the radiator on the air compressor (do not use compressed air).
7. Using compressed air, blow any dust out of the dryer unit (the black cage on top of the air tank)
8. Confirm the timer on the dryer unit (above the tank) is set to the current time

# Arbor Press



# Arbor Press Periodic Maintenance

Service manual: [https://drive.google.com/file/d/17N-GZd98lkBZe\\_qzui03i1omQ-WQyV2a/view](https://drive.google.com/file/d/17N-GZd98lkBZe_qzui03i1omQ-WQyV2a/view)

## **Clean and Lubricate**

1. Wipe off or vacuum the accumulated debris and dust.
2. Lubricate the arbor press ram with a light machine oil.

## **Check and Service Ram**

Check the ram for side-to-side and front-to-back play. If the play is excessive (per page 6 of the service manual):

1. Loosen the hex nuts (11).
2. Adjust (tighten) the screws (10 on side, 9 in front) just enough to eliminate the excess play.
3. Tighten them equally to assure even contact with the ram (4).
4. Hold the screw (10 or 9) in position and tighten the hex nut (11).
5. Check to make sure the amount of play is acceptable.

# Band Saw, Metal, Horizontal

# Check horizontal bandsaw interior, clean if needed

## Clean the Interior

1. Open the side panel.
2. Dredge out any buildup of chips, gunk, and other debris.
3. Ensure the cutting fluid can make its way to the sight glass on the bottom right of the machine. If it's not visible, submit a maintenance request so a trained person can mix and add coolant.
4. Ensure the drain for the drip tray is not obstructed
5. Ensure the drain inside the blade guard door (leads into a tube) are not obstructed

# Band Saw, Wood

Band Saw, Wood

# Throat Plate Printable Files

Replace the throat plate on the table saw with the printable in these files:

- [JetPlate v3.stl](#)
- [JetPlate v3.step](#)

Use either PETG or ABS filament to print the new throat plate.

Do not use PLA.

To install the printed throat plate, carefully move it into place with the saw running, using the blade to cut the clearance slot.

# Band Saw, Wood, Resaw

# Throat Plate Printable Files

Replace the throat plate on the table saw with the printable in these files:

- [JetPlate v3.step](#)
- [JetPlate v3.stl](#)

Use either PETG or ABS filament to print the new throat plate.

Do not use PLA.

To install the printed throat plate, carefully move it into place with the saw running, using the blade to cut the clearance slot.

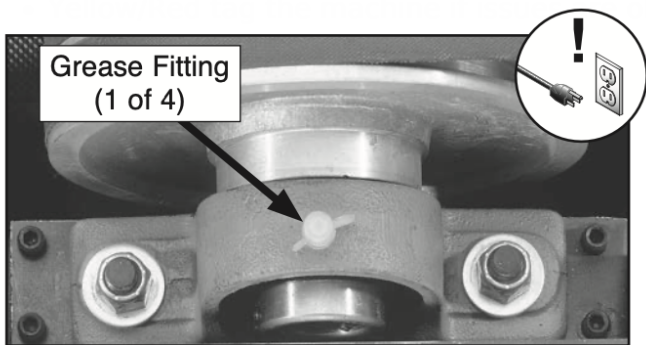
# Drum Sander



# Monthly Maintenance

- Perform weekly maintenance
- Remove the lower panel on the infeed side of the machine. Vacuum dust buildup from inside cabinet and off motor.
- Check v-belts for damage, tension, and wear. Yellow/Red tag the machine if issues are observed.
- Check for problematic issues:
  - Loose mounting bolts.
  - Worn or damaged sandpaper.
  - Worn switch or buttons.
- Lubricate pillow bearings (fig 2) with 1-2 pumps from a grease gun.
  - The manual says this should be done weekly, or per 20 hours of use. I expect monthly should be sufficient based on our usage.
  - Avoid adding too much grease, which attracts sawdust.

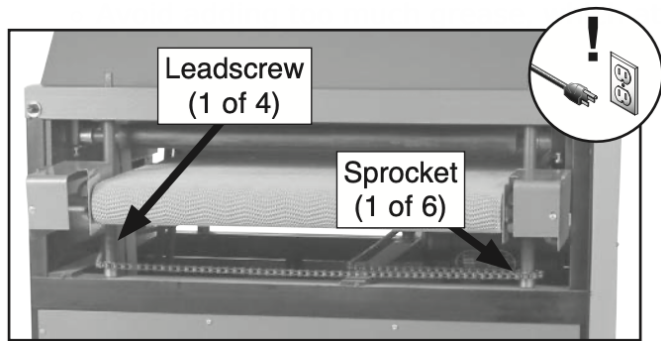
served.



(fig 2)

# Six Month Maintenance

- Lubricate conveyor table leadscrews and sprockets. (fig 3)
  - Clean the leadscrews, chain, and sprockets with a soft wire brush.
  - Apply 1-2 pumps of grease from a grease gun onto the sprockets and leadscrew threads. Adjust the conveyor up or down to spread the grease thoroughly throughout the mechanisms.

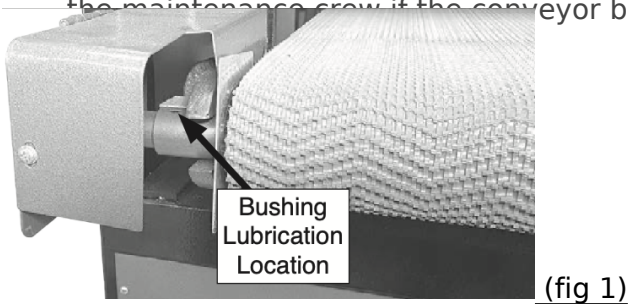


:racts sawdust

(fig 3)

# Weekly Maintenance

- Lubricate conveyor roller bushings with a couple drops of 3-in-1 oil from a can (located in Maintenance Cart drawer) in holes(fig 1).
  - The manual says this should be done daily—since we do not see daily use, weekly should be OK
  - Avoid adding too much oil, which attracts sawdust
- Vacuum dust buildup from underneath top cover.
- Check for worn or damaged sandpaper. Make a tool report that yellow tags the sander and alert the maintenance crew if the sandpaper needs to be cleaned.
- Check to see if the belt is tracking properly. The conveyor belt should not be touching the silver metal shields on each side. Make a tool report that yellow tags the sander and alert the maintenance crew if the conveyor belt tracking needs to be adjusted.



# Jewelry - Basic Maintenance

Maintenance tasks for jewelry area facilities and equipment

# Clean polishing machine filter

## Overview

- Clean out any debris from the filter box underneath the machine
- Put in a tool report + Asana task to change the filter if it looks dirty.

## Procedure

### Setup

- Wear a dust mask
- Locate the jewelry area shop vac and bring it to the polishing machine - USE ONLY THE JEWELRY SHOP VAC as precious metals may accumulate in the filter box that can be reclaimed.

### Clean the Filter

1. Ensure the machine is shut down and unplugged
2. Open the filter box
3. Vacuum out any strings, puffy dust, and dirt from the compartment
4. If the filter looks too thick with buffing compound, file a tool report with an asana task so it can be changed by a trained tech - this might need to be as frequent as once a month.

# Planer

Maintenance for the planer

Planer

# Manual

<https://drive.google.com/file/d/1epodmu5iSlOMjFa08aFL1iF1chJgBQEu/view>

(So we want to manage these PDF assets through BookStack?)

# Weekly Maintenance

## Overview

- Clean the cutter head.
- Check cutter blades for chips and dullness.
- Generally inspect the machine for damage and loose or worn parts.
- Check the dust extraction for blockages.

## Procedure

### Setup

- Grab the maintenance cart.
- Unplug the planer.
- Use a 10mm wrench to remove the bolts holding in the dust collection scoop. Set the bolts aside in a container. Remove the scoop and set to the side.
- Use a 10mm wrench to remove the top plate of the cutter cabinet. Set the bolts aside in a container. Remove the top plate and set to the side.

### Clean the cutter head.

1. Wipe down interior and exterior surfaces.
2. Clean out dust from the rubber gasket.
3. Rotate the cutters to check for any wood chips or debris.

### Check cutter blades.

Rotate the cutters, inspecting each row for any individual cutters that are loose, dull, or chipped.

If any damaged blades are found, note them in a tool report.

### Generally inspect the machine.

Generally inspect the machine for damage and loose or worn parts.



# Check the dust extraction.

Check the dust extraction for blockages and any large bits that could cause blockages. Test the dust collection gate.

## Cleaning Up

Use the reserved bolts to reattach the plate at the top of the cabinet.

Use the reserved bolts to reattach the dust collection scoop.

Plug in the planer.

Put away the maintenance cart.

## Metadata

<link containing metadata Asana>

# Safety

# Check fire extinguishers

Fire extinguishers are located in the following areas:

- Kitchen
- Wood Shop
- Maintenance Room
- Blacksmithing
- Front Entrance

For each fire extinguisher:

1. Verify that all fire extinguishers are pressurized (indicator is in the green range).
2. Verify that they are within their inspection time frame.

If any fire extinguishers within a year of being out of inspection, file a tool report to handle retesting/replacement.

Tool report: <https://airtable.com/appbIIORlmbIxNU1L/shrluff2WSzy8c3xd>

Safety

# Check First Aid Kits for low levels of supply

Check the inventory for the first aid kits and submit purchase requests if anything is needed - especially bandages as they disappear quickly.

There are three first aid kits - one each in the Kitchen, Woodshop, and Forge.

Purchase request: <https://protohaven.org/purchasing>

Safety

# Check workshop outlets

Check all electrical outlets on ceiling drops and floor runs for loose outlets and/or cable clamps, improper use of "punch-out" junction boxes, or improper use of "power strips" not installed and used in accordance with instructions included in the listing, labeling or certification.

If you find any loose parts on the outlet drops, submit a maintenance request.

Maintenance request: <https://airtable.com/appbIIORlmbIxNU1L/shrluff2WSzy8c3xd>

# Test & vacuum CO detector

The carbon monoxide detector is a small white plastic device located on the interior wall of the custodial room just to the right of the door.

## \*Test CO Detector\*

- Push the test button on the carbon monoxide detector.
- If it doesn't beep, the batteries are likely low and need to be replaced: file a tool report.
- Tool report: <https://airtable.com/appbllORlmbIxNU1L/shrluff2WSzy8c3xd>

## \*Vacuum CO Detector Grate\*

Use a shop vac to vacuum out any debris from the plastic grate on the carbon monoxide detector.

Do not use the shop vac assigned to the jewelry area. (The jewelry area shop vac should only be used for metals.)

Safety

# Flush Eye Wash Station (Monthly)

## **Flush the Eyewash Station**

Run the eyewash station for 1-3 minutes. (This flushes any stagnant water from the line.)

# Clean welding helmets and jackets

## \*Gloves\*

Inspect gloves. Put in a purchase request for any pairs that have holes or excessive wear (don't throw them out until we have replacements)

- Purchase request: <https://protohaven.org/purchasing>

## \*Helmets\*

1. Make a purchase request if the helmet is nonfunctional:
  - a. If there are holes or excessive wear
  - b. If the head strap is broken
  - c. If the lens is difficult to see through
2. Confirm the helmets auto-darken - shine a phone light on them or take them into direct sunlight
3. Wipe surfaces with a damp cloth

## \*Jackets\*

1. Inspect and report any holes, wear, or more than 3 missing buttons
2. If any are excessively dirty, file a tool report so they can be machine washed (warm water, regular detergent, high water level)



Safety

# Clean/sanitize safety glasses & hearing protection

## \*Materials\*

For a disinfectant, you can use:

- Sanitizing wipes (kept in the maintenance closet)
- Sanitizing spray (kept under the kitchen sink, with refills in the maintenance closet)
- Alcohol

Apply disinfectant, wait three minutes, then wipe with a clean cloth or paper towel.

If we are out of disinfectant, submit a purchase request:

- Purchase request: <https://protohaven.org/purchasing>

## \*Task List\*

Clean the safety glasses and hearing protection in all of the following areas:

- Left of the the door by the kitchen.
- Left of the door by the textiles/electronics in the studio.
- Left of the door in the woodshop.
- Hanging off the caddies in the wood and general metals areas.

Safety

# Welding fume extractor - check filter

\*Service Fume Extractor Filter\*

1. Check the filter gauge at the base of the machine.
2. if the gauge indicates replacement is needed, fetch (or purchase request) a new one and swap the old one out.

- Purchase request: <https://protohaven.org/purchasing>

Safety

# Test emergency lighting

\*Test Emergency Lighting\*

Turn off breaker 13 in panel A. (This breaker powers the emergency lighting.)

With the breaker off, confirm emergency lights are working in the following areas:

- by the bathrooms
- in the studio / front half of the building
- in the woodshop
- in the forge / loading bay

If any lights are not working, create a new tool report.

- Tool report: <https://airtable.com/appbIIORImblxNU1L/shrluff2WSzy8c3xd>

# Soldering Iron

# Check Consumables

- Check if the tip is in good condition: no obvious damage, good point, no deep pitting. Replace tip if needed.
- Check the sponge to make sure it is in good condition. Replace sponge if needed.

# Storage

# Check for missing tags on paid storage

## **Check for Storage Violations**

- Open any lockers without storage tags and look for any materials stored there.
- Examine all board/bar and sheet storage for items stored without storage tags.
- Check for any cages with stored items that are also missing a storage tag.
- Check for any parking spaces with stored stuff and no tag.
- Look for improperly stored stuff on and around the shelves by the powder coating area.

## **Handle Storage Violations**

For any paid storage violations:

- If there are small items, put them in the lost and found.
- If there's substantial stuff, create a storage violation using the iPad at the front desk.

# CNC Plasma



# CNC Plasma 14 Day Maintenance

Test the PH of the water

1. Locate the PH test strips, in the computer cubby hole at the CNC Plasma Computer station.
2. Use a stick or other object to lightly stir the water in the table. Just lightly move the water in between the slats, careful not to splash out. Stir at least half the table.
3. Remove one PH test strip from the bottle, seal the bottle back up quickly and make sure the lid is snug, the strips will go bad when exposed to air.

**NOTE:** Prior to wetting the strip, read steps 4 through 6 before continuing. The pH strip reading is most accurate immediately after the strip is wetted, and the indicated pH will continue to change after wetting.

4. Dip the colored end of the strip into the water for about 1 second. Remove and shake excess fluid from the strip.
5. Compare the strip to the color chart on the bottle as follows:
  - Hold the bottle in your left hand up right
  - Hold the test strip in your right hand by the portion that is not exposed to the liquid
  - Match the colors on the test strip parallel to one of the 14 rows corresponding to the pH on the bottle
6. Take note of the PH reading:
  - If the reading closely matches two rows on the bottle, record the pH to the 0.5 increment between the two rows
  - Example: The test strip shows between 9 and 10. The pH is recorded as 9.5
7. Return the pH test strip bottle to the CNC Plasma computer cubby.
8. Make an Air Table (Not ASANA) tool report:
  - In the "What would you like to Report" Section, enter "CNC Plasma 14 Day Maintenance entry: pH=[the measured pH]"
  - If the PH reading is NOT between 9 and 10:
    - Check "Create an Asana Task?" task to adjust the PH level of the table.

- Indicate in the "What would you like to Report" section "pH adjustment is required" in addition to the pH measurement entry above.

# Laser Cutter, Rabbit

# Clean catch boxes below lasers 1 and 2

Underneath the Rabbit lasers there's a cabinet, containing a box that collects any small pieces of material that fall through the honeycomb.

## Clean the Catch Boxes

For each of the large format lasers:

1. Unlatch and open the bottom panel in the front of the machine.
2. Find the handled catch box towards the top of the open space.
3. Remove the catch box by pulling it forward, then down and out of the machine.
4. Dump any contained loose material into a trash can.
5. Wipe away any remaining soot and debris with damp paper towel.
6. Clean any buildup of residue on the rear vent slots with plastic bristle brush (found on top of the black cabinets)
7. Replace the catch box,
8. Close and latch the bottom panel.

# Laser 1 & 2: clean honeycomb

## Safety

Wear gloves

Wear safety glasses

Wear a dust mask

## Clean Bed

1. Remove the honeycomb bed.
2. Clean up and discard any material that has fallen through the bed.
3. Use a poking tool to free all of the material stuck in the honeycomb. Clean up and discard material.
4. In a trash bag or on top of some cardboard, spray the honeycomb with oven cleaner and let sit following the directions on the can.
5. Rinse the honeycomb bed vigorously outside using a hose.

# Laser 1 & 2: Clean bed and underneath - NEEDS REVIEW

This needs to be reviewed for content and tech\_ready suitability before it is approved to be scheduled maintenance

- Remove the bed and clean up the material that has fallen through.
- Use a poking tool to free all of the material stuck in the honeycomb.
- Acquire a large bag and lot of easy off and clean the burnt on material from the bed.
- Rinse vigorously outside using a hose
- check belt tension

# Laser 1 & 2: Clean Blower

1. Reserve each laser one at a time to ensure they're not both down at the same time.
2. Remove the blower from the system and loosen any large debris on the slots on the blower cage with a flathead screwdriver, then brush clean with a bristle brush. Be careful not to bend the fins.
3. Check the water level in the chiller using the sight glass on the back. If not between the min/max level, drain/refill using deionized distilled water. If the sight glass is clouded or moldy, file a tool report.
4. Clean and lubricate the rails with machine oil.

# Table Saw



Table Saw

# Saw Blade Marking

File to laser PH logo onto saw blades

[Saw Blade Marking.svg](#)

# Lawnmower

Lawnmower

# Clean Lawnmower

- \* Remove the battery
- \* Clean the undercarriage using a putty knife and wire brush
- \* Reattach the battery

# Miter Saw, Wood

# Inspect and Clean Wood Miter Saw Blade

Service manual: PENDING

## \*Inspect the Blade\*

Inspect the saw blade for wear and damage.

1. If any teeth are missing, yellow tag the tool in a tool report and file a purchase request if there are no spares in the maintenance room.

1. If two consecutive teeth are missing, file a tool report, replace the blade and place a purchase request if the last has been used.

- Purchase request: <https://protohaven.org/purchasing>

## \*Clean the Blade\*

Materials Needed:

- Dish soap
- Blade-Cleaning Kit (Found in the Maintenance Room)

The blade-cleaning kit should contain:

- A bin (for soaking)
- A brush
- Oily rags
- Hand towels

Procedure:

1. Unplug the saw.
2. Remove the saw blade.
3. Soak the blade in the cleaning solution for a few minutes, or apply cleaning solution with a sprayer.
4. Scrub both sides with a plastic or brass bristle brush (not steel/stainless).
5. Rinse thoroughly clean with water.
6. Dry blade completely.
7. Oil the entire surface very lightly with general purpose oil.

8. Install the saw blade.

9. Plug the machine back in.

# Clean, Lubricate and Adjust Miter Saw

Service manual: [https://drive.google.com/file/d/16HFrtwBzy-s0uS8aojnePJ2yyeupkZX2/view?usp=drive\\_link](https://drive.google.com/file/d/16HFrtwBzy-s0uS8aojnePJ2yyeupkZX2/view?usp=drive_link)

## \*Tools/Materials Required\*

- General purpose oil
- Light household oil (sewing machine oil)

## \*Clean Lower Guard\*

1. Unplug the saw. (We want to eliminate the possibility of unexpected startup.)
2. Clean the blade guard with a damp cloth.

Warning: Do not use solvents on the guard. They could make the plastic cloudy and brittle.

## \*Remove Sawdust\*

1. Wipe down the saw body with a dry cloth.
2. Vacuum all around the saw, including slides (top, behind, and under).
3. Vacuum the scoop behind the saw of any dust or chips.

## \*Lubricate the Saw\*

1. Apply general purpose oil to the chop pivot.
2. Use light household oil (sewing machine oil) on metal-to-metal or metal-to-plastic contact areas on the central pivot of the plastic guard. (Lubricate as required for smooth, quiet operation. Avoid excessive oil, to which saw dust will cling.)

# Sandblaster



# Sandblaster - Deep clean

## \*Safety\*

- Wear a dust mask. (If you do not have your own, disposable masks are available in the custodial room.)
- Wear safety glasses.

## \*Tools/Materials Required\*

- Two 2-gal buckets (should be located near the machine)
- Soft mallet.

## \*Clean Siphon Tube\*

1. Remove the siphon tube via the two screws at the top. (Be careful and avoid dropping the screws.)
2. Inspect the siphon tube for holes and file a tool report if any are visible.
3. Blow compressed air through the siphon tube to dislodge any caked on abrasive and dirt.
4. Reinstall siphon tube.

## \*Clean Media\*

1. Place a bucket under the bottom gate of the cabinet.
2. Open the gate to drain out the media.
3. Tap the sides of the hopper with a soft mallet to get any remnants out. (We don't need the hopper completely clean.)
4. Take the buckets and a sifter outside.
5. Pass the material through the sifter to remove debris.
6. Discard debris in the dumpster.
7. Dump the sifted media back in the cabinet.

## \*Test Hopper Motor\*

1. Turn on the machine.
2. Verify hopper motor under the cabinet is active and vibrating. If it isn't running, file a tool report.

# Empty Sandblast media seperator

*"Empty the Media Seperator Drawer"*

Behind the Plasma table is a square gray machine that is the media separator for the sand blaster.

There is a drawer on the bottom with two retaining latches.

1. Put on a dust mask and safety glasses
2. Ensure the sandblaster is off
3. Pull and release the red lever on the right side of the filter a few times to knock loose fine particles from the filter.
4. Check the vent ducting from the booth to the separator, ensure it's not filled with media.
5. Empty the bottom drawer into the dumpster
6. Use the Powder coating shopvac vacuum out the inside around the filter tubes and drawer box.

If we are out of sandblasting media, make a purchase request:

- Purchase request: <https://protohaven.org/purchasing>"

# Inspect and rotate sandblaster nozzle

Service manual - <https://drive.google.com/file/d/10XyBZ8bd7pk9Vfl4iO3T76M2VwWSfi9C/view>

## \*Safety\*

- Wear a dust mask.
- Wear safety glasses.

## \*Rotate Nozzle\*

1. Unplug the sandblaster
1. Find a 1/8" Allen key in the maintenance cart.
1. Unlock the carbide nozzle at the front end of the spray gun using the allen key, so that it can rotate freely.
1. Rotate the carbide nozzle 1/4 turn clockwise (as looking down the barrel - but don't actually look down the barrel).
1. Lock the carbide nozzle in place using the Allen key.

## \*Inspect the Spray Gun and Tube\*

Inspect all around the body of the spray gun and the tube below it for holes.

If any holes are found, red tag the sandblaster and file a maintenance report.

## \*Notes\*

Rotating the nozzle extends the life of the nozzle.

# Cleanup

Cleanup

# Dust sheet metals area

## \*Safety\*

- Wear a dust mask.
- Wear safety glasses.
- Unplug all electrical equipment before cleaning.

## \*Task List\*

With a damp cloth, wipe down all external surfaces of the sheet metal tools:

- shear
- slip roller
- finger brake
- shrinker/stretcher
- turret punch
- notcher

# Empty shop vacs & clean filters

## \*Safety\*

- Wear a dust mask. (If you do not have your own, disposable masks are available in the custodial room.)
- Wear safety glasses.

## \*Empty Shop Vacs and Service Filters\*

We have seven shop vacs - two in precision metals (one for dry, one for wet), one at the powder booth, and four near the wood shop (one by the router, one by the Kern laser, one near the plastics).

For each shop vac:

1. Roll it to the dumpster outside.
2. Take off the top and dump the contents into the dumpster.
3. Remove filter from top; gently knock against the inside of the dumpster, then replace.
4. Visually check the filter for holes or punctures - if there are any, replace the filter and file a purchase request for additional filters.
5. Secure the lid back onto the main body.
6. Roll it back to where you found it.

## Cleanup

# Purge the scrap bins

### \* Woodshop\*

In the woodshop free bin and the free board caddy in the lathe area, remove any wood that:

- Is painted or treated
- Has nails/metal inside
- Is heavily splintered
- Is "swiss-cheesed" with little material to use, etc.

### \*Metalshop\*

In the metalshop materials bins in the powdercoating area, transfer any unsuitable metals from the suitable bin to the unsuitable bin. Unsuitable metals includes anything:

- Galvanized/coated
- Swiss-cheesed
- Any materials that aren't identifiable as aluminum or carbon steel

### \*Studio\*

In the two scrap bins by the laser cutters:

- remove any small/unusable pieces
- remove any pieces not on the allowed materials list (see QR code posted on the top of laser 2)
- break down any pieces with large voids so they fit nicely within the bins

Cleanup

# Dust and Sweep Woodshop Area

## \*Safety\*

- Turn on the woodshop dust collection.
- Wear a dust mask. (If you do not have your own, disposable masks are available in the custodial room.)
- Wear hearing protection. (The dust collection is loud.)

## \*Task List\*

For each woodshop tool:

- Use a shop vac or dust brush to remove dust from all visible surfaces.
- If you are familiar with the bandsaws and table saw: remove any sawdust built up in the interior of these machines.
- Sweep the woodshop floor. (To make final cleanup easier, you can push piles of sawdust to the floor-level dust gates, turn on the main dust collector, then open and close the gate using the lever on the top.)
- Leave overhead dust collection (not the main unit) to run on HIGH for 10 minutes.
- Turn off dust collection.



Cleanup

# Verify tool tags (physical & digital)

\*Compare Online and Physical Tool States\*

1. Open <https://api.protohaven.org/techs>
2. Make a note of tools in a yellow or red state.
3. Visit each of the tools listed as red or yellow state and verify that there is a physical tag on the tool that matches that state.
4. Scan for tools with physical tags that do not have a digital yellow or red state
5. Update all tool reports to match the current state of the tool - this may not necessarily be exactly what the tag says. If you're unsure, ask on #maintenance.

- Tool report: <https://airtable.com/appbIIORImblxNU1L/shrluff2WSzy8c3xd>

Cleanup

# Dust and Sweep Jewelry Area

\*Task List\*

1. Use a shop vac, dust brush, or water-dampened paper towel to remove dust from all visible surfaces. (Pay special attention to the central table and the L-shaped table with finishing tools.)
2. Wipe down the interior of the flame cabinet with a water-dampened paper towel.
3. Sweep the floor. (Use the shop vac in the jewelry area to pick up the sweepings - the shop vac collects metals that can be recovered.)
4. Report any unlabeled containers full of unknown liquids

Cleanup

# Dust and Sweep Forge Area

## \*Safety\*

- Wear a dust mask.
- Wear safety glasses.

## \*Task List\*

DO NOT dust the interior of the forges as improper cleaning may damage the refractory material.

1. Use a shop vac or dust brush to remove dust from all visible surfaces, paying special attention to the tables, tool caddies, and other "installed" furniture in the space.
2. Sweep the floor.
3. Dispose of any debris in a nearby trash can.

Cleanup

# Dust and Sweep Studio Area

For each tool in the studio:

- Use a shop vac or dust brush to remove dust from all visible surfaces.
- Sweep the floor of the studio.
- Dispose of any debris using the rolling trash cans.

Cleanup

# Empty leak catcher in custodial room

In the Custodial Room (behind the Jewelry Area) there is a bucket labeled "Leak Catcher" under a water pipe on the left side of the room as you enter.

- If the bucket is more than half full, dump the water into the sink and return it to its position under the water pipe.
- If you see additional water on the floor or the bucket is very full, notify a tech lead.

Cleanup

# Clean front desk area and shelves

## \*Task List\*

- Organize all hand tools. (Put similar tools close to each other and ensure power cables are nicely stowed.)
- Place any loose papers on the front desk in the desk organizer on the left hand side of the desk. Notify the #techs channel on Discord of what was placed there.
- Clean off the whiteboard to the side of the front desk.
- Tidy up any loose cables.
- Toss any trash.

Cleanup

# Clean Popcorn Maker

If the popcorn maker is already clean, you can just close out this task.

\*Clean Out Popcorn Compartment\*

1. Unplug the popcorn maker.
1. Remove any stale popcorn already in the popcorn maker.

\*Clean the Kettle\*

1. Unplug the kettle.
2. Lift the kettle up and out of the brackets.
3. Wash the kettle with soapy water. (Do not submerge the kettle.)
4. Let the kettle dry.
5. Put the kettle back on the brackets in the popcorn maker.
6. Plug in the kettle.

Cleanup

# Dust and Sweep Metals Area

## \*Safety\*

- Wear a dust mask (if you do not have your own, disposable masks are available in the custodial room).

## \*Task List\*

For each metal shop tool:

1. Use a shop vac or dust brush to remove dust from all visible surfaces.
2. Sweep the floors of the general metals, CNC plasma, welding, sand blasting, and precision metals areas.
3. Gathered debris should be tossed into the rolling trash cans.



Cleanup

# Deep clean coffee maker

Service manual: [https://drive.google.com/file/d/1yOemAE1Cz4E7A3Ecoyp32BPV\\_nxDVeOf/view](https://drive.google.com/file/d/1yOemAE1Cz4E7A3Ecoyp32BPV_nxDVeOf/view)

Follow the instructions on page 10 of the manual.

Cleanup

# Lubricate door hinges

\*Lubricate Hinges\*

Add a little bit of oil to the hinges of each of the doors of:

- The ED Office
- Conference Room
- Staff Room
- Design Classroom
- Class Supply Room
- Maintenance Room
- Custodial Room
- Bathrooms
- Front Door
- All three doors leading out of the studio

Cleanup

# Powder Coating - Sweep and Check Hoses

Service manual: <https://drive.google.com/file/d/1q-U4OK-cNpTElOdnf1WNjkKID4l9B48k/view>

## \*Safety\*

- Wear a dust mask.
- Wear safety glasses.

## \*Clean the Booth\*

1. Turn on the booth ventilation system
2. Use a broom to sweep the walls, ceiling, and floor of the booth.
3. Use the area shop vac to vacuum up any powder.
4. Turn off the booth ventilation system.
5. Thoroughly vacuum the exterior surfaces of the powder coating booth.
6. Sweep the floor around the powder booth and both the large and small ovens.
7. Take the shop vac out to the dumpster and empty it carefully - powder coat is a fine dust

## \*Inspect the Hoses\*

Inspect the air and powder hoses (both in the booth and by the control box) for sintering, kinking, or other degradation.

If you note any problems, file a tool report.

- Tool report: <https://airtable.com/appbIIORlmbIxNU1L/shrluff2WSzy8c3xd>

Cleanup

# Clean out overhead air filters in woodshop

## \*Safety\*

- Wear eye protection.
- Wear a dust mask.

## \*Cleaning the Filters\*

Do this when the woodshop is not actively in use.

1. Carefully lower the two overhead air filters in the woodshop using the winches mounted to the wall.
2. Vacuum out the filters and the catch bags inside.
3. Carefully raise the two overhead air filters in the woodshop using the winches mounted to the wall.

Cleanup

# Clean wash tub and water fountain

**\*Wash Sink and Water Fountain\***

Remove and discard any debris from the sink.

Wash both sections of the sink and the top surface of the water fountain with soapy water.

If Barkeep's friend or other stainless steel cleaner is available, follow the directions on the cleaner and apply it to the sink and water fountain.

Be sure to rinse both sink sections and the water fountain with plenty of water after.

## Cleanup

# Clean the water pitcher

### \*Clean Out the Pitcher\*

1. Remove the lid.
2. Wash and dry the lid.
3. Remove the top reservoir.
4. Remove the filter from the top reservoir and discard.
5. Wash and dry the top reservoir.
6. Wash and dry the pitcher.

### \*Replace the Filter\*

Observe the filter replacement reminder sticker on the right side of the pitcher. If the current month is on or after the indicated "replace filter" date:

1. Insert a new Brita filter into the top reservoir following the instructions on the wrapper of the new filter.
2. Reassemble the pitcher.
3. Move the sticker so that it's indicating the current month on the "New Filter" column.

The last step is very important - if the indicator is not adjusted, we'll be wasting brand new filters every time this task is scheduled.

If you used the last replacement filter, file a purchase request:

- Purchase request: <https://protohaven.org/purchasing>
- Amazon link for replacement filters: <https://a.co/d/0wRp7dq>

Cleanup

# Clean Computer Lab and Conference Room

## \*Materials\*

For a disinfectant, you can use sanitizing spray (kept under the kitchen sink, with refills in the maintenance closet)

Apply disinfectant, wait three minutes, then wipe with a clean cloth or paper towel.

If we are out of disinfectant, submit a purchase request:

- Purchase request: <https://protohaven.org/purchasing>

## \*Task List\*

- Disinfect all keyboards and mice.
- Dust off and wipe down all computers, tables, and chairs.
- Clean the whiteboards. (Do not touch areas that are not marked "DO NOT ERASE" or similar.)
- Throw out any trash or debris. (Any loose papers should be placed on top of the printer in the conference room.)
- Tidy up any disorganized cables.

# Lathe, Wood



# Wood Lathe - Monthly

Service manual:

[https://drive.google.com/file/d/1XsSwghnqBvr8uQD0qm1M8jcJ\\_te2DI1/view?usp=drive\\_link](https://drive.google.com/file/d/1XsSwghnqBvr8uQD0qm1M8jcJ_te2DI1/view?usp=drive_link)

## \*Clean Dust and Debris\*

- Use pressurized air from the air compressor to blow out dust from around the electric motor and vfd, under the banjo and tailstock.
- Blow out the morse taper holes on the headstock and tailstock.

## \*Clean Tailstock\*

1. Remove the Tailstock from the Bed Rails.
2. Blow off dust with compressed air.
3. Clean the slide points and the clamp points with a fine grit nonwoven pad or #000 steel wool.

## \*Clean Banjo\*

1. Remove the Banjo (the big chunk of metal that bolts to the lathe bed that holds the toolrest) from the Bed Rails.
2. Blow off dust with compressed air.
3. Clean the slide points and the clamp points with a fine grit nonwoven pad or #000 steel wool.

## \*Tighten Fasteners\*

Check and hand-tighten any loose connections in the tailstock:

- The slide lock lever
- The set screws on the handwheel
- The screws that hold the quill key on the back

## \*Clean and Lubricate Rails\*

- Use a fine grit non woven pad or #000 steel wool to clean the rails from oxidation and stuck on debris.
- Lubricate with a wiped on coat of paste wax (found in the woodshop section of the maintenance room).

## \*Inspect Belt for Wear\*

- Inspect all parts and accessories for wear and damage, file tool reports as appropriate.

- Tool report: <https://airtable.com/appbllORlmbIxNU1L/shrluff2WSzy8c3xd>

# Pedestal Grinders, Metal

# Pedestal Grinder Maintenance (Weekly)

Service manual: [https://drive.google.com/file/d/1QgkvdpKXrfAl8W\\_3rSINlg2mLRIDCh6/view](https://drive.google.com/file/d/1QgkvdpKXrfAl8W_3rSINlg2mLRIDCh6/view)

## \*Task List\*

1. Check the spacing between the tool rests and the grinding wheels. (The spacing should be less than 1/16 of an inch, never more than 1/8 Inch.)
2. Adjust the tool rests if necessary (Use a 12mm Allen wrench to loosen the two rest bolts. Tighten the bolts after adjusting.)
3. Set the spark deflectors (the upper metal guard) to 1/16 of an inch from the wheel.
4. Check for and clean any debris buildup in the ductwork, ensure all ducts are attached to the dust collector (except aluminum wheel; that goes into the bucket)

If the deflectors or tool rest cannot be adjusted within the distances above, file a tool report to replace the wheel.

## \*Notes\*

More info on bench grinders: [https://prothaven.org/wiki/\\_media/tools/grinder.pdf](https://prothaven.org/wiki/_media/tools/grinder.pdf)

Pedestal Grinders, Metal

# Pedestal grinder - cycle the media separator

The external air filter is a gray box to the right of the pedestal grinders.

**\*Cycle the Filter\***

Using your foot, press and release the gray lever on the right side of the filter a few times to knock loose fine particles from the filter

# Empty pedestal grinder media seperator

\*Empty the Media Seperator Drawer\*

To the right of the pedestal grinders is a big gray box that is the media separator. There is a cabinet door on the bottom with retaining latches.

1. Put on a dust mask and safety glasses
2. Ensure the separator is off
3. Check the vent ducting from to the separator, ensure connected and not filled with debris.
4. Carefully empty the drawer inside the cabinet into the dumpster outside.

# Bandsaw, Metal, Vertical

Bandsaw, Metal, Vertical

# Vertical Metal Bandsaw - Weekly

Service manual: [https://drive.google.com/file/d/1YgGuXN2GB-ZQffNzAmpv5Zo6hYNJFlxi/view?usp=drive\\_link](https://drive.google.com/file/d/1YgGuXN2GB-ZQffNzAmpv5Zo6hYNJFlxi/view?usp=drive_link)

## \*Task List\*

- With a thumb or cloth, check for grease on the shaft of the upper blade guide and no accumulated debris. Reapply with grease from the grease gun in the bottom drawer of the maintenance cart as necessary.
- Inspect the machine for wear.
- Clean off any dust and debris and wipe down the cabinet surfaces.
- Check the blade for missing / dull teeth and file a tool report if a replacement is needed



# 3D Printers

# Recharge 3D printer dessicant pack

## \*Recharge Dessicant Pack\*

1. Remove the white rectangular plastic dessicant pack from the "free filament" tote box by the 3D printing cabinet.
2. Inspect the dessicant beads through the front window.
3. Use the legend by the window to gauge if the beads are wet.
4. If the beads are wet, plug the dessicant pack into a wall outlet for a couple hours. \*Set a timer\* so you don't forget to return it.
5. Return the dried dessicant pack to the filament box and ensure the lid is closed.

# Jointer

Jointer

# Jointer Maintenance - Weekly

Service manual: [https://drive.google.com/file/d/1x37\\_ONdS5rXLuT0\\_jYOhp-QEAz2ClziH/view?usp=drive\\_link](https://drive.google.com/file/d/1x37_ONdS5rXLuT0_jYOhp-QEAz2ClziH/view?usp=drive_link)

\*Task List\*

1. Unplug the machine
2. Clean the cutter head.
3. Check cutter teeth for chips and dullness and file a tool report if needed - DO NOT ROTATE THE INSERTS
4. Generally inspect the machine for damage and loose or worn parts.
5. Check the dust extraction for blockages and any large bits that could cause blockages.

Jointer

# Jointer Maintenance - Monthly

## \*Task List\*

- Clean the machine with a shop vac and dry cloth.
- Wax the cast iron surface of the table
- Spray a light amount of teflon lubricant on the support pillars
- Check the motor drive belt for wear, splits and cuts. If the drive belt is in poor shape, submit a tool report.
- Clean any dust off the motor housing.
- Generally inspect the machine for damage and loose or worn parts. If any damage is found, submit a tool report.
- Tool report: <https://airtable.com/appbIIORlmbIxNU1L/shrluff2WSzy8c3xd>

# Powder Coating Booth

# Powder Coating - Clean out hooks & wires

## \*Task List\*

- Throw out any wire pieces that are excessively twisted/kinked and not useful for holding up parts.
- Sandblast any larger/stiff hooks that are fully coated in powder so they can better ground the parts that'll be hanging from them.
- Brush/vacuum around and inside the hooks/wires caddy to get rid of any loose powder.

# Powder Coating - Deep clean

## \*Safety\*

- Wear a dust mask. (If you do not have your own, disposable masks are available in the custodial room.)
- Wear safety glasses.

## \*Clean the Filter\*

1. Remove the fluffy filter off the wall of the booth, and the rigid filters from the rear of the machine.
2. Take the filters outside.
3. Clean the filters thoroughly with a vacuum.

## \*Inspect the Cabinet\*

1. Check inside the ductwork/ventilation for blockage or gaps/holes and clear it out.

## \*Inspect the tubing\*

1. Ensure the vinyl air pressure tubing has not swollen or started leaking - if it has, file a tool report.

## \*Clean Shop Vac\*

1. Roll the powder booth shop vac outside to the dumpster.
2. Tap the filter against the inside wall of the dumpster to dislodge any caked on powder. If the filter looks excessively worn, file a purchase request for a replacement.
3. Discard powder into the dumpster.
4. Roll shop vac back to the powder coating area.

As a last step, reinstall the removed filters.



# Powder Coating Ovens

# Powder Coating Oven - Clean and inspect

Service manual:

## \*Safety\*

- Wear a dust mask.
- Wear safety glasses.

## \*Task List\*

To wipe down oven surfaces, use a clean shop rag and a mixture of water with a little soap. (Do not use solvent-based cleaners, as they can affect the powder cure.)

- Wipe down the interior oven floor, walls, and ceiling.
- Vacuum out the heating elements and remove any debris laying on top of them.
- Make sure the hinges on the door swing freely and easily. (Lubricate with gen purpose oil if needed.)
- Inspect the door gasket and make sure it has a good seal all the way around.

If the door gasket does not make a good seal all around, file a tool report.

While cleaning, check around the heating elements for signs of cracking or loose wires. If you find any loose or damaged wires, file a tool report.

- Tool report: <https://airtable.com/appbIIORlmbIxNU1L/shrluff2WSzy8c3xd>

# Security

# Update Wyze camera firmwares and adjust positioning

Click through each camera on the Wyze app (on the iPad, located by the front desk or in the Staff room)

For each camera:

- \* ensure it is online
- \* ensure the firmware is up to date (it will prompt if otherwise)
- \* ensure it is pointing in a way which maximizes the view of the area

# CNC Metal Mill (Tormach)

# Clean Tormach Coolant System

The coolant system on the tormach has a tank and a filter screen on it - these should be inspected and cleaned regularly so the coolant can properly flow.

## \*Gather Materials\*

- 2 Buckets, can be found past the Tormach. One 5 gallon and one smaller bucket that has metal chips in it.
- Rubber gloves (found in custodial room)
- Slotted spoon / spatula (found at the CNC Plasma)

## \*Clean the Coolant System\*

1. Place a 5 gal bucket on the table of the machine.
2. Power the machine on (turn the rotary switch on the right side of the machine to the ON position, and ensure the E-stop on the front of the machine is disengaged). Press Green button to power on.
3. Aim the flexible coolant hose into the bucket, then move the "Coolant" switch to the "ON" position to pump coolant into the bucket.
4. When the pump has run dry, turn the switch back to AUTO when done.
5. Turn off the machine by turning rotary switch on the right back to the original position.
6. Put on rubber gloves.
7. Scooping from the right side (near the pump) to the left to avoid packing chips into the filter screen, use the slotted spoon/spatula to scoop the chips from the bottom of the coolant tank into a maintenance bucket. Get as many chips out of the coolant tank as reasonable; it does not need to be perfectly clean.
8. Place the chips in the aluminum recycling trash can that is in the machine shop area. Some contamination of metals is unavoidable, but try to avoid introducing too much coolant into the recycling can.
9. Refill the coolant tank from the bucket you drained it into in step 3.
10. Top off the tank with fresh coolant, to nearly the top lip of the tank.
11. Return all tools to where you found them.

# Deep Clean Tormach CNC

## \*Safety\*

- Wear a dust mask. (If you do not have your own, disposable masks are available in the custodial room.)
- Wear safety glasses.
- Wear hearing protection.
- Wear gloves when handling chips.

## \*Clean Tormach\*

1. Vacuum out the ways and the chip tray using the wet/dry vac next to the Tormach.
2. Remove any remaining visible chips from the front control panel, the coolant drain grate behind the machine, and elsewhere.
3. Clean off the keyboard, mouse, and monitor with a damp cloth.

# CNC Router



# CNC router dust collector - check interface between filter and bag

## \*Safety\*

- Wear a dust mask. (If you do not have your own, disposable masks are available in the custodial room.)
- Wear safety glasses.

## \*Check and clean interface\*

1. Remove the top filter from the dust collector using the handle at the top.
2. Visually inspect and brush any collected dust or debris resting on top of the funnel/cone area into the bag.

# Downdraft Table

Downdraft Table

# Downdraft Table Monthly Maintenance

Service manual: [https://drive.google.com/file/d/1t\\_Rllh8OS5fv1GuQ800Qa1ZzpGfTkGr9/view](https://drive.google.com/file/d/1t_Rllh8OS5fv1GuQ800Qa1ZzpGfTkGr9/view)

## \*Safety\*

- Wear a dust mask.
- Wear hearing protection.
- Wear safety glasses.

## \*Clean Downdraft Table\*

1. Clean and/or vacuum dust drawer. (Dust drawer located on front face, bottom, left hand corner.)
2. Remove table sections and vacuum exposed areas.
3. Open the motor door and vacuum the inside of cabinet.
4. Remove the filters and tap them out on the side of the dumpster - there's two of them (coarse and fine)

If suction is noticeably reduced, file a tool report (refer to "Servicing Filters" section of manual)

# Dye Sublimation Printer

Dye Sublimation Printer

# Check ink levels on dye sub printer

Prolonged use of the product when the ink level is below the line on the tank could damage the printer.

\* Verify on the front of the machine that the ink tank levels are not below the minimum marking. If they are, file a tool report.

- Tool report: <https://airtable.com/appbIIORImblxNU1L/shrluff2WSzy8c3xd>

# Slip Roll, Sheet Metal

# Oil slip roll rollers

## Safety:

Ensure the machine is turned off and unplugged before oiling the rollers.

## Oil the rollers

Apply several drops of 3-in-1 oil (located in the maintenance cart) to the three large rollers of the slip roll. Most of the oil ports will be small holes towards the ends of either sides of the rollers - they'll be on parts of the roller that do not actively rotate when the machine is in operation:

- One oil port located on the left side of the top drive roller, plus the movable bushing on the right hand side (the one that you pull out to allow removal of fully concentric projects, see picture below)



- Two oil ports on either side of the bottom drive roller - you can lift the top roller out via the removable bushing on the right side.
- Two oil ports on either side of the idler roller on the back of the machine

## In case of excessive friction

If the rollers aren't rolling freely after applying the 3-in-1 oil, use a spray can of WD-40 on the oil ports and work the rollers back and forth (side-to-side as well as rotating around) to dislodge any gunk.

# Maintenance Task Automation - For New Tasks, Start Here!

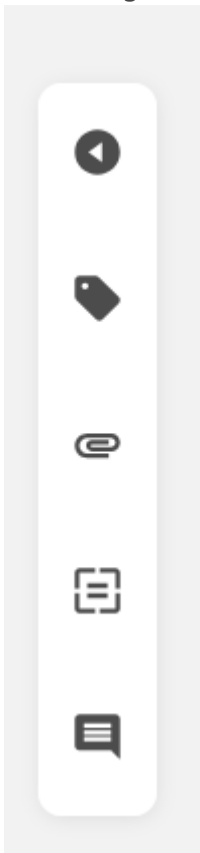
## Maintenance Automation

The pages in this book (as well as the ones in Maintenance - Training Required and Maintenance - Admin Required) are used by software automation to periodically schedule tasks in the Shop & Maintenance Tasks Asana project.

Scheduling automation will only operate on pages that have been approved and which have the appropriate tags (as below).

## Applying maintenance tags to a page

1. While editing a wiki page, look to the right side of the page for an icon panel. There should be a "Page Tags" button there, that looks like a luggage tag:



2. Click on the empty "Tag Name" field. You should see a suggested list of tags.
3. Click on one of the suggested tags prefixed with `maint_` to add it to the tags list. Repeat for all other tags with that prefix, so you have `maint_level`, `maint_freq_days`, etc. all listed with their tag values not yet set.



4. Fill in the tags, using the suggested tag values to help. It may also help to use an already tagged wiki page as a reference by observing the set tags on the left side of the page:

tool_code	ESR
maint_freq_days	90
maint_task	Oil the slip roller
maint_asana_section	Industrial & Sheet Metals
maint_ref	slip-roller-oiling
maint_level	tech_ready

To set the tool\_code tag, go to <https://www.protohaven.org/equipment/> and scroll the Index table so the "Tool Code" column can be seen on the far right. Use the code for the corresponding tool.

The `maint_ref` field can be anything, but it must be different than all other tasks. You can just grab a [randomly generated UUID](#), name it similar to the maint\_task value, etc.

5. Save the page when you're done. You can verify the page is visible to automation by clicking [this link](#) and using Ctrl+F to search for your task by name (note: works for tech\_ready maintenance only)

## Maintenance Tags

For details on what each tag means, see <https://wiki.protohaven.org/books/metabook/page/tags-for-wiki-task-pages>

## Approving maintenance pages

Scheduling automation will not schedule maintenance on a page which has not been approved by at least one person with approval ability. See the header on [this page](#) for details on how to mark approvals, and who has this ability.