

Letterpress Proofing Press



NOTE: For better understanding, one should watch the video along with this text. It is available on my website: affordablebindingequipment.com

General info

This press is a “gravity”-based press, which means the weight of the cylinder creates the pressure instead of a “pinch”-based press where pressure is created by pinching the platen and the cylinder together.

Advantages:

1. **Size of the press:** Most letterpresses that become available for sale are usually small, or weigh hundreds of pounds. The size of this press was modeled after the 1422 Line-o-scribe, which was used by grocery stores and theaters for making their own posters. The press is sized to print 14" x 22" posters and seems to be suitable for most needs. The space it needs to sit on is 21" x 36". The shaft handles stick out about 4" on both sides.

2. **Weight of the press:** Since this press easily comes apart, shipping and transport can be done via UPS and not a trucking company. It is also possible to move (with 2 people)

from one place in the studio to another. But it is heavy enough to keep from sliding around on your bench, especially with the non-skid rubber feet.

3. **“Type-high”** means nothing to this press, as it is adjustable from about 13/16" to about 2". This opens up a wide range of uses and makes the press more flexible for different mediums and type sources than just whatever will fit under a type-high cylinder.

4. **Availability:** If you have been looking for a small inexpensive letterpress, you know they don't become available very often, and when one does, there are a lot of other people that want it, and the press may need a lot of work to get into operating condition.

If you don't mind searching for parts (that eventually wear out) and have the mechanical know-how to do the work, love machines with lots of moving parts and like doing it “the way they used to”, then, by all means, buy one of the older presses. They are wonderful inventions.

But, if you want a simple machine with no parts to break or wear out, and want to start printing now, then this press is for you.

I will build these as I have time, and will take orders, if one is not completed when you check for availability. Lead time is about 10 weeks.



5. **Appearance:** It just looks nice! It is made primarily from oak, maple, and Baltic birch plywood with a Formica-covered 1-½" thick MDF platen. It is a satisfying and attractive piece of equipment to use. Since I am a cabinetmaker, I build this as a nice piece of woodworking, not as an industrial piece of machinery. Who says shop equipment has to look grey/black, heavy-duty, cast iron? Like the book-binding equipment I build, I take pride in the overall look and finish

of the piece, not just its function.

Miscellaneous:

Where to get type: There always seem to be full sets of type available on eBay. If you intend to buy, examine the pictures thoroughly and ask questions to make sure they are complete sets with the correct number of multiples of each letter. What I used for testing was a jumbled 10-pound box of miscellaneous type I bought on EBay. It's sad that this type is being wasted (sold for bullet making), its usefulness lost forever.

There is also [Arion Press](#), which still make lead type for sale. They have a wide range of fonts and sizes available.

Photopolymer: [Boxcar Press](#) will make a photopolymer printing plate for you of any digital file you send them. They are quick, very friendly and have a website packed with useful information on letterpress and photopolymer in particular. Along with regular printing plates, they can provide half-tone plates for color printing. If you want to try it, you can make these yourself, if you have a way to make the reverse negative of your file.

Just know that these photopolymer plates have about a 1-year usefulness (their claim) as they tend to dry out and curl (happened to the one I bought), unless kept and stored specifically the way Boxcar says to store them. I have found that they start to curl within a few weeks but then I didn't do much with it but keep it in a sealed light-tight bag. But they are inexpensive, when considering the cost of LOTS of type in different sizes and different fonts, upper and lower case, plus punctuation and artwork.

I provide a base for these photopolymer plates but you can also buy an aluminum base from them meant for this purpose.

Clean-up: General clean-up after you are done printing can be done with Coleman gas and lint-free rags, especially important with the photopolymer since lint sticks to the polymer. Use no water-based inks, as these will degrade the photopolymer. You can use a tooth brush with the lead type to clean well around the individual letters and a soft brush to clean the photopolymer. But remember that the polymer is soft and will scratch and edges may crumble.

Press info

Lockup is the same as with any proofing-type press, except there is a pressure bar that can be adjusted at 1/2" intervals to eliminate the need for lots of furniture. You may still need some furniture, though, to finish your lockup. 3 sets of tapered wedges are provided to help with the lock-up instead of quoins. A 9" x 12" maple wood chase is provided to get you started with smaller lockups.



The black knobs on the top adjust the height of the cylinder. The wing nuts lock the knobs in place to keep them from changing height during the printing process.

There are ramps at both ends of the press. The purpose of these is to raise the cylinder to lock and unlock the cylinder from the “up” position.

On top of the carriage are 2 notched pieces of wood which are **cylinder locks** (see above pic) When in place under the knobs, they lock the cylinder in the "up" position, so it won't hit the blanket on the return run of the carriage.



The cylinder weights about 50 lbs. How this amount of weight will make a satisfactory print depends on many factors, including how much type the cylinder contacts at one time. I have found that this is satisfactory without packing.

If you feel more weight is necessary, you can press down on the handles as you draw the cylinder across the lay-up, which can provide about 50 lbs. of extra pressure, depending on

how tall and strong you are.

This is not an exact science as each print may be slightly different, depending on how uniformly you push down on each handle on each pass, and how much pressure you apply during the whole print. This is actually a satisfying experience, as it makes you feel like you are a part of the printing process, instead of the press doing all the work.

If this doesn't provide the uniform result you are seeking, you can add body-building weights to the handles. These will need to be small enough to miss hitting the table the press sets on, or any diameter, if the press sets on a table slightly smaller than the base of the press. Just remember, added weight will mean a LOT more effort to get the carriage up the ramps at either end of the press.

The carriage runs on heavy file drawer guides that need no lubrication and the cylinder rotates on heavy-duty bearings that are maintenance-free.

Setup

Where to place the press:

The table you set this on needs to be heavy and sturdy (not wobbly like a card table), and not on casters. You need to be able to stand at the end with about 2 foot clearance for the carriage sides



to slide out without bumping into anything. Picture shows carriage in the "out" position.

I have found you can push or pull the carriage or stand at the side, though the side position makes it difficult to get the carriage up the ramps and doesn't allow for extra pressure to be made during printing.

Where to lock up on the platen:

It is best to lock up the chase closest to the end where you will be standing. If you are pulling and you lock-up towards the cylinder (home position), you will not be able to push down very hard, because of the distance away from you. If you lockup closer to where you are standing, then you can apply more pressure as the printing starts.

Setting cylinder height:

Do a dry run (no ink):

1. Lock up the type.
 2. Put down a sheet of the paper you will print on.
 3. Put down whatever packing you will be using.
 4. Lay the rubber blanket over the top of your lay-up.
 5. Without the cylinder locks in place (cylinder in "down" position like you are going to print), raise the cylinder with the adjusting knobs until the cylinder clears the lay-up.
 6. Move the carriage until the cylinder is over your lay-up.
 7. Lower the cylinder using both knobs until the cylinder rests lightly on top of the rubber mat. Make sure both sides rest evenly on the rubber blanket.
 8. Now, noting the punch mark on the knobs, turn both knobs one turn counterclockwise. This will lower the cylinder by .050". This is all the farther you need to adjust the cylinder down to get a good print. Any adjustment farther than this does not add any extra pressure to the print and may cause uneven side-to-side pressure, when you press on the handles.
 9. Tighten the wing nuts on the knobs to hold them to this setting and push the carriage back to home position, with the cylinder on the ramps.
- Practice will give you a feel for how much to lower the cylinder. If the printing seems light on one side, loosen the wing nut on that side and turn the knob counter-clockwise another half or whole turn, and that should take care of it.

The Printing process:

1. Do the lock-up
2. Make paper registration
3. Ink type and add paper
4. Add packing
5. Put rubber blanket down
6. Unlock cylinder
7. Pull the carriage to the end of the press up onto the lock ramp.
8. Lock the cylinder "up" by swinging the locking levers under the knobs.
9. Push the cylinder back to the start/home position, up on the unlocking ramps.
10. Flip rubber blanket over the carriage, remove packing, pull print.

Variables:

When I built the prototype, I knew nothing about letterpress, except for the hours of reading and watching videos. So when I started pulling prints, I learned a lot in a hurry. There are many

variables to getting a good print, most of which have nothing to do with what press you are using.

1. **Paper:** the thickness of paper, the hardness of paper, whether it is textured or very smooth, and whether it is coated or not. I used cheap copy/printer paper for testing and found that, although it looks and feels smooth, it is anything but that. I was getting texture and skips in the individual letters caused by the texture. This is OK if this is the look you want, but if you want perfectly-formed and fully-inked prints, you will need to buy smooth paper with no texture.

2. **Ink:** Rubber-based ink was recommended to me, because it dries slower on the type and brayer. In my reading, Van Son ink is an industry standard and used extensively in letterpress. But I found the ink be *way* too thick out of the can and left texture from the brayer on the type. The ink wouldn't flow out flat when rolling the ink on the glass and so it also didn't flow out on the type. You can hear the stickiness of the ink and see the texture the brayer leaves behind. I read about a solution to this problem: add a few drops of linseed oil to the ink on the glass until it no longer made the sticking sound. That solved the problem of texture on the letters and from then on I got uniformly printed letters.

Whatever ink you use, make sure it's meant for letterpress. Because rubber-based inks dry slower, don't expect to use your prints the next day. If you want faster drying times, use oil-based inks. Because these dry faster on paper, it will also dry faster on the type, so keep that in mind. Drying time is also determined by what type of paper is used. If it's coated paper, drying will take longer. Just remember that water-based inks will ruin photopolymer.

3. **Packing:** This is a trial and error exercise deciding what kind, how thick, or whether to even use any at all; this will be learned by testing. I found that the type/thickness of packing is directly related to the type/thickness of the paper used. If the print isn't satisfactory, then try lots of different types and thicknesses of packing. You can even get interesting texture in the print by using different weaves of cloth.

One idea is to get a softer rubber blanket to place under the one I provide. This will give deeper impressions in the paper, a hallmark of letterpress and seems to compensate for the slight curl in larger letters of photopolymer plates. The rubber I use is 60 durometer. The smaller the number, the softer the rubber. I bought it from McMaster-Carr and they have a large, confusing assortment of rubber types and thicknesses.

In doing some testing of an actual large offset printing press roller, I found that the rubber was 35-40 durometer, which is just about what a pencil eraser is. I chose harder rubber for the blanket because I didn't want the type to imprint into it and ruin it. Plus, I didn't think the softer rubber could take the wear and tear of use without tearing. If you were to use some 35-40 durometer rubber as packing and the right paper, I think you might be able to get some decent embossing within the limitations inherent in this press. And this will help when printing from lino-cut plates.

Again, I am no expert at this...I have seen videos where it seems they are using thick cotton batting as packing. So your experience and practice will help you know what packing works for you. Experiment...there is no right way.

4. **Pressure:** After you have gotten the correct paper, have the ink to the correct viscosity, and the packing you need, then the pressure of the cylinder is the next variable. If you don't have the first 3 right, no amount of pressure changes will make a satisfactory print. So before you feel you aren't getting enough pressure, change the other variables first to see if they make a difference. (I have addressed cylinder pressure "Press Info" on page 4)

5. **Carriage speed:** Carriage speed determines how long the given pressure is actually on each letter in the lock-up. Fast carriage speed means less pressure on the type, no matter how much pressure there is. Slower is better and will give a more even print, especially if you want embossing to occur. Practice will show how fast you can do your print. Since doing this type of printing is more art than production, time is not an issue.

6. **Multiple passes:** Multiple passes are possible with this press, but there is always the possibility of the paper shifting during the second pass unless the paper is taped down or clipped with some sort of registration clips. Just remember to use the cylinder locks at the end of the run to raise the cylinder up for the return trip.

Never print in both directions. If you try to print going back to the home position, the rubber blanket will probably move, bunch up and mess up your print. Always print only in one direction, away from the home position.



Rear view

Limitations

Every piece of equipment, no matter how sophisticated, has limitations. This press will probably not do perfect deep embossing. The amount of uniform pressure required is not possible with any gravity based press.

Because the cylinder is “balanced” side to side on the type while printing, very small lock-ups might not give a uniform print, as the cylinder could rock side to side on the type.

The solution to this, if you are type-high, is to put type-high runners or un-inked type on either

side of the lockup so the cylinder will have something else to ride on other than the small lockup. If you are careful, this may not be necessary, so practice to see if it's needed.

As with any printing press, large solid inked areas are always a problem, getting totally inked prints with no skips. Again, this is a function of paper, ink, and packing. But pressure is also in the equation, and this press may not provide enough pressure to give totally-inked, large area prints. This may apply to linoleum-cut prints, but I have never tried one.

How I came to make this press

A bookbinder contacted me who wanted to print his own covers. He had tried to buy a Line-o-Scribe on eBay, but was frustrated that so few come up for auction and bidding was heavy. Then he saw a website where a guy was building a letterpress out of scuba-diving tanks. He also discovered my website, where I state I will build custom equipment. This press is the result. I had done some reading and watched videos on letterpress before this, and actually designed and tried to build a hydraulic press (but couldn't find anyone to help me complete the design because my experience was limited). When I got his request, I did a lot more reading and watched more video and from all this got enough ideas how to construct it.

I had no hands-on experience in letterpress, so when it came time to test the prototype, I enlisted the help of a local guy who had 19 years of experience and knowledge running printing presses (but not specifically letterpress). Together, we tested many variables and finally pulled a decent print after only about 10 tries. The main problem we were fighting was incomplete-inked letters due to textured paper and ink being too thick. When we were done, he felt satisfied that this press would perform within the limitations of a gravity-type letterpress.

The guy who ordered it then came to pick it up. He had some experience with letterpress. We spent 3 hours pulling one print after another. We were able to get decent prints once we made adjustments to overcome the variables. In hindsight, we realized almost all the problems with the prints we pulled were due to the type of paper we used (uncoated cheap copy paper), and not anything inherent in the design of the press.

Also, a graphic arts professor at the local university came to look at it and he also feels the design is solid and will perform as described.

I am confident that, even if you have little or no experience with letterpress, with some practice and persistence, you will be able to produce consistent decent-looking prints, just as we did.

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