

## Hydraulic Jack Printing Press Instructions



**NOTE:** For better understanding, one should watch the video along with this text. It is available on my website: [affordablebindingequipment.com](http://affordablebindingequipment.com)

## General info

This press is a hydraulic jack-based letterpress, which means that up to 4 tons of pressure can be applied to make your print.

### Advantages:

1. **Size of the press:** This press is large enough to do most printing jobs and yet is small enough to take up very little room in your studio. Most letterpresses that become available for sale are usually small, or weigh hundreds of pounds. It only needs a 13" x 18" space on your bench.

2. **Weight of the press:** This press weighs only 55 pounds and has rubber feet to keep it firmly in place. It is built to be structurally solid and there is nothing that can wear out.

3. **"Type-high"** means nothing to this press, as it is adjustable from about 2-3/4" to 0". 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 or platens.

4. **Availability:** If you have been looking for a small inexpensive letterpress, you know they don't become available very often. When one does, there are a lot of other people who 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, if you 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.

4. **Pressure** I guarantee this press will put impressions into the paper! By applying 4 tons of pressure, it can actually push the type right through the paper if you are not careful! So if debossing is what you are looking for, this will work for you. I have not tried it, but I also think this press will work fine for lino block printing, especially with the correct packing.

5. **Appearance:** It just looks nice! It is made primarily from oak, beech, and Baltic birch/cabinet grade plywood, all with Formica covering for easy cleanup. 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:** Full sets of type always seem to be available on eBay. If you intend to buy there, 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 makes lead type for sale. They have a wide range of fonts and sizes available.

**Photopolymer:** But buying lead type can be expensive, considering the different sizes and fonts you will want. The perfect alternative is photopolymer. It prints like lead type but at a fraction of the cost. [Crownflexo](#) makes theirs with a laser. [Boxcar Press](#) makes theirs with a photo mask. Both companies will work with you to make what you need from a digital file you send them. I bought mine from Boxcar and 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. These can be rejuvenated with water, but I have not tried it.

You can use 1/4" acrylic for the base for your printing plate. This gives a nice hard surface to put it on and keeps ink off the bottom press platen.

**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 break down the photopolymer. You can use a tooth brush with the lead type to clean thoroughly around the individual letters and a soft brush to carefully clean the photopolymer. But remember that the polymer is soft and will scratch; edges may crumble if you get too robust with cleaning.

### **Press info**

Use of the press is very straight forward. When ready to print, you close the white valve and pump the handle up and down. To release, undo the valve and the springs will raise the platen. Simple, easy to use.



## Setup

### Where to place the press:

The table you set this on needs to be sturdy and not wobbly. Since it only weighs 55 pounds, it can be moved around and put away when not in use.

## The Printing process:

1. Prepare the chase or photopolymer plate.
2. Make paper registration.
3. Ink type and add paper.
4. Add packing.
5. Place this sandwich into the press, centering it as close as possible.
6. Close the white valve clockwise and pump the handle.
7. Open the valve (counterclockwise).
8. Pull your sandwich out and pull your print.

## Variables:

When I built the prototype for my proofing press, 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. While using that press and now this one, I found 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, whether it is coated or not and whether you moisten it or not. Letterpress paper is expensive, if you want to make impressions into the paper. So practice will be needed to get the effect you want. Keep that in mind when ordering.

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 to be *way* too thick straight 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, therefore 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. This also causes too much ink to be transferred to the type and leaves uneven edges as it is pressed onto the paper. I read about a solution to this problem and it works: add a few drops of linseed oil to the ink on the glass until it no longer makes the sticky sound. That solved the problem of texture on the letters and from then on I got uniformly printed letters. It also solved the problem of getting too much ink on the type, as less ink adheres to the brayer.

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 several different types and thicknesses of packing. You can even get interesting texture in the print by using different weaves of cloth.

But just know that with this hydraulic press, there is enough pressure, with very soft packing, to push the type right through the paper! So you will need the same type of packing that is used with regular steel platen-type presses.

**4. Pressure:** After you have gotten the correct paper, have the ink to the correct viscosity, and the packing you need, then how much pressure you apply is next. 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 seen videos of this type of press used and some apply pressure and immediately raise the platen. I have seen others leave it under pressure for a few seconds. This is all trial and error and how much pressure to apply and how long will be learned over time. Once the platen contacts the paper, how hard you push down on the handle determines how pressure is applied to the print. I realize that pumping the jack handle does not give accuracy to how much pressure is given, but with time, like any machine, you will learn the individual workings of it.

### **How I came to make this press**

A woman in New York contacted me who wanted to print her own wedding invitations. She wanted this type of press for this job. I did some research online and found a lot of people had built their own and I refined what I saw into what you see here.

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 with this press. It's straightforward design and simplicity allows you to concentrate on the art of letterpress printing without fiddling with a machine (especially if you are not mechanically inclined.)

