

# Printing Press Manual

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1. Check in with one of the printing press stewards to either run your printing press session or give you the go ahead to do it on your own.
2. Secure the blue printing press cart (must be done during steward hours as it lives in the cage).



The blue printing press cart

3. (Recommended) grab one of the wheelable Makerspace worktables and bring it over to the printing press corner as a work surface.
4. Design your project. What font size? How many e's or x's will you need? Are you thinking of using punctuation? What paper do you want to print on? What color ink are you going to use? **Write out your entire composition on some scrap paper and count all the letters.** Some of our cases of type don't have a lot of type in them, and so they will only support small projects.
5. Find the case corresponding to the font and size you want. **Carefully** pull the case out and place it on your work table – they are sometimes very very heavy

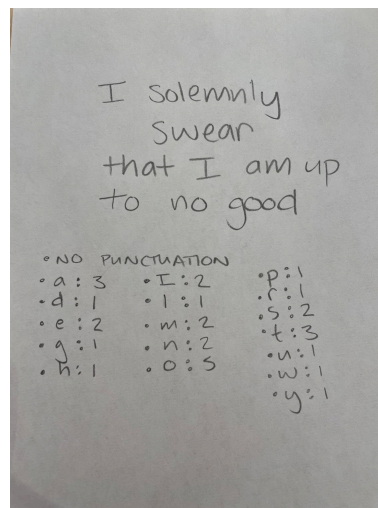
and quite low down. If the case feels too heavy for you to lift on your own, ask



someone to help you move it.

Labels on the cases on what font / size they contain

6. Check that the case you have chosen has enough of everything for your composition! It is really, really sad when you have made a large composition and then run out of only one or two letters :( If you are working on a very large project, it may take too long to count every letter. A test you can do to estimate if the case will be large enough is to count the number of “e”s. It's not always reliable, but will usually work.

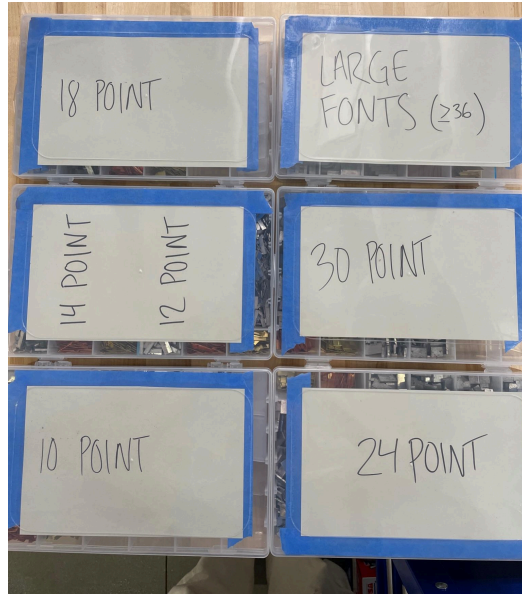


Example composition planning

7. Decide how wide you want your composition to be and adjust the composing stick with the handle to that length. The length of a composing stick is measured in picas. There are 6 picas in an inch. Note that the maximum print size of this

press is 8 x 5.5 in, or  $\frac{1}{2}$  of a normal sheet of paper, so it is not recommended to go past 30 picas on this press. Put a slug of the correct size in your composing stick (we want to eventually sandwich all the lines of our composition with slugs or leads).

8. Grab a box of spacers. They are in the blue cart and labeled by size. Font size is measured in points, where there are 72 points in an inch. This is the same point system you would use on an online editor.



Em spacers sorted by size

9. Set up your case, composition plan, case of em spacing, and extra leads:



Well organized layout

10. Use the case diagram (should be a few in the cart) to find all of your letters

ffi	fl	:	;	'	k		1	2	3	4	5	6	7	8	\$	'	()	Æ	Œ	æ	œ
j						e	i		s	f	g	ff	9		A	B	C	D	E	F	G
?	b	c	d									fi	0								
!							o	y	p	w	,	EN QUADS	EN QUADS		H	I	K	L	M	N	O
z	l	m	n	h											P	Q	R	S	T	V	W
x							a	r	.	-	4-EM SPACES	0-EM SPACES	2-EM AND 3M QUADS								
q	v	u	t	3-EM SPACES											X	Y	Z	J	U	&	ff

“California job” style case diagram. Notice that the more common letters have bigger compartments and that it is not sorted alphabetically. The lowercase letters are on the left and the uppercase are on the right. There are some special double letters, “ligatures,” on the edges—those ones are combinations that often will not sit nicely next to each other so they are made specially as one piece. Ligatures are most commonly found in relation to the letter “F.”

11. Begin typesetting! Hold the composing stick in your left hand and take one letter at a time and lay them down on your composing stick. They have little nicks on the side that should face outwards. Work from left to right. Do note that once you start touching the lead type you should not touch your face until you wash your hands! Place em spacers on either side of your type in the composing stick, as well as one 3-to-the-em or 4-to-the-em between words. This can be adjusted to adjust your spacing, but start with one 3-to-the-em and adjust from there.



Hold the composing stick in your left hand and lay type from right to left with the nicks facing towards the open end of the composing stick. The test should look upside down and backwards, so that when you visualize flipping it over it will be in the correct orientation. Use your thumb to hold the type in along the row as you set, or it may fall out. Again, make sure to sandwich each row with a slug or lead to keep everything evenly spaced and tight. Keep your type tight in the composing stick by filling with the largest spacing available and working all the way down to coppers and brasses. Notice that the coppers and brasses are not next to each other but sandwiched between larger type.

12. When your composing stick is full, or you have finished your composition, transfer it onto a galley (a metal plate) found in the rack next to the type cabinets (the imposing table) and tie the type with twine. Slide your composition onto a galley. **Always make sure to slide, not lift, your type.** Take a length of twine

from the blue cart and loop it around the composition, making sure it is tight. Finish looping your length of twine around the composition then push the end through the twine on one of the sides of the composition to tie it off. Fill out a galley sheet found on the imposing table and tape it to the edge of your galley so it is visible.



A completed composition in the corner of a galley.



A fully tied up composition ready to either start the printing process or be left until you can return.

13. At this point, you can leave your type until you can return to ink. When you return, move the type to the center of the galley and grab the chase (a heavy, cast iron rectangle) and place it around the type.

14. Use wooden blocks (called “furniture”) as spacers to fill out the rest of the chase. When it is getting close to full, untie the twine carefully. Add the small, expandable metal blocks (called “quoins” and pronounced coins) on the bottom and on one side. Once the furniture is fully placed, tighten the quoins by inserting the quoin key or a screwdriver and rotating to expand them. The quoins need to be tight enough to hold the type in place, but avoid over-tightening them.



The composition is fully tightened. Gently use one of the blocks (on the left) and a mallet to lightly tap the composition and spacing to make sure that the spacing is below the composition and the composition is all the same height.



Test that the composition is fully tightened by lifting it slowly above the galley. Make sure that nothing will fall before picking it up more. It should now be ready for printing. This entire block is called the forme.

15. Prepare your paper, choose your ink, and get ready to print. You want to make sure everything is prepared before you ink the press. Make sure you have paper that is the correct size (the press currently has gage pins that will accommodate 8.5 x 5.5 in sheets).
16. Before you add the rollers or ink, do a blind impression to check your work. Check your chase is tight one last time, then lift it carefully and place it on the press, underneath the inking disk. There is a lever (called the hook) you should lift on the top that will hold the chase tight against the back panel. Add a piece of paper so it is resting on top of the foam blocks, and pull slightly on the handle, checking that the grippers (the long metal pieces that hold the paper in place) will not contact any metal or type. The steel grippers will destroy the softer lead type if they come in contact with it. If the grippers look like they will land on the type, loosen the knob on the bottom of the gripper and move it out of the way. Once you have checked everything is clear, press the piece of paper into the type. Take it out and look for any errors. If you think it looks good, continue to inking. If there are errors, fix them and return to this step.

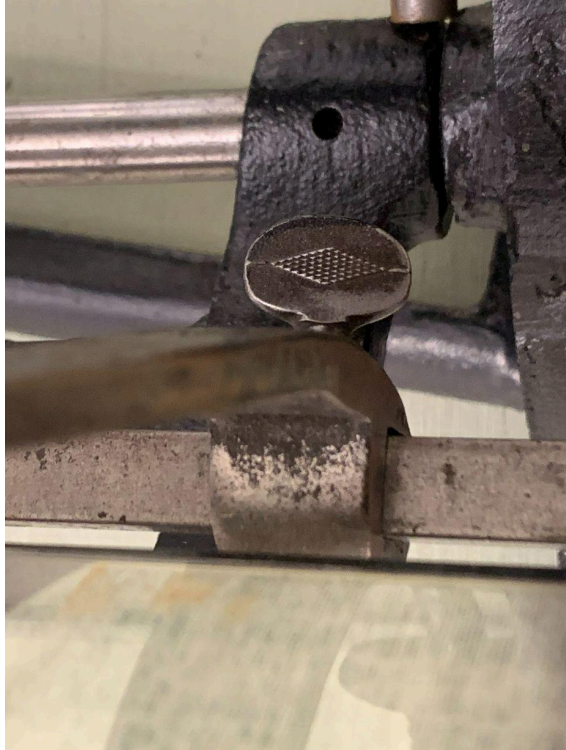




The hook is properly set on the forme. The forme should be tight against the steel back of the press

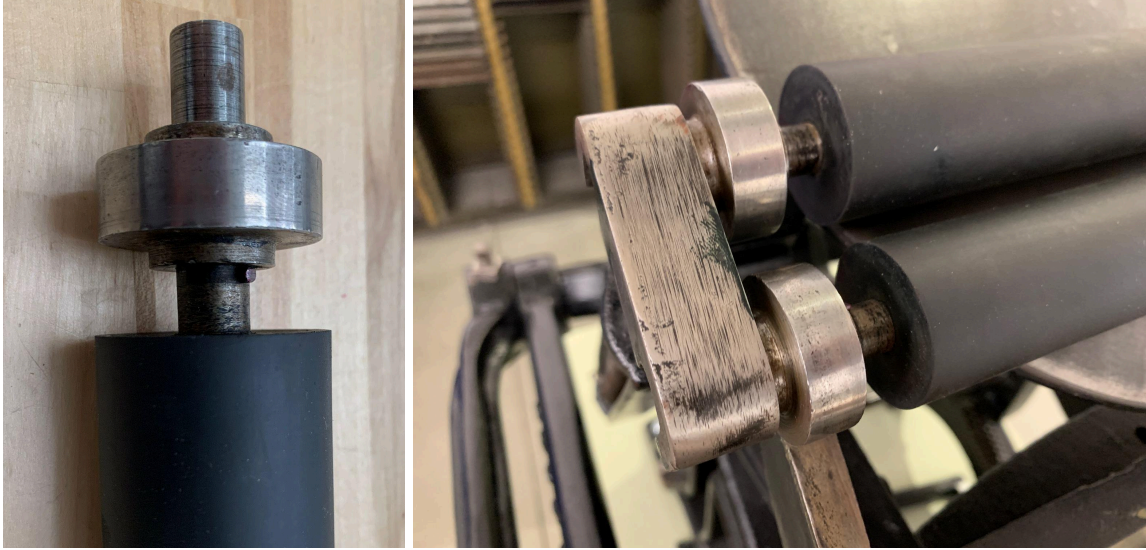


The metal grippers are the long rods sticking up. Make sure these will not come into contact with any type or high points of the forme.



The knob used to adjust the horizontal placement of the grippers.

17. Put the rollers on the press. They are located in the top of the blue toolbox, and should have 4 metal round spacers (called “trucks”) with a slot. Put the trucks on the rollers as shown below, then mount the rollers on the press by pushing up on the spring loaded saddle that moves when you push down on the handle. Put 1 roller in each slot on the saddle, and make sure the trucks run cleanly over the metal guides to either sides of the inking disk. This process is a bit fiddly to do on your own, so ask a friend to help.



Trucks mounted on the rollers (left) and the rollers mounted in the saddle on the press (right).

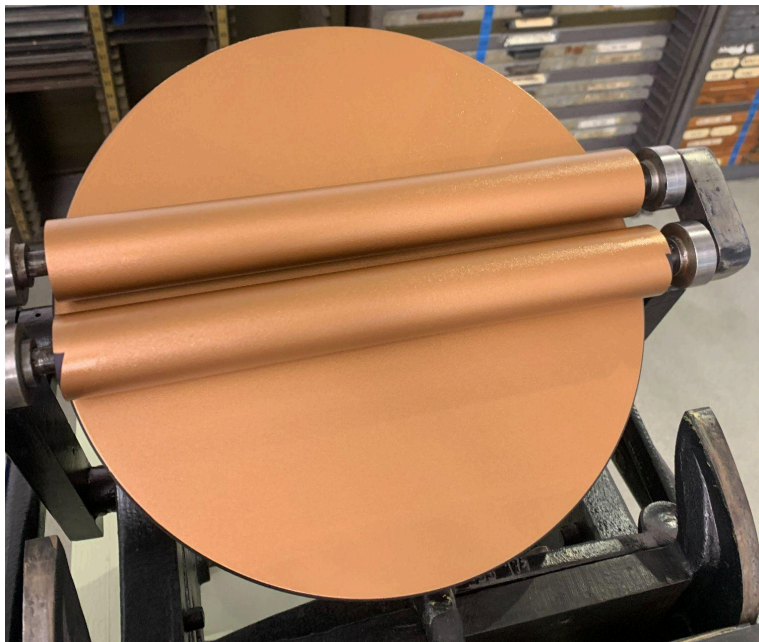
18. Once the rollers are placed, ink the disk. Grab your ink and dot ink in a spiral around the disk. Use the inking knife found in the ink drawer to pull the ink around the disk until it is mostly covered, taking care not to scratch the surface of the disk. Before you mount the forme, pull down on the handle and use the rollers to help spread the ink on the disk. The ink should make a sticky sound when you roll over it. If it does not, ask one of the printing press stewards for help. Pull down on the handle approximately 20 times to properly spread the ink.



Ink dotted in a spiral pattern to help spread the ink on the inking disk



Ink after being spread with the inking knife. Make sure not to scratch the surface of the disk with the corners of the inking knife.



Fully spread ink ready to print!

19. Put the forme back on the press, following the instructions in step 16. It is now time to print! Add the paper the same way you did in the blind impression, and print your first piece, making sure you push through the resistance on the handle to the final stop.
20. Look at your print. If there is not a clear impression on the paper, you may need to add more packing behind the paper. Ask a steward for help to do this. If the letters are bleeding or fuzzy, there may be too much ink on the disk. If you need to take away ink, lift some ink off the disk with the inking knife and transfer it to a piece of paper or plastic for use later if the disk needs more ink. If they are not quite visible, you may need to add more ink.

## Clean Up

**Clean up is essential to the press being available in the makerspace. If the space is not well cared for and kept clean, your privileges to use the machine may be revoked.**

1. Once you are done with printing all of your pieces, you need to clean up the press. Start by removing the forme from the press and setting it to the side.
2. Remove the rollers and bring them to the large sheet of glass. Roll them along to try and remove as much ink as possible from them, then use the Mirachem available in the bottom of the blue printing cart to clean them until no color comes off when you wipe them. Make sure to only use the Mirachem for the rollers as they will degrade over time if harsher solvents are used.
3. On the inking disk, use the flat side of your ink knife to lift some ink off before using the paint wipes and the heavy duty paper towels to remove the ink. Check the roller saddles as well as other parts of the press to make sure ink did not spread anywhere else. If it did, clean it.
4. Replace all parts back in the cart where they were originally found.
5. While the type is locked in the chase, use the paint wipes to clean the type carefully, making sure no ink remains. For smaller type, you may have to clean some of the sort (individual pieces of type) as you place them into the case. Unlock the type from the chase, and put away the furniture and quoins. Wipe the type off with the miracle wipes and make sure each letter is clean.
6. Replace all of your type in the correct spaces within the case and put all your spacers back in the correct locations. If the type is sorted hastily or incorrectly, it

can make the case very difficult to use in the future, so make sure to do this carefully and accurately.

7. Do a final check to make sure that all the ink is cleaned up, and alert a steward you have finished. Bring the printing cart back to the cage and let the steward double check the area is clean before turning in the cart keys.