

# Letterpress and Relief Printing

## Steps of Operation and Clean up

## An Introduction to The Vandercook Letterpress

### Remember the fundamentals of relief printing:

1. Quality or character of print surface, 2. Ink, 3. Paper, 4. Pressure, and 5. Clean up.

### A. Introduction to UMBC New Printmedia Letterpress area

#### 1. Measurements

Print measurements are most often made in terms of points and picas. One point equals 1/72 of an inch; or, there are 72 points in an inch. There are 12 points in one pica. A pica ruler (also called a line gauge) can be used to make these measurements, but you must remember that the finest measurements that the pica ruler allows are usually only in 1/2 picas, or 6 point measurements. For convenience, use the "6 and 12 point scale". The other gradations have their utility, though we will not be using them. These other measurements are used constantly in printing, publishing, and the graphic arts. Learn to use the pica ruler, and to think of the page in measurements expressed in points and picas.

#### 2. Leads and Slugs

Leads are the spacing between lines. ("Lead" rhymes with head.) In our new UMBC we are still building the leading area. So we don't have a large selection of lead but enough to do the few projects that will be working on. When selecting your lead lengths try to match them up with the furniture lengths that you have selected. It helps when in the final line up and locking, but there are times when you want unmatched lengths.

Important: Because we are limited in our lead and slug's selection

#### **PLEASE DO NOT CUT ANY OF THE MATERIALS TO FIT.**

Continue searching and looking at arrangements that might work if no lead and furniture combinations work then speak with the instructor.

#### 3. Furniture

We have both wood and some metal furniture, cut in various widths and lengths. The lengths and widths are not precise and you should take your time and measure with the pica rule accurately select the furniture.

The thin furniture pieces are called "reglets."

The thing to keep in mind is that the furniture and leads are the most reliable means for measuring and "locking up" type in supportive fixed locations on the press bed.

BUT - Again we are just beginning our supply of type, furniture, and leading so there will be a lot of **creative solution for establishing the lock up.**

1. Keep Good notes of your choices and decisions.
2. Take a cell phone picture of your set up.
3. Make an actual outline of the puzzle pieces and their positions including the image and type.

#### **4. Galleys**

Because of the limited resources as stated above we are not encouraging holding on to the type for extended periods of time, so we are not actually working with or using Galleys. When we do build up enough reserve type then the metal Galley Trays would be for storing type for a short period of time. For our projects we can use the type and wrapped in string to keep our lines together using a one of the small sheets of sheet metal in the type area and a couple of the square magnets you can keep your text in position till you get to print.

As soon as you have completed your type run and have copy proofed and curated the prints, Clean all the fonts thoroughly and place them back into the proper tray and bin.

DO NOT RUSH THROUGH THE PUTTING AWAY OF THE FONTS

IT WILL ONLY CAUSE GREATER ERROR AND FRUSTRATION

IT WILL BE THE CAUSE OF A FAILING GRADE IF YOU ARE NOT PAYING ATTENTION

Put all the magnets and metal sheets away

#### **B. Printing**

##### **I. Lock up**

Establish a "strong corner" on the press bed from which the furniture extends. Example: Begin building the furniture from the upper right corner of the press bed. Generally one can place strips of furniture against the far side of the bed and continue out to the end of the lock up area.

Create a "corridor" for the plate or type to fit in, then you make minor alterations in the horizontal alignment of the printing area simply by adding small increments of spacing material to one side or the other of this "corridor".

Position the quoin on the near side of the press bed.

From the far side of the press, across to the near side, the sequence of materials goes like this:

1. Fixed amount of furniture against the press side rail
2. Variable amount of furniture next to the type,
3. The type nestled in its corridor, with a variable amount of lead at the top and bottom ends of the type block,
4. A variable amount of furniture on the near side of the type block,
5. The quoin(s),
6. A fixed amount of furniture.

*You should make it simple to set up again.*

*Draw a diagram of how you set up the bed.*

*Take a cell phone picture of the set up.*

When making multiple pages, using a similar format, it is important to follow similar lock up procedures.

Remember: do not leave anything on the press bed except what you want to print. Any large item will permanently damage the Mylar draw sheet and its support "packing," and create a permanent, irregular pressure.

#### **II. Packing**

Packing - a crucial element in the letterpress process and there is always hundreds of questions about it.

**#1 Do not** permanently alter the packing on the press unless you have been given permission, and assistance, to do that.

The cylinder is fixed with a variable amount of packing.

The base packing is made up of:

1. Some tympan sheets
2. and 1 Mylar draw sheet.

Usually you can see a number punched into the cylinder, which gives a clue about what packing is needed to make a "normal" print.

On the Vandercook presses – Universal I, the SP-15, the SP-20, and the 219's – you will find the number .040 on the press cylinder. This number indicates that the cylinder **bearers** are .040" higher than the body of the cylinder. Since printing paper adds thickness to the final pack, the press is adjusted to take .040" packing plus printing paper. We under packed the press to allow for heavier papers than the makers of the press anticipated would be used on the proof press.

As you are making tests for your packing, remember to build the pressure slowly, in measurable increments. If you overpack, then you risk permanently damaging the Mylar draw sheet.

**If you've been given permission**, this is how the packing is changed:

1. Move the cylinder to the center of the bed (on "trip" if there is a form or plate on the bed) so that the reel rod is in the up position.
2. Unlatch the reel rod ratchet with the crescent wrench and prepare to loosen the draw sheet.
  - a. Though it may at first sound unusual, you must tighten the drawsheet in order to loosen it.
  - b. Tighten the draw sheet slightly, which then releases the tension of the ratchet.
3. Once the Mylar drawsheet is peeled back, you may add or subtract packing sheets.

**If you add a sheet of packing (regardless of its thickness) for a print, remove it at the end of your press run.**

**If you take out a sheet, replace it after you complete your run.**

The Mylar needs to be changed every so often, particularly when someone who preceded you has printed with too much pressure.

4. You can also add packing on top of the Mylar.

The difference between a "**soft pack**" and a "**hard pack**" can produce certain tactile effects on your print, you may or may not like and you should keep that in mind.

For expediency, and in most cases, adding a small bit of packing on the top of the Mylar is adequate. For highest quality and long runs permanent alterations it is usually best to add packing under the Mylar.

You may find that the simple use of an extra print paper will be all that is needed.

### III. The Rollers

The geared roller goes on first. Make sure the gear is stable, as it has a tendency for the screws on it to loosen. Strange sounds emerge from this gear area when screws are loose. The second form roller, without the gear, goes in front. Remember to keep the rollers in the up position at all times when the press is not in use.

There are screws on both ends of the rollers that occasionally loosen up.

They should be tight at all times, and if they become too loose they will scrape against the rails, first making a slight sound and then, as the screw loosens more, it may lodge against the rail.

As a matter of simple precaution, make sure the screws at the roller ends are tight.

- If you can unscrew them with your fingers, you know they should be tightened.
- The rollers should be adjusted frequently.
- If you notice that there seems to be any loosing inform either your instructor or Chris Perego or the print area monitor of the issue.
  - 1) This can be done by email directly to one of them.
  - 2) Or by going to your *myUMBC* and click on the “**Help**” menu .
    - a) In the Request Help window in the left column under “Departments & Programs “ is the listing for “Visual Arts Inquiry” and on that page you can submit a help request ticket directly to the Visual Arts staff.

Use the .918 (type-high) gauge. To adjust the rollers,

- 1) First loosen the setscrew that secures the black knob into position.
  - a) The knobs turn effortlessly, whether the setscrew is tight or not.
- 2) The black knob controls the height of the roller.
  - a) To raise the roller, turn the knob to the right.
  - b) To lower, turn left. (Right = raise; Left = lower.)
- 3) The rollers should leave a stripe no more than 1 pica wide.
  - a) A stripe larger than 1 pica indicates that too much pressure has been applied to the rollers.
  - b) A stripe smaller than 1 pica indicates that the roller should be lowered.
- 4) Often the type will appear to ink up all right and the print will look satisfactory even if the rollers are slightly out of adjustment.
  - a) In most cases, however, a close examination of the print will reveal that adjustment to the proper height will improve the print quality.

### IV. Ink

The best way to understand an ink is to use it, examine it as best as you can, and make notes about what you see, how it covers, how it dries, how it offsets, how it does what ever it does.

It is good to remember that even though inks may have the same names, they may not necessarily remain the same over time.

In the print media area we have inks for

#### **Intaglio, Lithography and Relief.**

- **Water based**
- **Oil based**

- **Rubber based.**

1. The majority of the inks we are using are the oil base inks that have no dryer in them but they still dry much faster than the rubber base inks.
2. In most of the hand printing process we find the oil base preferable because of the faster drying times.
3. Alternatively in the letterpress processes with the inking systems and distribution the slower drying, less tack and lower viscosity of the rubber base inks are the more desirable inks to be using.

While the rubber and oil can be mixed with each other, for the best results you should only mix rubber base with rubber base and oil base with oil base.

Sometimes that simply isn't available to you in the studio and adjustments to your ink recipe and mixing will have to be made.

Consult the *Pantone Matching Guide* for the basic colors and the recommended combinations of them into multiple color combinations.

As mentioned above there are a number of lithographic and intaglio inks in the Printmedia Studio that at first may look perfect for your desired color choice, but most of them have no drier, and they can create more of a mess when used for relief printing, especially when printing with the letterpress.

Save using these inks for the more special projects when there is additional special tweaking and ink manipulating that calls for additives extenders that increase drying times.

- Transparent inks have the vehicle of the ink, but no pigment:
  - Allowing for mixing of color by varying the amount of transparency with color pigment and when printed the color will alter based on the surface and/or color it crosses.
  - Having a solid understanding of color theory and ink and knowing what it does when printed helps tremendously here.
- Transparent Base also allows for the introducing of oil paint colors as a pigment or other non-drier inks and mediums. If you are having wild crazy creative thoughts here on what you can use on the press STOP .. you will not be using anything but the rubber based inks here.

## **V. Clean Up**

### **1. In General**

Clean up for inks is restricted to these three materials:

1. Odorless mineral spirits (found in the red plunger canisters),
2. Regular vegetable oil usually found near the intaglio area and sink
3. Simple green.
  - a. An good old H2O

There is generally never any need to have any other cleaners or solvents out.

After the edition has been run clean up starts with

1. Turn on the large vent fan if not already on
  - a. Put on a new coating of hand soap (the invisible glove)
  - b. And yes put on a pair of your disposable gloves
  
2. Use one of the paint scrapers to clean any slabs that you have put out and any areas of ink on the glass slabs.

**CATION NOTE:** 

**Be Careful and pay attention here please!!**

- a. Use the Yellow Pages for cleaning off the scraper.
- b. Be sure to tear out the pages and throw them in the red safety cans.
- c. Use a small amount of vegetable oil on any ink residue on slabs
- d. Followed with a spray of simple green and a clean towel.

On the press start with

1. With the Vibrator Assembly and rider rollers in the engaged position and the inking drum running
  - a. Squeeze out some vegetable oil on the metal rider rollers and vibratory assembly allowing for the ink to become thinner and looser.
    - i. It will seem to increase the amount of ink but it is actually breaking down the viscosity of the ink and allowing for fewer amounts of Mineral spirits to be needed in the end, making it healthier for all.
    - ii. Again use the brown paper towels to do the heavy clean up and place saturated rags in the red safety cans.
  - e. After the ink is loose on the metal rollers Take

There are many kinds of ink in the print room. Most of the relief inks appear to be a mess, since relief and letterpress inks (with drier) develop a skin on them as they dry. There may be an old can of ink with the designation "for proofing only" written on it. Be careful not to scrape off the ink skin when you roll out your ink. Use the stiff putty knife to go down the side of the ink can. Fresh ink awaits you underneath the skin on the surface. Keep the ink cans lid clean. Replace the lids quickly on the ink cans. Clean off excess skin and replace the "rabbit ears" if needed. Check with instructors and assistants before opening a new can of ink. We save the newest ink for printing finished work. There are several kinds of ink in the print shop, and they all have different qualities and capabilities.

## 2. The Clean Up Process

- Wear gloves whenever you are using solvents.
- Wipe surfaces first with a dry rag, then clean with a very light amount of mineral spirits.
- Remove to galley, or your locker (if it's your plate).
- Put dirty rags in the rag cans whenever you are not using them. Make sure the lid fits onto the can.
- Clean brayers, knives, cans. Clean up around the proof press.
- Put away furniture, galleys, printing plates, lead, scrap paper. Clean up everything else.

## 3. Automatic Washup

There is an **automatic washup** feature on several of the Vandercooks. Here is a quick lesson, if you have the automatic washup feature.

- a. Put a few drops of mineral spirits on rollers. Turn on switch. Engage rollers.
- b. Engage automatic washup. Turn clockwise. (If automatic washup not in use, or if the press has no automatic washup function, then remove rollers and wipe off ink by hand, using clean gray rags.)
- c. Add mineral spirits to the rollers, very slowly. If the solvent is added too quickly, then the rollers will not spin around. If this happens, wait until the rollers begin to turn again, and then add more solvent. Keep adding mineral spirits until the rollers look clean. Do not use type wash on anything but type.
- d. After most of the ink has been removed from the rollers, stop the motor and take off the rollers. Wipe each of them with the mineral spirits and rag until dry. Then return them to the storage cabinet under the press. Remember to put the front roller in first. The roller with the gear comes off next; it should rest on the front support. This way, when the rollers are put onto the press again they will be properly installed: the roller with the gear always goes closest to the ink drum.
- e. Clean off the doctor blade of the automatic washup. Replace the paper in the tray (half a sheet of newsprint is OK) and wipe everything clean. Return automatic washup tray to proper place.

## 4. Solvents

For letterpress work, we use primarily two kinds of solvents: oil-based and water based. Oil-based cleaners are more volatile and reliable, but a number of water-based solvents (such as “Mirachem” and “California Wash,” both which we have in the Print Lab) are adequate for clean-up, better for your health, and available in our Lab. We use Mineral spirits (also known as paint thinner) for the final of cleaning all rollers and soft surfaces, such as linoleum or "sandragraph" plates.

For lead type, we sometimes use a non-flammable type wash. Type wash is much more harsh than the mineral spirits, and it never should be used on rollers, brayers, linoleum, or soft plates. Use type wash only if you have been instructed on how to use it properly. There are solvent cans with labels clearly marked which should indicate what you are using. If you cannot identify a solvent, please bring it to our attention immediately.

There are other solvents in the room at any given time, but in most cases you will not need to use them. If you run out of mineral spirits, you may use kerosene, which is oily enough to clean rollers. Lacquer thinner has been used in the past by some people who have no regard for their mucous membranes. Alcohol is used as a solvent for shellac. None of these solvents should be used for polymer plates, linoleum, or large type.

## **5. Rags for Clean Up**

We use shop rags provided for the print shop by Aratex, paid for by lab fees. Clean rags are kept in the several places around the shop. Soiled rags should be kept in the metal cans with the covered lids, and saved for pick up. Check with us before you dispose of a solvent.

## **6. Storage**

Space is always at a premium, but with your cooperation and best efforts we can find appropriate places to store paper, plates, and printed work within the print room. Type can be stored on the galleys. Remember not to leave composing sticks, magnets, or furniture on the galleys.