



Screenprinting for fun at home

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one
tonne
graphic
(print, web & fun).

Howdy!

You want to learn the basics of screen printing? I'd be happy to give you a rundown. It's based on my experience so far as a amateur screen printer. It's simple, practical and to the point. Hopefully it's useful to you.

There are many resources which will probably contradict what you learn by reading this. That's okay. I'm often wrong - this process works for me but may not work for you. Getting your hands dirty and printing something by hand is great fun, and something I recommend. Give it a try and have fun.

Screenprinting is fun and relatively inexpensive way to print at home. These notes are a collection of handy resources which hopefully you will find useful when you start doing your own screenprinting. It's important to note that when you do this at home, you may find that you have to experiment to get things working properly at home. That's okay - that's part of the process. Be well prepared before hand and do not be discouraged if you have to fine tune your process to get good results. That's part of the fun! Accordingly, none of this represents hard and fast rules - you might find you get better results using different techniques and I encourage you to improve on *everything* pretty much!

Before we start, a quick word on equipment and taking yourself too seriously.

You can screenprint with very basic equipment. You do not have to spend a fortune to get professional results. Although – you may find if you've got better quality of your gear more reliable and consistent results will be your reward. There's definitely no need for a roll of \$50 notes big enough to choke a cow – this can be done on a ridiculously tight budget. Be inventive.

You are far better to spend a little on gear and treat it well and learn how to use it, than to spend a fortune and discover that you're not really enjoying printing that much. The best way to enjoy screenprinting? Make it fun, and make lots of mistakes.

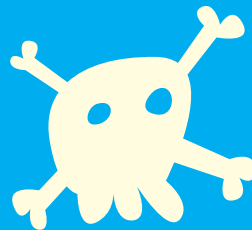
Happy printing!

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Safety.

Screenprinting like any printing process, uses potentially dangerous materials and equipment. In short, don't be an idiot.

In less short, please read material safety data sheets (MSDS) on products you use, and use protective gear. Treat all chemicals and tools with respect and be overly cautious, and take sensible risks. Keep it fun, not stupid.

Building a Basic Exposure Unit

An exposure unit is basically a box with a light in it. There are lots of ways to make them, but this is what I use which works pretty well. To build one of these, you shouldn't be looking at more than \$150AUD.

Ingredients:

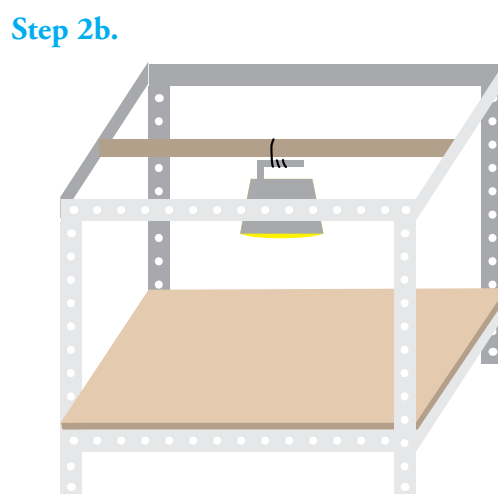
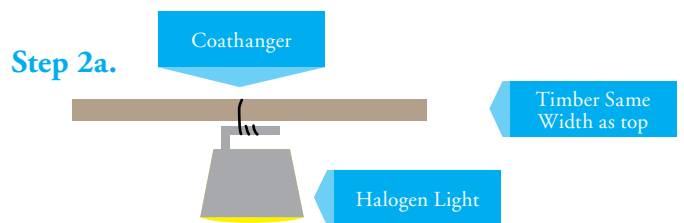
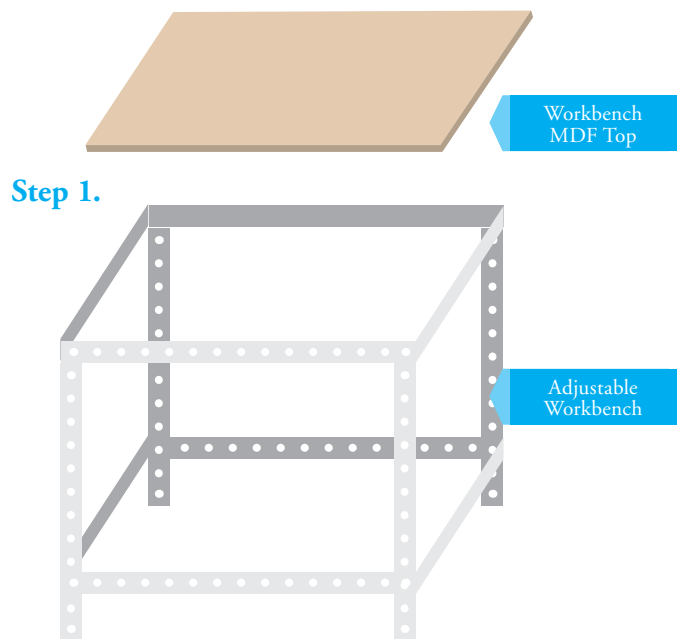
Bolt together workbench with adjustable shelf height
500w Halogen Work Light
Piece of dowel/timber same length as bench top
2 Coathangers
2-3 Metres black linen
Sheet of glass same width as your screen
Packet of 50mm Cableties

Step 1. Grab a basic workbench from your local hardware store. The kind with a metal frame and MDF tops are good as they're easy to modify if needed. Assemble the bench.

Step 2. Before putting the lid on the bench, put the timber below the lid. Using the coathangers make a hanging basket to hold the light. It will get hot so make sure the light isn't touching the MDF and is in the middle. Use the cable ties to secure the powercord for the light to the rod to keep it tidy and out of the way.

Step 3. Carefully drape the black cloth around the outside of the shelf so that it doesn't let light in. Make sure to leave a wide overlap in the middle so you can use that to put screens in and out of the unit. Make sure the black cloth is well away from the light, and once again, cable ties will make it easy to tie off the linen to the frame.

Step 3. (Admire your handy work)



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Exposing Screens

This is where the art really comes in. To successfully expose screens at home you'll need to be patient an experiment. Especially when using a basic exposure unit as per the plans on the previous page.

Sensitise Screen:

Under safe light (or in a very dark room) use a screen coating trough to put a thin coat of photo emulsion on your screen. To do this, you will need to tilt the screen at 45 degree angle, and gently drag the coating trough up the outside of the screen. The objective is to get a smooth, even and thin coat of the emulsion on your screen. If you are planning to do lots and lots of printing, coat it on both the inside and outside of screen - for most people a couple of coats on the outside is fine.

It will need to be 100% dry before you do anything with it. You can dry it more quickly using a drying cabinet, but be very careful with heaters and enclosed spaces for fairly obvious reasons.

Positive:

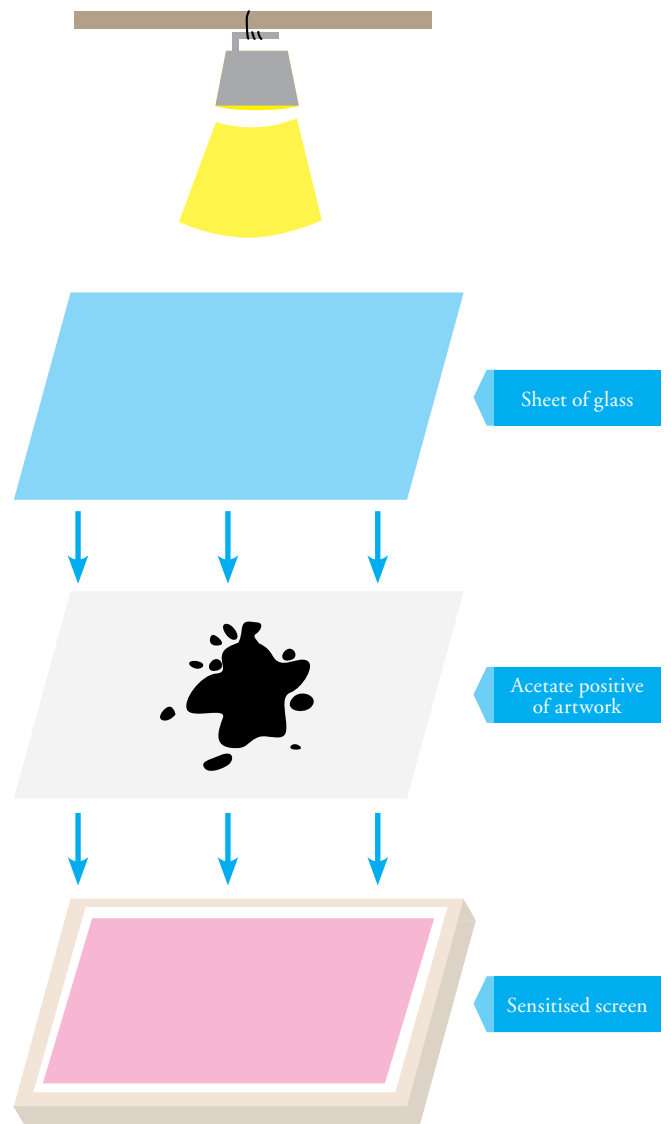
Using a positive of your artwork on acetate (if you wish to use photocopy paper and white spirit and oil, you will need a stronger light than this basic setup). Inside the exposure unit, sandwich the sensitised screen on the bottom, your artwork and then your sheet of glass on top.

Exposure:

Depending on how strong your light is, how thick the emulsion is, and how strong the black on the positive, will depend on how long it takes to successfully expose your artwork. I have had success on 28 minute exposures using this kind of setup, but I generally use a pressure hose to wash out the emulsion. You may find if you use a regular hose you can get away with exposing it for less time. Experiment!

Washout:

As soon as the exposure is done, get it washed out as quickly as possible. You can do this under full light if you work very quickly (hence why I use a pressure cleaner).



Printing

To print successfully, you need to be well prepared, have plenty of clear space setup, and work methodically. Beside that, make sure you keep your hands clean as a little ink will go a very long way.

Spotting Up:

Taking your now exposed screen you will want to hold up to light and look carefully for holes in the emulsion and screen. If you leave holes in the screen artwork they will print, so you need to either paint on a little bit of photo emulsion onto the holes and let that cure, or just tape over them.

Taping:

To stop the ink leaking around the edges of the emulsion you will need to tape up the screen to prevent the excess coming through. Do this on the inside of the screen, and be thorough as if you leave spots around the edges you can virtually guarantee that you'll end up with ink leaking through.

Standoffs:

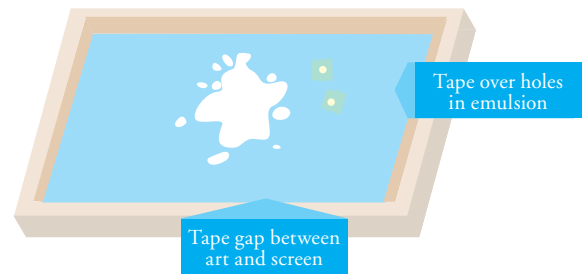
Depending on how your print jig is setup, you will most likely need standoffs on the bottom of your screen (especially if you use a basic hinge setup). Tape a small square of cardboard in the bottom corners of the screen so that the screen is never resting flat across the print surface. Without these stand offs it's very hard for the screen to snap-back cleanly and you'll have problems getting clear prints.

Printing:

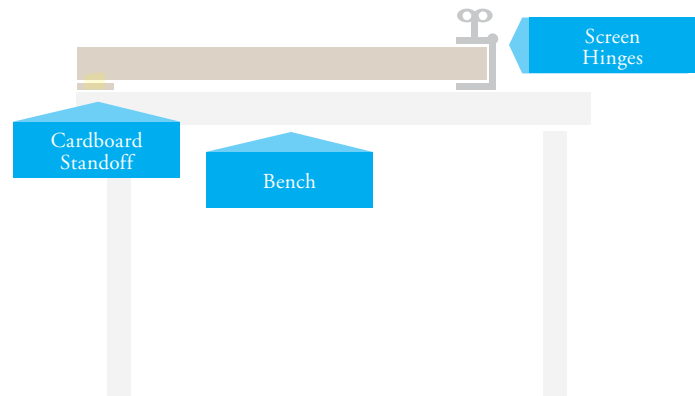
Put a thick bead of ink on the screen, slightly wider than your artwork. Make sure you're using fabric ink for works on fabric, and paper inks for works on paper. The consistency will make a difference to how it performs in the screen.

Without the screen touching the printing surface below, at a 45 degree angle evenly drag the ink across the screen to flood it. The screen is now flooded and ready to print. Make sure to keep the screen flooded when you're not printing as this will help ensure the paint doesn't dry in the screen and ruin it.

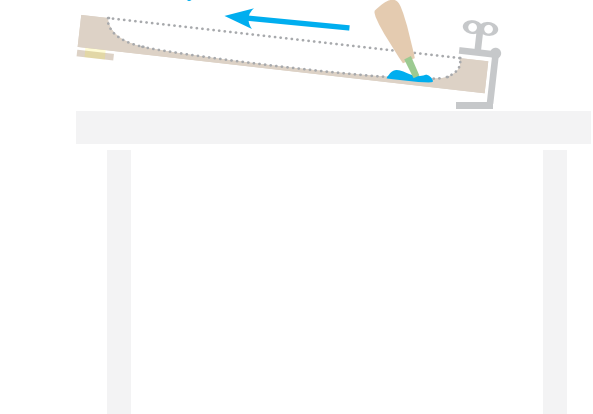
Put the screen down and do some test prints to make sure the screen is printing okay. Check for spots of rogue ink and that it's not bleeding too much. You need to experiment to get a feel for what works and what doesn't. Every screen and ink is different.



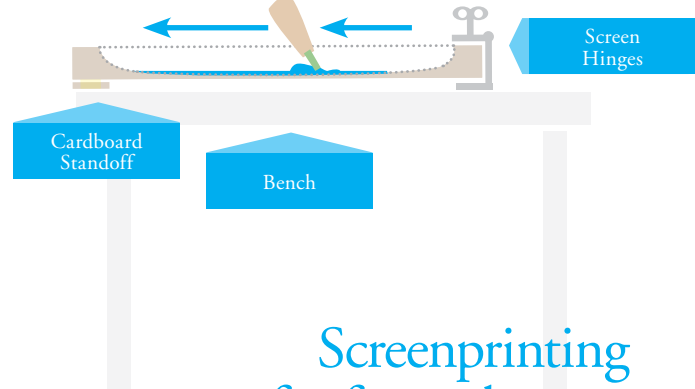
Side View



Flood (Cutaway view)



Side View



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Printing (continued)

Printing Angle and Snap Back:

To print successfully you need to think about how a squeegee works. It works best when only the corner of the squeegee is pressing on the screen - too much pressure and the squeegee will flatten off and cause your print to bleed, too little pressure and the ink will not flow evenly and not print nicely.

Screenprinting works on the principle of the screen staying above the print and only being in contact when you're actually printing. The screen returning to neutral after printing is called snapback. This is the reason why screens have to be tight as if they're loose they don't pop back up and you don't get a clean print. See the illustration for an exaggerated view of how it works.

Buying & Mixing Inks

You need to use the right kind of ink for the right kind of screen - fabric ink goes in a fabric screen, acrylic ink goes into a paper screen. The different densities of the screen (the fineness of the mesh) will affect how much goes though onto your printing surface. Fabric inks tend to be thicker and give better coverage of coarse surfaces, whereas paper inks are thinner and give better detail on finer print surfaces.

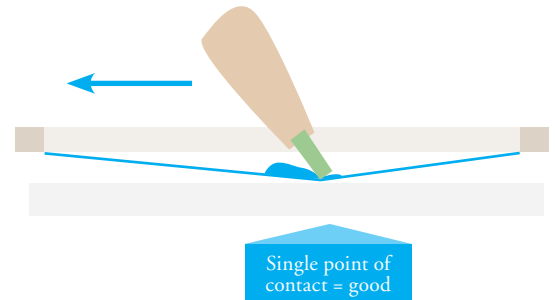
Most screenprinters will have medium on hand to help slow down the ink from drying in the screen. For works on paper, Lascaux is the gear you want, and for fabric, it doesn't have a fancy pants French name, just Fabric Medium is what you want.

The medium is basically a colourless goop which affects the consistency, drying time and opacity of the ink. If you're working in a really hot dry room, you will find the ink will dry a lot quicker than if you're working in a cool damp room. If you are having problems, you can add a retarding agent which will dramatically slow the drying time on the ink too.

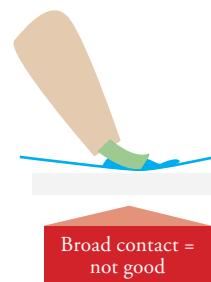
You should know basic colour theory as it's key to being a well rounded and all round nice person, but there's a quick guide on the right. Mixing the three primary colours will get your secondary colours. Get too carried away and you'll end up with brown. Don't worry, brown is an awesome colour. The best way to get a feel for mixing inks is to start mixing. Make a note of colours you've mixed if you are likely to need to make it again for the same project down the track.

When you buy inks to start with, just buy Black, White, Red, Yellow and Blue (and medium as appropriate to what you're printing on).

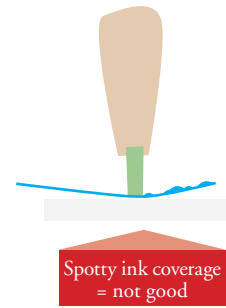
45 degree angle with good snapback



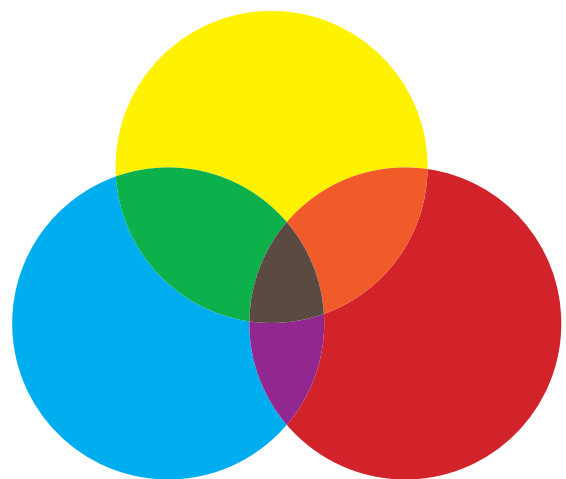
Too much pressure



Not enough angle



Basic colour theory



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Printing (continued)

Registration:

To get your artwork positioned neatly, and consistently you'll need to learn how to register your artwork. Fine registration on a setup like this is pretty difficult, especially when you're printing onto fabric.

Like most things in screenprinting, you need to experiment to find what works best for you.

Basic Registration

Basic registration, however is pretty easy. Here's a simple method.

Once you are printing successfully, tape acetate down on one side of your print surface, and print direct onto the acetate sheet.

Carefully flip this out of the way, and now you can position your print with confidence by popping the acetate over your print surface to check how it's lining up. Easy!

Registration Marks

If you're working with paper you can get a bit fancier with your registration. The acetate sheet method is a good start, but if your paper is all cut to the same size you can make registration marks on your printing bench.

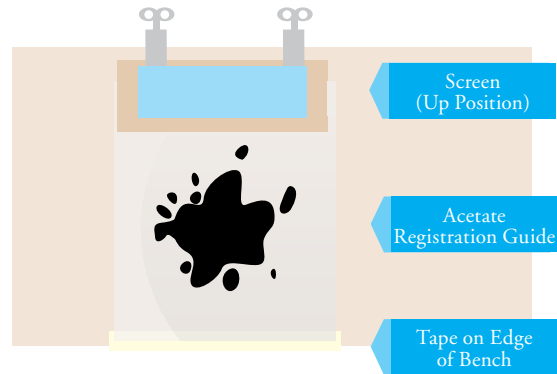
These can be as simple or as complicated as you like, but simply a couple of bits of tape at right angles in the corners of where the paper needs to go will help you register accurately on paper. You just drop your print in and you're away!

Stay Tidy

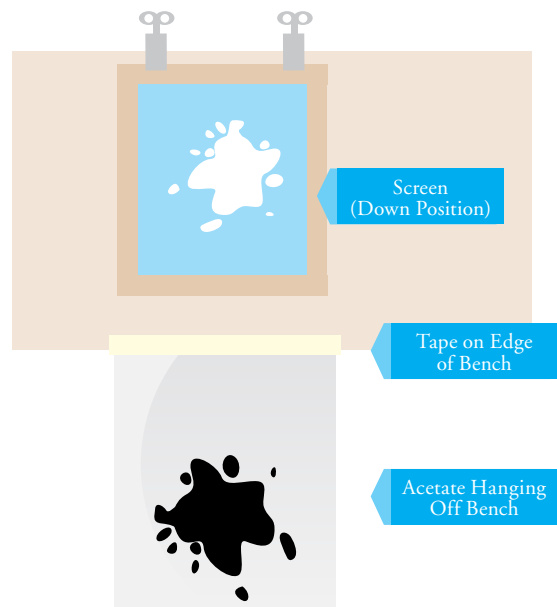
A wise printer once said to me last week, a little bit of ink goes a long way. In order to best enjoy your printing experience, keep your hands clean at all time, and wipe up ink spots straight away. The more attentive you are to keeping your workspace clean, the less prints you will ruin with smudge marks.

A bucket of water and a couple of cloths as well as a sponge is the best tool to help fight the battle of the inky fingers.

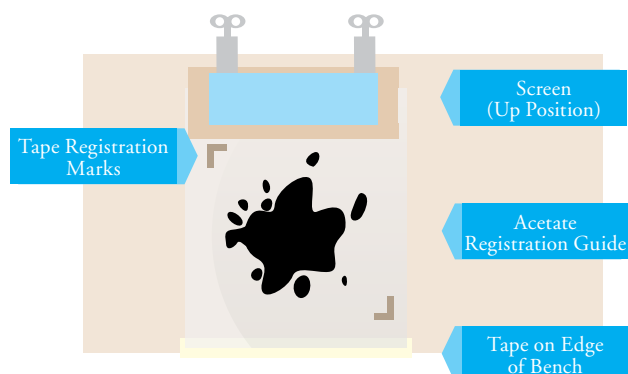
Top view of registration



Top view of registration between prints



Top view of registration marks



After you've printed...

Ink Cleanup

If you're cleaning up and planning to print using the same artwork again, then remove your tape, and wash out the paint carefully and methodically. If you leave paint in the screen (or let it dry in the screen while you were printing) you may end up ruining the screen. A scrubbing brush and lots of water is needed here.

Reclaiming Screens:

When you're done printing, you'll need screen reclaimer to get the finished artwork out of your screens. Spray the screen reclaimer on the screen (5 squirts in a normal spray bottle) and give it a quick scrub with a brush for a minute. Leave the screen reclaimer in the screen for 5 minutes (DO NOT let the screen reclaimer dry in the screen - as it will bugger the screen up).

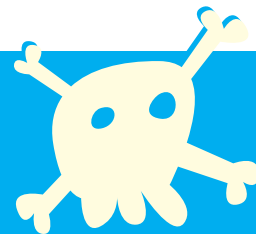
Then gently wet and scrub screen. You should see the emulsion starting to lift. Then it's pressure cleaner (and more screen reclaimer if you have to). Once the stencil is completely cleaned out and the screen looks good, give it a quick coat of powered ajax, wet and scrub the screen. And then spray with degreaser and rinse out and you're done!

Heat Setting

If you're printing using fabric inks, chances are you'll need to heat set your print. Look at the instructions on the jar of fabric ink. Many fabric inks give off nasty gases (ammonia) so iron in a well ventilated area. Or don't if you're a particularly huge fan of ammonia.

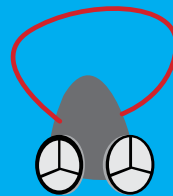
Generally speaking, if you're printing on cotton for example, then set your iron to the cool end of the cotton setting, iron for 3 minutes moving the iron continuously, keep an eye on it, and don't burn it! (Baking paper between the iron and your print may help too).

Commercial printers use flash dryers, but we're too rock and roll stingy for that right? As an alternative to ironing, some can be put in an oven – allegedly. I've not had a whole lot of success that way, so if you're trying that and have found a way to make it reliably work, email me and tell me what I'm doing wrong! (Should I take the garlic bread out?)



Emulsion remover

Emulsion remover is not good for you, and you should wear safety gear (I'm overly cautious and wear a vapour filter mask, goggles and gloves when working with this sort of product). Be sensible and look after your health.



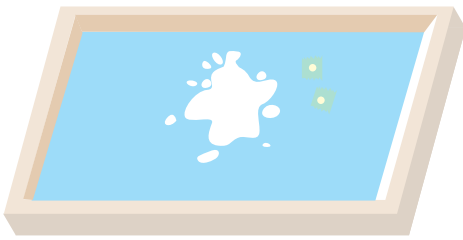
Gear Checklist

You can get by with very basic gear to screen print. Here's my basic list of gear that's worth buying. You can substitute these with equivalents - this is a list of equipment to make a home setup as outlined in the document above. It is by no means exhaustive.



Essential Gear

Silkscreens



Available in varying screen densities, 43t is for fabric, 77t for works on paper and 90t and above for very fine works on paper. You can buy pre-stretched screens which is a great place for beginners.

Squeegees

Basic squeegees with clean rubber "blade" which is a little bit smaller than your screen width. Clean squeegees thoroughly after each print.



Safety Stuff



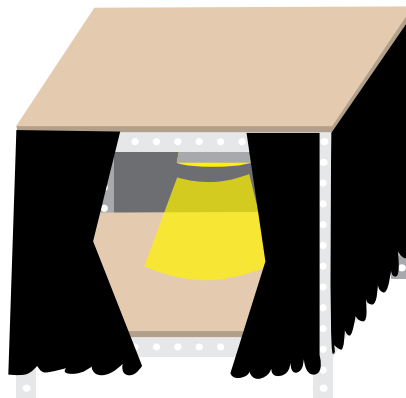
You must have a good pair of chemical gloves, goggles, earmuffs (for the pressure cleaner) and vapour mask. A first aid kit on site is a damn good idea too. Am I annoying you? Good. Go and get the basic safety stuff. Now.

Screen Hinges or Jig



You can use basic hinges or screen clamps as an affordable way to get setup. Mounting them on a bit of board if you don't have a dedicated bench is a great idea. If you want to get fancy, screenprinting jigs are great, especially if you're planning to print on tees.

Photo Exposure Setup & Gear



Not actually essential, but most people want one. You can spend as much or almost as little as you like on this. It's up to you. Basically you need photo emulsion, screen reclaimer, a coating trough, and some form of lightbox to use as your exposure unit.

General Stuff

- Good Quality Masking Tape
- Fabric Medium or Lascaux (helps stop the paint drying in your screen)
- Ink retarder (really slows down in curing time)
- Takeaway Containers for Ink
- Bucket & sponge
- Inks (fabric or paper)
- Spray Adhesive (this stuff is really bad for you - but makes it easier to make your work bench sticky keeping paper and fabric flat)
- Screen Reclaimer
- Pressure Cleaner
- Thick Acetate for Registration
- Powdered Ajax
- Washout laundry/trough
- Bag full of rags
- Iron for heat setting
- Scrubbing Brush

People I've Bought Stuff From (in Australia)

Bilton Graphics

www.biltongraphics.com.au
2 Jannah Court
Mornington
03 6244 4544

Ad-Art

279 Elizabeth St
North Hobart TAS 7000
03 6231 6992

i-print engineering

www.iprinteng.com
iprinteng@optusnet.com.au

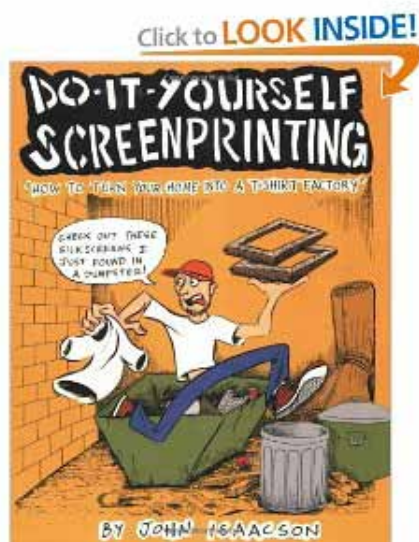
Melbourne

Etching Supplies

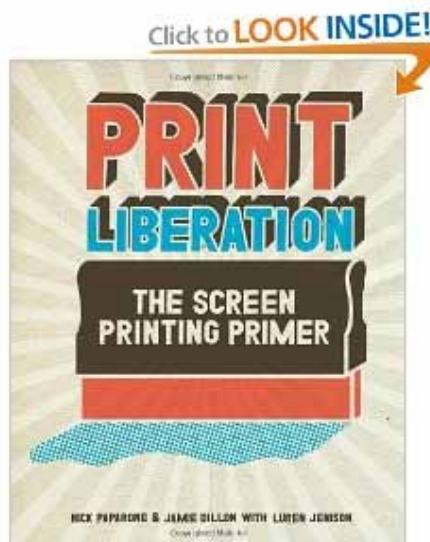
www.mes.net.au
03 9419 5666

Bookshelf

There's a bajillion books published on this topic. Here's a couple of recommendations - I own these books and they're awesome. Disclosure: these are links to Amazon.com and if you buy a copy I get a small cut. Not enough to move to the tropics, but go on, buy them, daddy needs a new pair of dancin' shoes.



Simple, fully illustrated and very funny guide to the process. Told in a comic book style presentation.



Practical, well designed book which provides a great overview of the process. Includes nice demo artwork on acetate ready to expose.



Covers heaps of different printing processes - screenprinting only gets a small section, but there is lots of general useful info in this book and it's beautifully presented.

That's it!

Have fun printing guys and girls, I may update this with more information and remove any particularly hilarious typos from time to time. You are reading the second version of this document, and it was published on the internet in June 2010. You can grab a fresh copy from [my website](http://www.onetonngraphic.com) at any time.

Acknowledgements

Thanks to Iona Johnson, and Kai Howells for their suggestions which have made this document better and more useful. If you see something that needs fixing, or clarification, email me and I'll try and add it in.