NEHOC Screen Printing Kit

Version:10.1

Internet Support

NEHOC offer the largest and most comprehensive English language web site on the Internet [Voted #1 by Suite101.com], dedicated to supporting and advancing NEHOC printing systems.

There is a comprehensive TRAINING section for your support, as well as online training videos - log on today and begin to unleash the potential of your system.

In addition once you become a GOCCOclub member [return the warranty for FREE Membership], you will have access to an even larger range of information, newsletters and training videos.

www.nehoc.com.au

LIFETIME SUPPORT and FREE* PRINTING SUPPLIES

When you complete and return your Warranty Form you will receive FREE registration to the GOCCOclub, a FREE news and information service providing product, application, training information and support for customers throughout the world.

>> MEMBER ONLY TRAINING VIDEOS
>> PRIORITY PRINTING REQUEST FORMS
>> GOCCOclub NEWS
>> FREE CARD PACK and OTHER MEMBER ONLY OFFERS

Receive a FREE Card/ Paper Printing pack valued over $52, plus there are new product special offers, training packs, discounted items and much, much more. ** Delivery cost applies*

Register your Warranty using the CD-ROM:

Open the NEHOC Training CD-ROM on your computer and use the Warranty Registration link. You will need Internet access as this takes you to the NEHOC web site and the registration form.

Register on the Internet:

www.nehoc.com.au/go/warranty

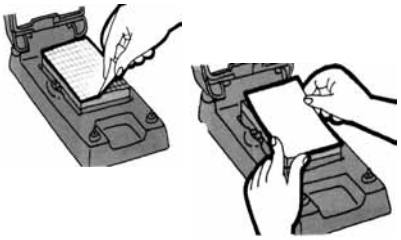
Registering by post:

The GOCCOclub
PO Box 175
NARRABEEN NSW 2101, Australia

IMPORTANT: If your Warranty Registration is not registered any claim will be delayed until the warranty is registered and proof of porchace is confirmed. Register immediately to ensure you receive instant support should it be required.

Section 1-1

Setting Up Your Machine Ready For Use



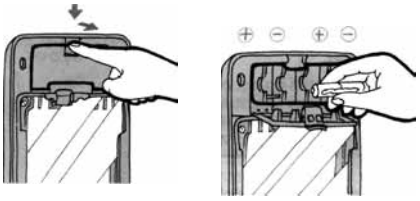
1. Remove the machine and contents from the box.
⇒ Complete and submit your Warranty Form immediately

2. Open the lid of the machine remove the plastic protector cover on the Pad Table by peeling off from a single corner - Discard once removed

3. Remove the Stage Glass protector card [white with orange border]

4. Cut out the border to create a post card size piece of card

5. Place the cut card onto the now sticky Pad Table
⇒ This stops any grid marks showing when screens are made and stops the lid from sticking to the Pad when it is lowered

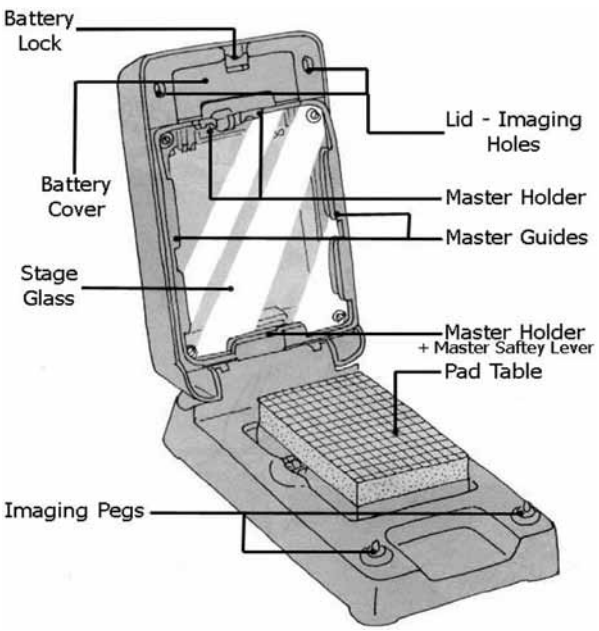


6. Open the Battery Cover in the Lid and insert the two batteries as marked [positive points to left.]

Your machine is now ready for use.

Section 1-2

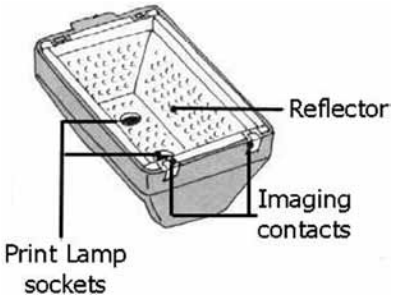
Part Names



Lamp Housing

Print Lamps are inserted into the Lamp Housing and 'flashed' to transfer the design onto the Print Master.

IMPORTANT: After 'flashing' Print Lamps will be hot. Do not handle until Print Lamps have cooled.



TIP: After imaging, place your Lamp Housing aside - FACE UP - so heat can escape from the cooling Print Lamps.

Do you really know how a screen is imaged?
Videos of this process are available on the NEHOC Training CD-ROM and the NEHOC web site - www.nehoc.com.au

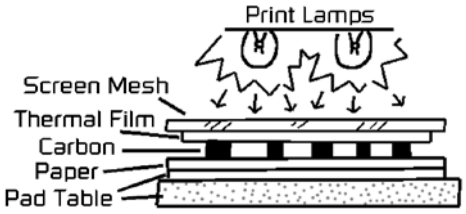
Section 2-1

How it really works

The system operates using a thermal process [Print Lamps] to transfer a carbon based piece of artwork [your design] onto a piece of ScreenMaster Screen Printing mesh.

The Imaging Process

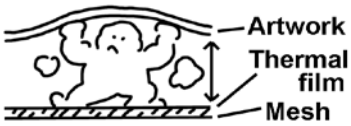
As the Print Lamps fire, the heat passes through the screen and hits the artwork, heating up the carbon to melt away the emulsion [thermal film], transferring your design onto the ScreenMaster. When the ink is squeegeed through the screen [which is attached to a frame prior to printing], the ink will pass through the exposed area of the screen – your design – and onto the item below.



Good artwork is vital to avoid problems before they occur!!

FACT: The #1 printing problem is caused by moisture caught in the artwork BEFORE imaging the screen.

Problems are especially noticeable on solid/ bold areas and include patchy printing or middle of letters and lines not printing. These problems **ARE** avoidable, and are caused by carbon blocking the screen and is easily avoided by preparing your artwork using the Artwork Clean-Up Procedure, outlined in **Section 2-7**.



Section 2-2

Artwork Types You Can Use

Artwork is the key to a good print - A small amount of time preparing your artwork will provide you with a perfect print result and ensure you avoid time consuming printing problems.

As previously explained the RISO system operates on a thermal process using **carbon based artwork**, this being available from 4 main types -

1. **A Photocopy - black carbon copy**
2. **Computer Laser Print [not Bubble Jet – ink is not carbon]**
3. **Hand drawn artwork with RISO carbon artwork pen**
4. **RISO or NEHOC designs book - printed with carbon ink**

Important: Your final design must be the same media. Do not mix a photocopy with hand drawn artwork, as the carbon levels will vary. If your design is a mixture of different types, simply make a photocopy and use the photocopy as your original artwork.

Keys to Good Artwork

#1 Use the same type of artwork [i.e. don't mix photocopy and laser print]
#2 Eliminate all the moisture in your artwork
#3 Remove excess carbon deposits that may block the screen

The Artwork Clean-Up procedure, outlined in **Section 2-7**, is generally the best artwork preparation technique for photocopies, laser prints & hand drawn designs.

Section 2-3

Using A Photocopy As Artwork

With a photocopy you can keep your original design for later use and can use almost any design to create a screen. Poor quality photocopies [background lines/ spotting/ etc.] will provide a poor result, use a photocopier that is regularly maintained and provides a clear copy.

1. Photocopy your design on the lightest setting available before the copy begins to break up or fade - even the lightest copy has more than the required carbon to make a screen

⇒ For best results ensure paper is dry/ no moisture is present

⇒ Use the photocopy as soon as possible after removal from the machine [no moisture should be present in the paper].

⇒ Bold designs use the Artwork Clean-Up Procedure detailed in **Section 2-7**

2. You must use the Blue Filter when imaging a screen [unless using the Artwork Clean-Up Procedure - see **Section 2-7**], as the B6 Blue Filter decreases the amount of heat coming through from the Print Lamps

3. Image your design as detailed in **Section 3-1**

Note: Photocopies MUST be used instantly or moisture will return to the copy. If you can not use instantly – perform the Artwork Clean-Up Procedure before imaging the design.

Section 2-4

Using Carbon Pens or Pencils

You can use any carbon pen or pencil directly provided the artwork is dry. Remember however you can NOT reuse your artwork to make another screen, so it's recommended to copy your original and use the copy.

1. Draw your design with RISO Carbon Artwork Pen or carbon pencil
2. Prepare your design before imaging by drying with a hair drier to eliminate the moisture from the ink & paper
3. Image your design as detailed in **Section 3-1**

Section 2-5

Computer Laser Prints

The best form of artwork, clear and detailed, however laser prints have an extremely high level of carbon, often too much for the RISO screens, blocking the screen with carbon if not prepared correctly.
We highly recommend using the Artwork Clean-Up Procedure [detailed in Section 2-7] to eliminate the excess carbon.

1. Generate your artwork within the computer & print to the laser printer
2. Perform the Artwork Clean-Up Procedure to level the carbon deposits and eliminate moisture
3. Image your design as detailed in **Section 3-1**

Section 2-6

Carbon Artwork Books

Most artwork books you will find in the shops are NOT printed with carbon ink and are not suitable for use - please check before creating a screen. Books from RISO or NEHOC are Carbon based.
Printed Design Books are ideal for logos, pictures, graphics, text, colour separated artwork & 'full colour' artwork. To be used directly from the book, the artwork must be printed with carbon ink.

1. Cut the design out of the Artwork Book
2. If stored in a moisture effected area, dry with a hair drier to ensure a good result
3. Image your design as detailed in **Section 3-1**

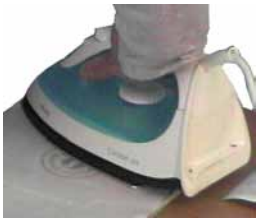
Carbon printed artwork has the lowest carbon levels of all 4 types of artwork, hence no levelling of carbon or blue filter required.

Section 2-7

Artwork Clean-Up Procedure

For this procedure you will require an iron set to permanent press - STEAM OFF, Artwork Clean-Up Paper [S-155] and a work bench which is heat resistant.

1. Set up your PRINT GOCCO ready for imaging before you begin
2. Tear off a piece of clean up paper sufficient to cover the design area
3. Place the artwork face up on top of several sheets of paper or a surface that will not be affected by heat
4. Lay the clean up paper on top of the artwork
5. Place the DRY iron over the paper moving the iron from one side to the other, taking no more than 2 seconds to pass over the design



6. Repeat this process a further 3 times [4 passes in total] before lifting artwork and slowly peeling off the clean up paper
   Note: Do not heat for longer than 3 seconds per pass as this will overheat the carbon
7. On a NEW FRESH piece of clean-up paper repeat steps 5 and 6
8. On a third piece repeat steps 5 and 6. By this stage there should be a clear carbon image transferred onto the clean up paper. This is normal, if this is not occurring see 'points to note' below.
9. On a fourth and final piece repeat steps 5 and 6. After this your artwork will be warm and paper noticeably crisp - YOU ARE READY TO IMAGE THE DESIGN.

Points to note for Artwork Clean Up Procedure

⇒ If the Clean-Up Paper begins to burn/ brown or stick to the artwork decrease the setting of the iron
⇒ If the paper is beginning to stick to the design or lift the carbon after checking the temperature - shorten the time of the pass as the paper is being fused to the carbon due to excessive heat
⇒ If by the third piece there is no imprint left on the paper then increase the time spent moving across the design
⇒ If after 4 passes as the correct heat and time no imprint is left on the clean up paper your artwork has a low carbon content which is ideal to image a screen with

Video of this procedure is available on the NEHOC Training CD-ROM and on the Internet - www.nehoc.com.au/video

Section 2-8

Using a Photograph or Dot Screen with Artwork

Photographs must be photocopied against a RISO Dot Screen [S-138] to transfer photographs into artwork. Use a good clear photograph – black and white where possible. Solid designs should use a White Dot Screen overlay to reduce the carbon density and eliminate carbon blockages.

1. Place the Dot Screen face down on the stage glass of the photocopier

⇒ NOTE: Many photocopiers have the Dot Screen function built in and do not require a separate screen to be laid onto the glass - in this case just lay artwork onto the glass

2. Place the photograph/ artwork face down over the Dot Screen

3. Lower the lid of the copier and lighten the setting before making a copy

⇒ The best setting is the lightest possible setting before any drop out or fading of the design

4. The copy that is produced should be used immediately to make a Print Master

⇒ Use a blue filter when using instantly. Place between the Stage Glass and Print Master

Section 2-9

Colour Separating Artwork

To make a multi-colour print you need to make a screen for each colour. For this you must colour separate your artwork by either hand or computer. Details for colour separations are available on the Internet [IS12], the NEHOC Training CD-ROM or from the GOCCOclub.

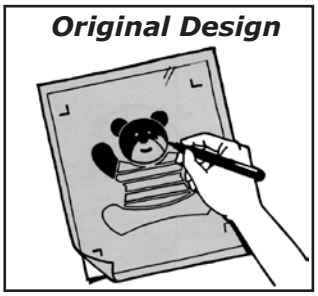
By Hand - Tracing Method

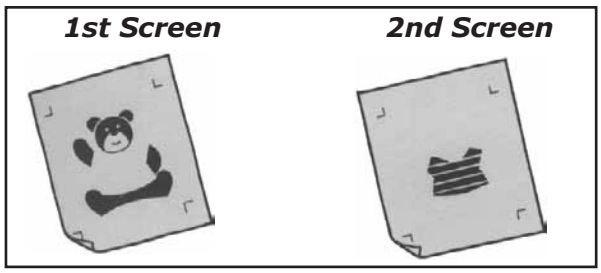
1. Place a sheet of thin paper over the original picture.

⇒ Draw the outlines of the areas to be coloured with a yellow pencil.

⇒ Shade in the areas to be coloured with a carbon based pen

⇒ Fill with 'texta' if it is to be photocopied



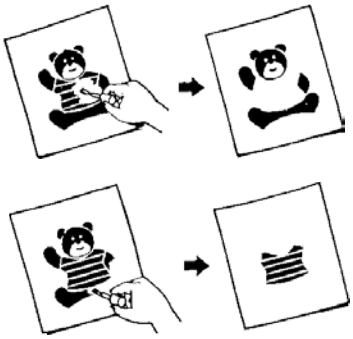


2. Image and frame each screen

3. Test print each colour

4. Start printing with the lightest colour

By Hand - Blocking Method



1. Place your original design onto the stage glass of the photocopier and make as many copies as you need layers [plus 1 or 2 spares].

⇒ Each photocopy becomes it's own separation/ layer

⇒ Name each layer [on the top or back] so you know what to remove from each separation

2. You must now block out using correction fluid [or cut with a sharp knife] the areas on each separation that are not required. Repeat the process for each photocopy/ separation.

When you have finished all your separations, take a new photocopy of the design and use this as your artwork when imaging your screen [remember the blue filter for photocopies].

Using a Computer

Computers are the best method of colour separating artwork as they enable you to move, re-size and manipulate your design quickly and accurately.

Using a computer for this process can range from simple through to complex depending on both the design , number of colours required and your computer skills.

This process involves the following steps:

1. Scan/ Create the design

2. Size the design

3. Create the layers/ colour separations

4. Registering the layers

5. Compiling and Printing

We highly recommend you print and read the information on Information Sheet #13 in the TRAINING section of the NEHOC web site for full details of this process, or view details from the 'How to . .' on the NEHOC Training CD-ROM.

Imaging Your Design

The quality of your print will be directly related to the quality of your Artwork. If you have not already done so please prepare your artwork using the Artwork Clean-Up process.

How to Make a Screen Printing Screen

1. Cut a piece of RISO ScreenMaster to the size of the frame you wish to use, allowing room on each side to cover the double sided tape]

⇒ Your design will determine the frame size you need to use, so lay your design down and then place the frame over is - allowing room on the sides and top for ink run off and the squeegee

2. Place a piece of card over the pad table

⇒ This will stop the Pad Table adhering to your artwork once imaged and eliminate any line markings caused by the pad grid

⇒ As detailed on Page 2 you can use the back of the orange Stage Glass cover.

3. Lay your artwork onto the Pad Table – face upwards [pic. right]

4. Place the screen mesh over the artwork – Film [smooth] side against your artwork [pic left.]

⇒ Ensure your design is centred on the screen

⇒ If using a Blue Filter with photocopied artwork, lay on top of the screen now

5. Insert Print Lamps into the Lamp Housing

6. **<u>Important</u>** - You **<u>MUST</u>** disarm the Lamp Housing Safety Switch - at the bottom of the Stage Glass so the Lamp Housing can be inserted and enabling the machine to flash.

⇒ Using the Ink Knife, scissors, or similar item push the switch down while inserting the back of the Lamp Housing into the machine

⇒ You can permanently disarm this switch by jamming with 'blue tack' or similar

7. Insert the Lamp Housing into the machine

8. Lower the Lid of the machine and place the palms of your hand onto the front corners and press down to 'flash' the machine, imaging the design to the screen

9. Hold for 2 seconds, until you can hear the Print Lamps have stopped 'cracking'

10. Remove the Lamp Housing

CAUTION Print Lamps will be hot

⇒ Place Lamp Housing with Print Lamps facing upwards, letting heat escape after imaging

11. Lift the lid of the machine and remove your imaged screen - ready for mounting to a frame

Instructions for Imaging Larger Designs A4, A3+ next page ☞

Imaging Larger Screens

Artwork larger than 140mm x 90mm will require two [or more] flashes to create the finished screen. The screen is processed in stages, with the unique nature of the NEHOC system ensures that when the first section of the screen is imaged, the artwork is lightly stuck to the back of the mesh - eliminating any movement/ blurring of the print - ensuring the design remains perfectly registered!

NOTE: When imaging very large screens you may be required to roll the edges of the screen so it does not cover the Imaging Pegs or Holes, nor make contact with the hinge. The raised Pad Table is designed to allow space for this process.

1. You must start your screen from one end/ edge and work your way across the screen
⇒ Do not image one end then the other and return to the middle

2. Place your artwork onto the Pad Table, lay your ScreenMaster mesh over the artwork [film side down] and image the design as outlined previously in **Section 3-1** the same as per a small screen.

DO NOT REMOVE THE ARTWORK

After imaging the 1st part of your design the artwork will lightly stick to the back of the mesh - this is the film melting away and creating a light contact between the two - this is perfectly normal.

It's the artwork sticking to the screen mesh that enables perfect registration of the remainder of your design. If you remove the artwork the screen may be ruined, as you will have to manually register the remainder of the screen.

You can peel off a small corner of the imaged area to check the design - do not peel off too much so as the contact is broken - 10mm is normally enough.

3. Move the screen through the machine, overlapping the already imaged area by about 5mm inside the Stage Glass area
⇒ To check the overlap you can lift the screen off the artwork and see where the two are attached
⇒ Flashing part of the design [the overlapped area] twice will not adversely affect the screen as the film has already been processed

Note
You MUST overlap the already imaged part of the screen with the area to be processed, otherwise you will end up with a gap and have to use further Print lamps to process a very small area. The screens are designed to be processed multiple times and this will not damage the screen in any way - it's part of the normal operation of the machine.

4. With your screen moved through the machine ready for the next section, insert new Print Lamps into the Lamp Housing and perform the imaging process again as details in **Section 3-1**

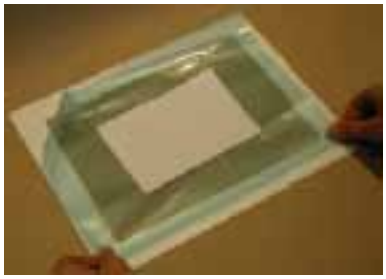
5. If your design is larger still, simply move the screen through the machine, overlapping the already imaged area and repeat the process until the design area has been covered

You do not have to image areas of the screen which do not contain a design - only image the design area. A small design on a larger screen may only need one process, provided the design fits into the Stage Glass area.

Mounting Your Imaged Screen To A Frame

It's important to remember the ScreenMaster mesh is ALREADY pre-tensioned and we are NOT stretching it, just adhering it and removing any wrinkles.

This is a simple process best done on a flat table or bench, with the snap procedure applied to all frame types [plastic, metal or wood] and sizes [A5, A4, A3, A2 & other].



1. Remove the backing from the double sided tape and place on a flat surface, with the 2 longest sides of the frame at the top & bottom.

2. With the artwork facing down [**film/smooth side up**], tighten and lower the bottom edge of the screen over the base of the frame as pictured left.

3. Working from the centre outwards, lightly press the bottom edge to the frame

4. Always working from the middle, pull the screen to the top of the frame and adhere in the middle as pictured left.

5. Working outwards, towards the corners, lift and pull the screen tighter and adhere to the frame as pictured right.

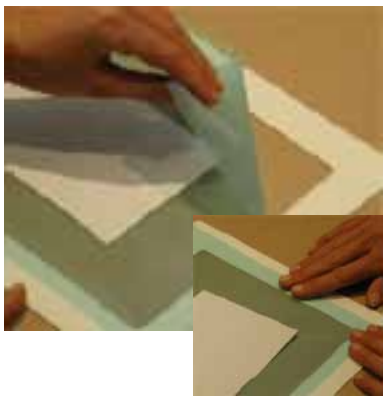
6. With the top and bottom done, rotate the frame so as the short edges are at the top and bottom

7. Repeat step 2 to 5 on both top and bottom sides. This will attach the mesh to all 4 sides of the frame.

You can not print with the screen if wrinkles are present.

It's common for a small wrinkle to appear in the mesh when framing, especially as you begin, though as you become more experienced you will find the framing technique very fast and simple with few wrinkles.

It's OK to have a small wrinkle in the corner or edge of the screen, but NOT in the design area or you will get a bleed of ink when printing.



8. Removing wrinkles by lifting the mesh off the frame in the area effected.

9. Pull the mesh slightly tighter - then reapply to frame working from the middle to the corners.

NOTE:

Your frame should be flat when finished - if it's bent the tension is too great and you will need to release the mesh and reapply.

Creating your own frames

NEHOC supply a range of common size frames, however if you require a custom size for a larger/ longer item, you can easily make your own. We recommend the use of aluminium over wood as it is ligher, stronger and will not bend if wet when cleaning the screen.

⇒ Ensure the corners are tightly secured and place double sided tape [N-190] to the frame before use

How To Screen Print

Video of this procedure is available on the NEHOC Training CD and also in Information Sheet #25 on the NEHOC web site.

Our equipment and techniques have changed the two basic elements of screen printing from that many people were taught in school - for the better!

1. Keep the angle of the squeegee upright at approx. 60-70 degrees - this will let the sharp edge do the printing.

⇒ This provides a clear, sharp print - angles too low force too much ink through the screen and bleeding may occur

2. Do not use excessive pressure when printing

⇒ The blade on the squeegee should NOT flex or bend whilst printing

⇒ You don't need much downward pressure - the ink will naturally be drawn through the screen onto the material below - you just need to guide the squeegee with even pressure

Basic Screen printing Technique

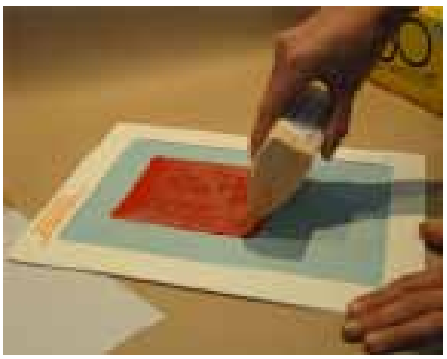
We recommend you print about 20 times on scrap paper to get the feel of the squeegee, pressure required, lifting the frame and reapplying ink.

1. Once your screen is made, place the screen over some paper ready for a test print

2. Dip an ink knife [wooden or plastic] into the ink and laden the squeegee blade with the ink ready to commence printing, as pictured right.

⇒ Laden by placing the ink knife against the blade and holding the squeegee still, pull the ink knife downwards - the blade of the squeegee will 'scrape' the ink off the ink knife

⇒ If you wish you can also put the ink directly onto the screen



3. Place sufficient ink onto the blade with an ink knife – about 6-7mm thick

4. Lower the squeegee angle to transfer the ink onto the screen and then bring the angle back up ready to print

⇒ This action is only performed with new ink - when printing continually there is no need to do this before each print

5. Pull the squeegee across the screen at an angle of approx. 70 degrees

⇒ You will hear a rippling noise of the squeegee ofer the mesh

⇒ Angles too low will have excessive ink run off and the print will be very dark

⇒ Too high an angle and the print will be patchy as the squegeee 'jumps' over the mesh

6. After printing raise the squeegee angle up to 90 degrees to 'pick up' the ink and remove it from the screen

7. Place the squeegee on some scrap paper and lift your frame in a hinge motion to reveal your print

⇒ A hinge motion is used to avoid smudging/ blurring the print [hold the frame on one side]

⇒ If the print is too light you can lower the frame and print again

Points to note

⇒ Your squeegee should move freely across the screen with even pressure & ink coverage

⇒ Once you commence printing you will quickly determine the correct level of pressure and squeegee angle that suits - the prints will tell you what you are doing wrong

⇒ Prints too dark, blurred, smudged or not a clear image = pressure too great and squeegee angle too low

⇒ Prints too light, not a clear image = pressure too light, squeegee angle too high or not enough ink on the squeegee

You must heat set your design to make it permanent

Most inks require setting by either heat or UV [if solvent based]. Heat setting eliminates the moisture and sets the pigments to the item.

Details of Heat Setting are available in **Section 4-4**.

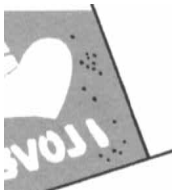
Section 4-2

Testing your Screen

When you have finished making the screen, you should always perform a test print

⇒ Print onto white paper [or black if using white ink] as this will show up any spotting/ unwanted marks

What are we looking for in a test print?



Pinholes - tiny spots/ marks that are caused by specks of carbon not visible to the eye when making a screen.

Look carefully at the test print to locate any pinholes that may have occurred. If pin holes have occurred do the following BEFORE performing a second print.

⇒ Leave non-imaged screen areas coated with ink residue from your first print - the ink will naturally dry in the tiny holes blocking them

⇒ Allow screen to stand for about 40-45 seconds, slightly less if very fine lines are involved - you don't want the ink to dry in the screen [or you have to wash it up]

⇒ Generally spots and blemishes will disappear, but this process MUST be performed on the very first print

Perform a second test print and compare this against the first.

⇒ If pinholes are still present then you may need to perform one of the following screen corrections detailed below

Section 4-3

Making Corrections

1. Return all excess ink from the screen and squeegee to the ink pot

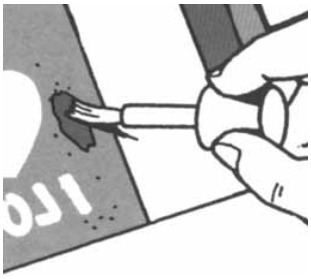
2. Leaving a 2 cm. wide border around the outside of the design, cover the outside area of the screen with Screen Masking Tape [T36].

⇒ Attach the tape to the back of the screen - film side of the ScreenMaster - once attached it can not be removed

3. Use your test print as a guide to locate the pinholes

4. Repair pinholes by applying Correction Fluid [S-767] over the area and allow to dry

⇒ Apply Correction Fluid to the film side of the screen



5. Test print again to ensure pin holes are blocked

IMPORTANT

DO NOT place Correction Fluid over design area or the screen will block and your design will NOT print. If you don't have a steady hand, place your screen face down and steady with your other hand when applying the Correction Fluid, or improve artwork quality to avoid pinholes [see Artwork Clean-Up].

Section 4-4

Heat Setting Inks

Fabric screen printing inks are water based and require heat setting in order to cure/set the pigments to the fabric. Not all inks require heat setting, with some inks curing by evaporation only [e.g Aqua plastic/ metals inks]. Always read the inks instructions before heat setting.

The temperature must get hot enough to firstly evaporate the waterbased medium, then set the pigments - about 150°C [depending on the material to be heat set], so you need to use an iron, heat press [Elna press or commercial type] or similar device.

Hair driers & household tumble driers are not suitable as they do not get hot enough to set the ink.

It is best to use brown paper over the design to ensure no marks are transferred onto the garment when heat setting [not all irons bases are clean], help to distribute the heat evenly and reduce scorching.

Pass the iron over the design from one side to the other ensuring you do not hold it still in any one area, or scorching may occur. The length of time required to heat set the ink depends on the temperature of the iron [this is set by the garment type] and the size of the print.

The following is a guide to the heat setting process and explains why prints should be heat set for 2 minutes to ensure permanent bonding.

150F [66°C] Water begins to leave the ink
200F [94°C] Binder reaches lowest viscosity and maximum surface contact is made with the fabric
220F [105°C] Water begins to leave the ink rapidly
270F [133°C] Fifty percent of the water is gone and the binder and pigment start to cure
300F [150°C] Most of the water is gone and the binder-pigment combination is partially cured
300F [150°C] [for 30 seconds to a minute] Binder and pigment is cured

The above should be used as a guide only, and may vary slightly between ink types. Times printed on sides of containers are for wet prints. Curing of dry prints still takes at least 2 minutes as ink has to get to temperature first.

Heat setting is faster when you can let the design naturally dry for 24 hours/ overnight as some natural evaporation will occur and shorten the heat setting process.

Section 5-1

Printing Dark Fabrics

When printing on dark coloured fabric you must to use an Opaque Ink that contains a thicker pigmentation/ density [about 3 times more pigment].

⇒ Standard colours will not show up as well as expected and have a transparent look

As the ink is thicker, you will need to elevate your screen above the fabric or the ink may not travel through the screen, sticking in the design producing a patchy print.

It is HIGHLY recommended all opaque inks are printed using the 'off contact' style of printing, described in Section 6-1

Hint

For a bright print and good ink coverage, print the design twice in the one go. This involves printing the design, lifting the screen [in a hinge action so as not to move the registration], lowering the screen and printing over the top of the print again.

⇒ Remember to always use Table Adhesive when printing to stop the fabric moving

Section 5-2

Printing Multiple Colours

To print multiple colours you are required to colour separate your artwork and create a separate screen for each colour to be printed. This process was covered in **Section 2-9**.

⇒ Some designs may enable you to put both colours on 1 screen and block off the unwanted part and print each colour separately.

To print multiple screens successfully you must have a method of registering the screens over each other to provide a print - a screen printing jig is HIGHLY recommended for this process. Jigs enable:

⇒ Printing all colours at once, overlaying the 'wet' colours

⇒ Printing one colour at a time, removing the item from the jig between colours [not suitable for t-shirts]

Using a screen printing jig [quick guide]

Video demonstrations and instructions on using a screen printing jig is detailed in the Training section of the NEHOC web site and on the NEHOC Training CD-ROM, the following is a shortened guide only.

1. Colour separate the design and create your screens

2. Place a copy of your full design over the item to be printed and register in place.

⇒ When registered, tape firmly in place - this becomes your master registration template

3. Insert the 1st screen into jig arm and place over the artwork area - now make your fine adjustments to register the imaged screen over the template stuck to the item below.

⇒ You can see through the screen so registration is fast & easy

4. When in place tighten the jig hinge and arm to lock into place.

⇒ Test alignment by raising and lowering the arm of the jig [if required re register]

5. With the 1st screen registered insert the next screen and repeat step 3-4.

6. Repeat this process for the remaining screens until all screens are registered.

7. Remove the template and begin your printing.

Section 5-3

Making a simple jig on a table

You can make a simple one/two colour jig on a table however please note this process will not work with every item, but by understanding the process you'll be able to make your own make jig as required.

1. Lay the item [t-shirt] down and place some pen/ registration marks around the item to get a rough outline

2. Place a copy of your original design onto the item and put it in the desired position

⇒ When registered, tape firmly in place - this becomes your master registration template

3. Lay one of the screens over the design and register over the template

4. With the screen in place over the item, tape one edge of the screen to the table [forming a hinge] - lift this over and tape the inside for extra strength

5. Repeat this hinge process with other screens/ colours

⇒ You must tape each colour in a different direction so there is a maximum of 4 colours, however when printing t-shirts the bottom of the t-shirt will get in the way so only 3 colours are possible.

Printing Opaque Inks - 'Off Contact' Printing

When the ink can not be absorbed by or penetrate the surface, you can not lay your screen directly onto the surface to be printed or the design will blur and smudge when printed.

For this reason the screen must be raised above the item to be printed by approx. 3-5mm, to create an off contact style of printing. After your squeegee passes over the design area, and the ink is printed onto your item, the screen 'snaps' back upwards and the ink is left sitting on top of the item.

⇒ This method is also known as 'snap' printing

⇒ Off contact printing is most commonly used for Opaque fabric inks and printing plastics/ metals.

Screen Size Limitations

As the screen is elevated and must travel down to the item, there is a limitation on the size of your design in relation to the overall size of the screen - you can not print to the edges of the screen as with direct printing.

With the extreme edges of the screen unusable, the general rule is to have your design about half the size of your screen. This rule however is a guide only, as sizes printed are normally bigger than that suggested below:

S-9102 Small Metal Frame - Design size 100 x 160mm, S-9103 Large Metal Frame - Design size 150 x 300mm & S-9104 XL Metal Frame - Design size 375 x 450mm

How to get the correct height

The aim is to elevate the screen above the item to a point just before the edges of the design can not be pressed down onto the item without stretching the screen. Registration of items is performed the same as normal direct printing, outlined in **Section 5-2**.

In this example we are printing a piece of plastic.

1. Just as per normal jig use and registration, place your item onto the jig and insert your imaged screen and register [outlined in **Section 5-2**]

2. Insert height adjusters [Plastic Height Adjusters code: S-9112] into the hinge of the jig.

⇒ The screen now needs to be raised above the item to be printed as high as possible without the edges not coming into contact when printed. The normal height is approx. 3-5mm however this may increase for solid areas which will 'stick' in the middle when printed.

3. Press down gently on the top of the screen on your screen to check the height.

⇒ If all the screen comes in contact then remove the frame and increase the height again.

Important Note

If you notice the frame bending down when you test the height you will need to attach height adjusters to the outside edge of your frames as well as in the hinge. This will stop the front of the frame from bending and keep the entire screen the same height.

4. If required, increase the height slightly by adding another further Height Adjusters

⇒ When the edges are too high and can not come in contact with the item below, the screen is too high and must be lowered slightly

5. Test the height again and make adjustment if required.

⇒ In some instances you may require as many as 8-10 adjusters under your screen - such as when printing a CD-ROM [design located in the middle of the frame] with an A3 Metal Frame. The actual height is not important, it's about checking the design to make it as high as possible without lifting the edges too far.

Printing Technique

Printing is almost the exact same as direct printing except you use 'slightly' more pressure - no more than just the weight of the squeegee in you hand.

The natural instinct is to press much, much harder which will actually result in a decrease of print quality and screen movement - resist the temptation and test print using a lighter pressure before commencing your print run.

⇒ The screen will naturally move down to the item when printing - resist using excessive pressure

When the screen is too low

a) Blurred or smudged: As the ink is printed the screen has not lifted and moves

b) Printed item sticking to the back of the screen: Firstly check the base of the jig has not lost its adhesive - if so put on more Table Adhesive and try another print. If the screen is too low the ink does not print and stays in the screen to which the item will stick.

Adjusting after you have started to print

If you need to readjust the height when printing it's very difficult to do without ruining the registration.

Your best option is to clean the screen down [wash it out if stopping for more than 1 minute] and start from scratch, as this may still be quicker than making dozens of tiny adjustments and miss prints.

Printing Plastics, Metals, Glass, etc.

This is an advanced application with additional equipment and techniques required.

Plastic, metals & glass are not absorbent surfaces, therefore any ink placed onto the surface remains on top of the item until it dries and bonds to the item. Unlike screen printing fabrics, the screen can not be laid directly on top of the item or smudging will occur when printing. For this reason your screen MUST be elevated above the item to be printed so as the screen does not rest on the item. This elevated style of printing is called _off contact printing, covered in **Section 6-1**

It is important to note not all plastic and metal surfaces are the same, with different compositions and constructions, greatly affecting the ability of the ink to adhere to the item.

⇒ Recycled plastics are best avoided as although they are often cheaper to purchase, they require a much stronger, and toxic, form of ink to adhere to the plastic

⇒ Use ABS plastic where possible

⇒ Use materials that are untreated/ pre-coated [i.e. leather]

Equipment Required

The NEHOC Screen Printing Kit is equipped for fabric printing, however by adding suitable supplies it can be used to print plastics & metals.

Screens - A finer grade of ScreenMaster should be used where possible [135Mesh], **however ScreenMaster 135Mesh can NOT be imaged successfully with Print Lamps**.

⇒ The NEHOC Screen Printing Kit is best combined with B6 and B5 Print Masters attached to plastic frames for printing [pic. right] - details of this process are on the Internet in the TRAINING section [IS32] or the NEHOC Training CD

Ink - Suitable ink is required for plastics/ metals such as the specially formulated Aqua Ink. Use only water based inks where possible, however solvent based inks can be used, but the screens can not be cleaned and kept.

Jig - Set up a jig or use a set of the NEHOC Jig Hinges [S-360H] for both registration of the print and importantly raising the height.

Frames & Squeegee - Remain the same as for fabric printing

Printing

1. Image your design onto the Print Master [instructions available on the web site], remove from the machine and tear off the plastic flap from the top of the Print Master

2. Remove the double sided tape from the plastic frame and attach the Print Master

3. Insert the frame into a jig and test the height of the frame for off contact printing as detailed in **Section 6-1**

Printing Ceramics

There is a complete ceramic section on the NEHOC website with a wide range of information and techniques: www.nehoc.com.au/info/ceramics detailing techniques and suitable inks. In addition view the NEHOC Ceramic Printing Kit Operation Manual on the NEHOC Training CD or download a copy from the website.

It's important to know you must use ceramic inks formulated for screen printing as the oxides must be extra fine and the medium suited for printing not brushing.

The equipment remains the same as fabric printing, all that changes is the ink you use.

Cleaning Screens

All NEHOC fabric inks are 100% waterbased with clean-up in cold water [not hot, as mesh is thermally reactive].

✘ Do NOT scrub the smooth/ film side of the screen.

✘ Do not hi-pressure hose

Simply turn on the cold tap and place the screen under the running water - in about 10 seconds the ink will start to wash off.

⇒ You can use a soft cloth to clean the frame and edges if required

Replacement Items

The complete range of products is available in the NEHOC Product Catalogue [on the NEHOC Training CD-ROM] or visit the web site and view the products on-line – **www.nehoc.com.au**

S-105 Print Lamps

Print Lamps eliminate the need for chemicals and U.V. exposure, they are the essential element required for imaging screens.

⇒ NEHOC Screen Printing Kit is supplied with 1 packet

ScreenMaster 70Mesh - for fabrics

ScreenMaster is available in a wide variety of widths, with 30cm the standard width fitting all small and large frames. Lengths vary from 1 Metre through to full 20 Meter lengths.

Check out the Product Catalogue or web site for a complete listing.

⇒ NEHOC Screen Printing Kit is supplied with a 30cm[W] x 1M[L] roll

Frame Mounts

Available in plastic and metal sizes:

S-9100 Small Plastic [Internal 120x180mm]
S-9101 Large Plastic [Internal 180x250mm]
S-9102 Small Metal Frame [Internal 180x250mm]
S-9103 Large Metal Frame [Internal 250x410mm]
S-9104 XL Metal Frame [Internal 470x570mm]

⇒ NEHOC Screen Printing Kit is supplied 2 x Small Plastic & 1 large Plastic Frame

Fabric Screen Printing Ink

An important ingredient of any printing, a waterbased ink is best to use providing professional quality results on all fabrics.

A wide range of colours is available, all intermixable, see from 500ml to 20L sizes. See the catalogue or your supplier for further details.

⇒ NEHOC Screen Printing Kit is supplied with 4 x Standard inks in sample sizes.

Artwork Clean-Up Paper

Essential for the creation of perfect artwork. See **Section 2-7** for details.

⇒ NEHOC Screen Printing Kit is supplied with a FREE sample roll

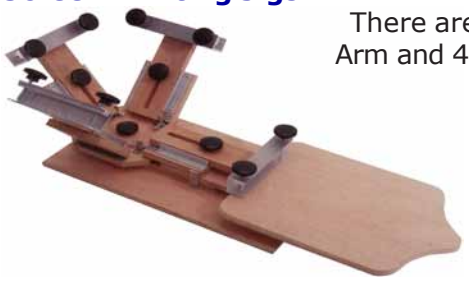
Double Sided Tape

Keep your costs low by reusing all your frames again and again - simply replace the double sided tape as required.

Table Adhesive

Eliminate blurring and smudges by keeping your items still whilst printing. This simple item can save you countless miss prints and is essential for any multiple colour printing.

Screen Printing Jigs



There are 4 fantastic jigs available, suitable for almost every applications, in Single Arm and 4 Arm/ Multi-colour in both wood and metal formats.

⇒ Print off contact with perfect registration
⇒ Accurate registration of multiple colours with professional quality
⇒ Print over 10 times faster than manual registrations
⇒ Actually REDUCES the space required for printing as the jig will hold the frame and squeegee between prints.

Correction Fluid

Touch up any pinholes or mistakes on your screen and just keep on printing.

Spare Parts

If required a wide variety of parts are available, contact your supplier for further information of visit www.nehoc.com.au to view the available parts.

⇒ NEHOC Screen Printing Kit uses PG-5 model spare parts

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