MURAKAMI SCREEN USA

Technical Newsletter - June 2011

MURAKAMI SCREEN U.S.A., INC. *745 Monterey Pass Rd. Monterey Park, CA 91754 Tel 323.980.0662*

How to Handle thinner Thread Mesh

Murakami's new LX Mesh and standard S Mesh can print base plates and white highlight hits like no other mesh available. It's unique mesh structure allows ink to print with minimal squeegee pressure and lay down consistent opaque base plates at standard squeegee speeds. The base plate is often the slowest printing head in a design. Speeding up the base plate print yields more pieces per hour and justifies the investment in a better base plate mesh.

Murakami Thin Threads and LX Mesh have made a significant impact on how an image is recreated and printed accurately on a shirt. We have demonstrated that printing with a 150/48 micron standard 'S' thread or LX Mesh will yield a better white base plate that is more opaque with less ink than any other mesh count currently available. The hand is softer and reproduction of the image is more accurate dot to dot. Our 80/71 micron and LX80SS/54 micron have made printing gels and high density inks a breeze. Our 225/40 micron is a smash hit for detailed water base prints and plastisol halftones instead of using a standard 230 mesh.

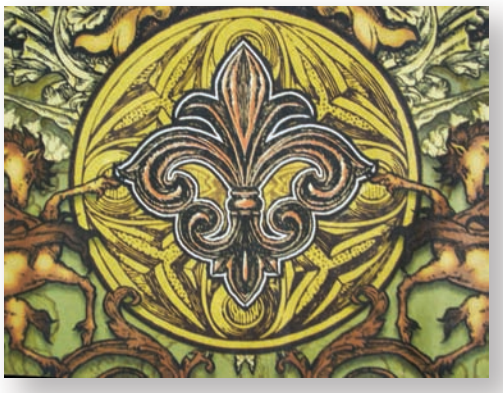

Photo Courtesy of Ink Throwers, Baja California

First, Thin Threads and LX Mesh requires changing screen handling procedures.

The most important thing to remember about using either our Thin Threads or LX Mesh is that the screen process must be adjusted to handle these threads properly:

Mesh Tension:

• The thinner the thread diameter the lower the optimum tension levels.

• The thicker the thread diameter the higher the optimum tension level.

• The point is each mesh has it's own workable tension level, which will vary by mesh count and thread diameter. You don't need high tension to achieve superior prints with these mesh counts.

Mesh Count International	Mesh Count US	Plain Weave or Twill Weave	Thread Diameter in Microns	Recommended Tension Levels Newtons
LX 80-71	LX 80-S	PW	71	18-22
LX 110-71	LX 110-S	PW	71	20-24
LX 135-48	LX 135-S	PW	48	18-22
LX 150-48	LX-150-S	PW	48	18-22
LX 180-48	LX 180-S	PW	48	20-24
S -225-40	225-S	PW	40	20-24

Note that the thinner the thread in microns the lower the tension needs to be. In the beginning choose a tension in the lower to middle tension levels to preserve screen life in your shop. Base plate print quality and registration will still be excellent at these lower tensions because the mesh stablizes quickly and retains tension better than any mesh available.

Safe Handling:

S-Thread and LX Meshes require safe handling procedures. If your screen room is a pile of screens leaning against the wall with corners of screens resting on the mesh of its' neighbor, or if your personnel toss screens into the reclaim booth and bang them around, your shop isn't ready for better mesh. Stick with conventional mesh thread like our T or HD to prevent screens from popping. Finer mesh requires special handling. Next, equipment and handling prodcedures.

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Equipment:

1. Rolling Racks - as mentioned above screens placed in racks last longer. A single worker can push 25 around at once without banging corners or accidentally dropping them, all poor handling of quality mesh.

If racks are unavailable make sure to handle screens gently. When placing screens on the ground or in the sink use minimal impact force, avoid dropping frames to the ground in the reclaiming area, avoid stacking the frames against each other haphazardly where corners of one screen rest on the mesh of its neighbor.

2. Newman Rollers - tape the frames with white Pelikan tape or split liner tape from Newman along all bars to protect the mesh that is exposed on the bottom of each roller.

3. Spatulas - Avoid burrs or sharp corners. Commercial plastic scoops work very well as do metal spatulas for mixing inks that have rounded ends and polished edges.

4. Tape - Rubber based tapes and especially tape designed for screen printing are easier to remove and don't leave adhesive on the mesh and frame. When this residue is present, reclaiming personnel often need to use a 2000 psi or higher pinpoint spray to remove the adhesive. On S and LX this will lead to mesh damage. For a few cents more change from standard brown or clear shipping tape to a rubber based tape, or tape designed to peel off and not leave adhesive residue.

5. Pressure Washers - Avoid pinpoint spray with strong pressure washers. If the reclaim solution is working the screen should be able to be reclaimed with a fan spray from 5-10 inches away from the emulsion. Pressure washers above 1200 psi are not needed for reclaiming and may damage fine mesh.

If you are experiencing emulsion that is difficult to reclaim it may be due to under exposed emulsion that locked onto the mesh when screen openers or hot solvents are used to clean out inks. These chemistries can lock in emulsion making reclaim difficult. Solution? Complete exposures, post expose in sun or post expose in an exposure unit. Typically low wattage fluorescent and metal halide shop lamps experience this. Underexposure is common with these systems, post expose for easier reclaiming.

6. Dip Tanks - Screens soaked in well maintained dip tanks achieve easier screen reclaiming and require less pressure washer strength.

7. Press Equipment: Squeegees and floodbars take a beating during their lifetime. 1st Floodbars:

Floodbars are easily nicked up when dumped into a parts cleaner. Always store floodbars blade up, or suspended in a slot in a racking system. Treat each one individually during cleanup, no more than one in the tank at a time to avoid nicks and dings that tear screens. If you have old nicked up floodbars try substituting a soft 65 duro squeegee to prevent tearing mesh.

Squeegees: Squeegee blade needs constant replacing, or sharpening in a busy automatic shop. Too often a hunk of blade is cut off a coil and slapped into the holder so the base plate screen will print sharply. The corners of the squeegee are forgotten about. Avoid sharp corners on your squeegees. There are tools that cut perfect radius corners or you can cut a 45 degree angle off, then cut the points off and sand the corners smooth, this helps preserve thin thread meshes.

Round off Corners of Squeegee

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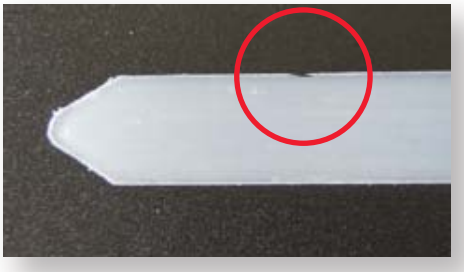
Stretching S and LX Meshes

Roller Frames:

1. Make sure that the channel for the locking strip is free from nicks and burrs. Use emery cloth to sand smooth.

2. Check the locking strip itself for nicks and burrs.



3. Be careful with the mesh clips. They may cut the mesh if you are not careful. Polish with emery cloth, do not let them slide against the mesh when inserting locking strips.

4. Position the rollers to the inside of the frame before starting to lock the mesh in place. Roll in to the next to last notch on each corner so the locking channel is facing in towards the center of the frame.

5. Make sure the corners are softened properly.

6. There is no need to go beyond 20-22 newtons on a 150/48 screen when all bolts are tightened. Note this is in the middle to low tension guidelines which creates a longer lasting screen. Remember that the tension will go up slightly when you tighten the bolts.

Shur-Loc Panels

1. Thinner threads have different elongation properties when compared to Standard Thread or HD thread diameters. Shur-Loc has engineered the panels for S Threads and LX Mesh to be able to maintain tension and also ensure that the mesh thread stretches at 90 degrees to the roller for best thread strength.

2. The corners are pre softened. No additional time to soften the corners properly.

3. The locking strip used by Shur-Loc for the panel ensures that the mesh will rest on their gluing strip and not be damaged by either nicked roller frame channels or locking strips. These panels have been fully tested at higher than recommended tensions.

4. Murakami carries a wide range of Shur-Loc panels for dealers and their end users. This system cuts stretch time of Newman Rollers by 50% or more since the mesh is precaptured with locking strips glued on precisely to the mesh panel. This results in longer lasting screens that are less prone to popping due to burrs on the channel, strips, or poor capture techniques.

- Pre Softened Corners assure optimum tension levels that capture the mesh square to frame preventing spot moire.

- Locking strips are adhered to the mesh preventing poorly maintained Newman Roller Channels and locking strips from cutting the mesh during use.

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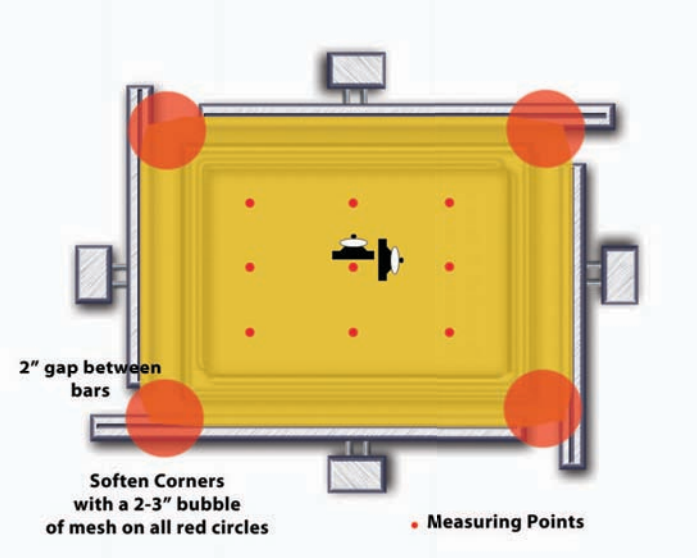
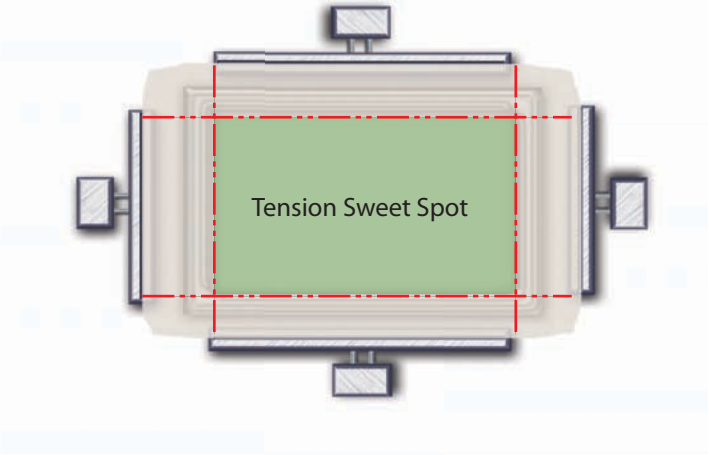
Static Stretch and Glue (Bar Stretcher)

1. The idea of one locking bar for all frame sizes creates stretching issues. The mesh in each corner does not know which way to stretch when the bars overlap. The corner is being pulled in multiple directions and is more prone to popping. This system has a difficult time stretching finer meshes. More softening is required in the corners and consistent tension levels on all 9 measuring points can be hard to achieve.



2. The locking bar should be at least two to three inches shorter than the outside dimension of the frame. This setup creates even pull in the corners with minimal softening and much more accurate tensions across the print area.



Equal bar length centered on pistons will create more consistent even tension than off centered bars that pull mesh unevenly.

3. Center each of the four stretching bars on its piston. The stretching bar must be able to pull equally across the length of the bar itself. The bar will pull on an angle if it is not at least as close to center as possible. (See previous drawing.)

4. Do not raise the frame any higher than it already is when it sits on the stretcher. The frame is already higher than the plane the mesh is going to stretched on so that we have good conatact between the frame and the mesh for gluing. When the stretching bars are engaged the mesh pulls across but also pulls downward from the edge of the frame.

5. That means that the mesh is being pulled across the frame edges and in a slightly downward direction. This could cause the S Threads or the LX Mesh to pop if the frame were raised too high before engaging the stretcher bars. The ideal stretcher would allow you to raise the frame to the mesh after the mesh is brought to the desired tension.

6. Try to keep air in the manifold. Normally the air is delivered to the cylinders on a first come first served basis. The stretch will be more even if you can keep air in the line before you actuate the cylinders. The idea is to have all cylinders move simultaneously so the mesh is pulled in all 4 directions evenly, this helps keep threads straight to handle the tension. Curved threads are caused by pulling the bar or roller in only one direction. This creates a weak screen due extra stress on the mesh knuckles where a pinch point is created by the curved threads.

7. One way to do this is to return the regulator knobs to zero when you are finished with a stretch. When you are ready for the next stretch and have the frame and the mesh positioned and ready, turn the pressure on each regulator up simultaneously and slowly so the mesh has a bit of tension and the cylinders and manifolds are full of air. Now as you increase PSI with simultaneous turns of both regulator knobs you can watch the tension meter and fine tune each direction to the desired newton levels.

8. For both Newman and Bar Stretch devices: Watch the amount of movement of the rollers and bars during stretch. They should both move equally in opposite directions to capture thread perpendicular to the frame to prevent breakage.

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Mesh Stretching Continued

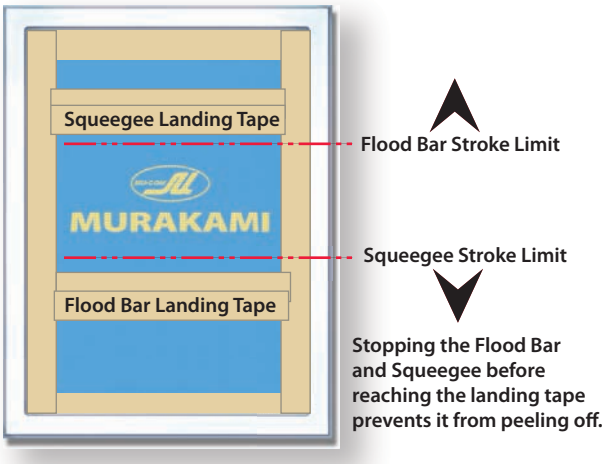
The tips for stretching S Threads and LX Mesh also hold true for Standard and HD threads as well. The difference is in the thread diameter. Therefore, the thinner threads need a bit more attention to detail. The more you pay attention to these little details the longer the mesh will last on the frame for any mesh count.

Degreasing: Avoid using a stiff bristle brush which can damage fine threads. Also there is no need to use micro-grit to roughen the threads, the emulsion will adhere well to the mesh. Degrease with a soft sponge to preserve threads.

Setting up the print with S or LX Mesh

• Setting up the Press: Do not place the squeegee, floodbars and clips (if you still use them) on the screen. Sharp edges and burrs can easily tear fine mesh.

• If you have older style pneumatic M&R or similar place tape on the inside of the screen where the floodbar and squeegee land since both can impact the screen life.



• When scraping ink out of the screen during break-down use a smooth polished putty knife, plastic scoop, or large ink mixing spatula. Use minimal pressure to avoid cutting the thin mesh.

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Using S or LX Mesh the First Time

Too often press set up personnel get into a rhythm from one job to the next. If LX Mesh or S-thread mesh is introduced without some training and explanation, the print (especially the base plate),will not show off the great possibilities of this mesh.

To achieve better results with S or LX mesh the squeegee controls bring out the best possible print available.

1. Back off on squeegee pressure until it doesn't print. Then slowly add a little pressure until you see the ink release from the screen. Apply squeegee pressure sparingly until you get a clean print. If you need more opaque white do this:

2. Increase angle by 5 degrees with a sharp 70-75 duro squeegee. You may need to increase squeegee pressure slightly again to compensate for the new angle, just go the absolute minumum squeegee pressure needed to see the ink clear the screen in the image area.

3. Still not white enough? Move to a sharp 65/95/65 duro squeegee, if the increased angle is too much reduce angle by small amounts until ink clears the mesh image. This to me is the most impressive part. Ink does not hang up, but transfers easily to the shirt, no excess pressure needed!

4. For other overprint screens a 70-75 duro squeegee set to normal angle and just enough pressure to clear the screens are all that's needed. S-thread mesh in the 350 range virtually eliminates wet onto wet dot gain that is common with simulated process and index printing.

5. Experiment with all squeegee controls. You can maintain higher print speeds, less pressure, and different angles to obtain stellar base plate prints.

6. Benefits:
• Increased production yields due to a faster printing base plate due to increased squeegee speed.
• Softer hand plastisol prints, brighter waterbase and discharge prints with more detailed art.
• Less ink usage, up to 20% less ink printed.
• More profits due to higher production yields from a faster printing base plate and superior mesh registration found only in Smartmesh from Murakami Screen USA.

For more information give us a call:
1.800.562.3534 ask for Al or Bob