

Screen Frame information for the Screen printer

A technical information article by Douglas Grigar

There are basically only two types of frames, Static and Retensionable.

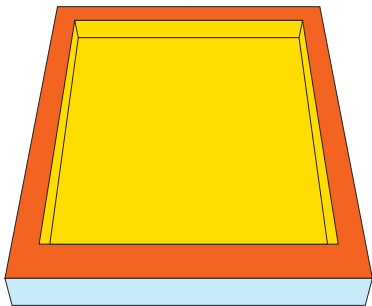


Fig. 1

Static frames are often referred to as stretch and glue or rigid. (Fig. 1)

Static frames are just that they are static. Once the mesh is attached it holds or loses its tension by the action of the mesh fabric itself. Once the mesh has lost its usable tension or is torn, it must be removed from the frame and new mesh attached to the frame.

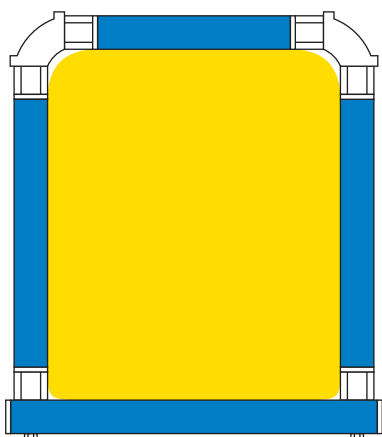


Fig. 2

Retensionables are often referred to as retens, rollers or extenders. (Fig. 2)

Retensionable frames have the ability to add tension to the mesh that is attached. Once mesh is attached it can be tightened at the will of the user. Mesh can work hardened due to the physical properties of mesh fabric to

stabilize after multiple printing and tightening cycles. (this applies to monofilament polyester mesh used by most textile screen printers)

Static frames can be made of aluminum (The best choice for static frames), steel, or wood.

Steel frames have dropped out of common use by textile screen printers because of oxidation issues.

Static wood frames are the most popular choice, even to this day. Well over 70 percent of the screens sold are wood frames. Wood frames are inexpensive, but will only hold reasonable tension for limited printing cycles. Wood frames, due to their inability to hold higher tension, and the disposable nature of the frames, are the lowest quality and the most expensive option in the long run.

Wood is most troublesome in the reaction to water and high tension. Wood frames will warp, bow, and even rot. While most wood frames are coated or painted with a water repellent, it takes little exposure to cleaning chemicals before the coating gives way and moisture enters the wood.

Most wood frame screens available from your supplier have mesh glued to the frame. In the late 70s and early 80s many screens were soft pine with corrugated staples in the corners. Screen mesh was attached with a cord pressed into grooves cut into the face of the frame. The same era had frames with mesh attached using staples over cloth tape strips. Both methods are unable to hold anything other than marginal tension, and have fallen out of general use.

The better quality wood frames are made with glued mortise and tenon corners, with the mesh fabric glued onto the face.

Static aluminum frames are more expensive than wooden frames but do not have the negative reactions to water and chemicals that wooden frames have.

Aluminum frames will not absorb chemicals or water, they will not rot, are

less likely to warp and are stronger than wood. Static aluminum frames can be stretched with mesh fabric many times.

Static Aluminum frames suffer from the fact that they hold or lose tension by the action of the mesh fabric alone. Once the mesh has lost its usable tension or is torn, it must be removed from the frame and new mesh glued to the frame.

Most static screen makers use cyanoacrylate glue (a type of super glue) on aluminum frames. The urethane glues such as Kiwo HMT 1000 will last longer and are less likely to lose their bond when exposed to ink degrader.

The aluminum frame must be prepared by sanding, grinding, or sandblasting. all glues will work best on a sandblasted face. Sanding or grinding will make grooves that let chemicals seep under the glue and attack the bond. Sandblasting creates an irregular pattern that slows the seeping chemicals.

All glue bonds will be attacked by common ink degraders. Care should be taken to limit or avoid contact of cleaning chemicals and the glue holding the mesh.

Retensionable frames are the most expensive to purchase, but reliable and cost effective. A retensionable frame that is not abused should last the life of a company.

Where a wooden frame would be replaced several times, and a static aluminum frame stretched many times, a retensionable frame needs only mesh fabric and can be tensioned or the mesh replaced on location.

Retensionable frames have the ability to add tension to the mesh fabric after each printing cycle. (Fig. 3) The ability to tighten, use, and repeat has the benefit of stretching the mesh threads to the point that they stabilize or work harden, and will hold higher tension for extended printing.

There are three major brands of retensionable frames: Diamond Chase

from Olec, Newman rollers from Stretch devices and Hix retensionable frames from Hix.

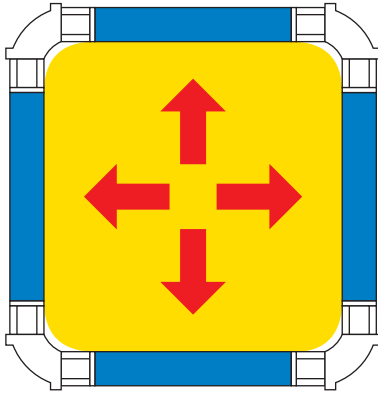


Fig. 3

Diamond Chase and Newman work by rolling the mesh away from the face of the frame. (Fig. 3)

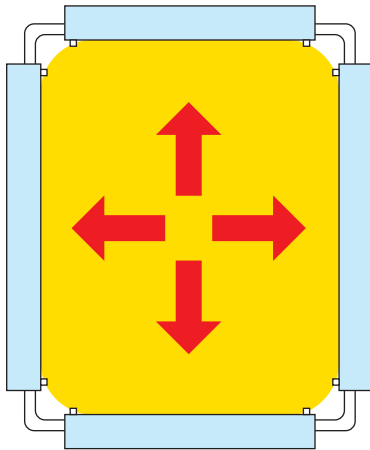


Fig. 4

Hix frames work by expanding out in all directions. (This changes the outside dimensions of the frame - Fig. 4)

While Hix frames use square tubes and need no changes to work with back clamps, Diamond Chase and Newman need the square bar that replaces one roller end. (Fig. 2)

Mixed manual and automatic press shops gain consistency with an inventory of all square bar frames. Roller frames with a square bar are interchangeable with manual and automatic presses.

This information is to present the choices and facts about frames. The best choice in frame selection would be to switch to, or start with retensionable frames. Retensionable frames will improve speed, print quality, and

consistency.

The long life and savings possible with retensionable frames make them the LEAST costly option. Every screen printing shop would like faster print speeds, less squeegee pressure, lower ink use, and longer print runs with higher quality results. Retensionable frames many technical advantages.

Some of the negatives to retensionable frames are the initial higher cost and the fact that the mesh is easier to damage. High tension screen mesh fabric is easier to corner, rub, and ping. Proper care of the retensionable frames and mesh is a must.

We all understand and recognize that wooden frame screens will print shirts that are acceptable for sale. It is a fact that any good printer COULD print a good design on a shirt with wooden screens. The counter point is that printing an acceptable shirt does not negate the fact that wood frames are inferior in performance to static aluminum and that all static frames are inferior to retensionable frames.

Stay consistent and you will be able to predict your results with greater accuracy. Your goal should be consistency, predictability, and repeatability.

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