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Capillary Stencils

Troubleshooting Guide

Pinholes

Possible Cause	Potential Solution
Stencil underexposed	Use exposure calculator to determine proper exposure time. Check lamp consistency and level of output.
Dust on exposure glass, film positive or capillary film	Clean glass and film positive. Use lint free cloths. Be sure capillary film is free of dust before adhering.
Residual moisture in stencil from insufficient drying and/or excessive humidity	Allow additional drying time before exposing stencils. Reduce humidity with dehumidifier. Increase exposure time in humid conditions. Do not dry unexposed screen with extremely wet screens.
Mesh preparation insufficient	Use recommended degreasers/wetting agents. Completely rinse entire frame. Abrade new monofilament fabric to increase adhesion. Avoid touching degreased mesh. Do not allow degreased screens to sit for extended time.
Capillary film too thin for mesh count	Use recommended film and mesh combinations.
Stencil washout incorrect	Avoid excessive water pressure. Do not use hot water in excess of 100 degrees F (38 C). Wash primarily from the substrate side of the screen. Do not wash screen for long periods of time.
Fabric too dry during film application	Rinse fabric just prior to adhering film.
Emulsion incompatible with ink	Select emulsion suitable for an ink system, i.e. water resistant stencil for water based inks.
Degreased screen exposed to compressed air	Avoid using compressed air to dry screens, it may contain water, dust or oil. Use a screen vacuum to speed drying
Aggressive solvents used on press	Replace aggressive solvents and minimize wash-ups. Retard inks to prevent drying in screen.

Poor definition (sawtooth/lack of edge sharpness)

Possible Cause	Potential Solution
Stencil underexposed or extremely overexposed	Use exposure calculator to determine proper exposure time. Check lamp consistency and level of output.
Contact between stencil and positive poor	Check vacuum. Check vacuum blanket or hoses for leaks. Check bleeder cord position. Check screen frames for warping.
Film positive edge quality and/or density poor	Use film with a sharp hard image edge. Ensure film positive has a solid density of 3.5 or higher.
Residual moisture in stencil from insufficient drying and/or excessive humidity	Allow additional drying time before exposing stencils. Reduce humidity with dehumidifier. Increase exposure time in humid conditions. Do not dry unexposed screen with extremely wet screens.
Mesh count too coarse for image detail	Switch to a higher mesh count or finer thread diameter.
Stencil dried with excessive heat	Do not exceed 100 degrees F (38 C) when drying stencils.
White mesh scattering light	Switch to dyed mesh and test to determine new exposure.
Capillary film fogged (pre-exposed)	Handle capillary film in yellow safelight. Store in light tight container.
Stencil washout incorrect	Avoid excessive water pressure. Do not use hot water in excess of 100 degrees F (38 C). Wash primarily from the substrate side of the screen. Do not wash screen for long periods of time.
Capillary film too thin or thick for mesh count	Use recommended film and mesh combinations.
Squeegee pressure excessive when mounting capillary film	Use lighter pressure when mounting capillary film.
Excess water not removed quickly enough after film mounted	Squeegee excess water from screen immediately after mounting film to wet fabric.

Poor resolution or loss of detail

Possible Cause	Potential Solution
Capillary polyester carrier not removed before exposure	Remove carrier sheet before exposure.
Poor contact between stencil and positive	Check vacuum or weights. Check for warped screen frames. Check for leaks in vacuum blanket or hoses. Check for proper bleeder cord position.
Mesh count too coarse for image detail	Switch to a higher mesh count or finer thread diameter.
Capillary film too thick for mesh count	Use recommended film and mesh combinations.
Film positive density poor	Remake film positive with solid density of 3.5 or higher.
Stencil dried with excessive heat	Do not exceed 100 degrees F (38 C) when drying stencils.
Light undercutting from light source	Point light source too close, move to distance equal to diagonal of the screen frame. Replace diffused light source with point light source.
White mesh scattering light	Switch to dyed mesh and test to determine new exposure.
Capillary film old or stored in hot/humid conditions	Use fresh capillary film. Follow manufacturer storage times and conditions.
Stencil overexposed	Use exposure calculator to determine proper exposure time.
Emulsion on incorrect side of positive	Remake film positive emulsion up, right-reading to contact the stencil during exposure.
Coated screen stored too long	Store coated screens for no more than 1-2 weeks.
Coated screen pre-exposed	Store coated screens in dark cool dry area. Store stencil material in light tight containers. Use yellow safe lights around unexposed screens.
Stencil washout incorrect	Avoid excessive water pressure. Do not use hot water in excess of 100 degrees F (38 C). Wash primarily from the substrate side of the screen. Do not wash screen for long periods of time.
Film positive layered excessively	Re-image positive into one layer of film.

Premature stencil breakdown on press

Possible Cause	Potential Solution
Stencil underexposed or extremely overexposed	Use exposure calculator to determine proper exposure time. Check lamp consistency and level of output.
Residual moisture in stencil from insufficient drying and/or excessive humidity	Allow additional drying time before exposing stencils. Reduce humidity with dehumidifier. Increase exposure time in humid conditions. Do not dry unexposed screen with extremely wet screens.
Mesh preparation insufficient	Use recommended degreasers/wetting agents. Completely rinse entire frame. Abrade new monofilament fabric to increase adhesion. Avoid touching degreased mesh. Do not allow degreased screens to sit for extended time.
Fabric too dry during film application	Rinse fabric just prior to adhering film.
Capillary film too thin for mesh count	Use recommended film and mesh combinations.
Capillary film old or stored in hot/humid conditions	Use fresh capillary film. Follow manufacturer storage times and conditions.
Capillary film fogged (pre-exposed)	Handle capillary film in yellow safelight. Store in light tight container.
Stencil inappropriate for water-based inks	Use water-resistant or waterproof stencils for water-based inks.
Squeegee pressure excessive	Reduce squeegee pressure. Reduce need for excessive pressure with higher screen tensions and lower off-contact.
Off-contact excessive	Decrease off-contact distance. Reduce need for high off-contact with higher screen tensions.
Floodbar pressure excessive	Reduce floodbar pressure.
Relative humidity excessive	Use moisture resistant dual-cure emulsion. Use dehumidifiers to help control press room conditions.
Aggressive solvents used on press	Replace aggressive solvents and minimize wash-ups. Retard inks to prevent drying in screen.
Screen tension insufficient	Use screens with higher tension.
Stencil not dry before printing	Thoroughly dry the stencil prior to printing.

Emulsion soft or washes/peels off mesh during washout

Possible Cause	Potential Solution
Stencil underexposed	Use exposure calculator to determine proper exposure time. Check lamp consistency and level of output.
Residual moisture in stencil from insufficient drying and/or excessive humidity	Allow additional drying time before exposing stencils. Reduce humidity with dehumidifier. Increase exposure time in humid conditions. Do not dry unexposed screen with extremely wet screens.
Capillary film adhered improperly	Follow manufacturer instruction on applying film.
Mesh preparation insufficient	Use recommended degreasers/wetting agents. Completely rinse entire frame. Abrade new monofilament fabric to increase adhesion. Avoid touching degreased mesh. Do not allow degreased screens to sit for extended time.
Stencil washout incorrect	Avoid excessive water pressure. Do not use hot water in excess of 100 degrees F (38 C). Wash primarily from the substrate side of the screen. Do not wash screen for long periods of time.
Capillary film old or stored in hot/humid conditions	Use fresh capillary film. Follow manufacturer storage times and conditions.
Film positive clear density too high	Remake film positive with density of 0.3 or less in clear areas.

Washout difficult

Possible Cause	Potential Solution
Stencil dried with excessive heat	Do not exceed 100 degrees F (38 C) when drying stencils.
Capillary film old or stored in hot/humid conditions	Use fresh capillary film. Follow manufacturer storage times and conditions.
Coated screen stored too long	Store coated screens for no more than 1-2 weeks.
Coated screen pre-exposed	Store coated screens in dark cool dry area. Store stencil material in light tight containers. Use yellow safe lights around unexposed screens.
Film positive density poor	Remake film positive with solid density of 3.5 or higher.
Capillary polyester carrier not removed before exposure	Remove carrier sheet before exposure.
Stencil overexposed	Use exposure calculator to determine proper exposure time.

Scumming or thin haze in image areas after washout

Possible Cause	Potential Solution
Stencil underexposed	Use exposure calculator to determine proper exposure time. Check lamp consistency and level of output.
Film positive density poor	Remake film positive with solid density of 3.5 or higher.
Stencil washout insufficient	Wash out screen thoroughly to remove all unexposed emulsion
Residual moisture in stencil from insufficient drying and/or excessive humidity	Allow additional drying time before exposing stencils. Reduce humidity with dehumidifier. Increase exposure time in humid conditions. Do not dry unexposed screen with extremely wet screens.
Contact between stencil and positive poor	Check vacuum. Check vacuum blanket or hoses for leaks. Check bleeder cord position. Check screen frames for warping.
Coated screen pre-exposed	Store coated screens in dark cool dry area. Store stencil material in light tight containers. Use yellow safe lights around unexposed screens.
White mesh scattering light	Switch to dyed mesh and test to determine new exposure.

Poor adhesion of stencil to mesh

Possible Cause	Potential Solution
Stencil underexposed	Use exposure calculator to determine proper exposure time. Check lamp consistency and level of output.
Residual moisture in stencil from insufficient drying and/or excessive humidity	Allow additional drying time before exposing stencils. Reduce humidity with dehumidifier. Increase exposure time in humid conditions. Do not dry unexposed screen with extremely wet screens.
Fabric too dry during film application	Rinse fabric just prior to adhering film.
Mesh preparation insufficient	Use recommended degreasers/wetting agents. Completely rinse entire frame. Abrade new monofilament fabric to increase adhesion. Avoid touching degreased mesh. Do not allow degreased screens to sit for extended time.
Capillary film old or stored in hot/humid conditions	Use fresh capillary film. Follow manufacturer storage times and conditions.
Capillary film fogged (pre-exposed)	Handle capillary film in yellow safelight. Store in light tight container.
Stencil washout incorrect	Avoid excessive water pressure. Do not use hot water in excess of 100 degrees F (38 C). Wash primarily from the substrate side of the screen. Do not wash screen for long periods of time.

Stencil brittle

Possible Cause	Potential Solution
Stencil dried with excessive heat	Do not exceed 100 degrees F (38 C) when drying stencils.
Capillary film old or stored in hot/humid conditions	Use fresh capillary film. Follow manufacturer storage times and conditions.
Relative humidity extremely low	Maintain a 40-60% relative humidity.
Stencil extremely overexposed	Use exposure calculator to determine proper exposure time.

Capillary stencil patchy

Possible Cause	Potential Solution
Mesh preparation insufficient	Use recommended degreasers/wetting agents. Completely rinse entire frame. Abrade new monofilament fabric to increase adhesion. Avoid touching degreased mesh. Do not allow degreased screens to sit for extended time.
Application techniques poor	Apply even pressure with roll down method. Use flat surface for board mounting method.
Drying conditions poor	Wipe the inside edge of frame after roll-down mounting. Dry frame horizontally, substrate side up to protect emulsion from drips and splashes.

Air pockets appear during film application

Possible Cause	Potential Solution
Dust/dirt on capillary film	Ensure capillary film is free of dust before adhering.
Capillary film kinked	Handle film carefully.
Fabric too dry during film application	Rinse fabric just prior to adhering film.
Mesh preparation insufficient	Use recommended degreasers/wetting agents. Completely rinse entire frame. Abrade new monofilament fabric to increase adhesion. Avoid touching degreased mesh. Do not allow degreased screens to sit for extended time.
Application techniques poor	Apply even pressure with roll down method. Use flat surface for board mounting method.
Screen tension insufficient	Use screens with higher tension.

Screen image does not match positive size or proportion

Possible Cause	Potential Solution
Frames warped	Repair or replace warped frames.
Screen tension insufficient	Use screens with higher tension.
Vacuum pressure too high	Repair any tears or holes in vacuum blanket. Follow manufacturer setting for vacuum pressure.
Positives expanding from heat during exposure	Use more stable film positives.
Stencil dried with excessive heat	Do not exceed 100 degrees F (38 C) when drying stencils.
Film positive layered excessively	Re-image positive into one layer of film.

Reclaiming difficult

Possible Cause	Potential Solution
Stencil underexposed	Use exposure calculator to determine proper exposure time. Check lamp consistency and level of output.
Stencil locked in from fast-flashing solvents	Use safety solvents to remove ink from screens. Avoid acetone, lacquer thinner containing toluene or ketones, and strong screen openers.
High pressure washer not used	Use a high pressure washer for reclaiming.
Screen stored for extended period of time	Reclaim stencils as soon as possible.
Reclaiming chemistry incompatible	Use recommended solvents and chemistry for reclaiming.