Graphic Printing Troubleshooting Guidelines

Voids or skips in ink	
Possible Cause	**Potential Solution**
Substrate contaminated with dust, dirt, or oily residue	Wipe substrate with anti-static duster, lint-free isopropyl alcohol wipes or tack cloth.
Debris in image area	Clean bottom of screen with press wash to remove debris. Clean work area regularly. Increase humidity level.
Ink too thick	Thin ink with appropriate reducer/thinners.
Off contact/peel excessive	Reduce off contact/peel distance.
Squeegee pressure insufficient	Increase squeegee pressure.
Squeegee too hard	Use softer durometer squeegee.
Squeegee angle too high	Lower squeegee angle.
Squeegee speed too fast	Reduce squeegee speed.
Mesh too fine	Use coarser mesh.
Stencil too thick	Reduce the number of emulsion coats for thinner stencil thickness.
Flood coat insufficient	Ensure an even flood coat is done directly after printing. Reduce flood bar speed.
Film positive has pinholes	Repair positive with opaqueing marker and re-expose.
Ink foaming in screen	Reduce printing speed. Use screens with higher tension.
Ink not properly ground (agglomerates present)	Use fresh ink that has been manufactured properly.
UV ink has excessive silicone flow control agent	Re-mix ink with less flow control. Observe manufacturer limits when using additives.

Incomplete image edges

Possible Cause	Potential Solution
Squeegee pressure insufficient	Increase squeegee pressure.
Image edge blocked with stencil	Remake stencil using correct exposure time. Washout image completely.
Image edge blocked with debris	Wipe bottom of screen with press wash to remove debris.
Image edge blocked with mesh threads	Use different mesh or angled fabric to avoid thread interference.
Ink drying in screen	Correct using 'Solvent ink drying in screen' chart.
Film positive has defects	Repair artwork and remake film positive.
Off contact/peel excessive	Reduce off contact/peel distance.
Image too close to frame	Select frame size where image takes up no more than 70% of the total mesh area.

Cob-webbing or static strings

Possible Cause	Potential Solution
Static electricity excessive	Increase relative humidity level. Use anti-static elimination equipment. Electrically ground table bed. Set vacuum draw to minimum needed to hold sheet. Reduce print speed. Use antistatic spray or ink additives.
Ink too thick or tacky	Mix ink well before use. Add retarder or thinner to ink.
Screen tension insufficient	Use screens with higher tension.
Off-contact and/or peel excessive	Reduce off-contact/peel distance.
Squeegee pressure excessive	Reduce squeegee pressure.

Ink streaking

Possible Cause	Potential Solution
Squeegee or flood bar has nicks	Sharpen or replace worn squeegees. Smooth or replace nicked flood bar.
Squeegee pressure insufficient	Increase squeegee pressure.
Squeegee speed too fast	Reduce squeegee speed.
Ink not mixed thoroughly	Mix ink with a mixer before using it on press.
Ink has debris or contaminates	Filter ink threw a screen to remove debris. Use fresh ink.
Screen mesh damaged	Remake stencil on undamaged mesh.
Ink too old	Rotate ink inventory using First In, First Out. Date ink cans as they are received. Observe the manufacturer specified shelf life.
Squeegee too hard	Use softer durometer squeegee.
Stencil coating uneven	Remake stencil using nick free coating trough and consistent coating pressure.

Ink flowing poorly (mesh marks)

Possible Cause	Potential Solution
Ink too thick or tacky	Mix ink well before use. Add retarder or thinner to ink.
Mesh too fine	Use coarser mesh.
Squeegee angle too high	Lower squeegee angle.
Squeegee pressure insufficient	Increase squeegee pressure.
Off-contact/peel too high	Reduce off-contact/peel distance.
Screen tension insufficient	Use screens with higher tensions.
Ink dried/cured too quickly	Allow sufficient ink flow-out time after printing.
Mesh not properly reclaimed	Remake screen on properly cleaned mesh.
Squeegee speed too fast	Reduce squeegee speed.
Flood speed too fast	Reduce flood stroke speed.
Squeegee too hard	Use softer durometer squeegee.

Ink smearing

Possible Cause	Potential Solution
Screen tension insufficient	Use screen with higher tensions.
Squeegee pressure excessive	Reduce squeegee pressure.
Off-contact/peel is excessive	Reduce off-contact/peel distance.
Image too close to frame	Select frame size where image takes up no more than 70% of the total mesh area.
Substrate sticking to mesh due to static electricity	Increase relative humidity level. Use anti-static elimination equipment. Electrically ground table bed. Set vacuum draw to minimum needed to hold sheet. Reduce print speed. Use antistatic spray or ink additives.
Vacuum table pressure insufficient	Increase vacuum pressure. Mask off open holes on vacuum bed. Service press bed vacuum to ensure adequate pressure.
Flood bar pressure excessive	Reduce flood bar pressure.
Vacuum table, screen and squeegee not parallel	Level press components properly.
Ink too thin	Use higher viscosity ink. Remix ink with less thinner/reducer. Thicken ink with appropriate additives.
Squeegee edge dull	Sharpen or replace worn squeegees.
Off-contact/peel insufficient	Increase off-contact distance.
Mesh too coarse	Use finer mesh.

Ink bleeding

Possible Cause	Potential Solution
Ink too thin	Use higher viscosity ink. Remix ink with less thinner/reducer. Thicken ink with appropriate additives.
Ink mixed poorly	Mix ink thoroughly before use.
Substrate too absorbent or rough	Adjust artwork resolution for substrate limitations.
Flood pressure excessive	Reduce flood bar pressure.
Stencil too thin	Increase the number of emulsion coats for thicker stencil. Use round edge scoop coater for initial coats.
Mesh too coarse	Use finer mesh.
Squeegee pressure excessive	Reduce squeegee pressure.
Squeegee speed too slow	Increase squeegee speed.
Squeegee angle too low	Raise squeegee angle.
Squeegee too soft	Use higher durometer squeegee.
Squeegee edge dull	Sharpen or replace worn squeegees.
Too much ink in screen	Remove extra ink to eliminate uncontrolled flow-back.

Orange peel / fisheyes in ink

Possible Cause	Potential Solution
Ink incompatible with substrate	Select proper ink for substrate being printed.
Substrate surface contaminated	Clean substrate surface with lint-free isopropyl alcohol wipes.
Ink mixed poorly	Mix ink thoroughly before use.
Ink mixed with incompatible additives or solvents	Re-mix with proper solvents and/or additives. Use only manufacturer recommended thinners.
Substrate surface uneven	Fill texture with base print of clear.
UV ink has excessive or incorrect silicone flow control agent	Re-mix with less flow control. Use manufacturer recommended additives. Observe manufacturer limits when using additives.

Pinholes appearing on print

Possible Cause	Potential Solution
Stencil has pinholes	Use proper exposure times for stencil. Prepare screen in dust controlled environment. Block out screen adequately prior to printing.
Stencil breaking down on press **Screen underexposed**	Use exposure calculator to determine proper exposure time.
Screen not dried properly	Dry screens completely before exposure.
Stencil material out of date	Use fresh emulsion.
Humidity excessive	Use moisture resistant dual cure emulsion.

Sawtooth on edges

Possible Cause	Potential Solution
Stencil is too thin	Increase the number of emulsion coats for thicker stencil. Use round edge scoop coater for initial coats.
Stencil severely underexposed	Use exposure calculator to determine proper exposure time. Check lamp for consistency and level of output.
Mesh threads blocking image edge	Use different mesh or angled fabric to avoid thread interference.
Ink too thick	Mix ink well before use. Thin ink with appropriate reducer/thinners.
Mesh too coarse	Use finer mesh.
Film positive has pattern	Remake film positive with higher resolution output device.
Ink drying in screen	Correct using 'Solvent ink drying in screen' chart.

Double image at edges

Possible Cause	Potential Solution
Screen tension insufficient	Use screen with higher tensions.
Off-contact/peel insufficient	Increase off-contact distance.
Substrate uneven or very textured	Clean ink buildup from screen periodically.
Squeegee pressure excessive	Reduce squeegee pressure.
Squeegee pressure uneven	Adjust press to achieve uniform squeegee pressure.

Ghost image in print

Possible Cause	Potential Solution
Mesh reclaimed incorrectly	Remake stencil on properly cleaned mesh.
Screen mesh damaged, abraded or burnished	Remake stencil on new or undamaged mesh.

Loss of detail/sharpness

Possible Cause	Potential Solution
Screen tension insufficient	Use screens with higher tension.
Squeegee pressure excessive	Reduce squeegee pressure.
Mesh too coarse	Use finer mesh.
Stencil too thin	Increase the number of emulsion coats for thicker stencil. Use round edge scoop coater for initial coats.
Ink too thin	Use higher viscosity ink. Remix ink with less thinner/reducer. Thicken ink with appropriate additives.
Squeegee edge dull	Sharpen or replace worn squeegees.
Stencil severely underexposed	Use exposure calculator to determine proper exposure time. Check lamp for consistency and level of output.
Substrate too absorbent or rough	Adjust artwork resolution for substrate limitations.
Squeegee too soft	Use higher durometer squeegee.
Squeegee angle excessive	Raise squeegee angle.
Flood pressure excessive	Reduce flood pressure.

Ink deposit too thin

Possible Cause	Potential Solution
Mesh too fine	Use coarser mesh.
Squeegee speed too fast	Reduce squeegee speed.
Ink too thin	Use higher viscosity ink. Remix ink with less thinner/reducer. Thicken ink with appropriate additives.
Squeegee too hard	Use softer durometer squeegee.
Squeegee angle too high	Lower squeegee angle.

Ink deposit too thick

Possible Cause	Potential Solution
Mesh too coarse	Use finer mesh.
Ink too thick	Thin ink with proper thinner/reducer.
Squeegee speed too slow	Increase squeegee speed.
Squeegee too soft	Use harder durometer squeegee.
Squeegee angle too low	Raise squeegee angle.
Flood bar pressure excessive	Reduce flood bar pressure.
Off-contact/peel is excessive	Reduce off-contact/peel distance.

Ink deposit uneven

Possible Cause	Potential Solution
Squeegee pressure uneven	Adjust press to achieve uniform squeegee pressure.
Screen frame warped	Remake screen on flat stable frame.
Squeegee edge uneven	Sharpen or replace worn squeegees.
Squeegee too soft	Use higher durometer squeegee.
Mesh too coarse	Use finer mesh.
Squeegee blade too long	Select squeegee 1-2 inches (3-5 cm) wider on each side of image.
Screen tension uneven	Ensure screens have uniform tension. Check for mesh rips or slippage and replace as necessary.
Flood pressure uneven	Adjust press to achieve uniform flood bar pressure.
Vacuum table, screen and squeegee not parallel	Level press components properly.
Vacuum table indented	Repair or replace vacuum table.
Substrate thickness uneven	Adjust press to print as even as possible. Switch substrates if possible.
Squeegee angle too low	Raise squeegee angle.
Off-contact/peel too high	Reduce off-contact/peel distance.

Ink foaming in screen

Possible Cause	Potential Solution
Squeegee and/or flood speed too fast	Reduce stroke speed.
UV ink requires flow control/bubble breaker additive	Add small increments of bubble breaker. Observe manufacturer limits when using additives.
Ink mixed excessively	Use lower mixing speed. Allow bubbles to disperse after mixing.

Solvent ink drying in screen

Possible Cause	Potential Solution
Ink reduced improperly	Use retarder to reduce inks instead of thinners.
Flood coat insufficient	Perform thick flood coat directly after printing.
Mesh too fine	Use coarser mesh.
Detail too fine	Use correct mesh and ink for image detail.
Airflow at print station excessive	Remove fans and other causes of increased airflow. Direct airflow away from screen or move print station.
Ink too thick	Thin ink with appropriate reducer/thinners.
Ambient temperature high	Reduce room temperature if possible.
Squeegee too soft	Use harder durometer squeegee.
Squeegee edge dull	Sharpen or replace worn squeegees.

Solvent ink does not coat substrate (first color refusal)

Possible Cause	Potential Solution
Ink selection incorrect for substrate	Contact supplier to determine proper ink series for substrate.
Substrate surface contaminated	Clean substrate with isopropyl alcohol and lint-free wipes.
Substrate surface energy too low	Raise substrate surface energy by treating with flame, corona discharge, or flashing through the reactor.
Substrate printed on untreated side (polyolefins)	Print on treated side of substrate.
Substrate treatment inconsistent or out of date (polyolefins)	Use fresh substrate. Use an adhesion modifier.

Second ink does not cover the first properly

Possible Cause	Potential Solution
First ink not sufficiently dry	Adjust dryer to dry ink completely. Check dryer thermostat and thermocouples for proper operation.
Silicone excessive in first ink down	Change ink.
Second ink deposit too thick	Reduce ink with proper thinner/reducer. Observe manufacturer limits when using additives.

Solvent ink will not dry

Possible Cause	Potential Solution
Dryer settings improper	Adjust dryer to dry ink completely. Check dryer thermostat and thermocouples for proper operation.
Ink modified improperly	Use manufacturer recommended additives/solvents. Observe manufacturer limits when using additives.
Epoxy ink catalyst quantity incorrect	Add catalyst per manufacturer recommendations. Mix catalyst in ink thoroughly.

Solvent ink offsetting on back of substrate

Possible Cause	Potential Solution
Ink insufficiently dried	Adjust dryer to dry ink completely. Check dryer thermostat and thermocouples for proper operation.
Substrate sheets too heavy	Monitor substrate stack height. Edge stack substrate.

Transparent UV inks clouding

Possible Cause	Potential Solution
Opaque ink used in transparent color match	Use only transparent inks for transparent color matches.
Ink has excessive flow agents or reducers	Remix ink with less flow agents or reducers. Observe manufacturer limits when using additives.

Poor opacity with UV ink

Possible Cause	Potential Solution
Ink has too much mixing clear	Re-mix ink with less clear.
Mesh too fine	Use coarser mesh.
Squeegee too hard	Use softer durometer squeegee.
Squeegee angle too high	Lower squeegee angle.
Stencil too thin	Increase the number of emulsion coats for thicker stencil. Use round edge scoop coater for initial coats.
Metallic pigment quantity insufficient (metallic inks)	Add additional metallic pigment to base, not to exceed manufacturer recommended limits.

Poor gloss on UV ink

Possible Cause	Potential Solution
Ink under cured	Decrease dryer belt speed. Increase lamp power. Add 5% clear to ink.
Ink selection incorrect	Consult manufacturer/supplier for proper ink series.
Halftone extender base used instead of mixing clear	Re-mix ink with correct clear.
Flattening agent added to ink	Re-mix ink without flattening agent.

Metallic UV ink rubbing off

Possible Cause	Potential Solution
Metallic pigment excessive	Overprint metallic with clear to seal the pigment. Add more clear base to reduce the metallic pigment concentration.
Clear ink selected incorrect	Mix metallic pigment with correct clear ink.