Screenprinting Troubleshooting

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The following covers the main causes of printing problems.

SYMPTOM	CAUSE	ACTION
Incomplete print image	Squeegee not parallel with screen. Squeegee edge not flat.	Turn blade round or renew blade:
	Squeegee-to-screen gap too large	Decrease gap
	Squeegee too narrow	Minimum squeegee width is 10 mm / ½^2 extra on each side of screen image.
	Stencil emulsion too thick for type of image and/or viscosity of printing medium.	Use recommended screen with thinner emulsion or change to less viscous ink (see below).
Incomplete print image	Ink too viscous to be completely drawn out of screen image as screen lifts off substrate behind squeegee on print stroke	Use recommended thinner, adding a small quantity at a time until a suitable consistency is obtained.
	Ink has dried in screen and is blocking flow through part of image.	Use recommended drying retarder instead of thinner, after removing screen and cleaning it.
	Image was not washed out correctly when screen was made.	Remake screen using fine spray to wash out image area thoroughly.
	Art work used to make screen was not dense enough to prevent light getting through, weakening image in stencil.	Create new artwork with clean-edged solid lines and areas to block off light COMPLETELY.
	Lines of artwork too fine for type of screen used.	Make new screen of type recommended for fine line conductor tracks.
	Print area incorrectly positioned, has overrun edge.	If screen positioning controls will not correct, image is wrongly placed on screen: correct position is central, and equal distance from sides of frame.
also, perhaps with a heavy deposit of ink in places.	Squeegee pressure too light.	Increase pressure in small steps until good impression is obtained.
Incomplete print image with heavy deposit.	Print gap too small.	Set correct screen to-workplace gap.
Incomplete print image with very light deposit.	Print gap too large.	Set screen-to-workpiece gap correctly.
	Ink too viscous.	Change to less viscous ink.
	Screen mesh too fine.	Change to screen recommended for work.
Print image becomes incomplete, after start of print run was satisfactory.	Ink distributor blade to-screen gap not set correctly; blade not properly in contact with screen during flood stroke, giving poor distribution as ink supply lessens.	
	Ink distributor blade not parallel with screen.	
Print image missing at one end but print quality satisfactory.	Length of print stroke too short.	Alter print image so that squeegee is not lifted off screen until 10 mm / ½² minimum past end of image area.
Print image missing both sides.	Squeegee too narrow.	Minimum squeegee width 10 mm / ½² extra each side screen image.
	Squeegee printing edge bowed.	Remove squeegee and reassemble or fit new blade: then check and adjust squeegee-to-screen gap.
	Print gap too large.	Set print gap correctly.
Slight gap or nick in successive prints, after satisfactory start to print run.	Dusty components.	Raise printhead and wipe underside of screen before continuing; make sure components are clean before loading.
	Squeegee cupped.	Fit new squeegee blade, adjust squeegee to screen gap.
Print image out of register.	Screen not accurately aligned over substrate.	
Print smudged.	Ink distributor blade not lifting clear of screen during print stroke.	
	Squeegee-to-screen gap too small.	Increase gap until screen peels away from substrate immediately behind squeegee.
	Ink distributor blade stops over screen image and smudges it at that point.	Image on screen too near front of machine: Remake screen with image central an equal distance from sides of frame.
	Strands of mesh from damaged screen are hanging down from the frame and dragging across the print area.	Remove cause of damage: fit new screen.
Print slurred at side of image.	Squeegee too narrow.	Minimum squeegee width is 10 mm / ½² extra on each side of image.
Print image has serrated edges.	Screen mesh too coarse.	Change to recommended screen with finer mesh.
	Stencil emulsion too thin.	Change to recommended screen with thicker emulsion.
also with thin ink deposit.	Screen open area too small.	Use recommended screen with a higher percentage of open area.
	Screen emulsion thin.	Use recommended screen with thicker emulsion.

Print image streaky, usually with poor edge definition.	Squeegee edge worn.	Fit new squeegee.
Stringing ('whiskers' on print image).	Ink too thin.	Use less thinner or retarder.
	Screen mesh too coarse.	Use recommended screen with finer mesh.
	Stencil emulsion too thick.	Use recommended screen with thinner emulsion.
Print image has lost fine detail and fine definition.	Screen mesh too coarse.	Change to screen with finer mesh.
Print image has poor definition with some serrated edges.	Screen mesh too coarse.	Change to screen with finer mesh.
	Stencil emulsion too thin.	Use recommended screen with thicker emulsion.
also with thin ink deposit.	Open area of screen too small.	Change to screen with higher percentage of open area.
	Stencil emulsion too thin.	Change to recommended screen with thicker emulsion.
Poor definition at edges of image particularly at rear edge of each deposit with deposit thin	Squeegee pressure too heavy	Reduce squeegee pressure in small steps until good print is obtained, then increase pressure slightly
Similar but with heavy deposit	Print gap too large	Reduce screen-to-substrate gap to recommended figure
Printing medium does not take properly to substrates	Contaminated printing surfaces	Clean substrates thoroughly before printing
Deposit too thin	Screen mesh too fine	Use screen with coarser mesh
	Printing medium viscosity too high	Use less viscous printing medium
	Stencil emulsion too thin	Use screen with thicker emulsion
	Squeegee too hard	Use softer squeegee
with poor edge definition, especially near rear edge of each deposit	Squeegee pressure too heavy	Reduce pressure in small steps until good print impression is given, then increase pressure slightly
with serrated edge	Screen open area too small	Use recommended screen with thicker emulsion
Ink deposit uneven over most of area	Squeegee blade too hard for type of work	Use softer squeegee
Ink spreads after printing	Screen mesh too coarse for viscosity of printing medium and type of image (example: some gold mediums for fine-line conductor work)	Change to screen with finer mesh, from recommended list
	Component not dry	Components should be clean and dry and at normal workshop temperature, before printing
Component sticks to screen	Component not registered correctly or not held by grippers and vacuum.	Wipe component clean or scrap: raise printhead and wipe underside of screen before continuing
	Substrate excessively bowed	Increase vacuum, mechanical gripping, reduce squeegee pressure or reject substrate
	Vacuum is insufficient to hold substrates when very viscous pastes are used	Check whether: a) Vacuum pipe not fully secured to unions b)Holes at registered printing position are blocked c)Filter of pump is blocked d)Pump exhaust pipe is restricted e) Other leaks exist
	Print gap too small	Set print gap correctly
Squeegee printing edge wears quickly	Squeegee too soft	Use harder squeegee
Print stroke does not clear screen of printing medium*	Squeegee pressure too low	Increase pressure in small steps until a clear track is obtained and then increase slightly
	Screen emulsion too thick for type of work	Change to screen with thinner emulsion or use less viscous medium
	Print gap too large	Set print gap correctly
	Squeegee speed too high	Decrease speed
When printing small image area, good results cannot be obtained even after machine adjustments etc.	Squeegee too wide for image area	Ideal squeegee width is 10 mm / ½² extra on each side of image