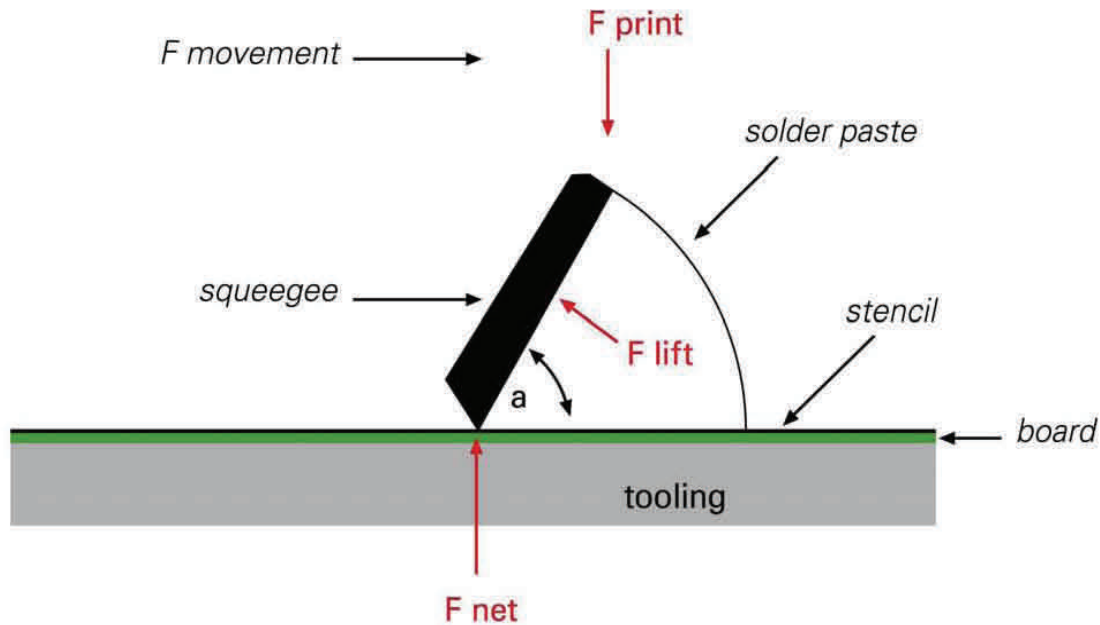


APPLICATION NOTES ~ Stencil Printing

No 2

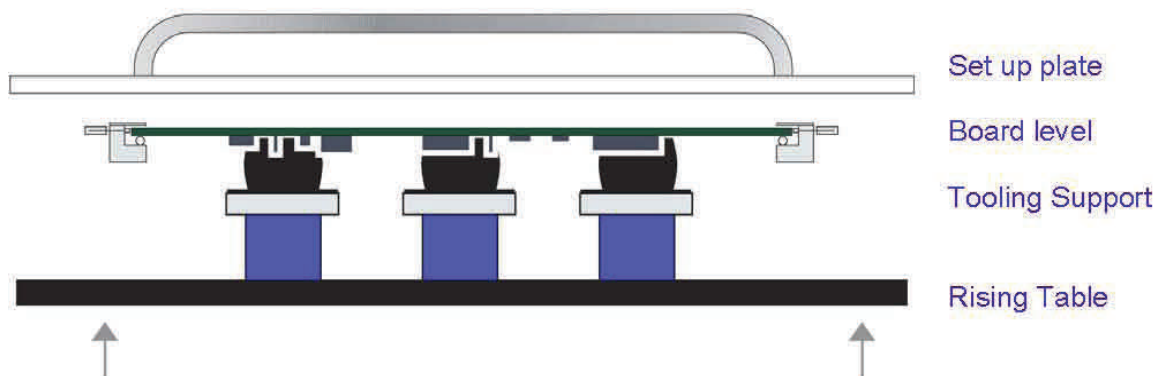
With 70%+ of all end of line defects associated to the printing process its essential for SMT engineers to understand the Physics and Forces involved in "ON CONTACT" stencil printing.



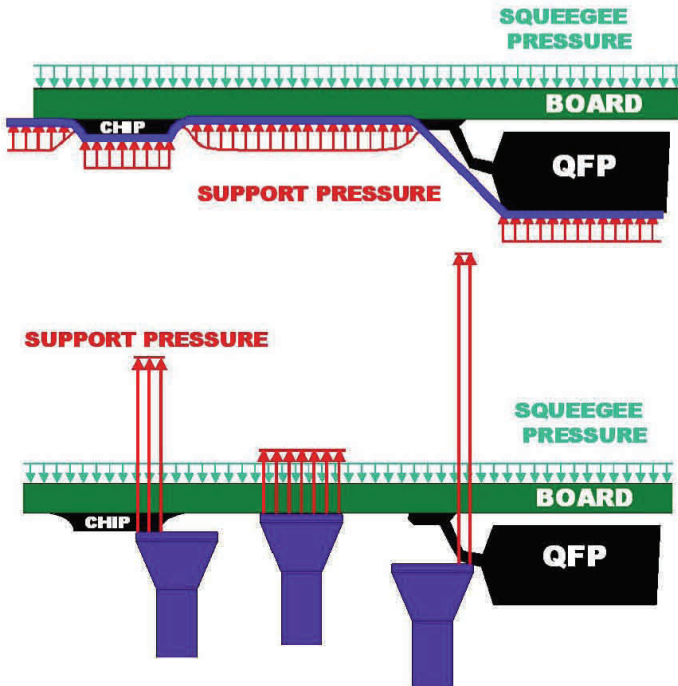
Printer settings control F MOVEMENT and F PRINT from squeegee directional travel speed and squeegee pressure. F LIFT is affected by viscosity of the solder paste or printing medium and this changes relative to temperature and humidity, F LIFT can change during a shift.

Critical, and affecting F NET, is board support at print height. "On Contact" means the board must sit flat against the stencil to provide a good gasket. As such there should be no gap (board sag) or upward Force pressure (board bowed). Any upward Force adds to F Lift, and reduces F Print.

Tooling set up is therefore critical and is best achieved using a [set up plate](#) that ensures the board is levelled across the conveyor rails giving a perfect board > stencil gasket.



Understanding F NET



F NET = Zero

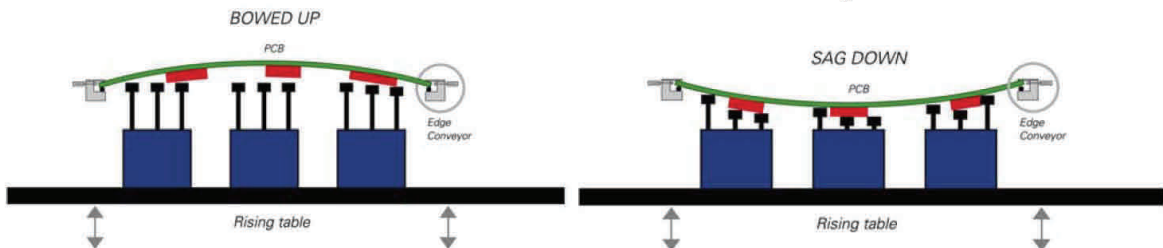
Board support does not transmit Forces back against F Print

F NET = High

Pressure from board support acts against F PRINT and reduces the squeegee print pressure

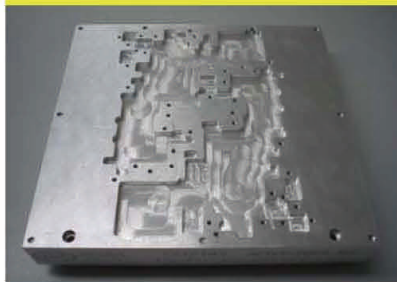
Effects of poor support

Never Auto Cycle tooling pins as board flatness cannot be guaranteed

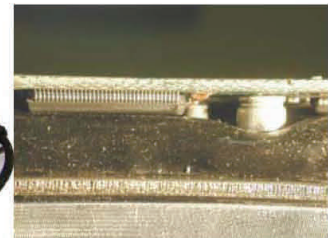


Board bowed up **F NET is high** pin pressure Board sag down **F NET no gasket** gap issue

Support Solutions



Custom Tooling Plate Machined to underside profile of the PCB, dedicated to design. Guarantees board flatness and gasket. Surface needs to be kept clean.



VacuNest reusable support modules Auto shape to underside board profile providing total compliant support platform. Supports a sagging board to achieve full gasket. Shape easily reset to accept board changes. ESD safe and require no maintenance.