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Troubleshooting for Printed Board Assembly Processes

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Association Connecting Electronics Industries

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Developed by Assembly Process Effects Handbook Subcommittee (7-23) of the Process Control Management Committee (7-20) of IPC

Users of this publication are encouraged to participate in the development of future revisions.

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Troubleshooting for Printed Board Assembly Processes
Section 1 – General Introduction

1_GENERAL INTRODUCTION

The Process Effects Committee of the IPC has developed this Process Control Handbooks for Printed Board Manufacture and Assembly, which is a documentation of problems, process causes, and the possible corrective action that may be taken. The inputs were voluntarily established by technical representatives of IPC member companies and have been reviewed in open discussion at the Process Effects Handbook meetings prior to publication.

New inputs are encouraged to help assure that the future Process Control Handbooks are complete and match the latest state-of-the-art in a particular subject.

1.1 Purpose and Format

The purpose of this Handbook is to provide guidance in the form of troubleshooting examples, process cause and effect information and statistical methods for correcting problems in all areas relating to the design, manufacture, assembly, and test of printed wiring products. A comprehensive Table of Contents deals with all of the various aspects of the design through delivery cycle.

The Guideline has been segmented into 16 major sections:

Section	Topic Descriptions	Comments
1	General information	Terminology
2	Documentation	Assembly drawing, Bill of Materials (BOM), Specification Control details, work instructions, routers, Specifications
3	Tooling and Fixturing	Stencils, Holding devices, Calipers, Torque devices
4	Handling and Storage	Materials, PWBs, and components
5	Assembly Material	Solder, flux, paste, adhesive, encapsulation
6	Mechanical Operation	Stenciling, paste deposition, conveyorization
7	Component Preparation	Lead forming and trimming, verification, and kitting
8	Component Mounting Site Preparation	Land pattern redressing, solder dotting, adhesive application, solder jetting
9	Component Placement	Insertion, SMT, bare die
10	Component Attachment	Reflow, wave solder, fountain soldering, hand soldering, welding, surface contact, press fit
11	Cleaning	Manual and automated; in-process and final
12	Coating and Marking	Conformal coating, assembly serialization, and labels
13	Inspection	Visual, magnification, measurement, go/no-go, x-ray
14	Testing	In-circuit, physical, end-use, material testing
15	Reliability Stress Conditioning	Thermal Cycling, Vibration, Humidity Testing