

Customer Supplied Material Guidelines

A key to timely and efficient building of kits is to provide clean kits. Following these guidelines will help ensure your build is not delayed and additional processing and costs are not incurred. Carson Manufacturing performs incoming audits of the materials in your kits – comparing the materials received to your latest BOM. If any issues are discovered during our audit, we will notify you in advance of the build, where possible, so that you have a chance to remedy any shortages and/or discrepancies.

Please note, not all issues can be captured at the time of kit audit and therefore some action may be needed at the time of build. The following are specific points that help speed assembly and ensure quality.

Printed Circuit Boards:

1. PCB's or Array **must** have 1 set of parallel sides.
2. PCB's **require** clearance of 0.190" from PCB edge to closest component (on parallel sides) otherwise; "waste rails" will be required to prevent component damage.
3. PCB's for thru-hole placements require 0.125" tooling holes located 0.125-0.250" from outer edge of PCB and not to exceed a 6" span or be closer than 2" to the next location. These tooling holes need to be located in a NON-populated area of the PCB.
4. PCBs for surface mount (SM) placement require at least 3 unique fiducials on each populated side (top and/or bottom) for machine reference and accuracy during screen print and placement. These fiducials should be 0.015"-0.020" in diameter and must be at least 0.150" from the outer edge of the PCB. Unique fiducials are recommended to be placed within the confines of the artwork, if space is not available fiducials can be placed on "waste rails" (outside of the artwork). Each fiducial set should be replicated for each stepped & repeated image (array).
 Fiducials should be place on outside copper and soldermask layers, and not on silkscreen (legend) layers.
5. PCB placement (centroid) data is required for programming the surface mount equipment. The data must include identification of the component, horizontal, vertical, orientation (theta) and side (if two-sided placement). Examples are shown below:

Reference	X location	Y location	Orientation	Side
R3	2.895 (in)	1.039 (in)	0 (deg)	T (top)
C21	462 (mm)	305 (mm)	180 (deg)	B (bottom)
U8	3294 (mil)	2875 (mil)	90 (deg)	(NA)

6. Minimum size is 3.2" wide (Y-axis) X 3.0" long (X-axis)
7. Maximum size is 15" wide (Y-axis) X 18" long (X-axis)

SMT Stencil:

1. Framed stencil must be 29" X 29" for use in an Accuflex printer, with 4 mil stainless steel foil.
2. Top and bottom sides can be combined on one stencil if space allows.
3. Stencil must have identification to associate with a specific PCB and/or assembly number.
4. Stencil should have green mounting tape to identify lead-free as required.
5. Stencil must have at least 3 fiducials per side as specified above.
6. We recommend sending us a Gerber file of the stencil artwork to check for potential problems prior to acquisition.

Components:

1. SMT placement machines occasionally drop parts, so kits should include an extra 10% quantity for SMT passive components i.e. resistors, capacitors (20% for 0402's). Other components should include 5% extra (a minimum of one piece) unless otherwise agreed by the parties in advance.
2. Reeled parts and cut tape should include 3" of leader strip (empty pockets) or 3" of additional components (in addition to the quantity stated above) that will be dropped in the course of feeder loading. (6" minimum continuous length)
3. Cut tape is acceptable provided it is continuous and meets the requirements listed above. Please do not splice tape (i.e. tape cut strips together or tape leaders to a reel). This process does not work well with the SMT equipment and often results in damaged strips causing discarded parts and production delays.
4. Customer must confirm all components are compatible with lead-free or tin lead processes according to customer specifications.
5. Moisture sensitive devices (including raw PCB's) should be packaged along with desiccant and a Humidity Indicator Card (HIC) in a sealed bag. If it is discovered that moisture sensitive devices are received without an HIC or with HIC's indicating the product has been exposed to excessive humidity Carson Manufacturing will need to bake the parts prior to building the product at a cost to the customer in order to avoid damage to the boards or parts. Note that this will cause 1-3 days of delay in processing your product.
6. If during set-up on the SMT line, Carson Manufacturing discovers that a part's leads do not match the pattern on the board (wrong size for example), Carson Manufacturing will attempt to contact the customer for guidance. If the customer is unavailable Carson Manufacturing will use best judgment and may decide to build the board without that component. If we must remove the job from the SMT line for this reason, additional set-up / tear-down fees may apply.
7. For components that do not meet the above guidelines, the customer may request that Carson Manufacturing hand install SMT components prior to reflow which may result in additional charges.
8. Any components shipped that do not match the original approved vendor list (AVL) on the customer BOM will be flagged and set aside in the non-conforming area during the kit audit process and require customer approval before release to build.
9. If insufficient components are provided, and the customer requests Carson to proceed with the build, some or all of the boards may be built with missing components. In such cases Carson Manufacturing will provide the customer with documentation identifying which boards were built incomplete and which shortages exist for each board by serial number. The customer will need to hand solder the shortages (no workmanship warranty from Carson Manufacturing for components installed by the customer) or if requested by the customer, Carson will hand solder the missing components upon receipt, which may result in additional charges.

Labeling:

Carson Manufacturing normally applies ¼" X ½" labels on assemblies to identify the assembly, as well as job number and manufacture date. Unless otherwise specified we will use our best judgement to determine the location to apply the label.

Please advise if you have a preferred area for this label or areas NOT to label.