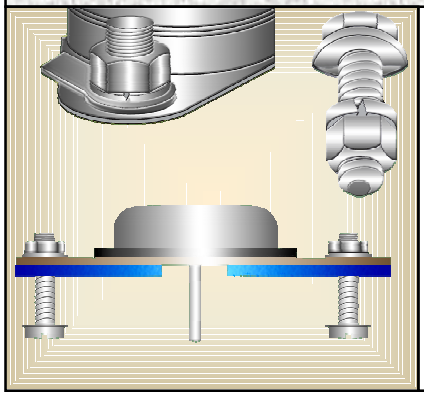
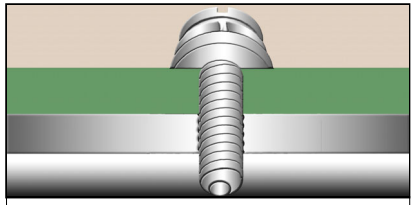


MECHANICAL ASSEMBLY – HARDWARE

Mechanical assembly hardware refers to the mounting of electrical and electronic components to a printed wiring board (PWB), or any other types of assemblies requiring the use of screws, bolts, nuts, fasteners, clips, component studs, adhesives, tie downs, rivets, connector pins, etc.

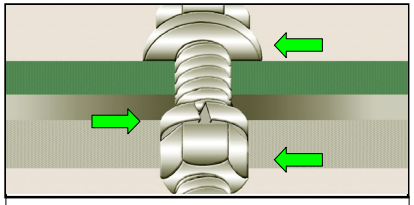
See Section 6.01 “Through-Hole Soldering, General Requirements”, for common accept / reject criteria.



PREFERRED
BLIND FASTENER SEQUENCE

Fasteners shall be assembled and installed in the sequence depicted, or per engineering documentation.
Note: Self-tapping fasteners shall not be used for flight hardware.

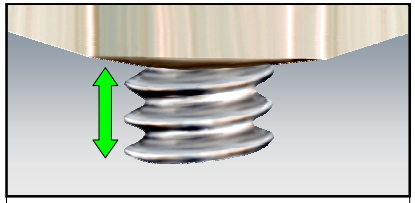
Best Workmanship Practice



PREFERRED
FASTENER SEQUENCE

Fasteners shall be assembled and installed in the sequence depicted, or per engineering documentation.

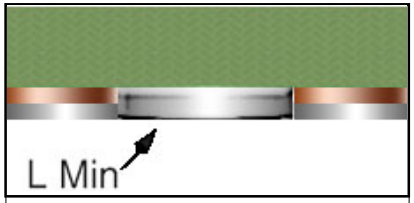
Best Workmanship Practice



PREFERRED
THREAD PROTRUSION (L)

A minimum of 1-1/2 threads shall extend beyond the threaded hardware (e.g., nut), unless otherwise specified by the engineering documentation.

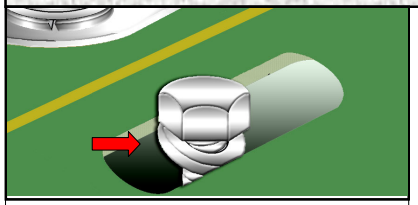
Best Workmanship Practice



ACCEPTABLE
THREAD PROTRUSION (L) - MINIMUM

Thread extension may be flush with the edge of the threaded hardware when complete thread engagement can be visually verified, or where protruding threads could present an interference (electrical / mechanical) or snag threat.

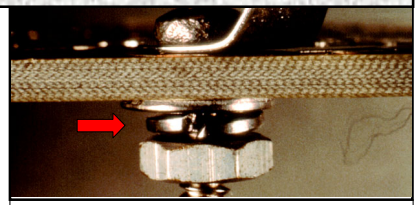
Best Workmanship Practice



UNACCEPTABLE
IMPROPER FASTENER SEQUENCE

The hardware is missing or improperly installed.

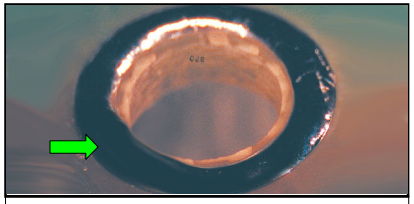
Best Workmanship Practice



UNACCEPTABLE
LOOSE FASTENER

The fastener is not completely tightened, resulting in the incomplete compression of the lock washer.

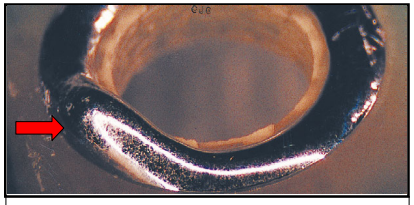
Best Workmanship Practice



ACCEPTABLE
MOUNTING HOLE SURFACE

The surfaces of mounting holes shall be smooth and level, ensuring the mounting hardware will exert even pressure when installed.

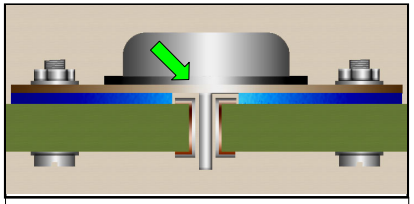
Best Workmanship Practice



UNACCEPTABLE
UNEVEN MOUNTING SURFACE

Excess solder on the mounting hole surface prevents the mounting hardware from properly seating.

Best Workmanship Practice



UNACCEPTABLE
HOLE OBSTRUCTION

Parts and components shall be mounted so that they do not prevent the proper fill of plated-through holes required to be soldered.

Best Workmanship Practice

UNACCEPTABLE
MISSING TERMINATION LUG

Wires shall not be wrapped around a screw terminal.

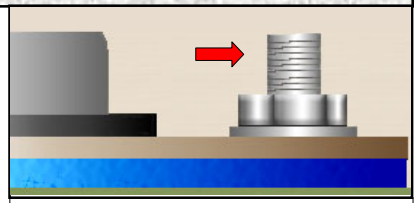
Best Workmanship Practice

THIS PAGE IS
INTENTIONALLY BLANK.

ACCEPTABLE
THREAD PROTRUSION (L) - MAXIMUM

Thread extension should not be more than 3.0 mm (0.12 in.), plus 1-1/2 threads for bolts or screws up to 25 mm (0.984 in.) in length, or 6.3 mm (0.248 in.) plus 1-1/2 thread for bolts / screws over 25 mm (0.984 in.) in length.

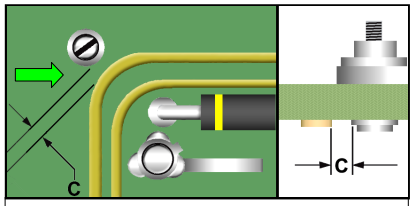
Best Workmanship Practice



UNACCEPTABLE
EXCESS THREAD PROTRUSION (L)

Excess thread protrusion represents an assembly, interference, and electrical separation problem, as well as adds unnecessary weight to the assembly.

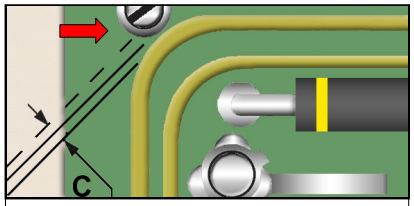
Best Workmanship Practice



ACCEPTABLE
ELECTRICAL CLEARANCE (C)

The mounting of hardware shall not violate minimum electrical spacing requirements.

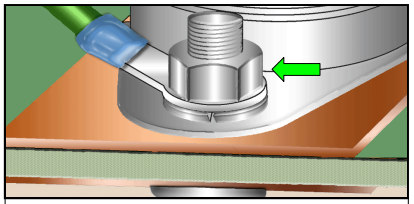
Best Workmanship Practice



UNACCEPTABLE
IMPROPER ELECTRICAL CLEARANCE (C)

The mounting hardware violates minimum electrical spacing requirements. This may result in electrical shorts or mechanical stress to the nearby circuit trace.

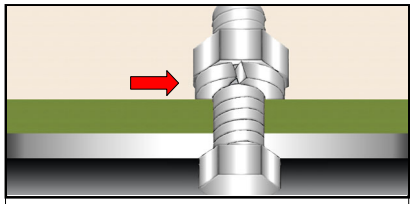
Best Workmanship Practice



ACCEPTABLE
FASTENER ASSEMBLY

The fasteners are properly installed and tight. Split-ring lock washer is fully compressed.

Best Workmanship Practice



UNACCEPTABLE
IMPROPER FASTENER SEQUENCE

The lock washer has been installed against a nonmetallic / laminate surface. The flat washer is missing.

Best Workmanship Practice