

RECOMMENDED GUIDELINES FOR SOLDERING AND CLEANING OF AMPHENOL FILTER CONNECTORS

Amphenol filter connectors are built for the rugged environments they will be exposed to during their service life. Amphenol connectors are suitable for hand, wave, and reflow soldering to printed circuit boards (PCBs). However, care should be taken during the soldering process of these connectors since there are filter components inside.

The following general guidelines are presented on handling the filter connectors during the soldering process.

Preheating:

Preheating connectors before the soldering process is recommended. Preheating reduces the chances of the connector and the filter components experiencing thermal shock during the soldering process. Amphenol recommends preheating to 120°C-125°C for five (5) to ten (10) minutes. The heating rate during the preheat should be 1-2°C/sec.

Heat Sinks:

Heat sinks help prevent any localized hot spot (or temperature buildup) within the connector. A suitable heat sink attached directly to the contact being soldered is recommended to reduce the heat applied to the filter assembly. However, specific contact arrangements (high density and/or mixed) may not allow the use of heat sinks.

Soldering:

Every effort should be made to prevent the internal hot spot temperature from exceeding 150°C. The goal is to avoid any sustained buildup of heat in any one area of the filter assembly. For solder cup arrays, the contacts should be soldered in a “criss-cross” pattern, alternating between central and peripheral locations. The minimum heat required to achieve suitable quality should be applied to the solder joint. Dwell time at the peak soldering temperature should be long enough to ensure the proper wetting of the solder joints. However, priority should be given to keeping the peak soldering time to a minimum to avoid the possibility of damage to the connectors. Less than five (5) seconds of dwell time for the tin-lead alloys is recommended. IPC-A-610 provides details on industry-accepted workmanship criteria for the soldering process.

Lead Trimming (Cutting):

PC tail leads may require trimming or cutting after the soldering process. The trimming process should not damage the connectors or the solder joints by inducing any physical shock. The solder connections should be visually inspected after trimming to ensure no fracture or deformation occurs during the trimming process.

Cleaning:

Usually, flux residue needs to be removed and cleaned after soldering the connectors to PCBs or cable harnesses. The sealing for all connectors (filtered and non-filtered) is designed to work in a mated condition (contact Amphenol for the exceptions). Hence, these connectors must not be “immersed” in solvent or aqueous cleaner.

Cleaning solvents can cause the insulators and rubber components to swell or deform. Using any liquid cleaner can allow the possibility of moisture ingress, which may not be entirely removed during subsequent drying operations. The trapped moisture inside the connector may compromise the functionality of the filter assembly. **Amphenol recommends that cleaning after soldering must not be done by immersion in a cleaning solution.**

After soldering, solder joints can be brush cleaned with isopropanol, preferably while holding the connector with its soldered contacts facing downward at an angle. Clean only the PCB and contacts without allowing the cleaner to come into contact with the connector. Allow the isopropanol to air dry at room temperature, followed by a 70°C -75°C oven cure for approximately two (2) to two-and-a-half (2.5) hours. If possible, interface the connector with a fully populated mating half or a specially designed sealing cap before cleaning.

Handling:

The contact terminals should not experience severe bending, twisting, or flexing at the exit from the connector backshell or epoxy sealing. This protects the contacts from experiencing high forces at the solder joints.