Solder joints

Ensuring the solder joints are made correctly is of prime importance in any electronics construction. Solder joints that are poor will either cause the equipment to not to work once it has been completed, or there is the possibility that the solder joint could fail intermittently or introduce noise into the electronics circuit.

Good solder joints

Fortunately most solder joints are good and do not cause any problems. A good solder joint will have a shiny finish to it, and it should not have too much solder. Typically the contour of the solder around the joint should be slightly concave.

Dry joints

Dry joints are the main form of problem solder joint. These solder joints may be completely open circuit, or they may be intermittent, high resistance or noisy. It is therefore essential that no dry solder joints are present in any electronics equipment.

Solder types

First of all, solder comes in many forms: pellets, bars, paste and wire. As a hobbyist, you will only need to get acquainted with the solder wire. And maybe the solder paste if you want to do SMD soldering.

There are two main types of solder:

1. **Lead-based solder**
2. **Lead-free solder**

The main practical difference between the two is the melting temperature. So in essence, you can choose whichever you like. Read more about soldering tools here.

Lead-based solder

Solder based on lead was universally used in the past. It was made of a mixture of tin and lead. Usually a 60/40 (tin/lead) mix, that melts at around 180-190C degrees.

Because lead has some damaging effects to our health, the industry is moving away from lead and towards lead-free solder.

Lead-free solder

Lead-free solder is solder without lead. EU requires commercially available electronics to use lead-free solder (RHoS) because of the health hazards of lead. It has a higher melting point, so it is a bit harder to work with, but usually not a problem.

Soldering Paste

Whether soldering tiny electrical circuits in a computer, or copper water pipes in your plumbing, you need to use soldering paste, sometimes called flux. Without it, your electrical connections may come apart or your pipes may leak.

Purpose

Soldering paste serves three purposes. It helps clean the copper as it heats, it helps the solder flow more evenly and it helps the solder adhere to the copper.

Desoldering Tools

If a mistake has been made, there are tools that can be used to remove the solder. A desoldering pump also known as solder sucker is a small mechanical device which sucks the liquid/molten solder from the joint where

the components are mounted. In order to desolder a component from the PCB, we first heat up the solder joint with the soldering iron till the solder liquefies/melts.

Applications of Printed Circuit Boards (PCB)

Printed circuit boards or PCBs, have a vital role in the modern day as technology has become essential to our daily routines. These circuit boards are essentially a foundation as they are used in almost everything electronic or electrical. Being at the heart of most electrical devices today, they can come in various configurations which allow them to serve different purposes and provides various capabilities. As technology grows and develops, the need for PCBs will also grow.

Consumer Electronics

The most common sector for printed circuit boards to be used in is consumer electronics. Millions of people around the world rely on electronic devices and it has become an essential part of their daily lives.

Industrial Applications

The industrial sector benefits greatly from printed circuit boards, especially businesses with production lines and manufacturing facilities. Not only are these electronic components essential to the day-to-day processes, but they enable automation which can help businesses to save on costs and reduce human error.

Medical Devices

Printed circuit boards and electronics contribute significantly to the medical sector. Not only are they used in appliances, but they are also used is monitoring, diagnostic, and treatment devices.