

## Resistance Welding

**Resistance welding (RW)** uses the application of electric current and mechanical pressure to create a weld between two pieces of metal.

The welding cycle must first develop sufficient heat to raise a small volume of metal to the molten state. This metal then cools while under pressure until it has adequate strength to hold the parts together. The current density and pressure must be sufficient to produce a weld nugget, but not so high as to expel molten metal from the weld zone.[1]

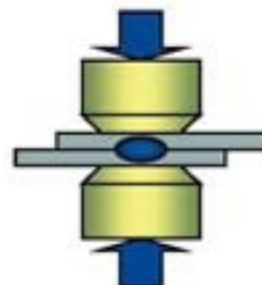


Photo: [www.cavs.msstate.edu](http://www.cavs.msstate.edu)

### Applications

RW has several applications in industry, such as:

- Automotive
- Medical
- Train carriage
- Domestic hardware
- Aerospace
- Electronics/electrical
- Nuclear
- Food/Drink etc.

### Common soldering material problems and their solution

	Problems	Solutions
Steel	Above 0,18% of Carbon	Heating the welding joint
Inox Steel 18-8 not stabilized	Occurs precipitation of carbides in grains joint	Short welding time
Aluminium	Formation of a refractory oxide layer	Previous material pickling
Nickel	High concentration of sulphur, may cause cracks in the welding	Avoid high sulphur content
	Nickel Oxidation	Short welding time
Galvanized Plate	Formation of brass by the combination of zinc with copper electrodes	Good cooling
	Lower contact resistance	Intensity increase by 30%

### Other recommendations for producing quality resistance welds

- Be sure that the electrodes you are using are suitable for the job.
- Select an electrode tip diameter suited to the thickness of the stock being welded.
- Make use of flow indicators for viewing and assuring proper cooling.
- Ensure that the top of the adjustable water-cooling tube in the holders is the proper height when changing to a different tip length.
- Use ejector type holders for easy tip removal that won't damage the tip walls.
- Clean the tip taper and holder taper on a regular basis, removing any foreign materials.
- Perform dressing of electrodes on a regular basis to maintain the correct contour. [2]



Photo: Centerline (Windsor) Ltd.