

Application Note on Linear sensor and Rotary Sensor in Resistance Welding Machine

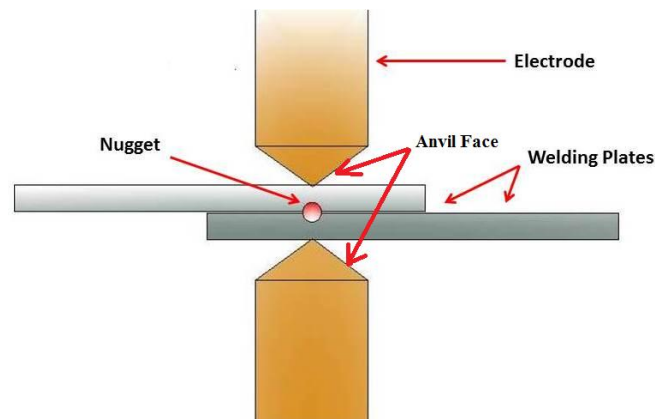
Working Principle

The working principle of Resistance Welding is the generation of heat due to electric resistance. Resistance welding is one of the oldest welding processes whereby two or more sheets of metal are welded together without the use of any filler material. The process involves applying pressure and heat to the weld area using shaped alloy copper electrodes which convey an electrical current through the weld pieces. The material melts, fusing the parts together at which point the current is turned off, pressure from the electrodes is maintained and the molten material solidifies to form the joint.

Two Types of resistance welding

Spot Welding

Spot welding is the simplest type of welding where the welding plates are held jointly below the force of anvil face. The copper (Cu) electrodes will make contact with the welding plates & the current will flow through it. The resistance is high at the edge surfaces because of the air gap.



Spot Welding

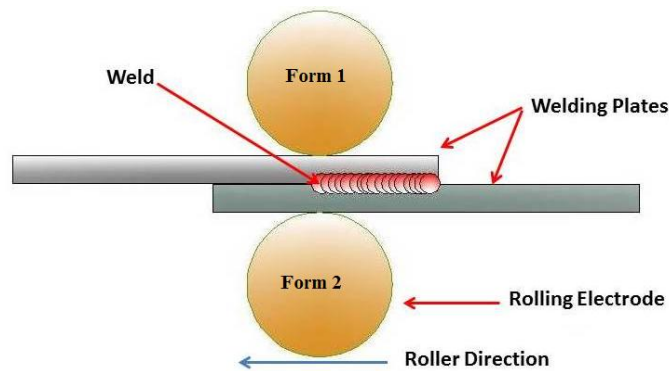
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The current supply & the time must be sufficient for the correct dissolving of edge faces. The flow of current will be stopped, however the force applied with electrode is continued for a second, and the weld quickly cooled.

Linear Sensor is used to control the vertical movement of Electrodes

Seam Welding

This type of welding is also known as continuous spot welding. In this process, a form (rolling electrode) is utilized to supply current throughout welding plates. Initially, the rolling electrodes are in contact with the welding plates. High current is supplied through these rolling electrodes to melt the edge surfaces & shape a weld joint.



Seam Welding

The rolling electrodes will begin rolling on work plates to make a permanent weld joint. The timing of the weld and movement of forms (Rolling electrodes) is controlled to assure that the weld overlap and work piece does not get over heated. The speed of the welding is about 60 inch per min within seam welding, which is used to make airtight joints.

Rotary Sensor is used to control the rpm of the forms (Rolling Electrodes)

Application

Resistance welding has applications in a number of industries, including automotive, aerospace, rail, metal furniture, electronics, medical, building and construction.