

Rules & Hints of Spot Welding

FFA # 24

The heating effect of spot welding is caused by three factors.

They are as follows:

1. Current Effect Amps or Kilo-Amps (I)
2. Resistance Effect Micro-Ohms (R)
3. Time Effect (T) Cycles 1 Cycle = 1/60 Sec.

Relationship: (Formula) “Heat” = I x R x T

Current increase causes... heat increase by square of current.

Resistance increase causes... lower heat in direct relation.

Time increase causes... increase heat in direct relation.

Force increase causes... reduced resistance and lower heat.

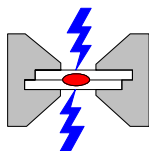
Tip diameter increase causes... lower resistance and lower heat.

The resistance of the weld joint is = to 1/P or the inverse of the pressure. Thus increase pressure = lower resistance etc.

Understanding these basic principles will help you make the proper adjustments on your “Resistance (spot) Welding Equipment”.

Hints & Rules of Thumb for Spot Weld Users

1. Use the % Heat Control in the 75-90% or high range, and use the lowest tap setting that will give a good weld. Using a high tap setting and % current causes excessive tip spitting, poor welds and higher tip wear.
2. Squeeze Time should be set to allow enough time for good metal contact before the weld current turns on. Too short a squeeze time causes spitting, sparking, tip wear and can be annoying.
3. Proper Tip Cooling. A properly cooled tip should allow you to touch the tip just after a weld has been finished. (Be Careful!) Most tip cooling is not adequate and should be improved.
4. Hold Time should be set to approximately equal weld time or slightly higher. It is easy to heat the metal quickly; it is much harder to properly cool the metal to below red heat. Note: No red heat should appear in the weld area when the tips are removed from the work piece. If red is seen, increase the hold time.



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