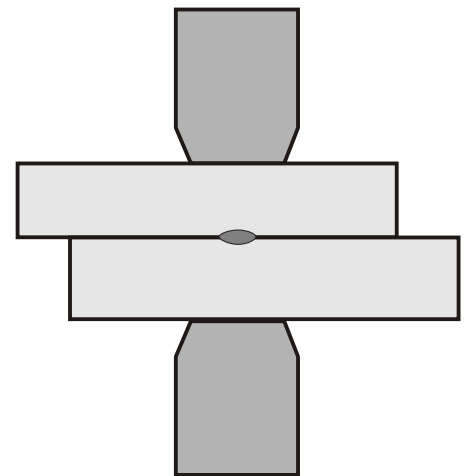


- Review of resistance welding process
 - Large number of variables
 - Force, current, voltage, time are major
 - Weld lobe IDs acceptable parameters
 - Monitor & control req' for good quality

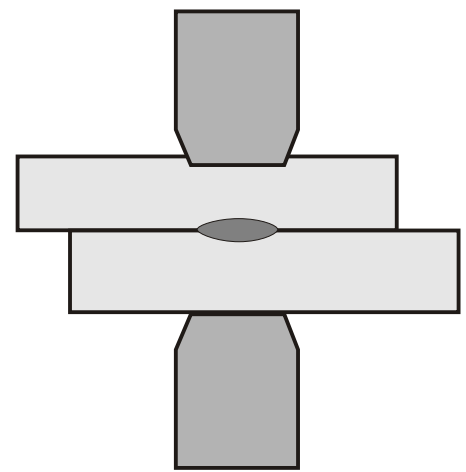
- What can go wrong?
 - Inconsistent weld quality
 - Small nugget diameter on pull test
 - Too much expulsion or flash
 - Nuts/studs pull off
 - Upside-down or missing nuts

- What are the negative results?
 - Shipping bad parts
 - High scrap rate
 - Long cycle time
 - Poor part quality
 - High degree of destructive testing
 - High cost of inspection
 - Lost orders

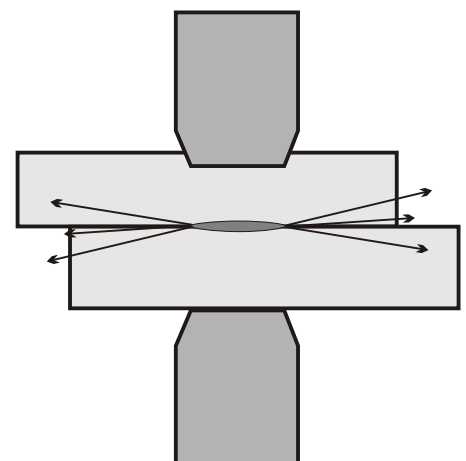
- What are the possible causes?
 - Force too high or low
 - Current too high or low
 - Weld time too short or long
 - Firing current too soon
 - Electrode deterioration
 - Misplaced nuts or studs



Small Nugget



Good Nugget



Expulsion