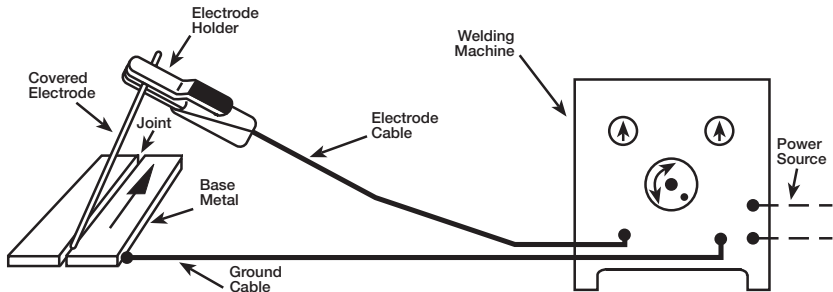


Product Information Report

Arc Welding

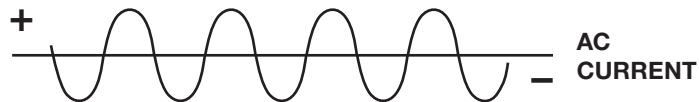


The arc welding process (Shielded Metal Arc Welding) is most often used for maintenance and small production welding. This process uses an electric arc generated between a flux covered electrode and the metal being welded (base metal). Heat from the arc melts the end of the electrode and the base metal. A typical arc welding station is illustrated below.



The equipment used in arc welding provides an electric current which may be either AC (alternating current) or DC (direct current). The amount of current (amperage) is adjustable. The diameter of the electrode and thickness of the base metal will determine the kind and amount of welding current required.

ALTERNATING CURRENT (AC) is an electrical circuit which periodically reverses its direction. In a typical AC circuit, the current goes in one direction and then reverses 60 times a second, so that the current changes its direction 120 times per second.

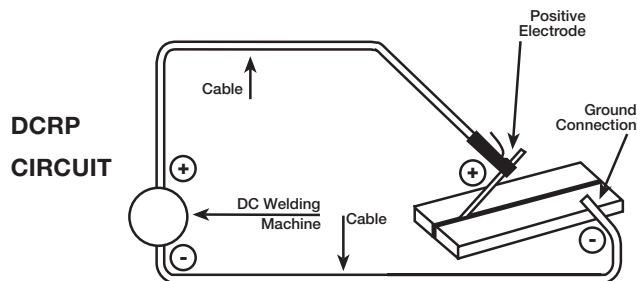


DIRECT CURRENT (DC) is an electrical circuit where the electricity flows constantly in one direction. In DC circuits electrical flow is always from the negative pole to the positive pole. In arc welding, control of the direction of electrical flow by arrangement of the poles can affect the running characteristics of an electrode and the depth of penetration.

In a DC arc welding circuit two terms are used to define electrical flow:

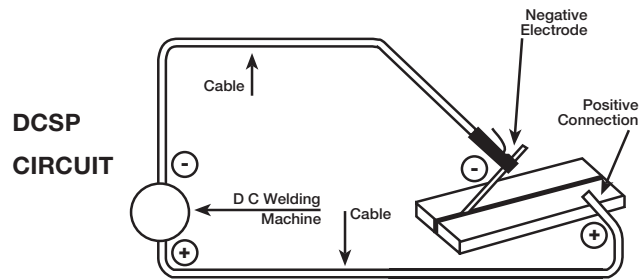
DCRP – DC Reverse polarity – Electrode positive

DCSP – DC Straight polarity – Electrode negative



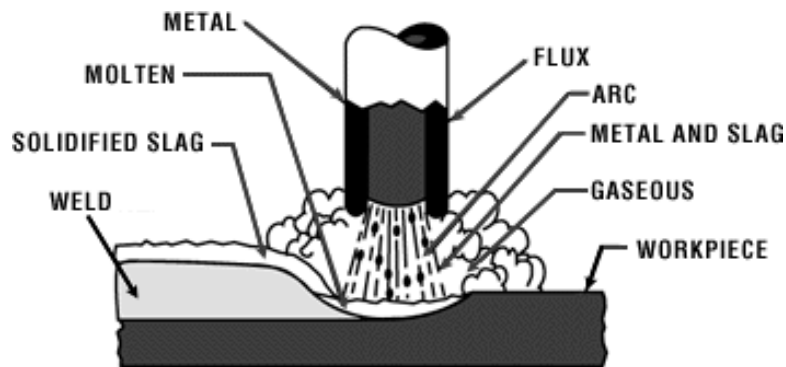
REVERSE POLARITY (DCRP): The arc welding leads are arranged so that the electrode is the positive pole and the base metal is the negative pole in the arc circuit. The decision to use DCRP depends on a number of variables including the material to be welded, the position of the weld, and the electrode being used. In general, DCRP will provide deeper penetration than AC or DC straight polarity. DCRP yields the smoothest running characteristics.

STRAIGHT POLARITY (DCSP): The arc welding leads are arranged so that the electrode is the negative pole and the base metal is the positive pole. In general, DCSP will provide shallow penetration in comparison to DCRP.



Flux Functions

- Shields the weld puddle from the atmosphere to avoid contamination
- Cleans the base metal by boiling out impurities and trapping them in the slag
- Stabilizes and controls the arc to improve running characteristics
- Creates a slag blanket over the weld which controls the cooling rate
- Some add alloys to the weld, for example: hardfacing, tool steels, etc.
- Help determine the function of the electrode, for example: vertical-down, fast freeze, etc.



STICK WELDING PROCESS

