

Unionarc Process Features Magnetically Coated Rod

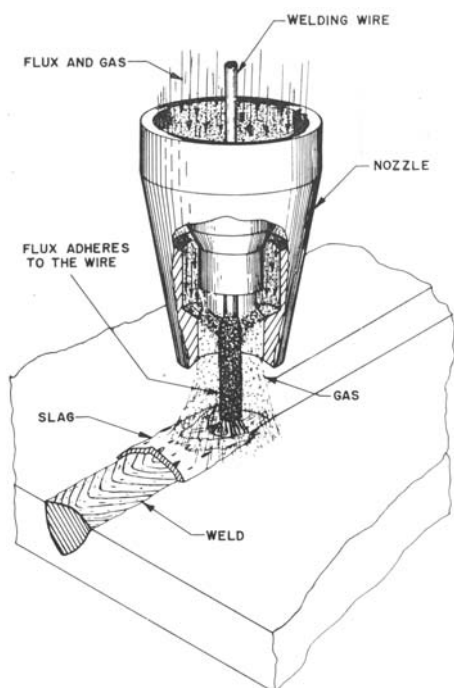
UNIONARC welding is a semi-automatic metal arc welding process, using a continuously fed bare wire, powdered magnetic flux, and carbon dioxide gas. The flux is carried to the welding nozzle by the carbon dioxide gas stream and surrounds the welding wire as it is fed from the contact tip of the torch. When welding current is flowing, a magnetic field is established around the extended portion of the welding wire. The flux is attracted toward the exposed wire and coats it. As the wire is directed into the weld puddle, the flux melts, refining the weld metal and shielding it from atmospheric contamination. The carbon dioxide flowing from the torch nozzle also helps to shield the molten metal and the arc. This open arc characteristic of Unionarc welding permits excellent visibility of the weld zone.

It is claimed that welds with this visible-arc process can be made manually in horizontal, vertical, or overhead positions with speed, economy, and quality.

The Unionarc welding machine consists basically of four pieces of equipment: 1) air-cooled manual welding torch; 2) powder dispenser assembly; 3) welding control; and 4) basic mechanical assembly.

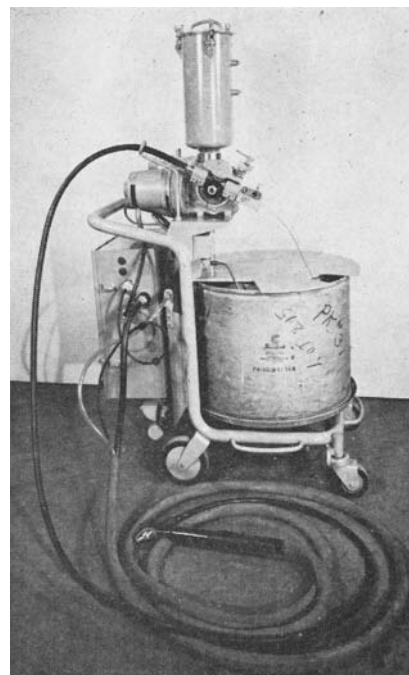
UAW-1 torch is an air-cooled manual welding torch rated at 450 amp continuous duty. The powder dispenser assembly is a flux-storage and metering device. The required amount of flux can be discharged into the stream of gas at a controlled rate to obtain optimum welding conditions.

In welding, the wire feed rate is maintained constant through the action of an electronic governor, and the power supply itself corrects for changes in



Cutaway view of the torch, showing the action of the flux, driven along by the carbon dioxide, in coating the magnetic wire as it comes out. The carbon dioxide also helps protect the weld from the atmosphere.

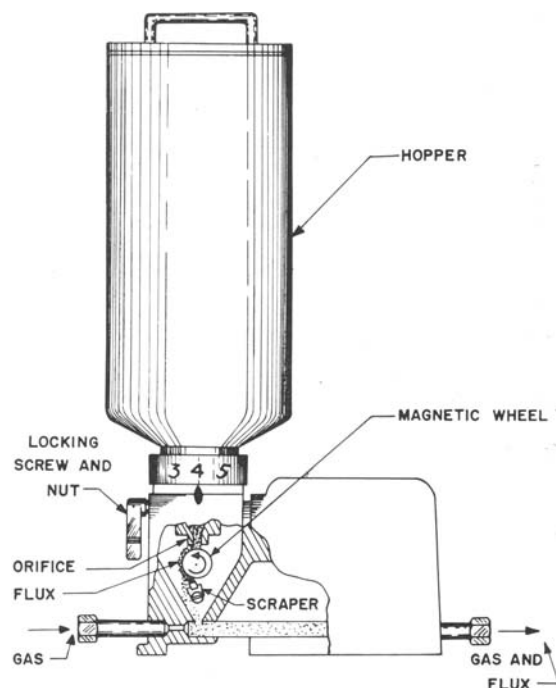
Side view of the Union-arc semi-automatic welding machine showing wire supply mounted on rotating assembly. This machine may be used for welding in vertical, overhead, or horizontal positions.



the arc length by varying the current delivered to the arc. In this way, the wire melts at a faster or slower rate, depending on the changes in the arc length, and thus the arc is brought back to its pre-set value.

Besides maintaining a constant wire-feed rate, the welding control also controls the operation of the welding current contactor, the gas-solenoid valve and the wire pack drive motor.

The new machine was invented by H. E. Kennedy, of Berkeley, Calif., who was also the inventor of Unionmelt, another Linde Co. product.



The hopper assembly is pressurized by gas at about 4 lb per sq in. It can be screwed in or out to control the quantity of flux released into the gas stream. The flux adheres to the surface of the rotating magnetic drum, and a rubber scraper, positioned beneath it, removes the flux layer from the drum. In the distributing chamber, the flux is suspended in the gas stream and is carried along toward the torch.