

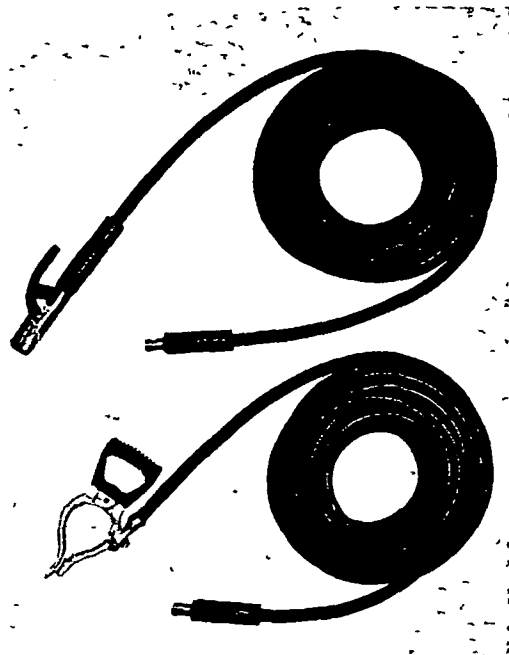


FIG 34-7—Fully insulated electrode holder on the electrode lead and the ground clamp on the work lead have insulated locking-type plugs for connection to receptacles on the welding machine
Courtesy Westinghouse Electric Corp

length are controlled by mechanical or electrical means

If speed of travel or feed of the work is controlled manually, the operation is semi-automatic. If the work is fed or the arc traverses the work automatically, the operation is automatic.

Insulation of current-carrying parts, cables, etc., applies to machine welding as well as to manual welding.

Mechanical power-transmission apparatus, such as gears, shaftings, couplings, and clutches, and other moving parts to which operators may be exposed should be guarded (See Chapter 29, "Point-of-Operation and Transmission Guards")

Protection against electric shock

Although open-circuit voltages on standard arc-welding units are not high compared to those of other processes, they cannot be neg-

lected as a potential hazard. Normally, the work setup is such that the work is grounded, and unless care is exercised, the welder or operator can easily become grounded.

The voltage between the electrode holder and the ground, during the "off" arc or "no-load" period, is the open circuit voltage. Unless the welder or operator is properly instructed and uses the equipment provided for his protection, he can become exposed to this voltage while changing electrodes, setting up work, or changing working position. The danger is particularly great in hot weather when he is sweaty.

He should develop the habit of keeping his body insulated from both the work and the metal electrode and holder. He should never permit the bare metal part of an electrode, the electrode insulation, or any metal part of the electrode holder to touch either his bare skin or any wet covering on his body.

Consistent use of well insulated electrode holders and cables, dry clothing on the hands and body, and insulation from ground will be helpful in preventing contact.

Some specific precautions for prevention of electric shock are

- 1 In confined places, cover or arrange cables to prevent contact with falling sparks
- 2 Never change electrodes with bare hands or wet gloves, or when standing on wet floors or grounded surfaces
- 3 Ground the frames of welding units, portable or stationary, in accordance with the *National Electrical Code*. With a small welding unit, a primary cable containing an extra conductor, one end of which is attached to the frame of the welding unit, can be used. By means of the proper polarized plug, this ground connection can be carried back to the permanently grounded connection in the receptacle of the power supply.
- 4 Arrange receptacles of power cables for portable welding units so that it is impossible to remove the plug without opening the power supply switch, or use plugs and receptacles which have been approved to break full load circuits of the unit.
- 5 If a cable (either work lead or electrode lead) becomes worn, exposing bare con-