

**WAC 296-304-04011 Arc welding and cutting.** (1) Manual electrode holders.

(a) Only manual electrode holders which are specifically designed for arc welding and cutting and are of a capacity capable of safely handling the maximum rated current required by the electrodes must be used.

(b) Any current carrying parts passing through the portion of the holder which the arc welder or cutter grips in his hand, and the outer surfaces of the jaws of the holder, must be fully insulated against the maximum voltage encountered to ground.

(2) Welding cables and connectors.

(a) All arc welding and cutting cables must be of the completely insulated, flexible type, capable of handling the maximum current requirements of the work in progress, taking into account the duty cycle under which the arc welder or cutter is working.

(b) Only cable free from repair or splices for a minimum distance of ten feet from the cable end to which the electrode holder is connected must be used, except that cables with standard insulated connectors or with splices whose insulating quality is equal to that of the cable are permitted.

(c) When it becomes necessary to connect or splice lengths of cable one to another, substantial insulated connectors of a capacity at least equivalent to that of the cable must be used. If connections are effected by means of cable lugs, they must be securely fastened together to give good electrical contact, and the exposed metal parts of the lugs must be completely insulated.

(d) Cables in poor repair must not be used. When a cable, other than the cable lead referred to in (b), becomes worn to the extent of exposing bare conductors, the portion thus exposed must be protected by means of rubber and friction tapes or other equivalent insulation.

(3) Ground returns and machine grounding.

(a) A ground return cable must have a safe current carrying capacity equal to or exceeding the specified maximum output capacity of the arc welding or cutting unit which it services. When a single ground return cable services more than one unit, its safe current carrying capacity must equal or exceed the total specified maximum output capacities of all the units which it services.

(b) Structures or pipe lines, except pipelines containing gases or flammable liquids or conduits containing electrical circuits, may be used as part of the ground return circuit, provided that the pipe or structure has a current carrying capacity equal to that required by (2).

(c) When a structure or pipe line is employed as a ground return circuit, it must be determined that the required electrical contact exists at all joints. The generation of an arc, sparks or heat at any point must cause rejection of the structure as a ground circuit.

(d) When a structure or pipe line is continuously employed as a ground return circuit, all joints must be bonded, and periodic inspections must be conducted to ensure that no condition of electrolysis or fire hazard exists by virtue of such use.

(e) The frames of all arc welding and cutting machines must be grounded either through a third wire in the cable containing the circuit conductor or through a separate wire which is grounded at the source of the current. Grounding circuits, other than by means of the vessel's structure, must be checked to ensure that the circuit between the ground and the grounded power conductor has resistance low enough

to permit sufficient current to flow to cause the fuse or circuit breaker to interrupt the current.

(f) All ground connections must be inspected to ensure that they are mechanically strong and electrically adequate for the required current.

(4) Operating instructions. You must instruct employees in the safe means of arc welding and cutting as follows:

(a) When electrode holders are to be left unattended, the electrodes must be removed and the holders must be so placed or protected that they cannot make electrical contact with employees or conducting objects.

(b) Hot electrode holders must not be dipped in water, since to do so may expose the arc welder or cutter to electric shock.

(c) When the arc welder or cutter has occasion to leave his work or to stop work for any appreciable length of time, or when the arc welding or cutting machine is to be moved, the power supply switch to the equipment must be opened.

(d) Any faulty or defective equipment must be reported to the supervisor.

(5) Shielding. Whenever practicable, all arc welding and cutting operations must be shielded by noncombustible or flame-proof screens which will protect employees and other persons working in the vicinity from the direct rays of the arc.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 17-18-075, § 296-304-04011, filed 9/5/17, effective 10/6/17; Order 74-25, § 296-304-04011, filed 5/7/74.]