

OSHA[®] GUIDELINES

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- Part Number: 1926
 - Part Title: Safety and Health Regulations for Construction
 - Subpart: J
 - Subpart Title: Welding and Cutting
 - Standard Number: [1926.351](#)
 - Title: Arc welding and cutting.
 - GPO Source: [e-CFR](#)
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[1926.351\(a\)](#)

Manual electrode holders.

1926.351(a)(1)

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, shall be used.

1926.351(a)(2)

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, shall be fully insulated against the maximum voltage encountered to ground.

[1926.351\(b\)](#)

Welding cables and connectors.

1926.351(b)(1)

All arc welding and cutting cables shall 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.

..1926.351(b)(2)

[1926.351\(b\)\(2\)](#)

Only cable free from repair or splices for a minimum distance of 10 feet from the cable end to which the electrode holder is connected shall be used, except that cables with standard insulated connectors or with splices whose insulating quality is equal to that of the cable are permitted.

[1926.351\(b\)\(3\)](#)

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 shall be used. If connections are effected by means of cable lugs, they shall be securely fastened together to give good electrical contact, and the exposed metal parts of the lugs shall be completely insulated.

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1926.351(b)(4)

Cables in need of repair shall not be used. When a cable, other than the cable lead referred to in paragraph (b)(2) of this section, becomes worn to the extent of exposing bare conductors, the portion thus exposed shall be protected by means of rubber and friction tape or other equivalent insulation.

1926.351(c)

Ground returns and machine grounding.

1926.351(c)(1)

A ground return cable shall 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 shall equal or exceed the total specified maximum output capacities of all the units which it services.

..1926.351(c)(2)

1926.351(c)(2)

Pipelines containing gases or flammable liquids, or conduits containing electrical circuits, shall not be used as a ground return. For welding on natural gas pipelines, the technical portions of regulations issued by the Department of Transportation, Office of Pipeline Safety, 49 CFR Part 192, Minimum Federal Safety Standards for Gas Pipelines, shall apply.

1926.351(c)(3)

When a structure or pipeline is employed as a ground return circuit, it shall be determined that the required electrical contact exists at all joints. The generation of an arc, sparks, or heat at any point shall cause rejection of the structures as a ground circuit.

1926.351(c)(4)

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

1926.351(c)(5)

The frames of all arc welding and cutting machines shall 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 structure, shall 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.

1926.351(c)(6)

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

1926.351(d)

Operating instructions. Employers shall instruct employees in the safe means of arc welding and cutting as follows:

..1926.351(d)(1)

1926.351(d)(1)

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

1926.351(d)(2)

Hot electrode holders shall not be dipped in water; to do so may expose the arc welder or cutter to electric shock.

1926.351(d)(3)

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 shall be opened.

1926.351(d)(4)

Any faulty or defective equipment shall be reported to the supervisor.

1926.351(d)(5)

See 1926.406(c) for additional requirements.

1926.351(e)

Shielding. Whenever practicable, all arc welding and cutting operations shall be shielded by noncombustible or flameproof screens which will protect employees and other persons working in the vicinity from the direct rays of the arc.

[44 FR 8577, Feb. 9, 1979; 44 FR 20940, Apr. 6, 1979, as amended at 51 FR 25318, July 11, 1986]