

Electrical–Wiring Design and Protection

Self-Inspection Checklist



Optional Information

Name of School:
Date of Inspection:
Career-Technical program/course/room:
Signature of inspector:

Guidelines:

This checklist covers regulations issued by the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) under the general industry standards subpart S 29 CFR 1910.304 and 1910.307 and the construction standards subpart K CFR 1926.404 and 1926.407. It applies to all electrical use systems. This checklist does not cover installations in ships, watercrafts, railway rolling stock, aircrafts, or automotive vehicles other than mobile homes and recreational vehicles. The regulations cited apply only to private employers and their employees, unless adopted by a State agency and applied to other groups such as public employees. Definitions of terms in bold type are provided at the end of the checklist to help you understand some of the questions.

This checklist does not address regulations dealing with outside conductors, 600 volts, nominal, or less; services to buildings; overcurrent protection (fuses and circuit breakers) for over 600 volts, nominal; and grounding for over 1,000 volts. If any of these conditions are encountered, consult the OSHA regulations.

Use and Identification of Grounded and Grounding Conductors

1	Are conductors used for grounding identified and distinguishable from all other conductors? [29 CFR 1910.304(a)(1) and 1926.404(a)(1)] <i>Note: Grounding conductors should be colored white according to the National Electric Code.</i>
2	Have all grounded conductors maintained the designated polarity when attached to a terminal or lead? [29 CFR 1910.304(a)(2) and 1926.404(a)(2)] <i>Note: Electrical outlets (receptacles), when tested with a circuit analyzer, should not show a reversed polarity, open neutral, or neutral reversed with any other line.</i>
3	Is the use of a grounding terminal or grounding-type device prohibited on a receptacle, cord connector, or plug attachment, except for the purpose of grounding? [29 CFR 1910.304(a)(3) and 1926.404(a)(3)]



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Overcurrent Protection 600 Volts, Nominal, or Less

4	Are conductors and equipment protected from overcurrent in accordance with their ability to conduct current safely? [29 CFR 1910.304(e)(1)(i) and 1926.404(e)(1)(i)]
5	Are overcurrent devices (except for the motor running overload protection) designed so as to not interrupt the continuity of the grounded conductors unless all conductors of the circuit are opened simultaneously? [29 CFR 1910.304(e)(1)(ii) and 1926.404(e)(1)(ii)]
6	Are disconnecting means provided for (a) all cartridge fuses (except for service fuses) that are accessible to other than qualified persons and (b) all fuses and thermal cutouts on circuits over 150 volts to the ground? [29 CFR 1910.304(e)(1)(iii) and 1926.404(e)(1)(iii)]
7	Is this disconnecting means installed so that the fuse or thermal cutout can be disconnected from its supply without disrupting service to the equipment and circuits unrelated to those protected by the overcurrent device? [29 CFR 1910.304(e)(1)(iii) and 1926.404(e)(1)(iii)]
8	Are overcurrent devices readily accessible to all authorized personnel? [29 CFR 1910.304(e)(1)(iv) and 1926.404(e)(1)(iv)]
9	Are the overcurrent devices located so that they will not be exposed to physical damage nor located near easily ignitable material? [29 CFR 1910.304(e)(1)(iv) and 1926.404(e)(1)(iv)]
10	Are fuses and circuit breakers located or shielded so that people will not be burned or otherwise injured by their operation? [29 CFR 1910.304(e)(1)(v) and 1926.404(e)(1)(v)]
11	Are circuit breakers clearly indicated whether they are in the open (off) or closed (on) position? [29 CFR 1910.304(e)(1)(vi)(A) and 1926.404(e)(1)(vi)(A)]
12	When circuit breaker handles on switchboards are operated vertically rather than horizontally or rotationally, is the up position the closed (on) position? [29 CFR 1910.304(e)(1)(vi)(B) and 1926.404(e)(1)(vi)(B)]
13	On switches in 120-volt fluorescent lighting circuits, is the circuit breaker approved for this purpose and marked "SWD"? [29 CFR 1910.304(e)(1)(vi)(C) and 1926.404(e)(1)(vi)(C)]
14	When installed within a six foot radius of sinks, are 125-volt, single-phase, 15- and 20-amp receptacles equipped with a ground-fault circuit interrupter? [recommended]
15	When installed outdoors, are 125-volt, single-phase, 15- and 20-amp receptacles equipped with a ground-fault circuit interrupter? [recommended]
16	Are all overcurrent devices legibly marked to indicate its purpose? [29 CFR 1910.303(f)]

Grounding

17	Are all neutral conductors grounded in all three-wire DC systems? [29 CFR 1910.304(f)(1)(i) and 1926.404(f)(1)(i)]
18	Are all two-wire DC systems operating at 50 volts through 300 volts between conductors grounded? [29 CFR 1910.304(f)(1)(ii) and 1926.404(f)(1)(ii)] <i>Note: Exceptions to this requirement are permitted when (a) they supply only industrial equipment in limited areas and are equipped with a ground detector; or (b) they are fire-protective signaling circuits having a maximum current of 0.030 amperes.</i>
19	Are all AC circuits of less than 50 volts grounded when (a) they are installed as overhead conductors outside a building, or (b) they are supplied by transformers, and the transformer's primary supply system is ungrounded or exceeds 150 volts to ground? [29 CFR 1910.304(f)(1)(iii) and 1926.404(f)(1)(iii)]
20	Are all AC systems of 50 volts to 1,000 volts grounded? [29 CFR 1910.304(f)(1)(iv) and 1926.404(f)(1)(iv)] <i>Note: See OSHA regulations for possible exemptions to this requirement. Electrical outlet receptacles should not indicate an open ground when tested with a circuit analyzer.</i>
21	For AC premises wiring systems, is the identified conductor grounded? [29 CFR 1910.304(f)(2) and 1926.404(f)(4)]
22	When systems are grounded, is a grounding electrode conductor used to connect both the equipment grounding conductor and the grounded circuit conductor to the grounding electrode? [29 CFR 1910.304(f)(3)(i) and 1926.404(f)(5)(i)] <i>Note: This is only determined at the main service or vault.</i>

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Grounding

23	Are both the equipment grounding conductor and the grounding electrode conductor connected to the grounded circuit conductor (a) on the supply side of the service disconnecting means, or (b) on the supply side of the system disconnecting means or overcurrent device if the system is separately derived? [29 CFR 1910.304(f)(3)(i) and 1926.404(f)(5)(i)]
24	On ungrounded service-supplied systems, is the equipment grounding conductor connected to the grounding electrode conductor at the service equipment? [29 CFR 1910.304(f)(3)(ii) and 1926.404(f)(5)(ii)]
25	Is the path to the ground from circuits, equipment, and enclosures permanent and continuous? [29 CFR 1910.304(f)(4) and 1926.404(f)(6)]
26	Are metal cable trays, metal raceways, and metal enclosures for conductors grounded? [29 CFR 1910.304(f)(5)(i) and 1926.404(f)(7)(i)] <i>Note: See OSHA regulations for possible exemptions to this requirement.</i>
27	Are metal enclosures for service equipment grounded? [29 CFR 1910.304(f)(5)(ii) and 1926.404(f)(7)(ii)]
28	Are the following appliances grounded: frames of electric ranges, wall-mounted ovens, counter-mounted cooking units, clothes dryers, and metal outlets or conjunction boxes that are part of the circuit for these appliances? [29 CFR 1910.304(f)(5)(iii)]
29	Are exposed noncurrent-carrying metal parts of fixed equipment that may be energized grounded? [29 CFR 1910.304(f)(5)(iv) and 1926.404(f)(7)(iii)]
30	Are all exposed noncurrent-carrying metal parts of cord and plug connected equipment grounded? [29 CFR 1910.304(f)(5)(v) and 1926.404(f)(7)(iv)] <i>Note: This applies to metal cases of tools and equipment except those that are double insulated.</i>
31	When required, are the noncurrent-carrying metal parts of fixed equipment grounded by an equipment grounding conductor contained in the same raceway, cable, or cord, or runs with or encloses the circuit conductors? [29 CFR 1910.304(f)(6)(i) and 1926.404(f)(8)(i)] <i>Note: For DC circuits only, the equipment grounding conductor may be run separately from the circuit conductors.</i>

Hazardous Locations

32	Are all equipment, wiring methods, and installations of equipment in hazardous (classified) locations intrinsically safe, approved for the hazardous location, or safe for the hazardous location? [29 CFR 1910.307(b) and 1926.407(b)]
33	Is equipment approved not only for the class of location but also for the ignitable or combustible properties of the gas, vapor, dust, or fiber that will be present? [29 CFR 1910.307(b)(2)(i) and 1926.407(b)(2)(i)]
34	Is equipment in a hazardous location marked to show the class, group, and operating temperature? [29 CFR 1910.307(b)(2)(ii) and 1926.407(b)(2)(ii)]
35	Are all conduits threaded and made wrench-tight? [29 CFR 1910.307(c) and 1926.407(c)]