

to provide protection against under-voltage, grounded phase, short circuit, and over-current.

**§ 77.900-1 Testing, examination, and maintenance of circuit breakers; procedures.**

Circuit breakers protecting low- and medium-voltage circuits serving portable or mobile three-phase alternating current equipment and their auxiliary devices shall be tested and examined at least once each month by a person qualified as provided in § 77.103. In performing such tests, the circuit breaker auxiliaries or control circuits shall be actuated in any manner which causes the circuit breaker to open. All components of the circuit breaker and its auxiliary devices shall be visually examined and such repairs or adjustments as are indicated by such tests and examinations shall be carried out immediately.

**§ 77.900-2 Testing, examination, and maintenance of circuit breakers; record.**

The operator shall maintain a written record of each test, examination, repair or adjustment of all circuit breakers protecting low- and medium-voltage circuits serving three-phase alternating current equipment and such record shall be kept in a book approved by the Secretary.

**§ 77.901 Protection of low- and medium-voltage three-phase circuits.**

(a) Low- and medium-voltage circuits supplying power to portable or mobile three-phase alternating equipment shall contain:

(1) Either a direct or derived neutral grounded through a suitable resistor at the power source;

(2) A grounding circuit originating at the grounded side of the grounding resistor which extends along with the power conductors and serves as a grounding conductor for the frames of all the electric equipment supplied power from the circuit.

(b) Grounding resistors, where required, shall be of an ohmic value which limits the ground fault current to no more than 25 amperes. Such grounding resistors shall be rated for maximum fault current continuously

and provide insulation from ground for a voltage equal to the phase-to-phase voltage of the system.

(c) Low- and medium-voltage circuits supplying power to three-phase alternating current stationary electric equipment shall comply with the National Electric Code.

**§ 77.901-1 Grounding resistor; continuous current rating.**

The ground fault current rating of grounding resistors shall meet the "extended time rating" set forth in American Institute of Electrical Engineers Standard No. 32.

**§ 77.902 Low- and medium-voltage ground check monitor circuits.**

On and after September 30, 1971, three-phase low- and medium-voltage resistance grounded systems to portable and mobile equipment shall include a fail safe ground check circuit or other no less effective device approved by the Secretary to monitor continuously the grounding circuit to assure continuity. The fail safe ground check circuit shall cause the circuit breaker to open when either the ground or pilot check wire is broken. Cable couplers shall be constructed to cause the ground check continuity conductor to break first and the ground conductor last when being uncoupled when pilot check circuits are used.

**§ 77.902-1 Fail safe ground check circuits; maximum voltage.**

The maximum voltage used for ground check circuits under § 77.902 shall not exceed 40 volts.

**§ 77.902-2 Approved ground check systems not employing pilot check wires.**

Ground check systems not employing pilot check wires shall be approved by the Secretary only after it has been determined that the system includes a fail safe design causing the circuit breaker to open when ground continuity is broken.

**§ 77.902-3 Attachment of ground conductors and ground check wires to equipment frames; use of separate connections.**

In grounding the frames of stationary, portable, or mobile equipment