WAC 296-307-38018 How must electrical protective devices be maintained and used? (1) Electrical protective equipment must be maintained in a safe, reliable condition.

(2) The following specific requirements apply to insulating blankets, covers, line hose, gloves, and sleeves made of rubber:

(a) Maximum use voltages must meet the requirements in Table 4.

(b) Insulating equipment must be inspected for damage before each day's use and immediately following any incident that can reasonably be suspected of having caused damage. Insulating gloves must be given an air test, along with the inspection.

(c) Insulating equipment with any of the following defects must not be used:

(i) A hole, tear, puncture, or cut;

(ii) Ozone cutting or ozone checking (the cutting action produced by ozone on rubber under mechanical stress into a series of interlacing cracks);

(iii) An embedded foreign object;

(iv) Any of the following texture changes: Swelling, softening, hardening, or becoming sticky or inelastic;

(v) Any other defect that damages the insulating properties.

(d) Insulating equipment found to have other defects that might affect its insulating properties must be removed from service and returned for testing under (h) of this subsection.

(e) Insulating equipment must be cleaned as needed to remove foreign substances.

(f) Insulating equipment must be stored in such a location and in such a manner as to protect it from light, temperature extremes, excessive humidity, ozone, and other injurious substances and conditions.

(g) Protector gloves must be worn over insulating gloves.

(h) Electrical protective equipment must be subjected to periodic electrical tests. Test voltages and the maximum intervals between tests must be according to Table 4 and Table 5.

(i) The test method used must reliably indicate whether the insulating equipment can withstand the voltages involved.

Note: Standard electrical test methods considered as meeting this requirement are given in the following national consensus standards:
- American Society for Testing and Materials (ASTM) D 120-87, Specification for Rubber Insulating Gloves.
- ASTM D 1048-93, Specification for Rubber Insulating Blankets.
- ASTM D 1049-93, Specification for Rubber Insulating Covers.
- ASTM D 1050-90, Specification for Rubber Insulating Line Hose.
- ASTM D 1051-87, Specification for Rubber Insulating Sleeves.
- ASTM F 478-92, Specification for In-Service Care of Insulating Line Hose and Covers.
- ASTM F 479-88a, Specification for In-Service Care of Insulating Blankets.
- ASTM F 496-93b, Specification for In-Service Care of Insulating Gloves and Sleeves.

(j) Insulating equipment that fails inspections or electrical tests must not be used by employees, except as follows:

(i) Rubber insulating line hose could be used in shorter lengths with the defective portion cut off.

(ii) Rubber insulating blankets could be repaired using a compatible patch that results in physical and electrical properties equal to those of the blanket.

(iii) Rubber insulating blankets could be salvaged by severing the defective area from the undamaged portion of the blanket. The resulting undamaged area must not be smaller than twenty-two inches by twenty-two inches (560 mm by 560 mm) for Class 1, 2, 3, and 4 blankets.

(k) Repaired insulating equipment must be retested before it may be used by employees.

(l) You must certify that equipment has been tested in accordance with the requirements of (h), (i), and (k) of this subsection. The certification must identify the equipment that passed the test and the date it was tested.

Note: This requirement may be met by marking the equipment and entering the results of the tests and the dates of testing onto logs.

Table 1
A-C Proof-Test Requirements
Maximum proof-test current, mA (gloves only)

Class of equipment	Proof-test voltage rms V	267 mm (10.5 in.) glove	356 mm (14 in.) glove	406 mm (16 in.) glove	457 mm (18 in.) glove
0	5,000	8	12	14	16
1	10,000		14	16	18
2	20,000		16	18	20
3	30,000		18	20	22
4	40,000			22	24

Table 2
D-C Proof-Test Requirements

Class of Equipment	Proof-test voltage
0	20,000
1	40,000
2	50,000
3	60,000
4	70,000

Note: The d-c voltages listed in this table are not appropriate for proof testing rubber insulating line hose or covers. For this equipment, d-c proof-tests shall use a voltage high enough to indicate that the equipment can be safely used at the voltages listed in Table 3. See ASTM D 1050-90 and ASTM D 1049-88 for further information on proof tests for rubber insulating line hose and covers.

Table 3
Glove Tests-Water Level[1, 2]

	A-C proof-test		D-C proof-test	
Class of glove	mm.	in.	mm.	in.
0	38	1.5	38	1.5
1	38	1.5	51	2.0
2	64	2.5	76	3.0
3	89	3.5	102	4.0
4	127	5.0	153	6.0

[1]The water level is given as the clearance from the cuff of the glove to the water line, with a tolerance of 13 mm. (0.5 in.).

[2]If atmospheric conditions make the specified clearances impractical, the clearances may be increased by a maximum of 25 mm. (1 in.)

Table 4
Rubber Insulating Equipment
Voltage Requirements

Class of equipment	Maximum use voltage[1] a-c-rms	Retest voltage[2] a-c-rms	Retest voltage[2] d-c-rms
0	1,000	5,000	20,000
1	7,500	10,000	40,000
2	17,000	20,000	50,000
3	26,500	30,000	60,000
4	36,000	40,000	70,000

Note: Rubber gloves shall only be used on voltages of 5000 volts phase to phase or less.

Table 4 Rubber Insulating Equipment Voltage Requirements			
Class of equipment	Maximum use voltage[1] a-c-rms	Retest voltage[2] a-c-rms	Retest voltage[2] d-c-rms

[1]The maximum use voltage is the a-c voltage (rms) classification of the protective equipment that designates the maximum nominal design/voltage of the energized system that may be safely worked. The nominal voltage design is equal to the phase-to-phase voltage on multiphase circuits. However, the phase-to-ground potential is considered to be the nominal design/voltage:

(a) If there is no multiphase exposure in a system area and if the voltage exposure is limited to the phase-to-ground potential, or

(b) If the electrical equipment and devices are insulated or isolated or both so that the multiphase exposure on a grounded wye circuit is removed.

[2]The proof-test voltage shall be applied continuously for at least one minute, but no more than three minutes.

Table 5 Rubber Insulating Equipment Test Intervals	
Type of equipment	When to test
Rubber insulating line hose	Upon indication that insulating value is suspect
Rubber insulating covers	Upon indication that insulating value is suspect
Rubber insulating blankets	Before first issue and every 12 months thereafter
Rubber insulating gloves	Before first issue and every 6 months thereafter
Rubber insulating sleeves	Before first issue and every 12 months thereafter

(3) Where switches or fuses of more than 150 volts to ground are not guarded during ordinary operations, suitable insulating floors, mats or platforms must be provided on which the operator must stand while handling the switches.

[WSR 97-09-013, recodified as § 296-307-38018, filed 4/7/97, effective 4/7/97. Statutory Authority: RCW 49.17.040, [49.17.]050 and [49.17.]060. WSR 96-22-048, § 296-306A-38018, filed 10/31/96, effective 12/1/96.]