

§ 77.402 Hand-held power tools; safety devices.

Hand-held power tools shall be equipped with controls requiring constant hand or finger pressure to operate the tools or shall be equipped with friction or other equivalent safety devices.

§ 77.403 Mobile equipment; falling object protective structures (FOPS).

(a) When necessary to protect the operator of the equipment, all rubber-tired or crawler-mounted self-propelled scrapers, front-end loaders, dozers, graders, loaders, and tractors, with or without attachments, that are used in surface coal mines or the surface work areas of underground coal mines shall be provided with substantial falling object protective structures (FOPS). FOPS which meet the requirements of the Society of Automotive Engineers (SAE) Standard J 231 shall be considered to be a "substantial" FOPS. An authorized representative of the Secretary may approve a FOPS which provides protection equivalent to SAE J 231.

(b) When necessary to protect the operator of the equipment, forklift or powered industrial trucks shall be provided with substantial FOPS. Such FOPS shall meet the requirements of the State of California, Division of Industrial Safety, General Safety Orders, Register 72, Number 6, February 8, 1972, Article 25, Section 3655—"Overhead Guards for High-Lift Rider Trucks."

(Sec. 101(a), Federal Coal Mine Health and Safety Act of 1969, as amended (83 Stat. 745; 30 U.S.C. 811(a))

[39 FR 24007, June 28, 1974]

§ 77.403-1 Mobile equipment; rollover protective structures (ROPS).

(a) All rubber-tired or crawler-mounted self-propelled scrapers, front-end loaders, dozers, graders, loaders, and tractors, with or without attachments, that are used in surface coal mines or the surface work areas of underground coal mines shall be provided with rollover protective structures (hereinafter referred to as ROPS) in accordance with the requirements of paragraphs (b) through (f) of this section, as applicable.

(b) *Mobile equipment manufactured on and after September 1, 1974.* All mobile equipment described in paragraph (a) of this section manufactured on and after September 1, 1974 shall be equipped with ROPS meeting the requirements of the Department of Labor specified in §§ 1926.1001 and 1926.1002 of Part 1926, Title 29, Code of Federal Regulations—Safety and Health Regulations for Construction.

(c) *Mobile equipment manufactured prior to September 1, 1974.* All mobile equipment described in paragraph (a) of this section manufactured prior to September 1, 1974 shall be equipped with ROPS meeting the requirements of paragraphs (d) through (f) of this section, as appropriate, no later than the dates specified in paragraphs (1), (2), and (3) of this paragraph (c), unless an earlier date is required by an authorized representative of the Secretary under paragraph (c)(4) of this section:

(1) Mobile equipment manufactured between July 1, 1971, and September 1, 1974, shall be equipped with ROPS no later than March 1, 1975.

(2) Mobile equipment manufactured between July 1, 1970, and June 30, 1971, shall be equipped with ROPS no later than July 1, 1975.

(3) Mobile equipment manufactured between July 1, 1969, and June 30, 1970, shall be equipped with ROPS no later than January 1, 1976.

(4) Irrespective of the time periods specified in paragraph (c) (1) through (3) of this section an authorized representative of the Secretary may require such mobile equipment to be equipped with ROPS at an earlier date when necessary to protect the operator of the equipment under the conditions in which the mobile equipment is, or will be operated. The authorized representative of the Secretary shall in writing advise the operator that the equipment shall be equipped with a ROPS and shall fix a time within which the operator shall provide and install the ROPS. If such ROPS is not provided and installed within the time fixed a notice shall be issued to the operator pursuant to section 104 of the Act.

(5) Nothing in this § 77.403-1 shall preclude the issuance of a withdrawal order because of imminent danger.

(d) Except as provided in paragraph (e) of this section, mobile equipment described in paragraph (a) of this section, manufactured prior to September 1, 1974, shall be deemed in compliance with this section if the ROPS is installed in accordance with the recommendations of the ROPS manufacturer or designer. The coal mine operator shall exhibit certification from the ROPS manufacturer or designer in the form of a label attached to the equipment, indicating the manufacturer's or fabricator's name and address, the ROPS model number, if any, the machine make, model or series number that the structure is designed to fit, and compliance with the applicable specification listed in paragraph (c)(1) or (2) of this section, or he shall, upon request of the authorized representative of the Secretary, furnish certification from a registered professional engineer that:

(1) The ROPS complies with the Society of Automotive Engineers (SAE) Standard J 397, "Critical Zone—Characteristics and Dimensions for Operators of Construction and Industrial Machinery" or SAE J 397a, "Deflection Limiting Volume for Laboratory Evaluation of Rollover Protective Structures (ROPS) and Falling Object Protective Structures (FOPS) of Construction and Industrial Vehicles" and the following applicable SAE Standards:

(i) J 320a, "Minimum Performance Criteria for Rollover Protective Structure for Rubber-Tired Self-Propelled Scrapers" or J 320b, "Minimum Performance Criteria for Rollover Protective Structures for Prime Movers"; or

(ii) J 394, "Minimum Performance Criteria for Rollover Protective Structure for Rubber-Tired Front-End Loaders and Rubber-Tired Dozers" or J 394a, "Minimum Performance Criteria for Rollover Protective Structures for Wheeled Front-End Loaders and Wheeled Dozers"; or

(iii) J 395, "Minimum Performance Criteria for Rollover Protective Structure for Crawler Tractors and Crawler-Type Loaders" or J 395a, "Minimum Performance Criteria for Rollover Protective Structures for Track-Type

Tractors and Track-Type Front-End Loaders"; or

(iv) J 396 or J 396a, "Minimum Performance Criteria for Rollover Protective Structures for Motor Graders"; or

(v) J 167, "Protective Frame with Overhead Protection—Test Procedures and Performance Requirements"; or

(vi) J 334a, "Protective Frame Test Procedures and Performance Requirements"; or

(2) The ROPS and supporting attachments will:

(i) Show satisfactory performance by actual test of a prototype involving a roll of 720° or more; or

(ii) Support not less than the weight of the vehicle applied as a uniformly distributed horizontal load at the top of the structure and perpendicular to a vertical plane through the longitudinal axis of the prime mover, and support two times the weight of the vehicle applied as a uniformly distributed vertical load to the top of the structure;¹ or

(iii) Support the following separately applied minimum loads:

(A) 125 percent of the weight of the vehicle applied as a uniformly distributed horizontal load at the top of the ROPS and perpendicular to a critical plane through the longitudinal axis of the prime mover; and

(B) A load of twice the weight of the vehicle applied as a uniformly distributed vertical load to the top of the ROPS after complying with paragraph (d) (1) (iii) (A) of this section. Stresses shall not exceed the ultimate strength. Steel used in the ROPS must have capability to perform at 0 °F., or exhibit Charpy V-notch impact strength at 8 ft.-lb. at -20 °F. with a standard Charpy V-notch Type A specimen and provide 20 percent elongation over two inches in a standard two inch gauge length on a 0.505 inch diameter tensile specimen. Bolts and nuts shall be SAE grade 8 (reference SAE J 429d, J 429e, J

¹Paragraph (d) of § 77.403-1 is based on the ROPS criteria of the U.S. Army Corps of Engineers, Safety—General Safety Requirements EM 385-1-1, Change 1, No. 21, Para. 18.A.20 (March 27, 1972), except that subparagraph (2)(ii) of this paragraph (d) is substituted for Para. 18.A.20e(2) of the Corps requirements.

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429f or J 429g and J 995, J 995a or J 995b).

(e) *Mobile equipment manufactured prior to September 1, 1974 meeting certain existing governmental requirements for ROPS.* Mobile equipment described in paragraph (a) of this section, manufactured prior to September 1, 1974 and already equipped with ROPS, shall be deemed in compliance with this section if it meets the ROPS requirements of the State of California, the U.S. Army Corps of Engineers, the Bureau of Reclamation of the U.S. Department of the Interior in effect on April 5, 1972, or the Occupational Safety and Health Administration, U.S. Department of Labor. The requirements in effect are:

(1) State of California: Construction Safety Orders 1591(i), 1596, and Logging and Sawmill Safety Order 5243, issued by the Department of Industrial Relations pursuant to Division 5, Labor Code § 6312, State of California;

(2) U.S. Army Corps of Engineers: Safety—General Safety Requirements, EM-385-1-1 (March 1967);

(3) Bureau of Reclamation, U.S. Department of the Interior: Safety and Health Regulations for Construction, Part II (September 1971); and

(4) Occupational Safety and Health Administration, U.S. Department of Labor: Safety and Health Regulations for Construction, 29 CFR 1926.1001 and 1926.1002.

(f) Field welding on ROPS shall be performed by welders who are certified by the coal mine operator or equipment distributor as being qualified in accordance with the American Welding Society Structural Welding Code AWS D1.1-73, or Military Standard MIL-STD 248, or the equivalent thereof.

(g) Seat belts required by § 77.1710(i) shall be worn by the operator of mobile equipment required to be equipped with ROPS by § 77.403-1.

(Sec. 101(a), Federal Coal Mine Health and Safety Act of 1969, as amended (83 Stat. 745; 30 U.S.C. 811(a))

[39 FR 24007, June 28, 1974. Redesignated and amended at 71 FR 16669, Apr. 3, 2006]

§ 77.403-2 Incorporation by reference.

In accordance with 5 U.S.C. 552(a), the publications to which references are made in §§ 77.403 and 77.403-1 and which have been prepared by organiza-

tions other than the Mine Safety and Health Administration (MSHA), are hereby incorporated by reference and made a part hereof. The incorporated publications are available at each MSHA Coal Mine Safety and Health district office of MSHA. The U.S. Army Corps of Engineers, Safety—General Safety Requirements and the Occupational Safety and Health Administration regulations are also available from the Information Dissemination (Superintendent of Documents), P.O. Box 371954, Pittsburgh, PA 15250-7954; Telephone: 866-512-1800 (toll free) or 202-512-1800; <http://bookstore.gpo.gov>. Bureau of Reclamation Safety and Health Regulations for Construction are available from the Bureau of Reclamation, Division of Safety, Engineering and Research Center, Denver, Colorado. SAE documents are available from the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096. American Welding Society Structural Welding Code D1-1-73 is available from the American Welding Society, Inc., 550 N.W. LeJeune Road, Miami, FL 33126. Military Standard MIL-STD 248 is available from the U.S. Government Printing Office, Washington, DC 20202.

(Sec. 101(a), the Federal Coal Mine Health and Safety Act of 1969, as amended (83 Stat. 745; 30 U.S.C. 811(a))

[39 FR 24008, June 28, 1974, as amended at 60 FR 35695, July 11, 1995. Redesignated and amended at 71 FR 16669, Apr. 3, 2006]

§ 77.404 Machinery and equipment; operation and maintenance.

(a) Mobile and stationary machinery and equipment shall be maintained in safe operating condition and machinery or equipment in unsafe condition shall be removed from service immediately.

(b) Machinery and equipment shall be operated only by persons trained in the use of and authorized to operate such machinery or equipment.

(c) Repairs or maintenance shall not be performed on machinery until the power is off and the machinery is blocked against motion, except where machinery motion is necessary to make adjustments.

(d) Machinery shall not be lubricated while in motion where a hazard exists,