

NFPA 1936

Standard on Powered Rescue Tools

2005 Edition



NFPA, 1 Batterymarch Park, Quincy, MA 02169-7471
An International Codes and Standards Organization

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NFPA 1936
Standard on
Powered Rescue Tools
2005 Edition

This edition of NFPA 1936, *Standard on Powered Rescue Tools*, was prepared by the Technical Committee on Fire Department Rescue Tools and acted on by NFPA at its November Association Technical Meeting held November 13–17, 2004, in Miami Beach, FL. It was issued by the Standards Council on January 14, 2005, with an effective date of February 7, 2005, and supersedes all previous editions.

This edition of NFPA 1936 was approved as an American National Standard on February 7, 2005.

Origin and Development of NFPA 1936

Work on this document began in a subcommittee of the Technical Committee on Fire Department Equipment. In October 1992, the NFPA Standards Council organized a new committee, the Technical Committee on Fire Department Rescue Tools, which took over the responsibility for developing the document. The first edition of NFPA 1936 was presented to the NFPA membership at the Annual Meeting in Baltimore, MD, on 19 May 1999, and issued by the Standards Council on 22 July 1999, with an effective date of 13 August 1999.

This second edition of NFPA 1936 incorporates the new *Manual of Style for NFPA Technical Committee Documents* format for codes and standards that has caused the renumbering of some chapters, the relocation of another chapter, and the addition of a new chapter. The title of the document has changed to “Powered Rescue Tools,” eliminating the “system” concept of the first edition. The standard addresses the tools and components as individual items and not as a “system” approach. All design, performance, and testing requirements have been reviewed and refined as necessary.

This second edition was presented to the Association membership at the 2004 November meeting in Miami Beach, FL, on 17 November 2004, and issued by the Standards Council with an effective date of 7 February 2005.

In Memoriam, 11 September 2001

We pay tribute to the 343 members of FDNY who gave their lives to save civilian victims on 11 September 2001, at the World Trade Center. They are true American heroes in death, but they were also American heroes in life. We will keep them in our memory and in our hearts. They are the embodiment of courage, bravery, and dedication. May they rest in peace.

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This list represents the membership at the time the Committee was balloted on the final text of this edition. Since that time, changes in the membership may have occurred. A key to classifications is found at the back of the document.

NOTE: Membership on a committee shall not in and of itself constitute an endorsement of the Association or any document developed by the committee on which the member serves.

Committee Scope: This Committee shall have primary responsibility for documents related to the design, inspection, testing, and use of rescue tools for the fire services.

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NFPA 1936**Standard on****Powered Rescue Tools****2005 Edition**

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NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates that explanatory material on the paragraph can be found in Annex A.

Information on referenced publications can be found in Chapter 2 and Annex B.

Chapter 1 Administration**1.1 Scope.**

1.1.1 This standard shall specify the minimum requirements for the design, performance, testing, and product conformance verification of powered rescue tools and components.

1.1.2 This standard shall specify the requirements for spreader, ram, cutter, and combination powered rescue tools.

1.1.3 This standard shall also specify the requirements for cable assemblies, hose assemblies, and power unit components for powered rescue tools.

1.1.4 This standard shall not specify any requirements for any accessories for powered rescue tools or components.

1.1.5 This standard shall not be construed as addressing all of the safety concerns, if any, associated with its use. It shall be the responsibility of the persons and organizations that use this standard to establish safety and health practices and determine the applicability of regulatory limitations prior to use of this standard.

1.1.6 Nothing herein shall restrict any jurisdiction from specifying powered rescue tool systems and components that exceed the minimum requirements of this standard.

1.1.7 Nothing herein shall restrict any manufacturer from producing powered rescue tools and components that exceed the minimum requirements of this standard.

1.2 Purpose.

1.2.1 The purpose of this standard shall be to establish minimum performance requirements for powered rescue tools and components that are utilized by emergency services personnel to facilitate the extrication of victims from entrapment.

1.2.2 Controlled laboratory environmental and physical tests are used to determine compliance with the performance requirements of this standard only; however, such tests shall not be deemed as establishing the performance levels of powered rescue tools and components for all situations.

1.2.3 This standard is not intended to serve as a detailed manufacturing or purchase specification but shall be permitted to be referenced in purchase specifications as minimum acceptable requirements.

1.3 Application.

1.3.1 This standard shall apply to the design, manufacturing, and product conformance verification of newly manufactured powered rescue tools and components.

1.3.2 The requirements of this standard shall not apply to accessories that might be attached to powered rescue tools or components.

1.3.3 This standard shall not apply to manually powered rescue tools and manually powered rescue tool components.

1.3.4 This standard shall not apply to small multipurpose tools including, but not limited to, saws, drills, chisels, pry bars, shoring systems, and similar tools.

1.3.5 This standard shall not apply to powered rescue tools and components that are manufactured prior to the NFPA effective date of this standard.

1.3.6 This standard shall not apply to powered rescue tools that are manufactured in accordance with other specifications or standards of other organizations.

1.4 Units.

1.4.1 Values for measurement in this standard are followed by an equivalent in parentheses, but only the first stated value shall be regarded as the requirement.

1.4.2 Equivalent values in parentheses shall not be considered as the requirement as these values are approximate.

Chapter 2 Referenced Publications

2.1 General. The documents or portions thereof listed in this chapter are referenced within this standard and shall be considered part of the requirements of this document.

2.2 NFPA Publications. National Fire Protection Association, 1 Batterymarch Park, Quincy, MA 02169-7471.

NFPA 30, *Flammable and Combustible Liquids Code*, 2003 edition.

NFPA 1971, *Standard on Protective Ensemble for Structural Fire Fighting*, 2000 edition.

2.3 Other Publications.

2.3.1 ANSI Publication. American National Standards Institute, Inc., 25 West 43rd Street, 4th floor, New York, NY 10036.

ANSI S12.36, *Standard Survey Methods for the Determination of Sound Pressure Levels of Noise Sources*, 1990 edition.

2.3.2 ISO Publications. International Organization for Standardization, 1, rue de Varembe, Case postale 56, CH-1211 Geneva 20, Switzerland.

ISO 65, *General requirements for bodies operating product certification systems*, 1996.

ISO 17011, *General requirements for accreditation bodies accrediting conformity assessment bodies*, 2003.

ISO 17025, *General requirements for the competence of testing and calibration laboratories*, 1999.

ISO 9001, *Quality management systems - requirements*, 2000.

2.3.3 UL Publications. Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, IL 60062-2096.

UL 745-1, *Standard for Safety for Portable Electric Tools*, 1995.

UL 745-3, *Standard for Safety for Portable Battery Operated Tools*, 1995.

UL 969, *Standard for Marking and Labeling Systems*, 2001.

Chapter 3 Definitions

3.1 General. The definitions contained in this chapter shall apply to the terms used in this standard. Where terms are not defined in this chapter or within another chapter, they shall be defined using their ordinarily accepted meanings within the context in which they are used. *Merriam-Webster's Collegiate Dictionary*, 11th edition, shall be the source for the ordinarily accepted meaning.

3.2 NFPA Official Definitions.

3.2.1* Approved. Acceptable to the authority having jurisdiction.

3.2.2* Authority Having Jurisdiction (AHJ). An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

3.2.3 Labeled. Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization that is acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

3.2.4* Listed. Equipment, materials, or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment, material, or service meets appropriate designated standards or has been tested and found suitable for a specified purpose.

3.2.5 Shall. Indicates a mandatory requirement.

3.2.6 Should. Indicates a recommendation or that which is advised but not required.

3.2.7 Standard. A document, the main text of which contains only mandatory provisions using the word "shall" to indicate requirements and which is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions shall be located in an appendix or annex, footnote, or fine-print note and are not to be considered a part of the requirements of a standard.

3.3 General Definitions.

3.3.1 Accessories. Those items that are attached to the powered rescue tool or to a component but are not necessary for the rescue tool or component to meet the requirements of this standard.

3.3.2 Cable Assembly. A powered rescue tool component consisting of the power cable with all permanently attached connectors that connect the powered rescue tool to the power unit.

3.3.3 Combination Tool. A powered rescue tool that is capable of at least spreading and cutting.

3.3.4 Compliant. Verified as meeting or exceeding all applicable requirements of this standard.

3.3.5 Components. See 3.3.29, Powered Rescue Tool Components.

3.3.6 Continual. With respect to the testing of a powered rescue tool, a test sequence performed with pauses or interruptions.

3.3.7 Continuous. With respect to the testing of a powered rescue tool, a test sequence performed without any pauses or interruptions for any purpose.

3.3.8 Creep. Unintended movement.

3.3.9 Cutter. A powered rescue tool with at least one movable blade that is used to cut, shear, or sever material.

3.3.10 Cycle. See 3.3.26, Operational Cycle.

3.3.11 Dump Valve. A device on a power unit to redirect all of the system flow to the reservoir.

3.3.12 Follow-Up Program. The sampling, inspections, tests, or other measures conducted by the product conformance verification organization on a periodic basis to determine the continued compliance of listed products that are being produced by the manufacturer to the requirements of this standard.

3.3.13 Highest Pulling Force (HPF). The pulling force that is achieved by the powered rescue tool while operating at the rated system input at the position of the arms or piston where the tool generates its greatest amount of force.

3.3.14 Highest Spreading Force (HSF). The spreading force that is achieved by the powered rescue tool while operating at the rated system input at the position of the arms or piston where the tool generates its greatest amount of force.

3.3.15 Hose Assembly. A powered rescue tool component consisting of hose with all permanently attached fittings that connect the powered rescue tool to the power unit.

3.3.16 HPE. See 3.3.13, Highest Pulling Force.

3.3.17 HSE. See 3.3.14, Highest Spreading Force.

3.3.18 Identical Rescue Tools. Powered rescue tools that are produced to the same engineering and manufacturing specifications.

3.3.19 Lowest Pulling Force (LPF). The pulling force that is achieved by the powered rescue tool while operating at the rated system input at the position of the arms or piston where the tool generates its least amount of force.

3.3.20 Lowest Spreading Force (LSF). The spreading force that is achieved by the powered rescue tool while operating at the rated system input at the position of the arms or piston where the tool generates its least amount of force.

3.3.21 LPE. See 3.3.19, Lowest Pulling Force.

3.3.22 LSE. See 3.3.20, Lowest Spreading Force.

3.3.23 Manufacturer. The entity that assembles the compliant product and also maintains the product conformance verification.

3.3.24 Operational Cycle. The movement of the powered rescue tool from the fully closed or retracted position to the fully open or extended position and returned to the fully closed or retracted position.

3.3.25 Power Unit. A powered rescue tool component consisting of a prime mover and the principal power output device used to power the rescue tool.

3.3.26 Powered Rescue Tool. A rescue tool that receives power from the power unit component and generates the output forces or energy used to perform one or more of the functions of spreading, lifting, holding, crushing, pulling, or cutting.

3.3.27 Powered Rescue Tool Components. Cable assemblies, hose assemblies, power units, hose reels, and remote valve blocks. The individual parts that are assembled in a rescue tool or component, such as seals, screws, valves, and switches, are not themselves considered as components for the purposes of this standard.

3.3.28 Prime Mover. Part of the power unit component; the energy source that drives the principal power output device of the power unit.

3.3.29 Product Conformance Verification. A system whereby a product conformance verification organization determines that a manufacturer has demonstrated the ability to produce a product that complies with the requirements of this standard, authorizes the manufacturer to use a label on listed products that comply with the requirements of this standard, and establishes a follow-up program conducted by the product conformance verification organization as a check on the methods the manufacturer uses to determine continued compliance of labeled and listed products with the requirements of this standard.

3.3.30 Product Conformance Verification Organization. An independent third-party organization that determines product compliance with the requirements of this standard with a labeling/listing/follow-up program.

3.3.31 Product Label. A label or marking affixed to powered rescue tools and components by the manufacturer containing general information, care, maintenance, or similar data. This product label is not the product conformance verification organization's label, symbol, or identifying mark; however, the product conformance verification organization's label, symbol, or identifying mark is attached to it or part of it. (See also 3.2.3, *Labeled*.)

3.3.32 Pulling Force. The force to pull that is generated by a powered rescue tool and that is measured or calculated at the standard production pulling attachment points on the tool.

3.3.33 Ram. A powered rescue tool that has a piston or other type extender that generates extending forces or both extending and retracting forces.

3.3.34 Rated System Input. The maximum input pressure/electrical power at which the powered rescue tool is designed to operate.

3.3.35 Rescue Tool. An abbreviation for powered rescue tool.

3.3.36 Rescue Tool Components. See 3.3.28, Powered Rescue Tool Components.

3.3.37 Spreader. A powered rescue tool that has at least one movable arm that opens to move material.

3.3.38 Spreading Force. The force to push or pull that is generated by a spreader rescue tool and that is measured or calculated at the very tips of the spreader arms or ram.

3.3.39 System Input. The input pressure or electrical power that the powered rescue tool is subjected to at any given moment.

3.3.40 Tool. An abbreviation for powered rescue tool.

3.3.41 Vendor Confirmation. A written statement by the original manufacturer of a component that states the specification or performance range, or both, of the component.

Chapter 4 Product Conformance Verification

4.1 General.

4.1.1 The process of product conformance verification for powered rescue tools and components as being compliant with NFPA 1936 shall meet the requirements of Section 4.1, General; Section 4.2, Product Conformance Verification Program; Section 4.3, Inspection and Testing; and Section 4.4, Manufacturer's Quality Assurance Program.

4.1.2 All compliant powered rescue tools and components that are labeled as being compliant with this standard shall meet or exceed all applicable requirements specified in this standard and shall be certified.

4.1.3 All product conformance verification shall be performed by a product conformance verification organization that meets at least the requirements specified in Section 4.2, Product Conformance Verification Program, and that is accredited for powered rescue tools in accordance with ISO 65, *General requirements for bodies operating product certification systems*. The accreditation shall be issued by an accreditation body operating in accordance with ISO 17011, *General requirements for accreditation bodies accrediting conformity assessment bodies*.

4.1.4 Manufacturers shall not claim compliance with portions or segments of the requirements of this standard and shall not use the NFPA name or the name or identification of this standard, NFPA 1936, in any statements about their respective product(s) unless the product(s) is certified as compliant to this standard.

4.1.5 All individual compliant powered rescue tools and components shall be labeled and listed.

4.1.6 All individual compliant powered rescue tools and components shall also have a product label that meets the requirements specified in Section 5.1, Product Labeling Requirements.

4.1.7* The product conformance verification organization's label, symbol, or identifying mark shall be part of the product label, shall be attached to the product label, or shall be immediately adjacent to the product label.

4.1.8 The product conformance verification organization shall not issue any new verifications to the 1999 edition of this standard on or after the NFPA effective date for the 2005 edition, which is 7 February 2005.

4.1.9 The product conformance verification organization shall not permit any manufacturer to continue to label any powered rescue tools and components that are certified as compliant with the 1999 edition of this standard on or after 1 September 2005.

4.1.10 The product conformance verification organization shall require manufacturers to remove all product conformance verification labels and product labels indicating compliance with the 1999 edition of this standard from all powered rescue tools and components that are under the control of the manufacturer on 1 September 2005, and the product conformance verification organization shall verify this action is taken.

4.2 Product Conformance Verification Program.

4.2.1* The product conformance verification organization shall not be owned or controlled by manufacturers or vendors of the product being certified.

4.2.2 The product conformance verification organization shall be primarily engaged in product conformance verification work and shall not have a monetary interest in the product's ultimate profitability.

4.2.3 The product conformance verification organization shall be accredited for powered rescue tools in accordance with ISO 65, *General requirements for bodies operating product certification systems*. The accreditation shall be issued by an accreditation body operating in accordance with ISO 17011, *General requirements for accreditation bodies accrediting conformity assessment bodies*.

4.2.4 The product conformance verification organization shall refuse to certify products to this standard that do not comply with all applicable requirements of this standard.

4.2.5* The contractual provisions between the product conformance verification organization and the manufacturer shall specify that product conformance verification is contingent on compliance with all applicable requirements of this standard.

4.2.5.1 The product conformance verification organization shall not offer or confer any conditional, temporary, or partial product conformance verifications.

4.2.5.2 Manufacturers shall not be authorized to use any label of or reference to the product conformance verification organization on products that are not compliant with all applicable requirements of this standard.

4.2.6* The product conformance verification organization shall have laboratory facilities and equipment available for conducting proper tests to determine product compliance.

4.2.6.1 The product conformance verification organization laboratory facilities shall have a program in place and functioning for calibration of all instruments, and procedures shall be in use to ensure proper control of all testing.

4.2.6.2 The product conformance verification organization laboratory facilities shall follow good practice regarding the use of laboratory manuals, form data sheets, documented calibration and calibration routines, performance verification, proficiency testing, and staff qualification and training programs.

4.2.7 The product conformance verification organization shall require the manufacturer to establish and maintain a quality assurance program that meets the requirements of Section 4.4, Manufacturer's Quality Assurance Program. The product conformance verification organization shall verify the manufacturer's quality assurance program to ensure that the quality assurance program provides continued product compliance with this standard.

4.2.8 The product conformance verification organization and the manufacturer shall evaluate any changes affecting the design, construction, or materials of the compliant product to determine its continued conformance to this standard.

4.2.9* The product conformance verification organization shall have a follow-up inspection program of the manufacturing facilities of the compliant product with at least two random and unannounced visits per 12-month period.

4.2.9.1 As part of the follow-up inspection program, the product conformance verification organization shall select sample compliant product at random from the manufacturer's production line, from the manufacturer's in-house stock, or from the open market.

4.2.9.2 Sample product shall be evaluated by the product conformance verification organization to verify the product's continued compliance.

4.2.10 The product conformance verification organization shall have in place a series of procedures that address report(s) of situation(s) in which a compliant product is subsequently found to be hazardous.

4.2.11 The product conformance verification organization's operating procedures shall provide a mechanism for the manufacturer to appeal decisions. The procedures shall include the presentation of information from both sides of a controversy to a designated appeals panel.

4.2.12 The product conformance verification organization shall be in a position to use legal means to protect the integrity of its name and label. The name and label shall be registered and legally defended.

4.3 Inspection and Testing.

4.3.1 For product conformance verification of powered rescue tools and components, the product conformance verification organization shall conduct both inspection and testing as specified in this section.

4.3.2 All inspections, evaluations, conditioning, and testing for product conformance verification shall be conducted by a product conformance verification organization's testing laboratory that is accredited in accordance with the requirements of ISO 17025, *General requirements for the competence of testing and calibration laboratories*.

4.3.2.1 The product conformance verification organization's testing laboratory's scope of accreditation to ISO 17025, *General requirements for the competence of testing and calibration laboratories*, shall encompass testing of powered rescue tools.

4.3.2.2 The accreditation of a product conformance verification organization's testing laboratory shall be issued by an accreditation body operating in accordance with ISO 17011, *General requirements for accreditation bodies accrediting conformity assessment bodies*.

4.3.3 Sampling levels for testing and inspection shall be established by the product conformance verification organization and the manufacturer to ensure a reasonable and acceptable reliability at a reasonable and acceptable confidence level that products certified to this standard are compliant, unless such sampling levels are specified herein.

4.3.4 Inspection by the product conformance verification organization shall include a review of all product labels to ensure that all required label attachments, compliance statements, product conformance verification statements, and other product information are at least as specified for the powered rescue tools and components in Section 5.1, Product Labeling Requirements.

4.3.5 Inspection by the product conformance verification organization shall include an evaluation of any symbols and pictorial graphic representations used on product labels or in user information, as permitted by 5.1.6 and 5.4.4, to ensure that the symbols are clearly explained in the product's user information package.