NFPA®

1901

Standard for Automotive Fire Apparatus

2016

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NFPA® 1901

Standard for

Automotive Fire Apparatus

2016 Edition

This edition of NFPA 1901, *Standard for Automotive Fire Apparatus*, was prepared by the Technical Committee on Fire Department Apparatus and acted on by NFPA at its June Association Technical Meeting held June 22–25, 2015, in Chicago, IL. It was issued by the Standards Council on August 18, 2015, with an effective date of September 7, 2015, and supersedes all previous editions.

This document has been amended by one or more Tentative Interim Amendments (TIAs) and/or Errata. See "Codes & Standards" at www.nfpa.org for more information.

This edition of NFPA 1901 was approved as an American National Standard on September 7, 2015.

Origin and Development of NFPA 1901

The 2009 edition of NFPA 1901 was a general update of the 2003 edition. The text was reorganized to present the requirements better, text was added to clarify requirements, and the requirements for delivery of documentation and test results with the apparatus were standardized. Annex material was added throughout to assist the user in understanding and meeting the requirements.

A new chapter on trailers transporting equipment or other vehicles under emergency response conditions was added, and changes were made throughout the document where necessary to address the requirements for the vehicle that is to tow the trailer. A requirement was added for a vehicle data recorder to capture data that can be used to promote safe driving and riding practices. The requirements for vehicle stability were changed to require tilt table testing, a calculated center of gravity no higher than 80 percent of vehicle height, or a vehicle stability system.

The 2009 edition introduced the concept of estimated in-service weight as a basis for designing the apparatus and measuring certain stability requirements and links the maximum top speed of the apparatus to the GVWR and agent tank capacity or the tire manufacturer's ratings. A "Statement of Exceptions" required the manufacturer to deliver either a certification that the apparatus meets the standard or a statement that describes specifically what is not fully compliant and identifies who is responsible for achieving compliance.

Because of diesel particulate filters being installed on fire apparatus, requirements for operation and performance of those devices were added.

Requirements for the minimum length of seat belts were established, together with instruction for how they are measured. A seat belt warning device to indicate when seat belts are not being properly used was required. Those new requirements also allowed seat belts to be bright orange in addition to red.

The cabs on apparatus with a GVWR over 26,000 lb (11,800 kg) had to meet standards on occupant protection during crashes. In addition, the document discouraged the wearing of fire helmets in the cab and required provisions for proper storage of helmets while the vehicle is moving.

More specific requirements for the retroreflective material used for striping apparatus were added, and striping on the rear of the apparatus was changed to require retroreflective striping in a chevron pattern sloping downward and away from the centerline of the vehicle at an angle of 45 degrees.

The chapter on industrial supply pumps [rated over 3000 gpm (12,000 L/min)] was integrated with the chapter on fire pumps [rated 3000 gpm (12,000 L/min) or less], and differences in requirements based on rated capacity were spelled out in the revised fire pump chapter. A requirement was added for testing the accuracy of the gauges and flowmeters during the pump certification testing.

A change to the aerial ladder and elevating platform requirements allowed for electronic envelope control, with electronics and interlocks used to prevent an aerial device from moving into an area where it cannot support its rated capacity.

Foam systems are required to be type tested for accuracy and certified by the system manufacturer and, after installation, to be tested and certified by the final installer for proper operation.

In addition to reorganization of material in the line voltage electrical system chapter for clarification, changes included requiring the protective ground from a shoreline inlet to be bonded to the vehicle frame, requiring the neutral conductor to be switched through the transfer switch if there are multiple power sources, establishing a minimum wire size for cord on permanently mounted reels, requiring fixed scene lighting devices to be tested and listed, and additional testing.

In Chapter 24, Air Systems, requirements for who is to train fire department personnel were revised. A high-temperature alarm is required in the compressor compartment together with a label cautioning users not to obstruct the airflow. Compressors are required to be equipped with an air quality–monitoring system. If a compressor is driven by an electric motor, a shoreline connection to the electric motor is required. High-pressure air hose and couplings are to have a pressure rating equal to or greater than the highest pressure expected to be encountered, with a safety factor of 4 to 1. Requirements for the testing and certification of breathing air fill stations were changed to add systems filling SCUBA, the section on system testing was changed to be specific to breathing air systems, and a new was added for testing utility air systems.

The 2016 edition of NFPA 1901 includes a new chapter on ultra-high pressure (UHP) fire pumps and associated equipment due to the increased use of UHP fire pumps. This edition provides guidance to manufacturers and purchasers as to the design, testing, and performance of UHP fire pumps with a rated discharge pressure of 1100 psi (7600 kPa) or greater. The Committee also clarified the requirements within Chapter 16 for pump controls and added updated tables to the body of the chapter for the engine speed advancement interlock test. Additional changes have been made throughout the document to remove redundant language and to clarify requirements.

See Annex E for a complete history of the standard.

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Committee Scope: This Committee shall have primary responsibility for documents on the design and performance of fire apparatus for use by the fire service.

Contents

NFPA 1901

Standard for

Automotive Fire Apparatus

2016 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.

A reference in brackets [ ] following a section or paragraph indicates material that has been extracted from another NFPA document. As an aid to the user, the complete title and edition of the source documents for extracts in mandatory sections of the document are given in Chapter 2 and those for extracts in informational sections are given in Annex F. Extracted text may be edited for consistency and style and may include the revision of internal paragraph references and other references as appropriate. Requests for interpretations or revisions of extracted text shall be sent to the technical committee responsible for the source document.

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

Chapter 1 Administration

1.1* Scope. This standard defines the requirements for new automotive fire apparatus and trailers designed to be used under emergency conditions to transport personnel and equipment and to support the suppression of fires and mitigation of other hazardous situations.

1.2 Purpose. This standard specifies the minimum requirements for new automotive fire apparatus and trailers.

1.3 Application.

1.3.1* This standard shall apply to new fire apparatus that meet the following criteria:

(1) Have 10,000 lb (4,500 kg) or greater gross vehicle weight rating (GVWR) or are trailers intended to be towed by fire apparatus under emergency response conditions
(2) Are designed for use under emergency conditions to transport personnel and equipment and to support the suppression of fires and mitigation of other hazardous situations
(3) Are contracted for on or after January 1, 2016

1.3.2 Nothing shall prevent the use of the standard prior to January 1, 2016, or for vehicles with less than 10,000 lb (4,500 kg) gross vehicle weight rating (GVWR), if the purchaser and the contractor both agree.

1.3.3 This standard shall not apply to wildland fire apparatus, which are covered by NFPA 1906.

1.4* Retroactivity. This standard shall not be applied retroactively.

1.5 Equivalency. Nothing in this standard is intended to prevent the use of systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety over those prescribed by this standard.

1.5.1 The technical documentation shall be submitted to the authority having jurisdiction to demonstrate equivalency.

1.5.2 The system, method, or device shall be approved for the intended purpose by the authority having jurisdiction.

1.6 Units of Measure.

1.6.1* In this standard, values for measurement in U.S. customary units shall be followed an equivalent in SI units.

1.6.2 Either set of values can be used, but the same set of values (either U.S. customary units or SI units) shall be used consistently.

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, www.NFPA.org.

NFPA 70®, National Electrical Code®, 2014 edition.

NFPA 1906, *Standard for Wildland Fire Apparatus,* 2016 edition.

NFPA 1911, *Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus,* 2012 edition.

NFPA 1931, *Standard for Manufacturer's Design of Fire Department Ground Ladders,* 2015 edition.

NFPA 1961, *Standard on Fire Hose,* 2013 edition.

NFPA 1963, *Standard for Fire Hose Connections,* 2014 edition.

NFPA 1981, *Standard on Open-Circuit Self-Contained Breathing Apparatus (SCBA) for Emergency Services,* 2013 edition.

NFPA 1983, *Standard on Life Safety Rope and Equipment for Emergency Services,* 2012 edition.

NFPA 1989, *Standard on Breathing Air Quality for Emergency Services Respiratory Protection,* 2013 edition.

2.3 Other Publications.

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