



NFPA 1911

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NFPA 1911

Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus

Went into effect April of 2007,
next edition 2012

Combined and expanded past NFPA
1911, 1914 and 1915 into one document



Scope

- Minimum requirements for establishing an inspection, maintenance, and testing program for in-service fire apparatus
- Includes guidelines for fire apparatus refurbishment or retirement
- Identifies the systems and items on a fire apparatus that are to be inspected and maintained



Scope

- Establishes frequency of inspections and maintenance
- Gives the requirements and procedures for conducting performance tests on systems and components
- Provides sample forms for collecting inspection and test data



Purpose

- To provide requirements for an inspection, maintenance, and testing program that will ensure that in-service fire apparatus are serviced and maintained to keep them in safe operating condition and ready for response at all times
- To establish that safety is a primary concern for the continued in-service use of a fire apparatus and the ultimate decision to refurbish or retire that fire apparatus



Application

Applies to:

- Public or private organizations utilizing fire apparatus
- All in-service fire apparatus, regardless of the year of manufacture
- Permanently installed components on fire apparatus
- Generally does not apply to portable equipment carried on fire apparatus



Organization of Document

23 Chapters

- Chapter 1 – Administration
- Chapter 2 – Referenced Publications
- Chapter 3 – Definitions
- Chapter 4 – General Requirements
- Chapter 5 – Retirement of Fire Apparatus
- Chapter 6 – Out-of-Service Criteria



Organization of Document

Chapters 7 - 15 Inspection and Maintenance by Component

- Chapters break down the components and systems
- What systems and components to inspect
- How to inspect systems and components
- Required maintenance and intervals



Organization of Document

Chapter 16 – 23 Performance

Testing By System or Component

- Test frequency
- Test procedure
- Record keeping requirements



Organization of Document

- Annex A - Explanatory Material
- Annex B - Conducting Pumping Tests
- Annex C - Developing a Preventive Maintenance Program
- Annex D - Guidelines for First-Line and Reserve Fire Apparatus
- Annex E - Informational References



Chapter 3

Definitions

- **Diagnostic Check.** An in-depth operational analysis of a system or component to verify that it is operating correctly.
- **Operational Check.** To determine the operational readiness of a component on a fire apparatus by observing the actual operation of the component.
- **Maintenance.** The act of servicing a fire apparatus or a component in order to keep the vehicle and its components in proper operating condition



Chapter 4

General Requirements

- All fire apparatus **that could be placed in service for emergency response** shall be inspected, maintained, tested, and retired as required by this standard
- AHJ to **enforce** criteria for when the apparatus is to be taken out-of-service
- Inspection, maintenance and testing performed by **qualified personnel**



Chapter 4

General Requirements

- Any person performing diagnostic checks, inspections, or maintenance of the fire apparatus shall meet the qualifications of **NFPA 1071, Standard for Emergency Vehicle Technician Professional Qualifications**, or the equivalent.
- Qualifications of personnel to do daily/weekly inspection and operational checks of fire apparatus



Chapter 4

General Requirements

- Safety requirements while working on apparatus
- Schedules and procedures for inspections and maintenance
- Maintenance and repairs made in accordance with the manufacturer's recommendations
- Documentation / Keep records



Chapter 5

Retirement of Fire Apparatus

- Fire department to consider safety as the primary concern in the retirement of apparatus
- Retired fire apparatus shall not be used for emergency operations



Chapter 6

Out-of-Service Criteria

- Establishes mandatory conditions for out-of-service
- Establishes conditions where technician must evaluate and make written recommendation regarding serviceability
- Out-of-service apparatus or components must be conspicuously marked



Seat Belts

If torn, has melted webbing, missing or broken buckles, or loose mountings

- Apparatus out-of-service if driver's seat
- Seat out-of-service if other than driver's seat



Vehicle Weight

Apparatus out-of-service if:

- **Gross axle weight rating is greater than the tire manufacturer's load rating**
- **Weight on the front axle, the rear axle, or the total gross weight exceeds the values on the weight rating label**



Tires

Apparatus out-of-service if:

- **Cuts in the sidewall that penetrate to the cord**
- **Tread depth of less than 4/32 in. on any steering axle**
- **Tread depth of less than 2/32 in. on any non-steering axle**



Tires

A qualified technician shall conduct an out of service evaluation of the following tire deficiencies and make a written report, including recommendations to the AHJ:

- **Punctures / Cuts to the cord**
- **Bulges, other than bumps or repairs; repair bulges greater than 3/8 in. (10 mm), or bulges or knots associated with tread**
- **Sidewall separation**



Fire Pump System

Fire pump system out-of-service if:

- **Pump will not engage**
- **Pump shift indicators in cab and on operator's panel do not function properly**
- **Pressure control system is not operational**



Aerial Device Systems

Aerial device out-of-service if:

- **Power takeoff (PTO) will not engage**
- **Stabilizer system is not operational**
- **Aerial device is not operational**
- **Hydraulic system components are not operational**
- **Cable sheaves are not operational**



Aerial Device Systems

Aerial device out-of-service if:

- **Cables are frayed**
- **Base and section rails show ironing beyond manufacturer's recommendation**
- **Aerial device is structurally deformed**
- **Torque box fasteners broken or missing**
- **Turntable fasteners broken or missing**



Aerial Device Systems

Technician evaluation if deficiencies with :

- **Hydraulic relief valve**
- **Hydraulic system components**
- **Emergency hydraulic system**
- **Visual and audible alarm systems**
- **Aerial lighting system**
- **Aerial intercom system**
- **Labels or warning signs**
- **Aerial water delivery system**



Aerial Device Systems

Technician evaluation if:

- **Rollers and slides are worn beyond manufacturer's recommendations**
- **Rotation bearing has clearances beyond the manufacturer's recommendations**

Chapter 7-15 Inspection and Maintenance of Systems



- Chapter 7 -- Chassis, Cab, Body
- Chapter 8 -- Low Voltage Electrical
- Chapter 9 -- Water Pumps and Tanks
- Chapter 10 -- Aerial Devices
- Chapter 11 -- Foam Proportioning
- Chapter 12 -- CAFS
- Chapter 13 -- Line Voltage Electrical
- Chapter 14 – Utility Air & Breathing Air
- Chapter 15 – Winch Systems



Chapter 16 Chassis Performance Testing

Performance testing includes:

- Fire apparatus axle weight test
- Braking system
- Parking brake system
- Road test



Chapter 17

Low Voltage Electrical Systems

Performance testing includes:

- Battery test
- Starter wiring test
- Alternator test
- Regulator test
- Battery charger/conditioner test
- Total continuous electrical load test
- Solenoid and relay test



Chapter 18 Fire Pumps & Ind. Supply Pumps Performance Testing

Same testing as was required by previous NFPA 1911

Performance testing includes:

- Engine speed check
- Pump shift indicator
- Pump engine control interlock
- Priming device tests



Chapter 18 Fire Pumps & Ind. Supply Pumps Performance Testing

Performance testing includes:

- Vacuum Test
- Pumping Test
- Pressure Control Test
- Intake Relief Valve System Test
- Gauge Test
- Flowmeter Test
- Tank-to-Pump Flow Rate



Chapter 19 Aerial Devices Performance Testing

Same testing as was required by previous NFPA 1914

- Inspection and operational testing annually
- Non-destructive testing at least every 5 years
- Qualifications for inspection personnel and third party testing companies



Chapter 20 Foam Proportioning System Performance Testing

Performance testing to determine
calibration accuracy of the system



Chapter 21 Compressed Air Foam System Performance Testing

Performance testing to determine if:

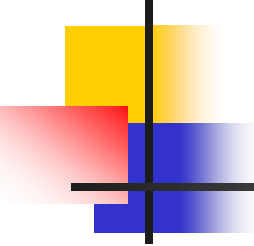
- The compressed air system can deliver the manufacturer's maximum recommended airflow at rated pressures
- The CAFS can maintain the water pressure and air pressure within ± 10 percent of the original set point



Chapter 22 Line Voltage Electrical Systems Performance Testing

Performance testing includes:

- Load test of power source
- Receptacle and appliance
- Resistance of wiring and grounds



Chapter 23 Compressed Breathing Air Systems Performance Testing

Compressor system required to be tested annually by the manufacturer

Fire department does an air quality test following annual compressor test

Annex A

Explanatory Material

- Information on and explanation of requirements in the standard
- Keyed to requirement in standard by paragraph number
- Asterisk in standard behind paragraph number indicated annex material

4.5.2* → A.4.5.2



Annex B

Conducting Pumping Tests

Discussion of:

- Test parameters
- Troubleshooting
- Calculating the results
- Lift or pressure correction (net pump pressure)
- Effect of altitude
- Tables for flows from smooth bore nozzles



Annex C - Developing a Preventive Maintenance Program

- Establishing what a preventive maintenance program is
- Identifying resources
- Establishing the program
- Maintaining records



Annex C – Forms

- Daily/Weekly Walk Apparatus Check Form
- Quarterly/Annual Apparatus Inspection Report
- Pump Performance Test Form
- Aerial Device Inspection and Performance Test Form
- Low-Voltage Electrical System Performance Test Form
- Line Voltage Electrical System Performance Test Form
- Foam Proportioning System Performance Test Form
- CAFS Compressor Performance Test Form



Annex D - Guidelines for First-Line and Reserve Fire Apparatus

- How the standards have changed to improve safety
- Upgrading fire apparatus to incorporate newer safety features
- Proper maintenance of fire apparatus
- Refurbishing or replacing fire apparatus



Annex D - Guidelines for First-Line and Reserve Fire Apparatus

The bottom line

- Apparatus built to or refurbished to 1991 or newer standard — OK
- Apparatus built to standard previous to 1991 but less than 25 years old — refurbish and upgrade for reserve service
- Apparatus not built to NFPA standard or over 25 years old — Retire



Annex E

Informational References

- List of all references that appear in annex material together with an address for the source



NFPA 1071

- **Standard for Emergency
Vehicle Technician Professional
Qualifications**

NFPA 1071

Scope

- This standard shall identify and define the minimum job performance requirements (JPRs) for a person to be considered qualified as an emergency vehicle technician (EVT)

NFPA 1071

Purpose

- The purpose of this standard shall be to ensure that persons meeting the requirements of this standard who are engaged in the inspection, diagnosis, maintenance, repair, and testing of emergency response vehicles are qualified. It shall not be the intent of this standard to restrict any jurisdiction from exceeding these requirements



NFPA 1071

Summary

- JPR format
- EVT 1
- EVT 2
- EVT 3
- Annex

NFPA 1071

JPR Format

- Job Performance requirements (JPRs)
The JPRs describe the performance required to perform a specific job
- Annex B explains JPRs fully

NFPA 1071

EVT 1

- Chapter 2 defines tasks and duties of an EVT 1
- Lists jobs and duties for inspection and maintenance

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EVT 2

- Chapter 3 defines tasks and duties of an EVT 2
- Lists jobs and duties for repair and testing

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EVT 3

- Chapter 4 defines tasks and duties of an EVT 3
- Lists jobs and duties of a first level supervisor or leadman
- Must be an EVT 2 to be an EVT 3

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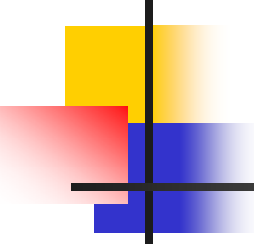
Annex

- Annex A: Explanatory Material
- List of current certifications to help AHJ determine who is qualified
- List of technician certifications that can help the AHJ determine who is qualified.

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Annex (CONT)

- Tables that list ASE and EVT certifications by Gross vehicle weight
- 15,000 GVWR and above Table A.2.1 (a)
- Below 15,000 GVWR Table A.2.1 (b)



**Table A.2.1(a) ASE and EVT
by Component, for 15,000
GVWR and Above**

Component	ASE	EVT
Chassis	T-3, T-4, T-6, T-8	F-2, E-1, E-4
Cab and body	T-all	F-2, E-1, E-3, E-4
Transmission	T-1, T-2, T-3, T-6, T-8	F-6, E-4
Pump and tank	T-8, T-6, T-3	F-3
Electrical	T-6, T-7, T-8	F-4, E-2
Aerial	T-3, T-5, T-6	F-5
Foam	T-8, T-6, T-3	F-2
Aux	T-1, T-2, T-3, T-6	F-2

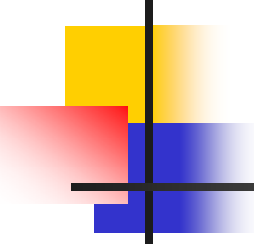


Table A.2.1(b) ASE and EVT by Component, for 15,000 GVWR and Below

Component	ASE	EVT
Chassis	A-2, A-3, A-4, A-5	F-2, E-1, E-4
Cab and body	A-all, T-2	F-2, E-1, E-3, E-4
Transmission	A-1, A-2, A-3, A-6, T-2	E-4
Pump & tank	A-2, A-3, A-6	F-3
Electrical	A-6, A-7 F-4,	E-2
Foam	A-2, A-3, A-6	F-2
Auxiliary	A-1, A-2, A-3, A-6, T-2	F-2

EVT Certification Commission, Inc.



- The Emergency Vehicle Technician Certification Commission, Inc. (EVT) is a nonprofit corporation dedicated to improving the quality of emergency vehicle service and repair by means of a certification program for emergency vehicle technicians.
- Website: www.evtcc.org
- Email address: evtcert@evtcc.org
- EVT Certification Commission, Inc. P.O. Box 894
Dundee, IL 60118
- Phone: 847-426-4075 Fax: 847-426-4076



EVT Exams & Tracks

- Fire Apparatus Track
- Ambulance Track
- ARFF Vehicle Track
- Management Track
- Law Enforcement Track



Fire Apparatus Track

- **F-1 Maintenance, Inspection, and Testing of Fire Apparatus**
- **F-2 Design and Performance Standards of Fire Apparatus**
- **F-3 Fire Pumps and Accessories**
- **F-4 Electrical Systems**
- **F-5 Aerial Fire Apparatus**
- **F-6 Allison Automatic Transmissions**
- **FA4 Advanced Electrical Systems**
- **F-7 Foam system operation and repair**
- **F-8 Hydraulic systems**



Ambulance Track

- **E-0 Maintenance, Inspection and Testing of Ambulances**
- **E-1 Design & Performance Standards of Ambulances**
- **E-2 Ambulance Electrical Systems**
- **E-3 Ambulance Heating, Air Conditioning, and Ventilation**
- **E-4 Ambulance Body and Chassis**



ARFF Vehicle Track

- **A-1 Design & Performance Standards and Preventive Maintenance of Aircraft Rescue and Fire-Fighting Vehicles**
- **A-2 Chassis and Vehicle Components of Aircraft Rescue and Fire-Fighting Vehicles**
- **A-3 Extinguishment Systems of Aircraft Rescue and Fire-Fighting Vehicles**



Management Track

- **First Level Supervisor**
- **Second Level Supervisor**



Law Enforcement Vehicles

- **L-1 Law Enforcement Vehicle
Installation**
- **Law Enforcement Vehicle Technician
Under development**