

## **Annex D Guidelines for First Line and Reserve Apparatus**

**D.1 General.** To maximize fire fighter capabilities and minimize risk of injuries, it is important that fire apparatus be equipped with the latest safety features and operating capabilities.

In the last 10 to 15 years, much progress has been made in upgrading functional capabilities and improving the safety features of fire apparatus.

Apparatus more than 15 years old might include only a few of the safety upgrades required by NFPA 1901 and subsequent editions of the NFPA fire department apparatus standards or the equivalent Underwriters' Laboratories standards. Because the changes, upgrades, and fine tuning to NFPA 1901 since 1991 have been truly significant, especially in the area of safety, fire departments should seriously consider the value (or risk) to fire fighters by keeping fire apparatus more than 15 years old in frontline service.

It is recommended that apparatus more than 15 years old that have been properly maintained and that are still in serviceable condition be placed in reserve status, be upgraded in accordance with NFPA 1912, and incorporate as many features as possible of the current fire apparatus standard.

This will ensure that, while the apparatus might not totally comply with the current editions of the automotive fire apparatus standards, many of the improvements and upgrades required by the current editions of the standards are available for the fire fighters who use the apparatus.

Apparatus that were not manufactured to the applicable NFPA fire apparatus standards or that are over 25 years old should be replaced.

**D.2 Evaluating Fire Apparatus.** It is a generally accepted fact that fire apparatus, like all types of mechanical devices, have a finite life. The length of that life depends on many factors, including vehicle mileage and engine hours, quality of the preventative maintenance program, quality of the driver training program, whether the fire apparatus was used within the design parameters, whether the apparatus was manufactured on a custom or commercial chassis, quality of workmanship by the original manufacturer, quality of the components used, and availability of replacement parts, to name a few.

In the fire service, there are fire apparatus with 8 to 10 years of service that are simply worn out.

There are also fire apparatus that were manufactured with quality components, that have had excellent maintenance, and that have responded to a minimum number of incidents that are still in serviceable condition after 20 years.

Most would agree that the care of fire apparatus while it is being used and the quality and timeliness of maintenance are perhaps the most significant factors in determining how well a fire apparatus ages.

Critical enhancements in design, safety, and technology should also play a key role in the evaluation of an apparatus' life cycle.

Previous editions of the fire department apparatus standards featured many requirements advancing the level of automotive fire apparatus safety and friendliness.

Contained within the 2009 edition were requirements for the following:

- rollover stability
- tire pressure indicators
- seat belt warning systems requiring all occupants be properly seated and belted
- extended seat belt length requirements to accommodate a fully dressed firefighter
- drivability, including minimum accelerations and top speed limitations
- enhanced step and work surface lighting
- increased use of reflective striping in the rear of the apparatus,
- enhanced aerial control technologies, enabling short jacking and standard controls

**D.3 Upgrading Fire Apparatus.** Any apparatus, whether in first-line or reserve service, should be upgraded in accordance with NFPA 1912, as necessary to ensure that the following features are included at a minimum:

- Seat belts with seat belt warning systems are available for every seat and are new or in serviceable condition.
- Warning lights meet or exceed the current standard.
- Reflective striping meets or exceeds the current standard.
- Slip resistance of walking surfaces and handrails meets the current standard.
- A low-voltage electrical system load manager is installed if the total connected load exceeds the alternator output.
- The alternator output is capable of meeting the total continuous load on the low-voltage electrical system.
- Where the gross vehicle weight rating (GVWR) is 36,000 lb (16,000 kg) or more, an auxiliary braking system is installed and operating correctly.
- Ground and step lighting meets or exceeds the current standard.
- Noise levels in the driving and crew compartment(s) meet the current standard, or appropriate hearing protection is provided.
- All horns and sirens are relocated to a position as low and as far forward as possible.
- Sign plates are present stating no riding on open areas.
- A pump shift indicator system is present and working properly for vehicles equipped with an automatic chassis transmission.
- For vehicles equipped with electronic or electric engine throttle controls, an interlock system is present and working properly to prevent engine speed advancement at the operator's panel, unless the chassis transmission is in neutral with the parking brake engaged, or the parking brake is engaged, the fire pump is engaged, and the chassis transmission is in pumping gear.
- All loose equipment in the driving and crew areas is securely