F1 Inspection, Maintenance & Testing of Fire Apparatus February 2026

Suggested Reference Material:

NFPA 1910: Standard for the Inspection, Maintenance, Refurbishment, Testing and Retirement of In-Service Emergency Vehicles and Marine Firefighting Vessels **(NFPA 1911 Chapters)** 2024 edition (800) 344-3555 or www.nfpa.org
OSHA 1926.552 Crane and Derricks wire rope section 1926.552(a)(3)(i)
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10762
Meritor Preventive Maintenance and Lubrication MM1. Sections 2, 4, 6, 7 & 8 http://graphicvillage.org/meritor/MM1.pdf
Meritor Maintenance Manual MM4M Sections 8 & 13 http://graphicvillage.org/meritor/mm4m.pdf
Meritor Ex Airdisk Brake MM0467 http://graphicvillage.org/meritor/mm0467.pdf
Download the above Meritor documents for no charge
Selective Catalytic Reduction http://www.dieselforum.org/about-clean-diesel/what-is-scr
Cummins Drivers tips for Emergency Vehicles https://mart.cummins.com/imagelibrary/data/assetfiles/0059413.pdf

LEARNING OBJECTIVES

1. Definitions and Terms

a. Shall
b. Should
c. Documentation
d. Deflection
e. Deformation
f. Drive Train
g. Interlock
h. Ironing
i. Leak
j. Leakage
k. Class 1 Liquid Leakage
l. Class 2 Liquid Leakage
m. Class 3 Liquid Leakage
n. Qualified Person
o. Non-Destructive Test (NDT)
p. Magnetic Particle Inspection
q. Out of Service
r. Retired Fire Apparatus
s. Reserve Fire Apparatus
t. In-Service Fire Apparatus
u. Ultrasonic Inspection
v. Preventive Maintenance
w. Instability
x. Fire Pump
y. SCR-Selective Catalytic Reduction-
z. DEF-Diesel Exhaust Fluid
(1) components
aa. HEST - High Exhaust System Temp.
bb. Diverter Valve
cc. Performance test

2. General Requirements

a. Federal, State & Local Laws
b. Personal Protection
c. Inspections & Maintenance
(1) frequency
(2) record keeping
(3) mounts for equipment
d. Qualification of Personnel
(1) who can determine who is qualified to do
(a) operational checks
(b) diagnostic, inspections, maintenance to NFPA 1071
e. Lubrication-frequency, grade, amount
f. Safety
(1) uses for retired vehicles

3. **Out-of-Service Criteria**

a. Steering Components
(1) 49 CFR Part 399.211, Appendix G, "Minimum Periodic Inspection Standards"
b. Out-of-Service Indicators
c. Minimum Brake Lining Thickness
d. Fluid Leak Classifications
e. Brake system
(1) Air Brakes
(a) Air pressure drop
(b) Compressor air build up
(2) Hydraulic Brakes
(3) Wheel Chocks
f. Low Air Warning
g. Component Out-of-Service
h. Seat Belts
i. Wheel & Tire Deficiencies
j. Engine Oil Leakage
k. Transmission and clutch
(1) Oil Leakage & Contamination
(2) Deficiencies
l. Coolant System
(1) Leakage
(2) Deficiencies
m. Axle Oil Leakage
n. Brake Fluid Leakage
o. Fuel Leaking
p. Power Steering Leakage
q. Wire Rope
r. Emergency Lights
s. Fire pump system
(1) Deficiencies
t. Driving and Crew Areas, Body, Compartmentation
u. Aerial Device Systems
(1) Audible Alarm Systems
(2) Intercom
(3) Emergency Hydraulic Systems
v. Low-Voltage and Line Voltage Electrical System
w. Horn Audible Warning Devices
x. Stop Engine Light
y. Wheel Chocks
z. Engine out of service
aa. Trailer
(1) Out of service
(2) Tires
(3) Inspection

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*To view this objective list in Spanish click here/Para ver esta lista de objetivos en inglés, haga clic aquí:
https://acrobat.adobe.com/id/urn:aaid:sc:us:13ab55f5-90de-4a67-ac61-e8cc034d95c9

4. Inspection, Diagnostic Checks and Maintenance

a. Chassis
- (1) King Pins
  - (a) Lubrication of Meritor King Pin Bushing
- (2) Steering Gear Box
- (3)Steering Stops
- (4) Drive Belts
- (5) Alternator
- (6) Ignition System
- (7) Work Lights
- (8) Air Leak Down Rates
- (9) Wheels & Tires
  - (a) tread depth
- (10) Tire coding
- (11) Battery Conditioner
- (12) Frame Rails
- (13) Engine Cooling
- (14) Engine Air Intake and Exhaust Systems
- (15) Engine Service Intervals
  - (a) severe service
  - (b) oil
- (16) Transmission Heat Exchanger
- (17) Drive Line
- (18) Brake Lining, Drums & Rotors
- (19) Filter Intervals
  - (a) air
  - (b) hydraulic
- (20) U-Joint Movement & Lubrication
- (21) Axle
  - (a) Driving
    - (i) Fluid Level
  - (b) Steering
- (22) Tie rod ends
- (23) Automatic Slack Adjuster (ASA)
- (24) Packing drip rate
- (25) Idle RPM
- (26) Battery
- (27) Steering wheel free play
- (28) Instruction plates and warning signage
- (29) Slip Yokes
- (30) Steering troubleshooting
- (31) Spring Brake Travel
- (32) Brake Diagnosis
- (33) ABS Historic Codes
- (34) Pressure Maintaining Valve
- (35) Turbo
- (36) Characteristics of DEF
  - (a) solution of purified water & urea
  - (b) non-toxic, non-hazardous
  - (c) freezing point
- (37) Engine ECM

b. Low Voltage
- (1) Components
- (2) Alarm
- (3) Apparatus Lighting
- (4) Voltage Drop Test
- (5) Starting system

c. Water Pumping Systems and Water Tanks
- (1) Transfer valve
- (2) Priming System
- (3) Pressure Controls
  - (a) Test for Fire Pumps

d. Aerial Devices
- (1) Deformation
- (2) Nondestructive Testing
- (3) Breathing Air
- (4) Fasteners

e. Foam Proportioning Systems
- (1) Foam Sampling
- (2) Inspection
- (3) Foam Concentration Inspection

f. Line Voltage
- (1) Testing
- (2) Power Sources
- (3) GFCI

g. Utility Air and Breathing Air
- (1) Hydrostatic Bottle Testing
- (2) Maintenance Requirements

h. Winch Systems
- (1) Wire Rope
- (2) Inspections
- (3) Out of service criteria as stated in OSHA 1926.552 (a)(3)(l))

i. Service criteria for out of business manufacturers

5. Road Tests

a. Fire Apparatus Axle Weight Test
- (1) Weight Verification
- (2) Fully Loaded State

b. Braking System
- (1) Braking Test
- (2) ABS Braking
- (3) Performance Test
- (4) Air Brake Alarm

c. Parking Brake System
- (1) Testing

d. Road Test
- (1) Requirements
- (2) Recording

e. Hest Lamp Operation

f. DPF Lamp Operation

6. Performance Testing

a. Low Voltage Electrical Systems
- (1) Voltage Regulator Testing
- (2) Battery Testing
- (3) Conductivity Test
- (4) Voltage Drop Test
- (5) Alternator Test
- (6) Continuous Electrical Load
- (7) Solenoid Voltage Drop Test
- (8) Load Testing
- (9) Battery conditioner test

b. Fire Pumps & Industrial Supply Pumps
- (1) Gauges - Master
- (2) Gauges Discharge
- (3) Flow meter
- (4) Automatic Transmission
- (5) Hydro testing time
- (6) Pump Testing

c. Aerial Device
- (1) Wire Rope inspection (OSHA 1926.552)
- (2) Inspections
- (3) Testing Intervals
- (4) Horizontal Load Testing
- (5) Elevation load test
- (6) Dye Penetrate Testing
- (7) Breathing Air Supply
- (8) Hydraulic Components
- (9) Nondestructive Test

d. Foam Proportioning Systems
- (1) Operational testing
- (2) Testing Methods

e. Compressed Air Foam Systems (CAFS)
- (1) Test Procedures
- (2) Compressor Test
- (3) Performance

f. Line Voltage Electrical Systems
- (1) Testing Procedures
- (2) Full Load Test