

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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4. Inspection, Diagnostic Checks and Maintenance

a. Chassis

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

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