

Suggested Reference Material:

NFPA 1911, *Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus*, including annexes National Fire Protection Association (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

Meritor Maintenance Manual MM4M Sections 8 & 13

Download the Meritor documents for no charge at:

<http://www.meritor.com/customer/northamerica/lod/default.aspx> , then in *Search by Keyword/Publication #* box enter **MM1**, then scroll down to the list. Then the same for **MM4M**.

Pumping Apparatus DRIVER/OPERATOR Handbook, 3rd edition, Oklahoma State University, Stillwater, OK. (800) 654-4055 or www.ifsta.org ; Chapters 2, 3, & 9

Selective Catalytic Reduction, <http://www.trucksr.com> How SCR Works & Introducing DEF sections

Cummins Drivers tips for Fire & Emergency Vehicles <http://cumminsengines.com/brochure-download.aspx?brochureid=307>

LEARNING OBJECTIVES

1. Definitions and Terms

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

2. General Requirements

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|--------------------------------|--|
| a. Federal, State & Local Laws | d. Qualification of Personnel to NFPA 1071 |
| b. Personal Protection | e. Lubrication-frequency, grade, amount |
| c. Documentation | f. Safety |

3. Out-of-Service Criteria

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

4. Inspection, Diagnostic Checks and Maintenance

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|---|--|---|
| a. Chassis | (12) Frame Rails | (21) Axle |
| (1) King Pins | (13) Engine Cooling | (a) Driving |
| (a) Lubrication of Meritor King Pin Bushing | (14) Engine Air Intake and Exhaust Systems | (i) Fluid Level |
| (2) Steering Gear Box | (15) Engine Service Intervals | (b) Steering |
| (3) Steering Stops | (a) severe service | (22) Tie rod ends |
| (4) Drive Belts | (b) oil | (23) Automatic Slack Adjuster (ASA) |
| (5) Alternator | (16) Transmission Heat Exchanger | (24) Packing drip rate |
| (6) Ignition System | (17) Drive Line | (25) Idle RPM |
| (7) Work Lights | (18) Brake Lining, Drums & Rotors | (26) Battery |
| (8) Air Leak Down Rates | (19) filter intervals | (27) Steering wheel free play |
| (9) Wheels & Tires | (a) air | (28) Instruction plates and warning signage |
| (a) tread depth | (b) hydraulic | (29) Slip Yokes |
| (10) Tire coding | (20) U-Joint Movement & Lubrication | (a. Chassis Continued) |
| (11) Battery Conditioner | | |

- (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

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

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

b. Fire Pumps & Industrial Supply Pumps

- (1) Gauges - Master
- (2) Gauges Discharge
- (3) Interlocks
- (4) Flow meter
- (5) Automatic Transmission

c. Aerial Device

- (1) Wire Rope inspection (OSHA 1926.552)
- (2) Interlocks
- (3) Inspections
- (4) Testing Intervals
- (5) Practical Testing
- (6) Elevation load test
- (7) Dye Penetrate Testing
- (8) Breathing Air Supply
- (9) Hydraulic Components
- (10) 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) Dielectric Test
- (2) testing Procedures
- (3) Full Load Test