



APT A STANDARDS DEVELOPMENT PROGRAM

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American Public Transportation Association
1300 I Street, NW, Suite 1200 East, Washington, DC 20005

APT A PR-IM-S-012-98, Rev. 2

First Published: March 17, 1999

First Revision: February 13, 2004

Second Revision: August 9, 2017

APT A Passenger Rail Equipment
Safety Standards (PRESS) Inspection
& Maintenance Working Group

Passenger Car Truck and Suspension Periodic Inspection and Maintenance

Abstract: This standard covers the basic procedures for the inspection, servicing, repair and adjustment for trucks and suspension of passenger coaches, with an emphasis on the maintenance of safety-critical systems.

Keywords: suspension, suspension system, suspension system adjustment, suspension system maintenance, truck maintenance, truck and suspension periodic inspection and maintenance

Summary: This document establishes the standard for passenger car truck and suspension inspection and maintenance. It is intended to assist railroads in applying basic procedures for periodic inspection, servicing, repair and adjustment of trucks and suspension of passenger cars, with an emphasis on the maintenance of systems that are safety-critical.

Scope and purpose: This standard for truck and suspension inspection and maintenance applies to all passenger cars. The periodic inspection and maintenance of passenger locomotive brake systems remains governed by 49 CFR, Part 229, and Railroad Locomotive Safety Standards. However, railroads may wish to use some of the procedures in this standard to supplement applicable federal regulations.

This document represents a common viewpoint of those parties concerned with its provisions, namely operating/planning agencies, manufacturers, consultants, engineers and general interest groups. The application of any standards, recommended practices or guidelines contained herein is voluntary. In some cases, federal and/or state regulations govern portions of a transit system's operations. In those cases, the government regulations take precedence over this standard. The North American Transit Service Association and its parent organization APTA recognize that for certain applications, the standards or practices, as implemented by individual agencies, may be either more or less restrictive than those given in this document.

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Introduction

This introduction is not part of APTA PR-IM-S-012-98, Rev. 2, "Passenger Car Truck and Suspension Periodic Inspection and Maintenance."

This introduction provides some background on the rationale used to develop this standard. It is meant to aid in the understanding and application of this standard.

This standard describes the basic maintenance and inspection functions for trucks and suspension on passenger cars. It is intended for:

- individuals or organizations that maintain trucks and suspension on passenger cars;
- individuals or organizations that contract with others for the maintenance of trucks and suspension on passenger cars; and
- individuals or organizations that influence how trucks and suspension are maintained on passenger cars.

CAUTION: Trucks vary in design, shape and use and should be inspected to meet all original equipment manufacturer (OEM) recommendations and operating property specification and requirements.

Passenger Car Truck and Suspension Periodic Inspection and Maintenance

1. Frequency of conduct

The frequency of conduct of this task shall be as specified in and in compliance with the requirements of Clause 4 of APTA-PR-IM-S-013-98, Rev. 1, “Passenger Car Periodic Inspection and Maintenance” or the superseding document.

2. Truck and suspension inspection and maintenance requirements

2.1 Tools/materials

In addition to the standard tools carried by maintenance personnel, air gauges, as applicable, are required for this maintenance task. No other specific materials are required.

2.2 Safety/personal protective equipment

Personal protective equipment, as required by the Railroad, shall be worn at all times in the performance of this maintenance task.

2.3 Training requirement

Railroads and their contractors shall develop and execute training programs that equip employees with the knowledge and skills necessary to safely and effectively perform the tasks outlined in this standard.

3. Inspection and maintenance procedures

CAUTION: Ensure that the equipment is secured against uncontrolled movement before commencing inspection and maintenance procedures. Follow proper blue flag protection of worker procedures as required by the Railroad and in accordance with applicable regulations.

3.1 Air springs

3.1.1 Mechanical inspection and maintenance of air springs

The mechanical inspection and maintenance procedure for air springs consists of the following steps:

- a) Visually inspect the condition of all air springs.
- b) Replace air springs that are excessively worn or damaged in accordance with operating property inspection criteria. Use the applicable and approved operating property and OEM instructions for the replacement of air springs.

3.1.2 Pneumatic inspection and maintenance of air springs

The pneumatic inspection and maintenance procedure for air springs consists of the following steps:

- a) Ensure that air springs are inflated to the OEM's recommendations.
- b) Inspect for air leaks to the air springs and fittings in accordance with operating property inspection criteria.
- c) Replace leaking air springs or O-rings. Repair fittings in accordance with approved operating property and OEM specifications.
- d) Adjust the air spring pressure, car height and car leveling in accordance with OEM/railroad standard maintenance procedures (SMPs).

3.2 Truck bolsters and anchor rods

The inspection and maintenance procedure for truck bolsters and anchor rods consists of the following steps:

- a) Inspect the condition of the truck bolster anchor brackets, anchor rods, and rubber cushions for cracks, damage or excessive wear and material loss due to corrosion.
- b) Replace cracked or damaged truck anchor bolster brackets, anchor rods, and rubber cushions as necessary in accordance with approved operating property and OEM instructions/SMPs.
- c) Inspect bolster safety straps and spring planks if applicable. Adjust as necessary.
- d) Use applicable OEM specifications to replace and adjust the truck bolster anchor bracket, anchor rod, and rubber cushions. Shim anchor rod to the OEM-recommended dimensions.

3.3 Shock absorbers

The inspection and maintenance procedure for shock absorbers consists of the following steps to be performed in accordance with approved operating property SMPs:

- a) Inspect the condition of all horizontal and vertical shock absorbers.
- b) Replace shock absorbers that are leaking with clearly defined droplet(s).

NOTE: A slight amount of weepage is normal.

- c) Replace shock absorbers that are damaged or excessively worn.
- d) Replace shock bushings that are damaged or excessively worn.
- e) Ensure that shock absorbers are properly applied and secured.

3.4 Lateral bumpers

The inspection and maintenance procedure for lateral bumpers consists of the following steps to be performed in accordance with approved operating property SMPs:

- a) Inspect the condition of all lateral bumpers.
- b) Replace lateral bumpers that are missing, excessively worn, or damaged.
- c) Inspect for proper clearance as per OEM instructions/SMPs.

3.5 Trucks, wear plates, liners, and equalizers

CAUTION: When welding on a truck frame with the wheel assembly attached, take precautionary measures to prevent current flow to wheel bearings and axles. Follow appropriate Association of American Railroads (AAR) standards and OEM specifications.

3.5.1 Truck frames

The inspection and maintenance procedure for truck frames consists of the following steps to be performed in accordance with approved operating property SMPs:

- a) Visually inspect truck frames for defects (cracks, loose securement, clearances, electric arcing and side-bearing clearances) and material loss due to corrosion.
- b) If side-bearing clearances are not within tolerances, then examine center wear pads and liner. Replace as needed.
- c) In the event of a cracked frame, follow OEM instructions, AAR standards, and the procedures and recommendations in 49 CFR Part 229.67, Trucks.

3.5.2 Wear plates, pedestal liners, and lug liners

The inspection and maintenance procedure for wear plates, pedestal liners, and lug liners consists of the following steps:

- a) Visually inspect wear plates, pedestal liners, and lug liners for cracks, broken welds, and mechanical damage.
- b) Repair or replace as required, following approved OEM recommendations, 49 CFR Part 229, and AAR Manual of Standards and Recommended Practices Rules 47 and 48.

3.5.3 Equalizers

The inspection and maintenance procedure for equalizers consists of the following steps:

- a) If applicable, visually inspect equalizer for proper alignment and proper seating in journal box.
- b) Visually inspect for stress cracks, metal fatigue, and electrical arcing. If any of these defects are evident, refer to approved OEM instructions, 49 CFR Part 229, and AAR Manual of Standards and Recommended Practices Rules 47 and 48 for repair and/or replacement.
- c) Inspect equalizer for damaged, shifted, or broken springs. Repair or replace as necessary in accordance with approved operating property SMPs.

3.6 Car leveling

Inspect car body for proper height and leveling per railroad maintenance instructions. If adjustments are required, then proceed as follows:

- a) Move the car onto level, tangent track with the car body centered over the trucks in accordance with railroad maintenance instructions. Follow OEM/builder instructions for securing, shimming and leveling the car.
- b) Ensure that all water tanks and sandboxes (if equipped) are full.
- c) Ensure that the air springs are properly inflated to the requirements in the OEM instructions.
- d) Inspect to ensure that there are no air leaks at the valves and the air pipe joints. Replace or repair as required.
- e) Inspect and adjust truck equalizer spring height and center bearing wear plates to the requirements of the OEM.
- f) Inspect and adjust to compensate for wheel wear to the requirements in the OEM instructions.
- g) Inspect and adjust clearances of bolster safety straps to the requirements of the OEM.
- h) Follow OEM/builder instructions for shimming and leveling.
- i) Inspect and adjust the coupler height to the OEM and Federal Railroad Administration (FRA) regulations.
- j)

Related APTA standards

APTA-PR-IM-S-013-98, Rev. 1, “Passenger Car Periodic Inspection and Maintenance”

References

This standard shall be used in conjunction with standard maintenance procedure, applicable federal regulations, OEM instructions and the following publications. When the following standards are superseded by an approved revision, the revision shall apply.

Association of American Railroads (AAR), Manual of Standards and Recommended Practices:
Rule 47, Truck Bolsters
Rule 48, Truck Side Frames, Transoms and Spring Planks

Code of Federal Regulations:
49 CFR Part 229, Railroad Locomotive Safety Standards
49 CFR Part 229, Railroad Locomotive Safety Standards, Subpart C—Safety Requirements, Subsection 229.67, Trucks

Definitions

original equipment manufacturer (OEM) instructions: The technical documentation produced by the organization that built or manufactured a specific piece of passenger rail equipment describing maintenance procedures and frequencies for that piece of equipment.

periodic maintenance: The performance of selected inspection and maintenance actions on systems or subsystems. Regulatory agencies or the operating authority may set the frequency of these actions. The frequency may be expressed as a function of time (i.e., days, weeks or months) or of utilization (i.e., mileage, cycles, etc.). The scope of these inspection and maintenance actions must be in full compliance with all applicable federal, state and local regulations.

standard maintenance procedure (SMP): The internal railroad document giving specific instruction on how to perform maintenance on a specific system or compound.

Abbreviations and acronyms

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| AAR | Association of American Railroads |
| APTA | American Public Transportation Association |
| CFR | Code of Federal Regulations |
| FRA | Federal Railroad Administration |
| NATSA | North American Transportation Services Association |
| OEM | original equipment manufacturer |
| PRESS | Passenger Rail Equipment Safety Standards |
| SMP | standard maintenance procedure |

Summary of document changes

- Document formatted to the new APTA standard format.
- Scope and summary moved to the front page.
- Sections on definitions, abbreviations and acronyms moved to the rear of the document.
- Two new sections added: “Summary of document changes” and “Document history.”

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Passenger Car Truck and Suspension Periodic Inspection and Maintenance

- Some global changes to section headings and numberings resulted when sections dealing with references and acronyms were moved to the end of the document, along with other cosmetic changes, such as capitalization, punctuation, spelling, grammar and general flow of text.
- Wording changes in Section 2.1.
- Addition of blue flag protection to note at the beginning of Section 3.
- Combined Section 3.1.1 b) with the former Section 3.1.1 c).
- Wording changes to Section 3.1.1 b).
- Wording changes to Sections 3.1.2 a)–d).
- Addition of inspection requirements to Section 3.2.
- Wording changes to Sections 3.2 a)–d).
- Wording changes to Section 3.3 b) regarding leakage as clearly defined droplet(s).
- Wording changes to Sections 3.4 b) and c).
- Renamed of Section 3.5.1 from “Trucks” to “Truck frames.”
- Addition of inspection requirements to Section 3.5.1.
- Wording changes to Sections 3.5.1 a) and b).
- Wording change to Section 3.5.2 b).
- Wording changes to Sections 3.5.3 b) and c).
- Addition of inspection requirements to Section 3.6.
- Addition of securement to Section 3.6 a).
- Wording changes to Sections 3.6 c) and e).
- Swapped order of Sections 3.6 h) and i).
- References updated to reflect current (as of May 1st, 2017) information.
- Participants list updated.

Document history

| Document Version | Working Group Vote | Public Comment/ Technical Oversight | CEO Approval | Policy & Planning Approval | Publish Date |
|-------------------------|---------------------------|--|---------------------|---------------------------------------|---------------------|
| First published | March 17, 1999 | — | — | March 17, 1999 | March 1999 |
| First revision | — | — | — | — | Feb. 13, 2004 |
| Second revision | April 28, 2017 | May 1, 2017 | July 19, 2017 | Aug. 1, 2017 | Aug. 9, 2017 |