



# Passenger Car Brake Disc and Disc Brake Unit Periodic Inspection and Maintenance

**Abstract:** This document establishes a standard for brake disc and disc brake unit inspection and maintenance of passenger cars.

**Keywords:** brake disc maintenance, brake disc periodic inspection and maintenance, brake discs, brake system, brake system maintenance, disc brake unit

**Summary:** This standard was titled “Passenger Car Brake Disc Periodic Inspection and Maintenance” in the previous publication of this document. This standard covers the basic procedures for the periodic inspection and maintenance of the brake discs and disc brake units of passenger cars, with emphasis on maintenance of safety appliances and other safety-critical systems. These systems (if applicable) are essential to the safe operation of passenger cars.

**Scope and purpose:** This standard is intended for use by rail properties to apply basic procedures for periodic inspection and maintenance of passenger car brake discs and disc brake units. It applies to all passenger cars equipped with disc brakes. Periodic inspection and maintenance of passenger locomotive brake systems remains governed by 49 CFR Part 229, Railroad Locomotive Safety Standards, and 49 CFR Part 238, Passenger Equipment Safety Standards. However, railroads may wish to use some of the procedures in this standard to supplement the federal requirements for locomotives.

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## Introduction

*This introduction is not part of APTA PR-IM-S-010-98, Rev. 3, "Passenger Car Brake Disc and Disc Brake Unit Periodic Inspection and Maintenance," formerly titled "Passenger Car Brake Disc Periodic Inspection and Maintenance."*

This standard describes the requirements for passenger car brake disc periodic inspection and maintenance. It applies to all:

1. Railroads that operate intercity or commuter passenger train service on the general railroad system of transportation; and
2. Railroads that provide commuter or other short-haul rail passenger train service in a metropolitan or suburban area, including public authorities operating passenger train service.

This standard does not apply to:

1. Rapid transit operations in an urban area that are not connected to the general railroad system of transportation;
2. Tourist, scenic, historic or excursion operations, whether on or off the general railroad system of transportation;
3. Operation of private cars, including business/office cars and circus trains; or
4. Railroads that operate only on track inside an installation that is not part of the general railroad system of transportation.

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## 1. Frequency of conduct

The frequency of conduct of this task shall be as specified in and in compliance with the requirements of APTA PR-IM-S-013-99, Rev. 1, "Passenger Car Periodic Inspection and Maintenance" or the superseding document.

## 2. Brake disc inspection and maintenance requirements

### 2.1 Tools/materials

Calipers, micrometers and/or gauges, in addition to the standard tools carried by maintenance personnel, are required for this maintenance task. No 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

For handbrakes and parking brakes see APTA PR-IM-S-004-98, latest revision, "Passenger Car Handbrake Periodic Inspection and Maintenance."

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

### 3.1 Brake discs

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

- a) Visually inspect the disc faces for damage, cracks or nicks along the outer periphery of the disc. Some radial checks and thermal checks are normal during operation. Refer to Original Equipment Manufacturer (OEM) instructions on disc inspection and the railroad Standard Maintenance Procedure (SMP) for condemning and inspection requirements.
- b) Visually inspect hub for cracks, broken or missing tangs, or damage. Refer to OEM/SMP for condemning and inspection requirements.

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- c) If applicable, visually inspect disc mounting hardware (such as bolts, nuts, washers and retaining mechanisms) for proper attachment and broken or missing components. Refer to OEM/SMP for condemning and inspection requirements.
- d) Measure the disc wear locations. Refer to OEM/SMP for condemning and inspection requirements. Discs with wear indicators can be visually inspected to ensure that they do not exceed allowable limits.
- e) Visually inspect the disc for any fin obstructions or damage, and remove any and all foreign material from cooling fins. Refer to OEM/SMP for condemning and inspection requirements.

### **3.2 Disc brake units**

- a) Inspect disc brake units for damage, leaks, and loose or missing components. Correct any damage or leaks found, secure loose components and replace missing components. Refer to OEM/SMP.
- b) Visually inspect brake lines and hoses for leaks, longitudinal cracks, mounting and chafing; repair as required.
- c) Apply and release the brakes and verify:
  - proper operation of the disc brake unit per OEM/SMP;
  - proper piston travel per the OEM/SMP; and
  - no indication of binding or fouling of the disc brake unit's levers and/or pins.

**NOTE:** For spring-applied and integral parking brakes, see APTA PR-IM-S-004-98, latest revision, "Passenger Car Handbrake Periodic Inspection and Maintenance."

- d) Lubricate the disc brake unit in accordance with OEM/SMP.
- e) Inspect brake disc mounting hardware, such as bolts, nuts, washers and retaining mechanisms, for proper attachment. Refer to the OEM/SMP for condemning and inspection recommendations.
- f) Inspect for missing disc brake pads. Replace missing disc brake pads, and ensure that the disc brake pad is properly secured as per APTA PR-IM-S-009-98, latest revision, "Passenger Car Tread Brake Shoe and Disc Brake Pad Periodic Inspection and Maintenance."

**NOTE:** Repair/replace damaged brake equipment as a result of a missing brake pad in accordance with OEM/SMP instructions.

- g) Inspect disc brake unit for worn or damaged bushings and pins. Refer to OEM/SMP for condemning and inspection recommendations.

## Related APTA standards

**APTA PR-IM-S-004-98, Latest Revision**, “Passenger Car Handbrake Periodic Inspection and Maintenance.”

**APTA PR-IM-S-009-98, Latest Revision**, “Passenger Car Tread Brake Shoe and Disc Brake Pad Periodic Inspection and Maintenance”

**APTA PR-IM-S-011-98, Latest Revision**, “Passenger Car Tread Brake Unit and Brake Cylinder Periodic Inspection and Maintenance”

**APTA PR-IM-S-013-99, Latest Revision**, “Passenger Car Periodic Inspection and Maintenance”

## References

Code of Federal Regulations:

49 CFR, Part 229, “Railroad Locomotive Safety Standards”

49 CFR, Part 238, “Passenger Equipment Safety Standards”

This standard shall also be used in conjunction with the following publications. When the following standards are superseded by an approved revision, the revision shall apply.

- Original equipment manufacturer (OEM) instructions
- Standard maintenance procedure (SMP) (see Definitions)

## Definitions

**original equipment manufacturer (OEM):** 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 (e.g., days, weeks or months) or of utilization (e.g., mileage or cycles). 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

|              |                                                    |
|--------------|----------------------------------------------------|
| <b>CFR</b>   | Code of Federal Regulations                        |
| <b>NATSA</b> | North American Transportation Services Association |
| <b>OEM</b>   | original equipment manufacturer                    |
| <b>PRESS</b> | Passenger Rail Equipment Safety Standards          |
| <b>SMP</b>   | standard maintenance procedure                     |

## Summary of document changes

- Title, Abstract, Keywords, Summary, and Scope and Purpose changed to incorporate disc brake units.
- Addition of Disc Brake Unit Section.
- Participants list updated.
- References updated.

**APTA PR-IM-S-010-98, Rev. 3**  
**Passenger Car Brake Disc and Disc Brake Unit Periodic Inspection and Maintenance**

## Document history

| Document Version | Working Group Vote | Public Comment/ Technical Oversight | Rail CEO Approval | Policy & Planning Approval | Publish Date  |
|------------------|--------------------|-------------------------------------|-------------------|----------------------------|---------------|
| First published  | Oct. 14, 1998      | —                                   | —                 | 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  |
| Third revision   | July 16, 2019      | Sept. 13, 2019                      | Nov. 4, 2019      | Jan. 10, 2020              | Jan. 17, 2020 |

This document was retitled to its current title from “Passenger Car Brake Disc Periodic Inspection and Maintenance” as part of Rev. 3. For all previous publications of this document prior to Rev. 3, unless otherwise indicated, this document was titled “Passenger Car Brake Disc Periodic Inspection and Maintenance.”