



APTA PR-IM-S-008-98, Rev. 3

First Published: Oct. 27, 1999

First Revision: May 23, 2003

Second Revision: March 22, 2004

Third Revision: Jan. 17, 2020

PRESS Inspection & Maintenance
Working Group

Passenger Car Electrical Periodic Inspection and Maintenance

Abstract: This standard contains minimum requirements for basic inspection and maintenance functions for electrical systems for new, remanufactured, and existing rail passenger equipment.

Keywords: electrical systems, inspection, maintenance

Summary: This procedure establishes a standard for electrical inspection and maintenance of passenger cars.

Scope and purpose: This standard is for electrical inspection and maintenance within the rail industry for passenger cars. It is intended to be used as applicable, for individual properties, in areas of cyclic inspection and maintenance of passenger car electrical systems. This standard is intended for use by railroads to apply basic procedures with regard to periodic inspection and maintenance of electrical systems for rail passenger cars as described within this document. The electrical systems addressed in this standard include lighting, intercar cabling and connections, communication, and convenience outlets only.

“This document represents a common viewpoint of those parties concerned with its provisions, namely transit operating/planning agencies, manufacturers, consultants, engineers and general interest groups. APTA standards are mandatory to the extent incorporated by an applicable statute or regulation. In some cases, federal and/or state regulations govern portions of a transit system’s operations. In cases where this is a conflict or contradiction between an applicable law or regulation and this document, consult with a legal advisor to determine which document takes precedence.”

© 2020 NATSA and its parent organization. No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of NATSA.

Table of Contents

Participants.....	iv
Introduction.....	iv
1. Frequency of conduct.....	1
2. Requirements and specific tasks	1
2.1 Tools/materials.....	1
2.2 Safety/personal protective equipment.....	1
2.3 Training requirement	1
2.4 Inspection and maintenance procedures	1
Related APTA standards.....	3
References.....	3
Definitions.....	3
Abbreviations and acronyms.....	3
Summary of document changes	3
Document history.....	4



Participants

The American Public Transportation Association greatly appreciates the contributions of the **APTA PRESS Inspection and Maintenance Working Group**, which provided the primary effort in the drafting of this document.

At the time this standard was completed, the working group included the following members:

Paul Kovacs, *Lea+Elliott, Chair*

Dave Elliott, *LTK Engineering Services, Vice Chair*

Danny Bailey, *Denton County Transp. Authority*

Stephen Bonina, *WSP USA*

Gordon Campbell, *Crosslinx Transit Solutions*

John Condrasky, *Wabtec Corp.*

Joshua Coran, *Talgo Inc.*

Richard Curtis, *Curtis Engrg. Consulting Svc, Inc.*

Ever Diaz, *Keolis Commuter Services*

Paul Edwards, *Transit District of Utah*

Marc Gagné, *TDG Transit Design GRP Int'l Inc.*

Ben Holland, *Bay Area Rapid Transit District*

Tony Jones, *Retired*

Robert Lee, *Metra*

Lloyd Mack, *LTK Engineering Services*

Robert Magdole, *Hoppecke Batteries Inc.*

Ted Mavronicolas, *Soft America*

Gerard McIntyre, *Knorr Brake Corp.*

Karl Mullinix, *Knorr Brake Corp.*

Joe Patterson, *Amsted Rail*

Mike Porter, *Community Transit*

Alan Rao, *Federal Transit Administration*

Gerhard Schmidt, *Siemens AG Industry Sector*

Martin Schroeder, *Jacobs*

Richard Seaton, *TDG Transit Design GRP Int'l Inc.*

James Skaggs, *International Electronic Machines*

Richard Spencer, *Knorr Brake Corp.*

Mark Sullivan, *STV Inc.*

Jeff Thompson, *SEPTA*

Matthew Todt, *Amsted Rail*

Michael Wetherell, *McKissack & McKissack*

Dan Wilson, *Miami-Dade Transit*

Timothy Wineke, *Knorr Brake Corp.*

Cliff Woodbury, *LTK Engineering Services*

Steve Zuiderveen, *Federal Railroad Administration*

Project team

Narayana Sundaram, *American Public Transportation Association*

Nathan Leventon, *American Public Transportation Association*

Introduction

This introduction is not part of APTA PR-IM-S-008-98, Rev. 3, "Passenger Car Electrical Periodic Inspection and Maintenance."

This standard 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.

Passenger Car Electrical 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 APTA PR-IM-S-013-99, Latest Revision, "Passenger Car Periodic Inspection and Maintenance."

2. Requirements and specific tasks

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. Follow all applicable lockout and tag-out procedures.

2.1 Tools/materials

Standard tools/materials carried by electrical maintenance personnel are sufficient for this maintenance task.

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 inspection 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.

2.4 Inspection and maintenance procedures

2.4.1 Lighting

- a) Ensure that all lighting fixtures and diffusers, including but not limited to passenger compartment, vestibule, and lavatories, are working and properly secured and clean lenses as necessary in accordance with standard maintenance procedure (SMP) instructions.
- b) Ensure that all exterior lights, including but not limited to markers, headlights, and auxiliary lights, are illuminated in accordance with SMP.
- c) Ensure that all non-passenger-controlled interior lights are illuminated in accordance with SMP.
- d) Ensure that all emergency lighting (including any illuminated emergency signage and/or active low-location exit path marking [LLEPM] system) is working by turning off main power supply in car.
- e) Ensure that all indication lights are functioning in accordance with SMP.
- f) Ensure that greater than 50 percent¹ of all LEDs in a lighting array are functional or at a level of functionality that is in accordance with SMP.

¹ AREMA Manual, Volume II, Section 7.1.5, Subsection B, Clause 3, 2013.

2.4.2 Electric coupler heads and cables

- a) Ensure that covers and weather stripping are not missing, broken, or cracked.
- b) Check for missing, misaligned, jammed, or damaged pins as per SMP or original equipment manufacturer (OEM) instructions.
- c) Visually inspect electrical head for corrosion, debris, or moisture.
- d) Check for alignment in accordance with SMP.
- e) Visually inspect coupler cables for chaffing.

2.4.3 Trainline receptacles and cables

CAUTION: Ensure that power is de-energized and lockout/tag-out policy is followed.

2.4.3.1 Trainline receptacles

- a) Check that receptacles are marked in accordance with SMP and secured to carbody.
- b) Visually inspect that covers and weather stripping are not missing, broken, or cracked.
- c) Visually inspect for broken, flashed, or missing receptacle pins.
- d) Visually inspect for cracked receptacle pin retaining plate and loose or missing plate mounting bolts.
- e) Visually inspect for dirt/moisture contamination of receptacle interior and retaining plate.
- f) If equipped with a locking mechanism, check for functionality in accordance with SMP/OEM instructions.

2.4.3.2 Trainline cables

- a) Check that head of cable is secure and undamaged in accordance with SMP/OEM instructions.
- b) Visually inspect cable for abrasions, cuts, or impact damage.
- c) Visually inspect for missing cables.

2.4.4 PA/IC and radio

- a) Test PA/IC and PEIC systems for proper volume level and clarity in accordance with SMP instructions.
- b) Test radio if applicable for proper transmitting and receiving clarity in accordance with SMP instructions.
- c) Check electronic messaging systems, be they visual and/or auditory, in accordance with SMP instructions.

2.4.5 Convenience outlets

Check convenience outlets in accordance with SMP instructions.

Related APTA standards

APTA PR-E-S-013-99, Rev. 1, “Emergency Lighting Design for Passenger Cars”

APTA PR-IM-S-013-99, Rev. 1, “Periodic Inspection and Maintenance of Passenger Coaches”

APTA PR-PS-S-006-18, “Emergency Egress/Access Signage and Low-Location Exit Path Markings for Passenger Rail Equipment”

References

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

Code of Federal Regulations:

49 CFR 229, Railroad Locomotive Safety Standards, October 2000.

49 CFR 238.307, Periodic Mechanical Inspection of Passenger Cars, October 2000.

AREMA Manual, Volume II, Section 7.1.5, Subsection B, Clause 3, 2013.

Definitions

emergency lighting: A lighting mode that is available whenever power for the normal lighting is unavailable. The main car battery or one or more independent power sources can be used to supply the power to operate the fixtures that provide emergency lighting.

emergency signage: Textual and graphic messages designed to assist passengers and train crewmembers in locating and using rail car emergency exits and to assist emergency responders in gaining access to rail cars using doors and windows from the exterior.

exit path: The path or corridor through a rail car that provides the preferred path of evacuation from the car.

low-location exit pathway marking: Evacuation guidance for passengers and crewmembers when normal and emergency sources of illumination are obscured or inoperative.

Abbreviations and acronyms

LED	light-emitting diode
LLEPM	low-location exit path marking
NATSA	North American Transportation Services Association
OEM	original equipment manufacturer
PA/IC	public address/intercom
PEIC	passenger emergency intercom
PRESS	Passenger Rail Equipment Safety Standards
SMP	standard maintenance procedure

Summary of document changes

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

APTA PR-IM-S-008-98, Rev. 3
Passenger Car Electrical 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.
- Rearranged wording in “Scope and purpose.”
- Section 2.4.1(c), added non-passenger.
- Minor text changes/additions made throughout the document.
- Slight wording changes to periodic maintenance definition to bring in line with standard PRESS definition for periodic maintenance.
- Addition of “emergency lighting,” “emergency signage,” “exit path” and “low-location exit pathway marking” to “Definitions” section.
- Removal of the word “instructions” from OEM under “Abbreviations and acronyms” section.
- Added LED, LLEPM, NATSA, PA/IC, PEIC and PRESS to “Abbreviations and acronyms” section.

Document history

Document Version	Working Group Vote	Public Comment/ Technical Oversight	Rail CEO Approval	Policy & Planning Approval	Publish Date
First published	—	—	Oct. 27, 1999	Jan. 11, 2000	Jan. 11, 2000
First revision	—	—	Oct. 30, 2002	Jan. 11, 2003	May 23, 2003
Second revision	—	—	—	—	March 22, 2004
Third revision	July 2, 2019	Sept. 13, 2019	Nov. 4, 2019	Jan. 10, 2020	Jan. 17, 2020