

Instructor/Participant Guide



212: Escalator-Inspection & Basic Maintenance

Module 3: Step Band



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PREVIEW ONLY



Icons Used in This Guide

Throughout the Instructor’s Guide, the following icons indicate the type of content presented.



Refer To



PowerPoint



Multimedia



Web based Training



Write



Ask



Individual Activity



Small Group Activity



Classroom Activity



Duration

Agenda

Topic No.	Topic Title	Duration
1	Introduction	5 minutes
2	Step Chain Assembly <ul style="list-style-type: none"> • Step band Inspection and Maintenance • Step Chain Rollers and Lubrication • Step Chain Inspection Recommendations • Step Chain Track and Guides 	40 minutes
3	Step Inspection and Clearance	15 minutes
4	Step Safety Side Brushes	10 minutes
5	Cleaning of Steps	10 minutes
6	ASME A-17 Code Compliance	15 minutes
7	Step Skirt Indexing Performance Tests <ul style="list-style-type: none"> • Step Skirt Indexing Requirements • Typical Equipment • Set Up Procedures • Reading the Graph 	40 minutes
8	Summary	5 minutes
Total Time:		2.5 hours



Overview

Purpose

The purpose of this module is to:

- Introduce participants to the inspection of components within the step band, commonly found in escalators at U.S. transit systems.

Objectives

At the end of this chapter, the learner will be able to:

- Describe the method used for visual inspection of the step band
- List typical problems which would require repair and/or replacement
- Complete a step assembly inspection
- Identify specification clearance parameters as per industry code
- Complete a visual inspection of the skirts and brush attachments
- Perform clearance check, needed adjustments, and repairs to brushes
- Complete proper documentation

Materials

Make sure you have the following:

- Laptop (one for leader)
- Participant Guides
- PowerPoint slide deck
- LCD projector
- A17.1 Safety Code for Elevators and Escalators
- A17.2 Guide for Inspection of Elevators, Escalators and Moving Sidewalks

Preparation


- A17.3 Safety Code for Existing Elevators and Escalators
 - Heavy Duty Transportation System Escalator Design Guidelines (APTA RT-RP-FS 007-02)
 - Field Employees' Safety Handbook
 - Transit Agency Handbook
- PREPARE** flip charts with the following title:
- Class Expectations



Instructor's Notes

Introduction

Step Band



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Outline

- Describe the method used for visual inspection of the step band.
- List typical problems which would require repair and/or replacement.
- Complete a step assembly inspection.
- Identify specification clearance parameters as per industry code.
- Complete a visual inspection of the skirts and brush attachments.
- Perform clearance check, needed adjustments, and repairs to brushes.
- Complete proper documentation.


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Slide 1

GAIN audience attention by introducing yourself.




WELCOME the participants to the step band module.



ASK: What does the step band consist of?

DIRECT participants to the objectives on slide 2.



REVIEW the objectives on Slide 2.

Slide 2

Welcome to the Step Band module.

What does the step band consist of?



Instructor's Notes

Step Band

Step Chain Rollers & Lubrication

- One of the most expensive parts to replace.
- Lack of lubrication will cause premature failure of the step chain.
- Easiest way to check the step chain assembly is from the lower pit.
- You will inspect the step chain rollers on both sides.
 - Look for damage to the rollers and roller bearings.
 - Look for flat spots, cuts in rollers, and extreme wear.
 - Ensure that the step roller fasteners are not missing or loose.

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Step Band

Step Chain Rollers & Lubrication

- Escalator step chains require either manual or automatic lubrication.
- Lubrication of the correct type, at the right location along with the proper amount is critical.
- Check for proper lubrication on each step chain.



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Slide 4



REVIEW slides 4 and 5 in the PowerPoint presentation to discuss the details of the step chain rollers and proper lubrication.



ASK participants to describe the differences between manual and automatic lubrication.

Slide 5

Step Chain Rollers & Lubrication

What is the difference between manual and automatic lubrication?



Figure 1: Oil Brushes



Instructor's Notes

Step Band

Step Chain Track Guides

- This inspection must be performed with the steps out of the escalator and the escalator operating in the "inspection" mode.
- Look for broken track supports, loose tracks, worn or broken tracks, loose fasteners, bumps in tracks, rollers jumping out of track, and misalignment of tracks.
- Check the step chain guides in the upper and lower pits to ensure they are properly guiding the step chain around the transition curves.
- Check turn-around or chain sprockets.

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Slide 7



REVIEW slide 7 and discuss step chain track guides.

CONTENT: Direct participants to describe in their own words the basics of step chain assembly.

APPLICATION FEEDBACK: Now that we have discussed a little about step chain assembly, have the participants answer the following questions.



ASK participants to describe what mode the escalator must be in to inspect the step chain track and guides.

Step Chain Track Guides

What mode must the escalator be in to inspect the step chain track and guides?

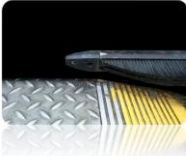


Instructor's Notes

Step Band

Step Safety Side Brushes

- Safety devices designed to reduce skirt/step gap accidents.
- Ensure there are no sharp edges and gaps between safety side brush sections.
- Ensure the brushes are mounted flush on the skirt boards.
- Look for foreign objects stuck in safety side brushes.



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Slide 10



REVIEW slide 10 and the details on the step safety side brushes.

CONTENT: Direct participants to describe in their own words the inspection of the safety side brushes.

APPLICATION FEEDBACK: Now that we have discussed a little about safety side brushes, have the participants answer the following questions.



ASK: Describe how to inspect the safety side brushes.

Step Safety Side Brushes

Describe how to inspect the safety side brushes.

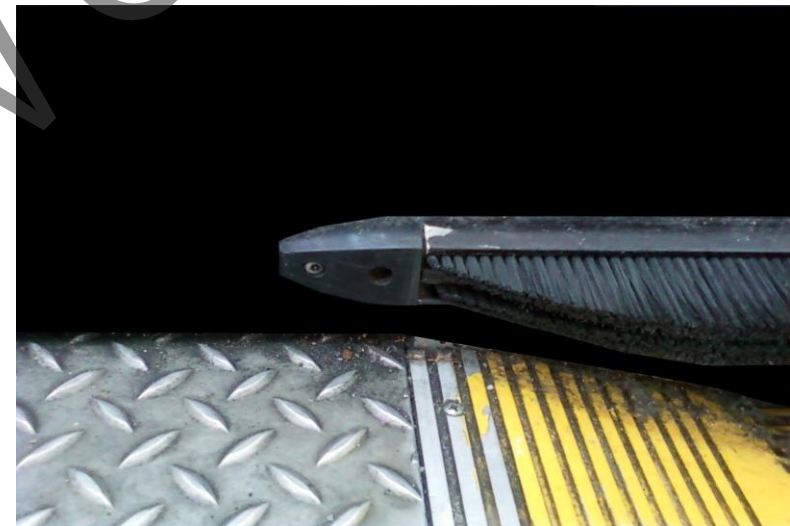


Figure 3: End Cap



Instructor's Notes

Step Band

ASME A-17 Code Compliance

- The latest version of the code book – 17.2 -2007 has several step code requirements.
 - 7.9 regulation addresses the step and step meshing.
 - 7.9.1 (d) regulation addresses the height, center to center, and width of the step cleat. Also, the height and length of the step is addressed by 7.9.1(d).
 - 7.17 states the step/skirt performance index requirements.
 - 7.19 requires the documenting of inspections, repairs, and maintenance records.

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Slide 12



REVIEW slide 12 and discuss ASME A-17.

CONTENT: Direct participants to describe in their own words the basics of the ASME A-17 Code.

APPLICATION FEEDBACK: Now that we have discussed a little about ASME A-17, have the participants answer the following questions.



ASK participants to list the description of each of the sections below.

ASME A-17 Code Compliance

List the description of the sections below.

7.9

7.9.1(d)

7.17

7.19



Instructor's Notes

Step Band

Step Skirt Indexing Requirements

Units Under Code	Code Requirements	Action Required
Any	< or = 0.15	None
2000 or earlier	>0.15 & < or = 0.4	Skirt deflectors required.
2000 or earlier	>0.4	Corrective Action required.
2002 or earlier	>0.15 & < or = 0.25	Skirt deflectors required.
2002 or earlier	>0.25	Corrective Action required.
Loaded Gap	2000 or later	
< or = 0.2 inch		None
>0.2 inch		Corrective Action required.

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Slide 15



REVIEW slide 15 and discuss the step skirt indexing requirements.



ASK participants to describe the action required on a 2000 unit with a step skirt index of >0.4.

Step Skirt Indexing Requirements

What is the action required on a 2000 unit with step skirt index of >0.4?

PREVIEW ONLY



Instructor's Notes

Step Band

Set Up Procedures

- There must be an effort for all the measurements to be consistent.
 - Being consistent and following the same process every time will result in fewer mistakes.
- Pick out two steps separated by at least 8 steps.
 - Look for the worst case step and test this step.

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Slide 20



REVIEW slide 20 and discuss set up procedures.



ASK participants to describe the process of selecting the appropriate number of steps to check.

Set Up Procedures

Describe how to select the appropriate number of steps to check.



Instructor's Notes


Summary

Step Band


Summary

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Slide 24

 **REVIEW** slide 24 and summarize the module.

EVALUATION AND CLOSURE: Recap the main points of the module before moving on to the next topic within this course.

 **ASK** the participants if they have any outstanding questions on what was presented.

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