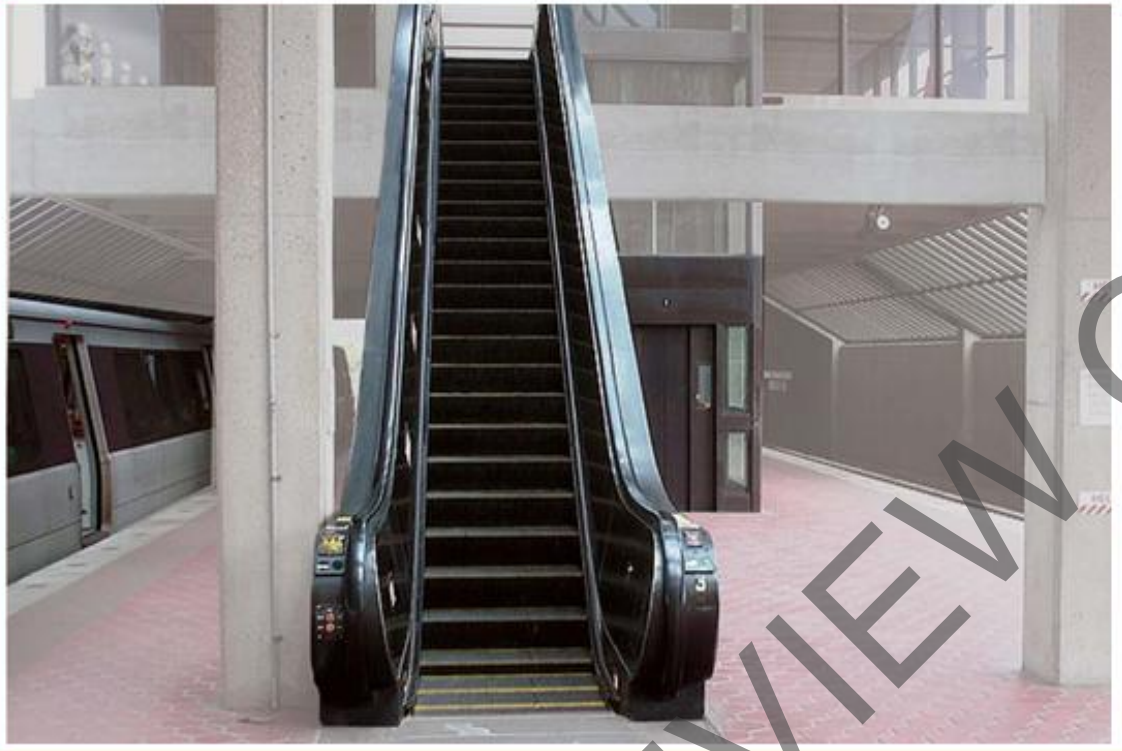
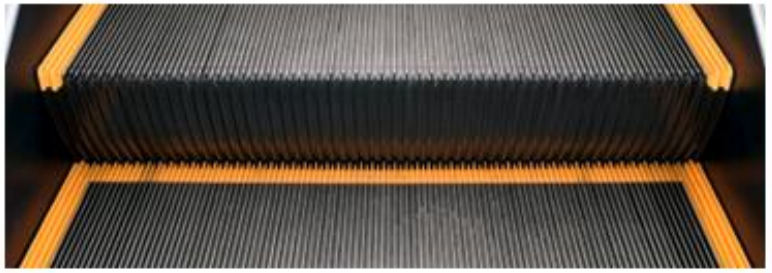
Instructor/Participant Guide





209: Escalator-Specific: Electrical Systems

Module 3: Escalator Safety Circuits

Transit Elevator/Escalator Consortium

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None

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	Electrical System Safety Circuits	20 minutes
3	Passenger Safety Circuits	20 minutes
4	Remote Monitoring and Annunciation	20 minutes
5	Summary	5 minutes
	Total Time:	**1.0 hours**

Overview

Purpose

The purpose of this module is to:

- Provide the participants with a basic knowledge of the various types of electrical safety circuits that protect the passengers, as well as the mechanical and electrical systems of a transit escalator.

Objectives

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

- Identify the function of different types of safety circuits
- Locate various safety devices in a schematic diagram
- Explain the function of specific types of safety circuits
- Test and verify the operation of various types of safety circuits
- Discuss the circuit fault conditions as they relate to safety circuits
- Identify the upper and lower safety circuits of a transit escalator

Materials

Make sure you have the following:

- Laptop (one for leader)
- Participant Guides
- PowerPoint slide deck
- LCD projector

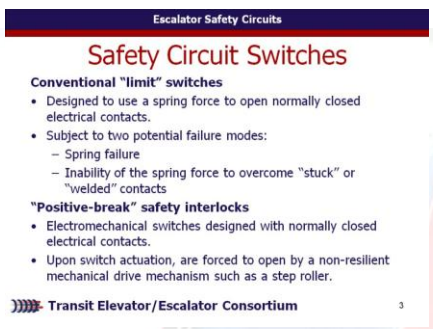
- A17.1 Safety Code for Elevators and Escalators
- A17.2 Guide for Inspection of Elevators, Escalators and Moving Sidewalks
- A17.3 Safety Code for Existing Elevators and Escalators
- Heavy Duty Transportation System Elevator Design Guidelines (APTA RT-RP-FS 008-03)
- Heavy Duty Transportation System Escalator Design Guidelines (APTA RT-RP-FS 007-02)
- Field Employees' Safety Handbook
- Transit Agency Handbook

Preparation

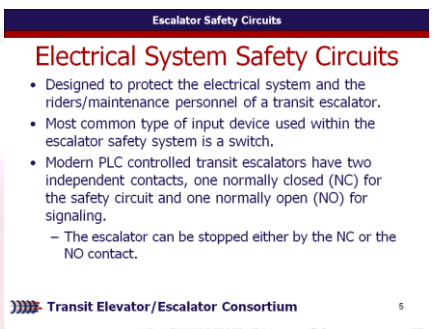
PREPARE flip charts with the following title:

- Class Expectations

Instructor's Notes



Slide 3



Slide 5

REVIEW the different safety circuit switches.

ASK the participants to describe the listed switches.

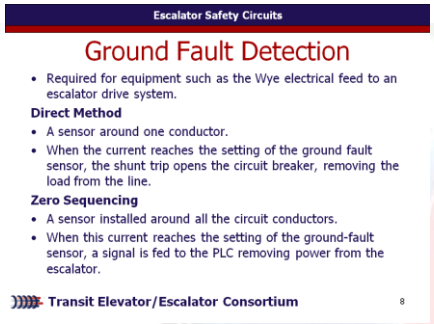
Safety Circuit Switches

Describe the following circuits:

Conventional Switches:

Positive-break Interlocks:

Instructor's Notes



Slide 8

REVIEW slide 8 and discuss ground fault detection.

CONTENT: Direct participants to describe in their own words the details of the electrical safety circuits.

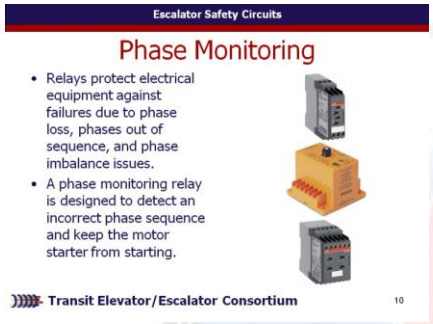
APPLICATION FEEDBACK: Now that we have discussed a little about ground fault detection, have the participants answer the following questions.

ASK: What is zero sequencing?

Ground Fault Detection

What is zero sequencing?

Instructor's Notes



Slide 10

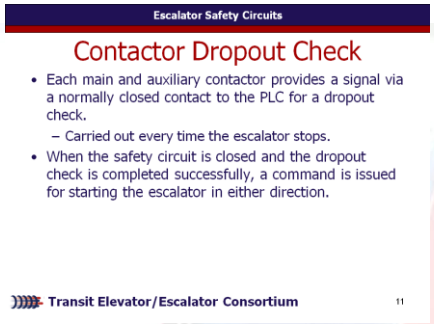
REVIEW slide 10 and review phase monitoring.

ASK participants to describe the purpose of the phase monitoring relay.

Phase Monitoring

What is the purpose of a phase monitoring relay?

Instructor's Notes



Slide 11

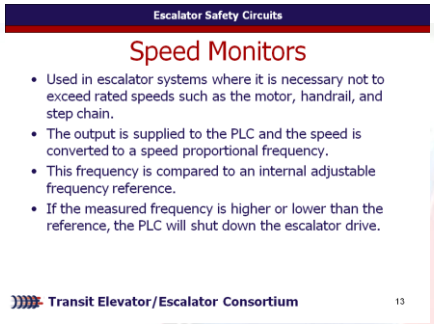
REVIEW slide 11 and review the contactor dropout check.

ASK: When is the contactor dropout check conducted?

Contactor Dropout Check

When is the contactor dropout check conducted?

Instructor's Notes



Slide 13

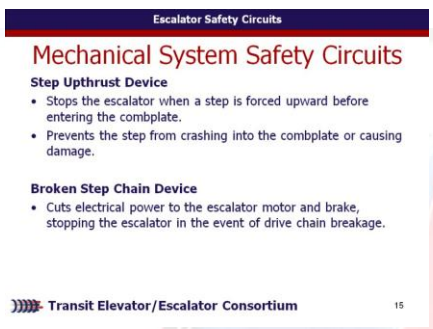
REVIEW slide 13 and discuss the purpose of speed monitors.

ASK the participants to describe what can occur if the measured frequency is higher or lower than the reference.

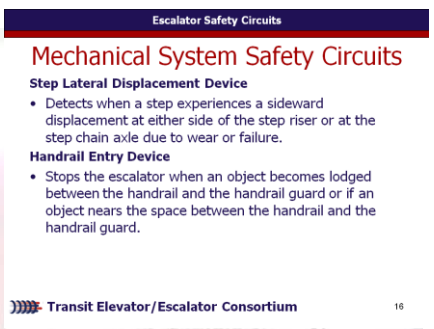
Speed Monitors

What can occur if the measured frequency is higher or lower than the reference?

Instructor's Notes



Slide 15



Slide 16

REVIEW slides 15 and 16 to discuss the mechanical system safety circuits.

CONTENT: Direct participants to describe in their own words how speed monitors operate.

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

ASK the participants to describe the listed devices.

Mechanical System Safety Circuits

Describe the listed devices below.

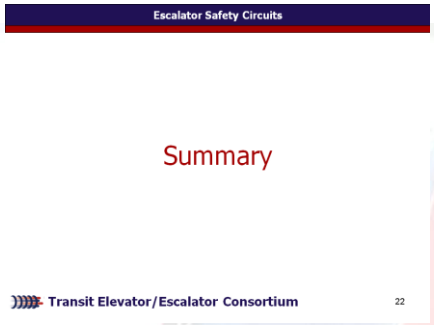
Step Upthrust Device:

Broken Step Chain Device:

Step Lateral Displacement Device:

Handrail Entry Device:

Instructor's Notes



Slide 22

REVIEW slide 22 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.

Summary