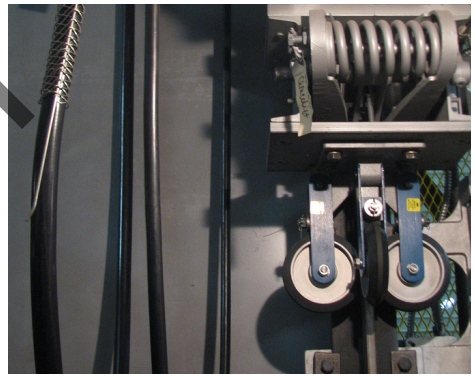
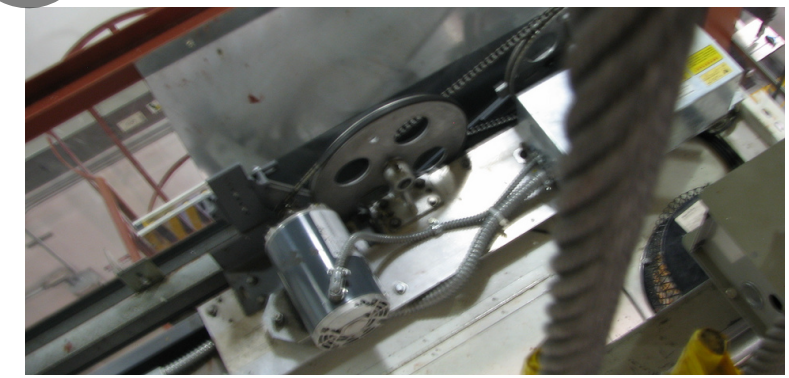
Instructor Guide





217: Elevator: Traction Elevator
Module 1: Safety Procedures

TRANSIT ELEVATOR/ESCALATOR CONSORTIUM

Table of Contents

Icons Used In This Guide

REVIEW slides

INDIVIDUAL ACTIVITY

ASK

WRITE

CLASSROOM ACTIVITY

Multimedia

SMALL GROUP ACTIVITY

REFER participants to

Agenda

Topic #	Topic Title	Duration
1	Overview	15 minutes
2	Basic Safe Maintenance	10 minutes
3	Machine Room Safe Maintenance	15 minutes
4	Overhead Safe Maintenance	7 Minutes
5	Hoistway Safe Maintenance	10 Minutes
6	Pit Area Safe Maintenance	10 Minutes
7	MRL Safe Maintenance	8 Minutes
8	Effective Communication	10 Minutes
9	Field Trip	20 Minutes
10	Summary	15 Minutes
	Total Time:	120 Minutes

Overview

Purpose The purpose of this module is to:

Provide the participant with an overview of basic safety practices to be used when maintaining electric traction and MRL elevators.

Objectives

At the end of this lesson, the transit elevator/escalator trainee will be able to:

- Discuss specific precautions necessary to perform elevator maintenance
- Identify effective communication techniques according to a distance situation
- Identify proper safety methods for working in the pit

Materials

Mandatory Make sure you have the following

- PowerPoint Presentation
- Coursebook
- Quizzes
- Pencils
- Elevator Industry Field Employees' Safety Handbook

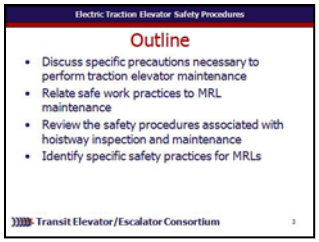
Optional You may also want the following for optional activities:

- Personal Protective Equipment
- Chalk board with chalk, large paper with marker, etc.
- Internet connection
- Lab, simulator or out of service elevator

Elevator – Electric Traction Safety Procedures

Instructor's Guide

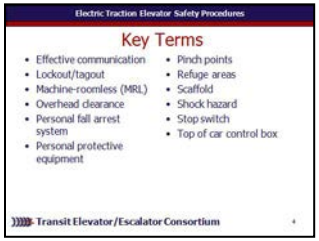
Module Length: 120 min Time remaining: 120 min This section: 15 min (11 slides) *Section start time: _____* *Section End Time: _____*

DO	SAY	Materials Needed
REVIEW module objectives **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** Today we will -Discuss specific precautions necessary to perform traction elevator maintenance -Review the safety procedures associated with hoistway inspection and maintenance - Relate safe work practices to MRL maintenance -Identify specific safety practices for MRLs -And Describe effective communication practices for electric traction elevator maintenance ***Advance.***	✓PPT slide 3 

Elevator – Electric Traction Safety Procedures

Instructor's Guide

Module Length: 120 min Time remaining: 120 min This section: 15 min (11 slides) *Section start time:* _____ *Section End Time:* _____

DO	SAY	Materials Needed
REVIEW and key terms **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** Lets take a look at some of the key words we will be defining as move through this module: Effective communication, Lockout/tagout Machine-roomless (MRL), Overhead clearance, Personal fall arrest system Personal protective equipment ***Advance.*** Pinch points, Refuge areas, Scaffold, Shock hazard, Stop switch Top of car control box ***Advance.***	✓PPT slide 4 

Elevator – Electric Traction Safety Procedures

Instructor's Guide

Module Length: 120 min Time remaining: 120 min This section: 15 min (11 slides) *Section start time: _____* *Section End Time: _____*

DO	SAY	Materials Needed
REVIEW slide **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** Safety around electric traction elevators requires much the same attitude and many of the same procedures as working safely around hydraulic elevators. This course focuses on the unique safety requirements of electric traction elevators, safety involving elevators in general are covered in the introductory course on elevators (213 Module 1) and the specific safety requirements around hydraulic elevators are discussed in the course on hydraulic elevators (218 Module 1). ***Advance.***	✓PPT slide 6 

Elevator – Electric Traction Safety Procedures

Instructor's Guide

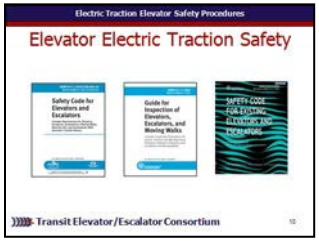
Module Length: 120 min Time remaining: 120 min This section: 15 min (11 slides) *Section start time: _____* *Section End Time: _____*

DO	SAY	Materials Needed
REVIEW slide **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** According to the National Institute for Occupational Safety and Health (NIOSH), construction elevator installers and repairers have the sixth highest rate of work-related deaths of all construction trades. ***Advance.*** ***Advance.*** A 2006 report sponsored by NIOSH on the major causes of elevator and escalator deaths and injuries led to five sets of recommendations: Use adequate lockout/tagout procedures Ensure adequate fall protection Treat elevator shafts as confined spaces Provide adequate maintenance and inspections Use only qualified personnel ***Advance.***	✓PPT slide 8 

Elevator – Electric Traction Safety Procedures

Instructor's Guide

Module Length: 120 min Time remaining: 120 min This section: 15 min (11 slides) *Section start time: _____* *Section End Time: _____*

DO	SAY	Materials Needed
REVIEW slides **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** The American Society of Mechanical Engineers (ASME) sets standards for the construction, maintenance, and safe operation of elevators and this module makes references to ASME A17.1 and A17.3 which cover safety codes for elevators. ***Advance.*** The Occupational Safety and Health Administration (OSHA) is the governing agency that seeks to assure safe and healthful working conditions for working men and women by setting and enforcing standards and by providing training, outreach, education and assistance. This module makes reference to OSHA's guidelines for elevator workers. ***Advance.***	✓PPT slides10, 11  

Elevator – Electric Traction Safety Procedures

Instructor's Guide

Module Length: 120 min Time remaining: 105 min This section: 10 min (11 slides) *Section start time: _____* *Section End Time: _____*

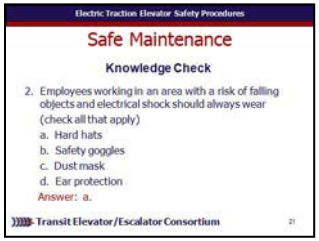
DO	SAY	Materials Needed
REVIEW slide	**In your own words:** Working in the entire traction elevator system in general and the overhead area in particular, technicians should always wear suitable head protection. From the *Field Employee's Safety Handbook*, "employees working in areas where there is a possible danger of head injury from impact, falling or flying objects, or from electric shock and burns shall be protected by hard hats. Again, hard hats are part of the personal protective equipment (PPE) provided by the transit agency for employees working around elevators. ***Advance.***	✓PPT slide 17

Instructor's Notes

Elevator – Electric Traction Safety Procedures

Instructor's Guide

Module Length: 120 min Time remaining: 105 min This section: 10 min (11 slides) *Section start time: _____* *Section End Time: _____*

DO	SAY	Materials Needed
ASK **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** Lets see what we have learned so far: Employees working in an area with a risk of falling objects and electrical shock should always wear (check all that apply) a. Hard hats b. Safety goggles c. Dust mask d. Ear protection ***Call on participants for answer*** ***Advance once given the correct answer*** Answer: a. ***Advance.***	✓PPT slide 20 

Module Length: 120 min Time remaining: 95 min This section: 15 min (17 slides) *Section start time: _____* *Section End Time: _____*

DO	SAY	Materials Needed
REVIEW slide **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** Under OSHA regulations, the **lockout/tagout** standard is intended to "cover the servicing and maintenance of machines and equipment in which the unexpected energization or start up of equipment, or the release of stored energy could cause injury to employees. The standard outlines the minimum requirements for the control of hazardous energy." In plain English, the standard is so that an employer establishes policies and procedures that will ensure that employees are not injured or killed due to electrocution, machine activation or the release of stored potential energy ***Advance.***	✓PPT slide 29 

Module Length: 120 min Time remaining: 95 min This section: 15 min (17 slides) *Section start time: _____* *Section End Time: _____*

DO	SAY	Materials Needed
REVIEW slide **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** Electrical components will be a constant source of shock hazard as well. Most of the electrical components in an elevator machine room will be grounded and a technician must be properly trained on the dangers of working between a live line and a ground path. The human body conducts electricity very well and direct contact with electrical current can be deadly. While some electrical burns look minor, there still may be serious internal damage, especially to the heart, muscles, or brain. ***Advance.***	✓PPT slide 34 

Module Length: 120 min Time remaining: 95 min This section: 15 min (17 slides) *Section start time: _____* *Section End Time: _____*

DO	SAY	Materials Needed
ASK **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** Pinch point precautions to take in machine room safe maintenance include (check all that apply) a. Be aware of hand placement b. Never work under suspended load c. Never wear lose clothing d. Always wear ear protection ***Call on participants for answer*** ***Advance once given the correct answer*** Answer: a., b., c. and what else? Review next slide ***Advance.*** ***[Review slide 39 from earlier.]*** ***Advance.***	✓PPT slides 38, 39  

Elevator – Electric Traction Safety Procedures

Instructor's Guide

Module Length: 120 min Time remaining: 80 min This section: 7 min (7 slides) *Section start time: _____* *Section End Time: _____*

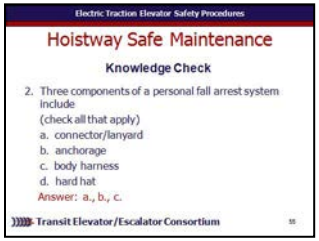
DO	SAY	Materials Needed
REVIEW slides **REFER** participants to ASME A17.1, A17.2, and A17.3 **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** ***[Refer participants to A17.1 Sections 1 and 2.4.7.1, A17.2 Section 3.4.1 and A17.3 Sections 1 and 2.4, for a detailed review of code requirements for overhead clearance.]*** ***Advance.*** Before working on top of the car, ***Advance.*** the technician should locate and test the **stop switch** which is located on the top of car control box. ***Advance.*** The switch should be tested in accordance with both manufacturer's recommendations and the transit authority's procedures. ***Advance.*** Additionally make sure the directional controls work properly in both directions before leaving the floor level. ***Advance.*** There is a light on the top of car control box should be a light associated with the stop switch. Ensure that the light both works and is guarded. ***Advance.***	✓PPT slides 42, 43   ✓ A17.1, A17.2, A17.3

Module Length: 120 min Time remaining: 73 min This section: 10 min (9 slides) *Section start time: _____* *Section End Time: _____*

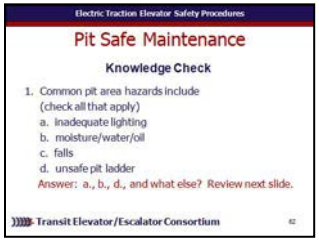
DO	SAY	Materials Needed
REVIEW slide **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** Next lets look at safety in the length of a hoistway in an electric traction elevator system. ***Advance.*** Many of the safety procedures mentioned in the previous section apply to working in the length of the hoistway. In this area, falls are among the most common causes of serious work-related injuries and deaths. Inspections and maintenance performed along the length of the hoistway are generally performed from the top of the car. The top of the car acts as a moving platform from which the technician works. The car can be moved up or down in the hoistway to facilitate inspections and repairs to any of the various switches, safety devices, or door mechanisms. ***Advance.***	✓PPT slides 47, 48  

Module Length: 120 min Time remaining: 73 min This section: 10 min (9 slides) *Section start time: _____* *Section End Time: _____*

DO	SAY	Materials Needed
ASK **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** Three components of a personal fall arrest system include (check all that apply) a. connector/lanyard b. anchorage c. body harness d. hard hat ***Call on participants for answer*** ***Advance once given the correct answer*** Answer: a., b., c. ***Advance.***	✓PPT slide 55



Module Length: 120 min Time remaining: 63 min This section: 10 min (10 slides) *Section start time: _____* *Section End Time: _____*

DO	SAY	Materials Needed
ASK **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** Lets see what we have learned so far: Common pit area hazards include (check all that apply) a. inadequate lighting b. moisture/water/oil c. falls d. unsafe pit ladder ***Call on participants for answer*** ***Advance once given the correct answer*** Answer: a., b., d., and what else? Review next slide. ***Advance.*** ***[Review slide for recall and review purposes.]*** ***Advance.***	✓PPT slides 62, 63  

Module Length: 120 min Time remaining: 53 min This section: 8 min (8 slides) *Section start time: _____* *Section End Time: _____*

DO	SAY	Materials Needed
REVIEW slide **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** Machine-roomless (MRL) elevators employ a smaller sheave than conventional traction elevators thereby allowing the motor that drives the elevator to be mounted within the hoistway itself and eliminating the need for a separate machine room. The configuration of an MRL elevator with the motor inside the hoistway presents some added complications for maintenance technicians. When the car is in its topmost location there is limited headroom with which to work on the motor and other equipment located in the hoistway. Therefore, we need to take some time and review specific safety practices related to this type of elevator system. ***Advance.***	✓PPT slide 66 

Module Length: 120 min Time remaining: 45 min This section: 10 min (9 slides) *Section start time: _____* *Section End Time: _____*

DO	SAY	Materials Needed
REVIEW slide **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** Miscommunication can result equipment inadvertently being energized or moved causing serious injury and possibly death. The key is therefore effective communication and there are three basic tenets in developing a solid communication process: Establish a channel of communication Be clear Make no moves without repetition ***Advance.***	✓PPT slide 76 

Module Length: 120 min Time remaining: 45 min This section: 10 min (9 slides) *Section start time: _____* *Section End Time: _____*

DO	SAY	Materials Needed
ASK **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** **True or False**. Each piece of communication that could result in movement or energy applied to equipment should be repeated for certainty ***Call on participants for answer*** ***Advance once given the correct answer*** Answer: True. ***Advance.***	✓PPT slide 82