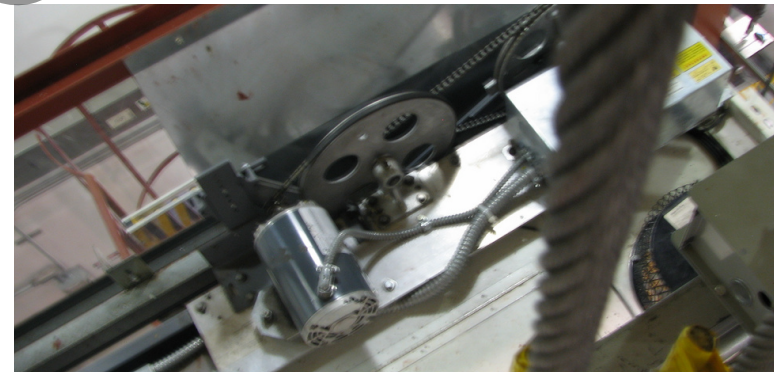
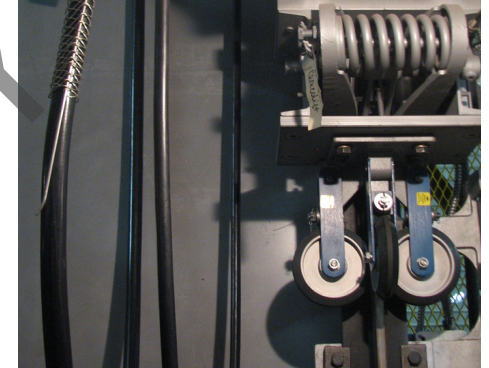


Instructor Guide



213: Elevator: Principles of Operation Module 3: Electric Traction Elevators & MRL Elevators

Elevator – Electric Traction and MRL

Instructor's Guide



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PREVIEW ONLY

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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 Operation and Types	40 minutes
3	Field Trip	74 minutes
4	Major Components (1)	35 Minutes
5	Field Trip	75 Minutes
6	Major Components (2)	30 Minutes
7	Field Trip	75 Minutes
	Summary	15 Minutes
	Total Time:	360 Minutes

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Overview

Purpose The purpose of this module is to:

- Provide the participant with a general knowledge and understanding of the principles of Electric Traction and MRL Elevator Operations. The key concepts discussed will aid the trainee in their future applications of elevator concepts and terminology.

Objectives

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

- Identify basic operation of a traction elevator
- Define terminology associated with traction elevator operation
- Identify different types of electric traction elevators
- Identify major components of electric traction elevators
- Identify and highlight specific safety features of traction elevators
- Identify braking system of traction elevators
- Identify operational controls of traction elevators
- Identify methods of roping

Materials **Mandatory**

Make sure you have the following

- PowerPoint Presentation
- Coursebook
- Quizzes
- Pencils
- Paper
- Elevators 101, 2nd Edition

Optional

You may also want the following for optional activities:

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

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Module Length: 360 min Time remaining: 345min This section: 40min (14 slides) Section start time: _____ Section End Time: _____


DO	SAY	Materials Needed
<div data-bbox="19 439 125 542"></div> <div data-bbox="164 471 473 514"> REVIEW objective </div> <div data-bbox="19 792 444 835"> Instructor's Notes </div> <div data-bbox="19 892 608 1242"> <hr/><hr/><hr/><hr/><hr/> </div>	<div data-bbox="676 421 1023 464"> In your own words: </div> <div data-bbox="676 485 1439 706"> <p>Lets take another look at our first objective. Some of you may remember some of this already, but lets take another look at the basic operation and different types of traction elevators.</p> </div> <div data-bbox="676 706 850 749"> Advance. </div> <div data-bbox="676 792 879 835"> Read slide. </div> <div data-bbox="676 899 1420 1163"> <p>In Course 200 you learned that the elevator industry uses the term electric traction elevators to mean <i>electric elevators</i>. We will continue to use the term “electric traction elevators” in this course as well as its truncated format, “traction elevator.”</p> </div> <div data-bbox="676 1163 850 1206"> Advance. </div>	<div data-bbox="1497 471 1787 514"> ✓ PPT slides 7, 8 </div> <div data-bbox="1535 535 1854 763"> </div> <div data-bbox="1535 785 1854 1021"> </div>

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Module Length: 360 min Time remaining: 345min This section: 40min (14 slides) Section start time: _____ Section End Time: _____

DO	SAY	Materials Needed
<div> REVIEW objective</div> <div><h3>Instructor's Notes</h3><div></div><div></div><div></div><div></div><div></div><div></div></div>	<p>In your own words:</p> <p>The basic operation of an electric traction elevator Advance relies on a pulley system drive sheave controlled by an electric motor to move the car using hoist ropes and Counterweight, contains an Advance electric motor with alternating current (AC) or direct current (DC) to produce traction by turning a traction sheave, and has Advance brakes to hold the car in place once stopped electronically.</p> <p>Advance.</p> <p>There are three types of traction elevators.</p> <p>Read slide.</p> <p>Advance.</p>	<p>✓ PPT slides 9, 10</p> <div><div><p>Electric Traction and MRL Elevators</p><p>Basic Operation</p><p>A traction elevator:</p><ul style="list-style-type: none">Relies on a pulley system drive sheave controlled by an electric motor to move the car using hoist ropes and counterweight.Electric motor is alternating current (AC) or direct current (DC) to produce traction by turning a traction sheave.Brakes hold the car in place once stopped electronically.<p>Transit Elevator/Escalator Consortium</p></div><div><p>Electric Traction and MRL Elevators</p><p>Types</p><div><div>Electric Traction Elevators</div><div><div>Gearless Electric Traction</div><div>Gearless Electric Traction</div><div>MRL</div></div></div><p>Transit Elevator/Escalator Consortium</p></div></div>

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Module Length: 360 minutes Time remaining: 305 minutes This section: 75 minutes Section start time: _____ Section End Time: _____



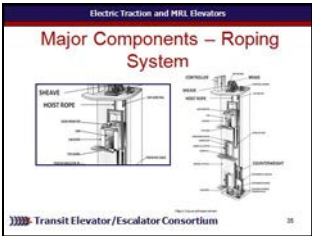
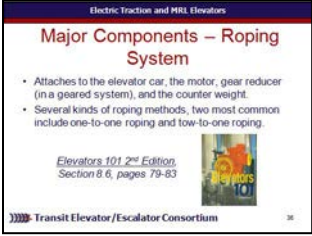
DO	SAY	Materials Needed
<div data-bbox="19 435 131 549"></div> <div data-bbox="164 454 405 539">CLASSROOM ACTIVITY</div> <div data-bbox="28 792 444 839">Instructor's Notes</div> <div data-bbox="28 892 608 1242"><hr/><hr/><hr/><hr/><hr/></div>	<p>In your own words:</p> <p>Okay, now it's time to see how this works in the real world. Please get your stuff together for a trip to the lab.</p> <p><i>[At instructor's discretion, take time to visit the field and look for the different types of traction elevators and related information.]</i></p> <p>Advance.</p>	<p>✓ PPT slide 20</p> <div data-bbox="1574 521 1889 753"></div>

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Module Length: 360 min Time remaining: 230 min This section: 35 min (17 slides) Section start time: _____ Section End Time: _____

DO	SAY	Materials Needed
<div> REVIEW slides</div> <div> REFER participants to <u>Elevators 101 2nd Edition</u>, Sections 8.46 pages 79 – 83.</div> <div><h3>Instructor's Notes</h3><hr/><hr/><hr/><hr/><hr/><hr/><hr/><hr/></div>	<p>In your own words:</p> <p>The next component we will take a look at is the roping system as seen here.</p> <p>Advance.</p> <p>The roping system Advance attaches to the elevator car, the motor, gear reducer (in a geared system), and the counter weight.</p> <p>Advance There are several kinds of roping methods with the two most common including a one-to-one roping and two-to-one roping.</p> <p>Advance.</p> <p>Lets take a look at <u>Elevators 101 2nd Edition</u>, Section 8.6, pages 79-83 for more information.</p> <p>[Have participants turn to these pages for additional information.]</p> <p>Advance.</p>	<p>✓PPT slides 36, 37</p> <div></div> <div></div>

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Module Length: 360 minutes Time remaining: 195 minutes This section: 75 minutes Section start time: _____ Section End Time: _____

DO	SAY	Materials Needed
<div data-bbox="19 435 131 549" data-label="Image"> </div> <div data-bbox="164 435 409 521" data-label="Section-Header"> <h3>CLASSROOM ACTIVITY</h3> </div> <div data-bbox="19 792 444 835" data-label="Section-Header"> <h3>Instructor's Notes</h3> </div> <div data-bbox="19 892 608 1242" data-label="Form"> <hr/><hr/><hr/><hr/><hr/> </div>	<div data-bbox="676 421 1429 913" data-label="Text"> <p>In your own words: Okay, now it's time to see how this works in the real world. Please get your stuff together for a trip to the lab.</p> <p><i>[At instructor's discretion, take time to visit the field and look for these traction elevator major components and related information.]</i></p> <p>Advance.</p> </div>	<div data-bbox="1497 464 1777 506" data-label="List-Group"> <ul style="list-style-type: none"> ✓ PPT slide 38 </div> <div data-bbox="1555 521 1870 749" data-label="Image"> </div>

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Module Length: 360 min Time remaining: 125 min This section: 30 min (13 slides) Section start time: _____ Section End Time: _____


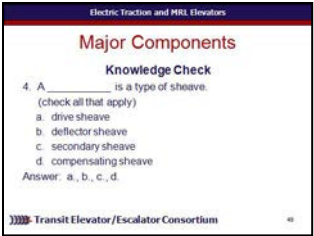
DO	SAY	Materials Needed
<div data-bbox="19 439 125 542"></div> <div data-bbox="164 471 415 506">REVIEW slides</div> <div data-bbox="19 792 444 835"> <h3>Instructor's Notes</h3> <hr/><hr/><hr/><hr/><hr/><hr/> </div>	<div data-bbox="676 421 1023 464">In your own words:</div> <div data-bbox="676 478 1410 785"> <p>Safety Devices, or “Safeties” Advance are built in safety systems that keep an elevator car in position. Advance They are activated by a governor, a mechanical device that monitors the speed of the elevator car and counterweight.</p> <p>Advance.</p> <p>Advance As the elevator car speeds up or slows down, so does the governor. Advance The governor signals the elevator control and activates the car or counterweight safeties when an overspeed situation arises.</p> <p>Advance.</p> </div>	<div data-bbox="1526 464 1854 506">✓PPT slides 43, 44</div> <div data-bbox="1541 535 1854 768"> </div> <div data-bbox="1541 785 1854 1018"> </div>

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Module Length: 360 min Time remaining: 125 min This section: 30 min (13 slides) Section start time: _____ Section End Time: _____



DO	SAY	Materials Needed
<div> ASK</div> <div>Instructor's Notes <hr/><hr/><hr/><hr/><hr/><hr/></div>	<p>In your own words:</p> <p>A _____ is a type of sheave. (check all that apply)</p> <ul style="list-style-type: none">a. drive sheaveb. deflector sheavec. secondary sheaved. compensating sheave <p>Allow participants to think for a moment.</p> <p>Call on participants for answer.</p> <p>Advance for correct answer.</p> <p>Answer: a., b., c., d.</p> <p>Advance.</p>	<p>✓PPT slide 51</p> <div></div>

Elevator – Electric Traction and MRL

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Module Length: 360 minutes Time remaining: 90 minutes This section: 75 minutes Section start time: _____ Section End Time: _____

DO	SAY	Materials Needed
<div></div> <div>CLASSROOM ACTIVITY</div> <div>Instructor's Notes </div>	<p>In your own words: Okay, now it's time to see how this works in the real world. Please get your stuff together for a trip to the lab.</p> <p><i>[At instructor's discretion, take time to visit the field and look for traction elevator major components, examples of operation, and related information.]</i></p> <p>Advance.</p>	<p>✓ PPT slide 52</p> <div></div>