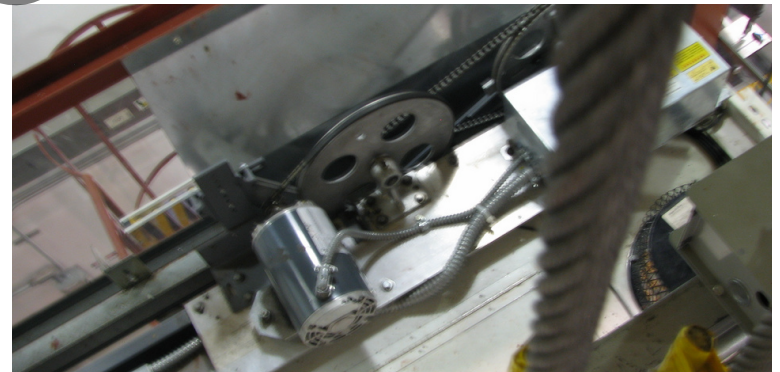
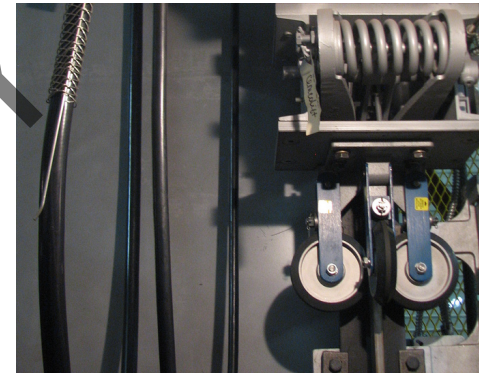
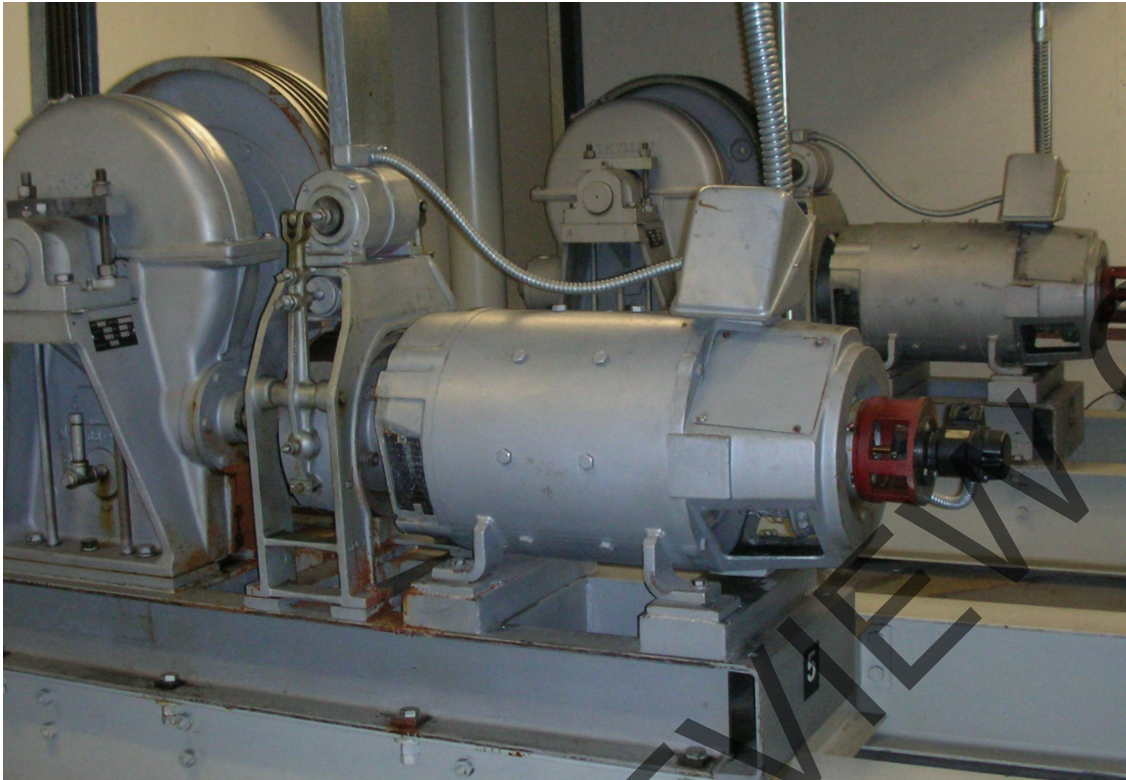


Instructor Guide



215: Elevator: Mechanical Drive Systems Module 1: General Safety Procedures



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PREVIEW ONLY

Elevator – Mechanical Drive Systems Safety

Instructor's Guide



Icons Used In This Guide



REVIEW slides



ASK



CLASSROOM ACTIVITY



SMALL GROUP ACTIVITY



INDIVIDUAL ACTIVITY



WRITE



Multimedia



REFER participants to

Agenda

Topic #	Topic Title	Duration
1	Overview	30 minutes
2	Machine Room Hazards	40 minutes
3	Top of Car Hazards	40 minutes
4	Pit Area Hazards	40 minutes
5	Summary	30 minutes
	Total Time:	180 minutes

PREVIEW ONLY

Elevator – Mechanical Drive Systems Safety

Instructor's Guide



Overview

Purpose The purpose of this module is to:
Provide the participant with general information on working safely on and around elevator driving machines.

Objectives

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

- Identify restricted areas at the top and bottom of the car
- Identify hazards and hazardous areas associated with hydraulic driving machines.
- Identify hazards associated with traction elevators
- Explain the correct procedures in dealing with spills

Materials

Mandatory Make sure you have the following

- PowerPoint Presentation
- Coursebook
- Quizzes
- Pencils
- Authority Specific Related Procedures
- Elevator Industry Field Employees' Safety Handbook

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

Elevator – Mechanical Drive Systems Safety

Instructor's Guide



Module Length: 180 min

Time remaining: 180 min

This section: 30 min (11 slides) Section start time: _____

Section End Time: _____

DO



REVIEW introduction slide

Instructor's Notes

SAY

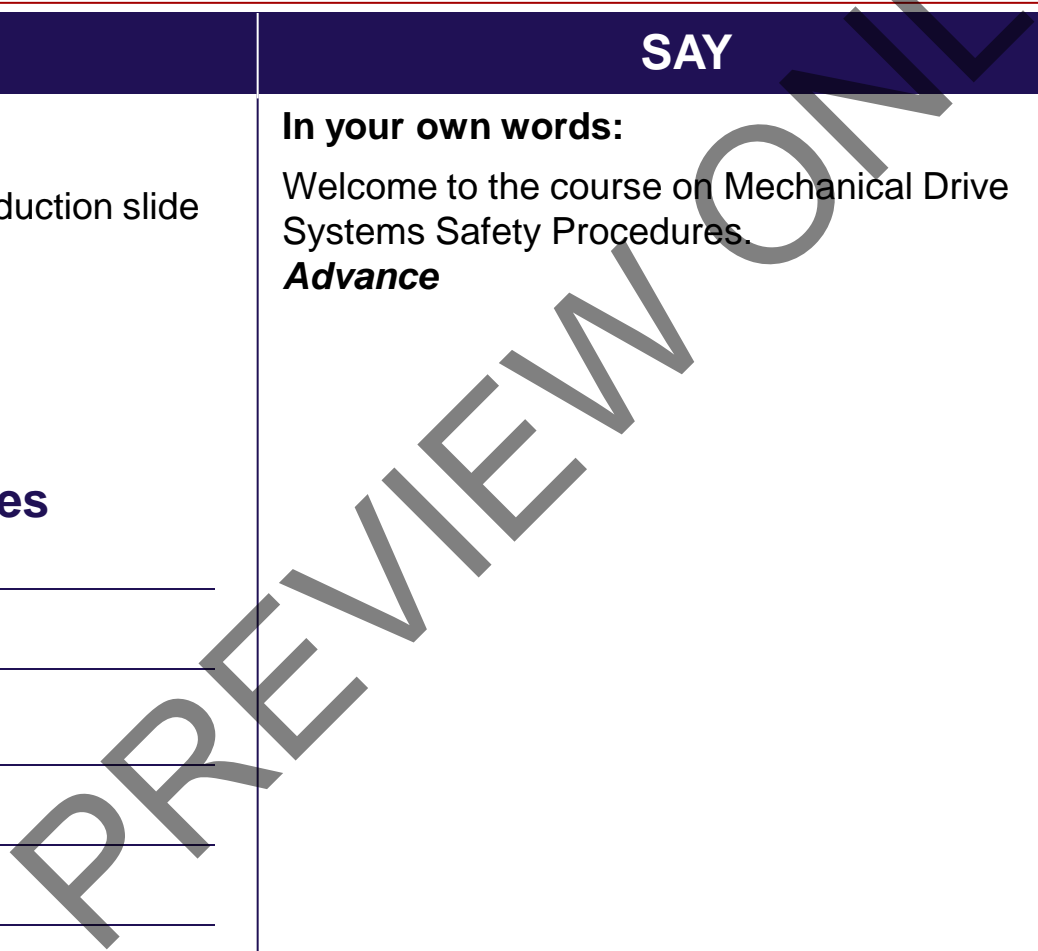
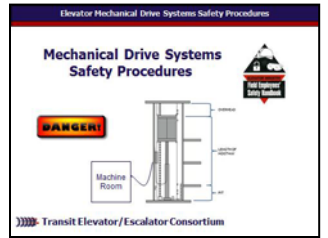
In your own words:

Welcome to the course on Mechanical Drive Systems Safety Procedures.

Advance

Materials Needed

✓ PPT slide 1



Elevator – Mechanical Drive Systems Safety

Instructor's Guide



Module Length: 180 min

Time remaining: 180 min

This section: 30 min (11 slides) Section start time: _____

Section End Time: _____

DO	SAY	Materials Needed
<div data-bbox="34 464 144 568" data-label="Image"> </div> <div data-bbox="150 506 598 542" data-label="Text"> <p>REVIEW introduction slide</p> </div> <div data-bbox="28 792 444 835" data-label="Section-Header"> <h3>Instructor's Notes</h3> </div> <hr/> <hr/> <hr/> <hr/> <hr/>	<div data-bbox="672 428 1023 464" data-label="Section-Header"> <p>In your own words:</p> </div> <div data-bbox="672 485 1391 656" data-label="Text"> <p>Elevators are potential sources of serious injuries, even deaths, to those who install, repair, and maintain them. According to the Department of Labor,</p> </div> <div data-bbox="672 678 1420 1021" data-label="Text"> <p>“Elevator installers and repairers have a rate of injury and illness that is slightly higher than the national average. Potential risks include injuries due to falls from ladders and scaffolding, burns or other injuries due to electrical shocks from control systems, and muscle strains from lifting and carrying equipment.”</p> </div> <div data-bbox="672 1035 975 1071" data-label="Text"> <p>Do Not Advance</p> </div>	<div data-bbox="1497 471 1729 506" data-label="Text"> <p>✓ PPT slide 2</p> </div> <div data-bbox="1535 542 1854 778" data-label="Image"> </div>

Elevator – Mechanical Drive Systems Safety

Instructor's Guide



Module Length: 180 min

Time remaining: 150 min

This section: 40 min (18 slides) Section start time: _____ Section End Time: _____

DO	SAY	Materials Needed
<div data-bbox="34 471 139 574" data-label="Image"> </div> <div data-bbox="177 506 260 542" data-label="Text"> <p>ASK</p> </div> <div data-bbox="28 792 444 835" data-label="Section-Header"> <h3>Instructor's Notes</h3> </div> <hr/> <hr/> <hr/> <hr/> <hr/>	<div data-bbox="676 428 1023 464" data-label="Section-Header"> <p>In your own words:</p> </div> <div data-bbox="676 492 1429 664" data-label="Text"> <p>Using Table 1 in the course book <u>Elevator Mechanical Drive Systems</u> "Module 1", what hazards exist for the governor in the machine room?</p> </div> <div data-bbox="676 742 1391 821" data-label="Text"> <p>Answer: entanglement, pinching, crushing, abrasion, and tripping.</p> </div> <div data-bbox="676 828 840 863" data-label="Text"> <p>Advance</p> </div>	<div data-bbox="1497 478 1748 514" data-label="Text"> <p>✓ PPT slide 27</p> </div> <div data-bbox="1535 535 1854 763" data-label="Image"> </div>

Elevator – Mechanical Drive Systems Safety


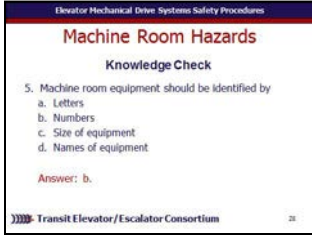
Instructor's Guide



Module Length: 180 min

Time remaining: 150 min

This section: 40 min (18 slides) Section start time: _____ Section End Time: _____

DO	SAY	Materials Needed
 <p>ASK</p> <p>Instructor's Notes</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	<p>In your own words:</p> <p>5. Machine room equipment should be identified by</p> <ul style="list-style-type: none">a. Lettersb. Numbersc. Size of equipmentd. Names of equipment <p>Answer: b. Advance</p>	<p>✓PPT slide 28</p> 

Elevator – Mechanical Drive Systems Safety

Instructor's Guide



Module Length: 180 min

Time remaining: 110 min

This section: 40 min (11 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slide



ASK

Instructor's Notes

SAY

In your own words:

Pinching or Nipping

[Ask] Again, what is pinching?

[Discuss participant responses]

Explain: Components or equipment elements that through changing positions or rotation can pinch or nip a worker's limbs, commonly fingers, or clothing. Wire ropes shall only be inspected or lubricated when the elevator car is stopped. Avoid pinch points.

Advance

Materials Needed

✓ PPT slide 35



Elevator – Mechanical Drive Systems Safety

Instructor's Guide



Module Length: 180 min

Time remaining: 110 min

This section: 40 min (11 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



REVIEW slide

In your own words:

In addition to the hazards shared by the machine room and top of the car, additional top of car hazards also include falling and being struck.

Lets look at falling first.

When a fall hazard exists, fall protection shall be used. Never stand or sit on the crosshead when the car is moving. If movement of the car is needed while on top of the car, be sure to have a firm hold on the crosshead, or other part of the car structure. Use extra care when working on car tops that are curved, domed, or located in unenclosed hoistways.

Advance

✓ PPT slide 36



Instructor's Notes

Elevator – Mechanical Drive Systems Safety

Instructor's Guide



Module Length: 180 min

Time remaining: 70 min

This section: 40 min (19 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



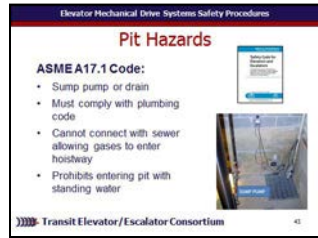
REVIEW slides

In your own words:

Water from the building due to leakages, cleaning floors or fighting fires may enter the pit and adversely affect operation of the elevator. Provisions include drains or sump pumps to prevent standing water from accumulating. Also, pits must comply with the plumbing code and cannot be directly connected to the sewer in a manner that would allow gases to enter the hoistway. Safety procedures also prohibit anyone to enter an elevator pit which has standing water.

Advance

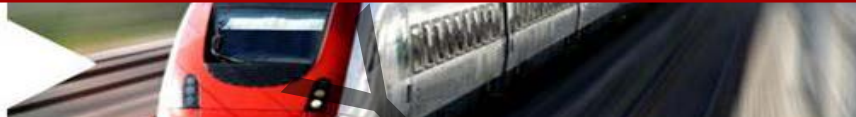
✓ PPT slide 43




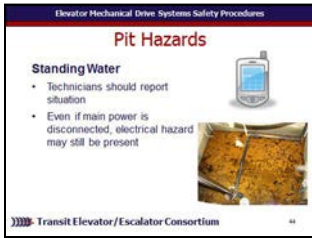
Instructor's Notes

Elevator – Mechanical Drive Systems Safety

Instructor's Guide



Module Length: 180 min Time remaining: 70 min This section: 40 min (19 slides) Section start time: _____ Section End Time: _____

DO	SAY	Materials Needed
 <p>REVIEW slides</p> <h3>Instructor's Notes</h3> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	<p>In your own words:</p> <p>If there is water in the pit, the elevator technician should report the situation so that the water can be drained from the pit. Water presents an electrical hazard because there could be residual power in pit equipment even when the main power is disconnected.</p> <p>Advance</p>	<p>✓ PPT slide 44</p> 

Elevator – Mechanical Drive Systems Safety

Instructor's Guide



Module Length: 180 min

Time remaining: 70 min

This section: 40 min (19 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slide



WRITE

Instructor's Notes

SAY

In your own words:

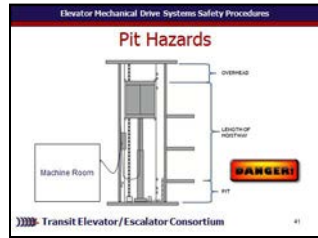
There is a variety of equipment in the pit that requires the attention of the elevator worker. Each piece of equipment carries its own hazard and worker safety is paramount when inspecting and maintaining this equipment.

Take a minute to list a few pieces of equipment found in the pit that may present a hazard.

Do Not Advance

Materials Needed

✓ PPT slide 45



Elevator – Mechanical Drive Systems Safety

Instructor's Guide



Module Length: 180 min

Time remaining: 70 min

This section: 40 min (19 slides) Section start time: _____

Section End Time: _____

DO	SAY	Materials Needed
<div data-bbox="34 464 144 568" data-label="Image"> </div> <div data-bbox="177 506 415 542" data-label="Text"> <p>REVIEW slide</p> </div> <div data-bbox="28 792 444 835" data-label="Section-Header"> <h3>Instructor's Notes</h3> </div> <hr/> <hr/> <hr/> <hr/> <hr/>	<div data-bbox="672 428 1023 464" data-label="Section-Header"> <p>In your own words:</p> </div> <p>As well as Cylinder and plungers (for hydraulic elevators) Traveling cables, junction boxes and fastening on the car Ladder Stop switch Lighting and light switch</p> <p>Advance</p>	<div data-bbox="1497 471 1748 506" data-label="Text"> <p>✓ PPT slide 46</p> </div> <div data-bbox="1535 528 1854 763" data-label="Image"> </div>

Elevator – Mechanical Drive Systems Safety

Instructor's Guide



Module Length: 180 min

Time remaining: 70 min

This section: 40 min (19 slides) Section start time: _____

Section End Time: _____

DO	SAY	Materials Needed
<div data-bbox="34 442 144 542" data-label="Image"> </div> <p data-bbox="164 471 425 506">REVIEW slides</p> <div data-bbox="34 556 144 664" data-label="Image"> </div> <p data-bbox="164 571 569 735">REFER participants to <u>Elevator Industry Field Employee Handbook 2012 Section 8.2</u></p> <p data-bbox="28 792 444 835">Instructor's Notes</p> <hr/> <hr/> <hr/> <hr/> <hr/>	<p data-bbox="676 428 1023 464">In your own words:</p> <p data-bbox="676 485 1439 835">Equipment mounted on the bottom of the car, such as safeties and guides are inspected and serviced from the pit. Some load-weighting sensors are also located under the car, while others are mounted on the crosshead. Appropriate safety measures must be implemented whenever authorized personnel enter the pit area.</p> <p data-bbox="676 842 1439 1099">When entering the pit, always follow the procedures in the <u>Elevator Industry Field Employees' Safety Handbook</u> and your transit agency's policy. It is also a good idea to have an up car call set when entering the pit. Thus, if the car moves, it would most likely move up.</p> <p data-bbox="676 1106 1420 1278">[Refer participants to <u>Elevator Industry Field Employee Handbook 2012 Section 8.2</u> to review working safely on top of the car.] Advance</p>	<p data-bbox="1497 471 1748 506">✓ PPT slide 47</p> <div data-bbox="1535 528 1854 763" data-label="Image"> </div> <p data-bbox="1516 806 1874 978">✓ <u>Elevator Industry Field Employee Handbook 2012</u></p>

Elevator – Mechanical Drive Systems Safety

Instructor's Guide



Module Length: 180 min

Time remaining: 70 min

This section: 40 min (19 slides) Section start time: _____

Section End Time: _____

DO	SAY	Materials Needed
<div data-bbox="34 464 144 568" data-label="Image"> </div> <div data-bbox="177 506 415 542" data-label="Text"> <p>REVIEW slide</p> </div> <div data-bbox="28 792 444 835" data-label="Section-Header"> <h3>Instructor's Notes</h3> </div> <hr/> <hr/> <hr/> <hr/> <hr/>	<div data-bbox="676 428 1023 464" data-label="Section-Header"> <p>In your own words:</p> </div> <div data-bbox="676 492 1439 792" data-label="Text"> <p>Be aware of any hazardous material that may be in the pit. Also, note and stay clear of equipment for adjacent cars that may be operational. Counterweight guards must be in place and secured where compensation is not provided and also where the back of the counterweight is open.</p> </div> <div data-bbox="676 849 1420 928" data-label="Text"> <p>You may recall from 213 or Restricted Space is space that contains:</p> </div> <div data-bbox="676 949 1304 1028" data-label="Text"> <p>Advance Or has potential to contain hazardous atmosphere.</p> </div> <div data-bbox="676 1049 1429 1128" data-label="Text"> <p>Advance Material with potential to engulf an entrant.</p> </div> <div data-bbox="676 1149 1400 1235" data-label="Text"> <p>Advance Possibility for entrant to become trapped or asphyxiated.</p> </div>	<div data-bbox="1497 478 1748 506" data-label="Text"> <p>✓ PPT slide 48</p> </div> <div data-bbox="1535 535 1854 763" data-label="Image"> </div>

Elevator – Mechanical Drive Systems Safety

Instructor's Guide



Module Length: 180 min

Time remaining: 70 min

This section: 40 min (19 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



REVIEW slide

In your own words:

Moving equipment such as counterweights, pumps, motors, belts, and sheaves can cause serious injury to maintenance workers within the pit area. Be aware and ensure that clothing and hands can't get caught in them. Proper hand protection should always be used when cleaning the pit. Never stand in the counterweight runway, under compensating chains or straddle over the traveling cable(s) loop.

Advance

✓ PPT slide 55



Instructor's Notes

Elevator – Mechanical Drive Systems Safety

Instructor's Guide



Module Length: 180 min

Time remaining: 30 min

This section: 30 min (3 slides)

Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



**CLASSROOM
ACTIVITY**



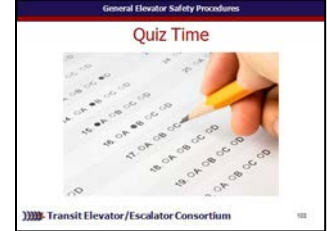
INDIVIDUAL ACTIVITY

Instructor's Notes

In your own words:

Administer quizzes.

- ✓ PPT slide 62
- ✓ Quizzes
- ✓ Pencils



PREVIEW ONLY