

Elevator – Electric Traction Hoistway

Instructor's Guide



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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	30 Minutes
2	Sensory Inspection	20 Minutes
3	Field Trip	60 Minutes
4	Inspection and Maintenance	120 Minutes
5	Field Trip	60 Minutes
6	Inspection and Maintenance	60 Minutes
7	Lighting	10 Minutes
8	MRL Elevators	20 Minutes
9	Field Trip	60 Minutes
10	Summary	40 Minutes
	Total Time:	480 Minutes

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Overview

Purpose The purpose of this module is to:

Provide the participant with an overview of inspecting and maintaining components in the hoistway of a traction elevator system within a public transit environment.

Objectives

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

- Identify hoistway areas and associated components requiring inspection
- List all hoistway auxiliary lighting requiring inspection
- Identify hoistway areas and associated components requiring cleaning
- Identify hoistway areas and associated components requiring lubrication
- Perform a sensory inspection of a hoistway
- Perform an inspection of components in a traction elevator hoistway
- Perform an operational test on all safety devices in the Hoistway
- Perform an operational test on all auxiliary lights

Materials

Mandatory Make sure you have the following

- PowerPoint Presentation
- Coursebook
- Quizzes
- Pencils
- Paper

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
- ASME A17.1
- ASME A17.2
- ASME A17.3
- Bethlehem Rope Technical Bulletin 3 & 6

Elevator – Electric Traction Hoistway

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Module Length: 480 min

Time remaining: 480 min

This section: 30 min (7 slides)

Section start time: _____

Section End Time: _____

DO



REVIEW introduction slides

Instructor's Notes

SAY

In your own words:

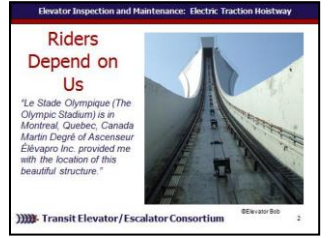
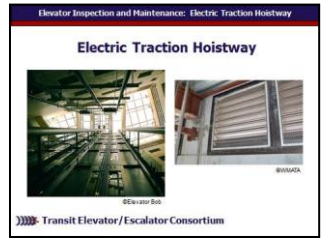
Welcome to the course on inspection and maintenance of electric traction hoistways.
Advance

Imagine being a technician for this electric traction elevator system in Canada! While this is very interesting to see, most hoistways in transit don't look like this one but will require similar maintenance.

Advance

Materials Needed

✓ PPT slides 1, 2



Elevator – Electric Traction Hoistway

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Module Length: 480 min

Time remaining: 480 min

This section: 30 min (7 slides)

Section start time: _____

Section End Time: _____

DO



REVIEW module objectives

Instructor's Notes

SAY

In your own words:

Today we will

- Identify hoistway areas and associated components, which require inspection
- Identify hoistway areas and associated components, which require cleaning
- Identify hoistway areas and associated components, which require lubrication
- List all hoistway auxiliary lighting which require inspection

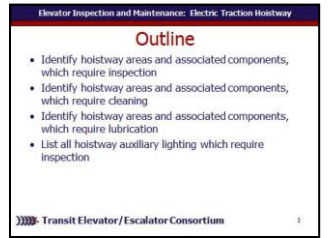
Advance

And

- Perform a sensory inspection of the hoistway
- Perform an inspection of components in a traction elevator hoistway
- Perform an operational test on all safety devices in the hoistway
- Perform an operational test on all auxiliary lights **Advance**

Materials Needed

✓ PPT slides 3, 4



Elevator – Electric Traction Hoistway

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Module Length: 480 min

Time remaining: 480 min

This section: 30 min (7 slides)

Section start time: _____

Section End Time: _____

DO



REVIEW key terms

Instructor's Notes

SAY

In your own words:

Lets take a look at some of the key words we will be defining as move through this module:

- Cable Support
- Deflector Sheaves
- Final Limit Switches
- Normal Limit Switches
- Physical Senses
- Sensory Inspection

Advance

Materials Needed

✓ PPT slide 5



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 480 min

This section: 30 min (7 slides)

Section start time: _____

Section End Time: _____

DO



ASK participants what they remember about safety and elevators



SMALL GROUP ACTIVITY



WRITE

Instructor's Notes

SAY

In your own words:

Thinking back to other courses or just in general, what do we already know about electric traction hoistways?

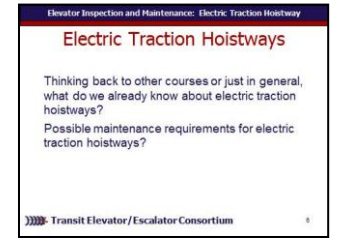
Possible maintenance requirements for electric traction hoistways?

Allow participants to think for a minute and perhaps discuss with a partner ideas as well as write down any ideas. Discuss participant responses and if possible list them on a chalk board or similar.

Advance

Materials Needed

✓ PPT slide 6



- ✓ Chalk board or large paper
- ✓ Blank Paper
- ✓ Writing instruments

Elevator – Electric Traction Hoistway

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Module Length: 480 min

Time remaining: 480 min

This section: 30 min (7 slides)

Section start time: _____

Section End Time: _____

DO



REVIEW slides

Instructor's Notes

SAY

In your own words:

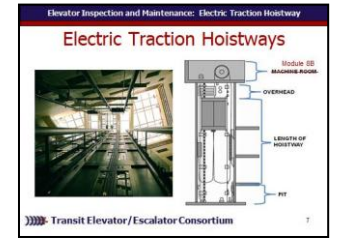
A **hoistway** is a shaft or space typically enclosed by fireproof walls to permit passage of an elevator, dumbwaiter, or material lift between the floors of a building. The hoistway extends from the bottom pit to the top of the shaft, which is generally the underside of the overhead machine room floor or the underside of the roof. Hoistway doors on each floor provide access to the elevator. Many hoistways are constructed with strategic access points along the shaft in the event of a mechanical failure.

Advance There are three major areas of the hoistway: overhead, hoistway length, and pit shown here. Inspection and maintenance of the machine room is covered separately in Module 8B of this course.

Do Not Advance

Materials Needed

✓ PPT slide 7



Elevator – Electric Traction Hoistway

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Module Length: 480 min

Time remaining: 450 min

This section: 20 min (6 slides)

Section start time: _____

Section End Time: _____

DO



REVIEW slides

Instructor's Notes

SAY

In your own words:

This module examines the components within each area of the traction hoistway that the elevator technician needs to inspect and maintain regularly.

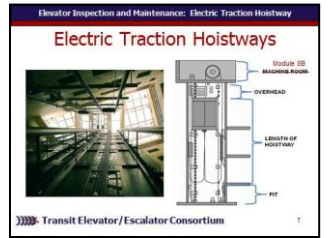
Advance

Lets begin by looking at a sensory inspection in an electric traction hoistway.

Advance

Materials Needed

✓ PPT slide 7, 8



Elevator – Electric Traction Hoistway

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Module Length: 480 min

Time remaining: 450 min

This section: 20 min (6 slides)

Section start time: _____

Section End Time: _____

DO



REVIEW slide



ASK

Instructor's Notes

SAY

In your own words:

During a **sensory inspection** a good elevator technician relies on the **physical senses** of sight, smell, hearing, and touch while inspecting and maintaining the elevator.

Ask

What may indicate a problem within the traction hoistway as indicated by sight?

Discuss possible answers

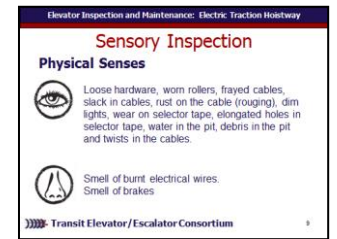
Advance for sample answers

Loose hardware, worn rollers, frayed cables, slack in cables, rust on the cable (rouging), dim lights, wear on selector tape, elongated holes in selector tape, water in the pit, debris in the pit and twists in the cables.

Advance

Materials Needed

✓ PPT slide 9



Elevator – Electric Traction Hoistway

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Module Length: 480 min

Time remaining: 450 min

This section: 20 min (6 slides)

Section start time: _____

Section End Time: _____

DO



REVIEW slide



ASK

Instructor's Notes

SAY

In your own words:

Ask

What may indicate a problem within the traction hoistway as indicated by smell?

Discuss possible answers

Advance for sample answers

Smell of burnt electrical wires.

Advance

Ask

What may indicate a problem within the traction hoistway as indicated by hearing?

Discuss possible answers

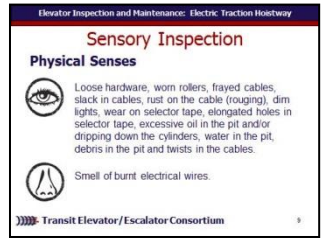
Advance for sample answers

Rattling or clicking of loose components such as rollers, hardware. Clicking near hoistway door. Clunking of counterweight or car landing on buffer.

Advance

Materials Needed

✓ PPT slides 9, 10



Elevator – Electric Traction Hoistway

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Module Length: 480 min

Time remaining: 450 min

This section: 20 min (6 slides)

Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



REVIEW slide



ASK

Instructor's Notes

In your own words:

Ask

What may indicate a problem within the traction hoistway as indicated by touch?

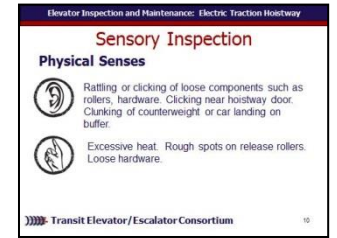
Discuss possible answers

Advance for sample answers

Excessive heat. Rough spots on release rollers. Loose hardware

Advance

✓ PPT slide 10



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 450 min

This section: 20 min (6 slides)

Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



ASK

Instructor's Notes

In your own words:

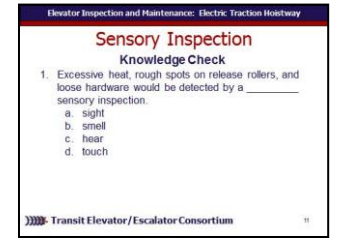
Lets see what we have learned so far:
Excessive heat, rough spots on release rollers, and loose hardware would be detected by a _____ sensory inspection.

- a. sight
- b. smell
- c. hear
- d. touch

Call on participants for answer
Advance once given the correct answer
Answer: d. touch.

Advance.

✓PPT slide 11



Elevator – Electric Traction Hoistway

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Module Length: 480 min

Time remaining: 450 min

This section: 20 min (6 slides)

Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



ASK

In your own words:

Clunking of a counterweight or car landing on a buffer would be detected by a _____ sensory inspection.

- a. sight
- b. smell
- c. hear
- d. touch

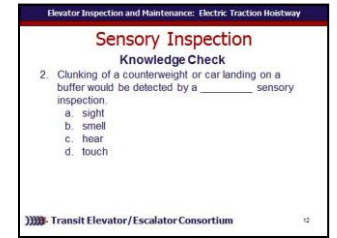
Call on participants for answer

Advance once given the correct answer

Answer: c.

Advance.

✓ PPT slide 12



Instructor's Notes

Elevator – Electric Traction Hoistway

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Module Length: 480 min

Time remaining: 450 min

This section: 20 min (6 slides)

Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



ASK

In your own words:

Describe a possible hoistway problem which would be indicated by sight.

Call on participants for answer

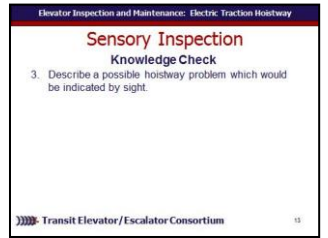
Advance once given the correct answer

Possible Answers:

Loose hardware, worn rollers, frayed cables, slack in cables, rust on the cable (rouging), dim lights, wear on selector tape, elongated holes in selector tape, excessive oil in the pit and/or dripping down the cylinders, water in the pit, debris in the pit and twists in the cables.

Advance.

✓ PPT slide 13



Instructor's Notes

Elevator – Electric Traction Hoistway

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Module Length: 480 min

Time remaining: 430 min

This section: 60 min

Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



ASK



CLASSROOM
ACTIVITY

Instructor's Notes

In your own words:

Take time to visit the field to provide an example demonstration and opportunities for participants to perform the following tests:

- Perform a sensory inspection of the hoistway

Advance

✓PPT slide 14



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slides

Instructor's Notes

SAY

In your own words:

Again, within the electric traction elevator system there are four main areas: machine room which we will cover later, overhead, length of hoistway, and pit.

Advance

Lets start by looking at overhead components.

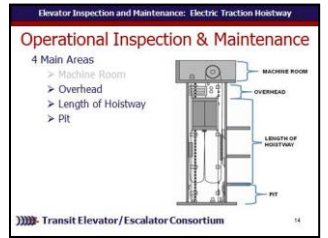
Review locations of overhead components as indicated on diagram:

- Refuge space
- Sprinkler head
- Smoke detector
- Heat detector
- Limit switches

Advance

Materials Needed

✓ PPT slides 15, 16



Elevator – Electric Traction Hoistway

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Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slide



REFER participants to Course book

Instructor's Notes

SAY

In your own words:
Refer participants to

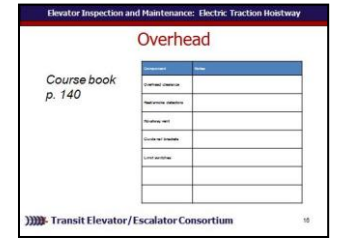
Participant Course book

for chart to write additional notes.

Advance

Materials Needed

✓ PPT slide 17



✓ Course book

Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slides



ASK

Instructor's Notes

SAY

In your own words:

Ask
Where is overhead clearance?
Allow participants to discuss answer.
Advance
Advance and share photo.
Advance

Many hydraulic elevators have very limited overhead clearance.

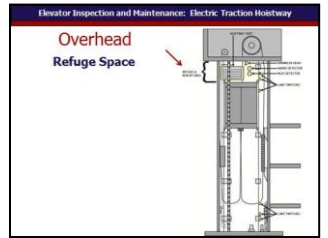
Ask
What is refuge space?
Allow participants to discuss answer.
Advance

Elevators require a certain amount of overhead clearance (refuge or runby space) to accommodate essential components on top of the car.

Do Not Advance

Materials Needed

✓ PPT slides 18, 19



Elevator – Electric Traction Hoistway

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Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slide



REFER participants to
ASME A17.1
ASME A17.2
ASME A17.3

Instructor's Notes

SAY

In your own words:

Overhead clearance is measured from the upper level floor to the lowest obstruction in the top of the hoistway. Make sure that this area is free of any debris or hazards. Make sure that necessary warning signs are in place.

Advance

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

Materials Needed

✓ PPT slide 19



- ✓ ASME A17.1
- ✓ ASME A17.2
- ✓ ASME A17.3

Elevator – Electric Traction Hoistway

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Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides)

Section start time: _____ Section End Time: _____

DO

SAY

Materials Needed



REVIEW slides



ASK

Instructor's Notes

In your own words:

Ask

Lets talk about heat and smoke detectors.
Who maintains these items?

Allow participants to discuss answer.

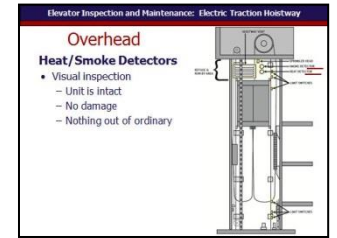
Advance and share diagram.

Advance

While the job to check the operation of heat and smoke detectors is generally left to fire inspectors, elevator technicians should visually check these components. Make sure the unit is intact and not separated from its base. Also check that there is no damage such as cracks. Visually note anything out of the ordinary.

Advance

✓ PPT slide 20



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Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slides



ASK

Instructor's Notes

SAY

In your own words:

Ask

What is a hoistway vent?

Allow participants to discuss answer.

Advance and share photo.

Advance

The hoistway vents located at the top of the overhead allows heat to dissipate from the hoistway.

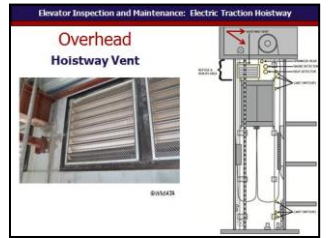
Advance

Make sure the **hoistway vent** is intact and secure. If louvers are present, make sure they are operational. Check for debris stuck to the vent, obstructing the flow of air. One item that is commonly found here is newspaper.

Advance

Materials Needed

✓ PPT slides 21, 22



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Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slides



ASK

Instructor's Notes

SAY

In your own words:

Ask

Lets talk about guide rail brackets. What are guide rail brackets?

Allow participants to discuss answer.

Advance

Examine the guide rail brackets for loose fastenings and proper fit at the joints. Check for corrosion. Because rail brackets have a protruding ledge that runs horizontally, dirt and dust can collect on top. Make sure to clean these surfaces.

Advance

Ask

What is a limit switch?

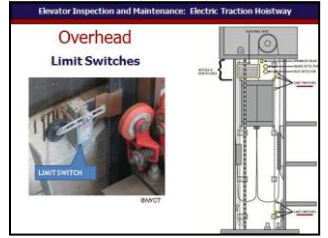
Allow participants to discuss answer.

Advance and share photo.

Advance

Materials Needed

✓ PPT slides 23, 24



Elevator – Electric Traction Hoistway

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Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



REVIEW slide

Instructor's Notes

In your own words:

There are three types of limit switches in the hoistway of transit elevators. One set is located in the overhead and the other set is located in the pit.

Advance If limit switches appear sticky, clean the arm or activator.

Advance Check that the switches and cams are aligned correctly and are securely fastened and adjust accordingly.

Advance The switch roller should strike the bevel of the cam and should be adjusted accordingly.

Advance Replace worn rollers and lubricate pivot pins.

Advance

✓ PPT slide 25



Elevator – Electric Traction Hoistway

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Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



REVIEW slides

Instructor's Notes

In your own words:

Examine the switch contacts and assembly for proper movement (contacts should wipe) and reaction and, where required, repair or replace.

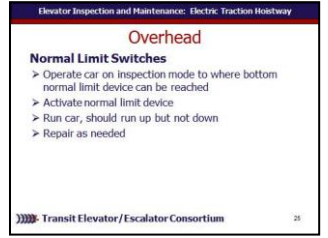
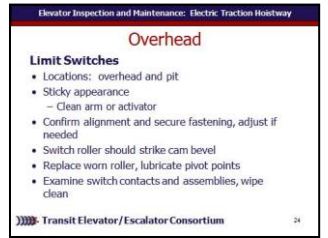
Note: you may need a ladder to reach some of the switches in order to test them.

Advance

For **Normal Limit Switches**, operate the car on inspection mode to a point where the bottom normal limit device can be reached. Activate the normal limit device. The car should run up, but not down. If not functioning as designed, correct the defect as required.

Advance

✓ PPT slides 25, 26



Elevator – Electric Traction Hoistway

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Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



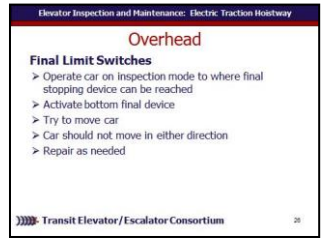
REVIEW slide

In your own words:

For **Final Limit Switches**, operate the car on inspection speed to a point where the final stopping device can be reached. Activate the bottom final device and try to move the car. The car should not move in either direction. If the car moves repair the defect.

Advance

✓ PPT slide 27



Instructor's Notes

Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



ASK

In your own words:

Lets see what we have learned so far:
What should Yvonne do when performing an inspection and maintenance of a limit switch?

Call on participants for answer

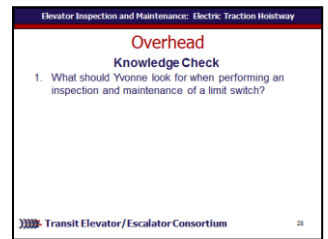
Advance once given the correct answer

Answer:

- Sticky appearance
 - Clean arm or activator
- Confirm alignment and secure fastening, adjust if needed
- Switch roller should strike cam bevel
- Replace worn roller, lubricate pivot points
- Examine switch contacts and assemblies, wipe clean

Advance

✓ PPT slide 28



Instructor's Notes

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Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



ASK

In your own words:

Yes or No. When testing a final limit switch, the car should not move in either direction.

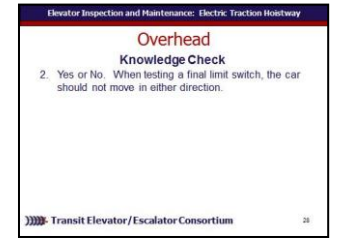
Call on participants for answer

Advance once given the correct answer

Answer: Yes

Advance

✓ PPT slide 29



Instructor's Notes

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Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO	SAY	Materials Needed
<div data-bbox="34 464 144 564" data-label="Image"> </div> <div data-bbox="164 492 434 535" data-label="Text"> <p>REVIEW slides</p> </div> <div data-bbox="28 792 454 842" data-label="Section-Header"> <h3>Instructor's Notes</h3> </div> <hr/> <hr/> <hr/> <hr/> <hr/>	<div data-bbox="666 421 1033 471" data-label="Text"> <p>In your own words:</p> </div> <div data-bbox="666 485 1381 578" data-label="Text"> <p><i>Review locations of length of hoistway components as indicated on diagram:</i></p> </div> <div data-bbox="666 578 1033 1199" data-label="List-Group"> <ul style="list-style-type: none"> Governor rope Hoist rope Guide rails Dust cover Door frame Fish plate Cable support grip Counterweight Halfway box Traveling cable Fascia plates Rail brackets Selector tape Compensating cable </div> <div data-bbox="666 1242 850 1285" data-label="Text"> <p>Advance</p> </div>	<div data-bbox="1497 471 1758 514" data-label="Text"> <p>✓ PPT slide 30</p> </div> <div data-bbox="1535 528 1864 763" data-label="Image"> </div>

Elevator – Electric Traction Hoistway

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Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slide



REFER participants to Course book

Instructor's Notes

SAY

In your own words:
Refer participants to

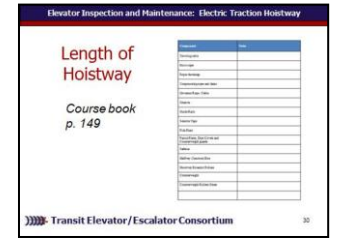
Participant Course book

for chart to write additional notes.

Advance

Materials Needed

✓ PPT slide 32



✓ Course book

Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slides



ASK

Instructor's Notes

SAY

In your own words:

Ask

What is a halfway junction box?

Allow participants to discuss answer.

Advance and share

- ✓ **photo**
- ✓ **labeled parts**
- ✓ **locations on diagram.**

Advance

Sheaves

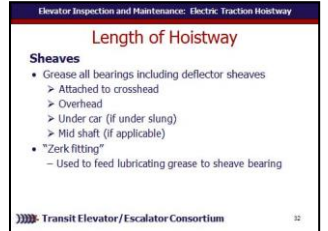
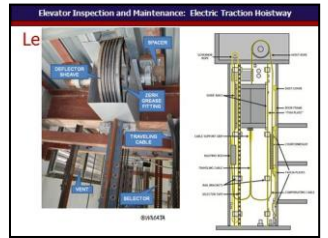
Grease all sheave bearings in the hoistway, including the **deflector sheaves** attached to the crosshead, in the overhead, under the car (if under slung), and mid shaft (if applicable).

Advance The grease fitting, many times referred to as “Zerk fitting”, is used to feed lubricating grease into the sheave bearing.

Advance

Materials Needed

✓ PPT slides 32, 33



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slides



ASK

Instructor's Notes

SAY

In your own words:

Ask

What is a traveling cable?

Allow participants to discuss answer.

Advance and share

- ✓ **photo**
- ✓ **labeled parts**
- ✓ **locations on diagram.**

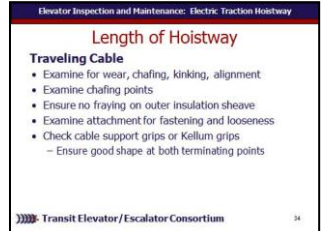
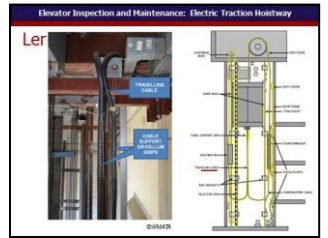
Advance

Look for wear, chafing, kinking and alignment. Examine for chafing points such as caused by exposure to beams, bolts, or rough wall. Make sure that there is no fraying on the outer insulation sheave. Protect cable from chafing. Examine attachment points for secure fastening and looseness. Fasten securely. Check that the **cable support or Kellum grips** are present and in good shape at both terminating points of the traveling cable.

Advance

Materials Needed

✓ PPT slides 34 35



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slide



ASK

Instructor's Notes

SAY

In your own words:

Ask

What is a hoist ropes?

Allow participants to discuss answer.

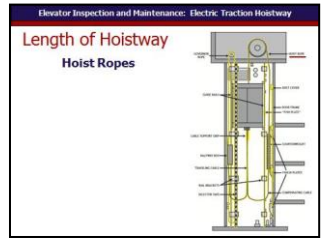
Advance and share

- ✓ **photo**
- ✓ **labeled parts**
- ✓ **locations on diagram.**

Advance

Materials Needed

✓ PPT slide 36



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



REVIEW slide

Instructor's Notes

In your own words:

For hoist ropes –
Inspect the ropes for corrosion (rouging),
crown wear, broken strands and equal
tension.

Advance Examine the shackles, springs,
bolts and cotter pins.

Advance Verify that the ropes are securely
fastened and free of dirt and excessive oil.

Advance Using a rope gauge, check for
proper rope size.

Advance Verify that the cable being threaded
through the shackles, to prevent the rotation
of the ropes, is a minimum of ½ inch.

Advance

✓ PPT slide 37



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



REVIEW slide

Instructor's Notes

In your own words:

Examine ropes for signs of lubricant build-up of

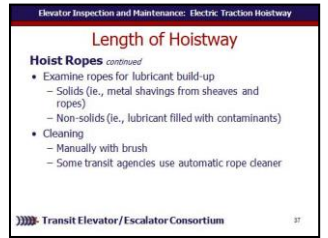
Advance solids, such as metal shavings from sheaves and ropes;

Advance and non-solids, such as lubricant filled with contaminants.

Advance The acceptable method of cleaning elevator ropes is manually with a brush. Some transit properties use an automatic rope cleaner.

Advance

✓ PPT slide 38



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slide



REFER participants to Bethlehem Rope Technical Bulletin 3 & 6

Instructor's Notes

SAY

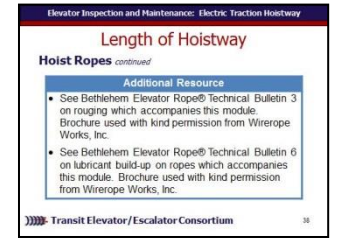
In your own words:
Refer participants to

- Bethlehem Elevator Rope® Technical Bulletin 3 on rouging which accompanies this module. Brochure used with kind permission from Wirerope Works, Inc.
- Bethlehem Elevator Rope® Technical Bulletin 6 on lubricant build-up on ropes which accompanies this module. Brochure used with kind permission from Wirerope Works, Inc.

Advance

Materials Needed

✓ PPT slide 39



✓ Bethlehem Rope Technical Bulletin 3 & 6

Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides)

Section start time: _____ Section End Time: _____

DO

SAY

Materials Needed



REVIEW slide



ASK

Instructor's Notes

In your own words:

Ask

What is a rope fastenings?

Allow participants to discuss answer.

Advance and share

- ✓ **photo**
- ✓ **labeled parts**
- ✓ **locations on diagram.**

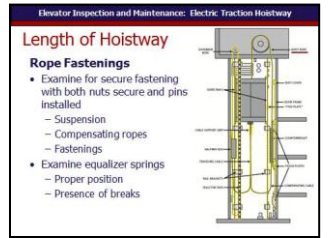
Advance

Examine the suspension, compensating ropes and fastenings for secure fastening with both nuts secure and cotter pins installed.

Advance Examine equalizer springs for proper positioning and the presence of any breaks.

Advance

✓ PPT slide 40



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



REVIEW slide



ASK

Instructor's Notes

In your own words:

Ask

What are compensating ropes and chains?

Allow participants to discuss answer.

Advance and share

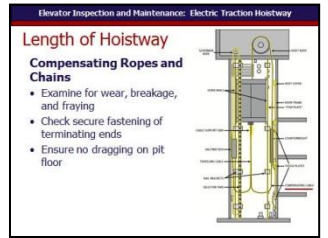
- ✓ **photo**
- ✓ **labeled parts**
- ✓ **locations on diagram.**

Advance

Look for wear, breakage, rust (**rouging**) and fraying ropes. Check that terminating ends are securely fastened. Make sure they are not dragging on the pit floor. If they are dragging this means that runby space may be inadequate.

Advance

✓ PPT slide 41



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slide



ASK

Instructor's Notes

SAY

In your own words:

Ask

What is a governor rope or cable?

Allow participants to discuss answer.

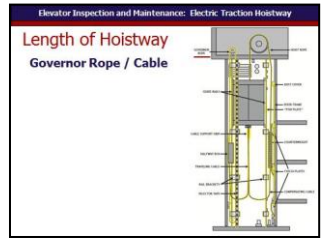
Advance and share

- ✓ **photo**
- ✓ **labeled parts**
- ✓ **locations on diagram.**

Advance

Materials Needed

✓ PPT slide 42



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



REVIEW slide

Instructor's Notes

In your own words:

ASME code prohibits any lubrication of the governor cable. Lubricating the governor rope or cable will affect the of the governor jaws to engage correctly in an emergency.

Advance Check for crown wear, broken strands, or reduced cable diameter. Some transit agencies provide their mechanics with a pocket-sized some gauge to check rope diameter and whether or not the diameter may be worn beyond allowable specifications.

Advance Report defects with the governor rope and follow the standard maintenance procedures of the transit agency.

Advance Check that there is a secure attachment at the safety carrier or safety attachment point and adjust accordingly.

Advance Clean dirt and grease contamination.

Advance

✓ PPT slide 43



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides)

Section start time: _____ Section End Time: _____

DO



REVIEW slide



ASK

Instructor's Notes

SAY

In your own words:

Ask

What are guide rails, brackets, or joints?

Allow participants to discuss answer.

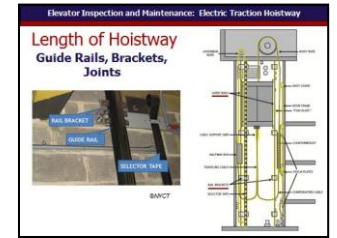
Advance and share

- ✓ **photo**
- ✓ **labeled parts**
- ✓ **locations on diagram.**

Advance

Materials Needed

✓ PPT slide 44



Elevator – Electric Traction Hoistway

Instructor’s Guide




Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO	SAY	Materials Needed
<div style="display: flex; align-items: center; margin-bottom: 20px;">  <div> <h3>REVIEW slides</h3> </div> </div> <div style="margin-top: 20px;"> <h3>Instructor’s Notes</h3> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> </div>	<p>In your own words:</p> <p>Inspect the guide rails, guide rail brackets, rail joints and connecting plate for corrosion and loose hardware and repair as required.</p> <p>Advance Clean guide rails of any lint and dirt. Check rails for nicks, gouges and burs and repair as required. Check alignment visually or with a laser. This is especially significant in earthquake-prone areas.</p> <p>Advance If use shoes, then have to lubricate.</p> <p>Advance</p> <p>With roller guides, rails don’t get as dirty though they are more prone to dust.
Inspect for wear; lubricate per OEM or Authority recommendations; check roller guides for fit and alignment with rail; inspect guide rail for loose fastenings and fit. Clean.</p> <p>Advance</p>	<p>✓ PPT slides 45, 46</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="font-size: small; text-align: center;">Elevator Inspection and Maintenance: Electric Traction Hoistway</p> <p style="text-align: center; color: red;">Length of Hoistway</p> <p>Guide Rails, Brackets, Joints</p> <ul style="list-style-type: none"> • Inspect for corrosion and loose hardware - repair as needed! • Guide rails <ul style="list-style-type: none"> - Clean - Check rails for nicks, gouges, and burs – repair as needed - Check alignment (very important in earthquake areas) • Lubricate shoes if present <p style="font-size: x-small; text-align: center;">Transit Elevator/ Escalator Consortium 44</p> </div> <div style="border: 1px solid black; padding: 5px;"> <p style="font-size: small; text-align: center;">Elevator Inspection and Maintenance: Electric Traction Hoistway</p> <p style="text-align: center; color: red;">Length of Hoistway</p> <p>Guide Rails, Brackets, Joints <i>continued</i></p> <ul style="list-style-type: none"> • Roller guides <ul style="list-style-type: none"> - Inspect for wear - Lubricate per OEM and transit authority recommendations - Check fit and alignment with rail - Inspect for loose fastenings and fit - Clean <p style="font-size: x-small; text-align: center;">Transit Elevator/ Escalator Consortium 45</p> </div>

Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slide



ASK

Instructor's Notes

SAY

In your own words:

Ask

What is a selector tape?

Allow participants to discuss answer.

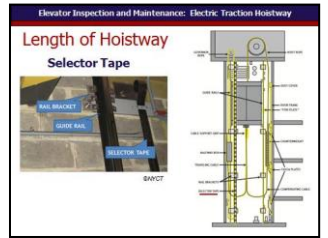
Advance and share

- ✓ **photo**
- ✓ **labeled parts**
- ✓ **locations on diagram.**

Advance

Materials Needed

✓ PPT slide 47



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



REVIEW slide

Instructor's Notes

In your own words:

Examine the stationary **selector tape** by shining a flashlight beam parallel with the tape and check for any bends or cracks.

Advance Examine the sensor guides on the stationary tape for wear. If the guide groove is twice the width of the tape thickness, it should be replaced.

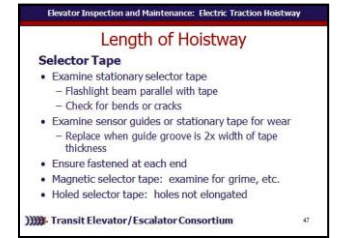
Advance Make sure that the selector tape is securely fastened at each end.

Advance For magnetic selector tapes, examine the magnets on tape for grime build up or materials that may interfere with their operation.

Advance For ones with holes, make sure that the holes are not elongated.

Advance

✓ PPT slide 48



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



REVIEW slides



ASK

Instructor's Notes

In your own words:

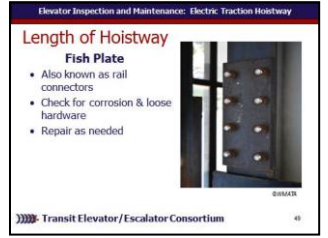
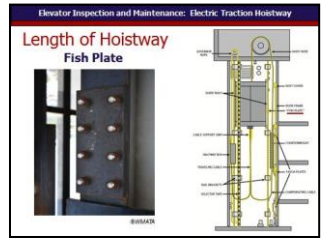
Ask
 What is a fish plate?
Allow participants to discuss answer.
Advance and share
 ✓ **photo**
 ✓ **labeled parts**
 ✓ **locations on diagram.**

Advance

Inspect the fish plates checking for corrosion and loose hardware. Repair defects as required.

Advance

✓ PPT slides 49, 50



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slide



ASK

Instructor's Notes

SAY

In your own words:

Ask

What is a fascia plate? A dust cover?

Allow participants to discuss answer.

Advance and share

- ✓ **photo**
- ✓ **labeled parts**
- ✓ **locations on diagram.**

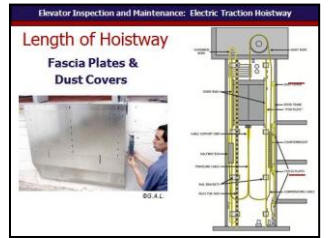
Advance

Inspect the fish plates checking for corrosion and loose hardware. Repair defects as required.

Advance

Materials Needed

✓ PPT slide 51



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



REVIEW slides

Instructor's Notes

In your own words:

Examine the entire shaft and ensure that all fascia plates and dust covers are in place, aligned correctly, and securely fastened.

Advance

Examine the **fascia plate** for presence of scrapes. Check and secure loose **dust covers**.

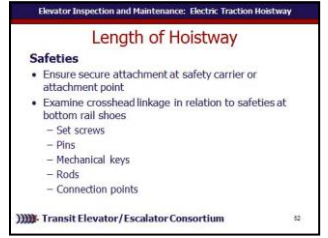
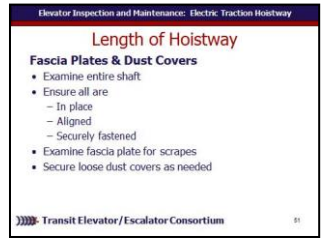
Advance

Ensure a secure attachment at the safety carrier or safety attachment point.

Advance Examine the crosshead linkage (where applicable) for the condition of the set screws, pins, mechanical keys, rods and connection points to the safeties located at the bottom rail shoes.

Advance

✓ PPT slides 52, 53



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



REVIEW slide

Instructor's Notes

In your own words:

If the plank/safety switch is located on the cross head, activate and verify that the elevator will not move.

Advance On elevators with “type B” safeties, clean and lubricate the threaded rod and drum beneath the car in the safety plank.

Advance Examine the tail rope that attaches to the safety carrier. Verify that it is rust-free and tight on the drum. Also check that the tail rope is in the deflector pulleys, so that when activated it will deploy as designed and not kink or break.

Advance

✓ PPT slide 54



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slide



ASK

Instructor's Notes

SAY

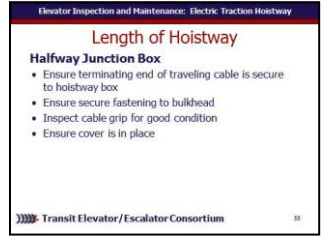
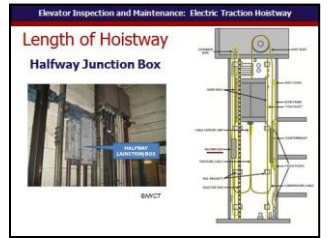
In your own words:

- Ask**
 What is a halfway junction box?
Allow participants to discuss answer.
Advance and share
- ✓ **photo**
 - ✓ **labeled parts**
 - ✓ **locations on diagram.**
- Advance**

At the junction box , ensure that the terminating end of the traveling cable is securely fastened to hoistway box.
Advance Make sure it is securely fastened to the bulkhead.
Advance Make sure cable support grip is present and in good condition.
Advance Make sure cover is in place.
Advance

Materials Needed

✓ PPT slides 55, 56



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slide

Instructor's Notes

SAY

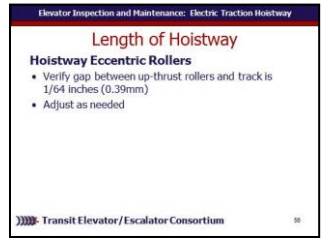
In your own words:

Verify that the gap between the up-thrust rollers and the track is 1/64 inch (0.39mm).
Adjust as required.

Advance

Materials Needed

✓ PPT slide 57



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slide



ASK

Instructor's Notes

SAY

In your own words:

Ask

What is a counterweight and a counterweight guard?

Allow participants to discuss answer.

Advance and share

- ✓ **photo**
- ✓ **labeled parts**
- ✓ **locations on diagram.**

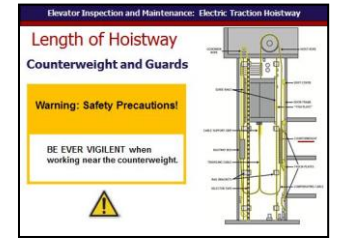
Advance

Safety Warning - BE EVER VIGILANT when working near the counterweight

Advance

Materials Needed

✓ PPT slide 58



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



REVIEW slide

Instructor's Notes

In your own words:

Examine the elevator counterweight and its assemblies.

Advance Check and tighten rods and bolts as required.

Advance Examine shackles and verify all shackle fastenings are tight and secure.

Advance Grease sheave bearing (only applies to 2:1 roping configuration).

Advance Make sure counterweight runby is still adequate per code requirements.

Advance Though presence of rust does not affect the integrity of the counterweight, the technician should check on the source of the dampness that may cause problems for other hoistway components.

Advance Experienced mechanics call the counterweight the “silent killer” hence the necessity of having the guard in place.

Advance

✓ PPT slide 59



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



REVIEW slide

Instructor's Notes

In your own words:

Lets look at counterweight rollers and shoes.
Advance

Inspect the guide rollers for wear and damage and replace as required. Examine the guide rollers for fit and alignment. Guide rollers should contact the rails with sufficient force to make a firm contact with the rail.

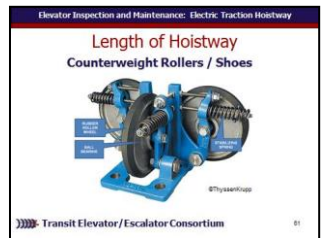
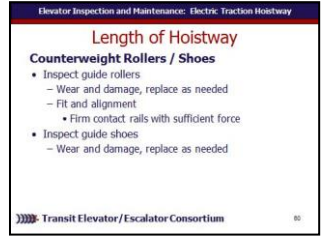
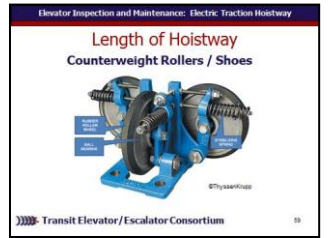
Advance Inspect all counterweight guide shoes for wear and damage and replace as required.

Advance

Review illustration with participants pointing out the rubber roller wheel, ball bearing, and stabilizing spring.

Advance

✓ PPT slides 60, 61, 62



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



ASK

Instructor's Notes

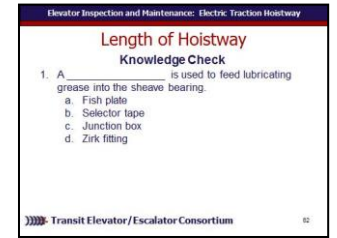
In your own words:

Lets see what we have learned so far:
 A _____ is used to feed lubricating grease into the sheave bearing.

- a. Fish plate
- b. Selector tape
- c. Junction box
- d. Zerk fitting

Call on participants for answer
Advance once given the correct answer
Answer: d.
Advance

✓PPT slide 63



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 370 min

This section: 120 min (50 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



ASK

In your own words:

Tom is given the task to perform inspection and maintenance of the counterweight and counterweight guards. What must Tom do to complete this task?

Call on participants for answer

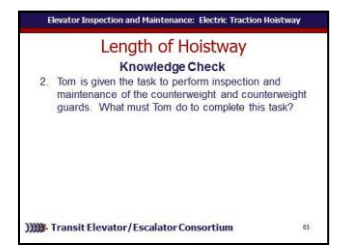
Advance once given the correct answer

Answer:

- Examine counterweight and assemblies
- Tighten rods and bolts as needed
- Verify shackle fastenings are tight and secure
- 2:1 roping configuration – grease sheave bearing
- Ensure runby is adequate per code
- Inspect sources of any dampness
- “Silent Killer” – ensure guard is in place

Advance

✓PPT slide 64



Instructor's Notes

Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 250 min

This section: 60 min

Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



ASK



CLASSROOM
ACTIVITY

Instructor's Notes

In your own words:

[Take time to visit the field to provide an example demonstration and opportunities for participants to perform the following tests:

- Perform an inspection of components in a traction elevator hoistway
- Perform an operational test on all safety devices in the hoistway

Advance

✓PPT slide 65



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____ Section End Time: _____

DO



REVIEW slides

Instructor's Notes

SAY

In your own words:

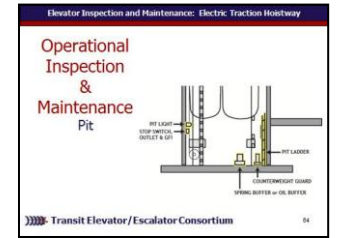
Review locations of overhead components as indicated on diagram:

- Pit light
- Stop switch, outlet, and GFI
- Pit ladder
- Counterweight guard
- Spring buffer or oil buffer

Advance

Materials Needed

✓ PPT slide 66



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____ Section End Time: _____

DO



REVIEW slide



REFER participants to Course book

Instructor's Notes

SAY

In your own words:
Refer participants to

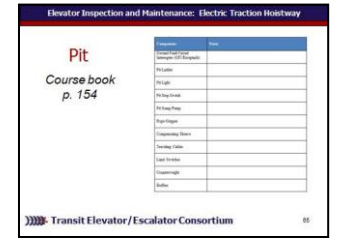
Participant Course book

for chart to write additional notes.

Advance

Materials Needed

✓ PPT slide 67



✓ Course book

Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slides

Instructor's Notes

SAY

In your own words:

The **pit** floor should be cleaned using a dustpan and broom. Never pick up trash with your bare hand. Clean the pit floor of any oil, grease, dirt and debris

Advance Examine the bottom level landing sills and clean as required.

Advance Examine the fascia below the lower landing for secure fastening. Make necessary repairs as required.

Advance Any valuable items found in the pit, such as keys, jewelry or other items, must be turned in to appropriate person or department as per your local transit agency policy.

Advance Check for water infiltration. Clean the pit floor of any oil, grease, dirt and debris.

Advance

Materials Needed

✓ PPT slide 68



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



REVIEW slide



ASK

Instructor's Notes

In your own words:

Ask

What is governor tension sheave

Allow participants to discuss answer.

Advance

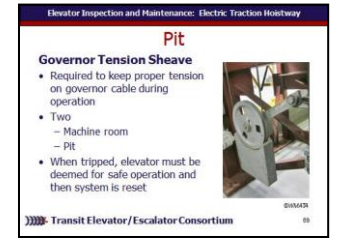
The governor rope tension sheave is required to keep proper tension on the governor cable during operation of the elevator.

Advance There are two governor sheaves: one in the machine room and one in the pit.

Advance If the elevator has experienced an overspeed condition in which the governor tripped and set the safety, it will be necessary to reset the system after the elevator has been deemed safe for operation.

Advance

✓ PPT slide 69



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____ Section End Time: _____

DO

SAY

Materials Needed



REVIEW slide



ASK

Instructor's Notes

In your own words:

Ask

What does GFI stand for?

Allow participants to discuss answer.

Advance

Ground Fault Circuit Interrupter (GFI Receptacle)

Set and reset the GFI to make sure it is functioning properly. If it is not, replace it.

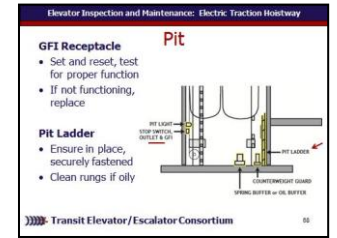
Advance

Pit Ladder

Make sure the **pit ladder** is in place and securely fastened. Check to make sure the rungs are not oily. If they are, clean them.

Advance

✓ PPT slide 70



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____ Section End Time: _____

DO

SAY

Materials Needed



REVIEW slides

In your own words:

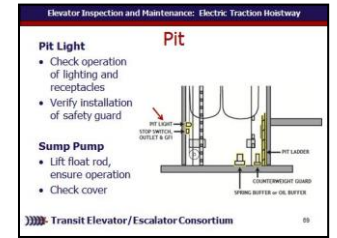
Pit Light
Check the operation of the pit lighting and receptacles. Verify that the pit light has required safety guard installed.

Advance

Pit Sump Pump
Verify that the **sump pump** is operational by lifting the **float rod**. If it is not functioning as designed, correct the defect. Note that sump pumps in pits, where provided, must be covered. Check that the cover is secured and level with the pit floor.

Advance

✓ PPT slide 71



Instructor's Notes

Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slides

Instructor's Notes

SAY

In your own words:

Pit Stop Switch

Advance

Examine the condition and verify operation of the **stop switch** before entering the pit. Verify that the pit stop switch is operational and prevents the car from moving when activated.

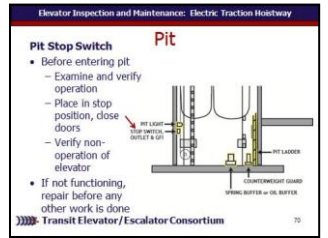
Place the pit stop switch in the stop position and close the doors to verify that it will prevent operation of the elevator.

Advance If the pit stop switch does not function properly, it must be repaired before any other work is done. Make necessary repairs as required.

Advance

Materials Needed

✓ PPT slide 72



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



REVIEW slides

Instructor's Notes

In your own words:

Rope gripper safety warning:
 Whenever Working on Rope Gripper, KEEP HANDS CLEAR. Forces created can cause injury.

Advance

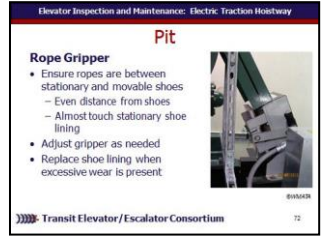
Check that the ropes between the stationary and movable shoes on the rope gripper. Ropes should be an even distance from the shoes - side to side and top to bottom. Ropes should almost touch the stationary shoe lining. Uneven ropes or a gripper that is installed at a bad angle will cause excessive and accelerated brake lining wear.

Advance

Adjust gripper as necessary and **Advance** replace shoe lining when there is excessive wear.

Advance

✓ PPT slides 73, 74



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____ Section End Time: _____

DO

SAY

Materials Needed



REVIEW slide



ASK

Instructor's Notes

In your own words:

Ask

What is compensating sheave?

Allow participants to discuss answer.

Advance

Activate the compensating sheave switch and verify that it will prevent the car from moving.

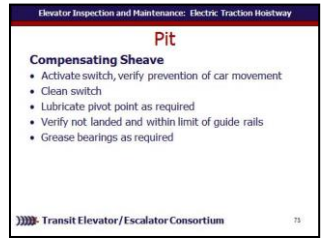
Advance Clean the switch and lubricate the pivot point as required.

Advance Verify that the compensating sheave is not landed and is within the limit of the guide rails.

Advance Grease the bearings as required.

Advance

✓ PPT slide 75



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slide



ASK

Instructor's Notes

SAY

In your own words:

Ask

Again what is a traveling cable?

Allow participants to discuss answer.

Advance

Verify that the traveling cable is not touching the pit floor or rubbing against any other equipment.

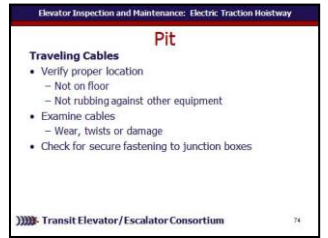
Advance Examine the cables for wear, twists or damage (may need to inspect from top of the car).

Advance Check that the traveling cable is securely fastened to all junction boxes (may need to inspect from on top of the car).

Advance

Materials Needed

✓ PPT slide 76



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slide



ASK

Instructor's Notes

SAY

In your own words:

Ask

Again, what do we know about limit switches?

Discuss participant ideas.

There are three types of limit switches in the hoistway of transit elevators. One set is located in the overhead and the other set is located in the pit. Inspection and maintenance in a traction systems is similar to hydraulic systems.

Advance If limit switches appear sticky, clean the arm or activator.

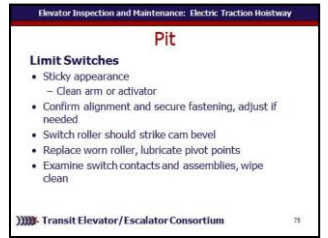
Advance Check that the switches and cams are aligned correctly and are securely fastened and adjust accordingly.

Advance The switch roller should strike the bevel of the cam and should be adjusted accordingly.

Advance

Materials Needed

✓ PPT slide 77



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____ Section End Time: _____

DO



REVIEW slide



ASK

Instructor's Notes

SAY

In your own words:

Replace worn rollers and lubricate pivot pins.

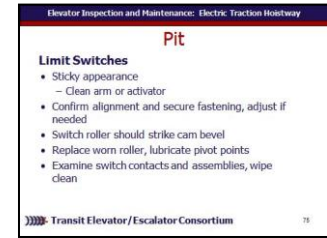
Advance Examine the switch contacts and assembly for proper movement (contacts should wipe) and reaction and, where required, repair or replace.

Note: you may need a ladder to reach some of the switches in order to test them.

Advance

Materials Needed

✓ PPT slide 77



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slides

Instructor's Notes

SAY

In your own words:

For **Normal Limit Switches**, operate the car on inspection mode to a point where the bottom normal limit device can be reached. Activate the normal limit device. The car should run up, but not down. If not functioning as designed, correct the defect as required.

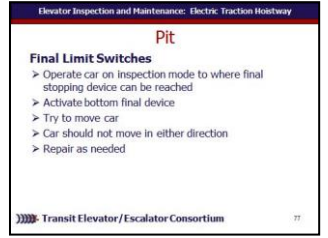
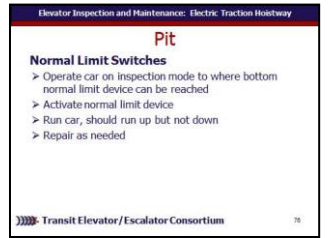
Advance

For **Final Limit Switches**, operate the car on inspection speed to a point where the final stopping device can be reached. Activate the bottom final device and try to move the car. The car should not move in either direction. If the car moves repair the defect.

Advance

Materials Needed

✓ PPT slides 78, 79



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____ Section End Time: _____

DO



REVIEW slides

Instructor's Notes

SAY

In your own words:

Advance

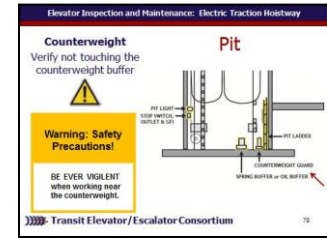
Verify that the counterweight is not touching the counterweight buffer.

And remember when working near the counterweight, be ever vigilant!

Advance

Materials Needed

✓ PPT slides 80



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slide



ASK

Instructor's Notes

SAY

In your own words:

Ask

What is a buffer?

Discuss participant ideas.

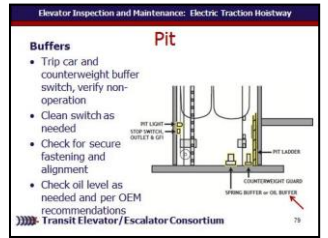
Advance

Inspect the operation of the car and counterweight buffer switch (if applicable) by tripping and verifying that the car will not run. Clean the switch as required. Check that the car and counterweight buffers are securely fastened and are aligned with the striker plates. Where oil buffers are used, check the oil level adding oil per OEM recommendations.

Advance

Materials Needed

✓ PPT slide 81



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 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:
What should Bobby do before entering the pit with regard to the pit stop switch?

Call on participants for answer

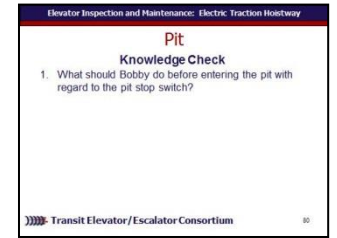
Advance once given the correct answer

Answer:

- Examine and verify operation
- Place in stop position, close doors
- Verify non-operation of elevator

Advance

✓PPT slide 82



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



ASK

In your own words:

Yes or No. Whenever Working on Rope Gripper, Jim should keep hands clear as forces created can cause injury.

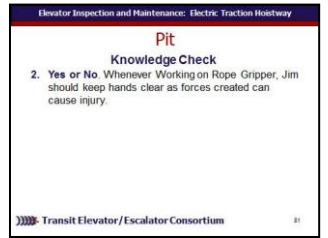
Call on participants for answer

Advance once given the correct answer

Answer: Yes

Advance

✓ PPT slide 83



Instructor's Notes

Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____ Section End Time: _____

DO



REVIEW slide



REFER participants to Course book

Instructor's Notes

SAY

In your own words:
Refer participants to

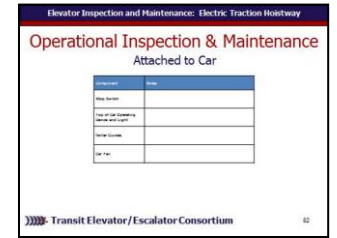
Participant Course book

for chart to write additional notes.

Advance

Materials Needed

✓ PPT slide 84



✓ Course book

Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____ Section End Time: _____

DO

SAY

Materials Needed



REVIEW slide



ASK

Instructor's Notes

In your own words:

Ask

What do we see on the top of the car here?

Discuss participant ideas.

Advance

Discuss photo and title.

Advance

✓ PPT slide 85



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____ Section End Time: _____

DO



REVIEW slides

Instructor's Notes

SAY

In your own words:

For the Stop Switch

Advance

Before entering the top-of-car, place the **stop switch** in the stop position. Then allow the doors to close and verify that the car will not run.

And for the Top of Car Operator and Light

Advance

Examine the top of car operator, stop switch and light by testing for proper operation. Any needed repairs must be made to the top-of-car operator, stop switch and light before proceeding with any other maintenance.

Always maintain the guard on the top car light. If the guard is missing, it must be replaced. Make all needed repairs.

Advance

Materials Needed

✓ PPT slides 86



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



REVIEW slides

Instructor's Notes

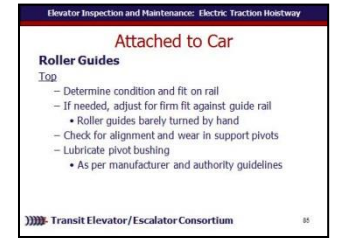
In your own words:

Roller Guides

Examine the **roller guides** atop the car to determine the condition of the rollers and fit on the rail. If required, adjust for a firm fit against the guide rail whereby the roller guides are just barely able to be turned by hand. Check for proper roller guide alignment with the guide rail. Check the support pivots for evidence of wear. Lubricate the pivot bushing per manufacturer and authority guidelines.

Advance

✓ PPT slides 87



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slides

Instructor's Notes

SAY

In your own words:

Bottom Roller Guides

Examine the lower roller guides to determine the condition of the tires and fit on the rail. If required, adjust for firm fit against the rail whereby the roller guides are just barely able to be turned by hand. Check for proper roller guide alignment with the guide rail. Check the support pivots for evidence of wear. Lubricate the pivot bushing with a couple of drops of 3-in-1 machine oil through the hole in the housing. Make necessary repairs or adjustments as required.

Advance

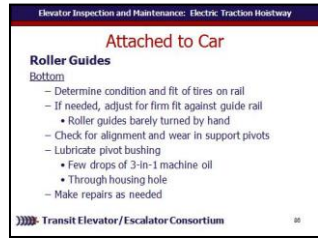
Car Guide Shoes

In cases where **guide shoes** are used instead of guide rollers, check pad thickness, tightness of hardware, and that the shoes move freely and smoothly.

Advance

Materials Needed

✓ PPT slides 88, 89



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slide



ASK

Instructor's Notes

SAY

In your own words:

Ask

How do we replace car guides or shoes?

Discuss participant ideas.

Advance

Replacing Guides/Shoes

When an elevator car is misaligned on the guide rail, it is often because of faulty roller guides and/or guide shoes.

To replace a guide roller start by marking its position on the crosshead by putting a box around the outside of its mounting bracket.

This will make it easy to know exactly where the new roller guide/shoe assembly should be placed. Next, loosen spring tension so that you can pull the rollers back. Lastly, remove the four bolts at the bottom and lift the assembly off.

Advance

Materials Needed

✓ PPT slide 90



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____

Section End Time: _____

DO



REVIEW slides

Instructor's Notes

SAY

In your own words:

Share photo and illustration.

Advance

Place a new a roller guide assembly inside the box you marked previously. Tighten into place by tightening the four bolts at the bottom and then tighten the spring tension so that the rollers are secure on the guide rail.

Advance

Car Fan

Clean car ventilation and fan opening. If necessary, remove the **car fan** and clean the blades or squirrel cage.

Advance

Materials Needed

✓ PPT slides 91, 92, 93



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____ Section End Time: _____

DO

SAY

Materials Needed



ASK

In your own words:

Lets see what we have learned so far:
Yes or No. Faulty roller guides or shoes will not result in misaligned car.

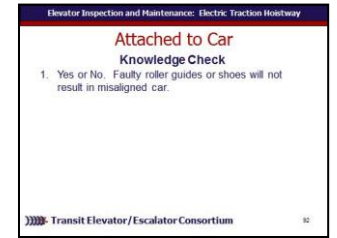
Call on participants for answer

Advance once given the correct answer

Answer: No. Faulty roller guides or shoes will result in a misaligned car.

Advance

✓PPT slide 94



Instructor's Notes

Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 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:
 Number in correct order the steps for replacing car guides or shoes

- Remove 4 bolts at bottom and lift off assembly
- Tighten 4 bolts
- Place new roller guides within markings
- Tighten spring tension to secure rollers on guide rail
- Mark by placing box around outside of mounting bracket
- Loosen spring tension to pull back rollers

Call on participants for answer
Advance once given the correct answer

✓PPT slide 95



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 190 min

This section: 60 min (31 slides) Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



ASK

Instructor's Notes

In your own words:

Answer:

1. Mark by placing box around outside of mounting bracket
2. Loosen spring tension to pull rollers back
3. Remove 4 bolts at bottom and lift off assembly
4. Place new roller guide within markings
5. Tighten 4 bolts
6. Tighten spring tension to secure rollers on guide rail

Advance

✓ PPT slide 96



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 130 min

This section: 10 min (1 slide)

Section start time: _____

Section End Time: _____

DO



REVIEW slide

Instructor's Notes

SAY

In your own words:

Review locations of lighting as indicated on diagram:

Always in on car top and pit, sometimes in hoistway and on bottom of car.

The presence of lights along the hoistway is much more likely in traction elevators as they generally have longer hoistways than hydraulic elevators.

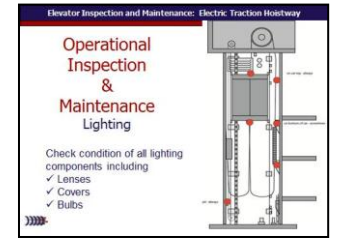
Advance Make sure to check the condition of all lighting components including lenses, covers and bulbs.

For more information on inspection and maintenance of lighting in transit elevators refer to Module 2 in this course.

Advance

Materials Needed

✓ PPT slide 97



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 120 min

This section: 20 min (3 slides)

Section start time: _____

Section End Time: _____

DO



REVIEW slide



REFER participants to Course book

Instructor's Notes

SAY

In your own words:
Refer participants to

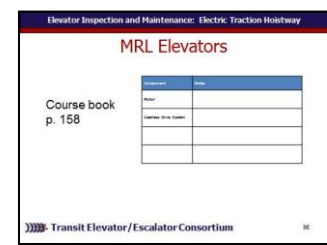
Participant Course book

for chart to write additional notes.

Advance

Materials Needed

✓ PPT slide 98



✓ Course book

Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 120 min

This section: 20 min (3 slides)

Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



REVIEW slide

Instructor's Notes

In your own words:

Inspecting and maintenance of MRL elevators are similar to the procedures for traction elevators.

Advance The obvious difference is, of course, that with no machine room, the MRL motor resides in the hoistway itself.

Note: governors are located in hoistway. It is seldom that the elevator technician has to take apart the motor to perform routine maintenance.

Advance The technician usually depends on sensory inspections listening, for example, for loud humming noises, or a bearing screaming or knocking.

Advance Look for alignment of the motor and check that hardware is securely fastened. Where applicable, follow guidelines to grease fittings. If bearings are sealed, then there is no need to grease fittings. **Advance**

✓ PPT slide 99



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 120 min

This section: 20 min (3 slides)

Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



REVIEW slide

In your own words:

Because MRL elevators operate with a gearless direct drive, listen for unusual noise such as screaming or knocking noise from bearings. Check for the smell of electrical burning which may be a result of burned windings.

Advance

✓ PPT slide 99



Instructor's Notes

Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 120 min

This section: 20 min (3 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:
Yes or No. MRL elevator inspection and maintenance is similar to hydraulic inspection and maintenance.

Call on participants for answer

Advance once given the correct answer

Answer: No. MRL elevator inspection is similar to a traction elevator inspection and maintenance process.

Advance

✓PPT slide 100



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 100 min

This section: 60 min

Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



ASK



CLASSROOM
ACTIVITY

Instructor's Notes

In your own words:

Take time to visit the field to provide an example demonstration and opportunities for participants to perform the following tests:

- Perform an inspection of components in a traction elevator hoistway
- Perform an operational test on all safety devices in the hoistway
- Perform an operational test on all auxiliary lights

Advance

✓PPT slide 101



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 40 min

This section: 40 min (3 slides)

Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



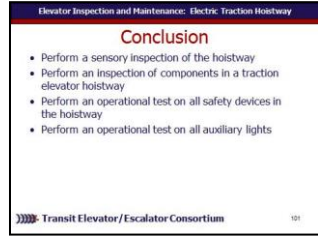
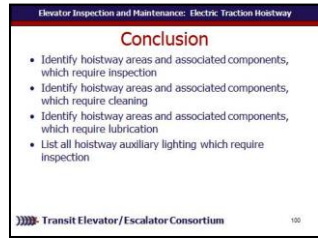
CLASSROOM ACTIVITY

Instructor's Notes

In your own words:
Read slide.
For each objective, briefly review what was learned in this module or ask participants to share what they have learned for each learning objective and briefly discuss as a class.
Advance

Read slide.
For each objective, briefly review what was learned in this module or ask participants to share what they have learned for each learning objective and briefly discuss as a class.
Advance

✓ PPT slides 102, 103



Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 40 min

This section: 40 min (3 slides)

Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



CLASSROOM ACTIVITY

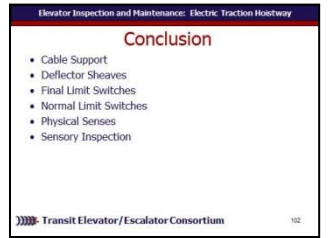
In your own words:

Lets take a look at some of the key words we have defined as moved through this module.

Read slide. Discuss definitions as a group.

Advance

✓PPT slide 104



Instructor's Notes

Elevator – Electric Traction Hoistway

Instructor's Guide



Module Length: 480 min

Time remaining: 40 min

This section: 40 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 105
- ✓ Quizzes
- ✓ Pencils

