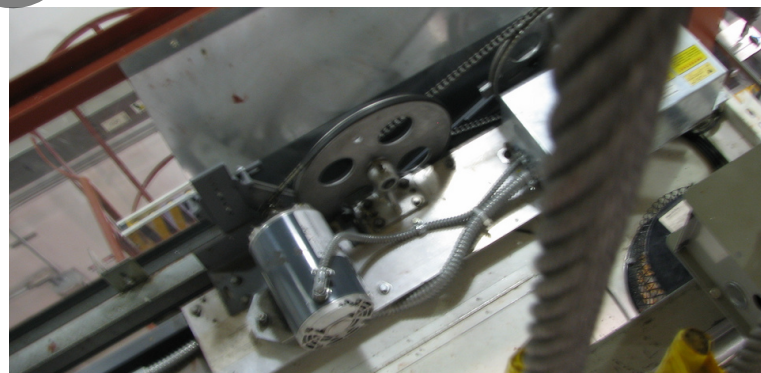
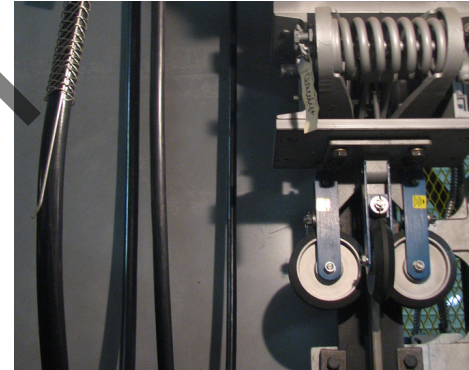


Instructor Guide



**220: Elevator: Other Systems
Module 5: Inclined Elevators**

Elevator – Other Systems Inclined Elevators

Instructor's Guide



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PREVIEW ONLY

Elevator – Other Systems Inclined Elevators

Instructor's Guide



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 | 20 minutes |
| 2 | Safety | 10 minutes |
| 3 | Components & Basic Operation | 20 minutes |
| 4 | Troubleshooting & Faults | 5 minutes |
| 5 | Maintenance | 5 minutes |
| 6 | Code | 5 minutes |
| 7 | Summary | 30 minutes |
| | Total Time: | 90 minutes |

PREVIEW ONLY

Elevator – Other Systems Inclined Elevators

Instructor's Guide



Overview

Purpose The purpose of this module is to:

Provide the participant with an overview of an inclined elevator system as compared to an electric traction elevator system.

Objectives

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

- Identify safety procedures for inclined elevators.
- Identify major components unique to inclined elevators as compared to electric traction elevators.
- Describe the basic operation of inclined elevators.
- Identify troubleshooting procedures unique to inclined elevators as compared to electric traction elevators.
- Identify maintenance requirements unique to inclined elevators as compared to electric traction elevators.
- Identify common faults unique to inclined elevators as compared to electric traction elevators.
- Identify code requirements specific to inclined elevators.

Materials

Mandatory Make sure you have the following

- PowerPoint Presentation
- Coursebook
- Quizzes
- Pencils

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
- Authority specific procedures if applicable
- ASME Code A17.1
- ASME Code A17.2
- NEC
- Time for a field visit if applicable

Elevator – Other Systems Inclined Elevators

Instructor's Guide



Module Length: 90 min

Time remaining: 90 min

This section: 20 min (6 slides)

Section start time: _____

Section End Time: _____

DO



REVIEW module objectives

Instructor's Notes

SAY

In your own words:

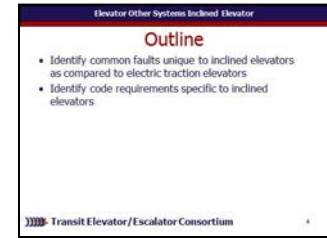
We will also

- Identify common faults unique to inclined elevators as compared to electric traction elevators
- Identify code requirements specific to inclined elevators

Advance

Materials Needed

✓ PPT slide 4



Elevator – Other Systems Inclined Elevators

Instructor's Guide



Module Length: 90 min

Time remaining: 90 min

This section: 20 min (6 slides)

Section start time: _____

Section End Time: _____

DO



REVIEW key terms

Instructor's Notes

SAY

In your own words:

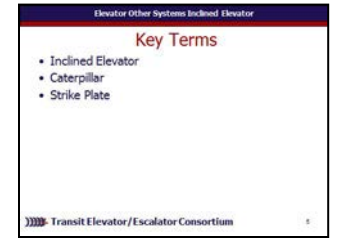
Lets take a look at some of the key words we will be defining as move through this module:

- Inclined Elevator
- Caterpillar
- Strike Plate

Advance

Materials Needed

✓ PPT slide 5



Elevator – Other Systems Inclined Elevators

Instructor's Guide



Module Length: 90 min

Time remaining: 70 min

This section: 10 min (3 slides)

Section start time: _____

Section End Time: _____

DO



REVIEW slide



Multimedia

Instructor's Notes

SAY

In your own words:

You may remember this illustration from an earlier course. This is an illustration of a traction elevator. Lets take a closer look.

[Multi-media: Click on illustration to link to website showing animation of traction elevator along with additional information for review.]

Advance.

Materials Needed

✓ PPT slide 7



✓ Internet connection

Elevator – Other Systems Inclined Elevators

Instructor's Guide



Module Length: 90 min

Time remaining: 60 min

This section: 20 min (8 slides)

Section start time: _____

Section End Time: _____

DO



REVIEW slides

Instructor's Notes

SAY

In your own words:

As stated previously, inclined elevators are almost exactly like traction elevators except inclined elevators travel on an incline instead of vertically. Major components include hoistway, Holister Whitney brakes, a traction sheave, a variable speed motor, machine room, controller and control systems, pit area, and landings. Door operation is also the same as any other elevator system as well.

Advance.

Here you can see the variable speed motor, the brake assembly, and traction sheave – the same as what you would find in a typical traction elevator.

Advance

Materials Needed

✓ PPT slides 10, 11



Elevator – Other Systems Inclined Elevators

Instructor's Guide



Module Length: 90 min

Time remaining: 60 min

This section: 20 min (8 slides)

Section start time: _____

Section End Time: _____

DO



REVIEW slide

Instructor's Notes

SAY

In your own words:

While inclined elevators and electric tractions are almost identical, some differences between these two systems do exist including the hoistway, speed, traveling cable enclosure, roping attachments, and counterweight configuration.

Advance First, the hoistway is on an incline similar to an escalator.

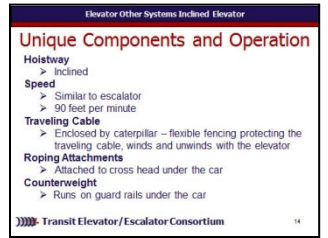
Advance Speed for an inclined elevator is also similar to an escalator and moves at 90 feet per minute.

Advance The traveling cable is enclosed by a **caterpillar**, a type of flexible fencing that unwinds and winds with the movement of the elevator and traveling cable.

Continued - Advance

Materials Needed

✓ PPT slide 14



Elevator – Other Systems Inclined Elevators

Instructor's Guide



Module Length: 90 min

Time remaining: 60 min

This section: 20 min (8 slides)

Section start time: _____

Section End Time: _____

DO



REVIEW slides

Instructor's Notes

SAY

In your own words:

This is visible underneath of the car and in the hoistway.

Advance Lastly, the ropes are attached to cross head under the car, and the counterweight runs on guard rails under the car.

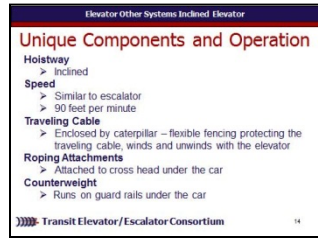
Advance

Here is a photo of the travelling cable which is difficult to see as it is encased in this mechanism called a caterpillar which houses and protects the travelling cable as it moves down this unique hoistway. In this photo, you can see how it rolls/fold and unrolls/unfolds with the movement of the car. You can also see a small buffer towards the lower landing level. This buffer is smaller than a typical buffer.

Advance

Materials Needed

✓ PPT slides 14, 15



Elevator – Other Systems Inclined Elevators

Instructor's Guide



Module Length: 90 min

Time remaining: 35 min

This section: 5 min (1 slide)

Section start time: _____

Section End Time: _____

| DO | SAY | Materials Needed |
|--|---|--|
| <div data-bbox="34 464 144 564" data-label="Image"> </div> <div data-bbox="164 492 415 535" 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="666 421 1023 464" data-label="Section-Header"> <p>In your own words:</p> </div> <div data-bbox="666 485 1439 792" data-label="Text"> <p>Maintenance for inclined elevator systems is mostly the same as for traction elevator systems. In addition to regular maintenance performed on traction systems, requirements for inclined elevators will also include additional attention to roller guides, door gibs, and caterpillar maintenance.</p> </div> <div data-bbox="666 806 1420 1035" data-label="Text"> <p>Advance With this type of elevator system, roller guides provide alignment and bear the weight of the car and counterweight. Roller guides must be in good shape for the life of the system as well as for smooth operation.</p> </div> <div data-bbox="666 1035 1420 1206" data-label="Text"> <p>Advance While door gib inspection is important in any elevator system, inspection of door gibs is important in the inclined elevator due to the hoistway configuration.</p> </div> <div data-bbox="666 1206 1052 1249" data-label="Text"> <p>Continued - Advance</p> </div> | <div data-bbox="1497 471 1748 514" data-label="Text"> <p>✓ PPT slide 19</p> </div> <div data-bbox="1535 528 1854 763" data-label="Image"> </div> |

Elevator – Other Systems Inclined Elevators

Instructor's Guide



Module Length: 90 min

Time remaining: 35 min

This section: 5 min (1 slide)

Section start time: _____

Section End Time: _____

| DO | SAY | Materials Needed |
|--|--|--|
| <div data-bbox="34 464 144 564" data-label="Image"> </div> <div data-bbox="164 492 415 535" 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="666 421 1023 464" data-label="Section-Header"> <p>In your own words:</p> </div> <div data-bbox="666 485 1400 578" data-label="Text"> <p>Inspect for integrity of the links in caterpillar and that nothing is worn.</p> </div> <div data-bbox="666 621 1449 842" data-label="Text"> <p>The maintenance of roller guides and limit switches as well as other shared maintenance requirements for both of these elevator systems are covered further in other courses – past and those to come.</p> </div> <div data-bbox="676 842 850 885" data-label="Section-Header"> <p>Advance</p> </div> | <div data-bbox="1487 471 1748 514" data-label="Text"> <p>✓ PPT slide 19</p> </div> <div data-bbox="1535 528 1854 763" data-label="Image"> </div> |

Elevator – Other Systems Inclined Elevators

Instructor's Guide



Module Length: 90 min

Time remaining: 30 min

This section: 5 min (1 slide)

Section start time: _____

Section End Time: _____

DO



REVIEW slides



REFER participants to ASME Code A17., A17.2
5.1 Section 8.6-8.12 &
NEC Section 620

Instructor's Notes

SAY

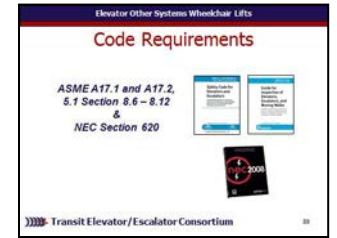
In your own words:

See A17.1 and A17.2, 5.1 Section 8.6 – 8.12 and NEC Section 620 for a detailed review of code requirements for Inclined Elevators.

Advance

Materials Needed

✓ PPT slide 20



✓ ASME Code A17.1, A17.2, and NEC Section 620

Elevator – Other Systems Inclined Elevators

Instructor's Guide



Module Length: 90 min

Time remaining: 25 min

This section: 25 min (6 slides)

Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



ASK

In your own words:

The traveling cable in an inclined elevator is protected by a _____.

- a. inchworm
- b. shoe
- c. caterpillar
- d. gate

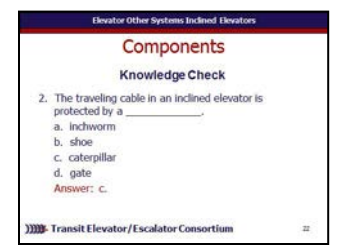
Call on participants for answer

Advance once given the correct answer

Answer: b.

Advance.

✓ PPT slide 22



Instructor's Notes

Elevator – Other Systems Inclined Elevators

Instructor's Guide



Module Length: 90 min

Time remaining: 25 min

This section: 25 min (6 slides)

Section start time: _____

Section End Time: _____

| DO | SAY | Materials Needed |
|---|--|---|
| <div data-bbox="34 464 144 571" data-label="Image"> </div> <div data-bbox="173 492 425 571" data-label="Section-Header"> <h3>CLASSROOM ACTIVITY</h3> </div> <div data-bbox="28 792 444 835" data-label="Section-Header"> <h3>Instructor's Notes</h3> </div> <hr/> <hr/> <hr/> <hr/> <hr/> | <p>In your own words: <i>[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.]</i> Advance.</p> <p><i>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.]</i> Advance.</p> | <p>✓ PPT slides 24, 25</p> <div data-bbox="1535 528 1854 756" data-label="Image"> </div> <div data-bbox="1535 778 1854 1006" data-label="Image"> </div> |

Elevator – Other Systems Inclined Elevators

Instructor's Guide



Module Length: 90 min

Time remaining: 25 min

This section: 25 min (6 slides)

Section start time: _____

Section End Time: _____

DO

SAY

Materials Needed



**CLASSROOM
ACTIVITY**

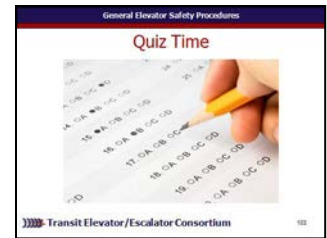


INDIVIDUAL ACTIVITY

In your own words:

Administer quizzes.

- ✓ PPT slides 27
- ✓ Quizzes
- ✓ Pencils



Instructor's Notes

PREVIEW ONLY