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<td>Refer participants to</td>
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## Agenda

<table>
<thead>
<tr>
<th>Topic #</th>
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<tr>
<td>1</td>
<td>Overview</td>
<td>30 Minutes</td>
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<td>Sensory Inspection</td>
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<td>Field Trip</td>
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<td>6</td>
<td>Lighting</td>
<td>20 Minutes</td>
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<td>7</td>
<td>Field Trip</td>
<td>60 Minutes</td>
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<tr>
<td>8</td>
<td>Summary</td>
<td>40 Minutes</td>
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</table>

**Total Time:** 480 Minutes
Elevator – Hydraulic Hoistway

Instructor’s Guide

Overview

Purpose  The purpose of this module is to:

Provide the participant with an overview of how to inspect and maintain components in the hoistway of a hydraulic 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, which require inspection
- Identify hoistway areas and associated components, which require cleaning
- Identify hoistway areas and associated components, which require lubrication
- Perform a sensory inspection of the hoistway
- Perform an inspection of components in a hydraulic elevator hoistway
- Perform an operational test on all safety devices in the hoistway
- Perform an operational test on all auxiliary lights
- List all hoistway auxiliary lighting which require inspection

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
- Elevator Maintenance
- ASME A17.1
- ASME A17.2
- ASME A17.3
In your own words:
Welcome to the course on the maintenance and inspection of hydraulic hoistways.

Advance

Hoistways encompass a number of areas and components.

Advance

REVIEW introduction slides

Materials Needed

✓ PPT slides 1, 2
## Elevator – Hydraulic Hoistway

**Instructor’s Guide**

Module Length: 480 min  
Time remaining: 480 min  
This section: 30 min (8 slides)  
Section start time:  
Section End Time:  

<table>
<thead>
<tr>
<th>DO</th>
<th>SAY</th>
<th>Materials Needed</th>
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<tbody>
<tr>
<td>In your own words:</td>
<td></td>
<td>✓ PPT slides 3, 4</td>
</tr>
</tbody>
</table>
| 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 | **Instructor’s Notes** |  |

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

**Advance**

---

Transit Elevator/Escalator Consortium
**In your own words:**

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

- Cable Support Grips
- Car Fan
- Cylinder
- Door Hangers
- Door Track(S)
- Dust Covers
- Fascia Plate
- Final Limit Switches
- Float Rod
- Guide Rails Brackets

**Advance**

- Guide Shoes
- Guide Shoes
- Heat And Smoke Detectors
- Hoistway
- Hoistway Vent
- Jack
- Normal Limit Switches
- Oil Buffers
- Pistons

**Advance**

**Materials Needed**

- PPT slide 5
In your own words:

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

- Pit
- Pit Ladder
- Pit Valve
- Refuge Space
- Roller Guides
- Roller Guides
- Rupture Value
- Scavenger Pump
- Seals
- Selector Tape

**Advance**

- Sensory Inspection
- Spring Buffers
- Stop Switch
- Traveling Cable

PPT slide 6
### Elevator – Hydraulic Hoistway

**Instructor’s Guide**

**Module Length:** 480 min  
**Time remaining:** 480 min  
**This section:** 30 min (8 slides)  
**Section start time:** ________  
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<th><strong>DO</strong></th>
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<th><strong>Materials Needed</strong></th>
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</thead>
</table>
| **ASK** participants what they remember about safety and elevators | **In your own words:**  
Thinking back to other courses or just in general, what do we already know about hydraulic hoistways?  
Possible inspection and maintenance requirements for hydraulic 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* | ✓ PPT slide 7  
 ✓ Chalk board or large paper  
 ✓ Blank Paper  
 ✓ Writing instruments |
The elevator apprentice can expect to spend a considerable amount of time on the job in the elevator **hoistway**. 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 as shown here.

**Do Not Advance**
Elevator – Hydraulic Hoistway

In your own words:

Inspection and maintenance of the machine room is covered separately in Module 8A of this course. Within each area are many components that require the technician to inspect, clean, lubricate, test, and perform the appropriate corrective maintenance.

Advance

Lets begin by discussing sensory inspections of a hydraulic hoistway.

Advance

Materials Needed

- ✓ PPT slides 8, 9
### Instructor’s Notes

- 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 hydraulic 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, 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

### Materials Needed

- ✓ PPT slide 10
### Materials Needed

- PPT slides 10, 11

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<table>
<thead>
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</thead>
<tbody>
<tr>
<td>REVIEW slides</td>
<td><strong>In your own words:</strong></td>
<td></td>
</tr>
<tr>
<td>ASK</td>
<td>What may indicate a problem within the hydraulic hoistway as indicated by smell?</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Discuss possible answers</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Advance for sample answers</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Smell of burnt electrical wires, strong smell of oil, human bodily fluid, sewer gas</td>
<td></td>
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<tr>
<td></td>
<td><strong>Advance</strong></td>
<td></td>
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<tr>
<td></td>
<td><strong>Ask</strong></td>
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<td></td>
<td>What may indicate a problem within the hydraulic hoistway as indicated by hearing?</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Discuss answers</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Advance for sample answers</strong></td>
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<td>Rattling or clicking of loose components such as rollers, hardware. Clicking near hoistway door.</td>
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<td></td>
<td><strong>Advance</strong></td>
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</table>
### Elevator – Hydraulic Hoistway

**Instructor’s Guide**

Module Length: 480 min  
Time remaining: 450 min  
This section: 30 min (6 slides)  
Section start time:  
Section End Time:  

<table>
<thead>
<tr>
<th>DO</th>
<th>SAY</th>
<th>Materials Needed</th>
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</thead>
</table>
| REVIEW slide | In your own words:  
**Ask**  
What may indicate a problem within the hydraulic hoistway as indicated by touch?  
**Discuss possible answers**  
**Advance for sample answers**  
Excessive heat. Rough spots on release rollers. Rough spots/scratches on the piston. Loose hardware  
With more experience, you will become more familiar with the normal sights, smells, sounds and feel of the system. During a sensory inspection, check for deviations from this norm.  
**Advance** | ✓ PPT slide 11 |

**Instructor’s Notes**

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### Instructor’s Notes

In your own words:

Lets see what we have learned so far: Excessive oil or water in the pit 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: a

**Advance.**
In your own words:
Burnt wires, sewer gas, strong oil odors 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: b.
### Elevator – Hydraulic Hoistway

#### Instructor’s Guide

**Module Length:** 480 min  
**Time remaining:** 450 min  
**This section:** 30 min (6 slides)  
**Section start time:** ________  
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<tr>
<th><strong>DO</strong></th>
<th><strong>SAY</strong></th>
<th><strong>Materials Needed</strong></th>
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</thead>
</table>
| ASK    | **In your own words:**  
Describe a possible hoistway problem which would be indicated by touch.  

*Call on participants for answer*

*Advance once given the correct answer*

**Answer:**  
Possible Answers:  

*Advance*  

| ![PPT slide 14] |

#### Instructor’s Notes

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### Elevator – Hydraulic Hoistway

**Instructor’s Guide**

Module Length: 480 min  
Time remaining: 420 min  
This section: 60 min  
**Section start time:** ________  
**Section End Time:** ________

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<tr>
<th><strong>DO</strong></th>
<th><strong>SAY</strong></th>
<th><strong>Materials Needed</strong></th>
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</thead>
</table>
| ASK    | 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**  

| CLASSROOM ACTIVITY | ✓ PPT slide 15 |

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**Instructor’s Notes**

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### Instructor's Guide

**Elevator – Hydraulic Hoistway**

**Module Length:** 480 min  
**Time remaining:** 360 min  
**This section:** 120 min (65 slides)  
**Section start time:**  
**Section End Time:**

<table>
<thead>
<tr>
<th>DO</th>
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<th>Materials Needed</th>
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</thead>
</table>
| ![Elevator Icon] | **In your own words:**  
Within the hydraulic elevator system there are four main areas: machine room, overhead, length of hoistway, and pit.  
**Advance**  
**Ask**  
What types of specific equipment found in a hoistway may need inspection and maintenance?  
**Allow participants to discuss possible answers.**  
**Review the list of sample hydraulic hoistway equipment.**  
**Advance**  
In a hydraulic hoistway you will typically find the following equipment and components: ventilation, sliding hoistway doors, pit access ladder, pit stop switch, pit drain or sump pump, pit and/or hoistway lighting, buffers, | ✅ PPT slides 16, 17 |

### Instructor's Notes

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### Elevator – Hydraulic Hoistway

**Instructor's Guide**

Module Length: 480 min  
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**Section start time:**  
**Section End Time:**  

<table>
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</table>

- **REVIEW slide**
- **ASK**

**In your own words:**

As well as guide rails, sensors mounted in the shaft to relay information to the controller concerning the position of the car within the hoistway, and a fire detection system which may include sprinkler heads and smoke and heat detectors.

All transit authorities have strict guidelines for working in an elevator hoistway.

**Advance**

These guidelines are detailed within ASME A17.1, *Safety Code for Elevators and Escalators*, and all applicable local jurisdiction codes that govern the operation of passenger elevators.

**Advance**

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**Materials Needed**

- ✓ PPT slide 17

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**Instructor’s Notes**

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**Transit Elevator/Escalator Consortium**
# Elevator – Hydraulic Hoistway

## Instructor’s Guide

Module Length: 480 min  
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This section: 120 min (65 slides)  
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<th>SAY</th>
<th>Materials Needed</th>
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</thead>
</table>
| REVIEW slides                   | In your own words:  
Let’s start by looking at inspection and maintenance of the overhead area of a hydraulic hoistway.  
**Review locations of overhead components as indicated on diagram:**  
Refuge space  
Sprinkler head  
Smoke detector  
Heat detector  
Limit switches  
**Advance**          | ✅ PPT slide 18                                                       |

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Instructor’s Notes

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Transit Elevator/ Escalator Consortium
### Elevator – Hydraulic Hoistway

**Instructor’s Guide**

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This section: 120 min (65 slides)  
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<tr>
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<th>Materials Needed</th>
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</thead>
</table>
| REVIEW slide | In your own words:  
*Refer participants to*  
**Participant Course book**  
p. 117  
*for chart to write additional notes.*  
**Advance** | ✓ PPT slide 19  
✓ Course book  
p. 116 |

**Instructor’s Notes**

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### Elevator – Hydraulic Hoistway

**Instructor’s Guide**

- **Module Length:** 480 min
- **Time remaining:** 360 min
- **This section:** 120 min (65 slides)

#### MATERIALS NEEDED

- **Materials Needed:**
  - ✓ PPT slide 20

### DO - SAY

<table>
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<tr>
<th><strong>DO</strong></th>
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<tbody>
<tr>
<td>REVIEW</td>
<td>In your own words: Many hydraulic elevators have very limited overhead clearance. Ask What is refuge space? Allow participants to discuss answer. Advance The refuge space when the car is at its maximum upward position with the plunger against the stop ring and the vertical clearance is also very limited. Remember that overhead clearance in the hoistway of a hydraulic elevator varies. The space may be very spacious but depending on conditions the available space can be very limited. Before getting on top of and operating the car verify the space available and take the steps necessary to insure your safety. Advance</td>
</tr>
</tbody>
</table>

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**Instructor’s Notes**

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[Transit Elevator/Escalator Consortium]
In your own words:
Always be aware of the top car emergency stop switch and be careful to avoid placing yourself in a hazardous position.

Advance  Make sure that this area is free of any debris or hazards.

Advance  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
### Elevator – Hydraulic Hoistway

**Instructor’s Guide**

Module Length: 480 min  
Time remaining: 360 min  
This section: 120 min (65 slides)  
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Section End Time: ________

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<th><strong>Materials Needed</strong></th>
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<tbody>
<tr>
<td>REVIEW slide</td>
<td><strong>In your own words:</strong></td>
<td>✓ PPT slide 21, 22</td>
</tr>
<tr>
<td>ASK</td>
<td><strong>Ask</strong></td>
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<tr>
<td></td>
<td><strong>What is a limit switch?</strong></td>
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<td></td>
<td><strong>Allow participants to discuss answer.</strong></td>
<td></td>
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<td></td>
<td><strong>Advance and share photo.</strong></td>
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</tr>
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<td></td>
<td><strong>Advance</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Instructor’s Notes</strong></td>
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<tr>
<td></td>
<td><strong>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.</strong></td>
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<td><strong>Advance</strong></td>
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<tr>
<td></td>
<td><strong>If limit switches appear sticky, clean the arm or activator.</strong></td>
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<td><strong>Advance</strong></td>
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<td><strong>Check that the switches and cams are aligned correctly and are securely fastened and adjust accordingly.</strong></td>
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<td></td>
<td><strong>Advance</strong></td>
<td></td>
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<tr>
<td></td>
<td><strong>The switch roller should strike the bevel of the cam and should be adjusted accordingly.</strong></td>
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<td><strong>Advance</strong></td>
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<td><strong>DO</strong></td>
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<td><strong>Materials Needed</strong></td>
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<tr>
<td>REVIEW slides</td>
<td><strong>In your own words:</strong> Replace worn rollers and lubricate pivot pins. <strong>Advance</strong> Examine the switch contacts and assembly for proper movement (contacts should wipe) and reaction and, where required, repair or replace. <strong>Note:</strong> you may need a ladder to reach some of the switches in order to test them. <strong>Advance</strong></td>
<td>✓ PPT slide 22, 23</td>
</tr>
<tr>
<td>Instructor’s Notes</td>
<td><strong>For Normal Limit Switches,</strong> operate the car on inspection mode to a point where the bottom normal limit device can be reached. <strong>Advance</strong> Activate the normal limit device. <strong>Advance</strong> The car should run up, but not down. <strong>Advance</strong> If not functioning as designed, correct the defect as required. <strong>Advance</strong></td>
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</table>
### Instructor’s Guide

**Elevator – Hydraulic Hoistway**

**Module Length:** 480 min  
**Time remaining:** 360 min  
**This section:** 120 min (65 slides)  
**Section start time:** ________  
**Section End Time:** ________

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<th>DO</th>
<th>SAY</th>
<th>Materials Needed</th>
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<tbody>
<tr>
<td>REVIEW slides</td>
<td><strong>In your own words:</strong></td>
<td>✓ PPT slide 24</td>
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</tbody>
</table>

For **Final Limit Switches**, operate the car on inspection speed to a point where the final stopping device can be reached.

- **Advance** Activate the bottom final device
- **Advance** and try to move the car.
- **Advance** The car should not move in either direction.
- **Advance** If the car moves repair the defect.

**Instructor’s Notes**

- ____________________________________________
- ____________________________________________
- ____________________________________________
- ____________________________________________
- ____________________________________________

**Module Length:** 480 min  
**Time remaining:** 360 min  
**This section:** 120 min (65 slides)  
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**Section End Time:** ________

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**Transit Elevator/escalator Consortium**

26
**DO** | **SAY** | **Materials Needed**
--- | --- | ---
REVIEW slides | 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  | PPT slides 25, 26
DO

REVIEW slide

ASK

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 performed by fire inspectors, elevator technicians should perform a visual inspection. 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

SAY

Materials Needed

✔ PPT slide 27
Elevator – Hydraulic Hoistway

Instructor’s Guide

Module Length: 480 min  Time remaining: 360 min  This section: 120 min (65 slides) Section start time:  Section End Time: 

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<th>Materials Needed</th>
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<tbody>
<tr>
<td>REVIEW slide</td>
<td>In your own words:</td>
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</tr>
<tr>
<td>ASK</td>
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<td>✓ PPT slide 28</td>
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**Instructor’s Notes**

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**DO**

**REVIEW slide**

**ASK**

**In your own words:**

**Ask**

Let's talk about guide rail brackets. What are guide rail brackets?

**Allow participants to discuss answer.**

**Advance**

Inspect the guide rails brackets for loose fastenings and proper fit at the joints.

**Advance** Because rail brackets have a protruding ledge that runs horizontally, dirt and dust can collect on top. Make sure to clean these surfaces.

**Advance** Check rails for nicks, gouges and burs and repair if necessary.

**Advance** Make sure to check alignment visually or with a laser, especially in areas prone to earthquakes. Report any defects or damage to supervision.

**Advance**
<table>
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<tbody>
<tr>
<td>REVIEW slides</td>
<td><strong>In your own words:</strong> Guide rails that are lubricated must be cleaned to prevent accumulation of lubricant, dirt and lint. Such accumulation creates a fire hazard as well as the possibility of preventing proper operation of the safety. <strong>Advance</strong></td>
<td>✓ PPT slide 28</td>
</tr>
</tbody>
</table>

**Instructor’s Notes**

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### Elevator – Hydraulic Hoistway

**Instructor’s Guide**

<table>
<thead>
<tr>
<th>DO</th>
<th>SAY</th>
<th>Materials Needed</th>
</tr>
</thead>
</table>
| ![Ask Icon] | In your own words: 
Lets see what we have learned so far: Before overhead maintenance, what steps should Julie always take? |

**Call on participants for answer**

**Advance once given the correct answer**

**Answer:**
- Be aware of top car emergency stop switch
- Verify available refuge space
- Ensure area is free of debris and hazards
- Ensure any needed warning signs are in place

**Advance**

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**Instructor’s Notes**

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- PPT slide 29
**In your own words:**
Mike is inspecting the normal limit switch. What steps should Mike take?

*Call on participants for answer*

**Advance once given the correct answer**

**Answer:**
- Operate car on inspection mode to where bottom normal limit device can be reached
- Activate normal limit device
- Run car, should run up but not down
- Repair as needed

**Advance**
## Elevator – Hydraulic Hoistway

### Instructor’s Guide

**Module Length:** 480 min  
**Time remaining:** 360 min  
This section: 120 min (65 slides)  
Section start time: ________  
Section End Time: ________

<table>
<thead>
<tr>
<th>DO</th>
<th>SAY</th>
<th>Materials Needed</th>
</tr>
</thead>
</table>
| ![REVIEW](image) slide | **In your own words:**  
Let's move on and look at inspection and maintenance of the overhead area of a hydraulic hoistway.  
**Review locations of length of hoistway components as indicated on diagram:**  
- Guide rails  
- Cable support grip  
- Halfway box  
- Traveling cable  
- Rail brackets  
- Selector tape  
- Dust cover  
- Door frame  
- Fish plate  
- Fascia plates  

- Advance | ✓ PPT slide 31

### Instructor’s Notes

- ————
- ————
- ————
- ————
- ————
- ————
- ————
- ————

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**Transit Elevator/Escalator Consortium**
## Elevator – Hydraulic Hoistway

### Instructor’s Guide

| Module Length: 480 min | Time remaining: 360 min | This section: 120 min (65 slides) | Section start time: ________ | Section End Time: ________ |

<table>
<thead>
<tr>
<th>DO</th>
<th>SAY</th>
<th>Materials Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>REVIEW slide</td>
<td>In your own words: Refer participants to</td>
<td>✓ PPT slide 32</td>
</tr>
<tr>
<td>REFER participants to</td>
<td>Participant Course book  p. 123</td>
<td></td>
</tr>
<tr>
<td>Course book</td>
<td>for chart to write additional notes.</td>
<td></td>
</tr>
<tr>
<td>Instructor’s Notes</td>
<td>Advance</td>
<td>✓ Course book  p.122</td>
</tr>
</tbody>
</table>

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**Instructor’s Notes**

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## Elevator – Hydraulic Hoistway

### Instructor’s Guide

**Module Length:** 480 min  
**Time remaining:** 360 min  
**This section:** 120 min (65 slides)  
**Section start time:**  
**Section End Time:**

<table>
<thead>
<tr>
<th>DO</th>
<th>SAY</th>
<th>Materials Needed</th>
</tr>
</thead>
</table>
| REVIEW slide | 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* |
| ASK | ✓ PPT slide 33 |

### Instructor’s Notes

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# Elevator – Hydraulic Hoistway

**Instructor’s Guide**

- **DO**
- **SAY**
- **Materials Needed**

## Instructor’s Notes

In your own words:

Examine the **traveling cables** for wear, chafing, kinking and alignment.

**Advance** Make sure that there is no fraying on the outer insulation sheave.

**Advance** Examine attachment points for secure fastening and looseness.

**Advance** Examine for chafing points, i.e. beams, bolts, rough wall etc. If found, protect as necessary.

**Advance** Check that the **cable support grips** or **Kellum grips**, like in the photo, are present and in good shape at both terminating points of the traveling cable.

**Advance**

<table>
<thead>
<tr>
<th>Materials Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ PPT slide 34</td>
</tr>
</tbody>
</table>

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**Module Length:** 480 min  
**Time remaining:** 360 min  
**This section:** 120 min (65 slides)

**Section start time:** ________  
**Section End Time:** ________
### Elevator – Hydraulic Hoistway

**Instructor’s Guide**

Module Length: 480 min  
Time remaining: 360 min  
This section: 120 min (65 slides)  
Section start time:  
Section End Time: 

<table>
<thead>
<tr>
<th>DO</th>
<th>SAY</th>
<th>Materials Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>REVIEW slide</td>
<td>In your own words:</td>
<td>✓ PPT slides 35, 36</td>
</tr>
</tbody>
</table>
| ASK              | **Ask**  
What is a halfway junction box?  
**Allow participants to discuss answer.**  
**Advance and share**  
✓ photo  
✓ labeled parts  
✓ locations on diagram  
**Advance**       |                                                     |

### Instructor’s Notes

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**
### Elevator – Hydraulic Hoistway

**Instructor’s Guide**

Module Length: 480 min  
Time remaining: 360 min  
This section: 120 min (65 slides)  
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<table>
<thead>
<tr>
<th>DO</th>
<th>SAY</th>
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<tbody>
<tr>
<td>REVIEW slide</td>
<td></td>
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</tbody>
</table>

**In your own words:**

#### Hoistway Eccentric Rollers
Verify that the gap between the upthrust rollers and the track is 1/64 inch (0.39mm). Adjust as required.

**Advance**

#### Hoistway Door Overlap
Verify that at all landings, with the hoistway door panels closed, there is an overlap at the top and sides of the opening and other (two-speed) doors by a minimum of 1/2 inch. Adjust as required.

**Advance**

**Materials Needed**

- ✓ PPT slide 37

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### Instructor’s Notes

- REVIEW slide

<table>
<thead>
<tr>
<th><strong>DO</strong></th>
<th><strong>SAY</strong></th>
<th><strong>Materials Needed</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In your own words:</td>
<td>✓ PPT slide 38</td>
</tr>
<tr>
<td></td>
<td><strong>Hoistway Door Hangers and Tracks</strong></td>
<td><strong>Instructor’s Notes</strong></td>
</tr>
<tr>
<td></td>
<td>Verify the car door track(s) is secured and clean.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Advance</strong> Tighten all loose hardware as required.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Advance</strong> Examine car door hangers, rollers, felt wicks and relating cables for defects and damage.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Advance</strong> Repair or replace as required.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Report defects to supervision.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Advance</strong> Where a secondary interconnecting means is used, check that it is engaging properly. Repair or replace as required.</td>
<td></td>
</tr>
</tbody>
</table>
### Elevator – Hydraulic Hoistway

**Instructor’s Guide**

<table>
<thead>
<tr>
<th>DO</th>
<th>SAY</th>
<th>Materials Needed</th>
</tr>
</thead>
</table>
| REVIEW slide | **In your own words:**
| **Ask** | *Ask*
 | What is a selector tape? 
| **Allow participants to discuss answer.** | *Advance and share*
| ✓ photo | ✓ labeled parts 
| ✓ locations on diagram | ✓ PPT slide 39

**Instructor’s Notes**

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### Materials Needed

- PPT slide 40

### 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**
### Elevator – Hydraulic Hoistway

**Instructor’s Guide**

**Module Length:** 480 min  
**Time remaining:** 360 min  
**This section:** 120 min (65 slides)  

<table>
<thead>
<tr>
<th>DO</th>
<th>SAY</th>
<th>Materials Needed</th>
</tr>
</thead>
</table>
| REVIEW slide | In your own words:  
  **Ask**  
  What is a fish plate?  
  **Allow participants to discuss answer.**  
  **Advance and share**  
  ✓ photo  
  **Advance**  
  Inspect the fish plates aka known as rail connectors, checking for corrosion and loose hardware. Repair defects as required.  
  **Advance** | ✓ PPT slide 41 |

**Instructor’s Notes**

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Instructor’s Notes

In your own words:

**Ask**
What is a fascia plate? A dust cover?

**Allow participants to discuss answer.**

**Advance and share**

- **Photo**
- **Locations on diagram**

**Advance**
Inspect the fish plates aka known as rail connectors, checking for corrosion and loose hardware. Repair defects as required.

**Advance**
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.

**Advance**
Check and secure loose dust covers.
### Materials Needed

- ✓ PPT slide 44
- ✓ Elevator Maintenance p.220 – 221, p.195 – 196

### Instructor’s Notes

- In your own words: Refer participants to
  
  **Elevator Maintenance**
  p. 220 – 221 and p. 195 – 196
  
  for more information on guides, guide rails, selectors, and traveling cables.

### Module Length: 480 min

- Time remaining: 360 min
- This section: 120 min (65 slides) Section start time: ________  Section End Time: ________

<table>
<thead>
<tr>
<th>DO</th>
<th>SAY</th>
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</thead>
<tbody>
<tr>
<td>REVIEW slide</td>
<td>In your own words: Refer participants to Elevator Maintenance p. 220 – 221 and p. 195 – 196 for more information on guides, guide rails, selectors, and traveling cables. Advance</td>
</tr>
<tr>
<td>REFER participants to Elevator Maintenance</td>
<td></td>
</tr>
</tbody>
</table>

Transit Elevator/Escalator Consortium
DO

ASK

SAY

In your own words:
Lets see what we have learned so far:
When inspecting the hoistway eccentric rollers, the gap between the upthrust rollers and track should be ____________ inch.

a. 1/64  
b. 1/8  
c. 1/4  
d. 1

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

Advance
## Elevator – Hydraulic Hoistway

### In your own words:
Also known as rail connectors, the ______________ should be inspected for corrosion and loose hardware.

- a. Selector tape
- b. Fascia plate
- c. Fish plate
- d. Traveling cable

### Call on participants for answer
**Advance once given the correct answer**

**Answer:** c.

**Advance**
### Elevator – Hydraulic Hoistway

#### Instructor’s Guide

**Module Length:** 480 min  
**Time remaining:** 360 min  
**This section:** 120 min (65 slides)  
**Section start time:**  
**Section End Time:**  

<table>
<thead>
<tr>
<th><strong>DO</strong></th>
<th><strong>SAY</strong></th>
<th><strong>Materials Needed</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>REVIEW slide</td>
<td>In your own words: Let’s move on and look at inspection and maintenance of the overhead area of a hydraulic hoistway. <strong>Review locations of pit components as indicated on diagram:</strong> Jack Pit Light Stop Switch, Outlet, &amp; GFI Pit Light Lit Valve Rupture Valve Scavenger Sump Pump Spring Buffer Pit Buffer <strong>Advance</strong></td>
<td>✓ PPT slide 47</td>
</tr>
</tbody>
</table>

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**Instructor’s Notes**

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<table>
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<tr>
<th><strong>DO</strong></th>
<th><strong>SAY</strong></th>
<th><strong>Materials Needed</strong></th>
</tr>
</thead>
</table>
| REVIEW slide | **In your own words:** **Refer participants to** Participant Course book p. 128 **for chart to write additional notes.** Advance | ✓ PPT slide 48  
✓ Course book p.127 |
| REFER participants to Course book | | |

**Instructor’s Notes**

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
In your own words:
Three common components found in all hydraulic elevator pits includes an overspeed valve, a manual shot off valve, and a scavenger.

**Advance**

<table>
<thead>
<tr>
<th>DO</th>
<th>SAY</th>
<th>Materials Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>REVIEW slide</td>
<td>In your own words: Three common components found in all hydraulic elevator pits includes an overspeed valve, a manual shot off valve, and a scavenger.</td>
<td>✓ PPT slide 49</td>
</tr>
</tbody>
</table>

Instructor’s Notes

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**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. Check for water infiltration.

**Advance**
**Instructor’s Notes**

**DO**

**SAY**

**Materials Needed**

<table>
<thead>
<tr>
<th>In your own words:</th>
<th>Ask</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In your own words:</strong></td>
<td><strong>What does GFI stand for?</strong></td>
</tr>
<tr>
<td><strong>Ask</strong></td>
<td><strong>Answer: Ground Fault Circuit Interrupter (GFI Receptacle)</strong></td>
</tr>
<tr>
<td><strong>In your own words:</strong></td>
<td><strong>Ground Fault Circuit Interrupter (GFI Receptacle)</strong></td>
</tr>
<tr>
<td><strong>Ask</strong></td>
<td><strong>Set and reset the GFI to make sure it is functioning properly. If it is not, replace it.</strong></td>
</tr>
<tr>
<td><strong>Advance</strong></td>
<td><strong>Pit Ladder</strong></td>
</tr>
<tr>
<td><strong>Pit Ladder</strong></td>
<td><strong>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.</strong></td>
</tr>
</tbody>
</table>

- PPT slide 51

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**Transit Elevator/Escalator Consortium**
### Elevator – Hydraulic Hoistway

#### Instructor’s Guide

**Module Length:** 480 min  
**Time remaining:** 360 min  
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**Section start time:**  
**Section End Time:**

<table>
<thead>
<tr>
<th>DO</th>
<th>SAY</th>
<th>Materials Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>In your own words:</strong></td>
<td>✓ PPT slide 52</td>
</tr>
<tr>
<td></td>
<td><strong>Pit Light</strong></td>
<td><strong>Instructor’s Notes</strong></td>
</tr>
<tr>
<td></td>
<td>Check the operation of the pit lighting and receptacles. Verify that the pit light has required safety guard installed.</td>
<td>In your own words:</td>
</tr>
<tr>
<td></td>
<td><strong>Advance</strong></td>
<td><strong>Sump Pump</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Pit Sump Pump</strong></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td><strong>Advance</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Instructor’s Notes**

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In your own words:

**Pit Stop Switch**
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. 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 Scavenger Pump**
Make sure the **scavenger pump** is functioning. When a drain is used instead, check the P trap (like under a sink), making sure it has the right amount of water to prevent build up of sewage gases in the hoistway. **Advance**

**Materials Needed**

- PPT slides 53, 54
## Elevator – Hydraulic Hoistway

### Instructor’s Guide

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Section start time:  
Section End Time:  

### Materials Needed

- ✔ PPT slides 55, 56

### DO

<table>
<thead>
<tr>
<th>REVIEW slides</th>
</tr>
</thead>
</table>

### SAY

**In your own words:**

**Jack - Cylinder and Piston**

Check the **jack** packing for excessive leakage. Examine **pistons** for scrapes, gouges, mars, and scoring. **Advance**

A test of the hydraulic cylinder should be performed after a relief valve test and the flexible hose test have been conducted. Cylinders that cannot be inspected visually should be tested in the following manner with no load in the car. Mark the location of the car at any convenient position. Open the disconnect switch for 15 min. Note the position of the car platform with respect to the reference mark. **Do Not Advance**
### Instructor’s Guide

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**Time remaining:** 360 min  
**This section:** 120 min (65 slides)  
**Section start time:**  
**Section End Time:**

<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>REVIEW slide</td>
<td></td>
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</tbody>
</table>
**In your own words:**
A change in car position that cannot be accounted for by visible oil leakage, valve leakage, or temperature change of the oil indicates a leak of the cylinder or in the underground piping and a need for further inspection, tests, or repairs.  
**Advance** | ✓ PPT slide 56

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### Instructor’s Notes

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### Materials Needed

- PPT slide 57

### DO

<table>
<thead>
<tr>
<th>In your own words:</th>
<th>SAY</th>
<th>Instructor’s Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overflow Container</td>
<td>Empty the overflow container for hydraulic oil that leaked from the plunger seal/packing and properly discard it.</td>
<td>Never pour this oil back into the tank, since it is likely to have dirt in it.</td>
</tr>
<tr>
<td></td>
<td>Advance</td>
<td>Record the quantity of oil discarded on the machine room log or in accordance with your agency’s requirements.</td>
</tr>
<tr>
<td></td>
<td>Advance</td>
<td>Examine the drain from the top of the cylinder and clean dirt and other obstructions in the channel that may cause the oil to overflow on the floor.</td>
</tr>
<tr>
<td></td>
<td>Advance</td>
<td>If the unit is equipped with a recovery system (scavenger pump) to return the oil to the tank, examine it for proper operation and means to prevent contamination of the oil.</td>
</tr>
<tr>
<td></td>
<td>Advance</td>
<td></td>
</tr>
<tr>
<td>DO</td>
<td>SAY</td>
<td>Materials Needed</td>
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<tr>
<td>-------------------</td>
<td>----------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>REVIEW slide</td>
<td>In your own words:</td>
<td>✓ PPT slide 58</td>
</tr>
<tr>
<td>Instructor’s Notes</td>
<td>For Drip pans, seals, and pit valves –</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Drip Pans</td>
<td></td>
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<tr>
<td></td>
<td><strong>Advance</strong> Where rail oilers are used,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>use empty drip pans to catch the oil</td>
<td></td>
</tr>
<tr>
<td></td>
<td>beneath the rails. Disposable aluminum</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pie plates are often used for this.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Seals</td>
<td></td>
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<tr>
<td></td>
<td><strong>Advance</strong> Be sure to check <strong>seals</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>for oil leak.</td>
<td></td>
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<tr>
<td></td>
<td>Pit Valve</td>
<td></td>
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<tr>
<td></td>
<td><strong>Advance</strong> Check the operation of the <strong>pit</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>valve</strong> and be sure it is not stuck</td>
<td></td>
</tr>
<tr>
<td></td>
<td>in an open or closed position. Also,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>examine it for leaks. Make sure it is</td>
<td></td>
</tr>
<tr>
<td></td>
<td>fully opened position for normal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>operations.</td>
<td></td>
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<tr>
<td></td>
<td><strong>Advance</strong></td>
<td></td>
</tr>
</tbody>
</table>
**In your own words:**

For rupture valves and couplings – Rupture Value

**Advance** Examine the *rupture value*, making sure that the tag is securely affixed. Check to make sure that the settings on the tag match how the valve is operating. Be sure to check for leaks.

**Coupling**

**Advance** Check coupling for leaks and tighten nuts and bolts as needed.

**Advance**
**Elevator – Hydraulic Hoistway**  
*Instructor’s Guide*

**Module Length:** 480 min  
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<table>
<thead>
<tr>
<th><strong>DO</strong></th>
<th><strong>SAY</strong></th>
<th><strong>Materials Needed</strong></th>
</tr>
</thead>
</table>
| **REVIEW** slide | **In your own words:**  
**Traveling Cables**  
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 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** The cable should maintain a “U” shape, parallel to the hoistway wall. It will make a double bend if it is not attached at the correct distance under the car.  
**Advance** This will result in unnecessary bending and premature failure.  
**Advance**  |  
| ✓ PPT slide 60 |
Elevator – Hydraulic Hoistway

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.

**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**
### Elevator – Hydraulic Hoistway

*Instructor’s Guide*

**Module Length:** 480 min  
**Time remaining:** 360 min  
**This section:** 120 min (65 slides)  
**Section start time:**  
**Section End Time:**  

<table>
<thead>
<tr>
<th>DO</th>
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</table>
| REVIEW slides | **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 61 62 |  

**Instructor’s Notes**

- [Image]

- [Image]

- [Image]

- [Image]
### Instructor's Notes

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**

**Buffers**

**Oil Buffers:** The operating speed in the down direction for most hydraulic elevators is less than the 220 feet per minute. Therefore, they usually do not have oil buffers. Where oil buffers are used, check the oil level. Add oil as required.

**Advance**

Lets look at Spring Buffers.

**Advance**

### Materials Needed

- ✔ PPT slides 63, 64
**Elevator – Hydraulic Hoistway**

*Instructor’s Guide*

<table>
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<tr>
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<tr>
<td>REVIEW slide</td>
<td><strong>In your own words:</strong> Check to be sure they are attached and mounted for tightness and alignment with the strike plate on the bottom of the car. <strong>Advance</strong> If a counterweight (used in roped hydraulic elevators) is used, it must not be allowed to land. <strong>Advance</strong> There should be at least a six-inch clearance at the bottom of the counterweight when the car plunger is against the stop ring. <strong>Advance</strong> Examine the spring buffers for dirt or materials inside that may prevent compression. <strong>Advance</strong> Also check for severe corrosion that may weaken them. <strong>Advance</strong></td>
<td>✓ PPT slide 65</td>
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Instructor’s Notes

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**Transit Elevator/Escalator Consortium**

63
### Elevator – Hydraulic Hoistway

#### Instructor’s Guide

**Instructor’s Notes**

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**Materials Needed**

- PPT slide 66

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<table>
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<td><strong>ASK</strong></td>
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- **In your own words:**
  Lets see what we have learned so far: What should Danny 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**
<table>
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</thead>
</table>
| **ASK** | **In your own words:**  
Alex needs to inspect the hydraulic cylinder. What should Alex do to complete this process?  

**Call on participants for answer**  
**Advance once given the correct answer**  

**Answer:**  
- Perform after relief valve test and flexible hose test  
- Tested with no load  
- Mark car location  
- Open disconnect switch for 15 minutes  
- Note car platform position compared to reference mark  
- Unaccounted change of car position indicates cylinder or underground leak  

**Advance** | ✓ PPT slide 67 |
On hydraulic elevators, the only component attached to the car is either a roller guide or a guide shoe. The elevator car travels the length of the hoistway by rolling along the guide rails. This is done by either roller guides or guide shoes which are attached to the elevator car.

Advance
**Elevator – Hydraulic Hoistway**

*Instructor’s Guide*

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<tbody>
<tr>
<td>REVIEW slide</td>
<td>In your own words: <em>Refer participants to</em></td>
<td>✓ PPT slide 69</td>
</tr>
<tr>
<td>REFER participants to Course book</td>
<td>Participant Course book p. 131</td>
<td>✓ Course book p. 130</td>
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<td><em>for chart to write additional notes.</em></td>
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<td><em>Advance</em></td>
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**Instructor’s Notes**

...
In your own words:

Ask
What do we see here?
Discuss participant ideas.
We have the top of the car operator and light. The stop switch is also located here as well.
Advance
<table>
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<tr>
<th><strong>DO</strong></th>
<th><strong>SAY</strong></th>
<th><strong>Materials Needed</strong></th>
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</table>
| REVIEW slide | **In your own words:** For the stop switch and top of car operator and light – 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. 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** | ✔ PPT slide 71 |

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Instructor’s Notes

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Transit Elevator/Escalator Consortium
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</table>
| REVIEW slide | **In your own words:** For top guide rollers Examine the **guide rollers** atop the car to determine the condition of the rollers and fit on the rail.  
**Advance** If required, adjust for a firm fit against the guide rail whereby the roller guides are just barely able to be turned by hand.  
**Advance** Check for proper roller guide alignment with the guide rail.  
**Advance** Check the support pivots for evidence of wear. Lubricate the pivot bushing per manufacturer and authority guidelines  
**Advance** | ✓ PPT slide 72 |
### Elevator – Hydraulic Hoistway

**Instructor’s Guide**

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<th>Materials Needed</th>
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</table>
| ![Review Slide](image) **REVIEW** slide | **In your own words:**  
For bottom guide rollers  
Examine the lower guide rollers to determine the condition of the tires and fit on the rail.  
**Advance** If required, adjust for firm fit against the rail whereby the roller guides are just barely able to be turned by hand.  
**Advance** Check for proper guide rollers alignment with the guide rail.  
**Advance** 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.  
**Advance** Make necessary repairs or adjustments as required.  
**Advance** | ✓ PPT slide 73 |
Elevator – Hydraulic Hoistway

**Instructor’s Guide**

Module Length: 480 min  
Time remaining: 360 min  
This section: 120 min (65 slides)  
Section start time:  
Section End Time:  

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</table>
| REVIEW slides | **In your own words:**  
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**  

Instructor’s Notes  
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** |

 ✓ PPT slides 74, 75
### In your own words:

**Review photo and indicated steps with participants.**

**Advance**

Place a new 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**

For a 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 76, 77, 78
### Elevator – Hydraulic Hoistway

#### Instructor’s Guide

**Module Length:** 480 min  
**Time remaining:** 360 min  
**This section:** 120 min (65 slides)  
**Section start time:** ________  
**Section End Time:** ________

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<tr>
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</table>
| **ASK** | **In your own words:**  
Lets see what we have learned so far:  
Yes or No. Repairs on the test operator, stop switch and light for operation must be made before other maintenance.  
**Call on participants for answer**  
**Advance once given the correct answer**  
**Answer:** Yes  
**Advance** | ✓ PPT slide 79 |

#### Instructor’s Notes

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### Elevator – Hydraulic Hoistway

**Instructor’s Guide**

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</table>
| ![ASQ](Image) ASK | **In your own words:** Describe the difference between inspection and maintenance of the top and bottom roller guides.  
**Call on participants for answer**  
**Advance once given the correct answer**  
**Answer:** Lubrication – top as per manufacturer and bottom uses few drops of 3-in-1 machine oil through housing hole.  
**Advance** | ✓ PPT slide 80 |

**Instructor’s Notes**

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## Elevator – Hydraulic Hoistway

### Instructor’s Guide

**Module Length:** 480 min  
**Time remaining:** 240 min  
**This section:** 120 min  
**Section start time:**  
**Section End Time:**  

<table>
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</table>
| ![ASK] | **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 hydraulic elevator hoistway  
- Perform an operational test on all safety devices in the hoistway  

**Advance**  

| ![CLASSROOM ACTIVITY] |  
**Instructor’s Notes** |
<table>
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<tbody>
<tr>
<td><img src="image.png" alt="Image" /></td>
<td>✓ PPT slide 81</td>
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</tbody>
</table>
### Elevator – Hydraulic Hoistway

**Instructor’s Guide**

Module Length: 480 min  
Time remaining: 120 min  
This section: 20 min (1 slide)  
Section start time: ________  
Section End Time: ________

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</table>
| REVIEW slide | 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. 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* | ✓ PPT slide 82 |

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**Instructor’s Notes**

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**Transit Elevator/Escalator Consortium**

77
## DO

- **ASK**

- **CLASSROOM ACTIVITY**

### Instructor’s Notes

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### SAY

**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 operational test on all auxiliary lights

**Advance**

### Materials Needed

- ✓ PPT slide 83
## Elevator – Hydraulic Hoistway

### Instructor’s Guide

### Module Length: 480 min

### Time remaining: 40 min

### This section: 40 min (5 slides)

### Section start time: __________

### Section End Time: __________

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<tr>
<td><strong>CLASSROOM ACTIVITY</strong></td>
<td>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</td>
</tr>
<tr>
<td><strong>Instructor’s Notes</strong></td>
<td>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</td>
</tr>
</tbody>
</table>

### Materials Needed

- ✓ PPT slides 84, 85
In your own words:
Let's 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.

Read slide. Discuss definitions as a group.
Advance.

Read slide. Discuss definitions as a group.
Advance.

Read slide. Discuss definitions as a group.
Advance.

Materials Needed

PPT slides 86, 87

Instructor’s Notes
### Instructor’s Guide

**Module Length:** 480 min  
**Time remaining:** 40 min  
**This section:** 40 min (5 slides)  
**Section start time:**  
**Section End Time:**  

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</table>
|    | In your own words: | ✓ PPT slide 88  
|    | *Administer quizzes.* | ✓ Quizzes  
|    |                   | ✓ Pencils  |

**CLASSROOM ACTIVITY**

**INDIVIDUAL ACTIVITY**

**Instructor’s Notes**

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