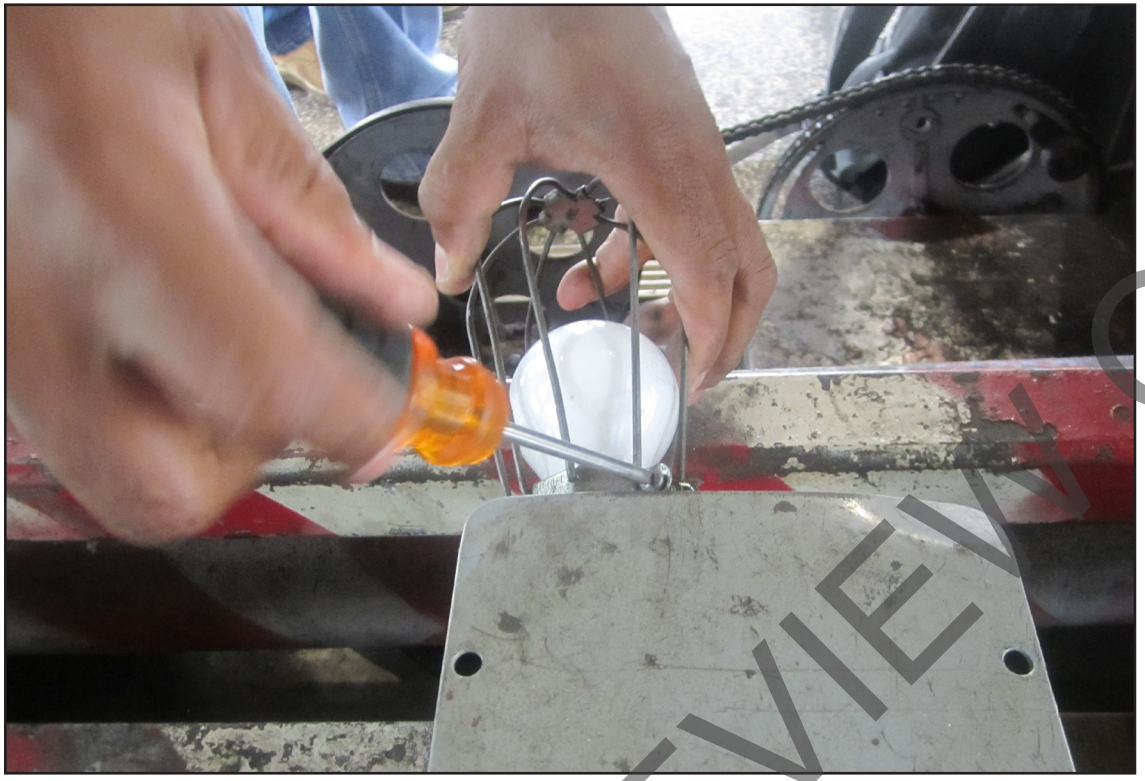
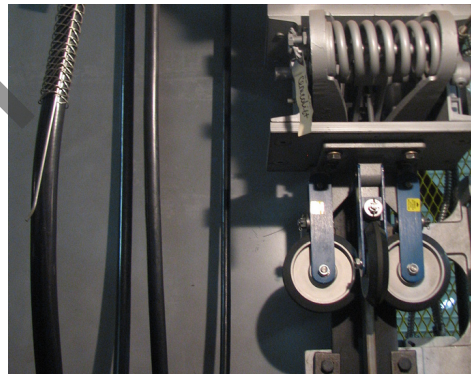
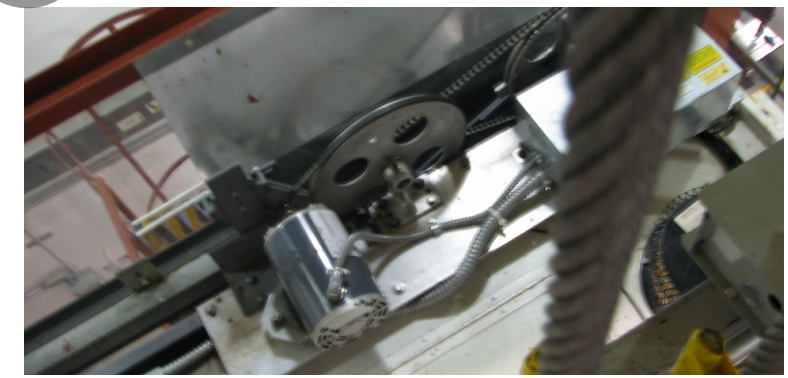
Instructor Guide







219: Elevator: Inspection and Basic Maintenance

Module 11: Operational Test

TRANSIT ELEVATOR/ESCALATOR CONSORTIUM

Table of Contents

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	Speed Check	40 Minutes
3	Field Trip	60 Minutes
4	Full Load Test	40 Minutes
5	Field Trip	60 Minutes
5	Overspeed test	40 Minutes
5	Field Trip	60 Minutes
5	Summary	30 Minutes
	Total Time:	360 Minutes

Overview

Purpose The purpose of this module is to:

Provide the participant with training on how to perform operational tests on elevator cars.

Objectives

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

- Check operational speed at normal, transition or slow-down and leveling or landing speeds.
- Perform an operational leveling test.
- Perform a full load test at the three different operational speeds.
- Perform an overspeed test at the three different operational speeds.
- Verify emergency stop is functioning properly.

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

Elevator – Operational Test

Instructor's Guide

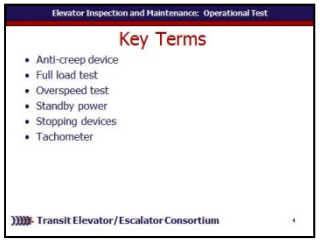
Module Length: 360 min Time remaining: 360 min This section: 30 min (8 slides) *Section start time: _____* *Section End Time: _____*

DO	SAY	Materials Needed
REVIEW introduction slides **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** Welcome to the course on operational testing. ***Advance*** Operational tests are important to maintain the function of elevator systems. ***Advance***	✓PPT slides 1, 2  

Elevator – Operational Test

Instructor's Guide

Module Length: 360 min Time remaining: 360 min This section: 30 min (8 slides) *Section start time: _____* *Section End Time: _____*

DO	SAY	Materials Needed
REVIEW key terms **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** Lets take a look at some of the key words we will be defining as move through this module: Anti-creep device Full load test Overspeed test Standby power Stopping devices Tachometer ***Advance***	✓PPT slide 4 

Elevator – Operational Test

Instructor's Guide

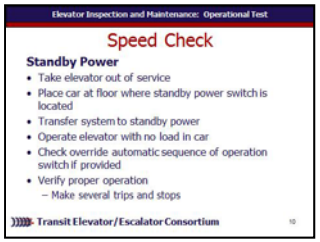
Module Length: 360 min Time remaining: 360 min This section: 30 min (8 slides) *Section start time: _____* *Section End Time: _____*

DO	SAY	Materials Needed
REVIEW slide **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** Operational tests are crucial to maintaining a safe and well functioning transit elevator system. Such tests are an essential part of the maintenance and inspection requirements of every transit elevator agency. The elevator technician conducts periodic operational tests to ensure compliance with ASME code and local transit agency requirements. As always, before performing any operational test be sure to follow the safety guidelines outlined in first module of this course, *General Safety and Maintenance.* ***Advance*** Always remove power from the elevator and perform appropriate LOTO procedures before conducting an operational test. ***Advance***	✓PPT slide 6 

Elevator – Operational Test

Instructor's Guide

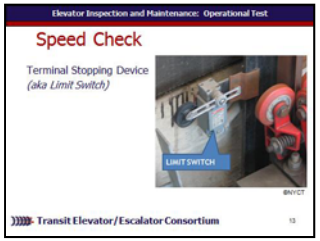
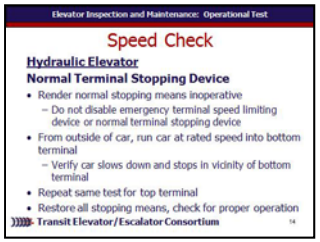
Module Length: 360 min Time remaining: 330 min This section: 40 min (19 slides) *Section start time:* _____ *Section End Time:* _____

DO	SAY	Materials Needed
REVIEW slide **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** Here is a photo of the top and bottom normal terminal stopping devices. ***Advance*** **Standby Power** Take the elevator out of normal service and ***Advance*** Place the car at the floor where the standby power switch is located. ***Advance*** Transfer the system to standby power and ***Advance*** Operate the elevator with no load in the car. ***Advance*** Check the switch which overrides and automatic sequence operation, if provided. ***Advance*** Make several trips and stops to verify proper operation. ***Advance***	✓PPT slide 10, 11  

Elevator – Operational Test

Instructor's Guide

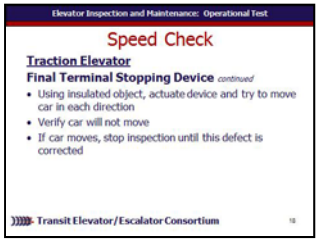
Module Length: 360 min Time remaining: 330 min This section: 40 min (19 slides) *Section start time: _____* *Section End Time: _____*

DO	SAY	Materials Needed
REVIEW slides **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** Here is a terminal stopping device also known as a limit switch. ***Advance*** To test the hydraulic elevator normal terminal stopping device, ***Advance*** Start by rendering the normal elevator stopping means inoperative. Do not disable the emergency terminal speed limiting device or the normal terminal stopping device. ***Advance*** Next, from outside of the car, run the car at rated speed into the bottom terminal to verify the car slows down and stops in the vicinity of the bottom terminal. ***Advance*** Do the same test for the top terminal. ***Advance*** Be sure to restore all stopping means and check for proper operation. ***Advance***	✓PPT slides 13, 14  

Elevator – Operational Test

Instructor's Guide

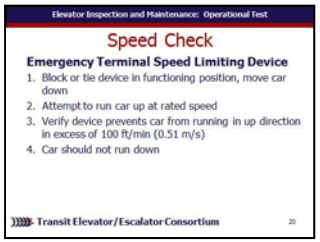
Module Length: 360 min Time remaining: 330 min This section: 40 min (19 slides) *Section start time: _____* *Section End Time: _____*

DO	SAY	Materials Needed
REVIEW slide **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** Continuing ***Advance*** Use an insulated object to actuate this device and try to move the car in each direction. ***Advance*** Verify that the car will not move; ***Advance*** If it does, the inspection should not be continued until this defect is corrected. ***Advance***	✓PPT slide 18 

Elevator – Operational Test

Instructor's Guide

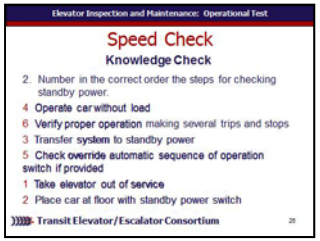
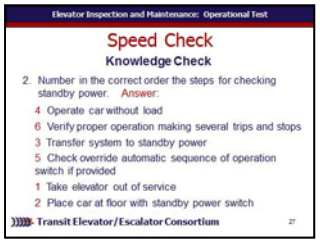
Module Length: 360 min Time remaining: 330 min This section: 40 min (19 slides) *Section start time: _____* *Section End Time: _____*

DO	SAY	Materials Needed
REVIEW slide **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** Finally, the emergency terminal speed limiting device can be tested it by ***Advance*** Blocking or tying the device in the functioning position and moving the car down. ***Advance*** Attempt to run the car up at rated speed. ***Advance*** Verify that the emergency terminal speed limiting device prevents the car from running in the up direction in excess of 100 ft/min. (0.51 m/s). ***Advance*** The car should not run down with the emergency terminal stopping device the functioning position. ***Advance***	✓PPT slide 20 

Elevator – Operational Test

Instructor's Guide

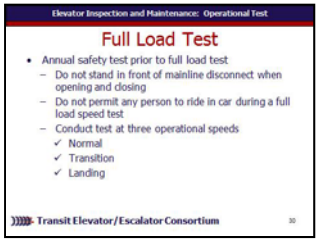
Module Length: 360 min Time remaining: 330 min This section: 40 min (19 slides) *Section start time: _____* *Section End Time: _____*

DO	SAY	Materials Needed
ASK **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** Number in the correct order the steps for checking standby power. ***Call on participants for answer*** ***Advance once given the correct answer*** Answer: 1. Take elevator out of service 2. Place car at floor where standby power switch is located 3. Transfer system to standby power 4. Operate elevator with no load in car 5. Check override automatic sequence of operation switch if provided 6. Verify proper operation Make several trips and stops ***Advance***	✓PPT slides 26, 27  

Elevator – Operational Test

Instructor's Guide

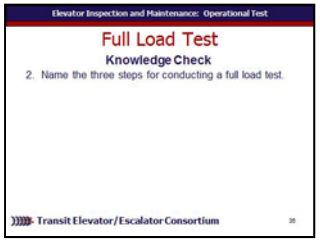
Module Length: 360 min | Time remaining: 230 min | This section: 40 min (9 slides) | *Section start time: _____* | *Section End Time: _____*

DO	SAY	Materials Needed
REVIEW slides **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** Code requires that an annual safety test is performed before you conduct a **full load test**. Also, when performing this operational test, ***Advance*** You should also take care not to stand directly in front of the mainline disconnect when opening and closing. ***Advance*** And, do not permit any person to ride the car during a full load speed test. ***Advance*** Remember to conduct the full load test at each of the three operational speeds (i.e. normal, transition and landing). ***Advance***	✓PPT slide 32 

Elevator – Operational Test

Instructor's Guide

Module Length: 360 min | Time remaining: 230 min | This section: 40 min (9 slides) | *Section start time: _____* | *Section End Time: _____*

DO	SAY	Materials Needed
ASK	**In your own words:** Name the three steps for conducting a full load test. ***Call on participants for answer*** ***Advance once given the correct answer*** Answer: 1. Place rated load on car platform using test weights 2. Determine operating speed in down direction with rated load 3. Conclude by attaching any required test tag, follow transit authority procedures ***Advance***	✓PPT slide 37 

Instructor's Notes

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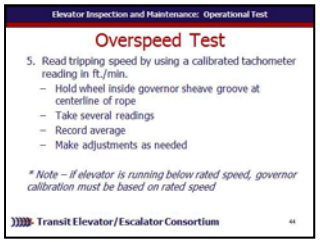
Elevator – Operational Test

Instructor's Guide

Module Length: 360 min | Time remaining: 130 min | This section: 40 min (9 slides) | *Section start time: _____* | *Section End Time: _____*

DO	SAY	Materials Needed
REVIEW slides **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** Here is a photo of a manufacturer's plate. ***Advance*** Read the tripping speed by using a calibrated tachometer reading in ft./min. This is done by holding the wheel inside the governor sheave groove at the centerline of the rope. Take several readings and record the average. Make adjustments as necessary. Additional information on governor maintenance is in Module 7A of this course. ***Advance*** Note that if the elevator for any reason is running below the rated speed, the governor calibration must be based on the rated speed. ***Advance***	✓PPT slides 44, 45  

Elevator – Operational Test

Instructor's Guide

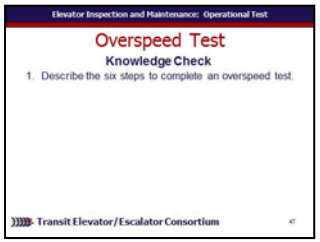
Module Length: 360 min | Time remaining: 130 min | This section: 40 min (9 slides) | *Section start time: _____* | *Section End Time: _____*

DO	SAY	Materials Needed
REVIEW slide **REFER** participants to Elevator Maintenance **Instructor's Notes** _____ _____ _____ _____ _____	**In your own words:** ***Have participants turn to Elevator Maintenance pages 187-188, Governors and Governor Testing. Review those pages together.*** ***Advance***	✓PPT slide 47  ✓ Elevator Maintenance

Elevator – Operational Test

Instructor's Guide

Module Length: 360 min | Time remaining: 130 min | This section: 40 min (9 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: Describe the six steps to complete and overspeed test. ***Call on participants for answer*** ***Advance once given the correct answer*** Answer: Check that all safeties hold Complete annual governor testing prior to overspeed test Examine car guide shoes, safety parts and governors Determine tripping speed of governor based on operating speed of elevator in down direction using ASME A17.2 code Read tripping speed by using a calibrated tachometer reading in ft./min. Conclude test by attaching any required test tag, follow transit authority procedures ***Advance***	✓PPT slide 48 

Elevator – Operational Test

Instructor's Guide

Module Length: 360 min | Time remaining: 30 min | This section: 30 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.*** 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 slides 50, 51