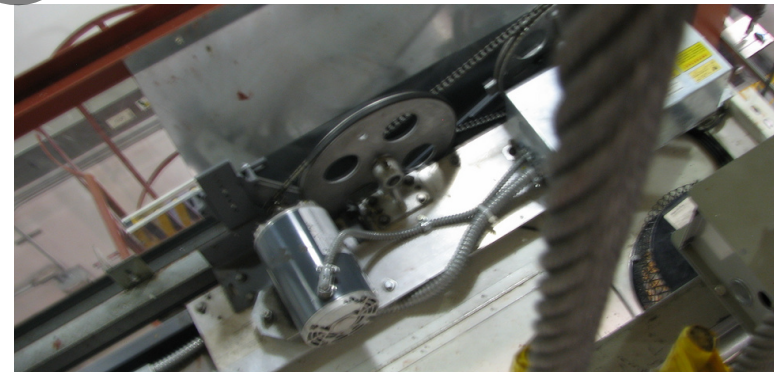
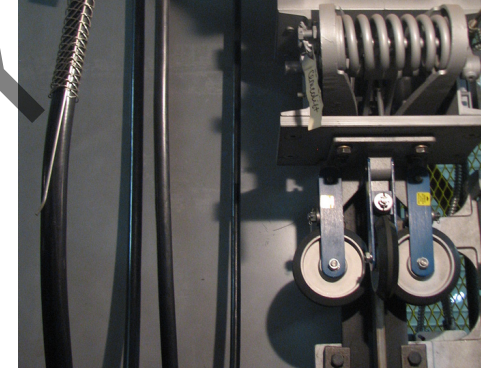


Instructor Guide



214: Elevator: Electrical Systems Module 2: Advanced Print Reading for Elevators



Table of Contents

Overview.....4

Basic Symbols.....7

Basic Single Speed Control.....11

Elevator Car Controls.....28

Speed Control Diagrams.....33

Advanced Elevator Control Diagrams.....40

Summary.....53

PREVIEW ONLY

Elevator – Advanced Print Reading

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	30 Minutes
2	Basic Symbols	60 Minutes
3	Basic Single Speed Control	240 Minutes
4	Elevator Car Controls	120 Minutes
5	Speed Control Diagrams	180 Minutes
6	Advanced Control Diagrams	210 Minutes
7	Field Trip	90 Minutes
8	Summary	30 Minutes
	Total Time:	960 Minutes

Elevator – Advanced Print Reading

Instructor's Guide



Overview

Purpose The purpose of this module is to:

Provide the participant with the principles of interpreting elevator electrical diagrams. The key concepts discussed will aid the trainee in their future applications of elevator concepts and terminology.

Objectives

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

- Locate and describe the function of specific components in an elevator control circuit
- Identify the sources of both AC and DC power within the system
- Locate and identify the safety circuit devices
- Locate and identify various control devices
- Identify and describe the car leveling circuit
- Describe the sequence of operation of a hydraulic elevator
- Describe the sequence of operation of a traction elevator

Materials **Mandatory**

Make sure you have the following

- PowerPoint Presentation
- Coursebook
- Quizzes
- Pencils
- Elevator World Educational Package and Reference Library, Volume 1
 - Lessons I – VI
 - Lessons VIII – XVII
 - Lessons XX - XXX
- Elevator Maintenance
- Basic Symbols Activity sheet

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
- paper

Elevator – Advanced Print Reading

Instructor's Guide



Module Length: 960 min Time remaining: 960 min This section: 30 min (4 slides) Section start time: _____ Section End Time: _____

DO	SAY	Materials Needed
<div data-bbox="34 464 144 568" data-label="Image"> </div> <div data-bbox="150 499 618 542" data-label="Text"> <p>REVIEW introduction slides</p> </div> <div data-bbox="28 792 444 835" data-label="Section-Header"> <h3>Instructor's Notes</h3> </div> <div data-bbox="28 892 608 1242" data-label="Form"> <hr/><hr/><hr/><hr/><hr/> </div>	<div data-bbox="676 421 1023 464" data-label="Section-Header"> <p>In your own words:</p> </div> <div data-bbox="676 478 1381 606" data-label="Text"> <p>Welcome to the course on Advanced Print Reading for Elevators Advance.</p> </div> <div data-bbox="676 656 1400 1049" data-label="Text"> <p>Riders Depend on Us. Prints, wiring diagrams, and schematics play a big role in what we accomplish. To know how to use these prints, we must have a general understanding of the symbols used in terms of context and how they relate to one another. This is what we are going to do in Module 2, Advanced Print Reading for elevators.</p> </div> <div data-bbox="676 1056 850 1099" data-label="Text"> <p>Advance.</p> </div>	<div data-bbox="1497 464 1787 506" data-label="Text"> <p>✓PPT slides 1, 2</p> </div> <div data-bbox="1535 528 1854 763" data-label="Image"> </div> <div data-bbox="1535 778 1854 1006" data-label="Image"> </div>

Elevator – Advanced Print Reading

Instructor's Guide



Module Length: 960 min Time remaining: 930 min This section: 60 min (4 slides) Section start time: _____ Section End Time: _____

DO	SAY	Materials Needed
<div data-bbox="34 439 144 545" data-label="Image"></div> <div data-bbox="164 471 405 511" data-label="Text"><p>REVIEW slide</p></div> <div data-bbox="34 556 144 662" data-label="Image"></div> <div data-bbox="164 568 537 654" data-label="Text"><p>REFER participants to <u>Elevator Maintenance</u></p></div> <div data-bbox="19 792 444 839" data-label="Section-Header"><h3>Instructor's Notes</h3></div> <div data-bbox="19 892 614 1242" data-label="Form"> <hr/><hr/><hr/><hr/><hr/> </div>	<p>In your own words: <i>[Have participants view Elevator Maintenance Appendix A p 109 – 126. Explain...]</i> Looking at the headers of the columns we can see the names of various manufacturers. As we move down the columns, we can see that symbols for different electrical components will sometimes vary between manufacturers. <i>[Allow participants a few minutes to review these pages.]</i> Advance.</p>	<div data-bbox="1497 471 1729 511" data-label="Text"><p>✓ PPT slide 7</p></div> <div data-bbox="1541 528 1854 763" data-label="Image"> <p><small>Elevator Electrical Systems Advanced Print Reading</small> Electrical Symbols Review electrical symbols in the following two resources ~ Elevator World Educational Package and Reference Library, Volume 1 page IV-4 and IV-5 ~ Elevator Maintenance, Appendix A pages 109 - 126 <small>Transit Elevator/ Escalator Consortium</small></p></div> <div data-bbox="1516 806 1787 885" data-label="Text"><p>✓ <u>Elevator Maintenance</u></p></div>

Elevator – Advanced Print Reading

Instructor's Guide



Module Length: 960 min Time remaining: 930 min This section: 60 min (4 slides) Section start time: _____ Section End Time: _____

DO	SAY	Materials Needed
<div data-bbox="34 454 144 564"></div> <div data-bbox="144 485 537 521">SMALL GROUP ACTIVITY</div> <div data-bbox="34 574 144 684"></div> <div data-bbox="160 606 285 649">WRITE</div> <div data-bbox="28 792 444 835">Instructor's Notes</div> <div data-bbox="28 892 608 1242"> <hr/><hr/><hr/><hr/><hr/> </div>	<div data-bbox="676 421 1023 464">In your own words:</div> <div data-bbox="676 485 1420 706"> <p>Using the symbols guide in Lesson 1 on pages IV-4 and IV-5 in Elevator World Educational and Reference Library, identify the symbols on the drawing C-0303-AA page IV-6.</p> </div> <div data-bbox="676 778 1410 863"> <p><i>[Allow participants work in small groups. Review answers when finished.]</i></p> </div> <div data-bbox="676 921 840 963">Advance</div>	<div data-bbox="1497 449 1719 492">✓ PPT slide 8</div> <div data-bbox="1535 528 1854 763"> </div> <div data-bbox="1506 799 1864 1071"> <ul style="list-style-type: none"> ✓ <u>Elevator World Educational Package and Reference Library</u> ✓ 214 Module 2 Activity 1 </div>

Elevator – Advanced Print Reading

Instructor's Guide



Module Length: 960 min Time remaining: 870 min This section: 240 min (18 slides) Section start time: _____ Section End Time: _____

DO	SAY	Materials Needed
<div data-bbox="34 439 144 545" data-label="Image"></div> <div data-bbox="164 471 425 511" data-label="Text"> <p>REVIEW slides</p> </div> <div data-bbox="34 556 144 662" data-label="Image"></div> <div data-bbox="164 564 537 654" data-label="Text"> <p>REFER participants to <u>Elevator Maintenance</u></p> </div> <div data-bbox="28 792 444 839" data-label="Section-Header"> <h3>Instructor's Notes</h3> </div> <div data-bbox="28 892 608 1242" data-label="Form"> <hr/><hr/><hr/><hr/><hr/><hr/> </div>	<div data-bbox="672 425 1023 464" data-label="Section-Header"> <p>In your own words:</p> </div> <div data-bbox="672 471 1420 821" data-label="Text"> <p>So, we took a look at some electrical Symbols often found in elevator schematics. Lets move on and begin to take a look at how they work in the diagrams. We will start by identifying the sources of both AC and DC power within the system and locating and identify the safety circuit devices.</p> </div> <div data-bbox="672 828 834 863" data-label="Text"> <p>Advance</p> </div> <div data-bbox="672 913 1362 1042" data-label="Text"> <p><i>[Have participants a few minutes to read over <u>Elevator Maintenance</u> p. 87–88.]</i></p> </div> <div data-bbox="672 1049 834 1085" data-label="Text"> <p>Advance</p> </div>	<div data-bbox="1497 471 1806 511" data-label="Text"> <p>✓ PPT slides 9, 10</p> </div> <div data-bbox="1541 528 1854 763" data-label="Image"> </div> <div data-bbox="1541 778 1854 1011" data-label="Image"> </div> <div data-bbox="1506 1042 1787 1120" data-label="Text"> <p>✓ <u>Elevator Maintenance</u></p> </div>

Elevator – Advanced Print Reading

Instructor's Guide



Module Length: 960 min Time remaining: 870 min This section: 240 min (18 slides) Section start time: _____ Section End Time: _____




DO	SAY	Materials Needed
<div data-bbox="34 439 144 545" data-label="Image"></div> <div data-bbox="164 471 425 511" data-label="Text"> <p>REVIEW slides</p> </div> <div data-bbox="34 556 144 662" data-label="Image"></div> <div data-bbox="164 568 537 654" data-label="Text"> <p>REFER participants to <u>Elevator Maintenance</u></p> </div> <div data-bbox="19 792 444 839" data-label="Section-Header"> <h3>Instructor's Notes</h3> </div> <div data-bbox="19 892 614 1242" data-label="Form"> <hr/><hr/><hr/><hr/><hr/> </div>	<div data-bbox="672 425 1023 464" data-label="Section-Header"> <p>In your own words:</p> </div> <div data-bbox="672 471 1375 556" data-label="Text"> <p>Some special circuits one may see can be found on p.87.</p> </div> <div data-bbox="672 571 1406 616" data-label="Text"> <p><i>[Refer students to look at Figure 1, p.87.]</i></p> </div> <div data-bbox="672 631 1425 935" data-label="Text"> <p>While both use NO (normally open) call buttons to place a call, the one on the left uses latching relay to close the TC contact once energized. The right diagram, on the other hand, uses a normally closed switch on the floor selector and is maintained through the switch on the floor selector.</p> </div> <div data-bbox="672 942 834 982" data-label="Text"> <p>Advance</p> </div>	<div data-bbox="1497 471 1748 511" data-label="Text"> <p>✓ PPT slide 14</p> </div> <div data-bbox="1541 528 1858 768" data-label="Image"> </div> <div data-bbox="1516 821 1792 899" data-label="Text"> <p>✓ <u>Elevator Maintenance</u></p> </div>

Elevator – Advanced Print Reading

Instructor's Guide



Module Length: 960 min Time remaining: 870 min This section: 240 min (18 slides) Section start time: _____ Section End Time: _____

DO	SAY	Materials Needed
<div> REVIEW slides</div> <div> REFER participants to <u>Elevator Maintenance</u></div> <div><h3>Instructor's Notes</h3><div></div><div></div><div></div><div></div><div></div></div>	<p>In your own words: Some special circuits one may see can be found on p.87.</p> <p><i>[Refer students to look at Figure 1, p.87.]</i></p> <p>While both use NO (normally open) call buttons to place a call, the one on the left uses latching relay to close the TC contact once energized. The right diagram, on the other hand, uses a normally closed switch on the floor selector and is maintained through the switch on the floor selector.</p> <p>Advance</p>	<p>✓ PPT slide 14</p> <div></div> <p>✓ <u>Elevator Maintenance</u></p>

Elevator – Advanced Print Reading

Instructor's Guide



Module Length: 960 min Time remaining: 870 min This section: 240 min (18 slides) Section start time: _____ Section End Time: _____

DO	SAY	Materials Needed
<div data-bbox="34 439 144 545" data-label="Image"></div> <p>REVIEW slides</p> <div data-bbox="34 559 144 665" data-label="Image"></div> <p>REFER participants to <u>Elevator World Educational Package and Reference Library, Vol 1.</u></p> <div data-bbox="19 792 444 835" data-label="Section-Header"> <h3>Instructor's Notes</h3> </div> <div data-bbox="19 892 608 1242" data-label="Form"> <hr/><hr/><hr/><hr/><hr/> </div>	<p>In your own words:</p> <p><i>Multi-media: Using the Elevator World Technical Library CD, Controller Lessons and Diagrams, Lesson I, review pages IV-1 – IV-6 with print C-0303-AA with participants. If these pages are available in print, distribute to participants to read independently prior to group review.</i></p> <p><i>After review of lesson and related print, display lesson questions and discuss answers with participants.</i></p> <p><i>Advance</i></p>	<p>✓ PPT slide 21</p> <div data-bbox="1541 528 1854 763" data-label="Image"></div> <p>✓ <u>Elevator World Educational Package and Reference Library</u></p>

Elevator – Advanced Print Reading

Instructor's Guide



Module Length: 960 min Time remaining: 870 min This section: 240 min (18 slides) Section start time: _____ Section End Time: _____

DO	SAY	Materials Needed
<div data-bbox="34 439 144 545" data-label="Image"></div> <p>REVIEW slides</p> <div data-bbox="34 559 144 665" data-label="Image"></div> <p>REFER participants to <u>Elevator World Educational Package and Reference Library, Vol 1.</u></p> <div data-bbox="19 792 444 835" data-label="Section-Header"> <h3>Instructor's Notes</h3> </div> <div data-bbox="19 892 608 1242" data-label="Form"> <hr/><hr/><hr/><hr/><hr/> </div>	<p>In your own words: <i>Multi-media: Using the Elevator World Technical Library CD, Controller Lessons and Diagrams, Lesson II, review pages IV-7 – IV-9 with print C-0303-AA with participants. If these pages are available in print, distribute to participants to read independently prior to group review.</i></p> <p><i>After review of lesson and related print, display lesson questions and discuss answers with participants.</i></p> <p>Advance</p>	<p>✓ PPT slide 22</p> <div data-bbox="1541 528 1854 763" data-label="Image"></div> <p>✓ <u>Elevator World Educational Package and Reference Library</u></p>

Elevator – Advanced Print Reading

Instructor's Guide



Module Length: 960 min Time remaining: 870 min This section: 240 min (18 slides) Section start time: _____ Section End Time: _____

DO	SAY	Materials Needed
<div data-bbox="34 439 144 545" data-label="Image"></div> <p>REVIEW slides</p> <div data-bbox="34 559 144 665" data-label="Image"></div> <p>REFER participants to <u>Elevator World Educational Package and Reference Library, Vol 1.</u></p> <div data-bbox="19 792 444 835" data-label="Section-Header"> <h3>Instructor's Notes</h3> </div> <div data-bbox="19 892 608 1242" data-label="Form"> <hr/><hr/><hr/><hr/><hr/> </div>	<p>In your own words: <i>Multi-media: Using the Elevator World Technical Library CD, Controller Lessons and Diagrams, Lesson VI, review pages IV-20 – IV-21 with print C-0303-AA with participants. If these pages are available in print, distribute to participants to read independently prior to group review.</i></p> <p><i>After review of lesson and related print, display lesson questions and discuss answers with participants.</i></p> <p>Advance</p>	<p>✓ PPT slide 26</p> <div data-bbox="1541 528 1854 763" data-label="Image"></div> <p>✓ <u>Elevator World Educational Package and Reference Library</u></p>

Elevator – Advanced Print Reading

Instructor's Guide



Module Length: 960 min Time remaining: 510 min This section: 180 min (7 slides) Section start time: _____ Section End Time: _____

DO	SAY	Materials Needed
<div data-bbox="34 439 144 545" data-label="Image"></div> <p>REVIEW slides</p> <div data-bbox="34 559 144 665" data-label="Image"></div> <p>REFER participants to <u>Elevator World Educational Package and Reference Library, Vol 1.</u></p> <div data-bbox="19 792 444 835" data-label="Section-Header"> <h3>Instructor's Notes</h3> </div> <div data-bbox="19 892 608 1242" data-label="Form"> <hr/><hr/><hr/><hr/><hr/> </div>	<p>In your own words: <i>Multi-media: Using the Elevator World Technical Library CD, Controller Lessons and Diagrams, Lesson XIII, review pages IV-41 – IV-42 with print C-1272-B with participants. If these pages are available in print, distribute to participants to read independently prior to group review.</i></p> <p><i>After review of lesson and related print, display lesson questions and discuss answers with participants.</i></p> <p>Advance</p>	<p>✓ PPT slide 34</p> <div data-bbox="1541 528 1854 763" data-label="Image"></div> <p>✓ <u>Elevator World Educational Package and Reference Library</u></p>

Elevator – Advanced Print Reading

Instructor's Guide



Module Length: 960 min Time remaining: 510 min This section: 180 min (7 slides) Section start time: _____ Section End Time: _____

DO	SAY	Materials Needed
<div data-bbox="34 439 144 545" data-label="Image"></div> <p>REVIEW slides</p> <div data-bbox="34 559 144 665" data-label="Image"></div> <p>REFER participants to <u>Elevator World Educational Package and Reference Library, Vol 1.</u></p> <div data-bbox="19 792 444 835" data-label="Section-Header"> <h3>Instructor's Notes</h3> </div> <div data-bbox="19 892 608 1242" data-label="Form"> <hr/><hr/><hr/><hr/><hr/> </div>	<p>In your own words: <i>Multi-media: Using the Elevator World Technical Library CD, Controller Lessons and Diagrams, Lesson IVX, review pages IV-43 – IV-45 with print C-1272-B with participants. If these pages are available in print, distribute to participants to read independently prior to group review.</i></p> <p><i>After review of lesson and related print, display lesson questions and discuss answers with participants.</i></p> <p>Advance</p>	<p>✓ PPT slide 35</p> <div data-bbox="1541 528 1854 763" data-label="Image"></div> <p>✓ <u>Elevator World Educational Package and Reference Library</u></p>

Elevator – Advanced Print Reading

Instructor's Guide



Module Length: 960 min Time remaining: 30 min This section: 30 min (2 slides) Section start time: _____ Section End Time: _____

DO	SAY	Materials Needed
<div data-bbox="34 459 146 571"></div> <div data-bbox="177 488 423 568"> <p>CLASSROOM ACTIVITY</p> </div> <div data-bbox="28 602 146 714"></div> <div data-bbox="168 631 564 668"> <p>INDIVIDUAL ACTIVITY</p> </div> <div data-bbox="28 792 444 839"> <p>Instructor's Notes</p> <hr/><hr/><hr/><hr/><hr/> </div>	<p>In your own words:</p> <p><i>Administer quizzes.</i></p>	<ul style="list-style-type: none"> ✓ PPT slides 53 ✓ Quizzes ✓ Pencils <div data-bbox="1508 631 1821 863"> </div>