

Cape Cod Community College AMTS

Practical Project Guide for AMT 227 Airframe Curriculum, Subject Item 48

Part 147, Appendix B, Subject G. Aircraft Electrical Systems

Item 48. Repair and inspect aircraft electrical system components; crimp and splice wiring to manufactures' specifications; and repair pins and sockets of aircraft connectors. (Level 2)

Project 1

Purpose: To acquaint the student with the proper procedure for inspecting and repairing aircraft electrical system components.

References:

- (1) 14 CFR Federal Aviation Regulations for Aviation Maintenance Technicians, Aviation Maintenance Technician Handbook – Airframe, Volume 1 (FAA-H-8083-31) Chapter 9
- (2) NIDA Corporation Model 130E Trainer User's Guide
- (3) Link: <http://nida/nidaile/portal.aspx>

Equipment and Tools Needed:

- (1) Computer
- (2) NIDA Corporation Model 130E Trainer
- (3) NIDA Experiment Card PC130-180
- (4) NIDA Experiment Card PC130-736
- (5) Multimeter
- (6) 1/8-inch slot screwdriver
- (7) Alligator clips

Supplies and Materials Needed:

- (1) Pencil and Paper

Procedure:

- (1) Students will sign onto the computer and go to the reference website. At the NIDA website the student will sign in with their user name and password. At the menu: click on AM1003, then click Aircraft Power, then Aircraft DC Generation Systems, click the menu button in the lower left hand corner, click DC Generation Experiment, and click Experiment. Using the arrows in the lower right hand corner review slides 4020 through 4130. Then do the experiments on slides 4140 through 4300.

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Item 48. Repair and inspect aircraft electrical system components; crimp and splice wiring to manufactures' specifications; and repair pins and sockets of aircraft connectors. (Level 2)

Project 2

Purpose: To acquaint the student with the proper procedure for crimping and splicing wiring to manufacturers' specifications; and repair pins and sockets of aircraft connectors.

References:

- (1) 14 CFR Federal Aviation Regulations for Aviation Maintenance Technicians, Aviation Maintenance Technician Handbook – Airframe, Volume 1 (FAA-H-8083-31) Chapter 9
- (2) AC 43.13-1B, Acceptable Methods, Techniques, and Practices – Aircraft Inspection and Repair
- (3) Daniels Manufacturing Corporation Standard Adjustable Crimp Tool (AF8) Instructions
- (4) Daniels Manufacturing Corporation GMT Series Precision Crimp Tool (232) Instructions
- (5) Daniels Manufacturing Corporation Plastic Install/Removal Tool PN M81969/14-03

Equipment and Tools Needed:

- 1) Wire stripper/Cutter
- 2) Hand Crimp tool GMT 232
- 3) 20-gauge butt type splices
- 4) 20-gauge avionics pins
- 5) 20-gauge pin insertion & extraction tool
- 6) Daniels AF8 crimper
- 7) DMC crimp tool turret head assembly

Supplies and Materials Needed:

- 1) 20-gauge wire
- 2) Crimp style mating connector

Procedure:

- a. Students will strip the wire just enough to fit into the avionics pin. Students will assemble the Daniels AF8 to the DMC crimp tool turret head and dial in the correct number for the 20-gauge pin and wire in accordance with the instructions. Students will crimp the pin to the wire. Next the student will install and remove the pin and wire in and from the crimp style mating connector using the pin insertion & extraction tool.
- b. Students, using their wire stripper/cutter cut the wire in half and strip one end of each wire just enough to fit half way into the butt splice. Using the hand crimp tool (GMT232) and the instruction put the wires into each end of the butt splice and crimp them together.

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Practical Project Guide for AMT 227 Airframe Curriculum, Subject Item 49

Part 147, Appendix C, Subject G. Aircraft Electrical Systems

Item 49. Install, check, and service airframe electrical wiring, controls, switches, indicators and protective devices. (Level 3)

Project 3A, 3B, & 3C

Purpose: To acquaint the student with the proper procedures for installing, checking, servicing airframe electrical wiring, controls, switches, indicators and protective devices.

References:

- (1) 14 CFR Federal Aviation Regulations for Aviation Maintenance Technicians, Aviation Maintenance Technician Handbook – Airframe, Volume 1 (FAA-H-8083-31) Chapter 9
- (2) Aero Train Model AS-12 Fuel Injection System Operation and Training Manual
- (3) Aero Train Model AS-11 Aircraft Fuel System Training Manual
- (4) Aero Train Model AS-03 Hydraulic Landing Gear System Training Manual

Equipment and Tools Needed:

- (1) Snap-On Toolbox
- (2) Aero Train Model AS-12 Fuel Injection System Trainer
- (3) Aero Train Model AS-11 Aircraft Fuel System Trainer
- (4) Aero Train Model AS-03 Hydraulic Landing Gear System

Supplies and Materials Needed:

- 1) Containers for Hardware
- 2) Pencil and Paper

Procedure:

Complete following procedures on 2 of the 3 assigned projects 3A, 3B or 3C

Project 3A Item 49: Install, check, and service airframe electrical wiring, controls, switches, indicators and protective devices. (Level 3)

- (1) Install the following components to return to service the Aero Train Model AS-12 Fuel Injection System Trainer
 - a. The fuel probe power wire (with boot) and ground wire

- b. The power lever micro-switch and its 2 connecting wires
- c. The system's Master switch and its 2 connecting wires
- d. The Fuel Quantity gage and its electrical connection
- e. The Indication Circuit Breaker and associated wires
- f. Service the trainer with fuel
- g. Complete the operating procedure 1.4.1 through 1.4.1.13 on pages 5 and 6 of the Model AS-12 Training Manual and verify that all components are working properly

Project 3B Item 49: Install, check, and service airframe electrical wiring, controls, switches, indicators and protective devices. (Level 3)

- (1) Install the following components to return to service the Aero Train Model AS
11

Aircraft Fuel System Trainer

- a. The wire (T13L20) that connects the transfer pump to the indicator light
- b. The Refill Switch and its 2 wires
- c. The system's Master switch and its connecting 2 wires
- d. The Fuel Flow gage and its electrical connection
- e. The Wing Tank Liquidometer Circuit Breaker and associated wires
- f. Service the trainer with fuel
- g. Complete the operating procedure 28-10-10 on page 7 of the Model AS-11 Training Manual and verify that all components are working properly

Project 3C Item 49: Install, check, and service airframe electrical wiring, controls, switches, indicators and protective devices. (Level 3)

- (1) Install the following components to return to service the Aero Train Model AS-
03

Hydraulic Landing Gear System Trainer

- a. Remove the top cover to gain access to the electrical portion of the trainer
- b. The white wire on the bottom of the Throttle micro the Aural Warning horn
- c. The Throttle micro switch and its remaining wire
- d. The system's Master switch and its connecting 2 wires
- e. The Flap Indicator gage and its electrical connection
- f. The Pump Circuit Breaker and its associated wires
- g. Comply with the Operating Instruction 6.0 through 6.6.5 on pages 21 and 22 of the Model AS-03 Training Manual and verify that all components are working properly

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Practical Project Guide for AMT 227 Airframe Curriculum, Subject Item 50.a

Part 147, Appendix C, Subject G. Aircraft Electrical Systems

Item. 50.a. Inspect, check, troubleshoot, service & repair alternating & direct current electrical systems. (Level 3)

Project 4

Purpose: To acquaint the student with the proper procedures for inspecting direct current electrical systems

References:

- (1) 14 CFR Federal Aviation Regulations for Aviation Maintenance Technicians, Aviation Maintenance Technician Handbook – Airframe, Volume 1 (FAA-H-8083-31) Chapter 9
- (2) NIDA Corporation Model 130E Trainer User’s Guide
- (3) Link: <http://nida/nidaile/portal.aspx>

Equipment and Tools Needed:

- (1) Computer
- (2) NIDA Corporation Model 130E Trainer
- (3) NIDA Experiment Card PC130-84B
- (4) Multimeter
- (5) Calculator

Supplies and Materials Needed:

- (1) Pencil and Paper

Procedure:

- (1) Inspect DC Electrical Systems:
 - a. Students will sign on to the computer and go to the reference website. At the NIDA website the students will sign on with their user name and password. At the menu: click on BE3021, then click Relays & Switches, then Relay Operation Experiment, review slides 10 through 440 using the arrow in the lower right hand corner, then click the menu button in the lower left hand corner, click the Experiment button and do slides 13001 through 14050.

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Practical Project Guide for AMT 227 Airframe Curriculum, Subject Item 50.a

Part 147, Appendix C, Subject G. Aircraft Electrical Systems

Item. 50.a. Inspect, check, troubleshoot, service & repair alternating & direct current electrical systems. (Level 3)

Project 5

Purpose: To acquaint the student with the proper procedures for inspecting, checking, troubleshooting, servicing & repairing alternating current electrical systems

References:

- (1) 14 CFR Federal Aviation Regulations for Aviation Maintenance Technicians, Aviation Maintenance Technician Handbook – Airframe, Volume 1 (FAA-H-8083-31) Chapter 9
- (2) Link: <http://nida/nidaile/portal.aspx>

Equipment and Tools Needed:

- (1) Computer
- (2) Calculator

Supplies and Materials Needed:

- (1) Pencil and Paper

Procedure:

- (1) Inspect & Repair AC Electrical Systems:
 - a. Students will sign on to the computer and go to the reference website. At the NIDA website the students will sign on with their user name and password. At the menu: click on AM1003 – Aircraft Electrical, then click Aircraft Power, then Aircraft AC Generation Systems, then click the menu button in the lower left hand corner, click on item number 3 AC Generation System Troubleshooting, then click on Discussion and do slides 3020 through 3291.

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