

Cape Cod Community College AMTS

Practical Project Guide for AMT 257 Powerplant Curriculum, Subject Item 9-10

Part 147, Appendix D, Part 2 - Subject A- Engine Instrument Systems

Subject: Engine Instrument Systems

Item 9. Troubleshoot, **service, and repair** electrical and mechanical fluid rate-of-flow indicating systems. (Level 2)

Item 10. **Inspect, check, service, troubleshoot, and repair** electrical and mechanical engine temperature, pressure, and r.p.m. indicating systems. (Level 3)

Project 1A & 1B & 1C & 1D & 1E

Purpose: To acquaint the student with the inspection, checking, servicing, and repair procedures for electrical and mechanical fluid rate-of-flow, engine temperature, engine pressure, and engine RPM indicating systems.

References:

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook – Powerplant, Volume 1 (FAA-H-8083-32) Chapter 2 & Volume 2 Chapters 6 & 10
- (2) Piper Comanche 250 (PA-24) Service & Parts Manuals
- (3) Piper Colt Flight Manual and Parts Manual
- (4) Cessna 402C Service Manual and Parts Manuals
- (5) AeroTrain AE-30-320 Operations Manual
- (6) AeroTrain AE-30-520 Operations Manual
- (7) Lycoming O-235, O-320, and O-540 Engine Service & Parts Manuals
- (8) Lycoming Direct Drive Overhaul Manual
- (9) Lycoming O-320 Parts Manual
- (10) Continental T S I O-520 Engine Service Manual

Equipment and Tools Needed:

- (1) Piper Comanche 250 (PA 24)
- (2) Piper Colt (PA-22-108)
- (3) Cessna 402C
- (4) O-320 Test Stand (AeroTrain AE-30-320 Training Aid)
- (5) T S I O-520 Test Stand (AeroTrain AE-30-520 Training Aid)
- (6) AMT Roll-Around Toolbox
- (7) Tachometer Checker

Supplies and Materials Needed:

- (1) None

Procedure:

Complete following procedure on the assigned project 1A or 1B or 1C or 1D or 1E

- (1) On a separate sheet of paper, list all engine temperature, pressure, RPM, and fuel flow instruments installed on the assigned aircraft or training aid and write a paragraph explaining how each of them work. Include any required inspection or maintenance on each.
Assigned Aircraft: Make blank _____ Model blank _____ Ser. No. blank _____
- (2) Remove engine cowling and aircraft interior as necessary to gain access to the instrument system & components.
- (3) Inspect and service the systems as per the aircraft manufacturer's instructions.
- (4) List all discrepancies found during the inspection, show them to the Instructor and repair them as authorized by the Instructor.
- (5) Perform operational check of the systems and adjust as necessary in accordance with the appropriate manual procedures and using the standard engine operation safety procedures.
- (6) Record all RPM, Pressures, Rates-of-Flow, and Temperature readings during the check.
- (7) Reinstall any cowling and interior removed in step 2 in accordance with installation procedures.
- (8) Secure the aircraft and engine.
- (9) Complete maintenance record entries.

Project 1A Item 9. Troubleshoot, **service, and repair** electrical and mechanical fluid rate-of-flow indicating systems and Item 10. **Inspect, check, service, troubleshoot, and repair** electrical and mechanical engine temperature, pressure, and r.p.m. indicating systems.

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook – Powerplant, Volume 1 (FAA-H-8083-32) Chapter 2 & Volume 2 Chapters 6 & 10
- (2) Piper Comanche 250 (PA 24)
- (3) Piper Comanche 250 (PA-24) Service & Parts Manuals
- (4) Lycoming O-540 Engine Service Manual

Project 1B Item 9. Troubleshoot, **service, and repair** electrical and mechanical fluid rate-of-flow indicating systems and Item 10. **Inspect, check, service, troubleshoot, and repair** electrical and mechanical engine temperature, pressure, and r.p.m. indicating systems.

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook – Powerplant, Volume 1 (FAA-H-8083-32) Chapter 2 & Volume 2 Chapters 6 & 10
- (2) Piper Colt (PA-22-108)
- (3) Piper Colt Flight Manual and Parts Manual
- (4) Lycoming O-235 Engine Service Manual

Project 1C Item 9. Troubleshoot, **service, and repair** electrical and mechanical fluid rate-of-flow indicating systems and Item 10. **Inspect, check, service, troubleshoot, and repair** electrical and mechanical engine temperature, pressure, and r.p.m. indicating systems.

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook – Powerplant, Volume 1 (FAA-H-8083-32) Chapter 2 & Volume 2 Chapters 6 & 10
- (2) Cessna 402C
 - a. **NOTE: only use one engine**
- (3) Cessna 402C Service Manual and Parts Manual
- (4) Continental T S I O-520 Engine Service Manual

Project 1D Item 9. Troubleshoot, **service, and repair** electrical and mechanical fluid rate-of-flow indicating systems and Item 10. **Inspect, check, service, troubleshoot, and repair** electrical and mechanical engine temperature, pressure, and r.p.m. indicating systems.

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook – Powerplant, Volume 1 (FAA-H-8083-32) Chapter 2 & Volume 2 Chapters 6 & 10
- (2) O-320 Test Stand (AeroTrain AE-30-320 Training Aid)
- (3) AeroTrain AE-30-320 Operations Manual
- (4) Lycoming Direct Drive Overhaul Manual
- (5) Lycoming O-320 Parts Manual

Project 1E Item 9. Troubleshoot, **service, and repair** electrical and mechanical fluid rate-of-flow indicating systems and Item 10. **Inspect, check, service, troubleshoot, and repair** electrical and mechanical engine temperature, pressure, and r.p.m. indicating systems.

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook – Powerplant, Volume 1 (FAA-H-8083-32) Chapter 2 & Volume 2 Chapters 6 & 10
- (2) T S I O-520 Test Stand (AeroTrain AE-30-520 Training Aid)
- (3) AeroTrain AE-30-520 Operations Manual
- (4) Continental T S I O-520 Engine Service Manual

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Practical Project Guide for AMT 257 Powerplant Curriculum, Subject Item 9-10

Part 147, Appendix D, Part 2 - Subject A- Engine Instrument Systems

Subject: Engine Instrument Systems

Item 9. **Troubleshoot**, service, **and repair** electrical and mechanical fluid rate-of-flow indicating systems. (Level 2)

Item 10. Inspect, check, service, **troubleshoot, and repair** electrical and mechanical engine temperature, pressure, and r.p.m. indicating systems. (Level 3)

Project 2A & 2B & 2C & 2D

Purpose: To acquaint the student with the troubleshooting and repair procedures for electrical and mechanical fluid rate-of-flow, engine temperature, engine pressure, and engine RPM indicating systems.

References:

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook – Powerplant, Volume 1 (FAA-H-8083-32) Chapter 2 & Volume 2 Chapters 6 & 10
- (2) Piper Comanche 250 (PA-24) Service & Parts Manuals
- (3) Piper Colt (PA-22) Flight and Parts Manuals
- (4) Cessna 402C Service Manual and Parts Manuals
- (5) Lycoming O-235, O-320, and O-540 Engine Service & Parts Manuals
- (6) Lycoming Direct Drive Overhaul Manual
- (7) Lycoming O-320 Parts Manual
- (8) Continental T S I O-520 Engine Service Manual

Equipment and Tools Needed:

- (1) Piper Comanche 250 (PA 24)
- (2) Piper Colt (PA-22-108)
- (3) Cessna 402C
- (4) O-320 Test Stand (AeroTrain AE-30-320 Training Aid)
- (5) AMT Roll-Around Toolbox
- (6) Tachometer Checker

Supplies and Materials Needed:

- (1) None

Procedure:

Complete following procedure on the assigned project 1A or 1B or 1C or 1D

Assigned Aircraft: Make blank _____ Model blank _____ Ser. No. blank

- (1) Analyze the Pilot Squawk (provided by the Instructor) and perform an operational check of the systems (if necessary) in accordance with the appropriate manual procedures and using the standard engine operation safety procedures.
- (2) Record all RPM, Pressures, Rates-of-Flow, and Temperature readings and list all discrepancies found during the operational check.
- (3) Analyze the operational check results of the system(s) and determine a possible cause of the system problem.
- (4) Discuss your procedure and results with the Instructor.
- (5) Remove engine cowling and aircraft interior (as necessary) to gain access to the instrument systems & components and repair any discrepancies at the discretion of the Instructor.
- (6) Reinstall any cowling and interior removed in accordance with installation procedures.
- (7) Secure the aircraft and engine.
- (8) Complete maintenance record entries.

Project 2A Item 9. **Troubleshoot, service, and repair** electrical and mechanical fluid rate-of-flow indicating systems and Item 10. Inspect, check, service, **troubleshoot, and repair** electrical and mechanical engine temperature, pressure, and r.p.m. indicating systems.

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook – Powerplant, Volume 1 (FAA-H-8083-32) Chapter 2 & Volume 2 Chapters 6 & 10
- (2) Piper Comanche 250 (PA 24)
- (3) Piper Comanche 250 (PA-24) Service & Parts Manuals
- (4) Lycoming O-540 Engine Service Manual

Project 2B Item 9. **Troubleshoot, service, and repair** electrical and mechanical fluid rate-of-flow indicating systems and Item 10. Inspect, check, service, **troubleshoot, and repair** electrical and mechanical engine temperature, pressure, and r.p.m. indicating systems.

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook – Powerplant, Volume 1 (FAA-H-8083-32) Chapter 2 & Volume 2 Chapters 6 & 10
- (2) Piper Colt (PA-22-108)
- (3) Piper Colt Flight Manual and Parts Manual
- (4) Lycoming O-235 Engine Service Manual

Project 2C Item 9. **Troubleshoot**, service, **and repair** electrical and mechanical fluid rate-of-flow indicating systems and Item 10. Inspect, check, service, **troubleshoot, and repair** electrical and mechanical engine temperature, pressure, and r.p.m. indicating systems.

(1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook – Powerplant, Volume 1 (FAA-H-8083-32) Chapter 2 & Volume 2 Chapters 6 & 10

(2) Cessna 402C

a. NOTE: only use one engine

(3) Cessna 402C Service Manual and Parts Manual

(4) Continental T S I O-520 Engine Service Manual

Project 2D Item 9. **Troubleshoot**, service, **and repair** electrical and mechanical fluid rate-of-flow indicating systems and Item 10. Inspect, check, service, **troubleshoot, and repair** electrical and mechanical engine temperature, pressure, and r.p.m. indicating systems.

(1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook – Powerplant, Volume 1 (FAA-H-8083-32) Chapter 2 & Volume 2 Chapters 6 & 10

(2) O-320 Test Stand (AeroTrain AE-30-320 Training Aid)

(3) Lycoming Direct Drive Overhaul Manual

(4) Lycoming O-320 Parts Manual

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