

Cape Cod Community College AMTS

Practical Project Guide for AMT 275 Powerplant Curriculum, Subject Item 31-32b

Part 147, Appendix D, Part 2- Subject J – Engine Exhaust & Reverser Systems

Item 31. **Repair engine exhaust system components.** (Level 2)

Item 32.a. **Inspect, check, troubleshoot, service, and repair engine exhaust systems.** (Level 3)

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

Purpose: To acquaint the student with the proper procedures of inspecting, checking, servicing, and repairing engine exhaust systems and components.

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 3
- (2) Piper Colt (PA-22) Flight and Parts Manuals
- (3) Piper Comanche 250 (PA-24) Service Manual
- (4) Piper Comanche 250 (PA-24) Parts Catalog
- (5) AeroTrain AE-30-320 Operation Manual
- (6) AeroTrain AE-30-520 Operation Manual
- (7) Lycoming O-540 Engine Service Manual
- (8) Lycoming Direct Drive Overhaul Manual

Equipment and Tools Needed:

- (1) Piper Colt (PA-22)
- (2) Piper Comanche 250 (PA 24)
- (3) AeroTrain AE-30-320 O-320 Operational Engine Trainer
- (4) AeroTrain AE-30-520 TSIO-520 Operational Engine Trainer
- (5) AMT Roll-Around Toolbox
- (6) Computer workstation with internet access.

Supplies and Materials Needed:

- (1) None

Procedure:

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

- (1) Remove engine cowling as necessary to gain access to the exhaust system & components.

- (2) Inspect the system for visual defects. Be sure to remove any heater muff(s) to insure complete inspection.
- (3) Repair or replace any missing or damaged components or parts.
- (4) Reinstall any cowling and muff(s) removed in step 1 in accordance with installation procedures.
- (5) Complete maintenance record entries.

Project 1A Item 31. **Repair engine exhaust system components.** (Level 2)

Item 32.a. **Inspect, check, troubleshoot, service, and repair engine exhaust systems.** (Level 3)

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook – Powerplant, Volume 1 (FAA-H-8083-32) Chapter 3
- (2) Piper Colt (PA-22)
- (3) Piper Colt (PA-22) Flight & Parts Manual
- (4) Lycoming Direct Drive Overhaul Manual

Project 1B Item 31. **Repair engine exhaust system components.** (Level 2) and Item 32.a.

Inspect, check, troubleshoot, service, and repair engine exhaust systems. (Level 3)

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

Project 1C Item 31. **Repair engine exhaust system components.** (Level 2) and Item 32.a.

Inspect, check, troubleshoot, service, and repair engine exhaust systems. (Level 3)

- (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) AeroTrain AE-30-320 O-320 Operational Engine Trainer
- (3) AeroTrain AE-30-320 Operation Manual
- (4) Lycoming Direct Drive Overhaul Manual

Project 1D Item 31. **Repair engine exhaust system components.** (Level 2) and Item 32.a.

Inspect, check, troubleshoot, service, and repair engine exhaust systems. (Level 3)

- (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) TSIO-520 Test Stand (AeroTrain AE-30-520 Training Aid)
- (3) AeroTrain AE-30-520 Operations Manual

(4) Continental TSIO-520 Engine Service Manual

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Item 31. **Repair engine exhaust system components.** (Level 2)

Item 32.a. **Inspect, check, troubleshoot, service, and repair engine exhaust systems.** (Level 3)

Project 2A & 2B

Purpose: To acquaint the student with the proper procedures of inspecting, checking, troubleshooting, servicing, and repairing engine exhaust systems and components.

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 3
- (2) Cessna 402C Service Manual and Parts Manual
- (3) Continental TSIO-520 Engine Service Manual

Equipment and Tools Needed:

- (1) Cessna 402C
- (2) AMT Roll-Around Toolbox
- (3) Computer workstation with internet access.

Supplies and Materials Needed:

- (1) None

Procedure:

Complete following procedure on the assigned project 2A or 2B

- (1) Remove engine cowling as necessary to gain access to the exhaust system & components.
- (2) Inspect the system for visual defects. Be sure to remove any heater muff(s) to insure complete inspection.
- (3) Carefully inspect the Turbocharger system as per the manufacturer's instructions.
- (4) Repair or replace any missing or damaged components or parts.
- (5) Reinstall any cowling and muff(s) removed in step 1 in accordance with installation procedures.
- (6) Complete maintenance record entries.
- (7) Troubleshoot the below system malfunctions (pages 2 & 3).

Project 2A Item 31. Repair engine exhaust system components. (Level 2) and Item 32.a. Inspect, check, troubleshoot, service, and repair engine exhaust systems. (Level 3)

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

Project 2B Item 31. Repair engine exhaust system components. (Level 2) and Item 32.a. Inspect, check, troubleshoot, service, and repair engine exhaust systems. (Level 3)

- (1) 14 CFR, Federal Aviation Regulations for Aviation Maintenance Technicians (Current Edition), Aviation Maintenance Technician Handbook – Powerplant, Volume 1 (FAA-H-8083-32) Chapter 3
- (2) TSIO-520 Test Stand (AeroTrain AE-30-520 Training Aid)
- (3) AeroTrain AE-30-520 Operations Manual
- (4) Cessna 402C Service Manual and Parts Manual
- (5) Continental TSIO-520 Engine Service Manual

Malfunctions	Checks	Repair
Unable to get rated power, manifold pressure is low		
Engine surges or smokes		
Low Power or insufficient manifold pressure		
Turbocharger noisy, plenty of power		
Sluggish or low power engine operation		
Manifold pressure overboosts during flight		
Engine power increases slowly or sever fluctuation of manifold pressure on rapid throttle advance		
Engine power increases slowly and manifold pressure overboosts on rapid throttle advance		

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