Cape Cod Community College AMTS

Curriculum Subject Guide for AMT 277 Powerplant Curriculum, Subject Item 33-39

Part 147, Appendix D, Part 2 - Subject K – Propellers

Subject: Propellers

Item 33. Inspect, check, service, and repair propeller synchronizing and ice control systems. (Level 1)
T – 2.0 Hrs / L – 0.0 Hrs
Item 34. Identify and select propeller lubricants (Level 2)
T – 1.0 Hrs / L – 4.0 Hrs Item 35.
Balance propellers. (Level 1)
T – 2.0 Hrs / L – 0.0 Hrs
Item 36. Repair propeller control system components. (Level 2)
T – 4.0 Hrs / L – 8.0 Hrs
Item 37. Inspect, check, service, and repair fixed-pitch, constant-speed, and feathering propellers, and propeller governing systems. (Level 3)
T – 8.0 Hrs / L – 20.0 Hrs
Item 38. Install, troubleshoot, and remove propellers. (Level 3)
T – 8.0 Hrs / L – 16.0 Hrs
Item 39. Repair aluminum alloy propeller blades. (Level 3)
T – 2.0 Hrs / L – 4.0 Hrs

Classroom time:	27.0 hours
Lab or shop time:	52.0 hours
Test time:	1.0 hours
Total Time:	80 hours
Teaching Level	1, 2, 3

Project 1
Item 36 – 4.0 Hrs

Project 2
Item 37 – 1.0 Hrs

Project 3
Item 34 – 2.0 Hrs
Item 37 – 7.5 Hrs

Project 4
Item 37 – 2.5 Hrs
Item 39 – 2.0 Hrs

Project 5
Item 38 – 8.0 Hrs

Project 6
Item 36 – 4.0 Hrs

Project 7
Item 37 – 1.0 Hrs

Project 8
Item 34 – 2.0 Hrs
Item 37 – 6.0 Hrs

Project 9
Item 37 – 2.0 Hrs
Item 39 – 2.0 Hrs

Project 10
Item 38 – 8.0 Hrs

Theory Test 1
0.25 Hrs

Theory Test 2
0.25 Hrs

Practical Test
0.5 Hrs

Prerequisite(s)

(1) All General curriculum subjects (Part 147 Appendix B)
(2) Powerplant Theory and Maintenance (Part 147 Appendix D, 1)

Course Interruptions: All interruptions or changes in course sequence will be in accordance with the Order of Instruction policy, located in Cape Cod Community College's Operations Manual, page 51.

Item 33:

Student Performance Goal(s)

Given: Cessna 402C and Maintenance Manual (1979-1985), AeroTrain AS-45 Ice & Rain Control System Trainer and CBT

Performance: The student will research the inspection, checking, servicing, and repair of the propeller Synchrophaser system on the Cessna 402C, review the provided CBT on operation of the propeller Deice system on the AS-45 Trainer, and write a ½ page (minimum) report describing the listed tasks for each.

Standard: The systems inspection, checking, servicing, and repair procedures will be described as per the Cessna 402C Maintenance Manual and operation of the AS-45 as per the CBT and the student must pass the Theory Test with at least a 70% grade.

Item 35:

Student Performance Goal(s)

Given: Cessna 402C, Piper PA-24-250 Comanche, propeller maintenance manuals, Internet access

Performance: The student will research the static balancing procedure for the propeller on one of the given aircraft and write a 1 page (minimum) report describing the procedure.

Standard: The report will describe the static balancing procedure as per the manufacturer's information and the student must pass the Theory Test with at least a 70% grade.

Item 36:

Student Performance Goal(s)

Given: Cessna 402C and Cessna 402C Maintenance Manual and Parts Manual, and Piper Comanche 250 (PA-24), Piper Comanche Service Manual (753-516), Piper Comanche Parts Catalog (752-464), Hartzell Governor Maintenance Manual Number 130B.

Performance: The student will be required to repair the propeller control system by replacing missing hardware (Governor control rod end bolt and spacer) and performing a rigging and adjustment check.

Standard: The replacement of the missing hardware will be accomplished using parts as required in the appropriate Parts Manual and the rigging and adjustment check will be accomplished as per the appropriate Maintenance Manual and the student must pass the Theory and Practical Tests with at least a 70% grade.

Item 34, 37, & 39 (NOTE: **Bold** parts apply to the specific Project):

Project 37-1:

Item 37. **Inspect,** check, service, and repair fixed-pitch, **constant-speed, and feathering propellers**, and propeller governing systems. (Level 3)

Student Performance Goal(s)

Given: Type Certificate Data Sheets (www.faa.gov)

Performance: The student will research various aircraft to determine if the propeller installed has a Critical Range and/or other propeller-related required placards.

Standard: The research process requires the student to access the Type Certificate Data Sheets at www.faa.gov and review various assigned aircraft to ascertain if a propeller Critical Range exists for that particular aircraft/engine/propeller combination and further to identify any Required Placards which concern the propeller and the student must pass the Theory and Practical Tests with at least a 70% grade.

Project 37-2:

Item 34. **Identify and select propeller lubricants** (Level 2)

Item 37. **Inspect, check, service,** and repair **fixed-pitch, constant-speed, and feathering propellers, and propeller governing systems**. (Level 3)

Given: Piper Comanche PA-24-250, Piper Comanche 250 (PA-24) Service Manual, Piper Comanche 250 (PA-24) Parts Catalog, Cessna 402C, Cessna 402C Service Manual, Cessna 402C Parts Manual, Piper Colt (PA-22-108) Service Manual, Piper Colt PA-22-108, Piper Colt (PA-22-108) Parts Manual, Avotek PT6-20 Test Cell, Avotek PT6A-20 Information , Sensenich Propeller Repair Instructions, Hartzell Propeller Owner's Manual Number 168, McCauley Propeller Owner/Operator Information Manual

Performance: The student will perform a 100-hour Inspection of the assigned propeller and governing system (both fixed-pitch and constant-speed/feathering) to include selecting lubricants, lubricating the propeller (if required), and operationally checking the aircraft or test cell.

Standard: The student will conduct the 100-hour inspection, lubrication, and operation as per the appropriate manufacturer's information and the student must pass the Theory and Practical Tests with at least a 70% grade.

Project 37-3:

Item 37. Inspect, check, service, and **repair** fixed-pitch, constant-speed, and feathering propellers, and propeller governing systems. (Level 3)

Item 39. **Repair aluminum alloy propeller blades.** (Level 3)

Given: Piper Comanche PA-24-250, Piper Comanche 250 (PA-24) Service Manual, Piper Comanche 250 (PA-24) Parts Catalog, Cessna 402C, Cessna 402C Service Manual, Cessna 402C Parts Manual, Piper Colt (PA-22-108) Service Manual, Piper Colt PA-22-108, Piper Colt (PA-22-108) Parts Manual, Avotek O320 Test Cell, Sensenich Propeller Repair Instructions, Hartzell Propeller Owner's Manual Number 168, McCauley Propeller Owner/Operator Information Manual.

Performance: The student will repair propeller blade nicks as assigned by the Instructor and conduct the appropriate NDT process to determine the integrity of the blade after the repair.

Standard: The repair process requires the student to research the proper repair procedures, perform the repair to manufacturer's standards, and perform the NDT process to standard industry practice standards and the student must pass the Theory and Practical Tests with at least a 70% grade.

Item 38:

Student Performance Goal(s)

Given: Piper Colt PA-22-08, Piper Colt Service Manual, Piper Colt Parts Manual, Sensenich Installation Instructions for Metal Fixed-Pitch Propellers, Sensenich Troubleshooting Solving Aircraft/Engine/Propeller Performance Problems, Sensenich Troubleshooting Propeller Vibration Checklist, Hartzell Propeller Owner's Manual Number 168, McCauley Fixed Pitch Service Manual, McCauley Propeller Owner Information Manual, McCauley Service Bulletin 227B Prop Installation Mounting Torque and Service Letter 1949-4D Dynamic Balance and Vibration Troubleshooting, O-320 Test Cell, Lycoming Direct Drive Engine Overhaul Manual.

Performance: The student will remove and reinstall the propeller of the assigned aircraft or test cell and troubleshoot the cause of "unusual vibration throughout the entire RPM range". The student will also conduct a Runout Check of the engine's crankshaft flange when the propeller is removed.

Standard: The student will remove, troubleshoot, and reinstall the propeller and conduct the crankshaft flange runout check following the appropriate aircraft, engine, and propeller manufacturer's information and the student must pass the Theory and Practical Tests with at least a 70% grade.

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