Aviation Technology- Maintenance
Standard Course Outline

AVTP 1063 - ENGINE FUEL SYSTEMS/FUEL METERING SYSTEMS

Catalog Description: Reciprocating and turbine engine fuel metering systems, including carburetors and injectors. Projects include disassembly and adjustment of carburetors, removal and repair of fuel controls, replacement of fuel pumps, and fabrication of fuel lines.

Prerequisite: AVTG 1001

Credit hours/ Contact hours/ Load hours: 3/66/6 hours a day for 11 days

Target Audience & Transferability:

This course is designed for students seeking a Technical Certificate in Powerplant or, when combined with General and Airframe, an AAS in Aviation Maintenance Technology, or an AS in Aviation Maintenance Management. Individual AVT courses or Certificates may be transferable to other FAA Certified Aviation Maintenance Technician schools under Federal Regulations.

Course Topics/ Student Outcomes:

ENGINE FUEL SYSTEMS

REFERENCES: AP; JSPT.
FAA Standard *FAA-S-8081-28* 5-7, Change 2 (9/24/2003)

By the end of the course, students will:

1. Exhibit knowledge of at least two of the following—
    a. inspection requirements for an engine fuel system.
    b. checks of fuel systems to verify proper operation.
    c. troubleshooting an engine fuel system.
    d. procedure for inspection of an engine driven fuel pump for leaks and security.
    e. function and/or operation of one or more types of fuel pumps.
    f. function and/or operation of one or more types of fuel valves.
    g. function and/or operation of engine fuel filters.

2. *Demonstrate the ability to perform at least one of the following (Level 3)—
    a. check a fuel selector valve for proper operation.
    b. inspect an engine fuel filter assembly for leaks.
    c. inspect a repair to an engine fuel system.

    *Core competency element

3. Demonstrate the ability to perform at least one of the following—
    a. check a fuel boost pump for proper operation. (Level 3)
    b. repair fuel selector valve. (Level 3)
    c. inspect a main fuel filter assembly for leaks. (Level 3)
    d. check the operation of a remotely located fuel valve. (Level 3)
    e. locate and identify a turbine engine fuel heater. (Level 2)
    f. service an engine fuel strainer. (Level 3)
    g. inspect an engine driven fuel pump for leaks and security, and perform an engine fuel pressure check. (Level 3)
    h. repair an engine fuel system or system component. (Level 3)
    i. troubleshoot a fuel pressure system. (Level 3)

FUEL METERING SYSTEMS

REFERENCES: AP.
FAA Standard: *FAA-S-8081-28* 5-6, Change 2 (9/24/2003)

By the end of the course, students will:

1. Exhibit knowledge of at least two of the following—
    a. troubleshooting an engine that indicates high exhaust gas temperature (EGT) for a particular engine pressure ratio (EPR).
    b. purpose of an acceleration check after a trim check.
    c. reasons an engine would require a trim check.
    d. purpose of the part power stop on some engines when accomplishing engine trim procedure.
    e. procedure required to adjust (trim) a fuel control unit (FCU).
    f. possible reasons for fuel running out of a carburetor throttle body.
    g. indications that would result if the mixture is improperly adjusted.
    h. procedure for checking idle mixture on a reciprocating engine.
    i. possible causes for poor engine acceleration, engine backfiring or missing when the throttle is advanced.
    j. types and operation of various fuel metering systems.
    k. fuel metering system components.

2. N/A

3. Demonstrate the ability to perform at least one of the following—
    a. remove and install the accelerating pump in a float-type carburetor. (Level 3)
    b. check and adjust the float level of a float-type carburetor. (Level 3)
    c. check the needle and seat in a float-type carburetor for proper operation. (Level 2)
    d. check a fuel injection nozzle for proper spray pattern, and install a fuel injector nozzle. (Level 2)
    e. check and adjust idle mixture. (Level 3)
    f. install a turbine engine fuel nozzle. (Level 3)
    g. locate and identify various fuel metering system components. (Level 2)
    h. service a carburetor fuel screen. (Level 3)

Required Text(s):

Powerplant Textbook (ASA)	ISBN # 1-56027-547-2
Powerplant Test Study Guide (ASA)	ISBN # 1-56027-572-3
FAR Handbook for AMT (ASA)	ISBN # 1-56027-563-4
AC43.13-1B Acceptable Methods, Practices, & Techniques (ASA)	ISBN # 1-56027-488-3

Optional Text(s):

Technician Powerplant Textbook (Jeppesen)	ISBN # 0-88487-207-6
Technician Powerplant Workbook (Jeppesen)	ISBN # 0-88487-243-2
AC65-12A Aircraft Mechanics Handbook Powerplant (FAA)	ISBN # 1-56027-024-1

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Supporting Reference(s)

O&P Study Guide (ASA)	ISBN # 1-56027-406-9
Maintenance Handbook (ASA)	ISBN # 1-56027-518-9
Dictionary of Aeronautical Terms (ASA)	ISBN # 1-56027-587-2

The workbooks and test study guides may be used to aid the instructor and students to reinforce the textbook information. Other Textbooks may be issued depending upon availability.

Required Methods of Instruction:

Classes are taught off-campus in a full time day or night format, requiring maximum attendance. Attendance is taken every hour. Missed time must be made up outside of regular scheduled class time before moving to the next subject.

Required Forms of Assessment:

Periodic exams will be performed by FAA approved instructors as required to insure progress. Students must pass this course with a 70% or better to qualify for an FAA approved Certificate of Completion in the Power-plant Section.