IO-550-A
B
C
G
N
P
R

CONTINENTAL® AIRCRAFT ENGINE

PERMOLD SERIES ENGINE

MAINTENANCE AND OVERHAUL MANUAL

Technical Portions Accepted by the Federal Aviation Administration

Publication M-16

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2-2.5.2. Fuel Injectors

Fuel injectors are a constant flow design. The fuel pump delivers fuel to the manifold valve where the liquid is divided into equal amounts for delivery to the individual cylinder injectors. The fuel injectors are calibrated to work as a set, and designated for specific cylinder installations.

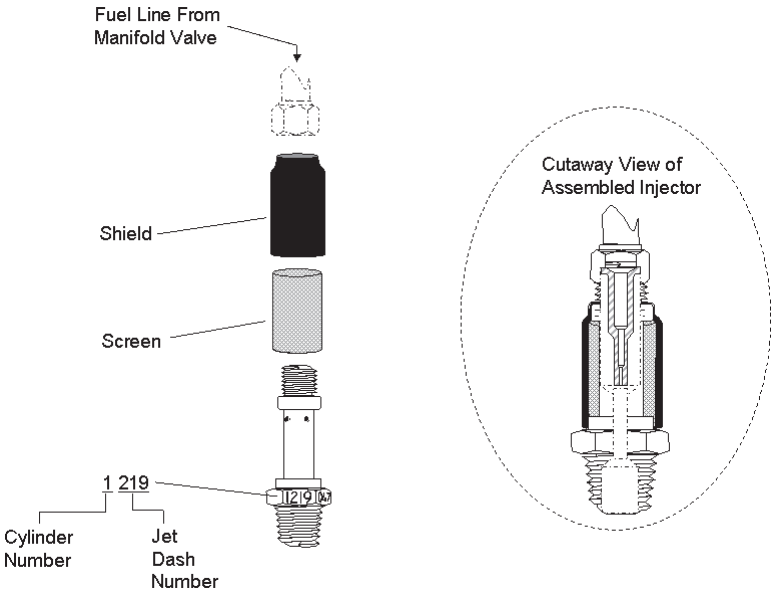

Figure 2-20. IO-550-A, B & C Fuel Injector Nozzle

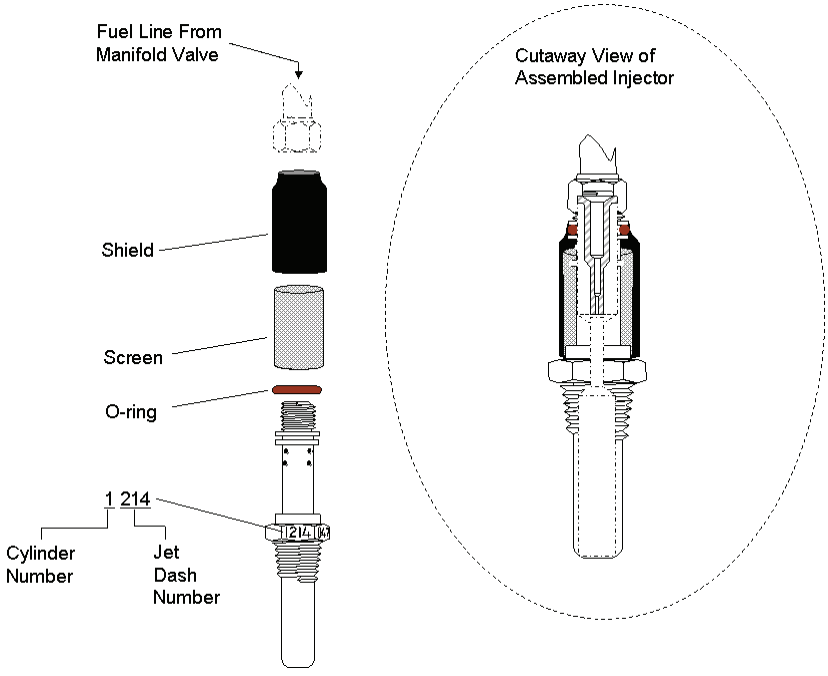

Figure 2-21. IO-550-G, N, P & R Fuel Injector Nozzle

Table 6-1. Engine Inspection and Maintenance Schedule

NOTE: If operating hours and a calendar period are specified, perform the inspection coincident with the earliest occurrence.			
Interval			
Cumulative Operating Hours	**Calendar**	**Task**	**Reference**
5	---	Drive Belt (optional equipment) Tension Check	Section 6-3.1
10	---	Alternator Initial Inspection (One Time)	Section 6-3.1
25	4 months	Oil Change (with integral oil screen)	Section 6-3.8
25	6 months	Initial operation inspection after placing a new, rebuilt, or overhauled engine in service, including cylinder replacement. Repeat this inspection after each 25 hours of operation until oil consumption stabilizes.	Section 6-3.2
50	4 months	50-hour engine inspection	Section 6-3.3
50	6 months	Oil and Filter Change (w/ 4.8” replaceable filter cartridge)	Section 6-3.8
100	6 months	Oil and Filter Change (w/ 5.8” replaceable filter cartridge)	Section 6-3.8
100	Annual	100-hour engine inspection	Section 6-3.4
300	Annual	Clean fuel injector nozzles	Section 6-3.4
500	4 years	Magneto inspection	Section 6-3.4
500	---	500-hour inspection	Section 6-3.5
NOTE: At engine TBO, engine accessories, including the starter, alternator, magnetos and fuel system must be replaced with new assemblies or assemblies which have been overhauled according to FAA approved procedures.			
1700	12 years	IO-550-A, B & C Recommended Time Between Overhaul (TBO)	Section 2-3
2000	12 years	IO-550-G, N, P & R Recommended Time Between Overhaul (TBO)	Section 2-3

6-3.4. 100-Hour (Annual) Engine Inspection

Frequency

The 100-Hour Inspection is accomplished under two circumstances:

- After every 100 hours of accumulated engine operation
- Annually, if the engine did not accumulate 100 hours of operation during the calendar year since the last 100-Hour Engine Inspection.

WARNING

Turn the Ignition Switch OFF and disconnect engine electrical power before commencing maintenance or inspections. Confirm continuity between the magneto capacitor and aircraft ground to prevent accidental engine start during maintenance. Do not stand or place equipment within the arc of the propeller.

Procedure

WARNING

Correct all fuel or oil leaks. Flammable petroleum products may ignite if exposed to an ignition source.

NOTE: Clean the fuel injector nozzles during the first 100-Hour Inspection after installation of a new, rebuilt or overhauled engine. Thereafter, clean the nozzles every 300 hours or annually.

1. Perform a "Visual Inspection" according to instructions in Section 6-3.6; correct any discrepancies.
2. Perform an "Engine Operational Check" according to instructions in Section 6-3.7.
3. Collect an engine oil sample according to the instructions in Section 6-3.8.4, "Oil Sample Collection" and submit it for analysis according to Section 6-3.8.5, "Oil Trend Monitoring and Spectrographic Oil Analysis."
4. Perform the "Cylinder Inspections" according to instructions in Section 6-3.11. The cylinder inspections consist of multiple inspections and checks including Cylinder Power Stroke Area, Differential Pressure, Borescope, Baffle, Cowling, and Cylinder Mounting Deck Inspections.
5. Perform a "Crankcase Inspection" according to Section 6-3.12.
6. Perform an "Engine Mount Inspection" according to Section 6-3.13.
7. Perform an "Induction System Inspection" according to Section 6-3.14.
8. Perform an "Ignition System Inspection" according to Section 6-3.15.
9. Perform an "Engine Gauge Inspection" according to Section 6-3.16.
10. Perform a "Fuel System Inspection" according to Section 6-3.17.
11. Perform an "Engine Control Linkage Inspection" according to Section 6-3.18.
12. Perform a "Induction or Cylinder Drain Inspection" according to Section 6-3.19.
13. Inspect the Exhaust System according to the airframe manufacturer's instructions.

10-3. Fuel Injector Replacement

NOTE: Continental Motors tests fuel injectors and manifold valves as a set during the assembly process. Fuel injector nozzles may be replaced individually but we strongly recommend injector replacement as a complete set to ensure proper fuel mixture distribution and optimum engine performance.

10-3.1. Nozzle Identification

Continental Motors fuel injector assemblies have undergone two product improvement modifications since 1998. Original nozzles were identified by three-character nozzle size codes (Figure 10-4) on two of the hexagonal wrench flats.

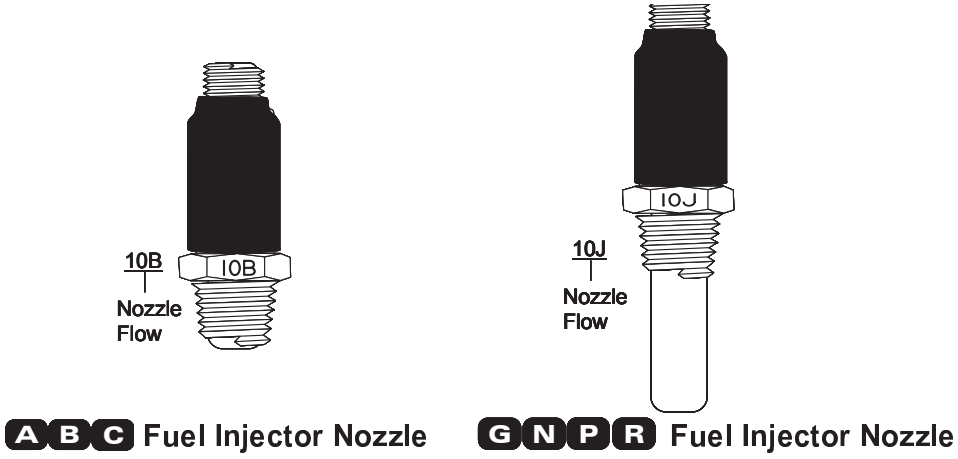

Figure 10-4. Original Fuel Injector Nozzles

The first modification extended the identification to four-characters, including the installed cylinder position at the left-most character (Figure 10-5) in the ID.

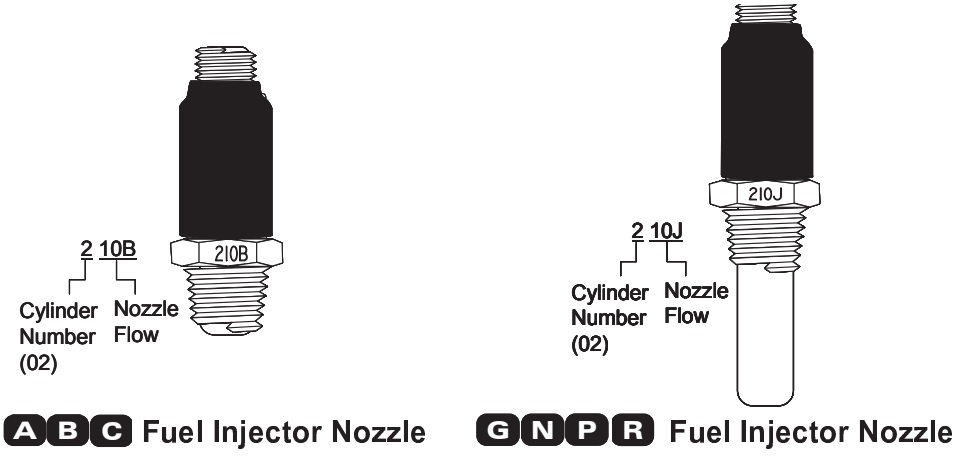

Figure 10-5. Position Tuned Fuel Injector Nozzle

Position tuned fuel injector nozzles manufactured after Dec 2005 are etched on four of the nozzle wrench flats (see Figure 10-6). To select the proper replacement nozzles, you must first identify which nozzle generation is installed. If the removed injectors do not conform

to the new format, the numbers must be cross-referenced. A factory service representative can assist in determining the proper replacement injector nozzle, based on the removed fuel injector identification.

Observe the markings in Figure 10-6. A three digit numeric code identifies the nozzle orifice bore is stamped on two of the injector's hexagonal wrench flats – ignore this number! Adjacent to the three digit number, the injector is stamped on two of the hexagonal wrench flats with a four digit code indicating the cylinder position number and the nozzle flow; use this 4 digit number when assigning nozzles to cylinders. When ordering replacement nozzles, specify the position number and nozzle flow for each replacement nozzle required.

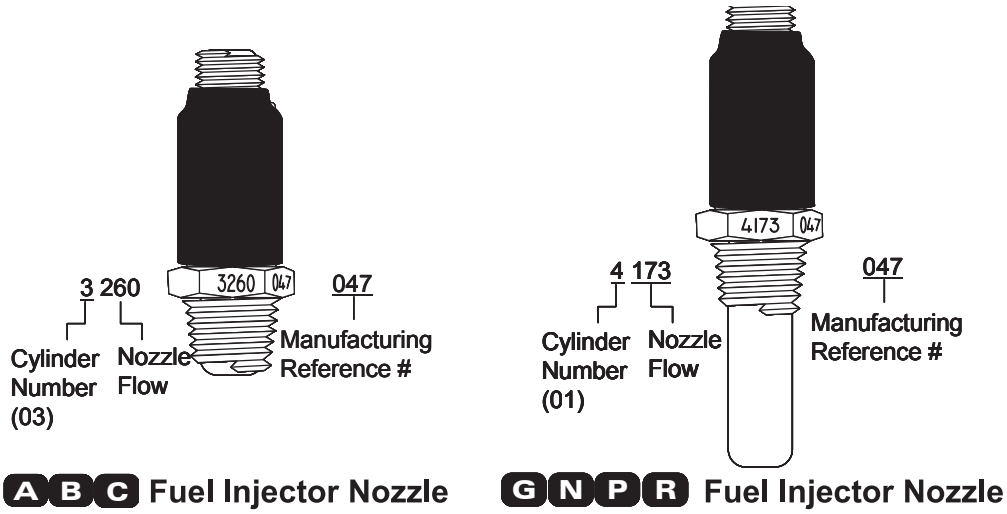

Figure 10-6. Post-2005 Position Tuned Fuel Injector Nozzle

10-3.2. Fuel Injector Removal

WARNING

Turn the Ignition Switch OFF, disconnect engine electrical power and confirm continuity between the magneto capacitor and aircraft ground before commencing maintenance to avoid uncommanded engine starts during maintenance. Do not stand or place equipment within the arc of the propeller.

1. Turn the Ignition Switch to the OFF position and disconnect engine electrical power.
2. Turn the aircraft fuel supply to the OFF position.
3. Loosen and remove the fuel line "B" nuts.
4. Remove fuel injector nozzles with an Ideal Aviation Part No. 8168-IA Injector Nozzle Removal/Insertion Tool ("Special Tools" in Chapter 3).
5. Place protective caps or plugs over the open fuel connections.
6. Record the nozzle identification and cylinder position for reinstallation or replacement.

10-3.3. Fuel Injector Installation

CAUTION: Ensure nozzle position numbers are matched to the appropriate cylinder. Installing incorrect nozzles or nozzles in the improper position will adversely affect engine performance.

1. Verify the cylinder position number (Figure 10-6) engraved on the nozzle wrench flat matches the intended cylinder. If the nozzle is a replacement, the cylinder position number and nozzle flow must be a suitable for the intended cylinder position.
2. Apply a small amount of anti-seize lubricant to the nozzle according to Figure 10-7; hand tighten the nozzle in the cylinder head; torque the nozzle to Appendix B specifications with a Ideal Aviation Part No. 8168-IA Injector Nozzle Removal/ Insertion Tool ("Special Tools" in Chapter 3).

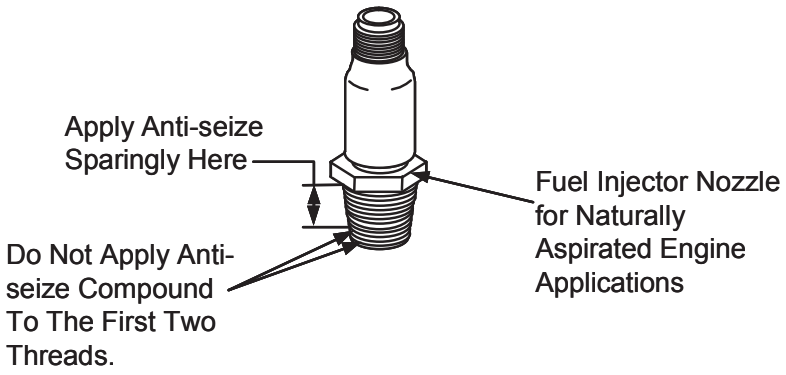

Figure 10-7. Apply Anti-Seize To Fuel Injector Nozzle

3. Connect the fuel lines to the fuel injectors at each cylinder and torque the "B" nuts to Appendix B specifications.
4. Perform an "Engine Operational Check" according to the instructions in Section 6-3.7.

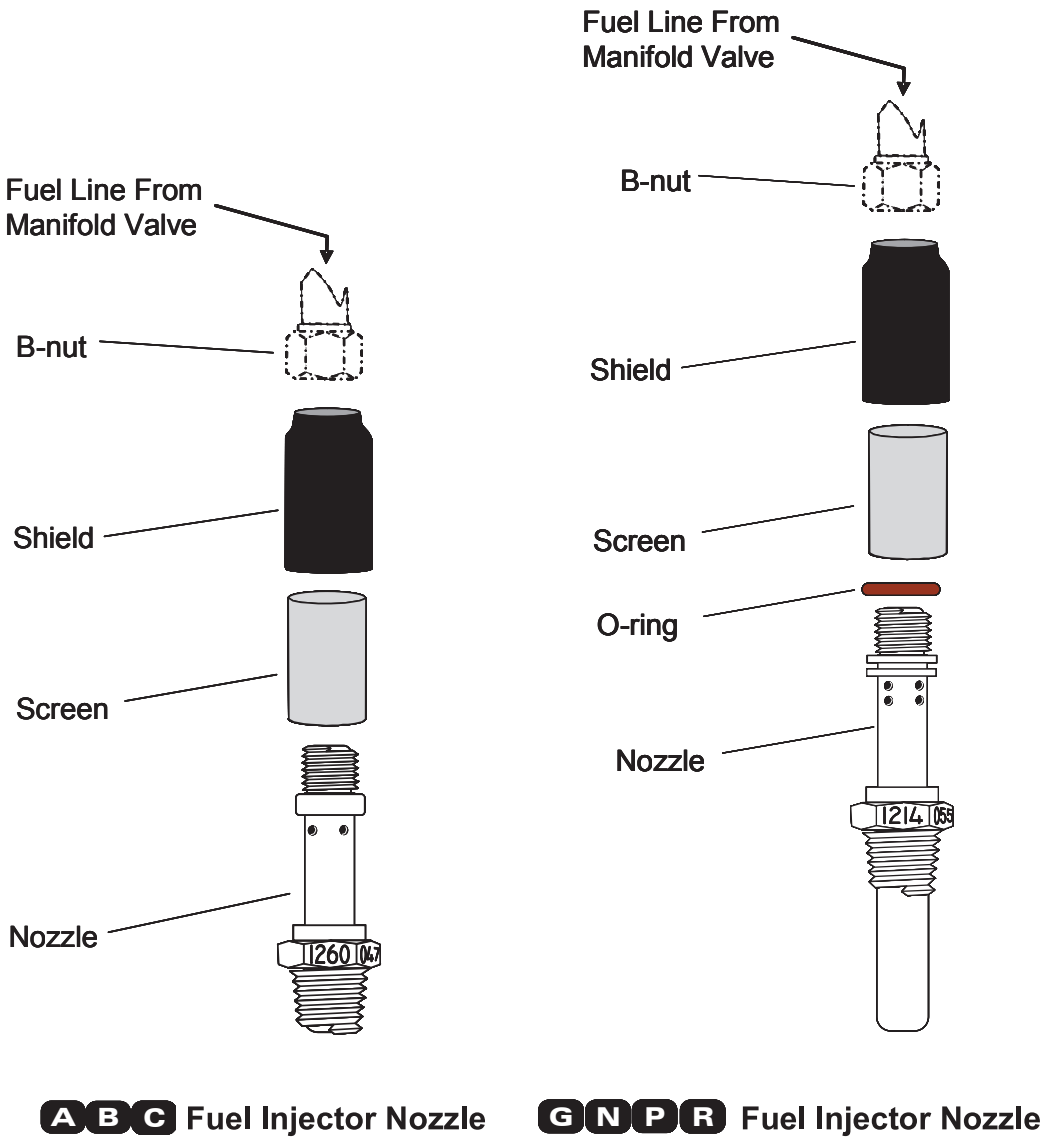

Figure 10-8. Fuel Injector Assemblies

Table 14-1. Aircraft Engine Parts Cleaning Guidelines

Item to Clean	Instructions/References/Tips
Fuel manifold valve	Mineral spirits
CAUTION: Never insert any object (wire, pipe cleaner, brush, etc.) in the fuel injector nozzle. If stain or obstruction cannot be removed with solvent or air, replace the nozzle.	
• Fuel injectors • Fuel screen	• Ultrasonic Cleaner Ultrasonic cleansing is the preferred method of cleaning; adhere to ultrasonic cleaner manufacturer's instructions. If ultrasonic cleaner is not available: • Acetone • MEK • Lacquer thinner Soak in solvent (acetone, lacquer thinner or MEK) to remove gum and fuel varnish stains and deposits. Use clean, oil free air to remove residue and dry the inside of nozzle.
Throttle control linkage pivot point areas	Stoddard solvent
Soiled aluminum alloy parts with carbon or gum deposits	Refer to "Cleaning Aluminum Alloy Parts" in Section 14-1.4.
Electrical charging system gears[1] with bushings[2]	Mineral spirits and a brass wire brush
Electrical charging system gears[1] without bushings	• Mineral spirits • Alkaline stripping bath followed by steam rinse to remove all alkaline traces (to prevent corrosion), inspect for traces of alkaline residue and re-spray with steam if alkaline residue found; flush with mineral spirits
• Starter adapter housing, cover and oil passages • Gears without bushings	Flush with mineral spirits (preferred cleansing agent) Alkaline stripping bath followed by steam rinse to remove all alkaline traces (to prevent corrosion); Dry with compressed air and inspect for traces of alkaline residue. Re-spray with steam if alkaline residue found; flush thoroughly with mineral spirits
Worm shaft on the starter/starter adapter	Mineral spirits
Starter/starter adapter gears[1] with bushings[2]	Mineral spirits and a brass wire brush
• Oil sump • Oil pump housing • Oil filter adapter • Tach drive adapter • Lubrication System gears without bushings	Flush with mineral spirits (preferred cleansing agent). Alkaline stripping bath followed by steam rinse to remove all alkaline traces (to prevent corrosion); Dry with compressed air and inspect for traces of alkaline residue. Re-spray with steam if alkaline residue found; flush thoroughly with mineral spirits
NOTE: NOTE: All oil passages must be clear	
Oil suction tube assembly	Mineral spirits
Oil cooler	Must be cleaned by an FAA-certified repair facility