

SERVICE INSTRUCTION

DATE: September 23, 2008

Service Instruction No. 1275C
(Supersedes Service Instruction No. 1275B)
Engineering Aspects are
FAA DER Approved

SUBJECT: Cleaning Fuel Injector Nozzles

MODELS AFFECTED: Precision Airmotive RS and RSA Fuel Injectors installed on Lycoming aircraft engines.

TIME OF COMPLIANCE: At overhaul and as engine conditions require.

Fuel nozzles can become clogged with a type of varnish from old fuel or from precipitate particles that are almost invisible to the naked eye. This condition may be indicated by rough engine operation, uneven idle, a cold cylinder, or an unusually high fuel flow indication on the gauge. Complete the following steps, in the order given, to remove, clean, and replace the fuel nozzles.

Cleaning Instructions

- Step 1. Examine the nozzle lines for damage or wear. If the nozzle lines are worn or damaged, replace the lines by unscrewing the lines from the flow divider.
- Step 2. Remove the nozzle assembly from the individual fuel lines using a wrench.
- Step 3. Insert a plug into the open end of each line to prevent dirt, dust, or other contaminants from entering the fuel lines.
- Step 4. Remove the nozzles from the cylinders and disassemble.

**CAUTION**

Never use a sharp tool such as a wire or pin to clean out a nozzle. Damage to the inlet and outlet fuel restrictors could result which would change the fuel flow.

Do not immerse packing rings, at any time, into the cleaning fluid. The rings may swell.

- Step 5. Clean the nozzles using **one** of the following approved cleaning liquids for the specified length of time:

Hoppes No. 9 Gun Cleaning Solvent

- 5a. Soak the nozzles in Hoppes No. 9 Gun Cleaning Solvent for 20 minutes.
- 5b. Rinse the nozzles with Stoddard solvent and blow dry with compressed air.

OR



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Alkon Cleaner

- 5a. The solution concentration of Alkon cleaner to water is 7 to 8 oz./gal.
- 5b. Heat the Alkon/water solution to 140°F (60°C).
- 5c. Soak the nozzles in the Alkon/Water solution for one hour.
- 5d. Rinse the nozzles with clean hot water and blow dry with compressed air.

OR

MEK (methyl-ethyl ketone)

- 5a. Soak the nozzles in MEK for one hour.
- 5b. Rinse the nozzles with clean hot water and blow dry with compressed air.

OR

Acetone

- 5a. Soak the nozzles in Acetone for one hour.
- 5b. Rinse the nozzles with clean hot water and blow dry with compressed air.

Reassembly Instructions

Step 6. Reassemble the nozzles as follows:

LW-18265: In normally aspirated engines where the nozzles, P/N LW-18265 (see Figure 2), are installed horizontally, particular attention must be paid to the identification marks stamped on one of the hex flats on the nozzle body. This mark is located 180° from the air bleed hole and must appear in the lower side of the nozzle to assure that the air-bleed hole is on top in order to reduce fuel bleeding from this opening just after shutdown. To ensure nozzle is correctly torqued, tighten the nozzle to 60 in.-lbs. torque. Then continue to tighten until the letter or number stamped on the hex of the nozzle body points downward.

LW-14540: During the reassembly of nozzles, P/N LW-14540, inspect the packing ring, LW-12081, for possible damage or deterioration and replace if necessary. Also use new lockplate, P/N LW-11602, and washer, P/N STD-2173 (see Figure 3). Tighten nozzle to 15 ft.-lbs. torque.

LW-18853, LW-18854, LW-18855: During the reassembly of nozzles, P/N LW-18853, LW-18854, and LW-18855, inspect the packing rings for possible damage or deterioration and replace as necessary (see Figures 4, 5 and 6). Also check the rubber hose that connects the tube assembly of the nozzle with the vent line for possible damage and deterioration. Replace as necessary. Tighten nozzle to 60 in.-lbs. torque.

Testing

After cleaning and reassembly, the nozzles must be tested for total fuel and air flow.

Step 7. Connect the nozzle assembly to the test stand using a supply line having a minimum inside diameter (I.D) of 0.080 in. For P/N LW-14540 nozzles, the minimum I.D. of the supply line must be 0.125 in.

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NOTE 1

The gauge for measuring the fuel inlet pressure must be at the same level as the nozzle.

NOTE 2

Test limits for each nozzle.*

P/N	Flow (lb/hr)	Fluid	Specific Gravity, Temperature & Pressure
LW-14540	57.5-59.5	Naptha	.734 @ 70°-80°F @ 12 psi
LW-18265	32+/-2%	Calibrating Fluid Per PES-2010	.732-.734 @ 70°-80°F @ 12 psi
LW-18265	32+/-2%	Calibrating Fluid Per PES-2150	.765-.775 @ 70°-80°F @ 12 psi
LW-18853	32+/-2%	Calibrating Fluid Per PES-2010	.732-.734 @ 70°-80°F @ 12 psi
LW-18853	32+/-2%	Calibrating Fluid Per PES-2150	.765-.775 @ 70°-80°F @ 12 psi
LW-18854	32+/-2%	Calibrating Fluid Per PES-2010	.732-.734 @ 70°-80°F @ 12 psi
LW-18854	32+/-2%	Calibrating Fluid Per PES-2150	.765-.775 @ 70°-80°F @ 12 psi
LW-18855	32+/-2%	Calibrating Fluid Per PES-2010	.732-.734 @ 70°-80°F @ 12 psi
LW-18855	32+/-2%	Calibrating Fluid Per PES-2150	.765-.775 @ 70°-80°F @ 12 psi

* - For P/N LW-18265, LW-18853, LW-18854, and LW-18855, use a calibrating fluid per PES-2010 or PES-2150.

Step 8. Test the fuel flow of the nozzle assemblies using the above test limits.

Step 9. In addition, air test nozzle assemblies P/N LW-18265, LW-18853, LW-18854, and LW-18855 as shown in Figure 1. If a nozzle assembly does not meet the requirements of Figure 1, recycle the assembly through the cleaning cycle and retest before rejecting the assembly.

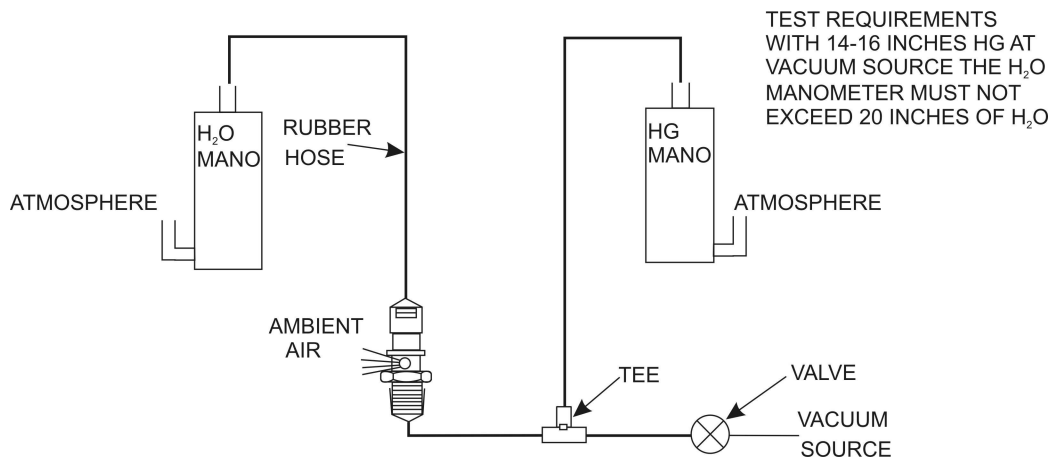
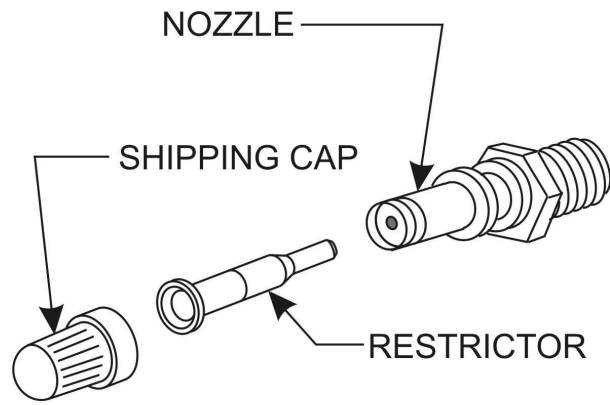


Figure 1. Air Testing Nozzle Assemblies

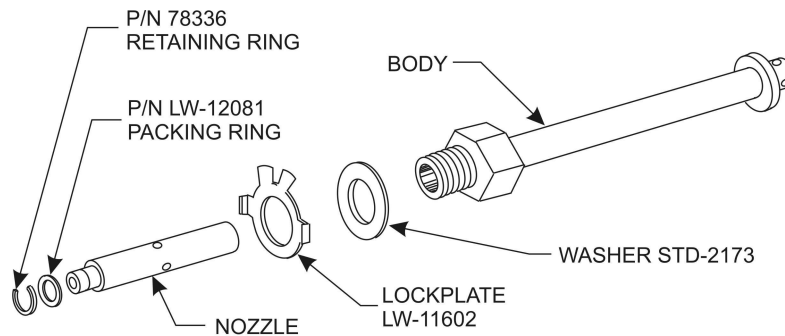
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P/N LW-18265 NOZZLE USED IN
NORMALLY ASPIRATED ENGINES

TORQUE 60 IN. LBS.

Figure 2. Exploded View of P/N LW-18265



P/N LW-14540 NOZZLES
USED IN T10 AND T10G-541 ENGINES

TORQUE 15 FT. LBS.

Figure 3. Exploded View of P/N LW-14540

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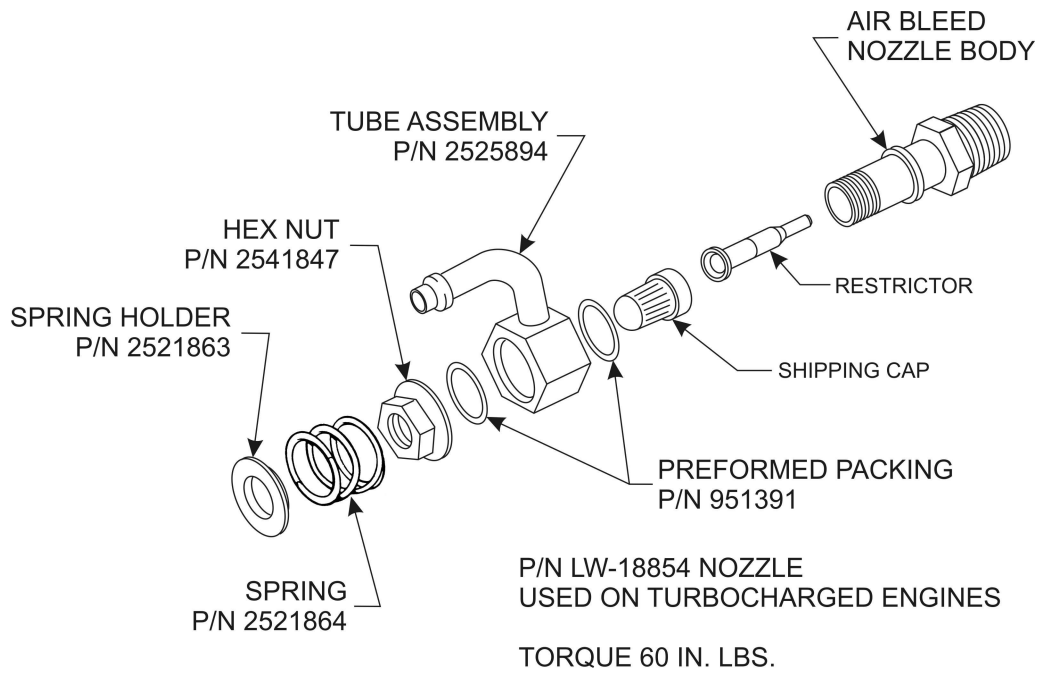


Figure 4. Exploded View of P/N LW-18854

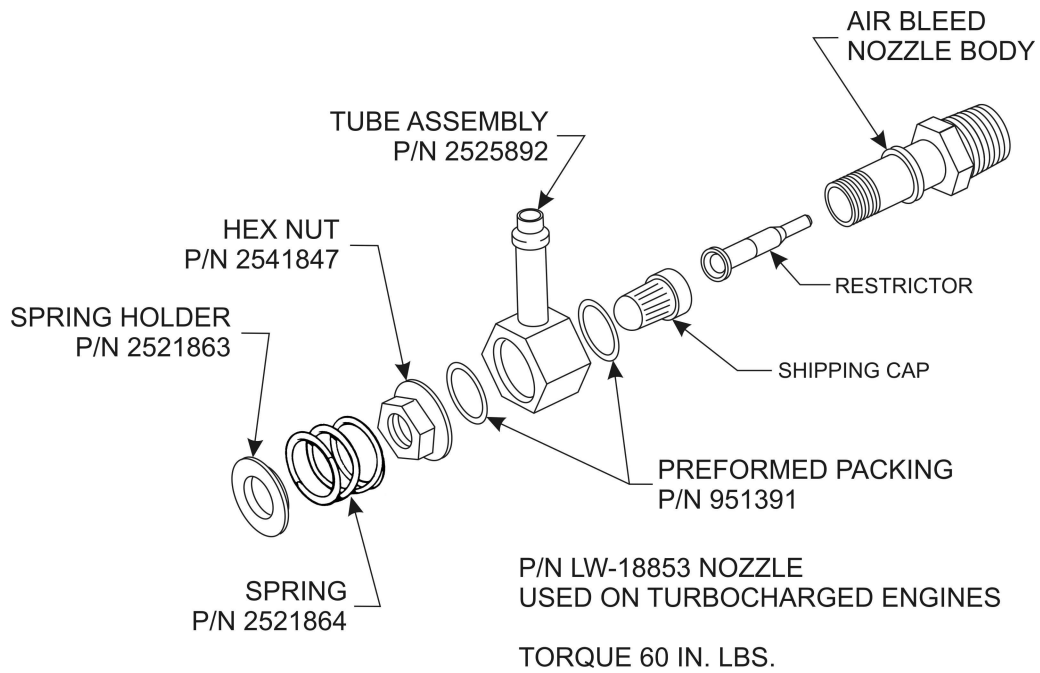


Figure 5. Exploded View of P/N LW-18853

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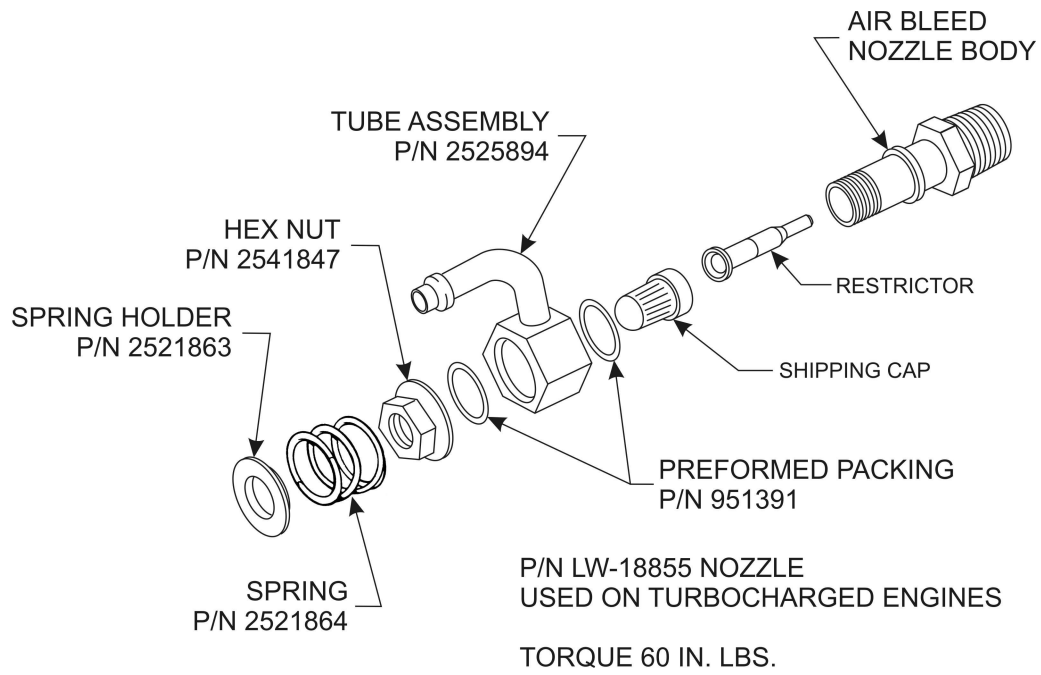


Figure 6. Exploded View of P/N LW-18855

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