

DUNCAN INTELLIGENCE

JT15D Oil Leak

By Ken Kuchenreuther

Over the years we have written many Duncan Intelligence articles about oil leaks (archives can be accessed at www.DuncanAviation.com).

Searching the JT15D archives could be especially valuable if you are new to an aircraft with JT15D engines. However, the reason for this article is to target one area of the JT15D that has initiated some concern – oil leakage in the exhaust duct area. The JT15D has an emergency fuel shutoff mechanism in the #4 bearing housing.

Incorporated in this assembly is a plunger situated behind the aft face of the low turbine shaft. When pushed by an uncoupled low turbine shaft the plunger will shut off fuel thus preventing an overspeed of the low pressure turbine assembly and possible catastrophic, uncontained release of the disks and blades.

The good news is I've never heard of this catastrophe. However, what has been found is the plunger tends to rub on the low turbine shaft for various reasons. One reason being the low turbine isn't properly seated. JT15D history has shown that this is most often the result of removing the exhaust duct for maintenance and the plunger is replaced per the maintenance manual due to wear. The shaft itself exhibits no damage. The oil leak becomes evident when the plunger, with its seal effectiveness compromised due to the excess heat, begins to leak.

Recently, we identified a JT15D-5D with an oil leak in the exhaust duct. After disassembly, the plunger was found with some metal buildup and the shaft face worn. Replacement of the shaft was required. On Oct 31, 2003, the maintenance manual was revised to change the low turbine seating procedure from torquing the low turbine bolt to seating the low turbine using about 9000 pounds of force and heat. This good idea, initiated by Pratt & Whitney, seems better suited for assembling two dry, splined, interference fit metal shafts. If you are performing this

maintenance, or are having it done by someone, be aware of the difference between pounds force and pounds per square inch.

Pratt & Whitney SIL # JT15D-038 has information dealing with this subject. For more information please contact Ken Kuchenreuther at Ken.Kuchenreuther@DuncanAviation.com or 800.525.2376.

Lightning Strikes

By Dan Arrick

Spring and Summer are the seasons for lightning strikes on airplanes. If you suspect your aircraft has been subjected to a lightning strike, a visual inspection of the engine inlet is required. If evidence of arcing (pitting, black scarring) is present on the inlet cone or LP Compressor (Fan) blades, remove the engine from service. Return the engine to an approved overhaul facility for lightning strike Special Conditions inspection in the appropriate Overhaul Manual.

Trivia Question

By Dan Arrick

The previous question was:

On JT15D-1 through -4 series engines, what is the purpose of the Step Modulator?

The Step Modulator ensures effective fuel control at all operating altitudes. To check for proper operation, look for ITT and Fuel Flow increases when the engine anti-ice or ignition is turned on.

This edition's question is:

What is the purpose of the cold or hot nozzle installed on a JT15D?

The first 10 callers with the correct answer will receive a small prize. Please respond to Dan Arrick by calling 800.525.2376 or e-mail at Dan.Arrick@DuncanAviation.com.

