

DUNCAN INTELLIGENCE

• Edited by Lanny Renshaw & Jon Dodson • Winter 2003

TFE731-40/60 MPI and CZI Event Planning

By Honeywell with comment by Jon Dodson

In the latest issue of Honeywell's Falcon Operator Update, Honeywell notes that MPI turn times average 20 days in the shop (+/- 10 days). This is accurate based on our experience with the first -60 MPIs performed in the field at Duncan Aviation. This turn time is not what we have come to expect from the classic engine models, with good reason. In any relatively new engine program, there is a fair amount of field evaluation that has to take place to determine how critical components are holding up, what kinds of repairs may be necessary, and allow for preparation time with the vendors. Planning early has always been a good idea and this message becomes even more critical for these new series engines. Duncan Aviation's engine professionals are experienced and ready to help.

Low Oil Pressure Associated with Carbon Ring Seals, TFE731-2/3/5

By Honeywell with comment by Jon Dodson

Editors note: *This article (taken in part) appears in the latest issue of Honeywell's Falcon Operator Update. It applies to Falcons, as well as a large number of engines operating with the revised carbon seal package.*

Engines which have Carbon Ring Seals (service bulletins 72-3596, 72-3597 & 72-3662) may experience a perceived low oil pressure condition when the throttle is reduced from power to idle. These engines feature:

- Oil scavenge pump with a 15% increased capacity.
- Transfer gearbox with a flapper valve to, in conjunction with the increased scavenge pump capacity, decrease air pressure within the #4/5 cavity.
- Fan gearbox vent tube with an integral check valve to, with the increased scavenge pump capacity, reduce the ambient pressure within the fan gearbox.
- High efficiency air-oil separator.

These additions and changes affect and enhance the oil vent system and the oil sump cavity pressures.

System Operation

→**Ground and Flight Idle:** At idle (flight or ground), both the transfer gearbox and fan gearbox check valves should be closed. With the valves closed, the oil scavenge pumps can readily evacuate the cavities. Both sumps, ideally, should operate at negative pressure.

→**Engine acceleration:** As the engine is accelerated, both sump pressures may drop slightly more negative, but will then start to increase.

→**Stabilized at Take-Off Power:** At take-off, the fan gearbox will typically remain at a negative value, which means the fan gearbox check valve (in the vent tube) is still closed. The transfer gearbox pressure will typically climb to some positive value. As this sump pressure goes positive, the transfer gearbox check valve will open and the transfer gearbox will be venting to the

accessory gearbox out the breather valve.

→**Throttle reduced to flight or ground idle:** When the throttle is reduced from a high power setting such as take-off to ground or flight idle, the oil pressure may temporarily approach or even reach the minimum pressure limit of 25 psig. This decrease is because the fan gearbox now operates at a negative pressure at ground idle.

Oil pressure is a function of the oil pump pressure output, the oil path restrictions (lube nozzles, restrictions, tubes, etc.) and sump pressure. With the sump pressure operating at a great negative value, one "restriction" to the flow of oil is reduced. The fan gearbox (planet gears, bearings, etc.) are in fact being flooded with oil. However, because there is less restriction to flow (as a result of the negative value in the fan gearbox) relative oil pressure may decrease for a few moments. Oil pressure conditions as a result of the processes described herein do not pose a detriment to the engine.

For TFE731 technical info, we have the experts with whom you should speak.

Our 731 Engine Teams consist of technicians with hundreds of combined years of experience.

Need technical advice? Call Duncan's 731 Tech Rep, Lanny Renshaw, at 402.479.4246

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