

ADVISORY WIRE

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REFERENCE NO:	AW300-49-0242	INFORMATION TYPE:	Maintenance Operational
ATA:	49	EFFECTIVITY:	Challenger 300 (20003 – 20500) Challenger 350 (20501 – 20999)
SUBJECT:	APU Compressor Seal Leakage / Cabin Odor Issue Update		

1. REFERENCES:

- 1.1. Challenger 300 Top Advisory Issue No. 1, 36-150BD APU Compressor Carbon Seal
- 1.2. Challenger 300 Aircraft Maintenance Manual Temporary Revisions TR 10-1, 12-27, and 12-28 dated Jan 25, 2016
- 1.3. Challenger 350 Aircraft Maintenance Manual Temporary Revisions TR 10-1, 12-4, and 12-5 dated Jan 25, 2016
- 1.4. Honeywell Component Maintenance Manual 49-24-59 Temporary Revision No. 49-5

2. INTRODUCTION:

This Advisory Wire is to provide Operators with an update concerning the APU Compressor Seal leakage / cabin odor issue and the introduction of APU design changes to resolve the issue.

3. DESCRIPTION:

There have been several reports in-service of cabin odors noticed by the flight crews or passengers. The prevailing cause of these events has been traced to small amounts of oil leaking past the APU Compressor Carbon Seal when using the APU as the bleed source for air conditioning.

Following extensive testing and development, Honeywell received TSO certification in 2015 for APU design changes introduced to address this issue. The changes included a new hydrodynamic seal, as well as changes to the gearbox, ejector, and oil pressure regulating valve to minimize seal oil delivery. Improved rotor group balance procedures were also introduced in early 2014 to improve rotor/seal tracking.

The first new 36-150BD APU incorporating these design improvements and designated P/N 3800775-2 was introduced into a production Challenger 350 in January 2016. During production flight testing, it was discovered that when starting the APU at high altitude after cold soaking, the APU OIL PRESS LOW caution message would post for a short time after the APU spooled up to 100%. Subsequent investigation has shown the likely root cause of the Low Oil Pressure (LOP) indication to be changes made on -2 APU pressure regulating valve that result in the oil pressure build-up to be a bit slower during cold altitude starts. It was also discovered that if operating the APU with Type 1 oil (MIL-PRF-7808) which has a lower viscosity, there was no LOP indication and APU operation was normal. As an interim mitigating action to address this LOP issue, all new -2 APUs in production will be serviced and delivered with Type 1 oil, and the approval of Type II oil (MIL-PRF-23699) has been withdrawn from the Aircraft Maintenance Manual and Honeywell CMM for operation of -2 APUs. This is a temporary measure that will be resolved via a future modification to the oil pressure

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regulating valve that will be introduced via a Honeywell Service Bulletin expected around Q2-Q3 2016. Replacement of the regulating valve will be able to be accomplished on-wing and once incorporated will reinstate the approved use of Type II oil. The use of either oil type as well as the change to the regulating valve will not affect the efficacy of changes introduced to address the cabin odor issue.

For APUs in service, a Honeywell Service Bulletin for the existing 36-150BD APU (P/N 3800775-1) that incorporates all the same modifications to address the cabin odor issue was initially targeted for release in January 2016. The SB release has now been moved to Q2 2016 due in part to a component supply issue involving a bearing retainer required for the modification, as well as the previously mentioned LOP issue. There is currently a very limited supply of bearing retainers with none expected to be available for aftermarket APU upgrades until around Q2 2016. Upgrades of -1 APUs may begin on a limited basis at shop visits beginning in Q2 2016, pending hardware availability. Priority will be given to units that have previously experienced a cabin odor /carbon seal leakage event. Initially, there may be a short period of time after the release of the SB that upgraded units may be limited to operation with Type 1 oil, until a modification to the oil pressure regulating valve to address the LOP issue is released and incorporated. Under this circumstance Operator's will be given the choice to defer the upgrade to the next APU shop visit if they do not want to limit the operation of the APU (temporarily) to Type 1 oil only.

The Service Bulletin policy and pricing will be outlined in the Honeywell SB at the time of release.

4. ACTION:

There is no action for Operators to take at this time.

For Operators who have or will be taking delivery of a new Challenger 350 in early 2016 with the first few -2 APUs, maintenance personnel should be aware that these first APUs have been serviced and delivered with Type 1 oil. Until a modification to the oil pressure regulating valve is released and incorporated, these units should only be operated with Type 1 oil. The list of approved oils in the AMM as well as the Honeywell CMM has been updated, and will be further revised accordingly as the LOP issue evolves and is addressed.