

TURBOCHARGER EXHAUST FLANGE INSPECTION AND/OR TURBINE HOUSING REPLACEMENT (PARTS)

INTRODUCTION:

It has come to the attention of Kelly Aerospace Power Systems (KAPS) that a possible interference condition may exist between the turbocharger turbine exhaust outlet flange area and the mating flange of the airframe exhaust tube. The piloted type exhaust tube flange may contact the filet radius of the turbine housing relief cut not allowing the two flange faces to meet properly. (see Figure 2 on page 4) Turbine housings manufactured between August 25, 2006 and January 25, 2008 are suspect. If this condition exists, exhaust pipe security may be compromised. While the exhaust outlet side of the turbocharger turbine has relatively low pressures, the potential of an exhaust leak, a loosening of the "V" band clamp, and a rise of temperature within the engine cowling exist. Left uncorrected, failure of the "V" band clamp may occur with possible loss of the tail pipe connection with resultant uncontained hot exhaust gas within the engine cowl.

This Service Bulletin is being issued to mandate the inspection and/or replacement of affected turbocharger turbine housing(s) P/N 441977-0023 and 441977-0025. These housings were used on complete turbocharger assemblies sold as replacement parts or inventory. The affected turbocharger assemblies have the serial numbers listed in the table(s) on page 2 and reflect only KAPS overhauled units. Some P/N 441977-0023S and 441977-0025S housings were sold as a service part to our sole source distributor AVIALL to be used in repair or overhaul.

COMPLIANCE:

Within the next ten (10) hours time in service or at the next regularly scheduled maintenance event or annual inspection which ever occurs first.

EFFECTIVITY:

Any aircraft utilizing a KAPS turbocharger, with the suspect serial numbers listed below and with a part number of 409170-9001, 465680-9005, 465930-9002, and 465930-9003.

NOTE:

The affected turbocharger may be installed (but not limited to) the engine(s) listed.

409170-9001: Lycoming, TIO-540-J2B; TIO-540-J2BD; TIO-540-N2BD (& LTIO)

465680-9005: Lycoming: TIO-540-V2AD; TIO-540-W2A

465930-9002: TCM, GTSIO-520-M

465930-9003: TCM, GTSIO-520-L; GTSIO-520-N

Suspect Serial Numbers (Turbocharger P/N 465930-9003)

JKR00016	JKR00017	JKR00018	JKR00019	JKR00020	JKR00021	KBR00206	KBR00207
KBR00208	KBR00209	KBR00210	KBR00211	KBR00483	KFR00293		

Suspect Serial Numbers (Turbocharger P/N's 409170-9001, 465680-9005, 465930-9002)

KER00039	KER00040	KER00041	KER00042	KER00043	KGR00031	KGR00032	KGR00033
KGR00034	KGR00035	KGR00036	KGR00037	KGR00038	KGR00039	KGR00040	KGR00041
KGR00042	KGR00043	KGR00133	KGR00134	KGR00135	KGR00189	KGR00190	KGR00191
KGR00192	KGR00193	KGR00194	KGR00195	KGR00196	KGR00197	KGR00198	KGR00199
KGR00200	KGR00201	KGR00202	KGR00203	KGR00204	KGR00205	KGR00206	KGR00218
KHR00181	KHR00182	KHR00183	KHR00184	KHR00185			

Any KAPS turbocharger using a P/N 441977-0023S as a repair or overhaul replacement part or which may be in unused inventory. *Turbine housings of this part number were produced October, 2006 marked 1006 underneath the part number. See spare part notes on page 2 and Figure 4 on page 4.*

Any KAPS turbocharger using a P/N 441977-0025S as a repair or overhaul replacement part or which may be in unused inventory. *Turbine housings of this part number were produced October, 2006 marked 1006 underneath the part number. See spare part notes on page 2 and Figure 4 on page 4.*

NOTE:

(Spare Part Only)

For the turbine housings sold as spare parts, the possible (but not limited to) turbocharger/engine combination may be as listed. *These turbocharger assemblies may have data tags from sources other than KAPS.*

- 409170-0001: Lycoming, TIO-540-J2B; TIO-540-J2BD; TIO-540-N2BD (& LTIO)
- 465680-0004: TCM, TSIO-520-AF; TSIO-520-P
- 465680-0005: Lycoming: TIO-540-V2AD; TIO-540-W2A
- 465930-0002: TCM, GTSIO-520-M
- 465930-0003: TCM, GTSIO-520-L; GTSIO-520-N
- 465448-0004: TCM, TSIO-520-CE
- 466412-0003 : TCM, TSIOL-550-A; TSIOL-550-C
- 466412-0004: RAM modified engines

NOTE:

(Spare Part Only)

Identification of the affected P/N 441977-0023S and 441977-0025S turbine housings sold as spare parts may be accomplished by observing the code markings on the inlet flange mating surface of the housing. *See Figure 4 on page 4.*

PROCEDURE:

CAUTION:

This procedure must be performed by competent and qualified personnel familiar with engine and airframe maintenance activities that are specific to turbocharged aircraft.

CAUTION:

Do not depend on this Service Bulletin for gaining access to the aircraft or engine. This will require that you use the applicable manufacturers maintenance manuals or service instructions. In addition, any preflight or in flight operational checks require use of the appropriate AFM or POH.

INSPECTION:

NOTE:

If the turbocharger installed on the engine(s) can be positively identified **as not being affected** by this service bulletin using the aircraft log books or other certified aircraft paperwork, no further action is necessary. If it cannot be established positively, then inspection of the data tag will be required.

NOTE:

(Spare Part Only)

If the turbocharger installed on the engine(s) has been repaired or overhauled between October 2006 and January 25, 2008 and included the replacement of the turbine housing P/N 441977-0023S or 441977-0025S, proceed with instructions starting with step 3. *See spare part notes on page 2.*

1. Access the aircraft turbocharger by removing the cowling as required in accordance with the instructions contained in the applicable aircraft maintenance manual.
2. Identify the affected turbocharger by checking data tag for part number and serial number and comparing to the suspect serial number table on page 2. If the turbocharger is affected continue with these instructions, if not, proceed to the "Return to Service" section step 3 and 4. For spare parts only, see note above.
3. Carefully remove the "V" band clamp from around the turbocharger turbine housing at the turbocharger exhaust outlet taking care not to move the exhaust tube and tail pipe assembly. Figure 1 shows a "V" band clamp improperly installed, notice gap and clamp riding up on flange.
4. Inspect the turbocharger turbine housing at the flange area captured by the "V" band clamp. Use a feeler gauge at the split line between the turbine housing flange and the exhaust tube flange all around the circumference. The maximum gap should not exceed .005 inch at any point. ***If you suspect or know that the exhaust tube and tail pipe assembly was moved at any point prior to checking for the gap, apply pressure towards the turbine housing flange before taking a measurement.*** Refer to Figure 2 on page 4.
5. If a gap exceeding tolerance is found, the turbocharger and tail pipe assembly should be removed. To accomplish this, follow the instructions contained in the applicable aircraft, STC holder, or engine maintenance manual or service information. Inspect and clean flange areas using methods recommended by the applicable airframe or engine manufacturer. *Do not attempt repair of the turbine housing.* Connect the cleaned exhaust tube to the turbocharger and re-inspect per step 4 above. If the gap still exceeds tolerance, the turbocharger turbine housing (P/N 441977-0023 or 441977-0025) must be replaced. Proceed to step 6. If gap tolerance is ***not exceeded***, metal stamp an upper case "I" in accordance with instructions found in step 7 in the area shown in Fig 3 to indicate the instruction was performed then proceed to step 10.
6. The turbocharger must be sent to a properly certificated part 145 repair station (or foreign equivalent) experienced in turbocharger repair.



Figure 1 - "V" band Clamp Showing Gap

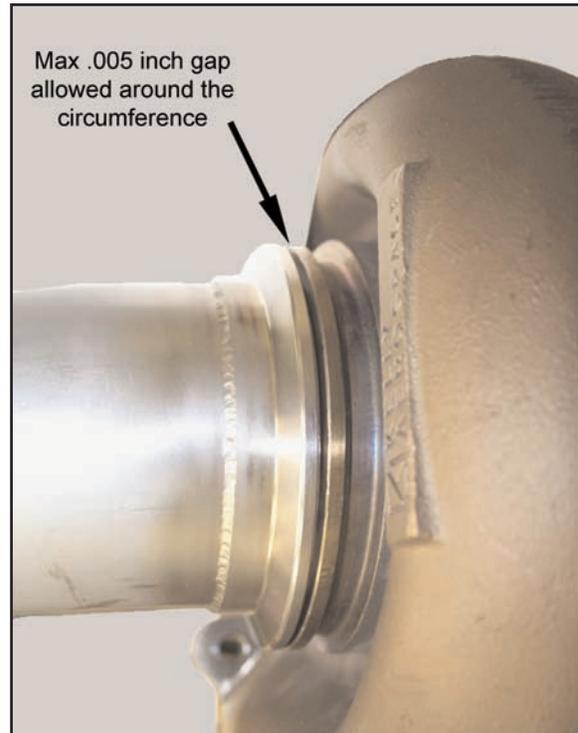


Figure 2 - Gap Inspection Area

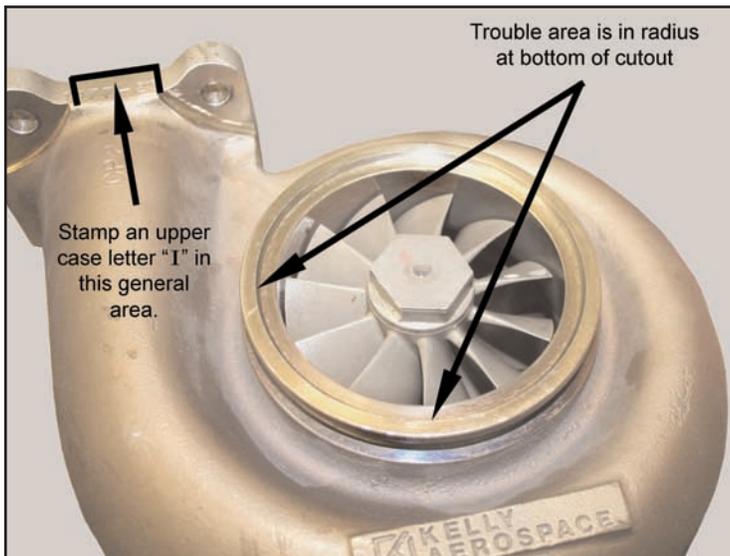


Figure 3 - Turbine Housing Trouble Area

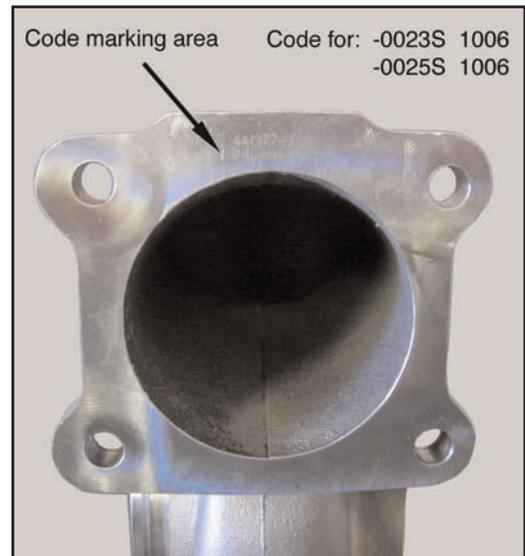


Figure 4 - Spare Part Code Marking

7. Once the turbocharger has been repaired, visually inspect for condition and orientation of the turbine housing then, using a 1/8" metal stamp of an upper case "I", stamp the turbine housing in the area shown in Figure 3. Care must be taken not to extend stamp within 1/8" of the mating edge as it may bulge and distort the mating surface. When stamped, proceed with the installation.
8. Utilizing the applicable aircraft, STC holder and/or engine manufacturers maintenance manuals or service instructions, re-install the turbocharger assembly.

NOTE:

If the existing "V" band clamp is to be used, it should be inspected for damage on the inside of the "V" prior to re-use. If the inside radius of the "V" is flattened or cut it should not be used. Obtain the clamp part number from the appropriate aircraft or engine parts catalog.

9. When connecting the exhaust tube and tail pipe assembly to the repaired turbocharger, it is advisable to re-check the flange fit per step 4 prior to installing the clamp. Carefully, position and install the "V" band clamp to manufacturer specifications and proceed to "Return to Service" below.
10. If gap tolerance was **not exceeded** and the metal stamp "I" has been applied per step 5, carefully, position and install the "V" band clamp to manufacturer specifications and proceed to "Return to Service" below.

RETURN TO SERVICE:

1. When the turbocharger has been replaced, the aircraft may be prepared for return to service.
2. Refer to Kelly Aerospace Power Systems Service Bulletin 23 and perform the recommended turbocharger operational tests. This consists of turbocharger pre-lubrication, ground running tests, and an operational flight test. Make sure no air, exhaust, or oil leaks are present. *Service Bulletin may be viewed or downloaded online via www.kellyaerospace.com.*
3. Utilizing the applicable aircraft and engine manufacturers maintenance manuals, install the upper and lower engine cowls removed to gain access.
4. Upon successful completion of this service bulletin per the applicable compliance time listed on page 1, make an appropriate log book entry that includes the affected turbocharger model and serial number, along with an appropriate statement of the inspection and/or repair.

MATERIAL REQUIRED:

One (1) or two (2) each, turbocharger turbine housing, part number P/N 441977-0023 or 441977-0025 as required. All KAPS parts must be obtained through an AVIALL, Inc. supplier. AVIALL is the sole distributor for KAPS turbocharger parts *NOTE: Other incidental parts may be required during the removal and installation of the turbocharger. These parts must be obtained per the aircraft or engine manufacturers parts list from the applicable manufacturer.*

DISPOSITION OF STOCK:

Any unused turbocharger which appears on the Suspect Serial Number Table(s) on page 2 in stock may be returned for repair or replacement. Any unused turbine housing, P/N 441977-0023S or P/N 441977-0025S sold from October 2006 through January 25, 2008 with code number 1006 which remains in stock. *See Figure 4 on page 4.*

WARRANTY STATEMENT:

Kelly Aerospace Power Systems will supply warranty consideration for each affected KAPS Turbine Housing (up to two per aircraft). Additionally, up to one (1) hour labor per engine or two (2) hours labor per aircraft (at 75.00 USD) will be allowed for the inspection and repair required in this service bulletin. Warranty must be filed through AVIALL Inc. with the affected turbine housing returned. All normal KAPS warranty procedures apply. No other warranty consideration related to this service publication applies. This publication does not imply or state any responsibility for the workmanship of any person or entity performing work or maintenance on the turbocharger, engine, or aircraft.

CONTACT INFORMATION:

If you have any questions concerning the instructions in this service bulletin, please contact Kelly Aerospace Power Systems Technical Support at 888-461-6077. Questions concerning aircraft service or operation must be forwarded to the applicable manufacturer of that product.