

MANDATORY

SERVICE BULLETIN

DATE: February 10, 1995

Service Bulletin No. 521
(Supersedes Service Bulletin No. 512)
Engineering Aspects are
FAA Approved

SUBJECT: Inspection of Exhaust System Slip Joints for Proper Engagement and
Inspection of Marmon Flange Joint at Transition Inlet

MODELS AFFECTED: TIO-540-AE2A aircraft engines.

TIME OF COMPLIANCE: **Initial Inspection:**

At the next scheduled maintenance event; not to exceed 50 hours of operation.

Subsequent Inspection:

Annually or every 250 hours of operation, whichever comes first.

Misalignment of the crossover exhaust components can overstress the intermediate exhaust pipe flanges and the left and right transition exhaust flanges. If the flange distorts and cracks, the intermediate pipe (P/N 40B19974) can separate from the crossover pipe (P/N 40B19975), thereby allowing exhaust gases to escape at the slip joint and possibly where the flanges join together. Also, gases could escape at the flange joints of the right transition (P/N 47C19845) and the left transition (P/N 47C19847).

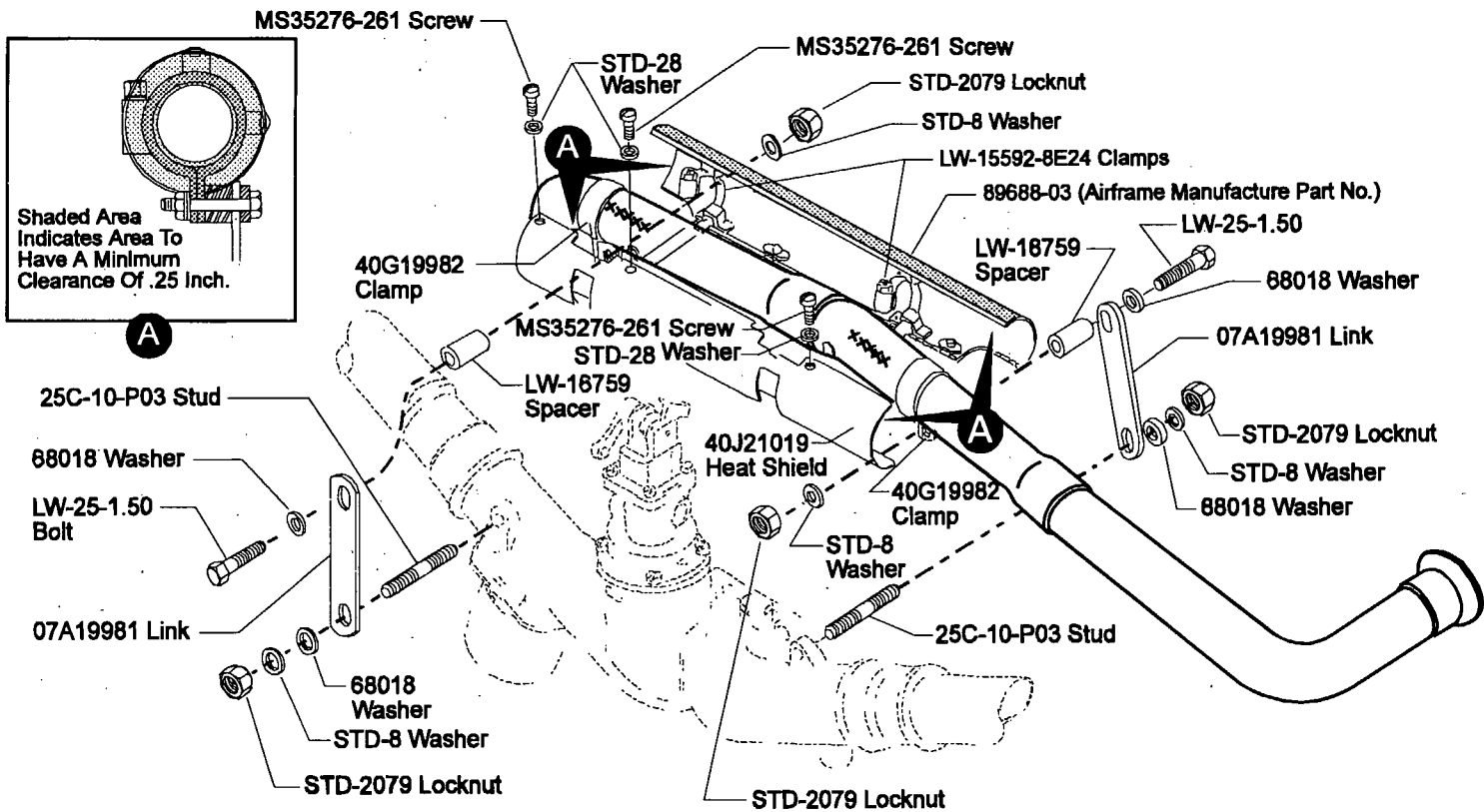
The crossover exhaust pipes must also be inspected for any signs of rubbing and/or wear from heat shield contact.

In order to ensure that proper engagement exists for each slip joint of the exhaust system and to check all flange joints at transition inlet, the following inspection should be made.

1. Remove the heat shield as follows (Refer to Figure 1):
 - a. Loosen both P/N LW-15592-8E24 clamps.
 - b. Remove the outer heat shield P/N 40J21019 from the inner heat shield P/N 89688-03 (Airframe Manufacturer Part Number) by removing the five (5) P/N MS35276-261 screws 10-32 x 3/8 inch long and five (5) STD-28 washers, No. 10 plain x 3/8 inch O.D., 3 on top and 2 on bottom.



Figure 1. Removal of Heat Shield



- c. Remove the inner heat shield P/N 89688-03 (Airframe Manufacturer Part Number) by removing the P/N LW-15592-8E24 clamps.
 - d. Remove both P/N 07A19981 links by removing the hardware as shown in Figure 1.
 - e. Remove both P/N 40G19982 clamps.
2. Mark the exhaust pipe as shown in Figure 2. This will be used to measure the slip joint engagement in steps 8 and 9.

CAUTION

WHEN MARKING THE EXHAUST PIPE, DO NOT USE GRAPHITE LEAD PENCIL OR SCRIBE. A REACTION BETWEEN THE GRAPHITE LEAD AND THE STAINLESS STEEL WILL RESULT. FOR BEST RESULTS, USE A NON-GRAPHITE MARKER SUCH AS COLORBRITE NOS. 2127, 4127, OR MARKS-A-LOT.

3. Remove the two (2) P/N LW-15592-8E24 clamps that secure waste gate transition heat shield P/N 40J19953. Remove this heat shield.
4. Remove the P/N LW-12093-3 V-band coupling and P/N 06B19913 gasket.

NOTE

As an alternate method, prior to disassembly, mark all pipes accessible and then remove cross over and heat shield as an assembly. Remove the heat shield from the crossover. Reinstall the crossover, aligning it with initial markings. Mark all other slip joints.

5. Remove the P/N 40B19975 right exhaust pipe and the P/N 40B19974 intermediate exhaust pipe.

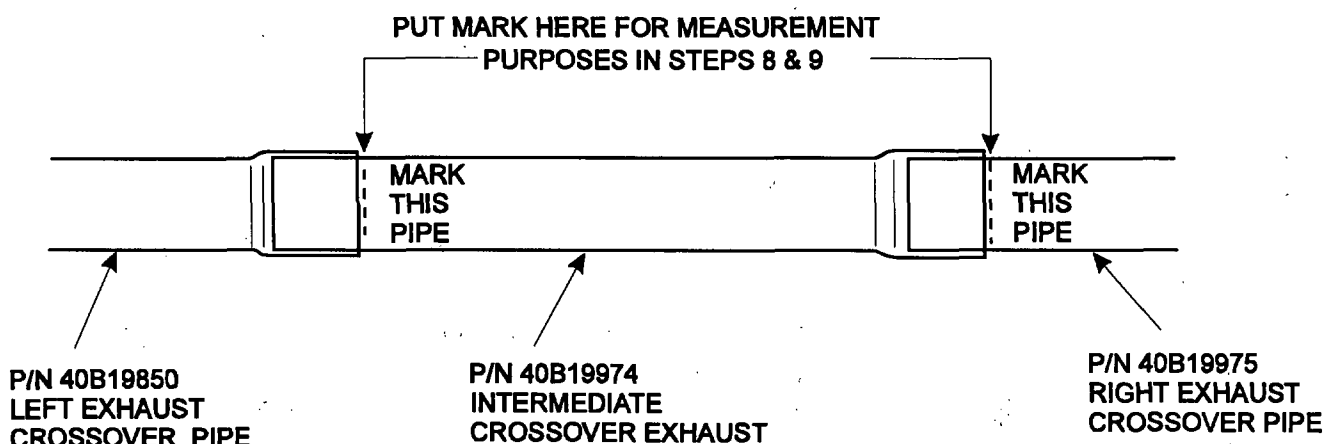


Figure 2. Marking Exhaust Pipes to Measure Engagement

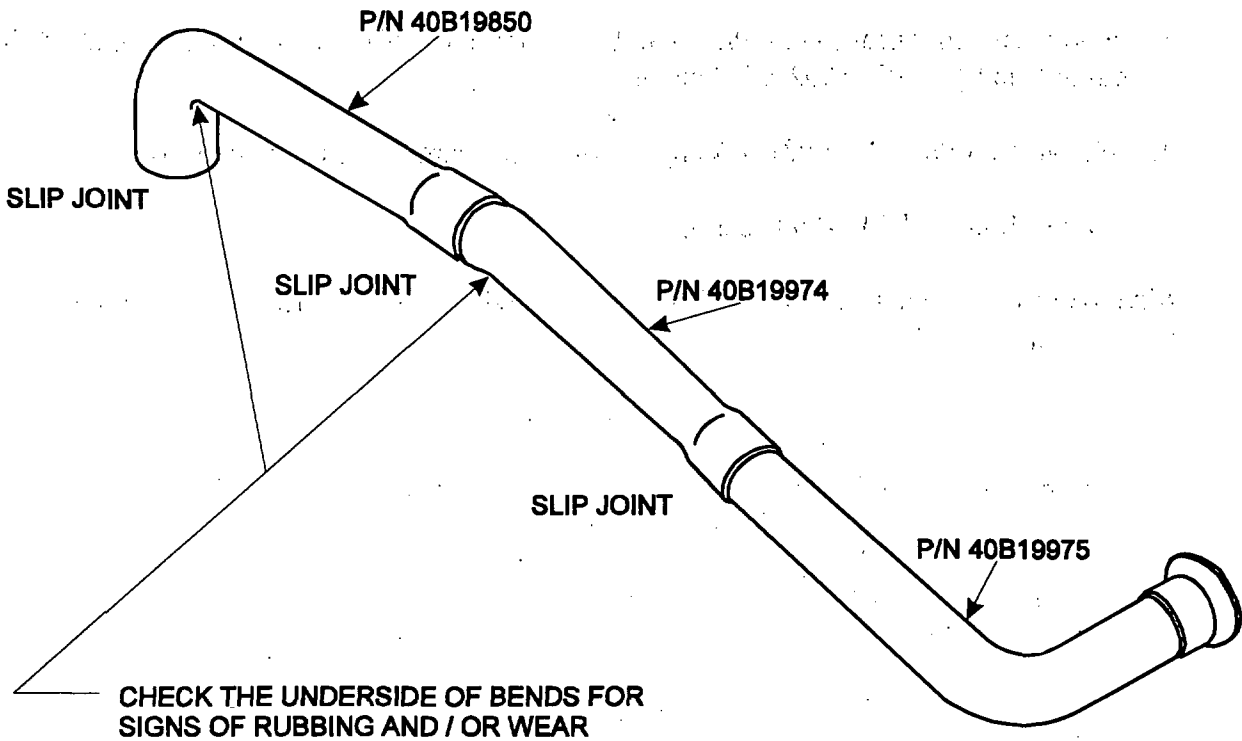


Figure 3. Inspecting P/N 40B19975 Right Crossover Exhaust Pipe and P/N 40B19850 Left Crossover Exhaust Pipe

6. Remove the P/N 40B19850 left exhaust pipe.
7. Inspect the P/N 40B19975 right crossover exhaust pipe and P/N 40B19850 left crossover exhaust pipe for any signs of rubbing at the area shown in Figure 3. If any signs of rubbing and/or wear from heat shield contact are present, the pipes should be replaced.
8. To check the slip joint engagement, measure the distance from the mark in step 2. to the end of the P/N 40B19975 right exhaust pipe. If this measurement is less than 0.75 inch, the P/N 40B19975 pipe must be replaced. See Figure 4.
9. Then measure from the mark to the end of the P/N 40B19974 intermediate exhaust pipe. If this measurement is less than 0.75 inch, the P/N 40B19975 pipe must be replaced.

REASSEMBLY.

1. Inspect exhaust pipes for cracks around the flange and pay particular attention to the condition of the slip joint noting any damage which may prevent free movement of the joint. In addition, check the end of the exhaust pipe inside the flange mouth; it must be a minimum of .075 inch below the surface of the flange face. (Refer to Figure 5.)

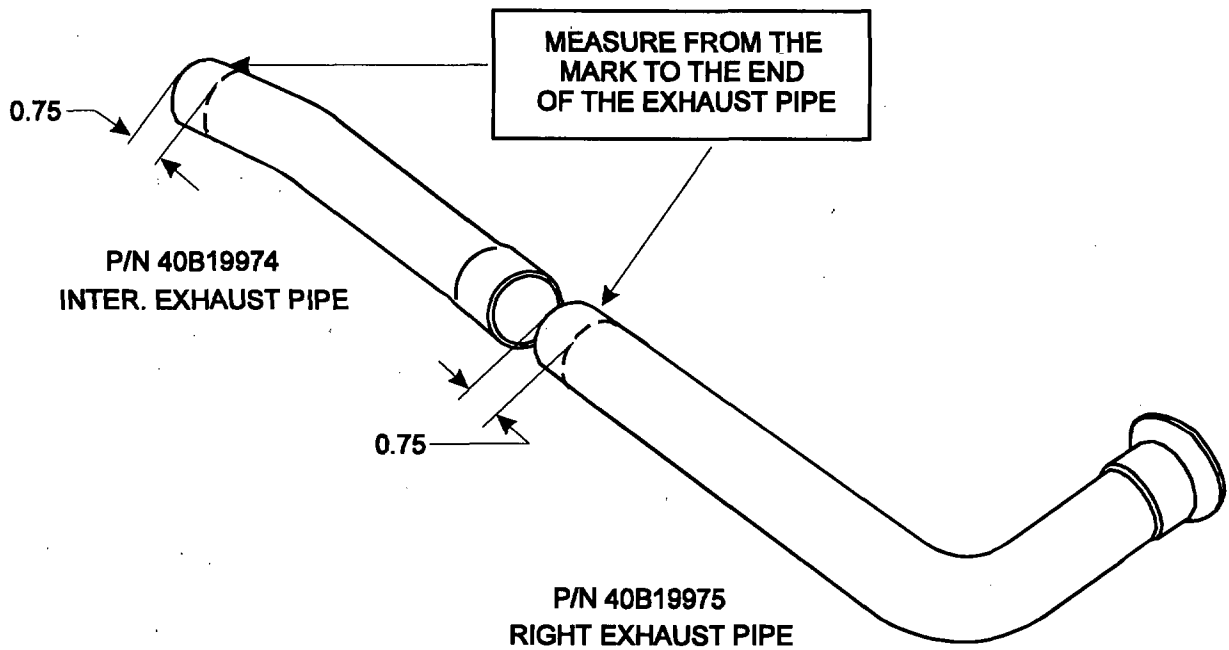


Figure 4. Measuring Engagement of Slip Joints

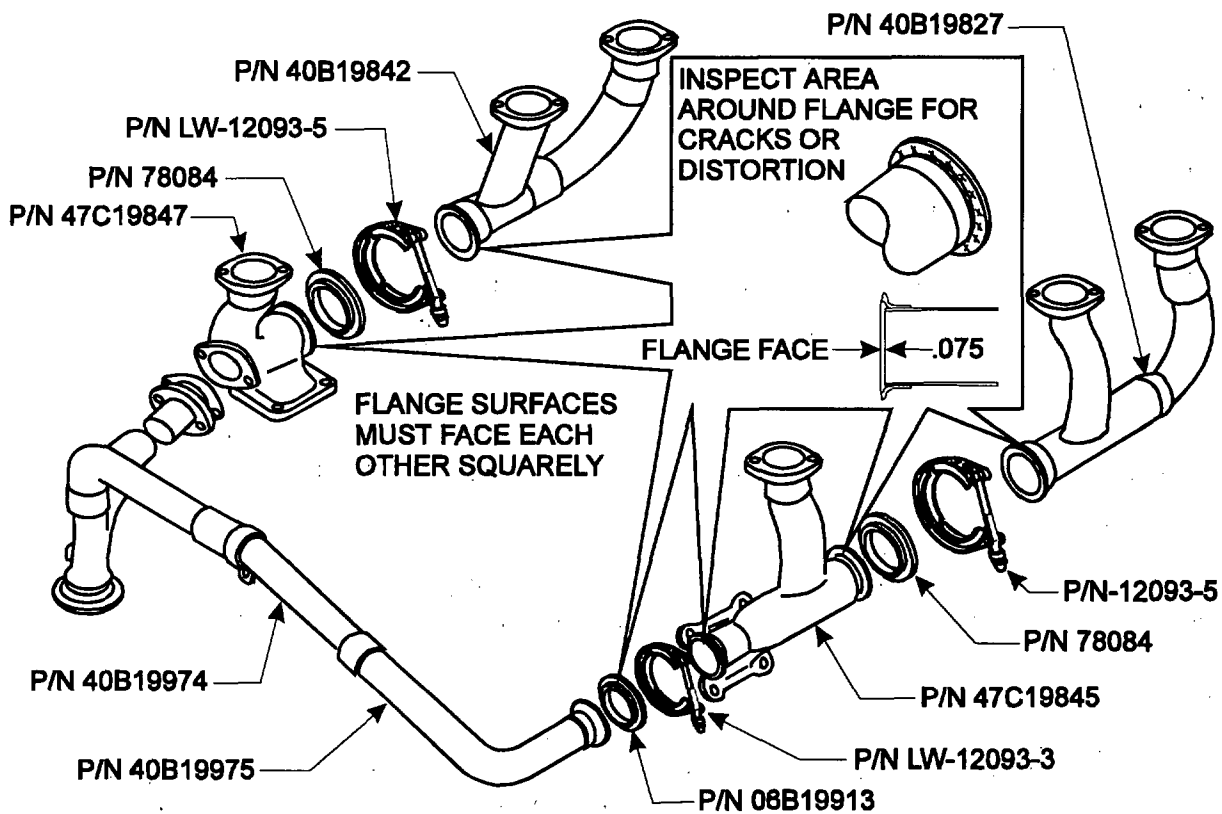


Figure 5. Flange Areas Subject to Damage

NOTE

The exhaust pipe segments attached to the waste gate transition assembly may be subject to cracks in the area of welds and attaching flanges. Replace any that indicate such defects.

2. Inspect the three V-band sections of each coupling with a depth micrometer in the area as shown in Figure 6. Any dimension obtained under .230 inch renders the coupling unfit for further service.

NOTE

Before assembling the intermediate and crossover pipes, coat slip joints with an antiseize compound, such as Fel-Pro C5A or equivalent, to minimize binding.

3. Slide the flared end of the P/N 40B19974 intermediate exhaust pipe over the smaller diameter end of the P/N 40B19975 right exhaust pipe.
4. Slide the flared end of the P/N 40B19850 left exhaust pipe over the smaller end of the P/N 40B19974 intermediate exhaust pipe.
5. Slip the P/N LW-12093-3 V-band coupling over the P/N 40B19975 right exhaust pipe. Place the P/N 06B19913 gasket in position with the lip of the gasket facing the right exhaust pipe.
6. Adjust all pipes so the slip joint engagement is the same for each joint.

NOTE

Whenever a V-band coupling is disassembled, a new gasket must be used at reassembly. This will insure maximum sealing efficiency to the joint.

7. With pipe P/N 40B19775 and P/N 47C19845 transition joined, assemble the P/N LW-12093-3 V-band coupling over both pipes and the P/N 06B19913 gasket.
8. Press the P/N LW-12093-3 V-band coupling over the flanges and engage the T-bolt. Using a torque indicator wrench, tighten the coupling nut approximately 70 % of the specified torque value. Tap the outer surfaces of the coupling with a rubber mallet to distribute band tension.

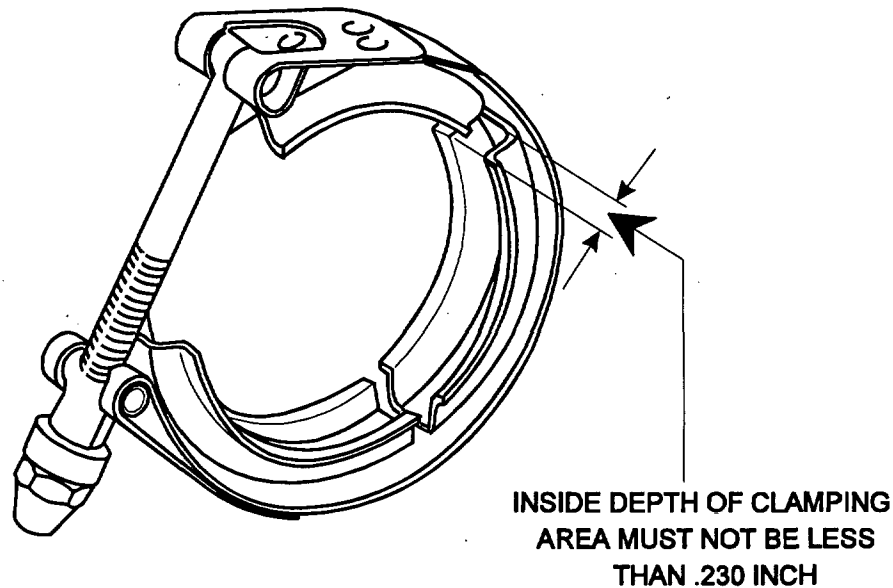


Figure 6. V-Band Coupling Inspection Requirement

NOTE

Two types of coupling nuts may be found on 2.00 inch V-band couplings. A split type locknut with a specified torque of 85 inch pounds, or a drilled hex. nut secured with safety wire, having a specified torque of 75 inch pounds.

9. Check the torque on the coupling and continue to tighten until specified torque is reached, tapping the outer surfaces to distribute band tension.
10. Secure heat shield P/N 40J19953 over P/N 47C19845 right exhaust transition and P/N 40B19775 right exhaust pipe using two (2) new P/N LW-15592-8E24 clamps.
11. Secure heat shield P/N 40J21019 as shown in Figure 1.