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SERVICE INSTRUCTION

DATE: June 5, 2014

Service Instruction No. 1562
Engineering Aspects are
FAA Approved

SUBJECT: Turbocharged Exhaust System Installation

MODELS AFFECTED: Lycoming Engines' turbocharged engine models

TIME OF COMPLIANCE: During turbocharger exhaust system replacement.

NOTE

Incomplete review of all the information in this document can cause errors. Read the entire Service Instruction to make sure you have a complete understanding of the requirements.

This Service Instruction contains basic guidelines to disassemble, assemble, and install a typical exhaust system on a Lycoming Engines' turbocharged engine model. These instructions apply only to turbocharged exhaust systems supplied by Lycoming Engines.

⚠ CAUTION

BEFORE DISASSEMBLY OF THE EXHAUST SYSTEM, LET THE ENGINE AND THE EXHAUST SYSTEM COOL FOR 1 HOUR OR LONGER AFTER ENGINE SHUTDOWN TO PREVENT BURNS.

Exhaust System Disassembly Guidelines

NOTE

If any component of this system is removed or replaced for any reason, loosen all other attachments on that side before installing the component.

Before disassembly of the exhaust system (for reference on assembly):

1. Apply labels to all exhaust pipes and pieces.
2. Take photos or draw a sketch of the exhaust system as installed and attached to the turbocharger.
3. Identify the locations of V-band couplings, clamps, and adapters.

⚠ CAUTION

DO NOT USE ETCH TOOLS, GRAPHITE LEAD PENCIL, OR SCRIBE TO MARK EXHAUST PIPES. FOR BEST RESULTS, USE A NONGRAPHITE MARKER SUCH AS COLORBRITE NOS. 2127, 4127, OR MARKS-A-LOT.

Exhaust System Assembly and Installation Guidelines

⚠ CAUTION

CRACKS AS WELL AS INCORRECT ASSEMBLY OR INSTALLATION OF THE TURBOCHARGER EXHAUST SYSTEM CAN ADVERSELY AFFECT ENGINE OPERATION, OR RESULT IN THE RELEASE OF HOT TOXIC GASES WHICH CAN CAUSE A FIRE AS WELL AS DAMAGE TO NEARBY COMPONENTS.

1. Prior to exhaust system assembly:
   A. Clean all exhaust pipes between exhaust manifold connections and at all slip joints with a scuff pad. Remove all debris. Make sure the connecting/mating surfaces at slip joints are clean and that there is no residual debris.
   B. Examine all of the exhaust pipes and saddle welds for cracks, bulges, dents, damage, and correct fit. Replace any component that is cracked, bulged, dented, damaged or does not fit correctly.
   C. Apply C5A copper based anti-seize or equivalent to the threads on the exhaust studs.
   D. Begin assembly of the exhaust system at cylinders #1 and 2 at the front of the engine and continue to the rear of the engine.
2. When connecting exhaust pipes:
   A. Make sure the connecting/mating surfaces at slip joints are clean, and that there is no debris.
   B. Apply a uniform coating of C5A copper based anti-seize or equivalent around the entire circumference of exhaust pipes, between the exhaust manifold connection, and at all slip joints (to minimize binding).
   C. Refer to the photo or sketch done before disassembly to ensure correct assembly and installation of the exhaust pipes.

⚠ CAUTION

WHEN INSTALLING EXHAUST SYSTEM COMPONENTS, INITIALLY TIGHTEN HARDWARE FASTENERS FINGER-TIGHT. DO NOT TIGHTEN ANY PART OF THE EXHAUST SYSTEM BEFORE PROCEEDING TO ANOTHER PART ON THE SAME SIDE OF THE ENGINE.

   D. Install exhaust system parts with hardware fasteners finger-tight to allow for adjustment in the next step.
   E. Align exhaust pipes in the correct configuration (per your photo or sketch) to enable engagement of the slip joints at the same distance for each joint. If there is binding at a slip joint or pipes at the V-band coupling are not aligned, loosen and re-install the components until they align correctly.

⚠ CAUTION

DURING REPLACEMENT OF ANY EXHAUST PIPE, ALL OF THE FLANGE SURFACES MUST BE ACCURATELY ALIGNED. IF CROSSOVER EXHAUST COMPONENTS ARE INCORRECTLY ALIGNED, THEY CAN CAUSE TOO MUCH STRESS ON THE FLANGES OF THE CROSSOVER EXHAUST PIPES AND CAUSE GAS LEAKAGE AT SLIP JOINTS AND FLANGE JOINTS.

3. If there is a flared end of the exhaust pipe, install the flared end over the smaller end of the connecting exhaust pipe.

4. Install a new exhaust flange gasket to replace a discarded gasket. (Refer to the latest revision of Service Instruction SI-1204 for exhaust flange gasket information.)

⚠ CAUTION

DURING V-BAND COUPLING INSTALLATION, USE CARE NOT TO SPREAD OR FORCE THE COUPLING BEYOND ITS NORMAL OPEN POSITION TO PREVENT DISTORTION OF THE COUPLING. THIS DISTORTION CAN CAUSE AN INEFFECTIVE SEAL OR RUPTURE THE METAL WHICH CAN RESULT IN FAILURE OF THE COUPLING.

5. Every time a V-band coupling is assembled, install a new gasket within the coupling. Make sure that the seal is complete when a V-band coupling is assembled over an exhaust system component. (Refer to the latest revision of Service Instruction SI-1238 for assembly and torque procedures for V-band couplings.)

⚠ CAUTION

TORQUE HARDWARE FASTENERS EVENLY AND UNIFORMLY TO PREVENT LEAKS.

6. Make sure there are no gaps at pipe connections and all pipes are correctly aligned before the final torque of the fasteners.
7. Once the alignment and configuration are validated, torque the hardware fasteners for each attaching component equally and uniformly on each side, one component at a time as per the latest revision of the Table of Limits, SSP-1776.