

No: 000268

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By: FLC Date: 07-26-82 Page: 1 of 1

Send To: 918 ENGINE EQUIPMENT KIT

C-0002
C CHRISTEN INDUSTRIES INC.
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Subject: CRACKS IN EXHAUST
MANIFOLD ASSEMBLIES OF
EAGLE II AIRCRAFT

The exhaust manifold assemblies on the Eagle II aircraft are constructed from bent and formed sections of thin wall AISI 321 stainless steel tubing welded into an assembly with clamp-type slip-joints which allow movement between the manifold parts when in use on the aircraft. The slip-joint movement dampens engine pulse vibration and reduces the vibration stress imposed on the manifold assemblies by movement of the engine cylinders.

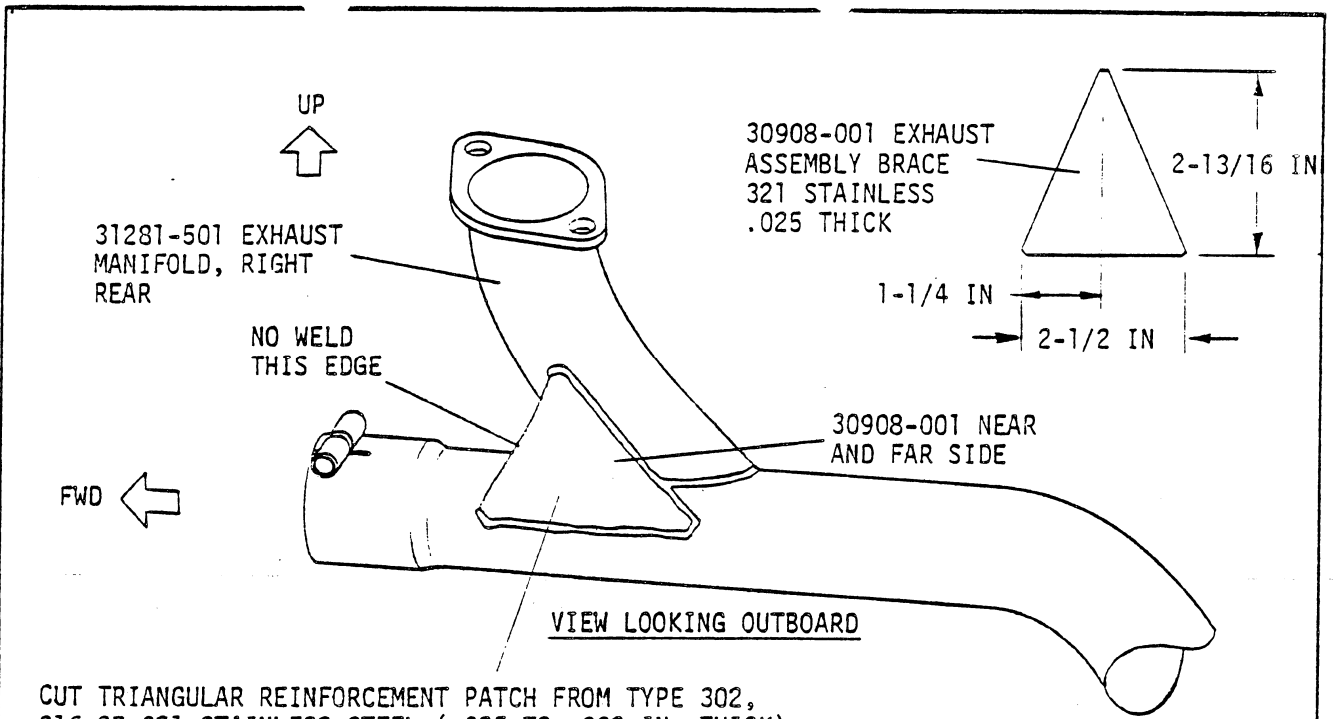
As described in the product manual for the 918 Engine Equipment Kit, it is important that the clamps on the manifold slip-joints be tightened sufficiently to support the manifolds but that they be loose enough to allow movement of the manifold parts. The clamps must not be overtightened or movement will be eliminated, and engine vibration will cause flexure and work-hardening of the manifold parts, and cracks will occur.

Eagle builders indicate that even when the exhaust manifolds are installed and tightened properly cracking may occur. Some aircraft have been operated for as long as 400 hours with no evidence of cracking; however, other aircraft have developed cracks during the first 25 hours of aircraft operation. When the cracking does occur, it is always located near the rear Y-joint of the aft manifold assembly, and it is most prevalent on the right rear manifold assembly. Analysis and testing have not explained the difference in cracking tendency among the various aircraft.

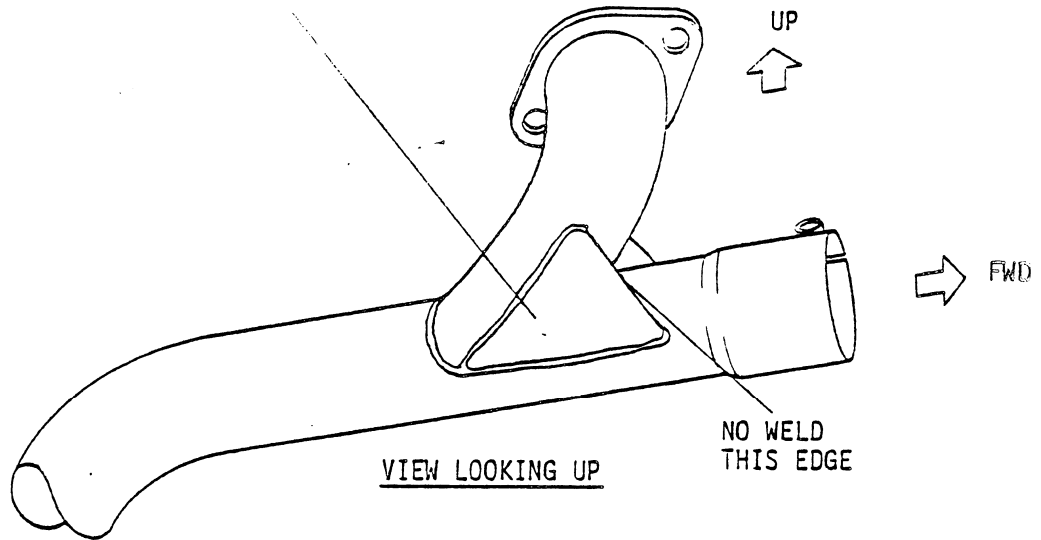
The manifold modification shown on the attached Engineering Sketch X-90139 eliminates the cracking problem, and all future Eagle II exhaust manifold assemblies will be supplied with the gusset-style brace shown on the sketch. We recommend that all Eagle II builders modify their exhaust manifolds in a similar way. Parts or factory service is available as follows:

- * 30908-001 BRACE, EXHAUST ASSEMBLY 4 reqd per aircraft
- * FACTORY MODIFICATION INCLUDING PARTS, FOB Hollister


ENCLOSURE: Engineering Sketch X-90139



CUT TRIANGULAR REINFORCEMENT PATCH FROM TYPE 302, 316 OR 321 STAINLESS STEEL (.025 TO .032 IN. THICK) OR USE CHRISTEN PART 30908-501. T.I.G. TACK WELD AND HEAT TO FORM EDGES INTO CLOSE CONTACT WITH MANIFOLD BEFORE COMPLETING T.I.G. WELDING. 2 PLACES.



NOTE: 31279-501 EXHAUST MANIFOLD FOR LEFT REAR (NOT SHOWN) SHOULD BE REINFORCED IN A SIMILAR MANNER.

UNLESS OTHERWISE SPECIFIED: TOLERANCES: FRAC. = 1/64 DEC. XXX = .005 ANGLES = 0° 30' DIMENSIONS IN INCHES DO NOT SCALE DRAWING	MATERIAL AND CONDITION NOTED			 CHRISTEN INDUSTRIES HOLLISTER, CALIFORNIA	
	FINISH NONE				
	DRAWN BY I. CLEDE	DATE 12-1-81	PROJECT EAGLE II AIRCRAFT	TITLE EXHAUST MANIFOLD REINFORCEMENT	
	APPROVED BY	DATE		CODE X-90139	NO. A