

Service Bulletin No. SB-AG-33
24 February 1993
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Sheared Huck Bolts In The Outer Wing

MODELS AFFECTED:	<u>MODEL</u>	<u>SERIAL NUMBERS</u>
	S2D	ALL
	S2R	5000-5099, 1380R, 1416R thru 2582R
	S2R-R1340	R1340-001 thru R1340-028*
	S2R-R3S	R3S-001 thru R3S-011*
	S2R-R1820	R1820-001 thru R1820-035*
	S2R-T11	T11-001 thru T11-005*
	S2R-T15	T15 (or T27) -001 thru 029*
	S2R-T34	6000-6049, T34 (or T41) -001 thru -143, -145, -147 thru -167, -170, -171, and -180*
	S2R-T45	T45-001*

* with or without DC suffix

NOTE: This bulletin affects aircraft that were manufactured with the original main wing spar configuration that utilized the aluminum spar web which was fastened to the spar caps with aluminum huck bolts. This bulletin does not affect recently manufactured aircraft that are equipped with the steel main spar web which is fastened to the spar caps with steel huck bolts.

REASON FOR PUBLICATION:

There have been several recent cases of sheared huck bolts in the outermost 2 feet of the steel spar cap in the Thrush wing. The process starts at the last row of hucks and progresses inboard. The last row of hucks are located at the wing station where the steel spar cap terminates. This is just inboard of the wing tie down fitting. The purpose of this bulletin is to replace all of the aluminum hucks in this critical area with steel fasteners.

BY WHOM WORK WILL
BE ACCOMPLISHED:

A & P mechanic or equivalent

ESTIMATED
MANHOURS:

10 Hours

APPROVAL:

Technical content is FAA approved.

COMPLIANCE:

This action is required at the next annual inspection, provided that the critical area (WS 116 7/8 to WS 193 3/8) is inspected and found to be free of any sign of damage.

- (1) Inspect immediately after receipt of this bulletin.
- (2) Then inspect every 100 hours of service until the next annual inspection, unless repaired sooner.

BACKGROUND:

Except for the Model S2R-T65, all other models manufactured prior to December 1991 were constructed with aluminum main spar webs and aluminum huck bolts

3/16 inch aluminum huck bolts (2LP-E-6-X) are rated at an ultimate shearing stress of 45,000 PSI. Over the years there have been random failures of these bolts along the span, due to small variances in hole quality, fastener quality, an condition of the driving tool. As long as these failures only occur in a very few fasteners at random points in the midspan, the problem is a fail safe occurrence. The very recent cases of progressive fastener failure from tip toward root is a catastrophic mode of failure and must be prevented from starting. This bulletin calls for replacement of the aluminum huck bolts in the outermost two feet of the steel spar cap with steel huck bolts (95,000 PSI shear) or NAS bolts (96,000 PSI shear). Moving inboard, this beefup stops at wing station 166 7/8 where the fastener pattern on each cap increases from 1 per inch to 1.5 per inch.

ACCOMPLISHMENT
INSTRUCTIONS:

I. Inspection

Inspect the forward and aft face of the front spar from the tie down fitting at W.S. 193 3/8 inboard to W.S. 166 7/8. Remove the

landing light and through its hole, inspect the aft face of the front spar for cracks in all metal parts. Check for loose huck bolts by looking for "smoking" or discoloration around the head or around the collar. Check for possible sheared huck bolts through the spar cap by trying to turn each fastener with pliers or a small vice grips.

If any damage appears in this area or if sheared huck bolts are found, accomplish section II below:

II. Repair

Replace the last outboard 13 vertical rows of aluminum huck bolts with NAS 1103 (steel) bolt or with steel huck bolts. The area to be replaced includes all huck bolts that appear in patterns of two, starting inboard at W.S. 166 7/8 rib and ending at the end of the spar cap, last row at W.S. 190 3/8.

This requires:

6 rows of NAS 1103-5 (or 6 rows of Huck 2LP-EU6-5)	24 bolts 24 bolts)
7 rows of NAS 1103-6 <u>(or 7 rows of Huck 2LP-EU6-6)</u>	28 bolts <u>28 bolts</u>
Total Per Wing	52 bolts
Total Per Aircraft	104 bolts

For NAS bolts, use AN 960 washers and MS 21042 nuts or equivalent. Use huck collars 6DC-EU6. Hardware is available thru Ayres Corporation dealers. Care should be exercised in the removal of the huck bolts to prevent damage to the holes in the spar web and the spar cap. It is important to maintain a tight fit for the replacement bolts.

RECORD ENTRY:

Make logbook entry. "Ayres Service Bulletin No. SB-AG-33 accomplished on _____ (Date) _____ by _____."