

Service Bulletin No. SB-AG-29
15 June 1992

WING SPAR CORROSION

MODELS AFFECTED: S2D, All Serial Numbers
S2R, S/N 5000-5099, S/N 1380R, 1416R thru
2583R
2R-R1340, S/N R1340-001 thru -030*
S2R-R3S, S/N R3S-001 thru R3S-011*
S2R-R1820, S/N R1820-001 thru 035*
S2R-T11, S/N T11-001 thru 005*
S2R-T15, S/N T15 (or T27) -001 thru -029 and
031*
S2R-T34, S/N 6000-6049, S/N T34 (or T41) -001
thru -178 and 180*
S2R-T45, S/N T45-001 and -003*
S2R-T65, S2RHG-T65, S/N T65-001 thru -010*
S2R-G6, S/N G6-101 thru -107*

* With or without DC suffix

REASON FOR
PUBLICATION:

As a result of an inflight failure of an S2R wing due to extensive corrosion, this bulletin has been written to provide: (1) for inspection of the wing front spar for corrosion damage and; (2) for accomplishing any repairs that are considered necessary.

COMPLIANCE:

For aircraft past the first annual inspection, this action is required within the next 100 hours of service or the next annual, whichever comes first. For all aircraft, this action is required at each annual inspection.

BY WHOM WORK WILL
BE ACCOMPLISHED:

A & P mechanic or equivalent

APPROVAL:

Technical content is FAA Approved

ACCOMPLISHMENT
INSTRUCTIONS:

I. Inspection of Front Spar

1. Remove existing inspection covers and cut additional inspection holes as illustrated in Figure 1. For these new openings, the necessary inspection covers, doublers and hardware can be obtained from your nearest dealer. When replacing the existing inspection covers, use 1/32 inch cork (or rudder) gaskets material glued to the cover plates with a good adhesive such as "3M1300". Precut gaskets are available from Ayres as P/N 20357-2 (oval) or P/N 10858-2 (round).
2. Visually inspect the front spar for corrosion from the centerline of the airplane to the wing tip. Use a good light and a mirror. Look for corrosion on the spar caps and on the spar web. (The majority of corrosion has been found on the aluminum spar web, occasionally under cracked paint and occasionally extending down under the spar cap.) Inspect the bead of PRC sealant that seals the interface (faying) surface between the steel spar caps (upper and lower) and the aluminum spar web. See Figure 2. This sealant is vital to prevent condensation and chemicals from getting in between the steel and aluminum parts. This is particularly important on the upper edge of the lower spar cap. No deterioration or cracking of this sealant should be permitted to continue.

Inspect all huck bolts for visible signs of corrosion or looseness such as "fretting" or discoloration around the base of the collar. If doubt exists, grasp the collar with a small vise grip and pull on it to see if the shank will break internally due to hidden corrosion damage.

NOTE

Properly clinched huck bolts can be rotated with moderate torque. This is a normal condition.

Inspect the condition of the coat of paint on the front face of the spar. No cracks or flakiness are permitted. Feel the paint for any sign of blisters that could hide pockets of corrosion under the paint. Particular care should be taken with this inspection: (1) Especially if corrosion exists or has been found in other places on the airframe (2) and

especially if the airplane if the airplane has been dispensing corrosion chemicals. (Corrosion damage that has been found in the field is largely a function of the particular chemicals used and the cleanliness of the operation. For instance, 10,000 hour airplanes with no corrosion have been examined, while 4,000 hour airplanes have been found with serious corrosion.)

Due to age, the zinc chromate putty on the center section splice fitting can shrink and provide traps for corrosion material. Remove this material and inspect. Do not replace it.

II. Repairs

1. Replacing Huck Bolts

Inboard of wing station 166, replace huck bolts with AN 3-6 bolts and AN 3-7 bolts. Outboard of W.S. 166, use only NAS 1103-5 and -6 bolts.

2. Repairing Corrosion Damage

A. Aluminum Spar Web

Corrosion chemical damage to the wing spar is usually greater on the aluminum spar web than on the steel spar cap. Corrosion may be removed, provided that:

- It is accessible for rework and does not run under other parts.
- It is spotty and it does not run in streaks longer than three inches, either vertically or horizontally.
- It does not exceed a depth of 1/32 inch.
- The damage is not such as to weaken any fastener pattern in either fastener shear or fastener tension.

All evidence of corrosion must be removed before refinishing is begun. Do not use steel wool, steel wire brush or emery cloth to remove corrosion because particles may break off and become embedded in the aluminum spar web and cause further corrosion.

Sand with wet or dry "Tri-M-Ite Pre-cut" which is made with aluminum oxide. "Scotchbrite Type A", (aluminum oxide) can also be used.

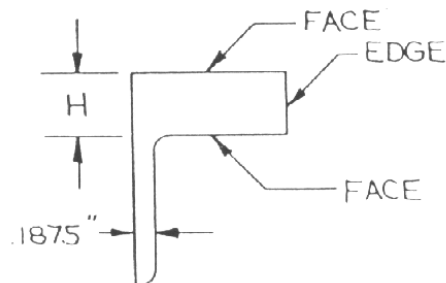
Sanding strokes should always be along the spar web in an inboard-outboard direction so that any minute scratches that may remain will not be across the spar web. Finish work should be done with Scotchbrite Type A, fine grit. The edges of the damaged area must be blended or faired out to the undamaged area.

Before proceeding with finish operations, examine closely, preferably with a 5-10 power glass, to be sure that all traces of corrosion have been removed. Any corrosion that remain will soon break out again.

- Clean and rinse with cold water. Dry thoroughly.
- Prime with zinc chromate (or equivalent) and then apply any good aircraft quality finish coat.

B. Steel Spar Caps

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For the first 26 inches of spar cap inside of fuselage area, take pictures of the damage and send them to the factory service department for advice.

For the remainder of the spar cap (outside the fuselage area), up to 1/16" may be removed from either (not both) face or 1/8" from the edge. This is provided that dimension H does not become less than 23/32" (.719 inch) after removal of material.

Note that material removal may be locally deeper than specified above, provided that it does not average more than specified across the spar cap section.

It is acceptable to remove 1/32 from the face of the .1875 leg in any area over the length of the spar cap. Up to 1/16" may be removed in area of less than two square inches.

All evidence of corrosion must be removed before refinishing is begun. Steel wool, steel wire brush, or emery cloth may be used on the steel spar cap only. Sanding strokes should always be along the spar in an inboard-outboard direction so that any minute scratches that may remain will not be across the spar cap. Finish work should be done with a very fine grit paper. The edges of the damaged area must be blended or faired out to the undamaged area.

Before proceeding with finish operations, examine closely with a magnifying glass, to be sure that all traces of corrosion have been removed. Any corrosion that remains will soon break out again.

- * Clean and prime with zinc chromate or the primer recommended to be used under the finish coat.
- * Paint with a aircraft quality finish coat.

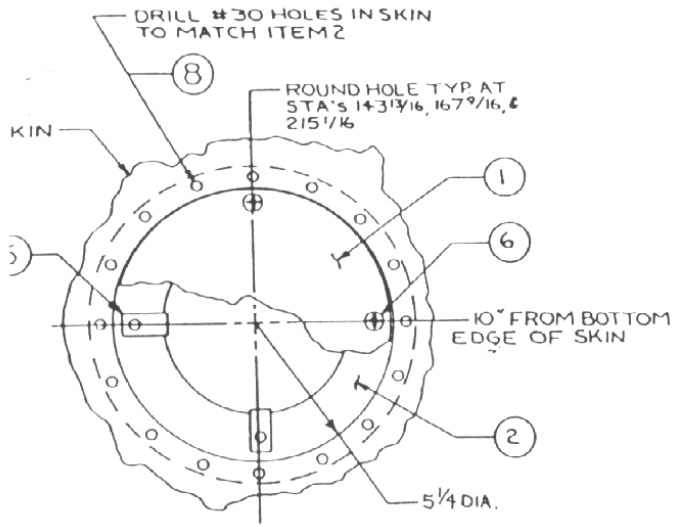
C. Corrosion Between the Steel Spar Caps and the Aluminum Web

If corrosion is seen to run into the interface between these parts or is even suspected to exist in this area, the spar caps must be removed from the web. Consult the factory for advice in this case.

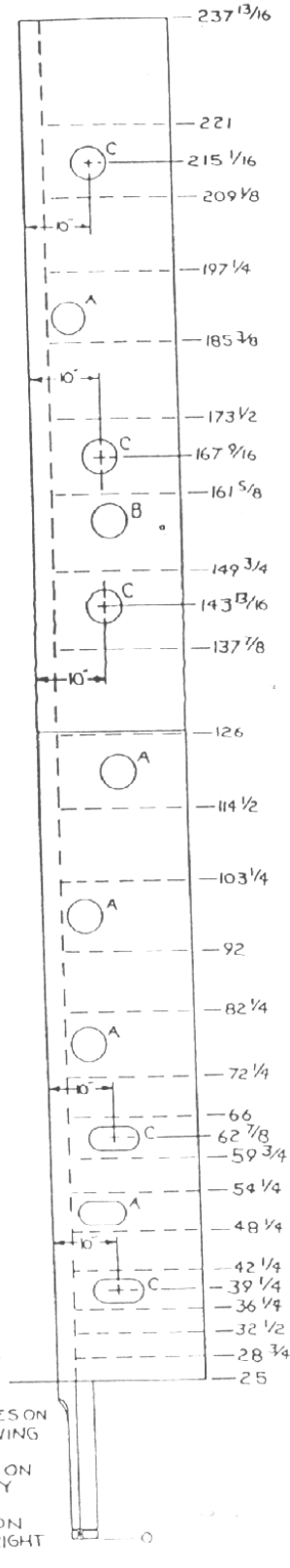
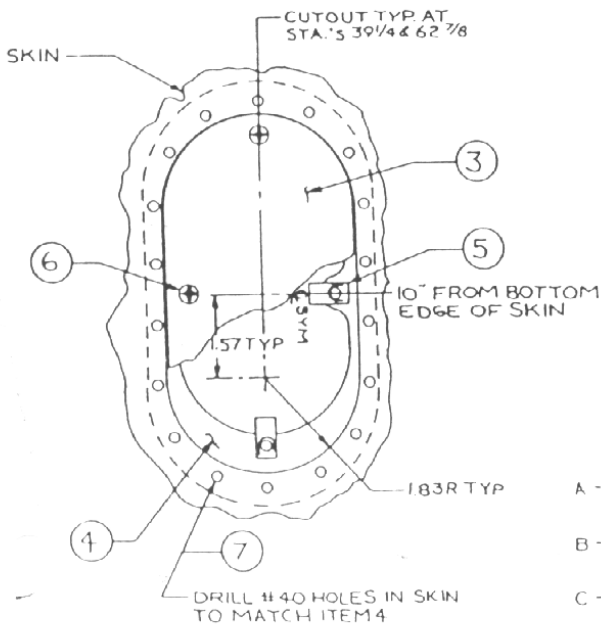
RECORD ENTRY: For the initial inspection and annually thereafter, make an entry in aircraft records as follow:

Service Bulletin No. SB-AG-29 dated _____ entitles "Wing Spar Corrosion" accomplished _____ dated _____,
By _____.

FIGURE 1
INSPECTION HOLES

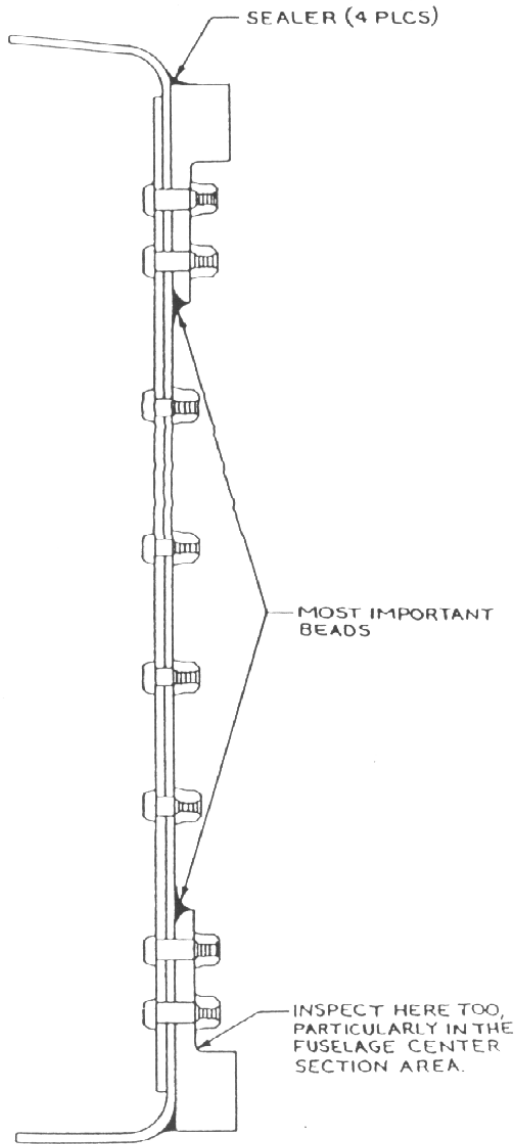


PARTS LIST PER HOLE				
ROUND	OVAL	PART NO.	DESCRIPTION	ITEM
1	-	10858-3	COVER PLATE ASS'Y	1
1	-	10857-1	DOUBLER	2
-	1	20357-3	COVER PLATE ASS'Y	3
-	1	20356-1	DOUBLER	4
-	4	SL 21308 1	NUTCLIP	5
4	4	MS 35206-243	SCREW	6
-	18	MS 20470 AD3	RIVET	7
16	-	MS 20470 AD4	RIVET	8



- A - EXISTING HOLES ON LEFT & RIGHT WING
- B - EXISTING HOLE ON LEFT WING ONLY
- C - NEW HOLES ON BOTH LEFT & RIGHT WING

FIGURE 2



NOTE:
SEE PAGE 3 FOR SUBSTITUTE
FASTENERS IF HUCK BOLTS
HAVE TO BE REPLACED