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Service Bulletin No. SB-AG-21

09-21-88

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This Bulletin affects only those airplanes that have been equipped with Ayres metal empennage (P/N 40220) at the factory or through field installation of Custom Kit 407.

METAL FIN SPAR REINFORCEMENT

MODELS AFFECTED:	<u>Model</u>	<u>Serial Numbers</u>
	S2R	2426R, 2443R, 2529R, 2580R, 2581R, 2582R
	S2R-T15	T15-007, -020DC, -021DC
	S2R-T34	6038, T34-091DC, 092DC, 093, 094DC-103DC, 104-109, T41-090DC
	S2R-R1820	R1820-021DC
	S2R-R1340	R1340-011, -012
	S2R-T65	T65-001DC
	S2RHG-T65	T65-002DC thru -008DC

THIS BULLETIN ALSO AFFECTS THE FOLLOWING CUSTOM KITS THAT HAVE BEEN SHIPPED FROM THE FACTORY BUT ARE NOT YET ASSIGNED TO OR INSTALLED ON SPECIFIC AIRPLANES:

KIT NUMBERS

61101
61125
61664

61785
61941

DEALERS

Johnston Aircraft Service
P.O. Box 1457
Tulare, CA 93275

Custom Farms
P.O. Box 338
Stanfield, AZ 85272

61794 Abide Aero
P.O. Box 5755
Greenville, MS 38701

61831 R & M (Australia)
61832 P.O. Box 520
61833 New South Wales,
Port McQuarie, Australia

REASON FOR PUBLICATION: TO PREVENT THE POSSIBILITY OF FATIGUE CRACKS FORMING IN THE TOP OF THE FIN REAR SPAR IN THE AREA JUST ABOVE THE UPPER RUDDER HINGE BRACKET.

COMPLIANCE: WITHIN THE NEXT 50 HOURS OF FLIGHT PROVIDED THE AREA IN QUESTION IS INSPECTED PRIOR TO EACH FLIGHT. THIS PREFLIGHT INSPECTION MUST BE CONTINUED UNTIL SB-AG-21 IS ACCOMPLISHED. SEE FIGURE "A" FOR AN ILLUSTRATION OF THE AREA TO BE INSPECTED. IF ANY CRACKS ARE FOUND, ACCOMPLISH THIS SERVICE BULLETIN PRIOR TO NEXT FLIGHT.

BY WHOM WORK WILL BE ACCOMPLISHED: AIRFRAME MECHANIC

APPROVAL: FAA APPROVED

ESTIMATED MAN HOURS: 10 HOURS

SPECIAL TOOLS: NONE

GENERAL DESCRIPTION:

This modification replaces the rear spar of the vertical fin with a new spar featuring a steel bracket that reinforces the upper end of the spar. The steel bracket also reinforces the attachment of the spar to the skin and to the upper rib.

ACCOMPLISHMENT INSTRUCTIONS:

- Remove the rudder from the aircraft.
- Remove the vertical fin from the aircraft.
- Drill out all of the rivets that attach the rear spar of the vertical fin to the remaining structure. (These rivets are marked 0 in Figure "B".) (All rivets are 1/8 inch diameter.)

- Remove the rear spar from the fin.
- In addition, on one side of the fin only, drill out the rivets marked in Figure B. This will allow the skin on one side only to be peeled back. (All rivets are 1/8 inch diameter.)
- Drill out the attaching rivets, remove and discard the two clips, P/N 40285-1 and P/N 40267-1. These clips attach the center rib and the lower rib to the spar. The replacement spar comes with new clips attached.
- Using existing holes, cleco the replacement spar assembly, P/N 40261-23 into position in the fin. Insure good alignment. Include cleco's through the two rib clips.
- Working through the opening caused by peeling back the side skin, backdrill outward through the new steel bracket, P/N 40268-4, to locate the (9) new holes in the opposite side skin. Also backdrill outward to locate the (7) new holes in the upper rib. Use a No. 30 drill for all holes. (See figure C for illustration of the new holes.)
- Lay the peeled skin back down and use 1 1/8 inch hole finder to drill (inward) the (9) new holes in the peeled skin. Use a No. 30 drill for all holes.
- Drilling inward, Line Drill No. 30 through existing holes in the skin into new spar flange. (18 holes per side). Also drill inward through the existing holes in the skin and upper rib that provided connection to the bracket that is being replaced. Also, drill 3 additional holes through the upper rib into the steel bracket. Midspace these holes between the new 4 hole pattern and the existing 3 hole pattern. These holes are part of the pattern that is illustrated in Figure "C" and labeled "New rivet locations, added 7 places.
- Working through the peeled back skin, use common rivets (AD4-3's, -4's and -5's) to fasten the spar assembly to the opposite skin and to the upper rib. (-3's go through the steel bracket. -4's go through the upper rib. -4's and 5-'s go through the spar flange.)
- Working through the peeled back skin, use AD 4-3's to attach the new rib clips to the center rib and to the lower rib. The hole patterns through the new parts and the old parts should match.

- Close out the assembly using 1/8" cherry max blind rivets through the rib flanges and through the steel brackets. Use –2 cherrys through the rib flanges. Use –3 cherrys through the steel bracket. Use AD4-4 and AD4-5 common rivets through the spar flange.

PAIN T AND RE ASSEMBLY

Paint the new parts as desired to match the aircraft color. Reassemble the fin and rudder to the aircraft.

PARTS LIST

<u>QTY</u>	<u>P/N</u>	<u>DESCRIPTION</u>
1	40261-23	Spar Assembly-fin Rear
36	MS20470AD4-3	Universal Head Common Rivets
42	MS20470AD4-4	Universal Head Common Rivets
24	MS20470AD4-5	Universal Head Common Rivets
24	C3243-4-2	Cherry Max Blind Rivets
15	C3243-4-3	Cherry Max Blind Rivets

RECORD COMPLIANCE:

Make appropriate entry in aircraft records as follows: Service Bulletin No. SB-AG-21 dated 09-21-88, entitled "Metal Tail Fin Reinforcement" accomplished _____ (date) _____.

By _____.

Fill out compliance card and return to Ayres Corporation

FIGURE A

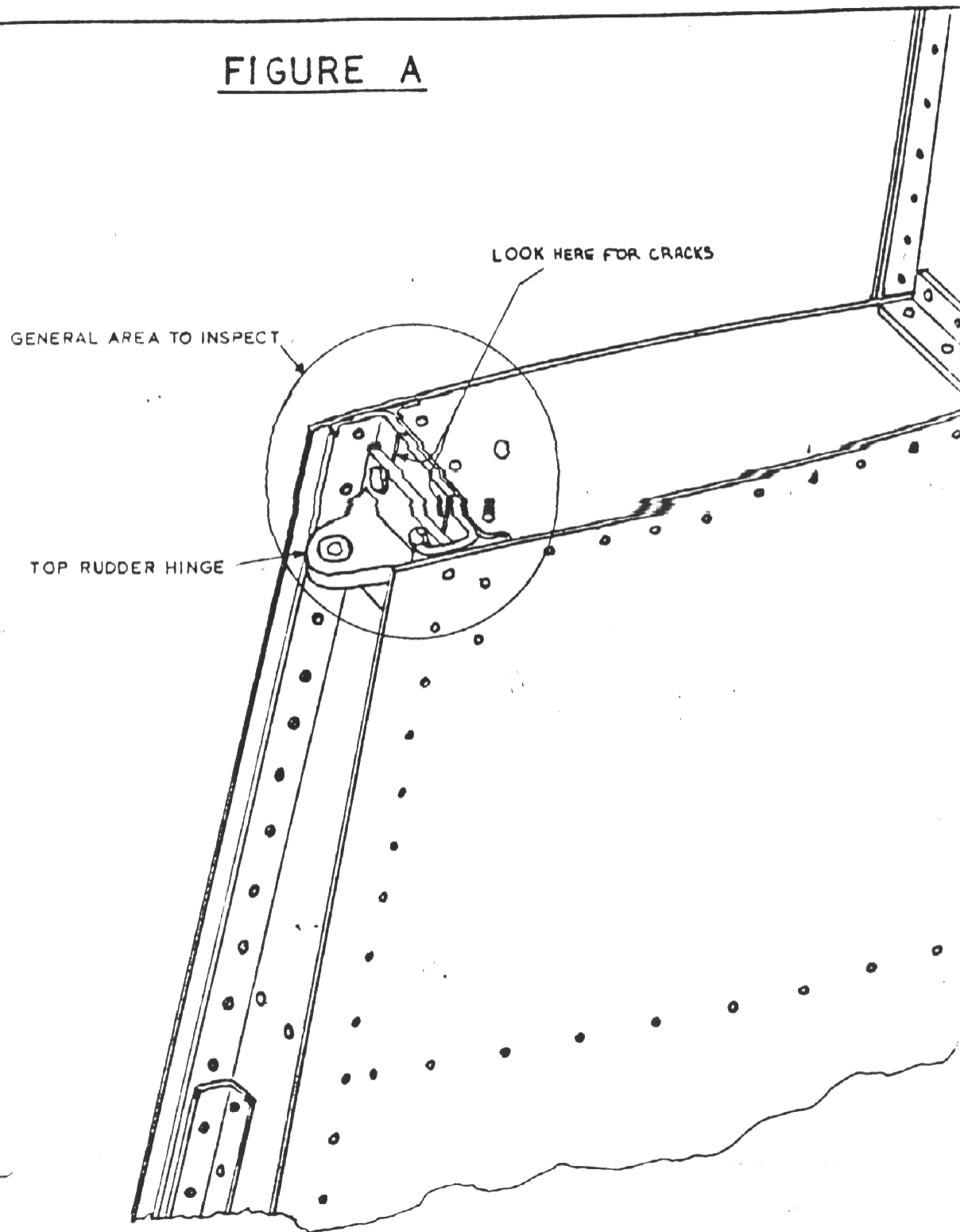


FIGURE B

- TO REMOVE SPAR ASSY
- △ TO PEEL SKIN BACK TO INSTALL NEW SPAR

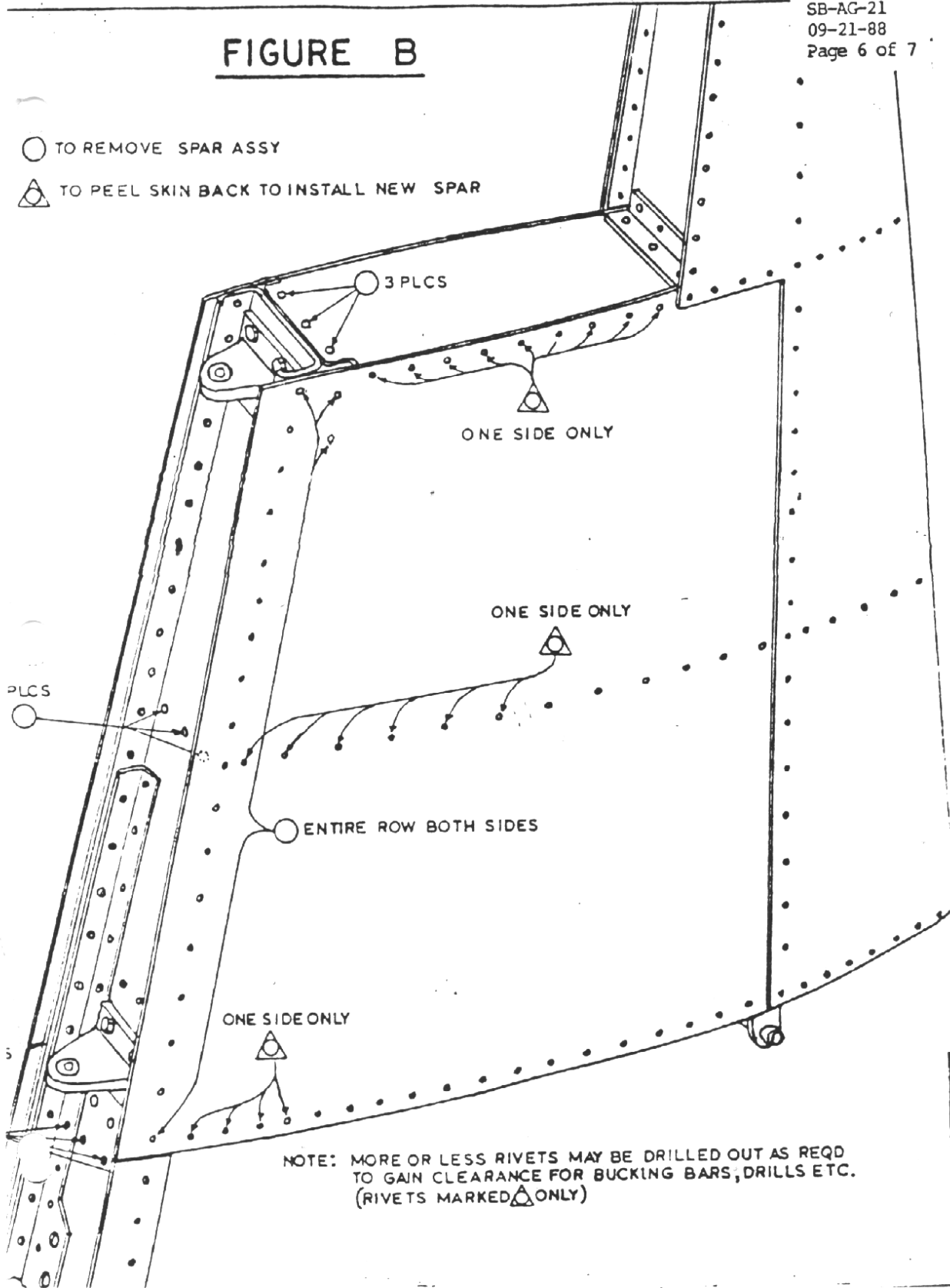


FIGURE C

