Ayres Corporation service bulletin **No. SB-AG-31**

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MAIN LANDING GEAR SHOCK STRUT INSPECTION AND REPAIR

MODELS AFFECTED:	MODEL	SERIAL NUMBERS
All models listed, including any serial number listed ending in DC (Dual Cockpit)	S2R	1416R thru 2583 R
	S2R-R3S	R3S-001 thru R3S-011
	S2R-R1340	R1340-001 thru R1340-020
	S2R-R1820	R1820-001 thru R1820-034
	S2R-T11	T11-001 thru T11-005
	S2R-T15/27	T15/27-001 thru T15/27-029; 031
	S2R-T34/41	T34/41-001 thru T34/41-180
	S2R-T45	T45-002
	S2R-T65	T65-001, T65-010
	S2RHGT65	HGT65-002 thru HGT65-009
	S2RG6	G6-101 thru G6-108

REASON FOR PUBLICATION:	Recent failure of two shock strut assemblies experienced by two separate operators, under similar circumstances. Also possible pending failures on other aircraft in the fleet of one operator reporting the failure.
COMPLIANCE:	Visual inspection prior to next flight. If no crack is found, modification within next 100 hours.
BY WHOM WORK WILL BE ACCOMPLISHED:	A & P mechanic or equivalent
APPROVAL:	FAA Approved
ESTIMATED MAN HOURS FOR INSPECTION:	30 Minutes
ESTIMATED MAN HOURS FOR MODIFICATION:	4 Hours

SPECIAL TOOLS: Aircraft jacks, welding equipment

BACKGROUND: Two operators experienced strut failure while maneuvering onto the loading pad to take on chemicals. Both aircraft had landed empty from a previous flight, and were making a tight right turn (braked right wheel) using power to blast the tail around when the left strut pulled apart at the top. This resulted in the left wing dropping onto the pad, and a propeller strike. The second operator's aircraft was carrying sufficient power to twist the engine case when the propeller hit the pad.

Subsequent investigation revealed that the rosette welds had been cracked, allowing all tensile loads to be carried by a small wall section of the outer tube, which tore away. This left the shock strut bolted to the gear at the bottom, and the steel inner plug still attached at the top with a small portion of the shock strut tube hanging on around the bolt.

ACCOMPLISHMENT INSTRUCTIONS: Remove skin panels necessary to gain access to the shock struts. Wipe clean the top section of the strut on front and back sides. The rosettes are located two inches below the upper attach bolt, one in front, one in back. The upper strut attach fork appears to be machined from solid 1 ½ inch steel rod, but is actually 1 ½ inch steel tube with a steel plug extending 3 3/8 inches into the bore of the tube, with rosettes welds in a 3/8 diameter hole to attach the plug in the tube. The plug is also welded to the tube, in two semicircular sections, at the top. Inspect the top welds and rosettes for evidence of a crack. If none exists, the operator may continue to operate for up to 100 hours from the time of the inspection.

Compliance is mandatory within 100 hours of the initial inspection.

MODIFICATION METHOD:

The factory redesign to strengthen the strut was to add four each additional rosette welds, tube-to-plug. One new set is 90 degrees to the existing, with 3/8 holes in the tube. Another set is in the same plane as the existing original rosettes, one inch above them. All aircraft subsequent to the serial numbers on page one of this service bulletin will have this configuration. This upper tube assembly (new) part number is 50116-27 and is available from the factory as a method of compliance, if installed in the shock strut assembly.

The part number of the complete shock strut assembly with the strengthened upper tube assembly is 50116-28 and is available from the factory.

RECORD COMPLIANCE:

Make appropriate entry in Aircraft Maintenance Records.

Example 1:

Ayres Corporation Service Bulletin Number SB-AG-31 complied with on _____(Date)____ and no cracks were found in either shock strut assembly. Total time now _____.

_____

Signature Title Date

Example 2:

Ayres Corporation Service Bulletin Number SB-AG-31 complied with on _____(Date)____ and modified in accordance with instructions by modifying existing struts (or) replacing with new parts no. 50116-xx.

_____

Signature Title Date