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**SL-GA8-2022-42**  
Issue 1

# Service Letter

## Subject:

On ground and in-flight Symmetry Check

## Applicability:

This Service Letter is the recommended means of correctly rigging GA8 and GA8-TC 320 model serial numbers that have undergone partial or complete reassembly, such as after transportation, a major repair, or had modifications embodied that affect the external geometry and therefore aerodynamic characteristics or any instance the flight crew report difficulty in achieving balanced flight. Proper completion of this procedure in these situations ensures optimum aircraft operation, efficiency, and safety.

## Amendments:

Issue 1: Initial issue. Refer to GAE12#2775.

## Background:

This Service Letter is intended to provide guidance on confirming the aircraft adheres to type design after any situation that required the re-installation of major assemblies, such as the wings and/or stabilisers, due to the transportation of the aircraft or subsequent to a major repair (see paragraph (b) of Appendix A to Part 43 of the FARs or equivalent). Additionally this Service Letter may be utilised if a modification has introduced a significant protuberance into the airflow or a number of smaller modifications to the external geometry have accumulated over time, such as numerous antennae, or any instance the flight crew report difficulty in achieving balanced flight.

## Instructions:

Before flight carry out the following steps;

Description	Initial	Date
<p>For aircraft that have been fitted at the factory with a rear spar cam adjuster detailed in the Service Manual section 57-10-10 "Wing Rigging" (aircraft serial numbers GA8-04-054 onwards or aircraft incorporating SB-GA8-2004-12).</p> <p>For new or factory refurbished aircraft; ensure the rear spar cam adjuster is set to the factory marked position.</p> <p style="text-align: center;"><b>NOTE:</b></p> <p style="text-align: center;"><i>For aircraft not fitted with a rear spar cam adjuster, refer to Service Bulletin SB-GA8-2004-12 for installation of rear spar adjusting bushes.</i></p>		
<p>For aircraft fitted with a fixed rudder tab (aircraft serial numbers GA8-05-070 onwards or aircraft incorporating SB-GA8-2005-22 or SB-GA8-2016-166);</p> <p>Ensure the fixed rudder tab is set to approximately 15 (+/- 1) degrees to port.</p>		

<b><u>NOTE:</u></b>		
<i>For aircraft not fitted with a rudder trim tab, refer to Service Bulletin SB-GA8-2005-22, or SB-GA8-2016-166 for rudder tab installation and adjustment.</i>		
<p>Friction Check of Rudder / Nose Wheel Steering Circuit;</p> <p>Raise Nose Wheel from ground in accordance with Service Manual Chapter 7 and rotate by hand using the sides of the Nose Wheel Fork through the full range of movement from the left to right stop. This should only require approximately 1 lb (0.5 kg) of load to achieve rotation.</p> <p>If this system exhibits additional resistance these must be identified and removed. Potential sources of friction include;</p> <ul style="list-style-type: none"> <li>(a) Nose Gear support assembly bearings – Clean and lubricate</li> <li>(b) Between steering pushrods and spherical bushes in firewall penetrations – Lubricate</li> <li>(c) Sliding plates on firewall that mount the spherical bushes – Apply dry silicone lubricant</li> <li>(d) Bearing blocks for the rudder pedal torque tubes – Clean and lubricate</li> <li>(e) Rudder cable tension – Check correct tension as per Service Manual section 27-20-50. Set to mid or low end of range considering variation with temperature (refer to FAA AC 43.13-1B section 7). Minimum friction allows the rudder to aerodynamically centre during flight which is vital for this symmetry check.</li> </ul>		
Ensure correct alignment of Nose Wheel which should be parallel to aircraft centreline when the rudder pedals are centred and the rudder trailing edge must align with the vertical stabiliser trailing edge.		
<p>Skid/Slip Indication Check;</p> <p>Apply a long spirit level across a clear section of the cabin floor free of any protrusions. Adjust aircraft laterally until level, this can be achieved by jacking the aircraft as per the Service Manual section 7-10-00 or deflating a main wheel tyre (ensure tyre is re-inflated to correct pressure before returning the aircraft to service). Once aircraft is laterally level; observe the skid ball in the turn co-ordinator or equivalent indicator in the Electronic Flight Instrument System (EFIS) is centred. If not adjust the mounting screws of the skid ball or follow the EFIS manufacturers instructions until centre is achieved.</p>		
<p>Fuel Balance Check;</p> <p>While the aircraft is laterally level; it is essential that there is an equal amount of fuel in the right and left wing tanks for conducting the flight check. Verify fuel quantities manually using a calibrated dipstick and add fuel as required to achieve equal quantities.</p>		

<p><b>Flap and Aileron Rigging Check;</b></p> <p>Verify the flap and aileron are rigged correctly in accordance with Service Manual sections 27-50-15 and 27-10-70 respectively. Confirm the flap and aileron are set to their zero positions. Place the flap lever in the flaps up position (lever down) and ensure the flap surfaces are against the up-stop in the trailing edge of the wing. Place the control wheel in the neutral position (the lower edge of the control wheel parallel to the lower edge of the instrument panel). Apply a straight edge to the underside of the wing from the front spar to the trailing edge at the outboard end of the flap and the inboard end of the aileron. The mean gap from the straight edge to the lower surface of the flap and aileron must be constant along the chord.</p> <p>The up position of each flap is independently adjustable via the eccentric up-stop located inside each wing at the actuating arm position. It has occurred that the flap up-stop has moved slightly from its set position.</p> <p>The aileron system must be free of any noticeable friction and almost nil backlash or freeplay when rotating the control wheel. There are separate closed loops in the aileron circuit. Firstly, the control wheel actuating sprocket chain is connected through turnbarrels to the lower section cable that routes around the quadrant and lower actuating arm. In the neutral position the lower actuating arm must be pointing vertical downwards. The threads on these turnbarrels are quite coarse and to achieve the correct tension and rigging adjustment it is only necessary to turn one end of the input to the barrel by a small increment. Secondly, the left and right aileron cables that route into each wing and connect to the bellcrank must be correctly positioned and tensioned using the turnbarrel in the left and right cabin wall and the balance cable that routes along the wing and through the upper cabin which connects the bellcranks must also be correctly positioned and tensioned using the turnbarrel in the roof. Set aileron cable tensions to mid or low end of range considering variation with temperature (refer to FAA AC 43.13-1B section 7). Minimum friction allows the ailerons to aerodynamically stream during flight which is vital for this symmetry check.</p>			
<p>Conduct independent inspections by appropriately licenced personnel of any affected components of the flight control systems for correct assembly, rigging, safetying, full and free movement in the correct sense;</p>			
<p><b>First inspection</b></p>	<p><b>Signature</b></p>	<p><b>Authority Number</b></p>	<p><b>Date</b></p>
<p><b>Second inspection</b></p>	<p><b>Signature</b></p>	<p><b>Authority Number</b></p>	<p><b>Date</b></p>

Perform these steps during flight, as indicated;

Description	Initial	Date
<p>During taxi, check aircraft tracks straight with pedals centred.</p> <p style="text-align: center;">Left turn / OK / Right turn</p>		
<p>During check flight, observe all systems for normal operation.</p> <p style="text-align: center;">OK / See Remarks</p>		
<p>Establish steady, straight, and level flight by setting the pitch trim at a safe altitude above ground level in an area clear of traffic, and <u>in smooth air</u>. Set power to approximately 75% (GA8 – 23 in. Hg MAP and 2250 RPM or GA8-TC 320 – 30 in. Hg MAP and 2250 RPM) and autopilot (if fitted) OFF.</p>		
<p>Hold the skid ball central throughout this manoeuvre using pressure on the rudder pedals and when stabilised; gently feel, by applying slight left and right rotation of the control wheel, the aerodynamically centralised position of the ailerons. Once the ailerons are centralised release the control wheel with the skid ball held central and note if the aircraft tends to roll right or left. Repeat several times to ensure consistent results are achieved.</p> <p style="text-align: center;">Left Roll / OK / Right Roll</p>		
<p>If a consistent roll is observed discontinue the flight and while on ground conduct the wing incidence adjusting cam alteration in accordance with the Service Manual section 57-10-10 on “Wing Rigging”. A crows foot type spanner for securing the nut is recommended to ensure ease of operation and adequate torquing of the rear spar cam adjuster in the set position.</p> <p>Lowering the left wing trailing edge will create a right roll and hence correct a left roll situation, and raising the left wing trailing edge will create a left roll and hence correct a right roll situation. In piloting terms, lowering the left wing trailing edge has the same effect as turning the control wheel to the right and vice-versa.</p> <p>Repeat the above steps until no rolling motion is observed.</p>		
<p>During the flight condition stipulated above, and once any rolling tendency is rectified, the aircraft is to be stabilised with the skid ball central and wings level; remove feet from the rudder pedals and observe any tendency to yaw right or left. Repeat several times to ensure consistent results are achieved.</p> <p style="text-align: center;">Left Yaw / OK / Right Yaw</p>		
<p>If a consistent yaw is observed discontinue the flight and while on ground perform an adjustment to the fixed rudder tab.</p> <p>For a right yaw adjust the trailing edge of the rudder tab to starboard and for left yaw adjust the trailing edge of the tab to port. In piloting terms; adjusting the trailing edge of the tab to starboard has the same effect as pressing the left rudder pedal and vice-versa. Large adjustments are extremely unusual and typically indicate an underlying problem with the wing rigging or uneven fuel quantities in the left and right wing tanks. Refer to Fuel Balance Check and Flap and Aileron Rigging Check from previous section.</p>		

<p style="text-align: center;"><b><u>NOTE:</u></b></p> <p style="text-align: center;"><i>Great care must be exercised when adjusting the fixed rudder tab. It is recommended that 2 pieces straight wood strips are C clamped to the tab and apply gentle loading as required being careful not to overstress the rivets through the .016" thin rudder skin.</i></p> <p style="text-align: center;"><b><u>NOTE:</u></b></p> <p style="text-align: center;"><i>The GA8 is equipped with a ground-adjustable tab on the rudder and a fixed (non-adjustable) trim tab on the elevator. No other tabs are approved or required to achieve proper rigging.</i></p> <p style="text-align: center;"><b><u>NOTE:</u></b></p> <p style="text-align: center;"><i>The GA8 has excellent handling and is a stable flight platform. When properly rigged, all GA8's are capable of flying "hands and feet off" much of the time. If the aircraft handling does not meet these criteria after completing the above rigging procedure then further investigation is required and the factory or local representative must be contacted for assistance.</i></p>		
<p>REMARKS:</p>		

**Support:**

Should you require any further information or assistance please contact our Customer Support Department for direction to the appropriate person:

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