



# Interagency Aviation Safety Alert



No. IA 08-09

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**Subject:** 4-Point Seatbelt Harnesses

**Area of Concern:** All Aircraft Operations

**Distribution:** All Aircraft Users

**Discussion:** SAFECOMs have been received that address the issue of improperly worn seat restraints and passengers being rushed when entering an aircraft and not being allowed time to ensure that their seat restraint system is properly fitted. The purpose of this Safety Alert is to reinforce the proper use of a 4-point seat restraint. While 4-point seatbelts are more complicated to adjust, if worn properly, they do offer excellent protection in the event of a mishap.

The following information is taken from FAA Safety brochure AM-400-90/2 Seat Belts and Shoulder Harnesses:

FAA regulations (91.105 and 91.107) require that safety belts and shoulder harnesses (when installed) be properly worn during landings and takeoffs. If the restraint is not worn properly, it cannot provide full benefits and can even cause injury in a serious impact.

Tests have shown that slack in the seat restraint system should be minimal. In an impact, your body keeps moving until the slack is taken out of the seat restraint, but then must be abruptly stopped to "catch up" with the aircraft. The seat restraint should be adjusted as tightly as your comfort will permit to minimize potential

The safety belt should be placed low on your hip bones so that belt loads will be taken by the strong skeleton of your body. If the safety belt is improperly positioned on your abdomen, it can cause internal injuries. If the safety belt is positioned on your thighs, rather than the hip bones, it cannot effectively limit your body's forward motion (Figure 1).

Be sure that the safety belt is installed so that when the buckle is unlatched, both the safety belt and the shoulder harness are released. Also, be sure that the buckle can be unlatched without interference from the seat armrest, aircraft controls, or the interior wall of the aircraft.



Figure 1 - Seat Belt correctly fastened

If the shoulder harness uses dual belts fastened to the safety belt near the center of your body, the shoulder belts will tend to pull the safety belt up off your hip bones. This could cause internal injuries in a mishap (Figure 2). Otherwise, a tie-down strap from the buckle to the center-forward edge of the seat may be necessary to resist the upward pull of the shoulder belts.

If your seat restraint system uses a tie-down strap, adjust it to remove all the slack when the restraint system is used. A properly installed and adjusted tie-down strap is completely safe.

When it is tightened about your hips, the safety belt should be positioned so that it makes an angle of about 55 degrees with the centerline of the aircraft. This allows it to resist the upward pull of the shoulder belts, reducing the risk of internal injury (Figure 3).

The rotary buckle may be difficult to release if it is not fitted correctly (Figure 4).



Figure 2 - Incorrectly fastened. This will not provide adequate protection in the event of a mishap.



Figure 4 - Incorrectly fastened. The whole center section turns, not just the release. This may delay egress.



Figure 3 - The safety belt should be positioned so that it makes an angle of about 55 degrees with the centerline of the aircraft.

For more information on seatbelt safety, and proper use, review the IHOG Chapter 9, page 11 and visit the FAA website at: [http://www.faa.gov/pilots/safety/pilotsafetybrochures/media/seatbelt\\_web2.pdf](http://www.faa.gov/pilots/safety/pilotsafetybrochures/media/seatbelt_web2.pdf)

**Recommendations:**

- As a passenger, you are responsible to ensure that your restraint system fits properly. If you are not familiar with the seat restraint system, ask for assistance. Do not allow yourself to be rushed. Your safety depends on a proper fit.
- Helitack crews - provide assistance and **ensure that four-point harnesses are properly adjusted for all passengers** prior to lift off.
- Fixed-wing pilots, fixed-wing flight managers and aircrew members - ensure that you, and any passengers aboard the aircraft, are wearing their seat belt and shoulder harness correctly.
- Be aware of potential difficulty in the operation of four point harness buckles while wearing work gloves.

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