

OPC

Occupant Protection Capsule

Overview

Designed as a touring aircraft, Jabiru designed their aircraft with an Occupant Protection Capsule: very specifically to protect the pilot and passenger from significant impact.

The OPC includes the strongbox that runs from the structural multi-laminated firewall aft to the rear cabin, center console and side mounted controls to prevent contact with the body (a yoke or seat center mounted stick often contacts the abdomen in a forward impact) and a high wing with pop-through doors allowing egress in the event of a rollover. History has proven Jabiru to be one of the safest Light Sport aircraft produced.

Development and Results

Early in development one of our pre-production aircraft had a crash landing at full power and high speed. Casualties were a horse (deceased) a fence and a minor injury to one of the two occupants.

For our certification, the crashworthiness report was still open. This was an expensive exercise but proved invaluable in supporting our crashworthiness justification. The pilot capsule was intact, undercarriage had not penetrated the cabin and the fuel system had not ruptured. Controls were all carefully placed not to puncture people. All simple stuff and very important in a crash.

Over 30 years and 2,000 aircraft later,
crashworthiness is still our major consideration for all new models and updates.

Why high wing? This is a very good question.

Low wing is easier to design and build with the wing spar, occupant load, undercarriage and fuel load all concentrated in close proximity. Fuselage longitudinal beams, integrated with the strongbox, connect the fire wall to the tail feathers and easily carry the manoeuvre loads. Structural test completed: tick all the boxes. A streamlined screen and canopy enhance the slick lines.

Now what about crashworthiness. Upside down in a paddock, how do I get out? What's protecting my head?

The high wing configuration must have a substantial structure to carry the wing loads to the firewall and to support the occupant load, fuel load, undercarriage and manoeuvre loads. This results in a strong structure around the occupants. Doors are necessary for side entry and usually open in a crash.

High wing aircraft are typically more stable as the wing lift is above the mass centre. This causes a pendulum effect which tends to keep the aircraft flying level.

The J230D is designed to FAA accepted ASTM standards and CASA accepted ASTM standards for Light Sport Aircraft CASR Subpart 21.H.

