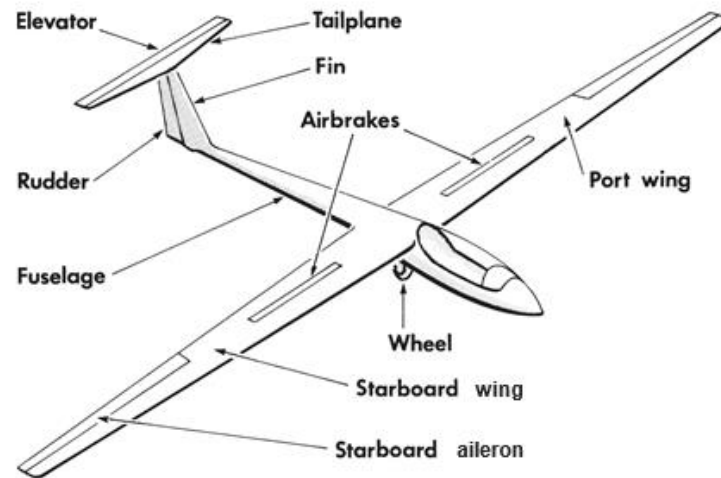


THE GLIDER AND ITS COMPONENTS



As shown above, a glider consists of the following principal components:

The fuselage - This is built as one unit: it may be either a wooden framework covered with plywood and fabric, a steel-tube framework covered with fabric and fibreglass fairings or made almost entirely of metal or glass-reinforced plastic (GRP). It includes the cockpit where the pilot sits. Two launching hooks may be fitted, one at the front end of the fuselage (the nose) for aerotowing and a second aft hook fitted under the fuselage, usually beneath the pilot seat, for winch launching.

The wings - Each wing (port and starboard) is detachable from the fuselage for convenience in transporting. The wings are of "cantilever" construction, that is without any external struts; old (Vintage) gliders will have struts to brace them. The structure consists of one or two "spars" and a framework of "ribs", covered with plywood and fabric or metal. The wing of modern gliders is made of GRP. The part of the wing joining the fuselage is known as the "root" and the extreme end as the "tip". The aileron control surfaces are built into the rear or "trailing" edge of the wings near the tips. The wings may also contain airbrakes or spoilers and, possibly, flaps; these are subsidiary controls which will be referred to later.

The tail unit - This consists of the tailplane, elevator, the fin and rudder. The fin is normally built into the fuselage, and the rudder is hinged to it. The tailplane (the fixed horizontal surface) and the elevator hinged to it is mounted either at the base or the top of the fin and is detachable. The material used in the construction of these components will usually be the same as the wings.

The main controls - The control surfaces are operated from the cockpit by means of the "control column" or "stick" and the rudder pedals. The stick is arranged to come between the pilot's knees. Movement from side to side operates the ailerons. Movement backward and forward operates the elevator.

The pilot's feet rest on the rudder pedals; forward pressure with one foot or the other operates the rudder.

Auxiliary controls - The cockpit also contains the controls for releasing the launching cable, operating the airbrakes and elevator trimmer, and operating the wheel brake; in high performance gliders there may also be controls for flaps and wheel retraction.

The undercarriage – Most training gliders have a non-retractable main wheel and small wheels in the nose and rear of the fuselage. Older gliders usually have a main wheel and a skid extending from the nose to the wheel. The configuration depends on whether the glider is nose- or tail-heavy when the pilot (or pilots) are sitting in it.

The instruments - A brief description of the instruments usually carried in a glider is given later in this series. It's worth mentioning here that the Air Speed Indicator (ASI) indicates knots, and the altimeter gives the height in feet. The variometer (or 'vario') which shows us how quickly the glider is ascending or descending may be found calibrated in feet per second, metres per second, or most commonly in knots. A knot is one nautical mile per hour, and a nautical mile is approximately 6,000 feet; a glider climbing at 1kt is climbing at approximately 100 feet per minute.



A typical instrument panel in a training glider

Top row from left to right Air Speed Indicator, electric variometer (switched off) and another variometer (showing 6kts of climb). Bottom left is the altimeter showing just under 1000 ft. The instrument at the bottom is a 'g' meter used during aerobatic training. You can just see a compass at the very top of the panel.