TEST FLYING THE SISU I SAILPLANE

by RICHARD H. JOHNSON

The Sisu I has the appearance of a very high performance sailplane despite its modest 50 ft. wingspan. A close inspection of its surfaces reveals that it has absolutely no external protuberances whatsoever, except for the tailwheel, after its landing wheel and tow release are retracted.

The cockpit is not of the extra large Schweizer size but is just right for my 5 ft. 10 in., 170 pound frame with parachute and adequate seat and back padding. A cockpit of this size gives me a feeling of being part of the sailplane and allows me to feel its every movement in flight, hence to fly it better. The cockpit area is somewhat cluttered with levers and knobs but all are located such that their actuation is both convenient and easy.

The canopy plexiglas is made up of two portions, the moulded part that opens between the wing and instrument panel, and the fixed flat wrapped unmoulded portion extending from the instrument panel to the nose. This flat wrapped portion of the canopy is completely free of waves and provides good forward visibility.

When taking off the cockpit noise level is very low and the ship's control responses are quite normal and very satisfactory. The only thing that left much to be desired is the elevator spring bungee trim system that usually requires more than one hand to operate and is difficult to adjust to the desired trim level. The aero towing characteristics are exceptionally good, due partially at least to the tow hook location being well forward and high so that the tow line forces pass near the glider's center of gravity.

After the aero tow, the tow hook was retracted and circling flight was initiated in a weak thermal. Some difficulty was noted in maintaining a steady airspeed when circling in the moderately turbulent air. This is believed to be partially due to the Sisu's extreme aerodynamic cleanliness and partially to the airspeed system which was found to be quite inaccurate when the sideslip angle exceeded more than about two degrees.

The ship appeared to climb satisfactorily in the weak thermal with the flaps set at zero deflection. The airspeed had to be held above 55 mph in order to avoid the stall warning buffet and consequently its turn radius was rather large. In an effort to improve its climb performance, both +5 and +10 degree flap settings were tried but without significant results. For each 5 degrees of flap deflection the buffet onset speed appeared to decrease approximately 1 mph, but the ship's sinking speed also increased such that little if any increase in climb performance was noted. It is appreciated that this was an average sized thermal and that in a small diameter thermal with a stronger core, the effect of the flap deflection may be of significance.

Next, stalls were investigated while flying in a wings level attitude. With the flaps in their zero setting a light to moderate buffeting is felt when the airspeed is reduced to approximately 52 mph. The buffeting increases slightly in magnitude until the stall is reached at 49 mph, at which time one wing drops and a moderate roll-off starts. The roll-off is stopped and the recovery is effected almost immediately by applying a small amount of forward stick. Stalls were also investigated at other flap settings from +5 degrees to +25 degrees and were found to differ little from the one just described except that the magnitude of the buffeting seemed to increase somewhat with flap setting. The stalling speed with the +25 degree flap setting was approximately 43 mph and those at the intermediate settings were proportional to the flap deflections.

Next, stalls from turns were performed and the results noted were very similar to those found in level flight. All in all, its stall characteristics are quite satisfactory for this class of sailplane, although not believed to be adequate for inexperienced or unproficient pilots. The L-K 10A sailplanes and RJ-5 sailplane have stall characteristics that are about of the same category as that of the Sisu.

The action of the speed brakes were then checked by actuating them at airspeeds between 50 and 100 mph. They extended and retracted easily and no objectionable hinge moments or buffeting were found to exist at the airspeeds investigated but their effectiveness was disappointing. While their effectiveness might be considered satisfactory by American standards, they were considerably less than that which Europeans would consider as adequate. When extended at 60 mph their effect is scarcely noticeable, although the rate of climb indicator does reflect a drag increase. While adequate for landings in Texas fields it would require considerable pilot skill to land it in a small field especially under adverse conditions.

The directional stability characteristics were checked by performing rudder kicks when in level flight at 60 mph. The rudder effectiveness was not very high but the directional stability was quite satisfactory. The kick induced yaw damped out quickly and completely in one cycle on each occasion. When rolling in and out of turns the controls are pleasantly light and well balanced. Adverse yaw is hardly noticeable and there appears to be no feed back thru the vee tail control mixer system. As with most well-designed vee tail aircraft, the pilot cannot discern by the flight or control characteristics if the tail is conventional or vee. The airframe feels exceptionally rigid and the wings flex so little it

The Sisu I sailplane set for take-off with designer/builder Len Niemi at the controls.
Photo by Charles Dobkins