FLIGHT TESTING THE MODIFIED 1-26

by DAVID E. MCNAY

Photo: David E. McNay

The author's modified Schweizer 1-26C. The wing fillets permit 10 second 360 degree turns.

Having been initiated into soaring in a flat-top L-K, I decided to put this modification on my 1-26 kit. Modifying the 1-26 in this manner had three advantages. First, the modification reduced the size of the cockpit to the point where one did not rattle around like a marble in a milkcan, as is the case with anyone other than a man-mountain in the standard version. Second, it allowed one to look forward normally instead of placing his forehead on the canopy, and looking down his nose as is the standard pose of a 1-26 pilot trying to catch a glimpse of the tow plane at take-off. Last, the modification would possibly improve the flying characteristics as was the case with the flat top L-K's.

Others have gone into the trials and tribulations of construction in great detail so I will not dwell on the matter except to say that John Boone, who did the lion's share of the construction, had just as many nice things to say about the kit as the others who have built their own. Since the finish work was done at Mississippi State University where the art of using fiberglass is at an advanced stage, this material was used generously over the forward sections and hatch. The hatch was constructed in one piece and when removed gave easy access to instruments, cockpit, and all assembly fittings.

The modified 1-26 was completed sufficiently for test flying on June 1, 1957, and was flown in a comparison test with a standard 1-26. The ships were identical in all respects except for the flat top modification and lack of finish paint on the modified 1-26. From this comparison test the modified ship had a rate of sink 16 ft./min. less than the standard at 35 mph; and whereas the standard ship stalled at slightly less than this speed, the modified ship could fly as slow as 30 mph. At between 50 and 60 mph the two ships were even. At 80 mph the modified ship was sinking 16 ft./min. faster than the standard. This latter could possibly have been attributed to the higher skin friction drag of the unpainted surfaces which would show the greatest effect at high speed.

Since definite improvement was shown at low speed, it was decided to make further slight modifications before making a complete performance flight test. The wheel was removed and replaced with a faired skid. Fiberglass wing fillets were installed to reduce separation and the intersection drag at the upper wing root-fuselage juncture which gave the familiar tail buffet which was so annoying when trying to spiral tightly in small thermals.

Dr. August Raspet's generous offer of towing facilities, using Mississippi State's ten-minutes-to-ten-thousand-feet, 450 horsepower Stearman, made possible extensive flight test evaluation of the modified 1-26. A typical test run would be as follows:

During the pre-dawn take-off, the pilot reported temperature readings each 500 feet to ground recorders via two-way radio. At altitude, the glider's airspeed was set for the particular run and then, as the glider descended each 100 feet, the pilot called out the altitude which was recorded with time by the ground observers. Each airspeed was checked for about 1000 feet. From a plot of the altitude versus time, an indicated rate of sink was obtained. Using the mean altitude of the run and the temperature at that point, the square root of the density ratio was obtained. The indicated sinking speed was then divided by the square root of the density ratio to obtain the sea level rate of sink. Dividing the calibrated airspeed in mph by the sea level rate of sink in ft./sec. and multiplying by 1.467 gave the L/D for that speed. The rate of sink and the L/D versus airspeed for the modified 1-26 appear in the first graph.

Since there are a number of 1-26's in use today, the second graph gives a plot of optimum airspeed to fly for maximum cross-country speed. This curve should be applicable to any 1-26 for all practicable purposes.

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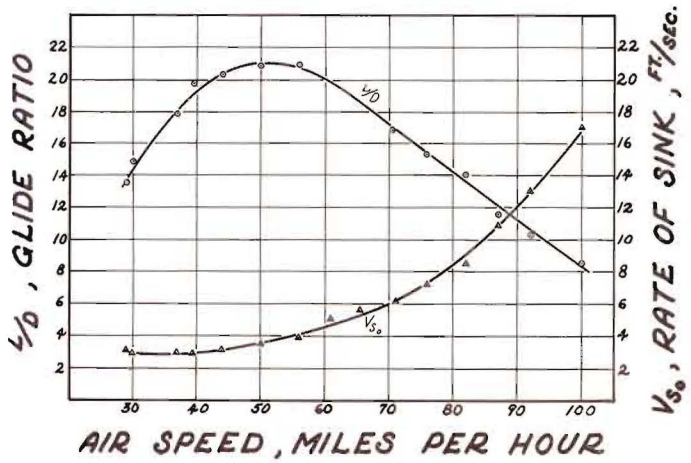
PERFORMANCE OF MODIFIED 1-26



OPTIMUM AIRSPEED SELECTOR* FOR MODIFIED 1-26