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Gee Bee Super-Sportster (Model Z)

Winner of Thompson Trophy at 236.24 M.P.H.

By Z.D. Granville

Contrary to the general belief, the Granville Brothers Gee Bee Super-Sportster is not a radically new ship in general design and construction.

Practically every part is either a duplicate or modification of the standard Gee Bee Senior Sportster two-place job now available commercially. The account of details, construction, mechanism, etc., following describes both models with the exception of several minor details.

The motor is a Pratt & Whitney Wasp Jr. suped (sic) up to 535 horsepower at 2,400 revolutions per minute. The metal propeller is a Curtiss fixed pitch type with a diameter of 8 feet two inches and a pitch of nine feet three inches.

The fuselage is welded chrome-molybdenum. The wing stub bracing is carried internally. With the exception of this bracing and general size, the fuselage construction is identical with the Senior Sportster, as are also the motor mounting. The N. A. C. A. cowling and other motor attachments.

The landing gear is fork type, having a six-inch travel on the oil and spring shock absorber.

The shock absorber unit is new but is a development of the original type used on the models E, D, and Y Sportsters. Aircraft Products Company wheels and brakes are actuated by the full-back position of the stick and the directional brake control by rudder pedals.

The 23-inch Goodrich tires are 6.50 by 10 and the wheel tread is 71.75 inches.

Boots and fairing are attached to the wheel forks in a way that they travel with the wheel straight up and down, keeping in the line of flight and keeping the wheel and tire covered to a maximum at all positions. The only difference in this construction and mechanism from that of the standard Senior Sportster is the absence of the emergency brake lever which locks the commercial job the same as a parked car.

Wheel streamlines are 10.5 inches wide. The tail skid is of the spring leaf type, streamlined with rubber.

The wings are of wood construction, using solid spars and are locked up with nuts. Ribs are spaced 5.4 inches apart and the main beams 35.5 inches apart.

The flying and landing wires by Stewart Hartshorn are single. The wire pulls attached to the compression members relieve the spars of bolt holes and relieve the ribs of all except

fabric loads.

A hammered aluminum fillet fairs in the angle between the wings and body. The M-6 wing curve is used.

Ailerons are torque tube type with formed sheet steel ribs welded to the torque tube. The hinges form bearings for the main torque tube.

The extension of the hinges telescopes directly inside the wing compression member at the rear spar. Angular ball and socket controls are used with ball bearing mountings for all torque tubes. This type of aileron construction eliminates the danger of fluttering and minimizes the possibility of pulling off an aileron.

The tail surfaces are welded steel tube construction with wrapped hinges working on the torque tube itself. The rudder, 19 inches wide, is actuated by cables, the 17-inch elevators by a push-pull tube and double cables.

The stabilizer, which is 18 inches wide and has a span of eight feet, moves up and down at the rear and is controlled by the screw type jack with crank control in the cockpit, giving an irreversible micrometer adjustment.

The adjustable stabilizer was found after a test to be unnecessary and when once set has no need to be changed.

The general construction of the wings, ailerons, landing gear, tail surfaces, controls, etc., is identical in all respects other than size with the commercial Senior Sportster. The cockpit cover or windshield is comprised of a large cover having a celluloid dome of sufficient size to give the pilot head room.

This cover drops on after the pilot is seated and is held securely in position by quickly releasable door fasteners.

In case of emergency this entire cowling over the cockpit can be released by one pull of the lever, allowing the pilot absolute freedom in leaving the ship.

The Fiberloid portion of this cover is so designed as to give vision in every direction other than straight back, and also so that the line of vision is approximately at right angles to the Fiberloid.

This arrangement allows the pilot full protection from the wind, effecting the consequent minimum of resistance, yet affords undistorted and unobstructed vision ahead, up, down, and on all sides.

Cockpit ventilation is accomplished through tubing which brings in fresh air from the wing stubs, and is controlled by a ventilator in the instrument board.

Contrary to the usual design, the fuselage is faired out to form a gentle outside curve from the 46-inch diameter N. A. C. A.

cowling back, gradually flattening to the vertical tail surfaces at the rear.

This plump fuselage gives it the appearance of being abnormally short coupled. The company has received criticism of this so-called short coupling, but its engineers state that their past experience with the various Sportster models has proved to their satisfaction that this design is as rigid, maneuverable, and as stable as the longer types of fuselages.

Specifications

Top speed 270 miles per hour

Cruising speed .. 230 miles per hour

Landing speed 80 miles per hour

Fuel capacity 103 gallons

Oil capacity 11 gallons

Cruising range 1,000 miles

Wing area, including ailerons 75 square feet

Wing span 23 feet 6 inches

Chord at root 50.4 inches

Length overall 15 feet 1 inch

Load factor, high angle of attack 10

Incidence angle 3 degrees

Dihedral angle 4.5 degrees

Aileron area 9.5 square feet

Stabilizer area 8.4 square feet

Elevator area 6.9 square feet

Fin area 2.2 square feet

Rudder area 4.9 square feet

Power, supercharged Wasp Jr. 535 hp at 2400

Weight empty 1,400 pounds

Gross weight (full load) 2,280 pounds

Wing loading (full load) .. 30.2 lbs. per sq. ft.

Power Loading (full load) 4.26 lbs. per hp