SAILPLANE CORP. OF AMERICA
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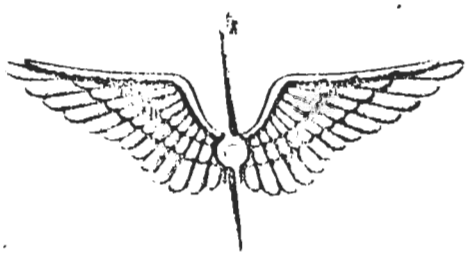
TECHNICAL ORDER NO. 09-30AB-2

ERECTION AND MAINTENANCE INSTRUCTIONS

TG-3A GLIDER



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MAY 10, 1943

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Model TG-3A Glider

Figure 1—Right Rear Three-quarters View

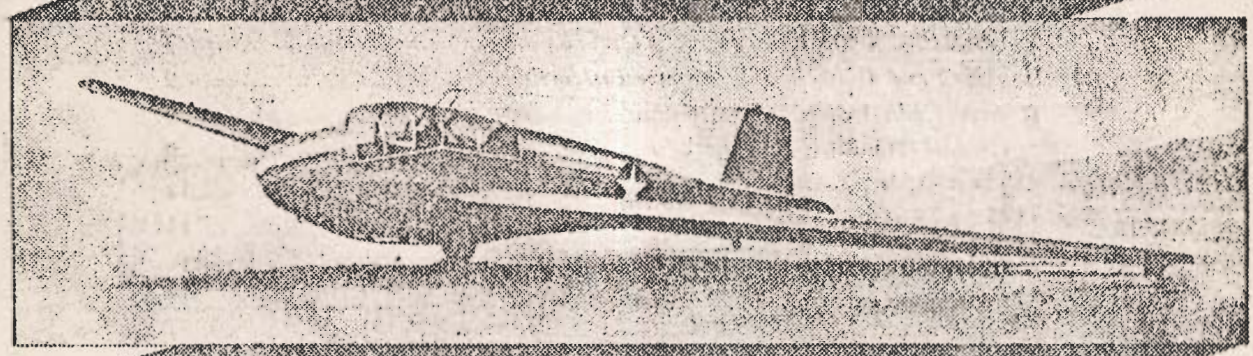

Figure 2—Left Front Three-quarters View

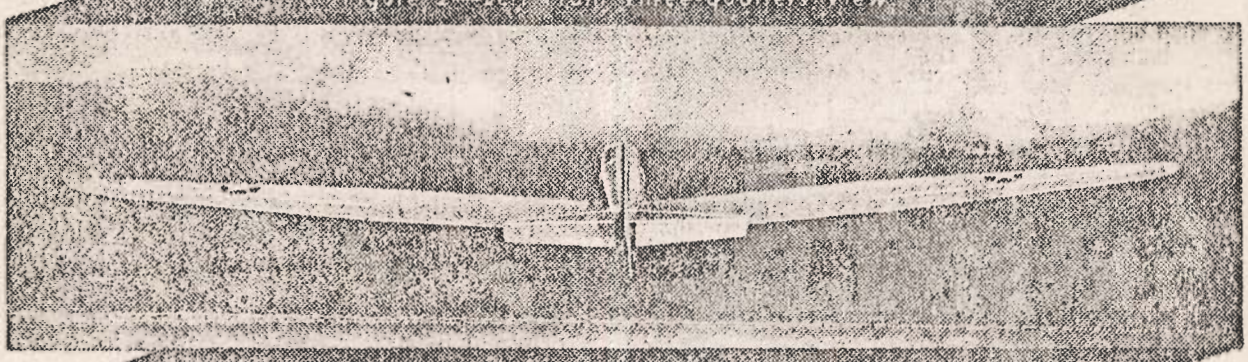

Figure 3—Rear View

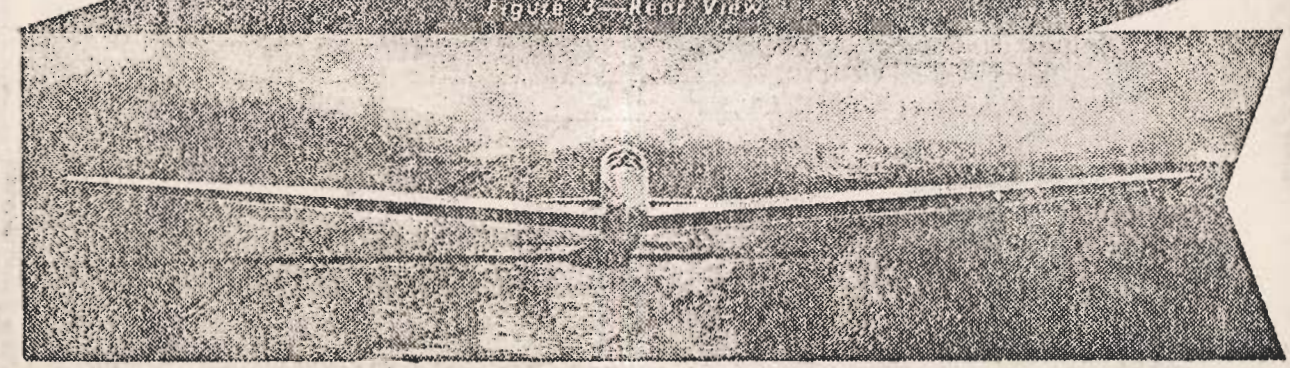

Figure 4—Front View

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SECTION I
DESCRIPTION, DIMENSIONS, AND LEADING PARTICULARS

1. DESCRIPTION.

a. GLIDER. (See figures 1 to 4.)—The model TG-3A is a two-piece, closed glider, manufactured by the Schweizer Aircraft Corporation, Elmira, New York, under contract No. W535 ac-26238. It is equipped with single-wheel landing gear, with a disc-type brake. The single wheel is supplemented by a nose skid, tail skid, and wing-tip skids.

b. WING.—The wing is a single-spar tapered cantilever wing. Torsion and drag loads are taken by the "D-tube" leading edge of plywood. The entire wing is cloth-covered. The airfoil is NACA 4416 at the root and 4412 near the tip.

c. FUSELAGE.—The fuselage is welded steel tubing with wood and steel fairing and fabric covering. Access to the rear cockpit is from the right side over the wing walkway through the sliding hatch. The front cockpit has steps on each side at the lower longeron. The cockpit enclosure may be opened in either direction or removed by the pilot. A lever release for the hinge pin acts as a latch on each side of the cockpit enclosure.

2. PRINCIPAL DIMENSIONS.

a. GENERAL.

Span	54 feet
Over-all length	27 feet 7 inches
Over-all height	8 feet

b. WING.

Total area (including ailerons)	237 square feet
Chord root	60 inches
Chord tip	36 inches
Mean aerodynamic chord	54.33 inches

c. AILERONS.

Total area	18.9 square feet

d. SPOILERS. (1 upper and 1 lower each wing.)

Span	29 1/4 inches
Chord	6 1/4 inches
Area (each)	1.27 square feet

e. EMPENNAGE. (See figure 5.)

(1) HORIZONTAL STABILIZER.

Total area	16.92 square feet
Setting (fixed)	1/2 degree
Mean chord	20.3 inches
Span	10 feet

(2) ELEVATOR.

Total area including tab	12.28 square feet
Mean chord	16.5 inches
Area of trim tab	0.78 square feet

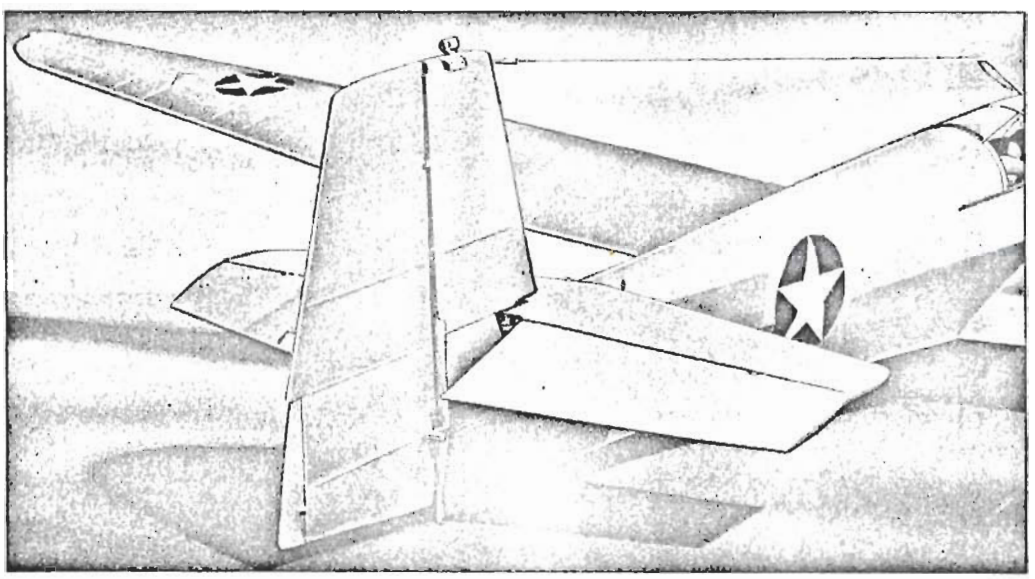

Figure 5—Empennage

(3) VERTICAL STABILIZER.

Total area ..... 4 square feet
Setting—fixed ..... 0 degree
Mean chord ..... 17 inches
Span ..... 38 inches

(4) RUDDER.

Total area including tab ..... 14.11 square feet
Trim tab ..... 0.71 square feet
Mean chord of rudder ..... 32.3 inches

f. FUSELAGE.

Height with vertical stabilizer ..... 8 feet
Maximum width ..... 26 inches
Maximum length with rudder ..... 27 feet 11 inches

3. SETTING AND MOVEMENTS OF CONTROL SURFACES.

a. AILERONS—TRAVEL IN DEGREES FROM NEUTRAL.

Up ..... 30 degrees
Down ..... 13 degrees

b. ELEVATOR—TRAVEL IN DEGREES FROM NEUTRAL.

Up ..... 30 degrees
Down ..... 28 degrees

c. RUDDER—TRAVEL IN DEGREES FROM NEUTRAL.

Left ..... 25 degrees
Right ..... 25 degrees

d. TRIM TABS—MOVEMENT FROM NEUTRAL.

(1) Rudder—Right, 15 degrees. Left, 15 degrees.
(2) Elevator—Up, 15 degrees. Down, 15 degrees.

4. LEADING PARTICULARS.

a. CONTROL SYSTEM.—The controls are dual for all flight and auxiliary controls. The elevator and aileron torque-tube unit is mounted on two bearings connected by push-pull tube and cables to the surfaces. The dual rudder pedals (figures 7 and 9) are connected by cables. The front pedals only are adjustable. The brakes may be operated by hand, by the lever on each instrument panel which operates the spoiler over the first part of its movement and then applies the brake in the last part. (See figures 7 and 9.) The tow-release knob is on the instrument panel (figures 6 and 9) and tab controls are on the sides of the cockpit. The rudder tab control is on the right side and the elevator tab control on the left. (See figures 6 to 9.)

b. LANDING GEAR.—The landing gear is a single-wheel type which is actually a fixed part of the fuselage

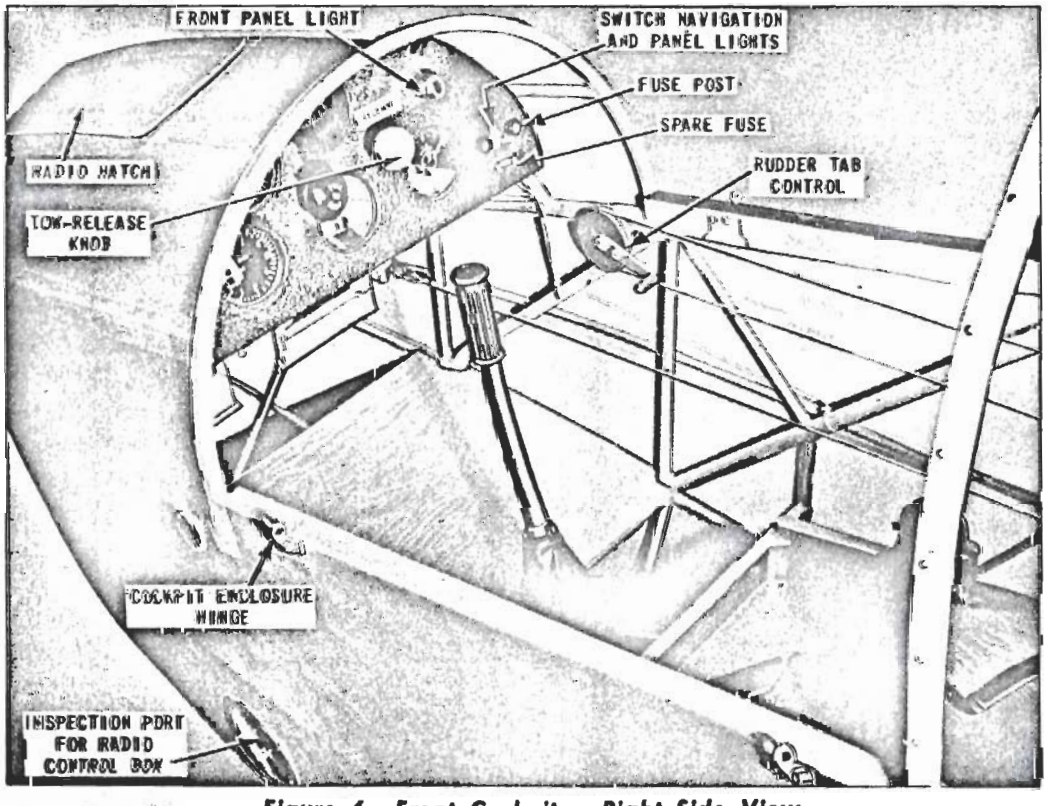

Figure 6—Front Cockpit — Right Side View

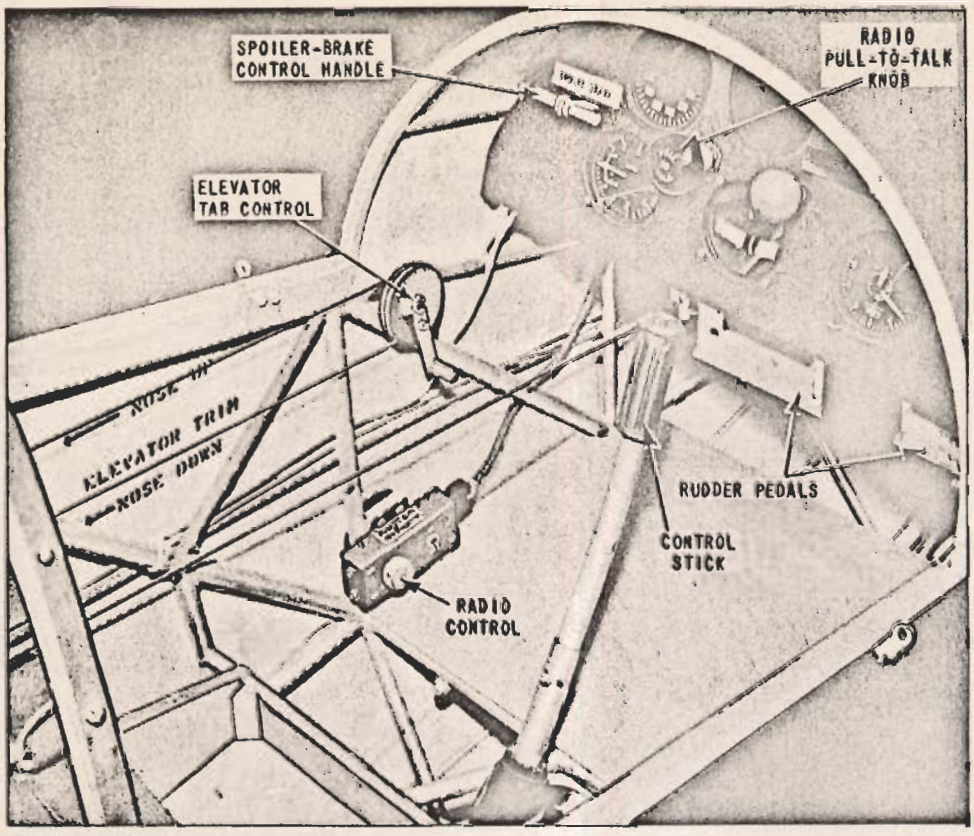

Figure 7—Front Cockpit—Left Side View

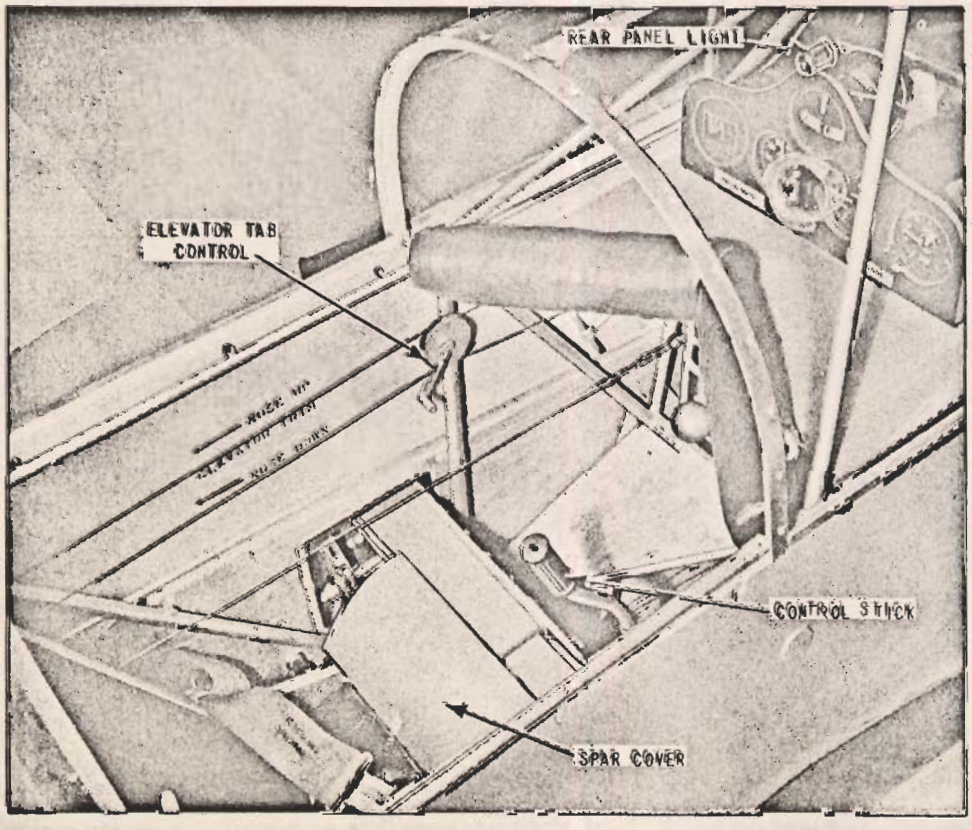

Figure 8—Rear Cockpit—Left Side View

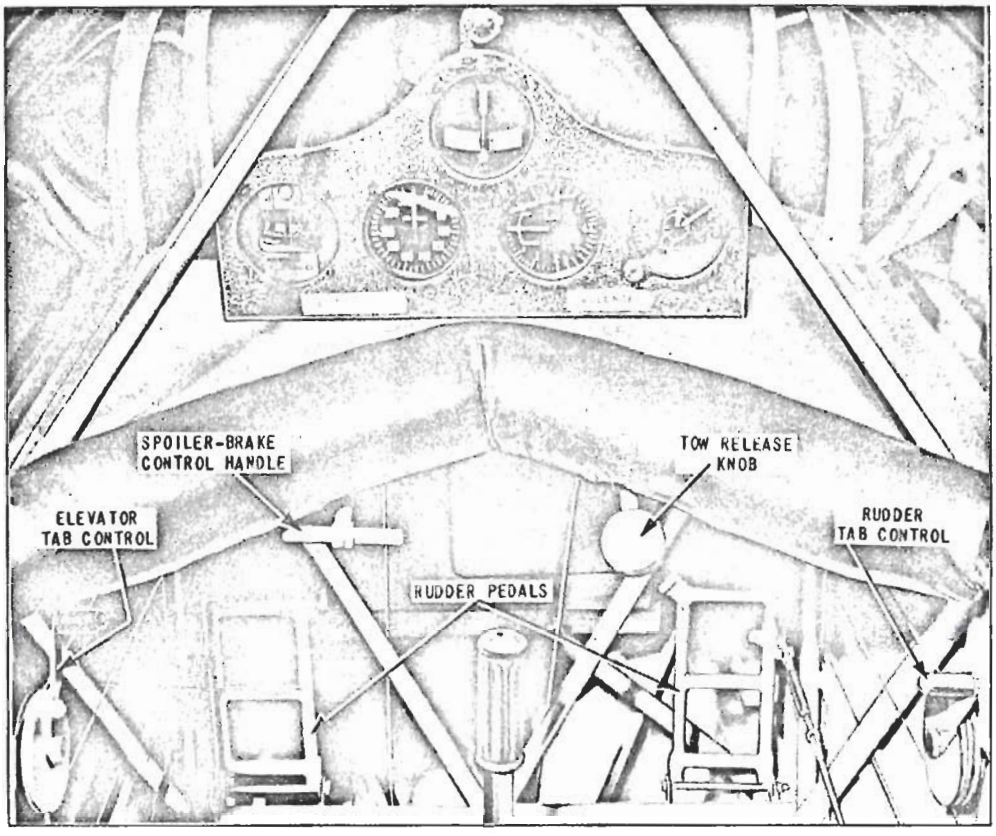

Figure 9—Rear Cockpit—Forward View

ructure except for the wheel and axle. The tire is 6.00 × 6 intermediate type. The brake is a Goodyear disc type. The open brake wheel is readily adjustable.

c. ELECTRICAL SYSTEM. (See figure 10.)—Running and instrument-panel lights are provided. Lights are the standard type, operated from the front instrument panel. (See figure 6.) Current is furnished by a dry-cell-type battery. Fuse holders are on the front instrument panel. (See figure 6.) The radio control box is located at the left side of the front cockpit and the "pull-to-talk" knob is on the front instrument panel. (See figure 7.)

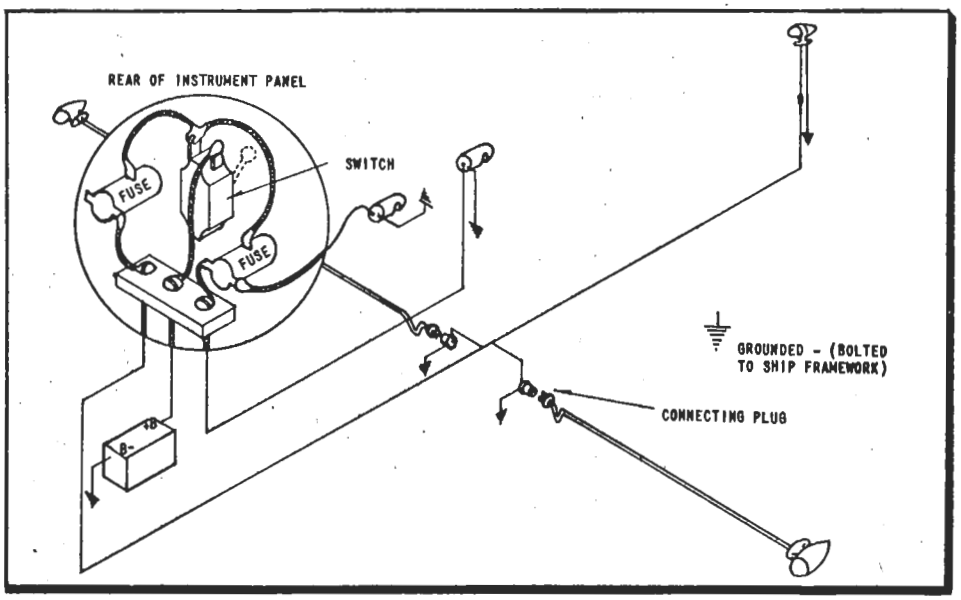

Figure 10—Electrical System Diagram

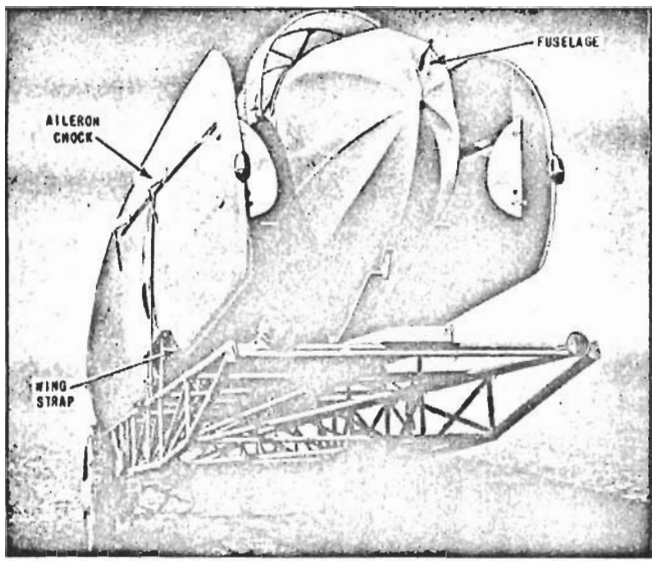

Figure 11—Rear View of Glider On Trailer

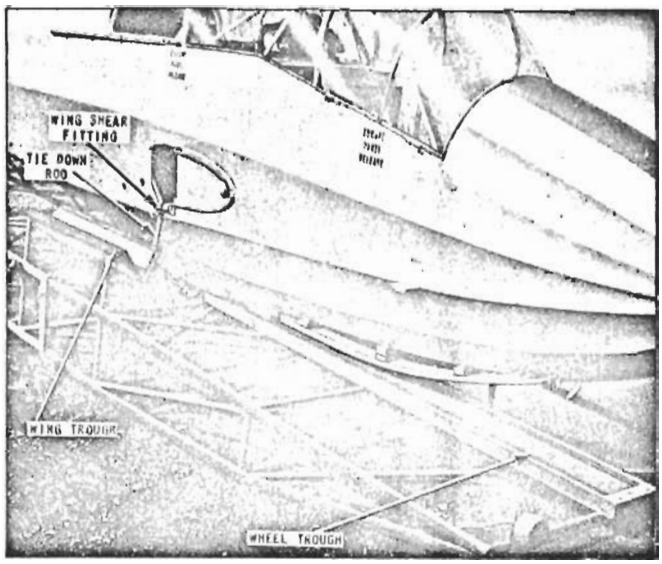

Figure 12—Fuselage On Trailer

SECTION II
SHIPMENT AND ERECTION PROCEDURE

1. SHIPMENT.

This glider together with a trailer forms a complete unit. The trailer is designed to be towed behind an automobile or similar vehicle. The trailer with the glider assembled has a width of 70 inches, and needs a length clearance of 32 feet. The maximum height is 8 feet in level position and approximately 11 feet with the drawbar on the ground. (See figures 11 to 14.)

2. STORAGE.

The storage of a wooden glider is similar to that of other wooden aircraft. It should not be subjected to extensive humidity and temperature changes. The ideal storage condition would have an almost constant temperature of 68°F (20°C) with a humidity reading of 50 to 60 percent. Care must be taken in resting wings on the ground for storage, that local loads do not become too great. One method of storing the glider is to leave it assembled. However, as the wing span is large, it is usually more convenient to disassemble the glider and store it on the trailer. If the glider is stored on the trailer, the cover should be placed over it to protect the finish. Take precaution to keep out mice, as they may destroy the rib lacings.

CAUTION

If the glider is used frequently, it is not advisable to disassemble after each use, as this may cause excessive wear in the fittings.

3. ERECTION PROCEDURE.

As this glider is designed to be assembled quickly, no rigging is necessary, if the normal procedure is used. This erection procedure shall start from the trailer and continue through until the glider is ready to fly. The procedure for the disassembly is the reverse of the erection procedure and therefore will not be listed in detail, except where it differs. The hardware required for assembly is listed in table 1, section VI.

a. UNLOADING PREPARATIONS.

(1) Release trailer from towing vehicle.

(2) REMOVE COVER.

(a) Loosen tie-down ropes.
(b) Unfasten zipper.
(c) Take or slide off cover from one side.
(d) Fold cover and lay aside.

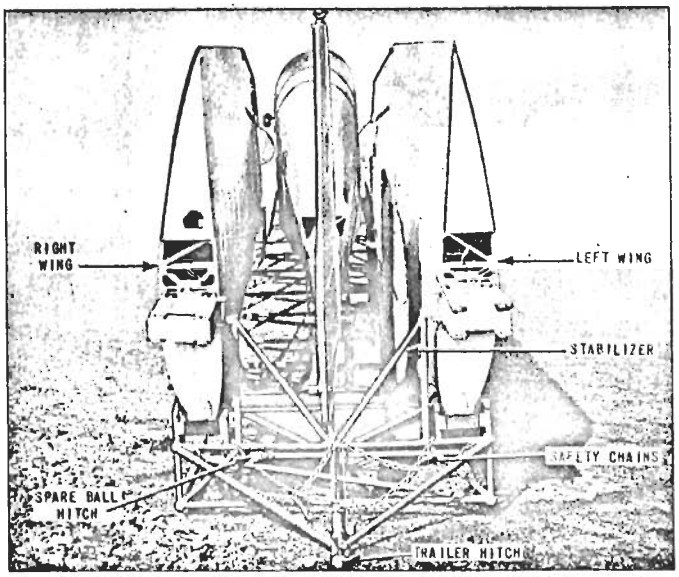

Figure 13—Front View of Glider On Trailer

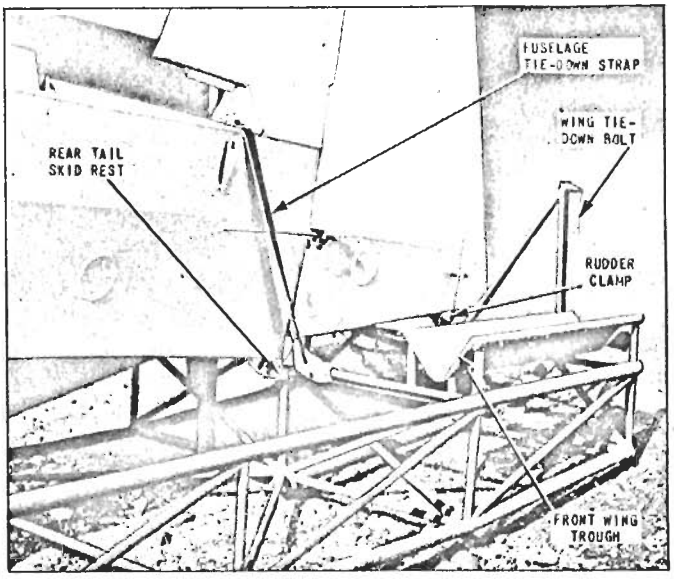

Figure 14—Fuselage On Trailer, Rear

(3) BLOCK TRAILER.

Place tow-bar end down, and block the other end with a saw horse, jack, or other means.

b. WING REMOVAL FROM TRAILER.

(1) Remove strap passing between aileron and aileron false spar. (See figure 11.)

(2) Loosen and remove bolt that fastens the shear fitting to the trailer. (See figure 12.)

(3) Shift wing back to clear trailer fitting.

(4) Place two men at the wing tip, one on either side of the wing, holding the leading edge.

(5) Place two men at the root, one lifting at the spar butt, the other with one hand at the butt lifting, and the other hand on the trailing edge to keep the wing upright. If there is any appreciable wind blowing, turn the trailer into the wind before unloading the wings. Even a slight breeze will make it difficult to handle a wing, because of the air pressure developed.

(6) Have all four men lift straight up simultaneously, high enough to clear the trailer trough. (See figure 12.) The wing trailing edge is tilted slightly away from the trailer.

(a) When completely clear of the trailer, the wing should be carried to the place of assembly and placed flat on the ground in flying position.

(b) The area set aside for the assembly of the glider should have a minimum clearance of 60 feet, so that the glider can be set out in exploded form. The other wing is removed in the same manner.

c. HORIZONTAL STABILIZER REMOVAL FROM TRAILER. (See figure 13.)

(1) Loosen wing nut in rear of frame.

(2) Take off the wing nut in the top of the front frame, towards the nose of the fuselage.

(3) Pull out, towards the nose of the glider.

(4) Set aside.

d. FUSELAGE REMOVAL.

(1) Reverse the trailer position so that the nose of the fuselage is toward the ground. Replace the wheel chocks.

(2) Unfasten the strap around the tail of the fuselage. (See figure 14.)

(3) Remove the front cockpit enclosure.

(4) Remove the bolts in the shear fitting of the fuselage, and move the tie arm out of the way.

CAUTION

When removing the bolts make sure that the fuselage is supported.

(5) Place two men at the aft end of the fuselage, one inside the trailer, the other at the left side of the glider.

(6) Place two men at the nose of the fuselage holding the cross member in the front cockpit and the steps.

(7) Simultaneously have the men in the front and rear lift the fuselage, and move it forward until the landing wheel rests in the wheel trough. (See figure 12.)

(8) The fuselage is now wheeled down the trough and clear of the trailer.

(9) The trailer is removed and the fuselage placed in position with the wings.

(10) In loading the fuselage it is eased into place with the men in the same position as in unloading. Care should be taken to avoid damage to the rudder and fabric, as the fuselage comes aft rather abruptly when the wheel drops into position.

e. FUSELAGE AND WING ASSEMBLY. (See figure 15.)

(1) A minimum of five men are needed to assemble the wings. They are stationed as follows:

Two men at the wing tip.

One man at the trailing edge root.

One man at the leading edge root.

One man to install the pins and lineup the spar and fittings.

NOTE

It will be much easier to line up the wings, if the mating ends of the spars and shear fittings are given a light coat of grease, before assembly. A little grease on the taper pins also helps assembly and removal of the pins. It is important that their surfaces be clean before greasing and assembly, to avoid scoring and seizing.

(2) Lift the wing, right wing first, and place the spar butt in the fuselage, lining up the shear fitting. (See figure 15-2.)

(3) Drive the undersize driftpin, No. 12A466 (found in the parts kit) through the shear fitting, then follow through with an AN7-46 bolt.

(4) Repeat the procedure for the fastening of the shear fitting of the left wing, using an AN7-52 bolt.

(5) Making sure that the fuselage is level, line up the main wing fitting. This can best be done by having a man in the fuselage direct the men at the wing tip to raise or lower the wing.

(6) When the fittings are lined up, insert the taper pins (figure 15-1) simultaneously. This is important, for if one pin at a time is inserted, there is a possibility of the wing dropping and crushing the fuselage. It will usually be necessary to drive the pins up with a few light taps using a soft-faced hammer.

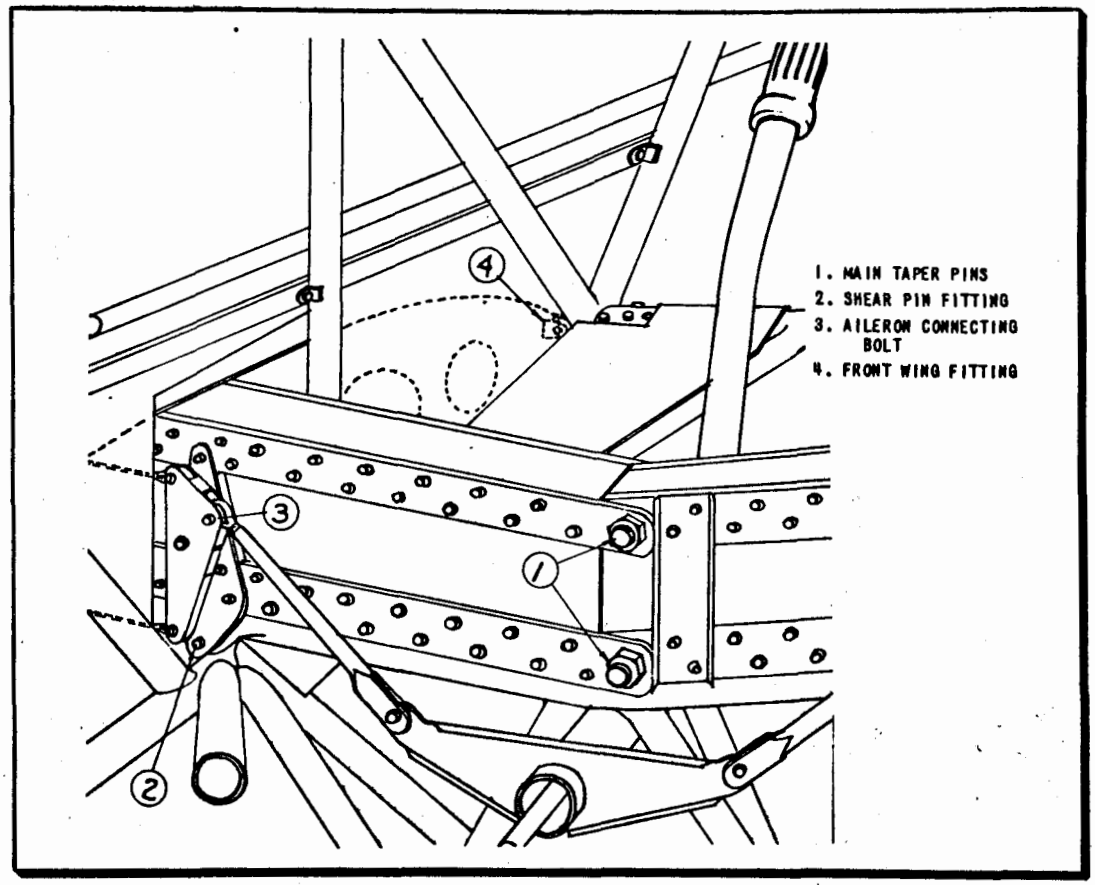

Figure 15—Wing Attachment Details