

SCHWEIZER AIRCRAFT CORP.
Elmira, New York 14902

Form F-113
3-69

SECTION TWO

ERECTION AND MAINTENANCE INSTRUCTIONS

MODEL SGS 2-32

ERECTION PROCEDURES

Unloading from Trailer:

1. Remove aft wing support by taking out the lock pin and unscrewing the support pin while wing is held at the tip, so there is a minimum of load on the pin. When removed, the wing can rest in padded holder on the trailer. The wing support is then rotated down to clear the wing by removing the two top pins.
2. Remove wing butt tie down fitting by unbolting the 3/8" nut and pulling out the bolt.
3. With one person on the tip and one or two people on the root, the wing is lifted and swung into a horizontal position and then placed on wing stands or on pads on the ground. Care should be taken to avoid hitting the fender with the leading edge of the wing when the wing is rotated.
4. Use the same procedure for the other wing.
5. Remove both stabilators from the trailer by taking out the wood plugs from the torque tube and loosening the clamp strip on the tip holders. The root is then lifted up to clear the support and then pulled out of the tip holder.
6. Raise tongue of trailer until the back end of trailer rests on the ground and block it in this position. Place wedge shaped block in position on the ground at the end of the track. This is most important if wheel fairing is installed, since damage to it could result otherwise.
7. Remove safety pin and bolt from tail wheel holder.
8. Remove canopy and aft deck and, while someone holds the fuselage, the two top bolts that attach to the fuselage on each side should be unpinned and unbolted.
9. The two fuselage support brackets are then hinged outward, and the fuselage can be backed off the trailer, making sure the wheel is kept on the track.
10. Place fuselage in position between wings and have someone hold the fuselage erect, or use a fuselage stand. Remove the rudder lock.

Assembly of 2-32:

1. Make certain all fitting holes, spar butts and carry-through are clean. At this point, some people prefer to put a very light coat of grease on the spar butt, but this is optional. Make sure that dive brake control is full forward before starting wing assembly.
2. With the fuselage held vertically, the wing is lifted up with one person at the tip and two at the root, and the spar and rear fitting inserted into the fuselage. Push in until $3/8$ " line-up holes in spar and carry-through are in position, and then insert line-up pins. (It is optional as to whether these line-up pins are put in all the way or not. The purpose is to get the main holes lined up for inserting the main pins.)
3. The same operation is repeated for the other wing.
4. Then take one of the main attach pins with the short shoulder and screw the assembly tool into the hole provided. (The assembly tool is the threaded rod with ball handle.) Then take this and insert the tapered portion of the pin into the center carry-through hole, press and rotate the pin as it is pushed through. Do the same with the other short pin. NOTE: Some light grease on the fitting will help to ease the pin in.
5. Install the assembly tool in the main attach pin with the long shoulder and insert in the outboard attach hole in the carry-through through the openings in the side of the fuselage. (Cockpit lining cover plate has to be removed in order to do this.) The point is inserted in the hole and then pin is rotated as it is pressed in. Do the same with the other pin.
6. Then insert the three lock pins; the long one for the two center pins and the short ones to lock the outboard pins. These are safetied by normal safety pins and the cockpit lining cover is replaced.
7. Install rear carry-thru pins and safety. Remove line-up pins and wings are now attached. NOTE: In inserting all pins, it is helpful to have a person on each tip to load and unload the weight in order to simplify the insertion of the pins.
8. The aileron pushrods should then be inserted in the idler horn, and the locking pins inserted and safetied. A thorough inspection should then be made to see that all attachments are complete and nothing interferes with the controls, and dive brakes (which hook up automatically) should be checked; as well as the ailerons. The rear deck can then be put on the ship, using the pins provided.
9. The tubular spar of the stabilator should then be cleaned and inserted in the torque tube and lined up so that the taper pins can be inserted. The

Assembly cont'd. :

control stick should be held to ease assembly. Taper Pins are then screwed in and need only be finger tight. Repeat the same operation for the other side, and then safety both taper pins with lock pin provided and apply cover plate.

10. Attach the two trim tab horns to the pushrod and safety. Have someone work the elevator controls to make sure that the stabilator functions properly.
11. Reinstall the canopy. Then proceed with a complete walk-around, checking all controls, inspection covers, instruments and release hook. The ship is then ready to go.

Disassembly of 2-32:

1. The first step in disassembling the ship is to remove the stabilators. This is done by first taking off the cover plate, and then removing the safety pins and unscrewing the two taper pins. Each surface is then removed by rotating the surface and pulling away from the fuselage. Hold control stick to facilitate disassembly. The canopy and rear deck are removed, and the two cockpit access cover plates are taken off. The safety pins are removed from the rear wing fittings and from the lock pins. Three lock pins are then removed from the main wing fitting pins. The aileron control tubes are disconnected by removing the safety pin and pulling back the captive pins.
2. The assembly tool is screwed into one of the center main pins and, with one person lifting up on each wing tip, the pin is rotated and pulled out. The same is done for the outboard fitting, and the operation repeated for the two pins on the other side. The two rear pins are removed. (This may require a slight movement of the wings fore and aft to unload the pin.)
3. With one person on each tip and one person on each side of the root of one wing, the wing is pulled from the fuselage. This will require lifting up slightly on the wing and holding it in the proper position as it is withdrawn. The same is done for the other wing, with the fuselage being held by the fourth person after the wing is withdrawn. This disassembly operation can be done with three persons by the use of a fuselage stand and if one wing tip is supported with a wing support stand. When the second wing is taken off, the third person as the trailing edge holds the fuselage until the man at the root can take the butt of the wing.

Loading on Trailer:

1. With the trailer held in the tail down position and the tapered block in place, the fuselage is run up the track until the wheel settles in the wheel well.

2. The tail pin is then inserted. Then the two side brackets are rotated and the attach bolts put in and locked. The rear deck and canopy are then put in place, and the rudder lock applied.
3. The stabilators are then put in their positions and held by inserting the wooden pin into the torque tube.
4. The wings are then put on the trailer and the butt attached, first using the bracket and bolt.
5. The wing support is rotated into position and pinned. The tip of the wing is lifted, and the wing supports are screwed into the wing and locked.
6. A check should be made to see that all attach points are fastened, and the trailer is ready to be attached to the car.

Installation of Fin and Rudder:

1. Install fin using (2) AN4-7A bolts to attach front spar, and (2) AN4-6A bolts to attach rear spar. Use AN960-416 washers under the AN365-428 self-locking nuts.
2. Install rudder by inserting rudder horn in fuselage cutout aft of fin. Tilt rudder to start in cutout and raise to an upright position. Install and safety hinge bolts. Upper and center hinges require AN3-10 bolts, lower hinge requires AN4-11 bolts, AN310-3 and -4 castellated nuts; AN960-10 and -416 washers; AN380-2-2 cotter pins are used on the respective bolts.
3. Connect rudder cables to rudder horn with (2) AN3-6 bolts. Install AN960-10 washers, AN310-3 castellated nuts & safety nuts with AN380-2-2 cotter pin.
4. Insert rudder balance weight with Serial Number stamped on balance weight facing down. Install AN4-12A bolt, AN960-416 washer and AN365-428 stop nut.
5. Attach rudder gap tape to fin with "Little Bear" Cement.
6. Install Dorsal Fin using AN525-8-6 screws into nut plates on bulkheads at Sta. 's 200 and 227, and #4 x 1/4" P.K. Sheet Metal Screws at 3" center spacing, into fuselage skin between bulkheads and also in aft section of fin skin. Install AN525-1032 screws into nut plates on fuselage bulkhead at Sta. 256.0, and two into nut plates each side of fin leading edge.

Removal of Fin and Rudder:

1. Removal of the fin and rudder is essentially a reversal of Items 1 thru 6. above.

1. LUBRICATION:

The control system of the 2-32 incorporates many ball bearings. They are pre-lubricated and sealed. Consequently, do not require lubrication.

Except for the rudder hinges, the parts requiring periodic lubrication are shown on Pages 2-7, 2-8 and 2-9.

A. Lubricating oil (SAE 30) should be used on the following points, except that under extremely dry and dusty conditions, powdered graphite is recommended.

1. Rudder hinges.
2. Rudder pedal pivot points and the rudder cable to rudder horn attach points. Page 2-7.
3. Control stick pivots. Page 2-8.
4. Dive brake push rods. Page 2-9.

NOTE: These points should be lubricated every 20 hours of flying time or 6 months elapsed time, whichever is sooner.

B. Because of close tolerances, a dry type lubricant (stick or spray can) is recommended for:

1. The bearing blocks for the dive brake torque tube located in the fuselage. Page 2-7.
2. The pivot bearing of the stabilator idler horn. Page 2-8.
3. The dive brake actuating rod and support blocks. Page 2-7.
Special care should be taken to keep rod clean & operating freely.

C. Trim tab actuating jack screw - "Aero Lubriplate" low temp. grease or equivalent. Page 2-8.

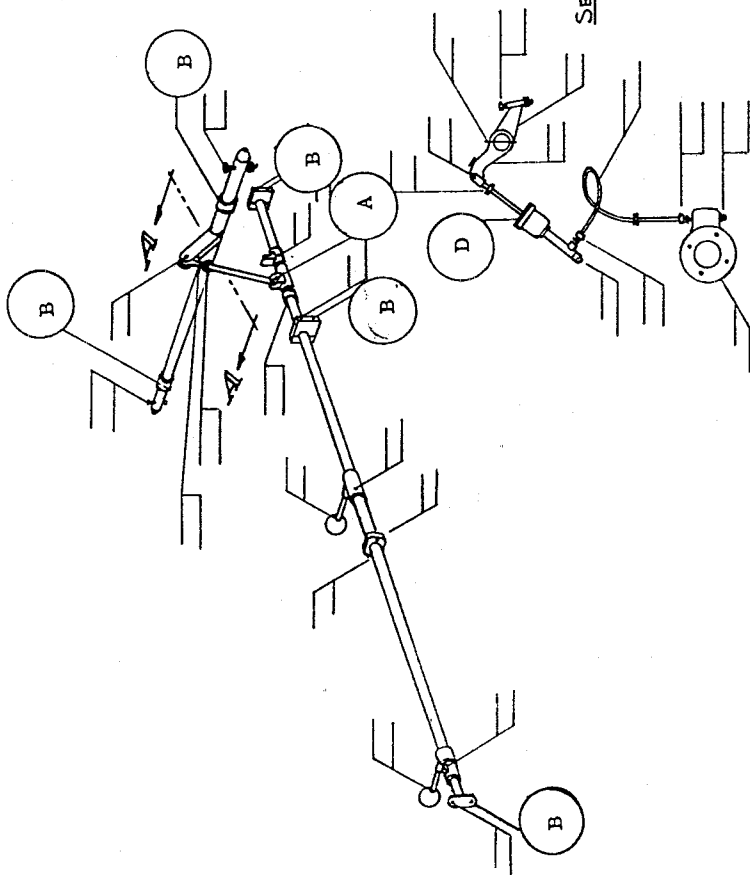
D. Hydraulic Brake Fluid - "Esso Univis J-43" (MIL-0-5606) or equivalent. Page 2-7.

2. LEVELING:

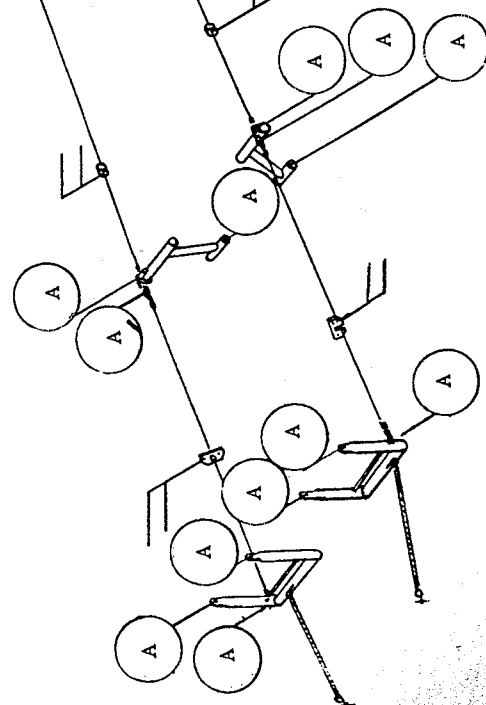
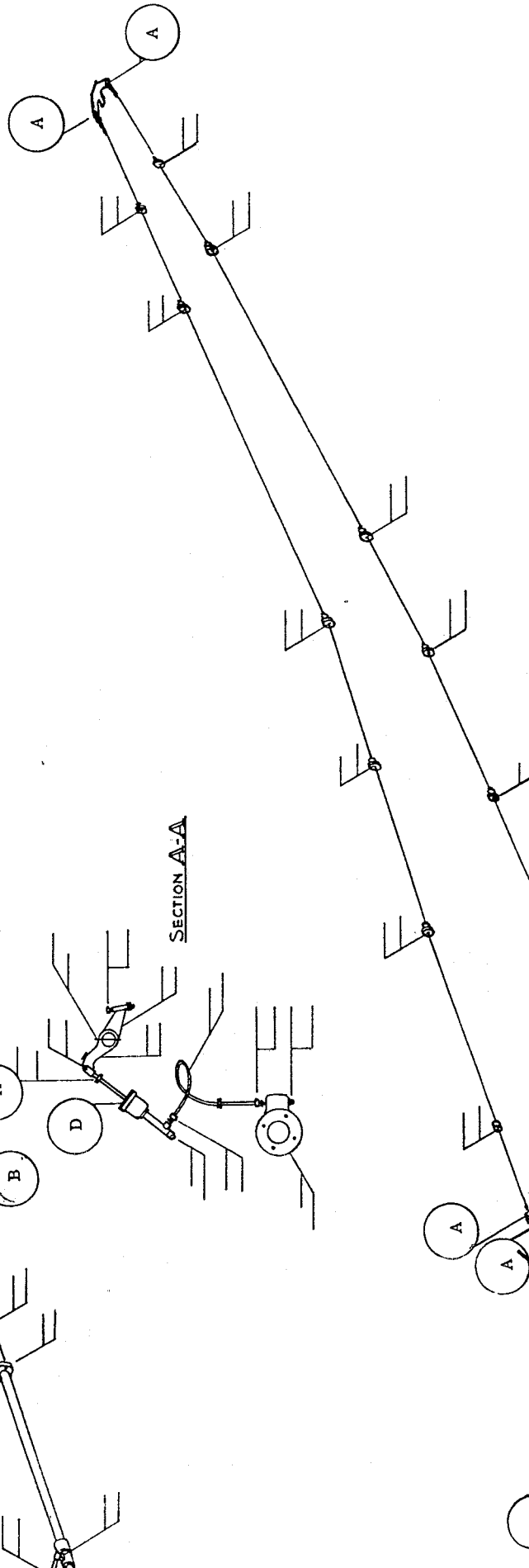
- a. To level fuselage laterally, prop up the wing tips and test for horizontal on fuselage cross member, aft of the front seat.
- b. To level longitudinally, prop up the tail and test for horizontal on the two brackets inside fuselage, aft of rear seat on the R. H. side.

3. RIGGING:

- a. The proper dihedral angle and angle of incidence are built into the wing and fuselage at the factory.
- b. Elevator and rudder control system rigging is accomplished by turnbuckles on the cables. Stabilator cables are rigged to 30 ± 5 pounds tension. Rudder control system tension is maintained by springs on rudder pedals. Cables should be rigged with turnbuckle threads flush with the barrel. Double wrap turnbuckles in accordance with FAA Manual No. AC43.13-1, Figure 4.5, or MS33591.



SECTION A-A



SGS-2-32 FORM 1-4347
 FUSEL. SER. No. _____
 INSPECTION CHART: RUDDER, DIVE BRAKE &
 HYD. BRAKE
 6-25-62 POWELL

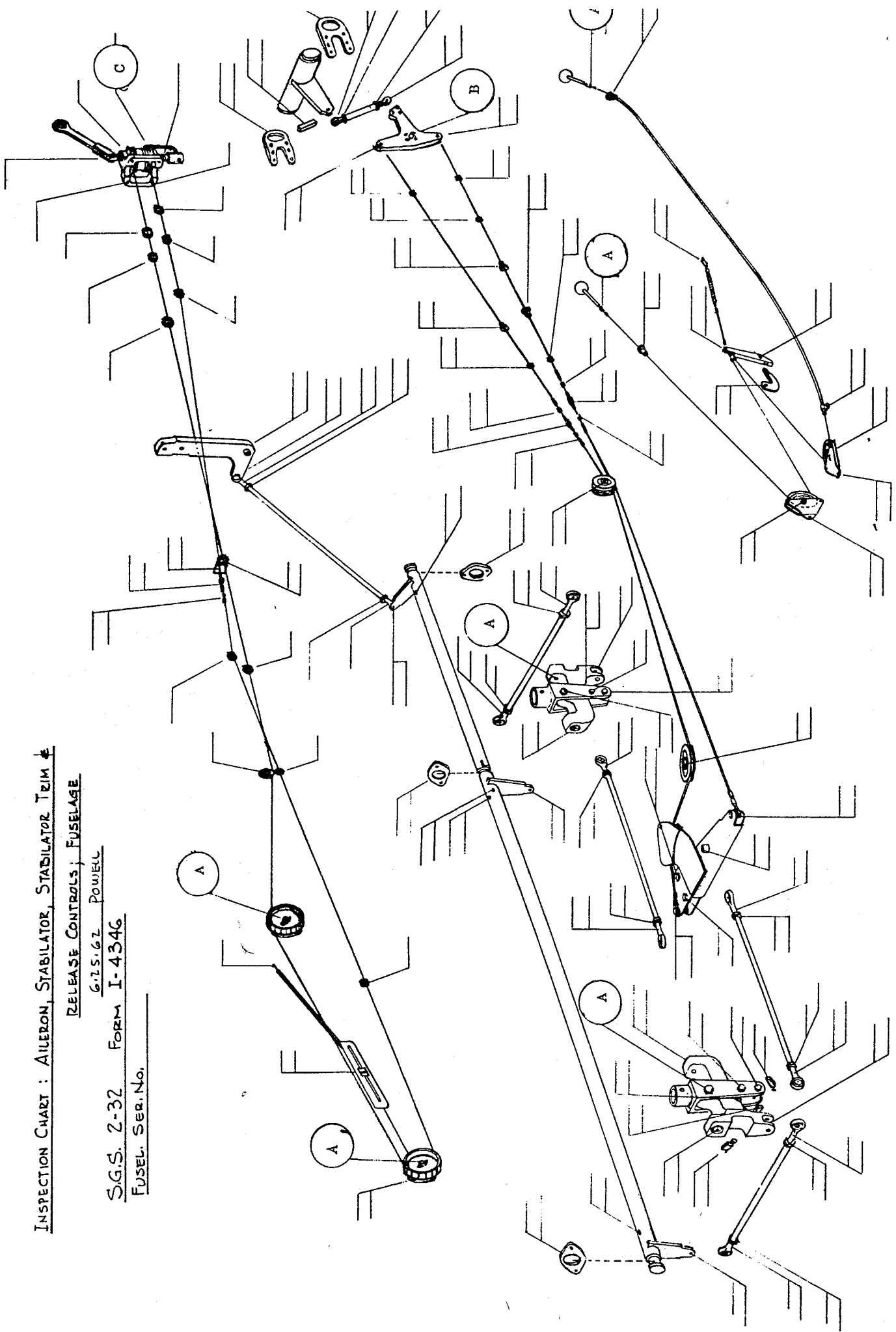
INSPECTION CHART : AILERON, STABILATOR, STABILATOR TRIM #

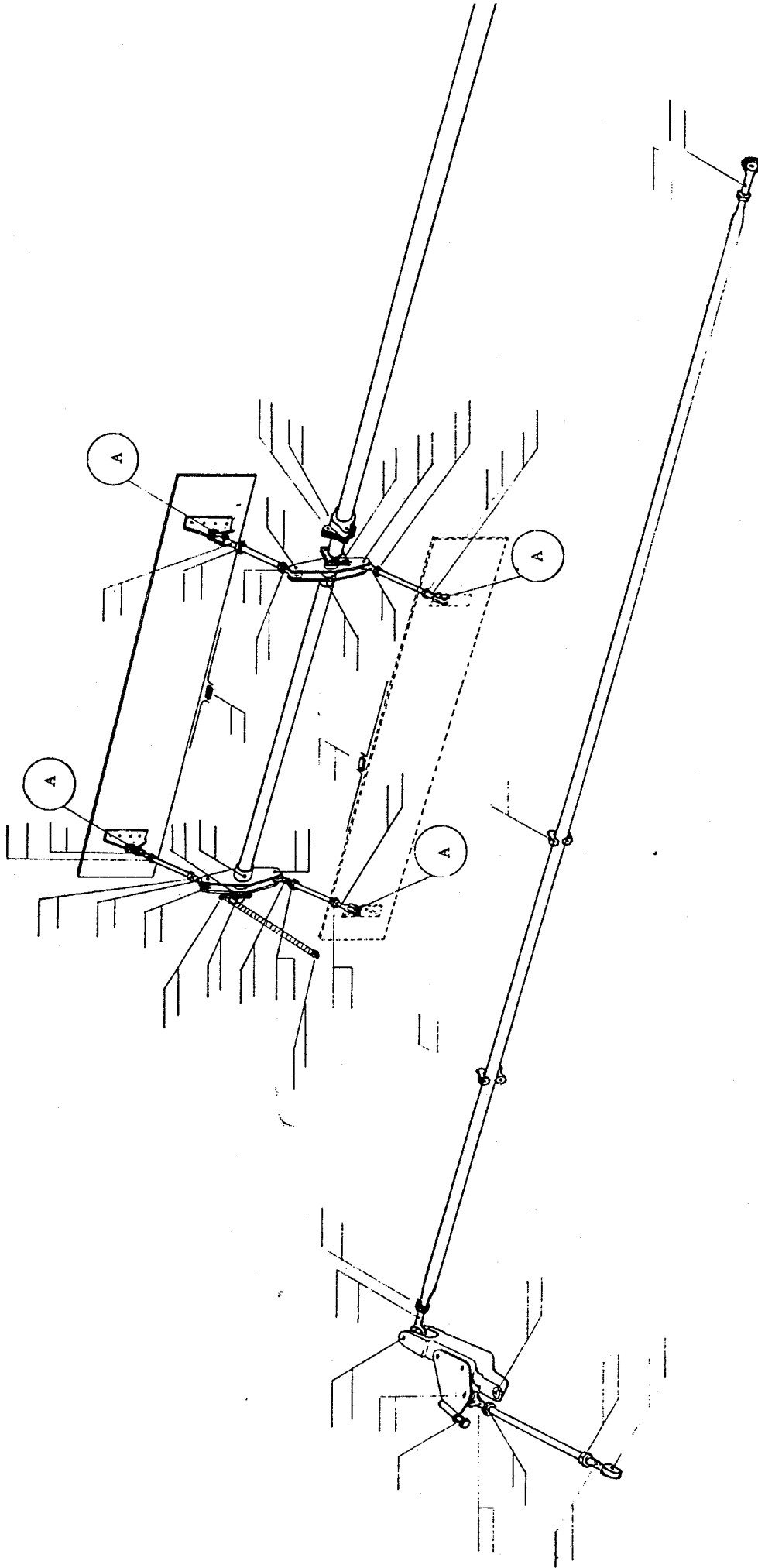
RELEASE CONTROLS; FUSELAGE

G.25.62 POWELL

S.G.S. 2-32 FORM I-4346

FUSEL. SER. NO. _____





SGS. 2-32 FORM I-4348

WING SER. No. (LEFT)

(RIGHT)

INSPECTION CHART: AILERON & DIVE BRAK

CONTROLS; WING

6-26-62 Power

Rigging cont'd.:

- c. The Dive-brake/wheel-brake control linkage should be rigged so that there is no slack or lost motion when control is started. The wheel-brake is rigged so that the brake is actuated at the last 1 - 1-1/2" of control rod travel (after the dive-brakes have been effectively opened).
- d. Tow hook release spring tension is checked by applying a force of 9 - 20 lbs. at the end of the release arm. The hook should then release. If the tension is not within this tolerance, the spring should be replaced. See Figure 2.

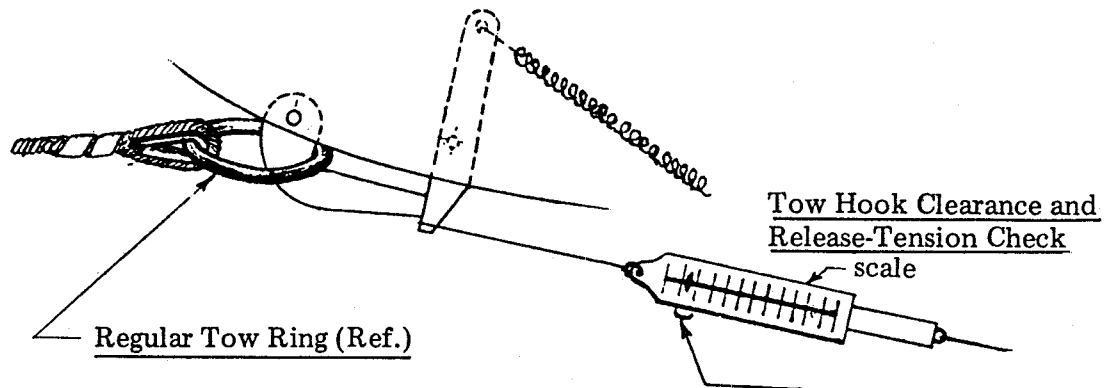


Figure 2

PREFLIGHT INSPECTION

1. Inspect the following for condition, operation, security of attachment and/or other signs of failure.
 - a. Wing and attachment bolts.
 - b. Stabilator and attachment bolts.
 - c. Stabilator.
 - d. Fin.
 - e. Rudder.
 - f. Fuselage skins.
 - g. Control Cable.
 - h. Control and control system push rods.
 - i. Ailerons.
 - j. Dive-brakes and control.
 - k. Main wheel and brake.
 - l. Tire (maintain tire pressure at 30 - 35 p. s. i.).
 - m. Tail wheel and bracket.
 - n. Skid and skid shoe. (Skid should be replaced if cracks or splits are evident. Shoe need not be replaced except for wear-through or breakage.)
 - o. Shoulder harnesses and safety belts.

Preflight Inspection cont'd.:

- p. Canopy.
- q. Release hook and release system.
- r. Pitot system. (After prolonged tie-down or exposure to rainy weather, remove lines from instruments and expel any water which may have collected in lines through them.)

CAUTION: DO NOT BLOW INTO PITOT TUBE WITH INSTRUMENTS CONNECTED.

ANNUAL, AND/OR 100 HOUR INSPECTION, SGS 2-32

1. Fuselage Group:

- a. Check control stick and torque tube assembly, lubricate torque tube support bearings. Inspect internal surface of torque tube for corrosion, clean and apply Paralketone, if necessary.
- b. Check controls for ease of operation.
- c. Check control cables for safety, corrosion, wear and security of attachment.
- d. Check elevator push tube for condition, wear and security of attachments at rod ends.
- e. Check fuselage skins for cracks, buckling and any other damage.
- f. Check cable pulleys for wear and attachment, replace if necessary.
- g. Check fairleads for wear and attachment, replace if necessary.
- h. Check canopy for condition, latches and attachment.
- i. Check plexiglas for cracks or excessive crazing.
- j. Check safety belts, shoulder harnesses, brackets and bolts.
- k. Check springs for corrosion, cracks and wear at ends.
- l. Check trim control system for wear and free operation.
- m. Dive-brake/wheel-brake mechanism for wear, alignment and linkage attachment. Lubricate control rod at guides with a dry stick-type lubricant.

Landing Gear Group:

- a. Remove wheel, inspect for cracks.
- b. Inspect wheel bearings for condition, repack.
- c. Inspect tire for wear and cuts.
- d. Inspect tail wheel and bracket for cracks and wear.
- e. Inspect skid and shoe for cracks, wear and attachment.
- f. Inspect brake for wear and operation.
- g. Check tire pressure (30 - 35 psi).

Empennage Group:

- a. Inspect stabilator for condition and attachment.
- b. Inspect stabilator fittings and bolts for wear and signs of failure.
- c. Inspect stabilator horn for condition and pushrod for security of attachment.
- d. Inspect fin for dents, general condition and attachment.
- e. Inspect rudder and hinges for condition and security of attachment.
- f. Check fabric and finish on rudder for cracks and deterioration. (Check tensile strength, if below 35 lbs. per inch, fabric must be replaced.)

NOTE: A synthetic fabric, "Ceconite 103" manufactured by Cooper Engineering Co., Box 3428, Van Nuys, Ca. 91405, is used on the rudder and ailerons. The "Ceconite Process"* procedure Manual No. 101 should be procured from them for guidance in repair and maintenance of this fabric. FAA Manual No. AC43.13-1 (Superseding CAM 18) is also used as a guide for testing and repairs - see Chapter 3.

*Trade Mark R Registered in U. S. Patent Office and Canada.

Wing Group:

- a. Inspect wing attachment fittings and bolts for condition and security of attachment.
- b. Inspect aileron push rods for condition and security of attachment.
- c. Inspect dive brake linkage for corrosion, wear and security of attachment.
- d. Inspect fixed surfaces for dents, corrosion, loose rivets and other signs of structural failure or damage.
- e. Inspect ailerons and hinges for condition, operation and attachment.
- f. Inspect aileron bellcranks for condition, evidence of damage and attachment.

Wing Group cont'd. :

- g. Inspect dive brake mechanism and hinges for condition, operation and attachment.
- h. Inspect wing tip wheels for damage and attachment.
- i. Inspect pushrod fairleads for wear or breakage and attachment.
- j. Inspect aileron fabric (see note under 3. f).

5. Tow Hook:

- a. Inspect hook for wear, cracks, roughness and attachment.
- b. Check mechanism for freedom of operation.
- c. Check release mechanism by applying a force of 9 - 20 lbs.
Ref. paragraph B. 3. d. and Figure 2.

6. Cabin Group:

- a. Inspect instruments for range markings, zero reading and security of attachment.
- b. Inspect instrument panel for security of attachment.
- c. Inspect name plate, decals for legibility and security of attachment. Check "Flight Limits" placard for correct Min./Max. Pilot weight from the weight and balance statement.
- d. Inspect airvent for operation and security of attachment.
- e. Inspect seats for damage and security of attachment.

SCHWEIZER AIRCRAFT CORP.
BOX 147
ELMIRA, N. Y. 14902

SAILPLANE TIE DOWNS

Many more sailplanes are damaged on the ground by the wind than in flying accidents. It is usually due to leaving the ship unsecured or using inadequate tie downs.

Therefore, it is very important that adequate tie downs are provided. The following procedures are recommended:

1. Sheltered Area: Tail down, ropes (*), at wings and tail (***).
2. Unsheltered Area: Facing into prevailing wind. Rope at wings and tail, and chain tie down to release hook.
3. Unsheltered - High Wind Hazard: Tail supported on padded stand. Rope to wings and two ropes to tail. Short chain (5/16" welded link), tie down to tow hook.
4. Flightline Tie Down: Short chain tie down to tow hook (tail in air). Water filled tire tube on end of one wing.

NOTE: *Minimum size of recommended ropes - 5/16" nylon, or 1/2" manila - renewed each season. (Knots can reduce rope strength by 50%.)

** Size and style of ground anchor will depend on soil composition and type of sailplane. In light sandy soils, anchor arm or chain longer and set deeper. A ground anchor should be able to withstand a vertical pull of at least 2,000#. Should not be located directly under tie downs.

*** Rudderlock - recommended if control locks are not used. Ailerons and elevator can be secured with seat belt around control stick.

****Securing the spoilers or dive brakes open will decrease lifting forces.