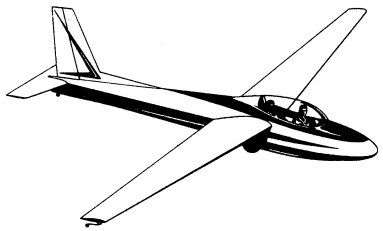


THE 2-32 SAILPLANE

FLIGHT - ERECTION - MAINTENANCE

MANUAL

SCHWEIZER AIRCRAFT CORP.
ELMIRA, N.Y.

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.

SCHWEIZER SGS 2-32

FLIGHT - ERECTION - MAINTENANCE

MANUAL

Schweizer Aircraft Corp.

Box 147

Elmira, N. Y. 14902

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

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.

TABLE OF CONTENTS

GENERAL DESCRIPTION

The SGS 2-32 is an all-metal, two-place high performance sailplane built by Schweizer Aircraft Corp. of Elmira, New York. Its capabilities as a high performance sailplane are nearly unlimited because of its loading capacity. It soars well in marginal conditions at light weight and will out-perform all but the exotically designed sailplanes under conditions favorable to heavily wing-loaded sailplanes of 7 - 8 lbs. per sq. ft. Its roomy cockpit, large bubble canopy, easy handling and comfortable seating, remove a great deal of the fatigue usually experienced on flights of long duration, the result of which is better pilot proficiency. The 2-32 is ideal for transition training from low or intermediate to high performance, single place sailplanes. The student can be shown and can experience the characteristics of a laminar airfoil wing. He can be taught how to use the very effective dive brakes that many high performance sailplanes have.

The 2-32 is impressive and, when used for an initiation flight, the student or person who is interested in soaring will get a much better idea of what the ultimate in soaring really is. This will do much towards promoting the sport.

Overall dimensions are:
Length - 26.75 ft.
Span - 57 ft.
Height - 9 ft.
Wing Area - 180 sq.ft.
Aspect Ratio - 18.05

FLIGHT CONTROLS:

1. Control Sticks:
   Front and rear are conventional.

2. Rudder Pedals:
   Front and rear are conventional.

3. Trim Control:
   Located directly under main right side Longeron front and rear and is in easy reach of pilots. Turns counter-clockwise for nose-down trim and clockwise for nose-up trim. Trim range varies with loaded condition of sailplane.

4. Tow Releases:
   Front release knob is located at center bottom of instrument panel. Rear release is located directly behind top left of front seat back. To actuate releases, pull knob full aft.

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.

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.

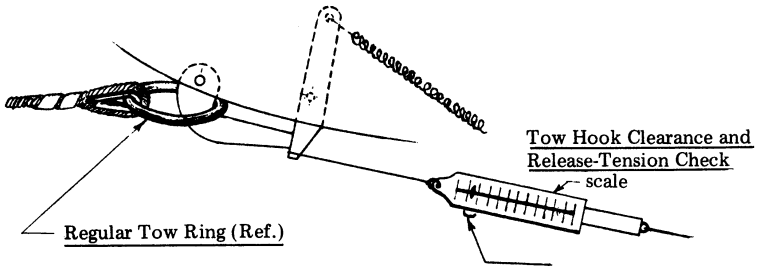


Figure 2

PREFLIGHT INSPECTION

1. Inspect the following for condition, operation, security of attachment and/or other signs of failure.

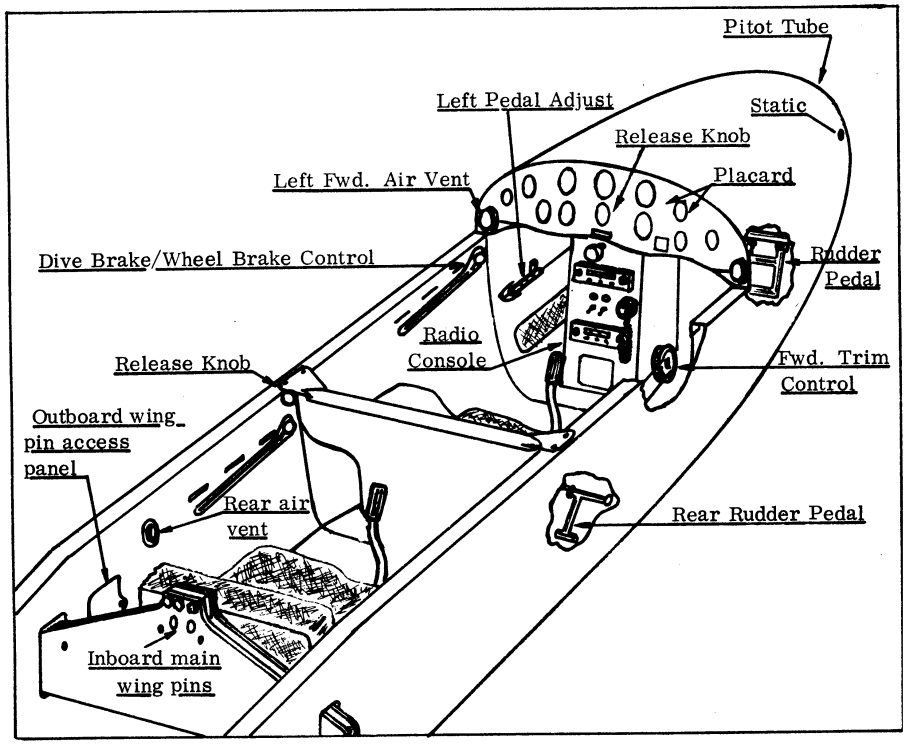
a. Wing and attachment bolts.
b. Stabilator and attachment bolts.
c. Stabilator.
d. Fin.
e. Rudder.
f. Fuselage skins.
g. Control Cable.
h. Control and control system push rods.
i. Ailerons.
j. Dive-brakes and control.
k. Main wheel and brake.
l. Tire (maintain tire pressure at 30 - 35 p.s.i.).
m. Tail 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.

FLIGHT CONTROLS, cont'd.:

5. Dive Brake Levers:
Front and rear are located on left side of cockpit and within easy reach of pilots. Pull back to open dive brakes and push forward to close them. More force is needed to closing than for opening. Dive brakes should normally be locked, and this is done by rotating lever up and then pulling back 1/4 to 1/2 inch.

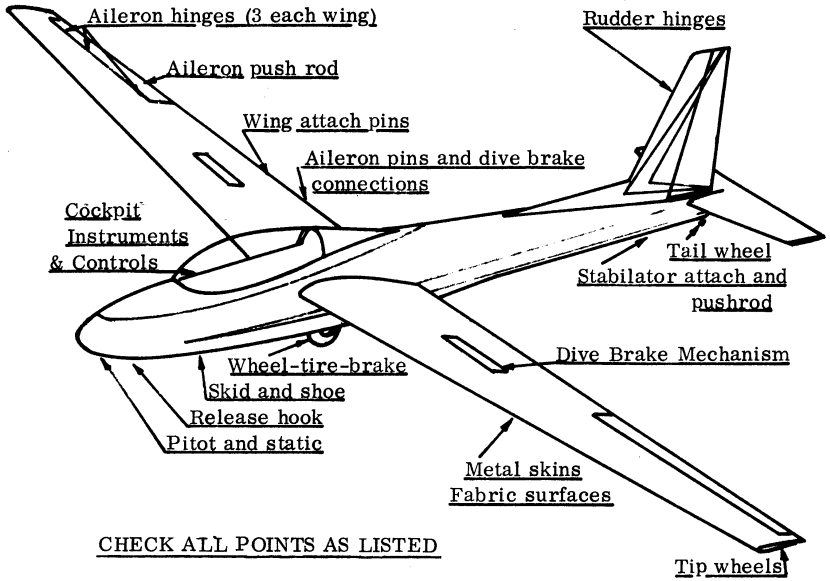
6. Wheel Brake:
Actuated when last 1/4 to 1/2 inch of dive brake control is used. Extra pull force is needed to achieve this

7. Instruments:
Front - ASI, is required. Additional instruments may be added up to full panel.



SGS 2-32 Cockpit (Instruments & Controls)

PREFLIGHT INSPECTION



CHECK ALL POINTS AS LISTED

1. Wing:
   a. Dive Brakes and their mechanism.
   b. Ailerons, hinges, pushrods, connections and fabric.
   c. Skins and general appearance.

2. Tail Assembly:
   a. Hinge points, pushrods & connections, (rudder and stabilator).
   b. Stabilator taper pins.
   c. Tail wheel assembly.
   d. Aft part of fuselage for general appearance.
   e. Remove inspection plate and check stabilator and rudder mechanisms.

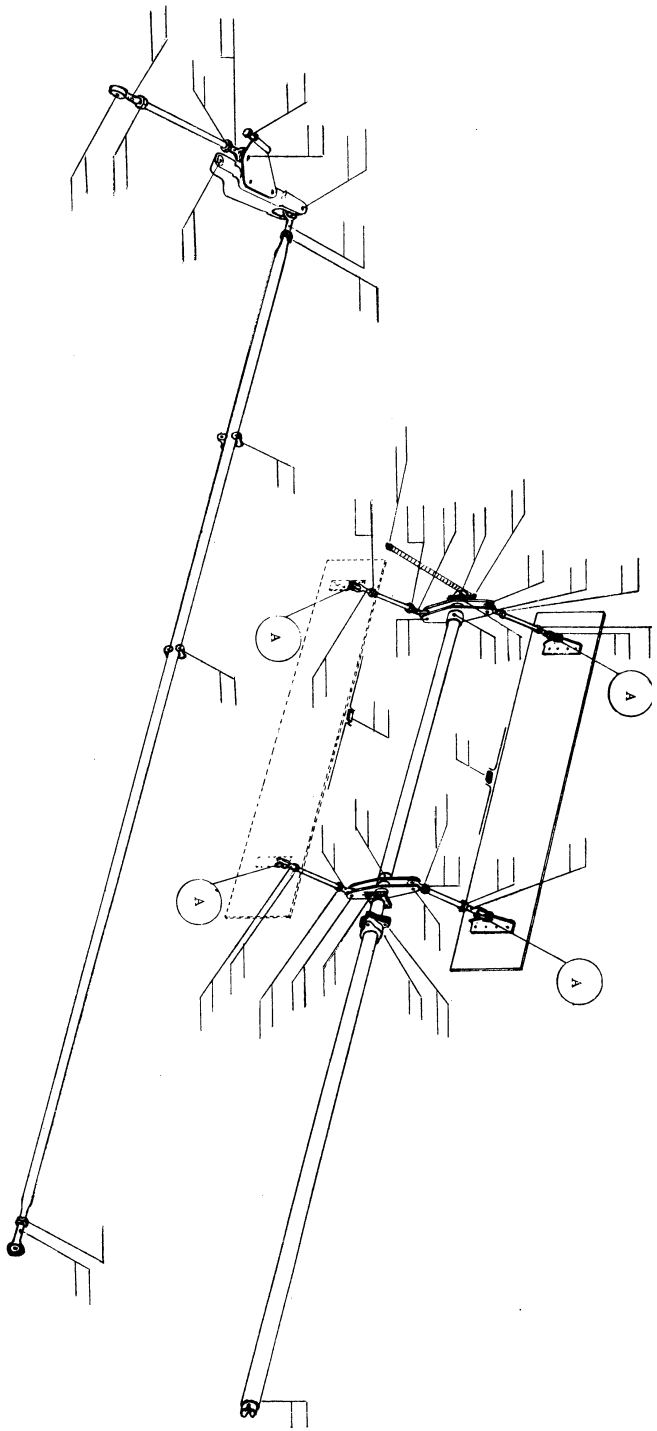
3. Fuselage:
   a. Flight controls for free and normal movement.
   b. Release hook and mechanism.
   c. Instruments, pitot tube and static openings.
   d. Canopy and hinge points.
   e. Safety belts and shoulder harnesses.
   f. Main wing carry-thru and rear carry-thru wing-fuselage pins.
   g. Aileron pins and automatic dive brake connections.
   h. Fuselage skins.
   i. Wheel, tire and brake.

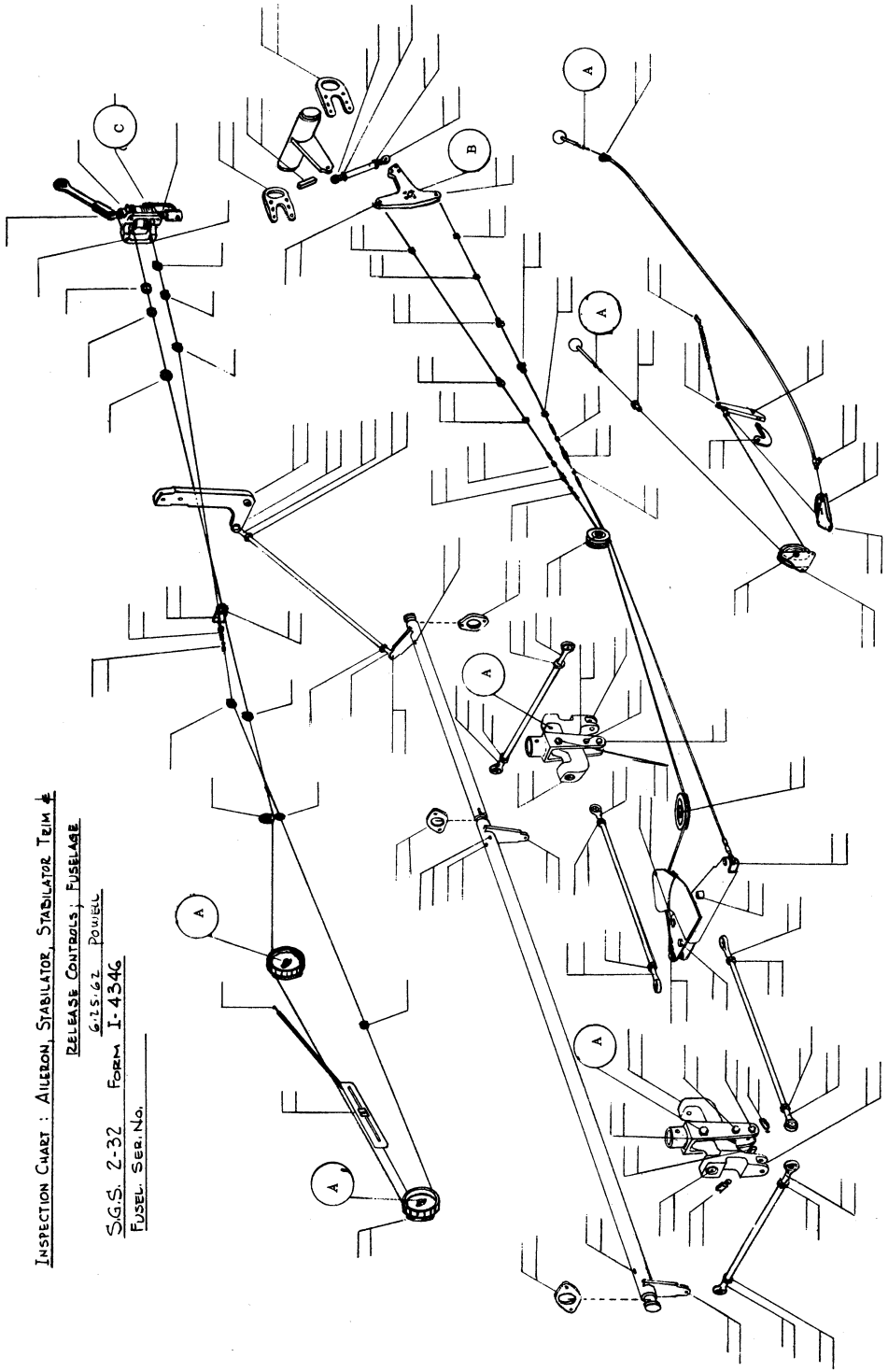
S.G.S. 2-32 FORM I-4348

WING SER. No. _____ (LEFT) _____ (RIGHT)

INSPECTION CHART: AILERON & DIVE BRAKE CONTROLS; WING

6-26-62 Power





WEIGHT AND BALANCE

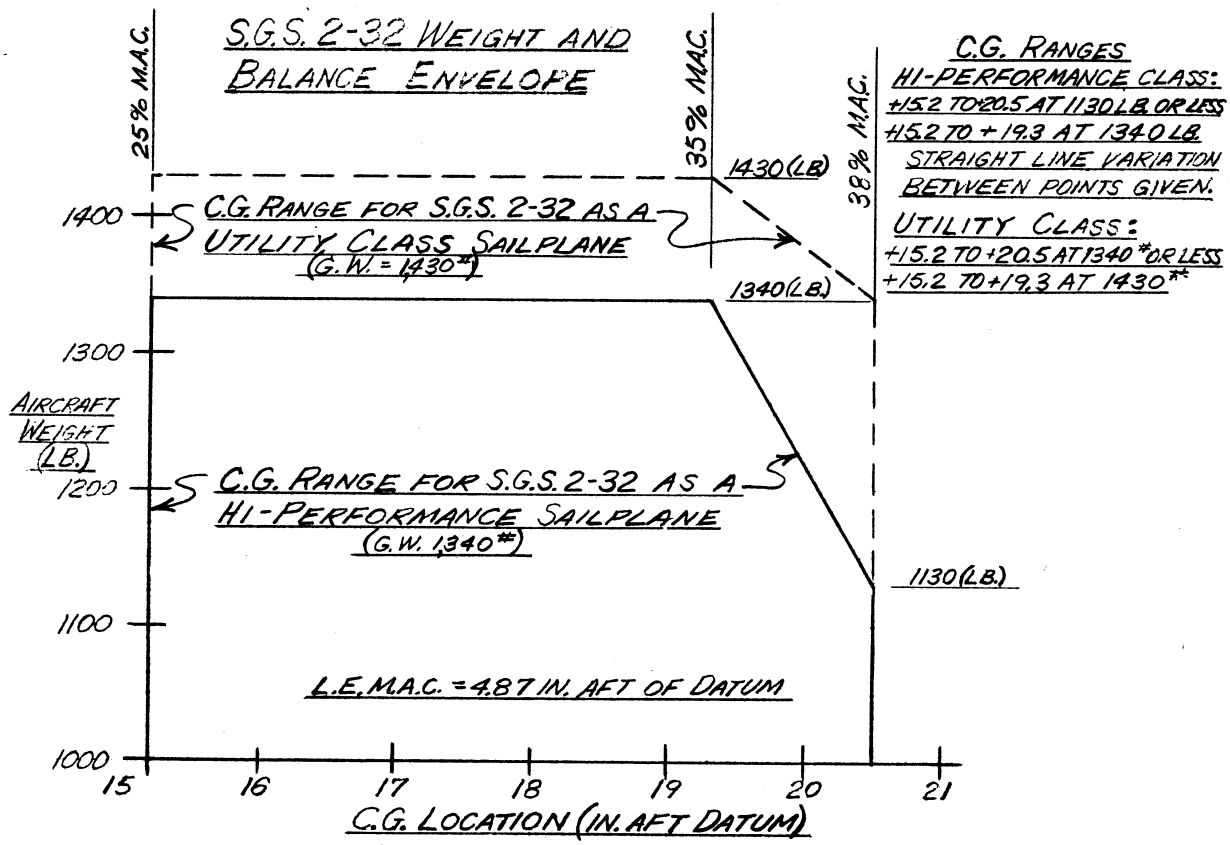
The 2-32 is a high performance two place tandem sailplane of clean aerodynamic design.

Solo flight is from front seat only. The placard in the ship gives basic minimum loading conditions and the pilot should familiarize himself with the weight and balance sheets to cover various loadings since there are a wide variety of loading conditions possible. No permanent equipment should be removed or added without checking the effects on the weight and balance form and placard.

The weight and balance envelope is shown on the following page. Note that 35% MAC (Mean Aerodynamic Chord) is the maximum rearward limit at a gross weight of 1, 340 lbs. With the gross weight reduced to 1, 130 lbs., the rearward limit is at 38% MAC. While it is legal to fly with the cg aft of 35% MAC, it is strongly recommended that, whenever practical, the cg be maintained at, or forward of, 35%. The range of 33 to 35% yields the best handling and soaring characteristics. In the aft portion of the cg range, the ship will stall more readily and recovery time is longer.

The dive brakes are effective and provide a much better means of rapid descent than spins so that there should be no normal requirement for spins.

S.G.S. 2-32 WEIGHT AND BALANCE ENVELOPE



C.G. RANGES

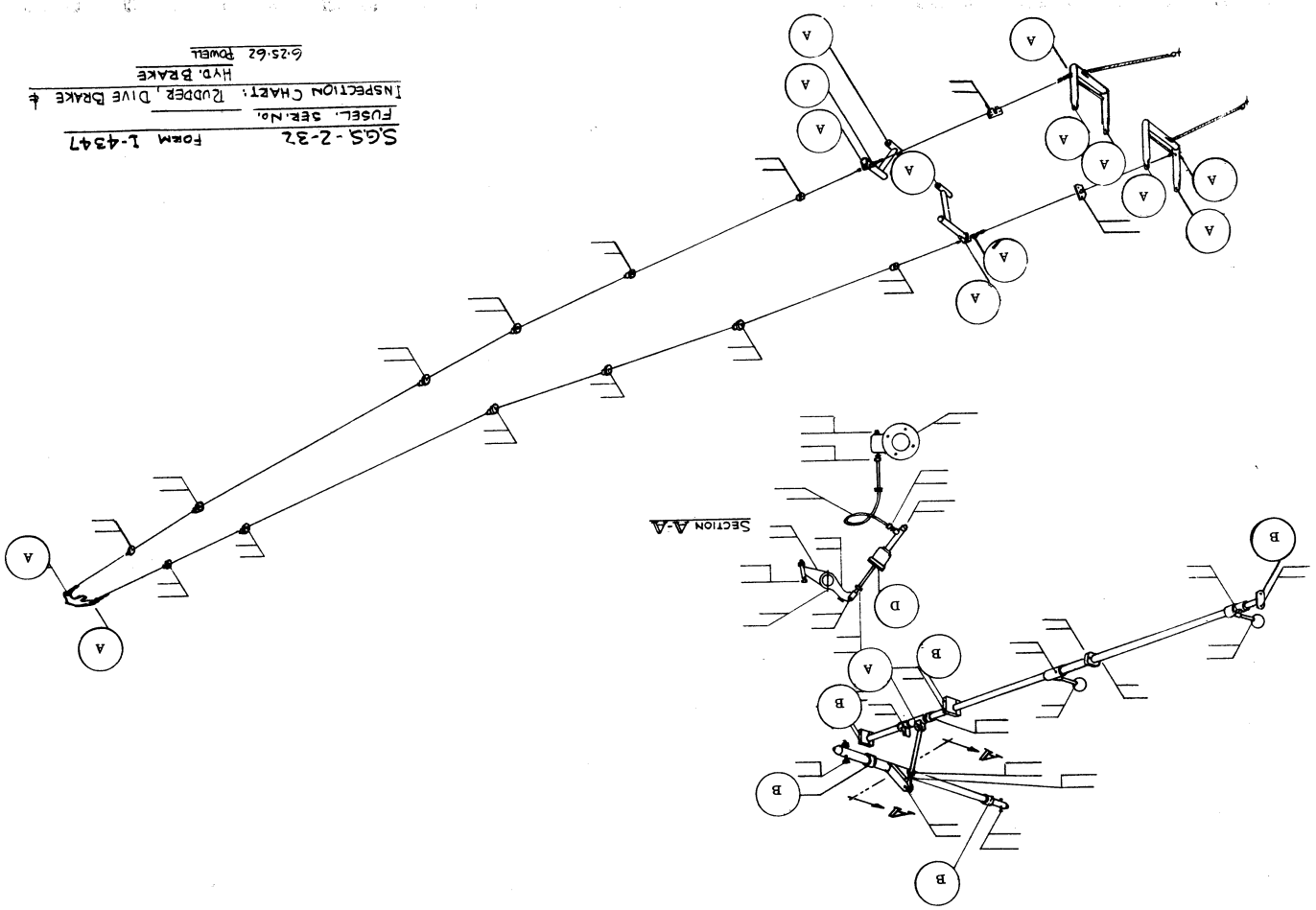
HI-PERFORMANCE CLASS:
+15.2 TO 20.5 AT 1130 LB. OR LESS
+15.2 TO +19.3 AT 1340 LB.
STRAIGHT LINE VARIATION BETWEEN POINTS GIVEN.

UTILITY CLASS:
+15.2 TO +20.5 AT 1340 #OR LESS
+15.2 TO +19.3 AT 1430 ##

WEIGHT AND BALANCE ENVELOPE
PREPARED BY: K. SMITH 6/17/64 CHECKED BY:
SCHWEIZER AIRCRAFT CORP. ELMIRA, N.Y.

S.G.S. 2-32

REVISED 4-7-65



S.G.S. 2-32 FORM 1-434?
FUSEL. SER. No.
INSPECTION CHART: RUDDER, DIVE BRAKE & HYD. BRAKE
6-25-62 POWELL

GENERAL MAINTENANCE

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 $30^{\pm}$ 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.

AERO TOWING

Towing is normal. Excellent visibility, the convenience of a trimmer and light control pressures remove most of the work from towing. A minimum indicated airspeed of 60 mph in the sailplane is recommended for best control. This is a heavier sailplane than most, and, due to the long fuselage and small clearance of the aft fuselage, a too low speed take-off will cause a hard bumping of the tail wheel on the runway. This will result in a series of tail bumps if correction control is not undertaken immediately. More care is required on a rough terrain take-off. The IAS of the sailplane should be between 45 and 50 mph before lift off. Be sure an adequate tow plane is used for towing. It is a good idea to brief any tow pilot on speed to tow, especially if he is unfamiliar with towing heavily wing loaded sailplanes.

AUTO OR WINCH TOWING

Auto Towing:

Because of its weight, either dual or solo, and the higher flying speeds, several factors should be considered before auto or winch towing the 2-32.

1. Pilot or Instructor should have considerable experience in auto-winch towing and experience in the 2-32.

2. The cable, wire or rope must be in very good condition and strong enough to do the job. Minimum strength of line or safety leader should be 1,350# (3/8 manila), maximum - 2,000#.

3. The tow car must have the ability to tow at higher speeds and with a heavier load on tow.

4. Due to the higher towing speed, a longer runway will be required to reach the same altitude that a slower tow with a lighter sailplane would produce.

5. The 2-32 does not have a CG Hook. Therefore, porpoising can be expected if too much back-stick is used during the climb.

6. The tow car driver should be familiar with the flight characteristics of the 2-32.

Maximum Speed - Auto-Winch Towing:

The maximum permissible auto-winch tow speed is 86 mph. However, there is no need to intentionally exceed 65 mph for any normal operation.

The Ground Run & Take-off:

Set trim slightly nose down. As the 2-32 begins its forward movement on tow, enough back-pressure is held to raise the skid off the runway so that it is in a level attitude. As the ground speed increases most back pressure is released to hold the level attitude. As flying speed is reached (42 - 45 solo, or 46 - 48 dual), enough back-pressure is added to get airborn. At an indicated 50 mph solo, or 55 mph dual, a medium climb can be started. This is held until 100' of altitude is reached where more back-pressure and a steeper climb is used. The ideal climb angle is governed by the indicated airspeed. However, a steep climb with under 55 mph solo, or 60 mph dual, is not recommended. If too much back-pressure is applied during the climb, the horizontal tail will stall and unstall causing the nose to pitch up and down. This is known as porpoising and can easily be stopped by easing forward on the stick until it ceases. The best climb angle is at an airspeed just before the sailplane porpoises. When reaching the top of the tow, which is near to release time, four things occur that indicate this. First, the sailplane will be at nearly a level attitude with the stick well back. Second, a sensation of being pulled down will be felt. Third, the rate of climb will fall off to practically nothing. Fourth, the tow car will be nearing the end of the runway and slowing down which in turn slows the sailplane. At this point, the pilot levels the sailplane to normal flight attitude and releases.

WINCH LAUNCHING

The procedure for Winch Towing the 2-32 is basically the same as for Auto Towing. However, there are some differences.

1. Acceleration at the beginning of the ground run for takeoff is much faster than an Auto Tow would be if both were using the same horsepower engine. The pilot should be prepared for this and react accordingly. The ground run will be much shorter.

2. Winches are run with a line speed suitable for the aircraft being towed.

3. Some Winches are equipped with tension meters which the winch operator uses to establish the towing speed of the sailplane. The pilot must establish the proper climbing attitude almost immediately to give the proper reading on the tension meter. If too little climb is established, the tow will over speed because of lack of tension. If the Winch Tow red line is exceeded, the flight should be terminated by a straight in landing, or, a short pattern as required.

   It should be noted that the tensions used to properly tow different type sailplanes will vary with their weight and flying speeds, and must be determined for each type of aircraft.

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.

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.

FREE FLIGHT

Flying Weight	Wing Loading	IAS	Minimum Sinking Speed
1020#	5.67#/sq.ft.	46 m.p.h.	2.08 FPS
1200#	6.72#/sq.ft.	50 m.p.h.	2.24 FPS
1340#	7.44#/sq.ft.	52 m.p.h.	2.38 FPS
1430#	7.94#/sq.ft.	54 m.p.h.	2.56 FPS

Flying Weight	Wing Loading	IAS	Glide Angle
1020#	5.67#/sq.ft.	55 m.p.h.	34 - 1
1200#	6.72#/sq.ft.	59 m.p.h.	34 - 1
1340#	7.44#/sq.ft.	63.5 m.p.h.	34 - 1
1430#	7.94#/sq.ft.	66.5 m.p.h.	34 - 1

Flying Weight	Wing Loading	Stalling Speed
1020#	5.67#/sq.ft.	41 m.p.h.
1200#	6.72#/sq.ft.	44 m.p.h.
1340#	7.44#/sq.ft.	46 m.p.h.
1430#	7.94#/sq.ft.	47 m.p.h.

Level flight stalls are normal and straight ahead, but may fall off in either direction due to gustiness or control position. Recovery is normal. Stalls while turning result in fall-off in direction of turn. Recovery is normal.

	Spiralling in Thermals			
	1020#	1200#	1340#	1430#
30° Bank	48 mph	52 mph	55 mph	58 mph
45° Bank	50 mph	54 mph	57 mph	60 mph

PLACARD SPEEDS

	Class I Hi-Perform.	Class II Utility
Max. Glide Speed, Dive Brakes Open	158 mph	139 mph
Max. Glide Speed, Dive Brakes Closed	150 mph	139 mph
Max. Aero Tow Speed	120 mph	110 mph
Max. Auto-Winch Tow Speed	86 mph	86 mph

SLIPS:

Normally executed slips can be performed, but with the effectiveness of the dive brakes, it is very unlikely that slipping becomes necessary.

SPINS:

The 2-32 has a long span and the all up weight is relatively high. Therefore, certain recovery procedures are necessary. Pilots with little or no spin training should not attempt spins in the 2-32 without prior dual training with a qualified instructor.

Spin entries are normal throughout the C.G. range. After the entry, there will probably be one nose up and down oscillation before the stable spin occurs. The rotations are relatively slow with an altitude loss of approximately 300' per turn. Recovery technique is normal, except that considerably more control is needed to stop the rotation and lower the nose. Instead of easing off back pressure on the stick, it must be pushed forward of neutral and instead of neutralizing rudder, opposite rudder must be applied. The rotation can be stopped in 1/4 to 1/2 a turn. Pull outs, depending on the loading of the sailplane, can be made at airspeeds of 75 - 90 mph without appreciable G-loads. Spins can be done with dive brakes open and the pull out will be at a slower airspeed.

Aerobatics:

The 2-32 is fully aerobatic, but pilots with no previous aerobatic experience should not attempt them without prior instruction. Due to the cleanness and weight of the sailplane, a badly executed maneuver may result in exceeding the maximum placard speed.

LANDING

Pattern: It is standard practice to fly a traffic pattern. Downwind, base leg and final approach. Extra speed is also used depending on wind velocity and gust conditions. It is good practice to add 1 mph to airspeed for each mph of wind.

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

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.

Dive Brakes: Approach should be made high, with use of dive brakes, as needed. Dive brakes increase sink, which in turn makes a steeper and more controllable glide path. They can also be used to lose altitude rapidly at any time during a flight, or during a tow to take up slack, or to lower sailplane from a too high position.

The 2-32's dive brakes are extremely effective. They will limit the aircraft's speed to approximately 145 mph in a vertical attitude in light weight condition; or 158 mph at full gross.

At slow speeds, care must be taken to lower the nose before brake (or additional brake) is applied as airspeed will decrease quite rapidly as brakes are opened. A minimum airspeed of 65 mph (plus wind speed allowance) is recommended for the pattern and final approach with the 2-32.

Touch Down: Can be done with dive brakes either partially open or closed although it is preferable to land with them 1/4 to 1/2 open. Once the flare out is initiated, airspeed will decrease quite rapidly. Care must be taken to maintain sufficient speed as sailplane will settle. Too slow a speed and too much rotation will cause the tail wheel to touch first.

By holding a level attitude close to the ground, the sailplane will settle to a smooth, level touch-down. DO NOT FLARE OUT TOO HIGH - this can cause a very hard landing which could result in injury to occupants or sailplane.

When the main wheel has touched down, full dive brake can be applied.

Taxiing after Touch Down: Even though sailplane is on the ground, it should literally be flown to a stop with use of all controls. Wheel brake may be used if a quick stop is desired or necessary. Care should be taken to keep the wings level with ailerons during taxi as the long wing could cause a ground loop if allowed to drag.

COLD WEATHER OPERATION OF THE 2-32

GENERAL PROVISIONS:

Since the 2-32 is ideal for winter flying; as well as high altitude wave flying, these sailplane quite often will be used in cold weather associated with this type of flying.

If any flying is to be done in freezing weather or at high altitude, it is recommended that a low-temperature lubricant be used on all pivot points - bearing surfaces or other moving parts. To do this, the pins or bolts should be removed and cleaned of any old grease or oil with a solvent, and then apply low-temperature grease such as Esso "Beacon #325", or equivalent grease meeting low-temperature requirements of Spec. MIL-G-3278, (See QPL-3278).

DIVE BRAKES:

Two types of freezing are possible with the dive brake system. The first is actual freezing down of the dive brake doors, and the second, high friction of the dive brake control system due to the low temperature effect on lubricants.

Snow or ice on top surface of the wing usually will be melted by the sun which results in a water film on the dive brake door seals. In flying, as the air cools with altitude, this water freezes the doors to the seals so that they may not be able to be opened. It is recommended that these doors and seals should be checked and dried off before flying if cold temperatures are expected. De-icer solution can be applied to the rubber to help keep them from sticking.

The dive brake system should be carefully cleaned and lubricated with low temperature grease. The most important point here is to be sure that the slide rod and housing are clean.

TRIM TAB ACTUATOR:

A rubber boot has been provided to discourage the formation of ice and freezing of this unit. (Ships below Serial No. 30 do not have this. A kit is available from SAC for retrofit.) It is important here to be sure that the jack-screw threads and all of the pivots in the rear control system are greased with low temperature grease.

ICE AND FROST ON SAILPLANE:

Ice and frost on a sailplane can be dangerous in that it can greatly increase the stalling speed. All ice or frost should beremoved from the sailplane before flying. This can best be done by cleaning off the excess snow and then letting the sun melt off the balance of ice or frost. If hangars or blowers are available, they should be used in cleaning snow or ice from sailplane. Care must be exercised in cleaning off the surfaces so finish and skins will not be scratched or fabric torn.

CANOPY PROVISIONS:

Be sure that the bolts, holding canopy glass to canopy frame, are just snug, so plastic can move as it expands and contracts. It is recommended that clear

SECTION TWO

ERECTION AND MAINTENANCE INSTRUCTIONS

MODEL SGS 2-32

view panels be used inside the canopy to provide necessary visibility when exhaled breath freezes on canopy. These clear-view panels can be taped to canopy with plastic electricians tape so that a small dead air space exists between the two. SAC has standard clear-view panels for those interested.

BATTERIES:

Dry and wet batteries lose voltage with low temperatures. Insulating them helps to delay loss of voltage. Some of the new type batteries have improved cold weather performance and should be investigated.

WHEEL FREEZING:

In late fall or early spring when slush or mud is on the field, it is possible to get the wheel well filled on take-off. Then during flight, if it gets cold enough, this can freeze and lock the wheel prior to landing. There is no remedy for this except to avoid the slush or mud. The consequence for landing with a locked wheel is not severe - at most, a blown tire.

With the aft control stick removed, and dual seat belts and shoulder harness installed, the 2-32 will accommodate two average sized passengers. A special floor plate covers the control stick opening.

2-32 FLIGHT ENVELOPE

The following graph shows the aircraft's basic flight envelope. Note that aircraft should be operated within this envelope at all times. The dash lines show the placard limits for flight with brakes and without brakes. From points A to C, and A to J, abrupt maneuvers will not exceed the load factor indicated by this line. Above C (98 mph), the maneuver must be limited to avoid excessive load factors. The gust line is based on the standard 24 ft./sec. gust. In case of extreme turbulence, such as in wave conditions and clouds, gusts can be much higher and the aircraft should be operated as slow as practical considering the fact that under turbulent conditions a safe margin above stall should be maintained.

While there is no specific restriction against aerobatics, sailplane aerobatics is a specialized field and requires experience and instruction to do safely. It is entirely too easy to exceed flight limits in improperly executed maneuvers and we do not recommend aerobatics.

Bear in mind that while the load factors in the Flight Envelope carry a 50% margin of safety, these margins should not be used intentionally and are for inadvertent conditions only. This is also generally true in over speeding - a 20% increase in speed over the placard will use up the margin of safety. A wise pilot will never use more speed, or pull more G's, than the condition requires.

OPTIMUM SPEED CHART

S.G.S. 2-32 GROSS WEIGHT = 1340 lbs.

Wt = 1000 F.P.M.		WT = 1200 F.P.M.		Wt = 1400 F.P.M.		Wt = 1600 F.P.M.	
W F.P.M.	V MPH	W F.P.M.	V MPH	W F.P.M.	V MPH	W F.P.M.	V MPH
--	53	--	53	--	53	--	53
--	60	--	60	--	60	--	60
--	66	--	66	--	66	--	66
--	71	--	71	--	71	--	71
--	77	--	77	--	77	--	77
--	82	--	82	--	82	--	82
--	86	--	86	--	86	--	86
--	90	--	90	--	90	--	90
--	94	--	94	--	94	--	94
--	98	--	98	--	98	--	98
000	101	--	101	--	101	--	101
100	104	--	104	--	104	--	104
200	107	000	107	--	107	--	107
300	110	100	110	--	110	--	110
400	112	200	112	000	112	--	112
500	114	300	114	100	114	--	114
600	117	400	117	200	117	000	117
700	119	500	119	300	119	100	119
800	121	600	121	400	121	200	121

OPTIMUM SPEED CHART

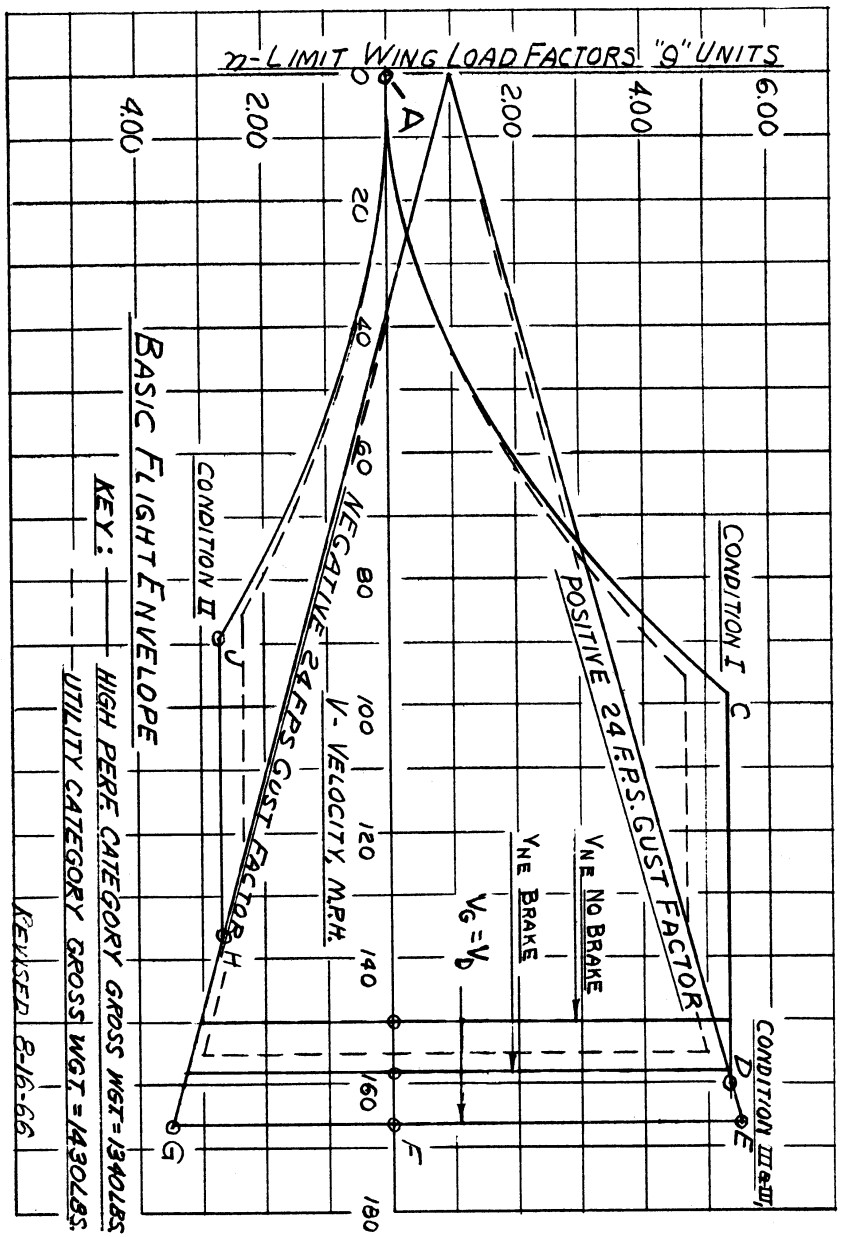
S.G.S. 2-32 GROSS WEIGHT = 1340 lbs.

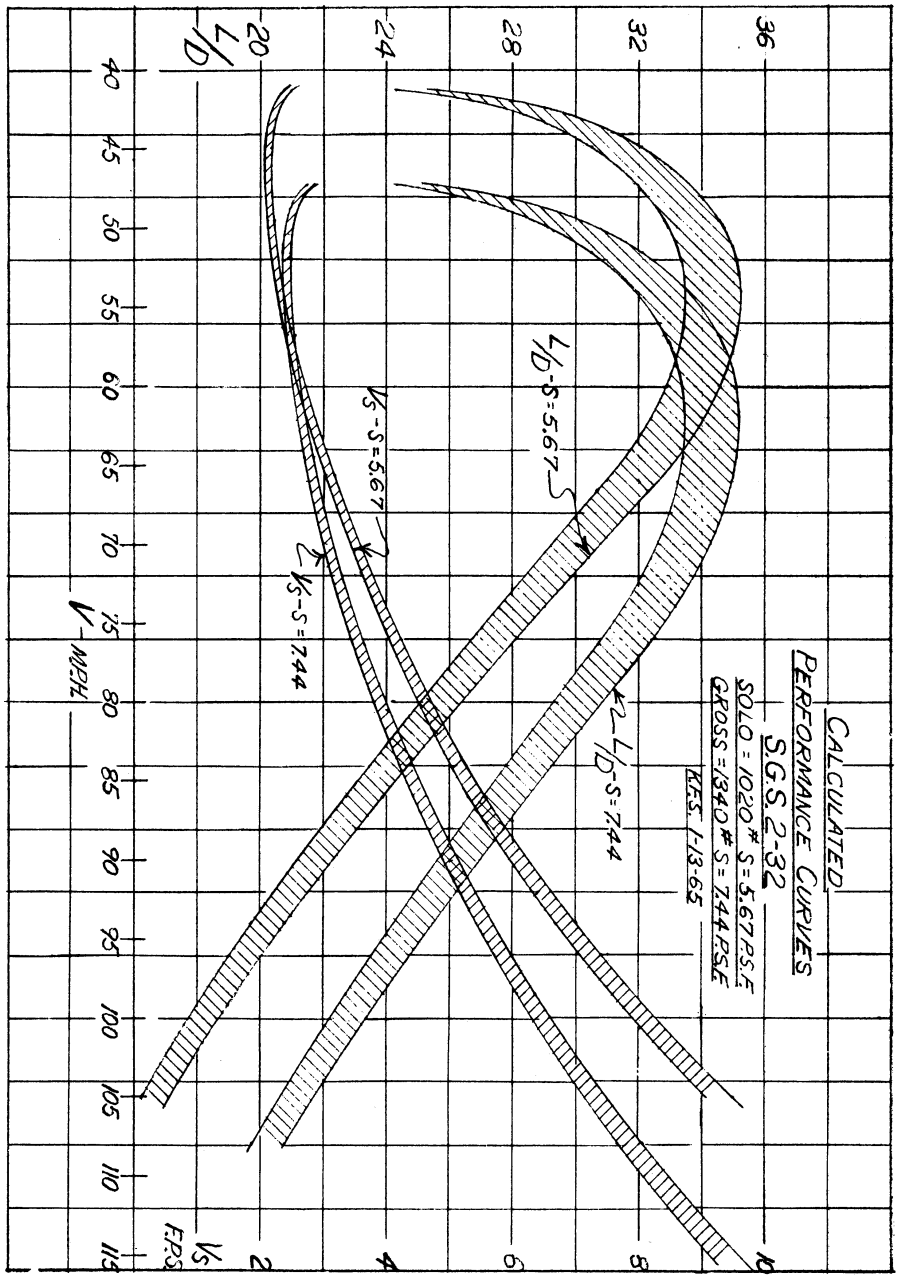
W = Variometer Reading
V = Horizontal Airspeed of Glider
Wt= Average Rate of Climb expected in next thermal

Wt = 000 F.P.M.		Wt = 200 F.P.M.		Wt = 400 F.P.M.		Wt = 600 F.P.M.		Wt = 800 F.P.M.	
W F.P.M.	V MPH	W F.P.M.	V MPH	W F.P.M.	V MPH	W F.P.M.	V MPH	W F.P.M.	V MPH
000	53	--	53	--	53	--	53	--	53
100	60	--	60	--	60	--	60	--	60
200	66	000	66	--	66	--	66	--	66
300	71	100	71	--	71	--	71	--	71
400	77	200	77	000	77	---	77	--	77
500	82	300	82	100	82	--	82	--	82
600	86	400	86	200	86	000	86	--	86
700	90	500	90	300	90	100	90	--	90
800	94	600	94	400	94	200	94	000	94
900	98	700	98	500	98	300	98	100	98
1000	101	800	101	600	101	400	101	200	101
1100	104	900	104	700	104	500	104	300	104
1200	107	1000	107	800	107	600	107	400	107
1300	110	1100	110	900	110	700	110	500	110
1400	112	1200	112	1000	112	800	112	600	112
1500	114	1300	114	1100	114	900	114	700	114
1600	117	1400	117	1200	117	1000	117	800	117
1700	119	1500	119	1300	119	1100	119	900	119
1800	121	1600	121	1400	121	1200	121	1000	121

1. Fly a little slower than indicated at high altitude.

2. Use a lower Wt than actual if conserving height is very important.





OPTIMUM SPEED CHART

S.G.S. 2-32 GROSS WEIGHT = 1200#

W = Variometer Reading
V = Horiz. Airspeed of Glider
Wt= Average Rate of Climb expected in next thermal

Wt = 000 F.P.M.		Wt = 200 F.P.M		Wt = 400 F.P.M.		Wt = 600 F.P.M.		Wt = 800 F.P.M.	
W F.P.M.	V MPH	W F.P.M.	V MPH	W F.P.M.	V MPH	W F.P.M.	V MPH	W F.P.M.	V MPH
000	47	--	47	--	47	--	47	--	47
100	55	--	55	--	55	--	55	--	55
200	63	000	63	--	63	--	63	--	63
300	69	100	69	--	69	--	69	--	69
400	74	200	74	000	74	--	74	--	74
500	79	300	79	100	79	--	79	--	79
600	83	400	83	200	83	000	83	--	83
700	87	500	87	300	87	100	87	--	87
800	91	600	91	400	91	200	91	000	91
900	95	700	95	500	95	300	95	100	95
1000	100	800	100	600	100	400	100	200	100
1100	104	900	104	700	104	500	104	300	104
1200	108	1000	108	800	108	600	108	400	108
1300	112	1100	112	900	112	700	112	500	112
1400	116	1200	116	1000	116	800	116	600	116
1500	120	1300	120	1100	120	900	120	700	120

1. Fly a little slower than indicated at high altitude.

2. Use a lower Wt than actual if conserving height is very important.