



THE 1-26 SAILPLANE

FLIGHT - ERECTION - MAINTENANCE

MANUAL

MODELS A thru E



**AIRCRAFT CORP.**

**ELMIRA, N.Y.**

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(Form F-106)

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(Form F-105)

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SGS 1-26 FLIGHT HANDBOOKThe SGS 1-26

The SGS 1-26 is a single-place all metal, fabric covered intermediate type sailplane built by Schweizer Aircraft Corp. at Elmira, New York. Over-all dimensions are:

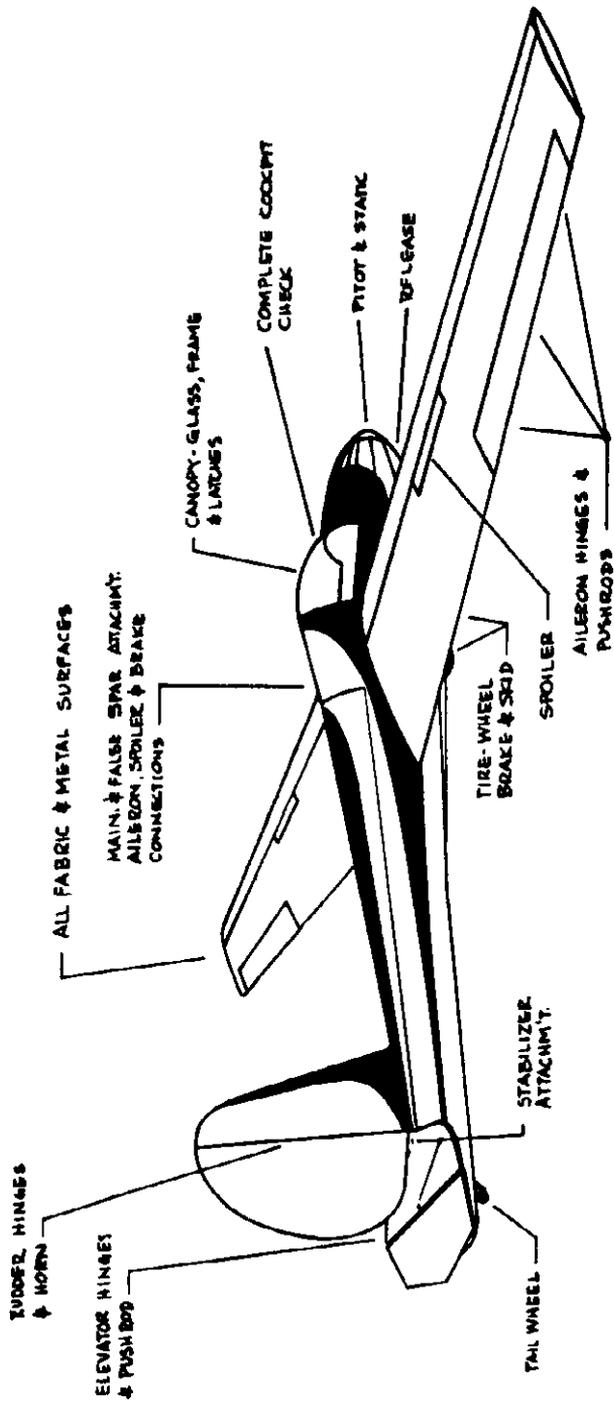
Length - 21'3"  
Span - 40'  
Height - 7' 2½"

Flight Controls:

1. Tow Release - located at center bottom of instrument panel. A pull of approximately 1 inch is required to release the tow rope.
2. Dive Brake - wheel brake lever located on left side of cockpit. Unlock and pull aft to actuate.
3. Control stick - a conventional stick mounted on a single torque tube for aileron and elevator control.
4. Rudder pedals - are conventional toe type and are not adjustable.
5. Trim lever - is a small "T" handle located under the bottom right side of instrument panel. This is a bungee type or spring loaded mechanism, attached to the elevator system. It is an any position control used only for nose heaviness. Turn left to unlock and right to lock into position.
6. Instruments - ASI is required. Additional instruments are optional, up to full panel, as desired.

PREFLIGHT

1. Wings:  
Check spoiler hinges and connections  
Check aileron hinge points and pushrods  
Check fabric
2. Tail Assembly:  
Check all hinge points  
Check pushrod attachment to elevator horn  
Check stabilizer attachment to fuselage  
Check rudder cable attachment to rudder horn  
Check tail wheel assembly  
Check fabric



## I-26 PRE-FLIGHT INSPECTION

### 3. Fuselage:

- Check all controls for free movement including release
- Check instruments
- Check canopy attach points
- Check safety belt and shoulder harness
- Check fabric
- Check Wheel, tire and brake
- Check static and pitot tubes for water or foreign objects.
- Check wing and control attachments

### 4. Check tow rope.

## AERO TOWING 1-26

1. The ailerons and elevator controls are quite sensitive and caution is needed to keep from over controlling.

The control feel on the stick is much lighter than on most sailplanes, therefore, after once getting used to sensitivity and light touch, you will find that towing is easier than ever.

2. Towing procedure is normal.
3. Recommended towing speed is 50-60 mph.

## WINCH OR AUTO TOWS

### Precautions:

1. Be sure equipment is suitable for purpose.
2. Person driving car or operating winch should be experienced with equipment and know towing characteristics of a 1-26.
3. Never attach rope or wire to empty sailplane.

Winch or auto tows may be executed in the usual manner with either the forward or cg release, although, a higher altitude is reached with the cg release. There is no tendency to oscillate with either release. Maximum auto or winch towing speed is 60 mph.

### Caution:

1. Do not climb at full back stick position until a safe altitude for stall recovery is reached.
2. Level out before releasing.
3. Be sure airspeed is indicating less than placard speed for winch or auto tow.

## FREE FLIGHT

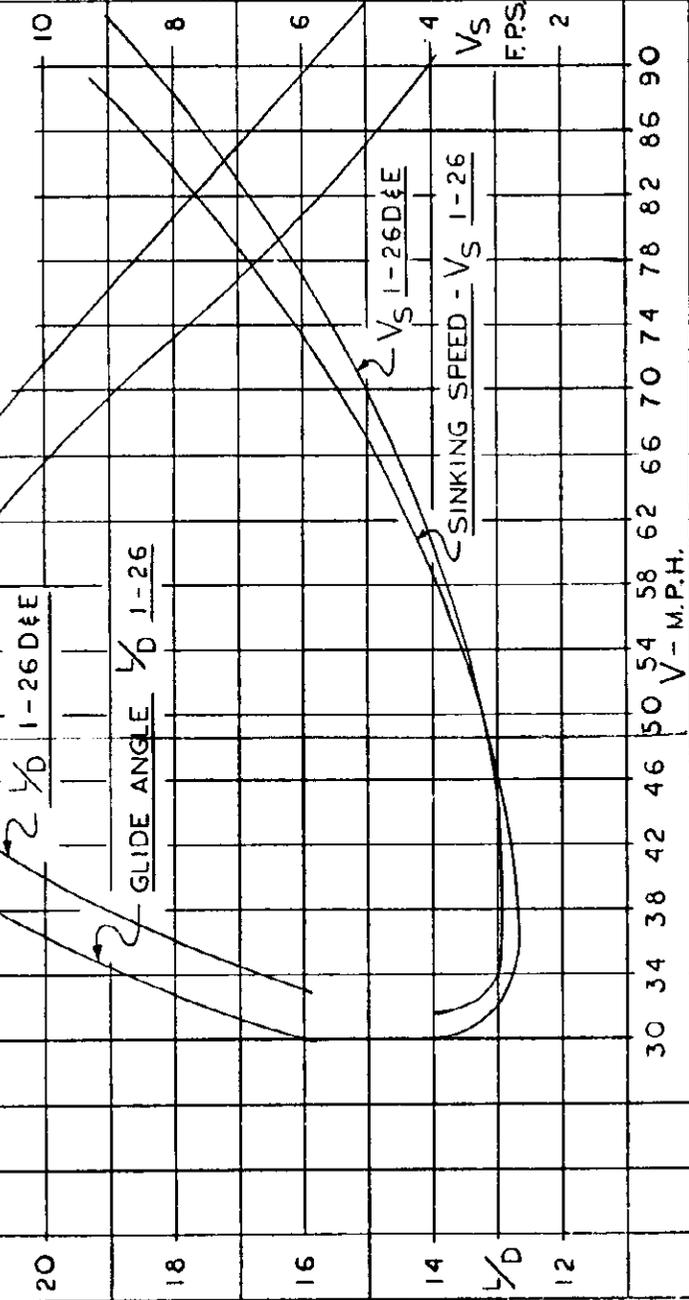
Flying Speeds	Best gliding speed (L/D)	48 mph	23-1
	Speed at lowest sink	38 mph	2.6 fps

# SGS I-26 & I-26D & E

## PERFORMANCE CURVES

GROSS WEIGHT = 575# - I-26

GROSS WEIGHT = 700# I-26D & E



Placard Speeds      Dive - 104 mph  
                         Aero tow - 95 mph  
                         Spoilers Open - 104 mph  
                         Auto or winch tow - 60 mph

USEFUL LOADS - Placard weights on instrument panel should be complied with. The following gross weights apply:  
1-26 and 1-26A - 575 lbs.  
1-26B and 1-26C - 600 lbs.  
1-26D and 1-26E - 700 lbs.

NOTE: 26058G ballast should be installed if necessary. See page 23.

AEROBATICS - The 1-26 is fully aerobatic but extreme care should be used not to exceed the placard speed when entering or recovering from any maneuver.

STALLS            - Straight ahead. The 1-26 generally falls straight through without tendency to fall off on a wing.  
  
                     - In a turn. The 1-26 always falls in the direction of the turn with no tendency to go over the top.

A pronounced buffeting will occur before the stall.

STALL RECOVERY - Increase flying speed by easing stick forward until nose falls through horizon and then resume desired speed. Directional control maintained with rudder.

SPINS - May be entered by use of full back stick and full rudder. It is nose down with no danger of flat spin if placard weight is complied with. The further forward the cg, the more nosedown the spin will be. This will result in a higher air speed while spinning and during recovery.

SPIN RECOVERY - Normal

Note 1. Do not use excess forward stick. The 1-26 accelerates very rapidly and could exceed placard speed.

Note 2. It is highly recommended that pilot's without aerobatic experience, refrain from any type of inverted flight or difficult maneuvers without adequate dual in same.

SPIRALLING IN THERMALS - In order to remain aloft or gain altitude, it is necessary to spiral. The average thermal diameter is quite small, therefore, a fairly steep bank is required. Although this is general practice, it is not necessary in areas where large diameter thermals are found. The best flying speed in any thermal, at any degree of bank is one or two miles per hour above the buffet before the stall.

### EXAMPLE

Stalling Speed Level Flight - 28 mph

	<u>20° Bank</u>	<u>30° Bank</u>	<u>45° Bank</u>	<u>60° Bank</u>
Stall Speeds	28.9	30.1	33.4	39.6
Buffeting Speeds	up to 35 mph	up to 37 mph	up to 39 mph	up to 43 mph
Spiralling Speeds	36-37 mph	38-39 mph	40-41 mph	44-45 mph

Keep in mind that the steeper the spiral is, the higher the minimum sink and stalling speed will be. It is very often necessary to sacrifice slow speed and low sink to remain within the limits of the thermal. This is specifically true in strong, small diameter thermals.

**SLIPPING** - The 1-26 can be slipped both forward and while turning. Both procedures are normal. Best slipping speed is 45-50 mph.

### LANDING

**Pattern** - It is general procedure to fly a rectangular traffic pattern. Downwind and base legs and approach. Extra air speed is also used depending on wind velocity and gust conditions. It is good practice to add 1 mph of airspeed for each mph of wind.

**Spoilers** - Approach should always be made high with generous use of spoilers. Spoilers 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 tow to take up slack rope or to lower sailplane from a too high position.

**Touch down with spoilers** - The glide path with spoilers on is quite steep, therefore, it is necessary to flare-out 2-5 ft. above the ground at 42-45 mph. Spoilers should also be closed to 1/3 to 1/2 open. If spoilers are not partly closed, it results in a tail first landing. Full spoilers can be used on touchdown if landing speed is increased to 50 mph. **Caution:** Do not flare out too high and drop or stall in.

**Touch down without spoilers** - is executed by letting sailplane land itself at 42-45 mph. If it is done at a slower speed, it will result in a tail first landing. Use extra care not to ease stick back after touchdown. This will increase angle of attack and the sailplane will become airborne again.

**Taxiing after touch down** - Even though the sailplane is on the ground, it is very important to fly it to a com-

plete stop. The wheel brake may be used if a quick stop is desired or needed. There is no danger of nosing over.

Getting out of 1-26 - When on the ground, the tail is down when empty and nose down with pilot aboard. When pilot gets out, he should keep his weight on side of cockpit until he is in a position to lower tail gently.

#### GENERAL FLIGHT PROCEDURE IN HIGH WIND

1. Be extra careful during ground handling operation. Keep tail high when going to and from tie down area.
2. Keep well upwind of take off and landing area.
3. When flying against wind, it is good practice to add the wind velocity to speed at best L/D.

#### EXAMPLE

Speed at best L/D	-	48 mph
Wind Velocity	-	15 mph
Desired speed	-	63 mph

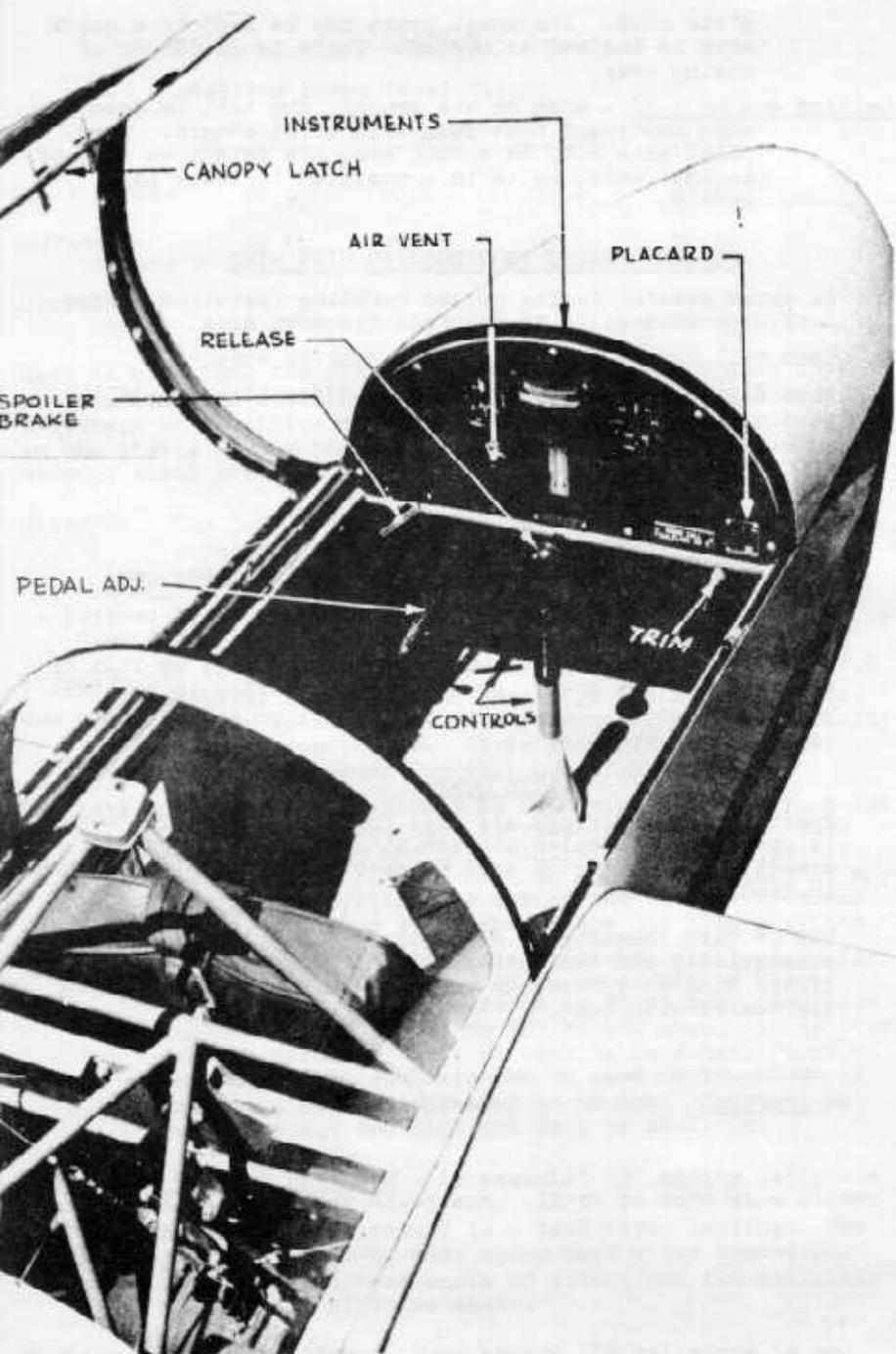
This speed will give a better L/D than a slower one.

4. Land into the wind whenever possible. Crosswind landing - crab into the wind just enough to maintain desired path over ground and at last moment straighten ship in line of flight and touch down. Be careful while ship is rolling. Downwind landing - land with brake full on and maintain control as long as possible.

#### TIE DOWNS

Special tie down rings are used to secure the 1-26. One is used at 3/16" holes at each wing tip and tail wheel bracket. Be sure rope used to secure ship is adequate and in good condition.

USE OF TAPE (Masking or Electrical). The 1-26 will fly more quietly and the buffet will be reduced by several mph if the wing-root-fuselage junction and back canopy hatch are sealed with tape.



## Flight Limitations for 1-26 through 1-26C

In any aircraft, it is important to know the operating limits and that exceeding these limits can highly endanger the aircraft and its occupants. The following information is provided for the 1-26 and 1-26A at 575 lbs. gross weight and the 1-26B and 1-26C at 600 lbs. gross wt. For slightly different conditions on the 1-26D and 1-26E, please refer to Page 21.

For the 1-26 thru 1-26C, the speeds with which you should be familiar are:

Placard Speed (never exceed) with or without spoilers open	104 mph
Placard Speed (never exceed) for aero tow	95 mph
Speed to begin maneuvering with caution	65 mph
Placard Speed (never exceed) for auto or winch tow	60 mph

In the 1-26, at speeds over 65 mph, the pilot must maneuver with caution. The maximum load factor which should be attained in flight is 5.54G, and the pilot can easily exceed this in abrupt maneuvers at speeds over 65 mph. The speeds between 65 mph and the 104 mph placard should be treated as a cautionary range and maneuvering within this range should be gradually reduced to a minimum as velocity increases.

The 1-26 limit load factor of 5.54 should not be exceeded in operation. A safety factor of 1.5 is required by the FAA which gives an ultimate load factor of 8.3, but this safety factor is required to allow for material variations and inadvertent atmospheric conditions. Because of its light wing loading, a sailplane can develop very high loads if speed limitations are not rigidly adhered to. Normal category light airplanes are usually certified to a limit load factor of 3.8 G.

### Understanding the Flight Envelope

The FAA required design flight envelope is presented on the following page. On the horizontal axis are indicated velocities in miles per hour, and on the vertical axis are load factors expressed in "G" units.

The straight lines labeled "gust load factors" represent the effect of the FAA required 24 ft. per second gust on the sailplane as speed varies. They diverge from the one "G" situation where the glider would be at rest or in perfectly balanced level flight. The curved lines diverging from zero "G" represent forces which can be induced by moving the elevator (or other) control abruptly at various speeds. As you can see, the faster you fly the more effect moving your controls will have. Gusts will also have more effect as speed increases.

Understanding the Flight Envelope cont'd. :

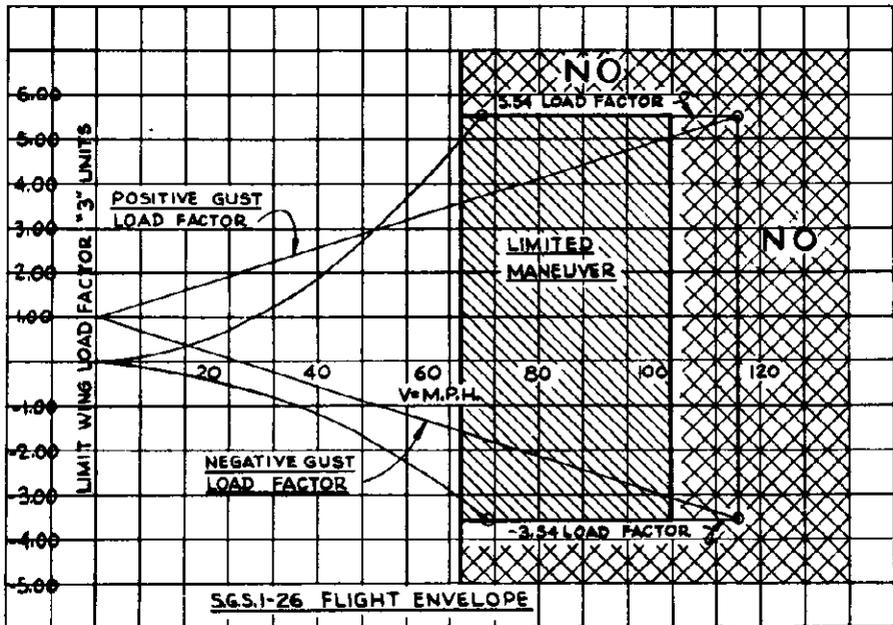
The speed for maneuvering with caution occurs where "G" loading from an abruptly moved control meets the 5.54 limit load factor. Assuming smooth and limited movement of the controls, the placard or "red-line" speed occurs where gusts could meet the 5.54 limit load factor without any maneuvering.

Normal placard speeds are reduced 10% from design speeds to provide an extra margin of safety. Thus, on the graph, the diagonal hatched area indicates speeds at which you must use caution in maneuvers. You should neither maneuver nor fly so fast as to expose your ship to loads within the cross-hatched area marked, "NO".

It can be inferred from the graph that abrupt maneuvering in gusty conditions is dangerous and can lead to very high "G" loads.

In normal operation the major cases of high "G" loads are tight spirals in thermals which would not normally exceed 2 or 2.5 G's. Winch or auto towing can produce high loads, but if the auto-winch placard speed is observed, this will be within safe limits. The best ground launch climb is obtained at speeds well below placard limits.

Aerobatics should be done with extreme caution since it is very easy to greatly exceed the placard or cautionary speeds in improperly executed maneuvers. They should not be done without previous instruction in two-place aircraft.



ERECTION AND MAINTENANCE INSTRUCTIONSMODEL SGS 1-26Erection Procedure:

This sailplane is designed to be assembled quickly. No rigging is necessary if normal procedure is followed. This erection procedure shall start with the sailplane on the trailer and continues until the sailplane is ready to fly. The steps for disassembly is the reverse of the erection procedure and therefore, are not listed in detail except where they differ.

## (a) Unloading Preparations:

1. Release trailer from towing vehicle.
2. 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 ring and cable assembly located at the out-board tie down fitting hole.
2. Loosen and remove bolt that fastens the spar butt to the trailer.
3. Place one man at the wing tip, holding the leading and trailing edge.
4. Place one man at the root, lifting at the leading edge.
5. Have both men lift straight up simultaneously, high enough to clear the trailer.

NOTE: With the horizontal stabilizer attached to the fuselage (fuselage supported in the tail high position) it is necessary to lift wing up and tilt outward at the same time to clear horizontal stabilizer.

6. When completely clear of the trailer, the wing should be carried to the place of assembly and placed flat on the ground.
7. Remove opposite wing, following same procedure as outlined above.

## (c) Horizontal Stabilizer, removal from trailer.

1. Remove wing nuts from frame and pivot straps.
2. Remove stabilizer from trailer and set aside.

## (d) Fuselage removal.

1. Remove canopy (front and rear).
2. Remove support from under rear of trailer, tilt trailer so that rear end is on the ground and block front of trailer.

3. Remove supports from rear spar wing attach holes making sure fuselage is supported manually.
  4. Remove bolt attaching tail wheel bracket to fuselage. With one man guiding tail, and one man on each side of fuselage at the cockpit, lift up fuselage enough to remove wheel from trough and back sailplane off trailer.
- e) Fuselage to wing assembly.
- Before placing wing on fuselage, check to be sure that there is no dirt on the spar butt or between the fuselage carry thru plates. A soft cloth can be used to wipe these surfaces clean. The main wing pin holes and rear carry thru fittings should be checked for the same condition.

A step-by-step procedure should be followed each time to prevent trouble. The following is recommended.

1. Support the fuselage in normal position with both canopies removed.
2. Wings placed on the ground or in racks on the correct side of the fuselage.
3. Line up pins, wing pins and rear carry thru bolts located so they are readily accessible.
4. Attach the wing spoiler cable to the aileron push rod temporarily with a rubber band so that it can be inserted thru the fuselage spar slot together with the push tube.
5. Have one person level the fuselage standing on the same side of the fuselage as the first wing is to be installed. Two men pick up the wing, one at the tip and one at the root. The leading edge of the wing is handed to the man supporting the fuselage, and the man carrying the wing root support the trailing edge.
6. The spar butt is placed into the carry thru, and the aileron push rod and spoiler cable is started thru the fuselage slots. The rear wing fitting is now in position to be inserted into the rear carry thru. Extreme care should be taken so that the man guiding the fitting into the hole does not have his fingers caught between the sharp wing skin and the fairing strips. A friction device is installed to keep the rear wing fitting straight.
7. When the rear fitting has been placed into the carry thru hole, the wing may be rocked slightly to slide it into position, use care to guide the wing butt skin over the fairing strips and flange on the root rib. Two 3/8" alignment holes are provided in the spar on each side of the carry thru structure to line up the wing-attach pin holes. A 3/8" tapered drift pin (SAC Part No. 2372A) should be used in these holes to align the wing-attach pin holes. (DO NOT USE A DRIFT PIN IN THE WING ATTACH PIN HOLES.) After lining

up the wing attach holes the (2) 26B-424 main wing pins are inserted using finger pressure, and at the same time rocking the wing.

NOTE: A coat of graphite powder may be used on the pins to aid in installation and removal. Install the AN365-624 nuts and 26A-435-1A washers on the wing pins and tighten only enough to prevent washers from turning.

8. Install the AN5-16 bolt in the rear carry thru and safety using (1) AN416-1 safety pin.
  9. The wing which was installed first can be placed on the ground and left in this position while the opposite wing is installed or, if another man is available, he can hold the first wing in the level position while three men install the opposite wing in the same manner outlined above. (4) through (8).
  10. After both wings are installed, the two aileron push rods are attached to the aileron idler horn using (2) AN393-23 clevis pins and (1) AN416-1 safety pin. (One safety pin being used to safety both clevis pins.) The two spoiler cables are attached to the spoiler brake idler horns by (2) AN393-13 clevis pins and (2) AN416-1 safety pins. Check operation of the aileron and spoiler control system for freedom of movement.
- (f) Fuselage to Horizontal Stabilizer Assembly.  
The horizontal stabilizer and elevator form a complete unit, and should not be disassembled.
1. The two stabilizer forward fittings are attached to the fuselage by (2) AN4-14A bolts, (2) AN365-428 nuts and (2) AN960-416 washers.
  2. The stabilizer rear spar is attached to the fuselage by (2) AN5-37A bolts, (2) AN365-524 nuts and (2) AN960-516 washers.
  3. The elevator horn is attached to the elevator push rod by (1) AN3-7 bolt, (1) AN310-3 nut, (1) AN960-10 washer and (1) AN380-2-2 cotterpin.
  4. Check operation of the elevator control system for freedom of movement.

#### GENERAL MAINTENANCE

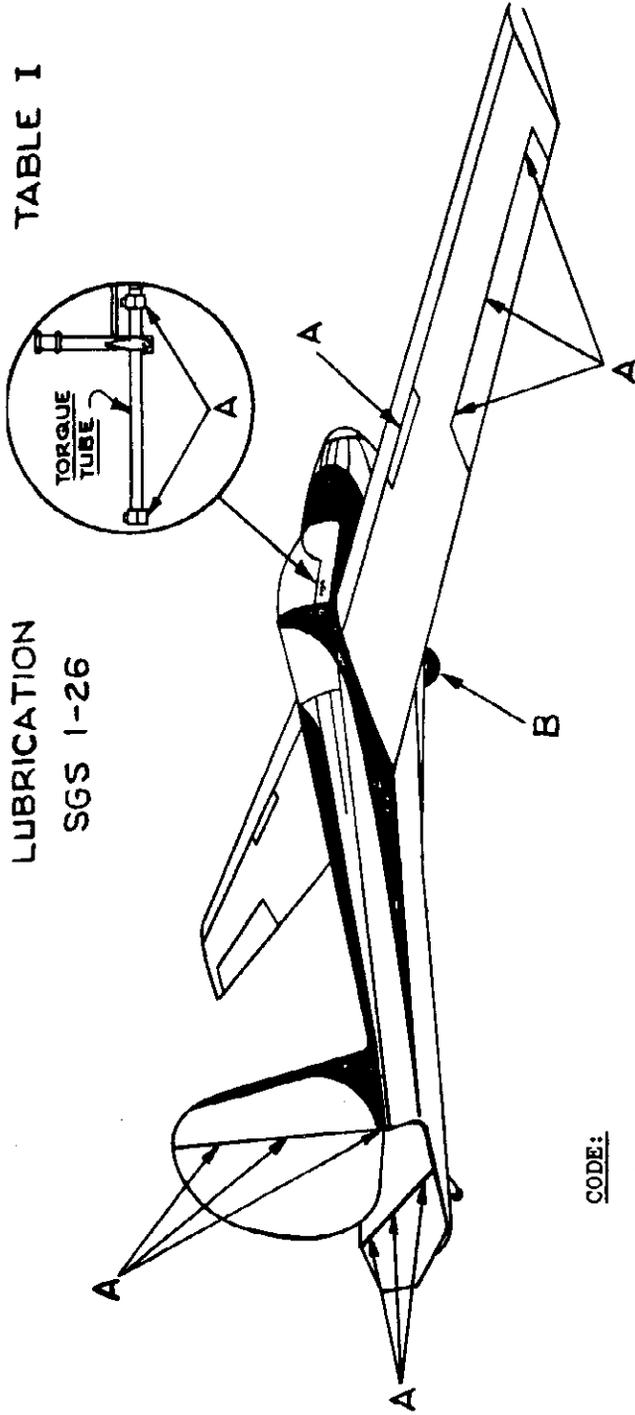
The sailplane can be serviced with a minimum of two lubricants; a good grade of lubricating oil and wheel bearing grease

1. Lubrication should be accomplished as follows:  
See Table I.  
(a) Lubricating oil should be used on the following parts:

Aileron hinges	Elevator hinges
Rudder hinges	Spoiler hinges
Torque tube bearings	

LUBRICATION  
SGS 1-26

TABLE I



CODE:

A - lubricating oil as required

B - wheel bearing grease as required

CODE:

A - LUBRICATING OIL AS REQUIRED

B - WHEEL BEARING GREASE AS REQUIRED

- (b) Lubricate at the following intervals:
  - (1) Oil hinges and torque tube bearings every 20 hours flying time or 6 months elapsed time, whichever is sooner.
  - (2) Grease wheel bearings as required, or if wheel should become noisy.
- (c) Rod End Bearings - are the sealed type and require no lubrication under normal conditions.
- (d) Control Pulleys - are the sealed type and require no lubrication under normal conditions.

2. Leveling:

- (a) To level fuselage laterally, prop up wings and test for horizontal across fuselage longerons just aft of forward wing carry thru structure.
- (b) To level fuselage longitudinally, prop up tail and test for horizontal on the fuselage longeron between Sta.'s 74 and 90.

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.

Elevator cables are rigged to 30<sup>+</sup> 5 pounds tension. Rudder control system tension is maintained by springs on rudder pedals. However, cables should be rigged with the turnbuckle threads flush with the barrel. Double safety turnbuckles in accordance with standard aircraft practices.

- (c) The spoilers have no initial tension. They should be rigged so that there is no slack or lost motion when control is started. Single safety turnbuckles in accordance with standard aircraft practices.
- (d) Tow hook release spring tension is checked by applying a force of 6-12 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.

INSPECTION (PREFLIGHT)

- 1. Inspect the following for condition, operation, security of attachment and any signs of wear, damage or failure.
  - (a) Wing and attachment
  - (b) Stabilizer

- (c) Elevator
- (d) Fin
- (e) Rudder
- (f) Fuselage covering and structural tubing
- (g) Control Cables
- (h) Controls and control system push rods
- (i) Ailerons
- (j) Spoilers and controls
- (k) Main wheel and brake
- (l) Tire (maintain tire pressure at 20 lbs.)
- (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 where there is excessive wear.)
- (o) Shoulder harness and safety belts
- (p) Canopy and Canopy release
- (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 by blowing through them.) CAUTION: DO NOT BLOW INTO PITOT TUBE WITH INSTRUMENTS CONNECTED.

INSPECTION (Annual and/or 100 hrs.)

1. Fuselage Group:

- (a) Check control stick and torque tube assembly. Oil torque tube support bearings.
  - (1) 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 - especially at fairlead and security of cable attachments.
- (e) Check fuselage members for cracks, misalignment and any other damage. Weld clusters for rust particularly in "cupped" areas without adequate drainage.
- (f) Note if the primer has been scraped off any fuselage member leaving exposed metal, sandpaper lightly to remove rust or dirt and touch up with zinc chromate primer, specification MIL-P-8585A.
- (g) Check cable pulleys for wear and attachment, replace if necessary.
- (h) Check fairleads for wear and attachment, replace if necessary.

- (i) Check fuselage fabric and finish for cracks and deterioration (check tensile strength, if below 35 lbs. fabric must be replaced.
- (j) Check canopy for condition and attachments.
- (k) Check plexiglas for cracks or excessive crazing.
- (l) Check safety belts, shoulder harness, brackets & bolts.
- (m) Check springs for corrosion, cracks and wear at ends.
- (n) Check bungee control for operation and security of attachment.

2. Landing Gear Group:

- (a) Remove wheel, inspect for cracks.
- (b) Inspect wheel bearings for condition, repack.
- (c) Check tire pressure (20 lbs.).
- (d) Inspect tire for wear and cuts.
- (e) Inspect tail wheel and bracket for cracks and wear.
- (f) Inspect skid and shoe for cracks, wear and attachment.
- (g) Inspect brake for wear and operation.

3. Empennage Group:

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

4. Wing Group:

- (a) Remove turtledeck and inspect wing attachment fittings and bolts for condition and security of attachment.
- (b) Inspect alleron push rods for condition and security of attachment.

- (c) Inspect spoiler cables for corrosion, wear and security of attachment.
  - (d) Inspect fixed surfaces for corrosion, loose rivets and other signs of structural failure or damage.
  - (e) Inspect ailerons and hinges for condition, operation and attachment.
  - (f) Inspect spoiler and hinges for condition, operation & attachment.
  - (g) Inspect bellcranks for condition, evidence of damage and attachment.
  - (h) Inspect pushrod and cable fairleads for wear or breakage and attachment.
  - (i) Check fabric and finish for cracks and deterioration. (Check tensile strength, if below 35 lbs., fabric must be replaced.)
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 6-12 lbs. as outlined in Paragraph B3(d).
  - (d) Check ring clearance between hook and fuselage when hook is closed, with a ring made from 5/16" dia. stock.
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 placards, nameplates, decals for legibility and security of attachment.
  - (d) Inspect air vent for operation and security of attachment.
  - (e) Inspect seats for damage and security of attachment.

## SUPPLEMENT FOR SGS 1-26D & E

### FLIGHT HANDBOOK AND MAINTENANCE INSTRUCTIONS

The SGS 1-26D differs from the previous models in that it has a modified nose with monocoque construction forward of the main spar carry-through. There are changes in the wing structure, including Dive Brakes in lieu of spoilers. The aileron structure has been revised. With the above changes the maximum gross weight has been increased to 700 lbs.

The SGS 1-26E differs from the 1-26D in that the monocoque construction has replaced the welded steel tube structure aft of the main spar carry-through, making the fuselage entirely monocoque. The vertical fin has been revised to accommodate the contour and fin-attach points, which differ slightly with the new construction. The rudder and horizontal tail surfaces are the same as for the 1-26D.

The dive-brake/wheel-brake control handle on the left hand side of the cockpit, has been changed to a conveniently longer length and the main wheel brake shoe is changed. The elevator cables on the 1-26E have the turnbuckles located at the aft end of the cables

Flight speeds, CG limits, maximum weight and overall dimensions remain the same as for the 1-26D.

#### Overall Dimensions

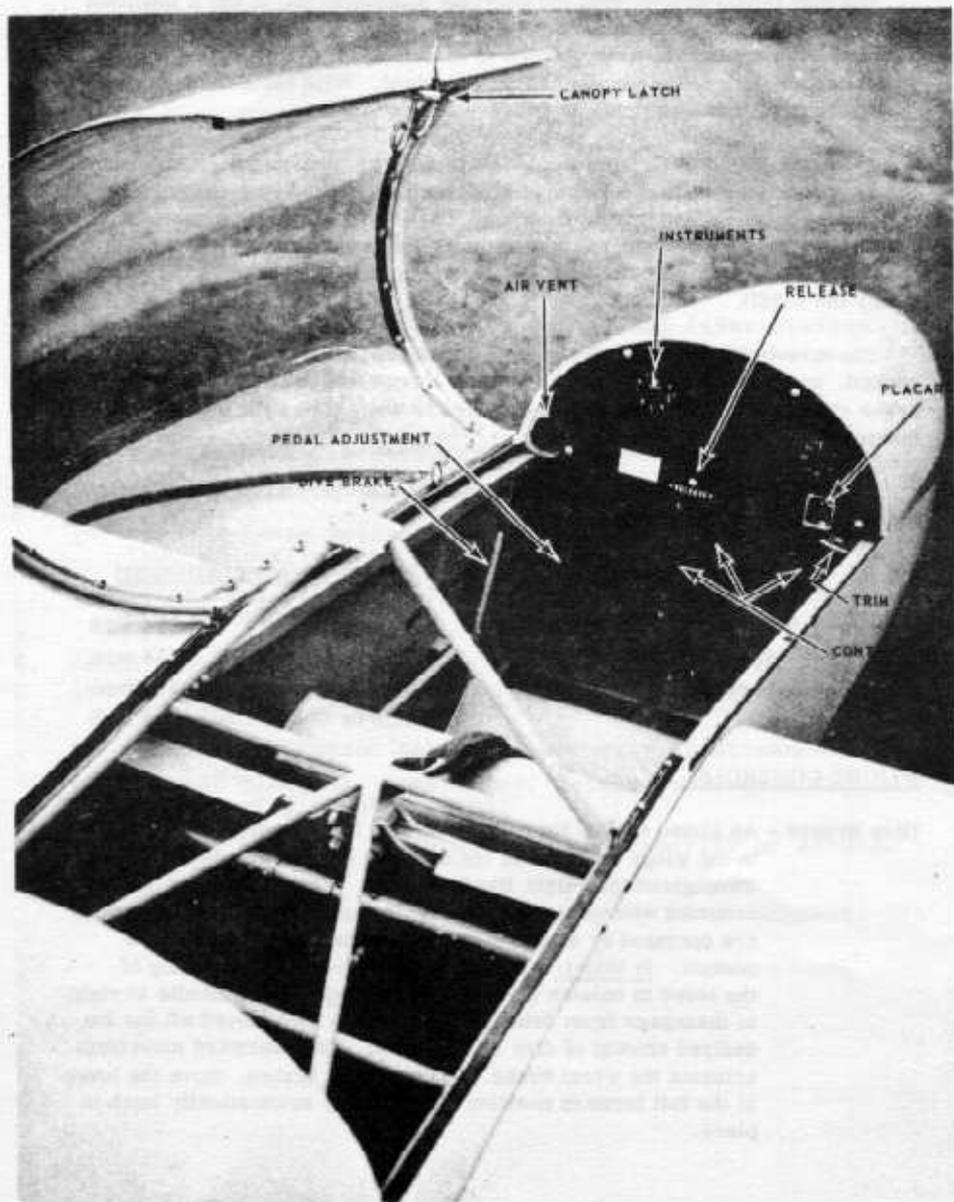
Length	21' 6 1/2"
Span	40' 0"
Height	7' 2 1/2"

#### Placard Speeds (maximums)

Glide or Dive	114 mph
Airplane Tow	114 mph
Dive Brakes Open	114 mph
Auto or Winch Tow	63 mph

#### FLIGHT CONTROLS:

**Dive Brakes** - As stated above, the SGS 1-26D and E incorporate dive brakes in the wings rather than the spoilers used in previous models. Throughout the Flight Handbook, the term dive brake can be assumed wherever the word spoiler appears. The dive brakes are operated by a lever-type control on the left side of the cockpit. **D Model:** Depress the thumb-button on the top of the lever to unlatch the control. **E Model:** Move handle to right to disengage from detent. The lever is then moved aft for the desired amount of dive brake effect. Full rearward movement actuates the wheel brake. To close dive brakes, move the lever to the full forward position where it will automatically latch in place.



## FLIGHT CONTROLS cont'd. :

Wing to Fuselage Assembly - Assure that the dive brake control lever in the cockpit is in the full forward position and latched. Also be sure the dive brakes in the wing are fully closed. This will index the respective fittings on the wing torque tube and in the fuselage to engage as the wing is inserted in the carry-through. There are two bearings for the bellcrank in the dive brake area of the wing which should be lubricated with oil periodically and also the actuating mechanism in the fuselage.

### SGS 1-26D and E FLIGHT ENVELOPE

The 1-26D and E have a load limit factor of 5.33 (see graph - page 22) which should not be exceeded. A safety factor of 1.5 is required which gives an ultimate load factor of 8.0. The 1.5 safety factor is for inadvertent conditions and material variations.

The placard speed is 114 mph. The speed for cautionary maneuvering is 68 mph, and the cautionary range should be considered between 68 and 114 mph.

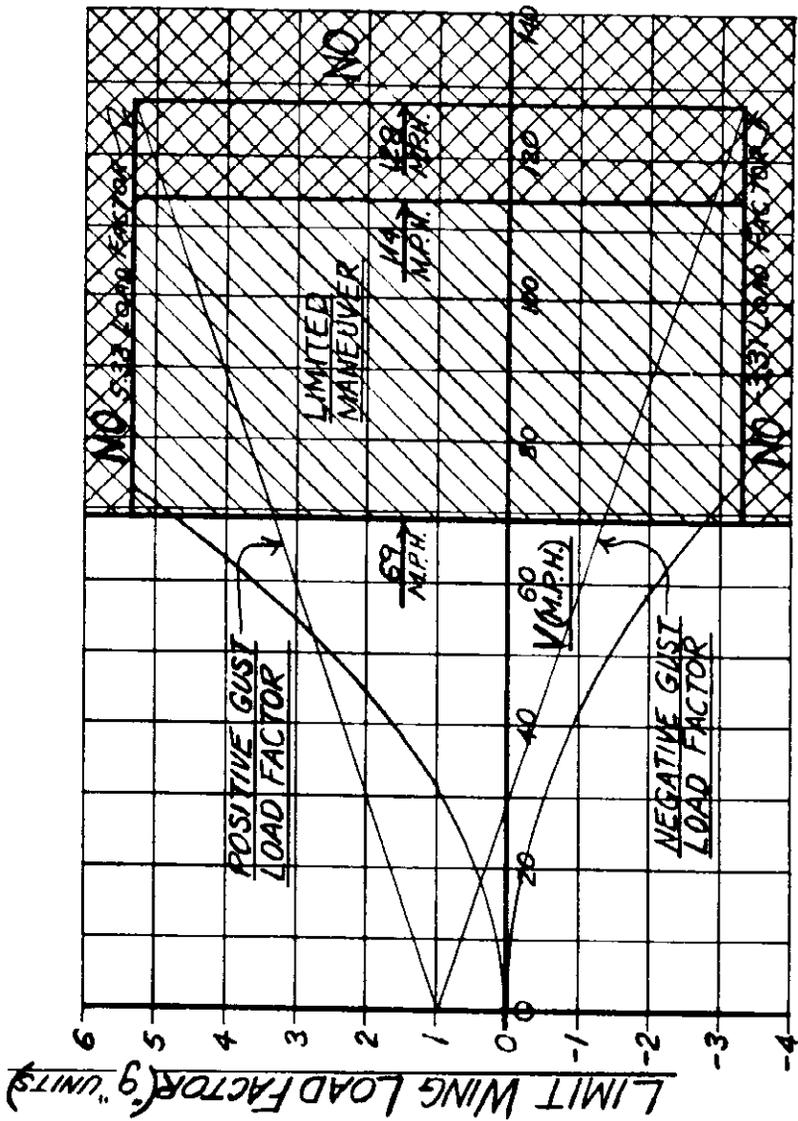
Refer to the 1-26 Flight Envelope text for additional information.

### STALL WARNING

As flying speed is reduced, a "burble" develops at the root of the wing which buffets the tail surfaces and so acts as a stall warning. In co-ordinated turns as the speed is reduced, this buffeting should not occur until the air speed is below 40 mph. This "burble" point can be delayed several miles per hour by sealing the wing -- fuselage junction -- and aft deck with plastic tape.

### FREE FLIGHT 1-26D and E

Flying Speeds	Best Gliding Speed (L/D)	53 mph	23-1
	Speed at lowest sink	40 mph	2.9 fps



S.G.S. I-26 D AND E FLIGHT ENVELOPE

## REMOVABLE BALLAST FOR SGS 1-26

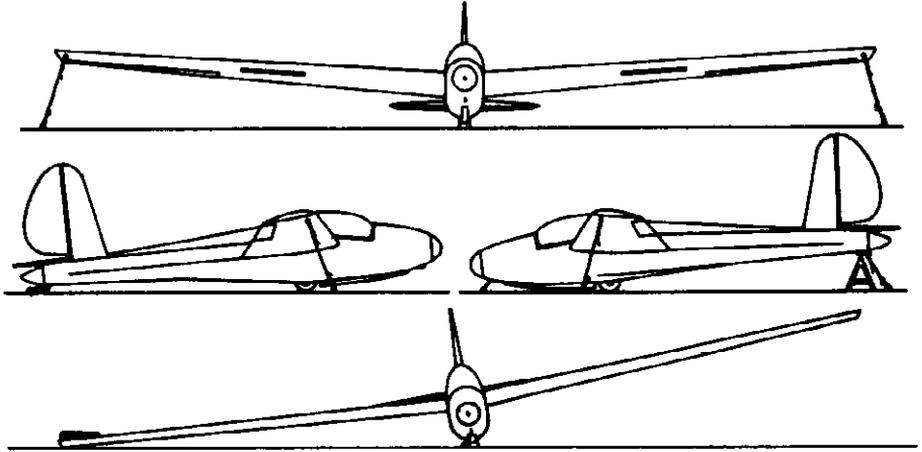
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A removable ballast installation part number 26058G has been developed for all 1-26 models to simplify the balance requirements necessary for a relatively light weight pilot.

The installation consists of a cannister assembly which is securely attached to the sailplane structure in a well forward location for maximum effectiveness. The ballast proper, is a cast lead bar with a handle for convenience in inserting or removing from the cannister. A snap-in pin retains the ballast in place. For each ballast installation, a special "Flight Limits" placard is installed and is stamped to show the resultant actual minimum and maximum pilot weights when the removable ballast is in place. These figures are calculated for each sailplane based on the current weight and balance at the time the ballast is installed.

This installation provides a safe and convenient means of ballasting for flight for the light-weight pilot without the penalty of reduction of useful load, as would be incurred by a like amount of permanent ballast.

## 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.

In the normal, tail down, ground position, the wing has a high angle of attack. A 1-26, (empty wgt. 380#), facing into the wind will be subjected to lift forces as shown:

<u>WIND</u>	<u>LIFT</u>	<u>NET LIFT</u>	<u>WIND</u>	<u>LIFT</u>	<u>NET LIFT</u>
30 mph	545	165#	60 mph	2,110	1,730#
40 mph	945	565#	70 mph	2,880	2,500#
50 mph	1,455	1,075#	80 mph	3,420	3,040#

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.



Airspeed limits (CAS).	Vne. Glide or dive	114 m.p.h.		
	Vta. Airplane tow	114 m.p.h.		
	Vtaw. Auto-winch tow	63 m.p.h.		
	Dive brakes extended	114 m.p.h.		
Center of Gravity (C.G. Range)	(+15.6) to (+20.0)			
Maximum weight	700 lb.			
No. of seats	1 (-4.4)			
Baggage	None			
Control surface movements				Limits
	Elevator thru SGS			
	1-26E, S/N 649	25° Up	25° Down	+0°, -3°
	For S/N 650 & up + optional retrofit of			
	1-26D & 1-26E gliders	21° Up	21° Down	+0°, -3°
	Rudder	30° Right	30° Left	±2°
	Aileron	36° Up	18° Down	+0, -3°
	Dive brakes	Top Up 85°	Bottom down 75°	± 5°
Serial Nos. eligible	SGS 1-26D - 400-445, 448-466, 470-481, SGS 1-26E - 500 and up.			
Specifications Pertinent to All Models				
Datum	Wing leading edge at root (Fuselage Sta. 58.37).			
Mean Aerodynamic Chord	49.77 in. (Leading edge of M.A.C. 3.27 in. aft of wing leading edge at root).			
Leveling means	Longeron between Stations 74 and 90.			
Certification basis	CAR 5, March 5, 1952 and Amendment 5-1. Glider Type Certificate No. 1G10.			
Production basis	None			
Equipment:	The basic equipment as prescribed in the applicable airworthiness regulations (See Certification Basis) must be installed in the glider for certification.			
NOTE 1.	A suitable placard to cover the maximum and minimum pilot weights must be installed in full view of the pilot as determined from the manufacturer's weight and balance report.			
NOTE 2.	The following placards must be installed in full view of the pilot:			
	(a) For the Model SGS 1-26 and Model SGS 1-26A, B, and C:			
	"Max. glide or dive	104 m.p.h.		
	Max. airplane tow	95 m.p.h.		
	Max. auto-winch tow	60 m.p.h.		
	Max. Spoiler operation	104 m.p.h."		
	(b) For the Model SGS 1-26D and Model SGS 1-26E			
	"Max. glide or dive	114 m.p.h.		
	Max. aero tow	114 m.p.h.		
	Max. auto-winch tow	63 m.p.h.		
	Max. dive-brake operation	114 m.p.h."		

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NOTE 3. An approved safety belt and shoulder harness is required.

NOTE 4. Each Model SGS 1-26 and SGS 1-26B glider assembled from a kit is designated Model SGS 1-26A and SGS 1-26C respectively and will be eligible for an airworthiness certificate when accompanied by an affidavit certifying that the glider is constructed in exact accordance with the approved drawings and manual: that the parts and materials furnished by the manufacturer in the kit have been used: and further when the following inspections have been satisfactorily passed:

- (a) An inspection for workmanship, materials and conformity before any covering is applied.
- (b) A final inspection of the completed glider.
- (c) Check of flight characteristics.

...END...