



AIRWORTHINESS ADVICE NOTICE

GFA AN 78

Issue 1

26.2.1988

Sheet 1 of 1

TYPE AFFECTED:

All Schweizer sailplanes

BACKGROUND:

This A.N. contains items relevant to airworthiness that are important but not quite important enough for mandatory Airworthiness Directive action.

ITEM 1:

Aerobatics - all models

Schweizer Service Bulletin SA-003 emphasises that no aerobatics are permitted except spinning in accordance with the Flight Manual.

ITEMS 2:

Schweizer SGS-135

Schweizer Service Bulletin SA-002 recommends inspection for small rodent entry, and repair work necessary should nests, etc be found.

If it is necessary to carry out any of the work discussed, access hatches, fabric renewal, etc. - that work must be carried out by an appropriately qualified GFA inspector, the work recorded by logbook entry.

SERVICE BULLETIN SA-002

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SUBJECT: DAILY INSPECTION OF AIRCRAFT STRUCTURES; DETAILED VISUAL INSPECTION OF TAIL RUDDER, ELEVATORS, VERTICAL TAIL SURFACE (TAIL FIN), AND FUSELAGE.

MODELS AFFECTED: ALL SGS 1-35, SGS 1-35A, SGS 1-35C, and SGS 1-36 (Sprite) Schweizer Sailplanes.

TIME OF COMPLIANCE: PART I: Shall be accomplished prior to the first flight of each day.
PART II: Shall be accomplished within next 100 hours of aircraft operation, or next three months, whichever occurs first.

PREFACE: Field reports indicate that on the affected aircraft it is possible for small animals to enter the aircraft's tail structures and deposit nesting materials and other debris. Part I of this Service Bulletin provides instructions for a daily check of specific aircraft structures for accumulations of debris. Part II of this Service Bulletin lists instructions for thorough visual inspection of the interior of the aircraft's tail rudder, elevators, tail fin and aft fuselage structure for accumulations of debris. Installation of access hole(s) in tail rudder may be required for the purpose of removing debris when performing Part II of this Service Bulletin. Detailed instructions are provided for patching holes in fabric. Part II also lists instructions to install an inspection hole in the aircraft vertical fin. Failure to comply with this Service Bulletin could result in a loss of control of rudder and elevator and/or improper balance of tail surfaces.

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PART I: DAILY INSPECTION

PROCEDURE

- a. Inspect pitot and static ports for mud dobbers, insect nests or other obstructions. Clear obstructions as required.

CAUTION

DISCONNECT INSTRUMENTS AND ASSOCIATED EQUIPMENT FROM PITOT AND STATIC LINES, IF COMPRESSED AIR IS USED TO CLEAR OBSTRUCTIONS. SERIOUS DAMAGE MAY OCCUR TO THESE COMPONENTS IF INSTRUMENTS AND EQUIPMENT ARE LEFT CONNECTED. (ENSURE REATTACHMENT OF CABLES AT PROPER LOCATIONS.)

- b. Inspect all hinges, air vents, and aircraft openings for straw, weeds, sticks or any other obstructions. Pay particular attention to hinge and pushrod openings around the tail fin, tail rudder and elevators. Remove obstructions as required.
- c. Inspect for debris inside of tail rudder lower fairing (Figure 1) as follows:

CAUTION

EXERCISE CARE WHEN ADJUSTING RUDDER POSITION IN NEXT STEP. THE RUDDER IS CONSTRUCTED FROM A CECONITE FABRIC BONDED TO AN ALUMINUM FRAME STRUCTURE. ALWAYS EXERT FORCE ON A SECTION OF FRAME CHANNEL WHEN ADJUSTING RUDDER POSITION.

- (1) Carefully adjust rudder position to extreme left or right.
- (2) Using a flashlight, inspect for debris inside lower fairing (Figure 1) by looking through lower hinge opening.
- (3) If debris is found, use a vacuum cleaner with flexible extension hose to remove debris.
- (4) Check two drain holes (Figure 1) at bottom of fairing for obstruction. Clear obstructions with 3/16-inch drill bit.
- d. Open access door on horizontal stabilizer stub (Figure 2) and use a flashlight to inspect upper fin and stabilizer stub area for debris. Use vacuum cleaner to remove debris.
- e. Inspect brake/wheel area for obstructions. Remove obstructions as required.

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PART II: DETAILED INSPECTION OF TAIL RUDDER, ELEVATORS, VERTICAL STABILIZER, AND FUSELAGE.

PARTS LIST

<u>NOMENCLATURE</u>	<u>PART NUMBER</u>	<u>QTY</u>	<u>SOURCE</u>
Snap Plug, 1 in., BPF-1	M 21626716	1	SAC
Fabric, Ceconite	101, 102, or 103	A/R	SAC
Doubler	10403-3	1 (A/R)	SAC
Patch (.020 skin)	10403-5020	1 (A/R)	SAC
Patch (.016 skin)	10403-5016	1 (A/R)	SAC
Rivets	AN426AD4, or AN470AD4	16 (A/R)	Commercial
Rivets	CR2248-4	10 (A/R)	Commercial

MATERIALS

<u>NOMENCLATURE</u>	<u>SPECIFICATION</u>	<u>SOURCE</u>
Lacquer Thinner	MIL-T-81772	SAC/Commercial
Wax Remover	---	SAC/Commercial
Clear nitrate dope	MIL-D-5553A	SAC/Commercial
Aluminized Dope - Butyrate (polyurethane paint)	MIL-D-5549	SAC/Commercial
Masking Tape	---	Commercial
Primer - Epoxy (polyurethane paint)	MIL-C-22750	SAC/Commercial
Paint - Polyurethane	MIL-C-83231A	SAC/Commercial
Fabric Cement, Superseam	---	Ceconite
Gap Tape	---	Reeves Fabric

TOOLS AND EQUIPMENT

Razor Knife
 Vacuum cleaner with flexible extension hose
 Source of compressed air, low pressure
 Drill
 3/16-inch drill bit
 1-inch drill bit or hole saw
 Pinking shears
 Emery cloth
 Flashlight
 Heat gun or Blow dryer

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PROCEDURE

NOTE

One of two types of tail rudders may be installed on the affected aircraft. The earlier type is an unsealed unit without a leading edge fairing (Figure 3, Detail B). The later type is sealed at the leading edge by a fairing (Detail A). Removal of an unsealed rudder is accomplished by performing step a(1) through a(3). A sealed rudder is removed by performing steps b(1) through b(3).

- a. If an unsealed rudder (Figure 3, Detail B) is installed, remove rudder as follows:
 - (1) Peel off gap tape between rudder and tail fin.
 - (2) Disconnect pushrods at lower end of rudder by removing a cotter pin, nut, washer and bolt from each push rod.
 - (3) Remove cotter pin, nut, and washer from upper, middle and lower hinge bolts at forward end of rudder. Remove hinge bolts.
 - (4) Remove rudder by sliding aft.
- b. If a sealed rudder (Figure 3, Detail A) is installed, remove rudder as follows:
 - (1) Remove cotter pin, nut, and washer from upper hinge bolt. (Do not remove bolt.)
 - (2) Remove four screws securing lower end of rudder.
 - (3) Remove rudder by pulling lower end aft and then sliding rudder upwards off hinge bolt.

NOTE

Rodents may gain access and deposit debris at four different locations within the tail rudder. Debris may be present between the leading edge fairing and the spar, inside the lower fairing, inside of the lower bay or inside the upper bay. (Refer to Figure 1.) Each of these areas should be thoroughly inspected with flashlight and inspection mirror.

- c. Using a flashlight and inspection mirror, inspect for debris inside of rudder by looking through hinge openings (Figure 3, Detail A or Detail B, as applicable).
- d. If debris is noted between leading edge fairing and spar, remove debris through upper hinge opening, using vacuum cleaner and flexible extension hose.

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- e. If debris is noted inside lower fairing, remove debris through lower hinge opening, using vacuum cleaner and flexible extension hose.
- f. If debris is noted inside upper or lower bay, remove debris as follows:

CAUTION

CECONITE FABRIC IS BONDED IN PLACE TO THE RUD-
DER'S ALUMINUM FRAME STRUCTURE. CARE SHOULD BE
EXERCISED WHEN CUTTING THE FABRIC AND REMOVING
DEBRIS IN FOLLOWING STEPS. IT IS POSSIBLE FOR
THE CECONITE FABRIC TO BECOME DEBONDED FROM THE
ALUMINUM FRAME STRUCTURE.

- (1) Determine approximate location of debris.

NOTE

Hole cut in next step should be just large enough
to gain access to debris with vacuum cleaner
flexible extension hose.

- (2) Use razor knife to cut ROUND hole in fabric (at location determined in previous step). Do not leave jagged edge on fabric.
- (3) Use vacuum cleaner and flexible extension hose to remove debris from bay.
- g. If hole was cut in fabric in previous step, proceed as follows:
 - (1) If rudder has been waxed, remove wax from surface by using wax remover.
 - (2) Clean surface around hole using clean rag dampened with lacquer thinner. Remove pigmented (colored) dope coats and aluminized coats.
 - (3) Ensure that hole is round. If not, cut fabric to make hole round.
 - (4) Roll edges of fabric around hole slightly inwards.
 - (5) Using pinking shears, cut a new, unwrinkled piece of ceconite fabric large enough to extend 2 inches beyond edge of hole in all directions.

NOTE

If pinking shears are not available, cut fabric
with regular shears and fray edges inwards an
1/8-inch (approx.).

- (6) Brush clear nitrate dope on surface to be patched, keeping 1/4-inch away from edges of hole.
- (7) Press patch in place; ensure that center does not sag.
- (8) Use a heat gun or blow dryer to shrink patch.
- (9) Brush more clear nitrate dope on bonding surfaces of patch.

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NOTE

Three layers of clear nitrate dope will be required to bond patch. Allow previous layer of dope to dry and abrade surface with emery cloth before applying next layer of dope.

- (10) Apply two more layers of clear nitrate dope.
- (11) Apply at least one coat of aluminized butyrate dope to patched portion of rudder.
- (12) Mask off rudder surface surrounding patch.
- (13) Mix epoxy primer and catalyst reducer in equal volumes.

NOTE

Catalyst mixture must stand for a minimum of one hour. The catalyzed mixture will remain workable for approximately eight hours.

- (14) Apply one coat of epoxy primer to patched areas on rudder. Allow adequate time for epoxy primer to dry before applying polyurethane top coat

CAUTION

CATALYST COMPONENTS ARE MOISTURE SENSITIVE AND WILL BE DEGRADED BY CONTACT WITH MOISTURE. TIGHTLY REPLACE THE CONTAINER LID IMMEDIATELY AFTER DISPENSING A PORTION OF THE CONTENTS. DISCARD THE CATALYST WHEN CLOUDY, TURBID, OR JELLED.

- (15) Mix polyurethane paint one part resin component to one part catalyst. Slowly add the catalyst to the resin component, never the reverse, while stirring and mixing thoroughly. Allow catalyzed mixture to stand one hour before applying. (The workable life of the mixed coating is four hours maximum.)

NOTE

Optimum atmospheric conditions for application of polyurethane topcoats are a temperature of 70 to 86°F (21.1 to 30°C) and a relative humidity of 35 to 50 percent. A relative humidity of 60 to 90 percent can cause bubbling/blistering to occur in polyurethane that exceeds the maximum of the specified thickness range 0.0014 to 0.0020 inch (0.0356 to 0.0508 mm).

- (16) Apply polyurethane top coat to patched portion of rudder.

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- h. Remove elevators from tail fin as follows:
 - (1) Open access door (Figure 2) on horizontal stabilizer stub.
 - (2) Remove pin securing elevators. (Refer to Figure 2.)
 - (3) Slide elevators outboard off trunnions.
- i. Inspect stabilizer, upper portion of tail fin and elevator attachment areas for debris and obstructions. Remove obstructions and debris as required.
- j. Remove oval shaped inspection holes at aft end of fuselage and inspect fuselage interior for debris. Remove debris as required.
- k. Using 1-inch drill bit and drill, install a 1-inch inspection hole in one side of tail fin at location shown in Figure 4.
- l. Using a flashlight and inspection mirror, inspect lower tail fin through inspection hole and through rudder pushrod opening.
- m. If debris is noted inside tail fin, proceed as follows:
 - (1) Use drill to puncture skin (of tail fin) and saber saw (or equivalent) to cut access hole at location shown (and size shown) in Figure 4. Deburr edges of access hole.
 - (2) Use vacuum cleaner with flexible extension hose to remove debris from lower portion of tail fin.
 - (3) Using doubler as a template, install appropriate number of rivet holes (of proper size) in tail fin skin at locations shown in Figure 5.
 - (4) Slide doubler through access hole, rotate it 90 degrees, and use appropriate rivets (Figure 5) to fasten doubler to fin skin.
 - (5) Secure patch to doubler with rivets. (Refer to Figure 5.)
- n. Use a 1-inch BPF snap plug to cover inspection hole installed in step k.
- o. Reinstall horizontal stabilizer and tail rudder in reverse order of removal.
- p. On sailplanes which incorporate an unsealed rudder, use fabric cement to install two new pieces of fabric gap tape (1 each side) between the tail rudder and the tail fin.
- q. Check installation for defects and flight controls for proper operation.
- r. Record compliance with Part II of this Service Bulletin in Aircraft Log Book.

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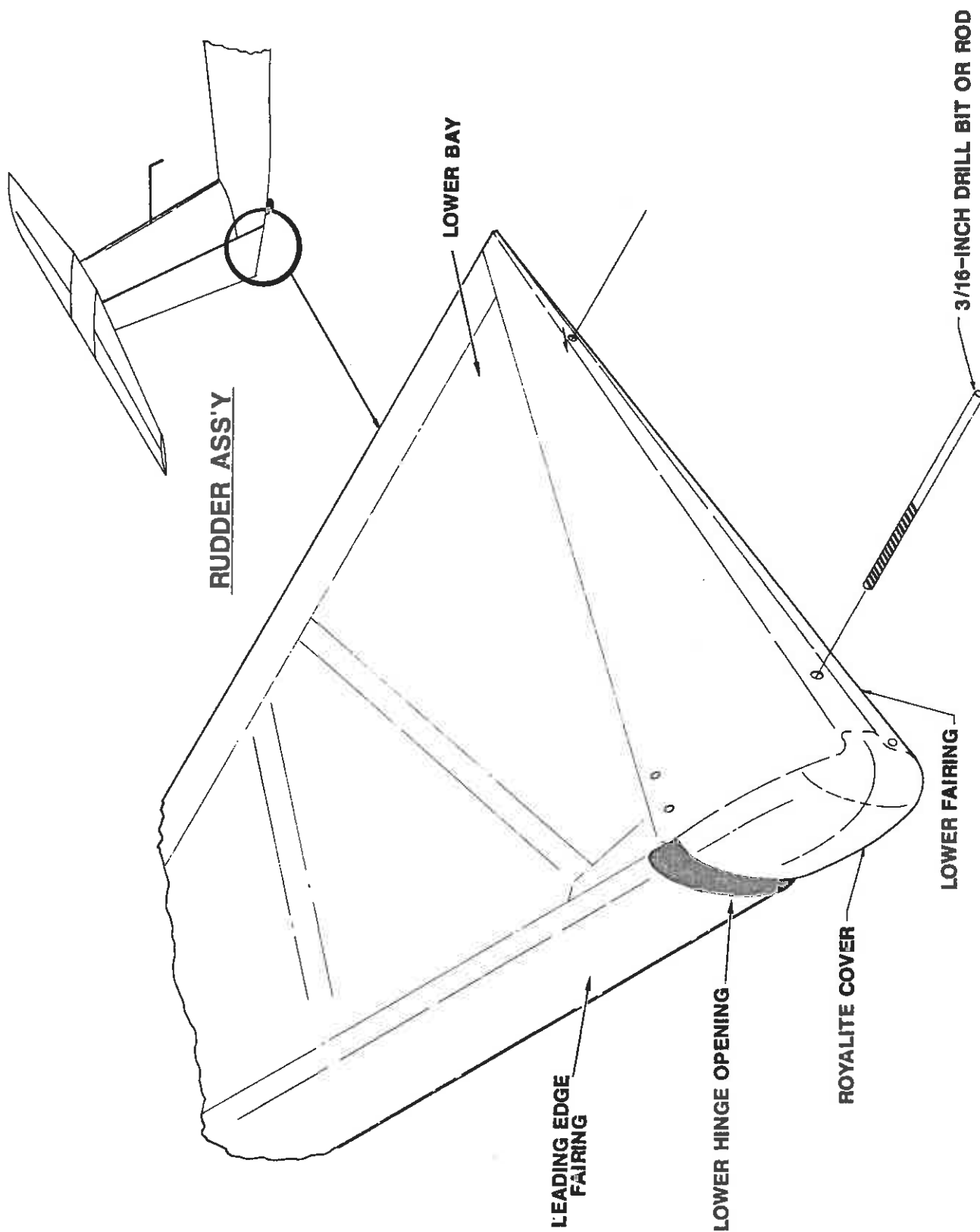


FIGURE 1

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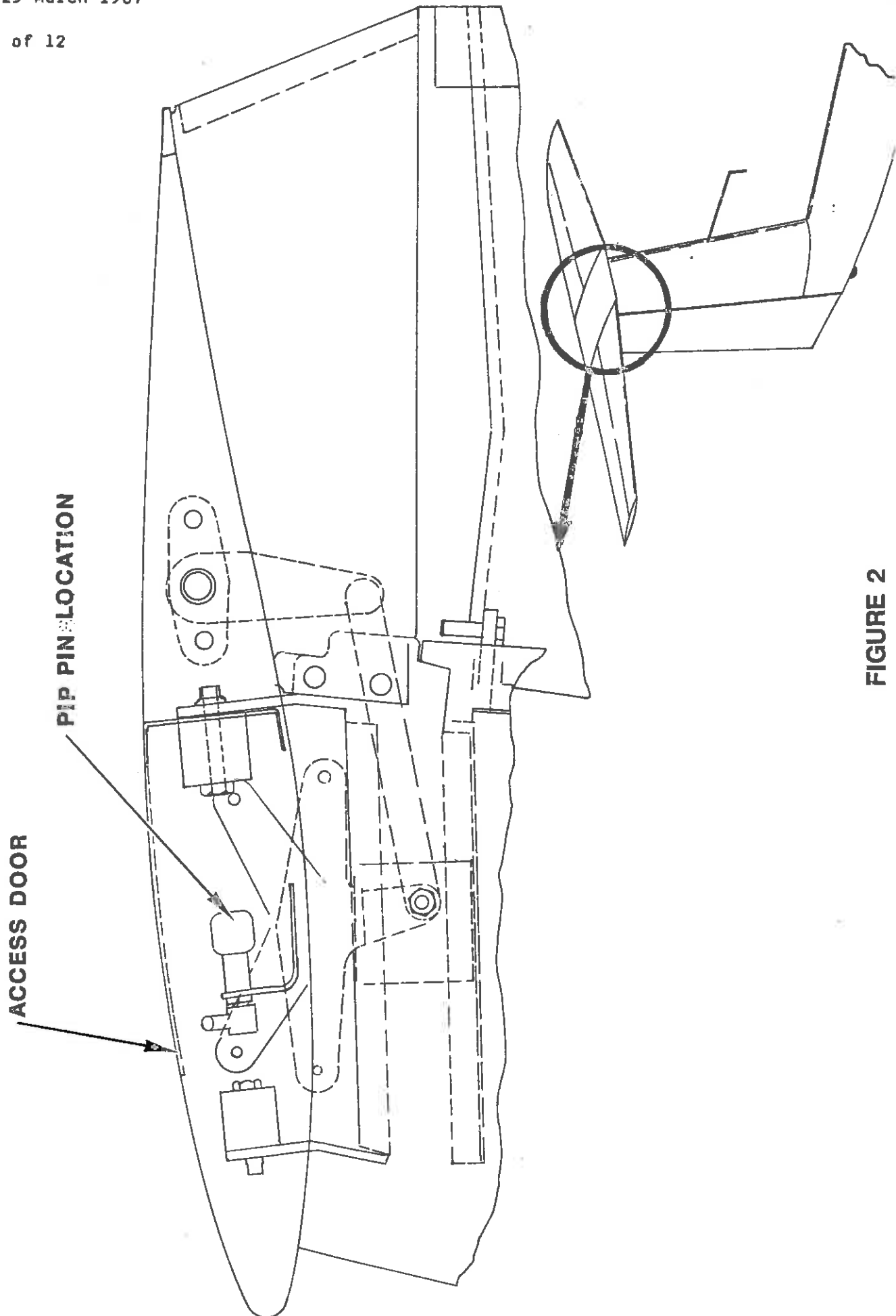
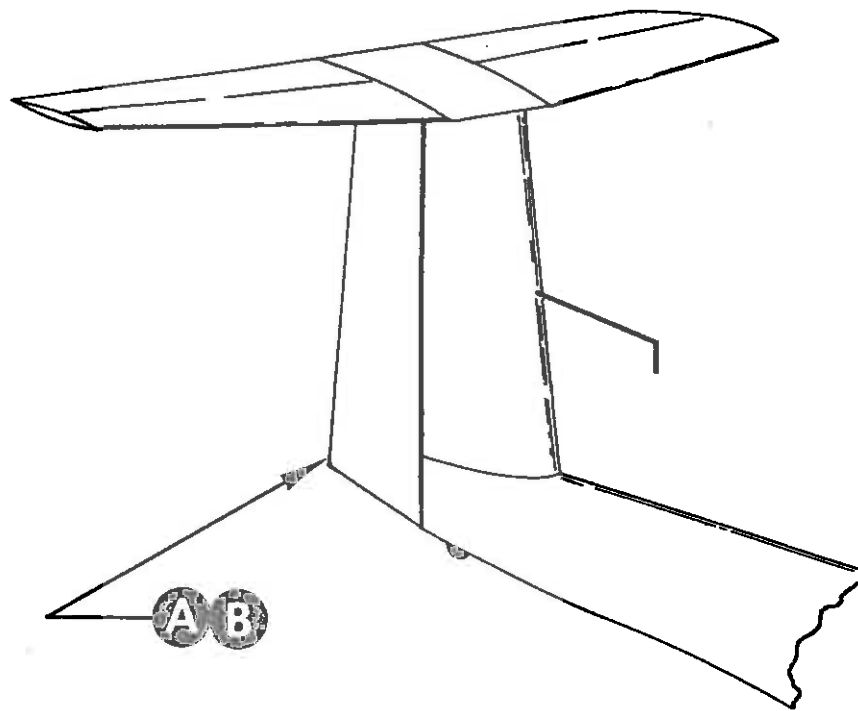


FIGURE 2

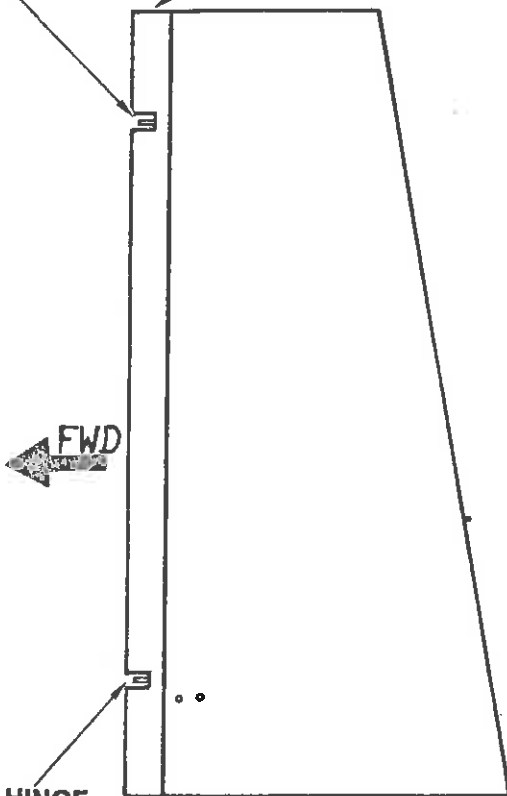
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UPPER HINGE
OPENING

LEADING EDGE FAIRING



LOWER HINGE
OPENING

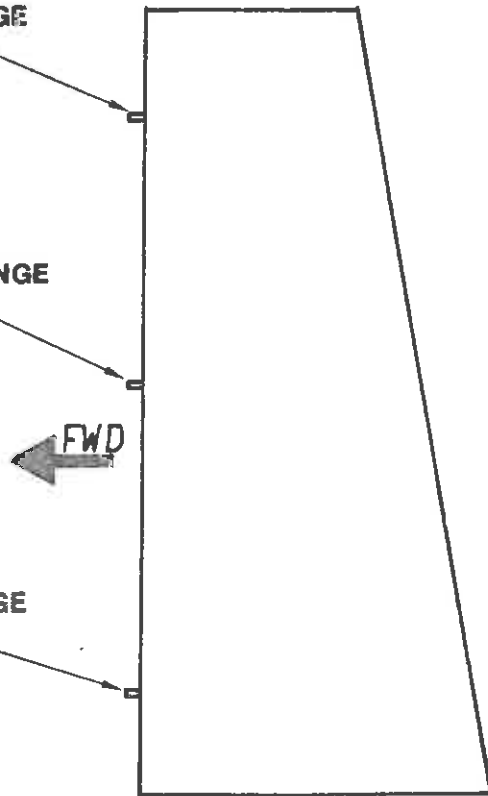


-SEALED RUDDER

UPPER HINGE

MIDDLE HINGE

LOWER HINGE



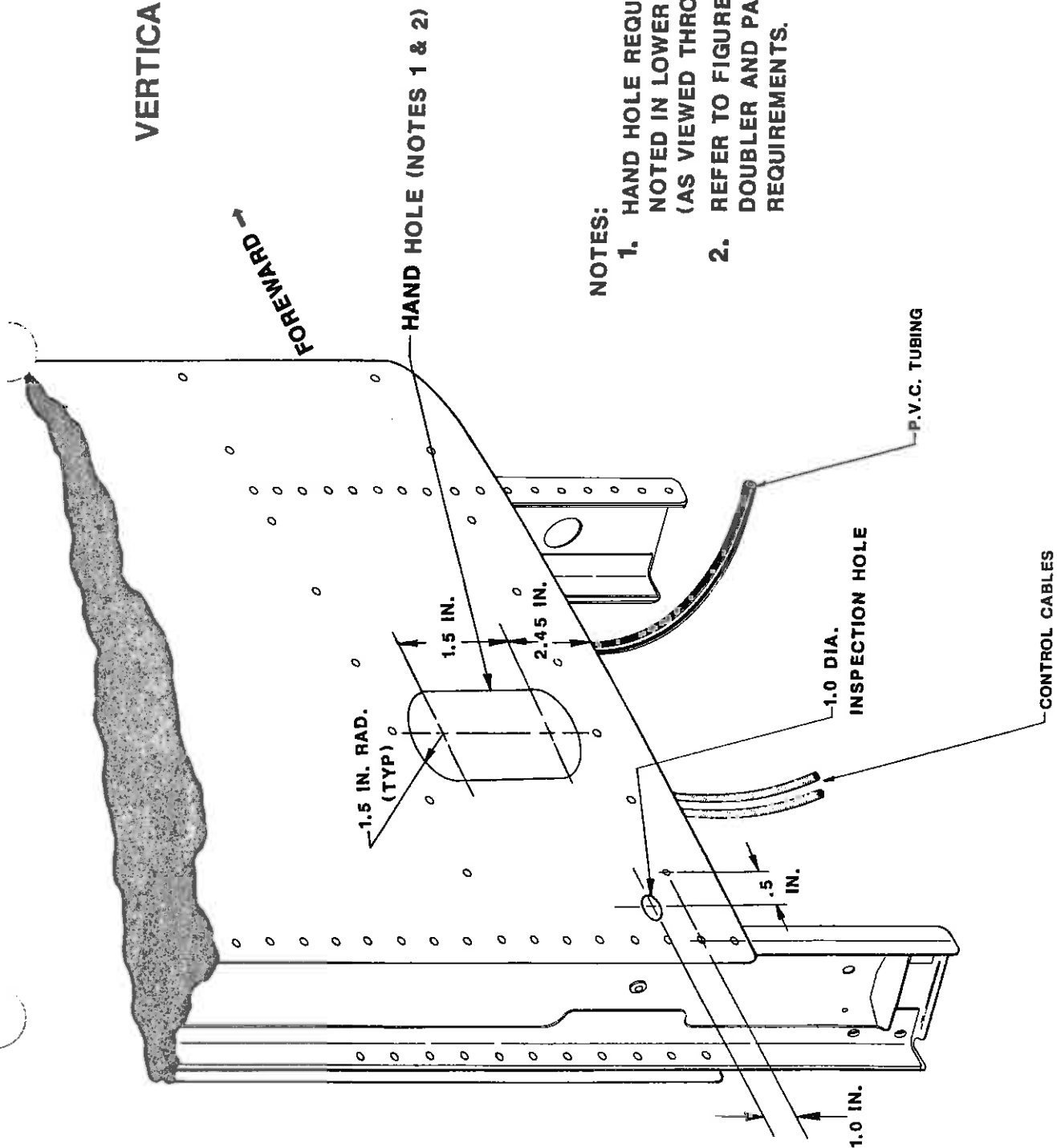
-UNSEALED RUDDER

FIGURE 3

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VERTICAL TAIL SECTION



NOTES:

1. HAND HOLE REQUIRED ONLY IF DEBRIS IS NOTED IN LOWER PORTION OF TAIL FIN (AS VIEWED THROUGH INSPECTION HOLE).
2. REFER TO FIGURE 5 FOR STRUCTURAL DOUBLER AND PATCH INSTALLATION REQUIREMENTS.

FIGURE 4.

SERVICE BULLETIN SA-003

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SUBJECT: AEROBATICS IN SCHWEIZER SAILPLANE MODELS LISTED BELOW.

MODELS AFFECTED: SGU 1-7
SGS 2-8 (TG2)
SGS 2-12 (TG3)
SGU 1-19
SGU 1-20
SGU 1-21
SGU 2-22, 2-22A, 2-22C, 2-22CK, 2-22E, 2-22EK
SGS 1-23, 1-23B, 1-23C, 1-23D, 1-23E, 1-23F, 1-23G, 1-23H,
1-23H15
SGS 1-24
SGS 1-26, 1-26A, 1-26B, 1-26C, 1-26D, 1-26E
SGS 2-32
SGS 2-33, 2-33A, 2-33AK
SGS 1-34, 1-34R
SGS 1-35, 1-35A, 1-35C
SGS 1-36 (Sprite)

NOTE

In the text of this writing, the terms "GLIDER"
and "SAILPLANE" are to be considered synonymous.

REFERENCE: 2-32 Flight-Erection-Maintenance Manual Page 1-10
2-22 Flight-Erection-Maintenance Manual Page 5
2-33 Flight-Erection-Maintenance Manual Pages 1-5
1-26 Flight-Erection-Maintenance Manual Page 5
1-34 Flight-Erection-Maintenance Manual Pages 1-7
1-36 "Sprite" Pilot's Operating Manual Page 23

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NOTE

For the purposes of this Service Bulletin, aerobatic flight means an intentional maneuver involving an abrupt change in an aircraft's attitude, an abnormal attitude, or abnormal acceleration, not necessary for normal flight. (Refer to FAR 91.71 for further information.)

PREFACE: Schweizer Aircraft Corporation DOES NOT APPROVE OR RECOMMEND that aerobatics of any kind be performed in any of the Schweizer sailplane models affected by this Service Bulletin, despite any language to the contrary in any of the Flight-Erection and Maintenance Manuals or Pilot's Operating Manual referenced herein.

Although there is language in the referenced publications that various levels of aerobatics are permitted, Schweizer Aircraft Corporation RECOMMENDS that NO TYPE of aerobatics be performed in these model sailplanes since in doing so, the structural design levels of the sailplane could be exceeded, which may result in serious personal injury to the occupants of the aircraft.

The only exception to this recommendation is spins when performed within the guidelines of, and as approved in, the Flight Manual or Pilot's Operating Handbook for the aircraft being operated. However, before performing spins in the aircraft, each pilot must receive complete instructions and training as to the proper execution of this maneuver, as well as the characteristics of the aircraft during the spin and recovery therefrom.