



GROB

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FLIGHT HANDBOOK

GROB G 103 »TWIN II«

This handbook must be carried on board at all times.

It refers to the GROB G 103 Sailplane

Registration:

VH-IUR

Factory Serial Number: 3735

Edmund Schneider PTY! LTD.

Owner: Herrn Harry Schneider

Two Wells Road, Aerodrome

Gawler, S. A. 5118

Australien

German edition of operating instructions are approved under § 12 (1) 2. of LuftGerPC.

Published December 1980

Approval of translation has been done by best knowledge and judgement — In any case the original text in German language is authoritative.

I.1 • Updates:

Current number	Page	Reference	Date	Signature
1	21	Control of tailplane (TM 315-11 only until serial no. 3550)	1. Oct. 80	
2	5a	Reference to flight manual for acro- batics (only for GROB G 103 A)	1. Dec. 80	
3	1, 8, 10, 12, 13, 20, 20a	Modification of se- rial no. 3730	1. Apr. 82	

1. April 1982

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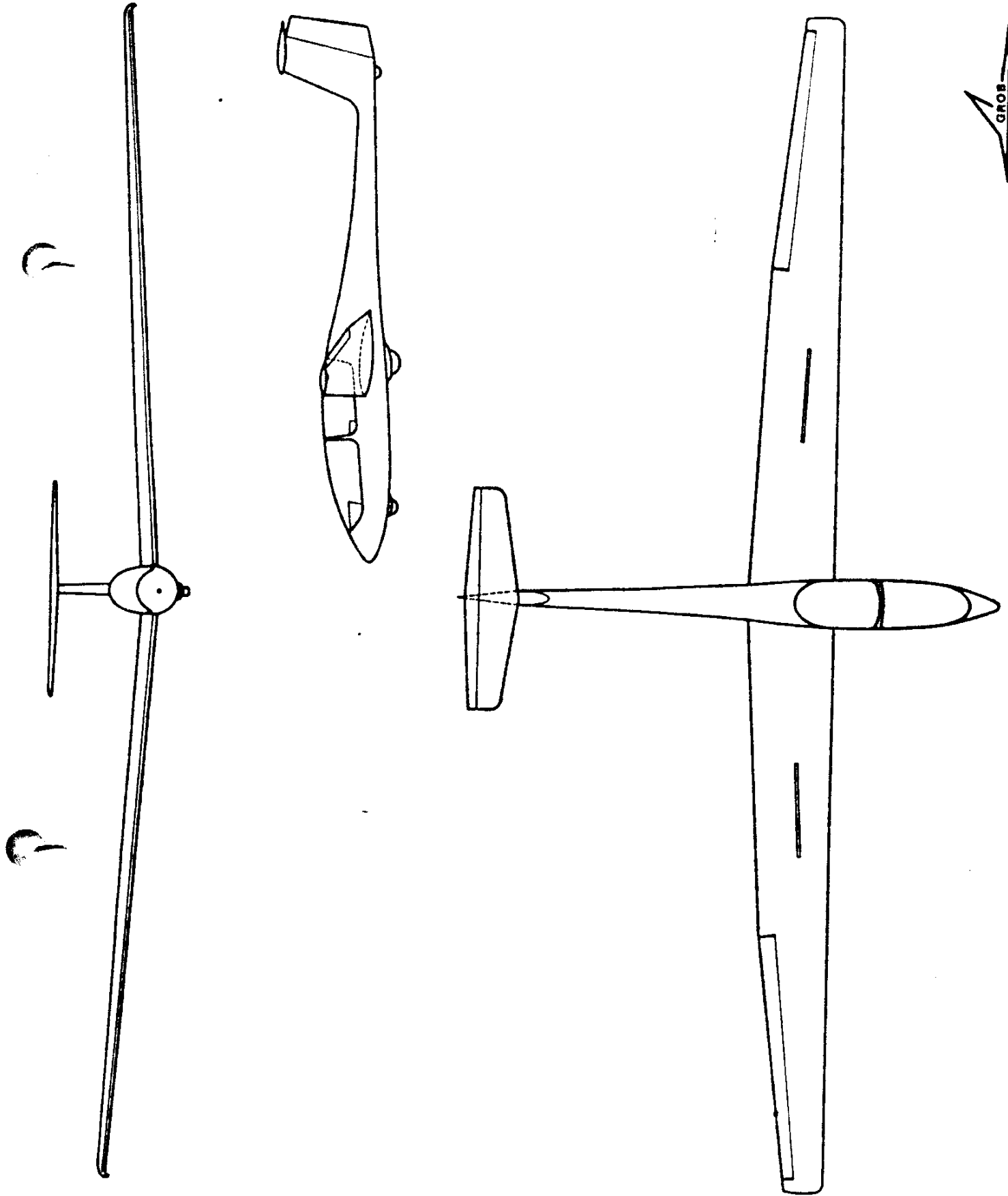
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I. 5 Description

The "TWIN II" is a high performance two seater sailplane with a T-tail, fitted with a nonretractable tandem undercarriage and upper surface airbrakes.

This sailplane is manufactured using the latest techniques in industrial Glass fibre construction.

It is designed for training, high performance and simple aerobatic flying.

Technical Data:

Span	17.5 m (57.4 ft.)	Wing Area	17.8 m ² (191.6 ft. ²)
Length	8,18m (26,8ft)	Maximum Flying Weight	580 kg (1279 lbs)
Height	1,55m (5,1ft)	Maximum Wing Loading	32,6 kg/m ² (6,68 lbs/ft. ²)
Aspect Ratio	17.1		

II. Operating Limits

II. 1 Airworthiness Group

(U, Utility, LFSM)

The LFSM (Lufttüchtigkeitsforderung für Segelflugzeuge und Motorsegler) published 23. 10. 1975 are the basic rules and requirements for the licensing of a new type of glider or motor glider in Germany.

II. 2 Permitted operating conditions.

The plane is licensed for:

1. Flight in VMC
2. Simple Aerobatics (Loops, Stall turns, Lazy eight, Chandelle and Spin).
3. Cloud flying (When fitted with suitable instrumentation as defined in section II. 3).

II. 3 Minimum equipment

1. 2 Air speed Indicators reading to 300 km/hr (162 kts, 187 mph)
2. 2 Altimeters.
3. Full Harness Straps in front and back cockpit.
4. Parachute or back cushion at least 7 cm (3 inch) thick for each occupant.
5. Loading limit plaque in front and back cockpit.
6. Flight Limits plaque.
7. Flight Handbook.

Cloud Flying.

For cloud flying the additional instruments listed below must be installed.

1. Variometer.
2. Electric turn and slip indicator.
3. Magnetic Compass (Compensated inside the glider).
4. VHF-radio (operational).

II. 4 Maximum Speeds

Maximum permitted speed in calm air	$V_{NE} = 250 \text{ km/h (135 kts, 155 mph)}$
Maximum permitted speed in rough air	$V_B = 170 \text{ km/h (92 kts, 105 mph)}$
Maximum Manoeuvring speed	$V_M = 170 \text{ km/h (92 kts, 105 mph)}$
Maximum winch launch speed	$V_W = 120 \text{ km/h (65 kts, 74 mph)}$
Maximum Aerotow speed	$V_T = 170 \text{ km/h (92 kts, 105 mph)}$

Conditions in rough air are similar to those encountered in rotors, clouds, whirlwinds and when overflying mountain ranges.

Manoeuvring speed is the maximum speed at which full control deflections may be used. At maximum speed (V_{NE}) the control deflections should be restricted to 1/3 of the full range.

Air speed indicator markings

77-170 km/h=42-95 kts=48-105 mph	— Green arc
170-250 km/h=92-135 kts=105-155 mph	— Yellow arc
at 250 km/h =135 kts =155 mph	— Red line
at 95 km/h = 51 kts = 59 mph	— Yellow triangle
(recommended minimum appr. speed)	

Position Errors

The airspeed indicator must be connected to the following sources: Pitot head in the tail fin, static vents side of the fuselage between the two seats.

Using a calibrated ASI the position error is not greater than $\pm 2 \text{ km/h}$ or 1 kt or 1.2 mph. A calibration curve is therefore not necessary.

II. 5 Flight envelope.

The sailplane design limit load factors are as follows:

At manoeuvring speed	+ 5.3 — 2.65
At V_{NE}	+ 4.0 — 1.5

(Brakes closed and calm air)

II. 6 Weight limits

Empty weight about 380 kg (837,7 lbs)
 Maximum flying weight . . 580 kg (1278,67 lbs)
 Maximum permitted weight of non lifting parts 400 kg (881,84 lbs)

II. 7 Centre of gravity position

The approved range of centre of gravity positions during flight is 260 mm (10.24 inches) to 460 mm (18.11 inches) behind the datum line, equivalent to 24.7% to 43.6% of the M.A.C. of the wing.
 A/c attitude: incidence board of 600:24 angle.
 The datum line is the front edge of the wing at the wing root.

The approved centre of gravity range does not get exceeded by the payload distribution specified in the loading plan II. 8.

The exact position of the centre of gravity at flying weight can be calculated according to VI. 5.

SET FOR 50KG PILOT -

II. 8 Load scheme „TWIN II“

Minimum load in the front seat for all flight	70 kg (154 lbs)
Maximum load in the front seat	110 kg (242 lbs)
Maximum load in the back seat	110 kg (242 lbs)
Maximum load in both seats	220 kg (485 lbs)
Maximum load in the baggage compartment	10 kg (22 lbs)

The maximum flying weight of 580 kg (1278,67 lbs) must not be exceeded.

Trim weights must be used at the suspensions in front of stick bulkhead to compensate if the front seat load is lower than 70 kg (154 lbs). See page 14.

Date of weighing: carried out by.	Equipment list used for weighing (date)	Empty (Weight) kg/lbs	Position of cg empty behind refe- rence mm/inches	Maximum total payload kg/lbs

II. 9 Tow hooks

For Aerotow: Nose hook "E 75" with modification 1-79.

For Winch launch: Safety back release hook "G 72" or "G 73".

The E 75 and the G 73 Tost hooks are limited to 36 months after installation or 2000 launches which ever occurs first, at which time they are to be recertified by the manufacturer.

II. 10 Weak link strength recommended

Winch launch and aerotow **max 754 daN , max 1662 lbs**

II. 11 Tire Pressure

mainwheel	6.00-6	2,5-2,8	bar
nosewheel	260x85	2,5	bar
tailwheel	210x65	2,5	bar

II. 12 Crosswinds

The maximum crosswind component approved for take off and landing, is 20 km/h (11 kts, 12 mph).

III. Emergency procedures**III. 1 Spin recovery**

Recovery from spin can be accomplished by the standard recovery procedure:

- Full opposite rudder
- Neutralize stick
- Ailerons should be neutral
- When rotation stops neutralize rudder and pull out gently.

III. 2 Canopy Jettison and Emergency Exit

- Pull red handles on right and left of canopy full back simultaneously.
- Push canopy up and away with the left hand
- Release safety harness
- Stand up and get out over left or right side depending on the attitude.
- When using a manual parachute grip release and pull firmly to full extend after 1-3 seconds

III. 3 Miscellaneous

Flying in rain

No noticeable deterioration of flying characteristics is caused by wet or lightly iced wings. A heavy deposit on the wing raises the stall speed by about 6 knots:

Increase approach speed by 6 knots.

The characteristics during lift off and touch down remain the same.

Wing dropping

If a wing drops in a turn or straight flight, leave the stick neutral and apply rudder against the direction of rotation.

Ground looping

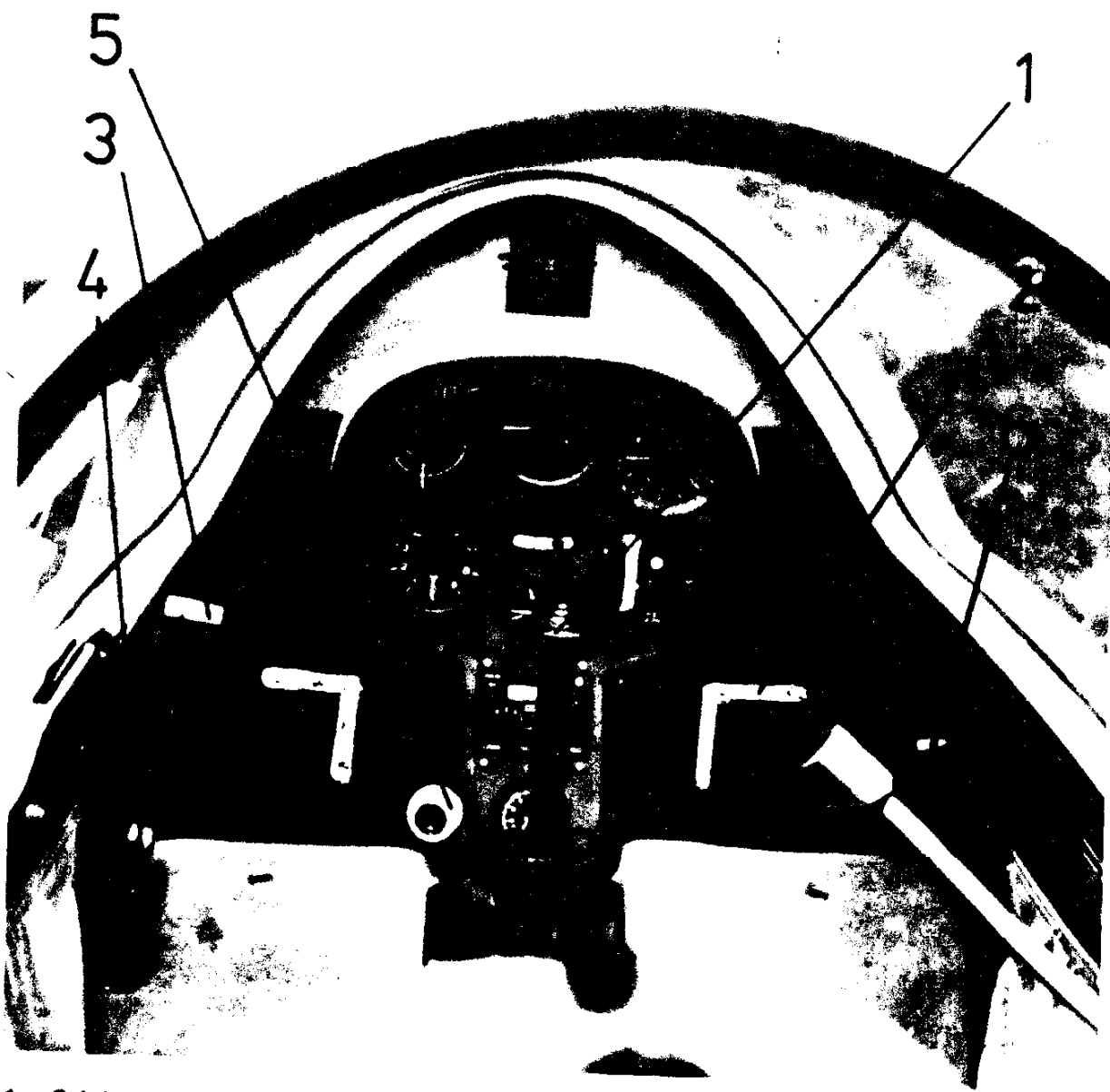
The aircraft is not prone to ground loop on take off.

If one wing touches the ground or the aircraft changes direction by more than 15 degrees, release cable immediately.

IV. Normal operation

VI. 1 Cockpit and controls

Front Seat.



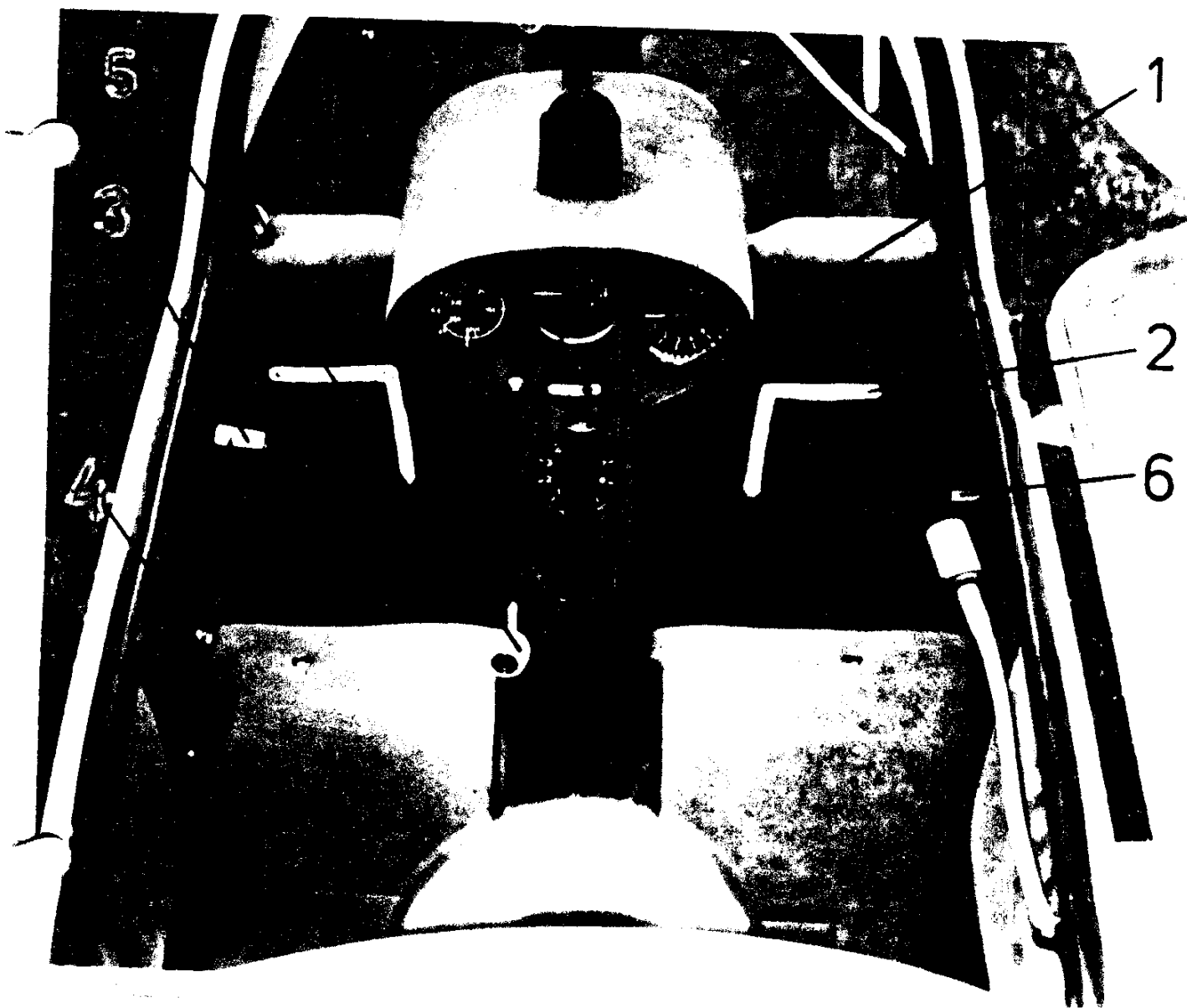
- 1 Stick
- 2 Rudder pedals
- 3 Airbrake lever and wheelbrake
- 4 Trim lever
- 5 Release knob
- 6 Canopy jettison

Ventilator top of instrument panel left side.

Rudder pedal adjustment top of instrument panel right side.

IV. 1 Cockpit and controls

Back seat.



- | | | | |
|---|-------------------------------|---|-----------------|
| 1 | Stick | 4 | Trim lever |
| 2 | Rudder pedals | 5 | Release knob |
| 3 | Airbrake lever and wheelbrake | 6 | Canopy jettison |

1. April 1982 (ÄM 315-12)

Instruments specifications

Basic equipment: Airspeed

The installation error of an airspeed indicator is not greater than 2 km/h or 1 kt. or 1,2 mph using the pitot tube in the tail fin and the static vents side of the cockpit.

The original certification was carried out using a Winter 6FMS4-2 and a PZL PR 400 S Airspeed indicator.

A similar FAA approved airspeed indicator to meet TSO C 2 reading to 300 km/h (162 kts, 187 mph) may be used.

Altimeter

The original certification was carried out using a Winter 4FGH 10 and a PZL 12 S Altimeter.

A similar FAA approved altimeter to meet TSO C 10 with a range to 35.000 feet may be used.

IV. 2 Daily preflight inspection

1.
 - a) Open canopy.
 - b) Check the 4 wing fastenings inside the fuselage if locked.
 - c) Visually check all controls inside the cockpit.
 - d) Check for foreign bodies.
 - e) Test controls for full and free movement.
 - f) Check tire pressure 2.5 – 2.8 atm. = 35.6 — 39.8 PSI
 - g) Check condition of both hooks.
 - h) Check functioning of releases and wheelbrake.

2.
 - a) Check top and bottom of wing for damage.
 - b) Check ailerons for condition, freedom of movement and play.
 - c) Check airbrakes for condition, locking and fit.

3. Check fuselage for damage especially on the underside.

4. Check tail unit for correct assembly and that safety lock is in position.

5. Check condition of the tailskid.

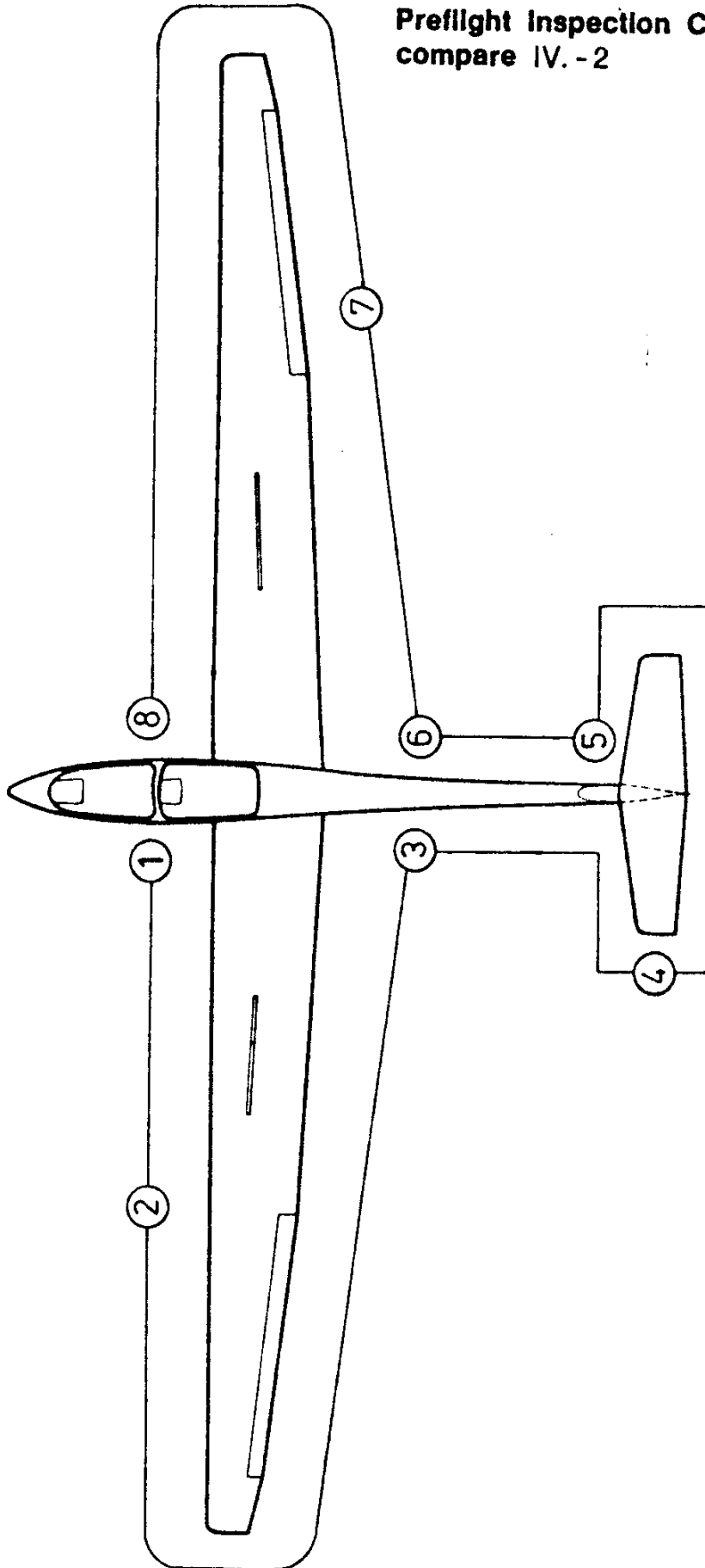
6. Check the pitot tube, total energy venturi and static vents are clean.

7. Repeat step 2 for right wing.

8. Check static vents.

After heavy landings or excessive flight loads the entire glider should be checked. The wings and tailplane should be removed for these checks and if any damage is found an inspector should be consulted. The plane should not be flown before any damage is repaired.

**Preflight Inspection Checkpoints
compare IV. - 2**



IV. 3 Control checks before take off

1. Check all controls for full and free movement.
2. Check that the ballast limitations are being adhered to.
3. Check safety straps and parachute are firmly fastened.
4. Check altimeter is adjusted to zero or airfield height.
5. Check that transmitter is switched on and set to airfield frequency.
6. Check trim is neutral.
7. Check canopy is closed and locked.
8. Check airbrakes are closed and locked.

IV. 4 Take off

Winch launch

Trim lever should be in central position.

Maximum winch launch speed is 120 km/h (65 kts, 74 mph).

The glider has a release hook in front of the mainwheel.

Winch launches cause no difficulties at all allowed centre of gravity positions and wing loadings.

The plane has no tendency to balloon up or to swing on the ground.

One should push forward slightly on the stick below about 100 metres (330 ft.) in the case of fast launches from a powerful winch. When the cable slackens pull the release firmly to its limit.

Aerotow

Trim lever should be in central position.

Maximum aerotow speed is 170 km/h (92 kts, 105 mph).

Aerotow should preferably use the nose hook.

The recommended length of tow rope is 40 — 60 m (120 — 200 ft.).

The glider can be controlled with coordinated rudder and aileron using full movements if required.

There is no tendency to swing in a strong crosswind.

The glider can be lifted off at about 70 km/h (38 kts, 44 mph).

The glider lifts off without assistance at a speed of about 80 km/h (43 kts, 50 mph) if the stick is kept in the neutral position.

The yellow release handle is mounted on the instrument panel and must be pulled to its limit when releasing.

IV. 5 Free flight

It is possible to fly the glider over the entire speed range in all attitudes.

Full control movements are only allowed up to the manoeuvring speed 170 km/h (92 kts, 105 mph). At higher speeds the controls should be used with the appropriate care.

IV. 6 Slow flight and stalling

The glider gives clear warning when about to stall by a distinct shaking of the elevator.

The stalling speed depends on the wing loading and the condition of the plane. The following are guidelines:

Single seater

Weight	Without Airbrakes	With Airbrakes
470 kg = 1034 lbs	66 km/h (36 kts, 41 mph)	75 km/h (40,5 kts, 47 mph)

Double seater

Weight	Without Airbrakes	With Airbrakes
580 kg = 1279 lbs	75 km/h (40,5 kts, 47 mph)	85 km/h (46 kts, 53 mph)

If the stick is pulled back further the glider goes into a controllable high rate of sink, during which rudder and aileron turns can be flown at up to 15 degrees of bank. When the stick is released the glider returns to a normal flying attitude immediately.

After the stick is pulled back quickly the glider pitches nose down and the bank can still be controlled with aileron.

IV. 7 High speed flight

There is no tendency for flutter to develop within the permitted speed range. Above 170 km/h (92 kts, 105 mph) control movements should be restricted to 1/3 of full range. The airbrakes limit the speed to under VNE in a 45° dive even at maximum flying weight.

IV. 8 Cloud flying

The minimum instrumentation required for flying in cloud is:

Air speed indicator	Variometer	Turn and Slip
Altimeter	Compass	

Experience to date shows that the ASI does not get affected by icing.

If the manouvering speed is exceeded unintentionally, pull out the airbrakes to avoid overstressing.

In emergency open brakes and leave cloud at about 170 km/h (92 kts, 105 mph).

Spin should not be used for rescue provision.

IV. 9 Simple Aerobatics

The glider is licenced for the following aerobatics

1. Loop

Entry speed *	180 km/h (97 kts, 111 mph)
Maximum g	ca. 3 g
exit speed	ca. 180 km/h (97 kts, 111 mph)

2. Stall turn

Entry speed *	180 km/h (97 kts, 111 mph)
---------------	----------------------------

At 140 km/h (76 kts, 87 mph) slowly apply rudder.
Shortly before the top apply opposite aileron.

Note: The stall turn is difficult to carry out because of the high moment of inertia. If a tailslide is accidentally initiated during the climb hold all controls in the centred position firmly.

3. Spin (possible in aft c.G. positions only)

Preparation. Decrease speed slowly to 80 km/h (43 kts, 50 mph) pull stick back and ^{apply} full rudder. Glider spins slowly. Rotation rate is one turn every 3 seconds with a height loss of about 80 m (262ft.) per turn.

Recovery : opposite rudder, neutralise stick and recover gently.

4. Chandelle

Entry speed 170 km/h (92 kts, 105 mph)

Pull up to fly 90° bank turn. During turn decrease speed and exit from turn with rudder and aileron. Chandelle should be completed heading in opposite direction.

5. Lazy Eight

Entry speed 140 km/h (76 kts, 87 mph)

IV. 10 Approach and landing

Normal flying practice is to approach at 95 km/h = 51 kts. The airbrakes are sufficiently powerful for steep approaches. The use of brakes causes the glider to be slightly nose heavy, so that the glider holds the required speed by itself.

Fully extended the airbrakes increase the stalling speed: do not extend the airbrakes fully during the roundout to avoid heavy landings. Don't use the airbrakes to full extension during touch-down due to strong effect of the wheel-brake.

If the nosewheel touches the ground the direction can be controlled by rudder until 40 km/h (22 kts, 25 mph).

The side-slip is quite controllable and, if needed, this manoeuvre can be used for steeper approaches. It is effective by using a 15 degrees angle of side-slip and should be finished of a safe hight (98 km/h; 54 kts; 61 mph).

Control Surface Movements

Aileron	Up:	3.541	±	0.394 in. (radius 8.19 in.)
	Down	1.77	±	0.31 in.
The Radius is the distance measured from the hinge line of the aileron at the inboard edge of the aileron.				
Elevator	Up:	3.58	±	0.24 in. (radius 8.74 in.)
	Down:	2.79	±	0.19 in.
The radius is the distance measured from the hinge line of the elevator at the elevator mid or center point.				
Rudder	Right:	8.78	±	0.39 in. (radius 17.72 in.)
	Left:	8.78	±	0.39 in.
The radius is the distance measured from the hinge line of the rudder at the base of the rudder.				
Airbrake				
At inner level: Up: 7 in.				

Rated load on Winch and
Auto Tow (Weak Link)

Maximum 600 kg (1323 lb.)

II. Model G103 TWIN II (Utility Category), Approved March 26, 1982.

Airspeed Limits (I.A.S.)

Maximum Air Speeds (Calm Air Unless Otherwise Noted)

Never exceed (V_{NE})			
0 - 6500 ft alt	135 kts	155 mph	250 km/hr
6501 - 10000 ft alt	128 kts	146 mph	237 km/hr
10001 - 13000 ft alt	121 kts	139 mph	225 km/hr
13001 - 16500 ft alt	115 kts	132 mph	213 km/hr
16501 - 19000 ft alt	109 kts	125 mph	202 km/hr
With Airbrakes extended	135 kts	155 mph	250 km/hr
In rough air (V_S)	92 kts	105 mph	170 km/hr
Maneuvering (V_A)	92 kts	105 mph	170 km/hr
Aero Tow (V_T)	92 kts	105 mph	170 km/hr
Winch tow (V_W)	65 kts	74 mph	120 km/hr

C.G. Range

+10.24 in. (260 mm) to +18.11 in. (460 mm) aft of datum.

Datum

Leading edge of wing at root.

Empty Weight

See Flight Manual

Leveling Means

Flight Manual, Chapter II.

Maximum Weight

1279 lb (580 kg).

No. of Seats

2-fixed seats with Seat 1 located 45.3 in (1150 mm) forward of datum and Seat 2 located 1.6 in. (40 mm) behind datum.

Baggage

Maximum 22 lb. (10 kg) at C.G.

Control Surface Movements

Aileron	Up	3.541	±	0.394 in. (radius 8.19 in.)
	Down	1.97	±	0.31 in.
The radius is the distance measured from the hinge line of the aileron at the inboard edge of the aileron.				

Control Surface Movements, cont'd

Elevator Up 3.54 ± 0.24 in. (radius 8.35 in.)
 Down 2.76 ± 0.20 in.
 The radius is the distance measured from the hinge line of the elevator at the elevator mid or center point.

With elevator No. 103A-3520 for gliders modified by TM 315-16
 Up 3.82 ± 0.31 in. (radius 9.17 in.)
 Down 2.99 ± 0.24 in.
 The radius is the distance measured from the hinge line of the elevator at the elevator mid or center point.

For glider serial numbers 3730 through 3838 modified by AM 315-12
 Up 3.82 ± 0.31 in. (radius 9.65 in.)
 Down 2.99 ± 0.24 in.
 The radius is the distance measured from the hinge line of the elevator at the elevator mid or center point.

For glider serial number 3839 and subsequent and gliders modified by AM 315-13/1, and for glider serial numbers 33879 and subsequent by AM 315-14 (spring trim system)

 Up 3.74 ± 0.31 in. (radius 9.45 in.)
 Down 2.92 ± 0.24 in.
 The radius is the distance measured from the hinge line of the elevator at the elevator inboard edge.

Rudder Right 9.17 ± 0.39 in. (radius 17.72 in.)
 Left 9.17 ± 0.39 in.

The radius is the distance measured from the hinge line of the rudder at the base of the rudder.

Airbrakes
 At inner level Up: 7.0 in

Rated Load on Winch and
 Auto Tow (Weak Link) Maximum 1323 lb. (600 kg).

III. Model G103A TWIN II ACRO, (Utility and Aerobatic Categories), Approved April 2, 1984.

(Similar to TWIN II except for stronger spar in the wing. Modifications per Grob Service Bulletin OSB315-66 are required for operation in Aerobatic Category)

Airspeed Limits (I.A.S.)
 (for category utility)

Maximum Airspeed (Calm Air Unless Otherwise Noted)

Never exceed (V_{NE})			
0 - 6500 ft alt	135 kts	155 mph	250 km/hr
6501 - 10000 ft alt	128 kts	146 mph	237 km/hr
10001 - 13000 ft alt	121 kts	139 mph	225 km/hr
13001 - 16500 ft alt	115 kts	132 mph	213 km/hr
16501 - 19000 ft alt	109 kts	125 mph	202 km/hr
With Airbrakes extended	135 kts	155 mph	250 km/hr
In rough air (V_S)	92 kts	105 mph	170 km/hr
Maneuvering (V_A)	92 kts	105 mph	170 km/hr
Aero Tow (V_T)	92 kts	105 mph	170 km/hr
Winch tow (V_W)	65 kts	74 mph	120 km/hr

Airspeed Limits (I.A.S.)
(for category aerobatic)

Maximum Airspeed (applies to serial number 33879 and subsequent only)
(Calm Air Unless Otherwise Noted)

Never exceed (V_{NE}).			
0 - 6500 ft alt	135 kts	155 mph	250 km/hr
6501 - 10000 ft alt	128 kts	146 mph	237 km/hr
10001 - 13000 ft alt	121 kts	139 mph	225 km/hr
13001 - 16500 ft alt	115 kts	132 mph	213 km/hr
16501 - 19000 ft alt	109 kts	125 mph	202 km/hr
With Airbrakes extended	135 kts	155 mph	250 km/hr
In rough air (V_S)	98 kts	112 mph	180 km/hr
Maneuvering (V_A)	98 kts	112 mph	180 km/hr
Aero Tow (V_T)	92 kts	105 mph	170 km/hr
Winch tow (V_W)	65 kts	74 mph	120 km/hr

C. G. Range

10.24 in. (260 mm) to 18.11 in (460 mm) aft of datum.

Datum

Leading edge of wing at root.

Empty Weight

See Flight Manual.

Leveling Means

Flight Manual, Chapter II.

Maximum Weight

1279 lb (580 kg).

No. of Seats

2- fixed seats with Seat 1 located 45.3 in. (1150 mm) forward of datum and Seat 2 located 1.6 in. (40 mm) behind datum.

Baggage

Maximum 22 lb. (10 kg) at C.G.

Control Surface Movements

Aileron Up 3.541 ± 0.394 in. (radius 8.19 in.)
 Down 1.97 ± 0.31 in.
 The radius is the distance measured from the hinge line of the aileron at the inboard edge of the aileron.

Elevator Up 3.82 ± 0.31 in. (radius 9.45 in.)
 Down 2.99 ± 0.24 in.
 The radius is the distance measured from the hinge line of the elevator at the elevator mid or center point.

For gliders serial numbers 3730-K through 3838-K

3.82 ± 0.31 in. (radius 9.65 in.)

Up

Down 2.99 ± 0.24 in.

The radius is the distance measured from the hinge line of the elevator at the elevator mid of center point.

For glider 3839-K and subsequent and those gliders modified by AM 315-13/1, and for glider serial numbers 33879 and subsequent by AM 315-14 (spring trim system)

Up 3.74 ± 0.31 in. (radius 9.45 in.)

Down 2.91 ± 0.24 in.

The radius is the distance measured from the elevator hinge line at the elevator inboard edge.

Rudder Right 9.17 ± 0.39 in. (radius 17.72 in.)
 Left 9.17 ± 0.39 in.

The radius is the distance measured from the hinge line of the rudder at the base of the rudder.

Airbrakes At inner level: Up 7.0 in

Rated Load on Winch and
Auto Tow (Weak Link) Maximum 1662 lb (754 kg).

IV. Model G 103 C TWIN III ACRO (Aerobatic Category), Approved September 18, 1989.

(Similar to TWIN II except for: wing. Modifications per Grob Service Bulletin OSB315-66 are required for operation in Aerobatic Category)

Airspeed Limits (I.A.S.)

Maximum Airspeed (Calm Air Unless Otherwise Noted)

Never exceed (V_{NE})			
0 - 6500 ft alt	151 kts	174 mph	280 km/hr
6501 - 10000 ft alt	143 kts	165 mph	265 km/hr
10001 - 16500 ft alt	130 kts	149 mph	240 km/hr
16501 - 23000 ft alt	116 kts	134 mph	215 km/hr
23001 - 29500 ft alt	103 kts	118 mph	190 km/hr
With Airbrakes extended	151 kts	174 mph	280 km/hr
In rough air (V_S)	108 kts	124 mph	200 km/hr
Maneuvering (V_A)	100 kts	115 mph	185 km/hr
Aero Tow (V_T)	100 kts	115 mph	185 km/hr
Winch tow (V_W)	76 kts	87 mph	140 km/hr

C.G. Range 10.63 in. (270 mm) to 18.90 in. (480 mm) aft of datum.

Datum Wing leading edge at the root rib.

Empty Weight See Flight Manual.

Leveling Means See Maintenance Manual Chapter 7.

Maximum Weight 1323 lb (600 kg)

No. of Seats 2-fixed seats with Seat 1 located 44.57 in. (1132 mm) forward of datum and Seat 2 located 1.38 in. (35 mm) behind datum.

Baggage Maximum 22 lb. (10 kg) at C.G. 31.89 in. (810 mm) aft of datum.

Control Surface Movements

Aileron Up 2.95 ± 0.31 in. (radius 8.46 in.)
Down 1.97 ± 0.20 in.
The radius is the distance measured from the hinge line of the aileron at the inboard edge of the aileron.

Elevator Up 4.02 ± 0.31 in. (radius 9.45 in.)
Down 2.91 ± 0.24 in.
The radius is the distance measured from the hinge line of the elevator at the elevator inboard edge.

Rudder Right 9.17 ± 0.39 in. (radius 17.72 in.)
Left 9.17 ± 0.39 in.
The radius is the distance measured from the hinge line of the rudder at the base of the rudder.

Airbrakes
At inner level Up 5.0 in

Rated Load on Winch and
Auto Tow (Weak Link) Maximum 1863 lb (845 kg)

DATA PERTINENT TO ALL MODELS.

Serial Nos. Eligible	See Import Requirements.
Certification Basis	<p>FAR 21.23 and FAR 21.29 effective February 1, 1965.</p> <p><u>For Model G103 TWIN ASTIR:</u></p> <p>Federal Republic of Germany Airworthiness Requirements for Sailplane and Powered Sailplanes (LFSM), dated October 1975.</p> <p>Type Certificate G39EU issued June 26, 1978. Date of Application for Type Certificate: December 30, 1976.</p> <p><u>For Model G103 TWIN II:</u></p> <p>Compliance with FAR 21.23 as revised by Amendment 21-53 has been shown utilizing the provisions of Advisory Circular 21.23-1 dated 12 January 1981, Section 5, paragraph a. The airworthiness requirements met under this provision are the Joint Airworthiness Requirement for Sailplane and Powered Sailplane (JAR-22) dated 1 April 1980 including Amendments 1 through 2, and Section 5, paragraph (e)(6) of Advisory Circular 21.23-1 dated 12 January 1981. Joint Airworthiness Requirements and Powered Sailplanes (JAR-22) dated 1 April 1980.</p> <p>Type Certificate G39EU amended 26 March 1982. Date of Application for amendment of the Type Certificate: 1 July 1980.</p> <p><u>For Model G103A TWIN II ACRO:</u></p> <p>Compliance with FAR 21.23 as revised by Amendment 21-53 has been shown utilizing the provisions of Advisory Circular 21.23-1 dated 12 January 1981, Section 5, paragraph a. The airworthiness requirements met under this provision are the Joint Airworthiness Requirement for Sailplanes and Powered Sailplanes (JAR-22) dated 1 April 1980 including Amendments 1 through 2, and Section 5, paragraph (e)(6) of Advisory Circular 21.23-1 dated 12 January 1981.</p> <p>Type Certificate G39EU amended 2 April 1984. Date of Application for amendment of the Type Certificate: 27 June, 1983.</p> <p><u>For Model G103C TWIN III ACRO:</u></p> <p>Compliance with FAR 21.23 as revised by Amendment 21-53 has been shown utilizing the provisions of Advisory Circular 21.23-1 dated 12 January 1981, Section 5, paragraph a. The airworthiness requirements met under this provision are the Joint Airworthiness Requirement for Sailplanes and Powered Sailplanes (JAR-22) dated 1 April 1980 including Amendments 1 through 2, and Section 5, paragraph (e)(6) of Advisory Circular 21.23-1 dated 12 January 1981.</p> <p>Type Certificate G39EU amended September 18, 1989. Date of Application for amendment of the type Certificate: 12 June 1989.</p>
Import Requirements	<p>A U.S. Standard Airworthiness Certificate may be issued on the basis of a German Export Certificate of Airworthiness signed by a representative of the Luftfahrt-Bundesamt (LBA), containing the following statement:</p> <p style="padding-left: 40px;">"The glider covered by this certificate has been examined, tested and found to comply with the type design approved under FAA Type Certificate No. G39EU and to be in a condition for safe operation."</p>

or,

Import Requirements, cont'd

For gliders imported from a third-party country that have never held a U.S. airworthiness certificate, either an export certificate of airworthiness from the third-party country or a detailed conformity inspection performed by a FAA manufacturing DAR or a FAA manufacturing inspector, shall be required prior to issuance of a standard airworthiness certificate. (Note: A FAA maintenance inspector is not authorized to perform this conformity inspection.) Eligibility for a U.S. Standard Airworthiness Certificate under this condition is established through compliance with FAR 21.183(d)

Eligible Serial Numbers

a) For the Model G103 TWIN ASTIR:

Eligible Serial Numbers: 3001 through 3291

Note: serial numbers 3001 through 3031 (prematurely exported) are eligible for a U.S. Standard Airworthiness Certificate when the glider has been modified in accordance with the LBA-approved Grob Technical Information TM103-3.

b) For the Model G103 TWIN II:

Eligible Serial Numbers: Serial numbers 3501 through 3878
Serial numbers 33879 through 34078

Note: serial numbers 3543, 3601 through 3604, 3609, 3615, 3648, 3650, 3652 and 3664 (prematurely exported) are eligible for a U.S. Standard Airworthiness Certificate when the glider has been modified in accordance with the LBA-approved Grob Technical Information TM315-14

c) For the Model G103A TWIN II ACRO:

Eligible Serial Numbers: Serial numbers 3544-K-() through 3878-K-()
Serial numbers 33879-K-() through 34078-K-()

Note: the following serial numbers (prematurely exported) are eligible for a U.S. Standard Airworthiness Certificate when the glider has been modified in accordance with the LBA-approved Grob Technical Information TM315-23:

3799-K-66	3843-K-89
3815-K-76	3847-K-93
3822-K-81	3848-K-94
3823-K-82	3850-K-96
3840-K-86	3852-K-98
3841-K-87	3854-K-100
3842-K-88	3855-K-101

d) For the Model G103C TWIN III ACRO:

Eligible Serial Numbers: Serial numbers 34101 through 34203

Eligible Serial Numbers, cont'd

Note: serial numbers 34107, 34110 and 34121 (prematurely exported) are eligible for a U.S. Standard Airworthiness Certificate when the glider has been modified in accordance with the LBA-approved Grob Technical Information TM315-44

Equipment

For the Model G103 TWIN ASTIR

The Required Equipment for the Kinds of Approved Operations are listed in the GROB Model G103 TWIN ASTIR Flight Manual LBA-approved 5 June 1978.

Equipment, cont'd

For the Model G103 TWIN II

The Equipment Approved for the GROB Model G103 TWIN II is listed in the GROB Master Equipment List dated 24 September 1981.

The Required Equipment for the Kinds of Approved Operations are listed in the GROB Model G103 TWIN II Flight Manual, LBA-approved 17 March 1982.

For Model G103A TWIN II ACRO

The Equipment approved for the GROB Model G103A TWIN II ACRO is listed in the GROB Master Equipment List dated 22 June 1983.

The Required Equipment for the Kinds of Approved Operations are listed in the GROB Model G103A TWIN II ACRO Flight Manual, LBA-approved 12 July 1983.

For Model G103C TWIN III ACRO

The Equipment approved for the GROB Model G103C TWIN III ACRO is listed in the GROB Master Equipment List dated June 1989.

The Required Equipment for the Kinds of Approved Operations are listed in the GROB Model G103C TWIN III ACRO Flight Manual, Revision 1, LBA-approved September 8, 1989.

Service Information

GROB Technical Information (Service Bulletins), published in the English language for the U.S. Type Design that carry a statement "Approved by the Luftfahrt-Bundesamt (LBA)" may be interpreted as FAA-approved.

Available documents for GROB Model G103 TWIN ASTIR:

- Flight Manual, LBA-approved 5 June 1978 or later approved revision
- Maintenance Manual for GROB G103 TWIN ASTIR, LBA-approved 5 June 1978
- Repair Instructions for the GROB G103 TWIN ASTIR, dated 5 June 1978

Available documents for GROB Model G103 TWIN II:

- Flight Manual, LBA-approved 17 March 1982 or later approved revision
- Airworthiness Limitations (Section X) of the G103 TWIN II Maintenance Handbook, LBA-approved 17 March 1982
- Repair Instructions for the GROB G103 TWIN II, dated September 1981

Available documents for GROB Model G103A TWIN II ACRO:

- Flight Manual, dated 12 July 1983 and Model G103 TWIN II Flight Manual LBA-approved 17 March 1982 or later approved revision
- Airworthiness Limitations (Section X) of the G103 TWIN II Maintenance Handbook, LBA-approved 17 March 1982
- Repair Instructions for the GROB G103 TWIN II, dated September 1981

Available documents for GROB Model G103C TWIN III ACRO:

- Flight Manual, Revision 1, LBA-approved 8 September 1989 or later approved revision
- Maintenance Manual for GROB G103C TWIN III ACRO, LBA-approved January 1989
- Airworthiness Limitations (Section XI, FAA) of the G103C TWIN III ACRO Maintenance manual, LBA-approved January 1989
- Repair Instructions for the GROB G103C TWIN III ACRO, dated 26 May 1989

NOTES

- NOTE 1. Current weight and balance report including list of equipment in certificated empty weight, and loading instructions, when necessary, must be provided for each glider at the time of original certification.

NOTES, cont'd

- NOTE 2. All placards and markings listed in Section II of the LBA-approved Grob Flight Manual must be installed in the location defined.
- NOTE 3. LBA-approved Section XI of the GROB TWIN ASTIR Glider Maintenance Manual dated 5 June 1978 and LBA-approved Section X of the GROB Glider Maintenance Manual for Models
-GROB G103 TWIN II LBA-approved 17 March 1982, and
-GROB G103 TWIN II ACRO, LBA-approved 17 March 1982 and
LBA-approved Section 11 of the GROB G103C TWIN III ACRO Glider Maintenance Manual dated January 1989 specifies mandatory replacement times, structural inspection intervals, and related structural inspection procedures. These airworthiness limitations may not be changed without FAA approval.
- NOTE 4. All external portions of the glider exposed to sunlight must be painted white except the wing tips, nose of fuselage, ailerons, and rudder. The colors of the excepted areas must be approved by Grob.
- NOTE 5. Major airframe repairs must be accomplished at FAA certificated repair stations rated for composite construction of small aircraft, using Grob Werke repair methods for model of interest, approved by the FAA.
- NOTE 6. Tost release hooks for the Grob Model G103 TWIN III ASTIR to be maintained in accordance with Tost Manual E75 and Europa G73 published in May 1975.
- All Tost tow release hooks for Grob gliders are to be maintained in accordance with the latest LBA/EASA-approved Tost Manual for each particular model hook.
- NOTE 7. G103 C TWIN III ACRO, Serial Number 34171 and up, incorporates the following improvements. The modifications are:
- a) Headrest, Part Number 103SL-7301/7302,
 - b) Main Landing Gear Frame Supports, Part Number 103SL-2017/2018;
 - c) Steerable Nose Landing Gear, Part Number 103SL-5100;
 - d) Rudder: Shape and Rudder Control Attachment, (Actuator Rib Part Number 103SL-3175)
 - e) Pedal Units, Part Number 103SL-4420 and 103SL-4800;
 - f) Airbrake Operating Rear Lever, Part Number 103SL-4412;
 - g) Horizontal Stabilizer Hinges, Part Number 115-1276 (one required) and 115-1278 (one required);
 - h) Elevator hinges, Part Number 103SL-3721 (two required);
 - i) Resin - hardener system:
 - 1) Resin: Type L285 from Martin G. Scheufler MGS Company
 - 2) Hardener: Type 285, 286 and 287 from MGS Company.

...END...