

MINISTÉRIO DA AERONÁUTICA
DEPARTAMENTO DE PESQUISAS E DESENVOLVIMENTO
CENTRO TÉCNICO AEROESPACIAL

TYPE CERTIFICATE DATA SHEET N° EP-8202

TYPE CERTIFICATE HOLDER:

BURKHART GROB FLUGZEUGBAU GMBH & Co. KG
8939 MATTSIES
GERMANY

EP-8202-01

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GROB

G 109

G 109B

JULY, 1993

I - MODEL GROB G 109, POWERED GLIDER (UTILITY CATEGORY AND SEMI-AEROBATIC) approved, March 17, 1982.

ENGINE

- . Manufacturer:
LIMBACH MOTORENBAU,
Kotthausener Strasse 5
D-5330 Koenigswinter 21
Germany
 - . Model
L 2000 EB 1.A
 - . Type
Reciprocating Engine,
4 cylinders horizontally opposed,
4 strokes, single ignition,
aircooled,
1994 total displacement in cm³ and
8,7:1 compression ratio.
 - . Maximum allowed rpm:
3400
 - . Maximum continuous rpm
3000
 - . Maximum take-off power
59 kW (79 hp) at 3400 rpm
 - . Maximum continuous power
51 kW (68 hp) at 3000 rpm
-

NOTE: This engine was approved as part of the glider GROB-G-109 type design.

PROPELLER

. Approved by CTA TCDS Nr 8401.

- . Manufacturer:
Propellerwerk Hoffmann
GmbH & Co. KG
Kuepferlingstrasse 9
8200 - Rosenheim 2
Germany
- . Model
HO - V 62R/L 160 T or BT
- . Diameter
1600 mm \pm 5 mm
- . Type
2 blades variable pitch propeller with mechanical pitch change system. The hub is manufactured of aluminum alloy, the blades are wooden composite with a metal leading edge protection.

MAXIMUM WEIGHT

810 kgf (See NOTE 2)

EMPTY WEIGHT

580 kgf

**CONTROL SURFACES
MOVEMENTS**

- . Aileron up 107 \pm 10 mm
+ 5 mm
down 63
- 10 mm
Measurement radius 242 mm from hinge line.
- . Elevator up **108 \pm 12** mm
down **97 \pm 10** mm
Measurement radius 282 mm from hinge line.
- . Rudder to both sides: 215 \pm 15 mm
Measurement radius 420 mm from hinge line.
- . Trim up **40 \pm 5** mm
down **31 \pm 5** mm

Measurement radius 100 mm from hinge line.

AIRSPED LIMITS (IAS)	<u>km/h (kts)</u>
Never exceed (V_{NE})	240 (130)
Rough air (V_B)	185 (100)
Maneuvering speed (V_A)	185 (100)
Maximum speed with airbrakes extended	240 (130)
 CG RANGE	 29,5 to 36% MAC 380 mm to 465 mm behind the datum line. (refer to Technical Information TM 817-10, dated 29/01/86)
 REFERENCE LINE	 Wing leading edge at the wing root.
 LEVELING LINE	 Level on top surface of fuselage first 500 mm segment in front of vertical stabilizer.
 FUEL CAPACITY	 Total : 80 liters Unusable fuel: 2 liters
 OIL CAPACITY	 Total : 2,5 liters Minimum: 1,5 liters See approved oil types at Flight Manual
 CERTIFICATION BASIS	 Brazilian Requirements for Air- worthiness Certification RBHA 1331/01 and RBHA 1111/01 chapters 7 and 10 of September 30, 1975. Brazilian Type Certificate nr 8202 issued on March 17, 1982. Validation: The type certificate nr 8202 was issued in accordance with the RBHA 1111/01 article 10.2 and in validation of the Type Certificate issued by LUFTHAFT BUNDESAMT of Federal Republic of Germany, in basis of the Joint Airworthiness Requirements for sailplanes and

Powered sailplanes (JAR 22) issued on April 1, 1980.

DATE OF APPLICATION November 6, 1981.
FOR TYPE CERTIFICATION

II- MODEL GROB G 109B, POWERED GLIDER (UTILITY CATEGORY) approved, December 20, 1985

ENGINE

- . Approved by CTA - TCDS N° 8509
 - . Manufacturer:
GROB - WERKE GMBH&Co KG
Flugplatz Mindlheim, 8939 Mattsies
Germany
 - . Model
GROB - 2500 - E 1
 - . Type
Reciprocating Engine,
4 cylinders horizontally opposed,
4 strokes, single ignition,
aircooled,
2450 total displacement in cm³ and
8,9:1 compression ratio.
 - . Maximum allowed rpm:
3400
 - . Maximum continuous rpm
3000
 - . Max. take-off power
70 kW (94 hp) at 3400 rpm
 - . Maximum continuous power
64 kW (86 hp) at 3000 rpm

PROPELLER

- . Approved by CTA TCDS Nr 8401
 - . Manufacturer
Propellerwerk Hoffman GmbH & Co. KG
kupferlingstrasse 9
8200 - Rosenheim 2
Germany

- . Model
HO - V 62R/L 160 BT
- . Diameter
1600 mm \pm 5 mm
- . Type
2 blades variable pitch propeller with mechanical pitch change system. The hub is manufactured of aluminum alloy, the blades are wooden composite with a metal leading edge protection.

MAXIMUM WEIGHT 850 kgf (See NOTE 3)

EMPTY WEIGHT 620 kgf

**CONTROL SURFACES
MOVEMENTS**

- . Aileron up **102 \pm 10 mm**
down 51 \pm 5 mm

Measurement radius 235 mm from hinge line.

- . Elevator up **112 \pm 11 mm**
down **102 \pm 10 mm**
Measurement radius 293 mm from hinge line.

- . Rudder to both sides:
210 \pm 15 mm
Measurement radius 420 mm from hinge line.

- . Trim elevator in neutral position
up **24 \pm 4 mm**
down **24 \pm 4 mm**
Measurement radius 68 mm from hinge line.
-

AIRSPEED LIMITS (IAS)		<u>km/h (kts)</u>
	Never exceed (V_{NE})	240 (130)
	Rough air (V_B)	170 (92)
	Maneuvering speed (V_A)	170 (92)
	Maximum speed with airbrakes extended	240 (130)
CG RANGE	25 to 38 % MAC 282 mm to 427 mm behind the datum line.	
REFERENCE LINE	Wing leading edge at span 1,3 m out of oblique wing - fuselage fairing	
LEVELING LINE	Level on edge of door frame. See the approved Airplane Flight Manual.	
FUEL CAPACITY	Total : 100 liters Unusable fuel: 2 liters	
OIL CAPACITY	Total : 3,5 liters Minimum: 1,75 liters See approved oil type at Flight Manual	
CERTIFICATION BASIS	Brazilian Requirements for Air- worthiness Certification RBHA 1331/01 and RBHA 1111/01 chapters 7 and 10 of September 30, 1975. Brazilian Type Certificate nr 8202 issued on March 17, 1982. Validation: The type certificate nr 8202 was issued in accordance with the RBHA 1111/01 article 10.2 and in validation of the Type Certificate issued by LUFTFAHRT BUNDESAMT of Federal Republic of Germany, in basis of the Joint Airworthiness Requirements for sailplanes and Powered sailplanes (JAR 22) issued on April 1, 1980.	
DATE OF APPLICATION FOR TYPE CERTIFICATION	November 5, 1984.	

DATA PERTINENT TO ALL MODELS

FUEL gasoline AVGAS 100/130

NR OF SEATS 2 side by side

REQUIREMENTS FOR IMPORT A Brazilian Airworthiness Certificate may be issued in the basis of the Airworthiness Certificate for Exportation issued by the LUFTFAHRT BUNDESAMT including the following statement: "The powered glider covered by this Certificate has been inspected, tested and found to comply with the Brazilian approved Type design as defined by the CTA Type Certificate nr 8202 and is in condition for safe operation".

EQUIPMENT REQUIRED The following equipments prescribed in the applicable airworthiness regulations and listed in the glider Flight Manual must be installed.

1. Instruments and basic equipments:
 - a) air-speed indicator
 - b) altimeter
 - c) magnetic direction indicator
 - d) side-slip indicator
 - e) variometer
 - f) tachometer
 - g) fuel quantity indicator
 - h) an oil temperature indicator
 - i) an oil pressure indicator
 - j) an oil quantity indicator (dip stick)
2. for cloud flying:

All instruments listed on item (1) above and, in addition, an artificial horizon.
3. Flight Manual approved by CTA.

NOTES**NOTE 1 - for model GROB G 109.**

a) The following placards must be installed in visible place for the pilot:

1. Placard of maximum speeds.

Never exceed V_{NE}	240 km/h (130 kts)
In rough air V_B	185 km/h (100 kts)
Maneuvering V_A	185 km/h (100 kts)

2. Weight

Maximum weight 810 kgf (825 kgf) (See NOTE 2)
Minimum pilot's weight with parachute 70 kgf (pilot's weight of less than 70 kgf must be complemented by using trim ballast secured on the seat).

b) Other markings and placards:

All placards should be translated to Portuguese in accordance with the wording presented in the Maintenance Manual.

c) The airspeed limits of the airspeed indicator must be marked in accordance with the Flight Manual.

NOTE 2 - for model GROB G 109.

It is permitted weight augmentation from 810 kgf to 825 kgf (except for serial numbers 6001 and 6010) in accordance with the technical information from manufacturer Nr 817-1, dated May 12, 1981 and approved by LBA.

NOTE 3 - for model GROB G 109B.

The placards listed in the Flight Manual, section II, item 11 - PLACARDS, must be installed in the appropriate locations of the powered glider as indicated in the Manual.

The airspeed limits of the airspeed indicator and the engine instruments must be in accordance with the Flight Manual.

NOTE 4

A weight and balance report, listing all equipment included in the empty weight, must be supplied with each powered glider, including instructions for weight and balance calculations if applicable.

NOTE 5

The inspections, maintenance, repairs and painting shall be performed in accordance with the Maintenance and Repair Manuals instructions. Major repairs may only be performed following the manufacturer instructions approved by CTA.

NOTE 6

All external portions of the glider exposed to sunlight must be painted white, except wing tips, nose of fuselage and rudder

NOTE 7

Flights at high altitude (above 10000 ft/3048 m) are only allowed if an approved oxygen system is installed.

NOTE 8

The life limit of the motorglider may be extended from 3000 (inclusive) to 12000 hours in accordance with Service Bulletin TM 817-28/1, dated NOV 25, 1991.

CLODOALDO MATIAS DE OLIVEIRA - Maj Av
Chefe da Divisão de Homologação Aeronáutica

Brig do Ar - NELSON DE SOUZA TAVEIRA
Diretor do CTA

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