M.I.C.M.-C.I.E.S.A.
INTREPRINDEREA DE CONSTRUCTII AERONAUTICE
2200 B R A S O V
Căsuţa poştală nr. 198

MANDATORY SERVICE BULLETIN

IS-28M2/80HP/EO-01/2-nd issue

APPROVED BY: DEPARTMENT OF CIVIL AVIATION
with no. 3182 / 20.03.1985

PRODUCT: IS-28M2/80 HP

OBJECT: PROPELLER OVERHAUL

COMPLIANCE: Service Bulletin No. E4C and Revision No. 1 to this bulletin issued by HOFFMANN and approuved by L.B.A.

DATE: the 11th of February 1985

1. PLANNING INFORMATION

A. APPLICABILITY

This bulletin shall be applied to all the IS-28M2/80HP aircraft:

- by the user, to aircraft under servicing;
- by the manufacturing plant, to aircraft under fabrication or under storage.

The bulletin shall be applied by the user, according to the methodology and terms indicated in the text (S.B. E4C issued by the manufacturer and amended by Revision no. 1 is reproduced).

The propellers type HO-V62 R/L 160T installed on LIMBACH L 2000 (80 HP) engines are affected.

B. REASON

A metal ferrule is attached to the blade body using lag screws. In flight, when using RPMs between 2950 and about 3250 stresses may arise in the lag screws exceeding the fatigue limit.

Remedial measures have been worked out which result in a considerable improvement of blade root retention and which means that critical RPM-range has changed, it is increased now.

C. DESCRIPTION

Section 1

Affected: Propellers of which blades have not yet modified since issue of S.B. IS-28M2/80HP/EO-01 dated 29.09.1983 (on the basis of S.B. No. 4 issued of HOFFMANN and dated 15th July, 1983) and which are not yet marked "SB 4" on the outer collar of the ferrule.

Compliance and required actions:

1) Immediately:

a) avoid RPM above 2900 in continous operation.
After take-off reduce RPM to 2900 as soom assafety of flight allows it.

b) acrobatic manoeuvres using engine power are not permissible.
Acrobatic manoeuvres with engine shut down are permissible.

2) Within the next 10 service hours (engine running time) after 15th July, 1983:

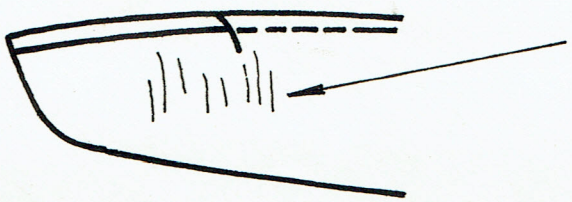
a) check RPM indicator.
Apply correction marking.

Example: "Reading 2830 is true 2900".

Apply a placard close to the RPM indicator reading:
" Avoid continuous operation above 2900 RPM ".

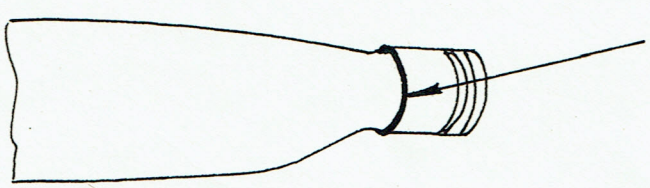
b) Inspect propeller using the advises of owner's manual Eo107.72. To do this, the spinner dome must be removed. The inspection has be carried out by a qualified person.

- If cracks in the lacquer are revealed with the directions across to the blade axis or if the metal leading edge is cracked, remove the propeller within the next 20 hours of service for special inspection in the factory.



such cracks may also appear in inner blade sections.

- Inspect carefully all around the blade root the area between blade body and metal ferrule. blades of newer construction are sealed in this area with silicone rubber material. Which such blades no cracks can be tolerated in the silicone material or its connection to the metal ferrule (contrary to description in the manual). If the crack is revealed in this area, the propeller has to be removed from service for special inspection in the factory.



Inspect carefully this circumference!

3) Within the next 10 service hours after the effective date of Revision No. 1 (11th December 1984) or latest until 31st March 1985, the propellers must be removed from service, for major overhaul and modification according to section 3 of this bulletin.

Section 2

Affected: Propellers of which blades have been modified already according to S.B. IS-28M2/80HP/EO-01 dated 29.03.1983 and which are already marked on the outer collar of the ferrule with "SB 4";

Compliance and required actions (if not already done):

1. Immediately:

a) avoid continuous RPM above 2900. After take-off reduce RPM to 2900 as soon as safety of flight allows it.

b) acrobatic manoeuvres using engine power are not permissible.
Acrobatic manoeuvres with engine shut down are permissible.

2. Within the next 10 service hours (engine running time) after 15th July 1983:
a) check RPM indicator
Apply correction marking.
Example: "Reading 2830 is true 2900".

Apply a placard close to the RPM indicator reading:
"Avoid continuous operation above 2900 RPM"

3. Before accumulating 600 service hours (engine running time) since new,
- or earlier, if required according to S.B. No.E1F issued by HOFFMANN (TBO) or a later approved issue,
- however latest until 31st August 1985:
Remove propellers from service for major overhaul and modification according to part 3 of this S.B.

Section 3

Affected: Propelles of which blades are marked with modification letter A or B behind blade serial number. This means:
A-blade ferrule with 6 lag screws (in production from October 1983)
B-blade ferrule with 5 larger lag screws (12 mm dia.)
(application at overhaul in the manufacturing factory from 18th January 1984)
Further modification letters probably behind the serial number do not afect this Service Bulletin. The marking SB4 on the outer collar of ferrule (see part 1 of this S.B.) becomes invalid by letter A or B behind the serial number.

HERSTELLER:	HOFFMANN
NAME:	HO-V-62R W.Nr. A 666
BLATT:	L 160 T W. Nr.3333 B ← Indication of modification letter
GERÄTE Nr.:	32.130/13 Prüfung xxx
VP 20-512- ( )	Datum xxx

Marking example

Advices

(1) The maximum allowable continuous RPM under all operating conditions is 3000.
(2) The placard "Avoid continuous operation above 2900 RPM" may be removed.
(3) Recommendation: Avoid RPMs above 3100 in principle.
(4) Recommendation: Check RPM indicator once a year.
(5) Overhaul time of propells is 600 hours according to indications of Service Bulletin E1F dated Nov. 2, 1983. The propellers are subject to service time development. Prolongations of service time will be published in Service Bulletin No. E1 ( ).

D. COMPLIANCE

1. Service Bulletin No. E4C dated 20.02.1984.
2. Revision No.1 to S.B. E4C of 11.12.1984 issued by PROPELLERWERK HOFFMANN ROSENHEIM and approved by L.B.A.

E. ACCOMPLISHMENT

This bulletin is applied by the manufacturer to the IS-28M2/80HP motorglider under storage or fabrication. To aircraft under servicing this bulletin is applied by the user, but without exceeding the operation limits provided to heading 1C of this bulletin.

F. MATERIAL -COST AND AVAILABILITY

Engine limitation placard.
The bulletin will be applied at the user's expense. HOFFMANN assures the modification of propellers according to section 3 of this Service Bulletin:

- -free of change, within the warranty period
- against payment (300 DM) after warranty expiration up to 450 service hours
- during overhaul, all propellers shall be modified according to section No.3 of this S.B.

G. TOOLING
Tool kit from the aircraft equipment.

H. WEIGHT AND BALANCE
Not affected.

I. REFERENCES

- S.B. E4C and Revision no. 1
- Propeller maintenance manual.

DATE: 11th February 1985

J. DOCUMENTS AFFECTED

Amendment no. 6 to the Flight and Maintenance Manual, 1st issue.

2. USING INSTRUCTIONS

A. WORK PREPARATION

Remove the propeller spinner dome and provide a white strong light source.

B. APPLICATION

Check the RPM indicator-indicating the measuring error if necessary.
If the indications of sections 1 and 2 have been applied, a yellow arc is painted for the true RPM range 2900 to 3000; if the indications of section 3 have been applied, a yellow arc is painted for the true RPM range 3000 to 3100.
Remove the old engine limitation placard and stick the new one.
The blades and the blade attachement to hub shallbe checked by a qualified person.
Follow the indications of sections 1,2 or 3, depending on the modifications previously applied to the blades, on the date and the number of service hours.

C. SERVICING INSTRUCTIONS

RPMs more than 2900 (according to sections 1 and 2) shall be used only during take-off until the flight safety requirements are met. In accordance with section 3, the maximum continuous RPM is 3000 without take-off restrictions

3. MATERIAL INFORMATIONS

A. MATERIAL LIST

Engine limitation placard.

B. TOOLING LIST

Tool kit.

C. SUPPLY INDICATIONS

None.

4. IDENTIFICATION

The application of the present bulletin shall be registered in the aircraft and propeller book.

5. APPENDIX

Amendment no. 6 to the Flight and Maintenance Manual.

REVISION RECORD CONTINUATION SHEET

All Revisions in the text are indicated by a marginal vertical line and the revision number

Rev. No.	No.of Pages	Description of Revision	Revision Date	Date Incorporated	Signature
1.	5.10.1- 5.10.12	Dittel FSG60M Radio Installation (optional)			
2.	P.V.1.A II.A 3.26.A	Landing overshoot	5.10.82		
3.	P.V.1.B. 3.21.A 4.4.A	Flying controls inspection	20.11.82		
4.	2.8A 2.12A 3.7A 3.13.A 3.14A	R.p.m.limitation application of S.B.E4.A Hoffmann	08.09.83		
5.	P.V.1.C 4.17A; 4.19A; A.1.2.A	Safe life increasing	20.02.85		
6.	2.8.B; 3.13B 4.24.A	Application of S.B. E4 C with Revision no.1 issued by Hoffmann	20.02.85		
7.	2.9A	Adding other types of engine oil	28.05.85		
8.		Only for Romania			
9.	P.V.1.F 1.1.A 3.8.A 4.18.A A.2.1.A A.2.4.A	Mounting of the 160 BT blade. Application of S.B. no.1N/18.12.91 Hoffmann	19.05.92		
10.	P.V.1.G 1.7.A 4.28.A	Flap control modification			

2.4. Engine Operating Limitations (Limbach L2000 E0)

Engine rpm Limits

Temporarily cancelled 4

- Maximum accepted speed (5 minutes max) (Red Line)	3400 rpm(80HP)
- Maximum cruise speed	3000 rpm(72HP)
- Cautionary range (5 minutes limitation) (Yellow arc)	3000-3400 rpm
- Operating range (Green arc)	700-3000 rpm
- Idling speed	about 700 rpm
- Static rpm for take-off (propeler in Fine pitch)	2700 rpm minimum

Oil temperature

- Maximum temperature (Red line)	120°C
- Minimum temperature (Red line)	50°C
- Cautionary range (Yellow arc)	50-60°C
- Normal operating range (Green arc)	60-120°C
- Recommended operating temperature	Approx.80°C
- Minimum temperature (flights in icing condition)	70°C

Oil Pressure

- Minimum pressure (Red line)	1kg/cm^2 (bar) (14psi) at 2500 rpm
- Maximum pressure (Red line)	4kg/cm^2 (bar) (57 psi)
- Operating range (Green arc)	1.0-4.0 kg/cm^2 (bar)(14-15psi)

Cylinder Head Temperature

- Max. temperature (Red line)	250°C
- Caution/Warning range (Red arc)	225-300°C

* According to the S.B. issued by HOFMANN on which the S.B. 28M2/80HP E0.01 is based:

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- Max. rpm (time as short as possible)	3400 rpm
- Caution area (5 min. limitation) yellow arc	2900-3400 rpm
- Normal operating area (green arc)	700-2900 rpm
- Maximum cruise rpm	2900 rpm

AEROBATIC FLIGHT WITH ENGINE RUNNING IS PROHIBITED

6 The restriction of 2900 RPM and the prohibition of aerobatic manoeuvres with engine running are not applicable any more to the propellers marked by A or B beside the serial number.

3.1.9. Take-off and Climb (Cont'd)

- Commence climb with an indicated airspeed of 90 km/h (48 kts)
- At an altitude of about 50-80 m (165-263 ft) the engine speed may be reduced to 2900 rpm (85 km/h) (45 kts) airspeed, if required adjust trim tab. 4
- In this configuration continue climb to a safe altitude (about 150-200 m (500-700 ft)).
- Switch off booster fuel pump (amber light extinguished).
- Flap neutral and locked.

Recommendations

The propeller manufacturer recommends to avoid to the extent possible RPMs higher than 3100. 6

To provide better engine cooling in warm weather increase aircraft speed in the climb.
During a climb of long duration, check the oil temperature continually. Oil temperature can be decreased by increasing the flying speed and decreasing the engine speed.
The use of upcurrents provides a faster climb, sparing the motor and reducing the fuel consumption. The best climbing speed is 105 km/h (57 kts). Small deviations from the optimum speed significantly influence the climbing speed.

In the event of an engine failure, select a flight path to provide for emergency landing until a safe altitude of 200-300 m (700 - 1000 ft) is attained.

4.4.10 Engine Controls

Engine controls are mechanical.

- Mixture (choke) control is by cable.
- Throttle control is by metal rod.

6 The RPM indicator calibration shall be checked yearly. If any difference is noticed, the following mention will be made on a placard beside the rpm indicator:

The RPM of ..... corresponds to 2900 rpm.
(for propellers with restriction)

The RPM of ..... corresponds to rpm.
(for propellers without restriction)