

**Subject:** Inspection and improvement of the propeller bearing

**Concerned:** G 103 C TWIN III SL, all S/N's

**Urgency:** Action 1: immediately, and then after every 5 flight hours until embodiment of action 2  
Action 2: not later than 31 December 1996

**Background Information:** Modifications to the propeller drive unit were already performed by Service Bulletins 869-7 and 869-16. But still in isolated cases an increased play of the propeller bearing was observed (especially after lack of maintenance), which will start rotating of the outer bearing races (4) and as a result damage to the grooved nut (2) in an advanced stage. In the worst case this may cause loss of the propeller. Therefore an improved propeller bearing was designed which provides a considerable improved bearing combined with resistance to lack of maintenance. To ensure a uniform type design, the modification of the propeller bearing for all G 103 C TWIN III SL is mandatory.

**Actions:**

1. **Inspection of the propeller bearing**  
The propeller bearing must be inspected for excessive play. If excessive play is detected at the propeller or at the upper pulley wheel, the reason must be checked out in detail and eliminated, if possible. This inspection must be repeated after every 5 flight hours until embodiment of action 2.
2. **Modification of the propeller bearing**
  - 2.1 Removal of the parts which have to be modified according to the Removal Instructions on pages 4 to 6.
  - 2.2 Modification of the parts at GROB  
(Installation of an additional bearing ring P/N 103SL-6430.05)
  - 2.3 Installation of the modified parts according to the Installation Instructions on pages 6 to 8.
3. **Revision of the Maintenance Manual**  
Revision 6 must be incorporated into the Maintenance Manual G 103C TWIN III SL.

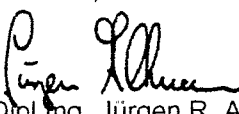
**Material:** The material will be provided by GROB.

**Weight and Balance:** negligible

**Remarks:**

1. The modification of the propeller bearing can be performed at an authorized aviation work shop and has to be certified in the logbook by an authorized inspector.
2. If you have sold your motorglider in the meantime, would you kindly pass this information on to the new owner and forward his name and address and aircraft S/N to us.

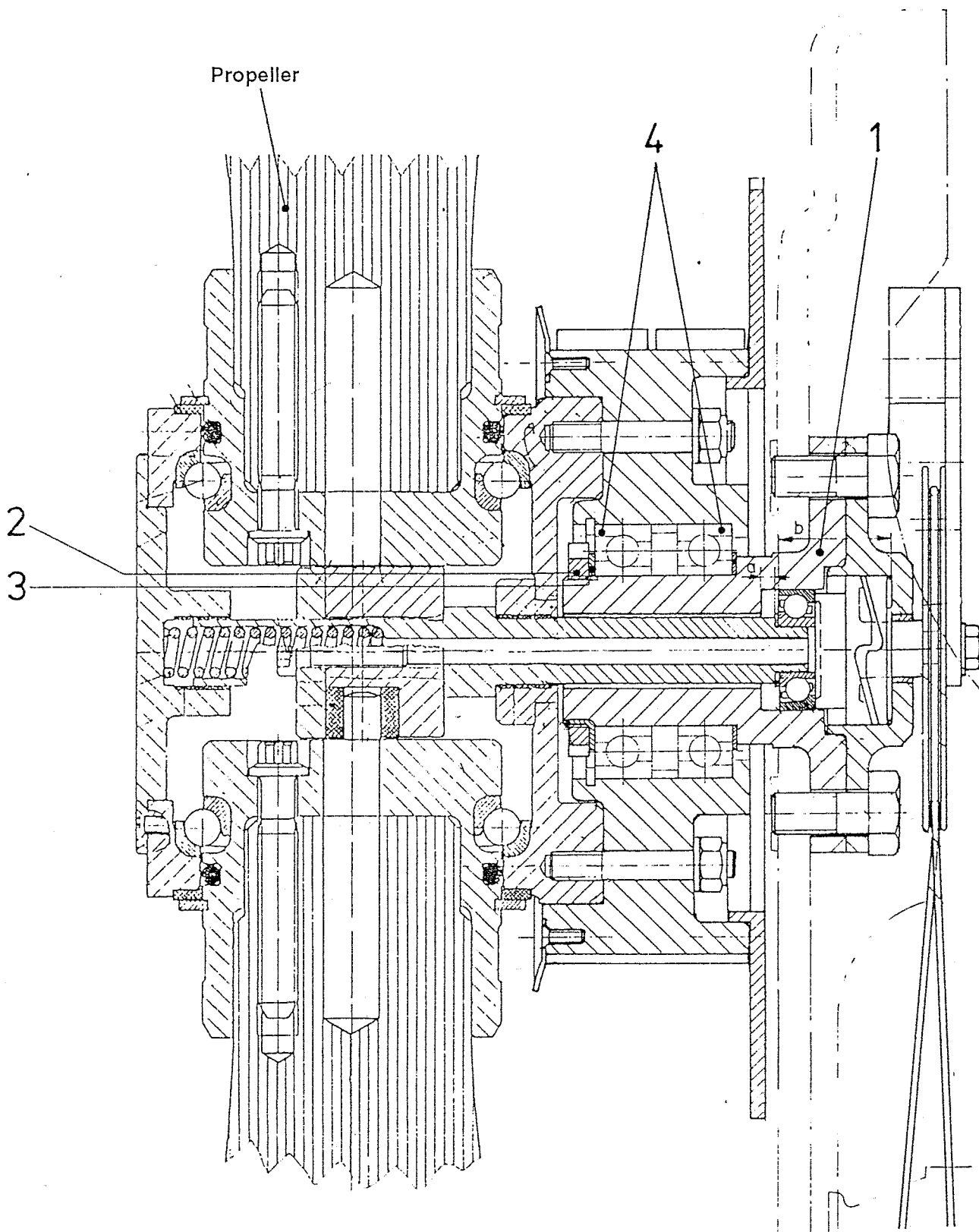
Mattsies, 07 March 1996

  
Dipl.-Ing. Jürgen R. Altmann  
Manager  
Airworthiness/Certification

**LBA approved:**

This Service Bulletin is originally written in German and approved by the German LBA on the 04 April 1996 and is signed by Mr. Walter.

The translation has been accomplished to the best of our knowledge und judgement.

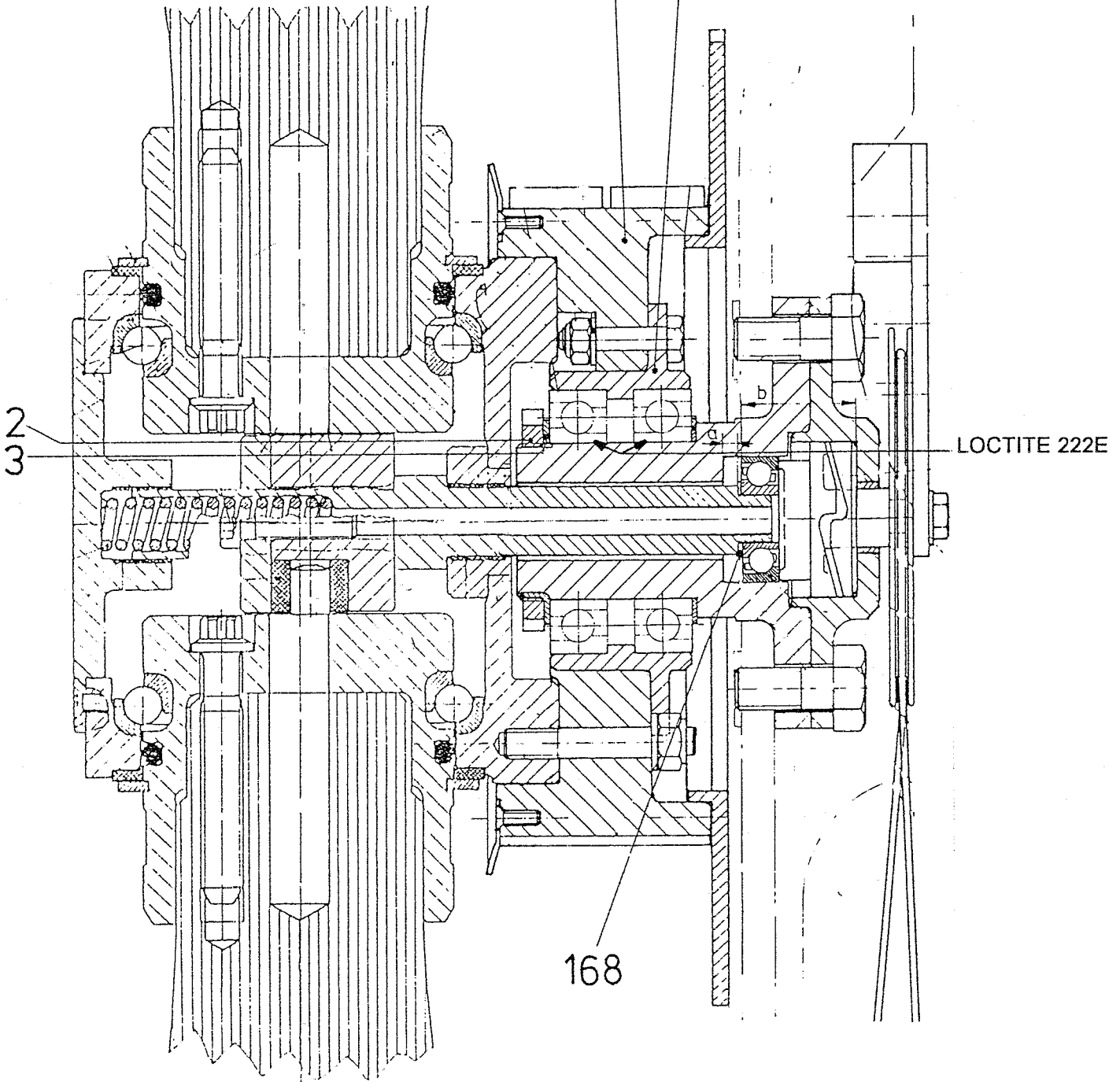


Previous propeller bearing (shown for the variable pitch propeller)

Propeller

112

Bearing ring P/N 103SL-6430.05



Modified propeller bearing (shown for the variable pitch propeller)

## Removal Instructions

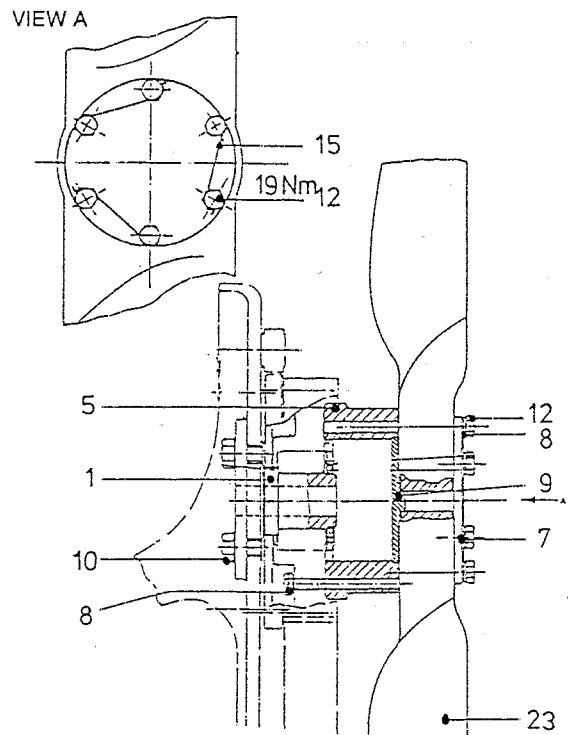
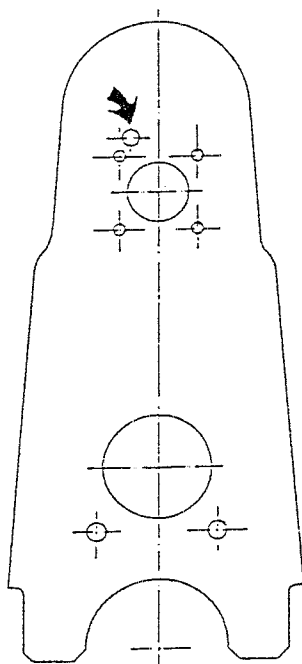
1. Extend engine fully.  
Only for variable pitch propeller: set propeller to "TAKE-OFF" position.  
Ensure that propeller is in the vertical position (index lever is engaged in the index plate = brake disc locked).  
Drive engine to 7° position.
2. Switch ignition to "OFF" and remove ignition key.
3. Secure engine for unintended retracting. Avionic main switch "OFF".
4. Remove L/H and R/H cover plates (may be not necessary for fixed pitch propeller).
5. Remove exhaust system (may be not necessary for fixed pitch propeller):
  - remove socket head cap screws at the retaining springs
  - remove exhaust system from rubber bearings and remove exhaust upwards
  - close opening of the exhaust at the engine
6. Remove propeller:

### Variable pitch propeller

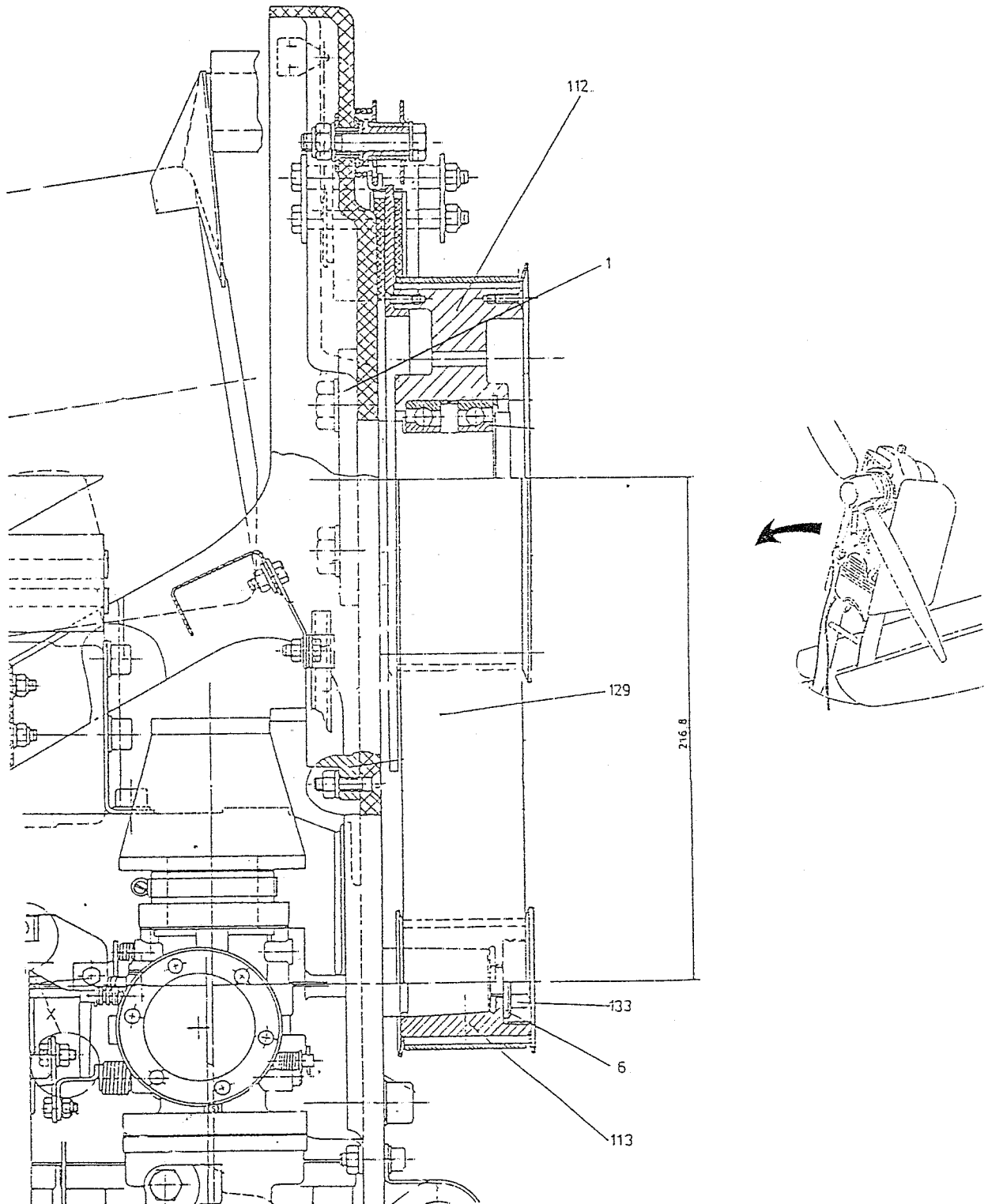
- remove 6 nuts M8 and washers from the rear side through the access hole in the engine mount in 11-o'clock position (the propeller has to be turned stepwise)
- remove propeller frontwards

### Fixed pitch propeller

- remove securing wire (15) from screws (12)
- remove 6 screws M8 (12) and washers (8)
- remove propeller (23) and propeller plate (7)
- carefully punch out centre plate (9) from back to front using a long pin



- 7 Disconnect index cable.
8. Remove lower pulley wheel (113):
  - loosen 1/2" holding screw = crankshaft attaching screw (133)
  - remove screw and washer (6)
  - remove lower pulley wheel from crankshaft using a puller



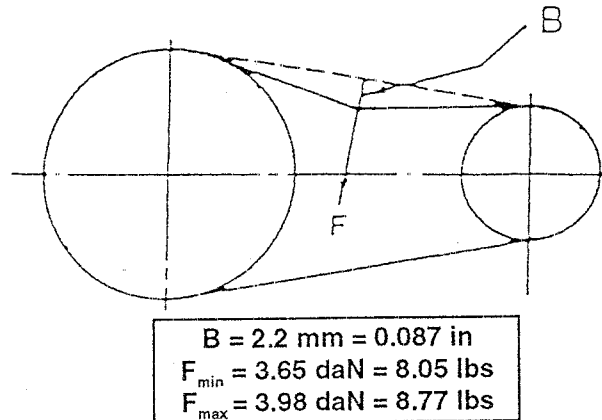
9. Remove tooth belt (129).
10. Disconnect brake cable M5. Loosen 2 screws M6 from the calliper, remove guide bushes from engine mount and remove calliper from brake disc.
11. Remove upper pulley wheel (112), propeller adapter (5) (fixed pitch propellers only) and supporting plate (4). Bend up both teeth from securing plate and loosen grooved nut using socket for grooved nut.  
**Note:** Grooved nut has left hand thread!
12. Only for variable pitch propeller: remove shims (168) from propeller flange.  
**Note:** The number (thickness) of these shims must be determined exactly. It is very important for reassembly.
13. Send upper pulley wheel (112) together with installed index plate to GROB for modification, use attached order form.

### Installation Instructions

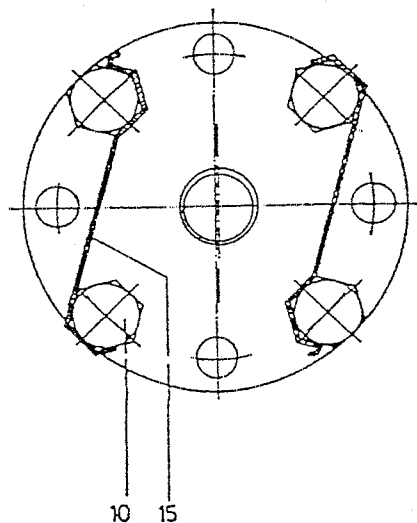
1. Clean all parts prior to reassembling, especially de-grease the propeller flange (markings of all marked parts must be renewed at the correct position, if necessary), and check for damage and excessive wear. Exchange, if necessary.  
**Note:** **New self-locking nuts and a new securing plate must be used.**
2. Grease ball thrust bearings using AEROSHELL GREASE 22 (MIL-G-81322D).
3. Install upper pulley wheel:
  - install supporting plate (4) (**Pay attention for the direction of installation!**)
  - fix both bearing inner races of the ball bearings which are included in the pulley wheel (112) at the propeller flange (1) using LOCTITE 222E.
  - push pulley wheel (112) fully onto propeller flange (1)
  - install securing plate (3) and grooved nut (2)
  - tighten grooved nut to 20 Nm (14.7 lbs.ft.)**Note:** It is recommended, to turn the pulley wheel during tightening to prevent damage to the bearing!
4. Fit two opposed teeth of the securing plate to the grooves of the grooved nut. Bend over the teeth and secure grooved nut using securing paint.
5. Connect index cable.
6. Install toothed belt (129) and lower pulley wheel (113) using washer (6) and bolt (133).  
**Note:** The toothed belt must not be bent, twisted or overstressed!  
If the toothed belt is too short and cannot be fitted, the eccentric must be turned accordingly.  
Before tightening the crankshaft attaching screw, adjust compression pressure and propeller position by the means of turning the crankshaft of the engine into the correct position. For this the propeller must be positioned in the vertical position and the marking at the magneto wheel 40 mm (1.57 in) before firing top center.

Tighten crankshaft attaching screw (133). Tightening torque: 50 Nm (36.9 lbs.ft.). Secure using securing paint.

7. Ensure, that index lever is engaged in the brake disc.
8. Install calliper and guide bushes.
9. Check of the initial tension of the toothed belt.  
Measure the force required to deflect the toothed belt **2.2 mm** (0.087 in) using a spring balance, tensiometer or an other proper tool.  
The force must be in the range of **3,65 - 3,98 daN** (8.05 - 8.77 lbs).  
If the values fall below or exceed this range, the toothed belt tension must be adjusted.



10. Adjustment of the toothed belt initial tension.  
Remove screws M12 (10) and turn propeller flange (eccentric) (1).  
**Caution:** Pay attention not to move the position of the flange, i.e. the installed spiral pin is located in the R/H upper corner.  
Tighten 4 screws (10) again. Tightening torque is  $57 \pm 2 \text{ Nm}$  ( $42 \pm 1.4 \text{ lbs.ft.}$ ).  
Repeat toothed belt initial tension check. If necessary, repeat adjustment.  
Secure 4 screws (10) using securing wire (15) MS20995-C32 or LN 9424-0,8-1.4301.9 (as an alternative securing wire  $\varnothing 1 \text{ mm}$  (0.04 in.) rust-free may be used).



11. Install propeller:

Variable pitch propeller

- fix shims (168) at propeller using AEROSHELL GREASE 22 (MIL-G-81322D)
- pull propeller onto pulley wheel
- place nuts and washers through the access hole (11-o'clock position) onto propeller flange bolts and start to tighten nuts
- repeat action until all 6 bolts are fitted with washers and nuts
- torque nuts crosswise with 18 - 20 Nm (13.3 - 14.7 lbs.ft)

Fixed pitch propeller

- install propeller adapter (5) and centre plate (9)
- install propeller (23) and propeller plate (7), washers (8) and screws (12)
- tighten nuts crosswise with 18 - 20 Nm (13.3 - 14.7 lbs.ft) and secure using securing wire (15) LN 9424-0,8-1.4301.9 (refer to view A, page 4)

12. Install exhaust system (if removed).

- remove covering from exhaust opening
- install exhaust to rubber bearings
- install socket head cap screws to the retaining springs

13. Install R/H and L/H engine cover plates (if removed).

14. Perform engine ground run.

15. Perform test flight.

16. Check bearing play after 5 flight hours. If play is evident, torque grooved nut (2) again.  
Note: Use a new securing plate !