

SERVICE INSTRUCTION

AMENDMENT ON REDUCTION GEARBOX TYPE „C“ AND TYPE „E“ FOR ROTAX® 2-STROKE UL AIRCRAFT ENGINES

SI-06-1998

Repeating symbols:

Please, pay attention to the following symbols throughout this document emphasizing particular information.

- ▲ **WARNING:** Identifies an instruction, which if not followed, may cause serious injury or even death.
- **CAUTION:** Denotes an instruction which if not followed, may severely damage the engine or could lead to suspension of warranty.
- ◆ **NOTE:** Information useful for better handling.

1) Planning information

1.1) Engines affected

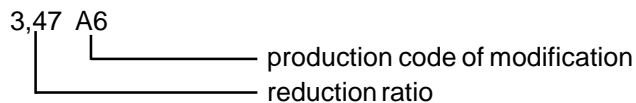
All versions of engine Type

447 UL 503 UL 532 UL
582 UL 618 UL

up to gearbox production code A6 (clearly visible on the gear cover, see fig. 1);

- ◆ **NOTE:** Consists either of 2 letter or 1 letter plus 1 number. They are increasing in alphabetical order or numbers.
...AA,AB,AC,...AZ;A1,A2,...A8;
...MA,MB,...MZ;M1,...M8;
...NA..OV,OW - OX,OY,OZ;O1,O2,...
This production code is punched on the gearbox housing after the gear ratio (see fig. 1).

Example:

3,47 A6


1.2) Concurrent ASB/SB/SI and SL

none

1.3) Reason

Gluing-in of the cone sleeve will reduce the tightening torque of the hex. nut.

Introduction of an installation sleeve to facilitate fitting of the cone sleeve.

Description of the production code in chapter 1.1, correction of the converted tightening torque value in chapter 3.1.1 and a new puller assy for the lay shaft gear in chapter 3.2 is the reason of revision 1.

1.4) Subject

Amendment on reduction gearbox type „C“ and type „E“ for 2-stroke UL aircraft engines.

This information is intended to assist the aircraft builder and operator in achieving the proper operating conditions, correct engine installation and consequently optimum performance and reliability.

1.5) Compliance

At the next disassembly of the gearbox.

- ▲ **WARNING:** Non-compliance with these instructions could result in engine damage, personal injury or death!

1.6) Approval

not required

d01413

1.7) Manpower

Estimated man-hours:

- engine installed in the aircraft --- manpower time will depend on installation and therefore no estimate is available from the engine manufacturer.
- engine removed from the aircraft --- appr. 1 h per unit.

1.8) References

In addition to this technical information refer to:

- current issue of the Operator's Manual (OM)
- current issue of the Illustrated Parts Catalog (IPC)
- all relevant Service Instructions (SI)
- Repair Manual (RM)
- Maintenance Manual (MM)

1.9) Other publications affected

The following Service Instruction must be replaced as a consequence of this Instruction and will become invalid therefore.

Description	Part no.	Issue	Date	Rev.
SI-06-1998 D/E		0	1998 10	0

1.10) Interchangeability of parts

All parts are interchangeable

2) Material Information

2.1) Special tooling - Price and availability

Price and availability will be supplied on request by ROTAX[®] Authorized Distributors or their Service Center.
parts requirement:

Item no.	New part no.	Qty.	Description	Old part no.	Remarks
5	877 810	1	installation sleeve		C and E gearbox
9	877 379	1	puller assy	877 375	C and E gearbox

3) Accomplishment / Instructions

Accomplishment

All the measures must be taken and confirmed by the following persons or facilities:

- ROTAX[®] -Distributors or their Service Center
- Persons with type-specific training (applicable only for non-certified engines)

▲ **WARNING:** Proceed with this work only in a non-smoking area and not close to sparks or open flames. Switch off ignition and secure engine against unintentional operation.

- Secure aircraft against unauthorized operation.
- Disconnect negative terminal of aircraft battery.

▲ **WARNING:** Carry out work on a cold engine only.

▲ **WARNUNG:** Should removal of a locking device (e.g. lock tabs, self-locking fasteners, etc.) be required when undergoing disassembly/assembly, always replace with a new one.

3.1) Instructions for gearboxes up to production code A6

see fig. 1, 2 and 3

- Disassemble the reduction gearbox in accordance with the current Repair Manual for engine type 462-532-582 to a state where the cone sleeve (1) can be removed.
- Clean and degrease cone sleeve (1).
- Degrease propeller shaft (2) and lay shaft gear (3).

3.1.1) Utilization of the installation sleeve assy

- ◆ NOTE: Use of a different tool (screw driver etc.) is inadequate and could result in damage of cone sleeve and propeller shaft. Use exclusively installation sleeve assy (5) (part no. 877 810).
- Place cone sleeve (1) into installation sleeve assy (5). Make sure that the rotating shaft (6) of the pressure screw (7) comes to rest in the slot of the cone sleeve (1).
- Using a spanner move shaft (6) into slot until the cone sleeve (1) expands enough.
- CAUTION: But ensure that the shaft will not move beyond inside dia. of the sleeve. Otherwise you risk damage to the propeller shaft.
- Apply LOCTITE 648 on inside of cone sleeve (1).
- ▲ WARNING: Make absolutely sure that no LOCTITE will enter into the ball bearing (4).
- After placing cone sleeve (1) into position on propeller shaft slacken the pressure screw (7) and remove the tool.
- Apply LOCTITE 648 on outside of cone sleeve (1).
- The tightening torque of the hex. nut (8) has been newly specified to **250 ±10 Nm (185 ±7 ft.lb)**.
- Reassemble reduction gearbox in accordance with the current Repair Manual for engine type 462-532-582.
- CAUTION: Allow at least 12 h for curing of the adhesive.

3.2) Disassembly procedure, with taper sleeve glued in position

Because of the changed assembly procedure the puller (9) for the layshaft gear has been modified. The new tool is fashioned with a chamfering at the base of the puller (9), thus achieving the best stability at pulling-off procedure. Furthermore the other end of the puller is now flat sided 36 A/F to tighten the puller (9) into position.

3.2.1) Procedure to pull-off the layshaft gear:

- Disassemble the reduction gearbox in accordance with the current Repair Manual for engine type 462-532-582 to the stage where to pull-off the layshaft gear.
- Place the mushroom-shaped protection piece (10) part no. 877 415 into the centering of the propeller shaft (2).
- Preheat the layshaft gear (3) (gluing area) with a hot air gun to approximately 300°C (570°F) to reverse the glue effect.
- CAUTION: Hot components risk of injury.
- Fit the puller assy. (9) part no. 877 379 on layshaft gear and tighten with open and wrench 36 A/F.
- Screw-in and tighten the puller screw. Remove propeller shaft assy complete with gear cover and puller assy from the fixture. If necessary separate the layshaft gear by a blow of the hammer on the tightened puller screw.
- CAUTION: Use a suitable underlayer for not damaging the removed parts.
- ◆ NOTE: When refitting the cone sleeve again clean propeller shaft from residual or remains of LOCTITE first.
Renew sealing ring (11).
- ▲ WARNING: Non-compliance with these recommendations could result in engine damage, personal injury or death!
- Connect negative terminal of aircraft battery.

3.3) Test run

Start engine. Conduct test run including ignition check and leakage test in accordance with the current Maintenance Manual of the respective engine type.

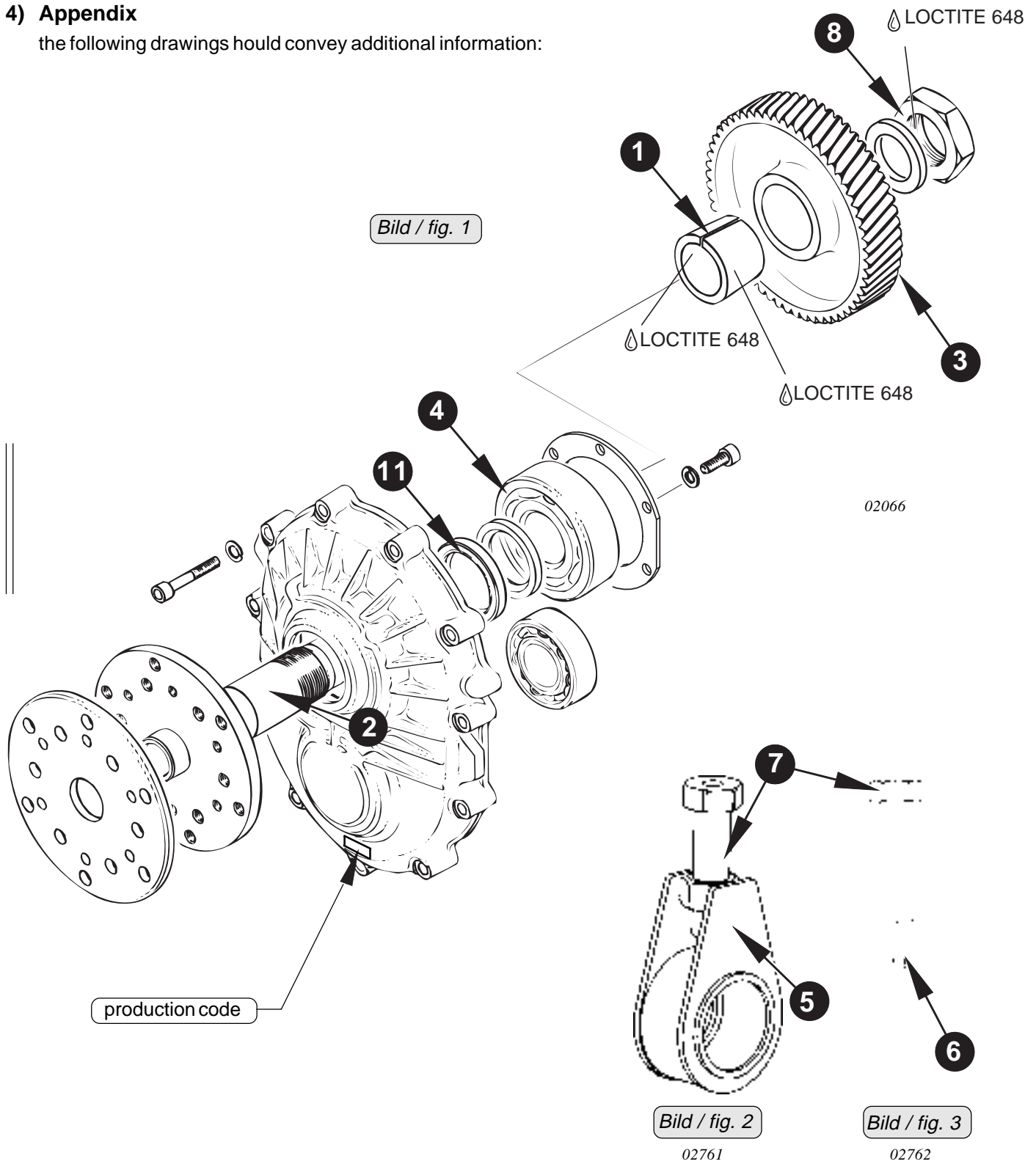
3.4) Summary

These instructions (section 3) have to be conducted in accordance with compliance in section 1.5

▲ WARNING: Non-compliance with these instructions could result in engine damage, personal injury or death!
Approval of translation to best knowledge and judgement - in any case the original text in German language and the metric units (SI-system) are authoritative.

4) Appendix

the following drawings should convey additional information:



view: installation sleeve assy / C-gearbox

Fig. 1, 2 and 3

Bild / fig. 4

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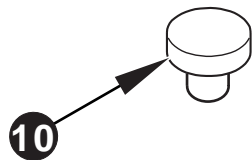
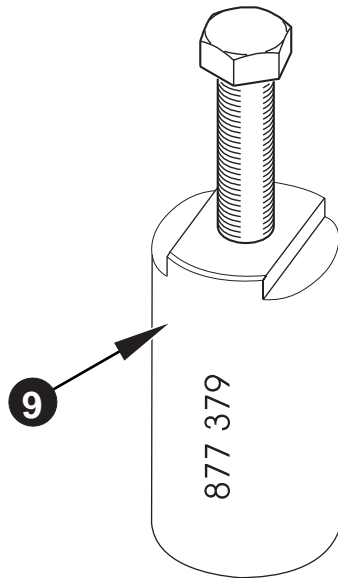
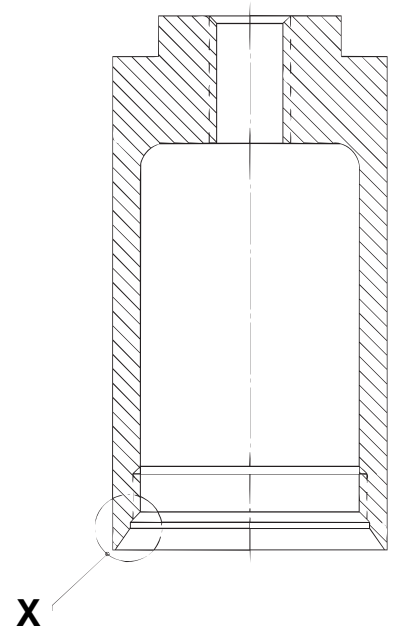
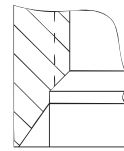


Bild / fig. 5

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puller assy for lay shaft gear

DETAIL X



view: puller assy
Fig. 4 and 5

◆ NOTE: The illustrations in this document show the typical construction. They may not represent full detail or the exact shape of the parts which have the same or similar function. Exploded views are **no technical** drawings and are for reference only. For specific detail, refer to the current documents of the respective engine type.