



AIRWORTHINESS DIRECTIVE

TYPES AFFECTED:

Powered sailplanes fitted with Rotax 505 engines
Serial No. 3332.580 to 3332.689

SUBJECT:

Inspection/replacement of cylinder holding down studs.

BACKGROUND:

Overseas experience has required the issue of Rotax Technical Note No. 505.01 which asks for the inspection and replacement of the cylinder holding down studs.

ACTION REQUIRED:

In accordance with TM 505.01 which constitutes part of this A.D.:-

- (a) Carry out Instruction 1 before next flight.
If any studs are broken the engine must not be started.
- (b) Carry out Instruction 1 at every Daily Inspection until Instruction 3 is incorporated.
- (c) Carry out Instruction 3 at a convenient time.

IMPLEMENTATION:

Actions (a) and (b) can be carried out by a DoA 1109 inspector authorised for Daily Inspection of powered sailplanes fitted with Rotax type 505 engine.

Action (c) to be carried out by a DoA 1109 inspector authorised for top overhaul and approved modifications to Rotax type 505 engine and must be recorded in the engine logbook.

MATERIALS:

As listed in TM505.01 available from Bombardier-Rotax GMBH, or their Australian agent.

WEIGHT & BALANCE:

No influence

COMPLIANCE:

The requirements of this Airworthiness Directive are mandatory. This Directive is issued pursuant to Air Navigation Regulations under the delegated authority of The Secretary of the Department of Aviation.

Issued by:

Chief Technical Officer,
Airworthiness

FOR AN ON BEHALF OF:

GLIDING FEDERATION OF AUSTRALIA

24/9/1986

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TECHNICAL NOTE

No. 505-01

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Subject : Studs 840 585 (M8 x 177) connecting cylinders to crankcase (8x).

Models affected : Motorised glider engines type 505, engine no. 3,332.580 to 3,332.689.

Reason : Breakage of studs.

Priority, tasks : After receipt of this information.

1) Checking the studs:

First indication of broken studs are signs of oilleaks between cylinder and cylinder head. If the socket nuts are also used for suspension purpose or the nuts are not accessible, request and pay attention to advises of aircraft manufacturer.

2) In case of any broken studs you must not start engine anymore.

3) Exchange of studs 840 585 according to following instruction.

Weight and center of gravity

: Not affected.

Items

: 8x stud 840 585
4x alignment tube 974 521
2x cylinder head gasket 831 880

Remarks

: This kind of service has to be carried out by a competent person and confirmed in the aircraft logbook.

Günskirchen, 1985 12 10


[Signature]

Approved by
Bundesamt für Zivilluftfahrt



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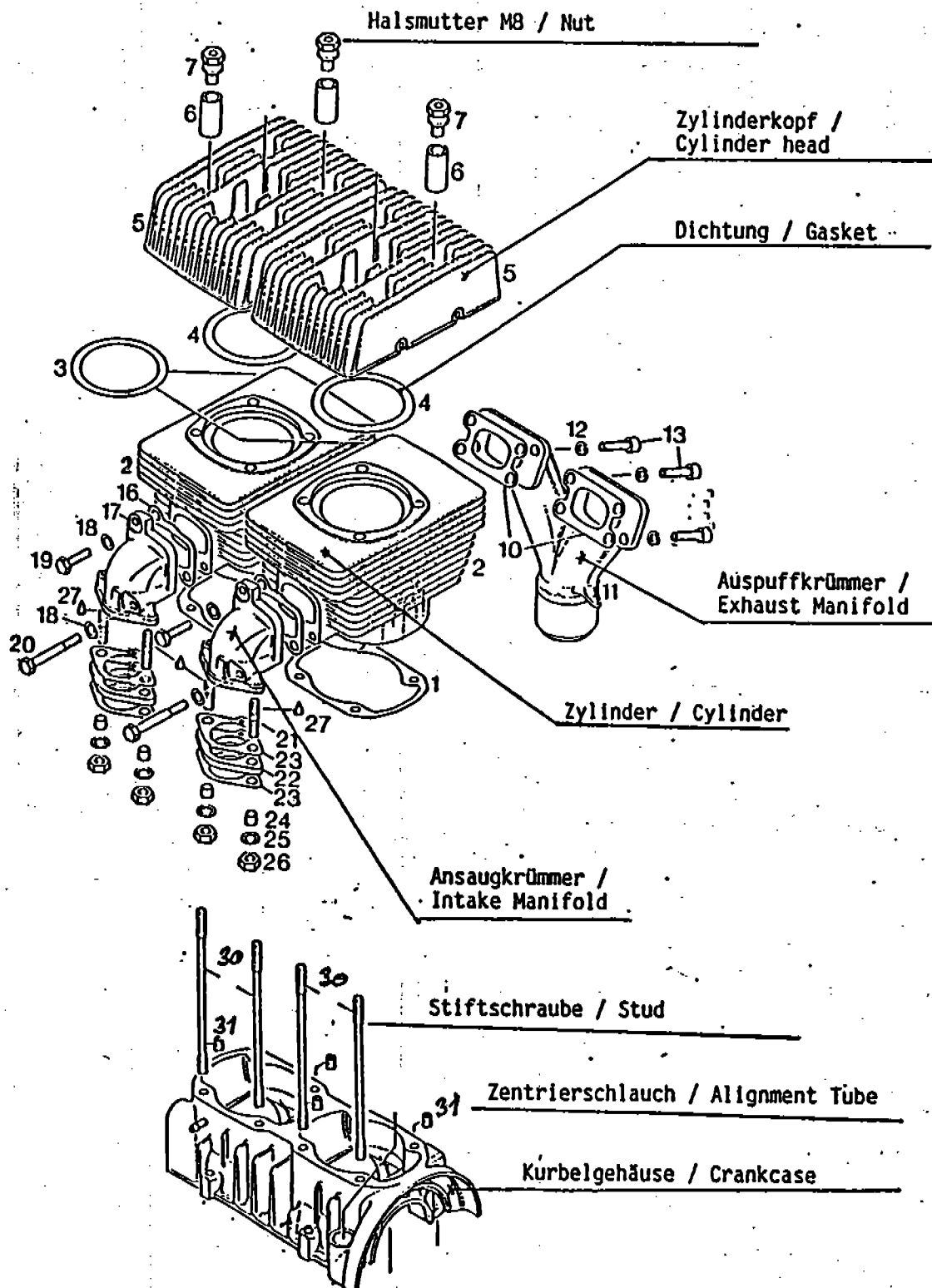
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<p><u>Instruction for exchange of the 8 studs connecting cylinders to crankcase</u></p>		
<ol style="list-style-type: none"> 1) Remove socketnuts item 7 (see illustr. on page 3) diagonally and remove spacers (item 6). 2) Take off cylinder head, keep cylinders in position. 3) Remove cylinder head gaskets and if present, compression shims. Don't reuse gaskets, always exchange for new ones. 4) Carefully remove carbon deposits from top of piston and combustion chamber. 5) Exchange studs (item 30) diagonally across. <p><u>Attention:</u> Insert alignment tubes (2 per cylinder, positioned diagonally). Fit studs with shorter threaded end right to bottom of tapped blind hole.</p> 6) Refit cylinder heads, using new gaskets. <p><u>Attention:</u> Fit nuts and compensating washers in same position as prior to disassembly.</p> <p>Tighten socketnuts diagonally with 20 Nm.</p> 7) In case of stud breakage remove any remaining parts from the tapped hole in the crankcase. 		
<p>BOMBARDIER-ROTAX GMBH, A-4623 GUNSKIRCHEN, AUSTRIA</p>		



TECHNISCHE MITTEILUNG
Nr. 505-01

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BOMBARDIER-ROTAX GMBH

1986 04 08
Ws/Wa

Re.: TN 505 -01 complementary practical advice for
carrying out work as per Technical Note 505-01

1) Unscrewing the studs:

To unscrew studs it is usual to take 2 normal nuts, to screw them onto the end of the stud, to screw them to each other (to "counterscrew" them), then to place a socket wrench over them and to screw the stud out. The exchange of the studs is done without taking off the cylinders.

2) Insertion of alignment tubes on stud:

The alignment tube is pushed over the stud at the side of the shorter thread (= crankcase side) and placed right after the thread over the shaft of the necked-down bolt. To facilitate insertion of the alignment tube it is slightly expanded with pointed pliers; it afterwards shrinks by itself. The stud with alignment tube can easily be inserted through the bores in cylinder. On the old studs screwed out the position of the alignment tubes can be seen.

3) If there are compression gaskets (0,1 mm thick) they need not be replaced as the cylinder heads are machined so that compression ratio is within the tolerance also without compression gasket. To avoid doubts, we suggest to leave them away.

4) As the cylinder base gaskets are already compressed it is not necessary to re-torque the cylinder head nuts.

5) Test run:

After finishing the rework, the engine can be started and run for the usual ground test.

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Access to cylinderheadnuts

(All designations see diagram 6 of the DG-400 maintenance manual)

1. Extend the power plant about 3/4 of the range.
2. Loosen the nuts of the bolts M 10 x 60 DIN 931-8.8 at the upper elastic mount of the engine. Do not disassemble the nuts!
3. Take away the following tywraps: a) for the fuel hoses and the electric wiring at the engine mounting plates at both sides.
b) for the bowden cables at the right engine restraining cable.
4. Screw away the loop clamp which holds the fuel hoses at the front of the engine.
5. Open the electric plug-socket connection at the right engine mounting plate.
6. Disassemble the cooling air guide: 4 screws M 6 x 12 DIN 912-8.8 upper side and at lower side see 7.
7. Dismount the 3 bolts M 8 x 25 DIN 912-8.8 which fix the plate 4 M 7 to the engine.

Note: There may be shims at these places which you should not loose.

8. Turn the propeller into horizontal position and rotate the engine 90° to the front. The engine should rest on a thick cushion on the fuselage. (no bowden cables, electric wires or fuel hoses have to be disconnected.)
9. Remove the 3 bolts M 8 x 16 DIN 912-8.8 which fix the securing plates (4 M 34) of the ignition cables. Hold the cylinderheadnuts with a flat spanner
10. Now you have free access to the cylinderheadnuts.

Note: The 3 nuts where the engine is fixed to plate 4 M 7 are of higher strength than the other 5 and to be used on the same places again!

11. Tighten up all cylinderheadnuts with 2 daNm after servicing work.
12. Reverse 5. to 1. to rebuild power plant and tighten up the 3 bolts M 8 x 25 DIN 912-8.8 (see 3.) with 2,4 daNm (18 ft.lb.). Use Loctite 72b (672) to secure all bolts. The 3 bolts M 8 x 16 see 9. have to be cleaned before.

7520 Bruchsal 4, April 8th 1986

W. D.