



Tapped hole for M8 cylinder stud in crankcase on ROTAX engines type 912 UL and 912 A, certified to JAR 22

1) Subject:

Checking of the tapped hole ❶ in crankcase at cylinder no. 2.

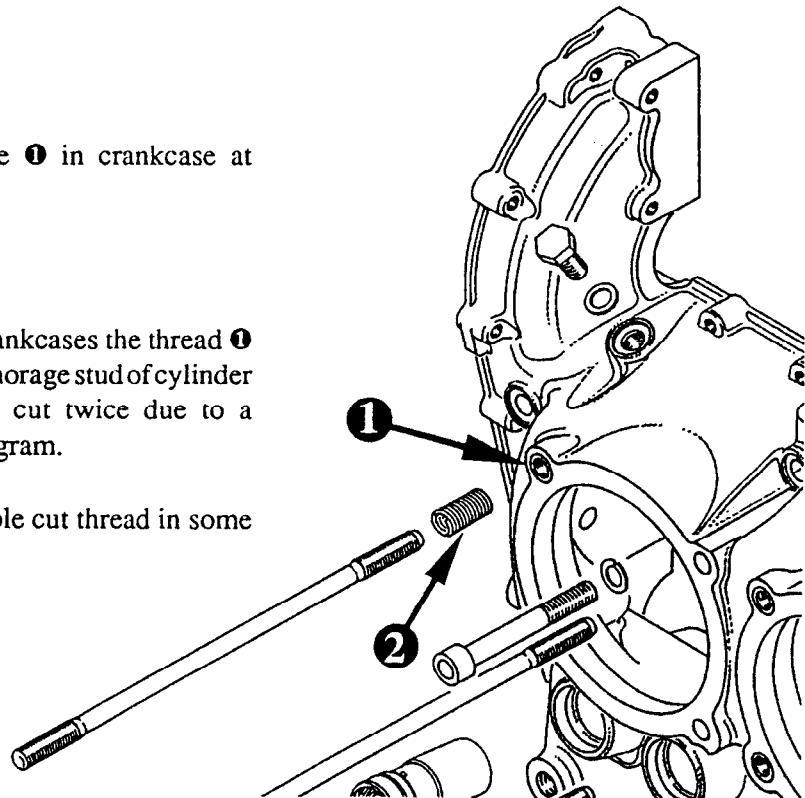
2) Reason:

It was noticed that in some crankcases the thread ❶ for the helicoil insert ❷ for anchorage stud of cylinder and cylinder head had been cut twice due to a mistake in the machining program.

The result thereby was a double cut thread in some cases.

3) Concerned:

This check has to be made on all engines listed below.



3.1) Non certified engines, 912 UL:

3.792 627	3.792 646	3.792 664	3.792 676
3.792 630	3.792 648	3.792 665	3.792 677
3.792 634	3.792 652	3.792 666	3.792 678
3.792 636	3.792 653	3.792 667	3.792 680
3.792 637	3.792 656	3.792 668	3.792 681
3.792 638	3.792 657	3.792 669	3.792 684
3.792 640	3.792 658	3.792 670	3.792 685
3.792 641	3.792 659	3.792 671	3.792 690
3.792 642	3.792 660	3.792 672	3.792 693
3.792 643	3.792 662	3.792 674	3.792 694



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3.792 696	3.792 724	3.792 741	3.792 758
3.792 697	3.792 725	3.792 742	3.792 759
3.792 704	3.792 726	3.792 743	3.792 760
3.792 705	3.792 727	3.792 744	3.792 761
3.792 706	3.792 728	3.792 745	3.792 763

3.792 708	3.792 729	3.792 746	3.792 765
3.792 710	3.792 730	3.792 747	3.792 766
3.792 711	3.792 731	3.792 748	3.792 767
3.792 712	3.792 733	3.792 749	3.792 768
3.792 716	3.792 734	3.792 750	3.792 769

3.792 717	3.792 735	3.792 751	3.792 770
3.792 718	3.792 736	3.792 752	3.792 773
3.792 720	3.792 737	3.792 754	3.792 774
3.792 721	3.792 738	3.792 755	3.792 775
3.792 722	3.792 739	3.792 756	3.792 780

3.792 723	3.792 740	3.792 757	
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3.2) Certified engines, 912 A

3.792 649	3.792 675	3.792 698	3.792 732
3.792 654	3.792 679	3.792 699	3.792 772
3.792 655	3.792 682	3.792 703	
3.792 661	3.792 683	3.792 707	
3.792 663	3.792 688	3.792 709	

4) Procedure:

All **non certified** engines (912 UL) with faulty thread according to par. 5) can be rectified by an authorized dealer.

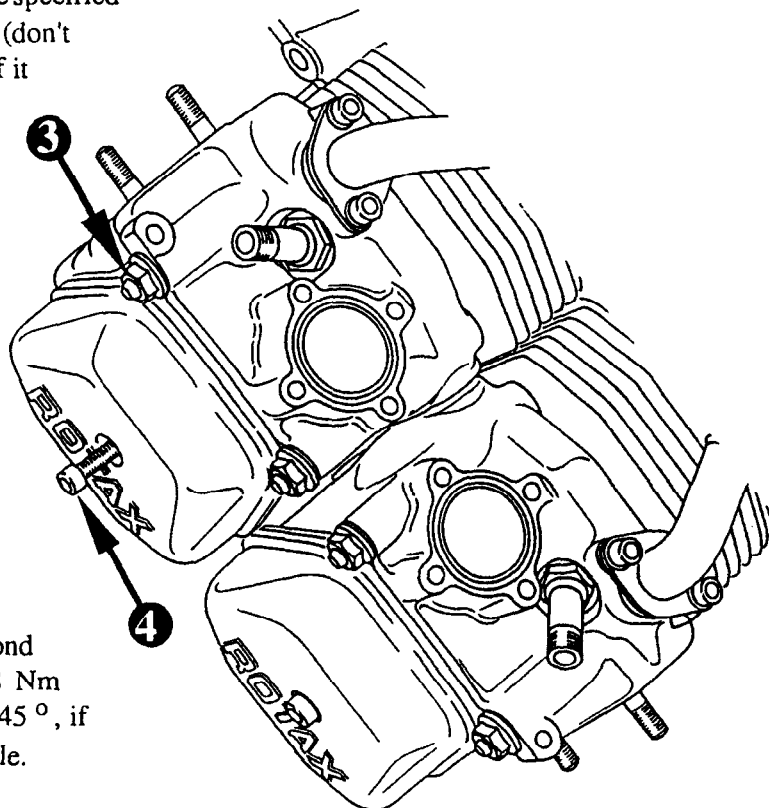
All **certified** engines (912 A) with threads declared faulty to par. 5) have to be shipped to ROTAX Austria.



5) Method of checking (check on cold engine only):

5.1) First check

On an engine installed in an aircraft with at least three hours operating time tighten the hex. nut M8 ③ on cylinder 2 to the specified torque of 18 Nm = 160 in.lb. (don't loosen before tightening). If it needs 45 ° or more wrench movement for tightening the thread must be rectified.



5.2) Second check

If on the first check the needed turn was less than 45 ° a second check for safety shall be carried out after further 3 hours running time. The thread is o.k. if at the second check the tightening to 18 Nm (160 in.lb.) takes less than 45 °, if more, rework the tapped hole.

6) Repair:

The rework of the tapped hole in crankcase for cylinder 2 can be done by given access on engine installed in the aircraft.

6.1) Removal of cylinder 2

Disconnect battery.

Slacken exhaust pipes and detach exhaust flange. Remove exhaust bend. Drain coolant and remove coolant discharge bend. Lift off intake manifold after removing four allen screws.

Remove Allen screw M6x25 ④ and take off valve cover and the two O-rings. Cross wise remove 2 hex. nuts along with washers and 2 cap nuts, carefully push off cylinder head assy. utilizing screw driver. The two oil return tubes and pushrods to remain with the head.



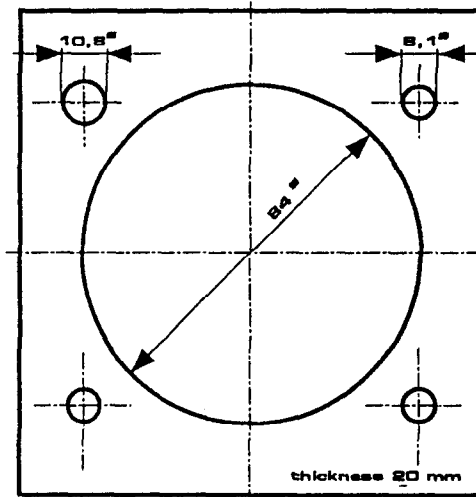
With piston no. 2 in T.D.C. carefully draw off cylinder, supporting piston by hand to ensure not to damage piston and rings. Remove stud M8x201 from the faulty tapped hole in the crankcase.

6.2) Rectifying of the faulty thread:

For removing the helicoil insert bend up the end of the helicoil using a pair of pointed pliers and turn out the helicoil insert. Fit the drilling template ⑤ to crankcase (provided by ROTAX) using suitable distance tubes and bore into faulty tapped hole using 10,8 Ø drill, 23 mm (0,9 in.) deep from crankcase sealing face.

ATTENTION: Cover any open engine compartment to prevent dropping-in of foreign matter.

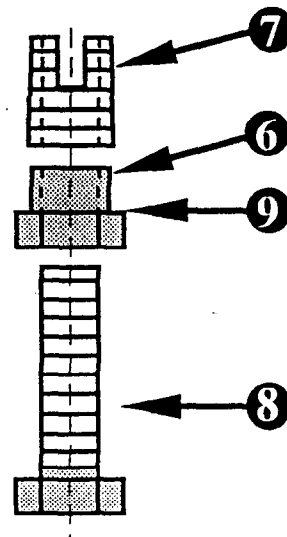
Remove drilling template.



drilling tamplate ⑤

Fit and lock shoulder nut ⑥ against thread insert ⑦ on hex. screw M8x30 ⑧ (grade 10.9, highstrength).

Fit unit into 10,8 Ø bore by screwing-in (cutting process) until shoulder of nut ⑨ stops at sealing face of crankcase, thus the thread insert ⑦ is recessed by 5 mm (0,2 in.). Take care at screwing-in process to keep centre line square to sealing face of crankcase. Remove hex. screw M8x30 and shoulder nut after slackening shoulder nut from thread insert.



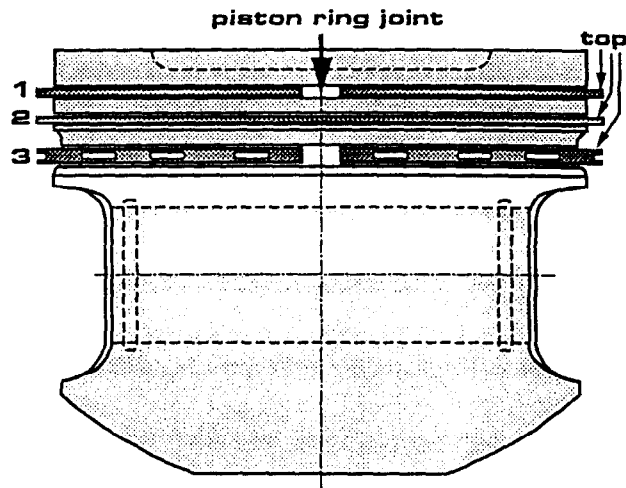


6.3) Reassembly of the engine:

Fit new stud M8x201 in crankcase and remove covering from crankcase.

Oil cylinder and place new O-ring 87x2 on collar of cylinder. Take care of proper staggering of the piston ring gaps.

Position gap of 1st and 3rd piston ring on centre of piston skirt and stagger 2nd ring 180°. Never position rings with gap in the vicinity of piston pin boss. Oil piston, apply piston ring clamp and carefully fit cylinder over piston in position.



ATTENTION: Always use piston ring clamp to prevent breakage of rings.

Check mating face cylinder to cylinder head for cleanliness and apply a thin layer of LOCTITE 221, coordinate and place pushrod in oil return tubes. Oil O-ring 16x5 and place on return tubes. Place cylinder head assy. in position, and as a precaution lift cylinder slightly to ease centering of cylinder in head and to prevent edging, resulting in leaks.

Slightly tighten crosswise the two cap nuts and two hex. nuts along with washer. Take care for pressing O-ring on return tube into crankcase evenly.

Fit aligning tool 277 260 with four screws M6 to both heads, thus aligning heads to warrant an even face for intake manifold.

Tighten nuts crosswise to 22 Nm (195 in.lb.). Remove aligning tool. Apply oil to all moving parts in rockerarm compartment.

Place both O-rings on valve cover. Fit valve cover with hex. screw M6x30. Tighten to 10 Nm (90 in.lb.).

ATTENTION: Use valve cover screw of correct length only.



Fit intake manifold along with O-ring to cylinder head. Tighten the Allen screws M6x25 and M6x70 to 10 Nm (90 in.lb). Check carb. attachment and control. Fit coolant bend with Allen screws M8x20 to cylinder head. Tighten to 10 Nm (90 in.lb). Fit coolant hoses using clamp size 23 mm (0,9 in.).

Fit exhaust bend to cylinder head. Connect high tension lead to spark plugs. Replenish coolant and vent cooling system. Check engine oil level and reconnect battery.

7) Transaction:

7.1) Which engines have been checked? Please state engine number.

7.2) Which of the engines checked had to be rectified.

7.3) Warranty claim (see enclosure)

Contents in a warranty claim

- 1. Brand and type of aircraft
- 2. Actual running time
- 3. Engine serial number of engine concerned
- 4. Client, holder of aircraft
- 5. Date of repair
- 6. Name of repairshop
- 7. Special indications / observations

8) Parts provided by ROTAX:

1 x Drilling template	Teile Nr. 877 480
1 x Thread insert	Teile Nr. 842 710
1 x Hex. screw M8x30 - 10.9	Teile Nr. 940 485
1 x Shoulder nut M8	Teile Nr. 842 700
1 x Stud M8 x 201	Teile Nr. 840 750
1 x O-ring 87 x 2 on collar of cylinder	Teile Nr. 250 510