	BRMAERO		BULLETIN TITLE:		ROTAX 912 IS ENC ATTACHMENT	SINE
	_	Wings with heart	CLAS	SIFICATION:	SAFETY DIRECTIV	/E/ALERT
Letecká	255	Tel.:+420 773 984 338	BULL	ETIN <u>NU</u> MBER	R: ALL-SA-5-0-0-ALL	-0001-2024
686 04 k	Kunovice	info@brmaero.com	Date of	issue: 08.02.20	24 Revision no.: 1st issue	Page: 1
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0 RI	ECORD O	F	Rev.No.	Affected pages	Reason	Date
R	EVISIONS	5				
1 GI IN	ENERAL IFORMAT	ION		L		
1.1	Affected a	aircraft				
1.1.1	Туре:		BRISTE	ELL UL/LSA		
			(UL=Ult	tra-Light Aircra	ft, LSA=Light Sport Aircra	ft)
1.1.2	Model:		All mod	dels equipped	with Rotax 912 iS engin	e
			and the		piece engine mount	
			(ऽस्ट मार् It does	not apply to ai	craft with a two-piece end	ine bed with a
			ring (se	e Figure 2).		
			It also c as desc	loes not apply ribed in this bu	to aircraft that have alread	dy been modified
1.1.3	S/N:		Not spe	cified, see 1.1	.2 Model	
1.1.4	Countrie	S:	All cour	ntries		
1.2	Reason		There h operate engine This wa pressec engine, from the The scr by the c	ave been case d with the left to the engine r is caused by th from the shoo and the subse e vibration lead ew head is pre- cotter pin (see	es in service where aircraf ower screw holding the R nount sheared off. he fan washer under the se exts at starting/stopping the equent gradual loosening of ling to the screw shearing evented from falling out of Figure 6).	t have been otax 912 iS crew head being e Rotax 912 iS of the screw joint off at the head. the engine mount
			Becaus did not inspecti	e the sheared have to be imn ions and the ai	off screw remained in the nediately detected during rcraft was operated with th	joint, the failure pre-flight nis failure.
1.3	Required	action	1. 2.	Inspection of Allen screw se engine mount Replace the washers (repl	the screw joint to check t ecuring the Rotax 912 iS e has not been sheared of screws with new ones acing the fan washers).	that the lower left ngine to the f. s with Nord-lock
1.4	Complian	ice time	1. 2.	Check the scre next take-off Replacement inspection	ew connection IMMEDIAT of screws +washers at t	ELY or BEFORE the he NEXT periodic
1.5	Mass data	a	Not affe	ected		
1.6	Electrical	load data	Not affe	ected		
2 D	OCUMEN.	TS				
2.1	Supersed documen	led ts	NONE			

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2.2	Revised d	ocuments	NONE			
2.3	Affected d	locuments	NONE			
3 M	ATERIAL					
IN	NFORMATI	ION				
3.1	Required	material	For replacing s	screws /wa	shers:	
		I	BRM kit conta	ining (see F	Figure 7):	
			1. Allens	screw IVI10	x35 10.9, 3 pcs.	
					Aluxilu doesn't have t	o change
			2. NORD	-LUCK NL1	D Washer, 4 pcs.	
			J. Cotter		b acrow threads is not	included in the
		:	supplied kit.	securing ti	he screw threads is not	included in the
			Contact to ord	er kit: BRM	Service: vlastimil.ritter	@brmaero.com
3.2	Required	tools	 Set of 	common v	vorkshop tools.	
		I	For the screws	s /removal:		
			• A su	oport for	supporting the engi	ne, or suitable
			works	hop jack fo	r hanging the engine (e	ngine hoist).
			Hand	drill + set o	f drill bits	
			• High	quality "ea	asy-out" set to remov	ve the damaged
			Screw		A 1 11	
			 Penet 	rating oil (e	e.g. Aerokroll)	Thursday Transf
			 thread neede 	d chase t d(M10x1.5	ool (M10x1.5) or a	Inread Tap If
			Screw	centering	jig or tool	
			 Install 	ation kit fo	r Gardsert threaded inse	erts (M10) in case
			it is ne	ecessary to	repair a damaged thre	ead in the engine
			case.			
			 Engine 	e degrease	r to clean threads	
			 Comp 	ressed air t	o clean threads	
			• Heat g	gun to heat	up the engine case	
3.3	Costs cov	ered by	BRM Aero will	supply the	above kit free of charge	Э.
			BRM Aero doe	es not reiml	burse labor or any other	costs.
4 A	CCOMPLI	SHMENT				
IN	ISTRUCTI	ONS				
4.1	Type of m	aintenance	Heavy			
4.2	Authorizat	tion to	As required by	the releva	nt national regulations	
	perform		It is recommer	nded that A	&P mechanic (airframe	and powerplant)
		I	LSRM-A (light	sport repa	ir mechanic) or CAA/FA	A repair station.
4.3	Manpower	r '	approx. 1	hour to insp	pect the engine mount	
		•	 approx. 3 	nours to re	eplace the screws holdi	ng the engine to
			 If it is nece 	essarv to d	rill out a broken screw	repair a thread in
			the engine	case the t	ime is extended	
			5			

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4.4 Work procedure

Inspection of the screw joint,

To check that the lower left hand Allen screw securing the Rotax 912 iS to the engine mount is not sheared off (see Figure 3)

- 1. Remove the engine cowling (upper and lower)
- 2. Visually inspect the lower left Allen screw

The signals indicating the screw is sheared off:

- Allen screw head seated up to the cotter pin (originally there was a gap between the two).
- Abrasion of the engine mount paint in the area around the screw head.
- Possible damage (e.g. to the engine mount paint) in the area of the water pump (including coolant leaks from the water pump) due to increased vibration
- Change increase of engine vibration when running

If there is any doubt as to whether or not the screw is sheared off, the cotter pin must be removed and the screw tightened with an Allen key. If it is turning, the screw has been sheared off.

WARNING: If the screw is found to be sheared, DO NOT CONTINUE OPERATION until the fault is rectified !

If the screw has not sheared off, operation may continue until the next periodic inspection, at which time the screws must be replaced with new ones (thread secured with Loctite 243), including installation of Nord-lock washers and new cotter pins.

• Screw Replacement Procedure

If it is determined that no screw is sheared, then each screw can be replaced individually. Secure engine with an engine hoist to prevent engine from shifting or moving. Remove cotter pin from engine mounting Screw holes. Remove and install one M10 screw at a time using a 8mm hex head socket. Replace existing screw with new. Replace fan washer with new NL10 Nord-Lock washer. Apply Loctite 243 to threads of screw and thread into engine case. Tighten to proper torque of 40 Nm (353.92 in. lb.) Do this for the top and bottom left hand M10 screws. Repeat sequence for the bottom M10 right hand screw.

***Note: On occasion it was found that bottom left hand M10 screw although not sheared off was hard to remove. In this case spray threads with penetrating oil (Aerokroil) and rock M10 screw in the threads then out the threads slowly to eventually remove. Chase out hole with 10MM thread chase tool (M10x1.5). Clean out hole with engine degreaser and compressed air.

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***Note: Procedure may require having to move coolant line out of the way to gain access to the top left-hand screw. In which case you would have to drain coolant and replenish as needed after the repair.

***NOTE: When removing left hand top and bottom screws make sure if thrust washers (shims) were used in between engine mount and engine case that they get reinstalled prior to installing new M10 screws.

***NOTE: The shim (Thrust Washer as Rotax refers to) is Rotax P/N 927954 (THRUST WASHER 10.1/20/1.5 as required) or 927953 (THRUST WASHER 10.1/20/1.0 as required) or 957952 (THRUST WASHER 10.1/20/0.5 as required). These Thrust Washer/Shims are only needed as required. No more than 2 of the 927954 should be used to fill in the gap if needed. That would total a 3mm thickness. The Thrust washers only get installed on the left side of the engine. Cyl 2 and Cyl 4 side.

Top right-hand screw is a M10x110, and torque should be checked and verified. Remove M10x110 screw and verify if a fan washer had been installed instead of the factory Nord-Lock washer. If so then new Nord-Lock washer should be installed. M10x110 screw and Nord-Lock washer should then be retorqued to a proper torque of 40 Nm (353.92 in. lb.). After all three M10 screws and Nord-Lock washers have been replaced and torqued and the M10x110 has been torqued insert new cotter pins through engine mount Screw holes. Remove engine hoist from engine. Check the installation. Re-install engine cowlings.

• Repairing the threads in the motor housing (Engine Case)

******Note: It is best practice to do the procedure below before you do above "Screw Replacement Procedure".

If lower left hand M10 screw has been sheared off then work area must be created. Drain all coolant from engine. Remove water pump housing and all 4 lower coolant hoses from back of engine. Attach engine hoist to engine. Remove cotter pins from all 4 engine mount points. Remove lower right hand M10 screw. Loosen up on top left and right hand M10 screws so that you can pivot the engine slightly up to clear the lower left engine mount boss. At this point you should have a clear work area to start to drill out the sheared off Screw.

**Note: Only drill a maximum of 35mm (1 3/8") from the edge of the case deep into the hole bore. Drilling deeper than that depth could potentially penetrate the oil valley of engine and future oil leakage through the threads could occur.

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STAY AS STRAIGHT AS POSSIBLE. DRILL AT LOW SPEED USING CUTTING OIL. TAKE YOUR TIME.

Start with taking a screw centering jig or tool to make a starting hole in the center of the affected screw. Best to use cobalt, titanium or carbide drill bits. Drill in the center of the affected screw using a 2mm (5/64") drill bit. Step up to 3mm (1/8") drill bit. Then 4mm (5/32") Then 5mm (13/64"). Then 6mm (15/64). It is recommended to heat up the engine case with a heat gun on the outside of the bore hole. At this point you can start trying to use a high quality "easy-out" set to remove the damaged screw.

Step up size as needed to get the damaged screw out. Chase out hole with 10MM thread chase tool (M10x1.5). Clean out hole with engine degreaser and compressed air.

In the event that you cannot get the damaged screw out only drill up to 8.6mm (11/32") Maximum. Step up to that that size. Chase out hole with 10MM thread chase tool (M10x1.5) or a Thread Tap if needed(M10x1.5). Clean out hole with engine degreaser and compressed air.

**Note: When reinstalling water pump housing use new Rotax gasket Rotax P/N 850-981.

**Note: In the event the hole is damaged beyond repair; It is suggested to use a GARD sert for the thread repair. A Heli coil is not a recommended means of repair.

https://www.gardspecialists.com/threadrepair/gardserts/metric/m10-200-product-1521

Follow directions from Guard Specialists for the proper way of installing this thread repair product. This thread repair product is approved by the FAA.

After the thread repair in case has been completed. Insert new M10 screw with Loctite 243 and NL10 Nord-Lock washer through engine mount into Engine Case. Tighten to proper torque of 40 Nm (353.92 in. lb.)

**Note: In the event that a GARD sert cannot be used for thread repair the engine must be sent to a Rotax overhaul center for the engine case to be replaced.

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4.5	Work insp	pection	Work to be insp powerplant) LS repair station. of 40 Nm (353. engine mount p system was dra	pected by a SRM-A (ligh Ensure all 92 in. lb.) f properly an ained, refill	a qualified A&P mechan at sport repair mechanic screws are torqued to the Ensure all cotter pins are d securely. In the even the system with the pro-	ic (airframe) or CAA/FA he proper to e inserted in t the cooling per coolant	and AA orque orthe g		
			Run up aircraft, check for leaks and proper coolant level before first flight after repair.						
4.6 Bulletin compliance record		Record the bulletin execution in the Aircraft Log Book.							
4.7	Feedback	í.	In case of need	d, please c	ontact BRM Aero at: <u>inf</u>	o@brmaero	.com		
5 B		APPROVAL			ton in MI				
					IN JAG				
5.1	Elaborate	d by:	Petr Javorský,	BRM Aero	, Certification manager				
5.2	Date of el	aboration:	08.02.2024	V	\vee				
		-							
5.3	Approved	l by:	Milan Bříštěla,	BRM Aero	, CEO				
5.4	Date of ap	oproval:	08.02.2024						
6 A	NNEXES		Annex 1 Engin Annex 2 Signa Annex 3 Screw	e mounts f Is indicatin / replacem	or Rotax 912 iS engine g sheared off screw in t ent procedure photos	he joint			

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6.1 ANNEX 1

Engine mounts for Rotax 912 iS engine



Figure 1 Original (one-piece) engine mount for Rotax 912 iS – affected by this bulletin



Figure 2 Two-piece engine mount with ring – NOT affected by the bulletin

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6.2 ANNEX 2

Signals indicating sheared off Screw in the joint



Figure 3 Loose Screw connection (lower left Screw) between the engine mount and the engine case.



Figure 4 Abrasion of the engine case with a Screw broken off inside

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Figure 5 Damage to the engine mount paint from the water pump pipe due to higher engine vibrations (after cutting off the Screw)



Figure 6 Screw head secured with a cotter pin

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Figure 7 BRM kit

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6.3 ANNEX 3

Screw replacement procedure photos



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