ALERT SERVICE BULLETIN

CHECKING OF SECOND COMPRESSION RING ON 84.00mm PISTONS INSTALLED ON EP912STi (155HP) ENGINES

ASB-EP912STi-001

1) Affected Engines

All EP912STi engines manufactured in the period between 06/2018-02/2019.

2) Reason

As the forged pistons installed on all EP912STi engines consist of a combination of pistons rings from two different ring suppliers, there may in some rare cases have been an incorrect combination of rings supplied with the pistons. Due to this we cannot rule out the possibility that the incorrect second compression ring has been installed in one or more engines.

3) Actions Required

For those with EP912STi engines, or for those who have purchase forged 84.00mm 8.3:1CR pistons with the black skirt coating, and the grey ceramic top coating between the 06/2018 to 02/2019, an inspection of the second compression ring is necessary. If a narrow ring (1.16mm marked with N, *PN: 21-GNH08400*) is installed, all (4) pistons must be replaced before the next flight. If the wide ring (1.46mm marked with N100, *PN:RS1110-3307*) is installed, the engine can be reassembled and put back into service.

4) Work Required

If the incorrect second compression ring measuring 1.16mm is installed, (4) new pistons with new rings, wristpins, circlips and gaskets must be replaced. Contact you nearest EP dealer to claim your **FREE OF CHARGE** replacement parts. All the removed parts shall be destroyed and discarded, preventing them to get back into service.

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5) List Of Parts

- ✓ 4x EP84_8.3T pistons
- ✓ 4x Piston ring sets
- ✓ 4x Piston wrist pins
- ✓ 8x Piston pin circlips
- ✓ 1x Cylinder head leveling flange tool
- ✓ 1x Circlip installation plunger
- ✓ 4x Cylinder base O-rings (87x2mm Viton)
- ✓ 4x Intake manifold O-rings (34x2mm Viton)
- ✓ 8x Pushrod O-rings (16x5mm Viton)
- ✓ 4x Valve cover O-rings (105x2.5mm Viton)
- ✓ 4x Valve cover O-rings (6.4x1.8mm Viton)

6) Work Description

It is a good idea to remove the cylinder head and cylinder on Cyl. N°1 or 2 as they are easier to access.

1) Drain the coolant by undoing the M6 socket screw at the bottom location of the water pump.
2) Removed the lower coolant hose be compressing the MU25 spring clamp and pulling the hose back. Remove the upper coolant hose by unscrewing the two M6 socket head screws.
3) Unscrew the four M6 socket head screws on the intake manifold for the two cylinders either 1/3 or 2/4 depending on the one you decide to remove.
4) Undo the two M8 copper exhaust nuts and pull of the exhaust manifold pipe.
5) Undo the M6 socket head screw on the valve cover and remove the cover.
6) In a cross pattern, loosen the four M8 (11mm socket) head bolt nuts a quarter turn at a time until they are loose. Then fully undo them.
7) Now gently pull of the cylinder head. Put it on a clean surface and leave the push rods in the pushrod tubes.
8) Turn the crankshaft to get the piston in the cylinder you are working on at top. Carefully pull the cylinder off so that you can gain access to the circlips. Use a picker to carefully rotate the circlip so that it orientates in a way where you can use a picker to yank it out. Pay attention so that it does not get lost during disassembly.
9) Use a picker, circlip pliers, or a pin puller and carefully slide the wristpin out enough to free the connecting rod. Pull of the cylinder and use one hand to support the connecting rods so that it does not hit against the cylinder case bore when sliding of the cylinder.
10) Carefully pull the piston out of the cylinder at the bottom and perform measuring of the second (BLACK) compression ring. If it is the narrow ring, all four pistons must come out following the steps above. If not, the engine can be assembled back together and put back into service.
11) Orientate the pistons rings so that the oil scraper is located at two O`clock, the second compression ring at ten O`clock, and the top ring at six O`clock looking at the top of the piston. See figure 1.1.
12) Clean the cylinder and pistons with Loctite Super Clean 7063 and apply engine oil to the cylinder wall and pistons, rings and wristpins.

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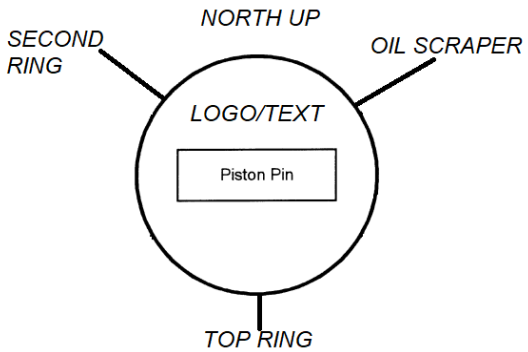
13) Compress the rings and carefully install the pistons into the cylinders from the bottom, using both hands to ensure the rings maintain compressed and that they compress properly during installation back into the cylinder.
14) Install the new 87x2mm O-ring, lube it with some engine oil, and slide the cylinder back onto the cylinder studs and slide the wristpin into the connecting rod. Install the circlip using the supplied circlip plunger.
15) Slide the cylinder all the way back against the engine case and ensure that the cylinder base O-ring has not gotten loose and is being pinched.
16) Clean the mating surface on the cylinder and the cylinder head. Apply a small bead of Wacker P12, the same silicone heat transfer grease used on the spark plugs, install the new 16x5mm pushrod O-rings unto the pushrod tubes lubed with engine oil, and carefully slide the cylinder head onto the cylinder studs. NOTE – Make sure to guide the pushrod tube O-rings into the valve tappet bores to avoid damaging them.
17) Apply engine oil to both the cylinder head nuts and cap nuts and start tightening the nuts in a cross pattern. DO NOT TORQUE THEM YET.
18) Once the head mates to the cylinder, install the cylinder head alignment tool and torque the four M6 socket head bolts to 10Nm.
19) Start tightening the head bolts in the orientation shown in the Rotax HMM.
20) The torque sequence is: 5Nm, 10Nm, 30Nm. Once all the nuts have been torqued to 30Nm, loosen one nut at the time 360°, tighten to 10Nm + 150°. Do these 3 last steps on one nut at the time in the sequence described in the Rotax HMM.
21) Once both heads are torqued, remove the aligning tool, re-install the valve covers with new lubricated O-rings, and torque the M6 socket bolt on the covers to 10Nm.
22) Install the intake runners onto the heads, 10Nm.
23) Install the exhaust manifold runners back on and tighten the M8 copper nuts gently.
24) Re-install the lower coolant hoses, slide the clamps into place, and torque the M6 socket screws on the upper coolant flange to 10Nm.
25) Install the M6 socket screw and copper washer on the water pump and torque to 10Nm.
26) Follow the instruction in the Rotax LMM for purging of the lubrication system.
27) Apply Glycol/water coolant mix.
28) Perform a ground run of the engine and ensure that all parameters are in the green and check visually for leaks before putting the engine back into service.



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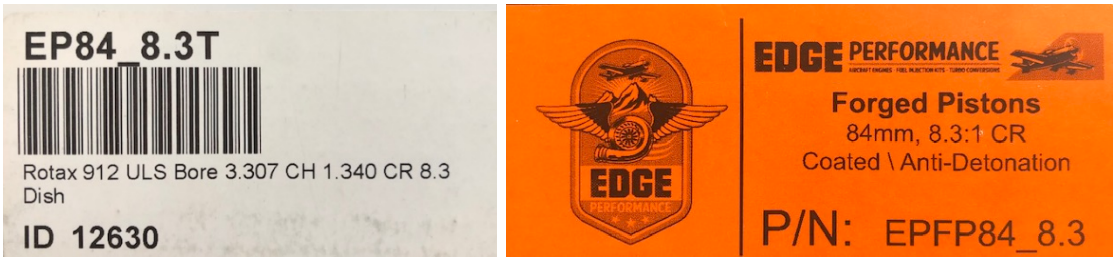
Identifying the affected piston part numbers



Showing the white box with the narrow second ring, and the bag with the proper wide rings

The two rings look similar, but the good one has N100 laser etched in the top, and the bad one has a N etched onto the ring end

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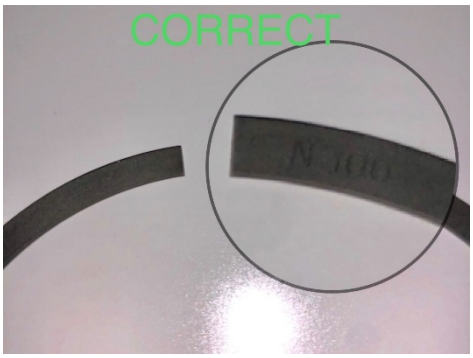
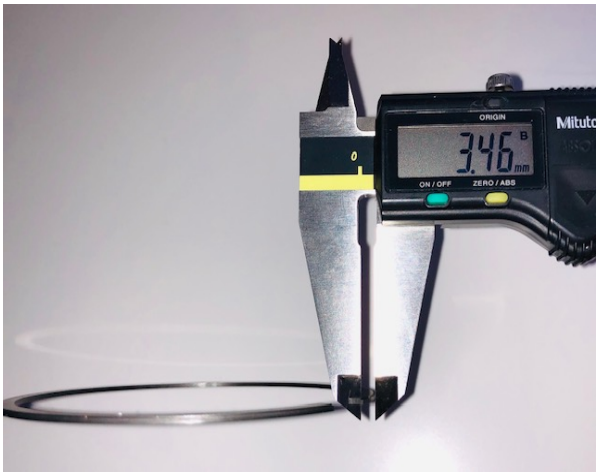
Showing the laser etched marks for easy identification



Showing the dimensions of the good wider rings



Showing the dimensions of the wrong narrower rings

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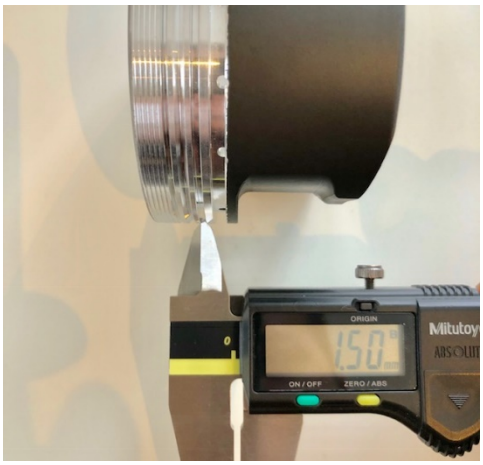
Showing the possibly affected pistons and which groove to verify the width of



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