

SERVICE BULLETIN

Exchange of stator assy. of ROTAX® Engine Type 912 i (Series)

ATA System: 24-20-00 Internal generator

MANDATORY

1) Planning information

To obtain satisfactory results, procedures specified in this publication must be accomplished with accepted methods and prevailing legal regulations.

BRP-Powertrain GmbH & Co KG cannot accept any responsibility for the quality of work performed in accomplishing the requirements of this publication.

1.1) Applicability

All engines of type:

Engine type	Serial number
912 iSc Sport	from S/N 4 417 413 up to S/N 4 417 424 inclusive

All stator assemblies with part no. 685060, 685061 which have been delivered as a spare part are also affected.

1.2) Concurrent ASB/SB/SI and SL

none

1.3) Reason

Due to one or more influencing factors, there might be an increased thermal load at the cable connections of the stator assembly, which may consequently lead to a failure of generator B.

Therefore an optimized stator assy. with an increased wire cross-section was developed. The installation is described in this document.

1.4) Subject

Exchange of stator assy. of ROTAX® engine type 912 i (Series).

1.5) Compliance

- During the next engine maintenance event or at any unscheduled repair within the next 100 hours of operation, but at the latest within 6 months of the release date of this Service Bulletin, exchange the stator assembly on engines listed in section 1.1. This must be done in accordance with the following instructions in section 3.

NOTE: If in the course of troubleshooting (ECU warning lamps show an error by deviations of the voltage or indicating instrument shows deviations of the voltage and/or smelling abnormal odors) the stator is located as error cause, a replacement before the next flight must be performed.

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Non-compliance with these instructions could result in engine damages, personal injuries or death!

1.6) Approval

The technical content of this document is approved under the authority of DOA ref. EASA.21J.048.

1.7) Labor time

Estimated labor hours:

engine installed in the aircraft - - - labor time will depend on installation and therefore no estimate is available from the engine manufacturer.

1.8) Mass data

change of weight - - - none.

moment of inertia - - - unaffected.

1.9) Electrical load data

no change

1.10) Software modifications

no change

1.11) References

In addition to this technical information refer to current issue of

- Operators Manual (OM)
- Maintenance Manual Heavy (MMH)
- Maintenance Manual Line (MML)

NOTE:

The status of the Manuals can be determined by checking the table of amendments. The 1st column of this table shows the revision status. Compare this number to the one listed on the ROTAX WebSite:

www.FLYROTAX.com. Updates and current revisions can be downloaded for free.

1.12) Other Publications affected

none.

1.13) Interchangeability of parts

- All used parts are unserviceable and must be returned F.O.B to ROTAX® Authorized Distributors or their independent Service Centers.

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2) Material Information

2.1) Material- cost and availability

Price and availability will be provided on request by ROTAX® Authorized Distributors or their independent Service Centers.

2.2) Company support information

- BRP-Powertrain will support this exchange of stator assy. Any information about this support will be provided on request by ROTAX® Authorized Distributors or their independent Service Centers.
- Exchanged parts must be returned F.O.B to ROTAX® Authorized Distributors or their independent Service Centers.
- Shipping costs, downtime costs, loss of income, telephone costs etc. or costs of conversion to other engine versions or additional work, as for instance simultaneous engine overhauls are not covered in this scope and will not be borne or reimbursed by ROTAX®.

2.3) Material requirement per engine

Parts requirement:

Part no.	Qty/ engine	Description	Application
481370	1	Parts set stator 912 iS/iSc Sport	Engine type 912 i Series

2.4) Material requirement per spare part

none.

2.5) Rework of parts

none.

2.6) Special tooling/lubricant-/adhesives-/sealing compound/price and availability

Price and availability will be supplied on request by ROTAX® Authorized Distributors or their independent Service Centers:

Description	Part no.	Application
Puller assy.	876010	Ignition housing
LOCTITE 243	897651	Ignition housing
LOCTITE 5910	899791	Ignition housing
KLUEBER ISOFLEX TOPAS NB5051	898351	Ignition housing, O-ring

NOTICE

If using these special tools observe the manufacturers specifications.

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3) Accomplishment/Instructions

NOTE: Before accomplishment, review the entire documentation to make sure you have a complete understanding of the procedure and requirements.

Accomplishment

All measures must be implemented and confirmed by at least one of the following persons or organizations:

- ROTAX® - Distributors or their independent Service Centers
- Persons with approved qualifications for the corresponding engine types. Only authorized persons (iRMT, Level Heavy Maintenance) are entitled to carry out this work.

NOTE: All work has to be performed in accordance with the relevant Maintenance Manual.

Safety notice



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.



Risk of scalds and burns! Allow engine to cool sufficiently and use appropriate safety equipment while performing work.



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

3.1) Inspection of the internal power supply (fuse box, stator etc.)

The following steps are necessary:

Step	Procedure
1	Check for mechanical, thermal and/or chemical damage/impact.
2	Check all terminals and their connections for thermal discoloration.
3	Check all ground connections, ground lines and plug connections for tightness, proper contact and for corrosion or damage and replace if necessary.

3.2) Removal of old ignition housing inclusive stator assy.

Preparation



The removal must be carried out according to the specifications of the current Maintenance Manual Heavy.



Use appropriate protective coverings to prevent the ingress of foreign bodies into all disconnected lines and connections.

- Drain coolant. See relevant Maintenance Manual Line for the 912 i Series engine type.

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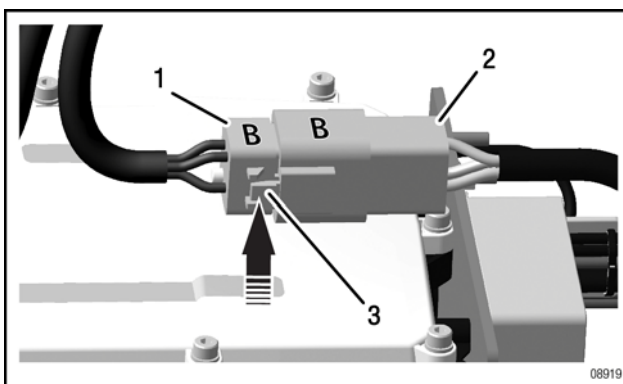
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- Remove adjacent assemblies (electric starter, water pump housing assy.).
- Remove coolant hoses from cylinder head.
- Disconnect oil pressure sensor OPS, crankshaft position sensors CPS_1 and CPS_2. For this, see section 76-70-00 "Sensors and actuators".

NOTE: Only remove the assemblies and lines if necessary!

Step	Procedure
1	Detach the electrical connection from the stator to the regulator by disconnecting the Black and Grey connectors. Mark before detaching!
2	Press on the catch (3) and disconnect the connector.

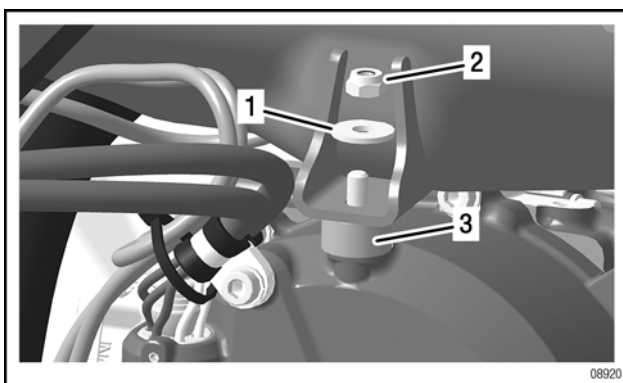
Fig. 1



- 1. Controller connector
- 2. Connection socket of controller
- 3. Catch

Step	Procedure
3	Loosen the airbox bracket by removing the lock nut and washer.

Fig. 2



- 1. Washer A 6.4
- 2. Lock nut M6
- 3. Rubber buffer 20x10xM6

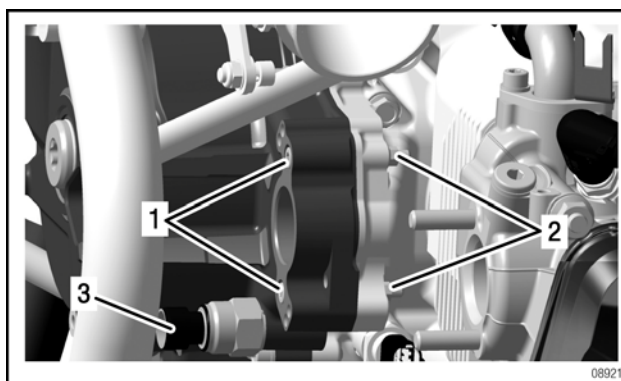
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NOTE: Push airbox upwards and wedge in place with suitable tool.

Step	Procedure
4	Remove 2 Allen screws M5x45 and hex. nuts M5 on electric starter.

Fig. 3



1. M5x45 Allen screw 2. M5 hex. nut
3. OPS pressure sensor (oil)

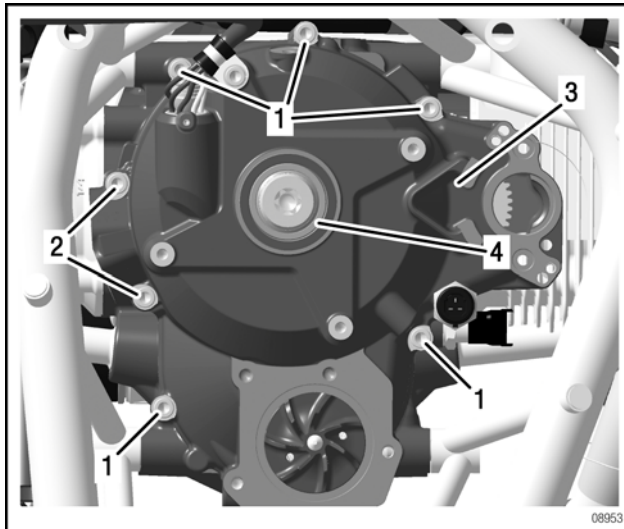
WARNING

Danger of injury!
The magnet of the fly wheel pulls the ignition cover towards the engine/
sealing surface with great force.
Fingers can be crushed.

Step	Procedure
5	Remove 5 M6x30 and 2 M6x50 Allen screws with washers 6.4.
6	Screw the threaded protective piece into the crankshaft and use puller part no. 876010 to remove the ignition housing.

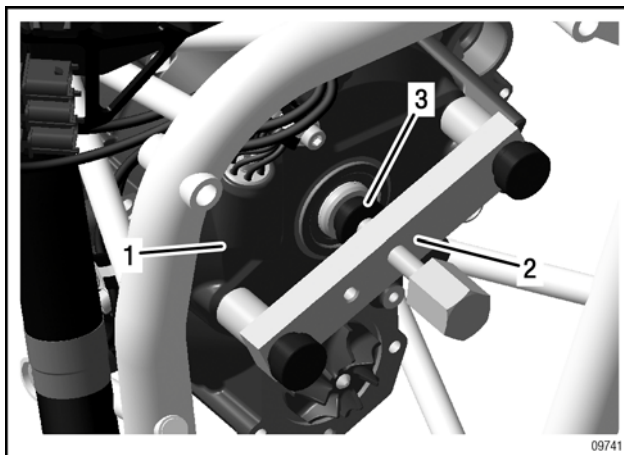
NOTE: Upper M6x50 Allen screw at cylinder 4 (slightly above CPS_1) reaches into the crankcase and is secured with LOCTITE 243.

Fig. 4



- 1. M6x30 Allen screws
- 2. M6x50 Allen screws
- 3. Ignition housing assy.
- 4. Oil seal

Fig. 5



- 1. Ignition housing assy.
- 2. Puller assy.
part.no. 876010
- 3. Protective piece

Step	Procedure
7	Disconnect OPS oil pressure sensor, crankshaft position sensors CPS_1 and CPS_2.
8	Remove O-ring from the crankcase or the ignition housing.

NOTE: The ignition housing has one dowel pin.

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3.3) Installation of new parts set stator 912 iS / iSc Sport

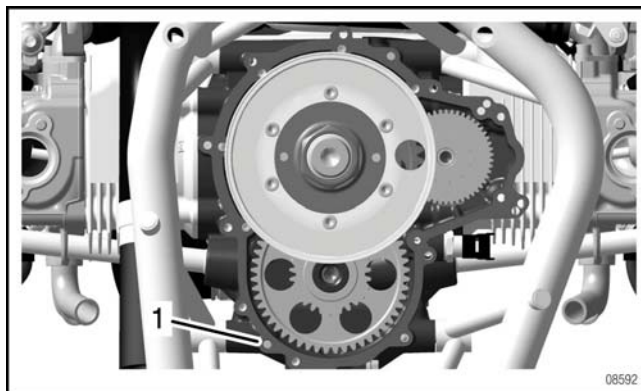
Preparation

NOTICE

The installation must be carried out according to the specifications of the current Maintenance Manual Heavy.

- Check if dowel pin is inserted into the crankcase. See Fig. 6.

Fig. 6

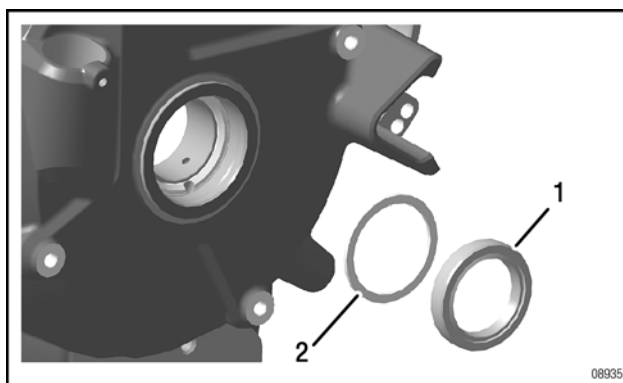


1. Dowel pin

NOTE:

If the crankshaft is damaged or worn in the vicinity of the oil seal sealing lip, the channel in the sealing lip can be moved 1.5 mm (0.06 in.) by omitting the washer.

Fig. 7



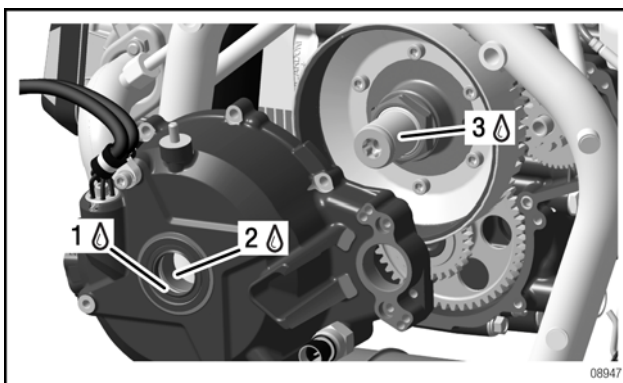
1. Oil seal

2. Washer

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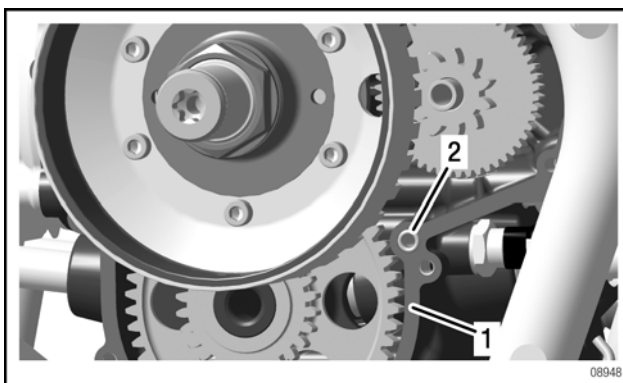
Step	Procedure
1	Lubricate oil seal, bearing bushing and crankshaft stub with KLUEBER ISOFLEX TO-PAS Nb5051.
2	Insert 5x2 O-ring into the crankcase and lubricate with KLUEBER ISOFLEX TOPAS Nb5051 to hold in position.

Fig. 8



- 1. Oil seal
- 2. Bearing bushing
- 3. Crankshaft stub

Fig. 9



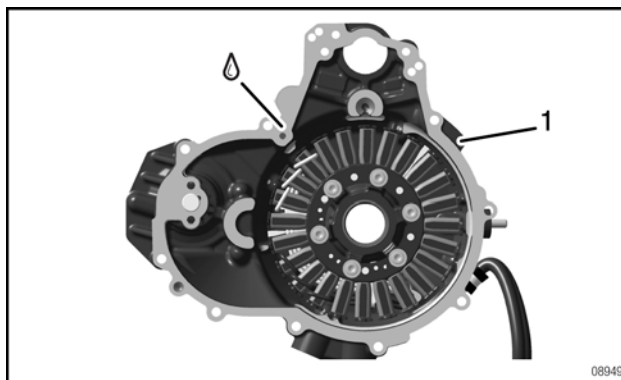
- 1. Crankcase
- 2. O-ring 5x2

Step	Procedure
3	Clean crankcase sealing surface of LOCTITE residues.
4	Install pressure sensor and crankshaft position sensors CPS_1 and CPS_2. See chapter 76-70-00 "Sensors and actuators", current issue of Maintenance Manual Heavy.
5	Install puller assy. part no. 876010 onto ignition housing. Apply LOCTITE 5910 to the sealing surface of the ignition housing.

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Fig. 10



1. Ignition housing

Step	Procedure
6	Install ignition housing on the crankcase with puller assy. part no. 876010.

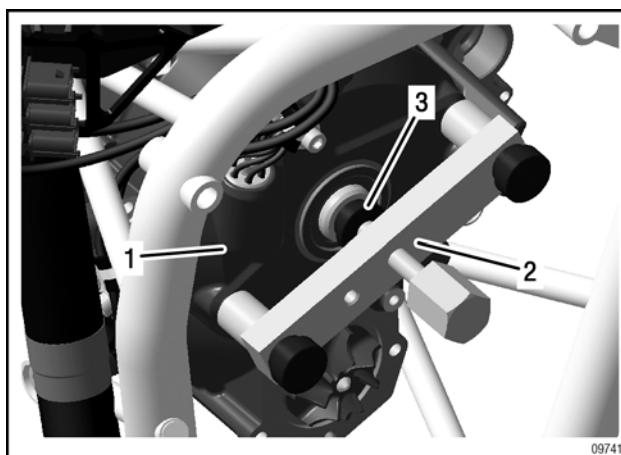
⚠ WARNING

Danger of injury!
The magnet of the fly wheel pulls the ignition cover towards the engine/ sealing surface with great force.
Fingers can be crushed.

NOTICE

The ignition housing must be attached manually without tapping.

Fig. 11



1. Ignition housing assy.

2. Puller assy.
part no. 876010

3. Protective piece

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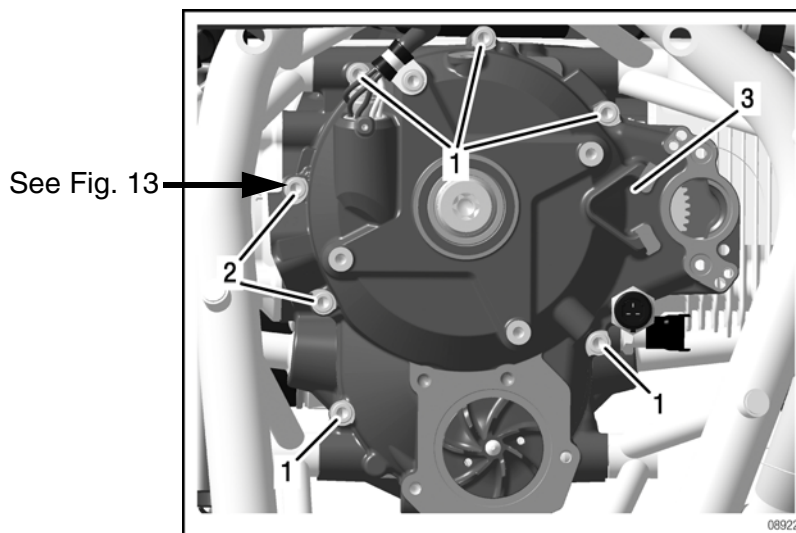
Step	Procedure
7	Turn the water pump wheel slightly so that the gear wheels can mesh.

NOTICE Make sure the ignition housing is aligned with the dowel pin and the sealing surface is not damaged during assembly.

Step	Procedure
8	Fasten the ignition housing to the crankcase using Allen screws. Tightening torque 10 Nm (88.48 in. lb.)

NOTE: To avoid leakage secure the **upper** Allen screw M6x50 with hose clamp using LOCTITE 243.

Fig. 12.



Ignition housing, tightening schematic

- 1. Allen screw M6x30
- 2. Allen screw M6x50
- 3. Ignition housing assy.

Step	Procedure
9	Secure Allen screw M6x50 with LOCTITE 243 and tighten it. See Fig. 13. Tightening torque 10 Nm (88.48 in. lb.)

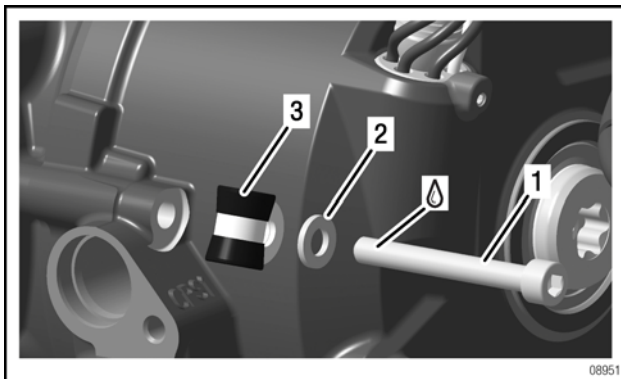
NOTICE Do not use a longer screw!
The screw would press on the cylinder shroud and cause damage to piston and cylinder.

NOTICE The clearance hole of the screw extends into the crankcase.
The engine is not leak-proof if this screw is not glued.

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Fig. 13

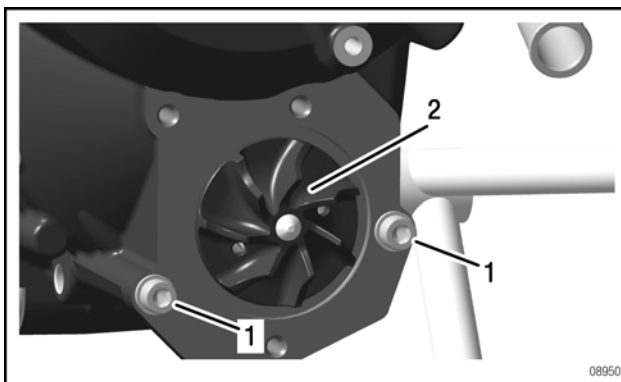


- 1. M6x50 hex. screw
- 2. Washer A 6.4
- 3. Cable clamp

NOTICE

If the water pump cover is not installed straight away, then 2 temporary M6x65 screws with washers must be installed and torqued so that the sealing surface is evenly clamped between ignition housing and crankcase.

Fig. 14



- 1. M6x65 auxiliary screws
- 2. Water pump wheel

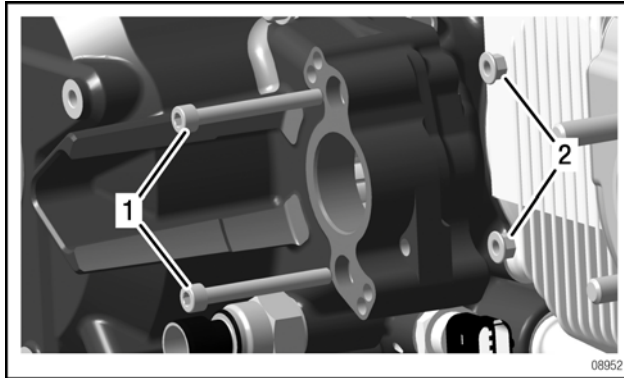
Step	Procedure
10	Fasten hex. screws M5x45 at the starter. Tightening torque 6 Nm (53 in. lb.). See Fig. 15.

NOTE: No washers are used for these screws, as otherwise the starter would not lie flat on the flange surface.

Step	Procedure
11	Remove puller assy. part no. 876010 from ignition housing.

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Fig. 15



1. M5x45 hex. screw

2. M5 hex. collar nut

3.4) Finishing work

- Install water pump housing with a new gasket. See also chapter 75-00-00 "Cooling system", current issue of Maintenance Manual Heavy.
- Install electric starter. See also chapter 80-00-00 "Electric starter", current issue of Maintenance Manual Heavy.
- Install airbox on ignition housing. See also chapter 73-10-00 "Fuel system", current issue of Maintenance Manual Heavy.
- Connect negative terminal of aircraft battery.
- Check the engine oil level according to the specifications of the current Maintenance Manual Line chapter 12-20-00.

3.5) Test run

Conduct test run. See chapter 12-20-00 of the latest Maintenance Manual Line of engine type 912 i Series.

- Change the engine oil according to the specifications of the current Maintenance Manual Line, chapter 12-20-00.

3.6) Summary

These instructions (section 3) have to be followed in accordance with the deadlines specified in section 1.5.

The execution of the mandatory Service Bulletin must be recorded in the logbook.



A revision bar outside the page margin indicates a change to text or graphic.

Approval of translation to best knowledge and judgement-in any case the original text in English language and the metric units are authoritative.

3.7) Enquiries

Enquiries regarding this Service Bulletin should be sent to the ROTAX® authorized distributor of your area.

A list of all distributors or relevant independent Service Centers is provided on www.FLYROTAX.com.

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4) Appendix, internal generator overview

the following drawings convey additional information:

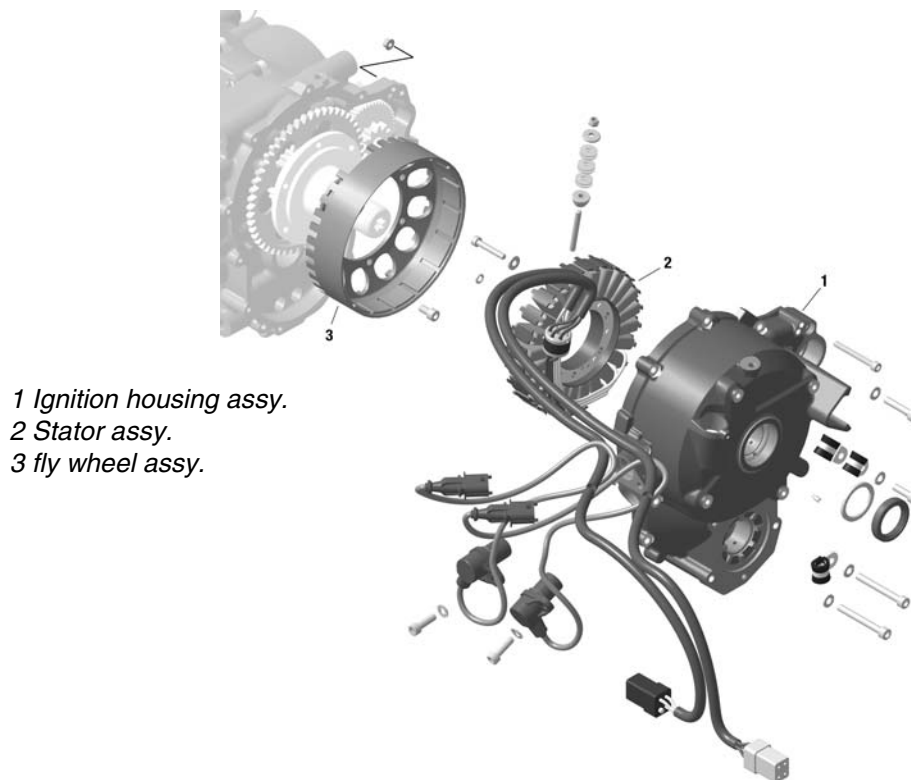


Fig. 16

Internal generator

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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.