



SERVICE BULLETIN

Replacement of regulator A and regulator B for ROTAX® Engine Type 912 i (Series)

ATA System: 76-10-00 Fuse Box

MANDATORY

Symbols used:

Please, pay attention to the following symbols throughout this document emphasizing particular information.

General note



Identifies an instruction which, if not followed, may cause serious injury or even fatal injury.



Identifies an instruction which, if not followed, may cause minor or moderate injury.



Denotes an instruction which if not followed, may severely damage the engine or could lead to suspension of warranty.

ENVIRONMENTAL NOTE

Environmental notes give you tips on environmentally conscious behaviour.

NOTE: Information useful for better handling.

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

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

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

1) Planning information

1.1) Applicability

All versions of the engine type

NOTE: At the time of delivery, the fuse boxes were installed on the following engines. Whether the fuse box of an engine is affected by this Service Bulletin, depends on the conditions mentioned in the following sections.

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Engine type	Serial number
912 iS	from S/N 4 417 001 up to S/N 4 417 045 inclusive / from S/N 4 417 047 up to S/N 4 417 091 inclusive / 4 417 093 up to 4 417 097 inclusive / 4 417 099 / 4 417 101 up to 4 417 131 inclusive / 4 417 133 up to 4 417 139 inclusive / 4 417 141 up to 4 417 181 inclusive / 4 417 188 up to 4 417 197 inclusive / 4 417 199 up to 4 417 240 inclusive / 4 417 250 up to 4 417 275 inclusive / 4 417 277 up to 4 417 305 inclusive / 4 417 308 up to 4 417 350 inclusive / 4 417 371 up to 4 417 377 inclusive / 4 417 379 up to 4 417 391 inclusive / 4 417 393 up to 4 417 397 inclusive
	from S/N 7 703 021 up to 7 703 023 inclusive / 7 703 032 up to 7 703 034 inclusive / 7 703 036 up to 7 703 042 inclusive / 7 703 057 / 7 703 061 up to 7 703 064 inclusive

all parts:

a) Fuse boxes on which the rectifier regulators have no color mark (red dot) on the housing.

See [Fig. 14](#) in Appendix.

b) Fuse boxes on which the rectifier regulators have a production date prior to calendar week 29 and production year 2013. See [Fig. 14](#) in Appendix

c) Fuse boxes with following serial numbers:

from S/N 11.0002 up to S/N 11.0128 inclusive / from S/N 11.0130 up to S/N 11.0151 / from S/N 11.0153 up to S/N 11.0155 inclusive / from S/N 11.0157 up to S/N 11.0171 inclusive / from S/N 11.0173 up to S/N 11.0204 inclusive / from S/N 11.0206 up to S/N 11.0207 inclusive / from S/N 11.0210 up to S/N 11.0217 inclusive / from S/N 11.0219 up to S/N 11.0225 inclusive / from S/N 11.0227 up to S/N 11.0232 inclusive / from S/N 11.0234 up to S/N 11.0237 inclusive / from S/N 11.0239 up to S/N 11.0300 inclusive / from S/N 12.0002 up to S/N 12.0019 inclusive / from S/N 12.0021 up to S/N 12.0024 inclusive / from S/N 12.0027 up to S/N 12.0067 inclusive / from S/N 12.0069 up to S/N 12.0087 inclusive / from S/N 12.0090 up to S/N 12.0107 inclusive / from S/N 12.0111 up to S/N 12.0160 inclusive / from S/N 12.0162 up to S/N 12.0165 inclusive / from S/N 12.0168 up to S/N 12.0184 inclusive / from S/N 12.0186 up to S/N 12.0218 inclusive / S/N 12.0220 / from S/N 12.0223 up to S/N 12.0228 inclusive / S/N 12.0230 / S/N 12.0236 / from S/N 12.0238 up to S/N 12.0241 inclusive / S/N 12.0252 / S/N 12.0254 / from S/N 12.0256 up to S/N 12.0257 inclusive / from S/N 12.0259 up to S/N 12.0272 inclusive / from S/N 12.0277 up to S/N 12.0280 inclusive / from S/N 12.0282 up to S/N 12.0284 inclusive / from S/N 12.0287 up to S/N 12.0294 inclusive / S/N 12.0640, where (a) and/or (b) applies.

NOTE: The respective serial number of the fuse box is visible on the bottom side of the housing.

1.2) Concurrent ASB/SB/SI and SL

none

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1.3) Reason

In rare cases a malfunction of the rectifier regulator with subsequent failure can occur.

1.4) Subject

Replacement of regulator A and regulator B for ROTAX® engine type 912 i (Series).

1.5) Compliance

- At the next BRP maintenance event or within the next 100-h check this exchange of rectifier regulator A and rectifier regulator B of the engines and/or fuse boxes listed in section 1.1, according to the instructions in section. 3 has to be carried out. If the engine is operated less than 100 hours during a year, so this exchange must be carried out at least till 01 June 2015.



Non-compliance with these instructions could result in engine damages, personal injuries or even fatal injury.

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 time:

- engine installed in the aircraft: labor time will depend on installation and therefore no estimate is available from the engine manufacturer
- engine removed from the aircraft: approx. 1 h per unit

1.8) Mass data

change of weight - - none.

moment of inertia- - - unaffected.

1.9) Electrical load data

no change

1.10) Software accomplishment summary

no change

1.11) References

In addition to this technical information refer to current issue of

- Maintenance Manual (MM) Heavy
- Maintenance Manual (MM) Line

NOTE:

The status of Manuals can be determined by checking the table of amendments of the Manual. The 1st column of this table is the revision status. Compare this number to that listed on the ROTAX® Web-Site:

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

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1.12) Other Publications affected

none

1.13) Interchangeability of parts

- All parts are interchangeable.
- All affected parts cannot further be used and have to be returned F.O.B to a ROTAX® Authorized Distributors or their Service Center.

2) Material Information

2.1) Material- cost and availability

Price, availability and any possible support will be provided on request by ROTAX® Authorized Distributors or their Service Center.

2.2) Company support information

- All parts are supplied free of charge.
- Replace parts must be returned F.O.B to ROTAX® Authorized Distributors or their Service Center.
- 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
481210	1	Regulator kit	Engine type 912 iS
composed of:			
864392	1	Regulator A-connector black	FUSE BOX
864393	1	Regulator B-connector grey	FUSE BOX
282870	2	Heat transfer pad 65x80x0.5 mm	FUSE BOX
842042	4	Lock nut M6	FUSE BOX
842033	2	Lock nut M5	FUSE BOX
242538	7	Lock nut M4	FUSE BOX

2.4) Material requirement per spare part

none

2.5) Rework of parts

none

2.6) Special tooling/lubricant-/adhesives-/sealing compound

none

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3) Instructions/Accomplishment

NOTE: Before maintenance, 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 organization:

- ROTAX® - Distributors or their Service Center
- Persons with approved qualifications to the corresponding engine type. Only certified technicians (iRMT-Level: Line Maintenance) are qualified to work on these engines.

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

Safety notice

WARNING 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.

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

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

3.1) Removal FUSE BOX

The following steps are necessary for the check:

Step	Procedure
1	Unplug the engine wiring harness and grounding connectors from the fuse box. See latest Maintenance Manual Heavy for the respective engine type.
2	Remove the attachment screws according to the aircraft manufacturer's specifications. Remove the fuse box.

NOTICE Removal must be carried out according to the manufacturer's instructions.

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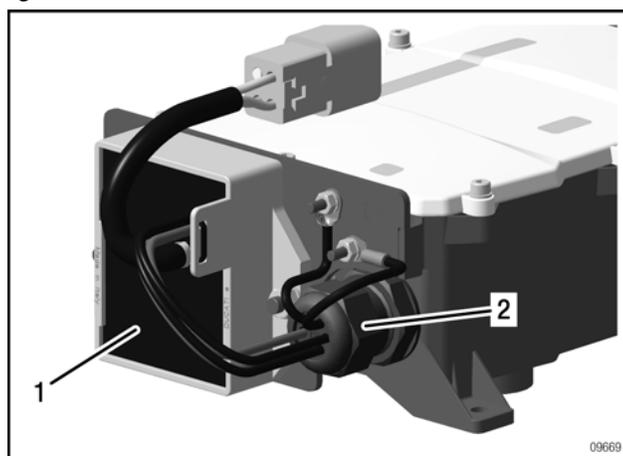
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3.2) Removal regulator B

See Fig. 1 and Fig. 2.

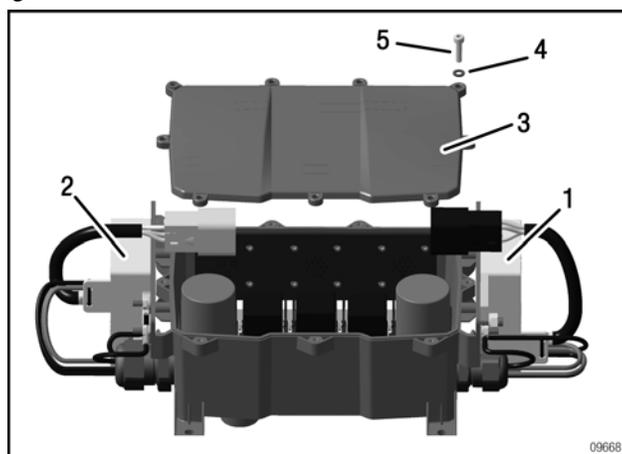
Step	Procedure
1	Loosen the gasket screw connection. Wrench size A/F 30.
2	Remove the cover. Loosen 9 M4 Allen screws along with plastic washer. Allen wrench A/F 3 mm.

Fig. 1



- 1 Regulator B
- 2 Cap nut of the gasket screw connection

Fig. 2



- 1 Regulator A
- 2 Regulator B
- 3 Cover
- 4 Plastic washer M4
- 5 Allen screw M4

See Fig. 3.

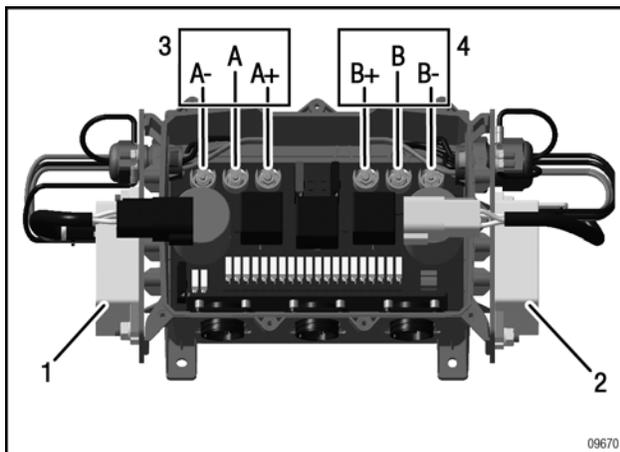
Step	Procedure
3	Disconnect the 2 RED/WHITE cable from connection bolt B+. Loosen the M5 lock nut with washer. Wrench size: A/F 8. Loosen the cable from connection bolt.

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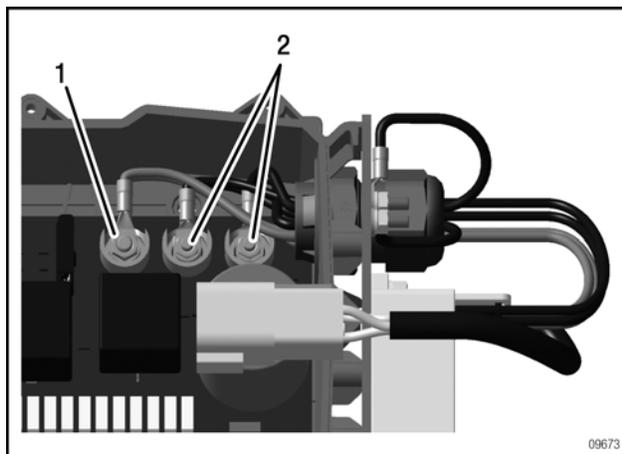
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Step	Procedure
4	Disconnect the 2 BLACK cable from connection bolt B. Loosen the M4 lock nut with washer. Wrench size: A/F 7. Loosen the cable from connection bolt.
5	Disconnect the 2 BLACK cable from connection bolt B-. Loosen the M4 lock nut with washer. Wrench size: A/F 7. Loosen the cable from connection bolt.

Fig. 3



- 1 Regulator A
- 2 Regulator B
- 3 Connection bolt regulator A
- 4 Connection bolt regulator B



- 1 Lock nut M5 with washer
- 2 Lock nut M4 with washer

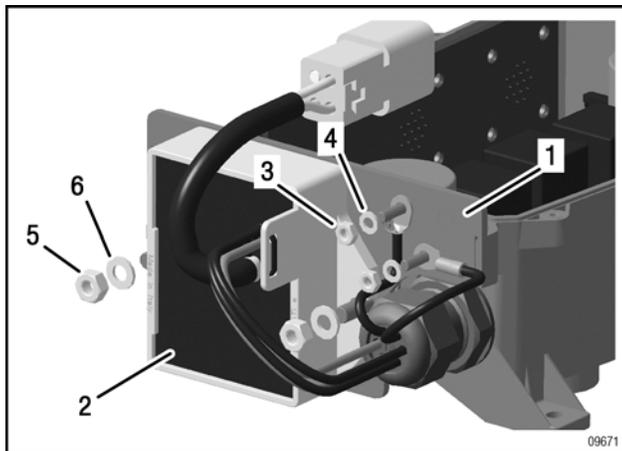
See Fig. 4.

Step	Procedure
6	Disconnect the 2 BLACK cable from regulator plate. Loosen the 2 M4 lock nut with washer. Wrench size: A/F 7 Loosen the cable from connection bolt.
7	Remove the regulator B. Loosen the 2 M6 lock nut with washer. Wrench size: A/F 10.

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Fig. 4



- 1 Regulator plate
- 2 Regulator B
- 3 Lock nut M4
- 4 Washer 4.3
- 5 Lock nut M6
- 6 Washer 6.4

Step	Procedure
8	<p>Pull the 2 RED-WHITE and the 4 BLACK cables with grommet out of the fuse box. To pull out the cables easily, avoid tilting of the cable lugs.</p> <p>NOTE: The connecting thread of sealing union must not be dismantled, if you replace the regulator. An exchange of this plastic insert is only necessary, if it is damaged.</p>
9	<p>Remove the regulator.</p> <p>NOTE: Be careful when handling the dismantled regulator. On the back side of the regulator and the regulator plate thermal paste can adhere.</p>

3.3) Removal regulator A

The regulator A is removed analogously to regulator B.

NOTICE

The pin assignment of the ground cable is different for rectifier regulator A and B.

NOTE: Wrench size of the gasket screw connection: A/F 25.

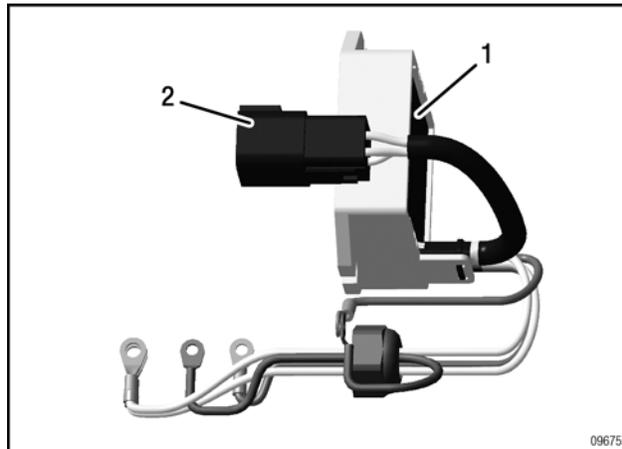
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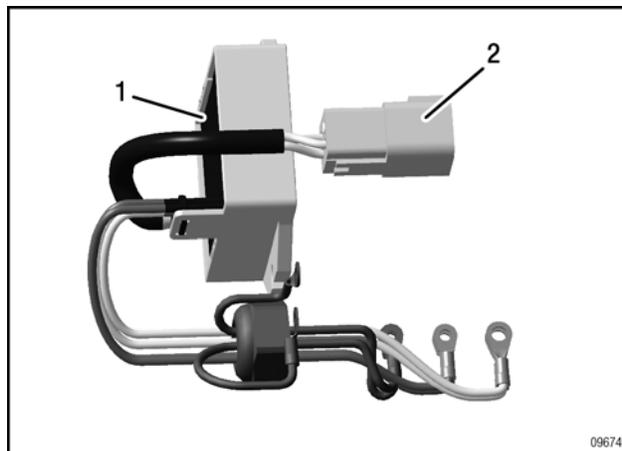
3.4) Installation of the new regulator A (part no. 864392) and regulator B (part no. 864393)

See Fig. 5.

Fig. 5



1 Regulator A
2 DEUTSCH connector (black)



1 Regulator B
2 DEUTSCH connector (grey)

NOTICE All hex nuts (self-locking) must be renewed after each installation (e.g. replacement of a regulator).

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3.4.1) Installation of regulator B

See Fig. 6.

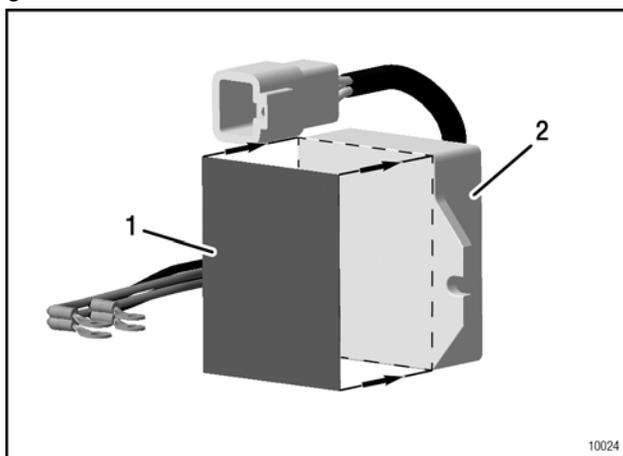
NOTICE

The adhesive surface on the back of the rectifier regulator must be cleaned before applying the heat transfer pads. Remove the protective film with caution, because rapid stripping can damage the heat transfer pad.

Step	Procedure
1	Clean the regulator plate: Remove residues of the thermal paste or the heat transfer pads.
2	Bonding the heat transfer pad to the rectifier regulator: Remove the protective film from heat transfer pad and stick the heat transfer pad with the adhesive surface onto the rectifier regulator (avoid any folds or bubbles). The positioning has to be done as shown in Fig. 6.

NOTE: When using a heat transfer pad, no additional application of a thermal compound is required.

Fig. 6



1 Heat transfer pad
2 Regulator

NOTICE

The rectifier regulator must be mounted so that it does not project beyond the regulator plate.

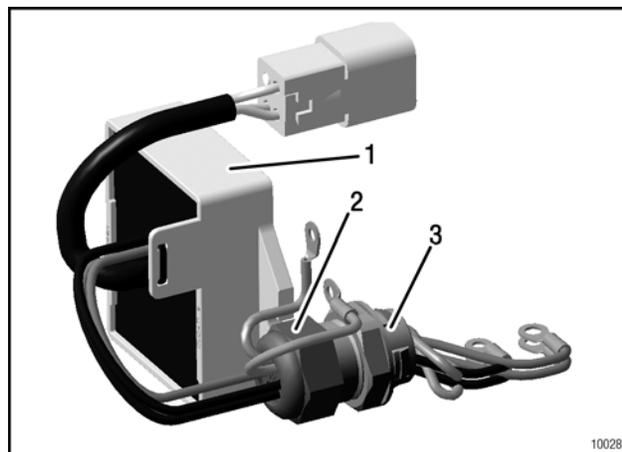
Step	Procedure
3	Fasten regulator to the fuse box with 2 M6 lock nuts and washers. Tightening torque: 6 Nm (53.09 in.lb). Wrench size: A/F 10. NOTE: Tighten the two lock nuts M6 alternately to ensure a smooth seat of rectifier regulator on the regulator plate.

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Step	Procedure
4	Remove the connecting thread of sealing union of the rectifier regulator that should be mounted. See Fig. 7. NOTE: The connecting thread of sealing union is included with each rectifier regulator as replacement part. An exchange of this plastic insert is only necessary if it is damaged.

Fig. 7



- 1 Regulator B
- 2 Cup nut of the gasket screw connection
- 3 Thread of the gasket screw connection

NOTICE When pressing in the plastic insert, avoid damaging the connecting thread of sealing union.

Step	Procedure
5	Pull all the cables 2 RED/WHITE (marking: B+) and 4 BLACK (marking: B and B-) into the fuse box. The plastic insert must be pressed completely into the connecting thread of sealing union.

NOTICE Note the wire marking and labeling of the connecting bolts (labeled on the board of the fuse box).
All cables must be installed without kinks.

NOTICE The cable lugs attached to the connecting ports B-, B and B+ must not touch each other (except those lugs which are attached to a connection bolt).

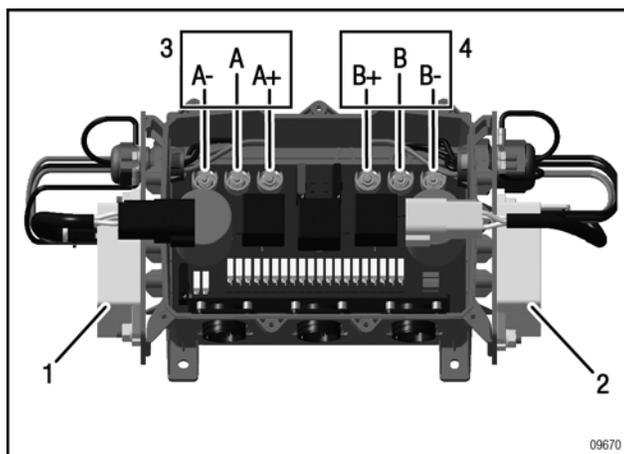
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See Fig. 8

Step	Procedure
6	BLACK cable (2 pcs, labeled: B-) connect to connection bolt B-. Fasten the cable lug with locking nut M4 and washer on the connection bolt. The crimping of the lower cable lug must be directed towards the board of fuse box. The crimping of the upper cable lug must be directed toward the cover of the fuse box Tightening torque: 1,2 Nm (10.7 in.lb). Wrench size: A/F 7.
7	BLACK cable (2 pcs, labeled: B) connect to connection bolt B. Fasten the cable lug with locking nut M4 and washer on the connection bolt. The crimping of the lower cable lug must be directed towards the board of fuse box. The crimping of the upper cable lug must be directed toward the cover of the fuse box Tightening torque: 1,2 Nm (10.7 in.lb). Wrench size: A/F 7.
8	RED-WHITE cable (2 pcs, labeled: B+) connect to connection bolt B+. Fasten the cable lug with locking nut M5 and washer on the connection bolt. The crimping of the lower cable lug must be directed towards the board of fuse box. The crimping of the upper cable lug must be directed toward the cover of the fuse box Tightening torque: 2,2 Nm (19.6 in.lb). Wrench size: A/F 8.

Fig. 8



- 1 Regulator A
- 2 Regulator B
- 3 Connection bolt regulator A
- 4 Connection bolt regulator B

See Fig. 9.

NOTICE

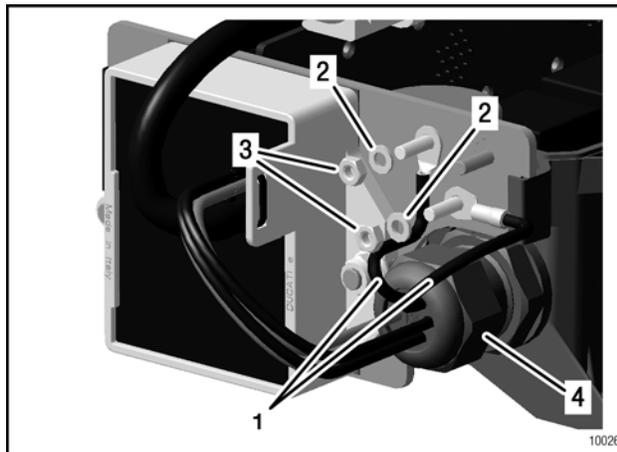
The cable lugs attached to the connecting ports B-, B and B+ must not touch each other (except those lugs which are attached to a connection bolt).

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Step	Procedure
9	Connect the unlabeled cable ends coming out of the fuse box and the regulator (2 pcs. BLACK) with the regulator plate. Positioning of the cables must be as shown in Fig. 9. Fasten the cable lug with locking nut M4 and washer on the connection bolt. Tightening torque: 1,2 Nm (10.7 in.lb). Wrench size: A/F 7.
10	Fasten gasket screw connection. Tightening torque: 6 Nm (53.09 in.lb). Wrench size: A/F 30.

Fig. 9



- 1 Cable BLACK
- 2 Washer 4.3
- 3 Lock nut M4
- 4 Cup nut of the gasket screw connection

3.4.2) Installation of regulator A

The regulator A is installed in the same way to regulator B (Step 1 up to Step 3). To be observed.

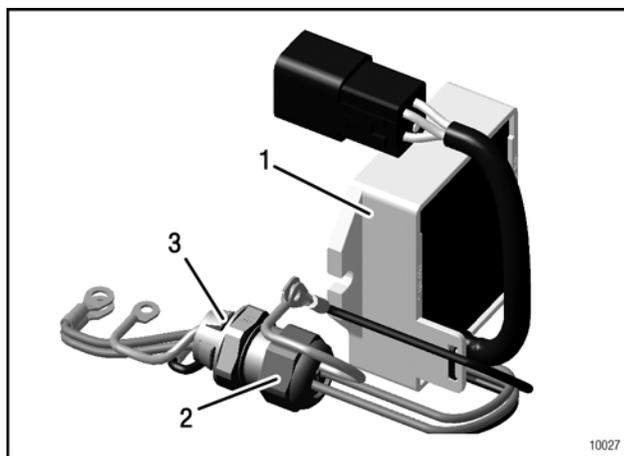
NOTICE Note the wire marking and labeling of the connecting bolts (labeled on the board of the fuse box).

Step	Procedure
4	Remove the connecting thread of sealing union of the rectifier regulator that should be mounted. See Fig. 10. NOTE: The connecting thread of sealing union is included with each rectifier regulator as replacement part. An exchange of this plastic insert is only necessary if it is damaged.

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Fig. 10



- 1 Regulator A
- 2 Cup nut of the gasket screw connection
- 3 Thread of the gasket screw connection

See Fig. 11.

NOTICE

When pressing in the plastic insert, avoid damaging the connecting thread of sealing union.

Step	Procedure
5	Pull all the cables 2 RED/WHITE (marking: A+) and 4 BLACK (marking: A and A-) into the fuse box. The plastic insert must be pressed completely into the connecting thread of sealing union.

NOTICE

Note the wire marking and labeling of the connecting bolts (labeled on the board of the fuse box).
All cables must be installed without kinks.

NOTICE

The cable lugs attached to the connecting ports A-, A and A+ must not touch each other (except those lugs which are attached to a connection bolt).

See Fig. 11

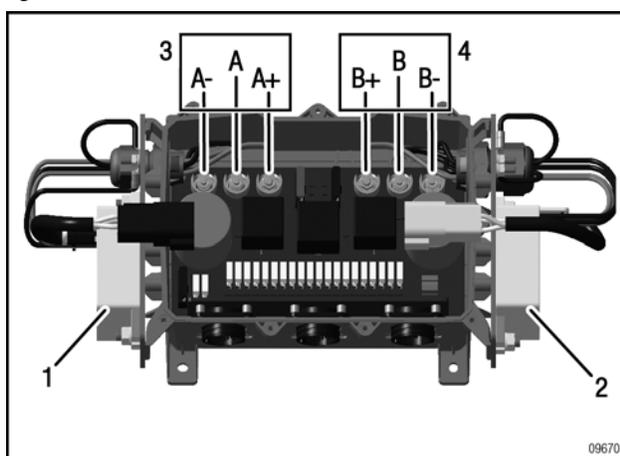
Step	Procedure
6	BLACK cable (1 pc, labeled: A-) connect to connection bolt A-. Fasten the cable lug with locking nut M4 and washer on the connection bolt. The crimping of the lower cable lug must be directed towards the board of fuse box. The crimping of the upper cable lug must be directed toward the cover of the fuse box Tightening torque: 1,2 Nm (10.7 in.lb). Wrench size: A/F 7.

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Step	Procedure
7	BLACK cable (1 pc, labeled: A) connect to connection bolt A. Fasten the cable lug with locking nut M4 and washer on the connection bolt. Tightening torque: 1,2 Nm (10.7 in.lb). Wrench size: A/F 7.
8	RED-WHITE cable (2 pcs, labeled: A+) connect to connection bolt A+. Fasten the cable lug with locking nut M5 and washer on the connection bolt. The crimping of the lower cable lug must be directed towards the board of fuse box. The crimping of the upper cable lug must be directed toward the cover of the fuse box Tightening torque: 2,2 Nm (19.5 in.lb). Wrench size: A/F 8.

Fig. 11



- 1 Regulator A
- 2 Regulator B
- 3 Connection bolt regulator A
- 4 Connection bolt regulator B

See Fig. 12.

NOTICE

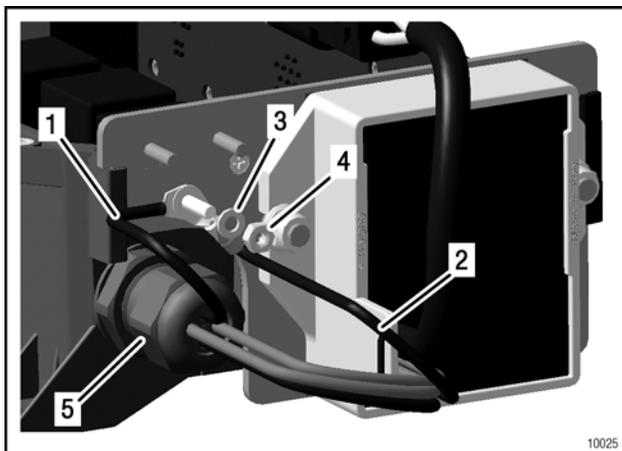
The cable lugs attached to the connecting ports A-, A and A+ must not touch each other (except those lugs which are attached to a connection bolt).

Step	Procedure
9	Connect the unlabeled cable ends coming out of the fuse box and the regulator (2 pcs. BLACK) with the regulator plate. Positioning of the cables must be as shown in Fig. 12. Fasten the cable lug with locking nut M4 and washer on the connection bolt. Tightening torque: 1,2 Nm (10.7 in.lb). Wrench size: A/F 7.
10	Fasten gasket screw connection. Tightening torque: 4 Nm (35 in.lb). Wrench size: A/F 25.

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Fig. 12



- 1 Cable BLACK
- 2 Cable BLACK
- 3 Washer 6.4
- 4 Lock nut M6
- 5 Cup nut of the gasket screw connection

3.5) Attachment of cover

NOTICE

Over tightening the hex screws M4 leads to a rupture of the cover.

Step	Procedure
1	Tighten cover with 9 hex screws M4. Internal hex key SW 3 mm. NOTE: Before attaching the cover, check the correct position of the gasket.

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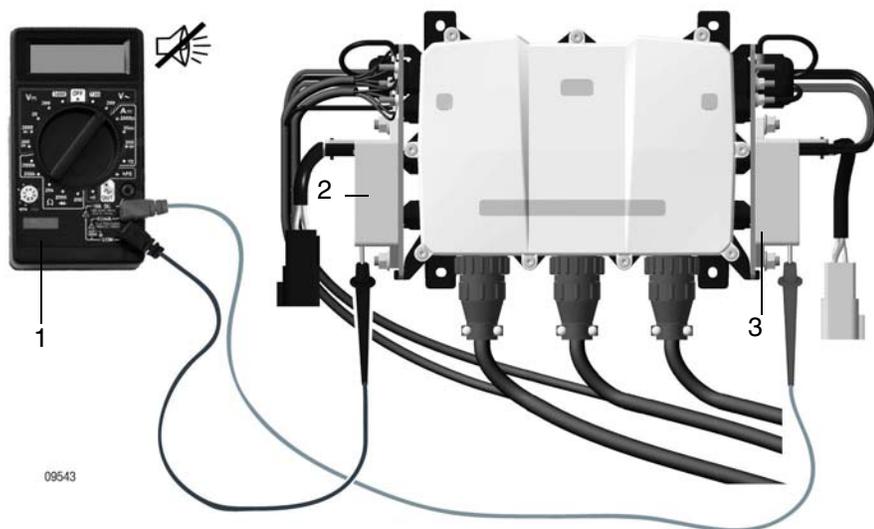
3.6) Inspection of installation of the rectifier regulator

See Fig. 13.

Before installing the fuse box carry out a continuity check using a multimeter between the regulator housing and rectifier regulator A and rectifier regulator B. A conductive connection (continuity) must not be present.

NOTICE If a conductive connection (continuity) is present, the installation of the rectifier regulator has to be checked. The fuse box must not be installed in an aircraft until the error is fixed and the installation corrected.

Fig. 13



- 1 Multimeter
- 2 Regulator A (black wire connector)
- 3 Regulator B (grey wire connector)

3.7) Installation FUSE BOX

NOTICE Installation must be carried out according to the manufacturer's instructions and specifications by the Installation Manual.

Step	Procedure
1	Install the fuse box to the aircraft manufacturer's instructions.
2	Connect the fuse box to the wiring harness (main harness). NOTE: Using the marking of the wiring harness.

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3.8) Inspection of the fuse box installation

See [Fig. 13](#).

After the installation of the fuse box, use a multimeter to carry out a continuity test between regulator A and regulator B in the static condition. A continuity must not be present.

NOTICE

If a conductive connection (continuity) is present, check the wiring as specified by the aircraft manufacturer and in accordance with the requirements of the Installation Manual. Until the error is not fixed, the engine must only be operated on the ground.

NOTICE

EMS ground may only be mounted to the regulator plate A (cooling plate of the fuse box) only.
Aircraft ground may only be mounted on the regulator plate B (cooling plate of the fuse box) only.

3.9) Finishing work

- Restore aircraft to original operating configuration
- Connect negative terminal of aircraft battery.

3.10) Test run

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

3.11) Summary

These instructions (section 3) have to be conducted in accordance with the deadlines from section 1.5. The execution of the mandatory Service Bulletin must be confirmed in the logbook.

Approval of translation to best knowledge and judgement-in any case the original text in German language and the metric units (SI-system) are authoritative.

3.12) Enquiries

Enquiries regarding this Service Bulletin should be sent to the ROTAX® authorized distributor of your area. A list of all distributors is provided on www.FLYROTAX.com.

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4) Appendix

The following illustrations should convey additional information:

- 1 Regulator
- 2 Part no. on the regulator
- 3 Red dot (color marking)
- 4 Production date
(format: production week, year)

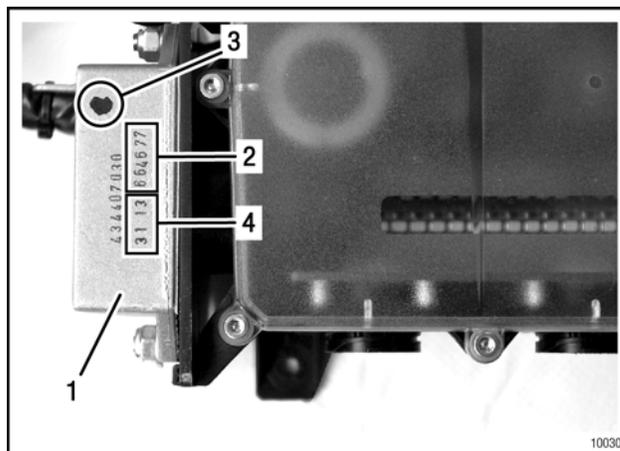


Fig. 14
Regulator

NOTE:

The illustrations in this document show a typical construction. They may not represent full detail or the exact shape of the actual parts but 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.

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NOTES