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Procedure of Starter Power Cable Harness Modification to Meet SB G 304MS-15 a)

Glider type	**G 304 MS**	Mfg No.	**See SB**	Registry	Various

The purpose of this document is to provide supplementary material for procedures described in service bulletin (SB) G304S-15 a), and to support both types of the engine control unit:

- SCU/SDU,
- ILEC.

The SB describes procedures used to replace the 304S-82-89-01 cable bundles as Action 1 and installation of cable inserts as Action 2.
This document provides the following options of procedures for completing Action 1 of the SB:

A) Replacement of the starter battery cable, SCU/SDU variant

- For planes equipped with SCU/SDU engine management system
- As described in the SB
- See page 2

B) Replacement of the starter battery cable, ILEC variant

- For planes equipped with ILEC engine management system
- See page 4

C) Modification of the current starter battery cables

- Instead of cable replacement, the existing cable bundles may be modified to add the 80A fuse boxes.
- Modification may be made for both A (SCU/SDU) and B (ILEC) variants
- See page 6

NOTE 1 – All maintenance work must be carried out and certified by qualified and authorized personnel

NOTE 2 – Sailplane configuration (SCU/SDU or ILEC) must be specified when ordering parts for Options A and B

NOTE 3 - to SB Action 2: an alternative to secure the cable movement limiter is available.

Option A of the 304S-82-90 connector inserts securing is shown in fig. 4 of the SB Action. Option B is shown in fig. 1 (bellow), where inserts are secured by the shrink tubes rather than cable ties.

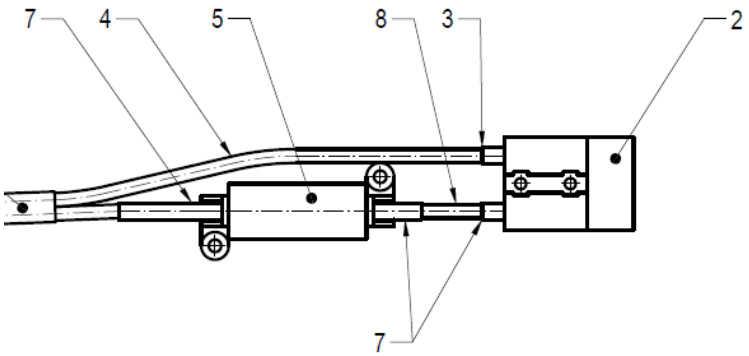


Fig. 1 – Assembly with variant B connector inserts

A) Replacement of the starter battery cable, SCU/SDU variant

As described in SB Action 1

Material:

As described in SB Action 1, i.e.

- Cable bundle (304S-82-89-00), 2pcs
- Drawing 304S-82-89-00
- 304S-82-90 connector inserts variant A – 4pcs + cable ties - 4pcs OR 304S-82-90 connector insert variant B – 4pcs + heat shrink tubing, red color, size 9.5/4.75 – 100 mm

Tools:

- Set of metric sized tools (wrenches and/or sockets, hex keys)

Procedure

As described in SB Action 1

B) Replacement of the starter battery cable, ILEC variant

Material:

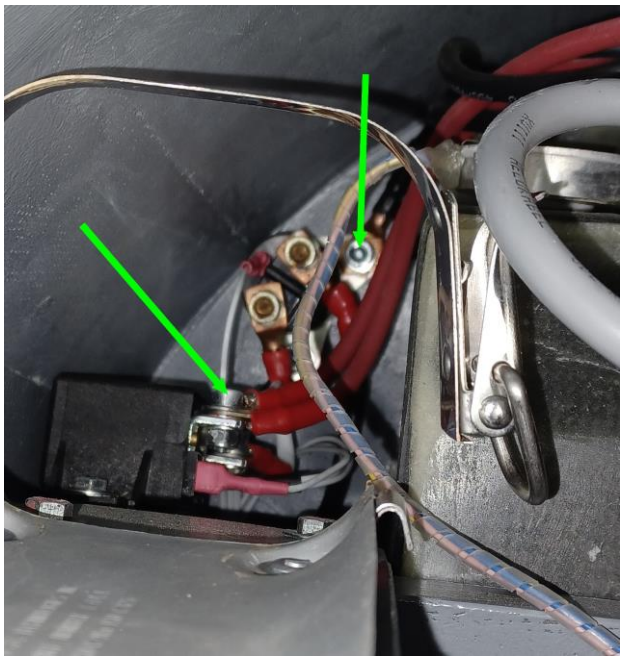
As described in SB Action 1, i.e.

- Cable bundle (304S-82-89-00), 2pcs
- Drawing 304S-82-89-00
- 304S-82-90 connector inserts variant A – 4pcs + cable ties - 4pcs OR 304S-82-90 connector insert variant B – 4pcs + heat shrink tubing, red color, size 9.5/4.75 – 100 mm

Tools:

- Set of metric sized tools (wrenches and/or sockets, hex keys)

Procedure:

Step	Action
B-1	Remove both starter batteries out of the holders. Store them securely.
B-2	Disconnect avionic power sources
B-3	Check that both main switch and engine main switch are off
B-4	Disconnect the battery cables from both relays. • The negative (black) cables are fastened to the mounting plate of the starter relay, located on the right side (with regards to direction of flight – left side when looking into the luggage area from the cockpit) of the rear luggage compartment wall • The positive (red) cables are fastened to a terminal on a relay on the right side floor (see note above) of the luggage compartment just ahead of the starter relay.  *Fig. B1 – Relays, battery cable ends to be disconnected marked by arrows.*

Step	Action
B-5	Remove the battery connectors on the other end of the cables from the battery holder, carefully pull the cables out
B-6	Replicate the routing of the original cables with the new cables, then attach on the relay side (see Fig. 1 for end result)
B-7	Attach the battery connectors back in their original positions. The fuse covers shall have their bases aligned to the battery holder, but are not otherwise secured – see Fig. 2  *Fig. B2 – Replacement cables after installation*
B-8	Check system function.

C) Modification of starter battery cables

Material:

- MTA 0300360 fuse holders, 2pcs
- MTA-1708250 terminals or equivalent (crimped, on cable, for M5 screw mounting) – 4pcs
- 80A fuses – MTA MIDIVAL-80A or equivalent (blade type, 32V DC, 80A rating, fuse size 40mm, mounting by M5 screws with 30mm mounting hole spacing) – 2pcs
- Heat shrink tubing, red color, size 8/4
- AWG7 cable (10mm2), red insulation
- Drawing 304S-82-89-00
- 304S-82-90 connector inserts variant A – 4pcs + cable ties - 4pcs OR 304S-82-90 connector insert variant B – 4pcs + heat shrink tubing, red color, size 9.5/4.75 – 100 mm

Tools:

- Set of metric sized tools (wrenches and/or sockets, hex keys)
- Cutting pliers
- Crimping pliers (suitable for MTA-1708250 terminals)
- Heat gun

Procedure:

Step	Action
C-1	**Cable removal** Remove the starter battery cables according to procedure relevant to the plane configuration: For SCU/SDU (Option A) – Steps 1 to 4 from the SB Action 1 For ILEC (Option B) – Steps B-1 to B-4 from Option B procedure in this document
C-2	**Cable modification** Cut the red cable leading to the „+ “connector terminal 35-55mm from the connector
C-3	Check the terminal dimensions to determine the extent of insulation to be stripped and the length of the heat shrink tube needed
C-4	Strip the insulation and put the heat shrink tube on the cable end. Move the shrink tube so that it doesn’t interfere during terminal attachment.
C-5	Attach the crimp-on terminal. Terminal blade should be parallel to the flat side of the battery connector. Secure the crimped end with heat shrink tube.
C-6	Test-fit the terminal into the fuse cover to determine the length to be cut from the other end of the red cable.
C-7	Cut the free end of the red cable in position determined in previous step.
C-8	Strip insulation from the free end of the cable (extent should be identical to step C-3)
C-9	Attach a ~25mm length of shrink tube to the free end of the cable

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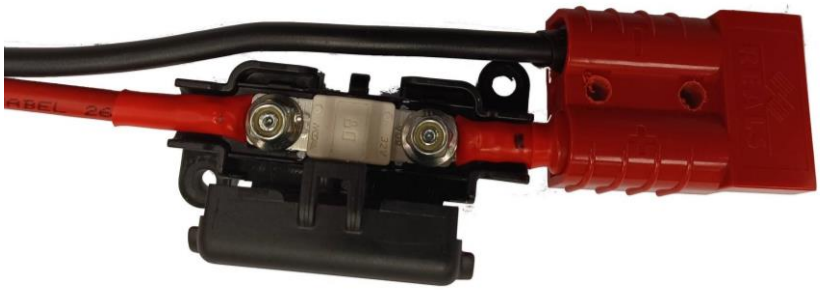
Step	Action
C-10	Attach a crimp-on terminal (blade should be parallel to the blade on the connector side), secure the crimped end with heat shrink tube
C-11	Install both terminals and the 80A fuse into the fuse box according to Fig. C1. Align the fuse box base with the plane of the flat side of the connector, then attach first the terminals, then the fuse on the M5 studs and secure with M5 locking nuts provided with the fuse cover. Close the fuse box cover.  *Fig. C1 – Fuse box detail*
C-12	Installation of modified cables Replicate the routing of the cables, then attach on the relay end
C-13	Attach the battery connector back in their original position. The fuse covers should have their bases aligned to the battery holder, but are not otherwise secured – see Fig. C2.  *Fig. C2 – Connectors after installation*
C-14	Check system function.