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Registration no 2002/022837/07
Approved Maintenance Organisation AMO1264
Manufacturing Organisation M677

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SERVICE BULLETIN

#0022

(Sling Aircraft (Pty) Ltd. considers compliance with all Service Bulletins mandatory)

RELEASE DATE: 01/06/2023

EFFECTIVE DATE: 01/06/2023

SUBJECT: Replacement of improperly de-embrittled bolts

MODELS AFFECTED: **Factory built aircraft serial numbers:**

Sling 2 – 359

Kit and quick build aircraft serial numbers:

Sling 2 – 344k, 367k, 385k

Sling 4 TSi – 204sk, 218sk, 237sk, 249sk, 260sk, 264sk,
283sk, 286sk, 298sk, 302sk, 311sk, 318sk,
320sk, 324sk, 334sk, 341sk, 353sk, 374sk,
377sk, 380sk, 383sk, 385sk, 388sk, 388sk,
397sk, 398sk, 399sk, 402sk, 406sk, 407sk,
408sk, 409sk, 410sk, 413sk, 419sk, 420sk,
422sk, 424sk, 425sk, 428sk, 429sk, 431sk,
435sk, 440sk, 447sk, 452sk, 465sk, 473sk

COMPLIANCE TIME: Next MPI (Mandatory Periodic Inspection) or annual inspection, whichever comes first.

LABOUR TIME: 1 hour for the engine mount bolt replacement.
30 minutes for the propeller bolt replacement.

1. DESCRIPTION AND PURPOSE:

It would appear that a batch of metric bolts from a Sling supplier was not de-embrittled adequately, which has resulted in the distribution of bolts that are considered unacceptably brittle. This Service Bulletin is to instruct owners of the affected models to return the affected bolts and order replacement bolts. This Service Bulletin also contains instructions on how to remove and install the various bolts, should they be installed already.

Note:

- The applicable aircraft Maintenance Manual and Construction Manual must be adhered to at all times.
- Refer to AC 43- Aircraft Inspection and Repair, when inspecting and replacing components.

1.1. MASS DATA:

N/A

1.2. ELECTRICAL LOAD DATA:

N/A

1.3. SOFTWARE MODIFICATIONS:

N/A

1.4. REFERENCES:

- a) Sling 2 & Sling LSA Maintenance Manual (DC-MAM-002-X-B)
- b) Sling 4 TSi Maintenance Manual (DC-MAM-001-X-F)

1.5. PUBLICATIONS AFFECTED:

N/A

2. MATERIAL INFORMATION:

2.1. PARTS AND CONSUMABLES LIST:

Sling 2:

- a) 4 X M10 x 130 mm Grade 8.8 bolts (HW-MTB-130-X-X-0)
- b) 6 X M8 x 40 mm Grade 8.8 bolts (HW-MTB-840-X-X-0)

Sling 4 TSi:

- c) 4 X M10 x 130 mm Grade 8.8 bolts (HW-MTB-130-X-X-0)

2.2. TOOLS REQUIRED:

- a) Torque wrench
- b) Ratchet
- c) 17 mm socket
- d) 12 mm socket
- e) 17 mm spanner
- f) Flat head screwdriver
- g) Philip screwdriver
- h) 5/16" spanner
- i) 3mm Allen key / hex drive
- j) Torque seal

k) Loctite 243

2.3. MATERIAL RESPONSIBILITY:

Sling Aircraft (Pty) Ltd. will provide the required hardware, listed in Section 2.1.

2.4. LABOUR RESPONSIBILITY

Sling Aircraft AMO 1264 (Johannesburg, South Africa) is available to perform the required work on all aircraft delivered to its premises. The aircraft may be flown to an aircraft maintenance organisation for the work to be carried out. Person(s) implementing the work are required to follow instructions set out below and refer to the supplementary documentation listed in Section 1.4 as needed. Sling Aircraft cannot accept any responsibility for the quality of work performed in implementing this service bulletin, if the work is not performed by Sling Aircraft AMO 1264 (Johannesburg, South Africa).

All work carried out on the aircraft with respect to this service bulletin (Service Bulletin #0022) may be performed by the kit builder. Refer to the legal requirements of the governing aviation authority of the country where the actions, as detailed by this service bulletin, are to be carried out.

Sling Aircraft will cover the labour costs for aircraft still under warranty. Sling Aircraft is not responsible for costs related to shipping, downtime, loss of income, etc.

2.5. COMPANY SUPPORT INFORMATION:

To request replacement parts, please use the following contact details:
sales@slingaircraft.com

Make use of the following contact details for any related technical queries:
airworthiness@slingaircraft.com or technical@slingaircraft.com

3. INSTRUCTIONS:

On Sling 2 aircraft there are two locations where affected bolts can be found which are:

1. The M8 bolts used to attach the Rotax engine to the engine mount frame.
2. The propeller mounting bolts.

To replace the engine mount bolts on the Sling 2, follow the instructions in Section 3.1.

To replace the propeller mount bolts on the Sling 2, follow the instructions in Section 3.2.

The affected Sling 4 TSi's only have the brittle bolts installed on the engine mount. To replace the engine mount bolts on the Sling 4 TSi, follow the instructions in Section 3.3.

The factory-built models shown in Table 1 have the bolts that were not sufficiently de-embrittled installed. Refer to Table 2 to see which kits and quick build aircraft are also affected.

Table 1: Factory built model SN and associated brittle bolt locations

Bolt section affected	Sling 2 serial numbers	Sling 4 Tsi serial numbers
Engine mount bolts	359	N/A
Propeller mount bolts	359	N/A

Table 2: Kit and quick build SN and associated bolt locations

Bolt section affected	Sling 2 serial numbers	Sling 4 Tsi serial numbers
Engine mount bolts	N/A	204sk, 218sk, 237sk, 249sk, 260sk, 264sk, 283sk, 286sk, 298sk, 302sk, 311sk, 318sk, 320sk, 324sk, 334sk, 341sk, 353sk, 374sk, 377sk, 380sk, 383sk, 385sk, 388sk, 388sk, 397sk, 398sk, 399sk, 402sk, 406sk, 407sk, 408sk, 409sk, 410sk, 413sk, 419sk, 420sk, 422sk, 424sk, 425sk, 428sk, 429sk, 431sk, 435sk, 440sk, 447sk, 452sk, 465sk, 473sk
Propeller mount bolts	344k, 367k, 385k	N/A

If the applicable bolts have not been installed, request replacement bolts from Sling Aircraft before installing them. If the bolts have already been installed, follow the applicable instructions in the respective section to replace the bolts, as reference above.

3.1. Replacement of Sling 2 engine mount bolts

- Step 1: Before any bolts can be replaced, the aircraft's cowling needs to be removed. To do so, refer to the Sling 2 & Sling LSA Maintenance manual (DC-MAM-002-X-B) Section 5.1.1.
- Step 2: The four M10 bolts (HW-MTB-130-X-X-0) that mount the engine to the engine frame need to be replaced. These bolts can be seen in the exploded view of the engine mount in Figure 1.

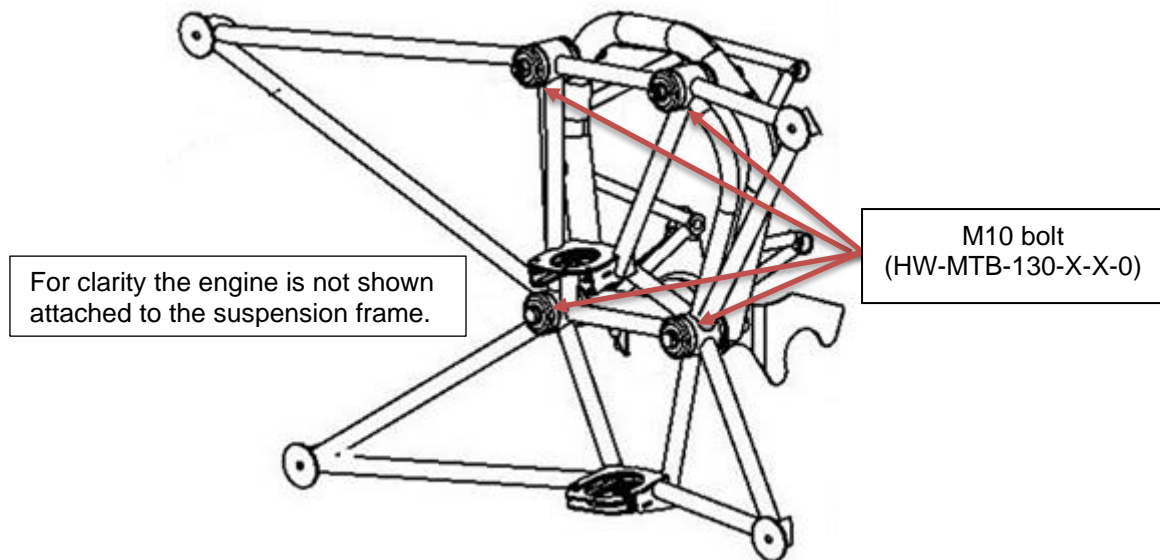


Figure 1: Sling 2 engine mount to engine frame attachment

It is possible to replace the M10 bolts one at a time, without uninstalling the engine.

- Step 3: Before any bolts are removed, the engine must be supported. This is to prevent the engine from getting damaged should it drop during the bolt removal, as well as to relieve some strain on the bolts for easy removal. The engine can be supported by the anchor points located on the top of the engine, as shown in Figure 2.

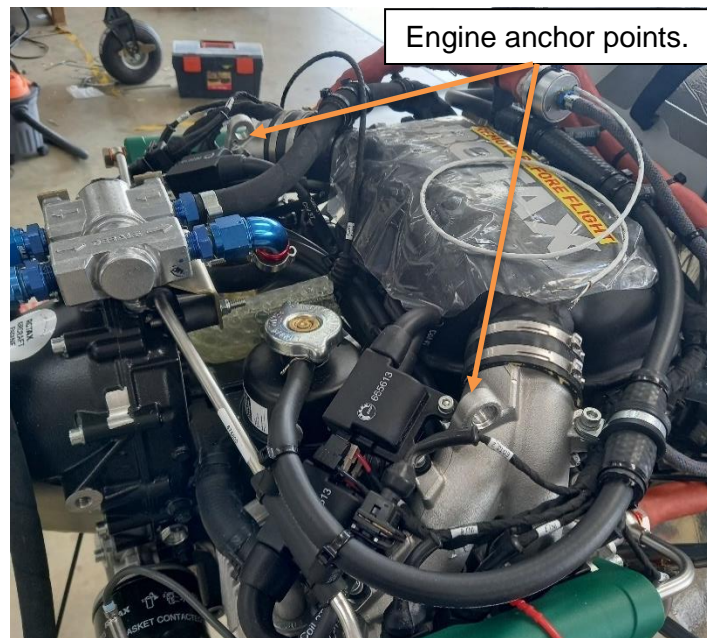


Figure 2: Rotax 912 iS engine anchor points

Step 4: Once the engine is supported, the bolts can be replaced *one by one*. Refer to Figure 3 and replace the bolts in order. Remove bolt 1 and install a new bolt. Torque the bolt to 38 Nm. Ensure all washers, rubber stoppers and spacers are installed in the correct positions when replacing the bolts. Once bolt 1 has been replaced and torqued to 38 Nm, replace bolt 2, which should then also be torqued to 38 Nm.

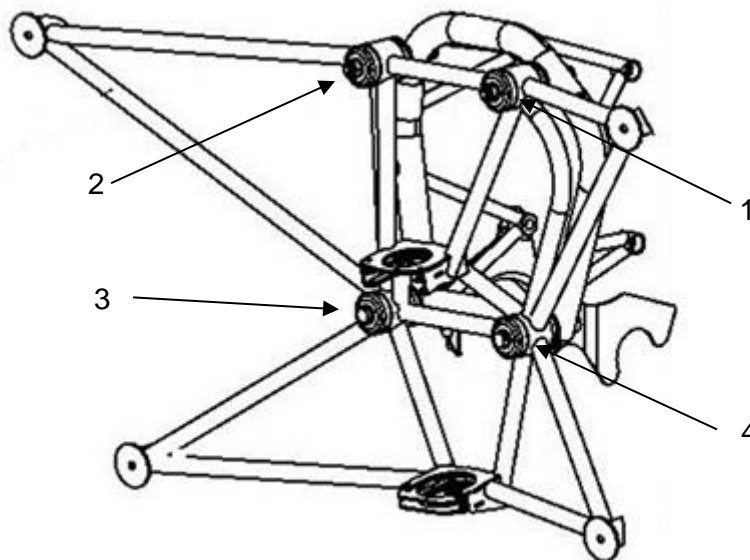


Figure 3: Bolt replacement sequence

Step 5: Before bolts 3 and 4 can be replaced the muffler needs to be lowered, to create enough clearance to remove the bolts. As shown in Figure 4, the nuts holding the exhaust pipes to the engine should be unscrewed to allow the pipes to detach from the engine. Do not detach the exhaust tubes from the muffler. This must be done for both the left- and right-hand side of the engine so that the exhaust can detach on both sides of the aircraft. The

two temperature sensors on each exhaust pipe can remain attached as there should be sufficient play in the wire length to lower the muffler enough to remove the bolts.

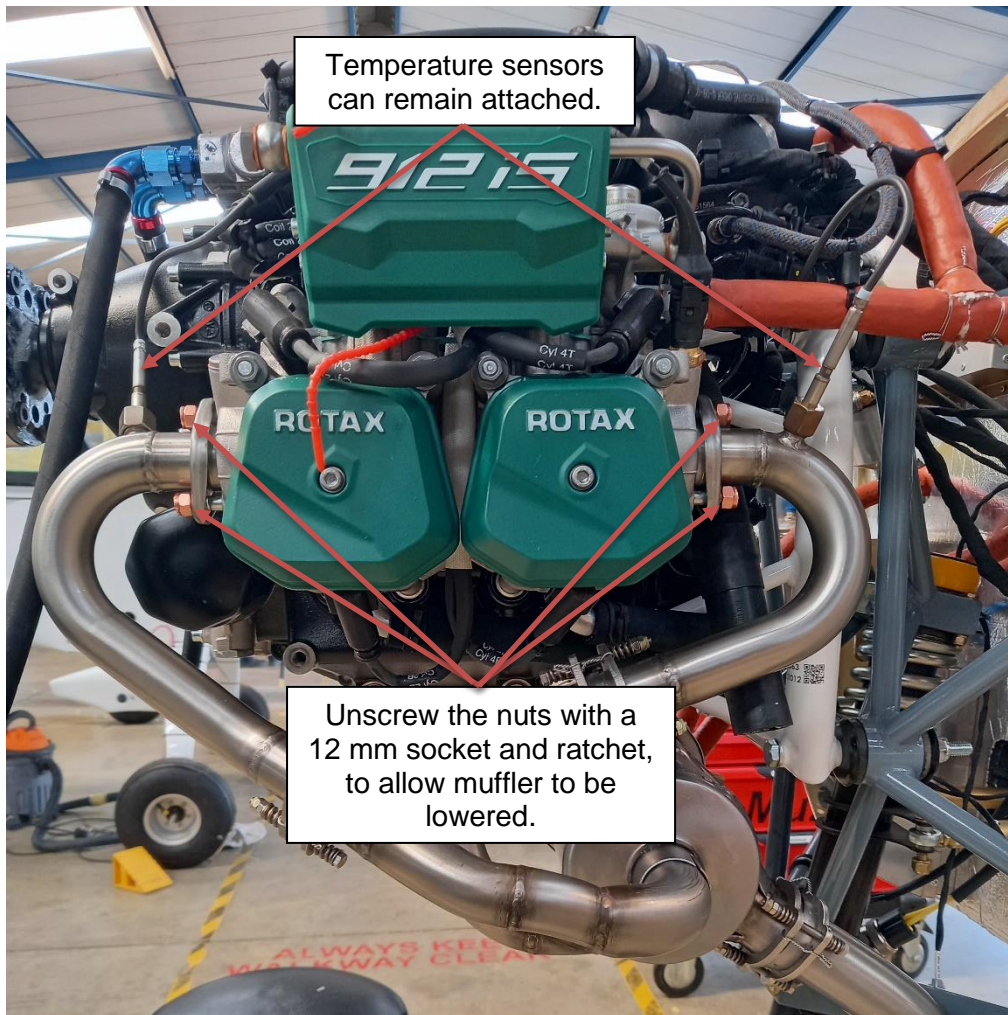


Figure 4: Detaching of the Rotax 912 iS exhaust.

Step 6: There are two ring clamps that restrain the muffler. Before it can be lowered, these ring clamps must be removed.

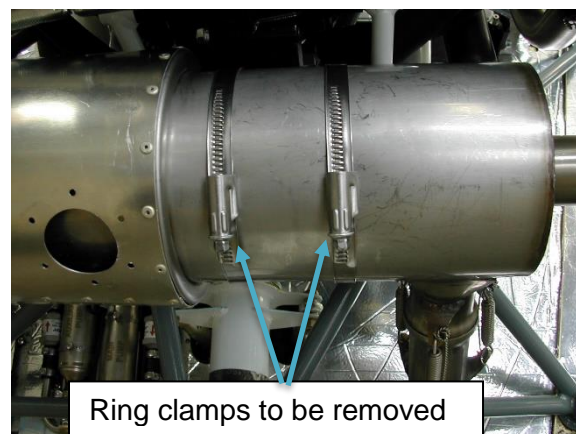


Figure 5: Sling 2 muffler ring clamps

- Step 7: Once the ring clamps have been removed, the muffler can be lowered enough for bolts 3 and 4 to be removed. The muffler should then be supported so that you don't have to hold it while you remove Bolt 3.
- Step 8: After bolt 3 has been removed, install a new bolt. Ensure all washers, rubber stoppers and spacers are installed in the correct positions when replacing the bolt, as seen in Figure 3. Once bolt 3 has been replaced and torqued to 38 Nm, replace bolt 4, which should then also be torqued to 38 Nm.
- Step 9: Reinstall the exhaust once the bolts have been replaced.
- Step 10: Apply torque seal to the bolts on both ends, once all the bolts have been torqued to the correct torque value of 38 Nm.
- Step 11: Once all 4 bolts have been replaced, reinstall the cowling, refer to the Sling 2 & Sling LSA Maintenance Manual (DC-MAM-002-X-B) Section 5.1.1.

3.2. Replacement of Sling 2 propeller mount bolts

- Step 1: Before any bolts can be replaced, the aircraft's cowling needs to be removed. To do so, refer to the Sling 2 & Sling LSA Maintenance Manual (DC-MAM-002-X-B) Section 5.1.1.
- Step 2: It is possible to replace the M8 bolts (HW-MTB-840-X-X-0) without removing the propeller.
- Step 3: The bolts that need to be replaced are the M8 bolts connecting the propeller extension and engine flange. Refer to Figure 6.

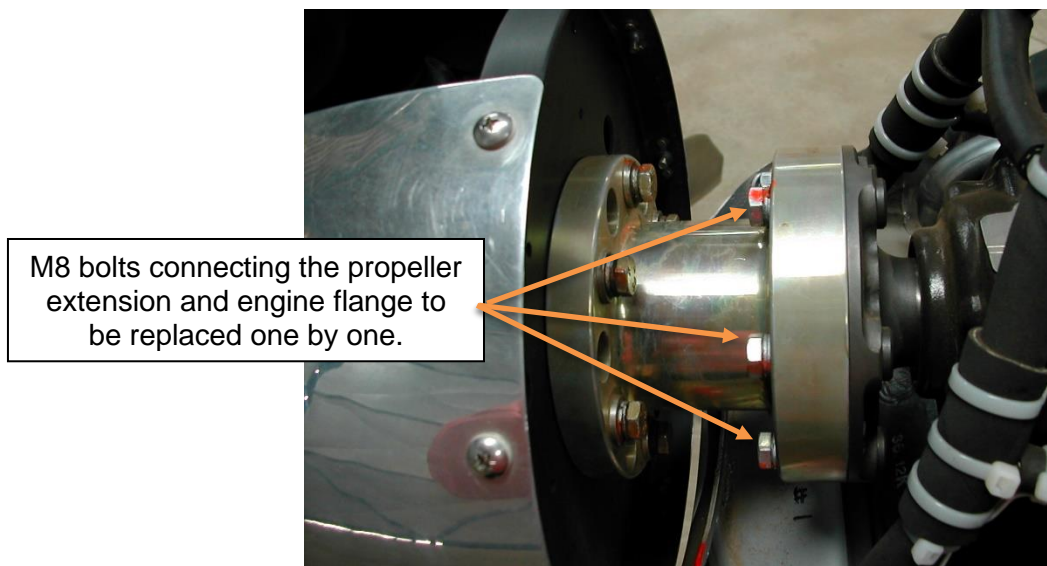


Figure 6: M8 bolts connecting the propeller extension and engine flange

- Step 4: Support the propeller and replace the M8 bolts one by one. This will allow the propeller to remain attached during the replacement process. The bolts should be replaced in accordance with the sequence shown in Figure 7. Loctite 243 should be applied to the threaded section of each replacement bolt before it is installed. Ensure that only one bolt is replaced at a time, and it gets torqued to the correct torque value of 24 Nm, before the next bolt is replaced.

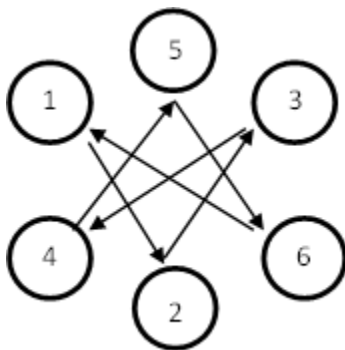


Figure 7: Propeller extension bolt replacement sequence

- Step 5: Once all the bolts have been torqued to the correct torque value, apply torque seal to the bolt.
- Step 6: Once all 6 bolts have been replaced, reinstall the cowling, refer to the Sling 2 & Sling LSA Maintenance Manual (DC-MAM-002-X-B) Section 5.1.1.

3.3. Replacement of Sling 4 TSi engine mount bolts

- Step 1: Before any bolts can be replaced, the aircraft's cowling needs to be removed. To do so, refer to the Sling 4 TSi Maintenance Manual (DC-MAM-001-X-F) Section 5.1.1.
- Step 2: The four M10 bolts (HW-MTB-130-X-X-0) that mount the engine to the engine frame need to be replaced. These bolts can be seen in the exploded view of the engine mount in Figure 8.

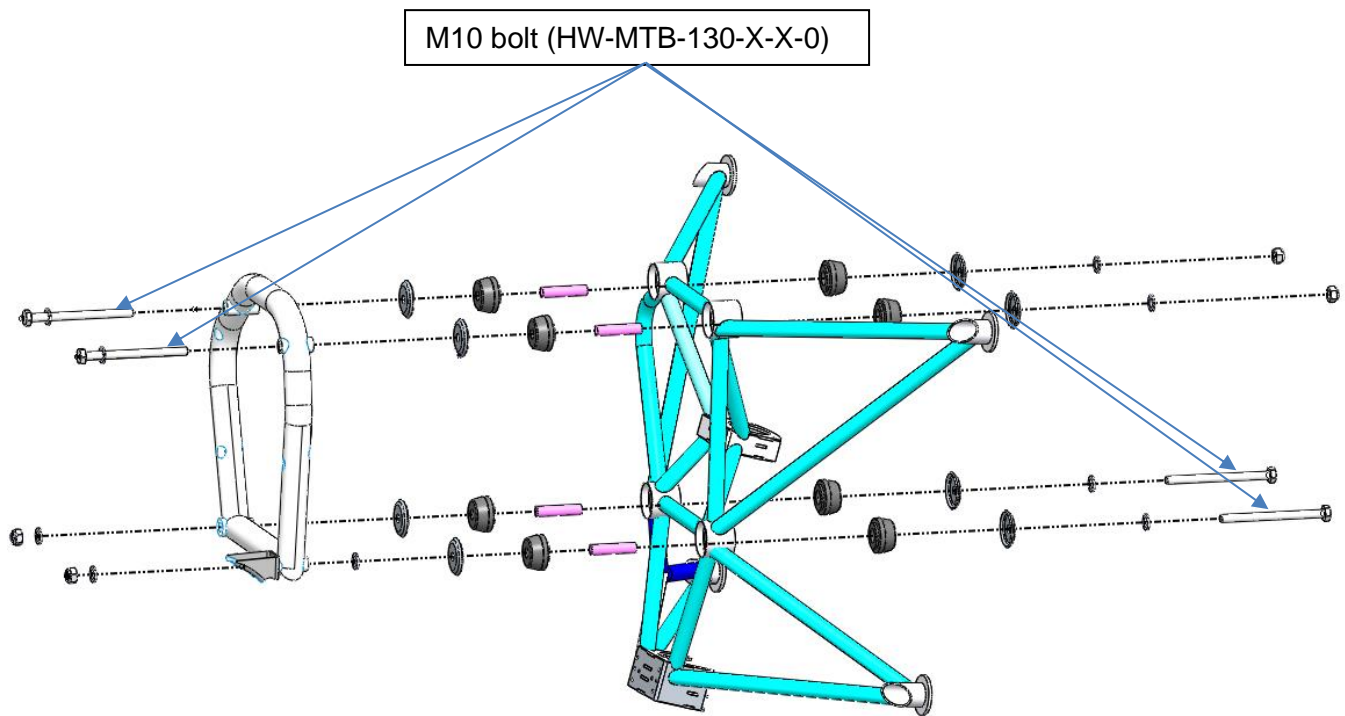


Figure 8: Sling 4 TSi engine mount to engine frame attachment

It is possible to replace the M10 bolts one at a time, without uninstalling the engine.

- Step 3: Before any bolts are removed the engine must be supported. This is to prevent the engine from getting damaged should it drop during the bolt removal, as well as to relieve some strain on the bolts for easy removal. The engine can be supported by the anchor points located on the top of the engine, as shown in Figure 9.

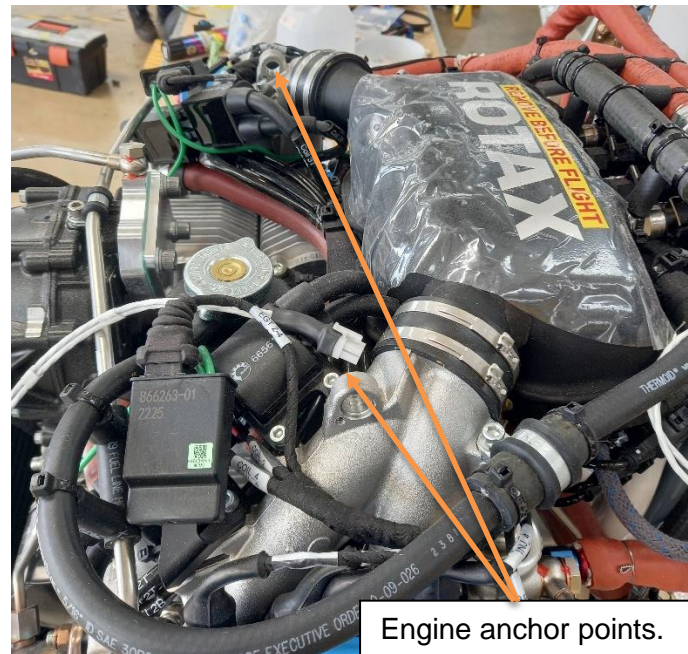


Figure 9: Rotax 915 iS engine anchor points

Step 4: Once the engine is supported, the bolts can be replaced *one by one*. Refer to Figure 10 and replace the bolts in order. Remove bolt 1 and install the new replacement bolt. Torque the bolt to 38 Nm. Once bolt 1 has been replaced and torqued to 38 Nm, replace bolt 2. Repeat this process until all 4 bolts have been replaced. All bolts should be torqued to 38 Nm. Ensure all washers, rubber stoppers and spacers are installed in the correct positions when replacing the bolts, as seen in Figure 10. The muffler of the Sling 4 TSi does not need to be lowered in order to replace the M 10 bolts shown in Figure 10.

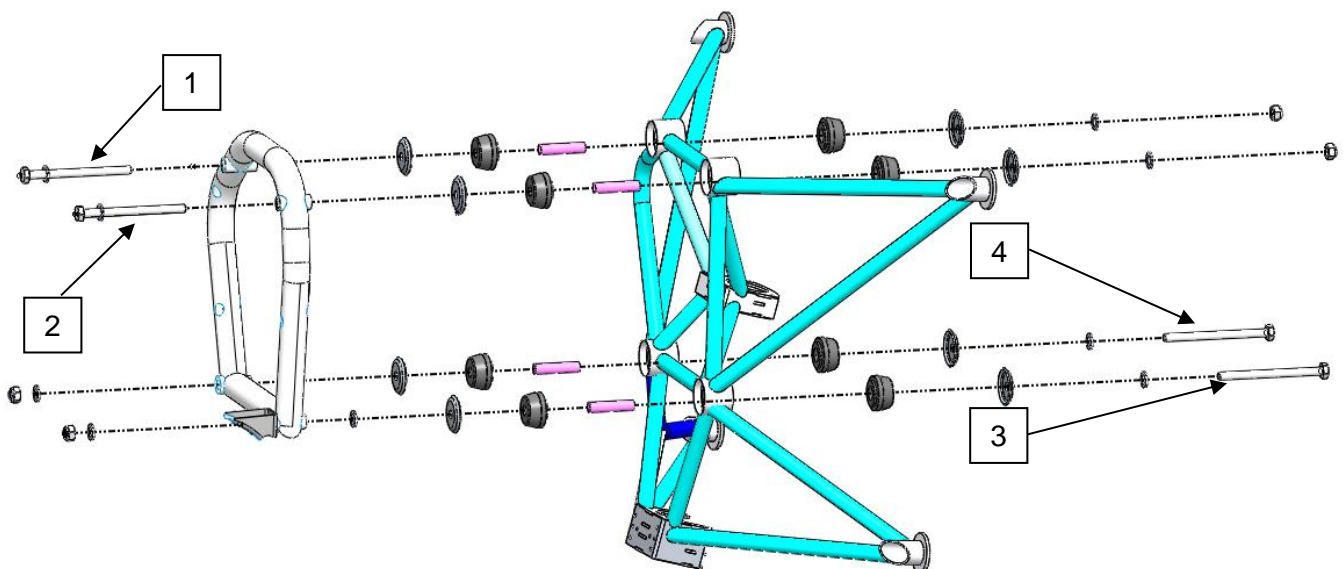


Figure 10: Bolt replacement sequence

- Step 5: Once all the bolts have been torqued to the correct torque value, apply torque seal to the bolt on both ends.
- Step 6: Reinstall the cowling. To do so, refer to the Sling 4 TSi Maintenance Manual (DC-MAM-001-X-F) Section 5.1.1.

Once the actions detailed in this service bulletin have been carried out, the aircraft's compliance to this service bulletin needs to be documented in the aircraft's airframe logbook.

Signed on this the 01 day of June 2023.

A handwritten signature in black ink that reads "JAL Pitman". The signature is written in a cursive style with a large, looped initial "J".

ACCOUNTABLE MANAGER
MR JAMES PITMAN