



Sling Aircraft (Pty) Ltd
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Approved Maintenance Organisation AMO1264
Manufacturing Organisation M677

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SERVICE BULLETIN

#0024

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

NOTE – THIS SERVICE BULLETIN REPLACES SERVICE BULLETIN #0019 IN ITS ENTIRETY.

SERVICE BULLETIN #0019 IS ACCORDINGLY CANCELLED WITH EFFECT FROM 01/06/2023.

RELEASE DATE: 01/06/2023

EFFECTIVE DATE: 01/06/2023

SUBJECT: Throttle cable replacement to prevent potential loss of engine power control.

MODELS AFFECTED: All Rotax 912 iS and 915 iS fitted Sling aircraft.

COMPLIANCE TIME: Next MPI (Mandatory Periodic Inspection) or within 50 flight hours from date of SB publication, whichever comes first. Alternatively, this Service Bulletin may be performed immediately by the kit builder.

LABOUR TIME: 2 hours

1. DESCRIPTION AND PURPOSE:

This Service Bulletin provides instructions required to be complied with to ensure the continued airworthiness of throttle cables installed in Rotax 912 iS and 915 iS fitted aircraft.

Throttle cables should be replaced with the newly designed versions in all flying aircraft fitted with a 912 iS or a 915 iS engine at the next MPI or within 50 flight hours from date of publication of this Service Bulletin, whichever comes first. Kit-built aircraft still under construction must replace the throttle cable assembly with the new design prior to first flight.

1.1. MASS DATA:

N/A

1.2. ELECTRICAL LOAD DATA:

N/A

1.3. SOFTWARE MODIFICATIONS:

N/A

1.4. REFERENCES:

- a) DC-MAM-002-X-B – Sling 2 and Sling LSA Maintenance Manual
- b) DC-MAM-001-X-F – Sling 4 TSi Maintenance Manual
- c) DC-MAM-001-X-G – Sling 4 High Wing Maintenance Manual

1.5. PUBLICATIONS AFFECTED:

Service Bulletin 19 – Service Bulletin 24 supersedes Service Bulletin 19.

2. MATERIAL INFORMATION:

2.1. PARTS AND CONSUMABLES LIST:

- a) 2 x HW-CPN-212-X-X-0 – Split pin for an AN 3 bolt.
- b) 1 X CF-BSH-003-X-A-1 – Bolt Bush for Throttle Quadrant Cable
- c) 1 X CF-BKT-038-R-X-0 – Throttle Quadrant Plate – Right (for Sling 2, Sling LSA and Sling 4 TSi)
- d) 1 X CF-BKT-038-L-X-0 – Throttle Quadrant Plate – Left (for Sling 4 High Wing only)
- e) 1 X HW-ANL-031-R-X-0 – Low profile lock nut for AN 3 bolt.
- f) 1 X CT-CBL-S01-X-F-0 – Throttle Cable Complete Assembly (the same cable assembly is used for Sling 2, Sling LSA and Sling 4 TSi).
- g) 1 X CT-CBL-S07-X-G-0 – Throttle Cable Complete Assembly (this cable assembly is used for Sling 4 High Wing only).
- h) 2 X HW-RIV-153-X-X-0 – M4 x 10 mm aluminium rivets
- i) 1 X HW-ANB-306- X-X-0 – AN3-6A bolt

2.2. TOOLS REQUIRED:

- a) Phillips / flat screwdriver
- b) 2mm / 2.5mm Allen key
- c) 3/8" Spanner
- d) 5.5 mm Spanner
- e) Rivnut gun (manual or pneumatic) and nozzle to pull M4 rivnuts.
- f) Rivet gun (manual or pneumatic) and jaws to rivet an M4 rivet.
- g) Loctite 222

2.3. MATERIAL RESPONSIBILITY:

Sling Aircraft (Pty) Ltd will provide the required hardware listed in Section 2.1 for all aircraft subject to the Service Bulletin.

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 24) 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 installation costs of aircraft under warranty. Sling Aircraft is not responsible for costs related to shipping, downtime, loss of income, etc.



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2.5. COMPANY SUPPORT INFORMATION:

To request Service Bulletin kits, 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:

The new throttle cable assembly makes use of a clevis and modified clevis sheath housing. Due to this, certain of the brackets in the throttle quadrant assembly need to be changed to the new versions. The figures below detail the required changes for the respective aircraft. Figure 1 details the components that need to change on Sling 2, Sling LSA and Sling 4 TSi, whereas Figure 2 details the changes for the Sling 4 High Wing.

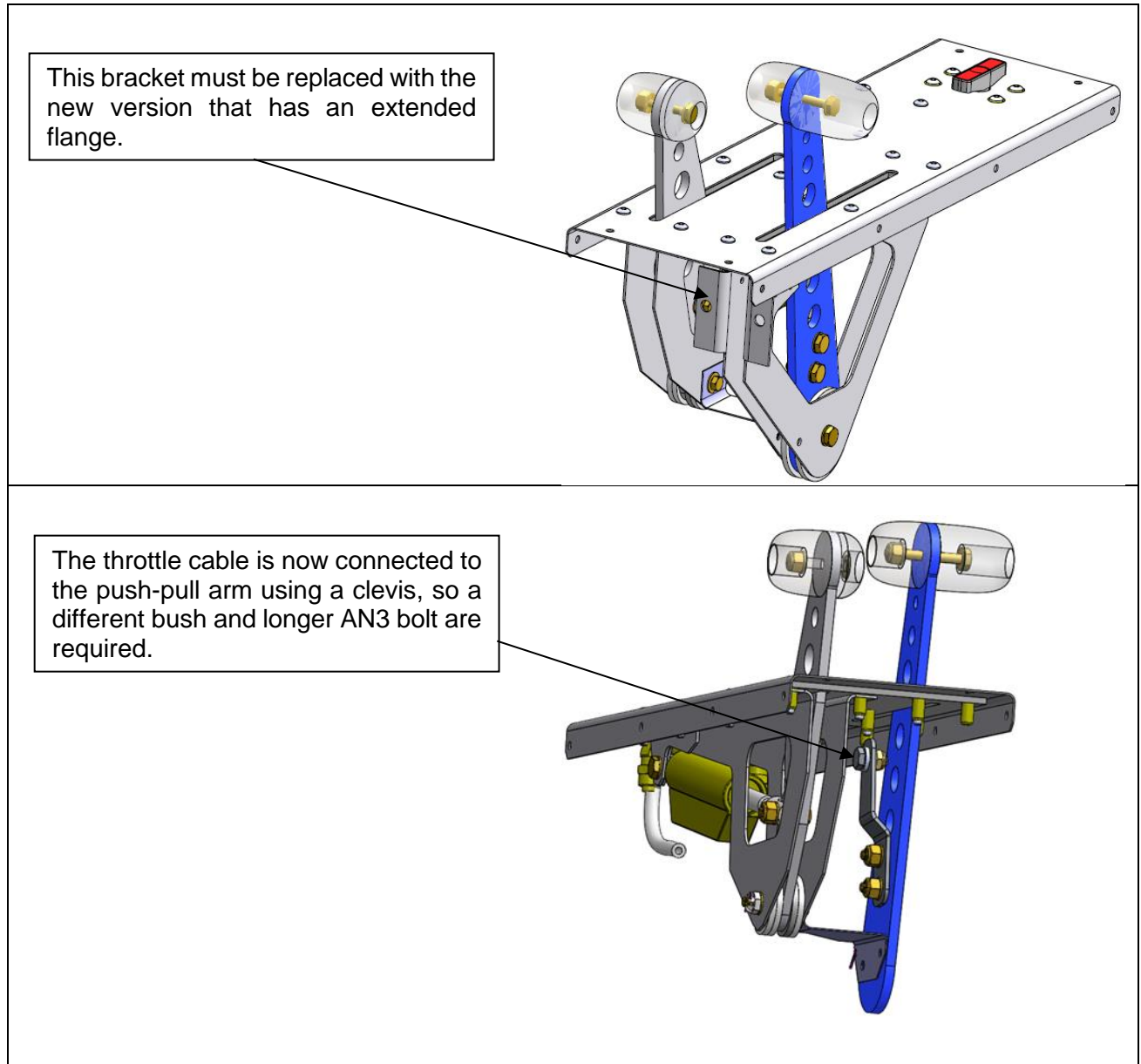
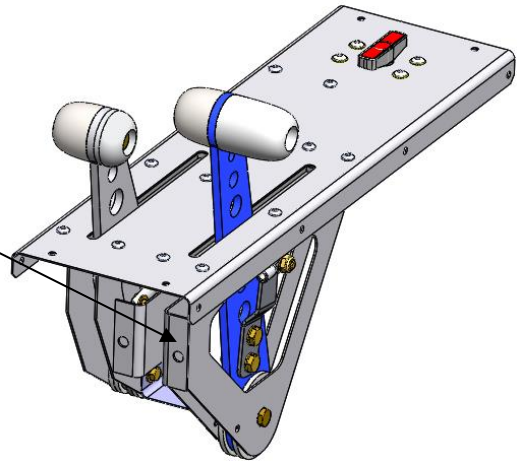


Figure 1

This bracket must be replaced with the new version that has an extended flange.



The throttle cable is now connected to the push-pull arm using a clevis, so a different bush and longer AN3 bolt are required.

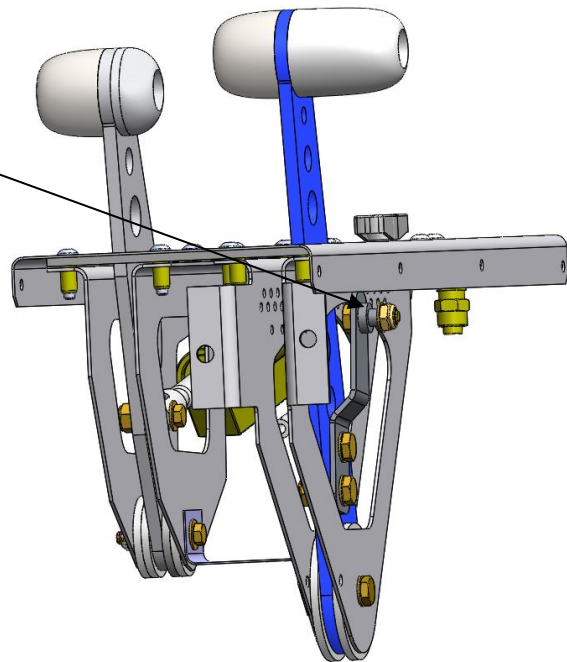


Figure 2

The following sections outlines the removal, installation and setting of the new throttle control system.

3.1. Removal of installed throttle cables for Sling 2, Sling LSA and Sling 4 TSi

Note: This section is only applicable to Sling 2, Sling LSA and Sling 4 TSi.

Step 1: Remove the front left seat. This will allow for easier access of the throttle cable. Refer to the applicable sections in the respective manuals as detailed in Table 1.

Table 1

Aircraft	Section	Manual/ Document number
Sling 2 and Sling LSA	4.3.2.1	DC-MAM-002-X-B
Sling 4 TSi	4.2.2.1	DC-MAM-001-X-F

Step 2: Remove the left-hand side centre console inspection panel.

Step 3: Once the side inspection panel has been removed, remove the 4 screws that hold the throttle quadrant in place, refer to Figure 3. This is to allow the throttle quadrant to be lifted and tilted for better access to the components beneath. Be careful not to pull the brake line off when you lift the throttle quadrant. The brake line should be long enough to remain attached during the entire replacement process.

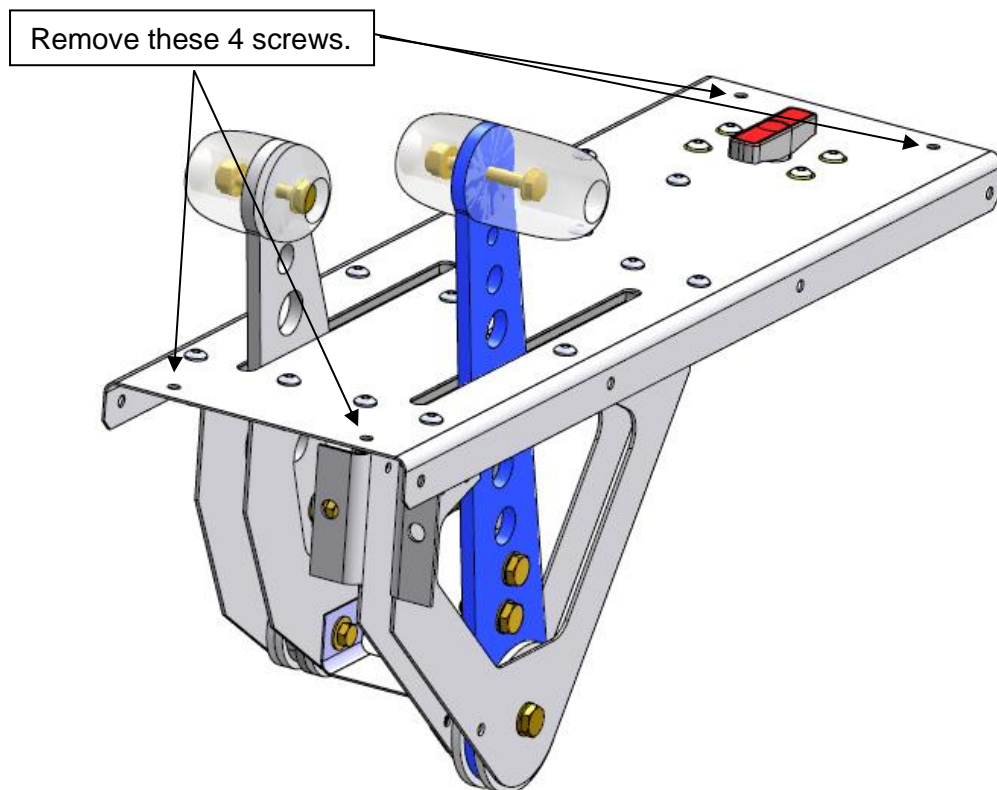


Figure 3

Step 4: Remove the 3 screws attaching the outer bracket to the top mount plate of the throttle quadrant. Refer to Figure 4.

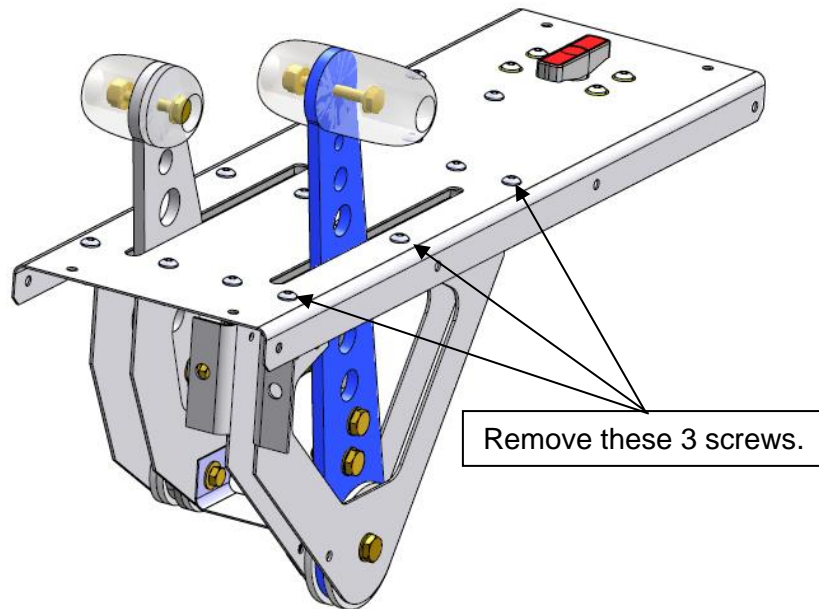


Figure 4

Step 5: Once the three screws have been removed from the outer bracket, remove the AN3 bolt shown in Figure 5, as well as the throttle stops. After the bolts have been uninstalled, the bracket can be removed, and the rivet must be drilled out.

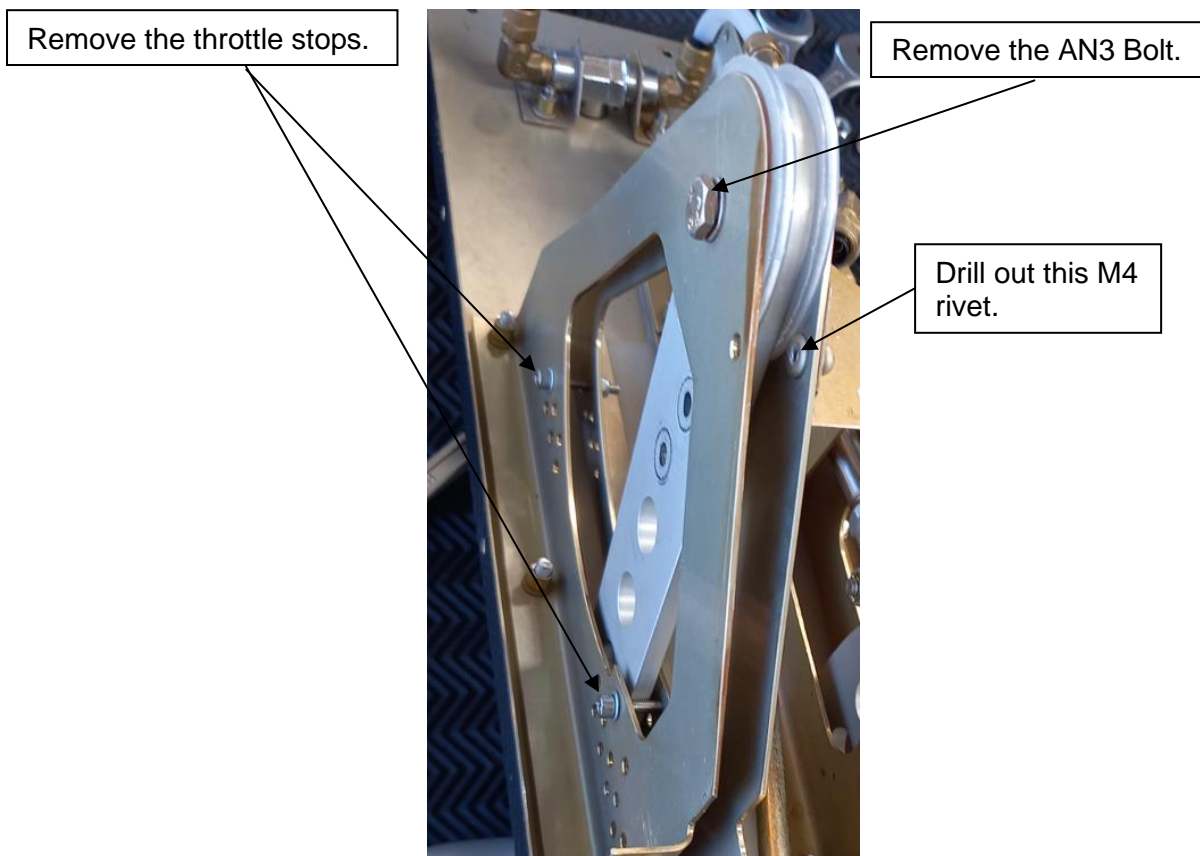


Figure 5

Step 6: Remove the 3 screws retaining the remaining bracket as seen in Figure 6.

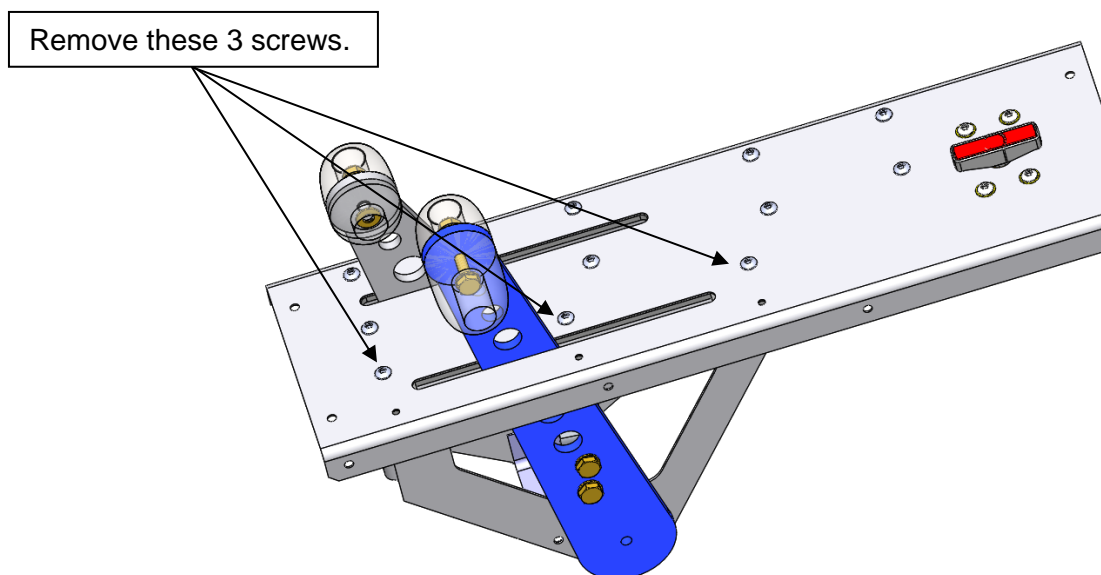


Figure 6

Step 7: Remove the AN 3 bolt attaching the throttle cable to the push-pull arm. A new bolt and bush will need to be installed in order to attach the new throttle cable. This will be detailed in Section 3.3.

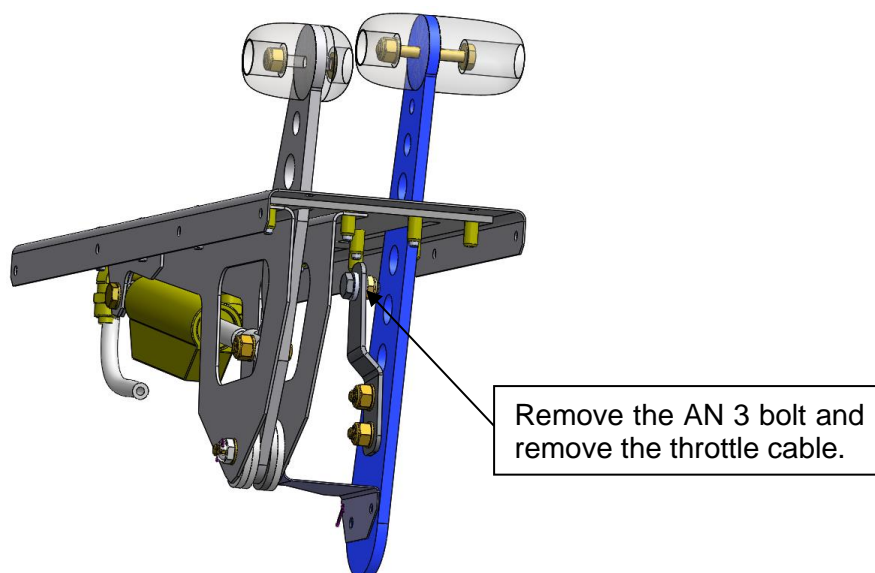


Figure 7

Step 8: Remove the cowling of the aircraft. Refer to Table 2 for the relevant manual where these instructions can be found.

Table 2

Aircraft	Section	Manual/ Document number
Sling 2 and Sling LSA	5.1	DC-MAM-002-X-B
Sling 4 TSi	5.1	DC-MAM-001-X-F

Step 9: Unscrew the nut on the throttle lever on the Rotax throttle body to release the throttle cable. Refer to Figure 8.



Figure 8

Step 10: In order to remove the throttle cable and sheath, it needs to be detached from the engine. To do so, unscrew the locking nuts that hold the sheath in place. Refer to Figure 9

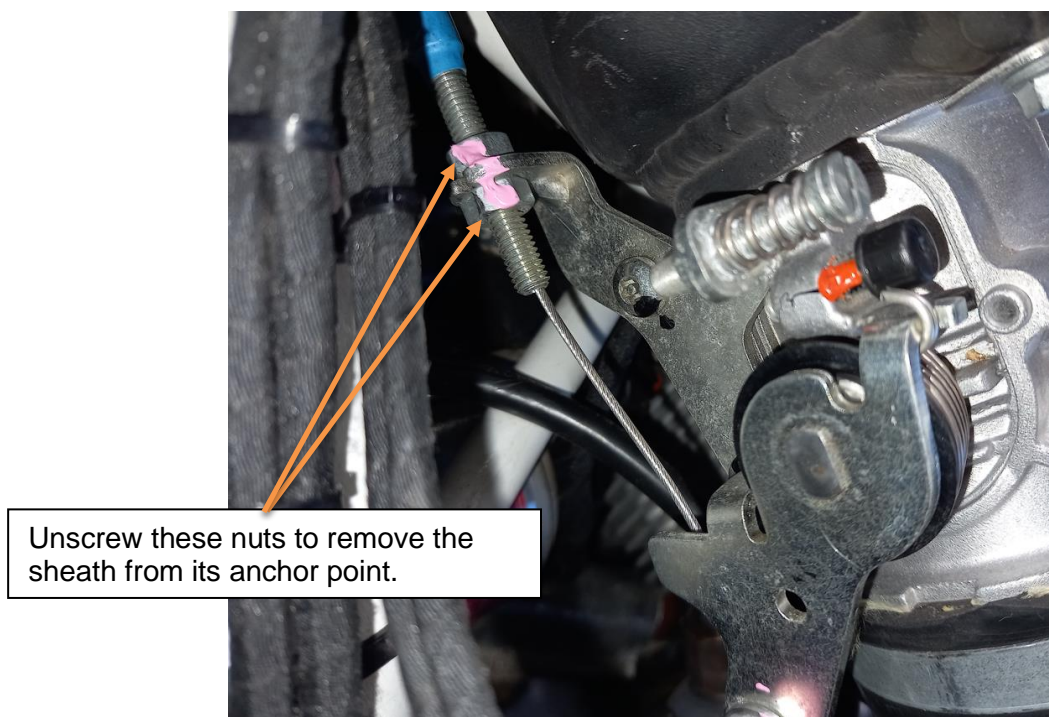


Figure 9

Step 11: The old throttle cable and sheath can now be removed from the aircraft.

3.2. Removal of installed throttle cables for Sling 4 High Wing

Note: This section is only applicable to the Sling 4 High Wing.

- Step 1: Remove the front left seat. This will allow for easier access of the throttle cable. Refer to Section 4.2.2 in manual DC-MAM-001-X-G.
- Step 2: Remove the left-hand side centre console inspection panel.
- Step 3: Once the left side inspection panel has been removed, remove the AN 3 bolts from the control handles so that the handle knobs can be removed. This must be done for both the brake and throttle handles.

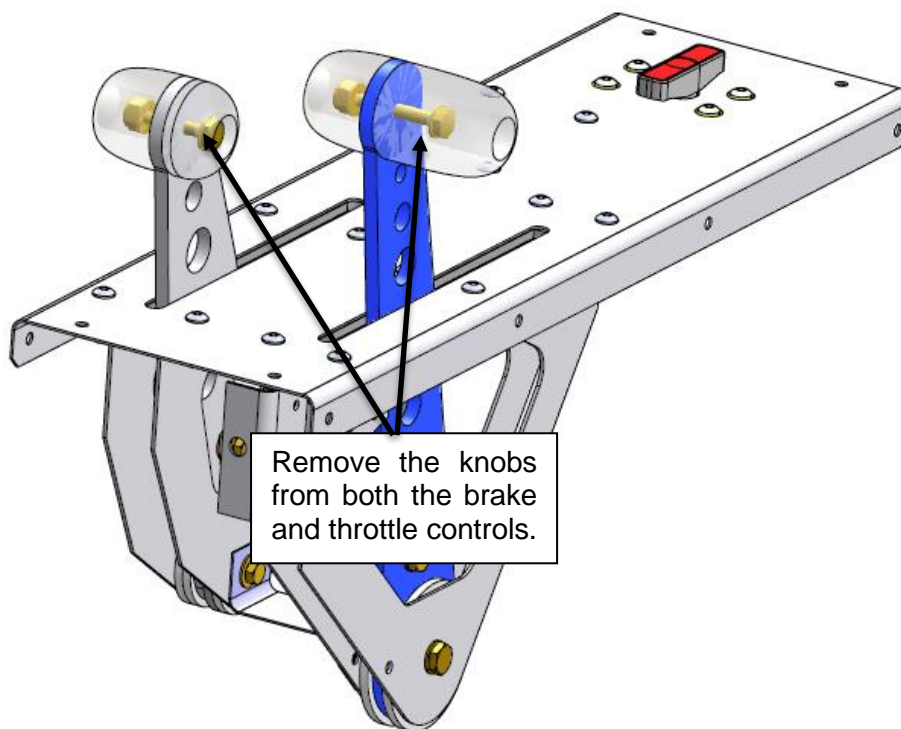


Figure 10

- Step 4: After the control handle knobs have been removed, remove the screws of the throttle quadrant upper cover. This cover must then be lifted off to expose the throttle quadrant underneath.

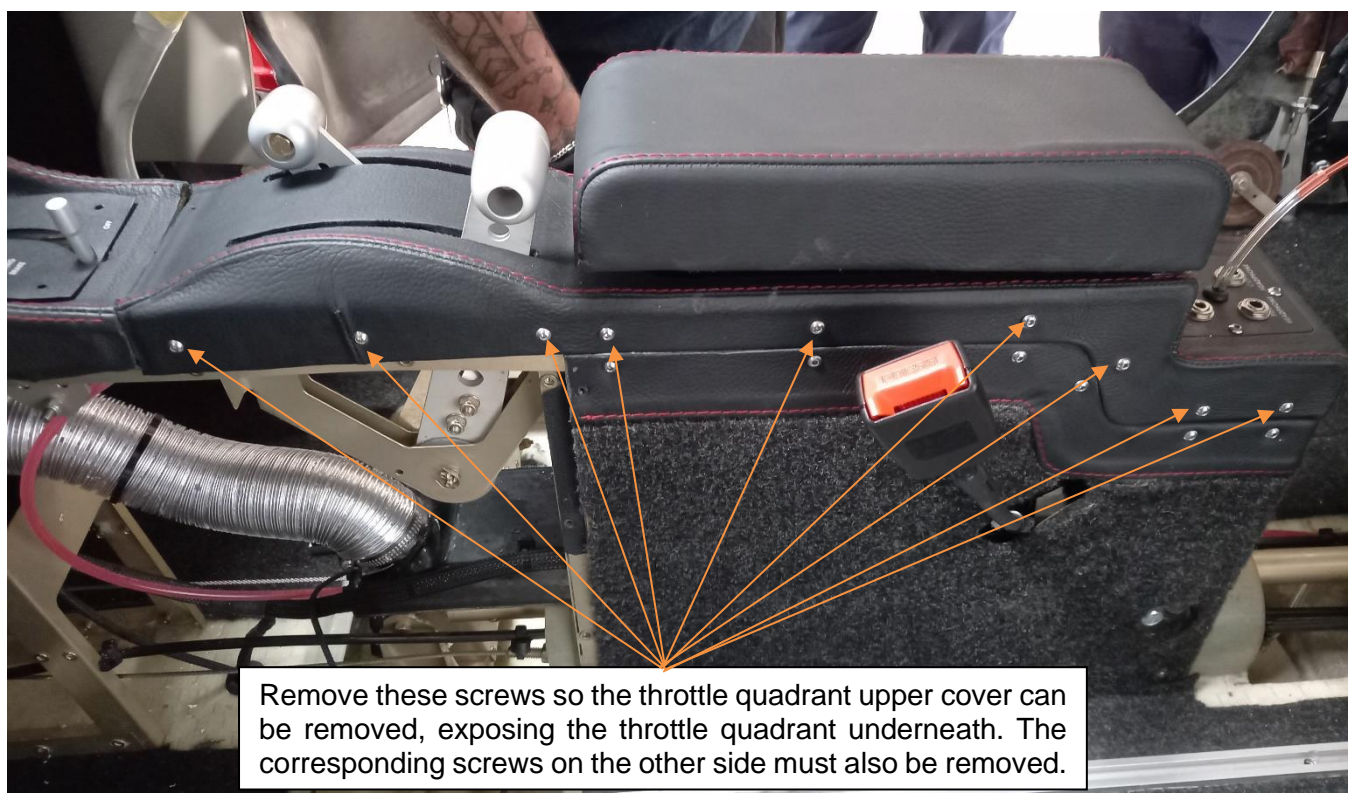


Figure 11

Step 5: Once the side inspection panel has been removed, remove the 4 screws that hold the throttle quadrant in place, refer to Figure 12. This is to allow the throttle quadrant to be lifted and tilted for better access to the components beneath. Be careful not to pull the brake line off when you lift the throttle quadrant. The brake line should be long enough to remain attached during the entire throttle cable replacement process.

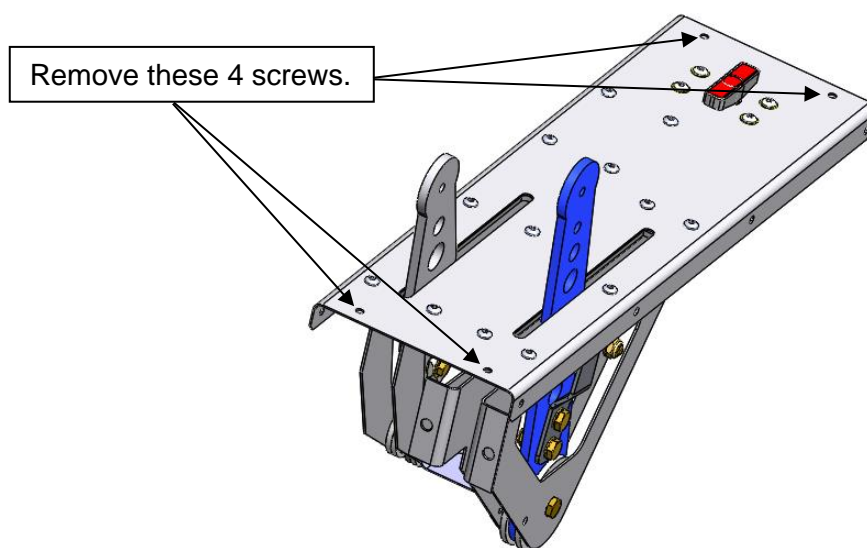


Figure 12

Step 6: Remove the 3 screws attaching the outer bracket to the top mount plate of the throttle quadrant. Refer to Figure 13.

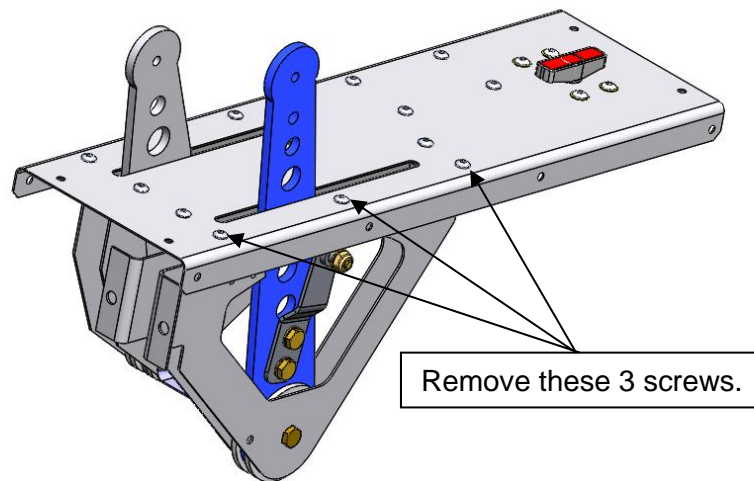


Figure 13

Step 7: Once the three screws have been removed from the outer bracket, remove the AN3 bolt shown in Figure 14, as well as the throttle stops. Once the bolts have been uninstalled, the bracket can be removed, and the rivet must be drilled out.

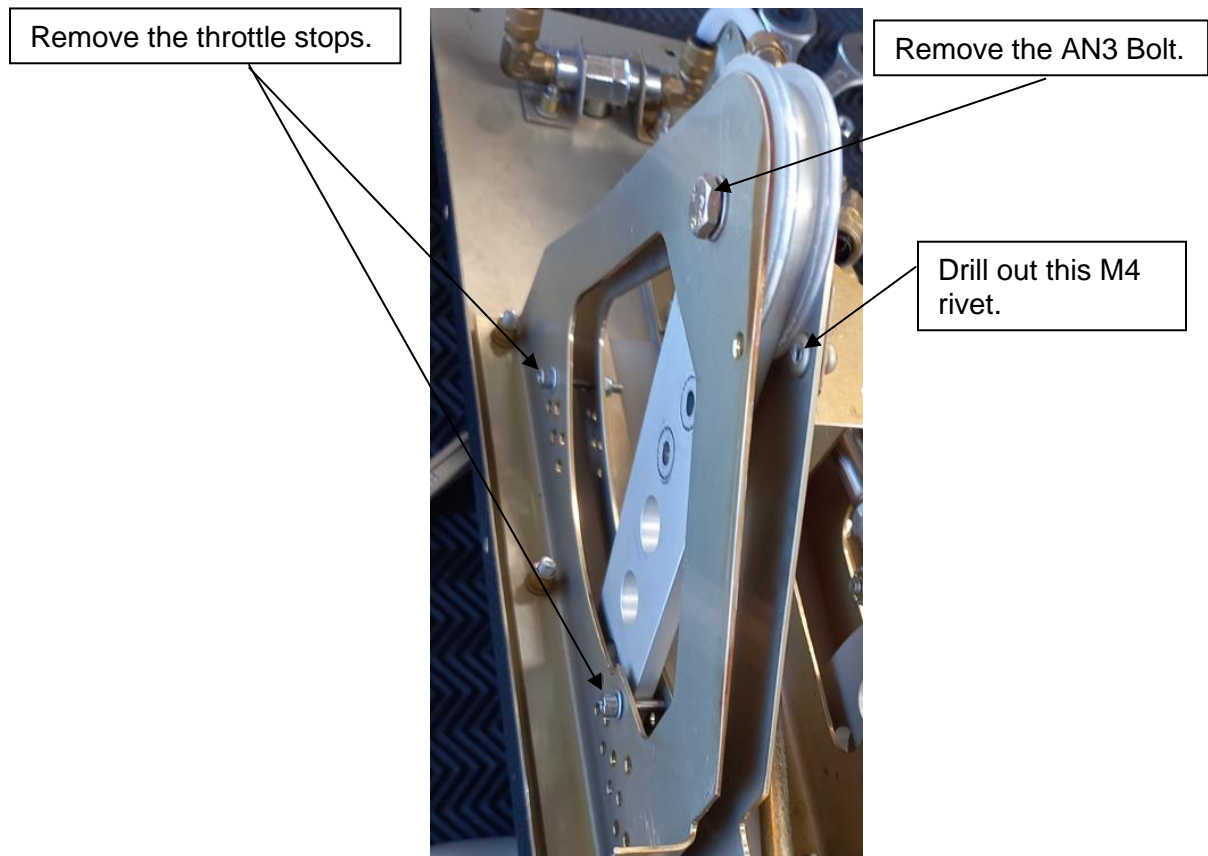


Figure 14

Step 8: Remove the 3 screws retaining the remaining bracket as seen in Figure 15.

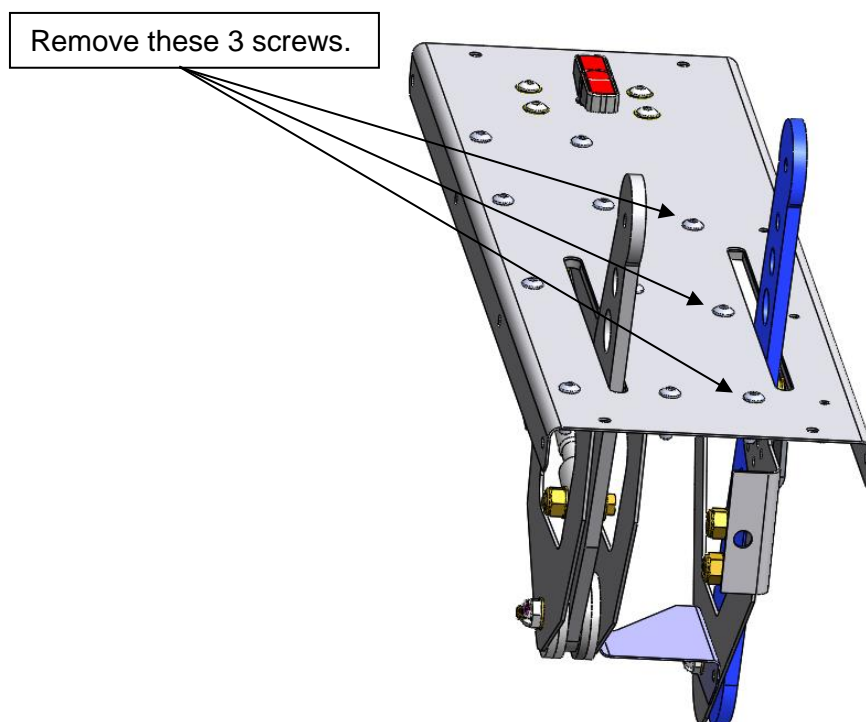


Figure 15

Step 9: Remove the AN 3 bolt attaching the throttle cable to the push-pull arm. A new bolt and bush will need to be installed in order to attach the new throttle cable, this will be detailed in Section 3.2.

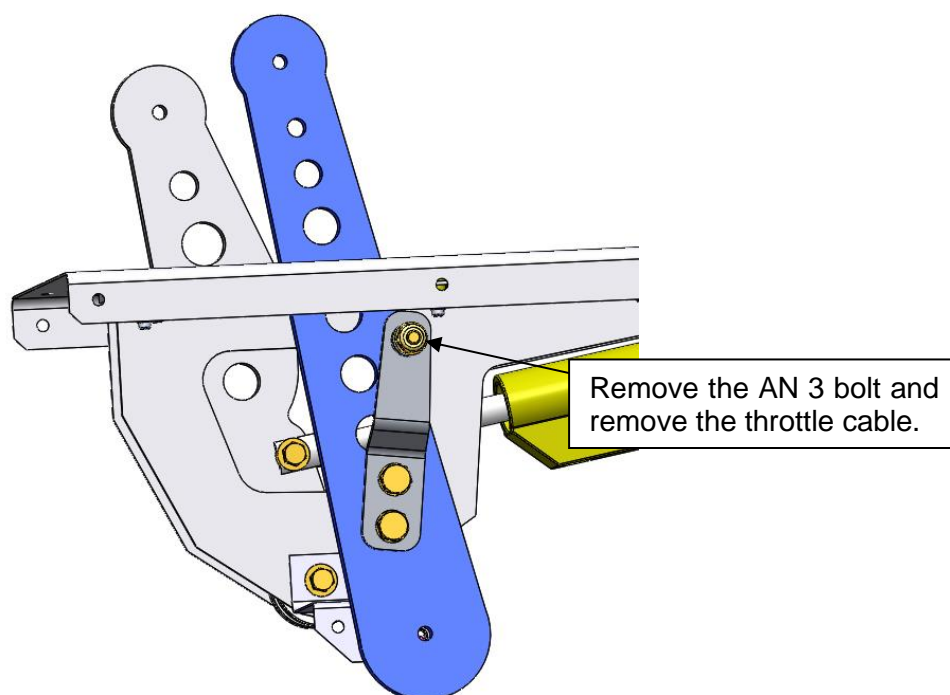


Figure 16

Step 10: Remove the cowling of the aircraft. Refer to Section 5.1 in document DC-MAM-001-X-G.

Step 11: Unscrew the nut on the throttle lever on the Rotax throttle body to release the throttle cable. Refer to Figure 17.



Figure 17

Step 12: In order to remove the throttle cable and sheath, it needs to be detached from the engine. To do so, unscrew the locking nuts that hold the sheath in place. Refer to Figure 18.

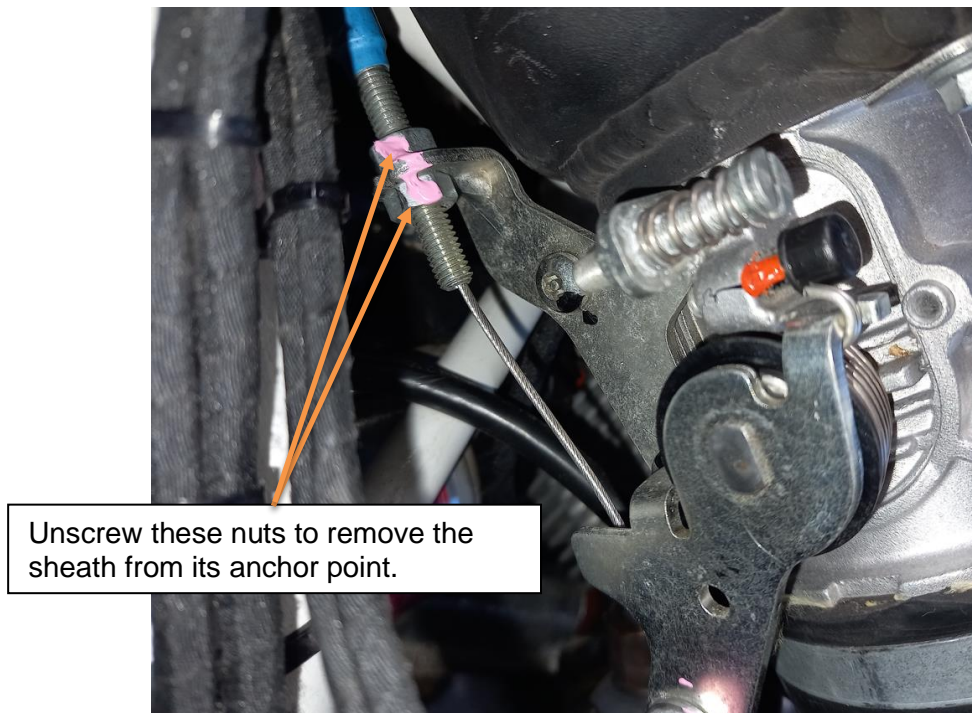


Figure 18

Step 13: The old throttle cable and sheath can now be removed from the aircraft.

3.3. Installation of new throttle cables, for all aircraft models

Note: This section is applicable to Sling 2, Sling LSA, Sling 4 TSi and Sling 4 High Wing.

As depicted in Figure 19, the only difference between the throttle quadrant of the Sling 4 High Wing and the other aircraft is the side of the throttle lever that the push-pull arm is mounted to. The section below details the replacement of the throttle cable in order for the Sling 2, Sling LSA and Sling 4 TSi. In order to replace the components on the Sling 4 High Wing just mirror the process for the opposite bracket as depicted below in Figure 19.

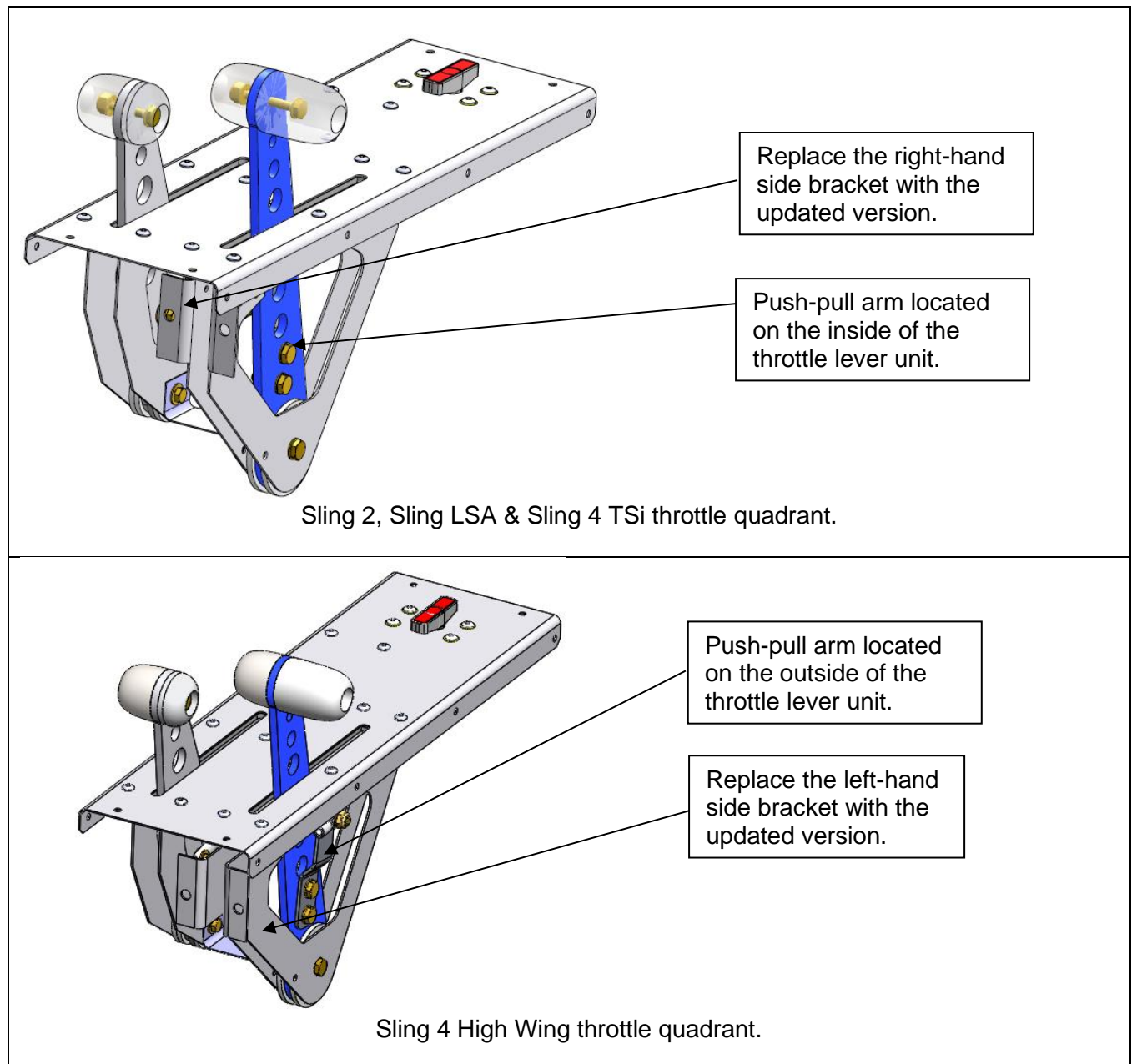


Figure 19

Step 1: Install M4 rivnuts onto the new throttle cable bracket (CF-BKT-038-R-X-0). Refer to Figure 20 for the location of where to install the rivnuts.

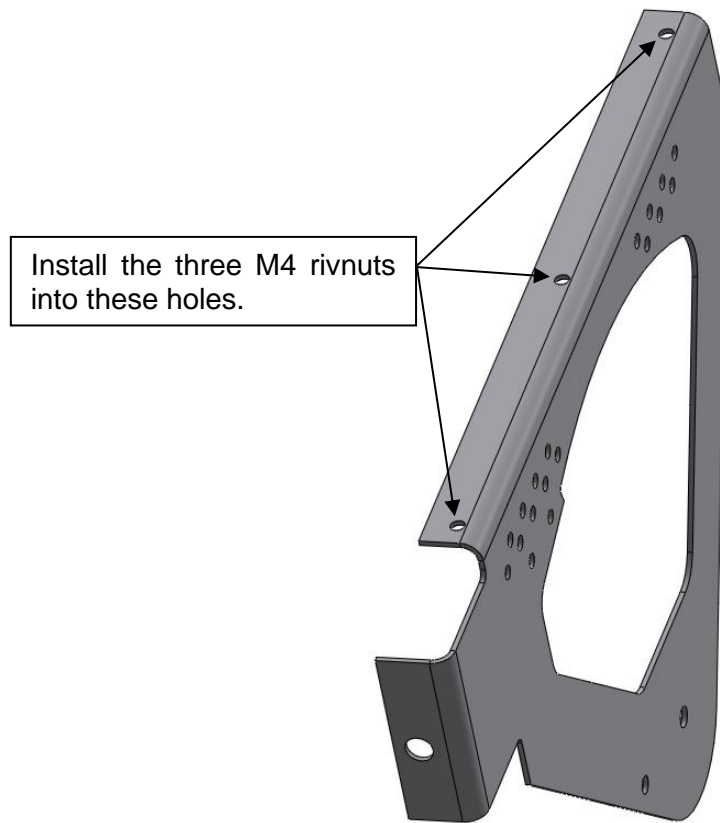


Figure 20

Step 2: Install the screws so that the new bracket is attached to the throttle quadrant upper plate, as see in Figure 21.

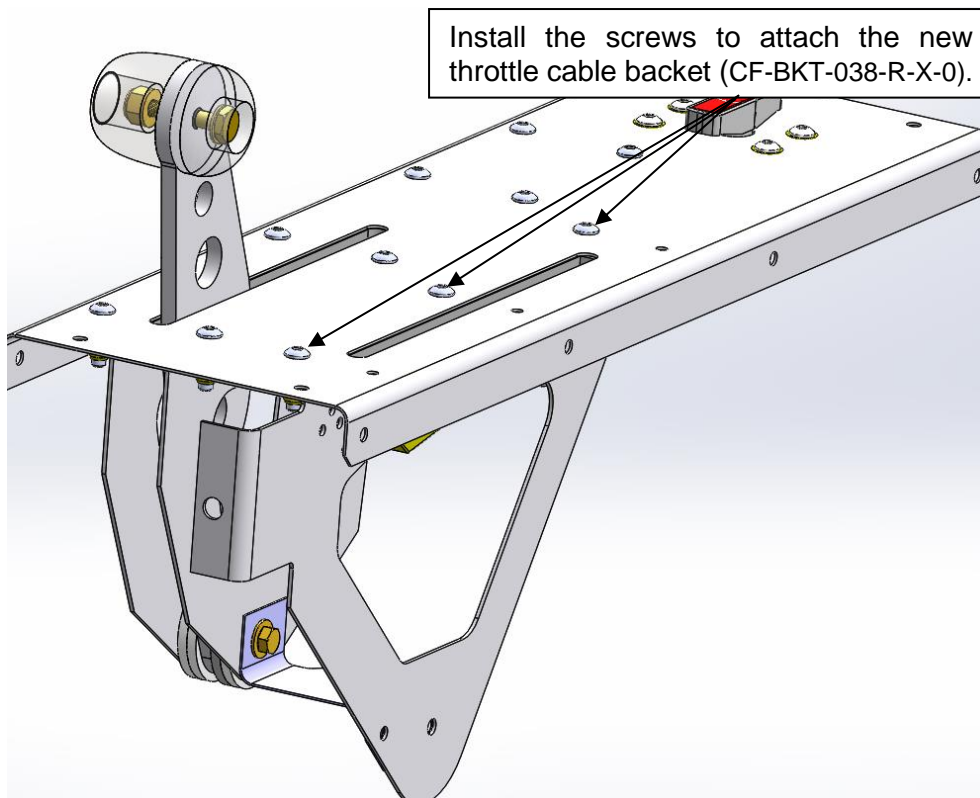


Figure 21

Step 3: Rivet the new bracket to the throttle quadrant Z-Section Spacer as seen in Figure 22, using the M4x10 rivet.

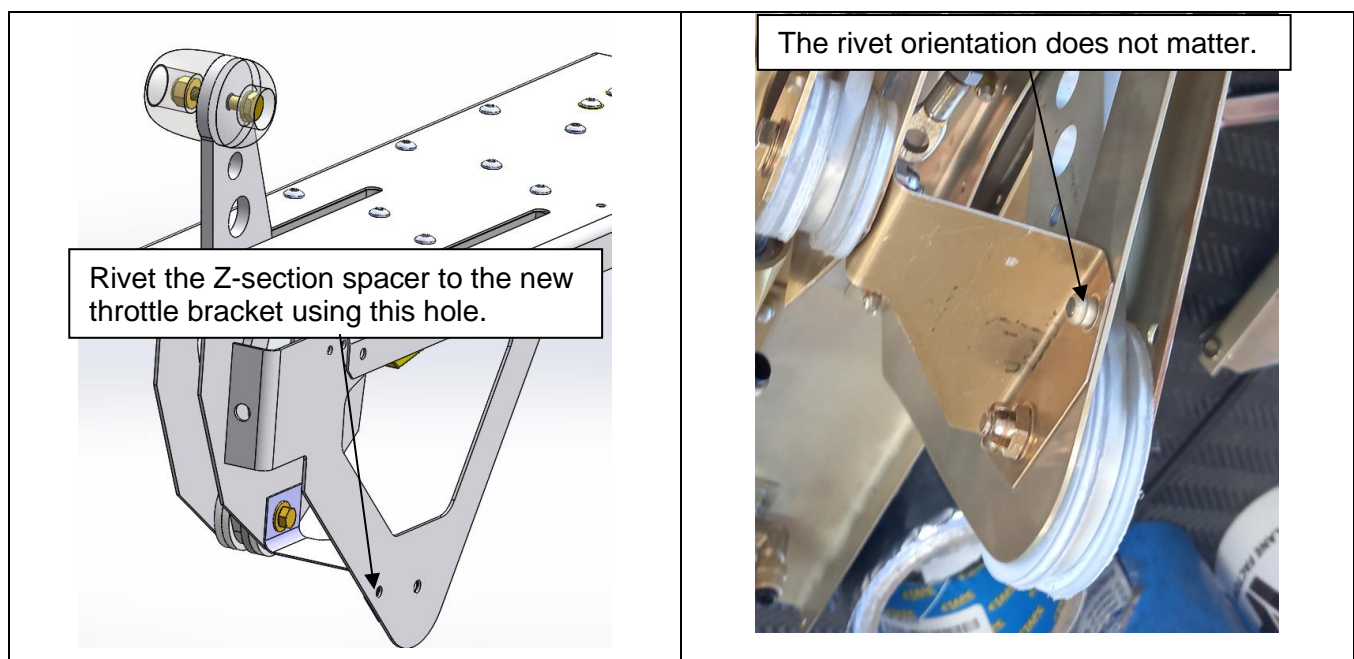


Figure 22

Step 4: Reinstall the throttle lever assembly and outer bracket, refer to Figure 23 for how the components go back together.

Do not install the split pin until the throttle friction is verified in Section 3.4. The throttle friction should be a suitable amount to prevent the control lever from creeping forward once connected to the engine throttle lever, which will be verified in Section 3.4. Just tighten the bolt so that it is hand tight for now.

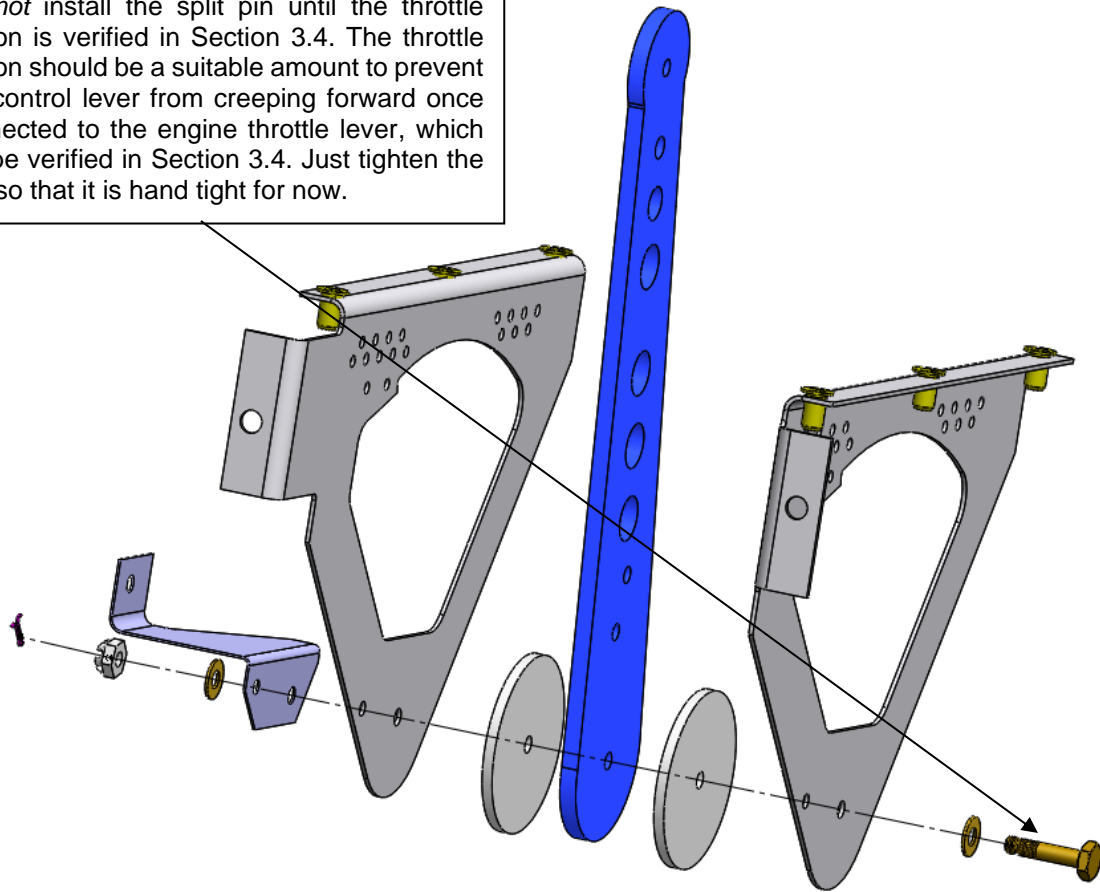


Figure 23

Step 5: Connect the sheaths threaded section to the right hand Throttle Quadrant Plate. Refer to Figure 24.

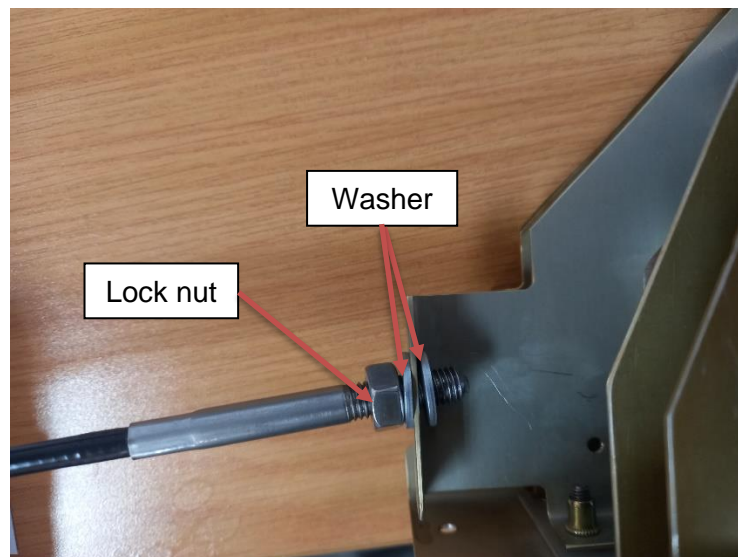


Figure 24

Step 6: Screw on the sheath endcap. Ensure that the play in the joint does not decrease once the end cap is screwed onto the sheath. If the joint has stiffened up, unscrew the nut by 1 rotation to allow sufficient play in the joint. Refer to Figure 25.

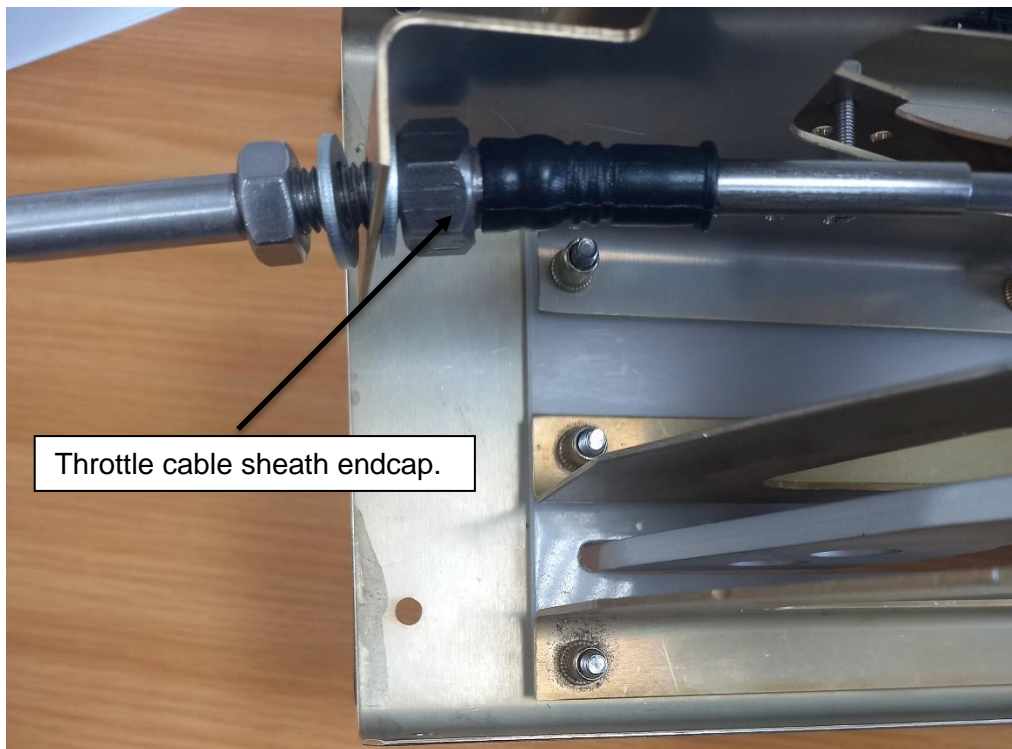


Figure 25

Step 7: Once the throttle cable sheath endcap has been screwed on, tighten the lock-nut so that the sheath is locked in place. If there is still sufficient play in the joint, apply torque seal to the locknuts.

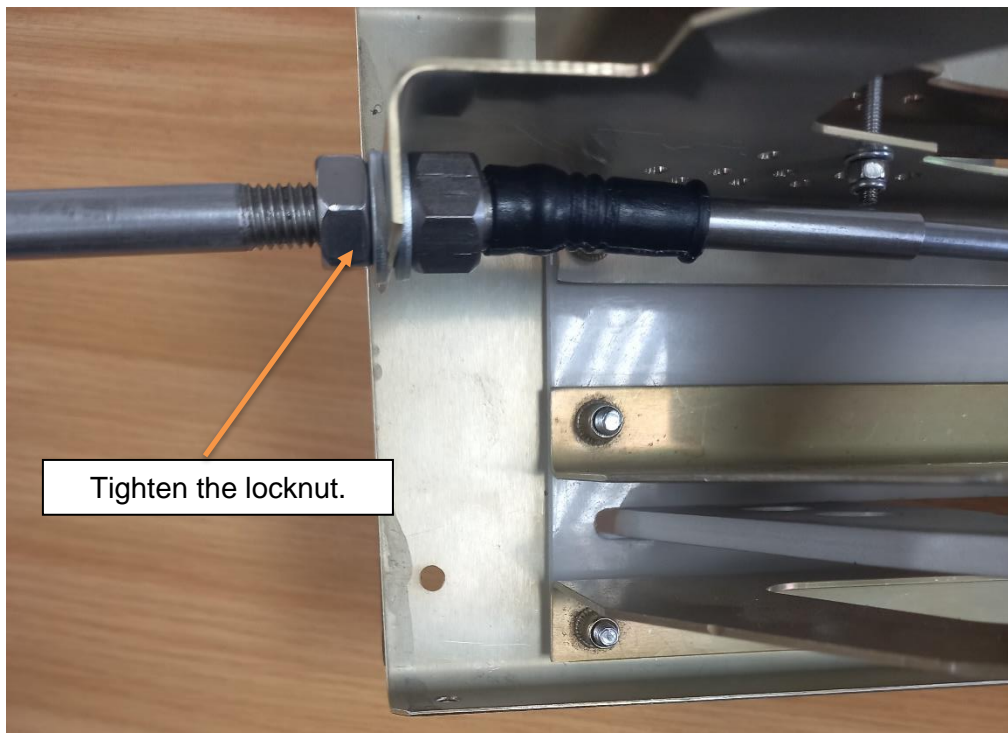


Figure 26

Step 8: Thread the throttle cable through the sheath so that the clevis is inserted into the throttle endcap. Refer to Figure 27 for what the clevis looks like once the throttle cable has been inserted into the throttle cable sheath.



Figure 27

Step 9: Refer to Figure 28 for how the clevis gets connected to the throttle lever arm.

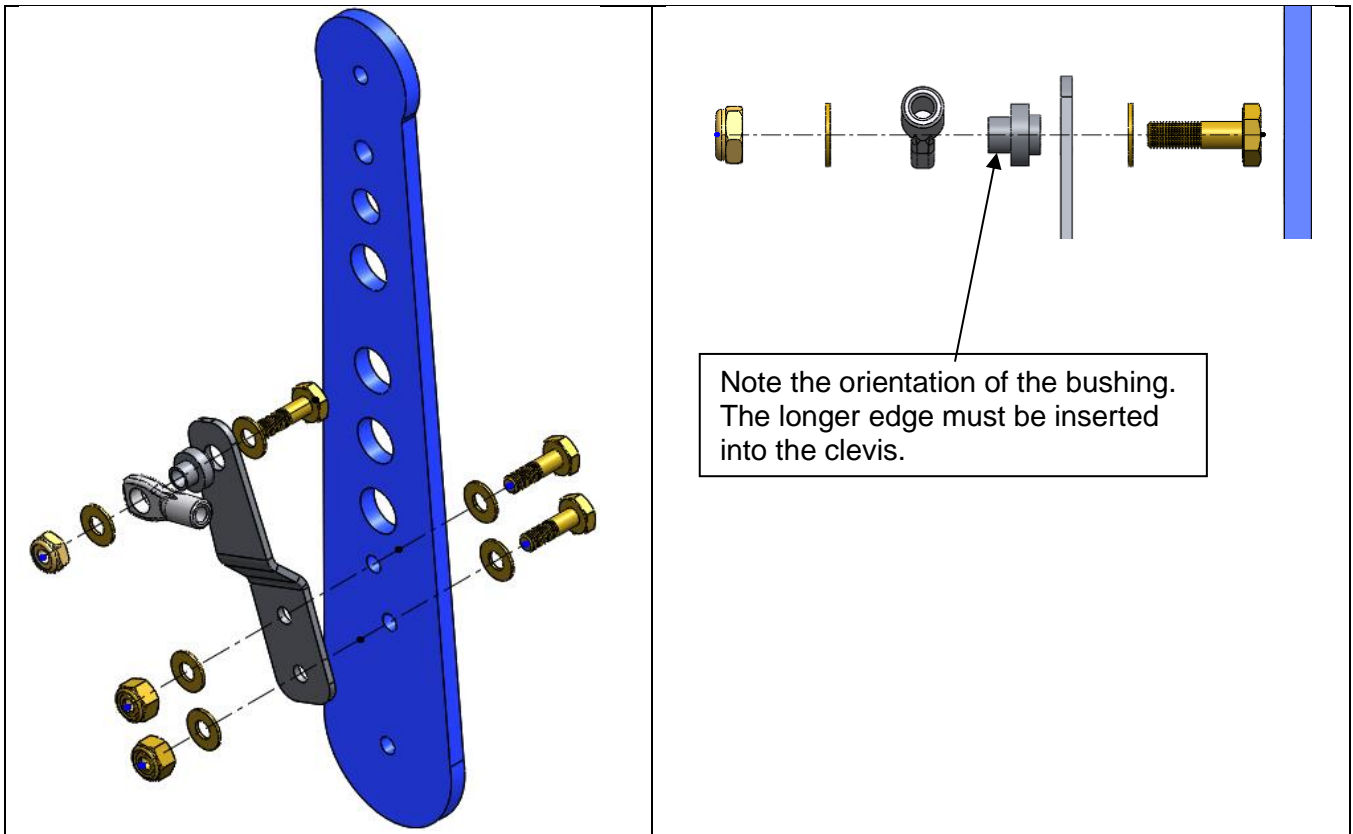


Figure 28

Step 10: Route the throttle cable and its sheath through the firewall, to the throttle lever on the Rotax throttle body. The cable should not have a bend radius smaller than 70 mm. If the bend is too tight there will be increased friction in the system. Ensure that there are no kinks in the cable from the throttle quadrant to the firewall. Standoffs may be used as necessary.

THROTTLE CABLE ROUTING

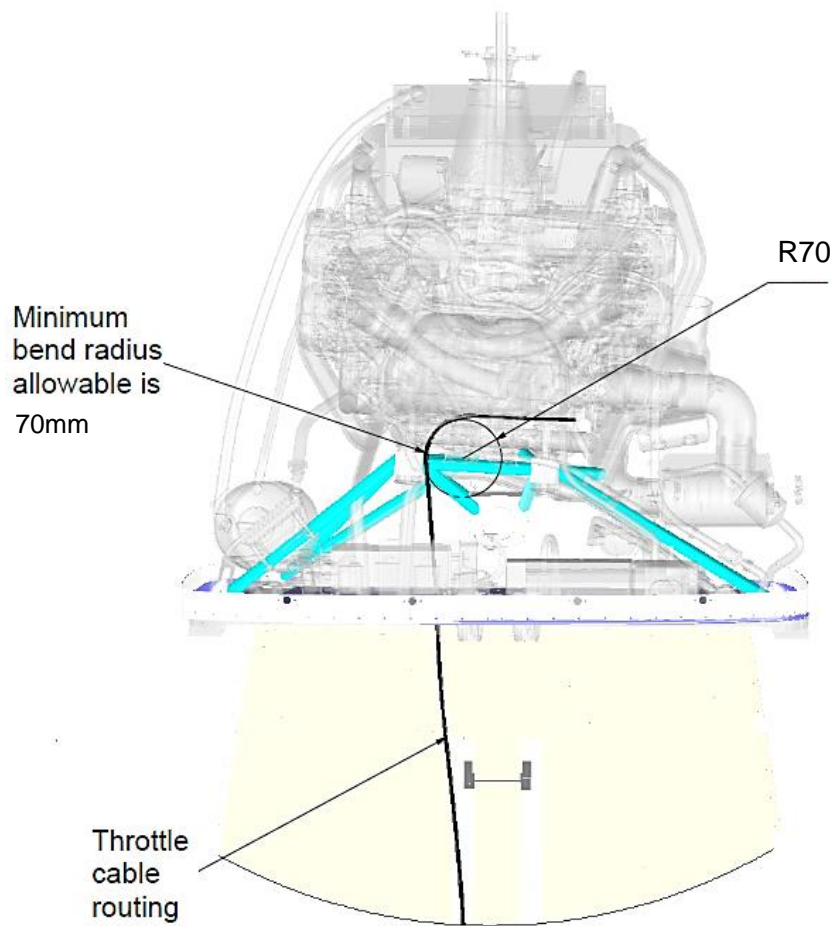


Figure 29

Step 11: Connect the throttle cable sheath to the mounting point on the throttle body.

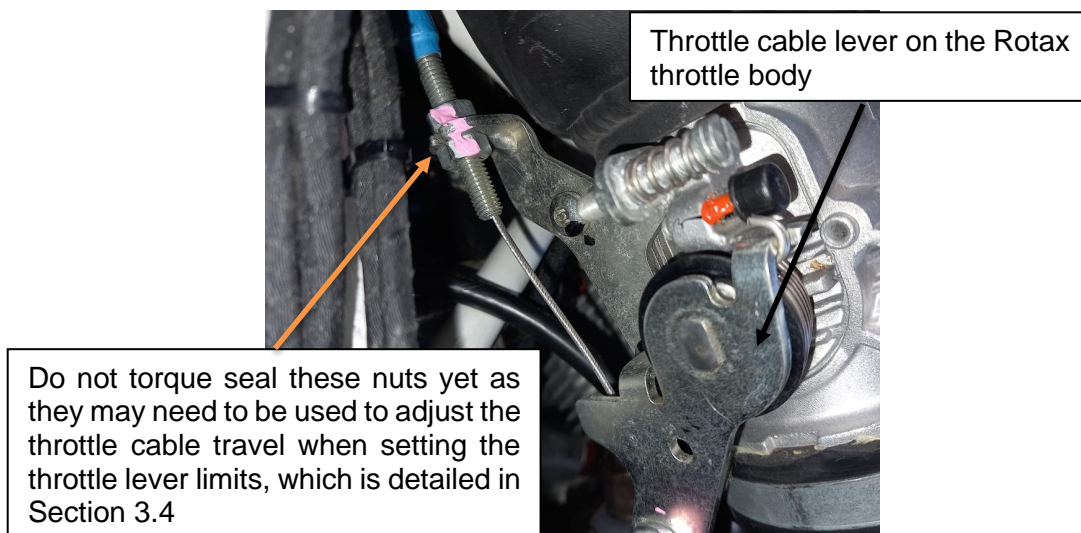


Figure 30

3.4. Setting of the throttle

Step 1: Install rear stopper pins to set the idle position of the throttle lever. The idle position stopper pin should be installed so that the throttle lever can be pulled as far back as possible without contacting the throttle quadrant upper plate. Figure 31 shows an example of the idle positions determined for an aircraft. Note: The idle position of the stopper pin may differ slightly from aircraft to aircraft.

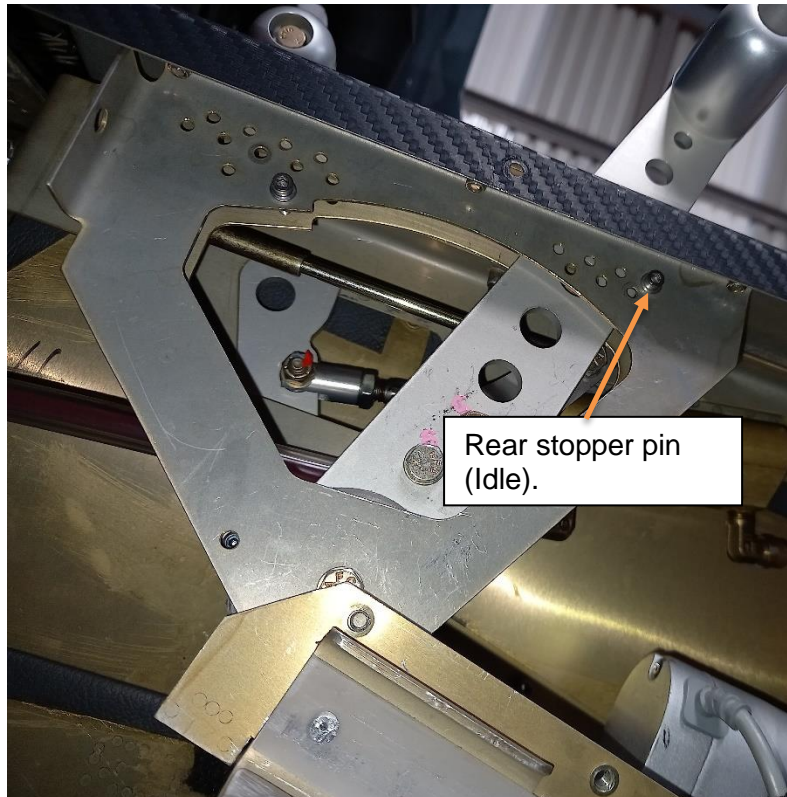


Figure 31

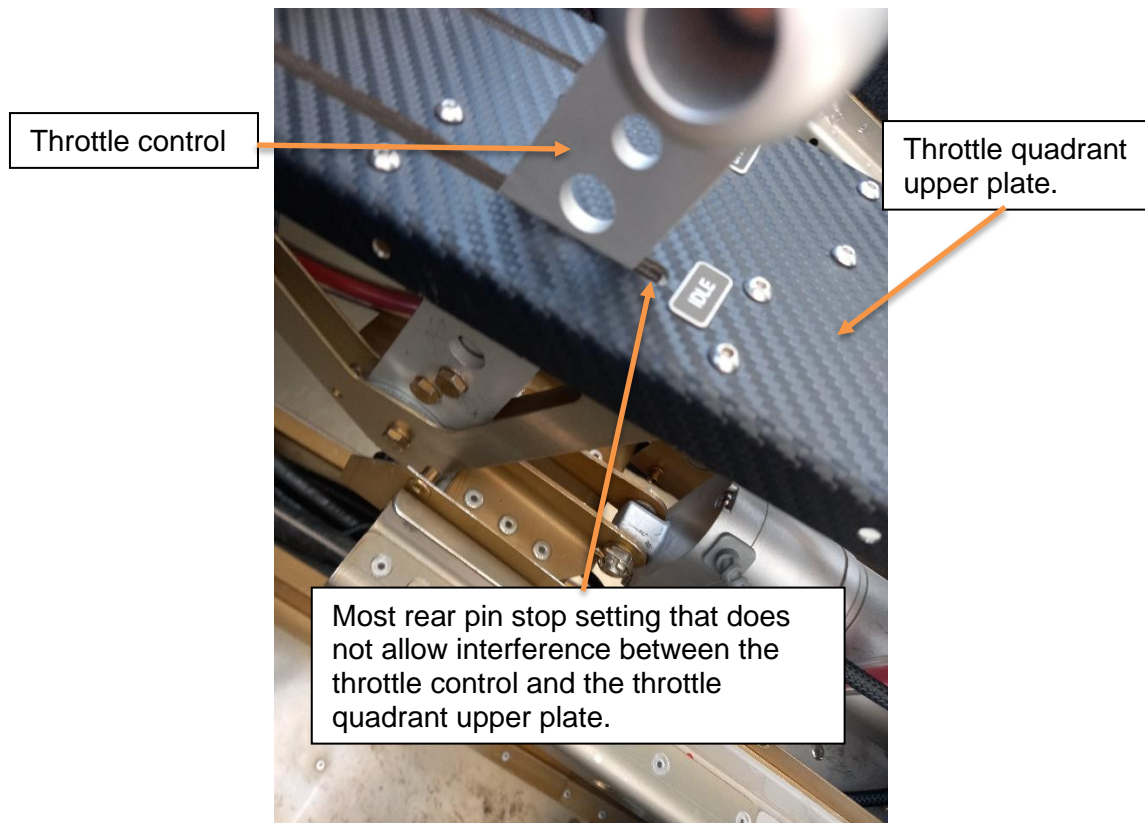


Figure 32

- Step 2: With the throttle control set to idle as seen above, connect the throttle cable to the throttle lever on the Rotax throttle body, while the throttle lever is in the idle position. Tighten the locking nut to fix the cable to the throttle lever and apply torque seal.
- Step 3: Push the throttle control forward until the throttle lever on the Rotax throttle body is fully open. Put the front stopper into the nearest hole so that it stops the control in the fully open position.
- Step 4: Once the stopper pins are set, check that the throttle lever goes to fully open and idle respectively. The throttle cable travel can be adjusted slightly by adjusting the locknuts on the sheath holding the sheath to the Rotax throttle body. Refer to Figure 33.

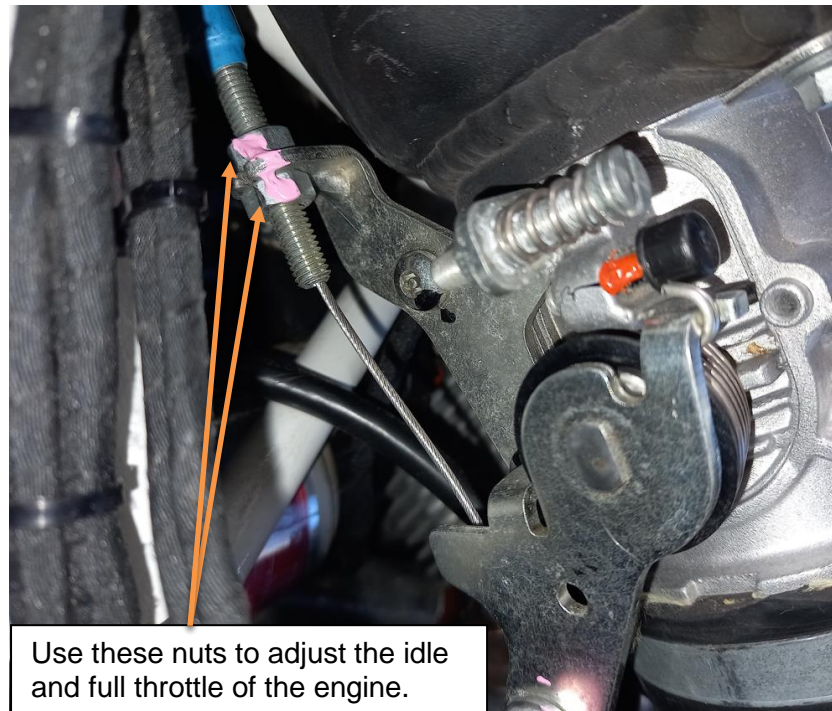


Figure 33

- Step 5: Once the throttle settings are correct, lock the locknuts and apply torque seal to them.
- Step 6: Pull the throttle to idle and confirm that the throttle control is smooth, has a suitable feel and that the lever does not creep forward under the tension of the spring on the engine side. If the control creeps forward tighten the bolt referred to in Figure 34. Once the friction is suitable to avoid the control from creeping forward, insert the split pin as seen in Figure 34.

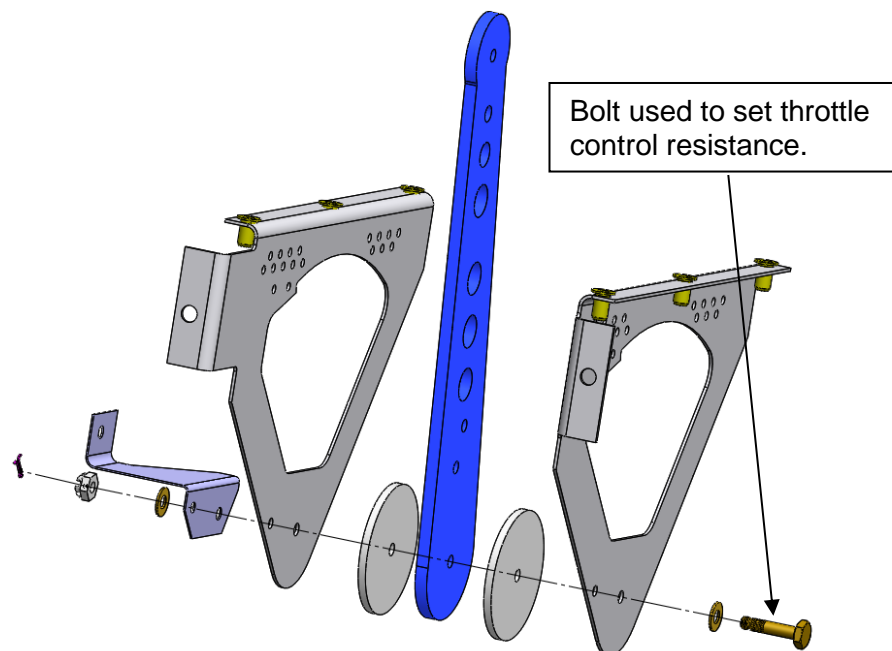


Figure 34

- Step 7: Reinstall the 4 corner screws to reattach the throttle quadrant upper plate to the throttle centre console.

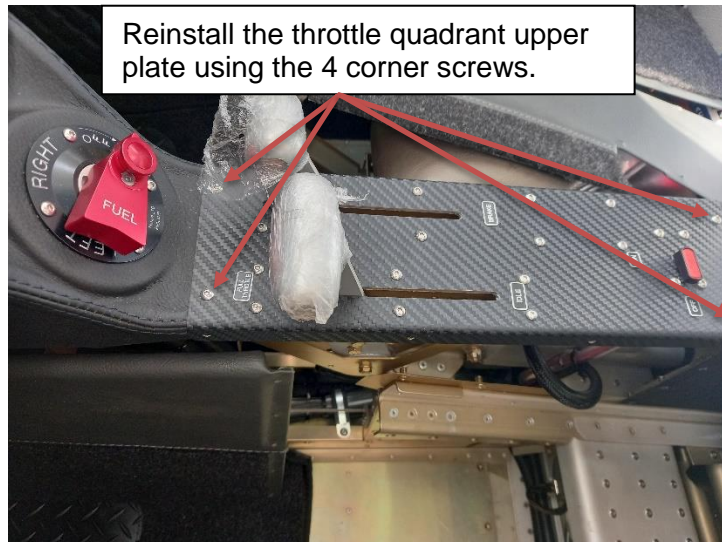


Figure 35

Step 8: Reinstall the left-hand side inspection panel.

Step 9: The front seat may now be reinstalled.

Note: Steps 10 and 11 are only applicable to Sling 4 High Wings. If the work outlined by this Service Bulletin was performed on a sling 2, Sling LSA or Sling 4 TSi, the Service Bulletin is now complete.

Step 10: Reinstall the throttle quadrant cover by reversing the process performed in Section 3.2, Step 4.

Step 11: Once the cover has been reinstalled, reassemble the throttle and brake handles that were disassembled in Step 3 in Section 3.2.

Check movement and operation of the entire throttle system following implementation of the Service Bulletin. Once the actions detailed in this Service Bulletin have been carried out, the aircraft's compliance to this Service Bulletin should be documented in the aircraft's airframe logbook.

Signed on this the ⁰¹ day of June 2023

JAL Pitman

ACCOUNTABLE MANAGER
MR JAMES PITMAN