Sling Aircraft (Pty) Ltd
Registration no 2002/022837/07
Approved Maintenance Organisation AMO1264
Manufacturing Organisation M677

Hangar 8 Tedderfield Airpark
Nettleton Road Eikenhof
Johannesburg 1872
South Africa

PO Box 308
Eikenhof
Johannesburg 1872
South Africa

[T]+27 (0) 11 948 9898
[F]+27 (0) 86 632 4493
sales@slingaircraft.com
www.slingaircraft.com

(Sling Aircraft (Pty) Ltd considers compliance with all Notifications mandatory)

RELEASE DATE: 9 December 2021

EFFECTIVE DATE: 9 December 2021

SUBJECT: Static Longitudinal Stability – Permitted Removal of Elevator Centre Balance Weights.
Optional modification to be referred to as "Sling 4 TSi Optional Elevator Centre Balance Weight Removal Modification"

MODELS AFFECTED: Sling 4 TSi (All)

COMPLIANCE TIME: Optional – as required or desired

DESCRIPTION AND PURPOSE:

It has recently been noted that the Sling 4 TSi aircraft displays mild static longitudinal instability in a specific, corner flight condition. This flight condition is characterized by maximum continuous (climb) power, aircraft trimmed for V_y (or slower), with the aircraft loaded at full aft CG (33% MAC). The instability is evident when the aircraft is upset from trimmed flight through the application of a pull on the stick. There is a tendency, following the release of the stick after a pull, for the nose to continue to climb slowly, in a divergent manner from the trim speed, until the aircraft enters a gradual stall. The instability condition, while marginal, has the consequence that the aircraft fails to meet, at the corner condition, the requirements of paragraph 23.175(a) of the FAR 23 airworthiness standard, for which the aircraft is designed. EASA CS23 has an equivalent requirement (CS23.175(a)), for purposes of this Notification.

The Sling 4 TSi aircraft design has, since inception, featured a fully weight-balanced elevator. To achieve this balance, three balance weights are installed ahead of the elevator hinge-line - one situated in each of the elevator horns and the third situated in the centre fuselage on an arm attached to the centre of the elevator spar. Through analysis and testing, it has been determined that strict compliance with paragraph 23.175(a) of the FAR 23 airworthiness standard can be achieved through the removal of the centre elevator balance weight, which in turn consists of four machined, steel plates. The removal of such weights results in no perceivable change in aircraft flight handling characteristics, save in respect of the condition being addressed. It does result in the elevator tending to hang down during taxi and when the aircraft is parked, but this is not considered to be of any consequence.

Considerations relating to changed structural and flight characteristics, particularly control flutter, have been considered and tested for, and the manufacturer is satisfied that removal of the central balance weights poses no risk of relevance in such regard. The trim tab will need adjustment, due to the change in the balance of the elevator. The method of adjusting the trim tab, as detailed in the section 'Adjustment of the Elevator Trim Tab', prescribes a set number of turns of the clevis clockwise. The number of turns of the clevis can differ slightly between aircraft, depending on each aircraft and how it was initially trimmed.

With effect from 9 December 2021 Sling Aircraft has accordingly introduced an optional, approved modification to the Sling 4 TSi aircraft design. The design modification consists of the removal of the centre elevator balance weights from the arm to which they are secured. The modification, referred to as the "Sling 4 TSi Optional Elevator Centre Balance Weight Removal Modification" has the consequence of rendering the aircraft technically compliant with the provisions of paragraph 23.175(a) of the FAR/CS Part 23 airworthiness standards.

Sling Aircraft, having considered the nature and consequences of the non-compliance of the aircraft with paragraph 23.175(a) of FAR 23, considers the modification set out in this Notification to be optionally implementable. Sling Aircraft holds the view that no meaningful or relevant risk is posed by the identified non-compliance. Owners or operators who wish to ensure strict compliance, however, or who operate in jurisdictions requiring same, should implement the modification as desired or prior to the next flight, as may be applicable. It is the responsibility of each aircraft owner or operator to consider the terms of this Notification and to familiarise themselves with the regulatory requirements in their specific region, and the implications thereof.

At the time of release of this Notification, customers in the following regions will be required, by the applicable regulatory provisions, to implement this Sling 4 TSi Optional Elevator Centre Balance Weight Removal Modification:

- United Kingdom

PARTS AND CONSUMABLES LIST:

a) AN3 Split-Pin

TOOLS REQUIRED:

a) Hex Key (4mm)
b) Hex Socket (10mm)
c) Ratchet Handle or Sliding Bar
d) Extension Bar
e) Long / Needle Nose Pliers
f) ¼" Wrench

MASS AND BALANCE:

The mass and balance of the aircraft will be affected by this change, and the relevant information can be found in Table 1.

Table 1 Mass and Balance Considerations

Item	Mass	Arm
Elevator Centre Balance Weights	1.220kg	5755mm

TRIM TAB RANGE OF TRAVEL:

The travel range is affected by this change, and the updated travel range is as follows:

Table 2 Trim Tab Range of Travel

Direction	Throw Angle	Trailing-Edge Measurement
Tab Up (Nose Down)	5º	6mm
Tab Down (Nose Up)	15º	16mm
Tolorence	+/- 5º	+/- 6mm

The trailing edge measurement is made when the tab is fully deflected up or down, from the trailing edge of the elevator to the trailing edge of the trim tab.

Each aircraft is slightly different and may require an alternative range of travel. Discretion is therefore given to the operator to make adjustments as they see fit. The wide tolerance allows for enough deviation to satisfy all aircraft.

INSTRUCTIONS:

Elevator Centre Balance Weight Removal:

1. Ensure the master switch is off.
2. Remove the empennage fairing.
    a. With the 4mm hex key, by removing all 4mm button screws fastening the fairing to the rear fuselage.
    b. Once all button screws are removed, pull the fairing forwards and upwards, away from the empennage. Be mindful that the fairing can scratch paintwork if removed incorrectly.

Figure 1 Elevator centre balance weight visible after removing empennage fairing

3. Remove the balance weight plates
    a. Once fairing is removed, remove the two 10mm bolts that fasten the weight plates with the 10mm hex socket, extension bar and ratchet handle/sliding bar.

Figure 2 Removal of the balance weight bolts

Figure 3 Balance weight arm after weight removal

4. Replace the empennage fairing.
    a. Similar to when removed, reinstall the fairing from the front. Be mindful of getting the lower fingers of the fairing underneath the horizontal stabilizer.
    b. Reinstall all 4mm cap screws.

Adjustment of the Elevator Trim Tab:

1. Remove the split pin, that secures the clevis/trim tab connecting pin, with long/needle-nose pliers.

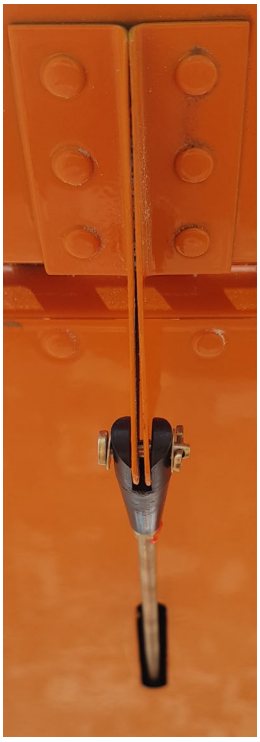

Figure 4 Trim arm with clevis, split pin and pin visible

2. Remove the clevis/trim tab connecting pin.
3. Loosen the ¼" nut, with the appropriate wrench, and turn the nut such that there is at least a 10mm gap between the nut and plastic clevis.

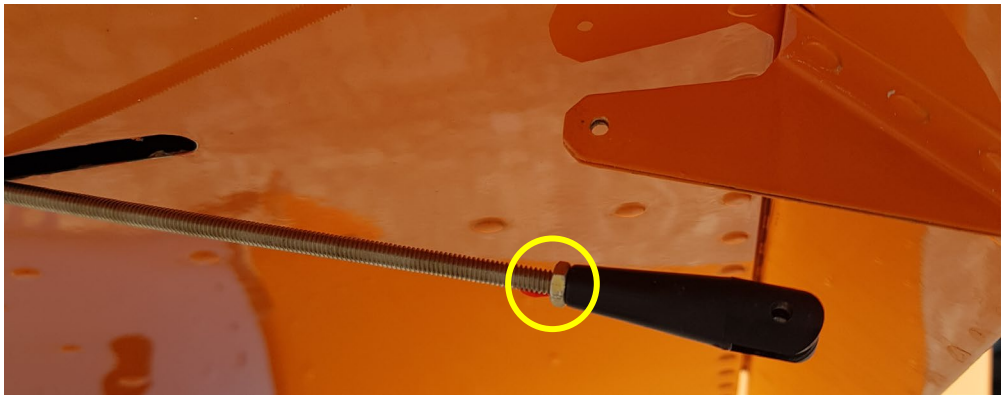

Figure 5 Trim arm clevis locking nut

4. Turn the clevis a full 3 revolutions clockwise (inwards).
5. Tighten the locking nut against the clevis, without letting the clevis rotate.
6. Re-insert the clevis/trim tab control horn pin.
7. Insert a new split pin and secure in place.

Signed on this the 9th day of December 2021

JAMES PITMAN
ACCOUNTABLE MANAGER