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## SERVICE BULLETIN

#0014 Revision 1

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(The Airplane Factory (Pty) Ltd. considers compliance with all Service Bulletins mandatory)

**NOTE – THIS SERVICE BULLETIN REPLACES SERVICE BULLETIN #0014 IN ITS ENTIRTY**

**SERVICE BULLETIN #0014 IS ACCORDINGLY CANCELLED WITH EFFECT FROM 04/09/2019**

**RELEASE DATE:** 04/09/2019

**EFFECTIVE DATE:** 04/09/2019

**SUBJECT:** Rivet replacement along fuselage main spar carry-through and on upper and lower inboard wing skins

**MODELS AFFECTED:** All Sling aircraft

**COMPLIANCE TIME:** No compliance time is imposed. The rivets may be replaced when paint cracking around rivets is detected on the fuselage underside along the main spar carry-through and/or on inboard wing skins

**LABOUR TIME:** 1 - 4 hours

## DESCRIPTION AND PURPOSE:

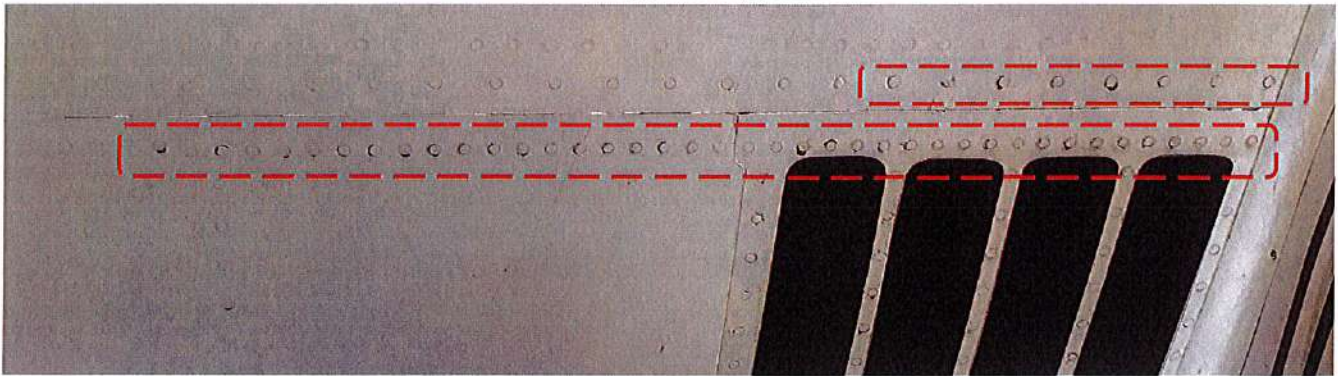
In aircraft, fretting may occur when rivets loosen due to vibration and/or flexing allowing slight motion between skin mating surfaces.

In some Sling aircraft, an indication of this condition is paint cracking around the rivets. The affected regions are usually located on the underside of the fuselage along the main spar carry-through and on upper and lower inboard wing skins. Figure 1 shows paint cracking on the inboard skins of a Sling 2 aircraft.

To minimise fretting, rivets in the affected areas should be replaced with Avinox stainless steel rivets (Part number BE61-00512).

This Service Bulletin requires that changes be made to all affected flying aircraft following a visual inspection of the inboard wing skins and the underside of the fuselage along the main spar. The change should in addition be applied to all affected kit-built aircraft still under construction prior to first flight.

Upper wing skin



Lower wing skin

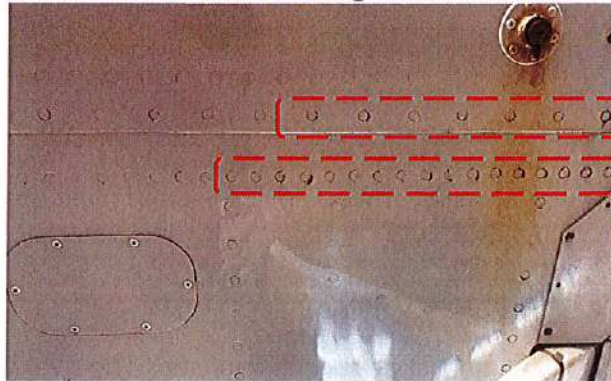


Figure 1 - Paint cracking around rivets on Sling 2 wing

#### **MATERIAL COST AND RESPONSIBILITY:**

All work must be performed by persons appropriately qualified to make structural changes and repairs to Sling aircraft. The Airplane Factory AMO (Johannesburg, South Africa) is available to perform the required work on all aircraft delivered to its premises. The Airplane Factory will cover the costs on all aircraft within the warranty period.

Person(s) implementing the work are required to follow the instructions set out below and refer to the attached drawings before attempting any work on the airframe.

#### **PARTS AND CONSUMABLES LIST:**

- a) (230 x for S2 and S4), (62 x for TSi) BE61-00512 4mm Avinox rivets
- b) Degreasing agent (Benzene used at TAF)
- c) Touch up paint
- d) Soft touch up brush
- e) Masking paper or plastic
- f) Rivet filler, if necessary (MIPA P85 Fine Filler used at TAF)
- g) Corrosion prevention coating. You may use any one of the following:
  - i. Eck corrosion coating (Part# 09-02138)
  - ii. Flamemaster CS 3204 Class B-2
  - iii. Pro-seal fuel tank sealant P/S 890 B2 (Part# 09-04643)
  - iv. Naftoseal MC-630 Class C
  - v. or any other suitable faying surface sealant



## TOOLS REQUIRED:

- a) Electric or air powered drill
- b) 4 mm dia. drill bit
- c) 4 mm pin punch
- d) Hammer
- e) Rivet gun
- f) 3/8" Spanner
- g) 2.5 mm Allen key

## INSTRUCTIONS:

1. On the top and underside surfaces of both wings (of Sling 2 and Sling 4 aircraft only), the region where rivets should be replaced is along the wing main spar, a spanwise distance of approximately 50cm measured from the wing root (see Figure 4 and Figure 5).
2. On the fuselage (of Sling TSi, Sling 2 and Sling 4 aircraft), this region is along the two rows of rivets that attach the underside centre fuselage skin to the centre spar (see Figure 2).
3. Figure 2 shows one half of the affected region on the underside of the starboard wing and fuselage and Figure 3 shows half the affected region on the upper starboard wing. The quantity of rivets recommended should cover these regions sufficiently.
4. Completely remove the wing fairing by firstly removing the AN3 bolt at the wing step using the 3/8" spanner and then loosening the M4 button screws that secure the fairing to the fuselage using the 2.5 mm Allen key.
5. Ensure that rivet removal is complete on the top of the wing before starting with the underside.
6. Using the powered drill with the 4 mm drill bit, drill the heads off rivets in the affected regions indicated in Figure 2 and 3 (specifically Figure 4 for Sling 2 and Figure 5 for Sling 4 wings). If rivets are filled, indent the centre of the rivet head with a centre punch and hammer before drilling.
7. Once the rivet heads are removed, use the 4 mm pin punch to push the remainder of the rivet out of the hole by tapping lightly with the hammer, keeping the punch against the rivet until it falls out of the hole completely.
8. Remove these rivet stems and chaff from the inside of wings and fuselage then clean and degrease surfaces.
9. Dip the rivet pins of all BE61-00512 Avinox rivets and apply the corrosion prevention coating into the cleared holes.
10. To ensure a proper seal, each application needs enough product applied so that it oozes out of the hole (to the surface of the skin) during assembly. Install the rivet(s) before the indicated curing time of the corrosion prevention coating (which can be found in the technical data sheet of sealant selected).
11. Wipe away excess product and clean with degreasing agent when all rivets are installed.
12. Cover the wings and fuselage using masking paper/plastic to prevent paint splatter or overspray, leaving the affected regions uncovered.
13. Apply touch-up paint.
14. The wing fairing should be re-fitted.

## DIAGRAMS:

The Figure 2 and 3 indicate the regions where rivets should be replaced on the aircraft. The rivets for the Sling TSi are replaced only on the centre spar carry-through under the fuselage.

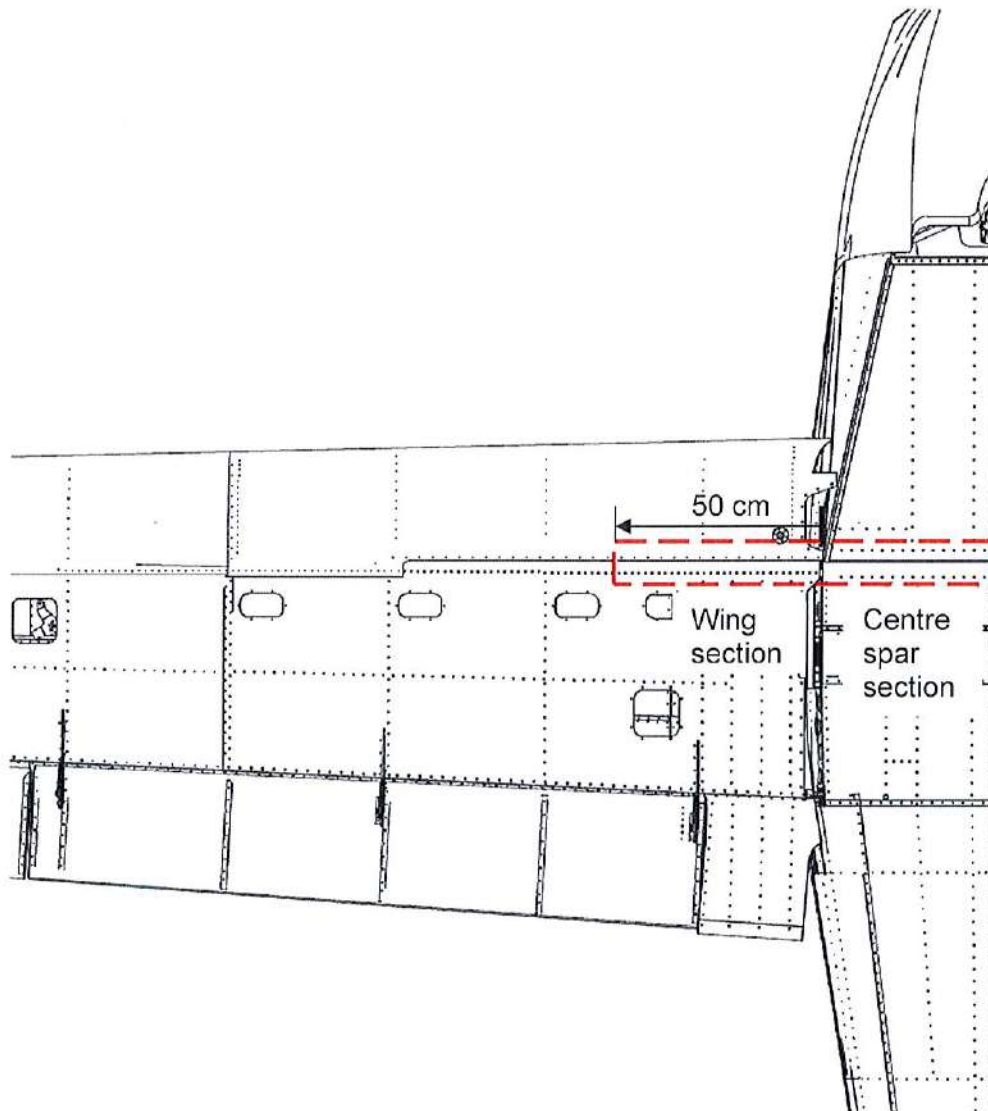


Figure 2 – Region of rivet replacement on the underside of starboard (right) wing

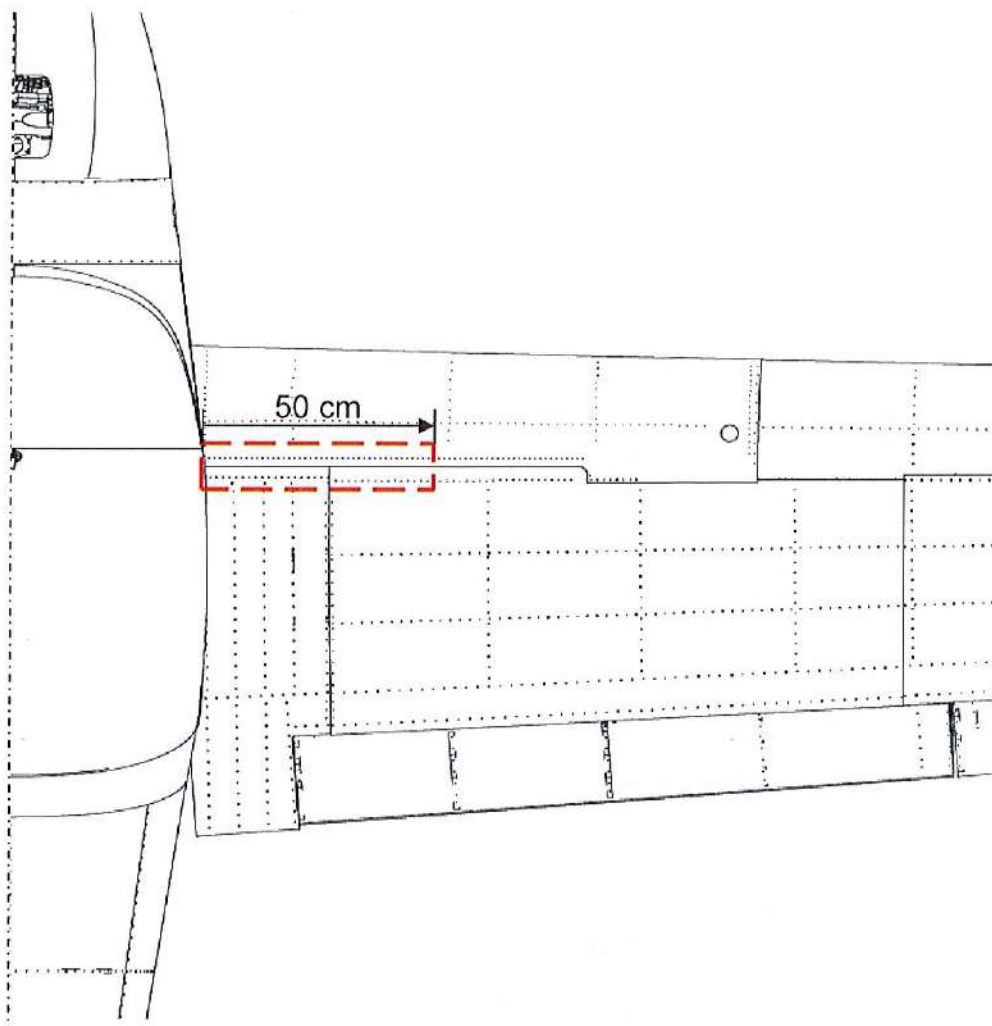


Figure 3 – Region of rivet replacement on the upper skin of starboard (right) wing



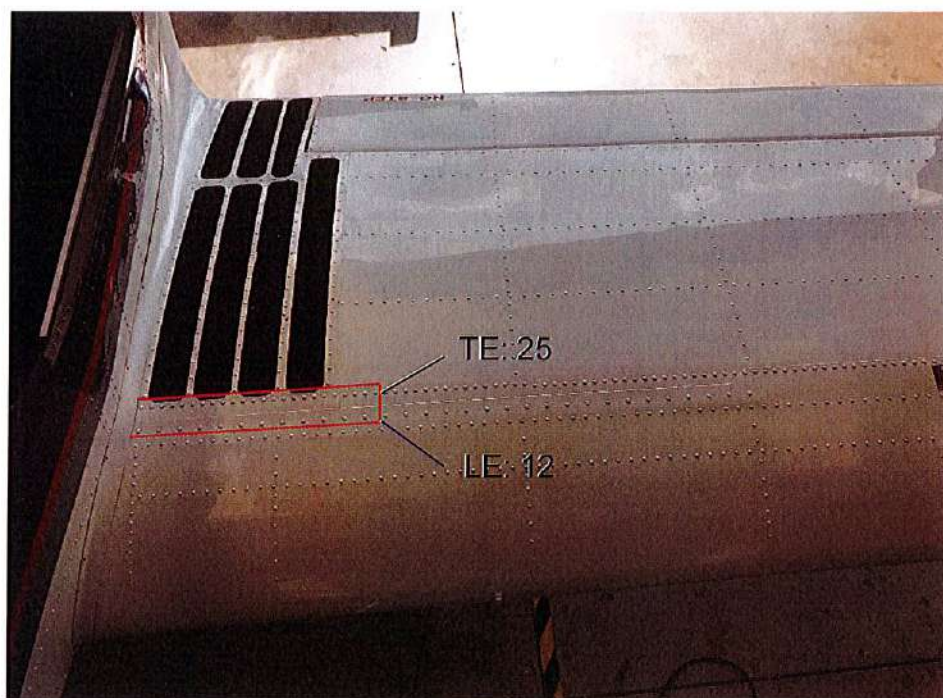
At approximately 50cm (spanwise distance) from the wing root, on the Sling 2 wings, the rivets to be replaced are 12 on the front section (leading edge) and 25 on rear section (trailing edge) of the upper wing spar. On the underside of the Sling 2 wing, the rivets to be replaced are 14 on the leading edge and 27 on the trailing edge as shown in Figure 4.

Hence, the total number of rivets, for both wings =  $[(12 + 25) + (14 + 27)] \times 2 \rightarrow 156$  (wings only).

The number of rivets along the centre spar carry-through under the fuselage  $\rightarrow 62$  (centre spar only).

In total:  $(156 + 62) \rightarrow 218$  rivets (Sling 2)

#### Upper skin of port (left) wing



#### Lower skin of port (left) wing

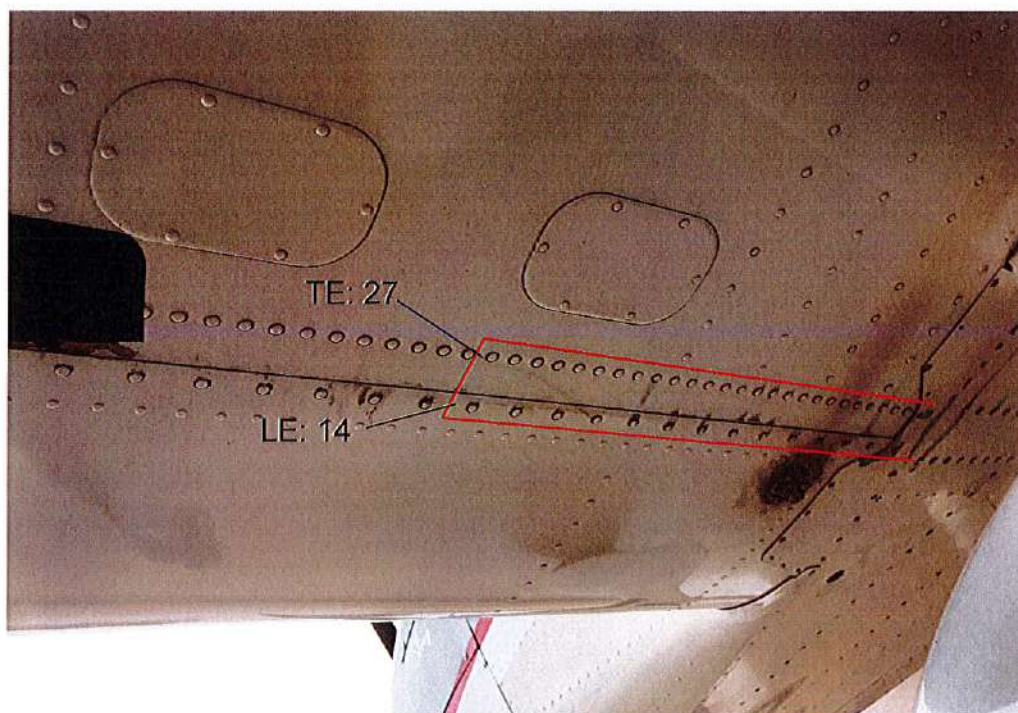
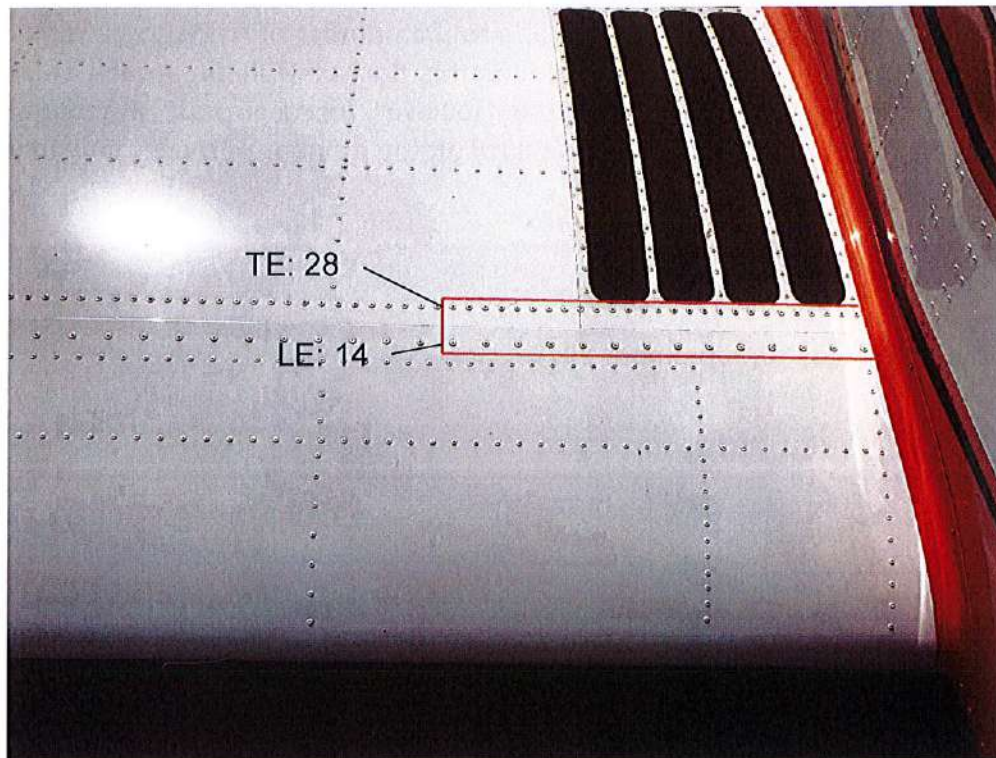


Figure 4 - Number of rivets to replace on Sling 2 and Sling LSA wings



As illustrated below, on the Sling 4 wings, the rivets to be replaced are 14 on the front section (leading edge) and 28 on rear section (trailing edge) of the upper wing spar. On the underside of the Sling 4 wing, the rivets to be replaced are again 14 on the leading edge and 28 on the trailing edge. Hence, the total number of rivets, for both wings =  $[(14 + 28) + (14 + 28)] \times 2 \rightarrow 168$  (wings only). The number of rivets along the centre spar carry-through under the fuselage  $\rightarrow 62$  (centre spar only). In total:  $(168 + 62) \rightarrow 230$  rivets (Sling 4)

#### Upper skin of (starboard) right wing



#### Lower skin of (starboard) right wing

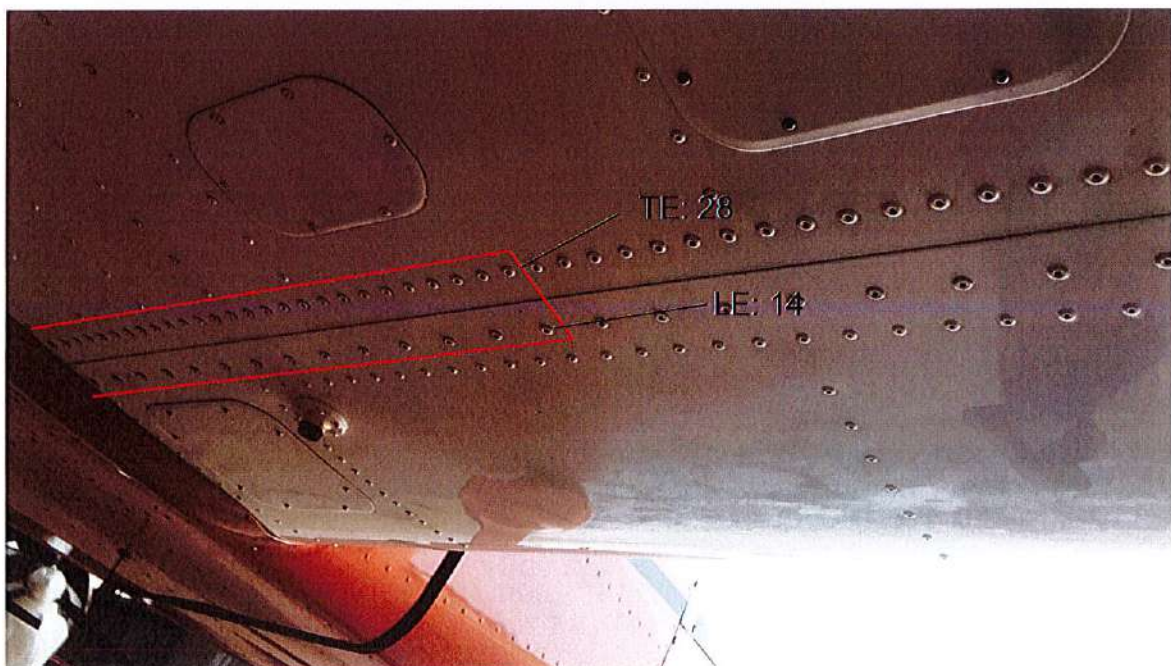


Figure 5 - Number of rivets to replace on Sling 4 wings

## Notes

1. Rivet replacement on the Sling TSi is limited to the main spar carry-through only. The rivets on the inboard wing skins should not be replaced. Hence, only 62 rivets are required for the Sling TSi modifications.
2. Figure 1 demonstrates the fretting condition in aircraft and hence should not be used as a guide to the number of rivets that should be replaced.
3. Figure 2 and 3 demonstrate the general region where rivets should be replaced and hence should not be used as a guide to the number of rivets to be replaced.
4. The number of rivets recommended in this Service Bulletin should be adhered to provided fretting is not yet detected. However, for an aircraft with longer service hours, the affected region, and as a result the number of rivets, may increase as evidenced in Figure 1.

Signed on this the 4<sup>th</sup> day of September 2019



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