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## SERVICE BULLETIN

IMPORTANCE	HIGH
AREA AFFECTED	Engine Mount Adapter
SA/B NUMBER	CH 012 06-2019
EFFECTIVE DATE	25 June 2020

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### **1. Applicability:**

All Cheetah/Cheetah-XLS/BushCat aircraft. While a greater likelihood of the defect exists on kit built aircraft due to quality control check in place at the factory we require that operators of ready-to-fly aircraft comply with this service bulletin as well.

### **2. Subject:**

Inspection of the four M10 x 30mm bolts that attach the engine mount adapter to the engine mount.

### **3. Purpose:**

This mandatory service bulletin ensures that the engine mount adapter bolts which bolt the engine mount adapter to the engine mount are able to fully screw into the threaded engine mount adapter rods, which allows for adequate compression of the rubber engine mounts. The bolts should not bottom out before compression of the rubber mount occurs.

### **4. Background:**

During the course of a pre-flight inspection on a kit-assembled aircraft with 50 hours total time, for which the parts were packed in May of 2017, it was noticed that the engine seemed to have shifted slightly to the right in the engine compartment. It was found that the rubber engine mounts were not properly seated in the engine mount which had resulted in the engine mount adapter and engine shifting slightly in the engine bay as can be seen by comparing the relative positions of the front DZUS fasteners on the cowling to the spinner in Figure 1. The engine had also shifted forward, resulting in the oil filter housing coming into contact with the lower oil radiator as shown in Figure 2.



Figure 1 – Engine shifted to the right



Figure 2 – Lower oil radiator and oil filter housing

Upon further investigation it was found that the two lower engine mount adapter bolts were bottoming out prematurely in the engine mount adapter rods which in turn prevented the rubber engine mounts from being properly fastened and compressed, which allowed the rubber mounts to become unseated as can be seen in Figure 3.



Figure 3 – Unseated rubber mount

The bolts were bottoming out due to a manufacturing defect in the rods into which they bolt. One of the defective rods are shown in Figure 4 where it can be seen that the bolt is not completely fastened and some of the threads are visible, whereas in Figure 5 the correct mount is shown and it can be seen that the bolt is completely bolted in and no threads are visible.



Figure 4 – Defective mount rod



Figure 5 – Correct mount rod

The reason for the bolt bottoming out and not fastening fully is due to a manufacturing defect in the machining of the rod before it gets welded to the rest of the adapter. For clarity a drawing of the rod is provided in Figure 6. The part is manufactured by drilling a  $\text{Ø}8.9\text{mm}$  hole through the entire rod. The first 15mm is then threaded, and a larger  $\text{Ø}14.0\text{mm}$  hole is machined in from the other side up to where it makes contact with the threaded section. In defective mounts the  $\text{Ø}14.0\text{mm}$  hole's depth was incorrect and it does not reach the threaded section, as a result the bolt cannot extend past the 15mm threaded section.

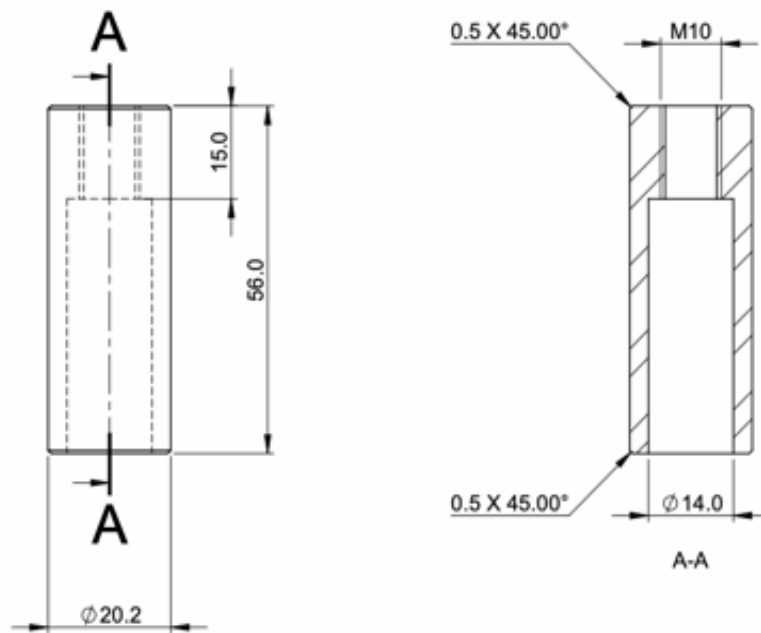


Figure 6 – Engine mount adapter rod

## 5. Discussion:

Defective engine mount adapters do not pose an immediate flight risk, but if the rubber mounts have become unseated and the adapter has shifted out of its normal position then this could cause increased vibration and if the engine has shifted and any parts are chaffing against the engine it could lead to premature failure of the affected components.

Chaffing on the oil filter housing and the lower oil radiator will eventually develop into a catastrophic loss of engine oil which could result in an engine failure and/or an engine fire.

A misaligned engine mount could also result in undesirable trim characteristics and in severe cases may have a negative impact on the aircraft's lateral and directional stability under high power conditions.

## 6. Required action:

1. All aircraft must be inspected visually by the operator before further flight. Steps 2 and 3 are only symptoms of the problem and if any of those two checks hold true, step 4 will still need to be checked to confirm that a defective engine mount adapter rod is the cause.
2. Check for a noticeable lateral shift in the engine by comparing the location of the front DZUS fasteners to the spinner.
3. Check for the oil filter housing chaffing on the lower oil radiator.
4. Check visually for any of the four engine mount adapter bolts which are not properly fastened, visible threads under the bolt head, as in Figure 4, would indicate that this is the case. The bolts to inspect are shown in Figure 7.

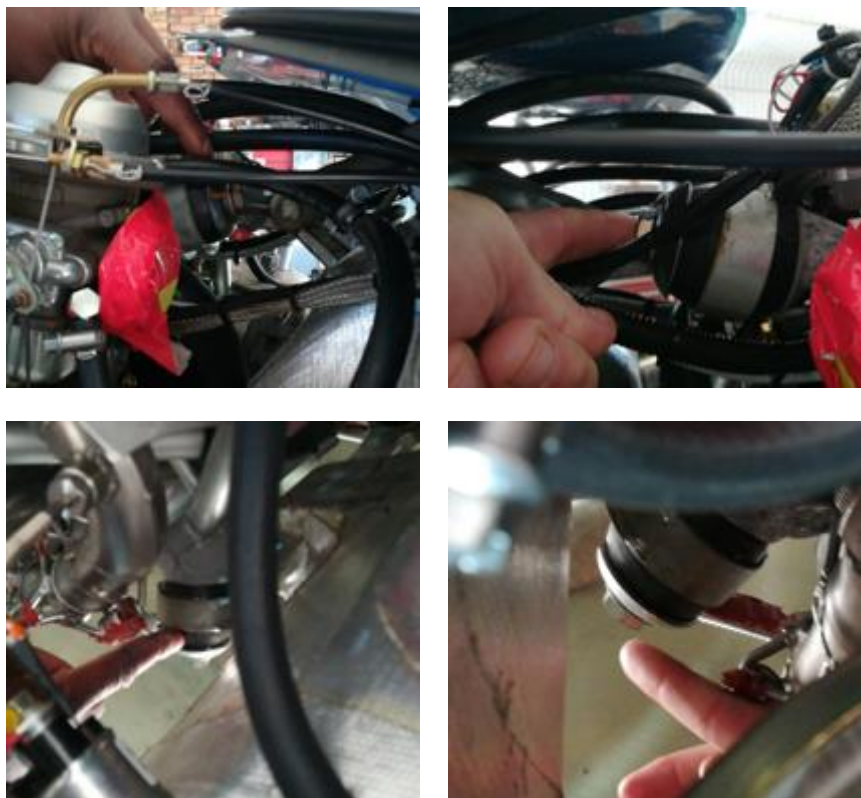


Figure 7 – Bolts requiring inspection

5. If a defective mount has been identified the factory should be notified immediately and the aircraft is to be grounded until the problem has been addressed.

To circumvent the problem a shorter length, Grade 8.8 Zinc Plated M10 bolt may be used which would not extend past the threaded section in the rod and would therefore not bottom out. At the time of publishing this service bulletin it had not been determined whether a M10 x 25mm or a M10 x 20mm would be the best replacement option. The factory will supply the best replacement option at no cost to the operator, we recommend using only approved bolts supplied by the factory since we cannot guarantee that the material and geometrical properties of your local hardware store bolts will be correct.

The two lower bolts may be removed as is, you may just have to remove the lower cowling to gain access to the engine mount. The upper bolts are slightly more complicated since the weight of the engine would need to be fully supported on an appropriate engine hoist before loosening the top bolts.

When inserting the new bolts ensure that the washers (and exhaust plate for the lower mounts) are inserted back in the same order that they were in when removed.

#### **7. Approved personnel:**

This work prescribed in this service bulletin may only be carried out, and signed off by persons with the following qualifications:

- In South Africa: RAASA Approved Person (AP), SACAA Aircraft Maintenance Engineer (AME) or higher, or person approved by the manufacturer.
- In USA: FAA Light sport repairman (LSRM) or higher, or person approved by the manufacturer.

In the case of owner/kit-built aircraft the kit builder is also approved to conduct the installation, if his/her country of registration allows.

#### **8. Effective date:**

This notice takes effect as of the 25<sup>th</sup> June 2020.

#### **9. Contact:**

Questions and/or comments regarding this service bulletin should be directed to Rainbow SkyReach (Pty) Ltd on:

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