

# Air Safety Support International

## Safety Communication Bulletin

### Shaw Aero Devices flush mounted Fuel Caps Part No. 416-50



1/2015

**Applicability: All Owners, Operators, Continued Airworthiness Management and Maintenance Organisations.**

#### **1 Introduction**

This Safety Communication Bulletin is issued to alert owners, Operators, Continued Airworthiness Management and Maintenance Organisations of the importance of inspecting Shaw Aero Devices flush mounted Fuel Caps Part No. 416-50 for leaks and the actions to be taken on finding evidence of leaks. This model of flush mounted Fuel Cap is known to be fitted to Britten-Norman, Beech, Cessna, Mooney, Piper and De Havilland Canada Twin-Otter type aircraft.

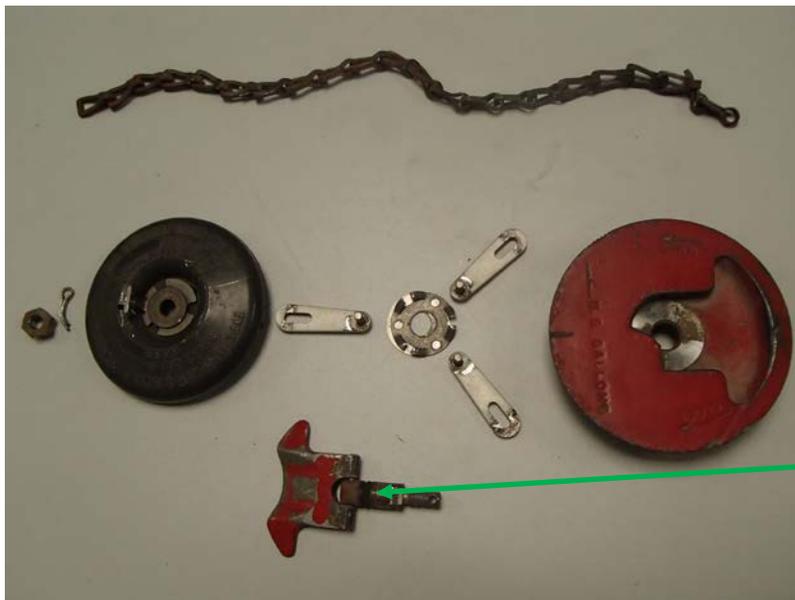
#### **2 Background information**

Since 1983 there have been a number of fatal aircraft accidents involving loss of engine power, which was caused by rain, or water used in aircraft washing to enter the fuel tanks. Contributable factors for the water ingress were failures of the O-ring seals in the cap assemblies to keep the water out because the seals were cracked and deteriorated. Post accident Safety recommendations highlight the importance of carrying out water drain checks after aircraft re-fuelling and after periods of heavy rain. These are important tasks and should be continued; however it does not address the root cause of water entering the fuel tank in the first place.

#### **3 Current inspection and Maintenance practices**

An investigation conducted by ASSI has found that there is limited guidance available for Owners, Operators, Continued Airworthiness Management and Maintenance Organisations as to the inspection frequencies and maintenance practices to ensure that the O-ring seals fitted to Shaw Aero Devices flush mounted fuel caps part no. 416-50 are not cracked and deteriorated. The larger of the two O-ring seals is visible on the main body of the cap, but the smaller O-ring seal located on the shaft of the locking mechanism axle is not visible without dismantling the cap and can be easily missed.

Refer to the picture below:



O-ring on the shaft of the locking mechanism axle is not visible when the cap is fully assembled

Current Maintenance practices suggest that aircraft Maintenance Organisations routinely change the large O-ring seal if it is found to be worn or deteriorated, but the caps are generally not dismantled and inspected.

The aircraft manufacturers list the O-ring seal part numbers within their Illustrated Parts Catalogues, but do not publish detailed procedures on how to dismantle the fuel cap in order to change the smaller O-ring seal on the locking shaft mechanism and more importantly the maintenance practices surrounding lubrication of the shaft and the adjustment of the cap to achieve a water tight seal.

#### 4 Recommendation

**Owners, Operators Continued Airworthiness Management and Maintenance Organisations are strongly recommended to review and carry out applicable preliminary checks and pressure tests in order to check for leaks in the fuel system in accordance with their Manufacturer's recommendations.**

**If leaks are found to emanate from the fuel cap due to inadequate sealing, the defective cap must be replaced with a new or overhauled cap assembly complete with O-ring seals.**

**In the absence of approved Manufacturer's data detailing how to change and lubricate the O-ring seals and adjust the fuel cap for correct sealing, the O-ring seals should not be removed and replaced by the maintenance Organisation.**

#### 5 Queries

Any queries in connection with this Safety Communication should be sent to:  
[enquiries@airsafety.aero](mailto:enquiries@airsafety.aero)

***Recipients of new Safety Communications are asked to ensure that these are copied to their 'in house' or contracted maintenance and Continued Airworthiness Management organisations, to relevant outside contractors, and to all members of their staff who could have an interest in the information or who need to take appropriate action in response to this Communication.***