

BULLETIN ADDENDUM

AAIB File: EW/G93/08/04

Aircraft Type and Registration: Sportavia RF5B Sperber, G-SSWV

Date & Time (UTC): 3 August 1993 at 1925 hrs

Location: Netherthorpe Airfield, Nottinghamshire

Information Source: Aircraft Accident Report Form submitted by the pilot, report submitted by an engineer and examination of magneto switch by the AAIB

AAIB Bulletin No 11/93, page 65 refers

The aircraft had crashed following power failure. Large flakes of paint were found in the fuel tank and these were found to be capable of blocking the fuel outlet, which was flush with the tank floor. When the aircraft had been repaired and the engine rebuilt the engine was test run and, on one occasion, it failed to start. The magneto key was turned to 'OFF' then 'ON' and when the starter button was pressed the engine started immediately but it was found that when the magneto key was rotated slightly the engine cut. Electrical checks on the switch, using a multimeter failed to reproduce the fault and it was sent to AAIB for examination.

G-SSWV, a motorglider, has a single magneto. The magneto switch, a Bendix type GM, had been modified from its original 'OFF R L BOTH' configuration to a two-position configuration (Fig 1). This kind of switch, as modified, had been an optional fit when the aircraft was manufactured in 1973. A screw, in nylon bushing, had been set into the switch body, the tip of the screw projecting into the switch to form a stop which prevented the internal cam, which is rotated by the key through the lock, from turning beyond the second key position (first position being 'OFF'). The four key positions are normally located by a leaf spring which settles into notches in the cam periphery at the required locations with a final stop at the 'BOTH' position. The cam also carries the movable (earthing) contacts. The switch's faceplate with the 'OFF R L BOTH' positions marked on it had been turned around and the 'OFF' position (only) marked on its blank reverse side. The second position, which would be 'ON', was not indicated on the reversed faceplate.

When the switch was opened (Fig 2) it was found that the cam, as turned by the key, was not able to be rotated fully to the second position. The 'R' terminal was not being fully uncovered and could have provided an erratic contact. When the lock was opened up it was found that the key was not fully retracting the tangs into the barrel and it was evidently the wrong key for the lock. Without the key in

place the barrel could be rotated by a small amount and tended to return to the 'OFF' position under the effect of the leaf spring settling in the cam notch but the rotation available with the key in place was marginally greater and sufficient to take the spring out of the notch. The movement of the spring over the cam was sufficient to give a positive 'feel' to the action, making it appear that the key was positively located in the new position. There was, of course, no indication on the faceplate of the correct rotational position for the key when 'ON'.

It was evident that the plastic cam had previously been rotated fully and had come into contact with the stop screw, presumably with the use of the correct key, because some plastic debris was found adhering to the screw thread. The sharp edges of the screw thread had, in fact, damaged the contact surface on the cam and had created plastic debris which was loose within the switch and which had the potential to become lodged under the terminals and prevent the magneto from being earthed when the switch was turned to 'OFF'.

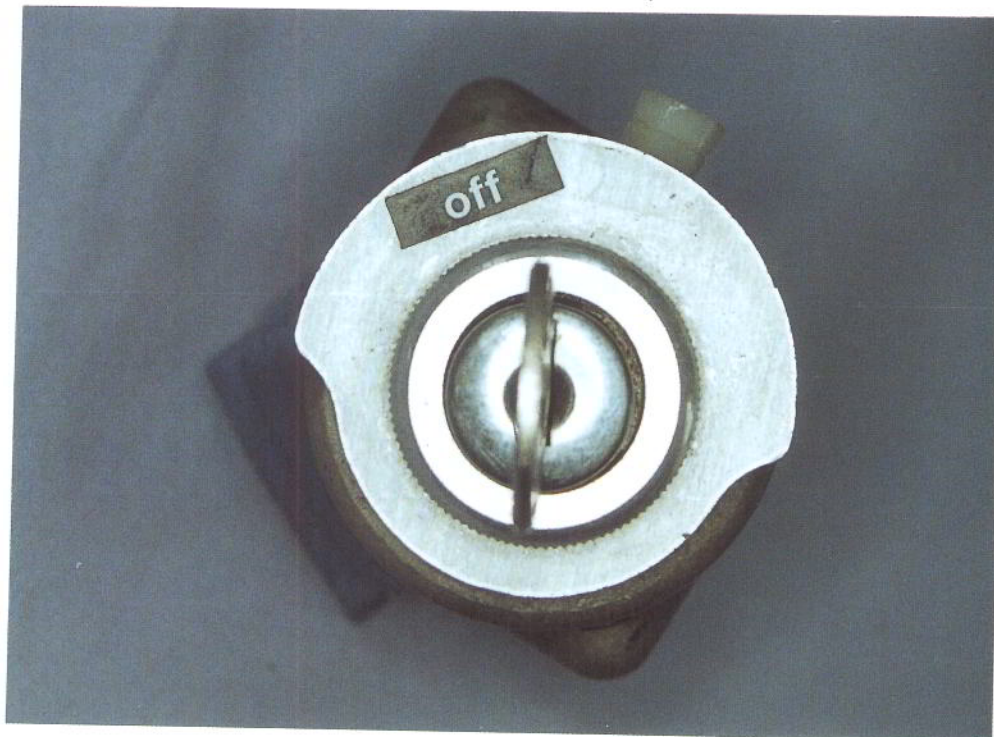


Fig 1 Magneto switch - key in partial ON position

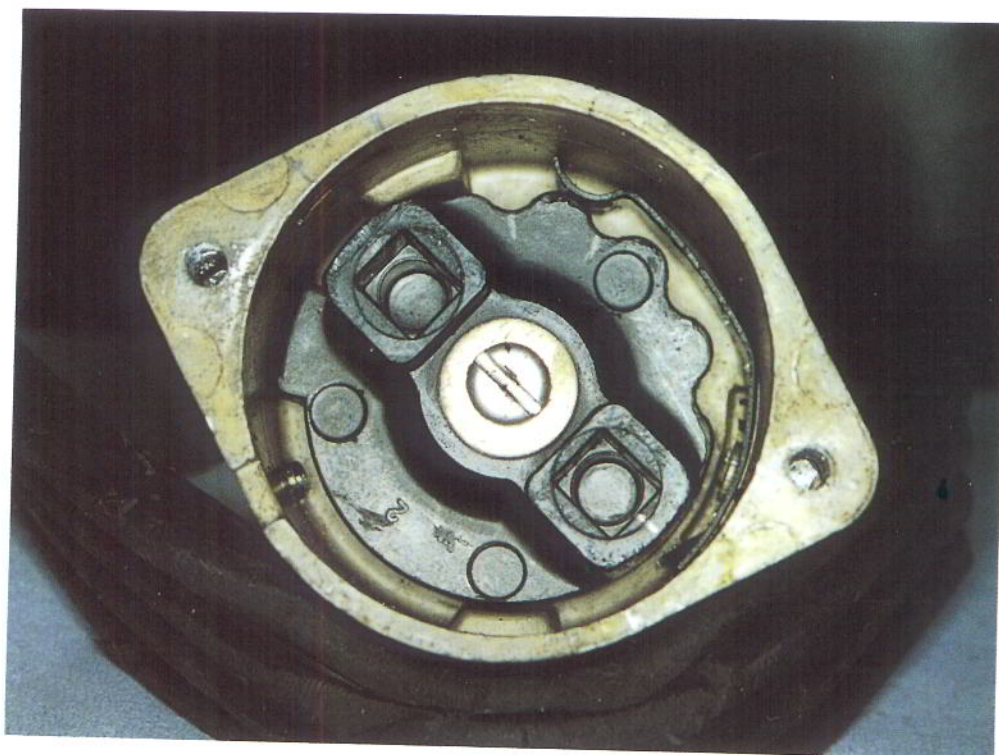


Fig 2 Magneto switch internal cam - key in partial ON position