

AAIB Bulletin No: 6/93

Ref: EW/G93/03/12

Category: 1c

Aircraft Type and Registration: Piper J3F-50 Cub, G-AGAT

No & Type of Engines: 1 Franklin 4AC-150 piston engine

Year of Manufacture: 1939

Date & Time (UTC): 19 March 1993 at 1022 hrs

Location: RAF Woodvale, Merseyside

Type of Flight: Private

Persons on Board: Crew - 1 Passengers - 1

Injuries: Crew - Minor Passengers - Minor

Nature of Damage: Landing gear and right wing tip damaged

Commander's Licence: Private Pilot's Licence

Commander's Age: 38 years

Commander's Flying Experience: 202 hours (of which 8 were on type)
Last 90 days - 5 hours
Last 28 days - 2 hours

Information Source: Aircraft Accident Report Form submitted by the pilot and
AAIB telephone enquiries

After normal pre-flight checks, including a power check, the aircraft took off from Runway 27 at RAF Woodvale with the owner in the front seat and a passenger in the rear. The reported wind was from 260°M at 20 kt. At around 800 feet agl, as the pilot was about to turn crosswind, the engine suddenly started to run roughly and lose power. The pilot then saw a sparking plug dangling free of the engine on the end of its electrical lead. He transmitted a PAN call to ATC, who immediately alerted the airfield fire service, and turned back towards the airfield in a descent. As the aircraft approached the ground the pilot attempted to turn the aircraft into wind but it touched down on a grassed area of the airfield between the runways while still drifting sideways and the landing gear collapsed. The occupants were each wearing a lap strap; both suffered minor injury but were able to evacuate the aircraft rapidly without difficulty. The fire crew and an ambulance arrived very shortly after touchdown.

The owner reported that he had operated the aircraft for approximately 12 hours since purchasing it and the plugs had not been changed in this time. Inspection reportedly showed that the rear sparking plug had been ejected from the threaded hole in the No 4 cylinder. The Champion sparking plug listed

for the Franklin 4AC series engine was originally the type AJ-66, superceded by the type J-43. Both were aviation standard plugs which seated onto a flat gasket washer. Examination by a Licensed Aircraft Engineer found that a J-43 plug was fitted in the forward position of the No 4 cylinder but that the ejected plug was a Champion RBL15YA. This is an automotive standard plug, commonly used in General Motors engines. It has the same thread diameter and reach as the AJ-66 and J-43 but, as well as being significantly different at the firing end, has a taper seat arrangement with no gasket. A taper seated plug installed in a flat seated hole would make only line contact and Champion noted that the correct installation torque, notice of which accompanies each plug supplied, for a taper seated plug is around half of that for a gasket seated plug.