Fairey Firefly

Fairey Firefly AS.5 aux couleurs de la Royal Navy

Le Fairey Firefly (luciole) était un biplace embarqué monomoteur britannique de la seconde guerre mondiale. Il servit principalement comme chasseur (en particulier de nuit), avion de reconnaissance et de lutte contre les sous-marins, mais aussi pour l'entraînement et le remorquage de cibles. Le ministère britannique de l'Air émit 2 spécifications en mars 1939 afin de remplacer le Fulmar, considéré comme un avion d'intérim. Le futur chasseur devait être soit conventionnel (spécification N.8/39), soit doté d'une tourelle de mitrailleuses (N.9/39). Le chasseur conventionnel devait être armé de 8 mitrailleuses Browning de 7,7 mm ou de 4 canons Hispano de 20 mm, et les 2 appareils voler à 275 nœuds et à 15000 pieds. 5 compagnies présentèrent des projets. Les spécifications évoluèrent : la guerre montra qu'un chasseur doté d'une tourelle était inefficace et ce projet fut annulé, au profit d'un appareil monoplace et d'un autre biplace. Ces deux appareils devaient atteindre respectivement la vitesse de 330 et 300 nœuds. Fairey proposa des concepts construits autour du Rolls-Royce Griffon ou du Napier Sabre. Le cahier des charges définitif fut exposé dans la spécification N.5/40, concernant uniquement un biplace. Le Firefly fut conçu par H.E. Chaplin. Une maquette fut présentée le 6 juin 1940. Le 12, l'Amirauté commanda 200 exemplaires du Firefly, dont 3 prototypes. Le vol inaugural eut lieu le 22 décembre 1941 avec Chris Staniland aux commandes du Z1826. Bien que plus lourd de 4000 livres (1810 kg) que le Fulmar (à cause des 4 canons de 20 mm), il était de 40 mph (60 km/h) plus rapide, grâce à une aérodynamique plus soignée et un moteur plus puissant, le Rolls-Royce Griffon IIB de 1735 hp. Le deuxième prototype, Z1827, vola le 4 juin 1942 et le troisième, Z1828, le 26 août 1942. Le Fairey était un avion monoplan à ailes basses elliptiques, cantilever, avec un fuselage semi-monocoque métallique et de section ovale. Les 2 membres d'équipage prenaient place dans des cockpits séparés en tandem. Son train d'atterrissage, classique, était rétractable. Il disposait bien entendu d'une crosse d'appontage et d'ailes repliables.

Fairey Firefly FR.1 thaïlandais

Les essais étatiques commencèrent le 28 avril 1942 : le deuxième prototype s'écrasa le 26 juin 1942, tuant Staniland. Les essais d'appontage eurent lieu au printemps 1943 et révélèrent un manque de visibilité. Les verrières furent alors surélevées. Les essais d'armement montrèrent que la tenue de vol, avec des roquettes et des réservoirs largables, étaient acceptables, sans plus. Les premiers Firefly Mk I furent livrés en mars 1943 mais il fallut résoudre un certains nombres de problèmes avant qu'ils ne soient acceptés pour le service, le 27 septembre la même année. Il ne pouvait pas être un bon chasseur de jour, mais il avait un potentiel comme chasseur d'escorte et chasseur de nuit. La première mission de guerre eut lieu le 17 juillet 1944, avec le 1770 NAS basé sur le HMS Indefatigable, en attaquant les batteries anti-aériennes du cuirassé Tirpitz. Après 470 exemplaires, les Firefly I (F.I, NF.I et FR.I) furent motorisés avec un Griffon XII de 1765 hp. D'autres missions en Norvège et sur le Tirpitz eurent lieu. Au cours de la seconde guerre mondiale, les Firefly se virent demander de plus en plus de missions anti sous-marins et furent déployés en Extrême-Orient dès décembre 1944. Ils attaquèrent des aérodromes et raffineries ennemis (d'abord à Sumatra) et furent les premiers appareils britanniques à survoler Tokyo. Ils participèrent également à la dernière mission de guerre britannique le 15 août 1945. Le Firefly connut une bonne carrière après la seconde guerre mondiale. Il fut livré après la guerre aux forces aériennes du Danemark, d'Éthiopie, et de la Thaïlande (12 Firefly FR.1 et T.2, de 1951 à 1955), ainsi qu'aux marines australienne (108 Firefly AS.5 et 6 livrés de 1949 à 1953), du Canada (64 Firefly AS.5 de 1946 à 1952), de l'Inde (6 Firefly TT.1 et 4 Firefly TT.4 à partir de 1955) et du Pays-Bas (au moins 30 Firefly F1, 7 Firefly T2, 12 Firefly FR.4, 14 Firefly FR.5). La Fleet Air Arm le conserva jusqu'en 1956. Ils reprirent du service en Palestine en 1948 afin de couvrir le départ des forces britanniques, lors de la guerre de Corée dans des missions d'attaque au sol, de patrouille maritime et de lutte contre les navires. Les Firefly australiens et britanniques furent également déployés lors de l'insurrection communiste en Malaisie, à partir de 1949. 15 Firefly néerlandais furent déployés en Nouvelle-Guinée néerlandaise entre 1960 et 1962 afin de contrer les attaques indonésiennes. Quelques missions furent effectuées avant qu'un accord politique ne soit trouvé. Les Firefly éthiopiens furent certainement engagés contre l'Érythrée. Le Firefly fut remplacé en première ligne par le Gannett, mais quelques versions furent développées pour des missions d'entraînement, de remorquages de cibles ou comme drones-cibles. 1702 exemplaires furent construits jusqu'en avril 1956, dont 24 ont survécu jusqu'à nos jours. 3 d'entre eux sont toujours en état de vol.

Source : https://aviationsmilitaires.net/v3/kb/aircraft/show/441/fairey-firefly

Version anglaise Wikipédia

The **Fairey Firefly** is a Second World War-era carrier-borne fighter aircraft and anti-submarine aircraft that was principally operated by the Fleet Air Arm (FAA). It was developed and built by the British aircraft manufacturer Fairey Aviation Company. Development of the Firefly can be traced back to pair of specifications issued by the British Air Ministry in 1938, calling for new naval fighter designs. Designed to the contemporary FAA concept of a two-seat fleet reconnaissance/fighter, the pilot and observer were positioned at separate stations. In flight, the Firefly was superior in terms of both performance and firepower to its predecessor, the Fairey Fulmar. Due to a protracted development, the type only entered operational service towards the end of the conflict, at which point it was no longer competitive as a fighter. The limitations of a single engine in a relatively heavy airframe reduced its performance, but the Firefly proved to be a fairly sturdy, long-ranged, and docile aircraft during carrier operations. The Fairey Firefly served in the Second World War as a fleet fighter. During the post-war era, it was soon superseded in the fighter role by the arrival of more modern jet aircraft, thus the Firefly was adapted to perform in other roles, including strike operations and anti-submarine warfare. In these capacities, it remained a mainstay of the FAA until the mid-1950s. Both British and Australian Fireflies routinely performed ground–attack operations from various aircraft carriers during the Korean War. In foreign service, the type was in operation with the naval air arms of Australia, Canada, India and the Netherlands. As late as 1962, Dutch Fireflies were used to carry out attack sorties against Indonesian infiltrators in Dutch New Guinea. Its final uses were in various secondary roles, such as trainers, target tugs and drone aircraft.

Design and development

During 1938, by which point British authorities were preparing for the likelihood of a major conflict, the Air Ministry issued a pair of specifications calling for naval fighters, a conventional and a "turret fighter". The performance requirements for both was to be able to attain a speed of 275 knots while flying at 15,000 ft (4,600 m) and carrying an armament, for the conventional fighter, of eight 0.303 in (7.7 mm) Browning machine guns or four 20 mm (0.79 in) Hispano cannon. This aircraft would replace the Fairey Fulmar, which had been viewed as an interim design. These specifications were updated during the following year, while several British manufacturers tendered their ideas. Further changes to the official specification followed, such as the turret fighter specification being eliminated, while a modified specification was issued to cover single and dual-seat fighters capable of 330 and 300 kn (610 and 560 km/h; 380 and 350 mph) respectively. Fairey offered designs that could accommodate either a single or twin-seat arrangements, either powered by the Rolls-Royce Griffon engine, or combining a larger airframe with a Napier Sabre engine. After consideration of the manufacturer's responses, Specification N.5/40 replaced the earlier specifications. Due to the necessity of navigating over open sea, it was decided to opt for a two-seater aircraft alone.[3][1] For defence of naval bases, a separate single seater design would lead to the Blackburn Firebrand.[4] The Firefly was designed by a team led by H.E. Chaplin at Fairey Aviation which reportedly used the Fulmar as a starting point.[1][5] During June 1940, the Admiralty placed an initial order for 200 aircraft "off the drawing board", the first three of which were to function as prototypes. On 22 December 1941, the first prototype of the Firefly performed its maiden flight.[6] Although the aircraft was 4,000 lb (1,800 kg) heavier than the preceding Fulmar (largely due to the adoption of the heavier Griffon engine and the armament of two 20 mm (0.79 in) Hispano cannon in each wing), the Firefly was 40 mph (64 km/h) faster due to improved aerodynamics, as well as the increased power of the Griffon IIB engine, being capable of generating a maximum of 1,735 hp (1,294 kW). The Firefly was a low-wing cantilever monoplane, featuring an oval-section metal semi-monocoque fuselage and a conventional tail unit with forward-placed tailplane.[7][1] It was powered by a Rolls-Royce Griffon liquid-cooled piston engine, which drove a four-blade Rotol-built propeller.[5] A large chin-mounted radiator was present to provide cooling for the engine.[1] The Firefly had retractable main undercarriage and tail wheel, the hydraulically-actuated main landing gear retracting inwards into the underside of the wing centre-section. This undercarriage was widely-set, a highly useful feature for carrier landings.[5] The aircraft was also fitted with a retractable arrester hook mounted underneath the rear fuselage. The pilot's cockpit was located above the leading edge of the wing while the observer/radio-operator/navigator was positioned aft of the wing's trailing edge. These positions provided better visibility for operating and landing,[7][1] and both crew were provided with separate jettisonable canopies.[5]

The Firefly was equipped with an all-metal wing which could be folded manually, the wings ending up along the sides of the fuselage when folded. When in the flying position, the wings were hydraulically locked in place.[7][1] The wing itself featured square tips and large Fairey-Youngman flaps, which provided relatively good handling while flown at low speeds.[8] A total of four 20mm cannon were buried within the wings, which was considered to be relatively heavy armament for the era.[1] According to pilots, the general handling of the Firefly was relatively well-balanced, but a level of physical strength was required to effectively execute aerobatics.[5] During 1942, handling and performance trials were first undertaken at RAF Boscombe Down by Admiralty test pilots Mike Lithgow and Roy Sydney Baker-Falkner. By 1944, the Firefly had been cleared to use underwing rocket projectiles and, by April 1944, tests involving a double-underwing load of 16 rockets and a pair of 45 US gal (170 L; 37 imp gal) drop tanks still provided acceptable handling.[9] Further testing with two 90 gallon (410 L) drop tanks or two 1,000 lb (450 kg) bombs deemed acceptable albeit with "...a small adverse effect on handling..." while "...handling with a single 1,000 lb (450 kg) bomb was unpleasant, but manageable."[9] Performance trials at 11,830 lb (5,370 kg) indicated a maximum speed of 315 mph (507 km/h) at 16,800 ft (5,100 m) while a climb to 20,000 ft (6,100 m) took 12.4 minutes, with a maximum climb rate of 2,140 ft/min (650 m/min) at 3,800 ft (1,200 m), and a service ceiling of 30,100 ft (9,200 m).[10]

Operational history

Firefly FR.Mk 4 of the Netherlands Navy operating in Dutch New Guinea.

The primary variant of the aircraft used during the Second World War was the Firefly Mk I, which was used in all theatres of operations. During March 1943, the first Firefly Mk Is were delivered to the FAA but these did not enter operational service until July 1944, at which point they equipped 1770 Naval Air Squadron aboard HMS *Indefatigable*.[2] The first operations were flown in the European theatre where Fireflies carried out numerous armed reconnaissance flights and anti-shipping strikes along the Norwegian coast. That year, Fireflies also provided air cover and aerial reconnaissance during attacks on the German battleship *Tirpitz*.[11][2]

Throughout its operational career, the Firefly took on increasingly demanding roles from fighter to anti-submarine warfare while being stationed mainly with the British Pacific Fleet in the Far East and Pacific theatres. The type was used against Japanese ground targets and fighter aircraft.[1] FAA Fireflies carried out attacks on oil refineries and airfields and was repeatedly dispatched against Japanese-controlled islands up until Victory over Japan Day.[2] The Firefly gained a level of public renown when the type became the first British-designed and -built aircraft to overfly the Japanese capital of Tokyo.[12][1] During May 1945, in anticipation of a major naval offensive against the Japanese mainland, the Canadian government accepted a British offer to loan a pair of *Colossus*-class aircraft carriers to the Royal Canadian Navy.[13] To equip these carriers, it was necessary to procure naval fighters. Based upon the feedback of veteran pilots, Canada opted to acquire the Firefly over opposition that favoured procuring American aircraft instead. As a stop-gap measure, Royal Navy Fireflies were loaned while more advanced purpose-built aircraft were being constructed.[14] Between 1946 and 1954, the Canadian Navy employed 65 AS Mk.5 Fireflies on its aircraft carriers. The service also flew a handful of Mk.I Fireflies. During the 1950s, Canada decided to sell off its Fireflies and buyers included the armed forces of Ethiopia, Denmark, and the Netherlands.[11][15] After the Second World War, the Firefly remained in front line service with the Fleet Air Arm, continuing in this capacity until the mid-1950s. During this time, British-built Fireflies were also supplied to a number of overseas nations, including Canada, Australia, Denmark, Ethiopia, the Netherlands, India and Thailand. During 1947, the Australian government approved of formation of the Royal Australian Fleet Air Arm and the acquisition of a pair of *Majestic*-class aircraft carriers from Britain. Following a consultation with the Royal Navy, the Royal Australian Navy (RAN) opted to procure both the Firefly and the Hawker Sea Fury to equip its new aircraft carriers.[5][16] These two types formed the backbone of the newly formed Australian Carrier Air Groups (CAGs), which would operate a total fleet size of 108 Fireflies, acquired across multiple orders. The first aircraft was delivered in May 1949, and the final Firefly arrived during August 1953. aircrew training predominated in early RAN operations ahead of achieving operational status during 1950.[5]

Firefly U.8 target drone aircraft in 1955

During the Korean War of the 1950s, both British and Australian Fireflies carried out anti-shipping patrols and ground strikes from various aircraft carriers positioned offshore.[17][16]

Additional missions roles including anti-submarine patrols and aerial observation, as well as assisting battleships in providing effective naval gunfire support. Numerous FAA Fireflies were loaned to the Australian Navy during the conflict as many of its aircraft did not feature cannons when configured for anti-submarine warfare.[5] Despite several incidents of aircraft being struck by anti-aircraft fire, the Firefly proved to be relatively rugged. The type was routinely used for strike operations against targets such as bridges and railway lines to damage North Korean logistics and communications. As the war went on, pilots developed new low-level dive-bombing techniques to achieve greater accuracy.[5] Combat use of the Firefly in the theatre continued until the signing of the Korean Armistice Agreement on 27 July 1953, although post-armistice patrols involving the type continued for several years afterwards.[16] FAA Fireflies were again deployed in the Far East amid the Malayan Emergency, where it was used conduct to ground-attack operations against Malayan Communist Party insurgents.[2] The Firefly's front line career with the FAA came to an end shortly following the introduction of the newer and larger Fairey Gannet, which effectively replaced the type.[1] The RAN also decided to relegate their Fireflies to secondary duties following the adoption of newer aircraft, such as the Gannet and the jet-powered de Havilland Sea Venom.[5] Several versions of the type were developed later in its career to serve in a number of secondary roles, including as trainers, target tugs and drone aircraft. As an example, the Indian Navy acquired a batch of 10 aircraft during the mid-1950s for target tug purposes.[18] By the end of the 1950s, many operators were disposing of their remaining Fireflies, typically as scrap.[5] In the late 1940s, the Royal Netherlands Navy deployed a Firefly squadron to the Dutch East Indies, as part of the forces countering Indonesian nationalists. When talks broke down in July 1947, the Dutch launched multiple air strikes. Three Fireflies were shot down by ground fire.[19] During 1960, in response to territorial demands and threats issued by Indonesia, the Netherlands chose to deploy a number of Firefly AS.Mk 4s to Dutch New Guinea. As Indonesian forces began to retake the territory, the Fireflies carried out attack operations during early 1962. These strikes continued until the Royal Netherlands Navy withdrew following the negotiation of a political settlement between the two countries.[20]

Surviving aircraft

Firefly TT.6 on display in Griffith, Australia

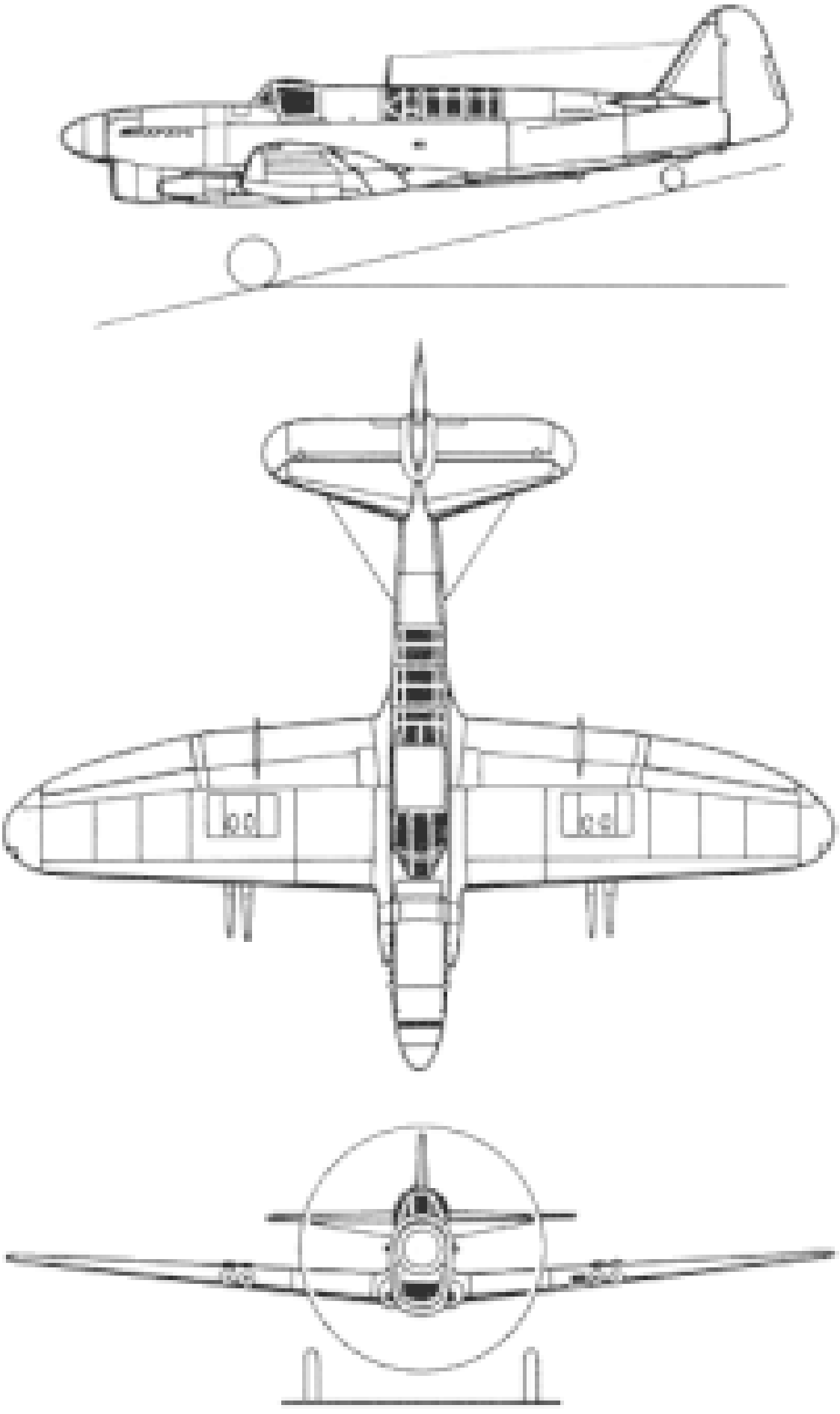
Fairey Firefly FR1 Thailand Air Force

There are approximately 24 Fairey Fireflies surviving worldwide, including three airworthy examples and at least one other being restored to flying condition. The Fleet Air Arm Museum holds VH127, a TT4, which is on public display at Yeovilton. The Imperial War Museum owns one of the oldest surviving Fireflies, serial number Z2033. Built as a MkI in 1944, Z2033 was used originally used by the RNAS for aircraft landing trials, then by Fairey for spin trials. Z2033 was converted to target tug designation an operated in Sweden in the 1950s in this role. The aircraft returned to the UK in 1964 to go on display at the Skyframe Aircraft Museum, and was acquired by Imperial War Museum in 1979. The museum returned Z2033 to its original MkI configuration, and repainted the aircraft as 'DK431' of 1771 Naval Air Squadron, as operated in the Pacific in July 1945. Z2033 was loaned to the Fleet Air Arm Museum for display between 2000 and August 2023, but the aircraft is now on display again at Imperial War Museum Duxford. [27] Firefly *WB271* was destroyed in July 2003 during an aerobatic air display at the Imperial War Museum in Duxford, Cambridgeshire – Europe's largest display of vintage warplanes. There are two airworthy Fireflies at present:

- AS 6 *WH632*, which was damaged in a crash and has since been restored to flying condition (painted as an RCN Firefly AS 5), is at the Canadian Warplane Heritage Museum (Canada).[28]
- AS 6 *WB518*, another former RAN machine, now in the USA. (Damaged at the Wings Over Gillespie Airshow in June 2012, with restoration to airworthiness completed).

WB518 was one of the first 10 Mk 6s built, but retained the earlier Mk 5 fuselage. It was originally delivered to the Royal Australian Navy's 817 Squadron and then served in 816 Squadron before being retired and ending up as a memorial on a pole in Griffith, New South Wales, Australia. *WB518* was then purchased by American Eddie Kurdziel, a Northwest Airlines captain and former U.S. Navy pilot. *WD518* was extensively restored and made its first public appearance at Oshkosh in 2002. Restoration of *WD518* used parts salvaged from *WD828* which was written off after a crash into a cabbage field in Camden, New South Wales in 1987. WB518 as of July 2015 was then undergoing extensive rebuilding and is now in flying condition out of Gillespie Field, El Cajon, California.

Specifications (Mk.4 / Mk.5 / Mk.6)



3-view drawing of Fairey Firefly Mk.I

General characteristics

- **Crew:** 2
- **Length:** 37 ft 11 in (11.56 m)
- **Wingspan:** 41 ft 2 in (12.55 m)
- **Width:** 13 ft 6 in (4.11 m) wings folded
- **Height:** 14 ft 4 in (4.37 m) including prop disc
- **Wing area:** 330 sq ft (31 m^2)
- **Empty weight:** 9,674 lb (4,388 kg)
- **Gross weight:** 12,727 lb (5,773 kg) stripped for fighter mission

13,479 lb (6,114 kg) normal

- **Max takeoff weight:** 15,615 lb (7,083 kg) with two drop-tanks
- **Powerplant:** 1 × Rolls-Royce Griffon 74 V-12 liquid-cooled piston engine, 2,300 hp (1,700 kW) for take-off
- **Propellers:** 4-bladed Rotol constant-speed propeller

Performance

- **Maximum speed:** 367–386 mph (591–621 km/h, 319–335 kn) at 14,000 ft (4,267 m)

330 mph (287 kn; 531 km/h) at sea level

- **Cruise speed:** 209 mph (336 km/h, 182 kn)
- **Range:** 760 mi (1,220 km, 660 nmi) on internal fuel at 209 mph (182 kn; 336 km/h)
- **Ferry range:** 1,335 mi (2,148 km, 1,160 nmi) with 2 90 imp gal (110 US gal; 410 L) drop-tanks at 209 mph (182 kn; 336 km/h)
- **Service ceiling:** 31,900 ft (9,700 m)
- **Time to altitude:**
- 5,000 ft (1,524 m) in 3 minutes 36 seconds
- 10,000 ft (3,048 m) in 7 minutes 9 seconds
- 20,000 ft (6,096 m) in 10 minutes 30 seconds
- **Wing loading:** 43 lb/sq ft (210 kg/m^2)
- **Power/mass:** 0.164 hp/lb (0.270 kW/kg)

Armament

- **Guns:** 4 × 20 mm (0.787 in) Hispano Mk.V cannon
- **Rockets:** maximum 16x RP-3 60 lb (27.2 kg) rockets on 8 × zero-length launchers
- **Bombs:** maximum 2x 1,000 lb (454 kg) on underwing pylons

Avionics

- Radar
- Radio
- Night-flying instrumentation / equipment

Source : https://en.wikipedia.org/wiki/Fairey_Firefly