= Blackburn Firecrest =

The Blackburn B @-@ 48 Firecrest , given the SBAC designation YA.1 , was a single @-@ engine naval strike fighter built by Blackburn Aircraft for service with the British Fleet Air Arm during World War II . It was a development of the troubled Firebrand , designed to Air Ministry Specification S.28 / 43 , for an improved aircraft more suited to carrier operations . Three prototypes were ordered with the company designation of B @-@ 48 and the informal name of " Firecrest " , but only two of them actually flew . The development of the aircraft was prolonged by significant design changes and slow deliveries of components , but the determination by the Ministry of Supply in 1946 that the airframe did not meet the requirements for a strike fighter doomed the aircraft . Construction of two of the prototypes was continued to gain flight @-@ test data and the third was allocated to strength testing . The two flying aircraft were sold back to Blackburn in 1950 for disposal and the other aircraft survived until 1952 .

= = Design = =

The Firebrand required significant effort by Blackburn to produce a useful aircraft and the first discussions on a redesign of the aircraft with a laminar @-@ flow wing took place in September 1943 . The new wing was estimated to reduce the weight of the wing by 700 lb (318 kg) and increase the aircraft speed by 13 mph (21 km / h) . The extent of redesign increased and this led to a new fuselage and other improvements . In October 1943 , Blackburn 's design staff , led by G.E. Petty , started work on this development of the Firebrand which led to Specification S.28 / 43 being issued by the Air Ministry on 26 February 1944 covering the new aircraft . The specification was designed around a Bristol Centaurus 77 radial engine with contra @-@ rotating propellers that allowed the size of the rudder to be reduced .

The new design , given the company designation B @-@ 48 , was known unofficially by Blackburn as the " Firecrest " but was always known by its specification number by the Air Ministry and Navy . It was a low @-@ winged , single @-@ seat , all @-@ metal monoplane . Aft of the cockpit the fuselage was an oval @-@ shaped stressed @-@ skin semi @-@ monocoque , but forward it had a circular @-@ section , tubular @-@ steel frame . The cockpit of the Firecrest was moved forward and raised the pilot 's position so that he now looked over the wing leading edge , and down the nose . The canopy was adapted from the Hawker Tempest fighter . In the rear fuselage was a single 52 @-@ imperial @-@ gallon (240 l ; 62 US gal) fuel tank with two 92 @-@ imperial @-@ gallon (420 l ; 110 US gal) fuel tanks in the centre wing section . The aircraft had a redesigned , thinner , inverted gull wing of laminar flow aerofoil section . The wing consisted of a two @-@ spar centre section with just over 6 @.@ 5 degrees of anhedral and outer panels with 9 degrees of dihedral . It could be hydraulically folded in two places to allow more compact storage in the hangar decks of aircraft carriers . Four Fowler flaps were fitted to give good low @-@ speed handling for landing and the wing had retractable dive brakes on both surfaces . In the course of the redesign the structure was simplified which reduced weight by 1 @,@ 400 lb (635 kg) and even after the fuel capacity was increased by 70 imperial gallons (320 l ; 84 US gal) the gross weight was still 900 pounds (410 kg) less than that of the Firebrand .

Work on two prototypes was authorised in November 1943 , but proposals for alternative engines delayed progress . In 1945 , it was decided that as well as adding another Centaurus @-@ engined prototype , there should be three prototypes with the Napier E.122 (a development of the Sabre) as Specification S.10 / 45 . The Ministry believed that this would enable Blackburn to develop their knowledge of aerodynamic and structural design and support the engine development at Napier . However , it was found that the S.10 / 45 aircraft could only be balanced if the E.122 powerplant was placed behind the pilot . The necessary redesign and 1 @,@ 000 @-@ pound (454 kg) weight increase , coupled with the limited funds available to the Royal Navy , meant that it could no longer be justified and the S.10 / 45 was cancelled on 8 October . While in final design , the Centaurus 77 engine with contra @-@ rotating propellers was cancelled in January 1946 and a conventional 2 @,@ 825 @-@ horsepower (2 @,@ 107 kW) Centaurus 57 was substituted . This engine was

found to require flexible mounts and was modified into the Centaurus 59 . The vertical stabiliser and rudder had to be enlarged from 33 to 41 square feet (3 @.@ 1 to 3 @.@ 8 m2) to counteract the new engine 's torque . In September 1946 a strength analysis conducted by the Ministry of Supply revealed that the aircraft would require strengthening to serve as a strike fighter and that a costly redesign would be required to bring it up to requirements . This would have made it comparable in weight and performance to the Westland Wyvern which had already flown so no contract was placed for production aircraft .

Delayed by the late delivery of its propeller , the first prototype was rolled out at Brough in February 1947 and then taken by road to RAF Leconfield where it made its maiden flight on 1 April that year . All three prototypes were completed by the end of September and the third prototype had been modified to reduce the outer @-@ wing dihedral to 3 degrees . Both the second and third prototypes remained unflown when the Ministry of Supply ordered that flying be ceased and work on the aircraft be stopped . Later in the month , however , the third prototype was allocated to tests of powered aileron controls , as testing of the first prototype had shown that while adequate at cruise speed , the ailerons were heavy both at low and high speed . The second prototype was allocated to structural testing .

The third prototype made its maiden flight in early 1948 , but the pace of the flight testing was leisurely with only 7 hours and 40 minutes completed by 30 November , over half of which were connected with air show performances . Testing concluded in March 1949 when the officer in charge concluded that there was no further purpose to the tests . While the Firecrest was faster than the Firebrand , and gave its pilot a much better view from the cockpit , it was otherwise disappointing , with test pilot and naval aviator Captain Eric Brown claiming that the Firecrest was even less manoeuvrable than the sluggish Firebrand , while the powered ailerons gave lumpy controls , leading to instability in turbulent air .

= = Operational history = =

Operational experience had found Blackburn 's Firebrand strike fighter to be far from suited to carrier operations . In particular , the pilot sat near the wing 's trailing edge , looking over a very long and wide nose which gave a particularly poor view for landing . The Firecrest had also been rendered obsolete by the arrival of gas turbine engines , and while Blackburn did draw up proposals for turboprop @-@ powered derivatives of the Firecrest , (as the B @-@ 62 (Y.A.6) with the Armstrong Siddeley Python engine) , these went unbuilt , with orders instead going to Westland for the Wyvern . The two flying prototypes remained in use until 1949 , being sold back to Blackburn in 1950 , and were later scrapped .

= = Aircraft = =

RT651

One of two prototypes ordered on 1 January 1944 to Specification S.28 / 43 . The airframe was sold by the Controller of Supplies (Air) to Blackburn on 17 April 1950 .

RT656

The second of two prototypes ordered on 1 January 1944 , it was used for structural testing before being disposed of in 1952 .

VF172

A third aircraft was ordered on 18 April 1945 and it was used for research into power @-@ boosted ailerons during February 1948 . The airframe was sold to Blackburn on 17 October 1949 .

Three further prototypes were ordered on 14 March 1945 against Specification S.10 / 45 and powered by Napier E.122 engine , but the order was cancelled and the aircraft were not built .

= = Operators = =

United Kingdom

Fleet Air Arm (never entered service)

= = Specifications = =

Data from Blackburn Aircraft since 1909
General characteristics
Crew : one pilot
Length : 39 ft 3 ½ in (11 @.@ 98 m)
Wingspan : 44 ft 11 ½ in (13 @.@ 71 m)
Height : 14 ft 6 in (4 @.@ 42 m)
Wing area : 361 @.@ 5 ft ² (33 @.@ 60 m ²)
Empty weight : 10 @,@ 513 lb (4 @,@ 779 kg)
Loaded weight : 15 @,@ 280 lb (6 @,@ 645 kg)
Powerplant : 1 × Bristol Centaurus 59 18 @-@ cylinder radial engine , 2 @,@ 475 hp (1 @,@ 846 kW)
Performance
Maximum speed : 380 mph (330 knots , 612 km / h) at 19 @,@ 000 ft (5 @,@ 790 m)
Cruise speed : 213 mph (185 knots , 343 km / h) at 15 @,@ 000 ft (4 @,@ 600 m)
Range : 900 mi (783 nmi , 1 @,@ 450 km)
Service ceiling : 31 @,@ 600 ft (9 @,@ 630 m)
Rate of climb : 2 @,@ 500 ft / min (12 @.@ 7 m / s)
Armament
Guns : Provision for 2 × .50 in (12 @.@ 7 mm) M2 Browning machine guns under or in wing (not fitted to prototypes)
Rockets : 8 × RP @-@ 3 rocket projectiles on underwing rails
Bombs : 1 × 2 @,@ 097 lb (951 kg) torpedo , or
2 × 250 lb (110 kg) bombs , one under each wing , in lieu of torpedo