Hawker Hunter

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Hawker Hunter	
	
Two-seat training variant of the Hunter	
Type	Fighter and ground attack
Manufacturer	Hawker-Siddeley
Designed by	Sidney Camm
Maiden flight	Prototype 21st July 1951 Production 16th May 1953
Introduced	1956
Retired	1980s
Status	Retired
Primary users	Royal Air Force Fleet Air Arm
Number built	1,972

Sixteen Hunters of the RAF Black Arrows perform aerobatics at the Farnborough Air Show, England.

A privately owned Hawker Hunter F.58 in England

The Hawker Hunter was a British jet fighter aircraft of the 1950s and 1960s. The Hunter served for many years with the Royal Air Force and was widely exported, serving with 19 air forces. A total of 1,972 Hunters were produced by Hawker-Siddeley and under licence.

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Development

The origins of the Hunter trace back to the Hawker Sea Hawk straight-wing carrier-based fighter. Seeking better performance and fulfilment of the Air Ministry Specification E.38/46, Hawker chief designer Sidney Camm created the Hawker P.1052, which was essentially a Sea Hawk with a 35-degree swept wing. First flying in 1948, the P.1052 demonstrated good performance but did not warrant further development into a production aircraft. As a private venture, Hawker converted the second P.1052 prototype into the Hawker P.1081 with swept tailplanes and revised fuselage, with a single jet exhaust at the rear. First flying on 1950-06-19, the P.1081 was promising enough to draw interest from the Royal Australian Air Force but development went no further and the sole prototype was lost in a crash in 1951.

Meanwhile, in 1946, the Air Ministry issued Specification F.43/46 for a daytime jet-powered interceptor. Camm took the basic P.1052 design and adopted it for the upcoming Rolls-Royce Avon turbojet. The Avon's major advantage over the Rolls-Royce Nene, used in the Sea Hawk, was the axial compressor, which resulted in a much smaller engine diameter and better thrust. In March 1948, the Air Ministry issued Specification F.3/48, to cover development of the project. Initially fitted with a single air intake in the nose and a T-tail, the project rapidly evolved to the more familiar shape. The intakes were moved to the wing roots, to make room for weapons and radar in the nose. A more conventional tail arrangement was devised, as a result of stability concerns.

The P.1067 first flew from MoD Boscombe Down on 1951-07-20, powered by a 6,500 lbf (28.91 kN) Avon 103 engine from an English Electric Canberra bomber. The second prototype was fitted with production avionics, armament and a 7,550 lbf (33.58 kN) Avon 107 turbojet. It first flew on 1952-05-05. As a back-up, Hawker was asked to adapt the new fighter to another British axial turbojet. The third prototype with an 8,000 lbf (35.59 kN) Armstrong Siddeley Sapphire 101 flew on 1952-11-30. The two Avon-engined aircraft were duck-egg green in color, while the Sapphire prototype was speed silver.

The Ministry of Supply ordered the Hunter into production in March 1950, a year before the first flight. The first production Hunter F.1 with a 7,600 lbf (33.80 kN) Avon 113 turbojet flew on 1953-03-16. The first 20 aircraft were in effect a pre-production series and featured a number of "one-off" modifications, such as blown flaps and area ruled fuselage. On 1953-09-07, a Hawker Hunter F Mk3 flown by Neville Duke broke the world air speed record, achieving 727.63 mph over Littlehampton [1]. However, the record stood for less than three weeks before being broken by an RAF Supermarine Swift on 1953-09-25.

Description

The Hunter was a conventional all-metal monoplane. The pilot sat on a Martin-Baker 2H or 3H ejector seat. The two seat trainer version used the Mk.4H ejection seats. The fuselage was of monocoque construction, with a removable rear section for engine maintenance. The engine was fed through triangular air intakes in the wing roots and had a single jetpipe in the rear of the fuselage. The mid-mounted wings had a leading edge sweep of 35 degrees and slight anhedral. The tail planes and fin were also swept. The controls were completely conventional. A single airbrake was fitted under the ventral rear fuselage. The aircraft had conventional retractable tricycle landing gear. A noteworthy feature of the single seat fighter version was the armament of four 30 mm ADEN cannon. The cannon and ammunition boxes were contained in a single pack that could be removed from the aircraft for rapid re-arming and maintenance. Interestingly, the barrels of the cannon remained in the aircraft when the pack was removed. In the two seat version, either a single ADEN Cannon was carried or, in some export versions, two ADEN Cannons, with a removeable ammunition tank. A simple Ekco ranging radar was fitted in the nose.

Operational history

The Hunter F.1 entered service with the Royal Air Force in July 1954. It quickly became apparent that the new fighter had insufficient fuel capacity. In addition, incorrectly-designed air intakes produced disruptions in air flow to the engine, with resultant compressor stalls. The engine problems were compounded by ingestion of gas when the cannon were fired, which resulted in flameouts. The potential solutions of cutting fuel to the engine when the cannon fired and restricting the use of cannon to low speeds and altitudes were obviously unsatisfactory. Furthermore, ejected cannon ammunition links had a tendency to strike and damage the underside of the fuselage. The original split flap airbrakes caused adverse changes in pitch trim and were quickly replaced by a single ventral airbrake. Unfortunately, this meant the airbrake could not be used for landings. Finally, the canopy suffered from fogging and icing during rapid descents.

Its short range was crippling for the new British fighter, with a maximum flight endurance of about an hour. On 1956-02-08, a flight of eight Hunters was redirected to another airfield due to inclement weather. Six aircraft ran out of fuel and crashed, with one pilot killed. One of the aircraft that landed ran out of fuel while taxiing.[1] On the positive side, the aircraft possessed good handling characteristics and even the early F1 version would exceed sonic speed in a 30°-40° dive at full throttle from 40,000 feet and above with comparatively minor trim changes.

Neil Williams, former British test-pilot and once vice-world aerobatics champion (who was killed in an accident with a Spanish Heinkel), relates in his book how his repeated attempts to break the sound-barrier all failed, even after diving the aircraft in full throttle and "full vertical" from over 35,000 feet but clearly this did not apply to production models.

The first Hunter prototype was fitted with an afterburning Avon RA.7R with 9,600 lbf (42.70 kN) of thrust and other aerodynamic refinements (most noticeably a pointed nose). Dubbed Hunter F.3, on 1953-09-07 it set a speed record of 628.1 knots (722.2 mph, 1,163.2 km/h) over a 1.62 nautical mile (1.86 mile, 3 kilometre) course.

To address the problem of range, a production Hunter F.1 was fitted with a new wing which featured fuel bladders in the leading edge and "wet" hardpoints. This increased the internal fuel capacity from 337 to 414 imperial gallons (404 to 497 US gal, 1533 to 1833 L). In addition, a single 100 imperial gallon (120 US gal, 454 L) external fuel tank could be carried under each wing.[1] The resulting Hunter F.4 first flew on 20 October 1954, entering service in March 1955. A distinctive Hunter feature added on the F.4 was the pair of blisters under the nose, which collected spent ammunition links to prevent airframe damage. Crews dubbed them "Sabrinas" after the contemporary movie star. A Sapphire-powered version of the F.4 was designated Hunter F.5. Although the Sapphire did not suffer from the flameout problems of the Avon and had better fuel economy, the RAF elected to persevere with the Avon in order to simplify supply and maintenance, since the same engine was also used by the Canberra bomber.

To deal with surging and flameout problems, Rolls-Royce fitted the Avon with a new automatic fuel system and redesigned compressor. The resulting Avon 203, producing 10,000 lbf (44.48 kN) of thrust, was fitted to Hawker P.1099, which became the definitive Hunter F.6. The other crucial revision on the F.6 was the new "Mod 228" wing, which had a larger area, a distinctive "dogtooth" leading edge notch to alleviate the pitch-up problem, and four "wet" hardpoints, finally giving the aircraft a good ferry range.

The Hunter F.6 was retired from its fighter role in the RAF in 1963, being replaced by the English Electric Lightning. The ground attack variants served until 1970. Some aircraft remained in use for training and secondary roles up to the early 1990s.

Combat History

Middle East

- Six-Day War (1967)

Hunters of the Iraqi air force gave a good account of themselves. Some missions flown by Jordanian pilots. Most of the Jordanian Hunters were destroyed on the ground on the first day of the war.

Chile

Hunters played an important role in the military coup that overthrew the socialist president of Chile, Salvador Allende, on September 11, 1973. Hunters of Squadron No 7 of the Chilean Air Forces bombarded the presidential palace, Allende's house in Santiago, and radio stations loyal to the government.

Somalia

The regime of Siad Barre used Hunters for indiscriminate bombings during the civil war in the late 1980s.

Rhodesia

The Rhodesians (now Zimbabwe) used their Hunter FGA.9s extensively against ZANU/ZAPU insurgents in the late 1960s and throughout the 1970s, including cross-border strikes.

Zimbabwe

Zimbabwe used its Hunters to support Laurent Kabila during the Second Congo War and they were supposedly also involved in the fighting in Mozambique.

Lebanon

The Lebanese Air Force operated Hawker Hunters since 1958. One was shot down on the first day of the Six-Day War by the Israeli Air Force. They were used infrequently during the Lebanese Civil War, flying their last sorties in a period from September 15th to 17th 1983.

Indo-Pakistan Wars

1965

During the Indo-Pakistan war, Hunters attacked Pakistani armoured units, destroying many Patton tanks. The aircraft proved invaluable in a ground attack role, destrying several tanks in the famous Battle of Asal Uttar. It also shot down as many as 6 F-86 Sabres and other aircraft for the loss of 8 Hunters. The reason for the unimpressive results in the air-to-air combat is attributed to the fact that the Hunters were bomb-laden and operating at extreme ranges. To add to the problems, the Indian Air Force (IAF) did not field any air-to-air guided missiles at that time. By comparison the Sabres did carry air-to-air missiles. Another handicap for the IAF was that in comparison the PAF, most of the Indian pilots were newer recruits. Further all IAF fighter pilots relied on the use of unguided rockets, cannons or gunpacks.[2]

1971

Four Hunters of the IAF destroyed dozens of Pakistani T-59 and Sherman tanks in the Battle of Longewala. The Hunters destroyed nearly 100 different vehicles belonging to the Pakistan Army in the same battle. Hunters were also involved in strategic bombing, attacking oil installations at Karachi on December 4, 1971, and the Mangla

Dam the next day, crippling its Hydel power project. A week later, four Hunters from Jaisalmer carried out rocket attacks on the Sui gas plant in Northern Sindh, setting the plant on fire. In East Pakistan (present-day Bangladesh), Hunters along with Canberras, MiGs and An-12s attacked the Joydebpur Ordnance factory and severely damaged it. The Hunters also engaged Pakistan Air Force aircraft in the skies over Dhaka destroying seven F-86 Sabres. [3][4] Aided by other aircraft of the IAF, the Hunters soon destroyed the eastern wing of PAF and were instrumental in gaining air superiority for the IAF in the 71 war.

Private operators

Delta Jets

Delta Jets who operate from Kemble Airfield near Cirencester in the UK have three operational Hawker Hunters. [5]

Robert Guilford

Smoke from the crashed Hawker Hunter at Hillsboro, Oregon

On July 16, 2006 in Hillsboro, Oregon, USA, a privately owned Mk.58 Hawker Hunter owned by Lawyer Robert Guilford crashed into a residential area when it failed to gain full power upon takeoff, killing the pilot but otherwise causing only material damage to some properties.[2] The crash is still being investigated by the FAA and the NTSB. The Hunter had been part of the static display on the ground and not an active participant in the airshow[3] Witnesses said that the takeoff of the Hawker Hunter appeared to be slower than normal.

Specifications (Hunter F.6)

Data from The Great Book of Fighters[4]

General characteristics

- Crew: One
- Length: 45 ft 11 in (14.00 m)
- Wingspan: 33 ft 8 in (10.26 m)
- Height: 13 ft 2 in (4.01 m)
- Wing area: 349 ft² (32.42 m²)
- Empty weight: 14,122 lb (6,405 kg)

- Loaded weight: 17,750 lb (8050 kg)
- Max takeoff weight: 24,600 lb (11,158 kg)
- Powerplant: 1× Rolls-Royce Avon 207 turbojet, 10,145 lbf (45.13 kN)

Performance

- Maximum speed: Mach 0.94, 620 knots (715 mph, 1,150 km/h) at sea level
- Combat range: 385 nm (445 mi, 715 km)
- Ferry range: 1,650 nm (1,900 mi, 3,060 km) with external fuel
- Service ceiling: 50,000 ft (15,240 m)
- Rate of climb: 17,200 ft/min (87.4 m/s)
- Wing loading: 51.6 lb/ft² (251.9 kg/m²)
- Thrust/weight: 0.56

Armament

- 4x 30 mm ADEN cannon, 120 rounds each, usually with a max of 150 per gun. Guns fitted into a removable gun pack.
- Up to 7,400 lb (3400 kg) of weapons on four hardpoints (Singapore Hunters had a centerline hardpoint.)including AIM-9 Sidewinder, AGM-65 Maverick, SNEB 68 mm rockets in 18-round Matra pods, SURA rockets.

Avionics

- Ekco Ranging radar

Variants

Further information: Hawker Hunter/Variants.

Users

Main article: List of units using the Hawker Hunter

Hunter users included Abu Dhabi, Belgium, Chile, Denmark, Iraq, India, Jordan, Kenya, Kuwait, Lebanon, Netherlands, Oman, Peru, Qatar, Rhodesia/Zimbabwe, Saudi Arabia, Singapore, Somalia, Sweden, and Switzerland. Belgium and Netherlands produced the Hunter under license.

Perhaps the most enthusiastic Hunter users were Switzerland and Singapore, who used it from 1958 to 1994, both improving it in service and often choosing to retain it in lieu of newer aircraft.

The Swiss AF for some years ran a display team using Hawker Hunter Mk.58s which performed internationally. The aerobatic demonstration team of Swiss Air Force is the Patrouille Suisse, which currently flies 6 Northrop F-5E Tiger II jets. Quite a number of the Hunters in private hands are ex-Swiss-AF. Several get together to re-enact those earlier displays.

Trivia

The project number should have been the P.1066, but as it would have undoubtedly been called the "Hawker Hastings" and Handley-Page already had an aircraft with this name, Sidney Camm decided to retire the 1066 project number without ever being used.

A Hawker Hunter with American markings is used in Fatboy Slim's video Sunset (Bird of Prey).

A Hunter is used in the films 28 days later and Lord of War.

The main character in the Wingman book series is named Hawk Hunter, and obvious allusion to this aircraft.