
A27 – BAE Systems Hawk



Two BAE Systems Hawk 127s, A27-13 and A27-31, of No 76 Squadron fly past Magnetic Island, Queensland, after a bombing mission during Exercise *High Sierra* in June 2014. Source: Department of Defence



BAE Systems Hawk 127 A27-08 seen in its original delivery colour scheme in June 2001. Source: Department of Defence



A BAE Systems Hawk 127 of No 79 Squadron preparing for take-off. May 2012. Source: Department of Defence

The Hawker Siddeley (now BAE Systems) Hawk was designed as an advanced jet trainer and entered Royal Air Force (RAF) service in 1976. In 1997 the RAAF placed an order for the Hawk 127 version that was developed for the RAAF as a lead-in fighter training aircraft, with a 'glass cockpit' and Head Up Display (HUD). The aim was to minimise the gap between the undergraduate turboprop trainer (then PC-9/A, now PC-21) and advanced fighter aircraft. Entering RAAF service in October 2000, the Hawk 127 lead-in fighter prepares wings-qualified Air Force pilots for conversion to the F/A-18F Super Hornet, EA-18G Growler and F-35A Lightning II.

Introducing the Hawk to RAAF service ended a process which had begun nearly three decades earlier when the British aircraft was first proposed as a replacement for the Aermacchi MB-326H jet trainer. In between, there were several false starts in the elusive search for a 'Macchi replacement'.

This became a perennial RAAF activity throughout the 1970s and well into the 1980s. In the meantime, operational and budgetary considerations evolved, and the need to replace the Macchi became increasingly urgent as airframe fatigue life problems worsened.

The Hawk first entered the 'Macchi replacement' equation in October 1971 when what was then known as the Hawker Siddeley HS.1182 was promoted to the RAAF. At that stage the HS.1182 had just been selected by the RAF and the prototype's

first flight in August 1974 was nearly three years away. Australian industry was offered significant participation in the overall HS.1182 programme including the manufacture of some thirty per cent of its components, but no agreement was reached.

The Macchi replacement issue dragged on for nearly two more decades with no resolution and by the 1990s the RAAF's requirements had changed considerably. The introduction of the F/A-18 Hornet to service in 1985 brought with it a new world of digital and computerised technology which needed a suitably advanced trainer on which to teach pilots their operational skills. Thus was born the Lead-In Fighter (LIF) trainer concept, not just for Australia but also for other air forces around the world.

What turned out to be the final round of investigations into replacing the Macchi began in 1993 and was finally completed in November 1996 when it was announced that a variant of the new generation Hawk 100 family had been selected. In June 1997, a contract for the purchase of thirty-three Hawk 127s for the RAAF was signed with British Aerospace (BAE Systems from late 1999). Twelve would be built at BAE Systems' Warton (Lancashire) facility and the remainder assembled and test flown at a purpose-built facility at Newcastle Airport/RAAF Williamtown by subsidiary Hunter Aerospace.

The Hawks were allocated the RAAF serials A27-01 to A27-34 including A27-25, a non-flying



BAE Systems Hawk 127 A27-10 of No 76 Squadron en route to the Evans Head Air Weapons Range in northern New South Wales in August 2020. Source: Department of Defence

structural test airframe. Qantas was contracted to assemble all but the first twelve Adour engines and provide repair and maintenance support for them. Hawker de Havilland would produce flaps, airbrakes, tailplanes and underwing pylons.

The twelve aircraft assembled in Britain were A27-01 to A27-09, A27-11, A27-15 and A27-27. A27-01 first flew at Warton in December 1999 followed by the next nine between April 2000 and January 2001. The last pair flew in May and September 2001. A27-03 and A27-04 were the first delivered to Australia in August 2000 and by the end of the year eight had arrived. The Hawk was formally taken into RAAF service in November 2000.

The first Australian-assembled Hawk (A27-10) had meanwhile flown in May 2000 and the twenty-first and last was handed over to the RAAF in August 2001. The final pair of British-assembled aircraft arrived in Australia in early October 2001, completing a quick and efficient delivery programme with little fuss and few problems.

The Hawk is operated by No 76 Squadron at RAAF Williamtown near Newcastle, and No 79 Squadron at RAAF Pearce near Perth. BAE

Systems Australia provides depot and operational level maintenance for all RAAF Hawks including deployment operations away from home bases. BAE Systems works in partnership with Defence in a Hawk Integrated Logistics and Operations Centre (HILOC) to provide support and stewardship of the Hawk system. CAE provides and maintains the advanced flight simulators and also provides simulator flying instructors to No 76 Squadron.

With the acquisition of the Hawk 127 the RAAF has been at the forefront of advanced Lead-In-Fighter Training. Modern weapons and frontline tactics have been introduced including intercepts using synthetic radar, night and day munition employment and simulated medium range Beyond Visual Range (BVR) missile training.

Pilots complete a fourteen week Introductory Fighter type conversion course at RAAF Pearce on the Hawk, which includes general flying, instrument flying, formation flying, night flying and navigation.

Graduates then progress to a fourteen-week weapons and tactics course at RAAF Williamtown for

air-to-air and air-to-ground weapons training on the Hawk. They then progress to conversion onto the EA-18G Growler, F/A-18F Super Hornet or, from 2021, the F-35A Lightning II.

The design of the Hawk avionics system allows software upgrades to reflect evolving training requirements and Project AIR 5438 Lead In Fighter Capability Assurance Program (LIFCAP) has upgraded the Hawk training system to ensure it can meet future aircrew training requirements for the F-35A Lightning II. The LIFCAP training system also includes three advanced flight simulators.

While the Hawk is not used as an operational aircraft, it can fly night and day missions to train fast jet aircrew in air-to-air and air-to-surface operations. The aircraft also provides lower-cost fast jet close air support and air defence training in support of the Army and Royal Australian Navy, and Red Air adversary support for frontline squadrons.

The Hawk is a low-wing, all-metal aircraft, fitted with a navigation and attack system, and powered by a single Adour Mk 871 turbofan engine. It features an avionics system integrated via a 1553 multiplex databus, night vision capable cockpit and external lighting system, a training data link system, attack radar

and radar warning receiver indications and simulated medium range active and semi-active missiles.

Two display and mission computers coordinate the display of information from the communications, navigation and attack subsystems. The cockpit features hands-on-throttle-and-stick controls in each cockpit, a HUD in the front cockpit and Multi-Function Displays in each cockpit which present flight information such as aircraft performance, attitude and equipment status reports. The Hawk also offers the ability to pre-program mission-specific data and record and playback mission data for debrief. A Health and Usage Monitoring System monitors and records equipment performance, aircraft fatigue and engine life data.

Hawk 127 external stores are carried on two wingtip missile stations, or mounted on four underwing and one centreline hardpoint. A radar emulator pod can be carried on the centreline when required for training of RAN fleet ships.

Interestingly, the Hawk is the sole type in RAAF service that shares a lineage back to Australian-born aviation pioneer Harry Hawker through the history of the Hawker, Hawker Siddeley, British Aerospace and BAE Systems companies.

TECHNICAL DATA: BAE Systems Hawk 127

DESCRIPTION:

Two-seat lead-in fighter trainer.

POWER PLANT:

One 26.0kN (5845lb) thrust Rolls-Royce/Turbomeca Adour Mk.871-05 turbofan.

DIMENSIONS:

Span (without missile rails) 9.07m (29ft 9in); length 12.43m (40ft 9in); height 3.98m (13ft 0in).

WEIGHT:

Empty 4480kg (9876lb); normal training loaded 5896kg (12 998lb); max loaded 9100kg (20 062lb).

ARMAMENT:

One 30mm Aden cannon, captive training AIM-9M Sidewinder missiles, BDU-33 practice bombs, Mk.82 227kg (500lb) conventional and GBU-12 laser guided bombs.

PERFORMANCE:

Max speed 1000km/h (621mph) at sea level, 1028km/h (639mph) at altitude; max climb (clean) 3595m (11 800ft)/min; service ceiling 13 563m (44 500ft); range with external tanks 1700km (1056 miles); 'g' limits +8/-4 clean or with AIM-9M missiles and gun.