
A3 – Dassault Mirage III



Dassault Mirage III A3-22 at Avalon, Victoria, in 1965. A3-22 served with the RAAF between 1965 and 1987, before being sold to the Pakistan Air Force in 1990. Source: RAAF

The search for a replacement for the CAC Sabre began in the mid-1950s. A joint evaluation team from the Departments of Air and Supply visited Europe and North America in 1960 to evaluate a number of fighters.

The Lockheed F-104 Starfighter was the early favourite, but the Dassault Mirage III was selected in March 1961 following an intensive sales effort by the French company. An initial order for thirty was placed, setting the scene for the RAAF receiving its first supersonic aircraft. Subsequent orders saw the number increase to 100 Mirage IIIO fighter-bombers and sixteen Mirage IIID two-seat operational trainers.

The original Mirage I first flew in June 1955, followed in November 1956 by the substantially revised prototype Mirage III. At the time of the RAAF order the choice of engine for the Mirage III was between the French SNECMA Atar 9C or the Rolls-Royce Avon turbojets, the latter already in RAAF service powering both the Sabre and the Canberra, albeit in non-afterburning form.

Rolls-Royce worked with Dassault to offer the Avon Mirage for the RAAF and the fourth production Mirage IIIC (the major initial production variant) was fitted with an afterburning Avon 67 turbojet. Identified as a Mirage IIIO, named *City of Hobart*

and wearing RAAF roundels but no serial, it flew on 13 February 1961.

The designation Mirage IIIO is of interest. With some degree of humour, Dassault proposed the designation Mirage IIIO for 'Ostralia' as the suffix letter 'A' had already been allocated to ten pre-production Mirage III airframes. Despite delivering superior performance, the Avon-powered option was not pursued on grounds of cost and Dassault converted *City of Hobart* to a prototype for the Mirage IIIE, the version on which Australia's aircraft were based.

Following selection of the Atar 9C engine, the first RAAF aircraft (A3-1) was built in France. It first flew at Bordeaux on 14 March 1963 and was handed over to the RAAF at Villaroche, near Paris, on 9 April. While an RAAF C-130A Hercules delivered A3-1 to Australia, the second French-built aircraft, A3-2, remained in France until August 1965 to test the various RAAF modifications.

Meanwhile, two further aircraft were shipped to Australia as fully-equipped major assemblies and completed at Avalon by the Government Aircraft Factories (GAF), the Australian prime contractor. The first of these, A3-3, was flown by Squadron Leader (later Air Vice-Marshal) Bill Collings at Avalon on 16 November 1963.



Dassault Mirage IIIO A3-1 photographed over Avalon, Victoria on 16 September 1964, barely eight months after its acceptance by the RAAF. This aircraft was to crash at Avalon less than three months later on 7 December 1964, during tests at 11 000m (36 000ft) when a spin developed, and the pilot was unable to recover, ejecting at 1400km/h (approximately 750 knots and supersonic) and at a height of 2134m (7000ft). Source: RAAF



A formation of four Dassault Mirage IIIOs photographed on 27 June 1986 (A3-48, A3-34 and A3-54 of No 79 Squadron and A3-5 of No 3 Squadron). Source: Department of Defence

Gradually the French production content was reduced, with GAF subcontracting the wings, tail and engine to the Commonwealth Aircraft Corporation (CAC). A3-3 to A3-8 were also built in France but assembled in Australia, A3-9 and 3-10 were supplied as sub-assemblies, A3-11 to A3-15 contained decreasing proportions of French components, and those following can be regarded as Australian-built. A3-16 first flew in May 1965.

The first order for thirty aircraft (A3-1 to A3-30), was followed in 1962 by an order for a further thirty (A3-31 to A3-60). In 1963 the order was increased by another forty (A3-61 to A3-100), followed by an initial ten two-seat trainers, similar to the French Mirage IIIB and designated IIID. These received the serial numbers A3-101 to A3-110.

Following the two French aircraft, the first forty-eight Australian-assembled aircraft (A3-3 to A3-50) were built as Mirage IIIO(F) interceptors with a Cyrano IIA radar. No 2 Operational Conversion Unit (2OCU) at RAAF Williamtown began receiving deliveries in 1964. No 75 Squadron became the first operational unit to equip in 1965 followed by No 76 Squadron in 1966.

The next fifty aircraft (A3-51 to A3-100) were built as IIIO(A) ground attack variants with the ground-mapping Cyrano IIB radar and the addition of Doppler navigation and radar altimeters for low-level operation. Ten complete fuselages were imported from France to maintain the delivery rate to the RAAF during strikes at GAF. The 100th and final single-seat Mirage IIIO was delivered to the RAAF in December 1968.



Dassault Mirage IIIO A3-10 of No 2 Operational Conversion Unit flying over Sydney. Source: RAAF



A lineup of No 75 Squadron Mirage IIIO aircraft photographed at Darwin on 8 October 1966 for Operation *Castor Oil*. Source: RAAF



Dassault Mirage IIIO A3-42 of No 77 Squadron taxiing on 27 January 1987. Source: Department of Defence

In 1967 No 75 Squadron deployed to Malaysia to replace No 3 Squadron, which then became the first unit to equip with the ground-attack Mirage under Wing Commander Jake Newham, who was later to be Chief of the Air Staff. When No 3 Squadron returned to Butterworth in 1969, No 77 Squadron re-equipped and became the fourth RAAF Mirage squadron.

A3-101, the first Mirage IIID two-seater, flew on 6 October 1966. It was accepted by the RAAF at Avalon on 10 November and a further nine followed over the next year. The trainer version did not have the Cyrano II nose radar; a second cockpit was added behind the first and the avionics equipment previously stored there was relocated in the nose. The Mirage trainers were assembled by GAF from imported French-built fuselages and CAC-built wings and vertical tail surfaces.

In December 1970 the government approved the procurement of six additional Mirage IIIDs at a cost of \$11 million. These aircraft (A3-111 to A3-116) were delivered between August 1973 and January 1974, enabling the retirement of the Sabre from operational fighter training.

An anomaly in Mirage deliveries occurred with A3-26. Dassault retained this aircraft in France from 1965 to 1968 as a trial installation for the IIIO(A)

standard. The aircraft was finally delivered to 2OCU in November 1968 and the following June it was decided to convert the remaining IIIO(F) aircraft to IIIO(A) standard for the ground-attack role.

With Defence cuts under the Whitlam Government, No 76 Squadron was disbanded among much ill-feeling in August 1973. The remaining three squadrons continued operating the Mirage in both the air defence and ground attack roles based at Williamtown and Butterworth. Several Mirage aerobatic teams were also formed during its service with No 77 Squadron. Best known was the Deltas in 1971, followed by the Miracles in 1976 and, for the RAAF's Diamond Jubilee in 1981, a three-aircraft team of red, white and blue aircraft. Basing of aircraft extended to RAAF Darwin in 1983 when No 75 Squadron relocated from Butterworth.

Despite being the RAAF's frontline fighter for over two decades and reportedly being able to 'hold its own' during Dissimilar Air Combat Training (DACT) with friendly 'adversaries' such as the Hunter, Lightning, Harrier, F-14, F-15 and F-16, the Mirage never fired its weapons in anger. Its period of service was characterised by the continued presence of (usually) two Mirage squadrons at Butterworth as part of Australia's contribution to the Five Power Defence Arrangements.



Dassault Mirage IIIID A3-112 and Mirage IIIO A3-2 of the Aircraft Research Development Unit in their distinctive orange and white scheme used for flight test purposes. circa 1987. Source: RAAF

The original intention was for the RAAF to replace its Mirage fleet by 1979, given a nominal fatigue life of 3000 flying hours per airframe. However, RAAF operations took a greater toll on fatigue life than expected due to a higher utilisation rate than other users and the increased focus on low level air-to-ground operations. As a result, Australia's Aeronautical Research Laboratories (ARL) undertook fatigue life testing and once the source of fatigue cracking was understood, ARL designed boron fibre repair patches to prevent wing cracks from spreading.

Further activity to extend wing life included re-skinning or replacing wings during the late 1970s at a time when the fleet was also being upgraded with improved avionics and ejection seats along with replacement of the ageing AIM-9B Sidewinder missiles with the much-improved Matra R.550 air-to-air missile. Some Australian Mirages flew over 4000 hours.

As 20CU began to work up for the F/A-18 Hornet in 1984, all Williamtown-based Mirages were transferred to No 77 Squadron. With some forty of the type on strength at the time, No 77 Squadron

became the largest peacetime fighter squadron in the RAAF. The squadron finally relinquished their Mirages for Hornets in November 1987.

In March 1986 No 79 Squadron reformed at Butterworth from No 3 Squadron as the latter began conversion to the Hornet. No 79 Squadron operated the Mirage until disbanding in April 1988, leaving No 75 Squadron at Darwin and the Aircraft Research and Development Unit (ARDU) at Edinburgh as the remaining operators. In early September 1988, No 75 Squadron flew a formation of Mirages over the east coast state capitals as a farewell gesture before the aircraft ceased squadron operations on 30 September.

In October the remaining No 75 Squadron Mirages were ferried to Woomera and appropriately, this squadron, which was the first to equip with the Mirage in 1965, was the last to operate it. The final RAAF Mirage flight was on 8 February 1989 when A3-101 was flown from ARDU at Edinburgh to Woomera to join forty-seven of the type in storage pending their disposal.

In 1990 Pakistan purchased fifty RAAF Mirages comprising forty single-seaters and eight two-seaters stored at Woomera plus two single-seaters which

had been stored at RAAF Point Cook, and five incomplete airframes. Of these, forty-five were taken into operational service with the Pakistan Air Force, and about two-thirds of them were upgraded to ROSE 1 (Retrofit of Strike Element) configuration by 1998. Pakistan seems likely to retain its Mirages in service into the early 2020s.

The Mirage saw longer service in our frontline than any other fighter before the F/A-18 Hornet. While over forty were lost in flying accidents, those who flew it held the type in high regard and the RAAF service of the *'Miracle'* or *'French Lady'* has been honoured with over a dozen examples on display on bases and in museums around Australia.

TECHNICAL DATA: Dassault Mirage IIIO

DESCRIPTION:

Single-seat interceptor/ground attack fighter.

POWER PLANT:

One 60.1kN (13 670lb) thrust with afterburner SNECMA Atar 9C turbojet.

DIMENSIONS:

Span 8.22m (26ft 11.5in); length 15.03m (49ft 3.5in); height 4.50m (14ft 9in).

WEIGHTS:

Empty 7049kg (15 540lb); max loaded 13 699kg (30 200lb).

ARMAMENT:

One Matra R530 and two Sidewinder AIM-9B or (later) two Matra R550 Magic air-to-air missiles; two 30mm cannon. Typical ground attack load six Mk.82 227kg (500lb) bombs or three GBU-12 laser-guided bombs. Max external load 3992kg (8800lb).

PERFORMANCE:

Max speed Mach 1.14 (1390km/h/864mph) at sea level, Mach 2.2 (2350km/h/1460mph) at 10 973m (36 000ft); time to 10 973m (36 000ft) 3.0min; service ceiling 16 994m (55 755ft); combat radius (ground attack) 1200km (746 miles); max ferry range 3862km (2400 miles).



Dassault Mirage IIIO A3-33 showing the sleek lines and the delta wing form that are characteristic of the Mirage family of aircraft. Source: RAAF