

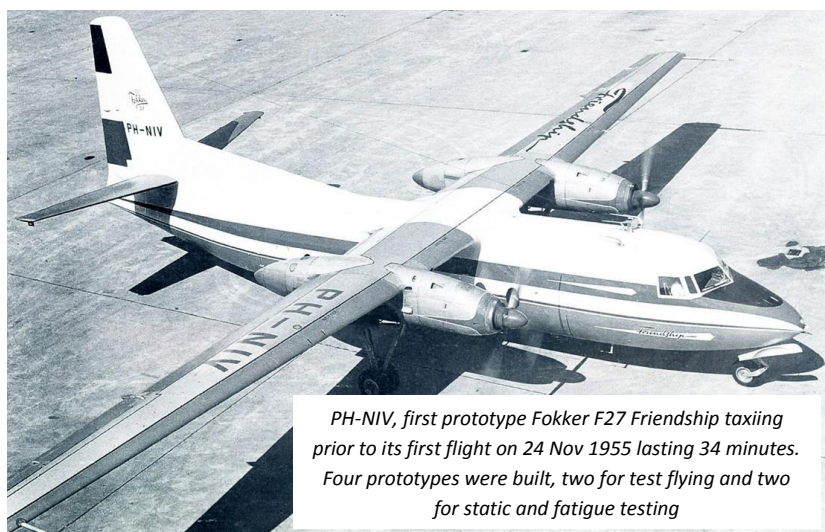
SOUTH AUSTRALIAN AVIATION MUSEUM

SIGNIFICANT AIRCRAFT PROFILES

F27 FOKKER FRIENDSHIP

Following WWII, the Douglas DC-3 could be found operating in most countries throughout the world, some 10,000 having been built between 1942 and 1945. They were readily available, as was their spare parts inventory. By the early 1950s, however, a number of western aircraft manufacturers and airline companies had begun examining the post WWII civil aviation markets and the aircraft types that could likely fulfil these requirements.

Among the manufacturers was the Fokker company located in the Netherlands near Schipol and named after its founder, Anthony Fokker. Although he had died in 1939, the company had maintained its aviation involvement that had begun prior to WWI. A steady stream of both military and civil aircraft had left Fokker production lines over the years. Types ranged from the Fokker DR-1 tri-plane, associated with Imperial Germany's legendary fighter pilot, Baron Manfred von Richtofen, to the Fokker F.VII-3m tri-motor, known to most Australians as the "Southern Cross" in which Sir Charles Kingsford-Smith made the first Pacific crossing from the US to Australia. Interestingly, by 1938, Fokker was carrying out design work on the F24, a twin engine, high wing aircraft accommodating 36 passengers. With the outbreak of WWII in the following year, further development did not proceed.



By 1951, Fokker had recommenced design work on a 32 seat aircraft as a prospective DC-3 replacement. The design incorporated new technologies, as Fokker had sought the views of numerous DC-3 operators regarding features they felt would enhance the new model. In mid 1952, Fokker established a relationship with the North American firm Fairchild that took an option

on a licence to build the forthcoming aircraft in the US. This proved to be a beneficial move by Fokker, as it gave it access to a large market normally dominated by US manufacturers.

Fokker chose Rolls Royce Dart turboprops to power the new aircraft, after originally considering Wright Cyclone piston engines. At this stage, the Darts were proving quite successful on the early Vickers Viscounts. A high wing was selected, as wind tunnel tests revealed a higher lift coefficient as opposed to a lower wing. The high wing arrangement had other advantages: it allowed passengers unfettered views and permitted easier loading by ground handlers due to the lower floor level. Although the high wing placement did require additional strengthening of the lower fuselage should a belly landing be required, no performance penalties resulted from the weight increase. Fokker was the first company to utilise a metal to metal bonding technique in the manufacture of the F27, in a step up from the De Havilland process of gluing metal to wood. It took some time before Fokker was able to overcome a number of obstacles to perfect the process, but it was justified by a 15 per cent lighter weight structure, longer fatigue life and improved aerodynamics. The name "Friendship" was announced in 1953 and the first of four prototypes flew in November 1955.

Initially airlines were slow in placing orders for the F27, although TAA (Trans Australia Airlines) did order six Friendships in 1956. The early foresight displayed by TAA marked the beginning of a long relationship between the airline and Fokker. TAA would eventually operate over 30 F27 aircraft of different Marks in its fleet. Fokker became reliant on funding from a number of banks and the Dutch government to maintain production until airline operators began showing more interest in this new entrant into civil aviation. Fokker's persistence began to pay off (quite literally) in 1960 as Friendship orders were received from numerous airlines. In fact, when production finally ended in 1986, a total of 592 F27s had been built at Schipol.

Across the Atlantic, Fairchild, having taken out an option with Fokker in 1952, signed an agreement in April 1956 to build the F27

under licence in the USA. Subsequently, the first Fairchild F27 prototype flew in April 1958 and remained in production until July 1973. In 1964, the company underwent a name change, becoming the Fairchild-Hiller Corporation and subsequent aircraft were designated as the FH-227. When Fairchild-Hiller ceased production, a total of 206 F27/FH-227 aircraft had been built.

TAA's first Friendship, VH-TFB, arrived in Australia in April 1959, the first of almost 80 F27s that would operate across the nation. VH-TFB was a Mk100 model, seating 36 passengers, with a cruising speed of 230kts/425km/h at an altitude of 20,000ft. Its two 1630shp/1215kW Rolls Royce Dart R.Da6 Mk511 turbo prop engines were able to uplift a maximum takeoff (MTOW) weight of 16,210kg/35,700lb over a 675nm/1250km sector. Under dry and hot conditions, engine take off power could be augmented by direct water methanol injection. At the time of VH-TFBs arrival, Australian orders for F27s had increased to 18, with TAA ordering 12 and Ansett-ANA 6.



Ansett F27-200 VH-MMR arriving Adelaide Airport in 1978. The port engine is already shut down for disembarkation and loading staff are in position to load/unload freight and baggage before the next service

TAA brings you

A NEW PROP-JET AIRCRAFT WITH HIGH-WING FOR PERFECT VIEW

TAA
prop-jet
FRIENDSHIP

Hills, lakes, towns, sea and sky — all that there is to see you will see when you fly by magnificent TAA prop-jet Friendships. There's no obstruction, nothing to mar your view. Friendships' Rolls-Royce engines are mounted on a distinctive high wing, so that the changing landscape comes to you in one sweeping, crystal-clear panorama.

Nothing can take the place of TAA's four years' experience in the prop-jet field.

These magnificent, pressurised aircraft will soon be here — look for the distinctive high wing and streamlined, uprushed tail — trade-marks of the new TAA prop-jet Fokker Friendships.

Fly TAA - the friendly way

An early advertisement for TAA and its new prop-jet Friendship. Particular attention seems to be drawn to the sweeping views it provides courtesy of the high wing location. The "Air Hostess" uniform also reflects a past era.

TAA introduced their F27 fleet primarily on intrastate routes, with the aircraft soon earning passenger praise, no doubt due to shorter flight times and a cabin that was both pressurised and air conditioned. Tragically, TAA F27 VH-TFB, "Abel Tasman" would be lost on 10 June 1960 when it crashed into the sea off Mackay, Queensland. There were no survivors from the crew of 4 and 25

passengers. The aircraft had departed from Rockhampton, arriving at around 2030 (8.30 pm) but, due to fog, held over Mackay until 2200 (10.00 pm) when it commenced an approach. Nothing more was heard from the aircraft. A subsequent investigation was unable to make any final determination as to the cause. However, one recommendation arising from the enquiry was that passenger aircraft of F27 size and above should be equipped with flight data recorders.

Despite the early setback due to TAA's loss of VH-TFB, F27 numbers steadily grew over the next three decades. Ansett-ANA F27s operated across the nation, through both its mainline and interstate subsidiary companies.

Airlines of South Australia (ASA), the smallest airline subsidiary, after retiring its Convair 440 and DC-3 aircraft, re-equipped with F27s, the first arriving in September 1966. With a fleet of four Friendships based at Adelaide airport, normal weekly scheduling would see their aircraft involved in:

1. RPT (Regular Public Transport) services to country centres, i.e. Port Lincoln, Kingscote, Mt Gambier etc;
2. Weekday charter flights to Moomba in the state's far north gas fields;
3. Night freighter flights (Mon-Thu) to Melbourne and return using F27 400 QC (Quick Change) aircraft; and
4. Weekend holiday flights to the New South Wales snow fields, Tasmanian scenic tours, Birdsville races etc.



*Airlines of SA F27-200 VH-MMR
The aircraft was originally ordered and operated by MacRobertson Miller Airlines in WA, then by Airlines of NSW and finally by Airlines of SA. It last flew in 1988*



*East-West F27-500 VH-EWP
Over a 30-year span, east-West operated over 20 F27 aircraft, initially Mk100s then Mk500s*

Ansett-ANA's two other subsidiary airlines, Airlines of New South Wales (ANSW) and MacRobertson Miller Airlines (MMA), operated along similar lines. However, their different geographic and demographic conditions necessitated larger F27 fleets. Another F27 operator, East West Airlines (EWA), was based at

Tamworth in New South Wales. The airline commenced operating in June 1947 and over the next few years its fleet consisted of Avro Anson, DC-3 and Lockheed Hudson aircraft. As was the case with its competitors, EWA was also looking for an aircraft that could replace its ageing fleet. Its assessment also led it to select the F27, with the first aircraft, a Mk100 VH-EWA, arriving in Tamworth in August 1959. Over the years, EWA like other F27 operators, replaced its original aircraft with later models, which eventually saw it operate some 20 plus Friendships over a 30 year period.

Throughout its production life the F27 underwent a number of modifications that were reflected in various Marks, commencing with the Mk100 through to the Mk800 for commercial operators. Fokker also adapted the F27 for either a troop carrying or maritime reconnaissance role. The majority of F27s that flew in Australia were Mk100, Mk200, Mk400QC, Mk500 and MK600QC.

TAA F27-600QC VH-TQP

Both Ansett and TAA operated F27 QC (Quick Change) aircraft, generally Mk400 or Mk600 models. The enlarged freight door allowed both quicker removal of passenger seats and loading of either palletised or general freight



F27QC(Quick Change) aircraft had a large cargo door located on the port side forward fuselage that allowed quick cabin seating removal and the loading of cargo pallets. Commencing with the Mk500, the fuselage was stretched 1.5m/5ft, enabling up to 52 passengers to be carried. Accordingly, the Rolls Royce Darts were upgraded to R.Da7 Mk536-7R of 2140shp/1595kW, with a MTOW of 20,800kg/45,900lb and a cruising speed of 254kt/470km/h.

Although F27s were not built anywhere near DC-3 numbers, the F27 proved a worthy DC-3 replacement. Until the Friendship's arrival, most rural communities in Australia were being served by piston engine aircraft, their origin mostly predating WWII. The turbo prop F27, brought to Australia in 1959 by TAA, introduced much improved levels of efficiency in regard faster flight times, passenger comfort and reliability. After a career spanning almost 30 years, most Australian operators had withdrawn their F27 aircraft from service by the late 1990s. Despite numerous improvements that saw other turbo props introduced after the F27s Australian career ended, the Fokker Friendship set standards for others to follow.

Dean Robinson
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November 2014.

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FOKKER F27 FRIENDSHIP		
Specifications for Mk100 and Mk500 Aircraft		
	Mk100	Mk500
Powerplants	1,630shp [1,215kW] Rolls-Royce Dart R.Da6 Mk511	2,140shp [1,595kW] Rolls-Royce Dart R.Da7 Mk536-7R
Normal cruise 20,000ft	230kt [428km/h]	254kt [470km/h]
Service ceiling	29,000ft	29,500ft
Range with max payload	675nm [1245km]	535nm [990km]
Range with max fuel	1,065nm [1,970km]	985nm [1,825km]
Weight empty	10,305kg [22,696lb]	11,160kg [24,585lb]
Max payload	6,395kg [14,089lb]	5,990kg [13,192lb]
Max takeoff weight	16,210kg [35,700lb]	20,840kg [45,900lb]
Max landing weight	15,435kg [34,000lb]	19,070kg [42,000lb]
Span	29.00m [95ft 2in]	29.00m [95ft 2in]
Length	23.56m [77ft 4in]	25.04m [82ft 1in]
Height	8.50m [27ft 11in]	8.50m [27ft 11in]
Wheelbase	8.74m [28ft 8in]	9.73m [31ft 11in]
Wing area	70.00m ² [754ft ²]	70.00m ² [754ft ²]
Cabin length excl flight deck	14,46m [47ft 5in]	15.96m [52ft 4in]
Cabin max width	2.57m [8ft 5in]	2.57m [8ft 5in]
Cabin max height	2.03m [6ft 8in]	2.03m [6ft 8in]
Cabin volume	60.4m ³ [2,136ft ³]	66.8m ³ [2,360ft ³]
Typical passenger load	40	52