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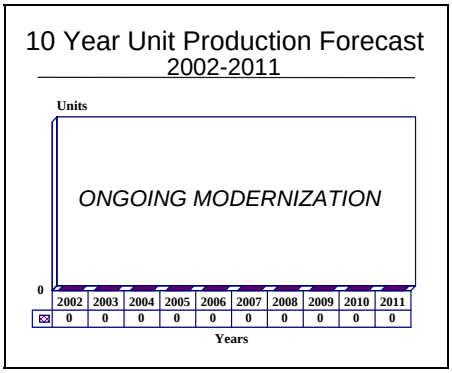
Saab 340 - Archived 3/2003

Outlook

- Production of the Saab 340 series ended in 1999
- More than 450 Saab 340s were produced



Orientation

Description. Pressurized, twin-turboprop, 30-37 passenger regional/commuter transport aircraft.

Sponsors. The 340 was originally sponsored by Saab and Fairchild Industries. Saab assumed control of the program in 1985.

Contractors. Saab AB, Saab Aircraft AB; Linkoping, Sweden. In May 1995, Saab-Scania AB was split into two independent companies: Saab AB and Scania AB. Both are fully owned units of Investor Group, which had been the parent company of Saab-Scania.

Status. Production of the Saab 340 series ended in 1999.

Total Produced. Saab produced a total of 459 Saab 340s, including prototype/flight test units.

Application. Regional/commuter passenger transportation. Additional uses include corporate/business transportation and military airborne early warning.

Price Range. 340BPlus, $9.7 million in 1999 US dollars.

Technical Data

(Saab 340B)

Design Features. Cantilever low-wing monoplane with cantilever tail section and retractable tricycle landing gear. The wing is constructed primarily of light aerospace alloys with some composite materials in the trailing and leading edges and ailerons. Single-slotted flaps are hydraulically actuated. The tail section is composed of a swept vertical stabilizer with a single piece rudder and trim tab, and twin unswept horizontal stabilizers, each with a single elevator and trim tab.

	Metric	US
Dimensions		
Length overall	19.73 m	64.73 ft
Height overall	6.97 m	22.87 ft
Wingspan	21.44 m	70.34 ft
Cabin length	10.39 m	34.09 ft
Cabin width	2.16 m	7.09 ft

	Metric	US
Cabin height	1.83 m	6.0 ft
Wing area, gross	41.81 sq m	450.0 sq ft
Weight		
Operating weight empty	8,225 kg	18,133 lb
Max T-O	13,155 kg	29,000 lb
Max ZFW	12,020 kg	26,500 lb
Max payload (weight limited)	3,795 kg	8,366 lb
Capacities		
Fuel	3,220 liters	850.5 gal
Baggage volume	6.80 cu m	240.0 cu ft
Performance[a]		
Max cruise speed[b]	522 kmph	282 kt
Range, 35 pax, fuel reserves, max cruise	1,389 km	750 nm
Service ceiling, standard	7,620 m	25,000 ft

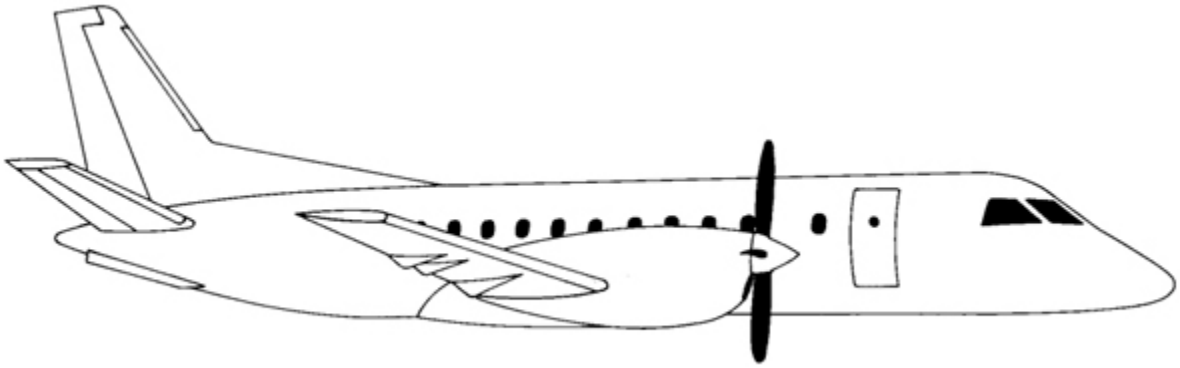
Propulsion

340A	(2)	GE Aircraft Engines CT7-5A2 two-shaft, axial-centrifugal flow turboprop engines each rated 1,294 kW (1,735 shp); each driving Dowty four-bladed, constant-speed, fully feathering and reversible propellers of 10.5 foot diameter.
340B/BPlus	(2)	GE Aircraft Engines CT7-9B turboprop engines each rated 1,394 kW (1,870 shp) with automatic power reserve. Each powerplant drives a Dowty or optional Hamilton Standard four-bladed propeller.

Seating

Crew of two. Standard accommodation for 35 passengers at 76 centimeter (30 inch) pitch, in 11 rows of three abreast. Corporate versions seat 14-27. High-density commuter seating of up to 37 in 12-row layout.

[a]At maximum take-off weight, ISA, unless otherwise noted.
[b]At 4,575 meters (15,000 feet).



SAAB 340

Source: Forecast International

Variants/Upgrades

340A. Initial version flown in January 1983 and certificated in May (Sweden) and June (US) 1984. The early GE CT7s produced 1,630 shp and were subsequently replaced in 1985 by the more powerful CT7-5A2 engine rated 1,735 shp. Several minor derivatives were produced, including a QC, or Quick Change, version for passenger and freight carriers, and a corporate model, seven of which were sold.

340B. Improved version incorporating more powerful GE CT7-9B turboprops, a new interior, higher gross weight, and better hot/high performance. A Saab 340 with CT7-9 engines was first flown in September 1987, with the initial production model taking to the skies in April 1989. Deliveries to launch customer Crossair began in September 1989. All major systems of this aircraft were identical to those of the 340A, including the Collins Pro Line II or AlliedSignal (Bendix/King) Gold Crown avionics.

The 340B was also available in a combi version capable of carrying 19 passengers and 1,500 kilograms (3,307 lb) of cargo.

340BPlus. Advanced version of 340B, featuring stretched wing with new propeller brake, active noise control system, and optional wing tip extensions and low-pressure tires. Deliveries began in 1994.

340C. A proposed upgrade incorporating more powerful CT7-11 turboprop engines, active noise suppression systems, greater range, and better take-off and landing performance and climb rate. This design was abandoned.

340 AEW. Airborne early warning (AEW) variant of Saab 340B. Features a strengthened structure to carry Ericsson Erieye radar antenna atop the fuselage. The Swedish government ordered one prototype 340 AEW in February 1993, and five additional aircraft later that year. Initial flight occurred in January 1994. Deliveries of all six have been completed.

SAR-200. Saab 340BPlus version purchased by Japan's Maritime Safety Agency for search-and-rescue use. This version is called the SAR-200. It features a Telephonics APS-143(V) search radar mounted below the fuselage, an FSI AAQ-22 turreted forward-looking infrared and flight management system, a large forward window, a drop hatch, and a flare/marker buoy launch system. The Maritime Safety Agency ordered two SAR-200s in 1996.

Program Review

Background. Saab had been working for some years on a light transport designated Transporter and, in late 1979, froze the design of Model 1082 as a low-wing, twin-turboprop, 36-passenger commuter. During the final six months of the project, Saab had been having discussions with Fairchild regarding collaborative development of a commuter transport and, in January 1980, an agreement covering such work was announced. Under the agreement, Saab handled about 75 percent of the development work, but production was split 50-50 between the two companies. Fairchild provided the aircraft's wings, engine nacelles, and tailplanes, while Saab was responsible for the fuselage, final assembly, and flight testing up to certification. In 1985, Fairchild withdrew from the program and, in 1987, ceased supplying aircraft subsystems and airframe components altogether.

Design Details. The cabin of the SF-340, as the aircraft was initially designated, features three-abreast seating with a recessed aisle, and a main passenger door with separate air stair is located forward of the wing on the port side. The airfoil section of the high-aspect ratio wing was based on new designs developed by NASA, resulting in reduced cruise drag, increased low-speed lift, and improved lift:drag ratios in both take-off and climb.

In late November 1983, Saab-Fairchild announced a new cabin layout which was eventually provided as a standard feature. This redesigned cabin, with a 35th seat, provided less congestion in the galley area and a more spacious toilet compartment. The incorporation of these changes resulted in a payload increase and a higher maximum take-off weight.

Avionics and Equipment. In June 1985, Rockwell Collins was chosen to supply avionics for five 340s ordered by Republic Express. Digital avionics included the APS-85 autopilot system, EFIS-85 electronic flight instrument system (EFIS), AHS-85 Attitude Heading Reference System (AHRS), Pro Line II com/nav pulse, and Pro Line II controls. Subsequently, AlliedSignal (Bendix/King) Gold Crown avionics were marketed as an option. Other avionics equipment available included a Lucas Aerospace electroluminescent flight deck instrument panel array, a Dowty microprocessor-based flight deck central warning system, and a Rosemount pitot static tube.

Improved 340B Launched. In September 1987, Saab announced plans to begin delivering an advanced 340B model in the spring of 1989. Designed primarily for hot/high operations, the 340B model was powered by CT7-9B engines rated at 1,870 shp each with automatic power reserve. As compared with the earlier

model, the B variant provided increased cruise speeds, climb rates, and range, while its maximum take-off weight increased from 12,700 kilograms (28,000 lb) to 13,155 kilograms (29,000 lb). The 340B entered production in 1989, with first deliveries commencing in September of that year.

Saab Decides to Cease 340 Production. In October 1997, Saab announced that it was considering ceasing regional aircraft production due to declining demand and the fact that the operation had lost approximately 1.0 billion Swedish kroner ($128 million) per year over the previous few years. Saab then continued to study the situation. Two months later, in December 1997, the Saab board of directors decided to discontinue production of the company's two regional aircraft, the Saab 340 and the Saab 2000, by mid-1999. Saab said at the time that current and anticipated orders for its two regional aircraft made it possible to continue production until mid-1999.

Saab's aircraft operation now concentrates on providing customer support and finance for the existing fleet of more than 500 Saab aircraft, and on contracting for other manufacturers. The company also retained responsibility for the aircraft in its leasing portfolio.

Funding

Not available.

Recent Contracts

None

Timetable

Month	Year	Major Development
Late	1970s	Saab commuter studies began
Jan	1980	Joint development/production agreement with Fairchild announced
Oct	1982	Prototype rollout
Jan	1983	Prototype first flight
Jun	1984	JAR/FAR certification obtained
Jun	1984	First deliveries made
May	1985	Aircraft certification with CT7-5A2 granted
Nov	1985	Fairchild withdrew from program
Early	1986	Saab Aircraft of America Inc established for North American marketing/product support
Sep	1987	100th 340 delivered
Sep	1987	Saab launched 340B
Sep	1987	First flight of 340 with CT7-9B engines
Feb	1988	Saab discontinued corporate Model 340
Apr	1989	First flight of production 340B
May	1989	American Eagle ordered 100 firm and optioned 340Bs
Sep	1989	Deliveries of 340B began
Apr	1994	Deliveries of 340BPlus began
Mid	1999	Production of 340 series ended

Worldwide Distribution

See World Airline Inventories in the Appendices.

Forecast Rationale

Saab ended production of the 340 and the 2000 in mid-1999. The two turboprops were the victims of the trend in the regional transport market toward jet-powered aircraft. Saab sold more than 450 Model 340s during

the life of the program, including 51 during the two-year period 1996-1997.

Despite this past success, though, the Saab 340 was clearly not immune to regional aircraft market fundamentals. Long-term trends toward larger capacity aircraft as well as toward jet-powered transports worked against the 340. The development of the Embraer ERJ 135 37-passenger jet and the Fairchild Dornier 328JET 34-passenger transport did not bode well for any turboprop in the 30-39-passenger category. Also, all but two of the 51 orders for new-production 340s placed in 1996-1997 were from one customer, US regional carrier Mesaba Airlines.

Approximately 400 Saab 340s remain in active service. Potential opportunities exist for retrofit and modification work.

Ultra Electronics is marketing its UltraQuiet active noise control system for retrofit to Saab 340A/Bs. This system was standard equipment on the Saab 340BPlus and the Saab 2000.

The UltraQuiet system is integrated into the trim of the aircraft and produces canceling noise within the cabin. This is a mirror image of the unwanted, original aircraft noise which, when combined with the original, reduces it. Residual noise is monitored by a network of microphones enabling the system to continuously adapt to changes in flight conditions and passenger movement. The performance of the retrofit system is to be similar to that of the production system.

In June 1999, Ultra Electronics announced that the Swedish airline Golden Air signed a Letter of Intent to purchase the UltraQuiet system for retrofit to its Saab 340 fleet. The agreement was for the supply of five systems.

Saab is developing a cargo conversion program for the 340. It will retain the aircraft's existing 1.32 meter x 1.35 meter (52 in x 53 in) door rather than install a new cargo door. Mesaba has indicated interest in converting 20-35 of its 340s to freighters.

In mid-2001, Saab and Piedmont Hawthorne formed an alliance to market existing 340s for use as corporate shuttles. The 340 corporate shuttle has 27 seats rather than the standard 35-seat airliner configuration.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR PRODUCTION

			High Confidence Level				Good Confidence Level			Speculative			
Aircraft	**(Engine)**	**thru 01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**	**09**	**10**	**11**	**Total 02-11**
SAAB													
340A	CT7-5A2	167	0	0	0	0	0	0	0	0	0	0	0
340B (MILITARY)	CT7-9B	6	0	0	0	0	0	0	0	0	0	0	0
340B/BPLUS	CT7-9B	286	0	0	0	0	0	0	0	0	0	0	0
Total Production		459	0	0	0	0	0	0	0	0	0	0	0