by 30 per cent. A flow-through exhaust-heated intake lip provides continuous anti-ice protection. Other improvements include aerodynamically faired exhaust stacks, dual-vane dual-motor inertial ice separators, hydraulically actuated landing gear retraction and extension, a three-bus electrical power distribution system with automatic load shedding capability and a rudder boost system for engine-out flight conditions.

The King Air C90A utilises the cabin pressurisation and heating system of the King Air F90-1. This provides a sea level cabin environment to an altitude of 3,370 m (11,065 ft) and a 2,440 m (8,000 ft) cabin altitude to a height of 7,045 m (23,120 ft); the corresponding figures for the C90A are 3,050 m (10,000 ft) and 6,400 m (21,000 ft) respectively.

A total of 1,100 commercial and 165 military King Air 90/A90/B90/C90/C90-1/C90As had been delivered by 1 January 1985.

TYPE: Six/ten-seat twin-turboprop business aircraft.

WINGS: Cantilever low-wing monoplane. Wing section NACA 23014·1 (modified) at root, NACA 23016·22 (modified) at outer end of centre-section, NACA 23012 at tip. Dihedral 7°. Incidence 4° 48' at root, 0° at tip. No sweepback at quarter-chord. Two-spar aluminium alloy structure. All-metal ailerons of magnesium, with adjustable trim tab on port aileron. Single-slotted aluminium alloy flaps. Automatic pneumatic de-icing boots on leading-edges are standard.

FUSELAGE: Aluminium alloy semi-monocoque structure.

TAIL UNIT: Cantilever all-metal structure with sweptback vertical surfaces. Fixed incidence tailplane, with 7° dihedral. Trim tabs in rudder and each elevator. Automatic pneumatic de-icing boots on leading-edges of fin and tailplane are standard.

LANDING GEAR: Hydraulically retractable tricycle type. Nosewheel retracts rearward, mainwheels forward into engine nacelles. Mainwheels protrude slightly beneath nacelles when retracted, for safety in a wheels-up emergency landing. Fully castoring steerable nosewheel with shimmy damper. Beech oleo-pneumatic shock absorbers. Goodrich mainwheels with tyres size 8·50-10, pressure 3·79 bars (55 lb/sq in). Goodrich nosewheel with tyre size 6·50-10, pressure 3·59 bars (52 lb/sq in). Goodrich heat-sink and aircooled multi-disc hydraulic brakes. Parking brakes.

POWER PLANT: Two 410 kW (550 shp) Pratt & Whitney Canada PT6A-21 turboprop engines, each driving a Hartzell three-blade constant-speed fully-feathering propeller with spinner. Propeller electrothermal anti-icing, auto ignition system, environmental fuel drain collection system, and magnetic chip detector, standard. Automatic propeller feathering, and propeller synchrophaser, optional. Fuel in two tanks in engine nacelles, each with usable capacity of 231 litres (61 US gallons), and auxiliary bladder tanks in outer wings, each with capacity of 496 litres (131 US gallons). Total usable fuel capacity 1,454 litres (384 US gallons). Refuelling points in top of each engine nacelle and in wing leading-edge outboard of each nacelle. Oil capacity 13·2 litres (3·5 US gallons) per engine. Engine anti-icing system standard. Engine fire detection and extinguishing system optional.

ACCOMMODATION: Two seats side by side in cockpit with dual controls standard. Normally, four reclining seats in main cabin, in pairs facing each other fore and aft. Standard furnishings include cabin forward partition, with fore and aft partition curtain and coat rack, hinged nose baggage compartment door, seat belts and inertia reel shoulder harness for all seats. Optional arrangements seat up to eight persons, some with two- or three-place couch, lateral tracking chairs, and refreshment cabinets. Baggage racks at rear of cabin on starboard side, with optional toilet on port side. Door on port side aft of wing, with built-in airstairs. Emergency exit on starboard side of cabin. Entire accommodation pressurised and air-conditioned. Electrically heated windscreen, windscreen defroster and windscreen wipers standard.

SYSTEMS: Pressurisation by dual engine bleed air system with pressure differential of 0·34 bars (5·0 lb/sq in). Cabin heated by 45,000 BTU dual engine bleed air system and auxiliary electrical heating system. Hydraulic system for landing gear actuation. Electrical system includes two 28V 250A starter/generators, 24V 45Ah aircooled nickel-cadmium battery with failure detector. Complete de-icing and anti-icing equipment. Oxygen system, 0·62 m³ (22 cu ft), 1·39 m³ (49 cu ft) or 1·81 m³ (64 cu ft) capacity, optional. Vacuum system for flight instruments.

AVIONICS AND EQUIPMENT: Standard avionics package comprises dual Collins VHF-251 VHF transceivers; dual Collins VIR-351 Omni nav receivers; Collins AMR-350 audio system; Collins ADF-650A ADF; Collins marker beacon receiver integral with AMR-350, plus marker lights; dual Collins GLS-350 glideslope receivers; Collins DME-451, with Nav 1/Nav 2 switching and DME hold; Collins PN-101 compass system (pilot); Standard Electric gyro horizon (pilot); CF gyro horizon and directional gyro (co-pilot); dual Flite-Tronics PC-125 125VA inverters with failure light; avionics transient protection; dual flight instrumentation; sectional instrument panel; white

Beechcraft King Air C90A business aircraft with new 'pitot' cowlings

include a wide range of equipment by Bendix, Collins, King, Edo-Aire Mitchell, RCA and Sperry. Standard equipment includes dual blind-flying instrumentation with sensitive altimeters, standby magnetic compass, outside air temperature gauge, LCD digital clock/chronometer, vacuum gauge, de-icing pressure gauge, cabin rate of climb indicator, cabin altitude and pressure differential indicators, dual load meters, voltage meter with bus selector switch, propeller de-ice meter, pilot and co-pilot four-way adjustable seats with shoulder harness, map pockets, control locks, storm windows, tracked sun visors, automatic fuel heater system, emergency locator transmitter, heated pitots, heated stall warning transmitter, stall warning device, cabin windows with adjustable polarised shades, carpeted floor, internal corrosion proofing, 'No smoking—Fasten seat belt' sign, fresh air outlets, dual map lights, primary and secondary instrument light systems, indirect cabin lighting, two overhead cabin spotlights, entrance door light, adjustable reading lights, aft compartment lights, dual landing lights, taxi light, position lights, dual rotating beacons, wing ice lights, heated fuel vents, external power socket, static wicks, and external urethane paint. Optional equipment includes flight hour recorder, instantaneous vertical speed indicator, cockpit and cabin fire extinguishers, a range of cabin seats, cabinets, storage drawers and toilets, entrance door step lights, tail floodlights, strobe lights, and wingtip recognition lights.

DIMENSIONS, EXTERNAL:

Wing span	15·32 m (50 ft 3 in)
Wing chord: at root	2·15 m (7 ft 0½ in)
at tip	1·07 m (3 ft 6 in)
Wing aspect ratio	8·57
Length overall	10·82 m (35 ft 6 in)
Height overall	4·34 m (14 ft 3 in)
Tailplane span	5·26 m (17 ft 3 in)
Wheel track	3·89 m (12 ft 9 in)
Wheelbase	3·73 m (12 ft 3 in)
Propeller diameter	2·36 m (7 ft 9 in)
Propeller ground clearance	0·305 m (1 ft 0 in)
Passenger door: Height	1·30 m (4 ft 3½ in)
Width	0·69 m (2 ft 3 in)
Height to sill	1·17 m (3 ft 10 in)

DIMENSIONS, INTERNAL:

Total pressurised length	5·43 m (17 ft 10 in)
Cabin: Length	3·94 m (12 ft 11 in)
Max width	1·37 m (4 ft 6 in)
Max height	1·45 m (4 ft 9 in)
Floor area	6·50 m² (70 sq ft)
Volume	8·88 m³ (313·6 cu ft)
Baggage compartment, aft	1·51 m³ (53·5 cu ft)

AREAS:

Wings, gross	27·31 m² (293·94 sq ft)
Ailerons (total)	1·29 m² (13·90 sq ft)
Trailing-edge flaps (total)	2·72 m² (29·30 sq ft)
Fin	2·20 m² (23·67 sq ft)
Rudder, incl tab	1·30 m² (14·00 sq ft)
Tailplane	4·39 m² (47·25 sq ft)
Elevators, incl tabs	1·66 m² (17·87 sq ft)

WEIGHTS AND LOADINGS:

Weight empty	2,615 kg (5,765 lb)
Max T-O weight	4,377 kg (9,650 lb)
Max ramp weight	4,404 kg (9,710 lb)
Max landing weight	4,159 kg (9,168 lb)
Max wing loading	160·1 kg/m² (32·8 lb/sq ft)
Max power loading	5·34 kg/kW (8·8 lb/shp)

PERFORMANCE (at max T-O weight except where indicated):

Max cruising speed at AUW of 3,855 kg (8,500 lb) at 6,400 m (21,000 ft)
243 knots (450 km/h; 280 mph)

Stalling speed, power off:
wheels and flaps up
89 knots (164 km/h; 102 mph) IAS
wheels and flaps down
76 knots (140 km/h; 87 mph) IAS

Max rate of climb at S/L 656 m (2,155 ft)/min

Rate of climb at S/L, one engine out
164 m (539 ft)/min

Service ceiling 8,565 m (28,100 ft)

Service ceiling, one engine out 4,490 m (14,725 ft)

Min ground turning radius 10·82 m (35 ft 6 in)

Runway LCN 4

T-O run 497 m (1,629 ft)

T-O to 15 m (50 ft) 689 m (2,261 ft)

Accelerate/stop distance 1,066 m (3,498 ft)

Landing from 15 m (50 ft) at max landing weight:
without propeller reversal 613 m (2,010 ft)
with propeller reversal 510 m (1,672 ft)

Landing run at max landing weight:
without propeller reversal 328 m (1,075 ft)
with propeller reversal 225 m (737 ft)

Range with max fuel at max cruising speed, incl allowance for starting, taxi, take-off, climb, descent and 45 min reserves at max range power, ISA, at:
6,400 m (21,000 ft)
1,080 nm (2,001 km; 1,243 miles)
4,875 m (16,000 ft)
935 nm (1,733 km; 1,076 miles)
3,660 m (12,000 ft)
870 nm (1,612 km; 1,002 miles)

Max range at econ cruising power, allowances as above, at:
6,400 m (21,000 ft)
1,315 nm (2,437 km; 1,514 miles)
4,875 m (16,000 ft)
1,180 nm (2,187 km; 1,359 miles)
3,660 m (12,000 ft)
1,070 nm (1,983 km; 1,232 miles)

BEECHCRAFT KING AIR MODEL F90-1

Deliveries of the original King Air F90 began in mid-1979. Basically, it combined the pressurised fuselage of the King Air 90 with reduced span wings similar to those of the King Air 100, and a T tail assembly similar to that of the Super King Air 200. Slow-turning four-blade propellers were fitted, to reduce airport and in-flight noise. Cabin pressurisation was increased to 0·34 bars (5·0 lb/sq in) to give a sea level environment at 3,375 m (11,065 ft), a 2,440 m (8,000 ft) environment at 7,050 m (23,120 ft), and a 3,050 m (10,000 ft) environment at an altitude of 8,075 m (26,500 ft).

The current King Air Model F90-1, announced by Beech on 13 June 1983, has improved performance, resulting from the use of PT6A-135A engines in low-drag 'pitot' cowlings as described for the Model C90A.

A total of 231 commercial King Air F90s and F90-1s had been delivered by 1 January 1985.

TYPE: Seven/ten-seat twin-turboprop business aircraft.

WINGS: Similar to King Air 100 (1983-84 *Jane's*). De-icing system standard.

FUSELAGE: Similar to King Air 90.

TAIL UNIT: Similar to Super King Air 200. Tailplane de-icing standard.

LANDING GEAR: Retractable tricycle type, with twin-wheel main units and single steerable nosewheel with shimmy damper. Electrical retraction, nosewheel rearward, main units forward into engine nacelles. Beech oleo-pneumatic

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spinner. Although flat rated at the same 559 kW (750 shp) as the PT6A-135 engines in the earlier Model F90, the -135A has an ISA rating of 660 kW (885 shp) at max continuous T-O power, instead of 634 kW (850 shp) for the -135 model. Propellers available optionally with reversible pitch. Usable fuel capacity 1,779 litres (470 US gallons). Automatic fuel transfer system, engine anti-icing, propeller de-icing, and ice-free fuel venting system, are standard. Oil capacity 13·2 litres (3·5 US gallons) per engine.

ACCOMMODATION: Two seats side by side on flight deck, with dual controls. Seats for five to eight persons in main cabin, in deep-cushioned chairs. Passengers screened from flight deck and toilet by partitions at front and rear of cabin. Space for 172 kg (380 lb) of baggage. Windscreen anti-icing standard.

SYSTEMS: Pressurisation system, differential 0·34 bars (5·0 lb/sq in); 16,000 BTU air-conditioning system. Electrical system includes two 28V 250A starter/generators and 45Ah aircooled nickel-cadmium battery. Oxygen system, 0·62 m³ (22 cu ft) capacity, with eight automatically deployed passenger masks and one first aid mask.

AVIONICS: Standard avionics package, by Collins, includes two VHF-20A transceivers, VIR-30MGM and VIR-30MG manual omnis, DB system Model 415 audio amplifier, ADF-650A ADF, marker beacon indicator, dual glideslope, DME-40, TDR-950 transponder, and PN-101 compass system. Full blind-flying instrumentation for pilot and co-pilot. Collins APS-80 autopilot, and large range of optional avionics available.

DIMENSIONS, EXTERNAL:

Wing span	13·98 m (45 ft 10½ in)
Length overall	12·13 m (39 ft 9½ in)
Height overall	4·62 m (15 ft 1¾ in)
Tailplane span	5·61 m (18 ft 5 in)
Wheel track	3·96 m (13 ft 0 in)
Wheelbase	3·80 m (12 ft 5½ in)
Propeller diameter	2·34 m (7 ft 8 in)
Propeller ground clearance	0·32 m (1 ft 0¾ in)
Passenger door: Height	1·31 m (4 ft 3½ in)
Width	0·69 m (2 ft 3 in)

DIMENSIONS, INTERNAL:

Cabin, excl flight deck: Length	3·86 m (12 ft 8 in)
Max width	1·37 m (4 ft 6 in)
Max height	1·45 m (4 ft 9 in)
Volume	8·88 m³ (313·6 cu ft)
Avionics compartment volume	0·45 m³ (16 cu ft)
Rear baggage compartment volume	1·51 m³ (53·5 cu ft)

AREA:

Wings, gross	25·99 m² (279·74 sq ft)

WEIGHTS AND LOADINGS:

Weight empty	3,015 kg (6,647 lb)
Max T-O and landing weight	4,966 kg (10,950 lb)
Max ramp weight	5,003 kg (11,030 lb)
Max wing loading	190·8 kg/m² (39·1 lb/sq ft)
Max power loading	4·4 kg/kW (7·3 lb/shp)

PERFORMANCE (at max T-O weight except where indicated):

Max cruising speed at average cruise weight:
- at 3,660 m (12,000 ft): 279 knots (517 km/h; 321 mph)
- at 5,490 m (18,000 ft): 275 knots (510 km/h; 316 mph)
- at 7,925 m (26,000 ft): 265 knots (491 km/h; 305 mph)

Max operating speed (VMO): 253 knots (469 km/h; 291 mph) IAS

Stalling speed, power off:
- flaps up: 94 knots (174 km/h; 108 mph) IAS
- 32·5% flap: 87 knots (162 km/h; 101 mph) IAS
- 100% flap: 79 knots (147 km/h; 91 mph) IAS

Max rate of climb at S/L	748 m (2,455 ft)/min
Rate of climb at S/L, one engine out	192 m (632 ft)/min
Service ceiling	9,280 m (30,450 ft)
Service ceiling, one engine out	4,660 m (15,300 ft)
Min ground turning radius	10·06 m (33 ft 0 in)
T-O run, 32·5% flap	465 m (1,524 ft)
T-O to 15 m (50 ft), 32·5% flap	1,196 m (3,925 ft)

Landing from 15 m (50 ft):

without propeller reversal	907 m (2,977 ft)
with propeller reversal	694 m (2,275 ft)

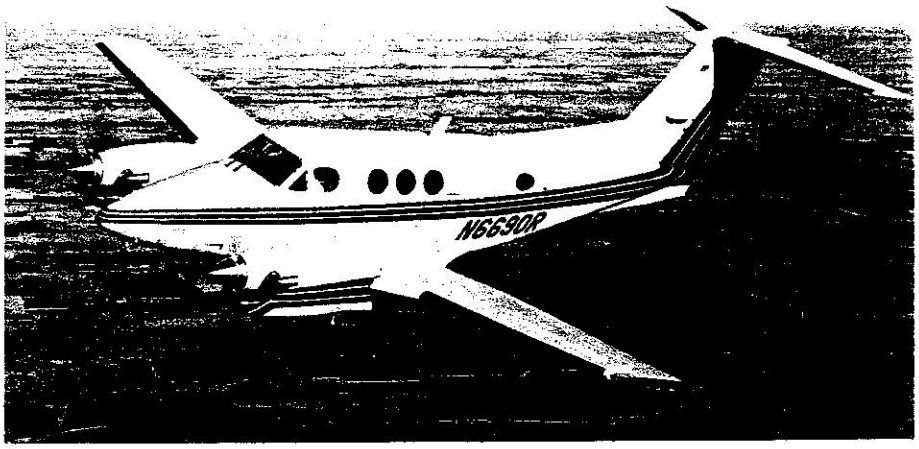
Landing run:

without propeller reversal	578 m (1,895 ft)
with propeller reversal	364 m (1,194 ft)

Accelerate/stop distance, 32·5% flap: 1,073 m (3,520 ft)

Cruising range at max cruise power, with reserves:
- at 3,660 m (12,000 ft): 961 nm (1,781 km; 1,106 miles)
- at 5,490 m (18,000 ft): 1,156 nm (2,142 km; 1,331 miles)
- at 7,925 m (26,000 ft): 1,439 nm (2,667 km; 1,657 miles)

Cruising range at max range power, with reserves:
- at 3,660 m (12,000 ft): 1,187 nm (2,200 km; 1,367 miles)
- at 5,490 m (18,000 ft): 1,397 nm (2,589 km; 1,608 miles)
- at 7,925 m (26,000 ft): 1,612 nm (2,987 km; 1,856 miles)



Beechcraft King Air F90-1 seven/ten-seat business aircraft, showing redesigned engine cowlings

BEECHCRAFT SUPER KING AIR 200 and B200

US military designation: C-12

Design of the **Super King Air 200** began in October 1970, construction of the first prototype and first pre-production aircraft starting simultaneously a year later. The first prototype (c/n BB1) flew for the first time on 27 October 1972, followed by the second aircraft (BB2) on 15 December 1972. Construction of the first production aircraft began in June 1973. FAA certification under FAR Part 23 was awarded on 14 December 1973, the aircraft satisfying also the icing requirements of FAR Part 25.

By comparison with the original King Air 100, the Super King Air 200 has increased wing span, basically the same fuselage, a T tail, more powerful engines, additional fuel capacity, increased cabin pressurisation and a higher gross weight. The cargo door fitted to some military versions became available as an option on civil Super King Airs in 1979; first deliveries were for air ambulance use in Libya and commuter operations in Australia.

The first three production Super King Airs were acquired by the US Army in 1974 as **RU-21Js**, fitted with various types of electronic warfare equipment and an array of antennae resembling those of the current RC-12D. After serving as testbeds for some years, these aircraft were stripped of the special mission avionics and configured as VIP transports.

In August 1974, Beech received an initial military contract to build and support 34 modified versions of the Super King Air designated C-12A. Subsequently, other military versions were ordered, as follows:

C-12A. Initial Model A200 for US Army (60) and US Air Force (30), with two 559 kW (750 shp) Pratt & Whitney Canada PT6A-38 turboprop engines, each driving a Hartzell three-blade constant-speed fully-feathering reversible-pitch propeller. Wing span 16·61 m (54 ft 6 in); auxiliary tanks. Weights, loadings and performance given in 1980-81 *Jane's*. Army aircraft later refitted with PT6A-41 engines. Total of 91 built, including one for Foreign Military Sales. Entered service at Fort Monroe, Virginia, in July 1975.

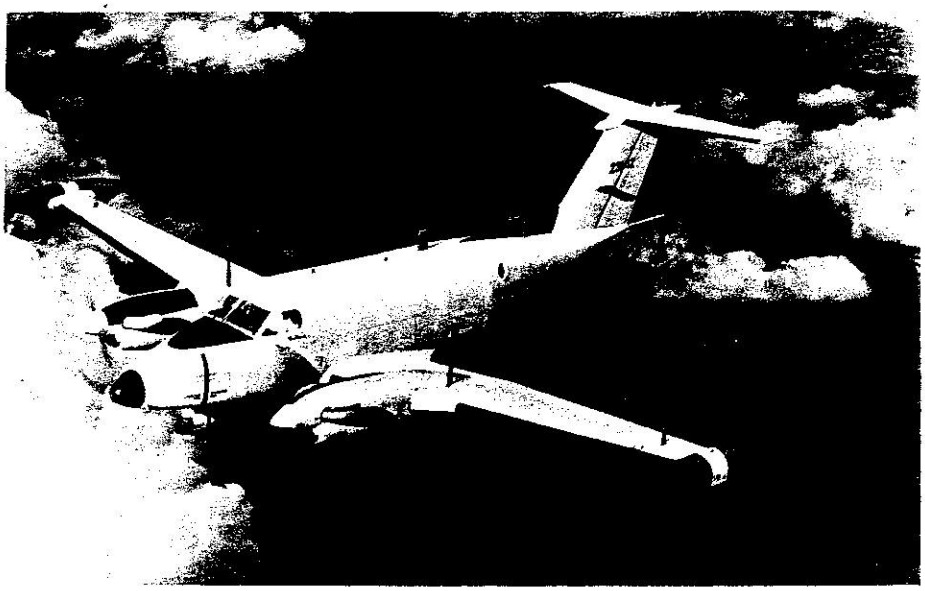
UC-12B. US Navy/Marine Corps version (Model A200C), with 634 kW (850 shp) PT6A-41 turboprop engines, cargo door and high-flotation landing gear. Total of 66 (49 Navy, 17 Marine Corps) delivered by 31 May 1982. A further 12 aircraft ordered in August 1985 for delivery commencing in 1986.

C-12C. As C-12A, for US Army (14), but with PT6A-41 engines. Deliveries completed.

C-12D (Model A200CT). As C-12C, for US Army, but with cargo door and provisions for tip tanks. Wing span (over tip tanks) 16·92 m (55 ft 6 in). Total of 33 ordered initially (including 13 modified to RC-12Ds, which see, and five for Foreign Military Sales), of which delivery was completed by March 1983. A further 12 aircraft ordered in August 1985 for delivery in 1986/1987.

UC-12D. Utility version, generally similar to C-12D, ordered in April 1983. Six for US Air Force; six for Army National Guard; all delivered in first half of 1984.

RC-12D Improved Guardrail V (Model A200CT). 'Special mission' US Army version, acquired to supplement earlier unpressurised RU-21H Guardrail V aircraft for battlefield duties in Europe and South Korea. The RC-12D serves as the aerial platform for the AN/USD-9 Improved Guardrail remotely controlled communications intercept and direction finding system, with direct reporting to tactical commanders at corps level and below. It is configured with an aircraft survivability equipment (ASE) suite, a Carousel IV-E inertial platform and Tacan set, and mission equipment including a radio data link, AN/ARW-83(V)5 airborne relay facility, associated antennae above and below the wings, and ECM in wingtip pods which increase overall span to 17·63 m (57 ft 10 in). Other system components are an AN/TSQ-105(V)4 integrated processing facility, AN/ARM-63(V)4 AGE flightline van, and AN/TSC-87 tactical commander's terminal. Thirteen RC-12Ds are included in total given for C-12D, with deliveries from Summer 1983. Further six ordered, for 1985 delivery, under



Retouched photograph of US Army RC-12D in Improved Guardrail V configuration

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contract announced in May 1983; these are to B200 standard. Nine included in FY 1985 budget requests. Prime system contractor is ESL Inc, with Beech as mission equipment integrator. Max T-O weight of the RC-12D is 6,441 kg (14,200 lb).

C-12F. Operational support aircraft (OSA), generally similar to Model B200C, with hydraulically retractable landing gear. Forty aircraft for US Air Force on five-year lease contract, with option on additional five aircraft. First C-12F delivered in May 1984 to Military Airlift Command at Scott Air Force Base, Illinois. Cargo door standard.

Worldwide deployment of the C-12s began in July 1975. They are described as "standard off-the-shelf Super King Air types, modified slightly to meet military flight requirements and to orient the control systems for two-pilot operation which is standard military practice". Accommodation is provided for eight passengers, plus two pilots, with easy conversion to cargo missions. The large baggage area has provisions for storing survival gear.

In February 1977 Beech delivered to the French Institut Géographique National two specially modified Super King Airs. These have twin Wild RC-10 Superaviogon camera installations and Doppler navigation systems, and were the first Super King Airs to be equipped with optional wingtip fuel tanks, which increase the total usable fuel capacity from 2,059 litres (544 US gallons) to 2,460 litres (650 US gallons) to provide a max endurance of 10·3 h. Designated **Model 200T**, they are fitted with high-flotation main landing gear, and are being operated under a special French airworthiness certificate which allows max T-O and landing weights of 6,350 kg (14,000 lb) and 6,123 kg (13,500 lb) respectively. The aircraft can be operated with or without the wingtip tanks, for high-altitude photographic and weather observation missions.

Beech announced on 25 April 1977 a specially equipped **Maritime Patrol** version of the Super King Air, which is described separately.

During 1978 Beech supplied to the Egyptian government a Super King Air which is being used to continue water, uranium and other natural resources exploration in the Sinai and Egyptian deserts which was originated by US ERTS-1 and Landsat satellites. This aircraft is equipped with remote sensing equipment, specialised avionics, and sophisticated cameras. In June 1978, Beech delivered to the government of Taiwan a Super King Air equipped to check ground based navigation systems; and Malaysia uses two Super King Airs for airways calibration and flight inspection. A second special mission aircraft was delivered to Taiwan's Ministry of the Interior in May 1979.

By 1 January 1985 Beech had delivered 1,330 Super King Airs to commercial and private operators and 254 military versions to the US Army, Air Force, Navy and Marine Corps.

The **Super King Air B200**, introduced in March 1981, is generally similar to the Super King Air 200, except for the installation of Pratt & Whitney Canada PT6A-42 turboprop engines, which provide better cruise and altitude performance than the PT6A-41s in the original Super King Air 200. In addition, max zero-fuel weight is increased by 272 kg (600 lb) and cabin pressure differential is increased from 0·41 bars (6·0 lb/sq in) to 0·44 bars (6·5 lb/sq in). Five versions are available:

Super King Air B200. Basic version, as detailed.

Super King Air B200C. As Super King Air B200, but with a 1·32 × 1·32 m (4 ft 4 in × 4 ft 4 in) cargo door.

Super King Air B200T. Generally similar to Maritime Patrol 200T, with standard provision to carry removable wingtip tanks to increase maximum fuel capacity by 401 litres (106 US gallons), to a total of 2,460 litres (650 US gallons). Span without tip-tanks 16·92 m (55 ft 6 in).

Super King Air B200CT. Version with both cargo door and wingtip tank provisions as standard.

Super King Air 300. Described separately.

Design of the Super King Air B200 began in March 1980, the prototype being a modified Super King Air 200 (c/n BB343). Manufacture of production aircraft began in May 1980, and FAA certification of all four versions was granted on 13 February 1981.

Beechcraft C-12F operational support aircraft of USAF Military Airlift Command

A full description of the original Super King Air 200 can be found in the 1980-81 *Jane's*. The following description applies to the B200, which replaced it in production:

TYPE: Twin-turboprop passenger, cargo or executive light transport.

WINGS: Cantilever low-wing monoplane, with constant chord centre-section and tapered outer panels. Leading-edges extended forward just outboard of engine nacelles. Wing section NACA 23018·5 (modified) at root, NACA 23011·3 at tip. Dihedral 6°. Incidence 3°48′ at root, −1°7′ at tip. No sweepback at quarter-chord. Two-spar light alloy structure. Conventional ailerons of light alloy construction, with trim tab in port aileron. Single-slotted trailing-edge flaps of light alloy construction. Pneumatic de-icing boots standard.

FUSELAGE: Light alloy semi-monocoque structure of safe-life design.

TAIL UNIT: Conventional cantilever T tail structure of light alloy with swept vertical and horizontal surfaces. Dorsal fin, and shallow ventral fin. Fixed incidence tailplane. Trim tab in each elevator. Anti-servo tab in rudder. Pneumatic de-icing boots standard, on leading-edge of tailplane only.

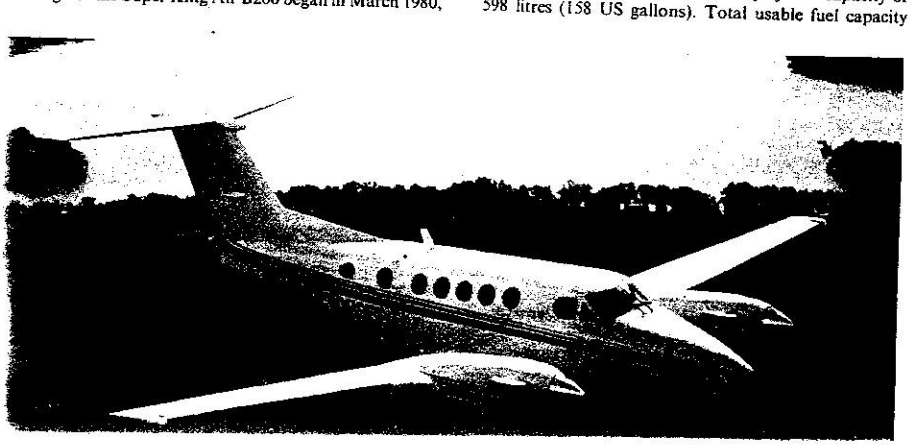
LANDING GEAR: Hydraulically retractable tricycle type, with twin wheels on each main unit. Single wheel on steerable nose unit, with shimmy damper. Main units retract forward, nosewheel rearward. Beech oleo-pneumatic shock absorbers. Goodrich mainwheels and tyres size 18 × 5·5, pressure 7·25 bars (105 lb/sq in). Oversize and/or 10-ply mainwheel tyres optional. Goodrich nosewheel size 6·50 × 10, with tyre size 22 × 6·75-10, pressure 3·93 bars (57 lb/sq in). Goodrich hydraulic multiple-disc brakes. Parking brake.

POWER PLANT: Two 634 kW (850 shp) Pratt & Whitney Canada PT6A-42 turboprop engines, each driving a Hartzell three-blade constant-speed fully-feathering reversible-pitch metal propeller with spinner. Bladder fuel cells in each wing, with main system capacity of 1,461 litres (386 US gallons) and auxiliary system capacity of 598 litres (158 US gallons). Total usable fuel capacity 2,059 litres (544 US gallons). Two refuelling points in upper surface of each wing. Wingtip tanks optional, providing an additional 401 litres (106 US gallons) and raising maximum usable capacity to 2,460 litres (650 US gallons). Oil capacity 29·5 litres (7·8 US gallons). Anti-icing of engine air intakes by hot air from engine exhaust is standard. Electrothermal anti-icing for propellers standard; automatic feathering and synchrophaser optional.

ACCOMMODATION: Pilot only, or crew of two side by side, on flight deck, with full dual controls and instruments as standard. Six cabin seats standard, each equipped with seat belts and inertia reel shoulder harness; alternative layouts for a maximum of 13 passengers in cabin and 14th beside pilot. Partition with sliding door between cabin and flight deck, and partition at rear of cabin. Door at rear of cabin on port side, with integral airstair. Large cargo door optional. Inward opening emergency exit on starboard side over wing. Lavatory and stowage for up to 249 kg (550 lb) baggage in aft fuselage. Maintenance access door in rear fuselage; radio compartment access doors in nose. Standard equipment includes reading lights and fresh air outlets for all passengers, triple cabin windows with polarised glare control, fully carpeted floor, 'No smoking—Fasten seat belt' sign, cabin coat rack, fluorescent cabin lighting, aisle and door courtesy lights. Electrically heated windscreens, hot air windscreen defroster, dual storm windows, sun visors, map pockets and windscreen wipers. Cabin is air-conditioned and pressurised, and can be provided with optional radiant heat panels.

SYSTEMS: Cabin pressurisation by engine bleed air, with a maximum differential of 0·44 bars (6·5 lb/sq in). Cabin air-conditioner of 34,000 BTU capacity. Auxiliary cabin heating by radiant panels optional. Oxygen system for flight deck, and 0·62 m³ (22 cu ft) oxygen system for cabin, with automatic drop-down face masks; standard system of 1·39 m³ (49 cu ft); 1·81 m³ (64 cu ft) or 2·15 m³ (76 cu ft) optional. Dual vacuum system for instruments. Hydraulic system for landing gear retraction and extension and brakes. Pneumatic system for wing and tailplane de-icing. Electrical system has two 250A 28V starter/generators and a 24V 45Ah aircooled nickel-cadmium battery with failure detector. AC power provided by dual 250VA inverters. Engine fire detection system standard; engine fire extinguishing system optional.

AVIONICS AND EQUIPMENT: Standard avionics include dual Collins VHF-20A VHF transceivers; Collins VIR-30AGM automatic Omni No. 1 with 331A-3G indicator; Collins VIR-30AG automatic Omni No. 2 with IND31C indicator; dual Omni range filters; Collins dual DB system Model 415 with dual Model 210 voice activated interphone, ADF voice/range filters and dual audio switches; Collins ADF-60A ADF, less indicator; Collins marker beacon receiver, integral with VIR-30 No. 1; dual Collins glideslopes, integral with VIR-30 No. 1 and No. 2; Sperry Primus 200 colour weather radar, Sperry C-14-A compass system, with servo amplifier (pilot); Collins RMI-30, with Nav 1/ADF on single needle, Nav 2/ADF on double needle; Collins TDR-90 transponder; Collins DME-40 with Nav 1/Nav 2 switching and DME hold; dual Flite-Tronics PC-250 250VA inverters with failure light; sectional instrument panel; dual flight instrument-



BE 3

930 nm (1,723 km; 1,071 miles)
at 6,100 m (20,000 ft)
975 nm (1,807 km; 1,122 miles)
at 7,620 m (25,000 ft)
1,030 nm (1,908 km; 1,186 miles)
at approx 65% power:
at 4,575 m (15,000 ft)
1,098 nm (2,035 km; 1,264 miles)
at 6,100 m (20,000 ft)
1,122 nm (2,079 km; 1,292 miles)
at 7,620 m (25,000 ft)
1,160 nm (2,150 km; 1,335 miles)
at approx 53% power:
at 4,575 m (15,000 ft)
1,289 nm (2,182 km; 1,356 miles)
at 6,100 m (20,000 ft)
1,220 nm (2,261 km; 1,405 miles)
at 7,620 m (25,000 ft)
1,235 nm (2,288 km; 1,422 miles)

BEECHCRAFT BARON MODEL 58TC

This turbocharged version of the Baron Model 58, is no longer in production. A total of 149 Model 58TCs was produced. A description of the aircraft may be found in the 1984-85 edition.

BEECHCRAFT KING AIR MODEL C90A

The King Air C90A is a pressurised 6/10-seat twin-turboprop business aircraft which superseded the Models 90, A90, B90, C90 and C90-1 King Air. Performance is improved by new 'pitot' cowlings which improve engine efficiency and reduce drag. The air inlet area of the pitot cowlings is 387 cm² (60 sq in), compared with 748 cm² (116 sq in) on the King Air C90-1. The reduced air intake area and sealed ducting increase the ram air flow to the engines by 30 per cent. A flow-through exhaust-heated intake lip provides continuous anti-ice protection. Other improvements include aerodynamically faired exhaust stacks, dual-vane dual-motor inertial ice separators, hydraulically actuated landing gear retraction and extension, a three-bus electrical power distribution system with automatic load shedding capability and a rudder boost system for engine-out flight conditions.

The King Air C90A utilises the cabin pressurisation and heating system of the King Air F90-1. In the C90A, this provides a sea level cabin environment to an altitude of 3,370 m (11,065 ft) and a 3,050 m (10,000 ft) cabin altitude to a height of 8,075 m (26,500 ft).

A total of 1,116 commercial and 226 military King Air 90/A90/B90/C90/C90-1/C90As had been delivered by 1 January 1986.

TYPE: Six/ten-seat twin-turboprop business aircraft.

WINGS: Cantilever low-wing monoplane. Wing section NACA 23014·1 (modified) at root, NACA 23016·22 (modified) at outer end of centre-section, NACA 23012 at tip. Dihedral 7°. Incidence 4° 48′ at root, 0° at tip. No sweepback at quarter-chord. Two-spar aluminium alloy structure. All-metal ailerons of magnesium, with adjustable trim tab on port aileron. Single-slotted aluminium alloy flaps. Automatic pneumatic de-icing boots on leading-edges are standard.

FUSELAGE: Aluminium alloy semi-monocoque structure.

TAIL UNIT: Cantilever all-metal structure with sweptback vertical surfaces. Fixed incidence tailplane, with 7° dihedral. Trim tabs in rudder and each elevator. Automatic pneumatic de-icing boots on leading-edges of fin and tailplane are standard.

LANDING GEAR: Hydraulically retractable tricycle type. Nosewheel retracts rearward, mainwheels forward into engine nacelles. Mainwheels protrude slightly beneath nacelles when retracted, for safety in a wheels-up emergency landing. Fully castoring steerable nosewheel with shimmy damper. Beech oleo-pneumatic shock absorbers. Goodrich mainwheels with tyres size 8·50-10, pressure 3·79 bars (55 lb/sq in). Goodrich nosewheel with tyre size 6·50-10, pressure 3·59 bars (52 lb/sq in). Goodrich heat-sink and aircooled multi-disc hydraulic brakes. Parking brakes.

POWER PLANT: Two 410 kW (550 shp) Pratt & Whitney Canada PT6A-21 turboprop engines, each driving a Hartzell three-blade constant-speed fully-feathering propeller with spinner. Propeller electrothermal anti-icing, auto ignition system, environmental fuel drain collection system, and magnetic chip detector, standard. Automatic propeller feathering, and propeller synchrophaser, optional. Fuel in two tanks in engine nacelles, each with usable capacity of 231 litres (61 US gallons), and auxiliary bladder tanks in outer wings, each with capacity of 496 litres (131 US gallons). Total usable fuel capacity 1,454 litres (384 US gallons). Refuelling points in top of each engine nacelle and in wing leading-edge outboard of each nacelle. Oil capacity 13·2 litres (3·5 US gallons) per engine. Engine anti-icing system standard. Engine fire detection and extinguishing system optional.

ACCOMMODATION: Two seats side by side in cockpit with dual controls standard. Normally, four reclining seats in main cabin, in pairs facing each other fore and aft. [illegible] ments seat up to eight persons, some with two- or three-place couch, lateral tracking chairs, and refreshment cabinets. Baggage racks at rear of cabin on starboard side, with optional toilet on port side. Door on port side aft of wing, with built-in airstairs. Emergency exit on starboard side of cabin. Entire accommodation pressurised and air-conditioned. Electrically heated windscreen, windscreen defroster and windscreen wipers standard.

SYSTEMS: Pressurisation by dual engine bleed air system with pressure differential of 0·34 bars (5·0 lb/sq in). Cabin heated by 45,000 BTU dual engine bleed air system and auxiliary electrical heating system. Hydraulic system for landing gear actuation. Electrical system includes two 28V 250A starter/generators, 24V 45Ah aircooled nickel-cadmium battery with failure detector. Complete de-icing and anti-icing equipment. Oxygen system, 0·62 m³ (22 cu ft), 1·39 m³ (49 cu ft) or 1·81 m³ (64 cu ft) capacity, optional. Vacuum system for flight instruments.

AVIONICS AND EQUIPMENT: Standard avionics package comprises dual Collins VHF-251 VHF transceivers; dual Collins VIR-351 Omni nav receivers; Collins AMR-350 audio system; Collins ADF-650A ADF; Collins marker beacon receiver integral with AMR-350, plus marker lights; dual Collins GLS-350 glideslope receivers; Collins DME-451, with Nav 1/Nav 2 switching and DME hold; Collins PN-101 compass system (pilot); Standard Electric gyro horizon (pilot); CF gyro horizon and directional gyro (co-pilot); dual Flite-Tronics PC-125 125VA inverters with failure light; avionics transient protection; dual flight instrumentation; sectional instrument panel; white lighting; radio accessories, static wicks and Beech metal radio panel; microphone key button in pilot and co-pilot control wheels; dual microphones, headsets and cockpit speakers; and avionics master switch. Optional avionics include a wide range of equipment by Bendix, Collins, King, Edo-Aire Mitchell, RCA and Sperry. Standard equipment includes dual blind-flying instrumentation with sensitive altimeters, standby magnetic compass, outside air temperature gauge, LCD digital clock/chronometer, vacuum gauge, de-icing pressure gauge, cabin rate of climb indicator, cabin altitude and pressure differential indicators, dual load meters, voltage meter with bus selector switch, propeller de-ice meter, pilot and co-pilot four-way adjustable seats with shoulder harness, map pockets, control locks, storm windows, tracked sun visors, automatic fuel heater system, emergency locator transmitter, heated pitots, heated stall warning transmitter, stall warning device, cabin windows with adjustable polarised shades, carpeted floor, internal corrosion proofing, 'No smoking—Fasten seat belt' sign, fresh air outlets, dual map lights, primary and secondary instrument light systems, indirect cabin lighting, two overhead cabin spotlights, entrance door light, adjustable reading lights, aft compartment lights, dual landing lights, taxi light, position lights, dual rotating beacons, wing ice lights, heated fuel vents, external power socket, static wicks, and external urethane paint. Optional equipment includes flight hour recorder, instantaneous vertical speed indicator, cockpit and cabin fire extinguishers, a range of cabin seats, cabinets, storage drawers and toilets, entrance door step lights, tail floodlights, strobe lights, and wingtip recognition lights.

DIMENSIONS, EXTERNAL:

Wing span	15·32 m (50 ft 3 in)
Wing chord: at root	2·15 m (7 ft 0½ in)
at tip	1·07 m (3 ft 6 in)
Wing aspect ratio	8·57
Length overall	10·82 m (35 ft 6 in)
[illegible]	[illegible]
Propeller diameter	2·36 m (7 ft 9 in)
Propeller ground clearance	0·305 m (1 ft 0 in)
Passenger door: Height	1·30 m (4 ft 3½ in)
Width	0·69 m (2 ft 3 in)
Height to sill	1·17 m (3 ft 10 in)

DIMENSIONS, INTERNAL:

Total pressurised length	5·43 m (17 ft 10 in)
Cabin: Length	3·94 m (12 ft 11 in)
Max width	1·37 m (4 ft 6 in)
Max height	1·45 m (4 ft 9 in)
Floor area	6·50 m² (70 sq ft)
Volume	8·88 m³ (313·6 cu ft)
Baggage compartment, rear	1·51 m³ (53·5 cu ft)

AREAS:

Wings, gross	27·31 m² (293·94 sq ft)
Ailerons (total)	1·29 m² (13·90 sq ft)
Trailing-edge flaps (total)	2·72 m² (29·30 sq ft)
Fin	2·20 m² (23·67 sq ft)
Rudder, incl tab	1·30 m² (14·00 sq ft)
Tailplane	4·39 m² (47·25 sq ft)
Elevators, incl tabs	1·66 m² (17·87 sq ft)

WEIGHTS AND LOADINGS:

Weight empty	2,742 kg (6,045 lb)
Max T-O weight	4,377 kg (9,650 lb)
Max ramp weight	4,404 kg (9,710 lb)
Max landing weight	4,159 kg (9,168 lb)
Max wing loading	160·1 kg/m² (32·8 lb/sq ft)
Max power loading	5·34 kg/kW (8·8 lb/shp)

PERFORMANCE (at max T-O weight except where indicated):

Max cruising speed at AUW of 3,855 kg (8,500 lb):	
at 3,660 m (12,000 ft)	242 knots (448 km/h; 278 mph)
at 4,880 m (16,000 ft)	247 knots (457 km/h; 284 mph)
at 6,400 m (21,000 ft)	243 knots (450 km/h; 280 mph)
Stalling speed, power off:	
wheels and flaps up	89 knots (164 km/h; 102 mph) IAS
wheels and flaps down	76 knots (140 km/h; 87 mph) IAS
Max rate of climb at S/L	656 m (2,155 ft)/min
Rate of climb at S/L, one engine out	164 m (539 ft)/min
Service ceiling	above 9,600 m (31,500 ft)
Service ceiling, one engine out	4,490 m (14,725 ft)
Min ground turning radius	10·82 m (35 ft 6 in)
Runway LCN	4
T-O run	497 m (1,629 ft)
T-O to 15 m (50 ft)	689 m (2,261 ft)
Accelerate/stop distance	1,066 m (3,498 ft)
Landing from 15 m (50 ft) at max landing weight:	
without propeller reversal	613 m (2,010 ft)
with propeller reversal	510 m (1,672 ft)
Landing run at max landing weight:	
without propeller reversal	328 m (1,075 ft)
with propeller reversal	225 m (737 ft)
Range with max fuel at max cruising speed, incl allowance for starting, taxi, take-off, climb, descent and 45 min reserves at max range power, ISA, at:	
6,400 m (21,000 ft)	1,080 nm (2,001 km; 1,243 miles)
4,875 m (16,000 ft)	935 nm (1,733 km; 1,076 miles)
3,660 m (12,000 ft)	870 nm (1,612 km; 1,002 miles)

Beechcraft King Air C90A business aircraft with new 'pitot' cowlings

BE 4

Max range at econ cruising power, allowances as above, at:
6,400 m (21,000 ft)
1,317 nm (2,440 km; 1,516 miles)
4,875 m (16,000 ft)
1,180 nm (2,187 km; 1,359 miles)
3,660 m (12,000 ft)
1,070 nm (1,983 km; 1,232 miles)

BEECHCRAFT KING AIR MODEL F90-1

Deliveries of the original King Air F90 began in mid-1979. Basically, it combined the pressurised fuselage of the King Air 90 with reduced span wings similar to those of the King Air 100, and a T tail assembly similar to that of the Super King Air 200. Slow-turning four-blade propellers were fitted, to reduce airport and in-flight noise. Cabin pressurisation was increased to 0·34 bars (5·0 lb/sq in) to give a sea level environment at 3,375 m (11,065 ft), a 2,440 m (8,000 ft) environment at 7,050 m (23,120 ft), and a 3,050 m (10,000 ft) environment at an altitude of 8,075 m (26,500 ft).

The current King Air Model F90-1, announced by Beech on 13 June 1983, has improved performance, resulting from the use of PT6A-135A engines in low-drag 'pitot' cowlings as described for the Model C90A.

A total of 225 commercial King Air F90s and F90-1s had been delivered by 1 January 1986.

TYPE: Seven/ten-seat twin-turboprop business aircraft.

WINGS: Similar to King Air 100 (1983-84 *Jane's*). De-icing system standard.

FUSELAGE: Similar to King Air 90.

TAIL UNIT: Similar to Super King Air 200. Tailplane de-icing standard.

LANDING GEAR: Retractable tricycle type, with twin-wheel main units and single steerable nosewheel with shimmy damper. Electrical retraction, nosewheel rearward, main units forward into engine nacelles. Beech oleo-pneumatic shock absorbers. Mainwheel tyres size 18 × 5·5, pressure 7·10-7·37 bars (103-107 lb/sq in). Nosewheel tyre size 22 × 6·75-10, pressure 4·13-4·41 bars (60-64 lb/sq in). Single-disc hydraulic brakes. Optional high-flotation gear for use on unimproved airstrips.

POWER PLANT: Two Pratt & Whitney Canada PT6A-135A turboprop engines, each driving a Hartzell HC-B4TN-3A (or -3B)/T10173FK-10·5 four-blade constant-speed fully-feathering reversible-pitch metal propeller with spinner. Although flat rated at the same 559 kW (750 shp) as the PT6A-135 engines in the earlier Model F90, the -135A has an ISA rating of 660 kW (885 shp) at max continuous T-O power, instead of 634 kW (850 shp) for the -135 model. Propellers available optionally with reversible pitch. Usable fuel capacity 1,779 litres (470 US gallons). Automatic fuel transfer system, engine anti-icing, propeller de-icing, and ice-free fuel venting system, are standard. Oil capacity 13·2 litres (3·5 US gallons) per engine.

ACCOMMODATION: Two seats side by side on flight deck, with dual controls. Seats for five to eight persons in main cabin, in deep-cushioned chairs. Passengers screened from flight deck and toilet by partitions at front and rear of cabin. Space for 172 kg (380 lb) of baggage. Windscreen anti-icing standard.

SYSTEMS: Pressurisation system, differential 0·34 bars (5·0 lb/sq in); 16,000 BTU air-conditioning system. Electrical system includes two 28V 250A starter/generators and 45Ah aircooled nickel-cadmium battery. Oxygen system, 0·62 m³ (22 cu ft) capacity, with eight automatically deployed passenger masks and one first aid mask.

AVIONICS: Standard avionics package, by Collins, includes two VHF-20A transceivers, VIR-30MGM and VIR-30MG manual omnis, DB system Model 415 audio amplifier, ADF-650A ADF, marker beacon indicator, dual glideslope, DME-40, TDR-950 transponder, and PN-101 compass system. Full blind-flying instrumentation for pilot and co-pilot. Collins APS-80 autopilot, and large range of optional avionics available.

DIMENSIONS, EXTERNAL:

Wing span	13·98 m (45 ft 10½ in)
Length overall	12·13 m (39 ft 9½ in)
Height overall	4·62 m (15 ft 1¾ in)
Tailplane span	5·61 m (18 ft 5 in)
Wheel track	3·96 m (13 ft 0 in)
Wheelbase	3·80 m (12 ft 5½ in)
Propeller diameter	2·34 m (7 ft 8 in)
Propeller ground clearance	0·32 m (1 ft 0¾ in)
Passenger door: Height	1·31 m (4 ft 3½ in)
Width	0·69 m (2 ft 3 in)

DIMENSIONS, INTERNAL:

Cabin, excl flight deck: Length	3·86 m (12 ft 8 in)
Max width	1·37 m (4 ft 6 in)
Max height	1·45 m (4 ft 9 in)
Volume	8·88 m³ (313·6 cu ft)
Avionics compartment volume	0·45 m³ (16 cu ft)
Rear baggage compartment volume	1·51 m³ (53·5 cu ft)

AREA:

Wings, gross	25·99 m² (279·74 sq ft)

WEIGHTS AND LOADINGS:

Beechcraft King Air F90-1 seven/ten-seat business aircraft, showing redesigned engine cowlings

PERFORMANCE (at max T-O weight except where indicated:
Max cruising speed at average cruise weight:
at 3,660 m (12,000 ft)
279 knots (517 km/h; 321 mph)
at 5,490 m (18,000 ft)
275 knots (510 km/h; 316 mph)
at 7,925 m (26,000 ft)
265 knots (491 km/h; 305 mph)
Max operating speed (VMO)
253 knots (469 km/h; 291 mph) IAS
Stalling speed, power off:
flaps up 94 knots (174 km/h; 108 mph) IAS
32·5% flap 87 knots (162 km/h; 101 mph) IAS
100% flap 79 knots (147 km/h; 91 mph) IAS
Max rate of climb at S/L 748 m (2,455 ft)/min
Rate of climb at S/L, one engine out
192 m (632 ft)/min
Service ceiling 9,280 m (30,450 ft)
Service ceiling, one engine out 4,660 m (15,300 ft)
Min ground turning radius 10·06 m (33 ft 0 in)
T-O run, 32·5% flap 465 m (1,524 ft)
T-O to 15 m (50 ft), 32·5% flap 1,196 m (3,925 ft)
Landing from 15 m (50 ft):
without propeller reversal 907 m (2,977 ft)
with propeller reversal 694 m (2,275 ft)
Landing run:
without propeller reversal 578 m (1,895 ft)
with propeller reversal 364 m (1,194 ft)
Accelerate/stop distance, 32·5% flap
1,073 m (3,520 ft)
Cruising range at max cruise power, with reserves:
at 3,660 m (12,000 ft)
961 nm (1,781 km; 1,106 miles)
at 5,490 m (18,000 ft)
1,156 nm (2,142 km; 1,331 miles)
at 7,925 m (26,000 ft)
1,439 nm (2,667 km; 1,657 miles)
Cruising range at max range power, with reserves:
at 3,660 m (12,000 ft)
1,187 nm (2,200 km; 1,367 miles)
at 5,490 m (18,000 ft)
1,397 nm (2,589 km; 1,608 miles)
at 7,925 m (26,000 ft)
1,612 nm (2,987 km; 1,856 miles)

BEECHCRAFT SUPER KING AIR B200

Design of the **Super King Air 200** began in October 1970, construction of the first prototype and first pre-production aircraft starting simultaneously a year later. The first prototype (c/n BB1) flew for the first time on 27 October 1972, followed by the second aircraft (BB2) on 15 December 1972. Construction of the first production aircraft began in June 1973. FAA certification under FAR Part 23 was awarded on 14 December 1973, the aircraft satisfying also the icing requirements of FAR Part 25.

By comparison with the original King Air 100, the Super King Air 200 has increased wing span, basically the same fuselage, a T tail, more powerful engines, additional fuel capacity, increased cabin pressurisation and a higher gross weight. The cargo door fitted to some military versions became available as an option on civil Super King Airs in 1979; first deliveries were for air ambulance use in Libya and commuter operations in Australia.

In February 1977 Beech delivered to the French Institut Géographique National two specially modified Super King Airs. These have twin Wild RC-10 Superaviogon camera installations and Doppler navigation systems, and were the first Super King Airs to be equipped with optional wingtip fuel tanks, which increase the total usable fuel capacity from 2,059 litres (544 US gallons) to 2,460 litres (650 US gallons) to provide a max endurance of 10·3 h. Designated **Model 200T**, they are fitted with high-flotation main landing gear, and are being operated under a special French airworthiness certificate which allows max T-O and landing weights of 6,350 kg (14,000 lb) and 6,123 kg (13,500 lb) respectively. The aircraft can be operated with or without the wingtip tanks, for high-altitude photographic and weather observation missions.

RF 5

DIMENSIONS, INTERNAL: As for Centurion except:
Baggage space 0·52 m³ (18·3 cu ft)

WEIGHTS AND LOADINGS:
Weight empty 1,121 kg (2,471 lb)
Max ramp weight 1,868 kg (4,118 lb)
Max T-O weight 1,860 kg (4,100 lb)
Max landing weight 1,769 kg (3,900 lb)
Max wing loading 107·90 kg/m² (22·10 lb/sq ft)
Max power loading 7·67 kg/kW (12·61 lb/hp)

PERFORMANCE (at mid-cruise weight, ISA, except where indicated):
Max level speed at 6,100 m (20,000 ft)
201 knots (372 km/h; 231 mph)
Max cruising speed at 7,010 m (23,000 ft)
213 knots (394 km/h; 245 mph)
Cruising speed at 3,050 m (10,000 ft)
185 knots (343 km/h; 213 mph)
Stalling speed, power off:
flaps up 65 knots (121 km/h; 75 mph) CAS
flaps down 55 knots (102 km/h; 63 mph) CAS
Max rate of climb at S/L 351 m (1,150 ft)/min
Max operating altitude 7,620 m (25,000 ft)
T-O run 387 m (1,270 ft)
T-O to 15 m (50 ft) 643 m (2,110 ft)
Landing from 15 m (50 ft) 488 m (1,600 ft)
Landing run 251 m (825 ft)
Range, with standard fuel, recommended lean mixture, with fuel allowance for engine start, taxi, T-O, climb and 45 min reserves: at max cruise power:
at 7,010 m (23,000 ft) 720 nm (1,334 km; 829 miles)
at 3,050 m (10,000 ft) 665 nm (1,232 km; 766 miles)
at max range power, allowances and reserves as above:
at 3,050 m (10,000 ft) 855 nm (1,585 km; 985 miles)
Range, with optional fuel, allowances and reserves as above: at max cruise power:
at 7,010 m (23,000 ft)
1,040 nm (1,928 km; 1,198 miles)
at 3,050 m (10,000 ft)
935 nm (1,733 km; 1,077 miles)
at max range power, allowances and reserves as above:
at 3,050 m (10,000 ft) 1,190 nm (2,205 km; 1,370 miles)

CESSNA MODEL T303 CRUSADER

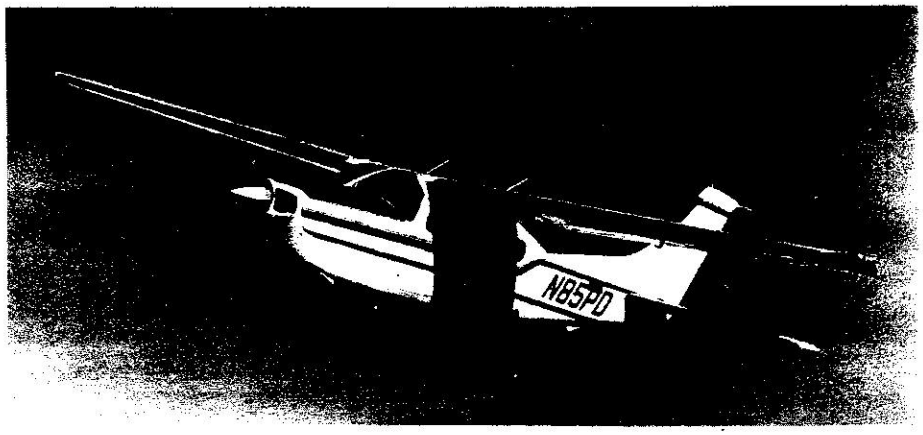
Cessna announced on 17 February 1978 the first flight, three days earlier, of a lightweight twin-engined aircraft known as the Model 303. At that time it was a four-seat aircraft, with 119 kW (160 hp) engines, and made use of bonded structures and a supercritical wing section. It was superseded by a new Model T303, with six seats, 186 kW (250 hp) turbocharged engines and conventional construction, except for use of bonding in the integral fuel tank area. Following certification to the latest FAR Pt 23 regulations on 27 August 1981, first deliveries of T303s were made in October 1981. A total of 289 had been delivered by 30 June 1985.

The Crusader has counter-rotating propellers, and an extensive range of equipment. Cessna claimed that it was the first aircraft in its class to have full IFR equipment as standard.

TYPE: Twin-engined cabin monoplane.

WINGS: Cantilever low-wing monoplane. Wing section NACA 23017 at root, NACA 23015·5 outboard of engines, and NACA 23012 at tip. Dihedral 7°. Incidence 3° at root, 0° at tip. Conventional two-spar structure of light alloy, with sheet metal ribs and stringers, and upper and lower skins. Flow energiser vanes are located at the wing leading-edge at each side of the fuselage and engine nacelles. Plain ailerons and wide span electrically actuated single-slotted Fowler trailing-edge flaps of light alloy construction. Trim tab in starboard aileron. Wing leading-edge de-icing boots optional.

FUSELAGE: Oval section semi-monocoque structure of light alloy.



Cessna Pressurised Centurion in 1985 configuration

TAIL UNIT: Cantilever structure, primarily of light alloy, with horizontal surfaces mounted partway up fin. Fin and rudder swept back. Long dorsal fin. Trim tab in rudder and starboard elevator. Tailplane and fin leading-edge de-icing boots optional.

LANDING GEAR: Retractable tricycle type, with single wheel on each unit. Mainwheels retract inward, nosewheel forward. Free-fall emergency extension, with manually operated hydraulic pump as backup. Main units of articulated (trailing link) type and steerable nosewheel all have oleo-pneumatic shock absorbers. Cleveland mainwheels with tubed tyres size 6·00-6, 8-ply rating, pressure 3·52-3·93 bars (51-57 lb/sq in). Nosewheel with tubed tyre size 6·00-6, 6-ply rating, pressure 2·48-2·90 bars (36-42 lb/sq in). Hydraulically actuated single-disc brakes. Parking brake. Heavy duty mainwheels with 6·50-8 tyres of 8-ply rating and heavy duty brakes optional (tyre pressure unchanged).

POWER PLANT: Two 186 kW (250 hp) Continental flat-six turbocharged engines comprising (port) a TSIO-520-AE and (stbd) an LTSIO-520-AE, driving respectively a McCauley Type 3AF32C506/82NEB-8 and 3AF32C507/L82NEB-8 counter-rotating three-blade constant-speed fully-feathering metal propeller with spinner. Fuel in integral wing tanks with combined usable capacity of 579 litres (153 US gallons). Refuelling point on upper surface of each wing. Oil capacity 17 litres (4·5 US gallons). Electrically heated propeller de-icing boots optional.

ACCOMMODATION: Standard seating for pilot and five passengers; or pilot, co-pilot and four passengers. Six individual forward-facing seats can be replaced by optional club arrangement. Outboard armrests are standard; inboard retractable armrests and adjustable headrests are normally optional, but are standard with club seating. Flight deck divider curtain optional. Wide range of optional cabin furniture and equipment. Clamshell type two-piece cabin door, with integral airstair, on port side at aft end of cabin. Emergency exit at front of cabin on starboard side. Optional top-hinged cargo door immediately aft of airstair door, for freight, air ambulance or casket carrying operations. Baggage stowage in nose compartment (with door on port side), wing lockers, and at rear of cabin, with combined capacity of 267 kg (590 lb). Accommodation heated and ventilated. Air-conditioning optional. Windscreen defrosting standard. Electrically heated windscreen anti-icing optional.

SYSTEMS: Electrical system powered by two 28V 60A engine driven alternators and a 24V 15·5Ah battery; 28V 95A alternators optional. Hydraulic system for landing gear operation powered by electro-hydraulic unit. Separate hydraulic system for brakes only. Heating system includes a 45,000 BTU combustion heater. Provisions for oxygen system of 2·17 m³ (76·6 cu ft) capacity. Optional air-conditioning system includes 13,000 BTU heater and requires dual 95A alternators and 28Ah battery. Engine fire detection system standard.

AVIONICS AND EQUIPMENT: Standard avionics include Sperry Series 400 (485B) nav/com with VOR/ILS, nav/com with VOR/LOC, ADF, glideslope and marker beacon receivers, transponder, and 400B Nav-O-Matic two-axis autopilot with slaved directional gyro. Yaw damper system. Optional avionics include 400B IFCS, HSI system, Series 400 R/Nav, DME, RMI, second glideslope receiver, encoding altimeter, altitude encoder, Series 800 encoding/alert altimeter, intercom system, Bendix RDR-160 colour or monochromatic, King KWX-56 colour or Sperry Primus 100 monochromatic weather radar systems, and King KT-96 radio telephone. Standard equipment includes sensitive altimeter, electric clock, horizon and slaved directional gyros with dual vacuum system, outside air temperature gauge; rate of climb, true airspeed and turn and bank indicators, alternate static source; cylinder head temperature and fuel flow gauges; low-fuel warning lights, economy mixture indicator; engine instrument, instrument panel post, and map lights; annunciator, control pedestal and radio lights; all-purpose control wheel, dual controls, electric elevator trim, control locks, padded glareshield, sun visors, audible stall warning system, emergency locator transmitter, six individual fore and aft adjustable and reclining seats, seat belts, shoulder restraints, armrests, map and storage pocket, soundproofing, adjustable ventilators, pilot's storm window, tinted windows, cabin courtesy lights, omni-flash beacons; landing, navigation and taxi lights; full flow oil filters, fuel quick drain valves and sampler cup, external corrosion proofing, heated pitot and stall warning transmitter, anti-precipitation static kit, tiedown rings, jack pads, nose-gear viewing mirror, towbar and external power socket. Optional equipment includes alternative sensitive altimeters, quartz clock, cabin heater hour meter, turn co-ordinator, electronic fuel flow indicating system, flight hour recorder, co-pilot's flight instruments, cabin fire extinguisher, rudder gust lock, microphone/headset combination, pilot and co-pilot vertically adjustable seats, inertia reel shoulder harnesses for pilot and co-pilot, headrests, stereo installation, table, refreshment centre, 'Fasten seat belts —no smoking' sign, flight deck divider curtain, window curtains, passengers' reading lights, baggage compartment courtesy lights, ice detection light, strobe lights, starboard landing light, propeller synchrophaser, propeller automatic unfeathering system, fan driven ventilation system, and fuselage ice protection plates.

Cessna Model T303 Crusader six-seat cabin monoplane with counter-rotating propellers

DIMENSIONS, EXTERNAL:
Wing span 11·90 m (39 ft 0½ in)
Wing chord: at root 1·75 m (5 ft 9 in)
at tip 1·24 m (4 ft 1 in)
Length overall 9·27 m (30 ft 5 in)
Height overall 4·06 m (13 ft 4 in)
Tailplane span 5·18 m (17 ft 0 in)
Wheel track 3·81 m (12 ft 6 in)
Wheelbase 2·29 m (7 ft 6 in)
Propeller diameter 1·88 m (6 ft 2 in)
Propeller ground clearance 0·305 m (1 ft 0 in)
Passenger door (port, rear):
Height, mean 1·17 m (3 ft 10 in)
Width 0·61 m (2 ft 0 in)
Emergency exit (stbd, fwd):
Height 0·69 m (2 ft 3 in)
Max width 0·58 m (1 ft 11 in)
Cargo door (port, optional):
Height 0·88 m (2 ft 10¾ in)
Width 0·81 m (2 ft 8 in)
Baggage door (port, fwd):
Height, mean 0·38 m (1 ft 3 in)
Width 0·86 m (2 ft 10 in)

DC 6

Wing locker doors (port and stbd):
Length 0·61 m (2 ft 0 in)
Width 0·65 m (2 ft 1½ in)
DIMENSIONS, INTERNAL:
Cabin:
Length (fwd to rear bulkhead):
standard 4·14 m (13 ft 7 in)
with cargo door 4·30 m (14 ft 1½ in)
Max height 1·20 m (3 ft 11½ in)
Max width 1·21 m (3 ft 11¾ in)
AREA:
Wings, gross 17·58 m² (189·2 sq ft)
WEIGHTS AND LOADINGS:
Weight empty 1,526 kg (3,364 lb)
Max T-O weight 2,336 kg (5,150 lb)
Max ramp weight 2,347 kg (5,175 lb)
*Max landing weight 2,268 kg (5,000 lb)
Max zero-fuel weight 2,200 kg (4,850 lb)
Max wing loading 132·8 kg/m² (27·2 lb/sq ft)
Max power loading 6·28 kg/kW (10·3 lb/hp)
* *with optional heavy duty wheels and brakes max landing weight is 2,336 kg (5,150 lb)*

PERFORMANCE (at max T-O weight, S/L, ISA, except where indicated):
Max level speed at 5,485 m (18,000 ft)
216 knots (400 km/h; 249 mph)
Max cruising speed, 71% power at 6,100 m (20,000 ft)
196 knots (363 km/h; 226 mph)
Cruising speed, 72% power at 3,050 m (10,000 ft)
180 knots (333 km/h; 207 mph)
Stalling speed, power off:
flaps up 68 knots (126 km/h; 79 mph) CAS
flaps down 62 knots (115 km/h; 72 mph) CAS
Max rate of climb at S/L 451 m (1,480 ft)/min
Rate of climb at S/L, one engine out
67 m (220 ft)/min
Max operating altitude 7,620 m (25,000 ft)
Service ceiling, one engine out 3,960 m (13,000ft)
T-O run 389 m (1,275 ft)
T-O to 15 m (50 ft) 533 m (1,750 ft)
Landing from 15 m (50 ft) 442 m (1,450 ft)
Landing run 250 m (820 ft)
Range with max fuel, recommended lean mixture, with allowances for engine start, taxi, T-O, climb, descent and 45 min reserves:
71% power at 6,100 m (20,000 ft)
895 nm 1,658 km; 1,030 miles)
72% power at 3,050 m (10,000 ft)
835 nm (1,546 km; 961 miles)
econ cruising speed at 6,100 m (20,000 ft)
1,005 nm (1,861 km; 1,157 miles)
econ cruising speed at 3,050 m (10,000 ft)
1,020 nm (1,889 km; 1,174 miles)

CESSNA MODEL 340A

A total of 1,287 Model 340s had been delivered by 30 June 1985. Production has ended, and full details can be found in the 1984-85 *Jane's*.

CESSNA MODEL 402C

The original Model 402 was intended for the third level airline market, with a convertible cabin and reinforced cabin floor of bonded crushed honeycomb construction, enabling it to be changed quickly from a ten-seat commuter to a light cargo transport. On 8 December 1971 Cessna renamed the original Model 402 as the Model 402 Utililiner and introduced a version designated Model 402 Businessliner.

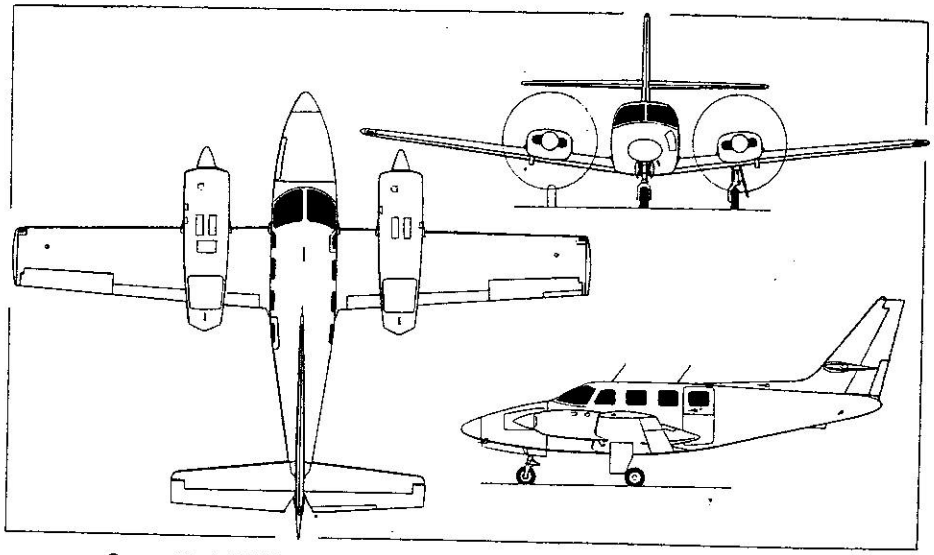
The same prototype served for Models 401 and 402, and the FAA Type Certificate, awarded on 20 September 1966, also covered both types. A total of 1,526 Model 402s had been built by 30 June 1985.

The two versions available currently are as follows:

Model 402C Utililiner. Basic version for up to ten persons, including crew, or cargo, or mixed passenger/cargo payload, as described in detail.

Model 402C Businessliner. As basic version, except for executive style interior with adjustable and tilting seats for crew of two and up to six passengers. Optional side hinged door, next to standard cabin door, to provide a total loading door width of 1·02 m (3 ft 4 in).

In 1985 Cessna introduced optional 'Value Group' avionics and equipment lists for the Model 402C. 'Value Group A' includes a basic avionics kit with aft cabin speakers and public address system, Series 400 nav/com, VOR/ILS, VOR/LOC, ADF, glideslope and marker beacon receivers, dual 100A alternators, 400B Nav-O-Matic autopilot with unslaved directional gyro, electric elevator trim, fuel low warning system, fire extinguisher, ground service power receptacle, retractable landing light in starboard wingtip, taxi light, emergency locator beacon, marker beacon audio muting, nosewheel fender, polished propeller spinners, flight hour recorder and static discharge wicks. The 'Value Group B' option adds to these items Series 400B IFCS, DME, Area Nav, second glideslope receiver and VOR/ILS indicator, Series 1000 RMI, 800 encoding altimeter with alerting and preselect, yaw damper and Bendix RDR-160 weather radar.



Cessna Model T303 Crusader (two Continental TSIO-520-AE engines) *(Pilot Press)*

TYPE: Ten-seat (optional nine-seat) convertible passenger/freight transport (Utililiner) or six/eight-seat business aircraft (Businessliner).

WINGS: Cantilever low-wing monoplane. Wing section NACA 23018 (modified) at aircraft centreline, NACA 23015 (modified) at centre-section/outer wing junction, NACA 23009 (modified) at tip. Dihedral 5° on outer panels. Incidence 2° 30′ at root, −0° 30′ at tip. All-metal two-spar structure of light alloy with stamped ribs and surface skins reinforced with spanwise stringers. Outer wing panels of bonded construction. All-metal ailerons and electrically actuated split flaps. Trim tab in port aileron. Optional pneumatic de-icing system.

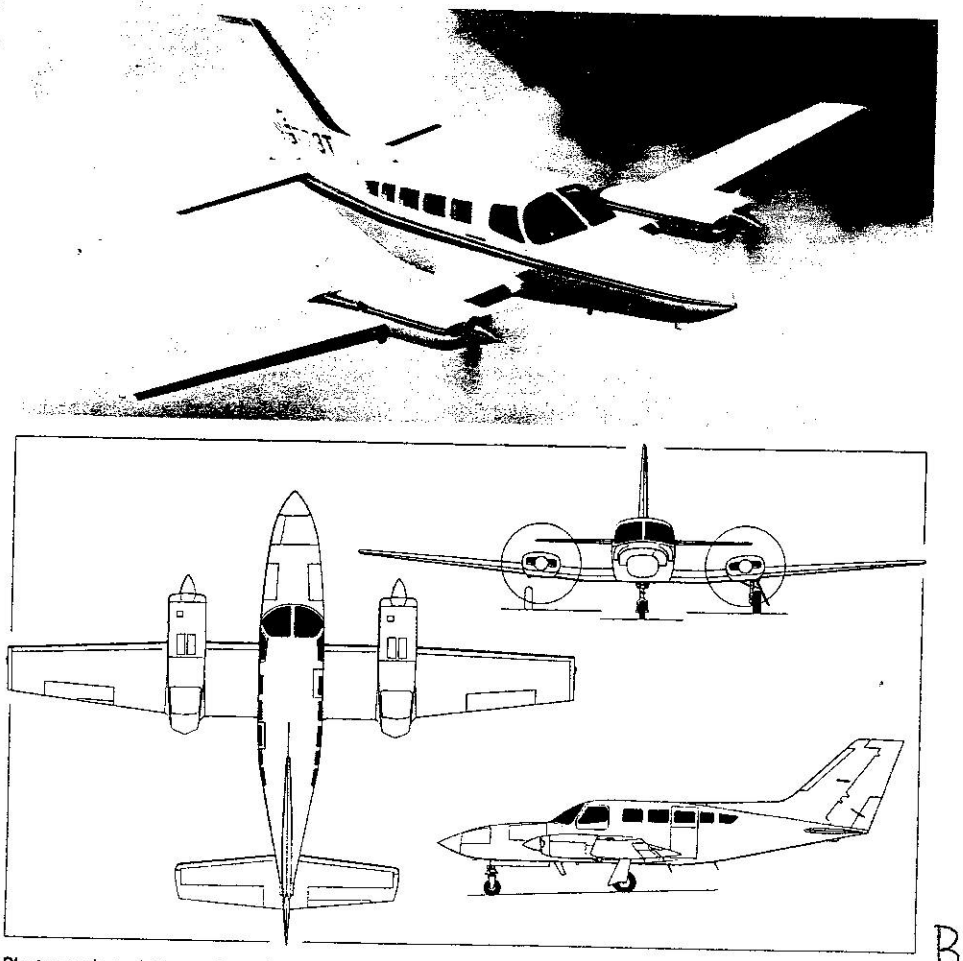
FUSELAGE: All-metal semi-monocoque structure.

TAIL UNIT: Cantilever all-metal structure, with 40° sweepback on fin at quarter-chord. Fixed incidence tailplane. Trim tabs in rudder and starboard elevator. Electric operation of trim tabs optional. Optional pneumatic de-icing system.

LANDING GEAR: Hydraulically retractable tricycle type with single wheel on each unit. Main units retract inward into wings, nosewheel unit rearward. No doors over mainwheels when retracted. Emergency extension system provided by a 138 bar (2,000 lb/sq in) rechargeable nitrogen blowdown bottle. Oleo-pneumatic shock absorbers. Steerable nosewheel. Heavy duty wheels, mainwheels with tubed tyres size 6·50-10, pressure 4·83 bars (70 lb/sq in); nosewheel with tubed tyre size 6·00-6, 6-ply rating, pressure 2·41 bars (35 lb/sq in). Cleveland heavy duty hydraulic brakes. Parking brakes.

POWER PLANT: Two 242 kW (325 hp) Continental TSIO-520-VB flat-six turbocharged engines, each driving a McCauley Type 0850334-34 three-blade constant-speed fully-feathering metal propeller with spinner. Propeller synchrophaser, automatic unfeathering and electric de-icing optional. Integral wing fuel tanks with total capacity of 808 litres (213 US gallons), of which 780 litres (206 US gallons) are usable. Refuelling point on the upper surface of each wing. Oil capacity 24·6 litres (6·5 US gallons).

ACCOMMODATION: Two seats side by side in pilot's compartment. Dual controls standard. Utililiner cabin has four



Photograph and three-view drawing *(Pilot Press)* **of the Cessna Model 402C, current version of the Businessliner/Utililiner**

individual seats in pairs and two double seats. Passenger seats are 'Enviro-form' moulded honeycomb, glassfibre reinforced. Businessliner has four individual seats as standard, two additional seats optional, in the main cabin. Refreshment cntre at aft end of cabin. Passenger reading lights standard on Businessliner, optional on Utililiner. Door with built-in airstair on port side of cabin at centre. Storm windows for pilot and co-pilot. Tinted cabin windows. An emergency escape hatch is provided on the starboard side of the cabin. Optional cargo door and crew door available. Baggage contained in area at rear of cabin, nose compartment, and wing locker at rear of each engine nacelle, with combined capacity of 680 kg (1,500 lb). Rear double seat on Utililiner can have fold-down back to facilitate access to rear baggage shelf. Cabin heated and ventilated. Windscreen defrosting standard. Electric anti-icing of pilot's window or alcohol anti-icing of pilot' and co-pilot's windows optional.

SYSTEMS: Electrical system powered by two 24V 50A alternators. 24V 25Ah battery. Battery can be sited optionally in nose baggage area. 100A alternators optional (standard with factory installed anti-icing kit). Hydraulic system, pressure 121 bars (1,750 lb/sq in), for operation of landing gear. Dual hydraulic pumps, one on each engine. Hydraulic reservoir located in nose baggage compartment. Separate hydraulic system for wheel brakes. Vacuum system provided by two engine driven pumps. Oxygen system of 1·25 m³ (44 cu ft) or 3·25 m³ (115 cu ft) capacity optional. Air-conditioning system optional. Heating and ventilation system with 45,000 BTU gasoline heater standard.

AVIONICS AND EQUIPMENT: Optional avionics include Series 1000 dual nav/coms, VOR/ILS, VOR/LOC, ADF, glideslope and marker beacon receiver, Area Navigation system, DME, AM-100 radio altimeter, Primus 200, RDR-160, RDR-160XD and RDR-230HP weather radars (the latter two with checklist display option), and Flitefone IV radio telephone system. Standard equipment is generally similar to that described for the Model 340, except that there is no pressurisation instrumentation, and the Businessliner versions have passenger armrests and headrests as standard (optional on the Utililiner). Optional equipment includes angle of attack indicator, co-pilot's blind-flying instrumentation, turn and bank indicator for co-pilot, digital clock, instantaneous rate of climb indicator, true airspeed indicator, pilot's and co-pilot's inertia reel harness, dual heated static source, 'total flood' cabin fire extinguisher, stereo system, Utililiner or Businessliner interiors (including flight deck divider curtains, window curtains, headrests, reading lights, 'Seat belt' and 'No smoking' signs and various arrangements of seats, tables, refreshment units and toilets), internal corrosion proofing, courtesy lights, courtesy light timer, cargo tiedown rings, fuselage ice protection plates, engine fire detection and extinguishing system, radome nose, static dischargers, fan driven ventilation system, ice detection light, three-light strobe system, vertical tail floodlight and photographic provisions.

DIMENSIONS, EXTERNAL:

Wing span	13·45 m (44 ft 1½ in)
Wing chord: at root	1·77 m (5 ft 9¾ in)
at tip	1·05 m (3 ft 5½ in)
Length overall	11·09 m (36 ft 4½ in)
Height overall	3·49 m (11 ft 5½ in)
Tailplane span	5·18 m (17 ft 0 in)
Wheel track	5·48 m (17 ft 11½ in)
Wheelbase	3·18 m (10 ft 5¼ in)
Propeller diameter	1·94 m (6 ft 4½ in)
Passenger door (standard):	
Height	1·27 m (4 ft 2 in)
Width	0·61 m (2 ft 0 in)
Cargo door (optional): Height	1·21 m (3 ft 11¾ in)
Width	1·05 m (3 ft 5½ in)
Nose baggage doors (each):	
Height	0·41 m (1 ft 4 in)
Width	0·86 m (2 ft 9¾ in)
Nacelle baggage doors (each):	
Length	0·61 m (2 ft 0 in)
Width	0·65 m (2 ft 1½ in)
Emergency exit (optional, stbd, overwing):	
Height	0·48 m (1 ft 7 in)
Width	0·69 m (2 ft 3 in)
Crew door (optional, stbd, fwd):	
Height	0·64 m (2 ft 1 in)
Max width	0·71 m (2 ft 4 in)

DIMENSIONS, INTERNAL:

Cabin: Length	4·83 m (15 ft 10 in)
Max width	1·42 m (4 ft 8 in)
Max height	1·30 m (4 ft 3 in)
Volume	6·30 m³ (222·4 cu ft)

AREAS:

Wings, gross	20·98 m² (225·8 sq ft)
Fin	2·46 m² (26·50 sq ft)
Rudder, incl tab	1·84 m² (19·85 sq ft)
Tailplane	4·02 m² (43·32 sq ft)
Elevators, incl tab	1·64 m² (17·63 sq ft)

WEIGHTS AND LOADINGS:

Weight empty: Businessliner	1,859 kg (4,098 lb)
Utililiner	1,872 kg (4,126 lb)
Max T-O and landing weight	3,107 kg (6,850 lb)
Max ramp weight	3,123 kg (6,885 lb)
Max zero-fuel weight	2,955 kg (6,515 lb)
Max wing loading	148·1 kg/m² (30·3 lb/sq ft)
Max power loading	6·42 kg/kW (10·5 lb/hp)

PERFORMANCE (at max T-O weight, ISA, except speeds are those at mid-cruise weight):

Never-exceed speed
235 knots (435 km/h; 271 mph) IAS

Max level speed at 4,875 m (16,000 ft)
231 knots (428 km/h; 266 mph)

Max cruising speed, 72% power:
at 6,100 m (20,000 ft)213 knots (394 km/h; 245 mph)
at 3,050 m (10,000 ft)194 knots (359 km/h; 223 mph)

Econ cruising speed:
at 6,100 m (20,000 ft) with 272 kg (600 lb) usable fuel 164 knots (304 km/h; 189 mph)
at 6,100 m (20,000 ft) with 560 kg (1,236 lb) usable fuel 166 knots (307 km/h; 191 mph)
at 3,050 m (10,000 ft) with 272 kg (600 lb) usable fuel 141 knots (261 km/h; 162 mph)
at 3,050 m (10,000 ft) with 560 kg (1,236 lb) usable fuel 142 knots (263 km/h; 164 mph)

Stalling speed, power off:
flaps up 78 knots (145 km/h; 90 mph) CAS
flaps down 68 knots (126 km/h; 78 mph) CAS

Max rate of climb at S/L 442 m (1,450 ft)/min

Rate of climb at S/L, one engine out
92 m (301 ft)/min

Service ceiling 8,200 m (26,900 ft)

Service ceiling, one engine out 4,510 m (14,800 ft)

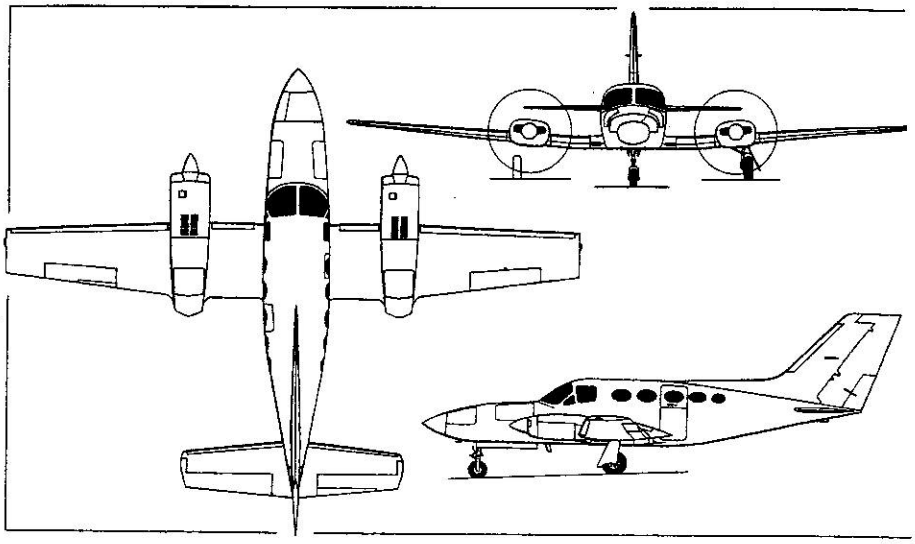
T-O run 537 m (1,763 ft)

T-O to 15 m (50 ft) 669 m (2,195 ft)

Landing from 15 m (50 ft) 757 m (2,485 ft)

Landing run 322 m (1,055 ft)

Range, recommended lean mixture, allowances for start, taxi, T-O, climb, descent and 45 min reserves at selected cruise power:
72% power at 6,100 m (20,000 ft) with 272 kg (600 lb) usable fuel 362 nm (671 km; 417 miles)
72% power at 6,100 m (20,000 ft) with 561 kg (1,236 lb) usable fuel 983 nm (1,822 km; 1,132 miles)
72% power at 3,050 m (10,000 ft) with 272 kg (600 lb) usable fuel 349 nm (647 km; 402 miles)
72% power at 3,050 m (10,000 ft) with 561 kg (1,236 lb) usable fuel 915 nm (1,695 km; 1,053 miles)
econ cruising power at 6,100 m (20,000 ft) with 272 kg (600 lb) usable fuel 459 nm (850 km; 528 miles)
econ cruising power at 6,100 m (20,000 ft) with 561 kg (1,236 lb) usable fuel
1,233 nm (2,285 km; 1,420 miles)
econ cruising power at 3,050 m (10,000 ft) with 272 kg (600 lb) usable fuel 499 nm (924 km; 574 miles)
econ cruising power at 3,050 m (10,000 ft) with 561 kg (1,236 lb) usable fuel
1,273 nm (2,359 km; 1,466 miles)



Cessna Chancellor six/eight-seat pressurised light transport *(Pilot Press)*

REIMS-CESSNA F 406/CARAVAN II

Details of this joint programme for a twin-turboprop business/utility transport can be found under the Reims Aviation entry in the French section.

CESSNA MODEL 414A CHANCELLOR

Cessna introduced the pressurised twin-engined Model 414 on 10 December 1969 as a 'step-up' aircraft for owners of Cessna or other light unpressurised twins. It combined the basic fuselage and tail unit of the Model 421 with the wing of the Model 402 and had 231 kW (310 hp) turbocharged Continental engines.

It was replaced in 1978 by the similar but much improved Model 414A Chancellor. Major changes included a new bonded 'wet' wing of increased span, extended nose and baggage area, and introduction of an external access door to the tailcone.

In 1985 Cessna introduced optional 'Value Groups' of avionics and equipment. 'Value Group A' options for the Chancellor are as described for the Model 402C, with the addition of manually adjusting fore and aft, vertical and tilting seats with pneumatic lumbar support and tinted windows. 'Group B' options add Series 1000 avionics, 800B IFCS, AM-100 radio altimeter, RDR-160 radar and cabin air-conditioning.

A total of 513 of the original Model 414s were built before introduction of the more advanced Model 414A, and a combined total of 1,052 Model 414/414As had been delivered by 30 June 1985.

TYPE: Six/eight-seat pressurised light transport.

WINGS: Cantilever low-wing monoplane. Wing section NACA 23018 (modified) at aircraft centreline, NACA 23015 (modified) at centre-section/outer wing junction, NACA 23009 (modified) at tip. Dihedral 5° on outer panels. Incidence 2° 30' at root, −0° 30' at tip. All-metal two-spar structure of light alloy with stamped ribs and surface skins reinforced with spanwise stringers. Outer wing panels of bonded construction. All-metal ailerons and electrically actuated split flaps. Trim tab in port aileron. Optional pneumatic de-icing system.

FUSELAGE: Conventional all-metal semi-monocoque structure, with fail-safe construction in the pressurised section.

TAIL UNIT: Cantilever all-metal structure, with sweptback vertical surfaces. Fixed incidence tailplane. Trim tabs in rudder and starboard elevator. Optional pneumatic de-icing system.

LANDING GEAR: Hydraulically retractable tricycle type, with single wheel on each unit, main units retracting inward, nosewheel unit aft. Emergency extension by means of a 138 bar (2,000 lb/sq in) rechargeable nitrogen bottle. Oleo-pneumatic shock absorbers. Steerable nosewheel. Mainwheels with tubed tyres size 6·50-10 (8-ply), pressure 4·83 bars (70 lb/sq in); nosewheel with tubed tyre size 6·00-6 (6-ply), pressure 2·41 bars (35 lb/sq in). Goodyear single-disc hydraulic brakes. Parking brakes.

POWER PLANT: Two 231 kW (310 hp) Continental TSIO-520-NB flat-six turbocharged engines, each driving a McCauley 3AF32C505/82NEA-5·5 three-blade constant-speed fully-feathering metal propeller with spinner. Propeller synchrophasers standard; unfeathering pressure accumulator and electric blade de-icing system optional. Integral wing fuel tanks with total capacity of 808 litres (213 US gallons) of which 780 litres (206 US gallons) are usable. Oil capacity 24·6 litres (6·5 US gallons).

ACCOMMODATION: Two seats side by side in pilot's compartment. Optional curtain, or solid divider with curtain, to separate pilot's compartment from main cabin. Standard seating arrangement for two rearward facing and two forward facing passenger seats. Optional arrangements provide for a further one or two forward facing seats at rear of cabin. Individual consoles each include reading light and ventilator. Optional items include executive writing desk, tables, hatshelf, stereo equipment, pilot's and co-pilot's vertically adjustable seats, refreshment and Thermos units, fore and aft cabin dividers, electric shaver converter, all-leather seats, passenger instrument console (clock, true airspeed indicator and altimeter) and intercom. Door is two-piece type with built-in airstairs in bottom portion, on port side of cabin at rear. Plug type emergency escape hatch on starboard side of cabin. Double pane cabin windows. Foul weather windows for pilot and co-pilot, on each side of fuselage. Accommodation heated and ventilated; air-conditioning optional. Windscreen defroster standard, electric or

alcohol windscreen de-icing optional. Baggage accommodated in nose compartment with external access doors, capacity 159 kg (350 lb), two wing lockers, capacity 54·5 kg (120 lb) each, and in rear cabin area, capacity 226 kg (500 lb). Total baggage capacity 494 kg (1,090 lb). External access door to tailcone on starboard side.

SYSTEMS: Cabin pressurisation system, max differential 0·34 bars (5·0 lb/sq in), maintains sea level cabin conditions to an altitude of 3,350 m (11,000 ft), and a 3,050 m (10,000 ft) cabin altitude to a height of 8,075 m (26,500 ft). Pressurisation preselect and variable rate cabin pressurisation system standard. Electrical system powered by two engine driven 28V 50A alternators. 24V 25Ah battery. 28V 100A alternators optional (standard on Chancellor II and III versions). Hydraulic system for operation of landing gear, pressure 121 bars (1,750 lb/sq in). Separate hydraulic system for brakes. Vacuum system for blind-flying instrumentation and optional wing and tail unit de-icing system. Oxygen system of 3·25 m³ (114·9 cu ft) capacity, or emergency oxygen system of 0·31 m³ (11·0 cu ft) capacity optional.

AVIONICS AND EQUIPMENT: The Model 414A has Value Group avionics options as detailed, plus radio telephone with cockpit control, Bendix RDR-160, RDR-160XD, RDR-230HP or Primus 200 weather radar. Optional avionics include alternative items from the Cessna Series 400, 800 and 1000 range as detailed for the Cessna Model 402C. Standard equipment includes blind-flying instrumentation, quartz crystal clock, outside air temperature gauge, sensitive altimeter, economy mixture indicator, control locks, dual controls, instrument panel glareshield, sun visors, alternator failure lights, aircraft systems monitoring device, heater overheat warning light, heated pitot and stall warning transmitter, stall warning device, 'door not locked' warning light, armrests, headrests, cabin air ventilators, cabin altitude and differential pressure indicator, cabin rate of climb indicator, cabin radio speaker, window curtains, super soundproofing, instrument post lights, map light, fuel selector valve light, emergency floodlight, aft cabin light, courtesy lights, reading lights, navigation light detectors, retractable landing light, navigation lights, strobe lights, full flow oil filters, non-congealing oil coolers, quick drain fuel valves, heated fuel vents, engine priming system, rudder lock, towbar, tiedown lugs, jack pads, and overall paint scheme. Optional items for all versions include angle of attack indicator, digital clock, digital fuel flow gauge with computer, instantaneous rate of climb, turn and bank and true airspeed indicators, pilot and co-pilot inertia reel shoulder harnesses, flight deck/cabin divider or curtain, table, refreshment centre, 7th and 8th seats, 'Fasten seat belt' and 'Oxygen' signs, toilet with privacy curtain, internal corrosion proofing, ventilation fan, 'total flood' cabin fire extinguisher, 8-track stereo installation, nacelle and nose baggage compartment courtesy lights, timer for courtesy lights, vertical fin floodlight, ice detection lights, fuselage ice impact panels, heated static source, dual pitot system, radome nose, and engine fire detection and extinguishing system.

DIMENSIONS, EXTERNAL:

Wing span	13·45 m (44 ft 1½ in)
Wing chord: at root	1·77 m (5 ft 9¾ in)
at tip	1·05 m (3 ft 5½ in)
Length overall	11·09 m (36 ft 4½ in)
Height overall	3·49 m (11 ft 5½ in)
Tailplane span	5·18 m (17 ft 0 in)
Wheel track	5·47 m (17 ft 11¾ in)
Wheelbase	3·18 m (10 ft 5¼ in)
Propeller diameter	1·94 m (6 ft 4½ in)
Passenger door: Height	1·30 m (4 ft 3 in)
Width	0·64 m (2 ft 1 in)
Height to sill	1·21 m (3 ft 11½ in)
Emergency exit (stbd, overwing):	
Height	0·69 m (2 ft 3 in)
Width	0·52 m (1 ft 8½ in)
Nose baggage doors (each):	
Max height	0·41 m (1 ft 4 in)
Width	0·86 m (2 ft 9¾ in)
Wing locker doors (each):	
Length	0·61 m (2 ft 0 in)
Max width	0·65 m (2 ft 1½ in)

DIMENSIONS, INTERNAL:

Cabin: Length	4·82 m (15 ft 9¾ in)
Max width	1·40 m (4 ft 7 in)
Max height	1·29 m (4 ft 3 in)
Volume	6·11 m³ (215·6 cu ft)

AREAS:

Wings, gross	20·98 m² (225·8 sq ft)
Fin	2·37 m² (25·53 sq ft)
Rudder, incl tab	1·46 m² (15·72 sq ft)
Tailplane	4·15 m² (44·62 sq ft)
Elevators, incl tab	1·49 m² (16·08 sq ft)

WEIGHTS AND LOADINGS:

Weight empty	1,994 kg (4,397 lb)
Max T-O and landing weight	3,062 kg (6,750 lb)
Max ramp weight	3,078 kg (6,785 lb)
Max zero-fuel weight	2,955 kg (6,515 lb)
Max wing loading	145·94 kg/m² (29·89 lb/sq ft)
Max power loading	6·63 kg/kW (10·89 lb/hp)

PERFORMANCE (at max T-O weight, ISA, except speeds are those at mid-cruise weight):

Never-exceed speed
237 knots (439 km/h; 273 mph) IAS

Max level speed at 6,100 m (20,000 ft)
235 knots (436 km/h; 271 mph)

Cruising speed, 74·8% power at 7,470 m (24,500 ft)
224 knots (415 km/h; 258 mph)

Cruising speed, 74·8% power at 3,050 m (10,000 ft)
193 knots (357 km/h; 222 mph)

Econ cruising speed at 7,620 m (25,000 ft) with 408 kg (900 lb) usable fuel
183 knots (339 km/h; 211 mph)

Econ cruising speed at 3,050 m (10,000 ft) with 408 kg (900 lb) usable fuel
143 knots (265 km/h; 165 mph)

Stalling speed, power off:

flaps up	82 knots (152 km/h; 95 mph) CAS
flaps down	72 knots (133 km/h; 83 mph) CAS
Max rate of climb at S/L	463 m (1,520 ft)/min
Rate of climb at S/L, one engine out	88 m (290 ft)/min
Service ceiling	9,390 m (30,800 ft)
Service ceiling, one engine out	6,050 m (19,850 ft)
T-O run	666 m (2,185 ft)
T-O to 15 m (50 ft)	791 m (2,595 ft)
Landing from 15 m (50 ft) at max landing weight	729 m (2,393 ft)
Landing run at max landing weight	309 m (1,013 ft)

Range, recommended lean mixture with allowances for start, taxi, T-O, climb, descent and 45 min reserves at selected cruise power:

74·8% power at 7,470 m (24,500 ft) with 272 kg (600 lb) usable fuel: 404 nm (748 km; 465 miles)

74·8% power at 7,470 m (24,500 ft) with 561 kg (1,236 lb) usable fuel: 1,099 nm (2,036 km; 1,265 miles)

74·8% power at 3,050 m (10,000 ft) with 272 kg (600 lb) usable fuel: 382 nm (708 km; 440 miles)

74·8% power at 3,050 m (10,000 ft) with 561 kg (1,236 lb) usable fuel: 984 nm (1,823 km; 1,133 miles)

econ cruising power at 7,620 m (25,000 ft) with 272 kg (600 lb) usable fuel: 482 nm (893 km; 555 miles)

econ cruising power at 7,620 m (25,000 ft) with 561 kg (1,236 lb) usable fuel: 1,293 nm (2,396 km; 1,489 miles)

econ cruising power at 3,050 m (10,000 ft) with 272 kg (600 lb) usable fuel: 532 nm (986 km; 613 miles)

econ cruising power at 3,050 m (10,000 ft) with 561 kg (1,236 lb) usable fuel: 1,327 nm (2,459 km; 1,528 miles)

Cessna Chancellor light transport with Continental TSIO-520-NB turbocharged engines

CESSNA MODEL 421 GOLDEN EAGLE

On 28 October 1965, Cessna announced a pressurised twin-engined business aircraft designated Model 421, the prototype of which had flown for the first time on 14 October 1965. FAA type approval was received on 1 May 1967 and deliveries began in the same month.

Two developed versions of the Model 421 were produced subsequently as the 421B Golden Eagle and 421B Executive Commuter, remaining in production until replaced by the Model 421C Golden Eagle in 1976.

A total of 1,899 Model 421s had been delivered by 30 June 1985. Production was suspended at that time.

TYPE: Six/eight-seat pressurised light transport.

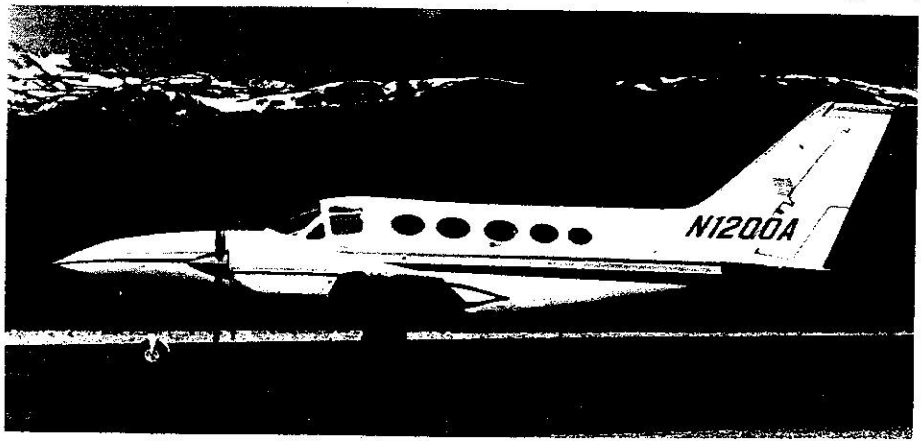
WINGS, FUSELAGE, TAIL UNIT: As for Model 414A.

LANDING GEAR: Hydraulically retractable tricycle type with single wheel on each unit, main units retracting inward, nosewheel unit aft. Emergency extension by means of a 138 bar (2,000 lb/sq in) rechargeable nitrogen bottle. Oleo-pneumatic shock absorbers. Main units of articulated (trailing link) type. Steerable nosewheel. All wheels with tubed tyres, mainwheel tyres size 6·50-10 (8-ply), pressure 5·52 bars (80 lb/sq in), nosewheel tyre 6·00-6 (6-ply), pressure 2·41 bars (35 lb/sq in). Goodyear single-disc hydraulic brakes. Parking brake.

POWER PLANT: Two 280 kW (375 hp) Continental GTSIO-520-N flat-six geared and turbocharged engines, each driving a McCauley Type 0850334-27 three-blade fully-feathering constant-speed metal propeller with spinner. McCauley propeller synchrophaser optional (standard on II/III versions). Standard total fuel capacity is 808 litres (213 US gallons), of which 780 litres (206 US gallons) are usable, contained in 'wet' wing. Optional wing locker tanks provide a maximum usable capacity of 991 litres (262 US gallons). Oil capacity 26·5 litres (7 US gallons).

ACCOMMODATION: Generally the same as for Model 414A; seats are of 'loose pillow' design. The nose compartment can contain a total of 272 kg (600 lb) of baggage and avionics, and two wing lockers an additional 91 kg (200 lb) each, plus 226 kg (500 lb) in the rear cabin area, making a total capacity of 680 kg (1,500 lb). Dual-setting electrically heated windscreen optional.

SYSTEMS, AVIONICS AND EQUIPMENT: Generally as for Model 414A.



Cessna Model 421 Golden Eagle pressurised light transport

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DIMENSIONS, EXTERNAL:

Wing span	12·53 m (41 ft 1½ in)
Wing chord: at root	1·77 m (5 ft 9¾ in)
at tip	1·14 m (3 ft 8½ in)
Length overall	11·09 m (36 ft 4½ in)
Height overall	3·49 m (11 ft 5½ in)
Tailplane span	5·18 m (17 ft 0 in)
Wheel track	5·30 m (17 ft 4½ in)
Wheelbase	3·20 m (10 ft 5¾ in)
Propeller diameter	2·29 m (7 ft 6 in)

AREA:

Wings, gross	19·97 m² (215 sq ft)

WEIGHTS AND LOADINGS:

Weight empty	2,129 kg (4,693 lb)
Max T-O weight	3,379 kg (7,450 lb)
Max ramp weight	3,402 kg (7,500 lb)
Max zero-fuel weight	3,175 kg (7,000 lb)
Max landing weight	3,266 kg (7,200 lb)
Max wing loading	169·4 kg/m² (34·7 lb/sq ft)
Max power loading	6·03 kg/kW (9·9 lb/hp)

PERFORMANCE (at max T-O weight, ISA, except speeds are those at mid-cruise weight):

Never-exceed speed
240 knots (445 km/h; 276 mph) IAS

Max level speed at 6,100 m (20,000 ft)
258 knots (478 km/h; 297 mph)

Max cruising speed, 73·5% power at 7,620 m (25,000 ft)
241 knots (447 km/h; 278 mph)

Max cruising speed, 73·5% power at 3,050 m (10,000 ft)
208 knots (386 km/h; 240 mph)

Econ cruising speed at 7,620 m (25,000 ft) with 637 kg (1,404 lb) usable fuel
192 knots (356 km/h; 221 mph)

Econ cruising speed at 3,050 m (10,000 ft) with 637 kg (1,404 lb) usable fuel
153 knots (283 km/h; 176 mph)

Stalling speed, power off:

flaps up	83 knots (154 km/h; 96 mph) CAS
flaps down	74 knots (137 km/h; 85 mph) CAS

Max rate of climb at S/L	591 m (1,940 ft)/min
Rate of climb at S/L, one engine out	107 m (350 ft)/min
Service ceiling	9,205 m (30,200 ft)
Service ceiling, one engine out	4,540 m (14,900 ft)
T-O run	544 m (1,786 ft)
T-O to 15 m (50 ft)	708 m (2,323 ft)
Landing from 15 m (50 ft)	699 m (2,293 ft)
Landing run	219 m (720 ft)

Range, recommended lean mixture, with allowances for start, taxi, T-O, climb, descent and 45 min reserves at selected cruise power:

73·5% power at 7,620 m (25,000 ft) with 561 kg (1,236 lb) usable fuel
882 nm (1,633 km; 1,015 miles)

73·5% power at 7,620 m (25,000 ft) with 713 kg (1,572 lb) usable fuel
1,197 nm (2,218 km; 1,378 miles)

73·5% power at 3,050 m (10,000 ft) with 561 kg (1,236 lb) usable fuel
790 nm (1,464 km; 910 miles)

73·5% power at 3,050 m (10,000 ft) with 713 kg (1,572 lb) usable fuel
1,060 nm (1,963 km; 1,220 miles)

econ cruising power at 7,620 m (25,000 ft) with 561 kg (1,236 lb) usable fuel
1,088 nm (2,016 km; 1,253 miles)

econ cruising power at 7,620 m (25,000 ft) with 713 kg (1,572 lb) usable fuel
1,483 nm (2,748 km; 1,708 miles)

econ cruising power at 3,050 m (10,000 ft) with 561 kg (1,236 lb) usable fuel
1,107 nm (2,052 km; 1,275 miles)

econ cruising power at 3,050 m (10,000 ft) with 713 kg (1,572 lb) usable fuel
1,485 nm (2,752 km; 1,710 miles)

CESSNA CONQUEST I

Known as the Corsair until late 1982, the Conquest I is a twin-turboprop business aircraft based on the airframe of the Model 421 Golden Eagle. Design began on 1 November 1977, and a prototype flew for the first time on 12 September 1978; construction of a pre-production example was started during 1979. FAA certification was gained by mid-1980. Initial deliveries of production aircraft were made in November 1980, and 132 Corsairs were delivered.

Aircraft c/n 119 introduced new avionics options that include the Sperry Series 1000 R/Nav, Collins PN-101 or Sperry RD-44 HSI, and Sperry AA-300 radio altimeter. Compressor wash rings are installed as standard to simplify engine cleaning, and a number of new optional cabin accessories, furnishings and interior trims are available. All Corsair/Conquest I owners are able to participate in the company's CesCom computerised maintenance programme. A total of 214 Corsairs and Conquest Is had been delivered by 30 June 1985.

TYPE: Six/eight-seat pressurised light transport.

WINGS: Cantilever low-wing monoplane. Wing section NACA 23018-63 (modified) at root, NACA 23015 (modified) at centreline of engine nacelles, NACA 23009-63 (modified) at tip. Dihedral 5° on outer panels. Incidence 2° 30′ at root, −0° 30′ at tip. All-metal two-spar structure of light alloy, with stamped ribs and surface skins reinforced with spanwise stringers. Outer wing panels of bonded construction. All-metal ailerons and electrically operated trailing-edge split flaps. Trim tab in port aileron. Optional pneumatic de-icing of wing leading-edges.

FUSELAGE: Conventional all-metal semi-monocoque structure, with fail-safe construction in the pressurised section.

TAIL UNIT: Conventional all-metal cantilever structure, with sweptback vertical surfaces. Tailplane has dihedral of 12°. Trim tab in starboard elevator, with dual heavy duty actuator. Trim tab in rudder. Optional pneumatic de-icing of fin and tailplane leading-edges.

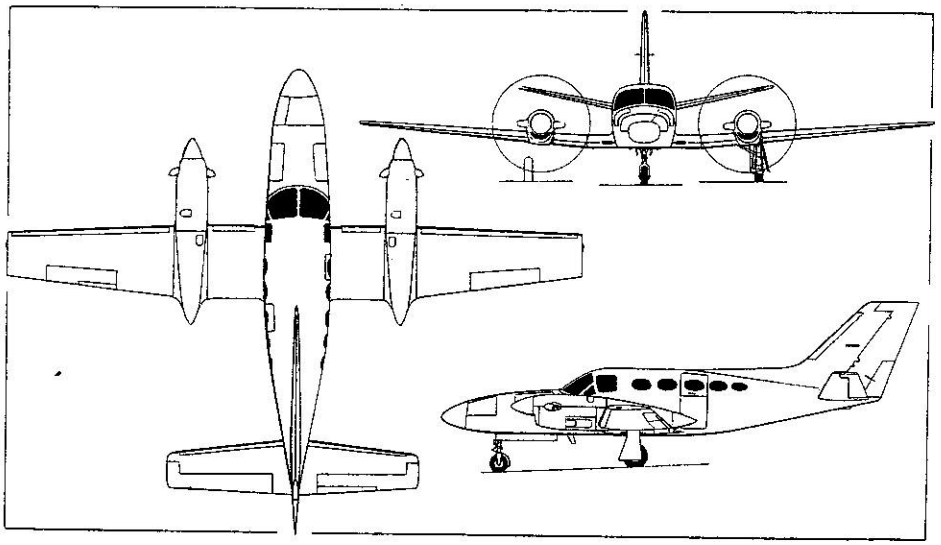
LANDING GEAR: Hydraulically retractable tricycle type with single wheel on each unit, main units retracting inward, nosewheel aft. Oleo-pneumatic shock absorbers, with main units of articulated (trailing link) type. Steerable nosewheel. All wheels with tubed tyres, mainwheel tyres size 6·50-10, 10-ply rating, pressure 5·17 bars (75 lb/sq in), nosewheel tyre size 6·00-6, 6-ply rating, pressure 2·76 bars (40 lb/sq in). Hydraulic disc brakes. Parking brake.

POWER PLANT: Two Pratt & Whitney Canada PT6A-112 turboprop engines, flat rated at 335·5 kW (450 shp), each driving a Hartzell Type 9910438-1 or McCauley Type 9910535-1 wide-chord three-blade constant-speed fully-feathering and reversible-pitch metal propeller. Propellers autofeather when engines are at rest. Fuel contained in integral tanks in outer wing panels, nacelle cells, and inboard collector tanks, with combined capacity of 1,411 litres (372·8 US gallons), of which 1,385 litres (366 US gallons) are usable. Refuelling point above each engine nacelle. Oil capacity 17·4 litres (4·6 US gallons). Engine inlet ducts have a separator mechanism to prevent ingestion of water. Propeller de-icing and synchrophaser standard. Engine fire detection system standard.

ACCOMMODATION: Two seats side by side in pilot's compartment, with dual controls. Optional curtain, or solid divider with curtain, to separate pilot's compartment from main cabin. Standard seating provides for four passengers, but optional arrangements have the front passenger seats facing aft and forward-facing seventh ar eighth seats. Optional equipment includes storage drav ers, refreshment centre, tables, toilet, radio telephon stereo system, and aft cabin divider. Door is of two-piec type, with built-in airstairs in bottom portion, on po side of cabin at rear. Plug type emergency escape hatc overwing on starboard side of cabin. Foul weathe windows on each side of fuselage for pilot and co-pilo Baggage accommodated in nose with external door capacity 272 kg (600 lb), and in rear of cabin area capacity 227 kg (500 lb). Total baggage capacity 499 k (1,100 lb). Accommodation is pressurised, heated an air-conditioned. Windscreen defroster standard. Elec trically heated windscreen and alcohol windscreen anti icing optional.

SYSTEMS: Freon air-conditioning system of 17,500 BTU capacity, plus engine bleed air and electric boost heating Pressurisation system with max differential of 0·35 bar (5·0 lb/sq in) provides a 3,050 m (10,000 ft) cabin altitude to 8,075 m (26,500 ft), or 3,625 m (11,900 ft) cabin altitude to 9,145 m (30,000 ft). Electrical system includes a 28V 250A starter/generator on each engine and a 39Ah nickel-cadmium battery. Hydraulic system for operation of landing gear. Separate hydraulic system for brakes. Vacuum system for blind-flying instrumentation and optional wing and tail unit de-icing. Oxygen system of 0·31 m³ (11·0 cu ft) capacity standard; a 3·25 m³ (114·9 cu ft) capacity system is optional. Engine fire detection system standard, extinguishing system optional.

AVIONICS AND EQUIPMENT: Standard avionics include a basic avionics kit comprising audio panel, cabin and cockpit speakers, combination microphone/headset for pilot, hand held microphone, and an avionics cooling system; Sperry Series 1000 avionics including dual coms, navs and glideslope receivers, ADF, DME, marker beacon receiver, RMI, transponder, Series 400 encoding altimeter, 1000A autopilot with slaved HSI and yaw damper. (Slaved HSI replaced by Collins PN-101 indicator and C-14 compass system from airframe c/n 152.) An alternative factory installed avionics package is available,



Cessna Conquest I (two Pratt & Whitney Canada PT6A-112 turboprop engines) *(Pilot Press)*

Cessna Conquest I six/eight-seat twin-turboprop pressurised transport

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based on the use of Collins equipment. Optional Sperry or Collins avionics to complement the above systems are available, and other options include Aeronetics RMI, Flitefone radio telephone, Sperry flight directors, and colour or monochromatic weather radar by Bendix, Collins and Sperry. Standard equipment includes dual sensitive altimeters (port encoding), electric clock, artificial horizons (port and starboard), directional gyro (starboard only), outside air temperature gauge, turn and bank indicator, dual rate of climb indicators, fuel flow indicators, instrument panel glareshield, sun visors, instrument post lights, map light, emergency floodlight, dual controls, control lock, audible stall warning system, fore and aft adjustable and tilting pilot and co-pilot seats with seat belts and shoulder harnesses, map and storage pockets, four adjustable and reclining passenger seats with seat belts, armrests and headrests, cabin differential pressure gauge, cabin rate of climb indicator, adjustable air-conditioning and ventilator outlets, annunciator panel lights, circuit breaker lights, individual reading lights, entrance door courtesy light, double pane windows, window curtains, cabin fire extinguisher, internal corrosion proofing, soundproofing, cargo tiedown rings, baggage straps, emergency locator transmitter, dual landing lights, taxi and navigation lights, high intensity strobe lights, full flow oil filters, quick drain fuel valves, static discharge wicks, ground power socket, heated pitot and stall warning transmitter, jack pads, nosewheel fender, towbar and all-over paint scheme. Optional equipment includes digital clock, angle of attack and instantaneous rate of climb indicators, co-pilot's turn and bank indicator, flight hour recorder, inertia reel shoulder harnesses for pilot and co-pilot, rudder gust lock, curtain or rigid flight deck dividers, 'Fasten seat belts—no smoking' sign, a variety of cabin furnishings including drawers, refreshment centres, tables and toilets, 'total flood' cabin fire extinguisher, tinted inner window panes, courtesy fight timer, fuselage ice protection plates, ice detection lights, nose baggage compartment light, and heated static source.

DIMENSIONS, EXTERNAL:

Wing span	13·45 m (44 ft 1½ in)
ord: at root	1·77 m (5 ft 9¾ in)
at tip	1·05 m (3 ft 5½ in)
Wing aspect ratio	8·65
Length overall	10·93 m (35 ft 10¼ in)
Height overall	3·84 m (12 ft 7¼ in)
Tailplane span	5·82 m (19 ft 1 in)
Wheel track	5·30 m (17 ft 4½ in)
Wheelbase	3·20 m (10 ft 6 in)
Propeller diameter: Hartzell	2·37 m (7 ft 9¼ in)
McCauley	2·36 m (7 ft 9 in)
Passenger door: Height	1·30 m (4 ft 3 in)
Width	0·64 m (2 ft 1 in)
Height to sill	1·21 m (3 ft 11½ in)
Emergency exit (stbd, overwing):	
Height	0·69 m (2 ft 3 in)
Width	0·52 m (1 ft 8½ in)
Nose baggage doors (each):	
Max height	0·41 m (1 ft 4 in)
Width	0·86 m (2 ft 9¾ in)

DIMENSIONS, INTERNAL:

Cabin: Length	4·83 m (15 ft 9¾ in)
Max width	1·40 m (4 ft 7 in)
Max height	1·29 m (4 ft 3 in)
Volume	6·39 m³ (225·6 cu ft)
Nose avionics/baggage compartment volume	0·95 m³ (33·4 cu ft)
Rear cabin baggage volume	0·87 m³ (30·6 cu ft)

AREAS:

Wings, gross	20·90 m² (224·98 sq ft)
Ailerons (total)	1·32 m² (14·16 sq ft)
Trailing-edge flaps (total)	2·14 m² (23·06 sq ft)
Fin	2·06 m² (22·20 sq ft)
Rudder (incl tab)	1·78 m² (19·15 sq ft)
Tailplane	3·84 m² (41·35 sq ft)
Elevators (total, incl tab)	1·99 m² (21·44 sq ft)

WEIGHTS AND LOADINGS:

Weight empty, equipped	2,229 kg (4,915 lb)
Max fuel weight	1,115 kg (2,459 lb)
Max T-O weight	3,901 kg (8,600 lb)
Max ramp weight	3,935 kg (8,675 lb)
Max zero-fuel weight	3,175 kg (7,000 lb)
Max landing weight	3,629 kg (8,000 lb)
Max wing loading	186·7 kg/m² (38·23 lb/sq ft)
Max power loading	5·81 kg/kW (9·56 lb/shp)

PERFORMANCE (at max T-O weight, ISA, except where indicated):

Never-exceed speed	Mach 0·52 (230 knots; 426 km/h; 265 mph) IAS
Max cruising speed at 5,400 m (17,700 ft) at AUW of 3,175 kg (7,000 lb)	264 knots (489 km/h; 304 mph)
Cruising speed at 9,145 m (30,000 ft), mid-cruise weight	250 knots (463 km/h; 288 mph)
Econ cruising speed at 9,145 m (30,000 ft), mid-cruise weight	210 knots (389 km/h; 242 mph)
Stalling speed, engines idling:	
flaps and landing gear up	88 knots (163 km/h; 102 mph) CAS
flaps and landing gear down	79 knots (147 km/h; 91 mph) CAS
Max rate of climb at S/L	567 m (1,861 ft)/min
Rate of climb at S/L, one engine out	109 m (357 ft)/min
Service ceiling	10,180 m (33,400 ft)
Service ceiling, one engine out	5,240 m (17,200 ft)
T-O run	660 m (2,164 ft)
T-O to 15 m (50 ft)	757 m (2,482 ft)
Landing from 15 m (50 ft)	654 m (2,145 ft)
Landing run	290 m (952 ft)

Range with max fuel at max cruising power, allowances for start, taxi, T-O, climb to cruise altitude, descent, and 45 min reserves at max cruise power:
at 6,100 m (20,000 ft) 1,012 nm (1,874 km; 1,165 miles)
at 9,145 m (30,000 ft) 1,387 nm (2,569 km; 1,596 miles)

Range with max fuel at max range power, allowances as above, and 45 min reserves at max range power:
at 6,100 m (20,000 ft) 1,339 nm (2,480 km; 1,541 miles)
at 9,145 m (30,000 ft) 1,576 nm (2,919 km; 1,814 miles)

CESSNA CONQUEST II

Cessna announced on 15 November 1974 that it was developing a twin-turboprop business aircraft designated Model 441, which was designed to slot into the market gap between contemporary twin piston engined aircraft and turbofan powered business aircraft. Marketed initially as the Conquest, and as Conquest II from 1983, this aircraft is powered by Garrett TPE331-8-403S turboprop engines, which were developed specially to meet the high-altitude high-speed requirements set for it by Cessna. Its high performance stems in part from use of a high aspect ratio bonded wing, and from the high strength trailing link landing gear.

Production aircraft from c/n 116 have as standard an automatic engine torque and temperature limiting system, propeller synchrophaser, fuselage ice protection plates, pneumatic actuator for cabin upper door, new low-pressure fuel boost pumps, and fuel pressure switch. From and including c/n 173, the certificated altitude was increased to 10,670 m (35,000 ft); quick-donning pilot and co-pilot oxygen masks were introduced, and additional options include Collins radios with electronic display, a dual inverter installation, Bendix RDR 160 colour radar display, and underseat storage drawers. From c/n 195 the original Hartzell propellers were replaced by McCauley equivalents that offer a weight saving of 5·2 kg (11·5 lb) each.

In addition to benefiting from the company's CesCom computerised maintenance programme, customers now receive a warranty for the Conquest II's Garrett engines, covering them over a period of 3,000 h or 50 months.

The prototype of the Conquest/Conquest II flew for the first time on 26 August 1975 and 342 had been delivered by 30 June 1985.

TYPE: Five/eleven-seat pressurised executive transport.

WINGS: Cantilever low-wing monoplane. Wing section NACA 23018 at root, NACA 23019 at tip. Dihedral 3° 30' on wing centre-section, 4° 55' on outer panels. Incidence 2° at root, −1° at construction tip. All-metal three-spar centre-section structure to meet FAR 23 fail-safe requirements: two-spar structure for outer wing panels. Hydraulically operated Fowler trailing-edge flaps of light alloy construction. Plain ailerons of light alloy construction. Trim tab in port aileron. Pneumatic de-icing system optional.

FUSELAGE: All-metal semi-monocoque structure of light alloy.

TAIL UNIT: Cantilever structure with sweptback vertical surfaces. Dihedral 12° on horizontal surfaces. Large tab in each elevator and rudder.

LANDING GEAR: Hydraulically retractable tricycle type with single wheel on each unit. Main units retract inward into wing, nosewheel rearward. Emergency extension by means of a 138 bar (2,000 lb/sq in) rechargeable nitrogen bottle. Cessna oleo-pneumatic shock absorbers. All legs of articulated (trailing link) type. Cleveland mainwheels with tubeless tyres size 22 × 7·75-10, pressure 6·55 bars (95 lb/sq in). Cleveland nosewheel with tubed tyre size 6·00-6, pressure 3·45 bars (50 lb/sq in). Cleveland single-disc hydraulic brakes. Parking brake.

POWER PLANT: Two Garrett TPE331-8-403S turboprop engines, each flat rated at 474 kW (635·5 shp) to 4,875 m (16,000 ft). Hartzell Type HC-B3TN-5E/T10178B-11 constant-speed fully-feathering and reversible-pitch three-blade propellers up to and including airframe c/n 194; McCauley 3GFR34C60T/93JA3 propellers subsequently. Total fuel capacity 1,823 litres (481·5 US gallons), of which 1,798 litres (475 US gallons) are usable. Refuelling point on upper surface of each wing. Oil capacity 14·2 litres (3·75 US gallons).

ACCOMMODATION: Seats for four to ten persons, and pilot, in pressurised and air-conditioned cabin. Various optional seating arrangements. Door aft of wing on port side, with upward hinged top portion and downward hinged lower portion with integral airstairs. Emergency exit over wing on starboard side. Baggage door on each side of nose. Max baggage capacity 680 kg (1,500 lb). Optional items include aft cabin divider, refreshment centre, toilet, writing tables and stereo system.

SYSTEMS: Pressurisation system max differential 0·43 bars (6·3 lb/sq in). Freon air-conditioning systems of 8,000 BTU or 16,000 BTU capacity optional. Hydraulic system for operation of flaps and landing gear, pressure 103·5 bars (1,500 lb/sq in). Separate hydraulic system for brakes. Emergency extension of landing gear by means of 138 bar (2,000 lb/sq in) rechargeable gas bottle. Electrical power supplied by two 28V 200A starter/generators; two 24V 22Ah nickel-cadmium batteries housed in nose compartment. Electronic fuel control system.

AVIONICS AND EQUIPMENT: Generally similar to those detailed for the Corsair, except that the Series 1000 autopilot is replaced by the Series 1000 IFCS. There is also a wider range of optional cabin furnishings. At c/n 195 the original Hartzell propellers were replaced by McCauley equivalents that offer a weight saving of 5·2 kg (11·5 lb) each. At c/n 200, a Collins FIS-70 flight director and gyro system were added to the optional Collins avionics package. A Sperry AA-300 radio altimeter and Collins PN-101/Sperry RD-44 HSIs became available from c/n 260.

DIMENSIONS, EXTERNAL:

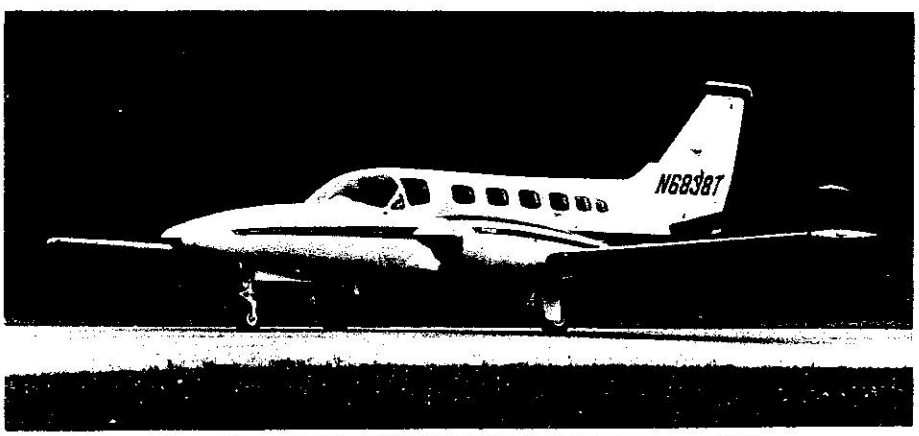
Wing span over tip lights	15·04 m (49 ft 4 in)
Wing chord: at root	1·78 m (5 ft 10 in)
at tip	1·23 m (4 ft 0¼ in)
Wing aspect ratio	9·5
Length overall	11·89 m (39 ft 0¼ in)
Height overall	4·01 m (13 ft 1¾ in)
Tailplane span	5·81 m (19 ft 1 in)
Wheel track	4·28 m (14 ft 0½ in)
Wheelbase	3·81 m (12 ft 5⅞ in)
Propeller diameter	2·29 m (7 ft 6 in)
Cabin door (port, rear): Height	1·30 m (4 ft 3 in)
Width	0·64 m (2 ft 1 in)
Emergency exit (stbd, fwd):	
Height	0·69 m (2 ft 3 in)
Width	0·58 m (1 ft 10¼ in)
Nose baggage doors (each):	
Max height	0·41 m (1 ft 4 in)
Width	0·86 m (2 ft 9¾ in)

DIMENSIONS, INTERNAL:

Cabin: Length	5·71 m (18 ft 9 in)
Max width	1·41 m (4 ft 7½ in)
Max height	1·29 m (4 ft 3 in)

AREAS:

Wings, gross	23·56 m² (253·6 sq ft)
Ailerons (total)	1·37 m² (14·74 sq ft)
Trailing-edge flaps (total)	3·99 m² (42·99 sq ft)
Fin	2·54 m² (27·33 sq ft)
Rudder (incl tab)	1·50 m² (16·15 sq ft)
Tailplane	4·21 m² (45·31 sq ft)
Elevators (incl tabs)	1·82 m² (19·57 sq ft)



Cessna Conquest II (two Garrett TPE331-8-403S turboprop engines)

BE 11

WEIGHTS AND LOADINGS:

Weight empty, approx	2,592 kg (5,715 lb)
Max usable fuel	1,444 kg (3,183 lb)
Max ramp weight	4,502 kg (9,925 lb)
Max T-O weight	4,468 kg (9,850 lb)
Max landing weight	4,246 kg (9,360 lb)
Max zero-fuel weight	3,855 kg (8,500 lb)
Max wing loading	189·6 kg/m² (38·8 lb/sq ft)
Max power loading	4·79 kg/kW (7·88 lb/shp)

PERFORMANCE (at max T-O weight, ISA, unless otherwise indicated, except speeds are those at mid-cruise weight of 3,788 kg; 8,350 lb):

Never-exceed speed
Mach 0·55 (245 knots; 454 km/h; 282 mph) IAS

Max level speed at 4,875 m (16,000 ft)
295 knots (547 km/h; 340 mph)

Max cruising speed at 7,315 m (24,000 ft)
293 knots (543 km/h; 337 mph)

Econ cruising speed at 10,670 m (35,000 ft)
259 knots (480 km/h; 298 mph)

Econ cruising speed at 7,620 m (25,000 ft)
246 knots (456 km/h; 283 mph)

Stalling speed, gear and flaps up, engines idling
90 knots (167 km/h; 104 mph) CAS

Stalling speed, gear and flaps down, engines idling
76 knots (141 km/h; 88 mph) CAS

Stalling speed, gear and flaps down, power off, at max landing weight 75 knots (139 km/h; 87 mph) CAS

Max rate of climb at S/L 742 m (2,435 ft)/min

Rate of climb at S/L, one engine out
218 m (715 ft)/min

Service ceiling above 10,670 m (35,000 ft)

Service ceiling, one engine out 6,515 m (21,380 ft)

Max certificated operating altitude
10,670 m (35,000 ft)

T-O run 544 m (1,785 ft)

T-O to 15 m (50 ft) 751 m (2,465 ft)

Landing from 15 m (50 ft) at max landing weight
572 m (1,875 ft)

Landing run 334 m (1,095 ft)

Range at max T-O weight with 1,444 kg (3,183 lb) fuel, at max cruising power, allowances for engine start, taxi, T-O, climb, descent and 45 min reserves at max cruise power:

at 7,620 m (25,000 ft)
1,571 nm (2,909 km; 1,807 miles)

at 10,060 m (33,000 ft)
2,063 nm (3,820 km; 2,374 miles)

at 10,670 m (35,000 ft)
2,193 nm (4,064 km; 2,525 miles)

Range at max T-O weight and at max range power, allowances as above:

at 7,620 m (25,000 ft)
1,816 nm (3,363 km; 2,090 miles)

at 10,060 m (33,000 ft)
2,212 nm (4,096 km; 2,545 miles)

at 10,670 m (35,000 ft)
2,291 nm (4,245 km; 2,638 miles)

CESSNA CITATION I

Production of the Cessna Citation I and I/SP seven/nine-seat business jets was terminated in the Summer of 1985. A total of 691 of the original Citations and later Citation I models had been delivered by 30 June 1985. A description of the aircraft may be found in the 1984-85 *Jane's*.

CESSNA CITATION S/II

US Navy designation: T-47A

Cessna announced on 4 October 1983 first details of the Citation S/II, a new version of the Citation II last described in the 1984-85 *Jane's*. Total deliveries of Citation IIs numbered 504 at 1 March 1985. The improvements were introduced on the production line from aircraft c/n 506, delivered in the late Summer of 1984. They include a new wing aerofoil section, utilising Citation III supercritical technology, to reduce high-speed drag while retaining the Citation II's slow-speed handling and short-field capability; a modified wing/fuselage fairing to improve localised airflow; an extended wing inboard leading-edge, increasing wing area/lift and providing greater fuel capacity; modified engine pylon contours to reduce drag; sealed aileron/speed brake gaps, and faired flap coves, to reduce drag and improve lift; hydraulically actuated Fowler flaps of graphite composite construction, in two panels on each wing, which extend further inboard to provide additional lift/drag; ailerons of graphite composite construction with geared trim tabs to improve roll access response; a TKS glycol anti-icing system for the wing leading-edges; and a new -4B version of the Citation II's Pratt & Whitney Canada JT15D turbofan engines, which provides greater thrust at high altitudes. Tail unit anti-icing systems are no longer required.

Internal refinements include an increase in tailcone baggage volume to 0·79 m³ (28·0 cu ft); a headroom increase of 12·7 cm (5 in) in the totally private toilet area; soft-touch headliners that reduce sound levels; Citation III style seats with shoulder harness, lateral tracking for more head and elbow room, and built-in life jacket storage; and redesigned sidewall air ducts which improve cabin insulation and heating and also provide a better than ten per cent increase in aisle width. New options include a vanity unit for the toilet, refreshment centres of composite construction, a wide door for use in cargo, air ambulance and other special applications, and Sperry EFIS.

The first production configuration Citation S/II made its first flight on 14 February 1984; FAA certification, with exemption for single-pilot operation, was granted in July 1984. A total of 40 Citation S/IIs had been delivered by 1 July 1985.

In May 1983, the US Navy awarded Cessna a $159·4 million contract for 15 Citation S/IIs for use in its Undergraduate Naval Flight Officer Training Systems Upgrade (UNFO/TSU) programme. These aircraft, designated **T-47A**, are replacing T-39Ds used previously to train personnel in use of air-to-air, air-to-surface, intercept and other radar equipment, as part of a five-year programme, plus a three-year option, covering provision of the aircraft, simulators, maintenance and pilot services. The T-47As differ from standard Citation S/IIs in having JT15D-5 turbofans and a shorter wing span, to increase rate of climb and make possible a speed of Mach 0·733 at 12,200 m (40,000 ft). Emerson supplies the nose mounted APQ-159 radar. The crew normally comprises a civilian pilot, Navy instructor and three students. The first T-47A made its first flight on 15 February 1984 and received FAA certification on 21 November 1984. All but one of the 15 aircraft had been delivered by 1 May 1985.

TYPE: Eight/ten-seat twin-turbofan executive transport.

WINGS: Cantilever low-wing monoplane without sweepback. Incidence 2° 30' at c/l, −0° 30' at wing station 247·95. Dihedral 4°. All-metal fail-safe structure with two primary spars, an auxiliary spar, three fuselage attachment points, and conventional ribs and stringers. Manually operated ailerons, of graphite composite construction, each with geared trim tab. Hydraulically operated trailing-edge Fowler flaps of graphite composite construction. Hydraulically operated aerodynamic speed brakes. Glycol anti-icing of leading-edges.

FUSELAGE: All-metal pressurised structure of circular section. Fail-safe design, providing multiple load paths.

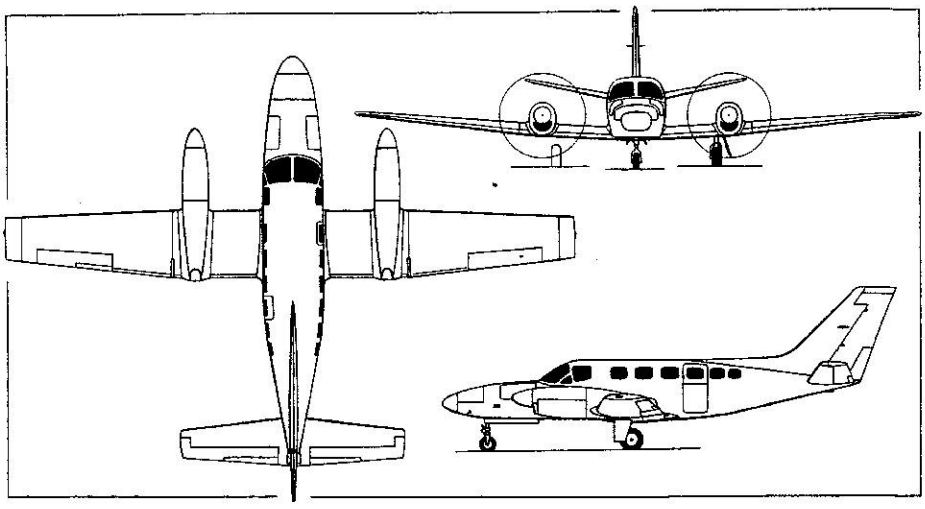
TAIL UNIT: Cantilever all-metal structure. Horizontal surfaces have dihedral of 9°. Dorsal fin. Manually operated control surfaces. Electric elevator trim with manual override; manual rudder trim.

LANDING GEAR: Hydraulically retractable tricycle type with single wheel on each unit. Main units retract inward into the wing, nose gear forward into fuselage nose. Free-fall and pneumatic emergency extension systems. Goodyear mainwheels with tyres size 22·0 × 8·10, 12-ply rating, pressure 8·27 bars (120 lb/sq in). Steerable nosewheel with Goodyear wheel and tyre size 18·0 × 4·4, 10-ply rating, pressure 8·27 bars (120 lb/sq in). Goodyear hydraulic brakes. Parking brake and pneumatic emergency brake system. Anti-skid system optional.

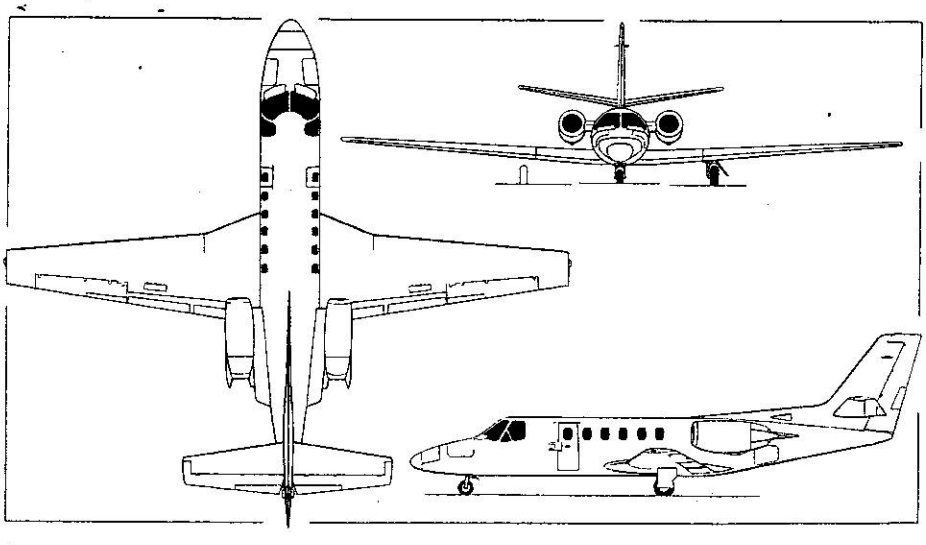
POWER PLANT: Two Pratt & Whitney Canada JT15D-4B turbofans, each rated at 11·2 kN (2,500 lb st) for take-off, mounted in a pod each side of rear fuselage. Integral fuel tanks in wings, with combined usable capacity of 3,263 litres (862 US gallons).

ACCOMMODATION: Crew of two on separate flight deck, on fully adjustable seats, with seat belts and inertia reel shoulder harness, and sun visors. Seating for six to eight passengers in main cabin. Standard interior configuration provides for six passenger seats, two forward and four aft facing, each with headrest, seat belt and diagonal inertia reel harness; flushing toilet aft; tracked refreshment centre; forward cabin divider with privacy curtain, aft cabin divider with sliding doors. Passenger service units containing an oxygen mask, air vent and reading light for each passenger. Three separate baggage areas, one in nose section, externally accessible, one in aft cabin area, and one in tailcone area, with a combined capacity of up to 658 kg (1,450 lb).

SYSTEMS: Pressurisation system supplied with engine bleed air, max pressure differential 0·61 bars (8·8 lb/sq in), maintaining a sea level cabin altitude to 6,962 m (22,842 ft), or a 2,440 m (8,000 ft) cabin altitude to 13,105 m (43,000 ft). Hydraulic system, pressure 103·5 bars (1,500 lb/sq in), with two pumps to operate landing gear and speed brakes. Pressurised reservoir. Separate hydraulic system for wheel brakes. Electrical system supplied by two 28V 300A engine driven DC starter/generators, with two 350VA inverters and 24V 40Ah nickel-cadmium battery. Oxygen system of 0·62 m³ (22 cu ft) capacity



Cessna Conquest II five/eleven-seat pressurised, turboprop powered executive transport *(Pilot Press)*



Cessna Citation S/II (Pratt & Whitney Canada JT15D-4B turbofan engines) *(Pilot Press)*

Piper PA-32R-301T Turbo Saratoga SP

Executive. As detailed for Saratoga/Turbo Saratoga, with deletions as above, the entire package adding 22·4 kg (49·4 lb) to basic empty weight.

Both versions of the Saratoga SP for 1985 introduced as standard inertia reel safety harnesses for all forward facing seats and electrically operated trailing-edge flaps. At 1 April 1985 sales of the Saratoga SP and Turbo Saratoga SP totalled 371 and 362 respectively.

The description of the Saratoga/Turbo Saratoga applies also to the retractable landing gear versions, except as follows:

WINGS, TAIL UNIT: Pneumatic de-icing system for wing and tail unit leading-edges is available optionally for the Turbo Saratoga SP.

LANDING GEAR: Hydraulically retractable tricycle type with single wheel on each unit. Main units retract inward, nosewheel aft. Integrated automatic system which extends the landing gear at 102 knots (189 km/h; 17 mph), unless overridden by pilot. Emergency free-fall extension system. Piper oleo-pneumatic shock absorbers. Steerable nosewheel. Mainwheels and tyres size 6·00-6, 8-ply rating, pressure 2·62 bars (38 lb/sq in). Nosewheel and tyre size 5·00-5, 6-ply rating, pressure 2·41 bars (35 lb/sq in). High capacity hydraulic disc brakes. Parking brake. Heavy duty tyres and brakes optional.

POWER PLANT: As for Saratoga except as detailed for Turbo Saratoga SP. Propeller de-icing optional for Turbo Saratoga SP.

ACCOMMODATION: As for Saratoga, but pilot's electrically heated windscreen plate optional for Turbo Saratoga SP.

SYSTEMS: As for Saratoga, but electrically driven hydraulic pump for landing gear actuation; built-in oxygen system of 1·81 m³ (64 cu ft) capacity and 95A alternator available optionally for Turbo Saratoga SP.

AVIONICS AND EQUIPMENT: Generally as listed for Saratoga, with amendments as noted in this entry, plus optional wing ice inspection light for Turbo Saratoga SP.

DIMENSIONS, EXTERNAL: As for Saratoga, except:

Length overall: Saratoga SP	8·45 m (27 ft 8½ in)
Turbo Saratoga SP	8·69 m (28 ft 6 in)
Height overall	2·59 m (8 ft 6 in)
Wheel track	3·39 m (11 ft 1½ in)
Wheelbase	2·43 m (7 ft 11½ in)

WEIGHTS AND LOADINGS (A: Saratoga SP; B: Turbo Saratoga SP): As for Saratoga/Turbo Saratoga, except:

Weight empty: A	907 kg (1,999 lb)
B	943 kg (2,078 lb)

PERFORMANCE (at max T-O weight, except where indicated. A: Saratoga SP/two-blade propeller; B: Turbo Saratoga SP/two-blade propeller; C: Saratoga SP/three-blade propeller; D: Turbo Saratoga SP/three-blade propeller):

Max level speed at optimum altitude:	
A	164 knots (304 km/h; 189 mph)
B	191 knots (354 km/h; 220 mph)
D	195 knots (361 km/h; 225 mph)
Best power cruising speed at optimum altitude:	
at 75% power: A	159 knots (295 km/h; 183 mph)
B	177 knots (328 km/h; 204 mph)
at 65% power: A	153 knots (283 km/h; 176 mph)
B	166 knots (307 km/h; 191 mph)
at 55% power: A	144 knots (267 km/h; 166 mph)
B	152 knots (282 km/h; 175 mph)
Best econ cruising speed at optimum altitude:	
at 75% power: A	157 knots (291 km/h; 181 mph)
B	171 knots (317 km/h; 197 mph)
at 65% power: A	151 knots (280 km/h; 174 mph)
B	160 knots (296 km/h; 184 mph)
at 55% power: A	141 knots (261 km/h; 162 mph)
B	145 knots (269 km/h; 167 mph)
Stalling speed, flaps up:	
A	65 knots (121 km/h; 75 mph) CAS
B	63 knots (118 km/h; 73 mph) CAS
Stalling speed, flaps down:	
A	59 knots (110 km/h; 68 mph) CAS
B	60 knots (111 km/h; 69 mph) CAS
Max rate of climb at S/L: A	308 m (1,010 ft)/min
B	341 m (1,120 ft)/min
Service ceiling: A	5,090 m (16,700 ft)
*B	6,100 m (20,000 ft)
Absolute ceiling: A	5,595 m (18,350 ft)
*B	6,100 m (20,000 ft)
T-O run, and T-O to 15 m (50 ft):	as for Saratoga and Turbo Saratoga
Landing from 15 m (50 ft), and landing run:	as for Saratoga and Turbo Saratoga

Range with max fuel, allowances for taxi, T-O, climb, descent, and 45 min reserves at max range power:

Best power settings at optimum altitude:	
75% power: A	784 nm (1,453 km; 903 miles)
B	730 nm (1,353 km; 840 miles)
65% power: A	828 nm (1,533 km; 953 miles)
B	790 nm (1,465 km; 910 miles)
55% power: A	869 nm (1,611 km; 1,001 miles)
B	843 nm (1,562 km; 971 miles)
Best econ power settings at optimum altitude:	
75% power: A	865 nm (1,603 km; 996 miles)
B	844 nm (1,564 km; 972 miles)
65% power: A	937 nm (1,736 km; 1,079 miles)
B	920 nm (1,704 km; 1,059 miles)
55% power: A	983 nm (1,822 km; 1,132 miles)
B	950 nm (1,760 km; 1,094 miles)

**Max certificated altitude*

PIPER (PA-31-350) CHIEFTAIN

Announced on 11 September 1972, the PA-31-350 Chieftain is a lengthened version of the discontinued Navajo C/R, with the fuselage extended by 0·61 m (2 ft 0 in) and with 261 kW (350 hp) counter-rotating turbocharged engines.

The main cabin floor is designed to carry heavy concentrated loads of up to 976 kg/m² (200 lb/sq ft) and, in addition to the 6·14 m³ (217 cu ft) of cargo space in the main cabin, 91 kg (200 lb) of cargo or baggage can be carried in the forward nose compartment, and 68 kg (150 lb) in the rear of each engine nacelle.

Two optional interior groups of equipment are available, depending upon the proposed use of the aircraft:

Standard Interior Group. Six adjustable seats. Pilot and co-pilot seats adjust fore, aft, vertically and tilt, have headrests, folding armrests and under-seat oxygen mask storage. Passenger seats in club arrangement with headrests, folding armrests, seat belts, and magazine storage pockets on each seat back. Inertia reel safety harnesses standard on all forward-facing seats. 'No smoking/Fasten seat belt' sign. Pull-curtain cockpit divider. Choice of eleven interior colour schemes.

Commuter Interior Group. Ten forward facing seats. Eight adjustable and reclining passenger seats with oxygen mask stowage and magazine storage as above. 'No smoking/Fasten seat belt' sign. Pull-curtain cockpit divider. Choice of nine interior colour schemes. Adds 39·5 kg (87 lb) to basic empty weight.

Two optional equipment groups are available for the Chieftain, as follows:

Co-pilot Flight Instrument Group. Includes blind-flying instrumentation with 3 in attitude and directional gyros, clock, rate of climb indicator, sensitive altimeter, true airspeed indicator, heated pitot, alternate static source, and individual rheostat controlled lighting. Group available with electric or vacuum gyros; adding 5·6 kg (12·4 lb) or 5·9 kg (12·9 lb) respectively.

De-icing Group. Pneumatic de-icing boot installation for wing and tail unit leading-edges; electric propeller de-icing; ice inspection light; heated lift detector; fuselage ice protection shields; and electric windscreen de-icing and windscreen wiper port side; adding 28·4 kg (62·7 lb).

Re-certification for flight into known icing conditions, to newer, more stringent standards, applies to aircraft equipped with the optional De-icing Group.

A total of 1,821 Chieftains had been sold by 1 April 1985.

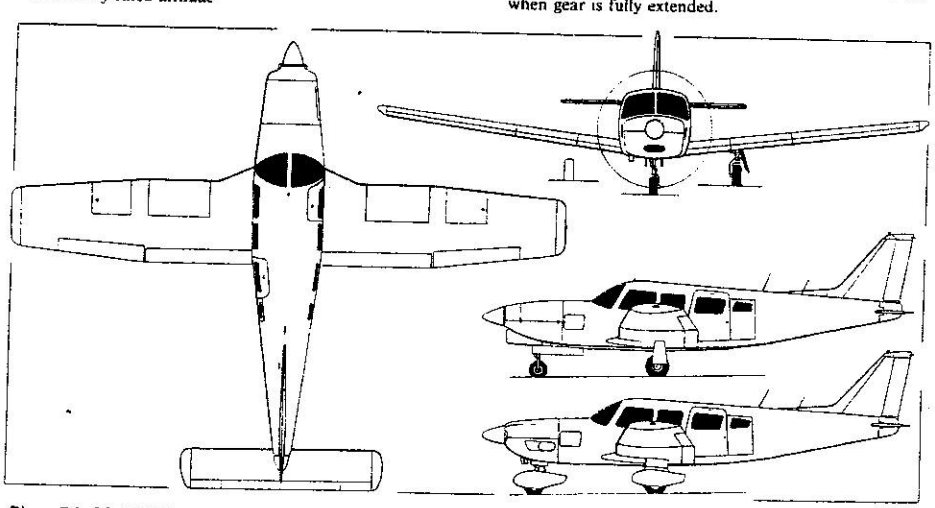
TYPE: Six/ten-seat passenger transport.

WINGS: Cantilever low-wing monoplane. Wing section NACA 63₃415 at root, NACA 63₃212 at tip. 1° aerodynamic twist. 2° 30' geometric twist. All-metal structure, with heavy stepped down main spar, front and rear spars, lateral stringers, ribs and stressed skin. Wings spliced on centreline with heavy steel plates. Flush riveted forward of main spar. Wing root leading-edge extended forward between nacelle and fuselage. Glassfibre wingtips. Balanced ailerons interconnected with rudder. Trim tab in starboard aileron. Electrically operated flaps. Pneumatic de-icing boots optional.

FUSELAGE: All-metal semi-monocoque structure.

TAIL UNIT: Cantilever all-metal structure, with sweptback vertical surfaces. Trim tabs in rudder and starboard elevator. Elevator horn anti-icing boots standard. Optional pneumatic de-icing boots.

LANDING GEAR: Hydraulically actuated retractable tricycle type, with single wheel on each unit. Manual hydraulic emergency extension. Mainwheels and tyres size 6·50-10, eight-ply rating, pressure 4·14 bars (60 lb/sq in). Steerable nosewheel and tyre size 6·00-6, six-ply rating, pressure 2·90 bars (42 lb/sq in). Toe controlled hydraulic disc brakes. Heavy duty brakes and toe operated brakes for co-pilot optional. Parking brake. Mainwheel doors close when gear is fully extended.



Piper PA-32R-301T Turbo Saratoga SP, with additional side view (bottom right) of PA-32-301 Saratoga

BE 13

POWER PLANT: Two 261 kW (350 hp) Avco Lycoming flat-six turbocharged counter-rotating engines, one TIO-540-J2BD and one LTIO-540-J2BD, each driving a Hartzell three-blade constant-speed fully-feathering metal propeller. Four rubber fuel cells in wings; inboard cells each contain 212 litres (56 US gallons), outboard cells each 151·5 litres (40 US gallons). Total standard fuel capacity 727 litres (192 US gallons), of which 689 litres (182 US gallons) are usable. Optional fuel tank in each nacelle, reducing baggage capacity, to provide total usable capacity of 893 litres (236 US gallons). Oil capacity 22·7 litres (6 US gallons).

ACCOMMODATION: Pilot and co-pilot on individually adjustable and reclining seats. Dual controls standard. Interior seating and equipment as detailed in optional interior groups. Cabin heated by thermostatically controlled Janitrol 50,000 BTU combustion heater. Piper Aire 16,000 BTU air-conditioning system optional. Baggage/cargo compartments in nose and rear fuselage, capacity of each 91 kg (200 lb), and in the rear of each engine nacelle, each 68 kg (150 lb) when optional fuel tanks are not installed, or 22·7 kg (50 lb) in each when tanks are installed.

SYSTEMS: Hydraulic system utilises two engine driven pumps, 24V electrical system supplied by two engine driven 28V 70A alternators and 24V 17Ah battery; 25Ah battery optional. External power socket standard. Oxygen system of 3·23 m³ (114 cu ft) capacity optional.

AVIONICS AND EQUIPMENT: A full IFR avionics package, including flight control system, is standard on 1985 Chieftains. In addition, there is a wide range of alternative options by Aeronetics, Bendix, Collins, Century Flight Systems, King, Piper, RCA, SunAir, United, and Wulfsburg. These include encoding altimeter, HF transceiver, radar altimeter, radio altimeter, radio telephone, R/Nav, V/Nav, and weather radar. Standard equipment includes pilot's blind-flying instrumentation; clock; dual exhaust gas temperature gauges; flight hour recorder; dual manifold pressure gauges; outside air temperature gauge; rate of climb indicator; sensitive altimeter; true airspeed indicator; fully adjustable pilot and co-pilot seats with shoulder safety belts and inertia reels; headrests; folding armrests; alternate static source; heated pitot; alternator and pneumatic failure, low fuel, door ajar, and heater overheat warning lights; stall warning device; corrosion proofing; cabin dome, courtesy, instrument panel, map, reading, landing, navigation, strobe and taxi lights; external power socket; tiedown rings; and stowable towbar. Optional equipment includes items covered by the operational groups as detailed, plus a wide range of cabin equipment including pilot's door, storage cabinets and drawers, tables, shoulder safety belts and inertia reels for passenger seats, fore and aft cabin dividers, auxiliary cabin heater, cabin fire extinguisher, cabin chimes, tinted windows, Thermos unit and refreshment centre, emergency locator transmitter, ground and in-flight recognition lights, lockable fuel caps, and fuselage ice protection shields. Also available optionally is a cargo kit which includes cargo barrier, tiedown rings and net, eight seat track tiedown rings, four-track cargo rollers, two strap/tiedown pouches, and cargo kit provisions.

Piper PA-31P-350 Mojave seven-seat pressurised light transport

DIMENSIONS, EXTERNAL:

Wing span	12·40 m (40 ft 8 in)
Length overall	10·55 m (34 ft 7½ in)
Height overall	3·96 m (13 ft 0 in)
Tailplane span	5·52 m (18 ft 1½ in)
Wheel track	4·19 m (13 ft 9 in)
Wheelbase	3·24 m (10 ft 7½ in)
Propeller diameter	2·03 m (6 ft 8 in)
Distance between propeller centres	3·35 m (11 ft 0 in)
Cabin door (port, rear): Height	1·14 m (3 ft 9 in)
Width	0·70 m (2 ft 3½ in)
Utility door (port, rear): Height	1·14 m (3 ft 9 in)
Width	0·43 m (1 ft 5 in)
Baggage door (port, fwd): Height	0·64 m (2 ft 1 in)
Width	0·71 m (2 ft 4 in)

DIMENSIONS, INTERNAL:

Cabin: Length	3·84 m (12 ft 7 in)
Baggage/cargo compartments:	
Engine nacelles (each)	0·37 m³ (13·25 cu ft)
Engine nacelles (each) with optional fuel	0·17 m³ (6·0 cu ft)

WEIGHTS AND LOADINGS:

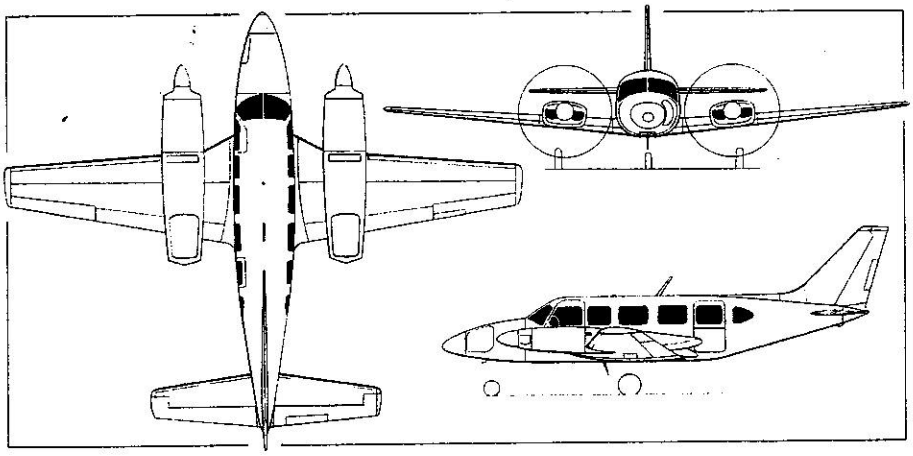
Weight empty (standard)	1,915 kg (4,221 lb)
Max T-O and landing weight	3,175 kg (7,000 lb)
Max ramp weight	3,196 kg (7,045 lb)
Max wing loading	149·4 kg/m² (30·6 lb/sq ft)
Max power loading	6·08 kg/kW (10·0 lb/hp)

PERFORMANCE (at max T-O weight, except where indicated):

Max level speed at average cruise weight	231 knots (428 km/h; 266 mph)
Cruising speed at average cruise weight:	
75% power at 6,100 m (20,000 ft)	221 knots (409 km/h; 254 mph)
75% power at 3,660 m (12,000 ft)	205 knots (380 km/h; 236 mph)
65% power at 6,100 m (20,000 ft)	210 knots (389 km/h; 242 mph)
65% power at 3,660 m (12,000 ft)	191 knots (354 km/h; 220 mph)
55% power at 4,575 m (15,000 ft)	177 knots (328 km/h; 204 mph)
55% power at 3,660 m (12,000 ft)	173 knots (320 km/h; 199 mph)
Stalling speed: flaps up	80 knots (148 km/h; 92 mph)
flaps down	74 knots (137 km/h; 85 mph)
Max rate of climb at S/L	341 m (1,120 ft)/min
Rate of climb at S/L, one engine out	70 m (230 ft)/min
Max certificated altitude	7,315 m (24,000 ft)
Service ceiling, one engine out	4,175 m (13,700 ft)
T-O run	411 m (1,350 ft)
T-O to 15 m (50 ft)	765 m (2,510 ft)
Landing from 15 m (50 ft)	573 m (1,880 ft)
Landing run	319 m (1,045 ft)

Range, with allowances for start, taxi, T-O, climb, and 45 min reserves at long-range cruise power; A with max standard fuel, B with max optional fuel:

75% power at 6,100 m (20,000 ft):	
A	885 nm (1,640 km; 1,019 miles)
B	1,210 nm (2,240 km; 1,392 miles)
75% power at 3,660 m (12,000 ft):	
A	855 nm (1,585 km; 985 miles)
B	1,100 nm (2,038 km; 1,266 miles)
65% power at 6,100 m (20,000 ft):	
A	925 nm (1,714 km; 1,065 miles)
B	1,260 nm (2,333 km; 1,450 miles)
65% power at 3,660 m (12,000 ft):	
A	900 nm (1,667 km; 1,036 miles)
B	1,225 nm (2,268 km; 1,409 miles)
55% power at 4,575 m (15,000 ft):	
A	950 nm (1,761 km; 1,094 miles)
B	1,290 nm (2,389 km; 1,484 miles)
55% power at 3,660 m (12,000 ft):	
A	950 nm (1,761 km; 1,094 miles)
B	1,290 nm (2,389 km; 1,484 miles)



Photograph and three-view drawing *(Pilot Press)* **of the Piper Chieftain six/ten-seat executive/commuter/cargo aircraft**

PIPER (PA-31P-350) MOJAVE

Announced by Piper on 20 November 1982, the Mojave is a piston engined counterpart of the turboprop Cheyenne II, of much the same size but with wings of slightly increased span and no tip tanks. It is pressurised, and its direct drive counter-rotating and turbocharged Avco Lycoming engines are similar to those which power the PA-31-350 Chieftain. A prototype is believed to have flown for the first time in late 1979. Certification was gained on 9 June 1983. At 1 April 1985 a total of 46 Mojaves had been delivered.

TYPE: Seven-seat pressurised light transport.

WINGS: Cantilever low-wing monoplane. Dihedral 5° from roots. Wing root leading-edge extended forward between nacelle and fuselage on each side. Electrically actuated flaps. Trim tab in starboard aileron.

FUSELAGE: Semi-monocoque structure, primarily of light alloy, with fail-safe structure in the pressurised section.

TAIL UNIT: Conventional tail unit, with swept vertical surfaces and an extended dorsal fin blended into the upper surface of the fuselage. Horn balanced control surfaces. Trim tab in rudder and starboard elevator.

LANDING GEAR: Retractable tricycle type with single wheel on each unit; main units retract inward into wing roots, nosewheel rearward. Mainwheels and tyres size 6·50-10, eight-ply rating. Steerable nosewheel size 6·00-6 with tyre

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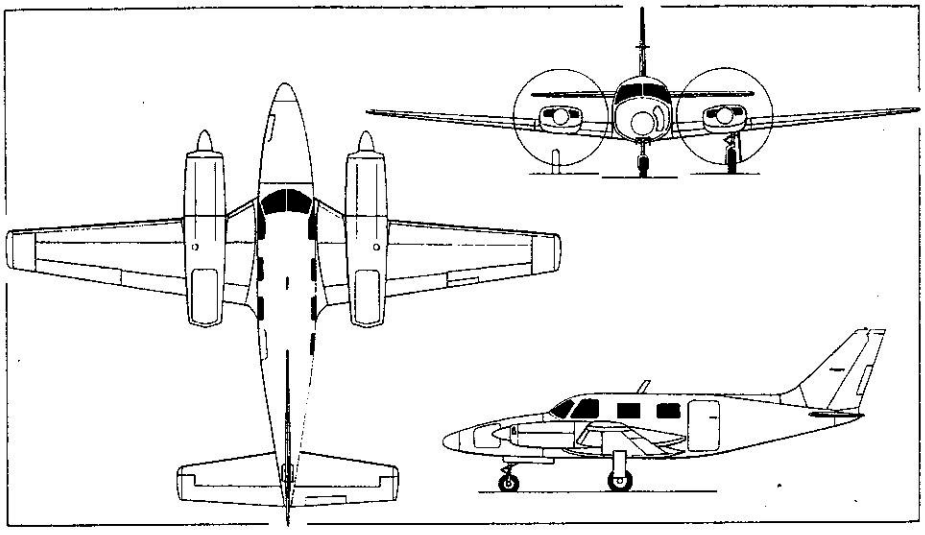

Piper PA-31P-350 Mojave (two Avco Lycoming TIO-540 engines) *(Pilot Press)*

size 17·5 × 6-25-6, 10-ply rating. Oleo-pneumatic shock absorber in each unit. Hydraulic disc brakes on main-wheels. Parking brake.

POWER PLANT: Two 261 kW (350 hp) Avco Lycoming flat-six turbocharged counter-rotating engines, one TIO-540-V2AD and one LTIO-540-V2AD, each driving a Hartzell three-blade constant-speed and fully-feathering propeller with spinner. Fuel system usable capacity 900 litres (238 US gallons). Oil capacity 24·6 litres (6·5 US gallons).

ACCOMMODATION: Pilot, co-pilot and five passengers, or pilot and six passengers, in pressurised cabin. Four contoured reclining seats for passengers in facing pairs, with side facing seat at rear on starboard side. Foldaway writing tables, a hot/cold refreshment centre, and stereo system, optional. Door with built-in airstair behind wing on port side. Baggage space in nose, wing lockers and rear cabin, with combined capacity of 308 kg (680 lb).

SYSTEM: Pressurisation system with max differential of 0·35 bars (5·0 lb/sq in), to provide a cabin altitude of 2,775 m (9,100 ft) to a height of 7,620 m (25,000 ft).

AVIONICS: Wide range of avionics, including colour weather radar, available from manufacturers that include Bendix, Collins, King and Sperry. Full IFR equipment and autopilot included in basic price.

DIMENSIONS, EXTERNAL:

Wing span	13·56 m (44 ft 6 in)
Length overall	10·52 m (34 ft 6 in)
Height overall	3·96 m (13 ft 0 in)
Tailplane span	5·52 m (18 ft 1¼ in)
Wheel track	4·19 m (13 ft 9 in)
Wheelbase	2·64 m (8 ft 8 in)
Propeller diameter	2·03 m (6 ft 8 in)
Distance between propeller centres	3·86 m (12 ft 8 in)
Passenger door (port, rear):	
Height	1·17 m (3 ft 10 in)
Width	0·71 m (2 ft 4 in)
Baggage door (port, nose):	
Height	0·53 m (1 ft 9 in)
Width	0·66 m (2 ft 2 in)
Nacelle locker doors (each):	
Length	1·02 m (3 ft 4 in)
Width	0·51 m (1 ft 8 in)

DIMENSIONS, INTERNAL:

Cabin: Length, instrument panel to rear bulkhead	4·41 m (14 ft 5¾ in)
Max width	1·27 m (4 ft 2 in)
Max height	1·31 m (4 ft 3½ in)
Baggage compartment volume:	
Nose	0·64 m³ (22·5 cu ft)
Nacelle lockers (total)	0·51 m³ (18 cu ft)
Rear cabin	0·62 m³ (22 cu ft)

AREA:

Wings, gross	22·02 m² (237·0 sq ft)

WEIGHTS AND LOADINGS:

Weight empty, standard	2,297 kg (5,064 lb)
Max T-O weight	3,266 kg (7,200 lb)
Max ramp weight	3,286 kg (7,245 lb)
Max zero-fuel weight	3,039 kg (6,700 lb)
Max landing weight	3,175 kg (7,000 lb)
Max wing loading	148·3 kg/m² (30·38 lb/sq ft)
Max power loading	6·26 kg/kW (10·29 lb/hp)

PERFORMANCE (at max T-O weight, S/L, ISA, except where indicated):

Max level speed at mid cruise weight	242 knots (447 km/h; 278 mph)
Cruising speed (mid cruise weight at optimum altitude):	
75% power	235 knots (435 km/h; 270 mph)
65% power	221 knots (409 km/h; 254 mph)
Stalling speed:	
flaps up	78 knots (145 km/h; 90 mph)
flaps down	72 knots (134 km/h; 83 mph)
Max rate of climb at S/L	372 m (1,220 ft)/min
Rate of climb at S/L, one engine out	78 m (255 ft)/min
Service ceiling	9,265 m (30,400 ft)
Service ceiling, one engine out	4,360 m (14,300 ft)
T-O run	495 m (1,625 ft)
T-O to 15 m (50 ft)	753 m (2,469 ft)
Landing from 15 m (50 ft)	700 m (2,300 ft)
Landing run	424 m (1,390 ft)

Range with max fuel at optimum altitude with allowances for engine starting, taxi, T-O, climb, and 45 min reserves at max range power:

75% power	1,113 nm (2,061 km; 1,280 miles)
65% power	1,143 nm (2,116 km; 1,315 miles)
60% power	1,221 nm (2,261 km; 1,405 miles)

PIPER (PA-31T-1) CHEYENNE IA

Introduced in 1978, the original Cheyenne I was a low cost version of the established Cheyenne PA-31T, which was redesignated Cheyenne II. FAA certification was received on 23 March 1978, and deliveries began at the end of April 1978. By 1 January 1984 a total of 197 Cheyenne Is had been sold, and the aircraft had been superseded by the improved Cheyenne IA.

Piper received FAA certification for the Cheyenne IA in May 1983. It differs from the earlier model in having new engine cowlings, a 4·4 per cent increase in engine power at altitude, and redesigned exhaust stubs, enabling max cruising speed to be increased. The flight deck is improved by lowering the glareshield and redesigning the overhead switch panel; a new interior layout maximises cabin space, with increased seat travel to provide more legroom, and the nose baggage compartment is redesigned to accommodate large, bulky items. By 1 April 1985 a total of 13 Cheyenne IAs had been sold.

The Cheyenne IA is available with Standard and Executive interior options and two operational group options as follows:

Standard. Six individual seats in pairs, with headrests and armrests. Pilot/co-pilot seats four-way adjustable with shoulder harness and inertia reels; third and fourth cabin seats aft-facing; and all cabin seats with seat belts; window curtains and wall to wall carpet. Rear cabin divider with clothes bar and baggage security net. Forward cabin divider curtain. 'No smoking/Fasten seat belt' sign. Oxygen outlets and masks at each seat position. Options available include a cabin instrumentation panel comprising digital readouts of altitude, outside air temperature, time, and true airspeed; pneumatic door extender; forward cabin combination unit; storage cabinets; folding tables; aft cabin combination unit, which includes side-facing seventh seat/toilet; seventh and eighth seats; tinted cabin windows; cabin fire extinguisher; stereo system; and all-leather seat covering.

Executive. Six individual seats, comprising two crew seats and four reclining chairs in the Standard arrangement. Other standard equipment as described, plus forward cabin combination unit which includes cabin dividers and curtain, electrically heated Thermos unit, cup dispenser, storage for ice, beverages and manuals; two folding tables; pneumatic door extender and aft cabin combination unit which includes side facing seventh seat/toilet, cabin divider with mirror, privacy curtain, refreshment centre; AC power outlet for electric razor; and baggage security net. Options are the same as for the Standard interior, unless included in the Executive package. Adds 55·3 kg (121·9 lb) to basic empty weight.

De-icing Group. Pneumatic de-icing boots for wing and tail unit leading-edges, and wing ice inspection light; adding 10·1 kg (22·3 lb) to basic empty weight.

Co-pilot Flight Group. Airspeed and rate of climb indicator, altimeter, electric turn rate indicator, attitude and directional gyros, clock, heated pitot, static system with alternate source, co-pilot's toe brakes and windscreen wiper; adding 8·7 kg (19·2 lb) to basic empty weight.

TYPE: Six/eight-seat cabin monoplane.

WINGS: Cantilever low-wing monoplane. Wing section NACA 63²A415 at root, NACA 63¹A212 at tip. Dihedral 5°. Incidence 1° 30' at root, −1° at tip. Sweepback 0° at 30 per cent chord. Three-spar structure of 2024ST light alloy. Balanced ailerons and single-slotted trailing-edge flaps of 2024ST light alloy. Trim tab in starboard aileron. Pneumatic de-icing boots on wing leading-edges optional.

FUSELAGE: Semi-monocoque structure of 2024ST light alloy, with fail-safe structure in the pressurised areas.

TAIL UNIT: Cantilever structure of 2024ST light alloy with sweptback vertical surfaces. Fixed incidence tailplane. Trim tabs in elevators and rudder. Pneumatic de-icing of fin and tailplane leading-edges optional.

LANDING GEAR: Hydraulically retractable tricycle type with single wheel on each unit, main units retracting inward and nosewheel aft. Nosewheel safety mirror. Piper oleo-pneumatic shock absorbers. Cleveland Type 40-106 mainwheels, with 6·50 × 10 10-ply tyres, pressure 5·52 bars (80 lb/sq in). Cleveland Type 40-120A steerable nosewheel, with 17·5 × 6·25 10-ply rating tyre. Cleveland Type 30-106 brakes. Parking brake.

POWER PLANT: Two 373 kW (500 shp) Pratt & Whitney Canada PT6A-11 turboprop engines, each driving a Hartzell Type HC-BTN-3B three-blade constant-speed reversible-pitch and fully-feathering metal propeller with spinner. Each wing has three interconnected fuel cells and a tip tank, giving a total capacity of 1,385 litres (366 US gallons). NACA type anti-icing non-siphoning fuel tank vents, incorporating flame arresters. Refuelling points on top of engine nacelles and on upper surface of each tip tank. Oil capacity 24·6 litres (6·5 US gallons).

ACCOMMODATION: Pilot and co-pilot on two individual adjustable seats. Dual controls standard. Pilot's storm window. Heated windscreen. Windscreen wiper standard for pilot, optional for co-pilot. Cabin seating for four to six passengers on individual seats. Door with built-in airstair on port side, which has seven locking pins and inflatable pressurisation seal. Dual pane windows. Emergency exit window on starboard side. Cabin heated and air-conditioned. Forward and aft cabin dividers. A wide range of options for cabin includes folding tables, beverage dispensers, pneumatic door extender, storage cabinets and tinted windows. Baggage compartments in nose, capacity 136 kg (300 lb), and rear of cabin, capacity 91 kg (200 lb). External door to nose compartment.

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SYSTEMS: Air-conditioning and pressurisation, with pressure differential of 0·38 bars (5·5 lb/sq in). Freon type air-conditioner of 23,000 BTU capacity. Janitrol combustion heater of 35,000 BTU capacity with automatic windscreen defroster. Hydraulic system supplied by dual engine driven pumps for landing gear retraction and brakes. Pneumatic system and vacuum system provided by engine bleed air. Electrical system supplied by two 28V 200A starter/generators and 24V 43Ah nickel-cadmium battery. External power socket standard. Oxygen system of 0·62 m³ (22 cu ft) capacity. De-icing system comprises electric anti-icing boots for air intakes, heated pitot and electric propeller de-icing. Fire detection system with six sensors; engine fire extinguishing system optional.

AVIONICS: A full IFR avionics package, including flight control system (autopilot) is standard on current Cheyenne IAs. Options include alternatives to or duplication of this equipment, plus altitude alerter, encoding altimeter, radar altimeter, radio altimeter, radio telephone, global navigation system, and HF transceivers by manufacturers which include the above, plus Aeronetics, RCA, Smith, Sperry and SunAir.

EQUIPMENT: Installed standard equipment is extensive, and optional items include co-pilot's flight instrument group, digital clock, toe brakes, and windscreen wiper; cargo door, emergency locator transmitter, wing and tail pneumatic de-icing boots, lockable fuel caps, engine fire extinguisher system, engine wash rings, fuselage ice protection plates, ice inspection lights and propeller synchrophaser.

DIMENSIONS, EXTERNAL:

Wing span	12·40 m (40 ft 8 in)
Wing chord: at root	2·61 m (8 ft 6¾ in)
at tip	0·97 m (3 ft 2 in)
Wing aspect ratio	7·37
Length overall	10·57 m (34 ft 8 in)
Height overall	3·89 m (12 ft 9 in)
Tailplane span	6·05 m (19 ft 10 in)
Wheel track	4·19 m (13 ft 9 in)
Wheelbase	2·64 m (8 ft 8 in)
Propeller diameter	2·36 m (7 ft 9 in)
Distance between propeller centres	3·85 m (12 ft 7½ in)
Propeller ground clearance	0·27 m (10½ in)
Passenger door (port, rear):	
Height	1·17 m (3 ft 10 in)
Width	0·71 m (2 ft 4 in)
Height to sill	0·97 m (3 ft 2 in)
Baggage door (port, fwd): Height	0·53 m (1 ft 9 in)
Width	0·53 m (1 ft 9 in)
Height to sill	1·10 m (3 ft 7½ in)
Emergency exit (stbd, fwd):	
Height	0·64 m (2 ft 1 in)
Width	0·48 m (1 ft 7 in)

DIMENSIONS, INTERNAL:

Cabin: Length, excl flight deck	2·57 m (8 ft 5 in)
Max width	1·27 m (4 ft 2 in)
Max height	1·31 m (4 ft 3½ in)
Floor area	4·37 m² (47 sq ft)

AREAS:

Wings, gross	21·3 m² (229 sq ft)
Ailerons (total)	1·21 m² (13 sq ft)
Trailing-edge flaps (total)	3·12 m² (33·6 sq ft)
Fin	1·37 m² (14·72 sq ft)
Rudder, incl tab	1·20 m² (12·88 sq ft)
Tailplane	3·92 m² (42·2 sq ft)
Elevators, incl tab	2·63 m² (28·3 sq ft)

WEIGHTS AND LOADINGS:

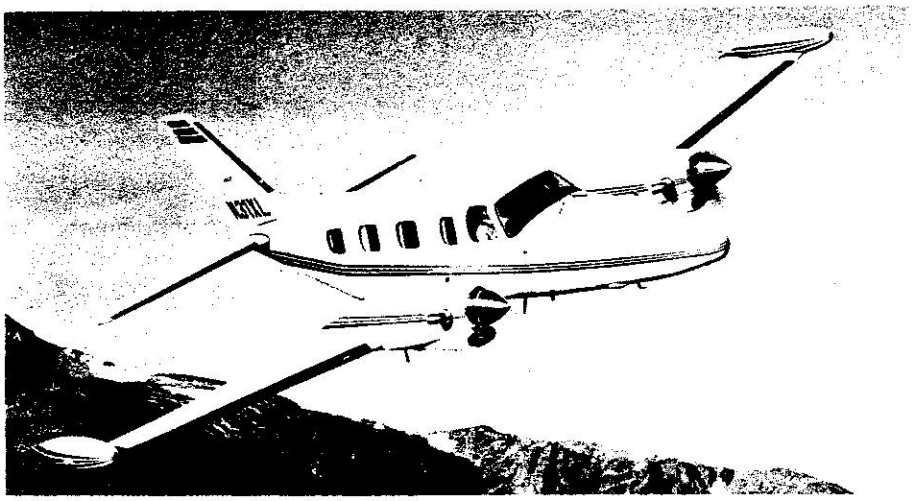
Weight empty	2,315 kg (5,104 lb)
Max T-O and landing weight	3,946 kg (8,700 lb)
Max ramp weight	3,969 kg (8,750 lb)
Max zero-fuel weight	3,266 kg (7,200 lb)
Max wing loading	185·5 kg/m² (38·0 lb/sq ft)
Max power loading	5·30 kg/kW (8·7 lb/shp)

PERFORMANCE (at max T-O weight):

Cruising speed, max cruise power, average cruise weight of 3,400 kg (7,500 lb), at:

3,660 m (12,000 ft)	255 knots (473 km/h; 294 mph)
4,875 m (16,000 ft)	261 knots (484 km/h; 301 mph)
6,100 m (20,000 ft)	257 knots (476 km/h; 296 mph)
7,620 m (25,000 ft)	247 knots (458 km/h; 284 mph)

Stalling speed, wheels and flaps up, engines idling	84 knots (156 km/h; 97 mph) IAS
Stalling speed, wheels and flaps down, engines idling	72 knots (133 km/h; 83 mph) IAS
Rotation speed	89 knots (167 km/h; 104 mph)
Approach speed	102 knots (189 km/h; 117 mph) IAS
Max rate of climb at S/L	533 m (1,750 ft)/min
Rate of climb at S/L, one engine out	134 m (440 ft)/min
Service ceiling	8,595 m (28,200 ft)
Service ceiling, one engine out	4,190 m (13,750 ft)
T-O run	436 m (1,429 ft)
T-O to 15 m (50 ft)	745 m (2,444 ft)
Landing from 15 m (50 ft)	690 m (2,263 ft)
Landing from 15 m (50 ft) with propeller reversal	507 m (1,663 ft)
Landing run	484 m (1,589 ft)
Landing run with propeller reversal	281 m (921 ft)
Accelerate/stop distance	1,016 m (3,334 ft)



Piper PA-31T2 Cheyenne IIXL, a lengthened fuselage version of the Cheyenne II

Range with allowances for start, taxi, T-O, climb, descent, and 45 min reserves at max range cruising power:

max cruising power at:

3,660 m (12,000 ft)	955 nm (1,769 km; 1,099 miles)
4,875 m (16,000 ft)	1,010 nm (1,871 km; 1,163 miles)
6,100 m (20,000 ft)	1,090 nm (2,020 km; 1,255 miles)
7,620 m (25,000 ft)	1,205 nm (2,233 km; 1,387 miles)

max range power at:

3,660 m (12,000 ft)	1,030 nm (1,908 km; 1,186 miles)
4,875 m (16,000ft)	1,130 nm (2,094 km; 1,301 miles)
6,100 m (20,000 ft)	1,205 nm (2,233 km; 1,387 miles)
7,620 m (25,000 ft)	1,285 nm (2,381 km; 1,479 miles)

PIPER (PA-31T2) CHEYENNE IIXL

On 17 October 1980, Piper announced a fourth member of the Cheyenne family of turboprop business aircraft. Known as the PA-31T2 Cheyenne IIXL, it is a version of the Cheyenne II (see 1983-84 *Jane's*), with the fuselage lengthened by 0·61 m (2 ft 0 in) to increase cabin volume by 16 per cent and so provide more comfortable accommodation for passengers and crew. In addition, it has Pratt & Whitney Canada PT6A-135 turboprop engines, each rated at 559 kW (750 shp), but flat rated at only 462 kW (620 shp) in this installation, and driving large diameter three-blade propellers at 1,900 rpm. This results in low noise levels, both internally and externally. By comparison with the Cheyenne II, the IIXL has a max T-O weight more than 180 kg (400 lb) greater. It uses the same type of environmental control unit as the Cheyenne III for cabin heating and air-conditioning, and has interior equipment options similar to those of the III.

FAA certification was received in February 1981, and the first six Cheyenne IIXLs were delivered to Piper sales centres on 2 June 1981. A total of 76 had been delivered by 1 March 1985.

The Cheyenne IIXL can carry an underbelly cargo pod, capable of accommodating 136 kg (300 lb) of freight, including golf bags, skis and bulky luggage. The pod is made of Kevlar and glassfibre, weighs 34 kg (75 lb) and is equipped with two side doors, each measuring 0·88 m × 0·25 m (2 ft 10½ in × 10 in). It can be installed in 30 min. Effect on performance is negligible, involving a 7 per cent reduction in twin-engine rate of climb and 3 per cent reduction in cruising speed at max cruise power.

A full IFR avionics package, including autopilot/flight director and weather radar, plus full icing protection, is standard on the current Cheyenne IIXL.

The description of the Cheyenne IA applies also to the Cheyenne IIXL, except as follows:

FUSELAGE: As for Cheyenne IA, except lengthened by 0·61 m (2 ft 0 in).

POWER PLANT: Two 559 kW (750 shp) Pratt & Whitney Canada PT6A-135 turboprop engines, each flat rated at 462 kW (620 shp) and driving a Hartzell HC-BTN-3B three-blade reversible-pitch constant-speed and fully-feathering metal propeller with spinner. Each wing has three interconnected fuel cells and a tip tank, giving total fuel capacity of 1,416 litres (374 US gallons), of which 1,385 litres (366 US gallons) are usable. Refuelling points in engine nacelles and on upper surface of each tip tank. NACA type anti-icing non-siphoning fuel tank vents with flame arresters. Oil capacity 24·6 litres (6·5 US gallons). Electrically heated air intake anti-icing boot, air intake ice deflection and air bypass doors. Electric propeller de-icing.

DIMENSIONS, EXTERNAL: As for Cheyenne IA except:

Length overall	11·18 m (36 ft 8 in)
Cargo pod (optional):	
Internal length	2·97 m (9 ft 9 in)
Internal width	0·55 m (1 ft 10 in)
Internal depth	0·29 m (11½ in)
Volume	0·47 m³ (16·6 cu ft)

DIMENSIONS, INTERNAL:

Cabin: Length, excl flight deck	3·83 m (12 ft 7 in)
Max width	1·27 m (4 ft 2 in)
Max height	1·31 m (4 ft 3½ in)
Forward baggage compartment	0·45 m³ (16 cu ft)

WEIGHTS AND LOADINGS:

Weight empty, standard	2,488 kg (5,486 lb)
Max T-O weight	4,297 kg (9,474 lb)
Max ramp weight	4,327 kg (9,540 lb)
Max landing weight	4,082 kg (9,000 lb)
Max zero-fuel weight	3,447 kg (7,600 lb)
Max wing loading	202·0 kg/m² (41·37 lb/sq ft)
Max power loading	4·65 kg/kW (7·64 lb/shp)

PERFORMANCE (at max T-O weight without cargo pod, except where indicated):

Cruising speed, max cruise power, at average cruise weight of 3,720 kg (8,200 lb):

at 3,960 m (13,000 ft)	275 knots (510 km/h; 317 mph)
at 4,875 m (16,000 ft)	273 knots (506 km/h; 314 mph)
at 6,100 m (20,000 ft)	270 knots (500 km/h; 311 mph)
at 8,840 m (29,000 ft)	255 knots (473 km/h; 294 mph)

Stalling speed, engines idling:

flaps and landing gear up	86 knots (160 km/h; 99 mph) IAS
flaps and landing gear down	77 knots (143 km/h; 89 mph) IAS
Rotation speed	101 knots (187 km/h; 116 mph) IAS
Approach speed	104 knots (193 km/h; 120 mph)
Max rate of climb at S/L	533 m (1,750 ft)/min
Rate of climb at S/L, one engine out	143 m (470 ft)/min
Service ceiling	9,875 m (32,400 ft)
Service ceiling, one engine out	4,540 m (14,900 ft)
T-O run	622 m (2,042 ft)
T-O to 15 m (50 ft)	896 m (2,940 ft)
Landing from 15 m (50 ft)	745 m (2,446 ft)
Landing from 15 m (50 ft), with propeller reversal	540 m (1,773 ft)
Landing run	479 m (1,571 ft)
Landing run, with propeller reversal	329 m (1,080 ft)
Accelerate/stop distance	1,276 m (4,186 ft)

Range with max fuel at max cruise power, allowances for start, taxi, T-O, climb, descent, and 45 min reserves at max range power, ISA:

at 3,660 m (12,000 ft)	775 nm (1,435 km; 892 miles)
at 4,875 m (16,000 ft)	856 nm (1,586 km; 986 miles)
at 6,100 m (20,000 ft)	945 nm (1,751 km; 1,088 miles)
at 8,840 m (29,000 ft)	1,175 nm (2,177 km; 1,353 miles)

Range with max fuel at max range power, allowances as above:

at 3,660 m (12,000 ft)	945 nm (1,751 km; 1,088 miles)
at 4,875 m (16,000 ft)	1,075 nm (1,992 km; 1,238 miles)
at 6,100 m (20,000 ft)	1,144 nm (2,121 km; 1,318 miles)
at 8,840 m (29,000 ft)	1,280 nm (2,372 km; 1,474 miles)

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PIPER (PA-42) CHEYENNE IIIA

Announced on 26 September 1977, the **Cheyenne III** differed from the I and II by having increased wing span, a lengthened fuselage, a T tail and more powerful PT6A-41 engines. The production prototype flew for the first time on 18 May 1979; FAA certification was gained in early 1980, and deliveries of production aircraft began on 30 June 1980. A total of 88 had been delivered before the Cheyenne III was superseded by the **Cheyenne IIIA**.

Piper received FAA certification for the Cheyenne IIIA in March 1983. It differs principally in having PT6A-61 turboprop engines, flat rated at 537 kW (720 shp), and offers performance improvements which include increased max cruising speed and higher certificated ceiling. Other features include improvements to the interior layout, air-conditioning and electrical systems. Twenty had been delivered by 1 March 1985.

A Cheyenne IIIA, equipped with special sensors, was delivered to the US Drug Enforcement Administration on 15 February 1984 for use on a variety of surveillance and identification missions by day and night, and in March 1985 an order for a further eight Cheyenne IIIA Customs High Endurance Tracker (CHET) aircraft was announced by Piper. These aircraft, equipped with infra-red sensors and long-range radars, are being delivered at one month intervals commencing in late September 1985. The US Customs Service has options on a further eight Cheyenne IIIAs.

In December 1984 Lufthansa German Airlines ordered three Cheyenne IIIAs, with an option on a fourth, for delivery commencing in the Spring of 1987. The aircraft, which will be equipped with Collins EFIS in flight decks configured to resemble those of Lufthansa's Airbus A310 jet transports, will be used for pilot training.

On 9-10 May 1984 a standard Cheyenne IIIA set a new speed record between Boston, Massachusetts, and Paris, flying the 2,995 nm (5,546 km; 3,446 miles) in 10 h 27 min 35 s, at an average speed of 286·3 knots (530·2 km/h; 329·4 mph), with one stop, at Gander, Newfoundland. On 29-30 August 1984 the same aircraft set five more records between Washington and Gander; Gander and London (Luton), England; Washington to London; New York to Gander; and New York to London; covering the overall 3,175 nm (5,880 km; 3,653 mile) great circle route in 10 h 26 min, at an average speed of 304·31 knots (563·59 km/h; 350·20 mph).

The Cheyenne IIIA is available with Standard and Executive interior options, and Co-pilot Flight Groups, as detailed for the Cheyenne IA. A full IFR avionics package, including autopilot/flight director and weather radar, plus full icing protection, is standard equipment on the current Cheyenne IIIA, to which the following description applies:

TYPE: Six/eleven-seat corporate and commuter airline transport.

WINGS: Cantilever low-wing monoplane. Wing section NACA 63_2A415, modified, at root, NACA 63_1A212 at tip. Dihedral 5°. Incidence 1° 30'. No sweepback. Three-spar safe-life structure of light alloy. Ailerons and trailing-edge flaps as for Cheyenne IA. Goodrich pneumatic de-icing boots for wing leading-edges are standard.

FUSELAGE: Conventional semi-monocoque safe-life structure of light alloy.

TAIL UNIT: Cantilever T tail of light alloy construction, with sweptback vertical surfaces. Fixed incidence tailplane. Elevators and rudder of light alloy. Servo tab in rudder; anti-servo tab in elevator. Goodrich de-icing equipment standard for leading-edges of tailplane and fin.

LANDING GEAR: Hydraulically retractable tricycle type with single wheel on each unit. Main units retract inward, nosewheel aft. Pneumatic blow-down system for emergency landing gear extension, with manually operated hydraulic system as backup. Piper oleo-pneumatic shock absorbers. Cleveland mainwheels with tyres size 6·50-10 12-ply Type III, pressure 6·90 bars (100 lb/sq in). Cleveland steerable nosewheel with tyre size 17·5 × 6·25, 10-ply rating Type III, pressure 4·83 bars (70 lb/sq in). Goodrich hydraulically operated disc brakes. Parking brake.

POWER PLANT: Two Pratt & Whitney Canada PT6A-61 turboprop engines, each flat rated at 537 kW (720 shp) and driving a Hartzell three-blade constant-speed feathering and reversible-pitch metal propeller with Q-tips. Automatic propeller feathering system and synchrophaser optional. Each wing has four interconnected fuel cells and a tip tank, with a combined total capacity of 2,158 litres (570 US gallons), of which 2,120 litres (560 US gallons) are usable. NACA type anti-icing and non-siphoning fuel vents incorporating flame arresters. Refuelling points on upper surface of each tip tank and engine nacelle. Oil capacity 24·6 litres (6·5 US gallons). Electric intake anti-icing and propeller de-icing.

ACCOMMODATION: Pilot and co-pilot on four-way adjustable seats with armrests, headrests, shoulder safety belts with inertia reels, and stowage for oxygen mask beneath seats. To be certificated for single pilot operation. Dual controls standard. Pilot's storm window. Cabin seats up to nine passengers, but standard interior includes six reclining and adjustable passenger seats with armrests, headrests, and magazine storage on seat back. Four optional executive interiors available, plus a wide range of options for cabin furnishing. Door with built-in airstair on port side, with seven locking pins and inflatable pressurisation seal. Emergency exit window on starboard side. Baggage compartments in nose and rear of cabin, each with capacity of 136 kg (300 lb), and in each engine nacelle, with a capacity of 45 kg (100 lb), giving a maximum total baggage capacity of 363 kg (800 lb). Accommodation is pressurised, heated and air-conditioned. Pilot's windscreen heated; provisions for heating co-pilot windscreen. Pilot and co-pilot windscreen wipers standard.

Piper Cheyenne IIIA six/eleven-seat turboprop business aircraft

SYSTEMS: Garrett pressurisation system with max differential of 0·43 bars (6·3 lb/sq in), maintaining a cabin altitude of 3,050 m (10,000 ft) to a height of 10,060 m (33,000 ft). Environmental control system, combining the functions of heater, air-conditioner and dehumidifier. Hydraulic system supplied by dual engine driven pumps. Pneumatic system and vacuum system supplied by engine bleed air. Electrical system includes two 28V 250A engine driven generators and 24V 43Ah storage battery. Oxygen system of 0·62 m³ (22 cu ft) capacity with ten outlets. De-icing system includes pneumatic wing and tailplane de-icing boots, electric anti-icing of engine air intakes, heated pitots, electric propeller de-icing, and windscreen heating.

AVIONICS AND EQUIPMENT: Generally as for Cheyenne IA, including King 300 and Collins AP-106 autopilot/flight directors. Extensive standard installed equipment includes 'No smoking-Fasten seat belt' sign; carpeted floor; tinted cabin windows; pull-down window shades; curtain between flight deck and cabin; oxygen system with individual masks in storage compartments; indirect fluorescent lighting, individual reading lights, and courtesy lights. Optional equipment includes cabin chimes; stereo system; cabin instrument cluster giving digital readouts of altitude, outside air temperature, time, and true airspeed; cabin fire extinguisher; emergency locator transmitter; and engine fire extinguishing systems.

DIMENSIONS, EXTERNAL:

Wing span over tip tanks	14·53 m (47 ft 8 in)
Wing chord: at root	3·12 m (10 ft 3 in)
at tip	0·97 m (3 ft 2 in)
Wing aspect ratio	7·82
Length overall	13·23 m (43 ft 4¾ in)
Height overall	4·50 m (14 ft 9 in)
Tailplane span	6·65 m (21 ft 10 in)
Wheel track	5·72 m (18 ft 9 in)
Wheelbase	3·23 m (10 ft 7¼ in)
Propeller diameter	2·41 m (7 ft 11 in)
Distance between propeller centres	5·38 m (17 ft 8 in)
Passenger door: Height	1·16 m (3 ft 10 in)
Width	0·73 m (2 ft 5 in)
Nose baggage doors:	
Fwd: height	0·30 m (1 ft 0 in)
width	0·61 m (2 ft 0 in)
Rear: height	0·51 m (1 ft 8 in)
width	0·66 m (2 ft 2 in)
Utility door (aft): Height	0·76 m (2 ft 6 in)
Width	0·47 m (1 ft 6½ in)

DIMENSIONS, INTERNAL:

Cabin (incl flight deck and rear baggage area):	
Length	6·99 m (22 ft 11 in)
Max width	1·30 m (4 ft 3 in)
Max height	1·32 m (4 ft 4 in)
Volume	approx 9·91 m³ (350 cu ft)
Nose baggage compartment	0·46 m³ (16·25 cu ft)
Rear baggage compartment	0·88 m³ (31 cu ft)
Nacelle baggage locker (two, each)	

AREAS:

Wings, gross	27·22 m² (293 sq ft)
Ailerons (total)	1·25 m² (13·5 sq ft)
Trailing-edge flaps (total)	3·98 m² (42·8 sq ft)
Fin	2·17 m² (23·36 sq ft)
Rudder, incl tab	1·88 m² (20·2 sq ft)
Tailplane	3·48 m² (37·5 sq ft)
Elevators, incl tab	2·26 m² (24·3 sq ft)

WEIGHTS AND LOADINGS:

Basic weight empty	3,101 kg (6,837 lb)
Max T-O weight	5,080 kg (11,200 lb)
Max ramp weight	5,119 kg (11,285 lb)
Max zero-fuel weight	4,241 kg (9,350 lb)
Max landing weight	4,685 kg (10,330 lb)
Max wing loading	186·6 kg/m² (38·22 lb/sq ft)
Max power loading	4·73 kg/kW (7·78 lb/shp)

PERFORMANCE (at max T-O weight except where indicated):

Max level speed at average cruise weight of 4,218 kg (9,300 lb)	314 knots (582 km/h; 362 mph)
Cruising speed at max cruise power, at average cruise weight of 4,127 kg (9,100 lb):	
at 6,700 m (22,000 ft)	305 knots (565 km/h; 351 mph)
at 7,620 m (25,000 ft)	302 knots (560 km/h; 348 mph)
at 9,145 m (30,000 ft)	293 knots (543 km/h; 337 mph)
at 10,670 m (35,000 ft)	282 knots (523 km/h; 325 mph)
Stalling speed, engine idling:	
flaps and gear up	102 knots (189 km/h; 118 mph) IAS
flaps and gear down	89 knots (165 km/h; 103 mph) IAS
Rotation speed	95 knots (176 km/h; 110 mph) IAS
Approach speed	111 knots (206 km/h; 128 mph) IAS
Max rate of climb at S/L	725 m (2,380 ft)/min
Rate of climb at S/L, one engine out	191 m (625 ft)/min
Service ceiling	10,925 m (35,840 ft)
Service ceiling, one engine out	7,070 m (23,200 ft)
T-O run	447 m (1,465 ft)
T-O to 15 m (50 ft)	695 m (2,280 ft)
Landing from 15 m (50 ft)	928 m (3,043 ft)
Landing from 15 m (50 ft) with propeller reversal	788 m (2,586 ft)
Landing run	583 m (1,914 ft)
Landing run with propeller reversal	444 m (1,457 ft)
Accelerate/stop distance	1,025 m (3,363 ft)
Range, with max fuel, allowances for taxi, T-O, climb, descent, 45 min reserves at max range power:	
max cruising power at:	
6,700 m (22,000 ft)	1,372 nm (2,542 km; 1,580 miles)
7,620 m (25,000 ft)	1,510 nm (2,798 km; 1,739 miles)
9,460 m (31,000 ft)	1,840 nm (3,409 km; 2,118 miles)
10,670 m (35,000 ft)	2,055 nm (3,808 km; 2,366 miles)
max range power at:	
6,700 m (22,000 ft)	1,803 nm (3,341 km; 2,076 miles)
7,620 m (25,000 ft)	1,945 nm (3,604 km; 2,240 miles)
9,460 m (31,000 ft)	2,170 nm (4,021 km; 2,499 miles)
10,670 m (35,000 ft)	

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PIPER CHEYENNE 400 LS

Announced in September 1982, this eight-seat business aircraft (known initially as the Cheyenne IV) combines the basic airframe structure, components and systems of the Cheyenne IIIA with a new power plant, updated electrical system and other changes to ensure optimum performance and economy of operation. The prototype Cheyenne 400 LS (N400PT) flew for the first time on 23 February 1983, followed by a second prototype on 23 June. FAA certification was obtained on 13 July 1984, and deliveries began with an aircraft handed over to the Garrett Turbine Engine Company on 26 July. At 1 April 1985 a total of 15 Cheyenne 400 LSs had been delivered.

The '400' in the designation marks the claim that this is the only corporate turboprop aircraft capable of achieving 400 mph; the 'LS' indicates Piper's link with Lear Siegler.

On 8 February 1985 a Piper Cheyenne 400 LS set two Class C1e world records on a flight from Miami, Florida, to New York City, which was completed in 2 h 51 min, at an average speed of 330·43 knots (612·36 km/h; 380·5 mph), continuing to Boston, Massachusetts, which was reached in 3 h 24 min 33 s, at an average speed of 319·58 knots (592·24 km/h; 368 mph). Another Cheyenne 400 LS, piloted by Brigadier General (USAF Retd) Charles E. 'Chuck' Yeager, established five world records on 16 April 1985, climbing to an altitude of 3,000 m (9,845 ft) in 1 min 47·7 s; to 6,000 m (19,675 ft) in 3 min 42·3 s; to 9,000 m (29,525 ft) in 6 min 34 s; to 12,000 m (39,375 ft) in 11 min 8·4 s; and flying from San Francisco, California, to New York City in 6 h 39 min 28 s, at an average speed of 302·86 knots (561·26 km/h; 348·75 mph). On 28 May 1985 General Yeager established a further record on a flight from Washington, DC, to Paris which was completed in 10 h 19 min 15 s at an average speed of 322·974 knots (598·53 km/h; 371·91 mph).

TYPE: Twin-turboprop eight-seat light business transport.

WINGS: Cantilever low-wing monoplane, basically similar to those of Cheyenne IIIA, adapted for new power plant and flush riveted throughout. Area inboard of each wheel well strengthened and modified to accept new main landing gear. Outer panels modified to incorporate integral fuel tanks and to carry wingtip tanks to supplement fuel capacity and provide endplate aerodynamic benefits.

FUSELAGE: Basically as for Cheyenne IIIA, but strengthened to cater for increased pressurisation and to embody new multi-ply stretched acrylic cabin windows. Flush riveted throughout.

TAIL UNIT: As for Cheyenne IIIA, with minor modifications to cater for higher speeds. Flush riveted throughout.

LANDING GEAR: Hydraulically retractable tricycle type, with single wheel on each unit. Main units retract inward into wings, nosewheel rearward. Redesigned by comparison with Cheyenne IIIA, for improved ground attitude and increased landing weight. Mainwheels and tyres size 6·50-10, 12-ply rating, pressure 7·58 bars (110 lb/sq in). Steerable nosewheel, size 6·00-6, with 17·5 × 6·25-6 tyre, 10-ply rating, pressure 5·52 bars (80 lb/sq in). Hydraulically actuated dual disc brakes, with multiple brake pads, on each mainwheel.

POWER PLANT: Two 1,226·5 kW (1,645 shp) Garrett TPE331-14A/14B counter-rotating turboprop engines, each flat rated at 746 kW (1,000 shp) and driving a Dowty Rotol ARA-D constant-speed reversible-pitch advanced technology propeller with four carbonfibre/epoxy blades. Blade design and construction incorporates protection from both erosion and lightning strike. The installation of each engine includes new mountings, a new nacelle enclosing the exhaust system, new inlet incorporating bleed air anti-icing, and an exhaust system which discharges the efflux over the wing. Propeller synchrophaser standard. Fuel in integral tanks in outer wings and wingtip tanks. The engines have automatic negative torque control, automatic start sequencing, and use a micro-computer system to record in-flight performance data for engine trend monitoring.

Piper Cheyenne 400 LS, powered by Garrett TPE331-14A/14B turboprop engines

ACCOMMODATION: Crew of two side by side on separate flight deck. Standard cabin has two rearward facing seats at front. Flat floor and table between these seats and two pairs of forward facing seats, with dropped aisle between each pair. Toilet, with solid divider and door, and walk-in baggage area, capacity 136 kg (300 lb), at rear of cabin. Alternative cabin layouts available. Airstair door at rear of cabin on port side. Optional cargo door immediately aft of this, to provide unobstructed wide opening. Double glazed windows. Emergency exit over wing on starboard side. Nose baggage compartment, capacity 136 kg (300 lb), large enough to accommodate skis and golf bags, with two doors on port side.

SYSTEMS: Environmental control system utilises engine bleed air from both engines for heating, cooling and pressurisation. Max pressure differential 0·51 bars (7·5 lb/sq in). Independent emergency bleed air pressurisation system. Completely new electrical system includes two engine driven generators and two batteries. Automatic dropout oxygen masks.

AVIONICS AND EQUIPMENT: A full IFR avionics package, including autopilot/flight director and weather radar, plus full icing protection, is standard equipment. Complete optional system by Collins includes pilot's electronic ADI and electric HSI; multi-function display for radar and nav as well as system functions; co-pilot's mechanical ADI and electronic HSI; digital air data system, FCS 65 flight control system with latest technology digital autopilot; and a complete line of com, nav, radar and long range nav systems. Similar system by Bendix is in form of a five-tube electronic display comprising pilot and co-pilot electronic ADI and electronic HSI; multi-function radar display; electronic engine instrument and crew alerting options; digital air data system; digital autopilot flight control system; and complete line of com, short and long range nav and radar systems.

DIMENSIONS, EXTERNAL: As for Cheyenne IIIA, except:

Height overall	5·00 m (16 ft 5 in)
Propeller diameter	2·69 m (8 ft 10 in)

DIMENSIONS, INTERNAL: As for Cheyenne IIIA, except:

Cabin: Max height	1·42 m (4 ft 8 in)
Baggage compartment volume:	
nose	0·48 m³ (17·0 cu ft)
rear	0·88 m³ (31·0 cu ft)

AREAS: As for Cheyenne IIIA, except:

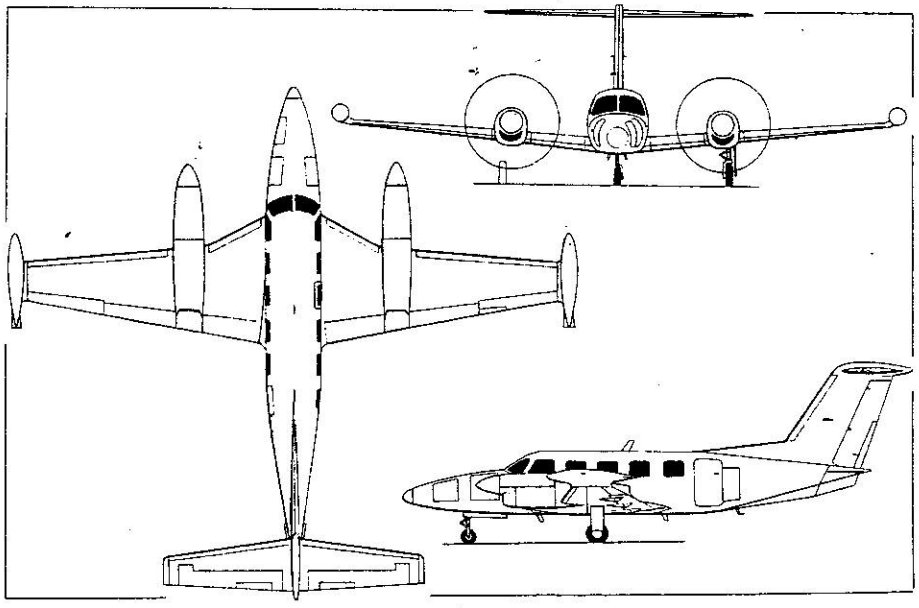
Fin	2·68 m² (28·81 sq ft)
Rudder, incl tab	1·60 m² (17·25 sq ft)
Elevators, incl tabs	2·26 m² (24·30 sq ft)

WEIGHTS:

Weight empty, standard	3,423 kg (7,546 lb)
Max usable fuel	1,756 kg (3,872 lb)
Max T-O weight	5,420 kg (11,950 lb)
Max ramp weight	5,459 kg (12,035 lb)
Max landing weight	5,035 kg (11,100 lb)
Max zero-fuel weight	4,536 kg (10,000 lb)

PERFORMANCE (at max T-O weight except where indicated):

Max operating speed	Mach 0·62 (246 knots; 455 km/h; 283 mph EAS)
Cruising speed at max cruise power at AUW of 4,536 kg (10,000 lb):	
at 7,315 m (24,000 ft)	351 knots (650 km/h; 404 mph)
at 8,850 m (29,000 ft)	346 knots (641 km/h; 398 mph)
at 10,670 m (35,000 ft)	334 knots (620 km/h; 385 mph)
at 12,500 m (41,000 ft)	294 knots (544 km/h; 338 mph)
Stalling speed, engines idling:	
flaps and landing gear up	93 knots (172 km/h; 107 mph) IAS
flaps and landing gear down	84 knots (156 km/h; 97 mph) IAS
Max rate of climb at S/L	988 m (3,242 ft)/min
Rate of climb at S/L, one engine out	304 m (997 ft)/min
Service ceiling	above 12,500 m (41,000 ft)
Service ceiling, one engine out	8,745 m (28,700 ft)
T-O to 15 m (50 ft)	680 m (2,232 ft)
Landing from 15 m (50 ft) at max landing weight:	
without reverse thrust	713 m (2,340 ft)
with reverse thrust	622 m (2,040 ft)
Accelerate/stop distance	998 m (3,275 ft)
Range at max cruise power at 10,670 m (35,000 ft), with allowances for start, taxi, T-O, climb, descent and 45 min reserve at max range power:	
with 8 passengers	1,243 nm (2,304 km; 1,432 miles)
with 2 passengers	1,821 nm (3,375 km; 2,097 miles)
Max range, at max range power at 12,500 m (41,000 ft), allowances as above:	
with 8 passengers	1,431 nm (2,652 km; 1,648 miles)
with 2 passengers	2,176 nm (4,033 km; 2,506 miles)



Piper Cheyenne 400 LS twin-turboprop eight-seat business transport *(Pilot Press)*

PIPER (PA-34-220T) SENECA III

On 23 September 1971, Piper announced a twin-engined light aircraft which had the company designation PA-34 and, following Piper tradition, the Indian name Seneca. Built at Piper's Vero Beach, Florida, factory, the aircraft was redesignated Seneca II from 1975. On 15 February 1981 Piper introduced an improved PA-34-220T Seneca III, with more powerful engines.

The Seneca III has counter-rotating (C/R) engine and propeller installations. The retractable landing gear is operated by an electro-hydraulic system and includes an emergency extension system which allows the wheels to free fall into the down and locked position. A dual-vane stall warning system provides warning by horn well in advance of the stall in either clean or gear/flaps-down configuration. 1985 Seneca IIIs feature electrically actuated flaps as standard.

Four optional factory installed avionics packages are available for the Seneca III, and the following optional operational groups are available:

BE 18

BE 19

Piper Seneca III, powered by two Continental TSIO-360-KB turbocharged counter-rotating engines

Custom. Comprising an instrument package which includes blind-flying instrumentation with 3 in attitude and directional gyros, electric clock, outside air temperature gauge, pictorial turn rate indicator, rate of climb indicator, true airspeedindicator, and dual engine driven pneumatic pumps; a lighting package which includes instrument panel white lighting and overhead red lighting, avionics dimming, cabin dome, map, reading, landing, navigation, taxi, and wing strobe lights; heated pitot;assist straps; and towbar; adding 16·6 kg (36·5 lb) to basic empty weight.

Executive. As Custom group, plus pilot's vertically adjustable seat, tinted windows, emergency locator transmitter, baggage compartment and entrance door lights, external power socket, and quick oil drain valves; adding 22·7 kg (50·0 lb) to basic empty weight.

De-icing Group. Comprising pneumatic de-icing boots for wing and tail unit leadng-edges, electric propeller de-icing, luminous outside air temperature gauge, ice inspection light, electric windscreen de-icing plate for pilot, heated pitot head and two heated lift detectors; adding 23·9 kg (52·7 lb) to basic empty weight.

It was announced on 3 January 1977 that Piper had signed an agreement with Pezetel, the Polish foreign trade organisation, enabling PZL Mielec (which see) to assemble, manufacture and distribute theSeneca in Eastern Europe. These aircraft (several hundred are involved in the agreement) are powered by 164 kW (220 hp) PZL-Franklin engines and are named **M-20 Mewa** (Gull).

At 1 April 1985 a total of 4,211 Senecas had been delivered, made up of 918 Seneca Is, 2,602 Seneca IIs and 691 Seneca IIIs.

TYPE: Six-seat twin-engined light aircraft.

WINGS: Cantilever low-wing monoplane. Dihedral 7°. Single-spar wings, Frise ailerons, and wide span electrically operated slotted flaps, of light alloy construction. Glassfibre wingtips. Pneumatic de-icing boots for leading-edges optional.

FUSELAGE: Light alloy semi-monocoque structure.

TAIL UNIT: Cantilever structure of light alloy. One-piece all-moving horizontal surface with combined antibalance and trim tab. Anti-servo tab in rudder. Pneumatic de-icing boots for fin and tailplane leading-edges optional.

LANDING GEAR: Hydraulically retractable tricycle type. Main units retract inward, nose unit forward. Oleopneumatic shock absorbers. Steerable nosewheel. Emergency free-fall extension system. Mainwheels and tyres size 6·00-6, 8-ply rating, pressure 3·79 bars (55 lb/sq in); nosewheel and tyre size 6·00-6, 6-ply rating, pressure 2·76 bars (40 lb/sq in). Nosewheel safety mirror. High capacity disc brakes. Parking brake. Heavy duty tyres and brakes optional.

POWER PLANT: One 164 kW (220 hp) Coninental TSIO-360-KB and one 164 kW (220 hp) Continental LTSIO-360-KB flat-six turbocharged counter-rotating engines, each driving a Hartzell two-blade constant-speed fully-feathering metal propeller with spinner. Three-blade propellers, propeller de-icing, automatic unfeathering and propeller synchrophasers optional. Fuel in two tanks in wings, with a total capacity of 371 litres (98 US gallons) of which 352 litres (93 US gallons) are usable. Optional 57 litre (15 US gallon) auxiliary tank in each wing to provide a max capacity of 485 litres (128 US gallons) of which 466 litres (123 US gallons) are usable. Oil capacity 7·5 litres (2 US gallons). Glassfibre engine cowlings.

ACCOMMODATION: Enclosed cabin, seating six people in pairs on individual seats with 0·25 m (10 in) centre aisle. Dual controls standard. Pilot's storm window. Two forward hinged doors, one on starboard side at front, the other on port side at rear. Large optional door adjacent to rear cabin door provides an extra-wide opening for loading bulky items. Passenger seats removable easily to provide different seating/baggage cargo combinations. Space for 45 kg (100 lb) baggage at rear of cabin, and for 45 kg (100 lb) in nose compartment with external access door on port side. Cabin heated and ventilated. Windscreen defrosters standard. Electrically de-iced windscreen for pilot, and ice inspection light optional.

SYSTEMS: Electro-hydraulic system for landing gear actuation. Electrical system powered by two 14V 65A alternators. 12V 35Ah battery. Oxygen system with six outlets, or built-in oxygen system of 1·81 m³ (64 cu ft), optional. Dual engine driven pneumatic pumps for flight instruments optional. Piper Aire air-conditioning system of 14,500 BTU capacity optional. Janitrol 45,000 BTU combustion heater standard.

AVIONICS AND EQUIPMENT: Four optional factory installed packages of avionics are available, these including nav/coms, ADF, autopilot, DME, glideslope and marker beacon receivers, and transponder, by Collins, King, Narco and Piper. Options include alternative to or duplication of the above equipment, plus autopilot/flight director systems, encoding altimeter, HF transceiver, R/Nav, radio altimeter, and weather radar, by manufacturers which include the above, plus Bendix/, Bonzer, Edo-Aire Mitchell, King, RCA, SunAir and United. Standard equipment includes dual cylinder head and exhaust gas temperature gauges, dual manifold pressure gauges, dual electric tachometers, sensitive altimeter and alternate static source. Pilot's and co-pilot's seats are fore and aft adjustable and reclining, and have shoulder and safety belts and armrests; pilot's storm window, sun visors,stall warning device, provisions for emergency locator transmitter, carpeted floor, soundproofing, fuel tank quick drains, jack pads, and tiedown rings. Items in operational groups are available optionally, plus co-pilot's blind-flying instrumentation, encoding altimeter, digital clock, cabin heater, hour recorder, cabin fire extinguisher, vertically adjustable seats for pilot and co-pilot, inertia reel shoulder belt systems for crew and passenger seats, headrests, window curtains, tables, refreshment console, tinted windows, ventilation fan, stainless steel control cables, in-flight recognition lights, towbar, and zinc chromate finish for aluminium parts.

DIMENSIONS, EXTERNAL:

Wing span	11·85 m (38 ft 10¾ in)
Wing chord, constant	1·60 m (5 ft 3 in)
Length overall	8·72 m (28 ft 7½ in)
Height overall	3·02 m (9 ft 10¾ in)
Tailplane span	4·14 m (13 ft 6¾ in)
Wheel track	3·38 m (11 ft 1¼ in)
Wheelbase	2·13 m (7 ft 0 in)
Propeller diameter	1·93 m (6 ft 4 in)
Distance between propeller centres	3·80 m (12 ft 5½ in)
Cabin door (stbd, fwd): Height	0·89 m (2 ft 11 in)
Width	0·91 m (3 ft 0 in)
Cabin door (port, rear): Height	0·72 m (2 ft 4½ in)
Width	0·71 m (2 ft 4 in)
Baggage door (stbd, rear): Height	0·52 m (1 ft 8½ in)
Width	0·66 m (2 ft 2 in)
Baggage door (port, fwd): Height	0·53 m (1 ft 9 in)
Width	0·61 m (2 ft 0 in)

DIMENSIONS, INTERNAL:

Cabin (incl flight deck): Length	3·17 m (10 ft 5 in)
Max width	1·24 m (4 ft 1 in)
Max height	1·07 m (3 ft 6 in)
Volume	5·53 m³ (195·3 cu ft)
Forward baggage compartment	0·43 m³ (15·3 cu ft)
Rear baggage compartment	0·49 m³ (17·3 cu ft)

AREAS:

Wings, gross	19·39 m² (208·7 sq ft)
Ailerons, incl tab (total)	1·17 m² (12·60 sq ft)
Trailing-edge flaps (total)	1·94 m² (20·84 sq ft)
Fin	1·14 m² (12·32 sq ft)
Rudder, incl tab	0·71 m² (7·62 sq ft)
Horizontal tail surfaces (total)	3·60 m² (38·74 sq ft)

WEIGHTS AND LOADINGS:

Weight empty, standard	1,294 kg (2,852 lb)
Max usable fuel weight:	
standard	253 kg (558 lb)
optional	385 kg (738 lb)
Max T-O weight	2,154 kg (4,750 lb)
Max ramp weight	2,165 kg (4,773 lb)
Max zero-fuel weight	2,027 kg (4,470 lb)
Max wing loading	111·1 kg/m² (22·76 lb/sq ft)
Max power loading	6·57 kg/kW (10·8 lb/hp)

PERFORMANCE (at max T-O weight except where indicated):

Max level speed at optimum altitude, mid cruise weight	196 knots (363 km/h; 226 mph)
Cruising speed at optimum altitude, mid cruise weight:	
75% power	193 knots (357 km/h; 222 mph)
65% power	191 knots (354 km/h; 220 mph)
55% power	180 knots (333 km/h; 207 mph)
45% power	168 knots (311 km/h; 193 mph)
Cruising speed at 3,050 m (10,000 ft), mid cruise weight:	
75% power	179 knots (332 km/h; 206 mph)
65% power	175 knots (324 km/h; 202 mph)
55% power	159 knots (295 km/h; 183 mph)
45% power	143 knots (265 km/h; 165 mph)
Stalling speed: flaps and landing gear up	66 knots (122 km/h; 76 mph) CAS
flaps and landing gear down	62 knots (115 km/h; 72 mph) CAS
Max rate of climb at S/L	427 m (1,400 ft)/min
Rate of climb at S/L, one engine out	73 m (240 ft)/min
Max certificated ceiling	7,620 m (25,000 ft)
Service ceiling, one engine out	3,750 m (12,300 ft)
T-O run	280 m (920 ft)
T-O to 15 m (50 ft)	369 m (1,210 ft)
Landing from 15 m (50 ft):	
standard brakes	658 m (2,160 ft)
heavy duty brakes	603 m (1,978 ft)
Landing run: standard brakes	427 m (1,400 ft)
heavy duty brakes	371 m (1,218 ft)
Accelerate/stop distance:	
standard brakes	732 m (2,400 ft)
heavy duty brakes	636 m (2,088 ft)

Range with standard fuel, allowances for taxi, T-O, climb, descent, and 45 min reserves at max range power:

at optimum altitude:	
75% power	463 nm (858 km; 533 miles)
65% power	550 nm (1,018 km; 633 miles)
55% power	630 nm (1,166 km; 725 miles)
45% power	670 nm (1,240 km; 771 miles)
at 3,050 m (10,000 ft):	
75% power	450 nm (833 km; 517 miles)
65% power	535 nm (990 km; 615 miles)
55% power	610 nm (1,129 km; 702 miles)
45% power	632 nm (1,170 km; 727 miles)

Range with max optional fuel, allowances as above:

at optimum altitude:	
75% power	665 nm (1,232 km; 765 miles)
65% power	785 nm (1,454 km; 904 miles)
55% power	920 nm (1,705 km; 1,059 miles)
45% power	990 nm (1,834 km; 1,140 miles)
at 3,050 m (10,000 ft):	
75% power	640 nm (1,186 km; 737 miles)
65% power	758 nm (1,405 km; 873 miles)
55% power	860 nm (1,593 km; 990 miles)
45% power	903 nm (1,673 km; 1,040 miles)

PIPER (PA-38-112) TOMAHAWK II

FAA certification of the original Tomahawk trainer was gained on 20 December 1977; the Tomahawk II was introduced in 1981. A total of 2,497 Tomahawk/Tomahawk IIs had been built when production was suspended in 1983, and it was not being resumed in 1985. A full description of the Tomahawk II can be found in the 1982-83 *Jane's*.

PIPER (PA-46-310P) MALIBU

Piper announced on 20 November 1982 a new six-seat cabin monoplane, the PA-46-310P Malibu, which the company claims to be the world's first cabin class, pressurised, piston powered single-engined aircraft. The almost circular section fuselage of the Malibu has practically no taper over the length of the cabin, providing each passenger with an equal level of comfort. The engineering and pre-production prototypes had completed more than 400 and almost 60 flight hours respectively at the time of the company's announcement, and during this period these aircraft met or exceeded all design performance goals. FAA certification was received in September 1983. Production deliveries began in November 1983, and by 1 April 1985 a total of 135 aircraft had been delivered.

In May 1984 a Malibu set two world records by flying from Tampa, Florida, to Gander, Newfoundland, in 8 h 27 min at an average speed of 213·36 knots (395·15 km/h; 245·53 mph); and then from Gander to Munich, Germany, in 12 h 53 min 55 s at a speed of 197·80 knots (366·32 km/h; 227·62 mph). On 7 December 1984 a Malibu set a world record by flying from Oakland, California, to Honolulu, Hawaii, in 12 h 1 min at an average speed of 173·864 knots (322·194 km/h; 200·2 mph) and on 17 December the same aircraft established another world record on a flight from Honolulu to Sydney, Australia, in 24 h 49 min 22 s, at an average speed of 177·76 knots (329·43 km/h; 204·7 mph).

In the Summer of 1985 it was reported that Piper was considering development of turboprop, stretched fuselage and twin-engined variants of the Malibu.

TYPE: Six-seat all-metal cabin monoplane.

WINGS: Cantilever low-wing monoplane of high aspect ratio. Dihedral 4°. Conventional ailerons and hydraulically actuated trailing-edge flaps. Pneumatic de-icing

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PARTENAVIA P.66T CHARLIE TRAINER

This two-seat improved version of the P.66C-160 Charlie made its first flight in the Spring of 1983. No further examples had been ordered or built by mid-1985. A description and illustration can be found in the 1984-85 *Jane's*.

PARTENAVIA P.68

The original P.68, designed by Prof Ing Luigi Pascale in 1968, was described in the 1975-76 *Jane's*. From it was developed the P.68B Victor twin-engined light transport, which entered production in Partenavia's factory at Naples Airport in the Spring of 1974.

Details of the P.68B, P.68C-R, P.68 floatplane/amphibian and P.68R can be found in the 1980-81 and earlier editions of *Jane's*. The following versions are currently in production:

P.68C. Improved version of P.68B, with lengthened nose, increased fuel capacity, and several internal changes. Detailed description applies primarily to this version (also known formerly as the Victor), which superseded the P.68B (1979-80 *Jane's*) in late 1979.

P.68C-TC. Similar to P.68C, but powered currently by Avco Lycoming TIO-360-A1C6D turbocharged engines with fuel injection. Certificated in June 1980. In production; 34 delivered by beginning of 1985.

P.68 Observer. Special observation version; described separately.

By the beginning of 1985 Partenavia had delivered 350 aircraft of the P.68 series, most of them for export to operators in more than 20 countries.

TYPE: Six/seven-seat light transport and trainer.

WINGS: Cantilever high-wing monoplane. Wing section NACA 63-3,515. Dihedral 1°. Incidence 1° 30'. No sweepback. Stressed skin two-spar torsion box structure of aluminium alloy. All-metal ailerons and electrically operated single-slotted trailing-edge flaps. Hoerner GRP wingtips. No tabs.

FUSELAGE: Conventional all-metal semi-monocoque structure of frames and longerons, with four main longerons and stressed skin covering. Fuselage/wing intersection mainly of GRP.

TAIL UNIT: Cantilever stressed skin metal structure. All-moving tailplane, in two symmetrical halves joined by steel cross-tube and of constant chord except for increase at leading-edge roots. Balance tab in tailplane trailing-edge, over 80 per cent of span. Sweptback fin and rudder, with small dorsal fin. Trim tab in rudder.

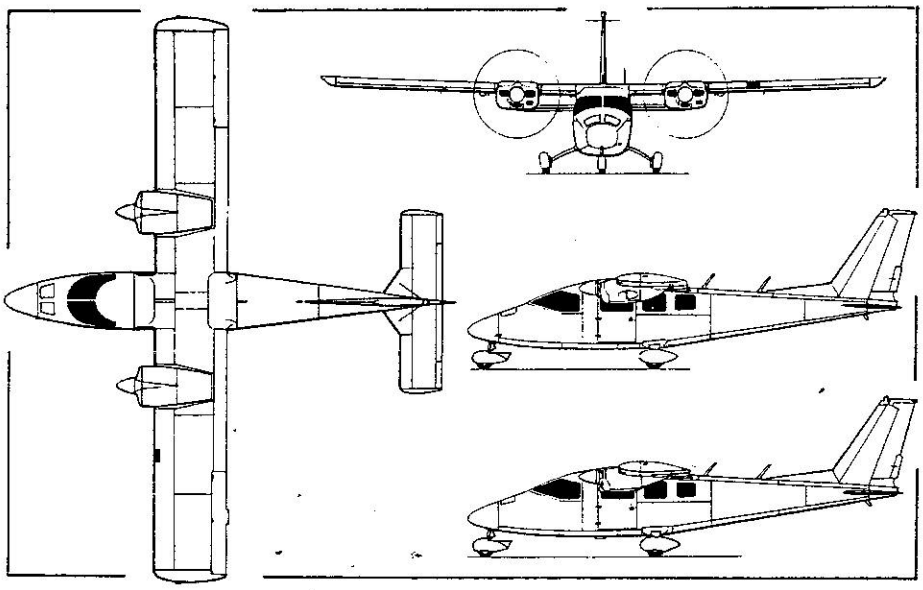
LANDING GEAR: Non-retractable tricycle type, with steerable nosewheel. Cantilever spring steel main legs. Oleo-pneumatic shock-absorber on nosewheel. Cleveland mainwheels, type 40-96, with Pirelli eight-ply tyres size 6·00-6. Goodyear six-ply nosewheel tyre, size 5·00-5. Cleveland type 30-61 hydraulic disc brakes. Parking brake. Streamline wheel fairings standard.

POWER PLANT (P.68C): Two 149 kW (200 hp) Avco Lycoming IO-360-A1B6 flat-four engines, each driving a Hartzell HC-C2YK-2C/C-7666A-4 two-blade constant-speed fully-feathering propeller with spinner. Integral fuel tank in each wing, total capacity 538 litres (118 Imp gallons), of which 520 litres (114 Imp gallons) are usable. Refuelling point above each wing. Oil capacity 15 litres (3·3 Imp gallons).

ACCOMMODATION: Seating for seven persons in cabin, including pilot, in two rows of two seats and a rear bench seat for three persons. A 'club' seating arrangement is available optionally, having the two middle seats facing rearward with a folding table between them and the bench seat. Front seats are of the adjustable sliding type. Access to all seats via large forward opening car type door on port side at front of cabin. Up to 181 kg (400 lb) of baggage can be carried in compartment aft of rear bench seat. Access to baggage compartment from inside cabin, or via large forward hinged door on starboard side at rear, which serves also as emergency exit. Two stretchers or other loads can be carried when all passenger seats are removed. Dual controls, cabin heating, ventilation and soundproofing standard.

SYSTEMS: Electrical power supplied by two 24V 70A alternators and a 24V 17Ah battery. No hydraulic system. Goodrich pneumatic de-icing system optional.

AVIONICS AND EQUIPMENT (P.68C): Wide range of Collins Micro Line or King Silver Crown avionics, and Edo-Aire Mitchell Century III autopilot, to customer's requirements. Provision for SunAir ASB 100 HF radio. Standard equipment includes airspeed indicator, gyro horizon, directional gyro, two cylinder head temperature gauges, clock, exhaust gas temperature indicator, outside air temperature gauge, rate of climb indicator, sensitive altimeter, electrical turn rate indicator, inertia reel shoulder harness for pilot and co-pilot, stall warning system, four upholstered seats with back pockets, and one bench seat with folding back (with safety belts on all seats), cabin fire extinguisher, six individual fresh air outlets and six floor warm air vents, windscreen defrosters, cabin soundproofing, annunciator panel warning lights, two map lights, individual reading lights, individual instrument panel floodlights with rheostat, anti-collision strobe light, two landing/taxying lights, navigation lights, anti-static kit, external power receptacle, oil coolers with thermostatic control, [illegible]



Partenavia P.68C, with additional side view (centre) of P.68C-TC *(Pilot Press)*

Partenavia P.68C-TC six/seven-seat light aircraft

towbar. Optional equipment includes Janitrol 45,000 BTU combustion heater, wing and tail pneumatic de-icing system, electrothermal propeller de-icing system, 0·46 × 0·58 m (18 × 23 in) floor panel for photogrammetric camera, including periscope sight hatch, second airspeed indicator, second gyro horizon, chronometer, second altimeter, pilot's and co-pilot's vertically adjustable seats, alcohol windscreen de-icing, heated stall warning indicator, all-leather interior, forced ventilation blower, ice light and second oil cooler.

DIMENSIONS, EXTERNAL:

Wing span	12·00 m (39 ft 4½ in)
Wing chord (constant)	1·55 m (5 ft 1 in)
Wing aspect ratio	7·742
Length overall	9·55 m (31 ft 4 in)
Height overall	3·40 m (11 ft 1¾ in)
Tailplane span	3·90 m (12 ft 9½ in)
Wheel track	2·40 m (7 ft 10½ in)
Wheelbase	3·50 m (11 ft 5¾ in)
Propeller diameter	1·88 m (6 ft 2 in)
Distance between propeller centres	4·10 m (13 ft 5½ in)
Baggage door, stbd: Height	0·80 m (2 ft 7½ in)
Width	0·80 m (2 ft 7½ in)

DIMENSIONS, INTERNAL:

Cabin: Length	3·58 m (11 ft 9 in)
Max width	1·16 m (3 ft 9½ in)
Max height	1·20 m (3 ft 11¼ in)
Baggage space	0·56 m³ (20 cu ft)

AREAS:

Wings, gross	18·60 m² (200·2 sq ft)
Ailerons (total)	1·79 m² (19·27 sq ft)
Trailing-edge flaps (total)	2·37 m² (25·51 sq ft)
Fin	1·59 m² (17·11 sq ft)
Rudder, incl tab	0·44 m² (4·74 sq ft)
Tailplane, incl tab	4·41 m² (47·47 sq ft)

WEIGHTS AND LOADINGS:

Weight empty: C	1,230 kg (2,711 lb)
C-TC	1,300 kg (2,866 lb)
Max T-O weight: C, C-TC	1,990 kg (4,387 lb)
Max landing weight: C, C-TC	1,890 kg (4,166 lb)
Max wing loading: C, C-TC	107 kg/m² (21·9 lb/sq ft)
Max power loading: C	6·68 kg/kW (10·97 lb/hp)
C-TC	6·36 kg/kW (10·45 lb/hp)

PERFORMANCE (at max T-O weight):

Max level speed:

C at S/L	174 knots (322 km/h; 200 mph)
C-TC at 5,335 m (17,500 ft)	195 knots (361 km/h; 224 mph)

Max cruising speed (75% power):

C at 2,290 m (7,500 ft)	
C-TC at 6,100 m (20,000 ft)	183 knots (339 km/h; 211 mph)
C-TC at 3,660 m (12,000 ft)	172 knots (318 km/h; 198 mph)

Cruising speed (65% power):

C at 3,350 m (11,000 ft)	161 knots (298 km/h; 185 mph)
C-TC at 3,050 m (10,000 ft)	158 knots (293 km/h; 182 mph)

Cruising speed (55% power):

C at 3,660 m (12,000 ft)	150 knots (278 km/h; 173 mph)
C-TC at 3,050 m (10,000 ft)	147 knots (272 km/h; 169 mph)

Stalling speed, flaps up: C, C-TC	65 knots (120 km/h; 75 mph)
Stalling speed, flaps down: C, C-TC	58 knots (106 km/h; 66 mph)
Max rate of climb at S/L: C	457 m (1,500 ft)/min
C-TC	472 m (1,550 ft)/min
Rate of climb at S/L, one engine out:	
C	82 m (270 ft)/min
C-TC	88 m (290 ft)/min
Service ceiling: C	5,850 m (19,200 ft)
C-TC	7,620 m (25,000 ft)
Service ceiling, one engine out:	
C	2,100 m (6,900 ft)
C-TC	4,420 m (14,500 ft)
T-O run: C, C-TC	230 m (755 ft)
T-O to 15 m (50 ft): C	396 m (1,300 ft)
C-TC	385 m (1,263 ft)
Landing from 15 m (50 ft):	
C, C-TC	488 m (1,600 ft)
Landing run: C, C-TC	215 m (705 ft)
Accelerate/stop distance: C	473 m (1,550 ft)
C-TC	510 m (1,673 ft)

Optimum cruising range (C), 45 min reserves:

75% power at 2,290 m (7,500 ft)	1,050 nm (1,945 km; 1,209 miles)
65% power at 3,350 m (11,000 ft)	1,140 nm (2,112 km; 1,312 miles)
55% power at 3,660 m (12,000 ft)	1,210 nm (2,242 km; 1,393 miles)

Optimum cruising range (C-TC) at 3,660 m (12,000 ft), 45 min reserves:

75% power	775 nm (1,436 km; 892 miles)
65% power	940 nm (1,742 km; 1,082 miles)
55% power	1,020 nm (1,890 km; 1,175 miles)

Range with max fuel (C-TC):

65% power at 6,400 m (21,000 ft)

PARTENAVIA P.68 OBSERVER

Developed originally in collaboration with Sportavia-Pützer, the Observer has a forward and downward view for the crew equal to that of a helicopter. The Plexiglas nose, cockpit and associated structure were designed by Sportavia-Pützer; the prototype (D-GERD) was constructed at that company's Dahlemer-Binz factory, and first flew on 20 February 1976.

With its good low-speed handling characteristics, the Observer is considered to be capable of performing many roles allocated normally to helicopters. It is intended particularly for patrol and observation operations.

The first Partenavia built Observer was flown in the Spring of 1980, and certification was obtained in June of that year. Improvements have since been made to the flight deck and instrument panel. By the beginning of 1985 a total of 15 Observers had been delivered, to customers in Africa, Australia, western Europe, and North and South America. The Observer was then being evaluated by a number of potential customers in several countries for such specific duties as anti-pollution patrol, traffic surveillance and fish shoal location. Observer production represents nearly 20 per cent of the P.68 assembly line output.

DIMENSIONS, EXTERNAL: As P.68C except:

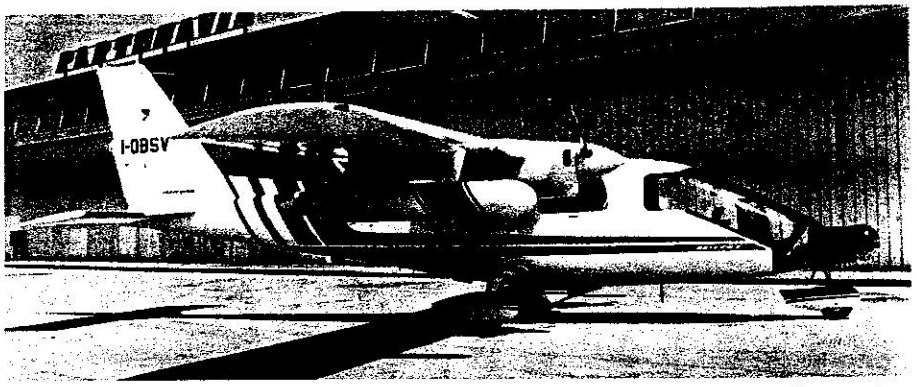
Length overall	9·35 m (30 ft 8 in)
Wheelbase	3·80 m (12 ft 5½ in)

WEIGHTS AND LOADINGS:

Weight empty	1,280 kg (2,822 lb)
Max T-O weight	1,960 kg (4,321 lb)
Max wing loading	105·3 kg/m² (21·58 lb/sq ft)
Max power loading	6·58 kg/kW (10·80 lb/hp)

PERFORMANCE (at max T-O weight):

Max level speed at S/L	174 knots (322 km/h; 200 mph)
Cruising speed:	
75% power at 2,285 m (7,500 ft)	165 knots (306 km/h; 190 mph)
65% power at 3,350 m (11,000 ft)	160 knots (296 km/h; 184 mph)
55% power at 3,660 m (12,000 ft)	149 knots (276 km/h; 171 mph)
Stalling speed: flaps up	64 knots (118 km/h; 74 mph)
flaps down	56 knots (101 km/h; 64 mph)
Max rate of climb at S/L	488 m (1,600 ft)/min
Rate of climb at S/L, one engine out	98 m (320 ft)/min
Service ceiling	6,100 m (20,000 ft)
Service ceiling, one engine out	2,375 m (7,800 ft)
T-O run	229 m (750 ft)
T-O to 15 m (50 ft)	387 m (1,270 ft)
Landing from 15 m (50 ft)	479 m (1,570 ft)
Landing run	210 m (690 ft)
Accelerate/stop distance	473 m (1,550 ft)
Optimum cruising range, 45 min reserves:	
75% power at 2,285 m (7,500 ft)	1,060 nm (1,964 km; 1,220 miles)
65% power at 3,350 m (11,000 ft)	1,140 nm (2,112 km; 1,312 miles)
55% power at 3,660 m (12,000 ft)	1,200 nm (2,224 km; 1,382 miles)



Partenavia P.68 Observer equipped with Electronique Aérospatiale ATAL television surveillance system

PARTENAVIA AP 68TP-300 SPARTACUS

This eight/nine-seat turboprop derivative of the P.68, known originally as the P.68 Turbo, was developed by Partenavia in a joint programme with Aeritalia. A six-seat prototype (I-PAIT, known as the AP 68TP) flew for the first time on 11 September 1978. Certification of this aircraft, which had a retractable landing gear, was obtained on 8 June 1981. The second and third aircraft (I-RAIO and I-RAIP), with eight/nine seats and non-retractable gear, were designated AP 68TP-100; this version made its initial flight on 20 November 1981 and was certificated on 12 July 1982. Both of these aircraft, which had all-moving tailplanes, were lost during flight testing, and were superseded by the AP 68TP-300, subsequently named Spartacus, with non-retractable gear, fixed tailplane and separate elevators; two examples had been completed by the Spring of 1983. The first of these (I-RAIK) made its initial flight on 1 April 1983. Italian RAI certification was obtained in the following December, and production was at the rate of two per month in early 1984. FAA certification was announced in May 1984.

The Spartacus is intended as a multi-role aircraft with low operating costs. The spectrum of possible missions includes air taxi, liaison, executive, cargo transport, coastal patrol, aerial survey, ambulance, and training. Underwing hardpoints are available on request.

The following description applies to the fixed-gear Spartacus; the retractable-gear AP 68TP-600, known initially as the Spartacus 10 and now as the Viator, is described separately.

TYPE: Twin-turboprop general purpose transport.

WINGS: As described for P.68C Victor. Trim tab in starboard aileron. Goodrich pneumatic boot de-icing of leading-edges optional.

FUSELAGE: Similar to P.68C, but slightly longer.

TAIL UNIT: Vertical surfaces similar to P.68C, but of increased chord. Fixed incidence tailplane with separate elevators; geared tab in port elevator. Pneumatic boot de-icing of leading-edges.

LANDING GEAR: Non-retractable tricycle type, with single wheel on each unit. Oleo-dynamic shock absorption on nose unit, leaf springs on main gear, both of Partenavia manufacture. Cleveland wheels, sizes 40-77B (nose) and 40-163EA (main). Nosewheel tyre size 5·00-5 (6 ply), pressure 1·93 bars (28 lb/sq in); mainwheel tyres size 6·50-8 (8 ply), pressure 4·13 bars (60 lb/sq in). Cleveland 30-139 brakes.

POWER PLANT: Two Allison 250-B17C turboprop engines, each flat rated at 244·5 kW (328 shp) for T-O and max continuous operation. Hartzell HC-B3TF-7A/T10173B-21R three-blade constant-speed fully-feathering reversible-pitch metal propellers with spinners. Fuel in two 380 litre (83·6 Imp gallon) tanks in wings and a 40 litre 8·8 Imp gallon) tank in each engine nacelle. Total capacity 840 litres (185 Imp gallons). Two 100 litre (22 Imp gallon) underwing tanks optional. Refuelling point at each wingtip. Oil capacity 11·4 litres (2·5 Imp gallons) per engine.

ACCOMMODATION: Seating for eight or nine persons, including pilot. Forward opening doors on starboard side of flight deck (crew), on port side at centre of cabin (passengers), and at rear of cabin on starboard side (passengers and emergency exit). Dual controls, cabin heating, ventilation and soundproofing standard. Air-conditioning optional.

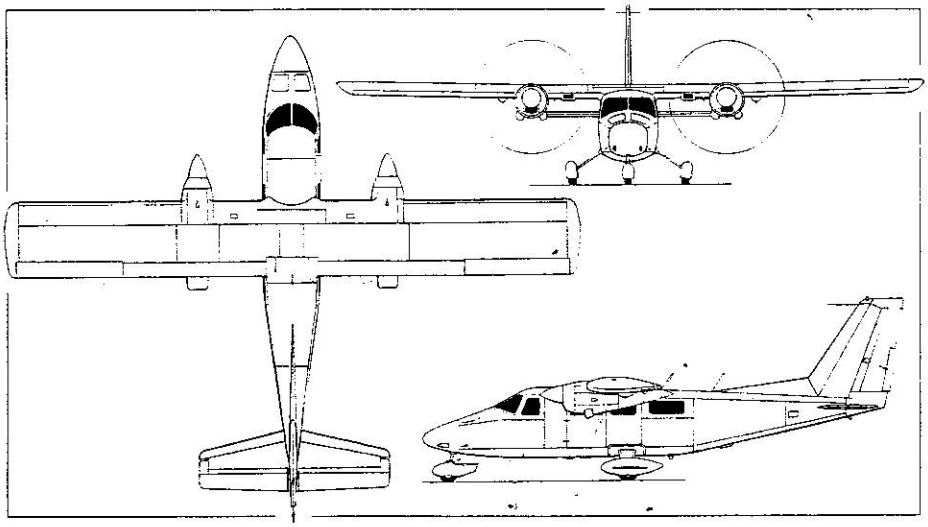
SYSTEMS: Primary electrical power supplied by two 150A 28V DC starter/generators and two voltage regulators. In the event of primary electrical failure, power is supplied by a 24V 29Ah lead-acid battery (self-sufficient for engine starting), and an inverter for 115/26V AC power. Electric de-icing of engine air intakes standard; de-icing of propellers, pitot and stall detector, pneumatic boot de-icing of outer wing leading-edges, and oxygen system, are optional. No hydraulic or pneumatic system.

AVIONICS: Collins Microline or King Silver Crown, to customer's requirements. Typical installations include HF com, DME, weather radar (Sperry or Bendix), autopilot, and Narco ELT.

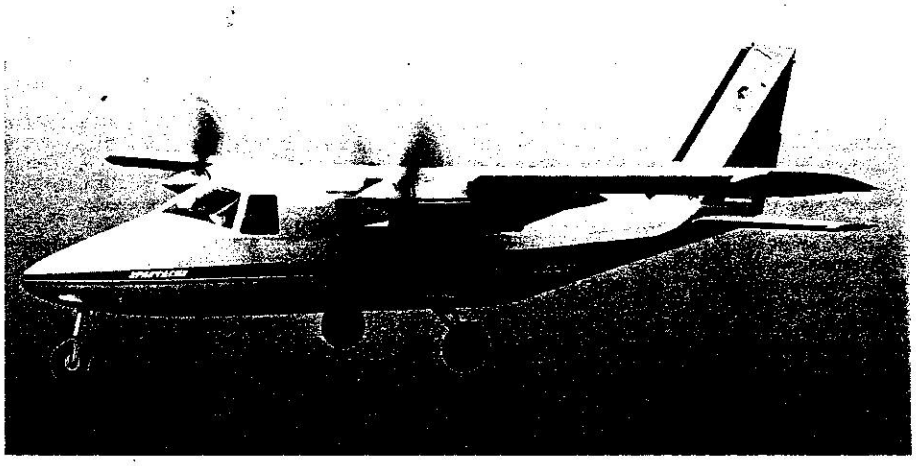
ARMAMENT AND OPERATIONAL EQUIPMENT (military version): Two underwing hardpoints, each of 182 kg (400 lb) capacity, with standard NATO MA-4A racks. Typical loads may include two SUU-11B/A 7·62 mm Minigun pods, four LAU-32B/A rocket launchers (each containing seven rockets), two 400 lb bombs, flare dispensers, air-to-surface missiles, supply containers, or auxiliary fuel tanks.

DIMENSIONS, EXTERNAL:

Wing span	12·00 m (39 ft 4½ in)
Wing chord, constant	1·55 m (5 ft 1 in)
Wing aspect ratio	7·742
Length overall	9·90 m (32 ft 5¾ in)
Length of fuselage	8·71 m (28 ft 7 in)



Partenavia Spartacus twin-turboprop general purpose transport *(Pilot Press)*



Partenavia AP 68TP-300 Spartacus (two Allison 250-B17C turboprop engines)

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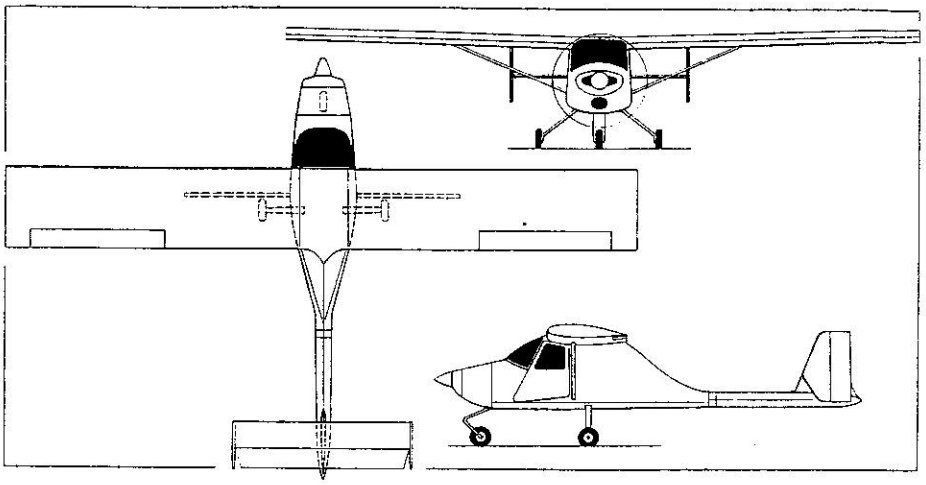
Max T-O weight: A	480 kg (1,058 lb)
B	520 kg (1,146 lb)
PERFORMANCE (estimated):	
Max level speed at S/L:	
A	97 knots (180 km/h; 112 mph)
B	102 knots (190 km/h; 118 mph)
Cruising speed (70% power) at 2,285 m (7,500 ft):	
A	86 knots (160 km/h; 99 mph)
B	92 knots (170 km/h; 105 mph)
Stalling speed, flaps up:	
A	40 knots (73 km/h; 46 mph)
B	42 knots (76 km/h; 48 mph)
Stalling speed, flaps down:	
A	35 knots (64 km/h; 40 mph)
B	37 knots (67 km/h; 42 mph)
Max rate of climb at S/L: A	198 m (650 ft)/min
B	234 m (768 ft)/min
Service ceiling: A	3,505 m (11,500 ft)
B	3,995 m (13,100 ft)
T-O to 15 m (50 ft): A	366 m (1,200 ft)
B	315 m (1,033 ft)
Landing run: A	105 m (345 ft)
B	120 m (394 ft)
Endurance: A	4 h 48 min
B	4 h 12 min



Partenavia P.86 Mosquito two-seat light aircraft *(Pilot Press)*

PIAGGIO

INDUSTRIE AERONAUTICHE E MECCANICHE RINALDO PIAGGIO SpA

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WORKS: Genoa and Finale Ligure
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VICE-PRESIDENT: Ing Umberto Barnato
DIRECTOR OF INTERNATIONAL PROGRAMMES: Ing Bruno Mori
DIRECTOR OF OPERATIONS: Ing Roberto Vianson
TECHNICAL DIRECTOR, AIRCRAFT: Ing Alessandro Mazzoni
MARKETING DIRECTOR: Commander G. B. Pizzinato

The original Piaggio company began the construction of aeroplanes in its Genoa-Sestri plant in 1916, and later in the Finale Ligure works. The present company was formed on 29 February 1964, and has since operated as an independent concern. It employs about 1,500 people and has a total covered works area (Genoa-Sestri and Finale Ligure) of approx 100,000 m² (1,076,390 sq ft). In addition to building aircraft of its own design, Piaggio is producing components for the Aeritalia G222, Panavia Tornado, Boeing 767 and McDonnell Douglas DC-10.

The company is organised into two production Divisions: the activities of the Aero-Engine Division are described in the appropriate section of this edition.

GATES/PIAGGIO GP-180 AVANTI

Details of this twin-turboprop corporate transport can be found in the International part of this section.

R. PIAGGIO P.166-DL3

The P.166 has been produced in several basic versions, of which the original piston engined P.166 was described in the 1963-64 *Jane's*; the P.166M, P.166B Portofino and P.166C in the 1971-72 *Jane's*; the P.166S in the 1974-75 *Jane's*; and the P.166-DL2 in the 1978-79 *Jane's*.

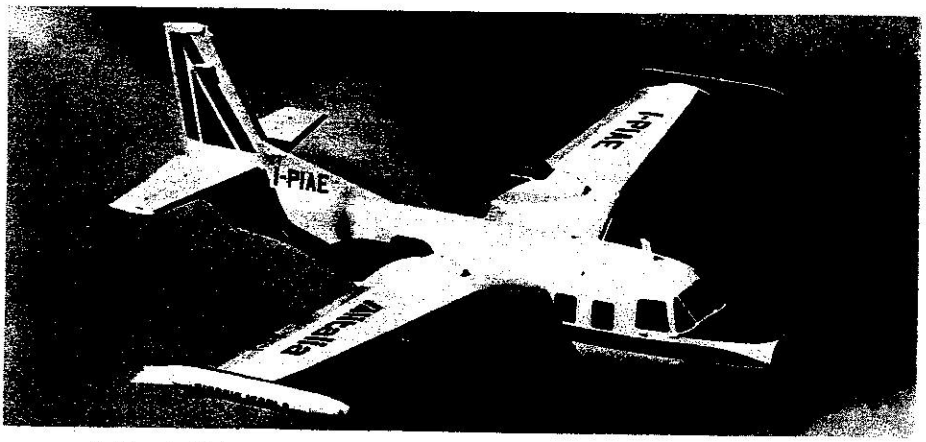
Current version is the turboprop powered P.166-DL3, which flew for the first time on 3 July 1976, and received FAA and RAI certification in 1978. It can be configured and equipped for a wide variety of duties, including executive transport (EXC); transport and dropping of up to ten paratroops (PAR); air ambulance for two stretchers and two medical attendants (AMB); multi-engine aircrew training (MTR); light tactical transport (LTT); armed military counter-insurgency, field support, and search and rescue (AML); maritime reconnaissance (MAR); environmental control and geophysical survey (ECS); aerophotogrammetry (APH); and aerial firefighting (AFF). Piaggio is currently building a batch of 16 P.166-DL3s, of which 12 had been completed by February 1985: two for Alitalia, four for the Somali Air Force, and six (in APH configuration) for the Aeronautica Militare Italiana.

TYPE: Twin-turboprop light transport.

WINGS: Shoulder gull-wing cantilever monoplane. NACA 230 wing section. Dihedral 2° 30' on inner portion, 2° 30' on outer wings. Incidence 2° 43' at root. Sweepback 7° 30' at quarter-chord. Aluminium alloy flush riveted torsion box structure, with single main spar and auxiliary rear spar. All-metal slotted ailerons, with geared and trim tab in starboard aileron. All-metal hydraulically actuated slotted flaps. Rubber boot leading-edge de-icing optional.

FUSELAGE: Aluminium alloy flush riveted semi-monocoque structure of frames and L section extruded stringers: no longerons.

TAIL UNIT: Cantilever aluminium alloy structure, with flush riveted smooth skin on fixed surfaces and beaded skin on control surfaces. Rudder and elevators statically and dynamically balanced. Geared and trim tabs in elevators; trim tab in rudder. Rubber boot leading-edge de-icing of fin and tailplane optional.



R. Piaggio P.166-DL3 MTR twin-turboprop aircrew trainer in the insignia of Alitalia

LANDING GEAR: Retractable tricycle type. Magnaghi oleo-pneumatic shock absorbers in all units. Hydraulic actuation. Nosewheel retracts rearward, main units upward. Goodyear 24 × 7·7 mainwheels with size 8·50-10 tyres, pressure 3·79 bars (55 lb/sq in). Goodyear steerable and self-centering nosewheel with size 6·00-6 tyre, pressure 2·90 bars (42 lb/sq in). Goodyear or Magnaghi hydraulic brakes.

POWER PLANT: Two Avco Lycoming LTP 101-700 turboprop engines, each flat rated at 447·5 kW (600 shp) and driving a Hartzell HC-B3TN-3DL/LT10282-9·5 three-blade constant-speed fully-feathering metal pusher propeller. Fuel in two 212 litre (46·5 Imp gallon) outer-wing main tanks, two 323 litre (71 Imp gallon) wingtip tanks, and a 118 litre (26 Imp gallon) fuselage collector tank; total standard internal fuel capacity 1,188 litres (261 Imp gallons). Auxiliary fuel system available optionally, comprising a 236 litre (52 Imp gallon) fuselage tank, transfer pump and controls; with this installed, total usable fuel capacity is increased to 1,424 litres (313 Imp gallons). Gravity refuelling points in each main tank and tip-tank. Provision for two 177 or 284 litre (39 or 62·5 Imp gallon) underwing drop tanks. Air intakes and propeller blades de-iced by engine exhaust.

ACCOMMODATION: Crew of two on raised flight deck, with dual controls. Aft of flight deck, accommodation consists of a passenger cabin, utility compartment and baggage compartment. Access to flight deck is via passenger/cargo double door on port side, forward of wing, or via individual crew door on each side of flight deck. External access to baggage compartment via port side door aft of wing. Passenger cabin extends from rear of flight deck to bulkhead at wing main spar; fitting of passenger carrying, cargo or other interiors is facilitated by two continuous rails on cabin floor, permitting considerable flexibility in standard or customised interior layouts. Standard seating for eight passengers, with individual lighting, ventilation and oxygen controls. Flight deck can be separated from passenger cabin by a screen. Door in bulkhead at rear of cabin provides access to utility compartment, in which can be fitted a toilet, bar, or mission equipment for certain roles. Entire accommodation is heated, ventilated and soundproofed. Emergency exit forward of wing on starboard side. Windscreen hot-air demisting standard. Windscreen wipers, washers and methanol spray de-icing optional.

SYSTEMS: Hydraulic system, pressure 127 bars (1,840 lb/sq in), for landing gear, flap and brake actuation, nosewheel steering and lock, and (on APH version) actuation of ventral door. Handpump for emergency extension of landing gear. Standard electrical system is 28V DC, supplied by two engine driven starter/generators and a nickel-cadmium battery. External power receptacle. Static or rotary inverters, to supply AC power for avionics and instruments, available optionally. Oxygen system.

AVIONICS: Standard avionics packages available to individual customer's requirements: minimum recommended package includes two VHF com, two VHF nav (VOR/ILS), ADF, ATC transponder, compass system and intercom. Optional avionics include radar, autopilot, navigation system and synthesiser type HF radio.

EQUIPMENT: According to mission configuration. Quickly interchangeable individual seats of various types, bench seat, divan or stretchers for EXC, PAR, AMB, MTR and LTT versions; strengthened floor in LTT. Four underwing pylons standard on AML, for ordnance, supply containers and auxiliary fuel tanks. Four pylons and integrated search/detection/identification/plotting and reporting system on MAR. Magnetometer, multiscanner, multiple-head camera and associated equipment in ECS version. Two cameras, associated equipment, and ventral sliding door in APH, with option for four underwing pylons. Internal removable water/extinguisher container and rapid charge/discharge system for AFF.

DIMENSIONS, EXTERNAL:	
Wing span: without tip tanks	13·51 m (44 ft 4 in)
with tip tanks	14·69 m (48 ft 2½ in)
Wing chord: at root	2·40 m (7 ft 10½ in)
at tip	1·15 m (3 ft 9¼ in)
Wing aspect ratio	7·3
Length overall	11·88 m (39 ft 0 in)
Height overall	5·00 m (16 ft 5 in)
Tailplane span	5·10 m (16 ft 9 in)
Wheel track	2·66 m (8 ft 9 in)
Wheelbase	4·71 m (15 ft 5½ in)
Propeller diameter	2·36 m (7 ft 9 in)
Cabin door: Height	1·38 m (4 ft 6 in)
Width	1·28 m (4 ft 2 in)
DIMENSIONS, INTERNAL:	
Cabin, incl flight deck: Length	3·20 m (10 ft 6 in)
Max width	1·57 m (5 ft 2 in)
Max height	1·76 m (5 ft 9 in)
Floor area	5·14 m² (55·3 sq ft)
Volume	6·63 m³ (234·1 cu ft)

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Fuselage: Max width	1·20 m (3 ft 11¼ in)
Height overall	3·65 m (11 ft 11¾ in)
Tailplane span	4·01 m (13 ft 2 in)
Wheel track	2·40 m (7 ft 10½ in)
Wheelbase	3·80 m (12 ft 5½ in)
Propeller diameter	2·03 m (6 ft 8 in)
Propeller ground clearance	0·74 m (2 ft 5 in)
Distance between propeller centres	4·03 m (13 ft 2¾ in)
Passenger door (port): Height	1·03 m (3 ft 4½ in)
Width	0·80 m (2 ft 7½ in)
Height to sill	0·65 m (2 ft 1½ in)
Passenger/emergency door (stbd):	
Height	0·95 m (3 ft 1½ in)
Width	0·90 m (2 ft 11½ in)
Height to sill	0·65 m (2 ft 1½ in)

DIMENSIONS, INTERNAL:

Cabin:	
Length, excl flight deck and baggage compartment	2·95 m (9 ft 8 in)
Max width	1·12 m (3 ft 8 in)
Max height	1·20 m (3 ft 11¾ in)
Floor area	3·30 m² (35·52 sq ft)
Volume	4·00 m³ (141·26 cu ft)
Baggage compartment volume	0·55 m³ (19·42 cu ft)

AREAS:

Wings, gross	18·60 m² (200·2 sq ft)
Ailerons (total)	1·76 m² (18·94 sq ft)
Trailing-edge flaps (total)	2·42 m² (26·05 sq ft)
Fin	2·90 m² (31·22 sq ft)
Rudder, incl tab	1·64 m² (17·65 sq ft)
Tailplane	3·76 m² (40·47 sq ft)
Elevators (total)	1·30 m² (13·99 sq ft)

WEIGHTS AND LOADINGS:

Weight empty, equipped	1,490 kg (3,285 lb)
Max fuel load	640 kg (1,411 lb)
Max payload	834 kg (1,838 lb)
Max T-O weight	2,600 kg (5,732 lb)
Max ramp weight	2,625 kg (5,787 lb)
Max landing weight	2,470 kg (5,445 lb)
Max zero-fuel weight	2,404 kg (5,300 lb)
Max wing loading	139·8 kg/m² (28·6 lb/sq ft)
Max power loading	5·32 kg/kW (8·73 lb/shp)

PERFORMANCE (at max T-O weight):

Max operating speed	200 knots (370 km/h; 230 mph) IAS
Max level and max cruising speed at 3,050 m (10,000 ft)	210 knots (389 km/h; 242 mph)
Econ cruising speed at 4,575 m (15,000 ft)	172 knots (319 km/h; 198 mph)
Stalling speed: flaps up	80 knots (149 km/h; 93 mph)
flaps down	66 knots (123 km/h; 76 mph)
Max rate of climb at S/L	627 m (2,057 ft)/min
Rate of climb at S/L, one engine out	158 m (520 ft)/min
Service ceiling	7,620 m (25,000 ft)
Service ceiling, one engine out	4,575 m (15,000 ft)
T-O run	232 m (760 ft)
T-O to 15 m (50 ft)	387 m (1,270 ft)
Landing from 15 m (50 ft)	436 m (1,430 ft)
Landing run	241 m (790 ft)
Range at 180 knots (333 km/h; 207 mph) at 3,660 m (12,000 ft), allowances for start, taxi, take-off, descent, and 45 min reserves at long-range power:	
with max payload	340 nm (630 km; 391 miles)
with max fuel	870 nm (1,612 km; 1,002 miles)

PARTENAVIA AP 68TP-600 VIATOR (WAYFARER)

The first retractable landing gear version of the Spartacus (I-RAIZ, c/n 6) made its initial flight in early July 1984. It was followed on 29 March 1985 by a prototype of the Viator (I-RAIL, previously known as the Spartacus 10), which has a longer fuselage than the fixed-gear AP 68TP-300, seating two additional passengers.

Certification of the Viator was expected by the end of 1985, and an initial order for two, by an African customer, has been reported. A **Viator MP**, developed primarily to meet an Italian Coast Guard maritime patrol requirement, was announced at the 1985 Paris Air Show. This would be equipped with a PPI 25 radar system incorporating 360° search and SLAR antennae and other LRUs (line-replaceable units) derived from the APS-705.

The following description applies to the civil Viator, except where indicated:

TYPE: Twin-turboprop general purpose transport.

WINGS, FUSELAGE AND TAIL UNIT: As for AP 68TP-300, except for lengthened fuselage.

LANDING GEAR: Retractable tricycle type, with electrically controlled hydraulic actuation. Oleo-pneumatic shock absorber in each unit. Nosewheel retracts forward, mainwheels inward into fuselage fairing. Wheels as for AP 68TP-300, but with McCreary 8-ply tyres, sizes 6·50-8 (main) and 6·00-6 (nose). Mainwheel tyre pressure 4·83 bars (70 lb/sq in). Cleveland disc brakes. No anti-skid units.

POWER PLANT: As for AP 68TP-300.

ACCOMMODATION: Standard club seating for pilot and nine passengers, in four rows of two seats (second and fourth rows rearward facing) plus a rear bench seat for two persons. Forward opening door on starboard side of flight deck, and for second/third row passengers on port side at centre of cabin. Double door (starboard, rear) provides access for rear seat passengers, and to 181 kg (400 lb) capacity baggage compartment aft of rear bench seat, and serves also as an emergency exit. With all passenger seats removed and special kits installed, up to 12 parachutists, or two stretcher patients plus two medical attendants, can be carried in cabin. Viator MP carries a pilot and three systems operators. Dual controls, and cabin heating, ventilation and soundproofing, are standard. Hot air for cabin heating and windscreen de-icing is provided by a Janitrol 45,000 BTU combustion heater installed in the fuselage nose.

SYSTEMS, AVIONICS AND EQUIPMENT: As described for AP 68TP-300.

ARMAMENT (optional): As described for AP 68TP-300, plus two 7·62 mm machine-guns installed on the landing gear pods.

DIMENSIONS, EXTERNAL: As for AP 68TP-300 Spartacus, except:

Length overall: Viator	10·85 m (35 ft 7¼ in)
Viator MP	11·55 m (37 ft 10¾ in)
Length of fuselage: Viator	9·66 m (31 ft 8¼ in)
Height overall	3·64 m (11 ft 11¼ in)
Wheel track	2·167 m (7 ft 1¼ in)
Wheelbase	3·51 m (11 ft 6¼ in)
Propeller ground clearance	0·725 m (2 ft 4½ in)
Passenger door (port):	
Height to sill	0·71 m (2 ft 4 in)
Passenger/emergency door (stbd):	
Height (mean)	0·91 m (2 ft 11½ in)
Width	1·10 m (3 ft 7¼ in)
Height to sill	0·79 m (2 ft 7 in)

DIMENSIONS, INTERNAL:

Cabin, excl flight deck and baggage compartment:	
Length	3·60 m (11 ft 9¾ in)
Floor area	4·00 m² (43·06 sq ft)
Volume	4·70 m³ (165·98 cu ft)
Baggage compartment volume	0·65 m³ (22·95 cu ft)

AREAS: As for AP 68TP-300 Spartacus

WEIGHTS AND LOADINGS:

Basic weight empty: Viator	1,560 kg (3,439 lb)
Viator MP	1,780 kg (3,924 lb)
Max fuel load	680 kg (1,499 lb)
Max payload: Viator	990 kg (2,182 lb)
Viator MP	770 kg (1,697 lb)
Max T-O and landing weight	2,850 kg (6,283 lb)
Max ramp weight	2,875 kg (6,338 lb)
Max zero-fuel weight	2,550 kg (5,622 lb)
Max wing loading	153·23 kg/m² (31·38 lb/sq ft)
Max power loading	5·93 kg/kW (9·59 lb/shp)

PERFORMANCE (at max T-O weight):

Max operating speed	200 knots (370 km/h; 230 mph) IAS
Max level and max cruising speed at 3,660 m (12,000 ft)	220 knots (408 km/h; 253 mph)
Econ cruising speed at 3,660 m (12,000 ft)	175 knots (324 km/h; 202 mph)
Stalling speed, power off:	
flaps up	83 knots (154 km/h; 96 mph)
flaps down	69 knots (128 km/h; 80 mph)
Max rate of climb at S/L	589 m (1,932 ft)/min
Rate of climb at S/L, one engine out	131 m (430 ft)/min
Max operating altitude	7,620 m (25,000 ft)
Service ceiling, one engine out	3,355 m (11,000 ft)
T-O run	275 m (900 ft)
T-O to 15 m (50 ft)	460 m (1,510 ft)
Landing from 15 m (50 ft)	490 m (1,610 ft)
Landing run	250 m (820 ft)
Min ground turning radius	10·36 m (34 ft 0 in)
Range at long-range power, allowances for start, taxi, take-off, descent, and 45 min reserves:	
with max payload	445 nm (824 km; 512 miles)
with max fuel	875 nm (1,621 km; 1,008 miles)
Range (Viator MP) with 395 kg (870 lb) payload and auxiliary fuel, at 3,660 m (12,000 ft), 45 min reserves:	
at 215 knots (398 km/h; 247 mph) max continuous cruising speed	1,006 nm (1,865 km; 1,158 miles)
at 170 knots (315 km/h; 196 mph) long-range cruising speed	1,264 nm (2,344 km; 1,456 miles)

PARTENAVIA P.86 MOSQUITO

A prototype of this new Partenavia design was due for completion by the end of 1985. Of high-wing configuration, with side by side seats for two persons, it is designed to conform to FAR Pt 23 and proposed with a choice of 48·5 kW (65 hp) or 56 kW (75 hp) flat-four engine.

General appearance of the Mosquito is shown in an accompanying three-view drawing. The wings are single-spar and braced each side by a single strut, and the fuselage consists of a two-shell glassfibre pod built up over a tubular metal keel which serves also as the tailboom. Extensive use is made of composites for the secondary structures.

DIMENSIONS, EXTERNAL (approx):

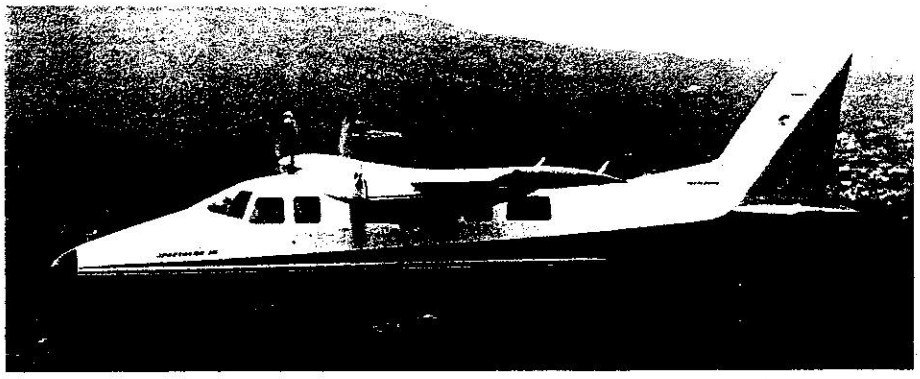
Wing span	10·00 m (32 ft 9¾ in)
Length overall	6·87 m (22 ft 6½ in)
Height overall	2·85 m (9 ft 4¼ in)

AREA (approx):

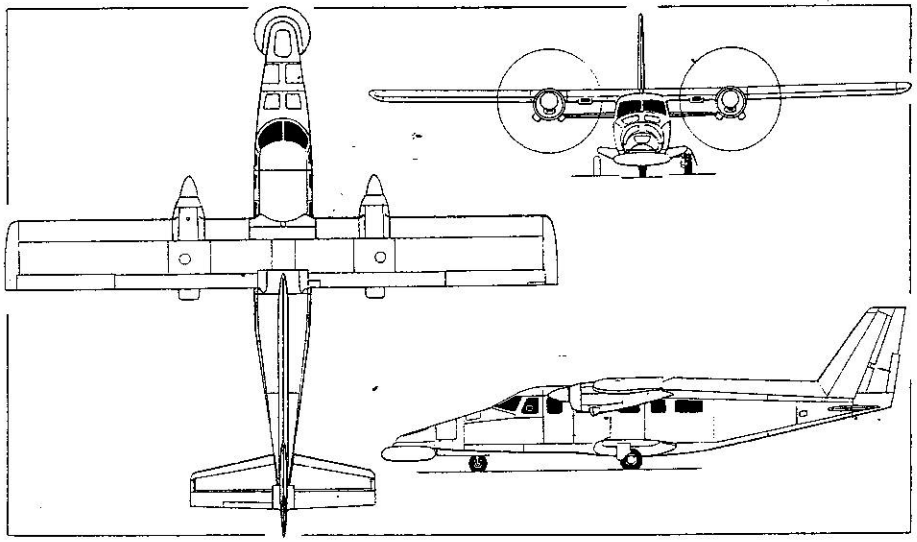
Wings, gross	12·50 m² (135·2 sq ft)

WEIGHTS (approx: A with 65 hp engine, B with 75 hp):

Weight empty: A	280 kg (617 lb)



Partenavia Viator, a 'stretched' version of the Spartacus with retractable landing gear



Partenavia Viator MP maritime patrol aircraft (*Pilot Press*)

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Utility compartment: Length	0·65 m (2 ft 1½ in)
Max width	1·52 m (5 ft 0 in)
Max height	1·70 m (5 ft 7 in)
Volume	2·27 m³ (80·2 cu ft)
Baggage compartment volume	1·80 m³ (63·6 cu ft)
AREAS:	
Wings, gross	26·56 m² (285·9 sq ft)
Ailerons (total)	1·95 m² (21·00 sq ft)
Trailing-edge flaps (total)	2·38 m² (25·60 sq ft)
Fin	1·62 m² (17·44 sq ft)
Rudder, incl tab	1·23 m² (13·24 sq ft)
Tailplane	3·50 m² (37·67 sq ft)
Elevators, incl tabs	1·29 m² (13·88 sq ft)
WEIGHTS AND LOADINGS:	
Weight empty, equipped	2,650 kg (5,842 lb)
Max fuel	1,139 kg (2,511 lb)
Max payload	1,073 kg (2,365 lb)
Max T-O weight	4,300 kg (9,480 lb)
Max ramp weight	4,320 kg (9,524 lb)
Max zero-fuel weight	3,800 kg (8,377 lb)
Max landing weight	3,800 kg (8,377 lb)
Max wing loading	162 kg/m² (33·2 lb/sq ft)
Max power loading	4·81 kg/kW (7·9 lb/shp)

PERFORMANCE (at max T-O weight except where indicated):

Never-exceed speed: 220 knots (407 km/h; 253 mph) CAS

Max level and max cruising speed at 3,050 m (10,000 ft): 215 knots (400 km/h; 248 mph)

Econ cruising speed at 3,660 m (12,000 ft): 162 knots (300 km/h; 186 mph)

Stalling speed:

flaps and landing gear up: 86 knots (160 km/h; 99 mph) CAS

flaps and landing gear down: 75 knots (139 km/h; 87 mph) CAS

Max rate of climb at S/L: 670 m (2,200 ft)/min

Rate of climb at S/L, one engine out: 177 m (580 ft)/min

Service ceiling: 8,535 m (28,000 ft)

Service ceiling, one engine out: 4,270 m (14,000 ft)

T-O to 15 m (50 ft): 665 m (2,180 ft)

Landing from 15 m (50 ft) at max landing weight: 457 m (1,500 ft)

Range, VFR:

with max payload: 750 nm (1,390 km; 863 miles)

with max fuel: 1,125 nm (2,084 km; 1,295 miles)

PROCAER

PROGETTI COSTRUZIONI AERONAUTICHE Srl

Viale Gramsci 2, 20091 Bresso (Milan)
Telephone: 6105742

PRESIDENT: Dott Ing Rico Neeff

PROCAER/GENERAL AVIA F15F

The F15F was derived from the earlier F15E Picchio, designed by Dott Ing Stelio Frati; both types have been described in previous editions of *Jane's*. The F15F first flew in 1977 and received Italian certification in 1981, but was lost in a crash due to pilot error in October 1984. Attempts are continuing to be made to find an industrial partner to market the aircraft in either piston or turboprop engined form in 1985-86.

JAPAN

FUJI

FUJI HEAVY INDUSTRIES LTD (Fuji Jukogyo Kabushiki Kaisha)

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Yasuyuki Kogure (Manager, Aircraft Sales Dept)

Utsunomiya Manufacturing Division

Yasumasa Honda (Division Manager, and Manager of Aircraft Plant)
Akitoshi Nagao (Manager, Aircraft Engineering Division)

Fuji Heavy Industries Ltd was established on 15 July 1953. It is a successor to the Nakajima aircraft company, which was established in 1917 and built 25,935 aircraft up to the end of the second World War.

The present Utsunomiya Manufacturing Division (Aircraft and Rolling Stock Plants) occupies a site of 531,541 m² (5,721,455 sq ft) including a floor area of 187,301 m² (2,016,090 sq ft) and in 1985 employed 3,084 people.

Under licence from Cessna, Fuji produced 22 L-19E Bird Dog observation aircraft for the Japan Ground Self-Defence Force. Under licence from Beech, it built also the Beechcraft Mentor, and several modified versions of the Mentor designated LM-1 Nikko, LM-2, KM, KM-2, KM-2B (JASDF T-3) and TL-1, as detailed in previous editions of *Jane's*. The KM-2D, a turboprop version of the KM-2B, is under development.

Fuji is currently producing the Bell Model 204/205 series and AH-1S HueyCobra helicopters, as described in this entry. It is building wing main assemblies for the Lockheed P-3C Orion maritime patrol aircraft being manufactured under licence in Japan for the JMSDF, and main landing gear doors and some titanium airframe parts for Japanese built McDonnell Douglas F-15J fighters delivered to the JASDF. As a part of Japan's YX civil transport aircraft programme, Fuji is responsible, under subcontract through the JADC (Japan Aircraft Development Corporation), for building wing/fuselage body fairings and main landing gear doors for the Boeing 767 jet transport.

Fuji KM-2D prototype conversion of KM-2 to turboprop power

FUJI FA-200 AERO SUBARU

Production of the FA-200 began in March 1968, and 298 had been completed by 1 February 1982, of which more than 170 were for export. No further examples had been sold by early 1985, but the aircraft remains available to order. A full description of all versions can be found in the 1979-80 *Jane's*.

FUJI KM-2D

In 1984 Fuji refitted a company owned KM-2 with an Allison 250-B17D turboprop in place of the Avco Lycoming IGSO-480 piston engine. First flight in KM-2D form took place on 28 June 1984, and JCAB certification (Aerobatic and Utility categories) was gained in February 1985. Fifty KM-2Bs are currently in service with the JASDF (designated T-3), and Fuji is proposing that this fleet be re-engined with turboprops for redelivery from 1987.

The KM-2B tandem two-seat trainer was last described in full in the 1981-82 *Jane's*; the prototype KM-2D (see accompanying photograph) has the four-seat cabin of the original KM-2, which was described in the 1969-70 edition. Main differences in the KM-2D are as follows:

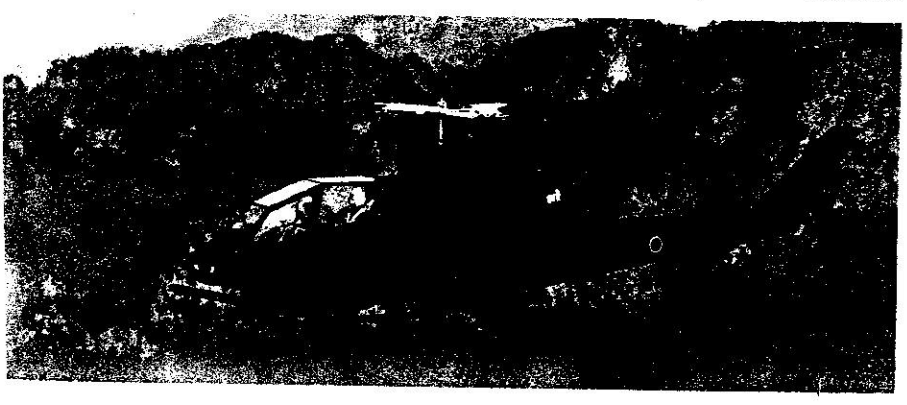
POWER PLANT: One Allison 250-B17D turboprop engine, flat rated at 261 kW (350 shp), driving a Hartzell HC-B3TF-7A/T10173-18 three-blade propeller. Total fuel capacity 266 litres (70 US gallons), comprising one 95 litre (25 US gallon) and one 38 litre (10 US gallon) tank in each wing. Oil capacity 10 litres (2·7 US gallons).

SYSTEM: Electrical system (30V DC) powered by 150A starter/generator and a 24V 22Ah nickel-cadmium battery.

AVIONICS: King VHF, VOR, ADF, ATC transponder and DME.

DIMENSIONS, EXTERNAL:	
Wing span	10·04 m (32 ft 11¼ in)
Length overall	8·43 m (27 ft 8 in)
Height overall	2·96 m (9 ft 8½ in)
Propeller diameter	2·12 m (6 ft 11½ in)
AREAS: As for KM-2 except:	
Fin	2·00 m² (21·53 sq ft)
Rudder, incl tab	0·66 m² (7·10 sq ft)

WEIGHTS AND PERFORMANCE: No details received



FUJI-BELL 204B-2 and UH-1H

Japanese designation: HU-1H

Fuji is manufacturing Bell Model 204B-2 and UH-1H helicopters under sublicence from Mitsui and Co Ltd, Bell's Japanese licensee. The first 204B arrived in Japan in kit form in May 1962 for assembly, and 34 commercial 204Bs were built before being replaced by the current B-2 model in 1974.

Fuji developed the higher powered Model 204B-2 in October 1973. Powered by a 1,044 kW (1,400 shp) Kawasaki built Avco Lycoming KT53I3B turboshaft engine, it has the same basic airframe and dynamic components as the 204B, but has a tractor tail rotor. The first

LANDING GEAR: First prototype has non-retractable tricycle type, with steerable nosewheel. Oleo shock absorbers. Faired main legs.

POWER PLANT: One 86.5 kW (116 hp) Textron Lycoming O-235-2NC flat-four engine, driving a two-blade wooden propeller with large spinner. 119 kW (160 hp) O-320-D2A optional, but installed in second prototype. Fuel capacity 135 litres (35.7 US gallons; 29.7 Imp gallons).

ACCOMMODATION: Two seats side by side under a sliding canopy.

AVIONICS: Bendix/King Silver Crown nav/com, ADF, audio console and transponder.

DIMENSIONS, EXTERNAL:

Wing span	8.50 m (27 ft 10¾ in)
Wing chord: at root	1.589 m (5 ft 2½ in)
at tip	0.876 m (2 ft 10½ in)
Wing aspect ratio	6.69
Length overall	7.30 m (23 ft 11½ in)
Height overall	2.84 m (9 ft 3¾ in)
Tailplane span	3.00 m (9 ft 10 in)
Wheel track	2.90 m (9 ft 6¼ in)
Wheelbase	1.86 m (6 ft 1¼ in)
Propeller diameter	1.78 m (5 ft 10 in)

AREAS:

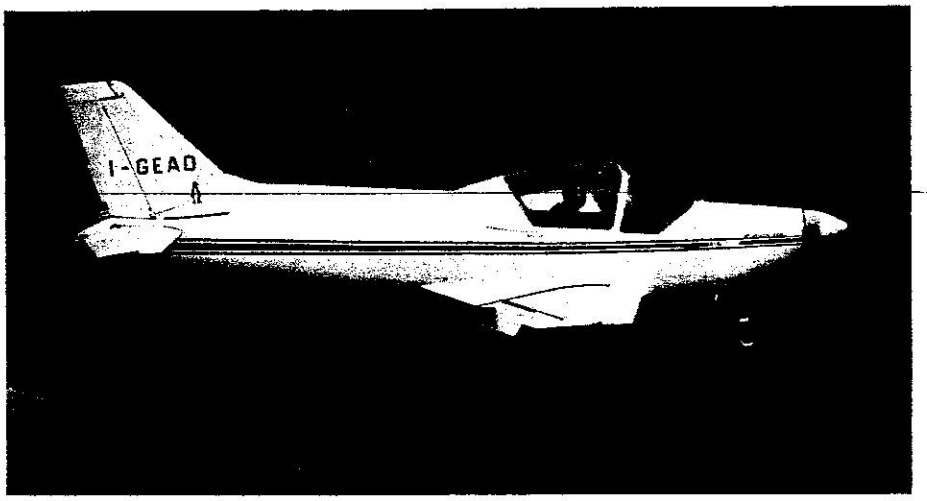
Wings, gross	10.82 m² (116.25 sq ft)
Fin	0.738 m² (7.94 sq ft)
Rudder	0.505 m² (5.44 sq ft)
Tailplane	1.24 m² (13.35 sq ft)
Elevator, incl tab	1.02 m² (10.98 sq ft)

WEIGHTS AND LOADINGS:

Weight empty, equipped	520 kg (1,146 lb)
Max T-O weight: Aerobatic	750 kg (1,653 lb)
Utility	800 kg (1,764 lb)
Max wing loading: Aerobatic	69.4 kg/m² (14.22 lb/sq ft)
Utility	74.1 kg/m² (15.17 lb/sq ft)
Max power loading: Utility	9.25 kg/kW (15.21 lb/hp)

PERFORMANCE (86.5 kW; 116 hp engine):

Max level speed at S/L	129 knots (240 km/h; 149 mph)
Cruising speed at 1,830 m (6,000 ft)	119 knots (220 km/h; 137 mph)
Stalling speed, flaps down	49 knots (90 km/h; 56 mph)
Max rate of climb at S/L	258 m (845 ft)/min
Service ceiling	4,270 m (14,000 ft)
T-O run	240 m (790 ft)
Landing run	160 m (525 ft)
Max range, no reserves	539 nm (1,000 km; 621 miles)



First General Avia F.22 Pinguino *(Editoriale Domus-Volare)*

GENERAL AVIA F.3500 SPARVIERO (HAWK)

Design of this twin-turbofan commuter transport began in 1983; its general appearance is shown in an accompanying illustration. The possibility of a manufacturing partnership was explored in 1985 but the project was subsequently halted while work continued on other programmes. However, in 1988 construction of a fuselage began.

The Sparviero will be of conventional aluminium alloy construction, with flush riveted skin. The retractable landing gear will be actuated hydraulically, with a steerable nosewheel. Accommodation in the pressurised fuselage will be for a flight crew of two plus up to 19 passengers and a galley unit; intended max pressure differential is 0.32 bars (4.6 lb/sq in).

POWER PLANT: Two 13.34 kN (3,000 lb st) Pratt & Whitney Canada JT15D-5 turbofan engines, in underwing pods. Fuel capacity 3,500 litres (924.6 US gallons; 770 Imp gallons).

DIMENSIONS, EXTERNAL:

Wing span	19.40 m (63 ft 7¾ in)
Wing aspect ratio	10.04
Length overall	15.20 m (49 ft 10½ in)
Height overall	5.60 m (18 ft 4½ in)
Tailplane span	6.40 m (21 ft 0 in)

DIMENSIONS, INTERNAL:

Cabin: Length	6.60 m (21 ft 8 in)
Max width	1.80 m (5 ft 10¾ in)
Max height	1.80 m (5 ft 10¾ in)

AREA:

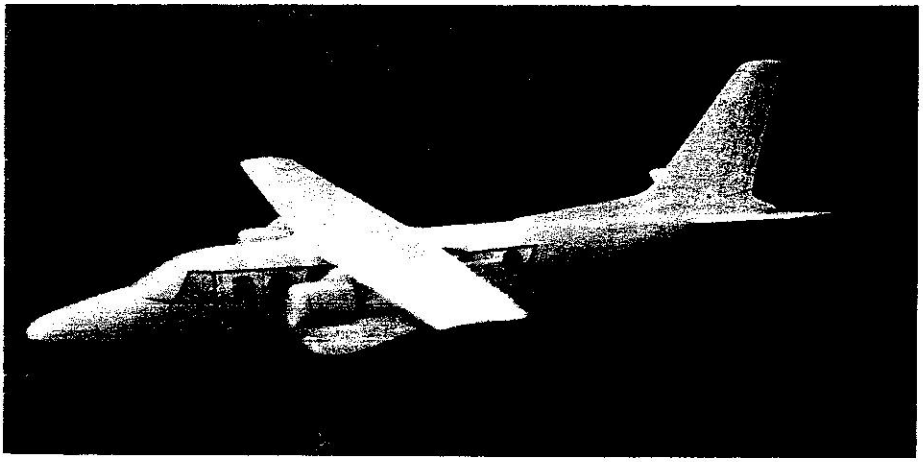
Wings, gross	37.50 m² (403.65 sq ft)

WEIGHTS AND LOADINGS (estimated):

Weight empty, equipped	4,800 kg (10,582 lb)
Max T-O weight	8,500 kg (18,740 lb)
Max wing loading	226.6 kg/m² (46.43 lb/sq ft)
Max power loading	318.6 kg/kN (3.12 lb/lb st)

PERFORMANCE (estimated, at max T-O weight):

Max level speed at 3,050 m (10,000 ft)	350 knots (648 km/h; 402 mph)
Max cruising speed at 4,575 m (15,000 ft)	315 knots (583 km/h; 362 mph)
Econ cruising speed at 6,100 m (20,000 ft)	280 knots (518 km/h; 322 mph)
Stalling speed, flaps down	70 knots (130 km/h; 81 mph)
Max rate of climb at S/L	762 m (2,500 ft)/min
Rate of climb at S/L, one engine out	228 m (750 ft)/min
Service ceiling	10,670 m (35,000 ft)
Service ceiling, one engine out	5,485 m (18,000 ft)
T-O run	390 m (1,280 ft)
Landing run	365 m (1,198 ft)
Range: max payload	430 nm (796 km; 495 miles)
max fuel	970 nm (1,796 km; 1,116 miles)



Model of the General Avia F.3500 Sparviero commuter transport

GLASFASER

GLASFASER ITALIANA SRL

Via Delle Ghiaie 3, 24030 Valbrembo (Bergamo)
Telephone: 39 (35) 612617

This company, which has specialised in the construction and repair of glassfibre sailplanes, has constructed the prototype of an aerobatic competition aircraft known as the **T-30 Katana**. Test flying was expected to start in January 1990.

Designed by Pietro Terzi, the Katana is powered by a 224 kW (300 hp) Textron Lycoming engine. The fuselage has a glassfibre skin over a metal structure, and the wings are also of metal. Three had been ordered by early 1990.

PARTENAVIA

PARTENAVIA COSTRUZIONI AERONAUTICHE SpA

Via Giovanni Pascoli 7, 80026 Casoria (Naples)
Telephone: 39 (81) 5502111
Telex: 720199 PARTNA I
PRESIDENT: Gen Fulvio Ristori
GENERAL MANAGER AND EXECUTIVE DIRECTOR: Ing Carlo Rosini
TECHNICAL MANAGER: Ing C. A. D'Amato
PRESS RELATIONS: Mrs F. Ridolfi

This company was founded in 1957 and has since built a series of light aircraft designed by its founder, Prof Ing Luigi Pascale. It came under the control of Aeritalia in July 1981 and is now part of that Group.

Since 1974 Partenavia has occupied a 12,000 m² (129,165 sq ft) facility on Capodichino Airport, Naples, where it is concentrating on production of the P.68C and P.68C-TC twin-engined seven-seat light aircraft, a derivative known as the Observer, and the turboprop powered Viator. Development and support of its single-engined designs is now the responsibility of Aviolight (which see).

PARTENAVIA P.68

The original P.68, designed by Prof Ing Luigi Pascale in 1968, was described in the 1975-76 *Jane's*. From it was developed the P.68B Victor twin-engined light transport, which entered production in the Spring of 1974. Details of the P.68B, P.68C-R, P.68 floatplane/amphibian and P.68R can be found in the 1980-81 and earlier editions of *Jane's*.

The following versions are currently in production:

P.68C. Improved version of P.68B, with lengthened nose, increased fuel capacity, and several internal changes. Detailed description applies primarily to this version (also known formerly as the Victor), which superseded the P.68B (1979-80 *Jane's*) in late 1979.

P.68C-TC. Similar to P.68C, but powered currently by Textron Lycoming TIO-360-A1C6D turbocharged engines with fuel injection. Certificated in June 1980. In production. Available as landplane or with twin amphibious floats. (Latter version first flown from land and water on 26 and 27 June 1985 respectively.)

P.68 Observer. Special observation version; described separately.

By the beginning of 1990 Partenavia had delivered approx 400 aircraft of the P.68 series, most of them for export to operators in more than 20 countries.

TYPE: Six/seven-seat light transport and trainer.

WINGS: Cantilever high-wing monoplane. Wing section NACA 63-3$_1$515. Dihedral 1°. Incidence 1° 30'. No sweepback. Stressed skin two-spar torsion box structure of aluminium alloy. All-metal ailerons and electrically operated single-slotted trailing-edge flaps. Hoerner GFRP wingtips. No tabs.

FUSELAGE: Conventional all-metal semi-monocoque structure of frames and longerons, with four main longerons and stressed skin covering. Fuselage/wing intersection mainly of GFRP.

TAIL UNIT: Cantilever stressed skin metal structure. All-moving tailplane, in two symmetrical halves joined by steel cross-tube and of constant chord except for increase at leading-edge roots. Balance tab in tailplane trailing-edge, over 80 per cent of span. Sweptback fin and rudder, with small dorsal fin. Trim tab in rudder.

LANDING GEAR: Non-retractable tricycle type, with steerable nosewheel. Cantilever spring steel main legs. Oleo-

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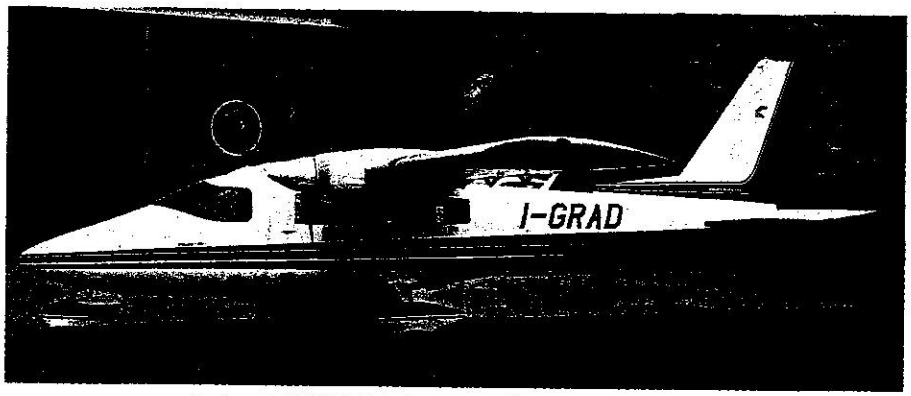
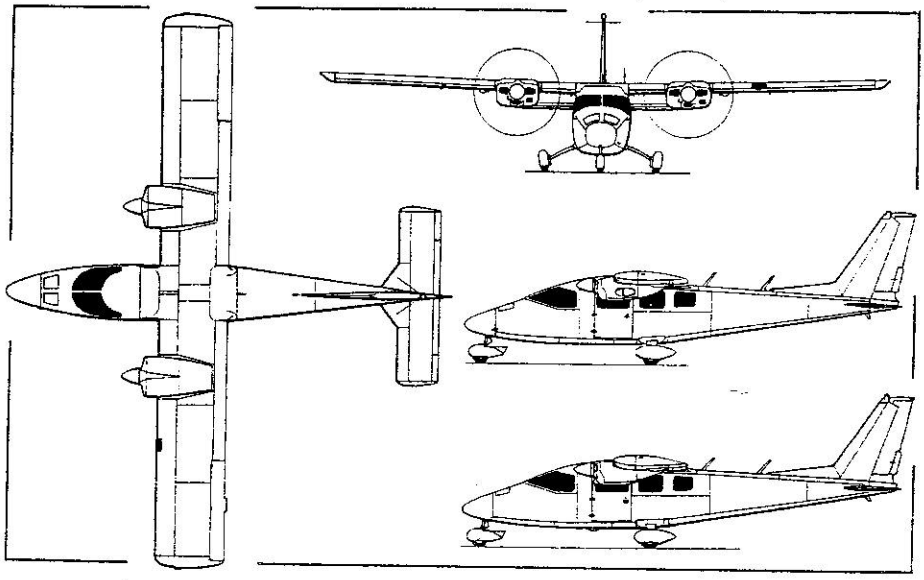


Partenavia P.68C-TC six/seven-seat light aircraft *(Avio Data)*



Partenavia P.68C, with additional side view (centre) of P.68C-TC *(Pilot Press)*

mainwheels, type 40-96, with Pirelli eight-ply tyres size 6.00-6. Goodyear six-ply nosewheel tyre, size 5.00-5. Cleveland type 30-61 hydraulic disc brakes. Parking brake. Streamline wheel fairings standard. C-TC version available optionally with De Vore PK twin-float gear having retractable ground wheels.

POWER PLANT (P.68C): Two 149 kW (200 hp) Textron Lycoming IO-360-A1B6 flat-four engines, each driving a Hartzell HC-C2YK-2C/C-7666A-4 two-blade constant-speed fully-feathering propeller with spinner. Integral fuel tank in each wing, total capacity 538 litres (142 US gallons; 118 Imp gallons), of which 520 litres (137 US gallons; 114 Imp gallons) are usable. Refuelling point above each wing. Oil capacity 15 litres (4 US gallons; 3.3 Imp gallons).

ACCOMMODATION: Seating for seven persons in cabin, including pilot, in two rows of two seats and a rear bench seat for three persons. A club seating arrangement is available optionally, having the two middle seats facing rearward with a folding table between them and the bench seat. Front seats are of the adjustable sliding type. Access to all seats via large forward opening car type door on port side at front of cabin. Up to 181 kg (400 lb) of baggage can be carried in compartment aft of rear bench seat. Access to baggage compartment from inside cabin, or via large forward hinged door on starboard side at rear, which serves also as emergency exit. Two stretchers or other loads can be carried when all passenger seats are removed. Dual controls, cabin heating, ventilation and soundproofing standard.

SYSTEMS: Electrical power supplied by two 24V 70A alternators and a 24V 17Ah battery. No hydraulic system. Goodrich pneumatic de-icing system optional.

AVIONICS AND EQUIPMENT (P.68C): Wide range of Collins Micro Line or Bendix/King Silver Crown avionics, and Edo-Aire Mitchell Century III autopilot, to customer's requirements. Provision for SunAir ASB 100 HF radio. Standard equipment includes airspeed indicator, gyro horizon, directional gyro, two cylinder head temperature gauges, clock, exhaust gas temperature gauge, outside air temperature gauge, rate of climb indicator, sensitive altimeter, electric turn rate indicator, inertia reel shoulder harness for pilot and co-pilot, stall warning system, four upholstered seats with back pockets, and one bench seat with folding back (with safety belts on all seats), cabin fire extinguisher, six individual fresh air outlets and six floor warm air vents, windscreen defrosters, cabin soundproofing, annunciator panel warning lights, two ment panel floodlights with rheostat, anti-collision strobe light, two landing/taxying lights, navigation lights, anti-static kit, external power receptacle, oil coolers with thermostatic control, quick drain fuel and oil valves, and towbar. Optional equipment includes Janitrol 45,000 BTU combustion heater, wing and tail pneumatic de-icing system, electrothermal propeller de-icing system, 0.46 × 0.58 m (18 × 23 in) floor panel for photogrammetric camera, including periscope sight hatch, second airspeed indicator, second gyro horizon, chronometer, second altimeter, pilot's and co-pilot's vertically adjustable seats, alcohol windscreen de-icing, heated stall warning indicator, all-leather interior, forced ventilation blower, ice light and second oil cooler.

DIMENSIONS, EXTERNAL:

Wing span	12.00 m (39 ft 4½ in)
Wing chord (constant)	1.55 m (5 ft 1 in)
Wing aspect ratio	7.7
Length overall	9.55 m (31 ft 4 in)
Height overall	3.40 m (11 ft 1¾ in)
Tailplane span	3.90 m (12 ft 9½ in)
Wheel track	2.40 m (7 ft 10½ in)
Wheelbase	3.50 m (11 ft 5¾ in)
Propeller diameter	1.88 m (6 ft 2 in)
Distance between propeller centres	4.10 m (13 ft 5½ in)
Baggage door, stbd: Height	0.80 m (2 ft 7½ in)
Width	0.80 m (2 ft 7½ in)

DIMENSIONS, INTERNAL:

Cabin: Length	3.58 m (11 ft 9 in)
Max width	1.16 m (3 ft 9½ in)
Max height	1.20 m (3 ft 11¼ in)
Baggage space	0.56 m³ (20 cu ft)

AREAS:

Wings, gross	18.60 m² (200.2 sq ft)
Ailerons (total)	1.79 m² (19.27 sq ft)
Trailing-edge flaps (total)	2.37 m² (25.51 sq ft)
Fin	1.59 m² (17.11 sq ft)
Rudder, incl tab	0.44 m² (4.74 sq ft)
Tailplane, incl tab	4.41 m² (47.47 sq ft)

WEIGHTS AND LOADINGS:

Weight empty: C	1230 kg (2,711 lb)
C-TC	1,300 kg (2,866 lb)
*Max T-O weight: C, C-TC	1,990 kg (4,387 lb)
Max landing weight: C, C-TC	1,890 kg (4,166 lb)
Max wing loading: C, C-TC	107 kg/m² (21.9 lb/sq ft)
Max power loading: C	6.68 kg/kW (10.97 lb/hp)
C-TC	6.36 kg/kW (10.45 lb/hp)

PERFORMANCE (at max T-O weight):

Max level speed:	
C at S/L	174 knots (322 km/h; 200 mph)
C-TC at 5,335 m (17,500 ft)	195 knots (361 km/h; 224 mph)
Max cruising speed (75% power):	
C at 2,290 m (7,500 ft)	166 knots (307 km/h; 191 mph)
C-TC at 6,100 m (20,000 ft)	183 knots (339 km/h; 211 mph)
C-TC at 3,660 m (12,000 ft)	172 knots (318 km/h; 198 mph)
Cruising speed (65% power):	
C at 3,350 m (11,000 ft)	161 knots (298 km/h; 185 mph)
C-TC at 3,050 m (10,000 ft)	158 knots (293 km/h; 182 mph)
Cruising speed (55% power):	
C at 3,660 m (12,000 ft)	150 knots (278 km/h; 173 mph)
C-TC at 3,050 m (10,000 ft)	147 knots (272 km/h; 169 mph)
Stalling speed, flaps up:	
C, C-TC	65 knots (120 km/h; 75 mph)
Stalling speed, flaps down:	
C, C-TC	58 knots (106 km/h; 66 mph)
Max rate of climb at S/L: C	457 m (1,500 ft)/min
C-TC	472 m (1,550 ft)/min
Rate of climb at S/L, one engine out:	
C	82 m (270 ft)/min
C-TC	88 m (290 ft)/min
Service ceiling: C	5,850 m (19,200 ft)
C-TC	7,620 m (25,000 ft)
Service ceiling, one engine out: C	2,100 m (6,900 ft)
C-TC	4,420 m (14,500 ft)
T-O run: C, C-TC	230 m (755 ft)
T-O to 15 m (50 ft): C	396 m (1,300 ft)
C-TC	385 m (1,263 ft)
Landing from 15 m (50 ft): C, C-TC	488 m (1,600 ft)
Landing run: C, C-TC	215 m (705 ft)
Accelerate/stop distance: C	473 m (1,550 ft)
C-TC	510 m (1,673 ft)
Optimum cruising range (C), 45 min reserves:	
75% power at 2,290 m (7,500 ft)	1,050 nm (1,945 km; 1,209 miles)
65% power at 3,350 m (11,000 ft)	1,140 nm (2,112 km; 1,312 miles)
55% power at 3,660 m (12,000 ft)	1,210 nm (2,242 km; 1,393 miles)
Optimum cruising range (C-TC) at 3,660 m (12,000 ft), 45 min reserves:	
75% power	775 nm (1,436 km; 892 miles)
65% power	940 nm (1,742 km; 1,082 miles)
55% power	1,020 nm (1,890 km; 1,175 miles)
Range with max fuel (C-TC):	
65% power at 6,400 m (21,000 ft)	1,100 nm (2,037 km; 1,266 miles)

PARTENAVIA P.68 OBSERVER

Developed originally in collaboration with Sportavia-Pützer of West Germany, the Observer has a forward and downward view for the crew equal to that of a helicopter. The Plexiglas nose, cockpit and associated structure were designed by Sportavia-Pützer; the prototype (D-GERD) was constructed at that company's Dahlemer-Binz factory, and first flew on 20 February 1976.

With its good low-speed handling characteristics, the Observer is considered to be capable of performing many roles allocated normally to helicopters. It is intended particularly for patrol and observation operations.

The first Partenavia built Observer was flown in the Spring of 1980, and certification was obtained in June of that year. Improvements were made subsequently to the flight deck and instrument panel. By the beginning of 1988 a total of 34 Observers had been ordered, for customers in Africa, Australia, western Europe, and North and South America. Twelve of these were for the Italian Police, delivered in 1988. No more recent sales figure was received.

An accompanying illustration shows the **Observer 2**, which features upturned wingtips, 100 litres (26.4 US gallons; 22 Imp gallons) of extra fuel in the wet wings, and larger tyres. Optional avionics and equipment for both versions include nose-mounted weather radar or an Electronique Aerospatiale ATAL television surveillance system.

DIMENSIONS, EXTERNAL: As P.68C except:

Length overall	9.35 m (30 ft 8 in)
Wheelbase	3.80 m (12 ft 5½ in)

WEIGHTS AND LOADINGS:

Weight empty	1,280 kg (2,822 lb)
Max T-O weight	1,960 kg (4,321 lb)
Max wing loading	105.3 kg/m² (21.58 lb/sq ft)
Max power loading	6.58 kg/kW (10.80 lb/hp)

PERFORMANCE (at max T-O weight):

Max level speed at S/L	174 knots (322 km/h; 200 mph)
Cruising speed:	
75% power at 2,285 m (7,500 ft)	165 knots (306 km/h; 190 mph)

55% power at 3,660 m (12,000 ft)
149 knots (276 km/h; 171 mph)
Stalling speed: flaps up 64 knots (118 km/h; 74 mph)
flaps down 56 knots (101 km/h; 64 mph)
Max rate of climb at S/L 488 m (1,600 ft)/min
Rate of climb at S/L, one engine out 98 m (320 ft)/min
Service ceiling 6,100 m (20,000 ft)
Service ceiling, one engine out 2,375 m (7,800 ft)
T-O run 229 m (750 ft)
T-O to 15 m (50 ft) 387 m (1,270 ft)
Landing from 15 m (50 ft) 479 m (1,570 ft)
Landing run 210 m (690 ft)
Accelerate/stop distance 473 m (1,550 ft)
Optimum cruising range, 45 min reserves:
75% power at 2,285 m (7,500 ft)
1,060 nm (1,964 km; 1,220 miles)
65% power at 3,350 m (11,000 ft)
1,140 nm (2,112 km; 1,312 miles)
55% power at 3,660 m (12,000 ft)
1,200 nm (2,224 km; 1,382 miles)

PARTENAVIA AP 68TP-600 VIATOR (WAYFARER)

The first retractable landing gear version of the Spartacus (I-RAIZ, c/n 6) made its initial flight in early July 1984. It was followed on 29 March 1985 by a prototype of the Viator (I-RAIL, previously known as the Spartacus 10), which has a longer fuselage than the fixed-gear AP 68TP-300, seating two additional passengers.

Twelve Viators had been ordered by early 1989 (when the last updated figure was received), of which the first three delivered went to Aeritalia for photogrammetric and other duties, Transavio, and a customer in Sierra Leone. The next three were for British, Italian and African customers.

Reports suggest that headroom in the forward section of the cabin has since been increased by 15 cm (6 in), a port door added to the flight deck, the instrument panel made larger, and options extended to include camera hatches in the floor for survey duties. Future plans include the development of a larger rear door for parachuting.

The description applies to the Viator in early production form, unless stated otherwise:

TYPE: Twin-turboprop general purpose transport.

WINGS: As described for P.68C Victor. Trim tab in starboard aileron. Goodrich pneumatic boot de-icing of leading-edges optional.

FUSELAGE: Similar to P.68C, but slightly longer.

TAIL UNIT: Vertical surfaces similar to P.68C, but of increased chord. Fixed incidence tailplane with separate elevators; geared tab in port elevator. Pneumatic boot de-icing of leading-edges.

LANDING GEAR: Retractable tricycle type, with electrically controlled hydraulic actuation. Oleo-pneumatic shock absorber in each unit. Nosewheel retracts forward, mainwheels inward into fuselage fairing. Cleveland wheels, sizes 40-77B (nose) and 40-163EA (main), with McCreary 8-ply tyres, sizes 6.50-8 (main) and 6.00-6 (nose). Mainwheel tyre pressure 4.83 bars (70 lb/sq in). Cleveland disc brakes. No anti-skid units.

POWER PLANT: Two Allison 250-B17C turboprops, each flat rated at 244.5 kW (328 shp) for T-O and max continuous operation. Hartzell HC-B3TF-7A/T10173B-21R three-blade constant-speed fully-feathering reversible-pitch metal propellers with spinners. Fuel in two 380 litre (100.4 US gallon; 83.6 Imp gallon) tanks in wings and a 40 litre (10.6 US gallon; 8.8 Imp gallon) tank in each engine nacelle. Total capacity 840 litres (222 US gallons; 185 Imp gallons). Two 100 litre (26.4 US gallon; 22 Imp gallon) underwing tanks optional. Refuelling point at each wingtip. Oil capacity 11.4 litres (3.0 US gallons; 2.5 Imp gallons) per engine.

ACCOMMODATION: Standard club seating for pilot and nine passengers, in five rows of two seats (second and fourth rows rearward facing). Forward opening door on starboard side of flight deck, and for second/third row passengers on port side at centre of cabin. (Latest examples also have port side flight deck door.) Double door (starboard, rear) provides access for rear seat passengers, and to 181 kg (400 lb) capacity baggage compartment aft of rear seats, and serves also as an emergency exit. With all passenger seats removed and special kits installed, up to 12 parachutists, or two stretcher patients plus two medical attendants, can be carried in cabin. Dual controls, and cabin heating, ventilation and soundproofing, are standard. Hot air for cabin heating and windscreen de-icing is provided by heat exchangers installed on both turbine cases.

SYSTEMS: Primary electrical power supplied by two 150A 28V DC starter/generators and two voltage regulators. In the event of primary electrical failure, power is supplied by a 24V 29Ah lead-acid battery (self-sufficient for engine starting), and an inverter for 115/26V AC power. Electric de-icing of engine air intakes, propellers, pitot and stall detector; and pneumatic boot de-icing of wing leading-edges, are standard. Oxygen system optional.

AVIONICS: Bendix/King Silver Crown IFR package standard. Typical installations include HF com, DME, weather radar (Honeywell or Bendix), autopilot, and Narco ELT.

DIMENSIONS, EXTERNAL:

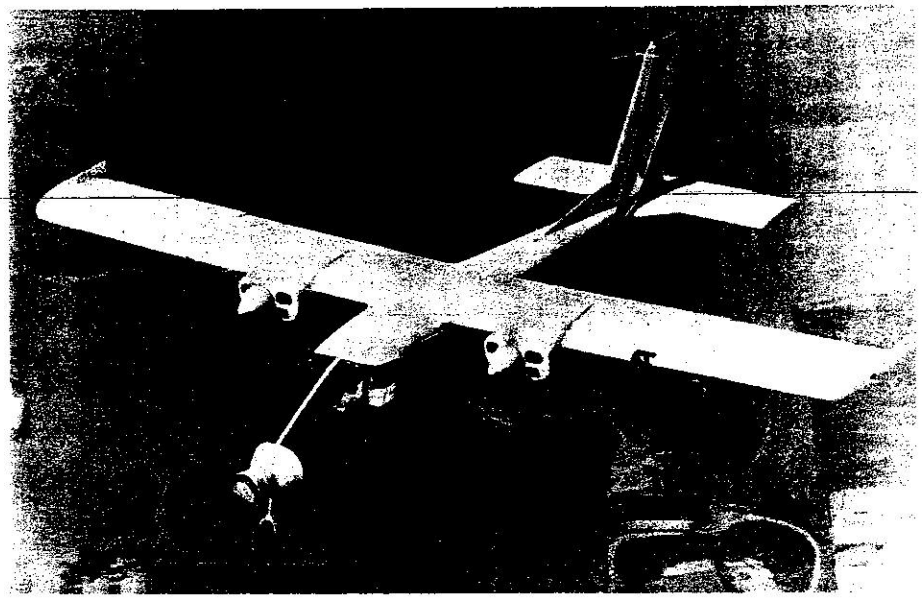
Wing span	12.00 m (39 ft 4½ in)
Wing chord, constant	1.55 m (5 ft 1 in)
Wing aspect ratio	7.7
Length overall	10.85 m (35 ft 7¼ in)
Fuselage: Length	9.66 m (31 ft 8¼ in)
Max width	1.20 m (3 ft 11¼ in)
Height overall	3.64 m (11 ft 11⅛ in)
Tailplane span	4.01 m (13 ft 2 in)
Wheel track	2.167 m (7 ft 1¼ in)
Wheelbase	3.51 m (11 ft 6¼ in)
Propeller diameter	2.03 m (6 ft 8 in)
Propeller ground clearance	0.725 m (2 ft 4½ in)
Distance between propeller centres	4.03 m (13 ft 2¾ in)
Passenger door (port): Height	1.03 m (3 ft 4½ in)
Width	0.80 m (2 ft 7½ in)
Height to sill	0.79 m (2 ft 7 in)
Passenger/emergency door (stbd):	
Height (mean)	0.91 m (2 ft 11½ in)
Width	1.10 m (3 ft 7¼ in)
Height to sill	0.79 m (2 ft 7 in)

DIMENSIONS, INTERNAL:

Cabin, excl flight deck and baggage compartment:	
Length	3.60 m (11 ft 9¾ in)
Max width	1.42 m (3 ft 8 in)
Max height	1.20 m (3 ft 11¼ in)
Floor area	4.00 m² (43.06 sq ft)
Volume	4.70 m³ (165.98 cu ft)
Baggage compartment volume	0.65 m³ (22.95 cu ft)

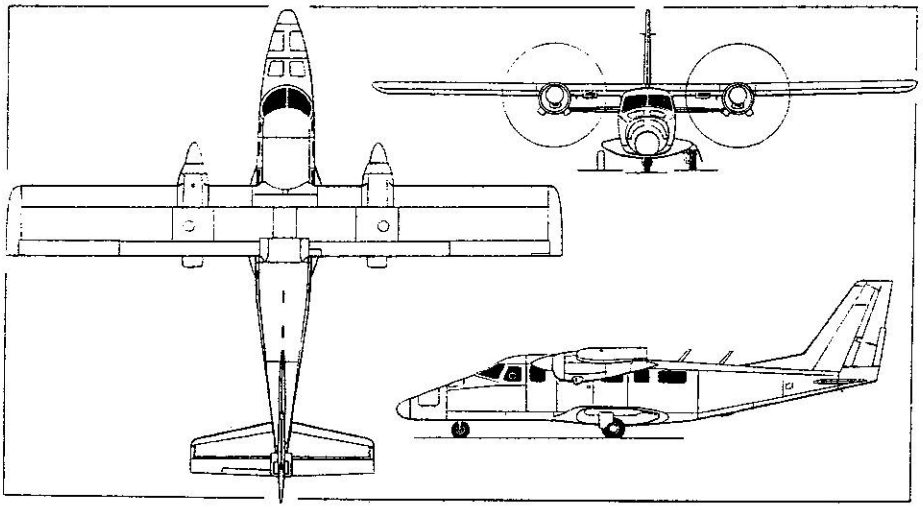
AREAS:

Wings, gross	18.60 m² (200.2 sq ft)
Ailerons (total)	1.76 m² (18.94 sq ft)



Partenavia P.68 Observer 2 featuring upturned wingtips to improve low-speed handling characteristics

Partenavia Viator (two Allison 250-B17C turboprops)



Partenavia Viator 10-seat twin-turboprop light transport *(Pilot Press)*

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Trailing-edge flaps (total)	2.42 m² (26.05 sq ft)
Fin	2.90 m² (31.22 sq ft)
Rudder, incl tab	1.64 m² (17.65 sq ft)
Tailplane	3.76 m² (40.47 sq ft)
Elevators (total)	1.30 m² (13.99 sq ft)
WEIGHTS AND LOADINGS:	
Basic weight empty	1,640 kg (3,615 lb)
Max fuel load (usable)	680 kg (1,499 lb)
Max payload	910 kg (2,006 lb)
Max T-O and landing weight	2,850 kg (6,283 lb)
Max ramp weight	2,875 kg (6,338 lb)
Max zero-fuel weight	2,550 kg (5,622 lb)
Max wing loading	153.23 kg/m² (31.38 lb/sq ft)
Max power loading	5.83 kg/kW (9.58 lb/shp)

PERFORMANCE (at max T-O weight):

Max operating speed	200 knots (370 km/h; 230 mph) IAS
Max level and max cruising speed at 3,660 m (12,000 ft)	220 knots (408 km/h; 253 mph)
Econ cruising speed at 3,660 m (12,000 ft)	170 knots (315 km/h; 196 mph)
Stalling speed, power off:	
flaps up	81 knots (151 km/h; 94 mph)
flaps down	70 knots (130 km/h; 81 mph)
Max rate of climb at S/L	589 m (1,932 ft)/min
Rate of climb at S/L, one engine out	131 m (430 ft)/min
Max operating altitude	7,620 m (25,000 ft)
Service ceiling, one engine out	3,355 m (11,000 ft)
T-O run	275 m (900 f
T-O to 15 m (50 ft)	460 m (1,510 f
Landing from 15 m (50 ft)	500 m (1,640 f
Landing run	250 m (820 f
Min ground turning radius	10.36 m (34 ft 0 ir

Range at long-range power, allowances for start, tax take-off, descent, and 45 min reserves:

with max payload	445 nm (824 km; 512 miles
with max fuel	860 nm (1,594 km; 990 miles

PIAGGIO

INDUSTRIE AERONAUTICHE E MECCANICHE RINALDO PIAGGIO SpA

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CHAIRMAN AND MANAGING DIRECTOR:
Dott Rinaldo Piaggio
GENERAL MANAGER: Dott Ing Giulio C. Valdonio
DIRECTOR OF INTERNATIONAL PROGRAMMES:
Dott Ing Bruno Mori
DIRECTOR, AIRCRAFT DIVISION: Dott Ing Piero Selvaggi
DIRECTOR, COMMERCIAL: Commander G. B. Pizzinato

The original Piaggio company began the construction of aeroplanes in its Genova Sestri plant in 1916, and later in the Finale Ligure works. The present company was formed on 29 February 1964, and has since operated as an independent concern. It employs about 2,000 people in three production divisions and in Italy has a total covered works area (Genova Sestri and Finale Ligure) of approx 120,000 m² (1,291,670 sq ft). In the USA, the Wichita factory of approximately 10,000 m² (107,640 sq ft) is dedicated to the construction of Avanti fuselages. In addition to aircraft of its own design, Piaggio is producing components for the Aeritalia G222, Panavia Tornado and AMX. Aeritalia (which see) acquired a 31 per cent holding in Piaggio in 1988.

The activities of the Aero-Engine Division are described in the appropriate section of this edition.

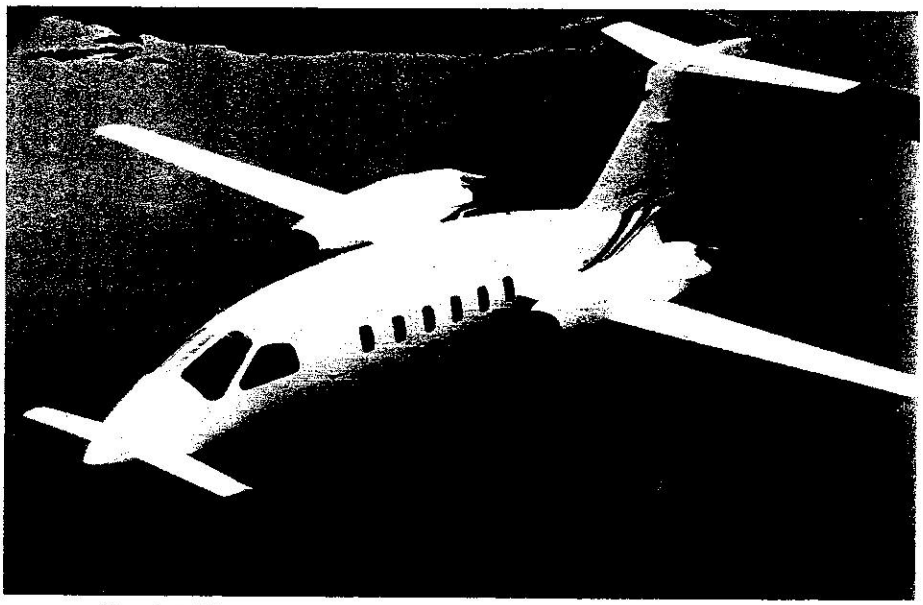
PIAGGIO P.180 AVANTI

Active development of this new corporate aircraft was started by Piaggio in 1982. Gates Learjet became a partner in 1983, but withdrew for economic reasons on 13 January 1986. All of Gates' tooling, together with the forward fuselages of the first three development aircraft (two flying prototypes and one for static tests), were transferred to Piaggio.

Construction began in late 1984, and the first Avanti (I-PJAV) made its first flight on 23 September 1986. The second aircraft (I-PJAR) first flew on 14 May 1987. RAI certification was awarded on 7 March 1990. Piaggio is building two initial production batches of 12 and 18 aircraft, using subassemblies produced both in the USA by Piaggio Aviation and in Italy. Final assembly is at Genova. The first production Avanti first flew on 29 January 1990, and FAA (FAR 23) certification was expected in May/June 1990.

Major design features are the adoption of a 'three lifting surfaces' concept, to reduce cruise drag and fuel consumption, and placement of the engines aft of the rear pressure bulkhead to minimise engine noise levels in the cabin. Primary lifting surface is the main wing, which is situated just above the mid position (to avoid drag-inducing bulges in the circular-section fuselage) and, by virtue of the pusher engine installation, has no propeller induced vortexes impinging on the leading-edge. The second lifting surface is the horizontal T tailplane and elevators, which provide orthodox control from a conventional location. The third is the foreplane, which not only assists the main wing in supporting the aircraft but allows the latter to be reduced in size, thereby also reducing cruise drag and fuel consumption. In assembly, fuselage skins are stretch-formed in unusually large panels to minimise seams, maintaining precise contour tolerances to ten one-thousandths of an inch. Structural members are then shaped to conform exactly to the skin, rather than the conventional reverse.

While most of the Avanti is of conventional metal construction, the nosecone, tailcone, tail unit, engine nacelles, foreplanes, wing outboard flaps and landing gear doors are built of composite materials: graphite/epoxy (carbonfibre) in areas of high stress and glassfibre or Kevlar/epoxy elsewhere. These parts of the airframe—48 components in all, representing about 18 per cent of the aircraft's operating weight empty—are manufactured under subcontract (main parts by Fil[illegible]



Piaggio P.180 Avanti prototype with new fin, but original sectioned windscreen

TYPE: Twin-turboprop corporate transport.

WINGS: Cantilever non-swept mid-wing monoplane, tapered on leading- and trailing-edges. Piaggio PE 1491 G (modified) section at root, PE 1332 G section at tip; thickness/chord ratio 13 per cent. Dihedral 2° from roots. Incidence 0°. Sweep 0° at 15 per cent chord. Integrally machined skins and spars of aluminium alloy; main spar forms an integral fail-safe structural unit with rear pressure bulkhead and main landing gear. Trailing-edge flaps (outboard of engine nacelles) are made in composites. Flaps are actuated electrically, as is trim tab in starboard aileron. Hot air anti-icing of outboard leading-edges.

FOREPLANE: All-composite fail-safe fixed incidence (+3°) foreplane at tip of nose, with 5° anhedral, fitted with electrically actuated all-composite single-slotted auxiliary trailing-edge flaps. Piaggio PE 1300 GN4 aerofoil section, thickness/chord ratio 13 per cent, and 0° sweep at 50 per cent chord. Electric anti-icing of leading-edges. Auxiliary flaps do not control the aircraft in pitch, but are coupled with the main wing flaps and deflect with them to offset changes in trim.

FUSELAGE: Circular-section pressurised fail-safe structure of mainly metal construction (machined aluminium alloy), with rear pressure bulkhead in line with wing main spar. Nosecone, tailcone, baggage door and landing gear doors are built of composite materials. Two composite ventral fins under tailcone.

TAIL UNIT: All-sweptback, all-composite T tail, with variable incidence, 5° anhedral tailplane and balanced elevators and rudder. Trim tab in rudder. No tail unit anti-icing.

LANDING GEAR: Dowty Aerospace hydraulically retractable tricycle type, with single-wheel main units and steerable, twin-wheel nose unit. Main units retract rearward into sides of fuselage; nose unit retracts forward. Dowty hydraulic shock absorbers. Tyre sizes 6.50-10 (main) and 5.00-4 (nose). Multi-disc carbon brakes.

POWER PLANT: Two 1,107 kW (1,485 shp) Pratt & Whitney Canada PT6A-66 turboprops, flat rated at 634 kW (850 shp), each mounted above the wing in an all-composite nacelle and driving a counter-rotating Hartzell five-blade constant-speed fully-feathering reversible-pitch pusher propeller with metal spinner. Propeller blades de-iced by engine exhaust. Fuel in two fuselage tanks totalling 680 litres (180 US gallons; 149.5 Imp gallons) and two 460 litre (121.5 US gallon; 101 Imp gallon) wing tanks; total fuel capacity 1,600 litres (423 US gallons; 352 Imp gallons). Optional single pressure refuelling point in lower centre-fuselage. Gravity refuelling point in upper part of fuselage.

ACCOMMODATION: Pressurised cabin for pilot and seven passengers, with toilet and coat storage area. Club passenger seats are armchair type, which can be reclined, tracked and swivelled, and locked at any angle. Foldaway tables can be extended between facing club seats. Two-piece wraparound windscreen. Rectangular cabin windows, including one emergency exit at front on starboard side. Indirect lighting behind each window ring, plus individual overhead lights. Airstair door at front on port side. Baggage compartment aft of rear pressure bulkhead, with door immediately aft of wing on port side. Entire cabin area pressurised and air-conditioned.

SYSTEMS: AiResearch bleed air environmental control system, with max pressure differential of 0.62 bars (9.0 lb/sq in). Single hydraulic system driven by electric motor, with handpump for emergency backup, for landing gear extension only. Electrical system powered by two starter/generators and a 25V 38Ah nickel-cadmium battery. 0.62 m³ (22 cu ft) oxygen system. Hot air anti-icing of main wing outer leading-edges; electric anti-icing for foreplane and windscreen; rubber boot for engine air intake, coupled with dynamic particle separator.

AVIONICS AND EQUIPMENT: Standard Collins EFIS (three CRTs), Collins VHF com/nav equipment, Collins WXR-840 weather radar, Collins dual transponder TDR-90, Collins single DME and ADF system, Collins radio altimeter, Collins primary and secondary compass systems, Aeronetics dual RMI, Collins APS-65A digital autopilot systems, JET dual vertical gyro, and Collins electronic air data system.

DIMENSIONS, EXTERNAL:

Wing span	14.03 m (46 ft 0½ in)
Foreplane span	3.38 m (11 ft 1 in)
Wing chord: at root	1.82 m (5 ft 11¾ in)
at tip	0.62 m (2 ft 0½ in)
Foreplane chord: at root	0.79 m (2 ft 7 in)
at tip	0.55 m (1 ft 9⅝ in)
Wing aspect ratio	12.30
Foreplane aspect ratio	5.05
Length overall	14.41 m (47 ft 3½ in)
Fuselage: Length	12.53 m (41 ft 1¼ in)
Max width	1.95 m (6 ft 4¾ in)
Height overall	3.94 m (12 ft 11 in)
Tailplane span	4.25 m (13 ft 11½ in)
Wheel track	2.84 m (9 ft 4 in)
Wheelbase	5.79 m (19 ft 0 in)
Propeller diameter	2.16 m (7 ft 1 in)
Propeller ground clearance	0.80 m (2 ft 7½ in)
Distance between propeller centres	4.13 m (13 ft 6 in)