

GAF CANBERRA Mk 20 and 21 Twin engine jet tactical bomber

Crew

Mk 20 Bomber Pilot and navigator seated in tandem, with jettisonable fixed pilot's canopy and hatch above the navigator; both crew equipped with Martin Baker Mk 1 C ejection seats with absolute operating minima of 120KIAS and 1,000ft above ground level.

Mk 21 Trainer Student pilot and instructor, side by side seating, with fixed cockpit canopy and dual controls, no ejection seats; navigator in tandem with Martin Baker Mk 1 C ejection seat. Jettisonable entrance door on lower starboard side of pressurised cabin.

Airframe

All metal mid-wing monoplane; semi monocoque fuselage built in three main units: front, centre and rear sections. The front consists of a pressurised cabin and transparent plastic nose cone, nose wheel unit and equipment hatch; centre fuselage contains fuel tanks, bomb bay and camera compartment; tailplane unit is mounted on the rear fuselage.

Variable incidence tailplane with conventional elevators, retractable tricycle landing gear with single main and dual nose wheels, split flaps, 'finger' speed brakes in wings, manual flight controls.

Engines

A84-201 to 227: 2 x Rolls-Royce RA3 Avon Mk 1 axial flow turbojets, each of 6,500lb static sea level thrust at 7,800rpm; 9 stage axial compressor, 8 combustion stages and a single stage turbine; each engine is started by a single breach cartridge mounted on the front of each engine.

A84-228 to 248: 2 x Rolls-Royce RA7 Avon Mk 109 axial flow turbojets, each of 7,400lb static sea level thrust at 7,950 rpm; 12 stage axial compressor, 8 combustion stages and a 2 stage turbine; each engine is started by a triple breach cartridge turbo starter mounted on the front of each engine.

Fuel System

Mk 20: three fuselage fuel tanks, two integral wing tanks, total 17,600 lbs (10350lbs) and optional jettisonable wing tip tanks of 4000lbs (2350lbs).

Mk 21 trainers: fuselage fuel only, total 10700lbs (6280 lbs); optional bomb bay tank (5000lbs, 2940 lbs).

Main Systems

Electrical system provides DC power from 2 x 27.5V 9kW generators and 24V main batteries, 24V DC emergency system and 1 x 2.4V emergency lighting battery.

Five 750W, 115V 400Hz inverters supply AC Power, with 1600Hz for the IFF.

The hydraulic system is powered by 2 x hydraulic pumps, one on each engine accessory gearbox, and operates landing gear, flaps, wheel and speed brakes and bomb doors.

No autopilot was fitted to either variants of the Canberra

NavCom Equipment

1950/60s Early Mk 20s were fitted with VHF TR 1936 (10 channels each radio) & then VHF TR16440 radios (44 channels), Marconi HF and ADF; AWA Van 3D DME, Green Satin Doppler and ground position indicator displaying latitude/longitude or along/across track and distance gone.

Late 1960/1970s Mk 20 - ARC-34B UHF, Collins VHF-20 VHF, Collins 618T HF, ARN-6 ADF, ARN-21C Tacan, APX-6 IFF, APA-89 SIF.

Mk 21 trainers were fitted with VHF TR 16440 x 2, AWA VAN 3 DME, ARN 21C TACAN, APX 6 IFF and Marconi ADF – no Doppler, HF or UHF radio.

Weapons

(Mk 20) Maximum internal bomb load 8,000lb (3,629kg); typical Vietnam load:

- 10 x 500lb (227Kg) GP bombs (initially);
- 6 x 1000lb (455Kg) GP bombs;
- 8 x 500 lb (227Kg) GP bombs; and
- 6 x 750lb (340kg) M117 bombs.

Dimensions

Length 65ft 6in (19.96m); height 15ft 7in (4.8m);

Wing span 64ft (19.50m); 65ft 6 in with tips;

Height (to top of tail) 15 ft 7 in (4.8m);

Mk 20: clean operating weight - 25,400lb (11,545 kg);

maximum landing weight - 40,000lb (18,180kg);

max takeoff weight - 51,000lb (23,180kg);

typical operating weight with no weapons and max internal fuel - 43,000 lbs (19545kg); with tip tanks - 48,000lb (21,818kg).

Mk 21: empty - 22,700lb (10,297kg), typical takeoff (max internal fuel) - 34,500lb (15,680kg)

Airspeed Limitations

Max IAS 450 knots; max Mach 0.75M up to 15,000ft; M0.79 from 15,000 ft to 25,000ft; M0.83M above 25,000ft.

Performance

Operational ceiling: 48,000 feet

Combat radius of action: 6000lb bomb load, no tip tanks, Hi-Lo-Hi sortie, 1,000 n miles (1850 Km)

6,000lb bomb load, no tip tanks, Lo-Lo-Lo sortie 470 n miles (870 Km)

Ferry range at M0.74 (nil wind): 2,700 n miles (5000 Km)