

AERO ENGINES 1968 ...

GE1 Civil and military single-shaft turbojet. Provides standard gas generator core engine, either direct or scaled-up for all new GE developments except GE4. Ensures continuity of experience and economies in development costs. Basic core engine rated at 5,000lb; length approximately 70in; diameter 24in.

CF700 Civil free-turbine, aft-fan turbofan. Sole example of small turbofan for business jets, comprises aft-fan version of J85 military turbojet with scale version of CJ805-23 fan. Special constant-thrust, vertical-operating versions developed for hover rigs. Latest version is CF700-2D of 4,350lb.

Applications Bell Aerosystems lunar landing research vehicle, 1×CF700-2V (4,200lb); Bell Aerosystems lunar landing training vehicle, 1×CF700-2C(V) (4,200lb). Dassault Fan Jet Falcon, 2×CF700-2C (4,125lb).

(CF700-2C) Eight-stage compressor, annular combustor, two-stage compressor-turbine, single-stage fan turbine, single-stage aft fan. Take-off 4,125lb; b.p.r. 1.9:1; mass flow (total) 126lb/sec; pressure ratio (gas generator) 7:1; length 53.6in; diameter 33.1in; weight 725lb.

CJ610 Civil single-shaft turbojet. Commercial version of J85 military turbojet. Latest versions are the CJ610-5 and -6 of 2,950lb. *Applications* Aero Commander Jet Commander, 2×CJ610-1 (2,850lb). Hansa HFB 320, 2×CJ610-1 (2,850lb). Lear Jet Model 23, 2×CJ610-1 (2,850lb) or CJ610-4 (2,850lb). Lear Jet Model 24, 2×CJ610-4 (2,850lb). Lear Jet Model 25 Transporter, 2×CJ610-6 (2,950lb).

(CJ610-6) Eight-stage compressor, annular combustor, two-stage turbine. Take-off 2,950lb; mass flow 44lb/sec; pressure ratio 6.8:1; length 45.4in; diameter 17.7in; weight 392lb.

J93 Military single-shaft augmented turbojet. Sole application is the North American B-70A Valkyrie supersonic research vehicle. Has provided valuable high Mach number experience for application to the GE4 SST engine.

(J93-GE-3) Eleven-stage compressor, annular combustor, two-stage turbine. Close-coupled afterburner with multi-flap, independently variable, primary and secondary nozzles. Take-off 24,000lb basic, 32,000lb with afterburning; length 237in; diameter 52.5in.

CJ805-23 Civil free-turbine, aft-fan turbofan. Sole example of airline aft-fan engine, has application only in Convair 990A. Comprises aft-fan version of CJ805-3 turbojet.

(CJ805-23B) Seventeen-stage compressor, annular combustor with ten flame tubes, three-stage compressor-turbine, single-stage fan turbine, single-stage aft-fan. Take-off 16,100lb; b.p.r. 1.47:1; mass flow (total) 422lb/sec; pressure ratio (gas generator) 13:1; length 149in; diameter 53in; weight 3,766lb.

CJ805-3B Civil single-shaft turbojet. Commercial version of J79 military turbojet. Sole application, Convair 880-22M.

(CJ805-3B) Seventeen-stage compressor, annular combustor with ten flame tubes, three-stage turbine. Take-off 11,650; mass flow 171lb/sec; pressure ratio 13:1; length 182in; diameter 32in; weight 2,817lb.

T64 Military free-turbine turboshaft. Developed in both turboshaft and turboprop form with varying configuration of reduction gear. Latest version is T64-GE-16 of 3,400 s.h.p. Manufacture licensed to Ishikawajima-Harima Heavy Industries, Rolls-Royce and MAN-Turbo.

Applications Lockheed AH-56A, 1×T64-GE-16 (3,435 s.h.p.) Sikorsky CH-53A, 2×T64-GE-6 (2,850 s.h.p.) or T64-GE-12 (3,435 s.h.p.).

(T64-GE-12) Ten-stage compressor, annular combustor, two-stage compressor-turbine, single-stage power-turbine. Direct drive. Military rating 3,435 s.h.p.; mass flow 26.5lb/sec; pressure ratio 13.0:1; length 83.3in; width 25.5in; height 31.3in; weight 696lb.

T64 Military free-turbine turboprop. Propeller turbine version of T64 turboshaft.

Applications de Havilland of Canada CV-7A Buffalo, 2×T64-GE-10 (2,850 e.h.p.). Fiat G.222, 2×T64-GE-14 (3,060 e.h.p.). Grumman HU-16F Albatross, 2×T64 (2,850 e.h.p.). Kawasaki P2V-Kai, 2×T64-IHI-10 (2,850 e.h.p.). LTV Hiller Ryan XC-142A, 4×T64-GE-1 (2,850 s.h.p.). Shin Meiwa PX-S, 2×T64-IHI-10 (2,850 s.h.p.). (T64-GE-14) Similar configuration to T64-GE-12. Take-off 3,060 e.h.p.; military rating 2,870 e.h.p. and 0.497lb/e.h.p./hr; mass flow 24.5lb/sec; pressure ratio 12.6:1; length 113in; width 29in; height 46in; weight 1,130lb.

T58 Military free-turbine turboshaft. Extensively installed in USN and USAF helicopters. Joint development to higher ratings by GE and Rolls-Royce. Manufacture licensed to Rolls-Royce, Ishikawajima-Harima Heavy Industries and Klockner-Humboldt-Deutz. Latest version is T58-GE-14 of 1,600 s.h.p.

Applications Bell UH-1F, 1×T58-GE-3 (1,325 s.h.p.). Bell X-22A, 4×T58-GE-8D (1,250 s.h.p.). Boeing-Vertol CH-46A, 2×T58-GE-8B (1,250 s.h.p.). Boeing-Vertol CH-46D, 2×T58-GE-10 (1,400 s.h.p.). Boeing-Vertol CH-113 and CH-113A, 2×T58-GE-8B (1,250 s.h.p.). Kaman UH-2A, 1×T58-GE-8B (1,250 s.h.p.). Kaman

UH-2C, 2×T58-GE-8B. Piasecki 16H-1C Pathfinder, 1×T58-GE-8B (1,250 s.h.p.). Sikorsky CH-3C, 2×T58-GE-1 (1,300 s.h.p.) or T58-GE-5 (1,500 s.h.p.). Sikorsky HH-3C, 2×T58-GE-1 (1,300 s.h.p.). Sikorsky HH-3E and CH-3E, 2×T58-GE-5 (1,500 s.h.p.). Sikorsky SH-3A and HH-52A, 7×T58-GE-8B (1,250 s.h.p.). Sikorsky SH-3D, 2×T58-GE-10 (1,400 s.h.p.).

(T58-GE-12) Ten-stage compressor, annular combustor, two-stage compressor-turbine, two-stage power-turbine. Rear-mounted integral gearbox. Take-off 1,600 s.h.p.; mass flow 13.7lb/sec; pressure ratio 8.3:1; length 59in; width 18.8in; weight 412lb.

CT58 Civil free-turbine turboshaft. Commercial version of T58 military turboshaft. Is the only US helicopter turbine to enter service.

Applications Sikorsky S-61L, 2×CT58-110 (1,250 s.h.p.) or CT58-140 (1,400 s.h.p.). Sikorsky S-61N, 2×CT58-140 (1,400 s.h.p.). Sikorsky S-62A, 1×CT58-110 (1,250 s.h.p.).

(CT58-140) Similar configuration to T58-GE-12 except for single-stage power-turbine. Take-off 1,400 s.h.p.; mass flow 13.7lb/sec; pressure ratio 8.3:1; length 59in; width 16.0in; weight 340lb.

J85 Military single-shaft turbojet. Extensively installed in light fighter and trainer aircraft. Manufacture licensed to Orenda and Alfa Romeo. Has also been used as gas generator/turbojet for GE lift-fan installations.

Applications Canadair CF-5A and CF-5D, 2×J85-GE-15 (4,300lb with afterburning). Canadair CL-41A, 1×J85-CAN-40 (2,633lb); Canadair CL-41G, 1×J85/J4 (2,950lb). Fairchild C-123K, 2×J85-GE-17 (2,850lb) booster units. Fiat G-91Y, 2×J85-GE-13 (2,720lb basic, 4,080lb with afterburning). Lockheed XV-4B, 6×J85-GE-19 (3,015lb). McDonnell ADM-20C Quail, 1×J85-GE-7 (2,450lb). Northrop T-38A Talon, 2×J85-GE-5A (2,680lb basic, 3,850lb with afterburning). Northrop F-5A and F-5B, 2×J85-GE-13 (2,720lb basic, 4,080lb with afterburning).

(J85-GE-13) Eight-stage compressor, annular combustor, two-stage turbine. Close-coupled afterburner with variable nozzle. Take-off 2,720lb basic and 4,080lb with afterburning; mass flow 44lb/sec; pressure ratio 7:1; length 108.9in; diameter 22.0in; weight 597lb.

J79 Military single-shaft turbojet. Major US Mach 2 turbojet with extensive application in Lockheed F-104 and McDonnell F-4. Manufacture licensed to MAN-Turbo, Ishikawajima-Harima Heavy Industries, Fabrique Nationale, Fiat and Orenda. Close on 10,000 J79s now built.

Applications Canadair CF-104 and CF-104D, 1×J79-OEL-7 (10,000lb basic, 15,800lb with afterburning). Convair B-58A Hustler, 4×J79-GE-5C (10,000lb basic, 15,600lb with afterburning). Lockheed F-104A and F-104B, 1×J79-GE-3A (9,600lb basic, 14,800lb with afterburning). Lockheed F-104C, D & F, 1×J79-GE-7A (10,000lb basic, 15,800lb with afterburning); Lockheed/Mitsubishi F-104J & DJ, 1×J79-GE/IHI-11A (10,000lb basic, 15,800lb with afterburning); Lockheed/European Consortium F-104G, 1×J79-GE/MAN/Fiat/FN-11A (10,000lb basic, 15,800lb with afterburning); Lockheed TF-104G, 1×J79-GE-11A (10,000lb basic, 15,800lb with afterburning); Lockheed F-104S, 1×J79/J1Q (11,870lb basic, 17,900lb with afterburning). McDonnell Phantom F-4B, RF-4B and F-4G, 2×J79-GE-8A (10,900lb basic, 17,000lb with afterburning); McDonnell Phantom F-4C, RF-4C and F-4D, 2×J79-GE-15 (10,900lb basic, 17,000lb with afterburning); McDonnell Phantom F-4E, 2×J79-GE-17 (11,870lb basic, 17,900lb with afterburning); McDonnell Phantom F-4J, 2×J79-GE-10 (11,870lb basic, 17,900lb with afterburning). North American RA-5C Vigilante, 2×J79-GE-8 (10,900lb basic, 17,000lb with afterburning).

(J79-GE-15) Seventeen-stage compressor, annular combustor, three-stage turbine. Close-coupled afterburner. Variable convergent-divergent nozzle. Take-off 10,900lb basic and 17,000lb with afterburning; mass flow 169lb/sec; pressure ratio 12.9:1; length 208.45in; diameter 38.3in; weight 3,685lb.

Compressor section for the General Electric GE4/J5, selected for the Boeing 2707 SST

