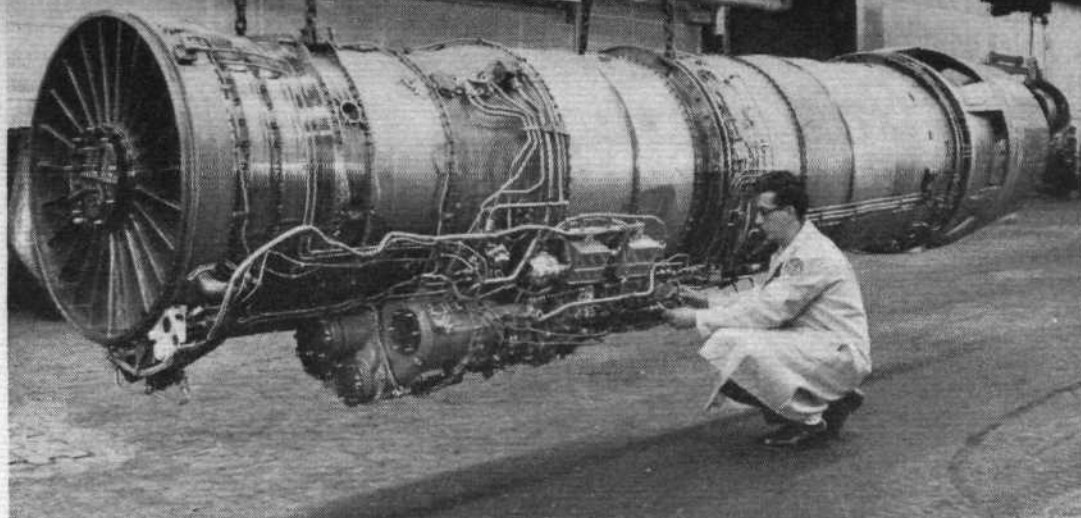


AERO ENGINES 1968...



The Pratt & Whitney TF30 is one of the very few afterburning turbofan engines. In its TF30P-3 form, it powers the General Dynamics F-111 aircraft

JT8D Civil twin-spool turbofan. Launched as a private-venture engine to power the Boeing 727, the JT8D has also been chosen for the Douglas DC-9, Sud Aviation Caravelle and Boeing 737. Is also being developed under licence by Flygmotor as RM8 supersonic augmented turbofan powering the Saab Viggen. Latest civil variant is the JT8D-11, a potential growth version in the 15,000lb thrust class intended to increase DC-9 and 737 range, presumably by higher b.p.r., lower s.f.c. configuration.

Applications Boeing 727-100, -100C/QC and -200, 3×JT8D-1 (14,000lb) or JT8D-7 (14,000lb). Boeing 737-100 and -200, 2×JT8D-7 (14,000lb) or JT8D-9 (14,500lb). Boeing 737E, 2×JT8D-5 (12,250lb). Douglas DC-9-10, 2×JT8D-1 (14,000lb) or JT8D-5 (12,250lb). Douglas DC-9-20 and -40, 2×JT8D-9 (14,500lb). Douglas DC-9-30, 2×JT8D-7 (14,000lb). Douglas CX-2 (DC-9-10), 2×JT8D. Sud Aviation Caravelle 10R and Super Caravelle, 2×JT8D-1 (14,000lb). Sud Aviation Caravelle 11R, 2×JT8D-7 (14,000lb). (JT8D-9) Two-stage fan plus four-stage i.p. compressor (both driven by l.p. turbine), seven-stage h.p. compressor, cannular combustor with nine flame tubes, single-stage h.p. turbine, three-stage l.p. turbine. Take-off 14,500lb up to 84°F; b.p.r. 1:1; pressure ratio 16:1; length 120in; diameter 44in; weight 3,196lb.

JFTD12 Military free-turbine turboshaft. Most powerful helicopter turbine in the West, the JFTD12 utilises the JT12 turbojet as gas generator, coupled with a power turbine.

Applications Sikorsky CH-54A Skycrane, 2×JFTD12-1 (4,050 s.h.p.) or JFTD12-4A (4,500 s.h.p.).

(JFTD12-1) Nine-stage compressor, cannular combustor with eight flame tubes, two-stage compressor-turbine, two-stage power-turbine. Direct drive. Take-off 4,050 s.h.p.; mass flow 49lb/sec; pressure ratio 6.8:1; length 108in; diameter 30in; weight 882lb.

JT12A Civil single-shaft turbojet. Commercial counterpart to J60 military turbojet.

Applications Lockheed Jetstar, 2×JT12A-6A (2,570lb). Lockheed Dash 8 Jetstar, 2×JT12A-8 (3,300lb). Martin SV-5J, 1×JT12A (3,000lb). North American Sabreliner, 2×JT12A-6A (2,570lb). North American Sabreliner Series 40 & 60, 2×JT12A-8 (3,300lb).

(JT12A-8) Nine-stage compressor, cannular combustor with nine flame tubes, two-stage turbine. Take-off 3,300lb; pressure ratio 6.7:1; length 78in; diameter 22in; weight 468lb.

J60 Military single-shaft turbojet. Scaled-down counterpart to the J58 turbojet.

Applications Lockheed C-140A, 2×J60-P-5 (3,000lb). Martin RB-57F, 2×J60-P-9 booster units (3,300lb). North American T-39A, B & D, 2×J60-P-3A (3,000lb). North American T-2B Buckeye 2×J60-P-6 (3,000lb).

(J60-P-6) Configuration similar to JT12A. Take-off 3,000lb; pressure ratio 6.4:1; length 71.0in; diameter 22in; weight 494lb.

TF30 Military twin-spool augmented turbofan. Initially launched as JTF10A civil turbofan, now constitutes major combat engine programme in the United States. Powering the F-111, will be the first supersonic augmented turbofan to enter service. Also collaborative development by Snecma, under licence, as TF306.

Applications General Dynamics F-111A, F-111K and FB-111, 2×TF30-P-3 (12,500lb, or 21,000 with afterburning). General Dynamics F-111B, 2×TF30-P-12. Ling-Temco-Vought A-7A, 1×TF30-P-6 (11,350lb). Ling-Temco-Vought A-7F, 1×TF30-P-18P (15,000lb).

(TF30) Three-stage fan plus six-stage i.p. compressor (both driven by l.p. turbine), seven-stage h.p. compressor, cannular combustor with eight flame tubes, single-stage h.p. turbine, three-stage l.p. turbine. Close-coupled afterburner with variable convergent-divergent ejector nozzle.

J58/JT11D Military single-shaft augmented turbojet. Sole application is the Mach 3 Lockheed F-12A/SR-71.

Applications Lockheed F-12A, 2×JT11D-20B (approximately

34,000lb with afterburning). Lockheed SR-71, 2×J58 (approximately 34,000lb with afterburning).

(J58) Eight-stage compressor, cannular combustor with eight flame tubes, two-stage turbine. Close-coupled afterburner with variable convergent-divergent ejector nozzle. Six external air ducts from compressor to afterburner provide low b.p.r. by-pass system.

J52/JT8 Military twin-spool turbojet. Provided the basis for the JT8D commercial turbofan.

Applications Douglas A-4E Skyhawk, 1×J52-P-6A (8,500lb). Douglas TA-4E and A-4F Skyhawk, 1×J52-P-8A (9,300lb). Grumman A-6A Intruder, 1×J52-P-6 (8,500lb). Grumman EA-6B Intruder, 1×J52. North American AGM-28B Hound Dog, 1×J52-P-3 (7,500lb).

(J52-P-8A) Five-stage l.p. compressor, seven-stage h.p. compressor, cannular combustor with nine flame tubes, single-stage h.p. turbine, single-stage l.p. turbine. Take-off 9,300lb; pressure ratio 12:1; length 117in; diameter 30.2in; weight 2,118lb.

TF33 Military twin-spool turbofan. Military counterpart to JT3D and first American turbofan to enter military service.

Applications Boeing B-52H, 8×TF33-P-3 (17,000lb). Boeing C-135B, 4×TF33-P-5 (18,000lb). Boeing KC-135B, 4×TF33-P-9 (18,000lb). Lockheed C-141A StarLifter, 4×TF33-P-7 (21,000lb). Martin RB-57F, 2×TF33-P-11 (18,000lb).

(TF33-P-7) Two-stage fan plus seven-stage i.p. compressor (both driven by l.p. turbine), seven-stage h.p. compressor, cannular combustor with eight flame tubes, single-stage h.p. turbine, three-stage l.p. turbine. Take-off 21,000lb; b.p.r. 1.25:1; mass flow 500lb/sec; pressure ratio 16:1; length 142.3in; diameter 53.0in; weight 4,605lb.

JT3D Civil twin-spool turbofan. Front-fan derivative of J57/JT3C turbojet, was first American turbofan to enter commercial operation. More than 800 JT3D-powered transports have so far been ordered by over 60 airlines, and the JT3D and its TF33 military counterpart have flown in excess of 25 million hours in service.

Applications Boeing 707-120B & 707-320B & C, 4×JT3D-3B (18,000lb). Boeing 720B, 4×JT3D-1 (17,000lb) or JT3D-3 (18,000lb). Douglas DC-8-50, -61 & 61F, -62, & -62F, 4×JT3D-3B (18,000lb).

The Pratt & Whitney JTF16 is an advanced engine project for important new military aircraft such as AV8B, the German/American V/STOL VG fighter

