

# Directory: world airliners

## BOEING 737 NEXT GENERATION FAMILY

	-600	-700	-800	-900
Length (m)	31.2	33.6	39.5	42.1
Wingspan (m)	34.31	34.31	34.31	34.31
Height (m)	12.5	12.5	12.5	12.5
Wing area (m <sup>2</sup> )	125	125	125	125
Cabin width (m)	3.54	3.54	3.54	3.54
Max take-off weight (kg)	56,250	60,330	78,240	78,240
MTOW option	65,090	70,000	79,000	79,000
Max landing weight (kg)	54,660	58,060	65,320	66,360
Operating empty weight (kg)	37,100	38,145	41,145	42,490
Max zero fuel weight (kg)	51,480	54,660	61,690	62,730
Max payload (kg)	14,380	16,505	20,540	20,240
Powerplant	2 x 18,500-22,690lb	2 x 20,500-24,170lb	2 x 24,170-26,290lb	2 x 24,170-26,290lb
	CFMI CFM56	CFMI CFM56	CFMI CFM56	CFMI CFM56
	-7B18/20/22	-7B20/22/24	-7B24/26	-7B24/26/27
Standard fuel capacity (l)	26,025	26,025	26,025	26,035
Normal operating speed (Mach)	0.785	0.785	0.785	0.785
Max cruising altitude (ft)	41,000	41,000	41,000	41,000
Landing field length (m, sea level/ISA)	1,340	1,415	1,634	1,704
Accommodation (1-class)	132	171	189	189
Accommodation (2-class)	108	146	160	177
Design range with pax	5,650km/110	6,040km/126	5,440km/162	5,080km/177

The FAA requires fleet-wide replacement of the 737's rudder system, with the redesign made mandatory for future 737s coming off Boeing's production line (see 737-100/200 entry). Boeing has been shipping wiring kits for 737 Classics since February. Deliveries of hardware retrofit kits for the 737 Classic will begin in the third quarter of next year.

Delivered: 1,988 (Classic)

In service: 1,968 (Classic)

### 737-600/700/800/900

The Next Generation 737 models were developed from the -300/400/500 family, incorporating a 25% larger wing, new CFM56-7 engines, higher cruising speeds, greater range and a new 777 style flight-deck. Four basic variants seating 108 to 190 passengers have been developed.

The -600 is the smallest and replaces the -500, while the -700 takes over from the -300 and the -800 succeeds the -400. While the -600 and -700 are the same size as the models they replace, the -800's fuselage is 2.8m longer than that of the -400. The -900 is the most recently developed model, and has a 2.6m stretch over the -800. It can seat up to 177 passengers in a two-class layout, but requirements for emergency exits mean the aircraft's maximum seating cannot go beyond the 737-800's 189 seats.

Boeing flew the first -700 in February 1997. Deliveries began to launch customer Southwest in December 1997. JAA certification was achieved in February 1998 after the European body approved a revised emergency exit design to meet its more stringent evacuation requirements.

The first -800 was delivered to Hapag-Lloyd in April 1998 and Scandinavian Airlines (SAS) took delivery of the first -600 in September 1998. The -900 is the latest derivative and deliveries to launch customer Alaska Airlines began in May last year.

Boeing has developed a longer-range -900X version, but has not yet secured a launch customer. The 737-900X, which has an MTOW increased to

83,700kg, can seat up to 220 passengers if airlines opt for an extra pair of Type I doors aft of the wing. Seating capacity at a standard 30in pitch is 201. Service entry is targeted for June 2005.

A passenger/cargo convertible 737-700C featuring a 3.4 x 2.1m side cargo-door has been developed for the US military and entered service earlier this year. Last year, Saudi Aramco, based in Dharan, Saudi Arabia, became the first civil operator of the 737-700QC. It is used as a corporate shuttle and freighter.

A dedicated business jet version of the 737-700 has been developed called the Boeing Business Jet (BBJ). Delivery of a larger BBJ2 version using the -800 fuselage began last year. A 48-seat BBJ was introduced by Lufthansa in June on business class-only services between Düsseldorf and New York Newark. The aircraft is operated by Geneva-based PrivatAir, replacing a flight operated with a mixed cabin Airbus A340.

The APB joint venture provides winglets for both BBJs and commercially operated 737NGs. They were certificated on the BBJ in September 2000 and received approval on commercially operated 737-800s in early 2001, with Hapag-Lloyd the first airline to fly a winglet-equipped 737-800. Winglets are offered both on new build 737-800s and for retrofit and are also available on the -700.

The FAA is implementing a requirement for a fleet-wide replacement of the 737's rudder system, with the redesign made mandatory for future 737s coming off Boeing's production line (see 737-100/200 entry). Boeing has been shipping wiring kits for the 737NG since July. Deliveries of hardware retrofits will begin in the second quarter of next year. Production deliveries of 737NGs with the new rudder system will begin in January.

The 737NG is used as the platform for several surveillance aircraft, including the BBJ-based airborne early warning and control (AEW&C) version (ordered by Australia and Turkey), and the proposed US Navy Multi-mission Maritime Aircraft (-700 or -800).

## Production

The 737NG models are built at Boeing's Renton plant near Seattle, Washington. Boeing delivered 299 737s last year. Output has averaged around 20 aircraft a month this year.

Ordered: 2,035 (NG, including 75 BBJs)

Delivered: 1,193 (NG including 66 BBJ)

### 747-100/SP/200/300

Pan American Airways launched what was then the world's largest airliner in July 1966 with an order for 25 747s. The first aircraft flew in February 1969 and Pan Am introduced the original P&W JT9D-powered 747-100 into revenue service between New York and London in January 1970.

A heavier, longer-range version, the -200 series, entered service in January 1971 and eventually became available with a choice of three powerplants: the P&W JT9D, GE CF6-50 and R-R RB211-524. Significant numbers of 747-200s were delivered as combis and pure freighters.

The long-range, short-bodied 747SP (Special Performance) was introduced in 1976, although total production only amounted to 45 aircraft. The -300, the first derivative to have an extended upper deck, was put into operation by Swissair in early 1983. Many early 747s have been bought by cargo operators and converted into freighters. The last "Classic" 747 was built in 1991.

On 25 May this year, a China Airlines (CAL) 747-200 crashed after breaking up in mid-air as the aircraft approached FL350. One theory being pursued by Taiwan's Aviation Safety Council (ASC), which is leading the investigation, is that the aircraft suffered a rapid depressurisation initiated by metal fatigue. Wreckage from the rear fuselage is believed to show evidence of pre-existing fatigue cracks.

In October, Japan Airlines (JAL) contracted Boeing to upgrade the avionics of its 747-200s and -300s to ensure the aircraft can continue operating in "preferred" European and Pacific region airspace. The modifications enable 747 Classics to be compliant with future air navigation system (FANS-1) and forthcoming European required navigation performance (RNP) standards.

Installation, flight testing and certification of the new avionics on the first JAL aircraft is due to be completed by May 2003.

Earlier this year, GE launched a hot section upgrade for the 747-200/300's CF6-50 engine, following a \$100 million contract from Air France. The carrier ordered the retrofit of up to 106 engines. GE predicts the kit will give up to 25% improvement in time on wing and better exhaust gas temperature margin.

CMC Electronics (formerly BAE Systems Canada) received an STC in 1999 for an upgrade to extend the life of 747 Classics through the addition of communications, navigation, surveillance/air traffic management (CNS/ATM) equipment. Honeywell and Boeing have proposed a glass cockpit 747 Classic retrofit, which would retain the flight engineer's position but provide a dual rating with the two-crew -400 model.

In 1998, KLM became the first operator of the freighter-converted version of the stretched-upper-