

CRJ-1000 launch: Specification details

The launch of the CRJ-1000 may be seen as some as stop-gap while Bombardier decides about the C-Series' launch. The CRJ-1000 provides an alternative to Embraer's ERJ-190.

Bombardier hopes that its double-stretched 100-seat CRJ-1000 will find favour with regional operators. This is Bombardier's low-risk alternative to the established Embraer ERJ-190 and the forthcoming Sukhoi 'Superjet'. The other main purpose of the CRJ-1000, however, may be to keep production lines active, while Bombardier's 100-seat-plus airliner venture, the C-series, remains firmly on the drawing board.

Programme milestones

The CRJ-1000 aircraft programme has been launched with 38 firm orders, 15 of which are CRJ-900 conversions, and 23 are conditional orders and options. The launch orders have been placed by: Brit Air of France, which has placed eight firm orders and eight options; My Way Airlines of Italy, which is converting 15 of its 19 CRJ-900 orders to CRJ-1000 regional jets; and a third undisclosed customer, which has also placed a firm order for 15 aircraft and a conditional order for 15.

Based on the CRJ-1000's list price, the value of Brit Air's eight firm ordered aircraft is \$371 million, which could rise to \$768 million if the airline exercises its eight options.

The original value of My Way's order for 19 CRJ-900s was \$702 million. This now increases to about \$857 million for

four CRJ-900s and 15 CRJ-1000s.

The value of the undisclosed customer's order for 15 aircraft is \$704 million, which could rise to \$1.5 billion if its 15 conditional orders are executed.

The new CRJ-1000 regional jet is due to enter service in the fourth quarter of 2009, and the first flight is scheduled for the summer of 2008. The aircraft will be offered with two range capabilities of 1,490nm and 1,691nm.

The longer-range option, the 'CRJ-1000ER', will have a 1,800lbs higher maximum take-off weight (MTOW) of 91,800lbs, with 90,000lbs for the standard version.

Market rationale

Bombardier forecasts a market demand for 400 CRJ-1000s over 20 years, mainly from Europe. In the US, however, where airline scope clauses cap the number of seats at 76, the uptake of the -1000 will be severely limited.

The manufacturer estimates that development costs will be \$300 million, amortised over a 10-year period and financed from company cashflow. The -1000's 2007 list price is \$41 million, \$5 million more than the 86-seat CRJ-900.

These prices compare with the 2006 published list prices of \$34.5 million for the ERJ-190, and \$36.5 million for the ERJ-195. Bombardier, however, stresses the CRJ-1000's cash operating cost

advantage, which is 15% lower than the ERJ-190's unit cost, partly as a result of the CRJ-1000's 24,800lbs lighter weight compared to the ERJ-190.

Technical differences

The CRJ-1000 is a simple stretch of the existing CRJ-900. The centre fuselage barrel has been extended by 1.58 metres forward of the wing, and 1.37 metres aft, which is a total stretch of 2.95 metres. This extension provides an extra three rows of seats at 31-inch seat pitch. Other changes over the CRJ-900 include:

- A reinforced wing with 7.5% greater wing area, achieved by extending the trailing edge.
- Wing-tip extensions of 0.66 metres.
- Maximum flap setting increased from 40° to 45°.
- A strengthened main landing gear.
- Carbon brakes, replacing steel ones.
- Larger passenger windows.
- A dual-zone environmental control system.
- An electro-thermal de-icing system.
- An up-rated engine option: CF34-8C5A3 with up to 5% more take-off thrust. The engine is otherwise common with CRJ-900.

Weights & loadings

There are three versions of the CRJ-900LR, with MTOWs of 80,500-84,500lbs, compared to 90,000lbs and 91,800lbs for the CRJ-1000. This results in increased wing loading for the -1000s (see table, this page). The respective increases in take-off-field lengths should be noted with the higher performance -A2 engines on the CRJ-1000 models with 14,050lbs thrust each, versus 13,630lbs thrust for the baseline -A1. The -A3 has 14,510lbs thrust, should operators require it. The -1000 also has higher maximum landing weights than the -900.

The differences in respective landing field lengths between the CRJ-900s and CRJ-1000s should be noted, due to the CRJ-1000's bigger wing equipped with a new 45° flap setting.

The CF34-8C5 and -8C5A1 on the CRJ-1000 have the same target life limited part (LLP) lives of 25,000 engine flight cycles as other versions of the CRJ family. Bombardier says that the -1000's higher rated CF34-8C5A2 and -8C5A3 engines are expected to have 'slightly lower' LLP lives. The CF34-8C5A2 and CF34-8C5A3 engines are expected to have similar shop visit intervals to the -8C5A1 powering the CRJ-900. [AC](#)

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CRJ-900 & CRJ-1000 SERIES SPECIFICATIONS

Aircraft	CRJ-900/ -900ER	CRJ-1000/ -1000ER	ERJ-190
Seat capacity	90	100-104	98
MTOW lbs	80,500/82,500	90,000/91,800	114,199
MZFW lbs	70,000	77,500	90,169
OEW lbs	47,250	50,700	62,126
Maximum fuel lbs	19,450	19,450	28,596
Engines	2 X CF34-8C5	2 X CF34-8C5A2	2 X CF34-10E
High cruise speed	M 0.83	M 0.82	M 0.82
Long-range cruise speed	M 0.80	M 0.78	M 0.80
Range nm	1,350/1,593	1,491/1,691	2,300
Take-off field length ft	5,833/6,105	6,549/6,820	6,759
Landing field length ft	5,235	5,756	4,341