

Bombardier Challenger 300

General Aviation/Utility
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Program Briefing

The Bombardier Challenger 300 (past designations: Continental Jet, BD-100), is a “super mid-size” eight-passenger twin-engine business jet designed to fill a void in the Bombardier line between the Model 60 Learjet and the Challenger 604. Officially launched in June 1999, the Challenger 300 entered service in early 2004. Bombardier’s Learjet facility was responsible for final assembly of the first aircraft, although



Challenger 300

the production line moved to Montreal in early 2005. Over 800 have been delivered so far. A new variant, the 350, arrived in 2014.

Manufacturer

Bombardier Aerospace
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Subsystems

Airframe

The Challenger 300 has an all-metal airframe with a large but simple wing, with winglets. Its cabin will seat eight in a double-club configuration. Bombardier completes the aircraft at its Tucson facility.

The 350 has a wing with more span, and canted winglets.

Airframe Subcontractors

- Aero Industry Development Center (AIDC): aft fuselage, vertical and horizontal stabilizers
- Canadair (Bombardier): cockpit
- Fischer: composite belly fairing
- Hawker de Havilland: APU installation kit, tailcone
- Learjet: final assembly
- Messier Dowty: landing gear
- Mitsubishi Heavy Industries: wing
- Short Bros (Bombardier): center fuselage section

Propulsion

Engines

The Challenger 300 is powered by two Honeywell AS 907 (now HTF 907) turbofans, thermodynamically rated at 8,050 lbst but flat rated to 6,830 lbst.

The 350 uses Honeywell HTF7350s rated at 7,323 lbst.

Propulsion System Contractors

- Honeywell: integrated power-plant system, including contractor-supplied nacelle, thrust reverser and all engine-mounted accessories

- Aero Industry Development Center (Taiwan): fan
- GKN Aerospace: nacelles (on 300)
- Hurel-Dubois: thrust reversers
- Safran: nacelles (on 350)

Electronics

The Challenger 300 has flat panel cockpit displays from Rockwell Collins (a risk-sharing partner), which is providing its Pro Line 21 avionics package. Thales (Sextant Avionique) is providing its integrated electronic standby indicator.

Other Systems

Other Contractors

Further subcontractors involved with miscellaneous subsystems are as follows:

- Crouzet: detection and sensors, man-machine interface
- DeCrane: pre-fit interiors
- Dowty Aerospace Yakima: landing gear actuators
- ECE: electrical system
- Goodrich: carbon composite disc brakes
- Honeywell: RE220 APU
- Intertechnique: fuel system
- Liebherr: flap controls, environmental and pressurization controls, anti-icing system
- Lufthansa Technik: high-definition cabin management
- Moog: secondary flight controls
- NLX: simulators
- Parker Abex: hydraulics

Specifications

	<i>Challenger 350</i>
Length overall:	68 ft 8 in (20.9 m)
Wingspan:	63 ft 10 in (19.5 m)
Height overall:	20 ft 3 in (6.2 m)
Cabin length:	23 ft 7 in (7.2 m)
Cabin height:	6 ft 1 in (1.9 m)
Cabin width:	7 ft 2 in (2.18m)
Seating:	8
Empty operating weight:	23,350 lb (10,591 kg)
Max. T-O weight:	38,500 lb (17,464 kg)
Max. Cruise Speed:	459 kt; Mach 0.8
Range:	3,200 nm (5,926 km)

Costs

Introductory price for the baseline Continental was \$13.5 million for the first 30 aircraft, rising to \$14.25 million from January 1999. Price in 2016 was \$24.86 million, equipped. The 350 sells for \$26.673 million in 2020.

Sales/Deliveries

Deliveries

	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>
Challenger 300	1	31	50	55	51	60	33	29	37	48	55
	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>Total</u>				
Challenger 300/350	54	68	62	56	60	56	806				

Program Overview

History

Background and Design

Unveiled at the National Business Aviation Association convention in Las Vegas, Nevada in October 1998, the Continental is Bombardier's effort to dominate the new "super mid-size" market niche. Planning for the project began in 1996, and the project was initially referred to as the Model 70 at the 1997 Paris Air Show. It was later designated BD 100, and named the Continental, emphasizing its coast-to-coast capability.

Launch, First Flight

The development program was expected to cost about \$500 million (Canadian) with risk sharing partners

contributing up to half. These include Honeywell, Rockwell Collins, Mitsubishi, and Taiwan's Aero Industry Development Center, among others.

The Continental entered the "joint conceptual definition phase" in August 1998. Bombardier officially launched the Continental Jet in June 1999, at the Paris Air Show. First flight took place in August 2001, with a second aircraft flying in October.

In 2002, Bombardier renamed the plane the Challenger 300. The company also made some avionics-related design changes, resulting in a schedule slip of about eight months.

The company also decided to move production to Montreal, starting in early 2005.

The first Challenger 300 was delivered to FlexJet in December 2003. It entered service in January 2004.

A total of 456 300s was built before production shifted to the...

Challenger 350

In May 2013 Bombardier announced the 350, an upgraded model. It features more powerful Honeywell engines. It had flown for the first time in March 2013. NetJets is the launch customer, and has signed a contract for up to 200 aircraft. Canadian certification was awarded in June 2014.

Teal Group Evaluation

Sometimes, Simplest Works Best

The Continental/Challenger 300 was basically an inevitable product. Bombardier needed something in the upper middle segment. The result was the Challenger 300. Aside from the new engine, it's a fairly low-tech solution. An all-metal design, the original Continental name advertised its status as a non-intercontinental plane. With a pre-fit interior and a limited selection of customer options, the Challenger 300 basically competed on price and costs. While the price tag and maintenance costs are lower than the other new planes in this class (Hawker 4000, now dead, and G200, now G280), the other planes offer better performance.

Yet the 300's simple approach to good value contrasts with the

Hawker 4000's high tech headaches (which contributed to its death) and the G200's design quirks (and then the G280's higher price tag). The Challenger 350 offers a good, wide cabin and great performance for the price. Accordingly, it has become the segment leader by a respectable margin. Also on the positive side, this low-tech approach resulted in a remarkably short development period — Bombardier claims it's the shortest for any all-new bizjet. Bombardier also did a good job getting the kinks out this time; the company learned from the Lear 45 and Global Express experiences.

For the future, Gulfstream's 280 and Cessna's Longitude will do better against the 350 series than the last crop of super mid-sized competitors. That explains the 350, a very smart update. While it will allow the series

to keep its numbers strong (2015-2019 were excellent as a result), we expect its market share to erode slightly as Longitude ramps up. On the positive side (for the 350, but not for BBD in general), the death of the Lear 85 removed any intra-company competition. The 85 was always a bit too close to the 300 series in terms of capabilities and price point.

For the future, there are two notable challenges to the Challenger: one is the Covid pandemic, and the second is BBD's new status as the world's only large, pure-play business jet prime. Regarding the first,

As for the second, we'll just have to see. The major impact might be in the next downturn, or the next time BBD needs to create a response to a new competitive threat in this segment.

Production Forecast

User (Variant)	Through 2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Total
Bombardier												
All users* (Chal. 300/350)	806	33	42	48	48	44	48	44	44	42	40	1,239

**Excludes three prototypes and two demonstrators.*