UKDirect

Bombardier Dash-8 Q400

Contents

For use with Microsoft Flight Simulator 2004 and FSX

Canadian Commuterliner

The Bombardier Dash 8 or Q-Series, previously known as the de Havilland Canada Dash 8 or DHC-8, is a series of twin-engined, medium range, turboprop airliners. Introduced by de Havilland Canada (DHC) in 1984, briefly owned by Boeing they are now produced by Bombardier Aerospace. Bombardier's 70 seat Dash-8 Series Q400 (or Q400 for short) is the latest and longest member of the successful Dash 8 family, but with new engines, avionics and systems, a modified wing and stretched fuselage it is essentially an all new aeroplane.

Dash-X

In the 1970s de Havilland began feasibility studies for an aircraft to fill the gap between their 20-seat DHC-6 Twin Otter and 50-seat Dash 7. By 1979 this was known as the Dash-X project but as the first orders were accepted in 1980 it had become the Dash-8.

From the start the Dash 8 was developed as a high-wing, twin engine plane with a pressurised cabin and in keeping with other de Havilland Canada aircraft feature short take-off and landing (STOL) performance. The Dash 8's STOL capability while not as good as it's predecessors still allows it to operate from 3000ft runways such as London City airport. The Dash-8 fuselage is almost circular and made from conventional materials and construction with the long, pointed nose cone perhaps being the striking feature.

With the Dash 8, DHC focused on improving cruise performance and lowering operational costs. The engine chosen was the Pratt & Whitney Canada PW100. The aircraft has been delivered in four series. The Series 100 has a maximum capacity of 39, the Series 200 has the same capacity but offers more powerful engines, the Series 300 is a stretched, 50-seat version, and the Series 400 is further stretched to 78 passengers. Models delivered after 1997 have cabin noise suppression and are designated with the prefix "Q". Production of the Series 100 ceased in 2005, and the Q200 and Q300 in 2009.

Over 1,000 Dash 8s of all models have been built, with Bombardier forecasting a total production run of 1,192 aircraft of all variants through 2016. Bombardier is considering a 90 seat stretched version of the Q400.

Q400

Designed for short-haul routes, the 70- to 80-seat Q400 aircraft entered service with launch customer SAS Commuter, on January 20, 2000.

The Q400 is pitched at the short haul regional airliner market for stage lengths of 550km (300nm) or less. Despite the recent proliferation of regional jets, Bombardier notes that regional jets have created their own market niche and are not replacing turboprops, which remain more economical over shorter stage lengths. Bombardier says the Q400's breakeven load factor for a 360km (195nm) stage length is just 29 passengers.

Its 360 knot (667 km/h) cruise speed is 60–90 knots (111–166 km/h) higher than its competitors/predecessors, power provided by two FADEC equipped 3410kW (4573shp) Pratt & Whitney Canada PW150A turboprops driving six blade Dowty propellers.

The maximum operating altitude is 25,000 ft (7,600 m) for the standard version, which can be increased to 27,000ft (8,200 m) if fitted with drop-down oxygen masks. The Q400 airframe shares the common nose and tail section of all models of Dash 8 but features a new strenghtened wing and new horizontal stabiliser. The fuselage cross-section is the same size as the Q300 but stretched 6.83m (22ft 5in) and fitted with two entry doors at the forward and aft ends of the fuselage on the left side, with emergency exit doors opposite them on the right side.

All Q400's are fitted with Bombardier's ANVS active noise and vibration system which reduces cabin noise to levels comparable to the CRJ jet airliner. This is achieved through the use of computer controlled active tuned vibration absorbers (ATVAs) mounted on the airframe. Bombardier claims it is one of the quietest aircraft flying today, inside and out. On the outside, the aircraft is 15 dB quieter than ICAO Stage 4 noise standards.
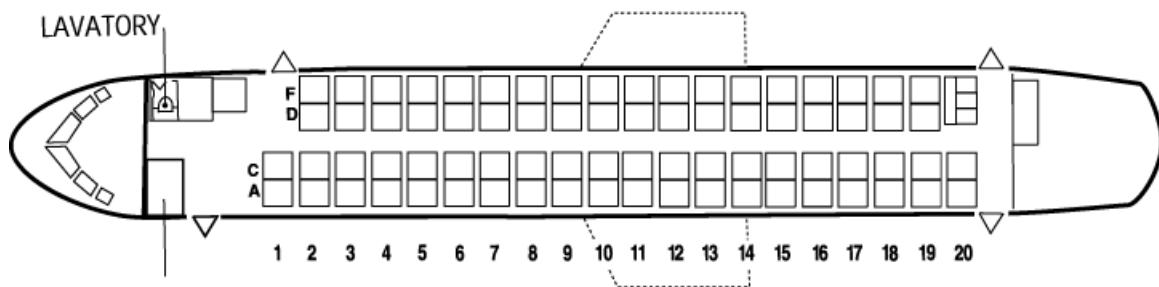

The flightdeck is fitted with an advanced avionics suite from Thales incorporating five large LCD colour displays which present information to the pilots in a similar format to earlier Dash 8s, allowing a common type rating. The equipment allows for Steep Approach profiles, CAT IIIA landings and has an on-board diagnostic system.
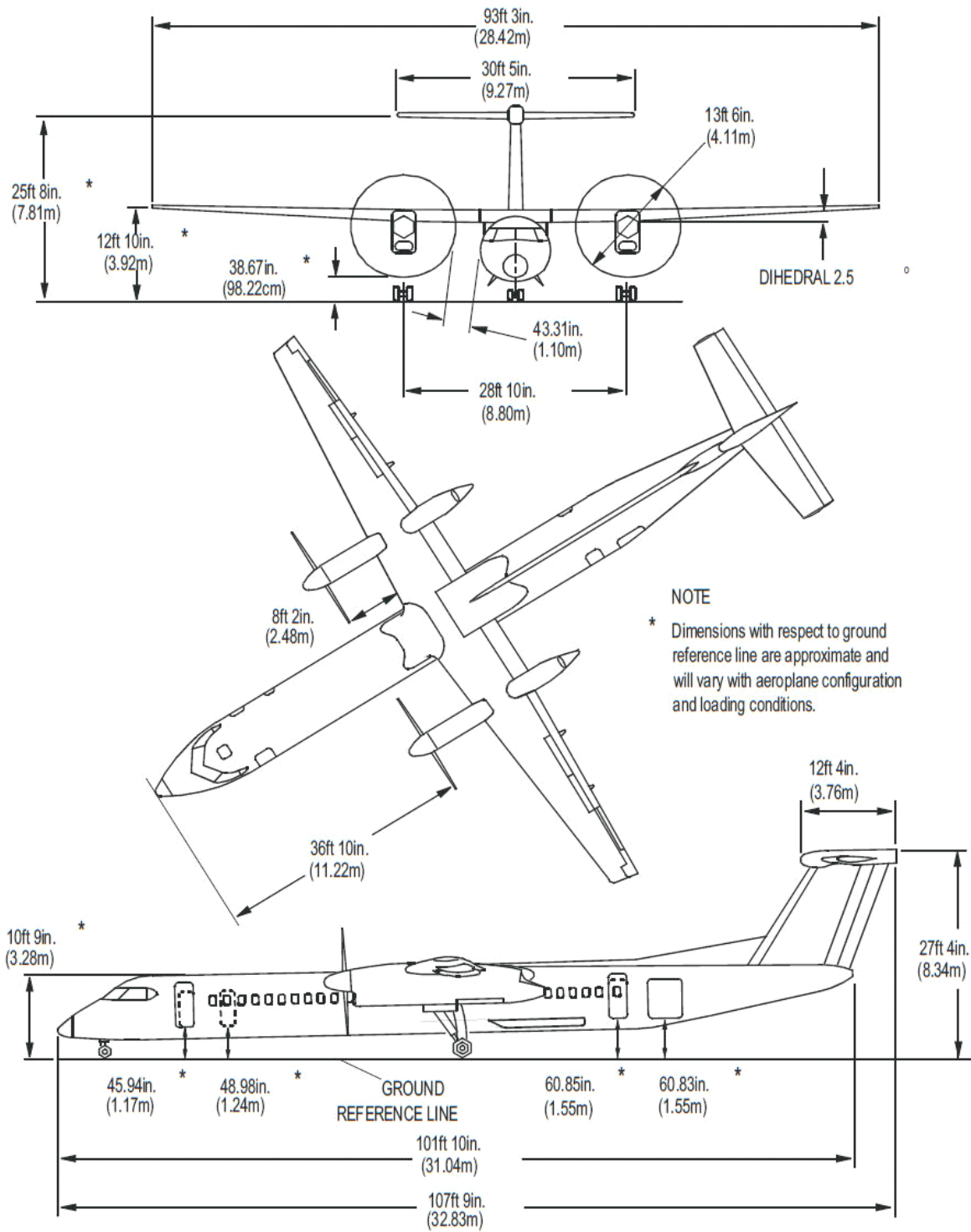
Q400NextGen

The current version of the Q400 is marketed as the Q400NextGen and has an updated interior providing larger overhead baggage bins, new seats and dished window fairings to allow more light in and a better view out. LED lighting and redesigned landing gear help reduce fuel and maintenance costs.

Dimensions

93ft 3in.
(28.42m)

30ft 5in.
(9.27m)

13ft 6in.
(4.11m)

25ft 8in. *
(7.81m)

12ft 10in. *
(3.92m)

38.67in. *
(98.22cm)

43.31in.
(1.10m)

DIHEDRAL 2.5 °

28ft 10in.
(8.80m)

8ft 2in.
(2.48m)

NOTE

* Dimensions with respect to ground reference line are approximate and will vary with aeroplane configuration and loading conditions.

12ft 4in.
(3.76m)

36ft 10in.
(11.22m)

10ft 9in. *
(3.28m)

27ft 4in.
(8.34m)

45.94in. *
(1.17m)

48.98in. *
(1.24m)

GROUND
REFERENCE LINE

60.85in. *
(1.55m)

60.83in. *
(1.55m)

101ft 10in.
(31.04m)

107ft 9in.
(32.83m)

Installation

1. Unzip the files and copy the "G-UKBD Dash8-Q400 Dreamwings" folder to the FS2004/Aircraft folder *or* FSX/SimObjects/Aircraft folder as appropriate.

2. Cut and paste the "Dash8_400" folder (the whole folder - not just the contents), which contains panel switch sounds into Flight Simulator's "Sound" folder.

3. Look in the Docs folder for checklists, and useful info.

A2A Shockwave lights

For users who have Shockwave lights installed use NOTEPAD to open and edit the AIRCRAFT.CFG and be sure to make a backup prior to saving. Simply replace your existing [LIGHTS] section with the new one below

AIRCRAFT.CFG

[LIGHTS]
//Types: 1=beacon, 2=strobe, 3=navigation, 4=cockpit
light.0=3, 5.0, -47.8, 6.3, fx_navred ,
light.1=3, 5.0, 47.8, 6.3, fx_navgre ,
light.2=2, 5.3, 47.8, 6.3, fx_strobe ,
light.3=2, 5.3, -47.8, 6.3, fx_strobe ,
light.4 = 3, -50.069, -0.016, 19.965, fx_strobeh ,
light.5 = 1, 17.875, -0.007, 4.644, fx_beacon ,
light.6 = 2, -59.003, 0, 18.829, fx_navwhih ,
light.7=4, -7.91, 0.00, 2.64, fx_vclight,
light.8 = 5, 8.000, -19.000, 4.3, fx_Shockwave_landing_light // Shockwave light
light.9 = 5, 8.000, 19.000, 4.3, fx_Shockwave_landing_light // Shockwave light
light.10 = 5, 8.000, -17.000, 4.3, fx_Shockwave_landing_light // Shockwave light
light.11 = 5, 8.000, 17.000, 4.3, fx_Shockwave_landing_light // Shockwave light
light.12 = 5, 50.000, 0.000, -4.7, fx_Shockwave_landing_light // Shockwave light

PANEL.CFG

Open the panel.cfg file and add the following line at the bottom of the [VCockpit01] section changing 'XX' to the next available number:
gaugeXX=shockwave_lights!SW Lights, 1,1,1,1 //shockwave light

Dash 8 Q400 Standard Operating Procedures

I have created a checklist pdf file for use with the Q400 located in the Docs folder. The following guide is to help UKD pilots operate the Q400 realistically (obviously not for use in the real-world!) within the restrictions imposed by the simulator and enhance your enjoyment!

Max V speeds for operating the Dash 8 Q400 series (assume IAS and MTOW)

V_{LO} 200kts Maximum speed for selecting gear up/down

V_{LE} 215kts Maximum speed for landing gear extended

V_A 203kts Maximum speed for full control surface deflection

Flap 5° 200kts Maximum speed for extending flap 5°

Flap 10° 181kts Maximum speed for extending flap 10°

Flap 15° 172kts Maximum speed for extending flap 15°

Flap 35° 158kts Maximum speed for extending flap 35°

Crosswind 32kts Maximum Crosswind Limit

Below 3,000ft

210kts Maximum IAS

Instrument Approach / Base Leg
190kts Minimum, maximum IAS must satisfy the "Below 3,000ft" criteria.

ILS Approach - 6 Miles

160kts Minimum

Gear Down

Stable Approach

500ft Rad Alt - (Stable = Vref -0kts / +15kts and within ½ scale deflection LLZ/GS, landing Power Set)

-3° / +3° Nose Attitude - From the Stable call at 500ft the nose attitude of the aircraft should be in the stated range.

Non Precision Approach

Gear Down, Landing Flaps and Vref   by the FAF (Final Approach Fix)

The Bombardier Dash 8 Q400 panel for Microsoft Flight Simulator 2004.
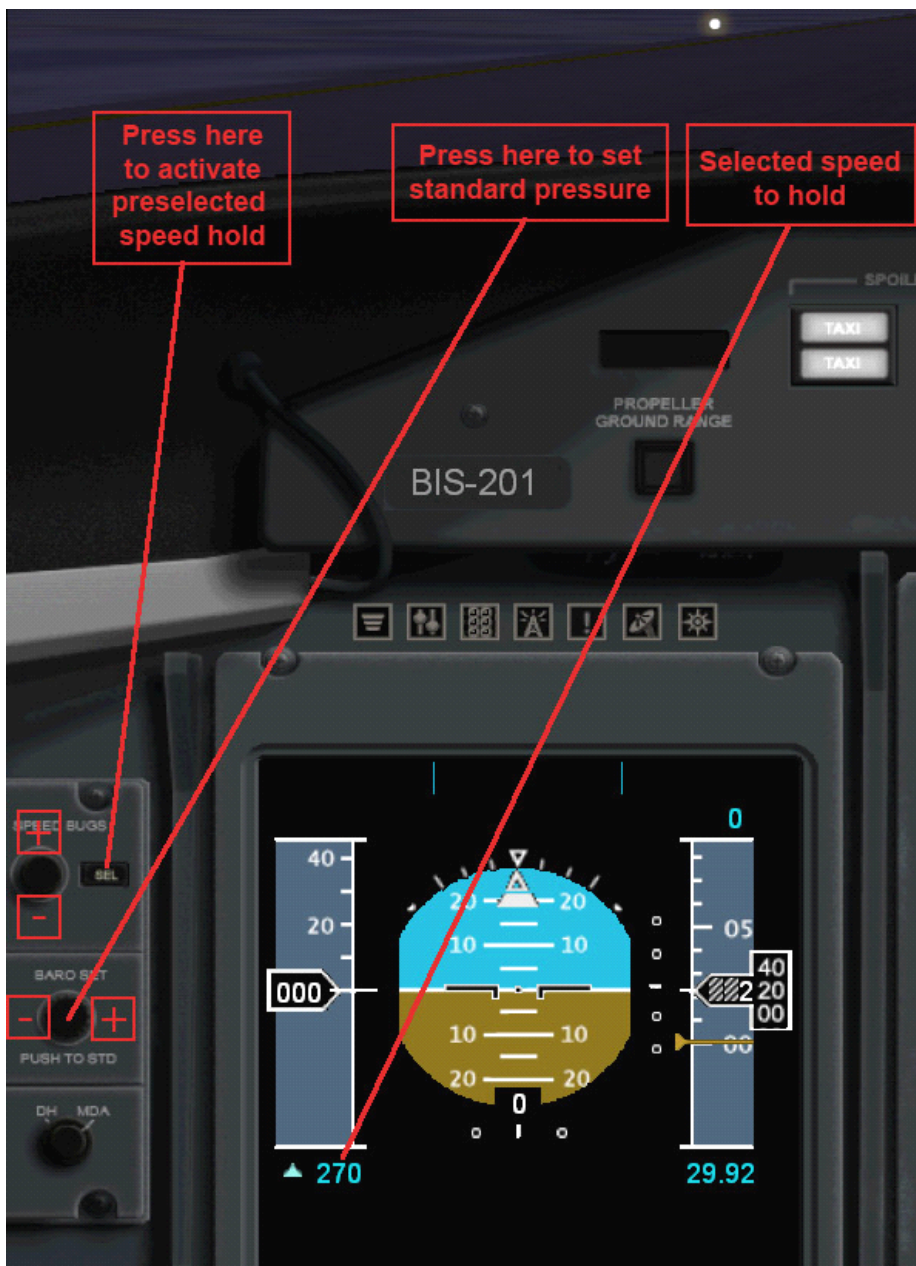
Created by Dmitry Stepin v1.2

This panel has been built especially for the Dreamwings Dash 8-400 model by Dmitry Stepin and includes a panel for users of FS Passengers. If you dont have FS Passengers just ignore those switches - they wont do anything but the rest of the panel is fully usable.

Not every switch operates , particularly on the overhead panel - please see picture below. Many switches have 'hotspots' either side of them and require you to click these areas rather than the switch, it is fairly intuitive to use. The next picture illustrates this point. This package includes the v1.2 panel update which moves the position of the simicons from the left of the main AI indicator (as seen above) to just above it. They have moved to accommodate extra buttons as shown in the next picture.

This panel can be used with FSX but please note the following:

IF THE ENGINES REFUSE TO START (ESPECIALLY IN FSX) TRY RUNNING THE SIM WITH A DEFAULT AIRCRAFT FIRST. START-UP AND SHUT DOWN DEFAULT PLANE ENGINES THEN CHANGE TO THIS AIRCRAFT.

Hotspots around the barometer pressure settings and speed holding buttons indicated. Above the Main AI can be seen the SimIcons to open the Overhead, radio, GPS and Map panels.

This panel simulates the spoiler switch incorrectly! Selecting TAXI deploys the spoilers, FLIGHT retracts them.

What should happen: The Spoiler switch on the glare shield (set to TAXI above) is used to retract spoilers on the ground. When this switch is set to the FLIGHT position, the spoilers will extend if the aircraft's power levers are at idle or less than +12 degrees forward, with weight on the landing gear. This Flight setting for the spoilers is normally used for landing procedures. EX: During touchdown, if the throttle settings are below 12 degrees or at idle, and enough weight sits on the landing gear, then the spoilers will automatically deploy.

When this switch is set to the TAXI position, the spoilers will remain retracted regardless of speed or throttle setting.
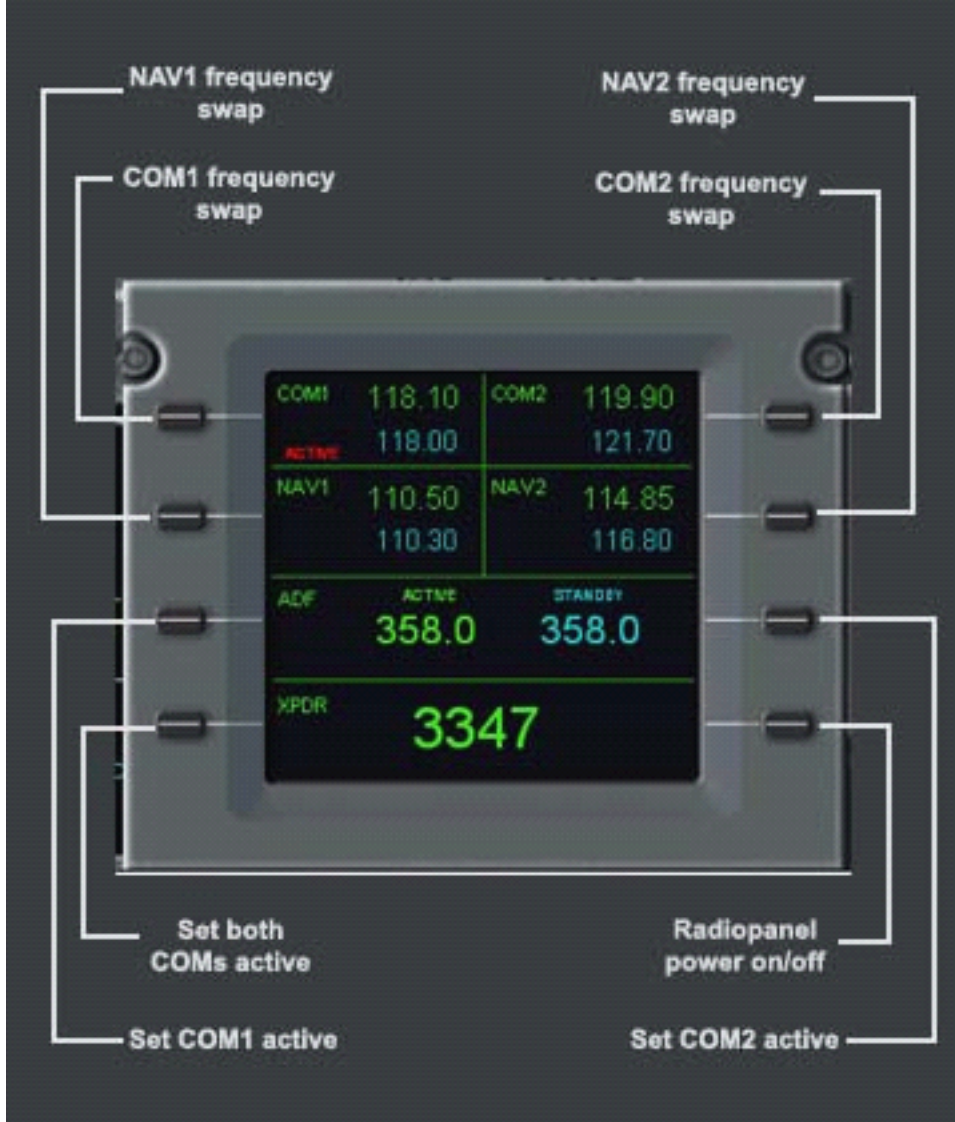
Overhead Panel

The main areas of the overhead panel. Most are self-explanatory, FSP is for users of FS Passengers (a payware add-on) and there are some instructions in the zip regarding installing extra files within FS. The DOORS section will operate the animated parts of the external model.

Engine Starting - ensure prop setting levers are set to START & FEATHER on the throttle panel. Set Ignition switch to NORM, select Start switch to 1 or 2 (click on the numbers to set) and press START button. Engine 1 or 2 depending on selection will now spool up. Once stabilised repeat for other engine.

IF THE ENGINES REFUSE TO START (ESPECIALLY IN FSX) TRY RUNNING THE SIM WITH A DEFAULT AIRCRAFT FIRST. START-UP AND SHUT DOWN DEFAULT PLANE ENGINES THEN CHANGE TO THIS AIRCRAFT.

Radio Panel

Mouse click on the blue standby numbers to change to required setting, when complete click the relevant button to swap frequencies.

The hot spots to increase the numbers are above the numerals to the left and right 'corners', and to decrease the figures the hot spots are below the blue numerals again to the left and right 'corners'.

Sources

http://www.airliners.net/

http://www.bombardier.com

http://en.wikipedia.org

http://q400nextgen.com/en/#/home/

FSX screenshots by the author, Dash 8 publicity shots used with permission,

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As always if you have any problems please ask on the forum or send me a message via FSAirlines.

Produced for UK Direct Airways by M.Greenough   UKD171

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www.planecrazy.me.uk/ukd