SELF-GUIDED TOUR

of the British Airliner Collection at IWM Duxford

THE BRITISH AIRLINER COLLECTION
DUXFORD AVIATION SOCIETY MUSEUM

www.britairliners.org /britishairlinercollection

Form follows function –
the shape of an aircraft is dictated by its purpose

Follow the major developments of post-Second World War civil aviation through 13 classic airliners. Check the QR codes on our display boards to see the aircraft in flight, the interior and flight deck.

1

BAC/AEROSPATIALE CONCORDE 101

(inside AirSpace)

First flight, 1971. Concorde 101 was a test aircraft and played an important role in making supersonic passenger flight a reality.

It crossed the Atlantic in 2 hours 56 minutes making it the fastest of all Concordes. It has an ogival delta wing that allows it to fly fast and high, and very special engines. See our display wall in AirSpace explaining how Concorde was developed and how it compares with other aircraft you can see at Duxford.

2

HANDLEY PAGE HERMES

(our 'museum on a plane' inside AirSpace)

First flight, 1950. This is the only Hermes still in existence. It was developed from the wartime Halifax bomber and is the oldest surviving British pressurised airliner. Pressurised aircraft can fly 'above the weather', giving passengers a much smoother ride and less airsickness. Because control and navigation systems were relatively primitive, five crew were needed to fly the Hermes, for only 40 passengers.

On board you can read about post Second World War air travel and the development of the airliners we use today. Don't miss the picture of Heathrow when it was a collection of tents!

3

AVRO YORK

(between hangars two and three)

First flight, 1946. This York served in the Berlin Airlift in 1948/9 and is one of only two remaining. It was designed by Roy Chadwick who adapted the Lancaster bomber with a larger body so that it could carry freight and passengers. It is typical of a warplane redesigned for peacetime. The RAF used it during the Berlin Airlift to carry food and fuel into Berlin, and later in its career it flew with independent airline Dan-Air. It could fly at 298mph (479km/h) at 23,000 feet (7,010 m) and had a range of 3,000 miles (4,828km). Its four Rolls Royce Merlin engines are the same as those used on the iconic Spitfire.

4

BRITISH AEROSPACE BAe146

(outside the Workshop cafe)

The BAe 146 is a modern aircraft dating from 1986. This one served with 32 (The Royal) Squadron, successor to the Queen's Flight. It has a bespoke luxury interior for only 30 passengers. Very quiet, and marketed as the 'Whisperjet', the BAe 146 was the first jet airliner allowed to use London City Airport. It could fly at 440mph (709km/h) and had a range of 1,610 miles (2,590 km). While not 100% British – it has American engines – it is the most successful British-designed jet airliner with 394 built.

5

DE HAVILLAND DOVE

(first in line of the row by the runway)

First flight, 1948. The Dove was the first British airliner to be produced after the Second World War as a replacement for the pre-war D H Rapide. It was used by airlines on shorter routes around Britain and feeder routes into main airports. Many were used by companies and by the military. It could carry eight passengers. It could fly at 202mph (325km/h) at 8,000 feet (2,400m). It was the first airliner to use adhesive instead of rivets to join metal, saving weight and improving the strength of the airframe. The adhesive was Redux®, developed by Aero Research Ltd at its premises just two miles from here.

6

AIRSPEED AMBASSADOR

The only surviving example, this 1952 piston-engined aircraft could carry up to 60 passengers at 260mph (418km/h). Notice how high the wings are set. This makes the aircraft more stable and allows plenty of room for the large propellers – and passengers could see the undercarriage going up and down! Although popular with passengers, only 20 entered airline service as it was soon eclipsed by the better-performing, turboprop-powered, Vickers Viscount. It was to be the last large piston-powered airliner built in Britain. Operating in bad weather in the 1950s could be risky: in 1958 an Ambassador crashed on take-off at Munich on an icy runway killing 23, including eight members of the Manchester United football team. Like several in the Collection, it began its career as a luxury aircraft with one of the nationalised airlines (in this case British European Airways, BEA). Later, these aircraft were sold to smaller, lower cost independent airlines like Dan-Air and Monarch, and air travel became accessible to a wider public. Only 23 were built.

Fact: Most of today's runways date from the Second World War. Before then, many aircraft had to land on grass, lakes or in harbours.

7

VICKERS VISCOUNT

First flight, 1952. The Viscount was the world's first turboprop-powered airliner. This is the oldest surviving example, from 1952. A turboprop is a jet engine which uses its power not to produce thrust out the back but to turn a propeller via a gearbox on the front of the engine. Turbines (jets) generate far less vibration than piston engines, are more reliable, easier to maintain and use less flammable and therefore safer fuel. These advantages were to end the era of large piston-powered airliners and change air travel forever. Notice how the wings are set much lower than on the Ambassador and their upward slope. This slope is called dihedral and gives the aircraft extra stability. The Viscount flew 75 passengers at 352mph (566km/h) at 25,000 feet (7,620m) with a range of 1,380 miles (2,220km). Not enough to cross the Atlantic, but a big leap forward nonetheless. It was Britain's biggest-selling large airliner, with 444 sold to 60 operators in 40 countries. Flight deck innovations were limited but only three flight crew were now required. No radio operator was needed on later aircraft as in early airliners like Hermes (displayed in AirSpace).

8

BRISTOL BRITANNIA

The Britannia was the world's first large turboprop-powered passenger aircraft. 143 passengers flew at up to 357mph (574km/h) at 24,000ft (7,300m). This aircraft first flew in 1959 and with BOAC inaugurated the first Round the World service together with a Comet 4. This was achieved in a series of hops via New York, San Francisco, Honolulu, Wake Island and Tokyo where the Comet took over and continued onwards to London via Rangoon, Delhi and Rome. With a range of over 4,400 miles (7,000km), here was an aircraft capable of crossing the Atlantic non-stop, and faster than any of the piston-powered airliners on the route. Nevertheless, like the Ambassador before it, it was soon to be superseded, this time by the jet airliners now coming into service.

9

DE HAVILLAND COMET 4

First flight, 1958. This actual aircraft operated the first scheduled service by a jet airliner from New York to London in 1958 in the record time of 6 hours and 11 minutes. The jet age had arrived! Manufacturers had battled to produce a jet airliner with the range to operate this important route but it lacked the range to fly London to New York without refuelling.

It could fly at 526mph (846km/h) at a height of 42,000 feet (12,000m), well above most turbulence, giving an even smoother flight. See how different it looks compared with the Ambassador, Viscount and Britannia. The sleek streamlining and swept-back wings needed for high-speed flight can be seen on all the later jet airliners in the Collection.

10

VICKERS SUPER VC10

First flight, 1965. This aircraft was the star of BOAC's advertising campaign in 1965. The Super VC10 is the biggest jet airliner built in Britain. Its distinctive shape with engines at the back and whale tail mark another step forward in aircraft design. The rear-mounted engines gave passengers a quiet ride, and made the wing very 'clean', so the ride was smoother too. By not mounting the engines under the wing they were better protected on poor quality runways, and the same applies to the high 'T-tail'. The VC10 was the first commercial aircraft to use 'turbofan' engines, now used on all modern jet airliners. It was more expensive to operate than its direct competitor, the Boeing 707, but was more popular with passengers. It carried 151 passengers at 43,000 feet (13,105m) at 580mph (933km/h). The record time for a subsonic Atlantic crossing by a scheduled service, 5 hours and 1 minute, was held for over 40 years by this VC10.

Why build a set when you can have the real thing?

The British Airliner Collection aircraft are in demand for films, documentaries and advertising campaigns.

- Britannia features in *My Week with Marilyn*
- Britannia appears in *Philomena*
- Viscount starred in *The Crown* series 1,2 and 3
- VC10 hosted the bears in the Heathrow Christmas advert
- Viscount starred in *The Courier* and a film soon to be released

We move the aircraft into position, rearrange seating and if they need to fly, CGI does the rest.

11

HAWKER SIDDELEY TRIDENT

First flight, 1967. The Trident carried 115 passengers at 580mph (933km/h) at 36,000 feet (11,000m) and was very advanced for its time. Major innovations were its 'Autoland' blind-landing system that allowed it to land in fog and the 'Moving Map' facility that traced the aircraft's position on a map. The advanced wing design was used in early Airbus aircraft. That wing made the Trident very fast but gave relatively limited lift at lower speeds. This demanded a long runway and gave rise to its nickname amongst crews: 'The Gripper', because of its reluctance to leave the ground! This aircraft served for a time with Cyprus Airways and was damaged by gunfire at Nicosia airport during the Turkish invasion of the island in 1974. You can still see the patches put on before it was flown back to the UK for repair!

12

BAC 1-11

First flight,1969. The BAC 1-11 was the last, and most successful, all-British jet airliner. It flew in 1969 and could carry up to 119 passengers at 541mph (871km/h) with a range of 1,480 miles (2,400km). Reliable and safe, with British European Airways (BEA) it flew more than a million hours without a single passenger fatality. Designed for short-haul operation, the structure was very strong to cope with frequent take-offs and landings. Its strength was demonstrated when a bomb exploded in the toilet of a Philippine Airlines 1-11 on two separate occasions, blowing off part of the cabin roof. The aircraft survived to fly again! It led the way with a two-crew flight deck for jet airliners, now standard. 244 were built, and unusually for a British airliner it was a success in the US, with 69 sales.

Fact: Most modern airliners fly at 500mph (805km/h) at 45,000 feet (13,716m) and have a range of 5,000 miles (8,047km).

13

BRITTEN NORMAN TRISLANDER

First flight, 1977. The modest aircraft you see before you is an example of Britain's most successful airliner series. It was specifically designed for Short Take-off and Landing (STOL) operations between small islands around the world. Able to operate from short, rough airstrips and beaches they have fulfilled a vital function connecting small communities. Everything about the Trislander reflects its purpose as a very rugged and versatile aeroplane. The Trislander is a stretched version of the original Islander with a third engine on top of the fin. It carried up to 18 people.

Take a look and you'll see how they managed to board an aircraft with no gangway. Even the pilot had company at the front! Spot the luggage compartment in the nose. It was noisy but very popular. Don't miss the wing mirror which gave the pilot a view of the third engine! This aircraft provided regular flights from Jersey, Guernsey and Alderney to mainland UK before retiring to Duxford.

Several Trislanders remain in service around the world.

Progress timeline

1. **Piston engine/ unpressurised**
2. **Propeller/ Turboprop**
3. **Jet engines/more speed/swept wings**
4. **Turbofan/used on all modern airliners**