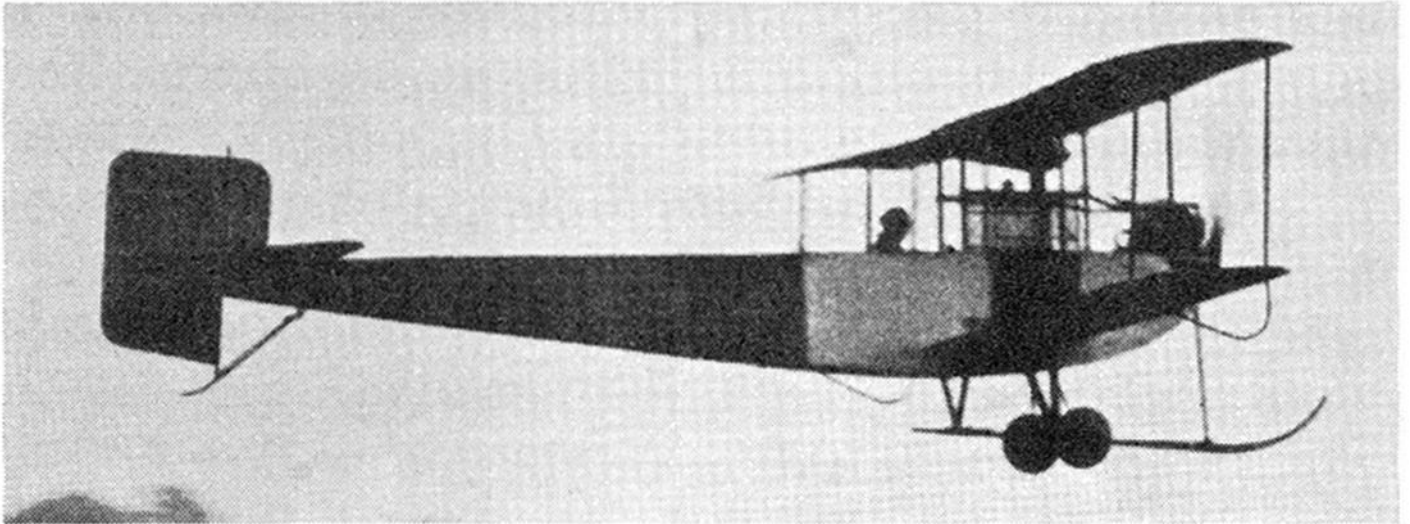


# Avro Duigan 1912 *Aviation Pioneer* 50 Inches Wing Span Plan



John Duigan flying his 35 h.p. Avro. (*W. Duigan.*)

The **Avro Duigan** was single seat tractor biplane built by [A.V. Roe](#) for the pioneer Australian aviator [John Robertson Duigan](#) in 1911. Only one was built, but several examples of the very similar slightly larger two-seater aircraft built by Roe at the same time, the [Avro Type E](#), were bought by the [RFC](#).

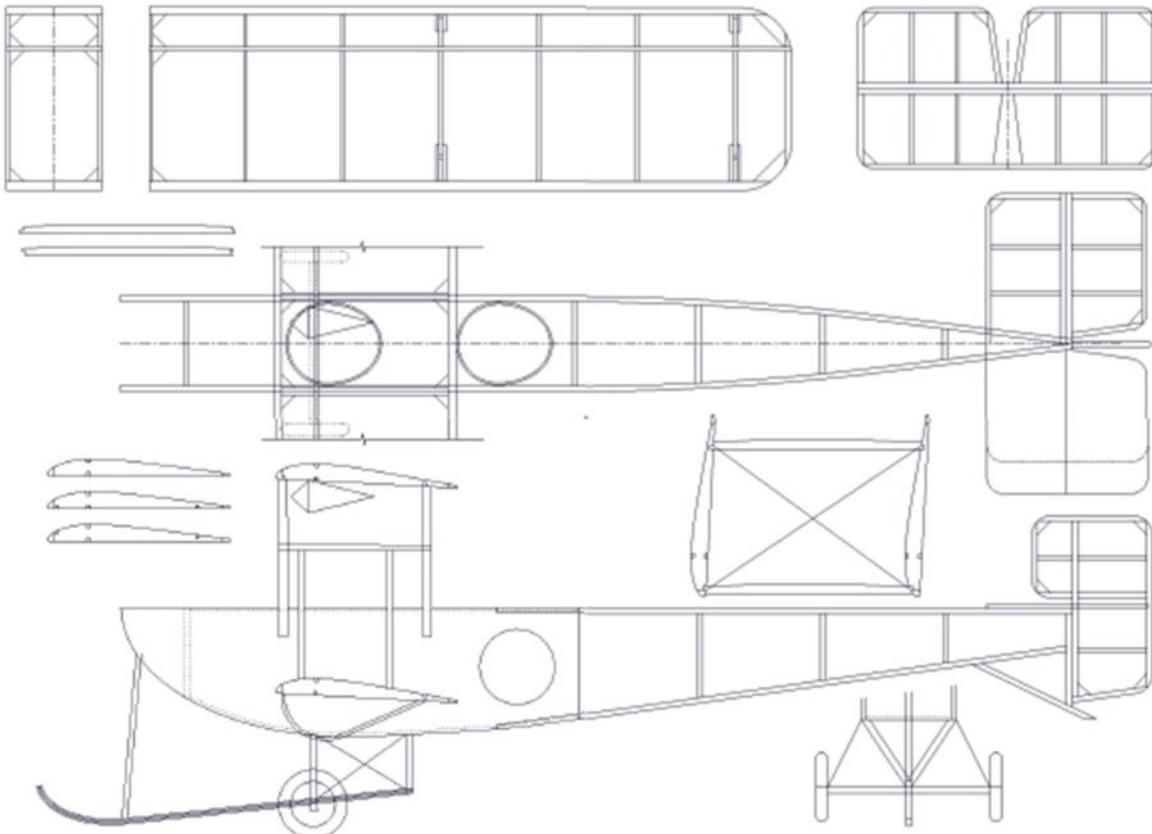
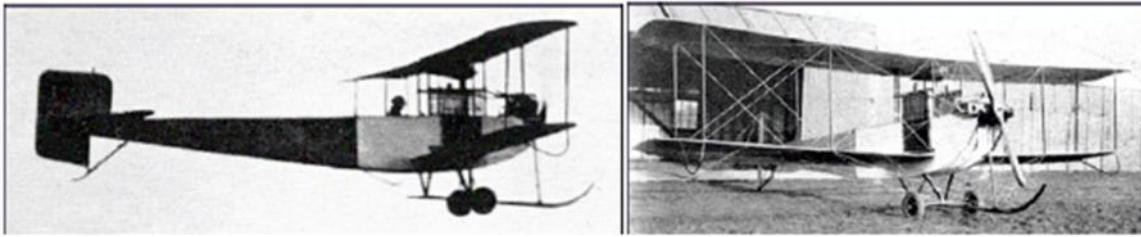
## Duigan



<b>Role</b>	2 seat biplane
<b>National origin</b>	UK
<b>Manufacturer</b>	A.V Roe & Co
<b>Designer</b>	A.V. Roe
<b>First flight</b>	March 1912
<b>Number built</b>	1
<b>Variants</b>	Avro 500

# Avro Duigan 1912 *Aviation Pioneer* 50 Inches Wing Span Plan

## *Avro Duigan 1912*



## Development

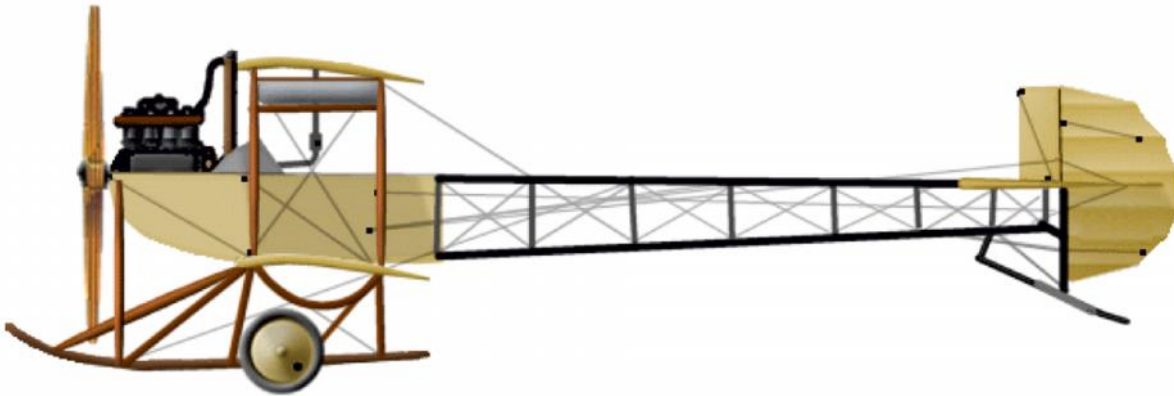
Roe's first biplane design, the [Avro Type D](#) had first flown in April 1911. The Avro Duigan was a major refinement of this fundamentally successful aircraft. It had a square rather than triangular cross section fuselage, simplifying construction and allowing the crew seats to be lower down, giving more protection. The wings were supported using an aerodynamically cleaner ordinary [two-bay](#) layout, replacing the two and a half bay arrangement of its predecessor, which had a third pair of [interplane struts](#) close to the fuselage. The undercarriage was simpler, a V-strut below the wing leading edge bearing a [leaf-spring](#) axle whose wheels had the refinement of covered spokes, and under this a single long skid supported by a second V-strut below the trailing edge and a single strut from the extreme nose of the aircraft. The tailplane was steel framed, with a rectangular fixed stabiliser and elevator and rudder. Other details were as previous aircraft.<sup>[1]</sup>

The fuselage was constructed of wire-braced ash metal covered forward of the cockpits. The observer sat in front with the pilot sitting behind the cut away trailing edge, an arrangement which positioned the front cockpit close to the [centre of gravity](#) of the aircraft and allowed it to be flown without a passenger with no change its balance. The [wire-braced](#) high [aspect ratio](#) two-bay

# Avro Duigan 1912 *Aviation Pioneer* 50 Inches Wing Span Plan

wings had ash spars and poplar ribs with the curved ends formed from cane. Lateral control was by [wing warping](#). A sprung tailskid was mounted below the rudder and small hoops were fitted below the outer interplane struts to protect the wingtips. The aircraft had dual controls and was fitted with small "Cellon" window to improve downward vision.

The aircraft was initially powered by a 40 hp (30 kW)<sup>[2]</sup> two-cylinder horizontally opposed [Alvaston](#) but soon replaced by a 35 hp (26 kW) [E.N.V.](#) V-8 motor.<sup>[3]</sup> Both were water-cooled engines, with pairs of large coiled tube radiators positioned parallel to the fuselage on either side of the front cockpit.



## Operational history

Trials with the Alvaston engine at [Huntingdon](#) race course were not successful, the aircraft barely lifting off. On his return to [Brooklands](#), the [E.N.V.](#) motor was fitted and on 10 March 1912 Duigan, flying solo managed some long, straight flights in his too-evidently underpowered machine. Some intensive engine tuning, together with a new propeller resulted in more success that April, with solo circuits, figures of eight, and an hour long series of circuits at about 500 ft (150 m). Nonetheless, Duigan won his [Aviator's Certificate](#) and returned to [Australia](#). His aircraft, without its engine, was sold to the [Lakes Aircraft Co.](#) who rebuilt it as the [Lakes Sea Bird floatplane](#) in October 1912, powered by a 50 h (37kw ) Gnome engine. In this form, it performed well. The slightly larger [Avro 500](#), powered by a 60 hp (45kW) [E.N.V.](#) was the first Avro aircraft type to be built in any quantity.

## Specifications

*Data from Jackson A.J Avro Aircraft since 1908 p.37*

### General characteristics

- **Crew:** 2
- **Wingspan:** 34 ft 0 in (10.36 m)
- **Powerplant:** 1 x E.N.V. type D, 35 hp (26 kW)

### Performance

- **Maximum speed:** 40 mph (65 km/h)