

AIRCRAFT CIRCULARS
NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

No. 140

THE WIBAULT 280 T.10 COMMERCIAL AIRPLANE (FRENCH)
An All-Metal, Cantilever, Low-Wing Monoplane

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THE WIBAULT 280 T.10 COMMERCIAL AIRPLANE (FRENCH)*

An All-Metal, Cantilever, Low-Wing Monoplane

By André Frachet

The constructor, Michel Wibault, exhibited at the aeronautic exposition a three-engine commercial airplane for ten passengers. It is an all-metal cantilever low-wing monoplane. This design has certain decided advantages. The take-off and landing are facilitated by the nearness of the wing to the ground. Moreover, in case of accident, the passengers are partially protected by the wing (Figs. 1-3).

On the other hand, the view of the passengers is reduced by the low wing. This disadvantage is partially overcome, however, by the fact that the floor of the fuselage rests on the wing spars, so that the seats are higher than in most low-wing monoplanes. Otherwise the view from the large cabin is unobstructed. Previous to the exhibit, several successful test flights were made at Villacoublay.

The wing consists of three distinct parts: a central rectangular part and two tapering lateral parts. The central part, of uniform thickness and chord, supports the fuselage, engine mounts and landing gear. The lateral parts decrease in thickness thus increasing the lateral dihedral. The long

*From Les Ailes, Nov. 27, 1930; L'Aéronautique, December, 1930 (p. 487); and data furnished by the manufacturers.

narrow ailerons are hinged to the trailing edge of the lateral parts of the wing. Their operation is facilitated by ball bearings. The two identical I-section wing spars are duralumin and are braced so as to insure the transmission of stresses from one to the other. The ribs are made from sheet duralumin, reinforced by small riveted stiffeners. The covering consists of sheet-metal panels.

The fuselage is made in three separable parts, which facilitate its transportation by rail. The framework consists of longerons of T-section duralumin (Figs. 4-6). The outside of the fuselage is covered with sheet metal, as also the walls of the passenger cabin. The front end of the fuselage contains the central engine group, a fire wall and a baggage compartment.

The second or central section of the fuselage contains the pilot and passenger cabins. The former has two seats abreast and dual control. The wooden rim of the steering wheel is covered with a special material and is joined to the hub by piano wires. The rudder bar is a duralumin tube (Fig. 7). The height of the seat is regulated by eccentrics which are rotated by the wheel at the rear by means of a chain and endless screw (Fig. 8). The windows are arranged so as to give the pilots a good view upward and even rearward. Their seats are separated by a passage leading to the cabin door. The cabin is very roomy with accommodations for ten passengers. The height is ample for moving about upright. There is a large

window beside each seat. The windows can not be opened, but provision is made for ample ventilation with warm or cool air according to the season. The entrance door is at the rear left, opposite the lavatory.

The third and last section, following the cabin, forms a freight compartment provided with a door on the right side, and also contains the radio instruments. This section terminates in a sternpost and supports the tail surfaces.

The horizontal empennage consists of a stabilizer and a two-part elevator. The former has two spars joined at their extremities and is adjustable during flight. The elevator is not balanced. The vertical empennage consists of a fin and an unbalanced rudder. All the tail surfaces are covered with sheet metal.

The 280 T.10 is equipped with three air-cooled Hispano-Wright radial engines with a total power of 936 hp. Other engines of about the same power can be used. The airplane exhibited at the salon is equipped with three Gnome-Rhone engines. The central engine is mounted in the nose of the fuselage. The lateral engines are mounted on bearers projecting from the leading edge of the wing. Ratier variable-pitch metal propellers are used. The exhaust pipes are very long and constitute silencers. The two fuel tanks have a combined capacity of 1200 liters (317 gal.). They are mounted in the wing in such a way that they can be dropped during flight.

The landing gear, without continuous axle, has a track of 5.075 m (16.65 ft.). It consists of two independent flexible trihedrals. The short axles are of the elbow type, connected with Messier oleopneumatic shock absorbers; the 1150 x 250 mm (45.28 x 9.84 in.) wheels are provided with brakes.

The tail skid is replaced by a dirigible wheel of cast light alloy directly under the sternpost.

Characteristics

Span	22.60 m	74.15 ft.
Length	17.00 "	55.77 "
Height	4.25 "	13.94 "
Maximum chord	4.04 "	13.25 "
Wing area	64.2 m ²	691.04 sq.ft.

Load distribution:

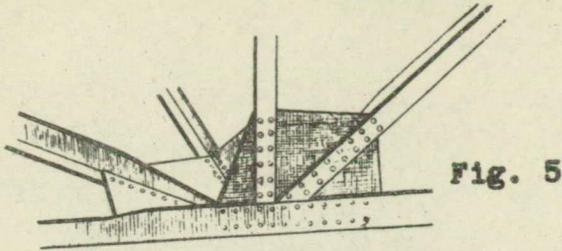
Airplane proper	2094	kg	4616.47	lb.
Engines empty	840	"	1851.88	"
Power-plant accessories	206	"	454.15	"
Fuel and oil tanks	75	"	165.35	"
Fixed equipment	<u>170</u>	"	<u>374.79</u>	"
Weight empty	3385	"	7462.64	"

Fuel	780 kg	1719.60 lb.
General equipment	70 "	154.32 "
Radio	75 "	165.35 "
Crew	160 "	352.74 "
Passengers	800 "	1763.70 "
Baggage	300 "	661.38 "
Disposable load	2185 "	4817.09 "
Full load	5570 "	12279.73 "
Total engine power	936 hp	
Wing loading	86.76 kg/m ²	17.77 lb./sq.ft.
Power loading	5.95 kg/hp	12.94 lb./hp

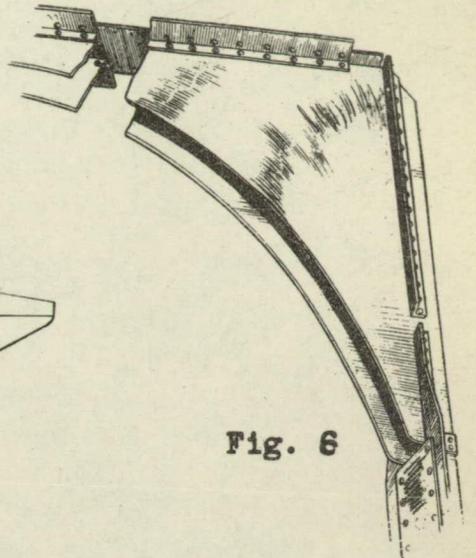
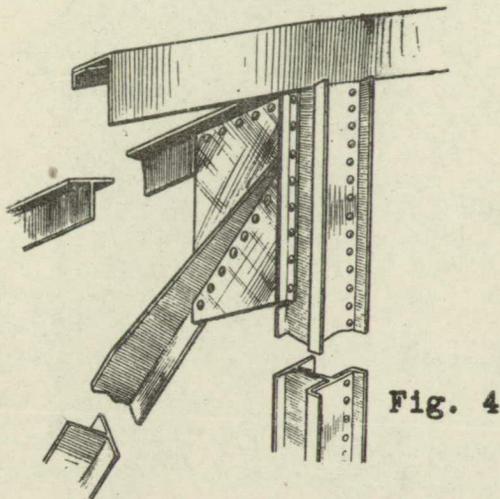
Theoretical Performances

Speed at sea level	202 km/h	125.54 mi./hr.
" " 1500 m (4920 ft.) (altitude of utilization)	215 "	133.59 "
Speed at 3000 m (9840 ft.)	209.5 "	130.18 "
" " 5000 " (16400 ft.)	197 "	122.41 "
" " 5800 " (19030 ")	187 "	116.20 "
Climb to 1000 " (3281 ")		3 hr. 49 min.
" " 1500 " (4920 ")		6 "
" " 3000 " (9840 ")		14 " 34 "
" " 4000 " (13120 ")		23 " 25 "
" " 5000 " (16400 ")		39 " 40 "
Ceiling	5800 m	19030 ft.

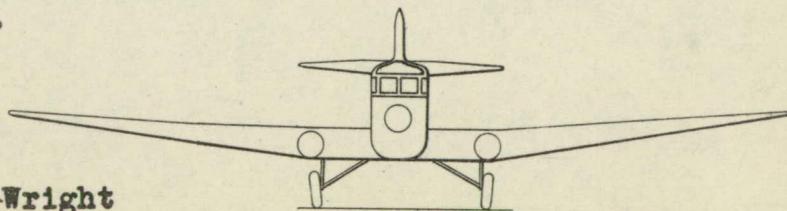
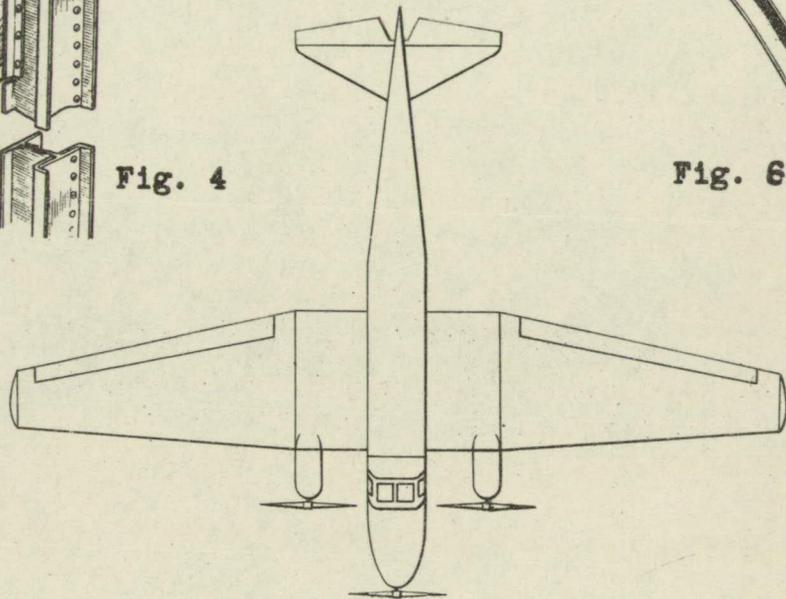
Translation by Dwight M. Miner,
National Advisory Committee
for Aeronautics.



Figs. 4,5,6
Structural
details



Span 22.60 m
(74.15 ft.)
Length 17.00 m
(55.77 ft.)
Height 4.25 m
(13.94 ft.)
Wing area:
64.2 m²
(691.04 sq.ft.)



Three Hispano-Wright
engines. Total of
936 hp

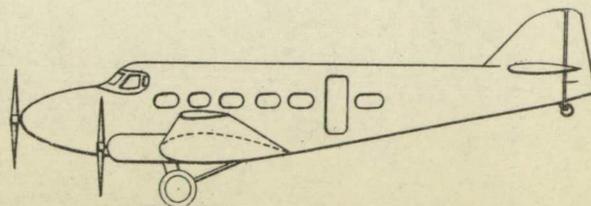


Fig. 1 General arrangement drawings of the Wibault 280 T.10

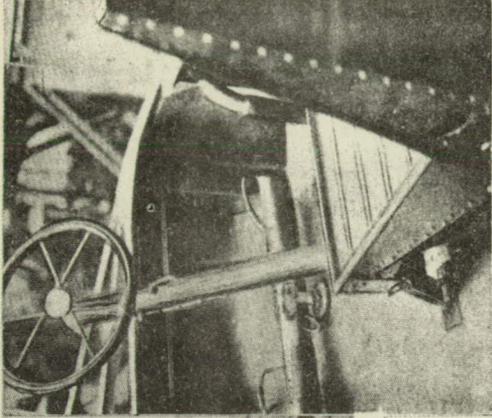


Fig. 7 Steering controls

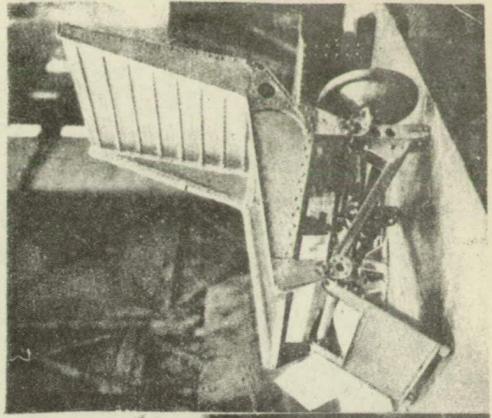


Fig. 8 Adjustable seat

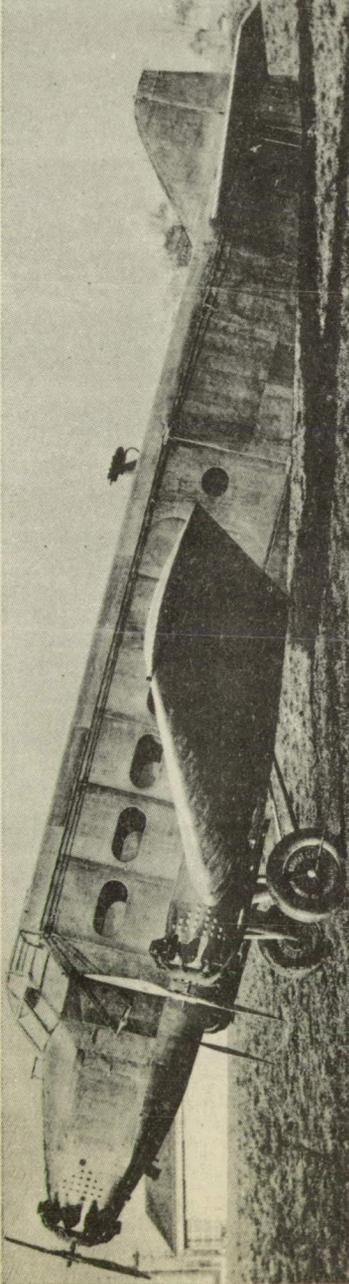


Fig. 2 Side view of the Wibault 280 T.10

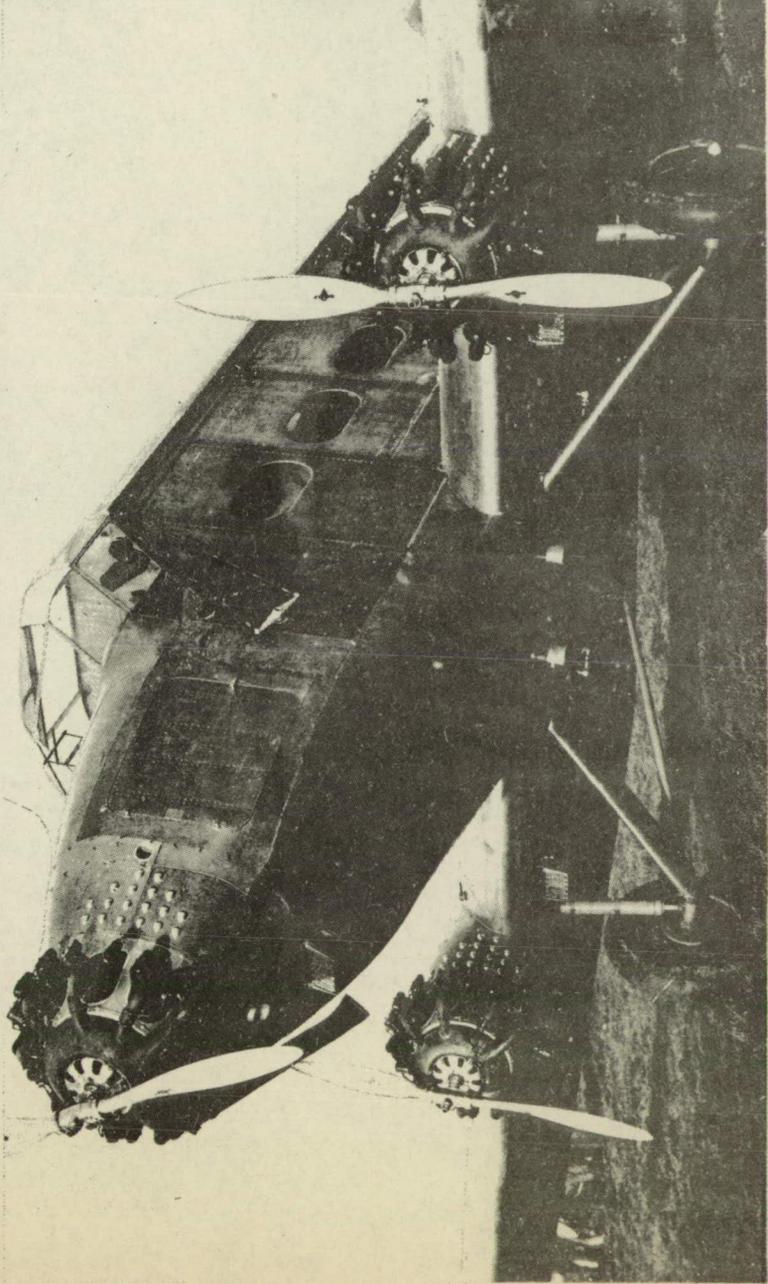


Fig. 3 Three-quarter front view of the Wibault 280 T.10