AIRCRAFT CIRCULARS

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

No. 46

FOCKE-WULF "G.L.18"

Twin-Engine 150 HP. Commercial Airplane

By J. Serryer

Washington
June, 1927

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Twin-Engine 150 HP. Commercial Airplane.*

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The formidable extension of its interior system of air lines has led Germany to use airplanes of small capacity, thus providing for traffic under the most economical conditions.

The agreements recently made by the government with the "Luft-Hansa" provided for using suitable airplanes on each line. As a result, certain aeronautical construction firms which had hitherto been able to exploit but a fraction of the system, now found themselves in a position to compete, with their special types of airplanes, in a more rational and extensive fashion, in furnishing the various types of airplanes required by such a vast organization.

Thus the Focke-Wulf "A.16" limousine airplane, which has been in use over two years, notably on the Bremen-Wangerooge section, constitutes the airplane type for short distances.

The "G.L.18," a new model derived from the "A.16" type, embodying many improvements suggested by the two years of service, has just been brought out by the Focke-Wulf Airplane Construction Company of Bremen.

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* From "Les Ailes," September 23, 1926.

To the really fine qualities of its predecessor the "G.L.18" had added another, which is of incontestable importance for commercial aviation. In fact, while neglecting neither economy nor comfort, the German engineers have made an enormous gain in the matter of safety. The new Focke-Wulf limousine has two engines and can fly 7 km (4.4 miles) with one of them stopped, with a loss of only 100 m (328 feet) in altitude.

The two 75 HP. Junkers engines, cooled by a forced air current, are located one on each side of the fuselage and are partially encased in the cantilever wing. This arrangement made it possible to give the nose of the fuselage a better shape. It has also freed the passenger cabin from the emanations of oil and gasoline which were formerly a source of discomfort.

The greatest power, which is twice that of its prototype, is compensated, as we shall see, by a notable improvement in its performances. The employment of a 100 HP. engine had already been found necessary on certain lines, with small aviation fields, for flying over elevated regions.

The wing of the "G.L.18" differs but little from that of the preceding model. It has retained the shape of the wings of a pigeon, like those of the "Taube" (dove) of 1913, which was made in both Germany and Austria. The purely cantilever wing is very thick in the center and tapers regularly, on the under

side only, to a point beyond the engine housings. This results in a slight lateral dihedral.

While the span of the "A.16" was 13.9 m (45.6 ft.), that of the "G.L.18" is 16 m (52.5 ft.). On the contrary, the maximum chord has been reduced from 3.6 m (8.5 ft.) to 2.5 m (8.2 ft.), the wing area being 34.5 m^2 (371.4 sq.ft.).

The principal characteristic of the Focke-Wulf wing resides in its different incidences. At the junction with the fuselage, the incidence is negative. It reaches about 1.45° at the first third of each half-wing, 1.3° at the second third, and becomes zero at the wing tips.

The non-balanced ailerons are jointed orthogonally with reference to the leading edge of the wing. They have been slightly shortened. They have external controls. The framework is all wood. There are two large box-girder spars, quite near to each other and to the leading edge, which is entirely covered with plywood. The wing is fastened to the top of the fuselage by suitable iron fittings integral with the girders forming the cabin walls.

The top of the fuselage is well-rounded, in order to afford the pilot good forward and lateral visibility. A door gives direct access to the pilot's cockpit, the front of which is protected by a large wind shield joined to the leading edge of the wing. Provision has been made for installing two pilot seats and a dual control for training young pilots.

The passenger cabin, directly behind the pilot's cockpit, normally contains three seats, though it can hold four. At this point the fuselage has a width of 1.3 m (4.27 ft.). Light and ventilation are furnished by four windows, two on each side. A large door affords access to the cabin, whose floor nearly touches the ground.

The horizontal empennage has retained the shape of a pigeon's tail. It consists of a large fixed stabilizer and a two-part non-balanced elevator.

The vertical empennage consists of a triangular fin and a balanced rudder with a larger surface than that of the "A.16."

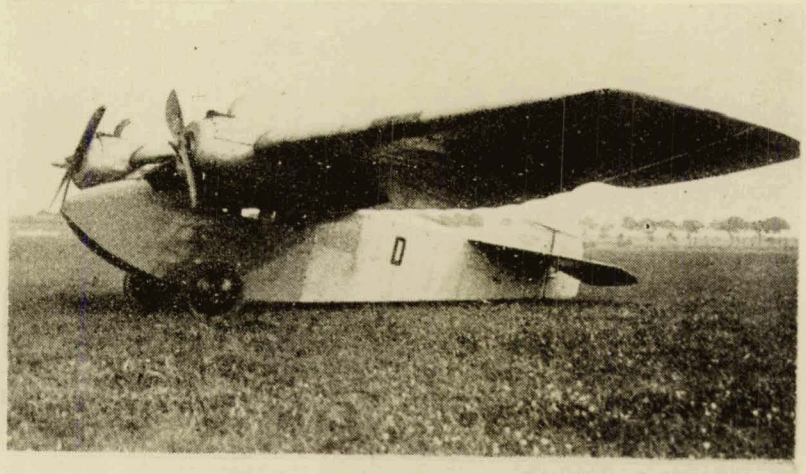
The engines are enclosed in streamlined cowlings. They are Junkers engines of the type L.1a, with six cylinders in line, with a 100 mm (39.37 in.) bore and a 120 mm (47.24 in.) stroke, with cam shaft at the top. Their nominal power is 70 HP., but they can develop 80 HP. at 2000R.P.M. Each engine weighs about 130 kg (286.6 lb.) and consumes 260-270 grams (.57-.60 lb.) per HP./hr. The cooling is effected by a fan enclosed in a housing which surrounds the cylinders.

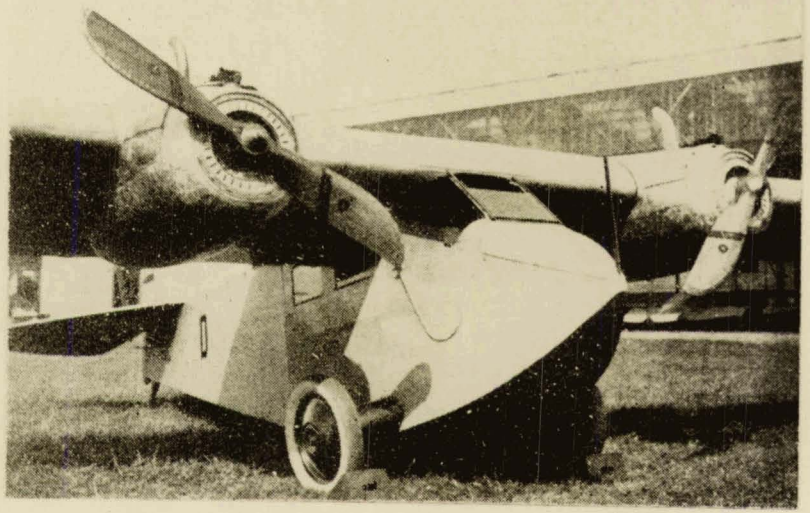
The landing gear consists of two separate parts attached to the front part of the fuselage. Each short axle is joined at one end to a strut forming an integral part of the fuselage. The other end carries the wheel, the whole axle being enclosed in a streamlined fairing. A wooden tail skid is mounted under the fuselage, being flexibly joined to the framework of the latter.

Characteristics

Span	16.00 m	52.5 ft.
Length	8.74 "	28.7 "
Height	2.60 "	8.5 "
Track gauge	2.40 "	7.9 "
Wing area	34.5 m^2	371.4 sq.ft.
Weight of pilot	80 kg	176.4 lb.
Weight of fuel	150 "	330.7 "
Useful load	295 "	650.4 "
Full load	1450 "	3196.7 "
Power	150 HP	148 HP.
Wing loading	42 kg/m^2	8.6 lb./sq.ft.
Power "	9.7 kg/HP	21.1 lb./HP.
Maximum speed	145 km/h	90.1 M.P.H.
Minimum speed	85 "	52.8 "
Climb to 1000 m (3280 ft.)	10 min.	
Flight duration	3 hr.	

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





Views of Focke-Wulf G.L.18 airplane.

From Z F M Jan.17, 1926.

Span	16.00 m	(52.5 ft.)
Length	8.74 m	(28.7 ft.)
Height	2.60 m	(8.5 ft.)
Wing area	34.50 m^2	(371.4 sq.ft.)

Two 75 HP Junkers Lla engines.