

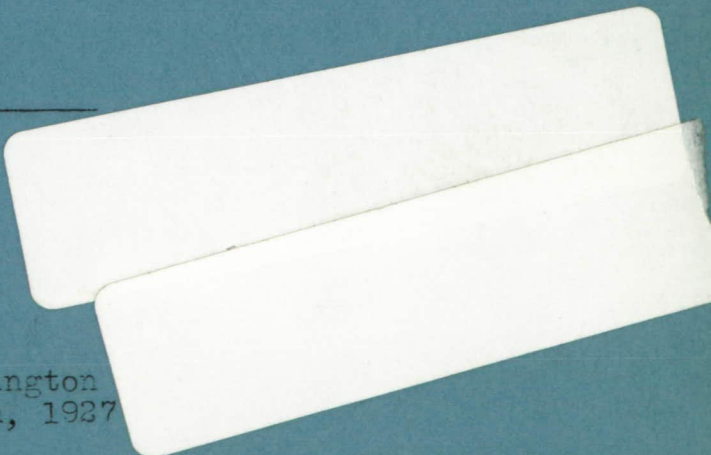
NACA-AC-33

FILE COPY  
NO. 6

AIRCRAFT CIRCULARS  
NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

\_\_\_\_\_  
No. 33  
\_\_\_\_\_

"SAVIOIA" SEAPLANE S.55  
(Military or Commercial)



Washington  
March, 1927



898

NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS.

AIRCRAFT CIRCULAR NO. 33.

"SAVOIA" SEAPLANE S.55\*  
(Military or Commercial).



The Savoia 55 is a two-engine, twin-hull seaplane, built by the "Societa Idrovolanti Alta Italia" (Seaplane Company of Upper Italy), which can be readily equipped for commercial or military work.

On February 13, 1927, Colonel the Marchese de Pinedo, started on his world flight from Elmas, Sardinia, and will attempt to span four continents and make a trip comprising some 30,000 miles, the outstanding feature being the double crossing of the Atlantic. He is using a Savoia 55 (Santa Maria) seaplane fitted with two 500 HP. Isotta-Fraschini engines. The seaplane carries a useful load of 7,500 pounds, has a range of 1900 miles and a cruising speed of 100 M.P.H.

In 1925 this famous pilot made a flight from Rome to Australia, Japan, and back to Italy, approximately 34,000 miles. The seaplane used for this flight was a Savoia 16 ter.

As may be seen from the accompanying illustrations (Figures 1 to 7) the general design of the S.55 is decidedly original, but it is one, nevertheless, possessing several features that render the seaplane a sound practical proposition for the job

---

\*From a circular published by the "S.I.A.I." and "Flight,"  
April 9, 1925.

for which it was intended, i. e., torpedo launching and mine laying. It is a thick-section cantilever monoplane, having twin boatlike hulls ("bat-boat" type) carrying the center section of the wings and forming one unit with the latter. Above the center section of this type is mounted, by a system of M-struts, a streamlined nacelle containing two 400 HP. Lorraine-Dietrich engines, arranged in tandem, the front one driving a tractor screw and the rear one a pusher screw. It will be observed that the engine nacelle is inclined so that the line of thrust of the engines is about 8 degrees out of the horizontal, and a slight upward pull or push is exerted. No doubt this is done in order to direct the slip stream on to the tail, the engines, necessarily, being fairly high in this seaplane. Cooling of the engines is effected by a radiator mounted in the nose of the nacelle.

The pilot's cockpit is located in the leading edge of the center section, the wing at this point having a maximum depth of about 3 feet. Underneath in the middle of the center section is mounted the torpedo, or mine-laying gear, there being a clear space of about 3 feet between the two hulls for this purpose. The span of the center section is 19 ft. 4 in., and the chord at this point is 16 ft. 6 in.

The outer wing sections, which have a pronounced dihedral angle, taper sharply from root to tip, both in chord and ordinate, the chord and ordinate at the tip being 9 ft. 9 in. and

8 in., respectively. The leading edge sweeps back about 15 degrees, while the trailing edge is only slightly inclined. Balanced ailerons of the inclined axis type are employed for lateral control.

The tail surfaces are carried by two pairs of V-outriggers from the center section and the hulls. The top beam of each V is attached to the upper surface of the center section, near the rear main spar, while the lower beam is attached to the sternpost of the hull. The two V's are cross-braced, and in addition each has a vertical strut at its forward and rear ends. Mounted on the top of the horizontal stabilizing surface, which is of rectangular plan form, of 97 sq.ft. area, are three triangular vertical fins, to the trailing edges of which are hinged balanced rudders.

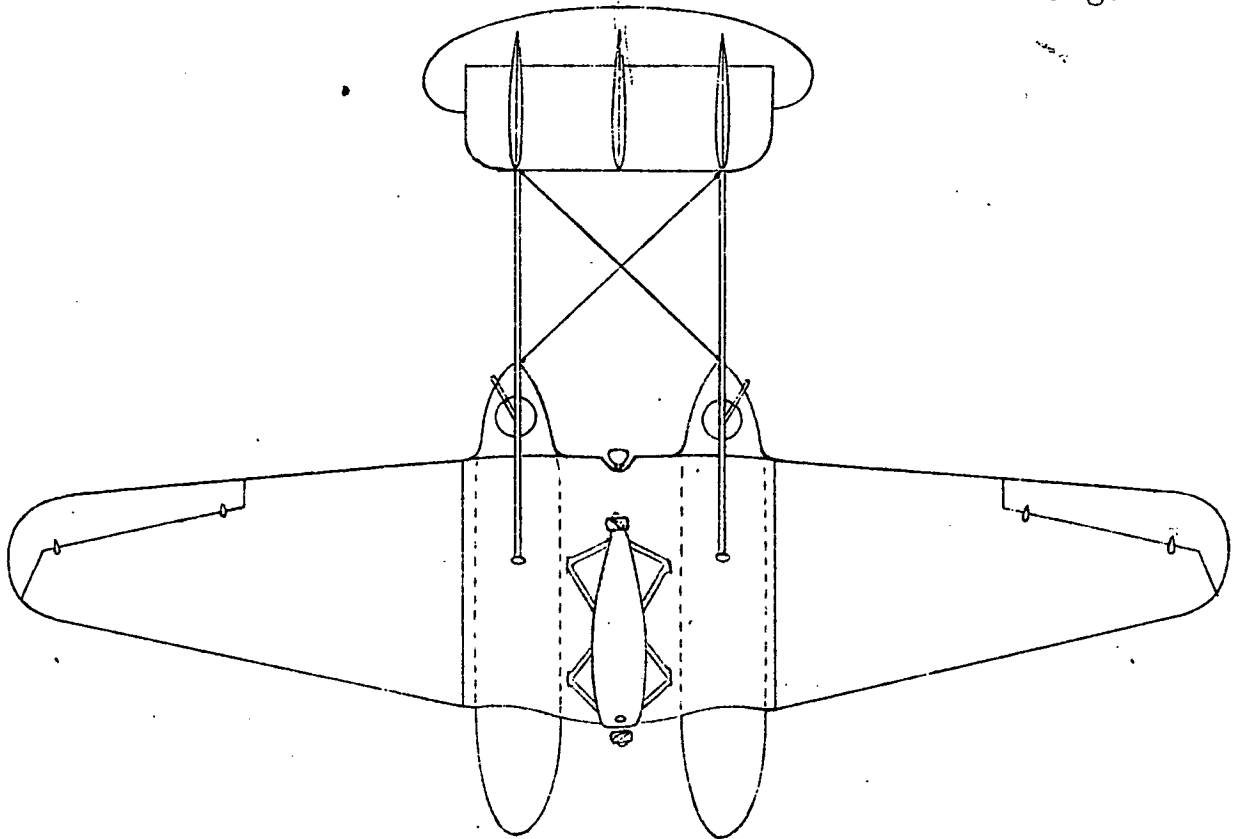
As regards the two hulls or boats, which are spaced about 13 feet apart, these are a little over half the total length of the seaplane, being, in fact, about 30 ft. 6 in. long, and having a beam of 5 ft. 3 in. They are of the single-step V-bottom type, and are so constructed that if desired they can be formed into cabins, accommodating 12 passengers, for commercial work. A gunner's cockpit is provided in the stern of each of the hulls, from which a very good range of action is obtained.

An important feature of the S.55 is that it is very easily dismantled for transport, the wings being in three detachable sections; each of the hulls can be detached from the center sec-

tion while, of course, the tail unit is easily dismantled. The engines may readily be inspected, even during flight, and one is sufficient to maintain the seaplane in the air.

### Characteristics and Performances

Engines	2 Lorraine-Dietrich,	400 HP.
Wing area	95 m <sup>2</sup>	1001.0 sq.ft.
Weight empty	3700 kg	8157.1 lb.
Useful load	2000 "	4409.2 "
Wing loading	61 kg/m <sup>2</sup>	12.49 lb./sq.ft.
Power "	7.1 kg/HP	15.44 lb./HP.
Normal flight duration		4 hours
Increasable to		10 "
Maximum horizontal speed	210.0 km/hr	130.5 M.P.H.
Minimum horizontal speed	90 "	55.9 "
Climbing time to:	1000 m (3281 ft.)	3 min. 20 sec.
" " "	2000 m (6562 ft.)	8 " 21 "
" " "	3000 m (9842 ft.)	16 " 15 "
" " "	4000 m (13123 ft.)	37 " 25 "
" " "	5000 m (16404 ft.)	60 " 0 "



Span 24m (78.74 ft.)  
Length 16m (52.49 ft.)  
Height 5m (16.40 ft.)  
Max. chord 5.03m (16.5 ft.)

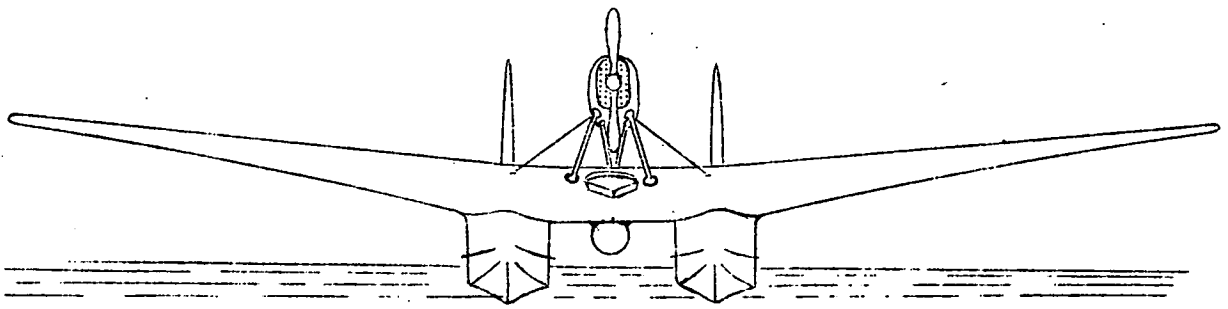
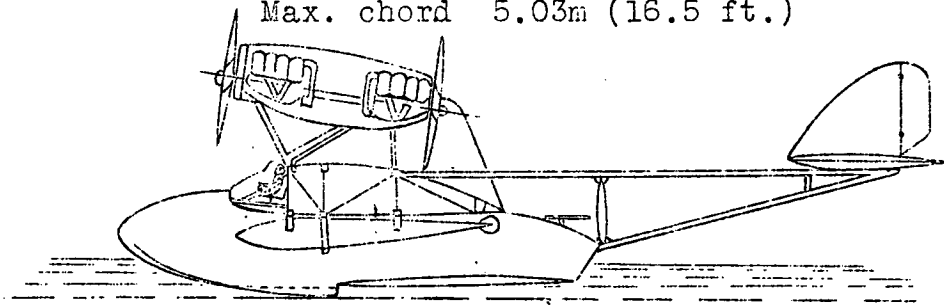


Fig. 1 Military S.55 seaplane.

5

From  
*L'Ala  
D'Italia*  
Mar. 1926

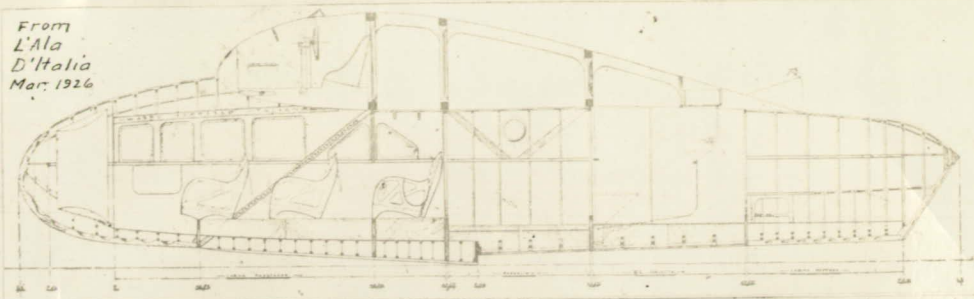
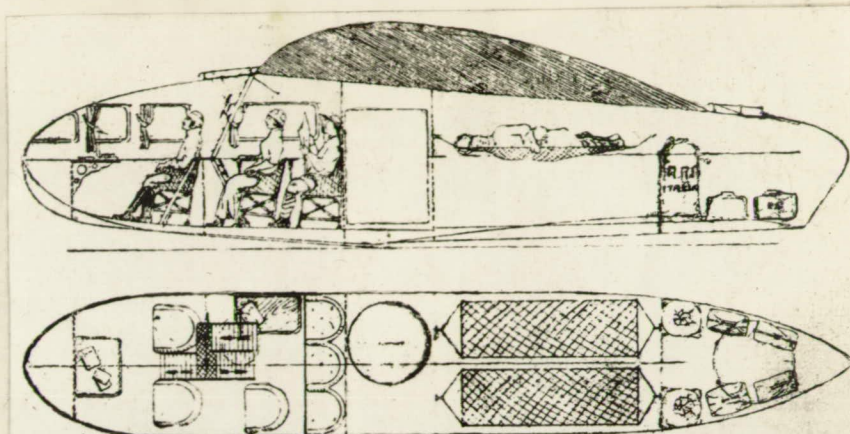


Fig. 2 Vertical section through hull



From *L'Ala D'Italia*, Sept. 1924

Fig. 3 Elevation and plan of one of the two hulls showing accommodations for passengers and baggage. Maximum capacity is 13 passengers in addition to pilots.



From *L'Aviazione*, Dec. 1926

Fig. 4 Inside view of one of the hulls.



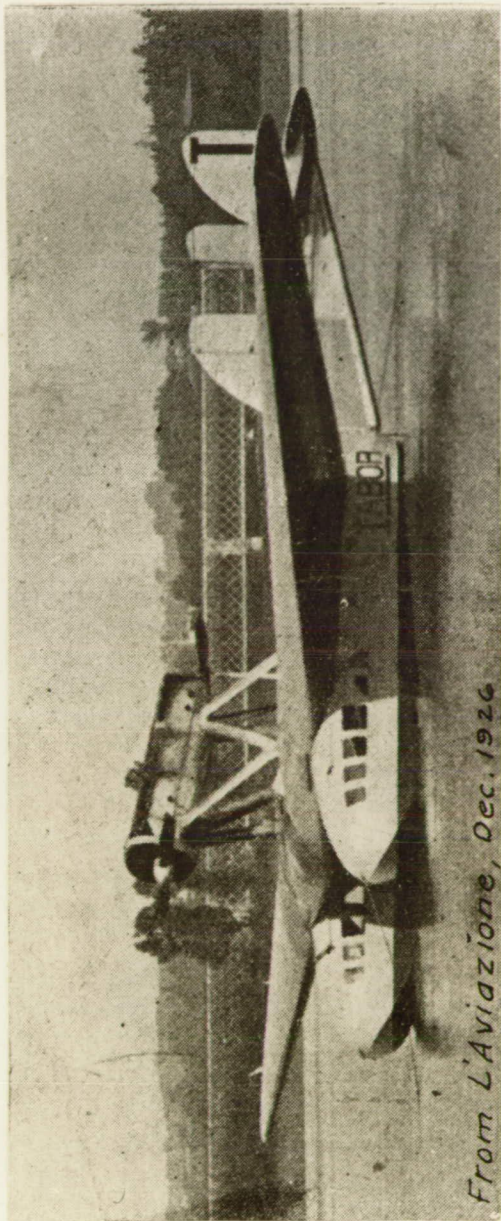
From *L'Aviazione*, Dec. 1926

Fig. 5 Passageway between cabin and cockpit

SECTIONS AND VIEWS OF THE S.55 SAVOIA SEAPLANE

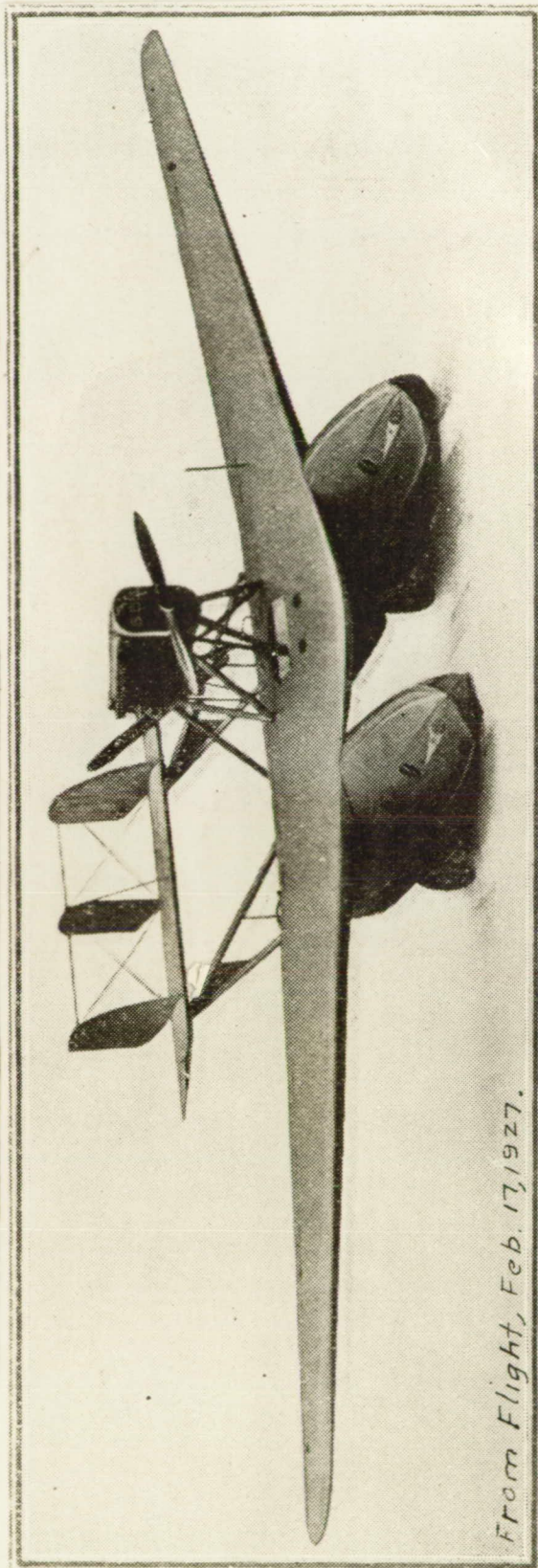
4424 AS

6



*From L'Aviazione, Dec. 1926*

**Fig.6 Commercial S.55 seaplane**



*From Flight, Feb. 17, 1927.*

**Fig.7 Military S.55 seaplane**