

LOIRE 210

The Loire 210 was designed to meet a 1933 requirement from the French navy for a catapultable single-seat fighter seaplane.



The first prototype flew to Saint Nazaire on March 21, 1935, its performance is considered correct. Its piloting is easy, and it passes all the traditional aerobatic program. An order for 20 aircraft was placed on May 12, 1937. In all this will therefore be 21 aircraft built and delivered with considerable delays related to various requested modifications. These deliveries were staggered from November 1938 to September 1939.

In service, the aircraft experienced some accidents which put an end to its brief career (added to the fact that the naval staff had no real doctrine of employment for a fighter seaplane that could not cope to its ground competitors) . Studies have shown the fragility of the flotation system. In fact, nothing too complicated to rectify but it was no longer the time to do that.

The planes were divided into 4 groups HC1 to HC4 (Hydravions de Chasse 1 à 4). Catapultages were carried out at sea on the battleships "Strasbourg" and "Dunkirk" as well as on the cruiser "Georges Leygues".

The HC1 group, planned to be attached to the transport of aircraft "Commandant Teste", was to be assigned to the defense of the port of Toulon. However, it turned out that it could only be ineffective. The report of Admiral Lartigue citing :

"The Loire 210 seaplanes that equip this squadron have proven to be extremely poor. They have no interest in the defense of Toulon. Their only likely use in wartime is:

- either the attack off long-haul enemy seaplanes;*
- the attack on surveillance seaplanes catapulted by enemy privateers. "*

These models delivered 4 years after the prototype tests were obsolete for what they had been planned.

The models shown were made with Gmax and the FSX SDK and then adapted for MSFS with Blender and the MSFS SDK.

Installation :

There is no automatic installer, unzip the package and install the result in the Community directory of your installation.

The different textures :

2 textures corresponding to the prototype and production versions.



Prototype state 1



Series

The cockpit :

Inspired by a photograph of the cockpit of a period Loire 210, its authenticity is far from guaranteed, although the instruments in use at the time have been modeled as accurately as possible. The illustrations are taken from MSFS screenshots.



The gauges are representations of French vintage gauges. They are all represented and animated but some are inoperative in the simulators (awaiting coding or without correspondence with the simulation engine).



Description

- 1 : Sun visor lever
- 2 : Cinema_machine gun commands (INOP)
- 3 : Compass Vion 31
- 4 : Extinguisher (INOP)
- 5 : Contact, battery, voltmeter
- 6 : Armament control panel
- 7 : Gauges fuel level, fuel pressure, oil temperature and pressure
- 8 : Flight controller: Anemometer, clinometer, variometer, lateral slope indicator and turn indicator
- 9 : Tachometer
- 10 : Clock
- 11 : Pneumatic system (valve, controller)
- 12 : Altimeter
- 13 : Manifold pressure
- 14 : Magneto contacts
- 15 : Carburetor heating switch
- 16 : Panel lighting switch

- 17 : Navigation lights switch
- 18 : Munerelle inhaler
- 19 : Fuel cutoff switch
- 20 : Pitot reheating switch
- 21 : Engine control levers (red = gas, blue = mixture)
- 22 : Labinal generator for managing the battery required for radio equipment
- 23 : Shooting trigger on top of the stick (or joystick button or "smoke" on the keyboard)
- 24 : Viet Starter
- 25 : TH53 Receiver activation
- 26 : Viet starter set
- 27 : Machine gun counters
- 28 : Transmission frequency switch lever (Active/ Standby)
- 29 : Standby Frequency Setting (kHz)
- 30 : Standby Frequency Setting (mHz)
- 31 : Flaps lever
- 32 : Elevator trim

Activating the rudder in the water: assign the "Toggle water rudder" command in the simulator's control options or use the "Ctrl+W" key combination.

Engine start :

The engine start can be done in two ways, one fast and the other respecting the start procedure with the Viet system.

Quick Start :

- 1) *Just pull the magnetos control switch then type CTL + E and the start-up will be done according to the automatic procedure otherwise the continuation is done with the Viet starter.*

Viet start procedure :

- 2) **Principle :**
- 3) This involves spraying an air-petrol mixture into the cylinders and igniting it with a spark produced by a manual magneto. A compressed air tank and an auxiliary fuel tank are associated with the device. The engine start following explosions due to the starter. With the engine running, the system disconnects.
- 4) The sprayer contains the pieces used to produce the fuel mixture: nozzle, diffuser, adjustment knob (inoperative FSX / P3D). A distribution tap whose key bears the inscriptions: "Aspirer", "injecter", "Démarrer" allows the following operations to be carried out: aspiration of petrol, injection of petrol and starting of the engine.
- 5) **Start-up operations**

Starter air tank opening

The opening is done by operating the dedicated pull tab (marked) on the dashboard. A pressure gauge allows to control the pressure

Fuel injection

Fuel injection is the auxiliary to the starter. It is essential for priming carburetors and restarting the engine.

Position the 3-point wrench of the dispensing tap on "ASPIRER" and lift the pump to suck up the petrol.

3 branches key on "INJECTER", lower the piston of the injection pump to discharge the petrol in the injectors of the intake manifolds.

Start-up

Open the starter needle (arrival of compressed air in the starter)

Key on "ASPIRER", lift the piston of the injection pump.

Key on "DEMARRER" open the starting needle and immediately turn the starting magneto until the engine starts.

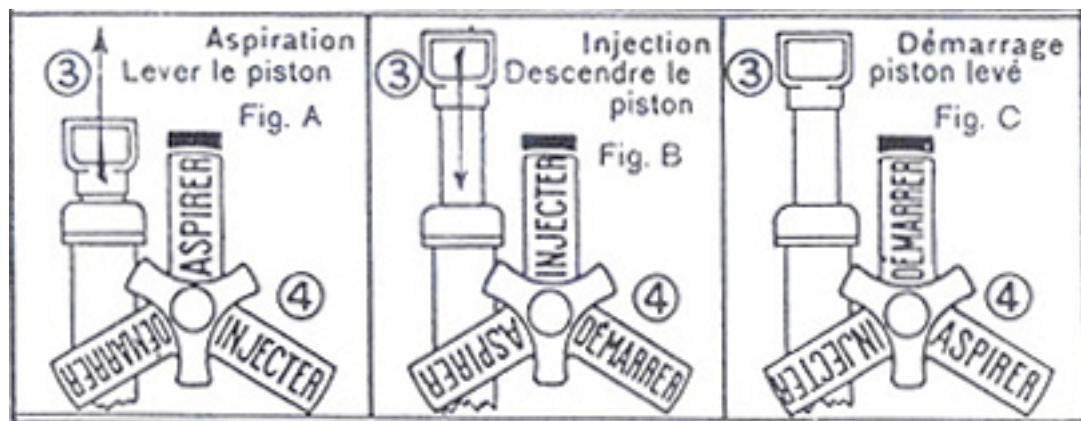
With the engine running, immediately close the starter needle to reduce air consumption.

Empty the injection pump by positioning the key on "INJECTER" and lowering the piston of the injection pump.

Close the "demarrage" needle.

A video shows these different operations.

In all operations of the start key, left and right click are effective (forward, backward).



Representation of the different positions of the starting key

To complete the operations, activate the battery, the Labinal generator and start the radio. If you use the engine stress option, it is necessary to make a fixed point to raise the oil temperature above 55 ° C.

DUCRETET TH 53 radio :

From diagrams and period documents, the TH53 set was modeled and installed in the Loire 210.

In the 1930s, radio frequencies were different from what we know today. In France, in military aviation, 2 frequencies were used for transmission and 5 frequencies for reception. We did not transmit on the same frequency as that used in reception.

These frequencies were pre-set before departure for the mission. The tuning was done by a circuit comprising a variable capacitor and a self induction coil. To adjust these frequencies, the positioning of the capacitor was carried out using a vernier graduated from 0 to 100 (or sometimes from 0 to 180) and an abacus displaying the correspondence angle and associated frequency. A mechanical device associated with light indicators enabled the pilot to select the frequencies.

In transmission, a lever made it possible to pass from one frequency to another.

On reception, the pilot gradually actuated a lever until he felt an impression of blocking / interlocking indicating that he was on a preset frequency. A light indicator enabled him to know the sequence number of the frequency (from 1 to 5).

This device is emulated with limitations due to differences in the system used today and implemented in MSFS. Only COM1 frequencies are used with settings in STANDBY and ACTIVE.

The image below shows its location in the cockpit of the Loire 210



1. Start button. To activate the set put it on Em / Rec
2. With the radio on, the active frequency is displayed.
3. Active/Standby Frequency Inverter Lever
4. Frequency setting (kHz) Standby
5. Frequency setting (mHz) Standby

Adaptation to MSFS

To adapt / animate the TH53 in MSFS.

- The reception frequency change lever controls the STDBY / ACT passage for each channel

The weapon system

The model has 4 machine guns powered by 500 cartridges each. They have security, an individual selection system and a trigger on the top of the stick. There is a system of round counters controllable by 2D or 3D gauges.

The command can be done by "I" which is generally associated with the "smoke system". In the "aircraft.cfg" file, a "dummy" gauge allows it to work, although it has no effect.

The view below shows the Loire 210 effecting a fire (FSX).

The model has 4 machine guns, each fed by 500 rounds. They are equipped with a safety, an individual selector system, and a firing trigger at the top of the control stick. A round counter system, controllable via the 3D gauges on the instrument panel, is also included.

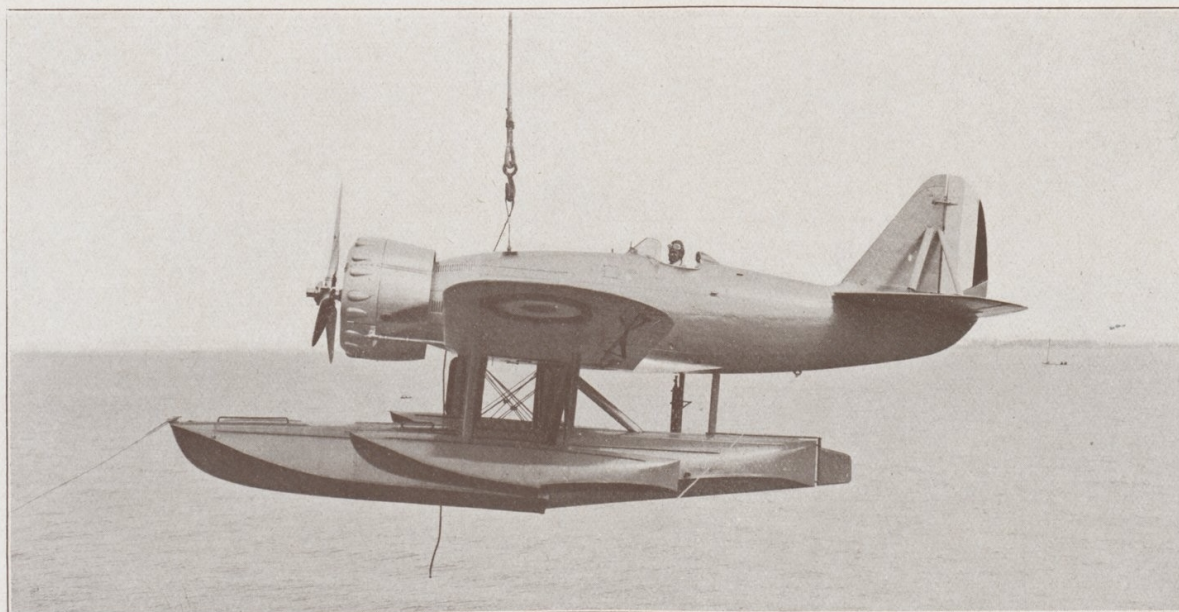
The gun can be fired using a joystick button associated with the smoke system or by pressing the trigger at the top of the control stick.

There are no visible traces of spent cartridges, only a flashing light effect at the exit of the machine guns. Firing has no effect in the simulator.

View of the round counter gauges at the bottom of the instrument panel.



Société Nationale de Constructions Aéronautiques de l'Ouest



THE LOIRE 210

Catapultable single-seat seaplane-fighter, all-metal frame, and covering except for fabric-covered wings.

720 HP Hispano-Suiza 9 Vbs air-cooled motor. Three-bladed metal airscrew.

Low-wing comprises a centre-section, strutted from below and carrying the alighting gear and detachable wing-extensions. Split flaps.

Elliptical-section fuselage. Placing of pilot provides excellent visibility. The monocoque is of mixed longitudinal-transverse type.

Tail-plane is mounted above the fuselage.

Welded steel tube engine-mounting.

Alighting gear comprises a central float provided with trunnions for catapulting and two wing-tip floats to provide lateral stability.

Pilot's cockpit contains oxygen-equipment, radiotelephone transmitter and receiver, belt and antibreak-neck head-support for catapulting.

Dimensions and weights :

Hispano Suiza P Vbs motor.....	720 HP
Span.....	11 ^m ,79
Span with extensions detached.....	4 ^m ,70
Overall height.....	3 ^m ,73
Overall length.....	9 ^m ,51
Wing area.....	20 sq. m. 26
Weight empty.....	1552 ^{kg}
Disposable load.....	548 ^{kg}
Weight loaded.....	2100 ^{kg}
Load per sq. m.....	103 ^{kg} ,6
Load per HP.....	2 ^{kg} ,9
Load factor at 2100 ^{kg}	16 ^{kg}

Performance :

Speed at 3000 ^m	280 kmh
Min. speed.....	94 kmh
Climb to 3000 ^m	5 ^{min} 19 ^{sec}

LOIRE 210

Hydravion de chasse catapultable, monoplace, entièrement métallique sauf revêtement d'ailes entoïlées.

Moteur Hispano-Suiza de 720 CV type 9 Vbs, refroidissement par air. Hélice métallique tripale.

Aile basse constituée par un plan central haubanné par-dessous et porté par le train d'amerrissage et de deux demi-ailes démontables. Volets d'intrados.

Le fuselage est de section elliptique. La position du pilote lui donne une excellente visibilité. La charpente monocoque est de système mixte longitudinal transversal.

Le plan fixe est monté au-dessus du fuselage.

Bâti-moteur en tubes d'acier soudés.

Train d'amerrissage comprenant un flotteur central avec tourillons de catapultage et deux ballonnets en bout d'aile assurant l'équilibre transversal.

Poste de pilotage avec inhalateur, poste de radiophonie, émission et réception. Ceinture et appui-tête spéciaux de catapultage.

Caractéristiques :

Moteur Hispano Suiza P Vbs.....	720CV
Envergure.....	11 ^m ,79
Envergure demi-ailes démontées.....	4 ^m ,70
Hauteur totale.....	3 ^m ,73
Longueur totale.....	9 ^m ,51
Surface portante.....	20 ^m ² ,26
Poids à vide.....	1552 ^{kg}
Poids mobile.....	548 ^{kg}
Poids total.....	2100 ^{kg}
Charge par m ²	103 ^{kg} ,6
Charge par CV.....	2 ^{kg} ,9
Facteur de charge à 2100 ^{kg}	16 ^{kg}

Performances :

Vitesse à 3000 ^m	280 kmh
Vitesse minimum.....	94 kmh
Temps de montée à 3000 ^m	5 ^{min} 19 ^{sec}

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NANTES BOUGUENNAIS (Loire-Inférieure) — Tél. : Nantes 165-40, 165-41 et Bouguenais 21.
SAINT-NAZAIRE — (Loire-Inférieure) — Tél. : 302.

Aérodromes : VILLACOUBLAY et CHATEAU-BOUGON (Nantes).

Base d'Hydravions : SAINT-NAZAIRE.

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Although tested without problems, the authors disclaim all responsibility for any damage to hardware or software resulting from the use of this add-on.

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The RESTAURAVIA website for MSFS 2020 and 2024 versions: <https://restauravia.fr/>

The RFN for FSX/P3D versions: <https://royalefrenchnavy.restauravia.fr/>

Thanks

Without the courtesy of Mr. Aimé SALLES who was kind enough to communicate his documentation to me and give me many explanations on the radio equipment of the time, the TH53 station could not have been modeled or animated.

JM CHARDES aka Gastonj – june 2020

