

Fokker C.X Hispano AZmodel¹ injection kit

Sesquiplane reconnaissance/light bomber

Scale 1:72

The Fokker C.X appeared in 1934 and was the successor of the Fokker C.V², but did not have the success this last plane has had. The plane has only been sold to the Dutch Army Air Department (LVA), the Dutch East Indies Air Department (KNIL LA, see the photograph at the right), to the Finnish Air Force and one aircraft to Spain. It has also been license produced in Finland.



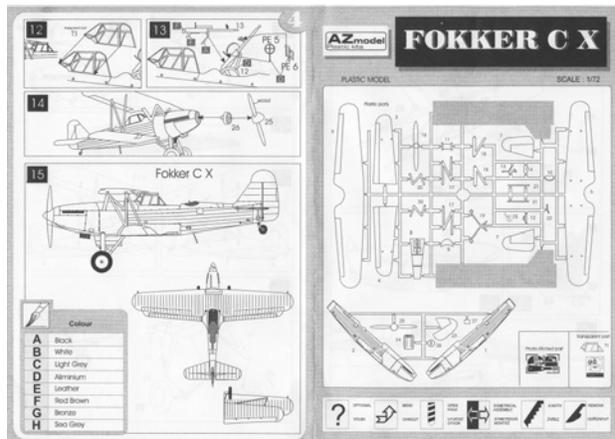
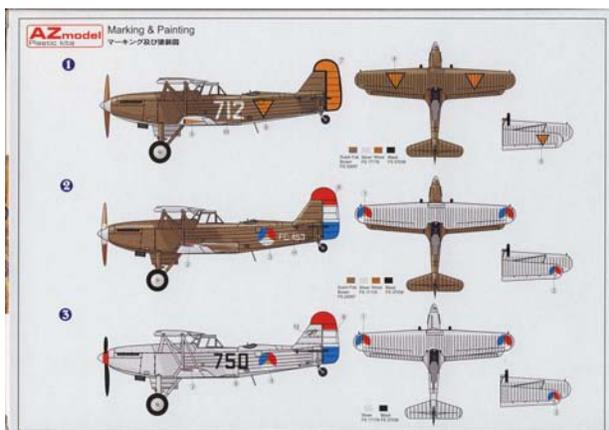
The C.X was Fokker's last operational military wheel biplane. There were two production versions of the C.X: one with a Rolls-Royce Kestrel V engine for LVA and KNIL LA, and one with a Bristol Pegasus XXI engine³ of 835 hp for the Finnish Air Force. Also a prototype with a Hispano-Suiza 12 Ycrs engine of 860-925 hp and a three bladed propeller has been produced in 1936 and had its maiden flight on August 24 of that year.

The version with the Kestrel engine is the subject of this kit⁴. The aircraft with the Hispano-Suiza engine, which carried the registrations X-1 and 750, can supposedly also be built from the kit, but shape the forward fuselage, oil cooler and engine exhausts was different. As 750 it flew from April 1937 until January 1938 with the LVA. There are no records reporting that the aircraft has been equipped with bombs, neither are there photographs showing it with that equipment. The 750 has gone to Republican Spain via Estonia and France in early 1938 and had there a license-built sister aircraft. Both aircraft were finally used by Franco's Nationalists until the end of the 40s, registered as R.7-1 and -2. 35 Finnish C.X's equipped with a Bristol Pegasus engine have been license-produced in Finland. The last one of this series has been destroyed in an accident in 1958.



The kit comes in a carton box and contains the plastic parts, a clear plastic injection plastic canopy, resin parts for wheels and pilot seat, photo-etched parts for instrument panels, gun sights for the fixed and movable machineguns (with spares!) and (pilot) seat belts, a piece of clear plastic imprinted with the instrument dials for pilot and observer, a sheet of decals for three versions (the LVA version as it has flown from 1939 onwards, the KNIL LA version with national insignia prior to 1939, and an aluminium painted 750 of the LVA with national Dutch insignia as have been used prior to 1939) and an instruction sheet.

The instruction sheet is limited. It does not contain a description of the aircraft. It does contain a view



is not to the scale of the kit. A front view is missing, which is in fact essential to establish the correct V-shape of the lower wing. Three-view color drawings (again not to scale) representing the three versions are printed on the rear side of the box. The aluminium coloured 750 is depicted with a three bladed propeller, which is not included in the kit.

Alting (ref. 1), Arnken (ref. 2), Franquinet (ref. 3), Hegener (ref. 4), Hooftman (ref. 5, 6 and 7), Postma (ref. 8), Schoenmaker (ref. 9), van Steenderen (ref. 10), Wesselink (ref. 11), Vliegwereld (ref. 12), Vredeling (ref. 13) and Luchtvaart Historisch Tijdschrift⁵ (ref. 14) report the dimensions of the C.X, while Franquinet, Hegener, Hooftman, Postma and Vredeling give also a three-view drawing.

References 5, 6, 11 and 13 pay specific attention to the C.X with Hispano-Suiza engine, the version I decided to build.

	<i>Ref.</i>	<i>1:72</i>	<i>model</i>
<i>Span (upper wing)</i>	12.00 ⁶ m	166.7 mm	167.0 ⁷ mm
<i>(lower wing)</i>	10.49 m	145.8 mm	147.1 mm
<i>Length</i>	9.32 m	129.4 mm	131.5 mm
<i>Height</i>	3.08-3.30 m	42.8-45.8 mm	43.7 (44.5 ⁸) mm
<i>Engine</i>	Hispano Suiza 12Yrcs ⁹ , 925 hp		
<i>Crew</i>	2		
<i>Armament</i>	1 cannon Hispano-Suiza 9 ¹⁰ , 1 movable machine gun 7.9 mm		

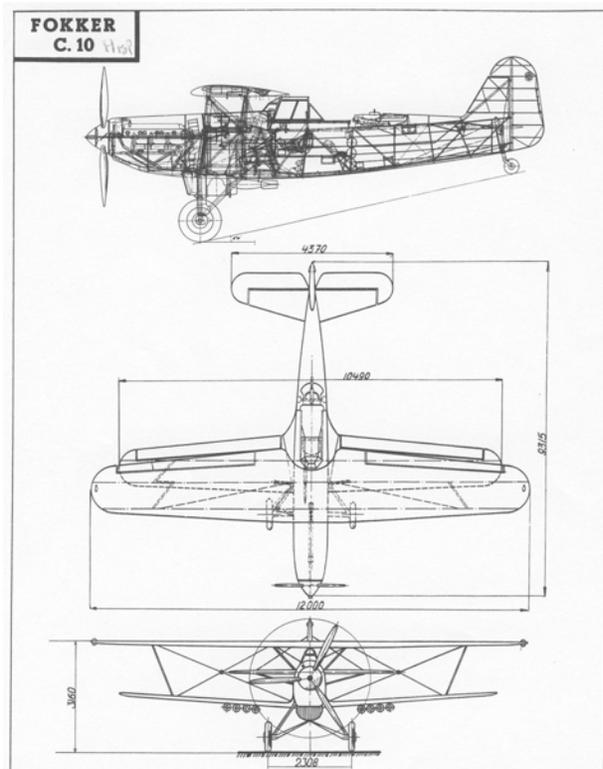
With all modifications to the model, it is very well to scale.

General

First thing I noticed is that the kit includes also two fuselage halves intended for the Pegasus powered version of the kit (they are “blackened out” in the instruction sheet). Engine and cowling parts for this version are missing, so I expect the inclusion has been unintended. The instructions are sometimes wrong or unclear. Part 27, which is clearly oil cooler, is indicated to be some internal element of the radiator unit. The kit contains a propeller with and without spinner. Only the propeller with spinner is used in the instruction sheet; it is not explained for what purpose the other one is meant to be¹¹. The oil cooler part 14 was used on the Pegasus powered version only, as well as the search or landing light in the right lower wing. The parts are very well detailed but need quite some deburring to fit well, as is the case with other kits of AZmodel.

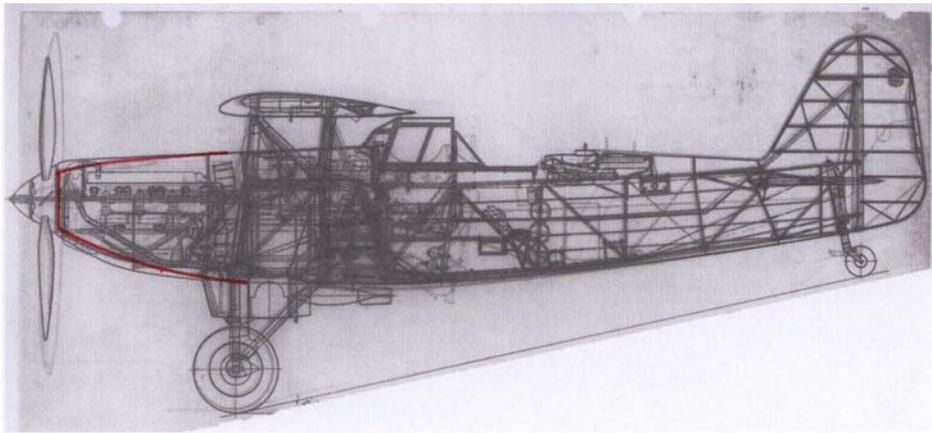
Modifying the model for the Hispano-Suiza powered 750

Ref. 13 contains a number of drawings specifically for the Hispano-Suiza powered X-1 or 750 and a large set of pictures taken during the history of the aircraft (the configuration changed quite a lot in time). From the drawing and photographs in the references it appears that the engine was larger and needed more room. I have used the original Fokker drawings 37666 and 35641 of ref. 13 to derive the correct dimensions for the 750 version. Some pictures of the X-1 show the aircraft without oil cooler. From other pictures it appears that the 750 has not been equipped with an external oil cooler at all.



The difference in length between the Kestrel and Hispano version is rather small, so I decided not to correct for it, as the fuselage in the kit itself is slightly longer than it should have been on 1:72 scale (128 mm, including a spinner, that is too small for the 750). The diameter of the Kestrel spinner included in the kit is 7.5 mm; for the Hispano engine it should be 9.5 mm, leading to a length increase of 1 mm (plus another 0.5 mm for the cannon accommodated in the propeller axis). This brings the length on the correct value.

However the fuselage needs to be adapted to the larger spinner diameter. Also, a three-blade propeller needs to be found with a diameter of approximately 45.4 mm (3280 mm real life). The front of the fuselage of the model is 25.5 mm before the centerline of the front landing gear leg. This is correct for the Hispano, but slightly too large for the Kestrel (22.4 mm). The fuselage at the location of the landing gear leg should have a height of 17.9 mm for the Hispano version (17.0 mm for the Kestrel); the model measures 17.8 mm, so that is correct. The red line in the drawing (on scale 1:72) below shows the differences between both fuselage outlines, derived by superposition of drawings of the Kestrel powered version and the Hispano powered version, and checked against the actual profile of the fuselage of the model. It confirms also, that the model is quite well to scale, except for the slightly too long length. All other parts of the aircraft (radiator location, landing gear wing position) seem to have been maintained unmodified.



Comparison of the top view drawing and the fuselage cross section yields the following (in mm):

distance from front of fuselage	drawing	model
2	9.6	10.5
5	11.4	11.3
10	12.4	13.0
15	13.0	13.9
25	13.2	14.4

The most forward width will be corrected by bringing the spinner diameter to 10 mm; we will have to live with the slightly oversized fuselage width.

The exhaust of the Hispano engine is different. Instead of 6 individual exhaust pipes they have the configuration 1-2-2-1. They appear in the airframe as holes in the engine cover; the pipes themselves are about flush with the cover. Length of the exhaust stack should be 13.3 mm; the Kestrel stack of the model has a length of 13 mm (which is too large compared to the 11.7 mm on scale). The stack is located on the model 5 mm from the front of the fuselage, which is correct for the Hispano. Also, at the right side of the nose a rearwards pointing tube is visible on the photographs. The panels covering the engine are quite different from those of the Kestrel version and the engravings of the model.

Another major error in the kit is the location of the lower wing and the shape of the lower fuselage at that location. The C.X fuselage underside is flat and the lower wing is mounted flush with it. Modifications are described below at the section dealing with the fuselage.

Other differences between the Hispano and Kestrel versions are:

- The observer does not have an instrument panel in the C.X-H.

- The X-1/750 was standard equipped with bombs under the wing (the wing structure provides hard points).
- The 750 had no external oil cooler, but two small air intakes under the fuselage for an oil cooler mounted internally.

Painting scheme

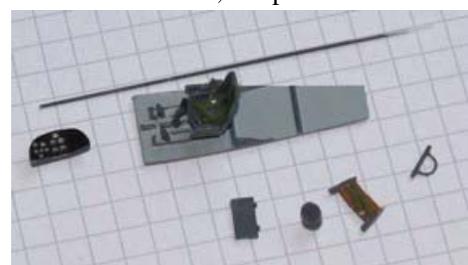
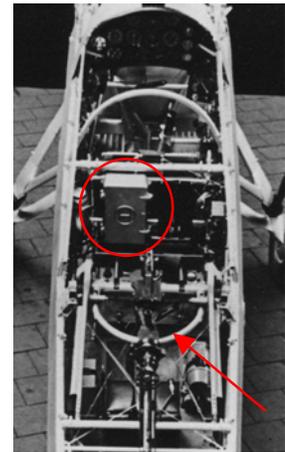
I have modified the suggested painting scheme suggested in the kit based on the photographs in my possession. The plane has been painted overall silver (Humbrol 11), also the propeller and the propeller hub; there is no evidence that they have been black, respectively decorated with a red band. The radiator inside has also been painted silver; the pictures show it is metallic, and certainly not black, and a restored Fokker C.V at the Aviodrome Museum in Lelystad, the Netherlands shows such a finish (ref. 22). Bomb racks have been painted dark khaki; I have assumed they were standard LVA issue. Navigation lights of course red (tail and left) and green (right). The footholds have been accentuated with a black 0.1 mm marker.

Cockpit

Although there seems to be no cockpit floor in the drawings and in the pictures of the fuselage frame, I still have included the floor present in the kit. I guess some kind of floor should have been present to protect equipment and crew from undesired interaction. I have deleted the observer's instrument panel, but added the box (housing the release commands of the bomb aiming equipment "Nedinsco-Zeegers") with its supporting tubing shown in the red circle. I have also mounted a small oxygen bottle (left over from a MPM Fokker G.I kit) to the left of the box. The picture also shows that the machine gun support included in the kit is rather crude; I have replaced it with a custom made one of 0.7 mm plastic rod and 0.4 mm brass wire. I had to putty the mounting holes in the fuselage and drill them again with the smaller diameter.

Cockpit wall and floor have been painted light grey. The pilot seat, fuselage tubing and control stick, throttle, etc. dark grey¹². As no rudder pedals are included in the kit, I have produced some of scrap plastic and glued them to the patterns on the cockpit floor. The cockpit floor is too wide, so it needs to be adjusted to fit well. The observer's seat does not fit either in the narrow fuselage; it is too wide to be glued in place at any location in the observer compartment. I have taken away a bit from the middle part to fit it in its place.

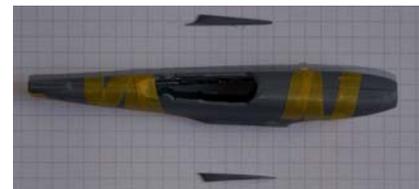
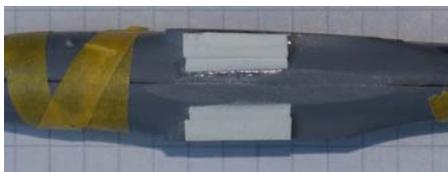
The pilot seat is very nicely detailed, but again too wide for the fuselage. So I have sanded the right armrest down (which can be done without losing detail) until the seat could be fitted well. Also, the pilot's instrument panel needs some rework before it fits nicely in the fuselage. Prior to assembly the seatbelts, painted dark green with silver fittings, have been glued in the pilot and observer seats. The picture at the right shows the items to be assembled in the cockpit (from the top clockwise around the floor with pilot seat and controls: 0.5 mm rod to construct the fuselage frame between pilot seat and observer, frame for observer's machine gun, observer seat, oxygen bottle, radio box and pilot instrument panel).



Fuselage

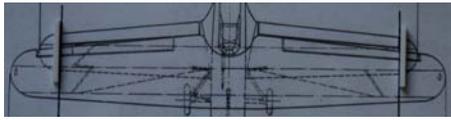
The major modifications to be performed are the change of the lower wing position and the correction of the wing fairing, the adaptation of the forward fuselage, of the exhausts, the propeller and spinner. I have executed these in the following order.

First I have removed the Kestrel exhausts (damaging the panel engravings is not an issue here, because they have to be changed anyhow). Then the fuselage halves have been taped together, and the height of it has been adapted by sanding the lower side down from 19.4 mm to 19.0 mm as

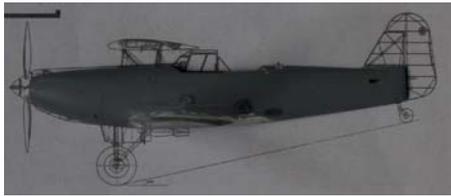


measured from the three-view drawing at the end of this report. As the roots of the lower wing are 2 mm to high and 2 mm to far forward, the wing roots have been removed from the fuselage with a

saw. The space between the flattened fuselage underside and the lower side of the remainder of the wing roots has been filled up with scrap plastic sheet and sanded down until flat from side to side. The wing roots have been glued to the lower wing halves.



I have modified a copy of the top view from the drawing into a jig to obtain the right wing dihedral. According to the front view the lower wing should be 4 mm from the bottom plane at 65 mm from the centerline of the plane. I have glued two pieces of plastic 4 mm high at the correct location and cemented the lower wings in place. Note that prior to gluing the lower wings to the fuselage the position of the N-styles has been corrected and the inspection hatches have been engraved (see below in the section **Wings**). When thoroughly dry I have secured it extra with cyano glue.

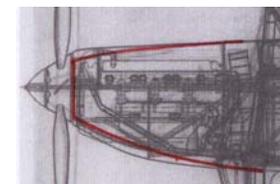
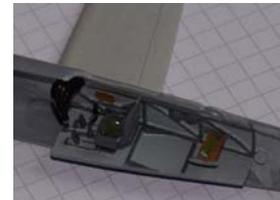


Now the cutting, grinding, sanding, filling and again sanding job can start to remove the leftover of the old wing position and to produce the fairings for the new position. The picture at the left shows the finished left fuselage half positioned on the 1:72 scale side view, that is: before the correction of the engine cover profile. Note also the difference between the (Kestrel based kit) fuselage profile and the one of the Hispano version of the drawing.

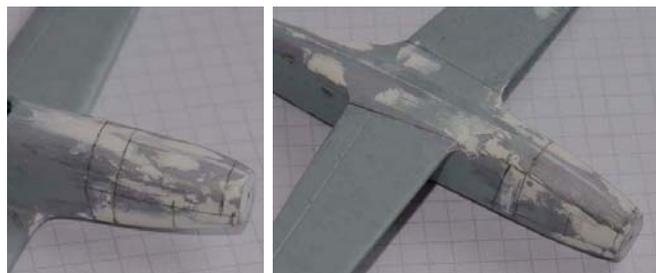
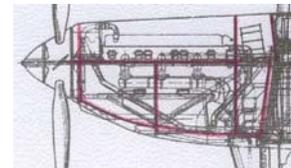
After that the cockpit interior can be glued in place and the two fuselage halves can be cemented together. I have puttied and sanded the joint, as they are always rather ugly with AZ Models kits after deburring the parts.



To correct the forward fuselage shape I have mounted a 10 mm disc of 0.5 mm plasticard on the propeller axis location. From 1 mm plasticard I have cut a top and bottom profile, shaped as the difference between the fuselage outline and the red line in the drawing at the right (scale 1:1 to the model), and glued them in place at the joint (see the picture at the left). I have filled up the space between disc and profiles with putty. The machine guns at the top of the fuselage have been removed, as the C.X Hispano only carried a cannon firing through the engine axis. Sanding the forward fuselage down to the "correct" shape has been done "on the eye". I have needed three "iterations" to obtain the correct (and symmetrical!) shape, and a final one after engraving the new cover panels and a first coat of aluminium paint to remove the last irregularities.

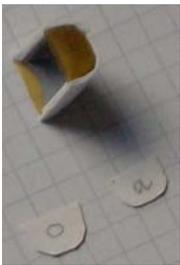


Panel etchings have been added according to the red lines in the scheme shown at the right, printed at scale 1:1 to the model. The photograph of the aircraft with disassembled covers illustrates this very well. Fasteners have been reproduced as could be seen on other photographs. Finally I have glued the frame behind the pilot seat, the bomb aiming equipment box and the observer's oxygen bottle in place.



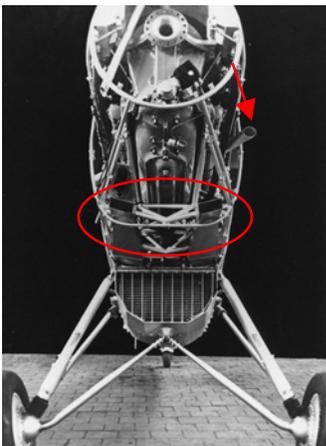
Next the "new" engine exhausts have to be modelled. The positions have been measured and from the scaled drawing at the right, where the distance of the exhaust holes from the front of the fuselage is 5.0, 8.5, 9.9, 13.4, 14.8 and 18.3 mm. The holes are located 1.4 mm above the propeller centerline. At these locations 0.8 mm holes have been drilled. The second and third and the fourth and fifth hole have been joined together with a sharp knife¹³.

The holes have been painted black before the final coat of aluminium has been applied to the fuselage.

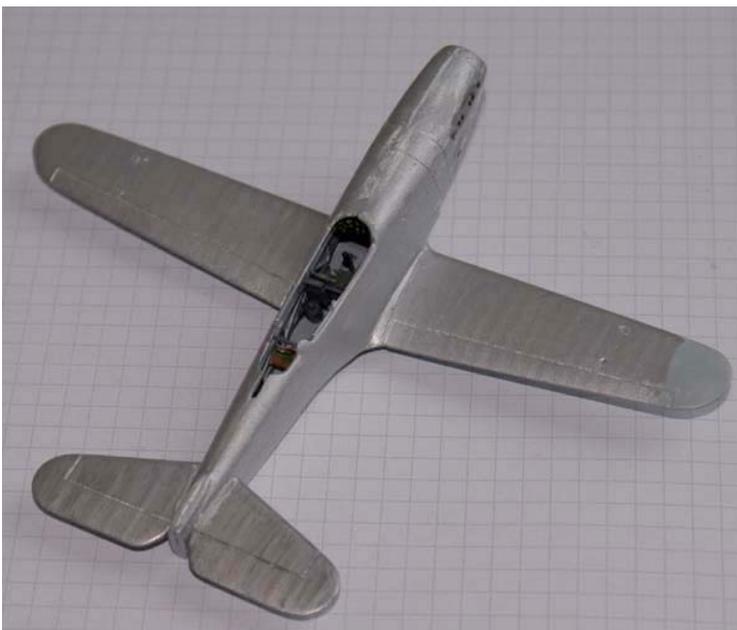


The radiator of the C.X Hispano was more angular than that for the Kestrel version, and above all quite a bit larger. The width is almost equal to the bottom fuselage, the length is 16 mm against the 13 mm of the part included in the kit and the height is 4.5 mm at the aft side, against 3.5 mm for the Kestrel version (sizes measured from the scale drawing at the end of this building report). I have tried to achieve a better likeness by thickening the Kestrel radiator in the kit with 1.05 mm and 0.6 mm plasticard, applying putty to eliminate the gaps between the strips and carefully sanding it in shape. Front and back radiator structure has been simulated with machine gun shielding left over from HR Model WW I photo-etched accessory sets. I have made templates of thin carton to obtain the correct shape. The picture shows

the beefed-up radiator and the templates for the front and back radiator structure. These have been trimmed to fit the fuselage contour and mounted in place.



The air intakes for the internal oil cooler have been made of 0.25 x 4.8 mm Evergreen strip to obtain a cross-section of about 2.6 x 1.2 mm and shaped to fit under the fuselage about 8.5 mm from the front of the fuselage. The picture at the left illustrates their correct position. The intakes enter the nose covers just before the end of the first panel section. It also shows the tube sticking out at the port side (red arrow). The purpose of this tube, apparently capturing air, is not clear, but I have nevertheless reproduced it from 1 mm plastic rod. This photograph makes also clear that the panelling at the fuselage underside up till the radiator consisted out of two panels. At the left and right side tubes are protruding through the panelling (starboard 17.0 mm from the front and 5.5 mm below the engine axis, respectively 3.5 and 3.0 mm, at the left side 7.5 and 3.5 mm). Two holes of 0.9 mm have been drilled at the left, the first pointing rearwards, the second downwards, while at the right a small length of 0.6 mm plastic rod has been mounted pointing forward. In all three cases the exit plane has been painted matt black. Before continuing with the wing assembly I have glued the



horizontal tail plane in place and finished the joint nicely. The pictures show the fuselage-lower wing combination at this stage prior to applying the last coat of paint.

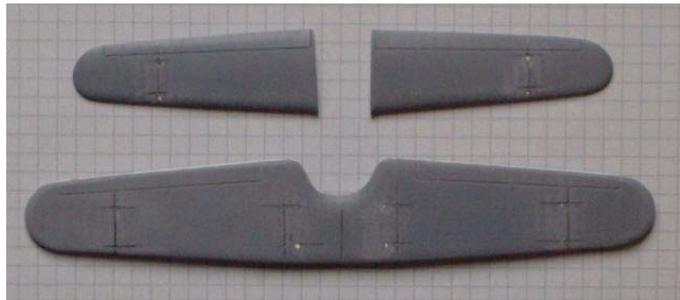
To the bottom part of the rudder I have glued two control horns left over from the 1:144 scale Fokker F.VIIb/3m kit. The rudder has been painted red, white and blue and glued in place. The tail wheel will be mounted only after the assembly is complete. The fuselage and lower wings receive their final coat of aluminium paint. When dry, I have mounted the observer interior parts (frame, bomb aiming equipment and oxygen bottle).

Wing

The top half of the upper wing is at both tips about 2 mm larger than the lower half, which has the correct span: 167 mm. I have corrected the difference in dimensions by applying putty and sanding after cementing both halves together, which is anyhow necessary to obtain a nice leading and trailing edge.

From the 1:72 scale drawings, reproduced at the end of this review, I deduced that the inter-wing and cabane strut positions as implemented in the model are not correct. Differences are:

- The distance between the spars of top and bottom wing are not correct (it should be 8.5 mm for the bottom wing and 10.5 mm for the top wing (also in accordance to drawings 36800 and 37200 of ref. 13), which leads to the conclusion that the uprights of the N-styles are not parallel, like the parts included in the kit.
- The distance between the N-styles at the upper wing should be 120 mm and between the cabane styles 30 mm.
- The rear upright of the N-styles should be 9 mm from the trailing edge for the top wing, and 5.5 mm for the bottom wing.



I have drawn the correct location on the wing after closing the original holes with putty, and drilled superficial holes of 0.8 mm.

From photographs it appears that the N-styles of the X-1 prototype were streamlined; on the 750 tubes, which were hardly streamlined, have replaced them. The drawings show a maximum cross-section of 0.95 mm (1.55 mm for the part in the kit). The cabane struts, however, were streamlined and rather heavy. Their maximum cross section appears to be 1.6 mm (1.35 mm in the kit). So I have decided not to use the N-styles and cabane struts of the kit, but to produce custom made ones. For the N-styles I have selected 1.0 mm plastic rod, for the vertical cabane struts 2.0 x 0.9 mm streamline profile strip and for the diagonal cabane struts 1.5 x 0.6 mm streamline profile strip. In addition, the left rear cabane strut has to be modified for the heavy streamline profile at the fuselage joint (4.2 x 1.5 mm streamline profile strip). As a consequence of using custom struts the upper wing must be assembled using the Aeroclub bi-plane wing assembly jig.



Prior to assembling the wings to the fuselage I have engraved inspection hatches according to the drawings of the C.X wings of ref. 13. Navigation lights at bottom and top of upper wing have been custom-produced from sesame seeds cut over length and "frozen" with thin cyano glue. I have adjusted and mounted the modified radiator at this stage.

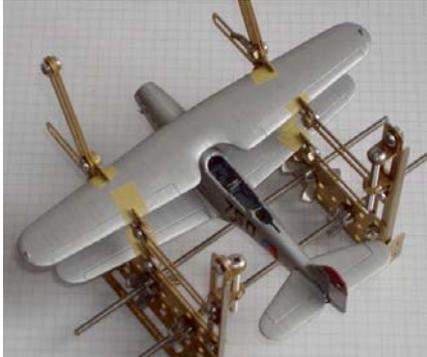


As the lower wings are hinged to the fuselage, the joint is very clear on the original aircraft, a reason not to clean it up too much on the model. Lower wing and fuselage are now painted silver (Humbrol 11) all over, as well as the top wing. I have drilled holes for the bracing wires now, as everything is easy to reach. As the C.X has double bracing wires, four 0.3 mm holes are drilled at each side of the fuselage at the location of the forward lower wing spar, and two each at the location of the forward N-

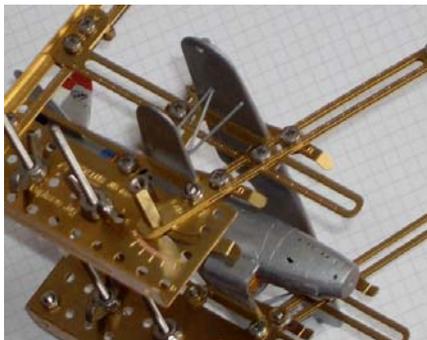
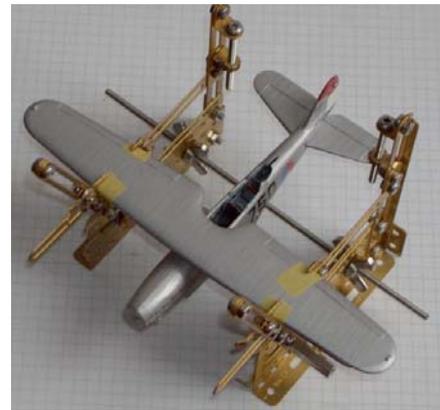
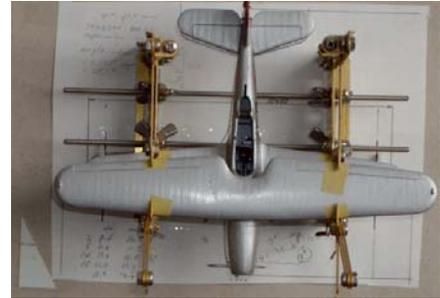


style rod in the lower wing and both uprights in the upper wing and at the location of the rear cabane strut. In the wings I have drilled the holes though both surfaces; I will clean these up once the bracing wires are in place. Decals have been applied to the fuselage and the fuselage, upper surface of the lower wing and lower surface of the upper wing have been finished with a layer of satin clear varnish¹⁴. All is ready now for assembly in the Aeroclub biplane assembly rig. Wing separation is 21.5 mm and stagger 11.5 mm at 40 mm from the centerline. I will use that as a reference to set up the rig.

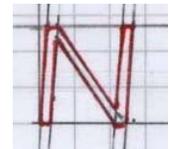
Distance between the wings and stagger have been reproduced on a piece of plasticard (left bottom corner of the picture), which I have used it to establish the first setting of the jig. By adjusting the jig and comparing the model configuration continuously with the top view the final position has been established. Deviation of the final value for the stagger from the initial one was less than a degree.



I have protected the wings with pieces of ya tape on the place where they would touch the rig. With previous models the rig caused sometimes scratches that were difficult to remove; the edges of the photo-etched rig are rather sharp and I have never taken the trouble to debur them completely. The inter-wing N-styles have been produced from 0.95 mm plastic rod. I have determined their length by trial and error with pieces of brass wire. The n-styles are glued with a drop of liquid cyano glue. The result is shown at the left.



As outlined above, the cabane struts have been constructed from streamline profile strip material. Their length has been measured from the front view and checked again with a piece of brass wire on the model itself. I have



constructed them over a pattern reproduced scale 1:1 at the right. To fit them well they need quite some correction. I have used cyano glue to cement the N-styles themselves and the joint to fuselage and wing.

Now the model can be removed from the jig. The big fairing at the bottom of the rear cabane strut can be seen well. To show the overall appearance of the





the paint, the forward gun sight, painted beforehand, has been glued in place with a little cyano glue.

The pitot tube at left inter-wing N-style has been produced from a small triangle of 0.6 mm plasticard and a piece of 0.5 mm plastic rod. All 0.3 mm holes have been opened up again and control horns (left over from another kit) have been mounted at the lower side of the ailerons.



Next step is mounting the bracing wires. First I have fixed a length of 0.08 mm fishing line with a drop of thin cyano glue in each of the four holes at the lower wing root. When dry the wires are routed to the holes drilled next to the upper wing N-style locations, brought under tension with bits of Tamiya tape and fixed there with a drop of glue. I have repeated this procedure for the two bracing lines from the rear cabane strut-upper wing joint to the forward lower wing N-style strut at the lower wing (and of course for both wings).



Next the wires are cut off at the upper surface of the upper wing and the lower surface of the lower wing. Glue traces are removed and the surface is sanded carefully. It

has not been necessary to apply putty; the surface was sufficiently smooth, but after the second coat of silver I had (again) to remove the last traces of glue with a sharp knife¹⁵ and to sand some more to get a satisfactory result. Excess glue traces on struts and fuselage have been removed and touched up with silver. Finally the upper wing top surface and the lower wing bottom surface have received a final coat of silver.



I have also finished the tail bracing with 0.5 mm plastic rod and the rudder control cables, also made of 0.08 mm fishing line. The aileron push-pull rods have been produced from 0.25 mm metal strand.

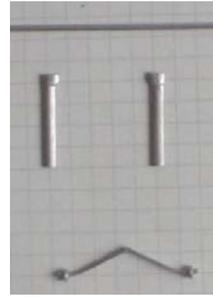


Undercarriage

The undercarriage crossbars need to be adapted; the crossbars between the two legs have not a X-shape (as supplied in the kit, which is only applicable for the Pegasus version), but are attached to the radiator structure, which is apparently part of the load carrying structure. Also the shape of the lower part of the part of the kit is different from that shown in the front view drawing. From other pictures of the X-1 and the 750 it appears the undercarriage legs and cross bars are extensively faired, which is only partly the case with the parts included in the kit. Also, it appeared that after the modification of fuselage, radiator and lower wing the original landing gear legs did not fit any more. So here again some adaptations are necessary.

Modifications made are:

- Providing the inverted Y-shape crossbar with half a streamline profile, increasing the chord to 2.2 mm,
- Cutting it to length and adapting the shape to that shown in the front view drawing,
- Constructing new main undercarriage legs from 4.2 x 1.5 mm (top) and 2.8 x 1.2 mm (bottom) streamline profile strip and sanding it in shape,
- Using 1.5 x 0.6 mm streamline profile for the backwards support of the main landing gear legs.



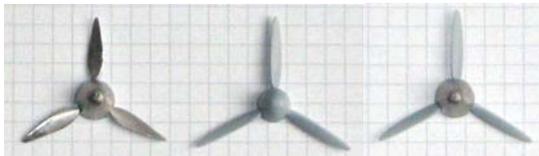
I have first glued the inverted Y-shape crossbar to the radiator at 26 mm from the front of the fuselage and then fitted the main legs between fuselage and the end of the cross bars. When this was dry, I have cut the supports to size (they are attached to the forward spar of the lower wing, about 3.5 mm from the leading edge at the wing root) and glued them in place. All parts had been painted silver before assembly, so I only had to do some minor touch-up afterwards.

When I placed the model on its legs, it appeared that, notwithstanding all precautions in assembling wings and undercarriage, one of the wings was standing some millimeters higher than the other. This will be corrected later on by removing 0.3 mm from one of the tires.



Propeller

I have found two candidates for a propeller with a diameter of 45.4 mm and a spinner diameter of 9.5 mm. The Aeocub¹⁶ Models P116 for the Messerschmitt BF109G10 has a diameter of 43 mm and a spinner diameter of 10.0 mm. An advantage is that also the Messerschmitt had a cannon that fired through the hollow propeller axis, and that this aspect is also visible in the spinner provided. The rather flower-petal shape of the blades needs to be corrected (the photographs of the 750 clearly show a relatively narrow, pointed blade shape, see the picture at the right) and the spinner must be more pointed, but most modifications are easily made with file and sand paper. Care should be taken to give the blades the right angle of attack, as they are rather flat in their original shape and break easily when bend too much or often.

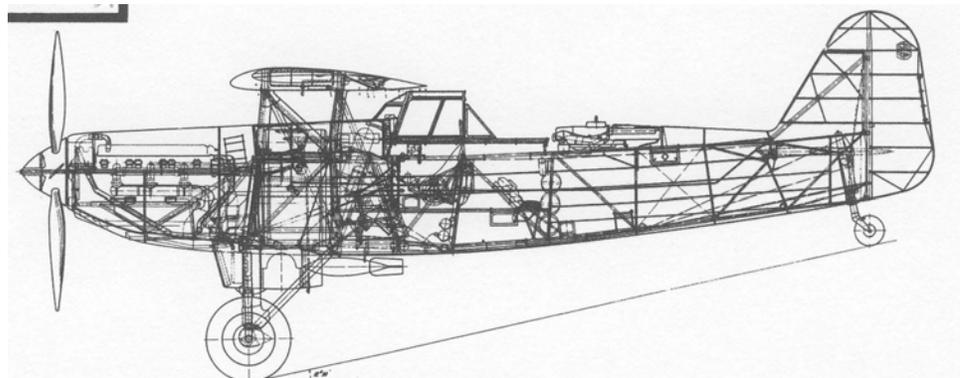


The picture at the left shows the three possibilities. I have selected the Spitfire prop with the Messerschmitt spinner. The Spitfire propeller tips have been made a bit more pointed and the blades have been cut off from the center piece and rotated 90 degrees to obtain the correct angle of incidence for the left running Hispano engine (apparently the Merlin of the Spitfire is running right).

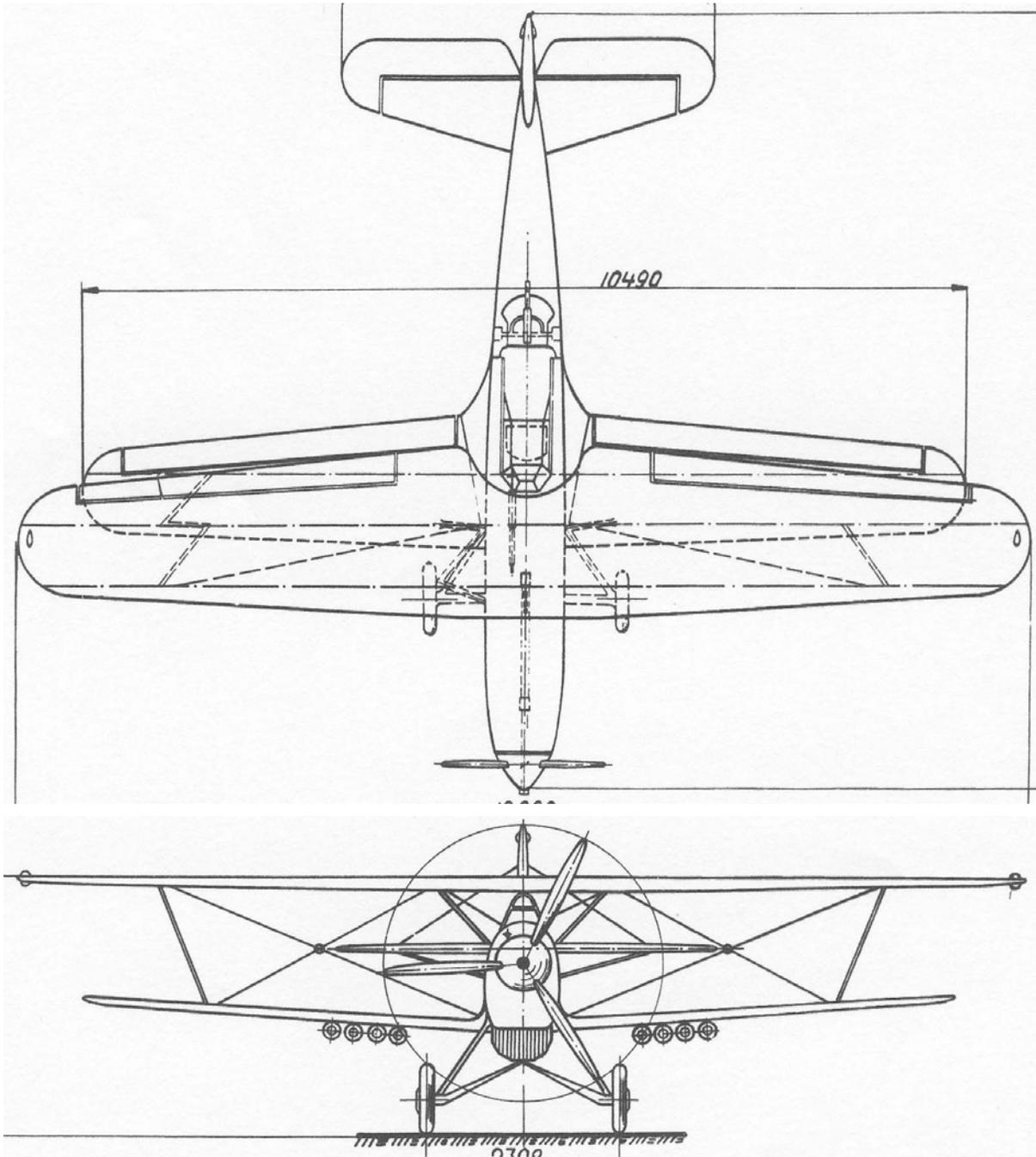
The second candidate is a Spitfire Mk. II conversion kit by 3D-Kits¹⁷. The propeller has a diameter of 45.0 mm and the spinner of 9 mm. The propeller blades are slightly too narrow and too little pointed compared to those seen in the photographs. As a hybrid solution it is also possible to combine the Messerschmitt spinner with the Spitfire propeller. The

Scale drawings

The pictures below represent the Fokker C.X Hispano reproduced on scale 1:72 (if this document is printed on A4 paper). They have been used to determine the correct position and dimensions of details, like (inter-) wing



struts, navigation lights, bomb rack, radiator, etc. The side view has been used as a template to correct the forward fuselage shape; the top view has served as a template for the modification of the lower wing position and dihedral, which is only implicitly defined in the kit by upper wing and inter-wing N-styles.



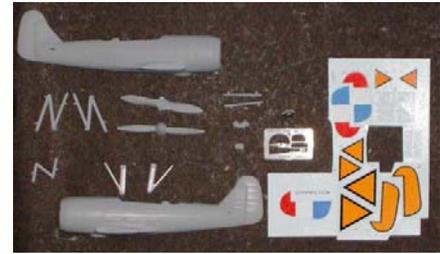
Final assembly

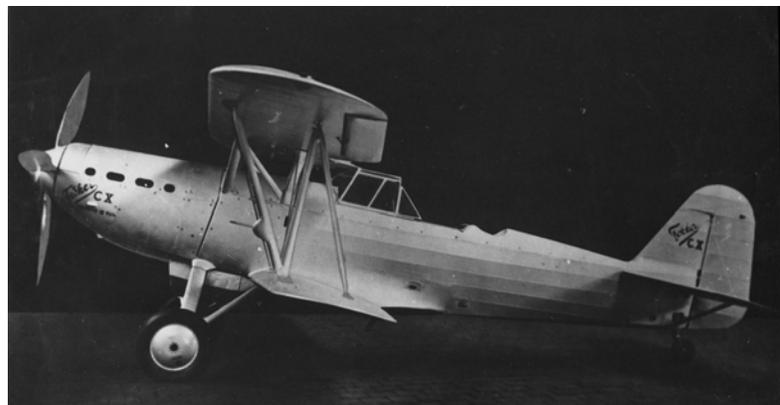
The tail wheel has been mounted and one of the main undercarriage wheels has been sanded down a couple of tens of millimeters until the top wing was perfectly horizontal. Decals have been applied to the wings and the cockpit canopy, painted beforehand, has been glued in place with white glue. After a final touch-up of the wing and undercarriage struts by careful sanding and by applying a bit of silver paint, a finishing coat of satin varnish has been applied. I have mounted the machine gun and finished the model by gluing the two 0.25 mm metal strand bracing wire stabilization bars in place.



In the end there were quite some parts I did not use, as shown in the photograph at the left, almost all of them because they did not belong to the Hispano version of the C.X or were incorrect due to the wrong position of the lower wing and the wing and cabane struts.

The pictures below show the finished model.





These two pictures (the bottom one representing the early version of the C.X Hispano) show that there is still some room for improvement.

- Indeed the nose should have an even larger height.
- The radiator should be positioned a bit more forward, as also indicated in the Hispano drawings. This probably means it has to be built completely from scrap to get a correct fitting with the modified lower fuselage.
- The wing aft fairing should be made more important.

The pictures also show, that the fuselage stringers of the AZmodel kit should extend further forward (the aluminium sheeting ends at the forward end of the cockpit roof). Note, that the “fat” N-styles had disappeared from the C.X, when it served as “750” with the LVA. The appendices under the upper wing were gone too at that time.

The picture of the model illustrates also the problem of achieving a “natural” viewing angle (camera lens center on scaled eye height = 20 mm from the ground surface). One might solve this by placing the model at the edge of the table and cropping the picture at ground level. This probably requires manual focusing and exposure setting to get a sharp and well-exposed picture. Worth some experiments.



Below I have added some pictures showing the C.X Hispano version built from the AZmodel kit together with the Kestrel version, constructed from the Czech Master Resin kit. They clearly illustrate the differences between the two models, but also show that in some aspects (e.g. the upper wing, which has a flat top surface) the AZmodel kit is better. But that does not take away, that the lower wing position and cabane strut positions of that kit are also completely wrong for the Hispano version, so the same modifications are needed as I have done for the Hispano version.





References

1. P. Alting, *Fokkers in Uniform, Driekwart eeuw militaire Fokker vliegtuigen*, pp. 35, 37, 59, Rebo Producties, Sassenheim, 1988
2. R.A. Arnken, *De Ontwikkeling van het Vliegtuig*, pp. 176-177, Gottmer, Haarlem, 1946
3. E. Franquinet, *Fokker, Een leven voor de luchtvaart*, pp. 309, 350, N.V. Uitgeversmaatschappij "De Pelgrim", Eindhoven, 1946
4. H. Hegener, *Fokker, The Man and the Aircraft*, pp. 97, 155, 183-184, 219, ISBN 0-8168-6370-9, 1961
5. H. Hooftman, *Nederlandse Vliegtuig Encyclopedie, Fokker C-X*, all pages, of specific interest are pp. 3, 12, 18, 108, 123, 126-127, 137, 150, 157, 160, Cockpit-Uitgeverij, Bennekom, 1980
6. H. Hooftman, *Van Brik tot Starfighter, Deel I: Met stofbril en leren vliegkap*, pp. 95-98, 109-111, 115, La Rivière & Voorhoeve, Zwolle, 1962
7. H. Hooftman, *Van Glenn Martins en Mustangs, Alle vliegtuigen die gevlogen hebben bij het K.N.I.L., de Indische Militaire Luchtvaart*, pp. 26-27, 59, La Rivière & Voorhoeve, Zwolle, 1967
8. T. Postma, *Fokker, Bouwer aan de Wereldluchtvaart*, pp. 96, 117, 122, 130, Fibula - Van Dishoeck, Haarlem, 1979
9. W. Schoenmaker & T. Postma, *Klu Vliegtuigen, De vliegtuigen van de Koninklijke Luchtmacht vanaf 1913*, pp. 51-53, ISBN 90 6013 966 6, 1987
10. C. van Steenderen Jr., *Moderne Vliegtuigen, Overzicht der Voornaamste Moderne Sport-, Verkeers- en Militaire Vliegtuigen*, p.65, J.M. Meulenhoff, Amsterdam, 1938
11. T. Wesselink & T. Postma, *De Nederlandse Vliegtuigen, Alle vliegtuigen ooit in Nederland ontworpen en gebouwd*, pp. 90-91, Unieboek B.V., Bussum, 1982
12. Vliegwereld, *Het Dertigjarige Bestaan van de Nederlandse Fokkerfabriek 1929 – 1949*, p. 470, Jaargang 15, No. 29, 1949
13. W. Vredeling, *Collection Fokker, Copies of original Fokker drawings and documents*, drawings 31385, 35641, 36846, 39005, 39008, 2010
14. Luchtvaart Historisch Tijdschrift, *Luchtvaartkennis, Jaargang 59, no. 2*, pp. 34, 44-51, ISSN 1381-9100, 2010
15. K. van de Berg, R. Hezemans & E. Koolhaas, *Van Luchtvaartafdeling tot Koninklijke Luchtmacht, 75 jaar militaire luchtvaart in Nederland*, p. 20, Rebo Producties, Sassenheim, 1988
16. H. Hooftman, *Fokker, Bekende en onbekende vliegtuigtypes van A.H.G. Fokker, Neerlands grootste vliegtuigbouwer*, p. 38, ARTI beeld encyclopedie 36, Alkmaar, 1959
17. H. Hooftman, *Nederlandse Vliegtuig Encyclopedie, Burgerluchtvaart in Nederland, Deel 3; Van PH-AJA tot PH-AKZ*, pp. 148-149, Cockpit-Uitgeverij, Bennekom, 1981
18. T. Postma, *Fameuze Fokker Vliegtuigen*, p. 50, Luchtvaart in Beeld nr. 1, Omniboek, Kampen, 1978
19. H.J. Hazewinkel, *Vliegtuigbouw in Fokkers Schaduw, De geschiedenis van al die andere Nederlandse vliegtuigbouwers*, p. 35, 1988
20. T. Postma, *Vermetele vliegende Hollanders*, pp. 62, 81, 86, ISBN 90 228 3987 7, De Haan, Bussum, 1975
21. Luchtvaart Historisch Tijdschrift, *Luchtvaartkennis, Jaargang 59, no. 1*, pp. 2-5, ISSN 1381-9100, 2010
22. E. Hoogschagen, *Fokker C.5, Ontwikkeling, gebruik en ondergang*, p. 231, ISBN 978-90-8616-073-0

¹ www.legatokits.cz

² The Fokker C.VII-W was a floatplane. The C.VIII and C.IX have been built in very limited numbers, and have mostly been used for training purposes. The C.VI was a C.V with a less powerful engine.

³ See building report of the Czech Master Resin Fokker C.X Bristol kit.

⁴ Czech Master Resin produced a kit of Rolls-Royce Kestrel version too; see the building report of that version.

⁵ Ref. 14 gives, next to performance figures, different length and height for the Kestrel and Pegasus powered version (9.27 m/128.8 mm and 9.01 m/125.1 mm; 3.20 m/44.4 mm and 3.31 m/46.0 mm respectively). The larger height of the Pegasus powered engine may be explained by the smaller length and by the larger diameter of the propeller (so more clearance to the ground), required by the greater engine power. This reference also reports the span of the lower wing. I have not been able to find performance figures for the C.X-Hispano. Ref. 5 contains a copy of a factory brochure giving performance figures for the C.X with a Hispano-Suiza Ydrs engine of 860 hp. Empty weight 1550 kg, take-off weight 2350 kg, maximum speed 345 km/hr, cruise speed 290 km/hr, ceiling 8600 m, range 660 km, climb to 7000 m 16.8 minutes.

⁶ The dimensions are taken from drawing 37666, C.X-H(ispano) Assembly; ref. 13.

⁷ 171 mm on the uncorrected model.

⁸ In flight position.

⁹ Only the C.X with registration number X-1 and 750.

¹⁰ Only the X-1/750, and probably one aircraft license built in Spain. Although the drawings show that there was also a machine gun mounted at the top right side of the fuselage, it is not visible on any of the photographs of the X-1 and 750.

¹¹ From ref. 5 it appears that it belongs to the Pegasus powered (Finnish) version.

¹² The instruction sheet suggests to paint these items aluminium, but most of the interior of the LVA airplanes has always been painted in (various shades of) grey.

¹³ I have done this only later, when closely examining the photographs of the 750.

¹⁴ I prefer to do this before assembly, because everything is still easy to reach and remaining glue after strut assembly is easier to remove.

¹⁵ I have used a new surgical knife, which allows you to cut very close to the surface.

¹⁶ It is now, with most other white metal products of this company, discontinued. Another candidate is the Curtiss Electric 3 blade 11' diameter propeller from the same company. This one, however, has no spinner and the blades have to be slightly corrected also.

¹⁷ www.3d-kits.co.uk