

# Koolhoven F.K.41 (Desoutter Mk.I) Dujin Models resin kit

Monoplane sports plane, air taxi

Scale 1:72

The F.K.41 was a three seat sports and taxi plane, which made its maiden flight in the summer of 1928. It was powered by a 50 hp Siemens engine and was one of the first of that kind of aircraft with a closed cabin. Eight aircraft were sold over the years. Because of raising interest in the aircraft the Desoutter Aircraft Company Ltd was founded in England specifically for the license production of the F.K.41. Powered by a 105 hp Cirrus Hermes I<sup>1</sup> engine and some other modifications it was marketed in the UK as Dessouter Mk.I and 28 copies were sold. The aircraft has been developed further as Dessouter Mk.II.



G-AAPZ | Copyright by glider | 2006-05-07 | Airport-Data.com

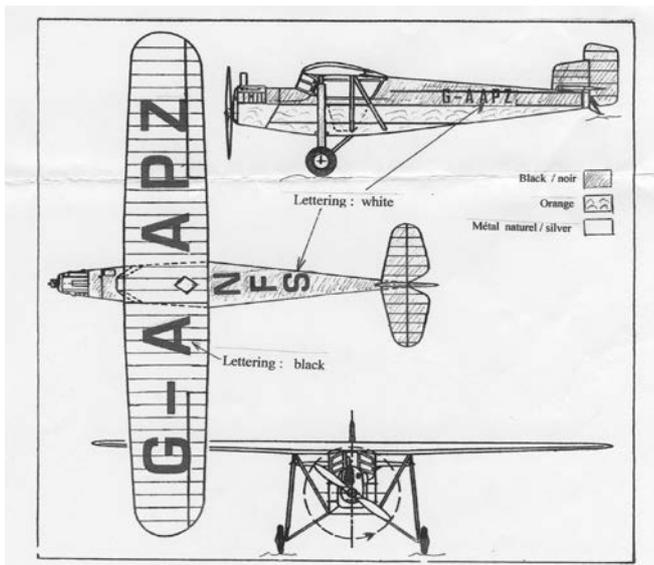


One Desoutter Mk.I has been brought into a flight-worthy condition<sup>ii</sup>, the G-AAPZ originally operated by National Flying Services Ltd., which placed a large order and eventually received 19 Desoutters. In their black and bright orange livery they were a familiar sight at their UK-wide chain of flying clubs, where they were used for instruction, pleasure flights and taxi work. In 1935 the G-AAPZ, was sold to Richard Shuttleworth<sup>iii</sup> and is now flown from Old Warden aerodrome.

This particular aircraft is the subject of this resin kit

by Pierre Dujin. The kit comes in a plastic bag and contains the resin parts, some wire material to construct bracing and undercarriage struts, clear plastic vacuum formed windscreen and cabin windows and an instruction sheet. Decals are only provided for the large black lettering on the wing, but not for the white lettering on the fuselage, which is unfortunate, because white decals cannot be produced easily with an inkjet printer.





The instruction sheet is very limited and contains only a short description of the aircraft in French and a three-view drawing indicating the painting scheme and the location of the decals.

Via the website of [www.koolhoven.com](http://www.koolhoven.com) I have received many pictures of the restored G-AAPZ and a number of articles from aircraft magazines of the period. I will make ample use of them to construct this model and specific pictures are collected in the appendix to this building report.

Wesselink (ref. 1) and Top (ref. 2) give the dimensions of the FK 41/Desoutter Mk I. In addition quite some references can be found on the Internet.

	Ref.	1:72	model
Span	10.50 m	145.8 mm	154.7 mm
Length	7.80 m	108.3 mm	113.8 mm
Height	2.14 m	29.7 mm	34.4/35.6 <sup>iv</sup> mm
Engine	ADC Cirrus Hermes I 105 hp		
Crew	Pilot and 2 passengers		

From the table it appears that the model is slightly oversized.

The resin parts were rather crude and they had also quite some thick flash, that took quite long to remove and there were also some air bubbles that needed repair. I have removed all parts and have cleaned them thoroughly. The thin undercarriage struts were very badly bent, but luckily the kit contained four copies, while only two are needed. Some were so bad, that they could move directly to the round archive, but for most I even have one spare copy left.

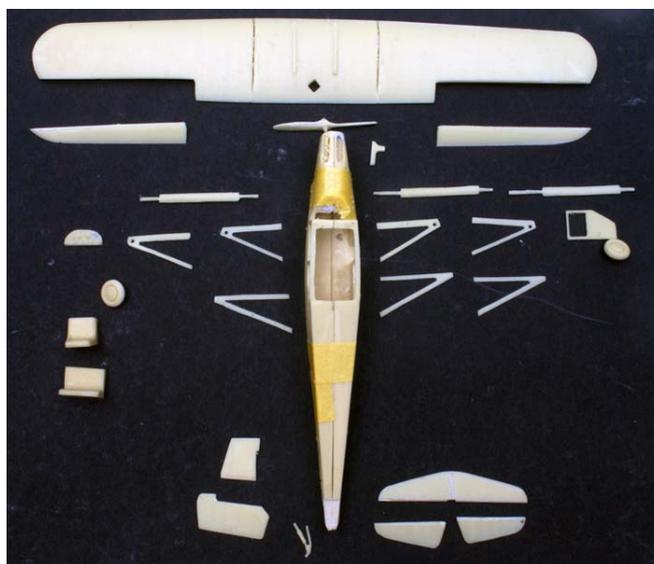
As often is the case with resin kits, the wing was flat at the underside, while it should be flat at the top side. So I have made two cuts at both sides of the wing center section in the top side with a saw, almost to the bottom surface, hoping that I could easily bend the wing tip upward (which worked) and that the wing would remain in that bent condition (which did not work). After a couple of attempts the wing broke, so I have glued the wing tips to the center section with thick cyano and have left it to dry upside down. I have also made the small square window in the center section, which is drawn on the three-view drawing on the instruction sheet, but is not present in the part.

The kit contains only the seats and the instrument panel are to detail the interior, so other detail will have to be made from scratch. The walls of the fuselage are very thick; the passenger bench does not even fit in the fuselage, so the walls will have to be sanded down.

I have also removed the control surfaces from wing and tail planes and I have adapted the rear part of the fuselage and the horizontal tail plane such that the vertical tail plane fits smoothly.

### Decals

The registrations on the fuselage are in white characters on a black painted surface, so I have reproduced them with a character set resembling the original rather well as white text on a black background and printed them on white inkjet decal paper. When they are cut out as close as possible to the white characters and applied on the



black painted surface the result will be satisfactory. An alternative will be to have ALPS decals custom made, but that seems a bit overkill in this case.

The decals in the kit were not in a good state, so I have scanned them as black and white with high resolution, repaired the missing pixels and printed them on clear inkjet decal paper.

Most effort took the reproduction of the NFS logo. Although the photograph I had was quite good, it also contained some reflections. But by increasing the contrast, converting to black and white, removing excess pixels and creating the missing ones I managed to get a good B&W copy, which I also printed on the correct scale (5.5 mm high fitting between the outer fuselage stringers) on the clear decal paper. With a magnifying glass it is just legible.



I have drawn the white lettering in CorelDRAW. A specialized printing shop has printed it<sup>v</sup>. The raster is rather

visible, but it does not disturb too much on the model. The decals are very thin and difficult to move, once they have been applied to the surface, even when using ample water.



### Cockpit

The photographs I have used as an example for the cabin interior have been collected in the appendix. As the instrument panel included in the kit did not resemble the actual one at all, I have made a new one from scratch. The original panel is also illustrated by the picture at the right taken from the October 8, 1930 issue of *The Aeroplane*.

The window styles of the model are rather thick and wide so I started thinning them with knife and files to more acceptable proportions. The upper fuselage half on the picture has been done, the lower half not. The door in the kit is now too small, so I have made a new one from plasticard.

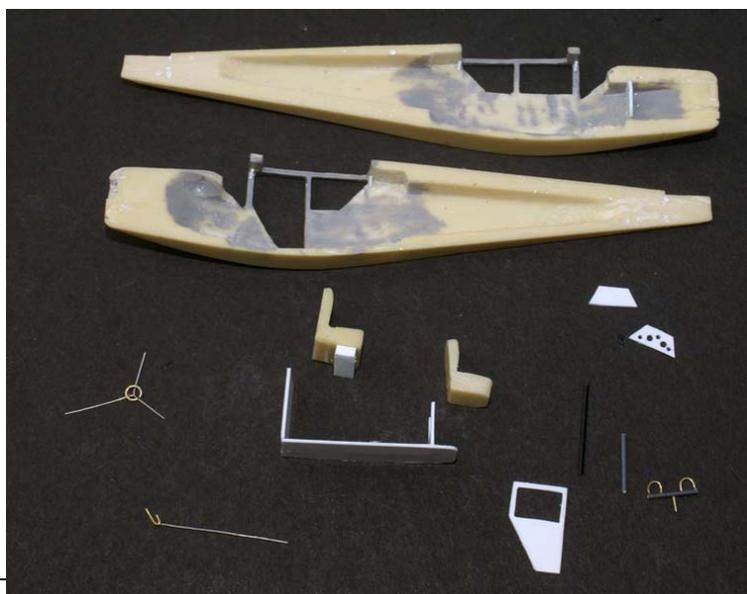
### Fuselage

I have widened the fuselage to be able to fit a cabin floor and bulkhead in it. That has been produced trial and error from 0.5 mm plasticard. The rear cabin bulkhead is located a bit behind the passengers' bench, of which the rear side sits at edge of the rear cabin window.



I had also to widen the front of the fuselage to make room for the rudder pedals and the stick. I have also placed an engine bulkhead in the front fuselage. Also, part of the instrument panel support had to be removed from the fuselage, because it is located more forward and is mounted vertical in the original aircraft. The pictures show clearly, that quite some material has been removed from the fuselage inside.

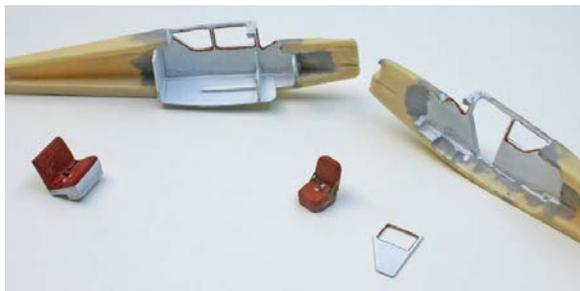
The cabin detailing parts have been made to size or have been built completely from scratch. I have mounted gussets at the top of the fuselage. The instrument panel has been made from 0.5 mm plasticard and holes have been drilled to represent the instruments. It will be glued on a black painted panel of the same size and shape, and the dials will be simulated by scratching them in the black paint. I have made the pilot seat quite a bit smaller to fit it properly in the cabin. At the location of the pilot seat I have glued a half



frame to the floor. The passenger seat has been increased a bit in height.

The rudder pedals have been made from 0.8 mm plastic rod and 0.4 mm brass wire and the transmission rod for the aileron controls (the black rod) is also 0.8 mm plastic. I have made the new door from 0.5 mm plasticard and the 0.25 mm wire with the U-shaped end fitting down left will be transferred into the throttle. The item at the left is the trim wheel before shortening the three 0.25 mm spokes. In the middle of the cabin floor I have made a tunnel, which serves in the real aircraft to cover the rudder cables and the elevator push-pull rod.

The cabin interior has been painted white. I have painted the seats with Humbrol 60 (scarlet) with a drop of Humbrol 186 (brown) and I have treated them with a light brown wash when they were dry.



The base of the pilot seat and the edges of the window openings have been painted with Humbrol 9 (tan) to simulate the varnished wood window mountings.



The restraints of the pilot seat back have been made from khaki and silver

painted Tamyia tape left from the FK.31 seat belts and the seat belts from black and silver painted tape.



From Evergreen U-profile strip I have made the tunnel on the cabin floor, through which the control cables and rods for elevator and rudder are routed. For the pilot seat a small base has been constructed from the same material.



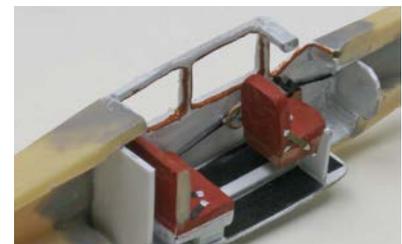
The rear seat was still too wide for the fuselage, so I had to remove some more material from the sides before gluing it in place. I have also put the document holder (painted tan) and the throttle handles-cum-rod in place on the left wall next to the pilot seat. On the floor mats made of black painted Tamyia tape.



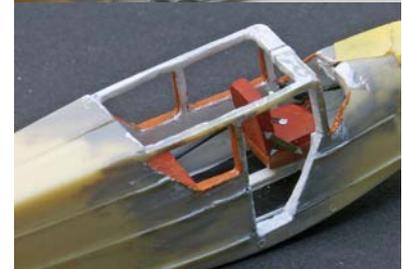
The elevator trim wheel has been finished in grey (spokes), tan (rim) and black (a folded 0.25 mm metal wire simulating the cables running to the rear). The picture at the right shows the wheel clearly; in the original aircraft it is also situated almost behind the pilot's seat.

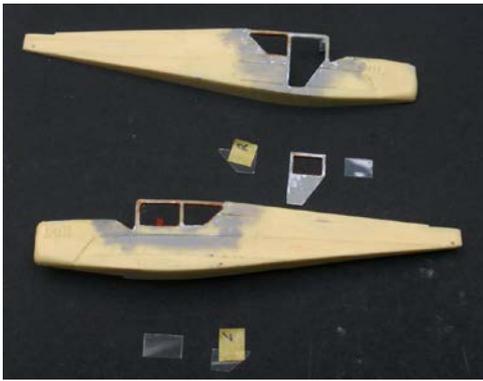


The control stick will follow later after the fuselage has been closed.



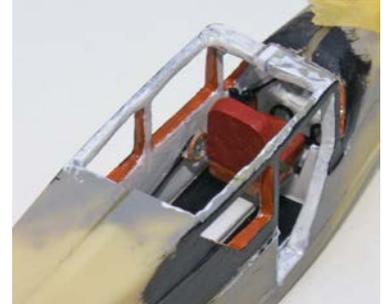
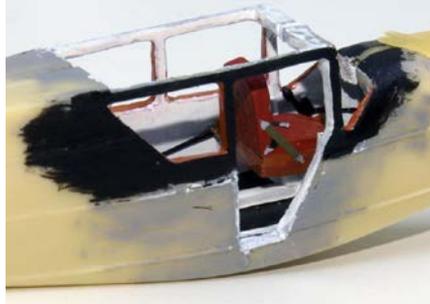
As I was not very satisfied with the shaky simulation of the window mountings, I have revised the painting scheme. I have painted the inner side of the walls all white and the edges of the window openings tan. That way it looks quite a bit better.





Next step was to produce the cabin windows now that the fuselage still could be handled freely and there was good access for fitting. I have cut the windows from 0.25 transparent plastic, fitting them trial and error in the window openings. That worked quite well, I ruined only three windows by cutting away too much material. I will glue the windows in place with white glue after the fuselage has been closed and the sides have been painted.

In order to be able to see how it will look later I have painted the surrounding of the windows black. The pictures also show that the cabin walls are still quite thick, although I have taken away almost half the thickness they had originally.



Another modification I have made is the rudder pedals. Although they seemed all right when seen in isolation, they did not fit in the narrow fuselage and -worse- they were far too big. So I have remodelled them from 0.25 mm metal wire instead of the 0.4 mm I had used before.



After retouching the white paint the fuselage can now be closed. I have glued both halves together with thick cyano



and clamped them with Tamyia tape. The joint between both halves was quite crude, especially on the lower side, so I have first sanded the top and bottom surface of the fuselage thoroughly and after that I have applied putty generously to correct that.

On the centre line of the top fuselage surface the original aircraft has a stiffener, like on the fuselage sides. I have modelled that with a straightened 0.25 mm end of metal wire, glued with a minute quantity of thin cyano.



This being done, the tail planes can be attached and the fuselage can receive a coat of primer and the top of the fuse-



lage its first coat of black. The stiffener on the top surface resembles perfectly the integrally moulded stiffeners on the fuselage sides.

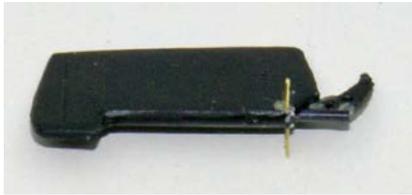
When the black paint was well dry, I have painted the lower side of the fuselage orange. As the edge against the black was a bit irregular I have applied more pressure on the tape for the second coat. Unfortunately then a piece of the black paint came off, when I removed the masking tape, but the damage can be easily repaired.

The nose has been detailed with gun metal (Humbrol 53), and I have dry-fitted the wing on the fuselage, indicating some adjustment of the top surface of the cabin frame was

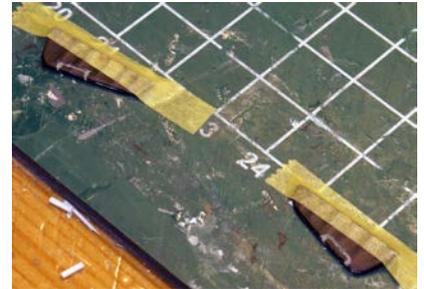


needed.

The rudder and tailskid had to be modified quite a lot, as they are one unit on the F.K.41, and the control horns (which I made from PE parts in my general equipment box) are attached to the vertical tube of the rudder. I



have also engraved the trim surfaces on both elevators, which are actuated by Bowden cables, and added their control horns, for which I have used the smallest PE parts in stock. The elevator control mechanism itself is accommodated in the fuselage.



Next I have finished the cabin and cockpit interior. The instrument panel has been mounted, as well as the control stick (the small bit in front of the seat and under the instrument panel) and the vertical tube for the aileron actuation mechanism.

I was still puzzled about the trim surface control cables. First thing to sort out was where the two cables were leading to, seen here above the rudder control cable. The top one is clear: to the control horn on the lower surface of the trim. The outer cable of this Bowden type cable is supported on the horizontal stabilizer.



Another picture gave an indication where the second Bowden cable was leading. It passes apparently under the horizontal stabilizer and passes through the elevator, and the steel wire core leads to the control horn on the upper surface of the trim. This was also confirmed by information from the "Stichting Koolhoven Vliegtuigen", which provided the excellent photographs contained in this report. And indeed, the right side of the aircraft is complete clean, except for the rudder control cable. So the right elevator has no control surface and I had to correct the tail configuration:



remove the freshly engraved trim surface, and the corresponding hole in the fuselage, move the control horn to the left elevator and drill a 0.4 mm skewed hole through that elevator for the trim cable.



After sanding the elevators and the fuselage have been re-touched with black paint and gloss varnish.

Next I have applied the NFS logo on the front fuselage and glued the engine exhaust and inlet unit (produced from plastic strip) in place. Note that this would have been the best moment to apply the other decals to the fuselage. However, as the were not ready yet at the



printer's I have continued in finishing the cabin windows and mounting the wing. The decals will be applied later.

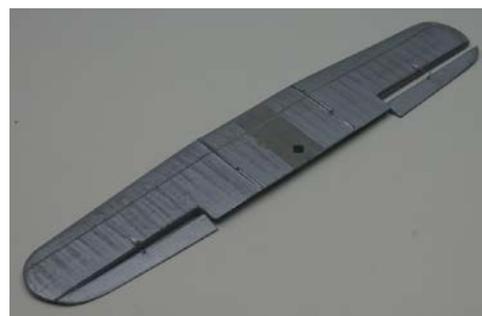
The vacuum formed windshield is not of the best quality and it has been quite an effort to get it in an acceptable shape and fit it approximately to the shape of the fuselage. Also, gluing it to the fuselage was not easy; I have used Microscale Micro Weld and that dries quite slowly. Although Microscale claims, that it does not attack the paint, quite a lot of the painted-on window styles disappeared.

The windshield was sitting slightly skewed on the fuselage, when it was fitted such that no gap was left between its lower edge and the fuselage. I have corrected that by producing a false ceiling for the cockpit from two layers of 0.25 mm plastic sheet, sanded flush with the top fuselage frame and fitting correctly with the lower surface of the wing. I have repainted the window styles with a toothpick and, as I was now in the window mood, fitted also the cabin windows. They were fitting well, even after the painting, and I have glued them as usual with white glue. The fuselage is now ready to be integrated with the wing.



## Wing

The wing has received a first coat of silver paint (Humbrol 199) and has been provided with the aileron transmission mechanisms. I have removed the moulded stubs from wing and ailerons and have replaced them by fairings and individual rods. The fairing have been cut and sanded from a strip of 0.9 mm plastic card (first sanding the tip of the strip in shape, and cutting it off when it is correct), the transmission is made from 0.25 mm metal wire, glued in 0.4 mm holes drilled in fairings and ailerons. Direction and length of the wires is such that the port aileron (right on the picture) will be deflected upwards and the starboard one downwards. As a consequence the control stick will point to the left, when I glue it in place.



Next I have applied gloss varnish on the wing as a preparation for decal application. It was very difficult to apply the decal correctly on the surface at the location of the fairing for the wing and undercarriage style attachment and the fairing for the aileron mechanism.



The first time I had applied ample Microscale Set and Sol, but the only result was that the decal was tensioned tightly, instead of adhering to the surface in the holes and grooves. So I had to print a second set, which I have applied only with Set and which I have cut in at the location of the fairings. The correct location of the decal I have derived from the nice photograph of the F.K.41 in flight on the first page of this report. The decal, which is a copy of the original one included in the kit, is slightly too large, but I have left it that way. When the decals had well dried, I have finished wing and ailerons with satin varnish. I have also produced the pitot tube assembly, which will be mounted under the right wing.



I have glued the wing with thick cyano glue to the fuselage, taking care that it was well aligned relative to fuselage and tail surfaces. I have prepared the wing struts have been prepared for mounting by cutting



small bits from the point of the V to fit them in 0.7 mm predrilled holes in wing. When fitting them to the wing, they appeared to be a bit too short, so I have lengthened them with a very small piece of 0.5 mm plastic rod, painted the new bit black and fitted them to wing and fuselage.



### Undercarriage

The wheels in the kit are far too small compared to the drawing as well as to the photographs. So from my scrap box I have selected a pair of wheels with the correct diameter and shape, made small axels from 0.9 mm plastic rod, flattening the end a bit to mount it later under the V-struts of the undercarriage. I have modified the ends of the V-struts such that the fit well in the 0.7 mm pre-drilled holes in the fuselage. The oleo-styles have been made to the correct length according to the three-view drawing and the diameter of the ends has been corrected to fit in the holes in the V-struts and in the wing.

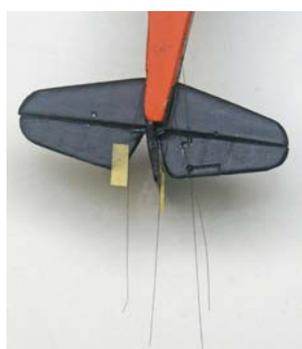


After painting the parts, I have fitted the V-struts and the oleo dampers. The V-struts still needed a small correction before gluing the assembly with a drop of thin cyano. The wheels I will fit at the last moment, as they risk to be damaged by handling during the final assembly of the model. Next I have applied the white custom printed decals on the black fuselage.



### Final assembly

First thing to do is to attach the rudder and elevator to the vertical and horizontal stabilizer. I have fixed them with three drops of thin cyano to simulate the hinges and have finished the tail with satin varnish. When this had dried well, I have attached 0.06 mm black painted fishing line in the 0.3 mm holes I had drilled before hand for the two cables to the rudder-tailskid assembly and the two Bowden



cables to the trim surface in the left elevator half. These last two cables must not be tensioned too much, as the first part of the Bowden cable runs over the elevator hinge and must move with the elevator motion. It was not easy to fix the thin fishing line in a nice curve; it straightened itself quite consistently. The last piece of the Bowden cable has been painted silver. To allow some visibility on the interior of the cabin I have fixed the door in an open position.



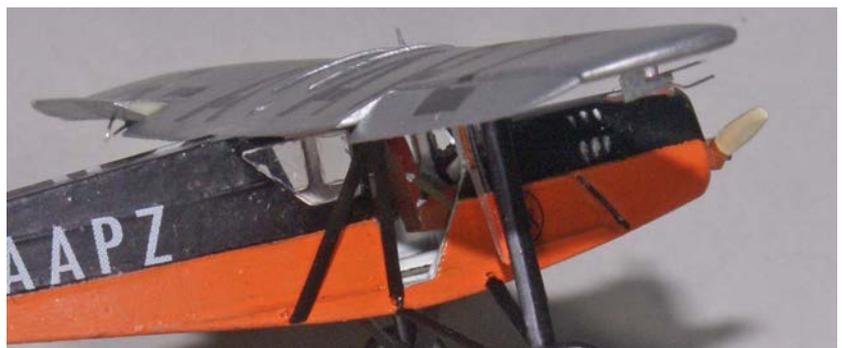


Next I have glued the ailerons to the wing, again with three drops of glue each. I have also glued the pitot tube under the right wing and have made the window in the wing with Crystal Clear.

Finally the axles of the wheel have been cut to the correct length and the wheels have been glued to the undercarriage. I have glued two small cover plates over the rudder control cables where they leave the fuselage and attached the propeller. Some touching-up and the model is finished. To illustrate the size of the model I have placed a 50 mm ruler next to it. The model measures 33 mm.

The Dujin kit is a nice model to build, but to construct a realistic interior quite some adaptation is required. White decals and the NFS logo are missing in the kit and the black registration on the wing is a bit too large. The dihedral of the wing is incorrect, as is the case with many resin kits. The wheels are much too small and need to be replaced. Details on the left side of the engine are missing. But with a bit of effort all these shortcomings may be corrected, and a nice model results. I have had much support from the excellent documentation provided by Henri Kaper from the Koolhoven Airplanes Foundation. Below some pictures are shown of the final result.







### References

1. T. Wesselink & T. Postma, *Koolhoven, Nederlands vliegtuigbouwer in de schaduw van Fokker*, pp. 63-64, ISBN 90 228 3890 0, 1981
2. D. Top, *Frits Koolhoven en zijn Vliegtuigproductie*, pp. 60, 62-63, 1996
3. H. Hooftman, *Nederlandse Vliegtuig Encyclopedie, Burgerluchtvaart in Nederland, Deel 1; Van H-NABA tot PH-AEZ*, pp. 136-137, Cockpit-Uitgeverij, Bennekom, 1979
4. H. Hooftman, *Nederlandse Vliegtuig Encyclopedie, Burgerluchtvaart in Nederland, Deel 2; Van H-NAFA tot PH-AIZ*, p. 71, Cockpit-Uitgeverij, Bennekom, 1980
5. H. Hooftman, *Nederlandse Vliegtuig Encyclopedie, Burgerluchtvaart in Nederland, Deel 3; Van PH-AJA tot PH-AKZ*, pp. 87-89, 157, Cockpit-Uitgeverij, Bennekom, 1981
6. Anon., *Koolhoven Vliegtuigen, 1910-1940*, p. 5, 1940
7. H.J. Hazewinkel, *Vliegtuigbouw in Fokkers Schaduw, De geschiedenis van al die andere Nederlandse vliegtuigbouwers*, p. 29, 1988
8. Luchtvaart Historisch Tijdschrift, *Luchtvaartkennis, Jaargang 59, no. 3*, p. 115, ISSN 1381-9100, 2010
9. Tijdschrift voor de Luchtvaart historie, *Verenigde Vleugels, Jaargang 12, No. 6*, p. 16, Oegstgeest, 2010

## Appendix Pictures from the *Stichting Koolhoven Vliegtuigen*<sup>vi</sup> used for the model details

The following pictures have been used to produce and detail the model.

### Interior



The black rod at the right in the picture above is part of the aileron actuation mechanism. The back of the pilot's seat can be folded backwards to ease the pilot's entry.



Seat belts and front seat support strap.



Elevator trim wheel and throttle.

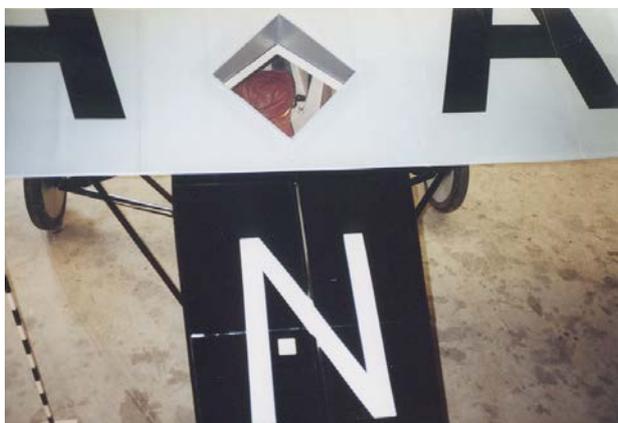


The rear cabin bulkhead and the rear seat.



The fuel gauge.

### Wing



There is a square window in the wing, which is missing in the kit.

### Control surfaces

Relevant pictures of the control surfaces have been included in the text of the building report.

<sup>i</sup> Sources are not consistent on the version of Cirrus Hermes engine that was used; it varies from I to III, and power quoted varies from 105 to 115 hp.

<sup>ii</sup> <http://www.koolhoven.com/reconstruction/desoutter-mk1/>

<sup>iii</sup> <http://www.shuttleworth.org/>

<sup>iv</sup> Ground, respectively flight attitude

<sup>v</sup> Black Lion Decals; <http://www.blackliondecals.nl/>

<sup>vi</sup> <http://www.koolhoven.com/>