Aircraft history

The Koolhoven F.K.43 was a design of 1931, originally designed as a private plane for Van Lear Black, and has been produced until 1938. The F.K.43 was of mixed construction with a wooden wing, covered with plywood, and a steel tube fuselage. The aft part of the fuselage was covered with linen, the cabin part with ply. The cowling was covered by metal sheet.

The F.K.43 has served satisfactorily with the KLM from 1932 to 1940 as a trainer and taxi plane and several private customers used it as a touring plane. Due to their small size compared to other KLM aircraft the F.K.43's received the names of insects. The second series of the aircraft produced for the KLM was slightly improved relative to the prototype and the first series; it had a more streamlined belly and plywood covering of the cabin walls instead of linen. The two rotating doors giving access to the front seats disappeared and the cabin door moved from starboard to port. Two aircraft were delivered later as replacement for aircraft lost in accidents. They differed from the second series by their smaller cabin windows.

One aircraft of this later delivery, the PH-ASN, survived the war, as it escaped after the capitulation of the Netherlands to England on May 15th 1940 and served with the R.A.F. as liaison aircraft. It has been returned to the KLM in the Netherlands in November 1945 and flew afterwards with the National Flying School in Rotterdam as PH-NAU until September 1952. It was also used by the Delft University of Technology for research in the field of boundary layers. This same aircraft, registered as "965", was also one of the two F.K.43s, which were requisitioned by the LSK (Dutch Army Air Force) prior to the war. The PH-NAU was scrapped in 1955.

Aircraft characteristics

Span:	11.00 m
Length:	8.20 m
Height:	2.40 m
Empty weight:	630 kg
Take-off weight:	1140 kg
Engine:	De Havilland Gipsy Major II, 140 hp
Accommodation:	Pilot, three passengers (taxi plane); pilot, trainee, two passengers (trainer)

References

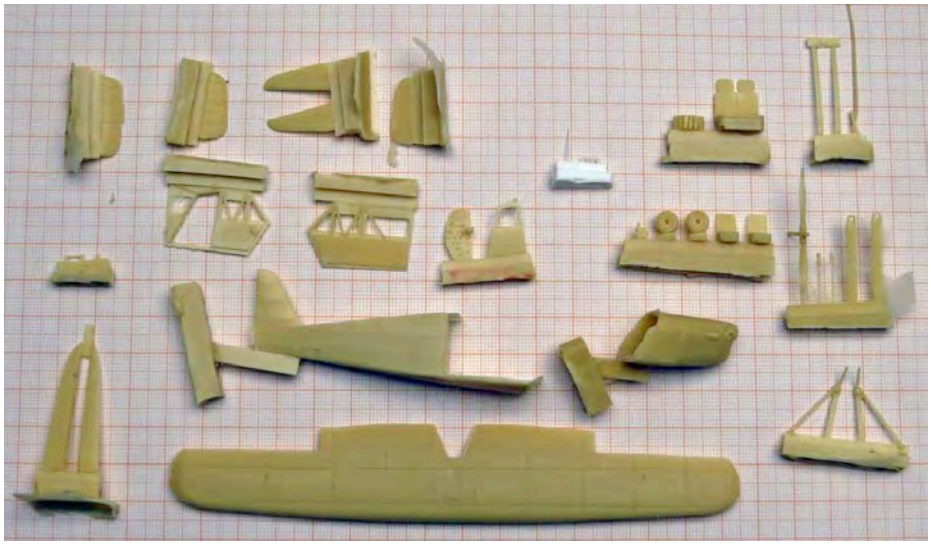
D. Top, *Frits Koolhoven en zijn Vliegtuigproduktie*, pp. 69-71, 73-74, 1996

T. Wesselink, *Koolhoven Vliegtuigen*, pp. 208-209, 211, 214, ISBN 978-90-818510-2-2, 2012

T. Wesselink & T. Postma, *De Nederlandse Vliegtuigen, Alle vliegtuigen ooit in Nederland ontworpen en gebouwd*, p. 79, Unieboek B.V., Bussum, 1982

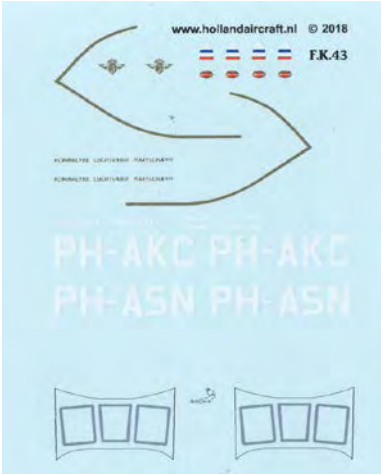
Kit contents

- 33 resin parts.
- 50 mm of 0.75 mm styrene rod for parts 8 and 13.
- 75 mm of 0.5 mm styrene rod for frame tube from instrument panel to fuselage frame, for the stabilizer struts and for the frame tubes at the inside of the windshield.
- 15 mm of 0.5 mm brass rod for pins in top of main undercarriage struts.
- 5 x 20 mm of 0.4 mm styrene sheet for exhaust brackets



and elevator, rudder and ailerons control horns (top only).

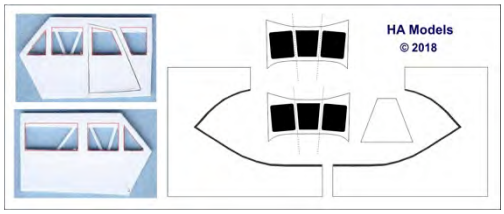
- 70 x 29 mm of 0.25 mm transparent plastic sheet for windows.
- Decal sheet for two KLM versions (PH-AKC and PH-ASN), the Dutch ML or LSK (Air Force) version (865), the RAF version (FK43), the Dutch NLS version (PH-NAU) and the PH-NAU during the TH Delft research programme.



The two decals sheets at the right with white, gold or silver in it and the orange rudder decals have been printed with an ALPS printer; the left decal sheet with a laser printer. The orange decals in the bottom ALPS printed sheet are printed on a double white layer to ensure sufficient cover of the black painted rudder. If you prefer to use the laser printed version, feel free to do so, but it probably covers less well on the black surface.

The decal sheets have been given a top layer of Microscale Liquid Decal Film. As a consequence a continuous layer covers the decals, so it is advised to cut them out close to the objects. It is advised to use a water-based varnish to seal the ALPS printed decals. If you use another varnish, test first on a decal you are not using for your model whether it does not damage the ALPS decals. The ALPS printed decals for the propeller tips, the Hamilton standard logo's and the windscreen frame are used for a number of F.K.43 versions, as indicated in the sections below.

- Template on carton to produce the paint masks for the windshield, the cabin ceiling window, the second KLM series (PH-AKC) cabin walls and a paint mask for the separation between aft fuselage section blue and forward section black-blue painting for the KLM versions.



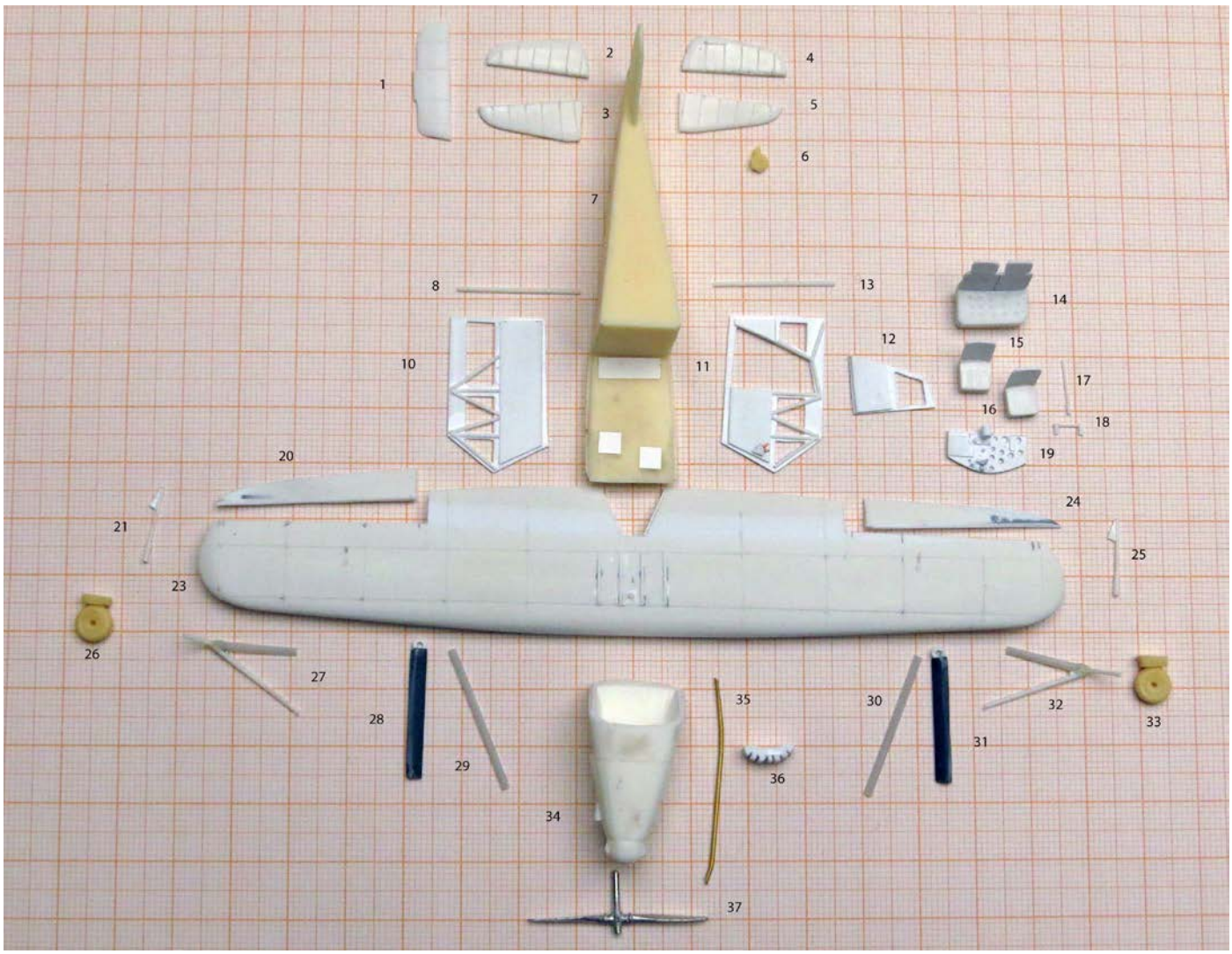
- Print of the windshield template on paper to produce the windshield.
- Three-view drawing 1/72.

Building instructions

Painting of parts and (sub) assemblies should be done at convenient points in the building process.

Note that most pictures with the instructions below have been made during the assembly of the prototype for the kit, so small differences in assembly order and configuration may be present.

It is advised to use gloss water-based varnish to seal the decals before finishing the model with satin varnish. Satin varnish alone does not protect the (ALPS printed) decals well enough; they stay vulnerable for mechanical damage.

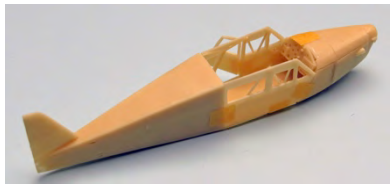


1. Remove the resin parts from sprues; this can best be done with a razor saw. Clean the flash. Pay attention to the cabin side walls; the fine edges should fit snugly into the ridges on the aft fuselage and the underside of the wing. Their dimensions also determine the alignment of nose and wing. The wing leading edge needs a bit of rework; auxiliary provisions for the casting process have left some traces.

2. If you are building the PH-AKC, modify the cabin sidewall windows according to the mask supplied.

3. Decide whether you want to mount the cabin door (12) in open or closed position. If you select the closed position, glue the door in the sidewall opening. Dry fit in any case the door, and adjust if required.

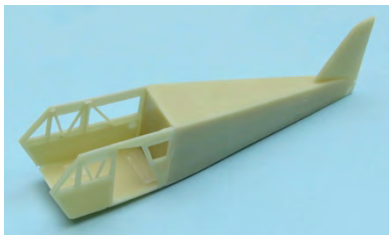
4. Attach the cabin sidewalls (10, 11) provisionally with tape to the aft fuselage (7). The top of the walls should be flush to the top of the fuselage; the sides should be flush with the aft fuselage sides; correct if necessary. Dry fit the instrument panel.



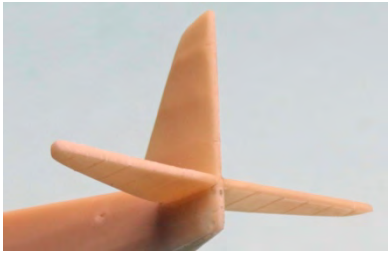
Probably the port cabin wall is slightly too high and too long compared to the starboard one. Remove a small quantity of material from the bottom and rear of the port wall. Also, remove the top of the fuselage frame cast with the sidewalls, if required to get a good fitting of the wing.

5. Dry fit the nose (34) to the fuselage. Check the alignment of the nose relative to the longitudinal axis well. If the nose is not well aligned as seen from the top and bottom, correct this by removing a very small strip from the rear edge of the cabin wall at the opposite side the nose is pointing to.

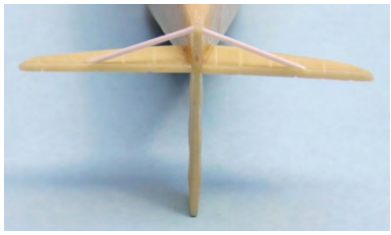
6. Glue the cabin sidewalls to the aft fuselage.



7. Glue the stabilizer halves (3, 5) to the aft fuselage. The hinge lines of rudder and elevator halves should be in one plane. The place of elevator halves is marked by superficially drilled holes.

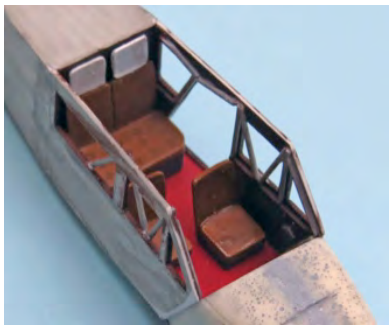


8. Make the stabilizer support struts (0.5 mm styrene rod) to size and glue them in place. The place of the support struts is marked by superficially drilled holes.



This is a convenient moment to paint the inner side of the cabin walls and the floor.

9. Drill slanted holes in the exit openings of the control cables in the aft fuselage. Repeat this after each layer of paint.



10. Glue the seats (14, 15, 16) to the small squares cast on the cabin floor.

Note: Probably the passenger bench is a bit too wide; dry fit and correct by sanding if required.

11. Glue the nose to the fuselage. Align the lower side well and check carefully.

12. Dry fit the wing over the fuselage. No gaps should appear between walls and wing lower surface; correct before gluing if necessary. If the space between the sidewalls is smaller than the width of the ceiling panel at the underside of the wing, remove a bit from the starboard side of the wing panel. This is best done by marking the palce of the cut with a pencil, initiating the cut with a knife and finishing the cut with a razor saw.

13. Mount the control stick (17) and rudder bar (18) in front of the pilot seat.

Probably there is not enough room to mount the complete rudder bar; cut the left side off to centre it well in front of the seat.

Also, the control stick does not always reproduce well in resin. If it is missing or defective in your kit, produce a control stick yourself from pieces of 0.5 and 0.8 mm styrene rod or other material.

14. Glue the instrument panel (19) to the top of the nose. Keep the panel edge just below the nose surface to provide gluing area for the windshield.

15. Mount a frame tube made from 0.5 mm styrene rod between centre of instrument panel and top of the cabin frame.

16. If you produce the 865, RAF FK43 or PH-NAU, mount the oil cooler under the nose (36).

This is a convenient place to finish the fuselage paint scheme and apply the decals to the fuselage.

17. Measure the maximum dimensions of the cabin window openings. Cut the cabin windows from the clear plastic sheet about 1 mm larger than the window openings and fit them by trial and error, cutting and sand-

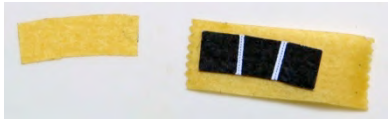
ing the edges to the correct size. Glue them in the window openings with Microscale Kristal Klear or equivalent.

18. Drill slanted holes in the exit openings of the control cables in the wing. Repeat this after each layer of paint.

It may be convenient to paint the wing and to apply the decals before mounting the wing on the fuselage. In any case the part serving as cabin ceiling should be painted.

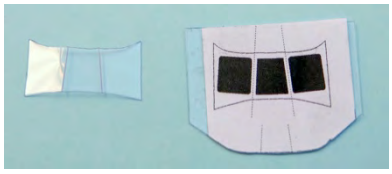
19. Glue the wing (23) on the fuselage.

20. Produce a paint mask for the windshield from masking tape with the aid of the carton template provided.



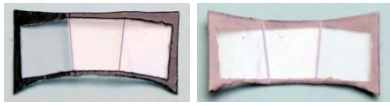
21. Glue the paper copy of the windshield on a piece of transparent plastic Kristal Klear diluted with a drop of water.

22. Cut the windshield about 0.5 mm larger on all sides than the template provided. Carve the dotted lines lightly with a knife and carefully bend it backwards. Sand and cut the windshield to fit between wing, nose and sidewalls.

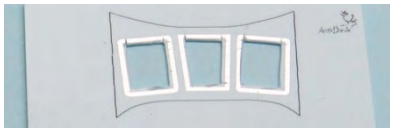


Note that the wider side of the centre window must be at the top when fitting the windscreen between wing and nose.

23. When it fits well, remove the template and apply the paint mask to the windscreen on the outside and paint the edges of the windshield, first a layer of well covering light grey, then the outside layer in the colour going with the version you are building.



24. Bend the windshield in the required shape and dry fit it for a last time.



25. Cut out the windows in the aluminium decal representing the frame of the windshield windows. Stay a minimum distance away from the silver printed edge.

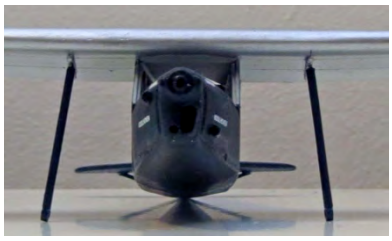
26. Apply the window decal to the windshield. Apply decal fluid as required.

27. When dry cut away the excess decal around the windscreen and seal it carefully with water based acrylic gloss varnish, staying away from the transparent surface.

28. Glue some small ends of light grey painted 0.5 mm plastic rod to the inside of the windscreen at the place of the window bends. To simulate the fuselage frame tubes.

29. Glue the windshield in place with white glue or Microscale Kristal Klear. Close the gaps around it with white glue if necessary. Paint the white glue in the colour of the forward fuselage.

30. Mount a 0.5 mm brass pin in the top of the vertical landing gear legs (28, 31). Dry fit in the holes under the wing; 2.0 mm of the brass material should remain visible. If you build the model in flying configuration, 5 mm of the brass pin should be visible (and the cabin door should be closed of course).



31. Pass the stub axles (27, 32) through the rings at the bottom of the vertical landing gear legs (28, 31). Align the V-struts with the markings on the bottom of the fuselage (streamline profile at

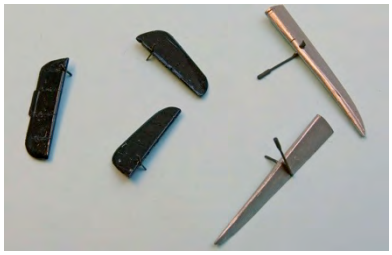
the rear), such that the vertical leg is slightly slanted forward (1 mm) and sideways (3 mm). Use the V-struts as an aid to dry fit the vertical legs in position. When correct, glue the undercarriage leg in place.

32. Cut the V-struts to the correct size and glue them in place.
33. Make the forward wing streamline struts (29, 30) to size and glue them in place.
34. Make the aft wing struts (0.8 mm styrene rod; 8, 13) to size and glue them in place keeping them well vertical. Start with the side the cabin door is and make sure the cabin door stays free.
35. Cut the ceiling window about 0.5 mm larger on all sides than the template provided. Sand and cut it trial and error to fit the opening in the wing and glue it in place.

36. Produce the exhaust heat exchanger from the piece of 2.4 mm diameter plastic tube. It should be 8 mm long. In order to fit the exhaust-heat exchanger assembly correctly under the fuselage, the top of the tube should be cut away until the top of the inner bore. Glue the heat exchanger to the exhaust (35) as indicated in the four-view drawing. Mount brackets cut from 0.4 mm sheet on the exhaust. Take care you do that in the correct orientation.

37. Shorten the stub axles such that the wheels fit nicely along the main carriage legs. Glue the main wheels (26, 33) and tail wheel (6) in place.
38. Paint the exhaust and its supports and mount it in place under the fuselage.

39. Drill holes for the fin rigging wires in the fin and the stabilizer halves (for their locations refer to the four-view drawing). Insert a piece of fishing line or other material in the pre-drilled holes, bring it under tension and fix it with a drop of cyanoacrylate glue.



40. Provide elevator halves, rudder and ailerons with control horns of 1.5 mm height made from 0.4 mm sheet styrene in place. The elevator half with the trim tab is located at starboard. Mount the balance weights (21, 25) under the ailerons. The location of the control horns of elevator and rudder are indicated in the four-view drawing. The location of control horn and balance weight of the ailerons is opposite the exit point of the control cables from the wing, so use the wing as your guideline.

The control horns at the underside of the elevator halves must be 1.5 mm high or less to prevent interference with the stabilizer struts.

41. Glue the control surfaces (1, 2, 4, 20, 24) to tail and wing with the desired deflections.

Do not give the elevator halves too large a deflection; this makes the attachment of the control cables to the control horns very difficult or

impossible.

42. Provide control cables from fuselage and wing exit points to the control horns and the balance weight brackets.
43. Glue the door (12) in place, if you build the model with an open door.
44. Paint the propeller (37), apply the decals as required for the version you are building and glue the propeller in place.

Painting instructions and decal placement

With the painting instructions the following abbreviations are used: HE = Humbrol enamel, RA = Revell Aqua, VMA = Valejo Model Air, VMC = Valejo Model Color. The paints used are the ones I have used; of course equivalent colours of other brands may be selected.

Cabin interior

The inside of the cabin walls of the KLM F.K.43s were finished with dark wood, probably mahogany, the finish of the interior of most KLM aircraft of the time. I have used a base of VMC70.846 and a top layer of VMA71.036, applied in a streaky fashion with a brush. The visible steel tubes were painted light grey (HE129), as well as the inner surface of the nose cavity (walls and top), the instrument panel dark grey (HE123), while the compass has been finished with gold (HE16), being a better shade for brass, and light blue (HE47). Control stick, rudder bar and throttle have been painted dark grey with accents of black. The floor was covered by a lighter (grey) shade material, probably dark vermillion carpentry (VMC70.947). The ceiling was finished in a lighter colour, possibly light grey (HE129). The lower part of the seats has been painted dark grey, back rest and bottom leather (HE62).

It is unlikely that the interior decoration has been changed in the ML and RAF configuration. The photographs of the NLS aircraft, when being scrapped, show also a dark interior finish.

PH-AKC Second series for KLM 1935

Rear of aircraft fuselage, tail planes and underside of the fuselage until the rear wing struts are dark blue (HE15), front of fuselage and undercarriage and wing struts almost black dark blue (three parts HE21, one

part HE15), wing and propeller aluminium (VMA71.062). The door has a white edge (HE22). Exhaust painted steel (VMA71.065).

Propeller tips white with a red and blue stripe (either paint or decal). Black registration decals on top and underside of wing. Middle of the “A” of “AKC” aligned with the inner edge aileron of left wing. The registrations are centred between front and rear spar. “PH-“ mirrored from outboard on underside right wing. Place of the registrations on upper and lower side the same.

Due to an error in the wing master the distance between the spars on the top side of the port wing is greater than that of the starboard wing. This shows only up when applying the decals. The error can be (optically) reduced by using the slightly enlarged, inkjet printed “PH-“ decal provided.

The windscreen windows had an aluminium frame. White decals “CITROENVLINDER” on upper forward part of cowling, large “KOOLHOVEN” on side of cowling. White registration on fuselage side centreline 17 mm behind rear cabin window. Gold “KONINKLYKE LUCHTVAART MAATSCHAPPY” under cabin windows, such that the end of “MAATSCHAPPY” is on the cabin door. Gold KLM logo centred under the middle cabin window. Hamilton Standard logos on propeller. Propeller tips white, with red and blue band, either decals or painted.

PH-ASN ***Third series for KLM 1938***

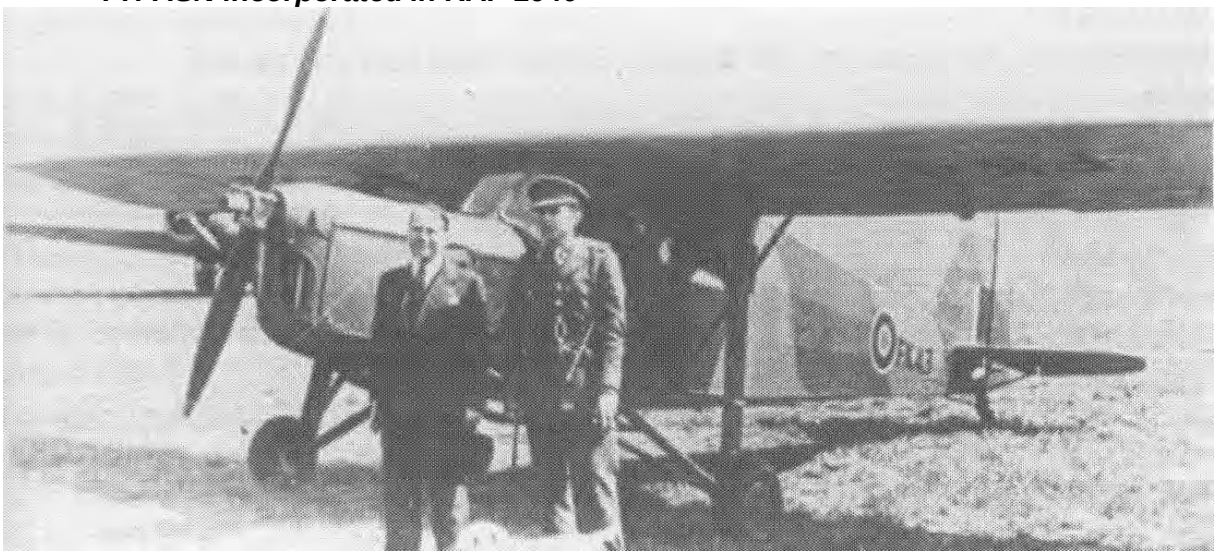
The painting scheme is identical to the PH-AKC with the exception of the white edge of the door and the red, white and blue propeller tips. The wings are identical to PH-AKC, aluminium propeller. White decals “NONVLINDER” on upper rear part of cowling. White registration on fuselage side centreline 17 mm behind rear cabin window. White “FK43” and Koolhoven logo on fin are placed between second and third rib. Gold “KONINKLYKE LUCHTVAART MAATSCHAPPY” under cabin windows, such that the end of

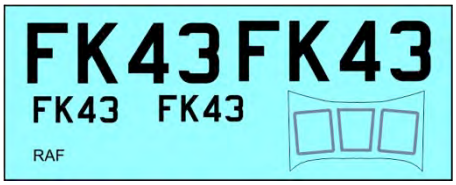
"MAATSCHAPPY" is on the cabin door. Gold KLM logo is centred under the middle cabin window. No Hamilton Standard logo's on propeller. The windscreen windows had an aluminium frame.

965 PH-ASN requisitioned by the ML (Militaire Luchtvaart, Lucht Strijdkrachten, Dutch Army Air Force) 1939

Aircraft was painted grey all over (HE64). Aluminium propeller with red, white and blue tips. either decals or painted, and Hamilton Standard logos. Black "965" 1 mm behind rear window, centred on side. Black edged 9 mm high orange triangle on fuselage sides. Black edged 20.5 mm high orange triangles on top and bottom of wing, point just on inner edge of aileron. Black edges are always 1.4 mm wide. Black edged orange rudder; paint the rudder black and apply first the white to it and then the orange decal over it. The orange triangles are not part of decal sheet.

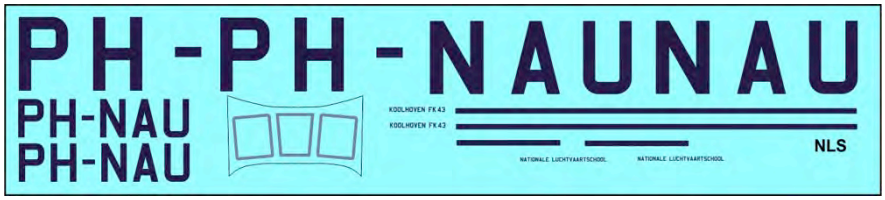
FK43 PH-ASN incorporated in RAF 1940





Aircraft camouflaged; camouflage scheme unknown. Black “FK43” decal on side of rear fuselage behind a British roundel of 8 mm diameter. 6 mm high red-white-blue fin flash on lower rear edge of fin. The photograph shows that the registration “FK43” is repeated under the port wing with the bottom of the text towards the leading edge; standard RAF rules dictate that the registration is also under the starboard wing, but 180 degrees rotated. The height of the text is about 30% of the wing chord at the location of the aileron inner edge. Yellow edged red, white and blue roundels are placed at the tips under both wings; on top of the wing blue and red roundels are placed. The windshield windows have no aluminium frame. The roundels and the fin flash are not included in the decal sheet.

PH-NAU NLS 1947 (Nationale Luchtvaart School) returned from RAF to KLM, transferred to NLS



Aircraft was painted aluminium all over, except the front of the cowling, which was painted dark blue, and the red, white and blue rudder. “KOOLHOVEN FK 43” decal on lower forward edge of top cowling. Dark blue “PH-NAU” is placed 8 mm behind rear windows. The dark blue striping under windows from cowling until tail is interrupted by the registration. Dark blue PH- and NAU decals are located under and on top of the wings, just outside the undercarriage connection. Although not present on the picture above, a picture of

the scrapped PH-NAU shows that the text “NATIONALE LUCHTVAARTSCHOOL” is located under the first rectangular window and the window in the door. On the other side of the fuselage this was mirrored.

PH-NAU TH Delft 1952, boundary layer research

The PH-NAU had a different paint scheme during the research period for the TH Delft in 1952, It carried only the registration PH-NAU (in scale 8 mm long) on the fin between the first and second rib and the regular registrations on the wing in an overall aluminium finish.

Enjoy your model.

Rob Hamann

HA Models
info@hollandaircraft.nl

Model conception, masters and decal drawings by Rob Hamann, with the technical (and moral) support of Rob de Bie, Maarten Schönfeld, Wim Hoogendoorn and Luuk Boerman. Documentation from various books and provided by Harry van der Meer/Aviodrome, Dik Top, Hans Mooren and Stef Biemans. The resin kit has been cast by Tilly Models, the decals have been printed by Arctic Decals. A building report of the prototype of the F.K.43 model can be found at http://www.hollandaircraft.nl/K14%20FK%2043.pdf