



## Building instructions 1/72 scale De Schelde S.20

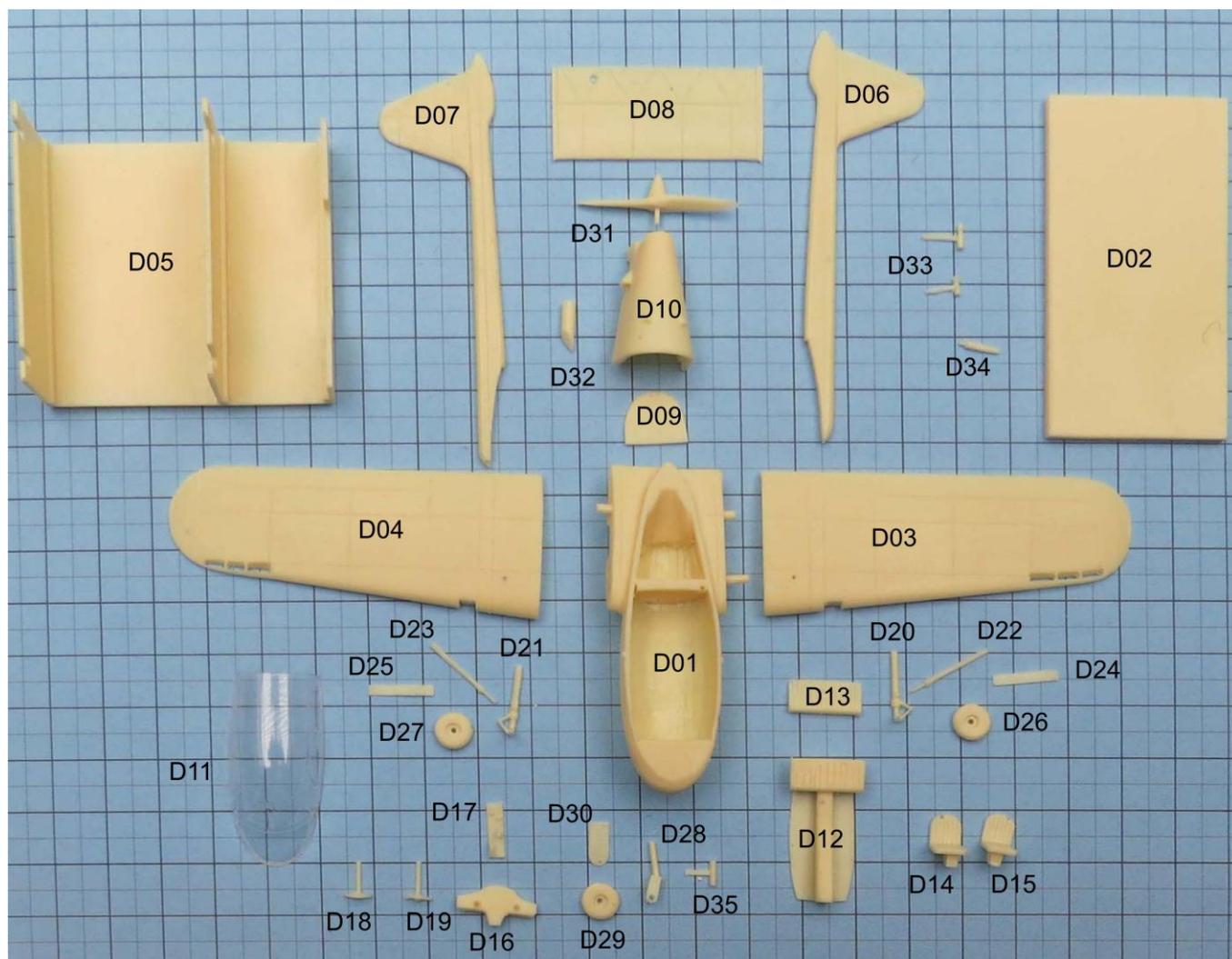
7. Het Vliegveld, pp. 112-114, mei 1940

*Additional material and information has been received from Hans Berfelo and the Aviodrome Museum.*

### Kit contents

- 34 resin parts, of which two assembly jigs.
- One clear vacuum formed cabin canopy.
- 10 mm of 1.2 mm styrene rod to make an exhaust replacing part (D31)
- 10 mm of 0.7 mm styrene rod for the front wheel mounting.
- 10 mm of 0.6 mm styrene rod for fuel level indicators
- 10 mm of 0.5 mm brass rod for pitot tube production.
- Two 2 x 0.13 mm discs covered with aluminium tape for the landing lights.
- Paint masks for the canopy.
- Decal sheet for registration number, orange triangles, company and propeller logos, instrument panel and air intake and exhaust grid.
- Three-view 1:72 scale drawing, indicating the decal placement.

### Parts





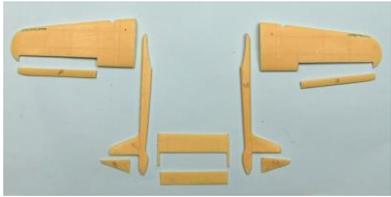
### Building instructions

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

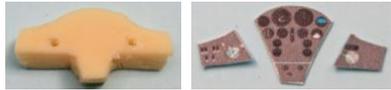
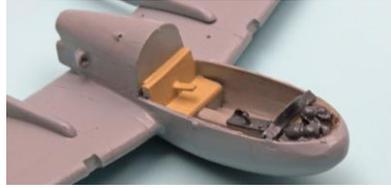
*Note that most pictures illustrating the instructions below have been made during the assembly of the two prototypes for the kit, so small differences in assembly order and configuration may be present. Also, the model has been painted with a brush; if an airbrush is used, the painting and assembly order will probably be slightly different. And of course these guidelines reflect my building routine.*

*The parts of this first kit show more air bubbles than later production kits; the moulds have been corrected to avoid them.*

*An appendix to these building instructions address the option to build the model with extended flaps. The styrene material to do so is not included in the kit. A copy of the building instructions can be downloaded from [www.hollandaircraft.nl/resin\\_kits.html](http://www.hollandaircraft.nl/resin_kits.html)*

1. Remove the resin parts carefully from the sprues; this can best be done with a razor saw. Clean the flash. Clean all parts with water and detergent or IPA to remove traces of casting agents.
2. Probably you will have to repair the air bubbles in some parts with small thickness. This is best done by using Revell Plasto, as it attaches well to the resin, and reinforcing the repair with a very thin layer of thin cyanoacrylate glue.
3. Remove the excess material from the vacuum formed cabin canopy (D14). Remove also the ridges from the top of the lower fuselage part (D01). These were intended to help placing the canopy, but if left, they force the canopy sides too much out, leaving a large, unequal joint.
4. Decide whether you want to build the model with extended ailerons, ridders and/or elevator. If so, remove the control surfaces from wing and tail surfaces with razor saw, panel scriber and knife. Mark them and set them apart.
5. Dry fit the fuselage lower part (D01) and the wings (D03 and D04). Correct the mounting surface, pins and holes if necessary. Place (D01) upside down on the wing assembly jig (D02). Centre it well. Attach the jig and the fuselage with tape to the assembly surface.
6. Glue the wings (D03 and D04) to the fuselage. Adjust the joint by applying putty and sanding if required.
7. Prepare the jig (D05). Remove the excess resin from the underside and check continuously whether the thickness of the bottom plate is equal at each corner. If not, correct by further sanding or gluing thin pieces of styrene under the corners. Check the distance from the bottom surface of the jig D05 and the lower edge of the recesses in the jig. They should be equal at both sides and should be 13 mm for the large recesses and 18 mm for the small ones. Correct by removing some material or gluing a piece of styrene strip in the recess as needed. Dry fit the fuselage lower part (D01) and the tail booms (D06 and D07) in the jig (D05). Correct the width of the cut outs if necessary. Keep the lower wing surface equal to the bottom of the lower edge of the large recesses and the wing trailing edge against the forward vertical surface of the jig. The port tail boom (D06) is the one with a hole in the forward part to mount the antenna mast (D34). The forward end of the booms should be equal to the engraved front wing spar and the booms should be centred between the double engraved wing ribs.
8. The attitude of the port tail boom (D06) must be corrected as the interface of the part with the wing surface is different from the starboard boom, resulting in an asymmetry of tail and wing tips. This is done by gluing a piece of 0.4 mm thick styrene at the front of (D06) on the wing. This brings the aft end of the tail boom down relative to the wing.

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9. Glue the tail booms to the wing, keeping the “step” in the booms against the wing trailing edge. Check that they are normal to the wing trailing edge and check whether the horizontal tail surface (D08) fits in between the booms. Check also whether the wing tips are on equal distance from the horizontal plane when the model is resting on the tail booms and the fuselage bottom. If not, correct by breaking the tail boom (D06) away from the wing. Clean the gluing surface and adjust the thickness of the styrene. If correct, glue the horizontal tail surface in place on the centreline of the tail booms. Remove the excess styrene and close the joint with thick cyanoacrylate glue and putty.
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10. To prevent the model to be a tail sitter carefully hollow the nose without damaging the outer walls and the nose wheel bay. Fill the room with two grams lead, checking that it still fits under the forward part of the canopy.
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11. Decide whether you want the version with the oval cooling air exhaust or the round one. If you select the second version remove the oval exhaust with knife and sanding from the fuselage aft part (D10) as shown at the left in the picture. Dry fit with the aft fuselage to check whether the surface fits smoothly. The round exhaust is included as a decal.
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12. Glue the cabin aft wall (D09) to the aft fuselage part (D10). Apply putty to the joints and sand the surface smooth.
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13. Dry fit the cabin floor and bench (D12) in the lower fuselage (D01). Make sure that the bench is well horizontal and that the tunnel is well centred. Adjust as necessary. Dry fit the instrument panel (D16) in the forward part of the fuselage. It should be well horizontal and the top should be tilted slightly forward. Dry fit the aft fuselage part (D10) and the canopy (D11) on the lower fuselage. The instrument panel should be just below the inner side of the canopy. If correct, remove the aft fuselage and the canopy and apply glue in the joints between the instrument panel and the lower fuselage. This is best done by dipping a thin metal wire in the glue and applying drops of glue in the joint.
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14. To ease the application of the decal for the instrument panel, remove the bosses around the two holes for the steering wheels. Separate in any case the panel decal in three parts as shown in the picture and apply them one by one. If you leave the bosses, cut the two white circles open to allow the decal to flow around the bosses.
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15. Fit and glue the back of the bench (D13) on the bench seat and against the back wall of the cabin. Make sure the thicker part of (D13) is on the top side. Mount the instrument panel (D16). Glue the console panel (D17) on the tunnel in the middle of the cabin floor (D12). Check whether the canopy fits well against the fuselage sides and whether the instrument panel leaves the canopy free. Correct if necessary.
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16. Glue the fuselage aft assembly (D09) and (D10) to the lower fuselage part (D01). Align the edges of both fuselage parts well. When set, dry fit the cabin canopy (D11) to the fuselage assembly. Adjust (D11) if necessary. If you have left the oval exhaust apply putty to fair it to the fuselage. When dry, sand the putty smooth.
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17. Paint the cabin floor, walls and rear wall light grey and the bench, the mid console and the instrument panel (D16) dark grey. Keep the mounting surface for the two seats free of paint.
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18. Apply a De Schelde logo decal to the rear cabin wall above the bench. Apply the three parts of the decal to the instrument panel.
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19. Detail the mid console (D17) and the lower part of the instrument panel. Form six handles from 0.25 mm metal wire. Form the tip of the handles with a drop of thick cyanoacrylate glue. When dry, paint the handles and glue them in place according to the photographs of the cabin interior.
20. Paint the steering wheels (D18 and D19) and the seats (D14) and (D15). Provide the seats and the bench with seat belts (not provided in the kit). Mount the seats to the cabin floor.
21. Adjust the length of the axles of the steering wheels (D18 and D19) and mount them to the instrument panel (D16). Take care they have the same position and rotation. This completes the cabin interior.
22. Decide whether you are going to build the model with extended or retracted undercarriage.
23. Dry fit the nose and main wheel doors in the wheel bay cavities and adjust as required. Paint the undercarriage components (D20) through (D27). If you want to build it with extended undercarriage, jump to step 30. If you want to build the model with retracted undercarriage, continue here.
24. Glue the pair of nosewheel doors (D30) in the nose wheel bay.
25. Dry fit the main wheels (D26) and (D27) in the main wheel bays with outer side downwards. If they are not flush to the lower wing surface, sand the inner side off until the fit well. Glue them in place.
26. Glue the main undercarriage doors (D24) and (D25) in the outboard wheel bay aperture, flush to the lower wing surface.
27. Fit the main undercarriage legs (D20) and (D21) in the recess between the tail boom and the wheel. Remove the lower and top part of the legs until a length of 4.5 mm is left. Check that this fits between the wheel doors and the wheel. Adjust if necessary.
28. Fit the undercarriage extension actuators (D22) and (D23) in the recess between the undercarriage door and the wheel. Cut off the excess length. If there is not enough place for both the undercarriage legs and the actuators, delete the undercarriage legs.
29. Jump to step 37.
30. Note that the main wheels should be vertical, while the landing gear legs are normal to the wing lower surface. Achieve this by drilling a slightly slanted hole in the centre of the wheels (D26 and D27). Dry fit landing gear legs with the wheels in the mounting holes in the wheel bay and glue the wheels. Glue the wheels to the main undercarriage legs (D20 and D21) in the correct position. Mount the nosewheel (D29) to the nose wheel leg (D28). Use the piece of 0.7 mm styrene rod as axle. Remove the excess length of the wheel axles up to 0.5 mm from the wheel or leg surface.
31. Dry fit the port main undercarriage leg (D20), the wheel pointing outwards and the scissors pointing backwards in the hole casted in the wing under the tail boom. Check the distance between the wing lower surface and the bottom of the tire, which should be 14 mm. Glue if correct, the main leg should be pointing slightly outboard, the wheel vertical.
32. Repeat the procedure for the starboard main undercarriage leg (D21).
33. Cut off the thin part of the extension cylinder (D22) leaving 1 mm attached.
34. Dry fit (D22) between the outer edge of the port wheel bay and the notch on the main landing gear leg and adjust it trial and error to the correct length. Glue it in place.
35. Repeat the procedure with part (D23) for the starboard landing gear leg.



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36. Dry fit the nose wheel leg (D28) in the nose wheel bay. Glue it temporarily with a bit of Microscale Kristal Klear or equivalent. Check whether the model is horizontal as indicated in the scale drawing, the aft edge of the tail booms 22.5 mm above the ground plane. Shorten the leg if necessary to achieve this and glue the nosewheel in place.



*It is probably wise to paint the canopy before mounting it. Use the paint masks provided.*

37. Close the canopy (D11). Use a glue that does not damage the clear plastic, e.g. white glue, applied sparsely to the tiny ridge on the fuselage part. Fill the large gap between parts (D11) and the nose of the fuselage (D01) first with white glue, next with putty. Sand the joint smooth. It requires quite some effort to obtain a well-formed nose. Adjust the joint between the canopy roof and the top of the aft fuselage by applying putty and sanding it until it is smooth. Fill the other joints between the canopy and the fuselage if needed. (Re)paint the fuselage and cabin roof.



38. If you build the model with deflected control surfaces, glue the ailerons in the desired position. Apply the large orange triangles on the wings (they also cover part of the ailerons). When dry, separate the part over the aileron from the rest of the decal with a sharp knife. Apply the decals to the tail booms. Apply the rudder decals to the black painted rudders.



39. Apply the decal for the air inlet grid on the nose. Use ample decal softener and carefully cut in the folds at the edges, if required.

40. If you build the model with retracted undercarriage, skip this step and step 42. Dry fit the main landing gear doors (D24 and D25) in place along the extension cylinders. Cut them to the correct length and glue them in place.



41. Separate the nose wheel doors (D33) lengthwise into parts. Glue the halves along the nose wheel bay edges.

42. If you build the model with deflected control surfaces, glue the rudders and elevator in the desired position. Apply the De Schelde logos on the cabin doors and the other decals, if you did not do so already.



43. If you have removed the casted oval exhaust in step 11, glue the decal for the round exhaust in place on the end of the lower fuselage. Examine the photographs for the correct position.

44. Remove the stub from the small tube (D35) and make sure the holes in the tube are well visible. Glue it on the nose.



45. Cut the stub from the Venturi tube (D33) to the required length and make sure the holes in the tube are well visible. Glue it on the above the port side cabin door, well horizontal and the short end pointing forward.

46. Cut two pieces of 0.6 mm rod to represent the fuel gauges, paint them and glue them in the holes on top of the wings next to the tail booms.

47. Shorten the pin of the antenna mast (D34) and fit it in the hole of the port tail boom. Glue it in place.



48. Glue the two discs with aluminium foil representing the landing lights in place. Finish the "glazing" with Microscale Kristal Klear or equivalent.

49. The exhaust (D32) supplied with the kit is a bit large for the model. You may want to make a smaller version from the piece of 1.2 mm styrene supplied. Cut it in the same shape as (D32) and drill a 0.6 mm hole in the end. Paint the exhaust and glue it in place under the starboard lower rear side of the fuselage (see the rear view photographs of the S.20).





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50. Paint the propeller (D31) and apply the Heine logo decals on the forward viewing side of the propeller. Mount the propeller.
51. If you are building the model with extended flaps, glue them in place with a 55 degrees deflection (see the appendix).
52. Apply the antenna wire between the top of the port fin and antenna mast.
53. Drill a 0.5 mm hole on the centreline just above the air inlet grid. Fit 10 mm of 0.5 mm diameter brass rod in it to form the pitot tube.





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### Painting instructions and decal placement

With the painting instructions the following abbreviations are used: HE = Humbrol enamel, RA = Revell Aqua, VMA = Valejo Model Air. The paints indicated are the ones I have used or matched; of course equivalent colours of other brands may be selected. It is recommended to finish the model with satin varnish.

#### Cockpit interior

Walls and floor: Light grey (HE129). Mid console, instrument panel, control elements, seat back and frames: Dark grey (HE 125). Steering wheels: Black (HE21). Bench and seats: Cream (HExx)

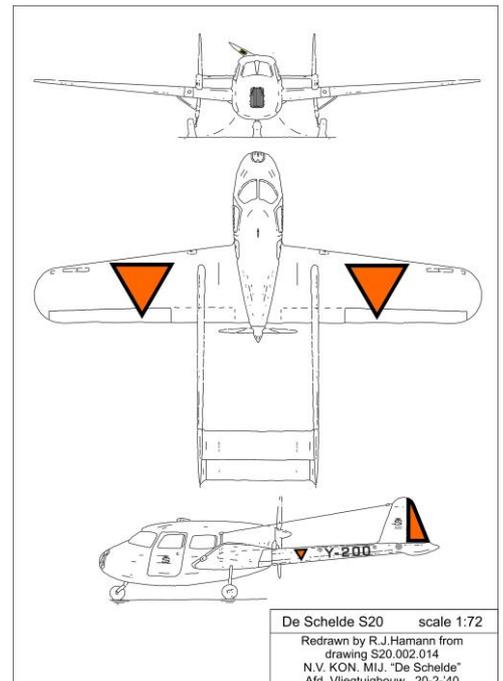
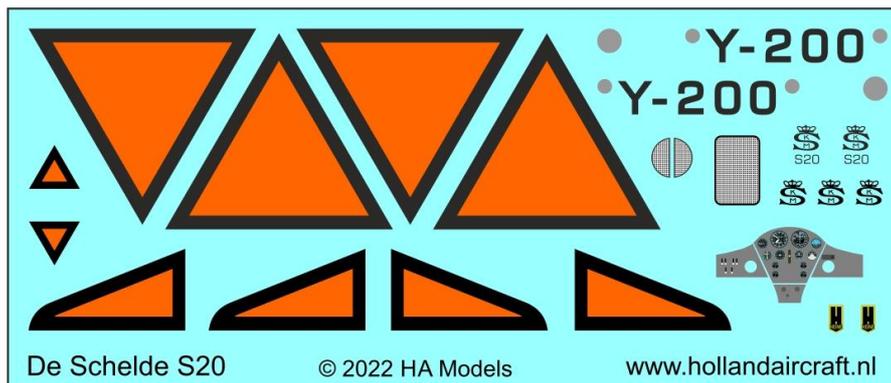
#### Outer finish

Mid grey (HE 127) all over. Wheel tires tank grey (RE 36178). Wheel bays: Light grey (HE129). Undercarriage legs, actuator extension rods: Dark grey (HE 125). Undercarriage cylinders: Aluminium (VMA 71.062). Tube on nose and Venturi tube: Light grey (HE129). Propeller and rudders: Black (HE21). Spinner: Mid grey (HE 127).

#### Decal placement

See the separate sheet with instructions how to handle the UV-printed decals. The exact location of the decals is indicated in the scale drawing. If you are building the model with deflected ailerons, it is advised to cut the wing triangles beforehand on the separation between wing main structure and aileron and to apply the pieces separately.

Note that the small triangles on the tail booms are not located on the regulatory position and that the black edge is narrower than prescribed.



When finishing the cabin interior, you have already applied the instrument panel decal and a De Schelde logo decal to the rear cabin wall. Apply the small orange triangles and the decal with the registration and the round access hatches to the tail booms. After painting the rudders black, cut the decals apply around the orange surface and apply them to the rudders. Place the De Schelde logos with the type indication on the fins and the two remaining De Schelde logos on each cabin door. Apply the air intake grid to the nose, just above the nose wheel bay. If you build the configuration with the round air exhaust, apply the decal on the rear edge of the lower fuselage. Apply the orange triangles on the top and bottom surface of the wings. The Heine decals must be applied to the forward facing propeller blade surface. Cut these decals a bit wide from the black surface to prevent loss of the fine yellow border.

The antenna wire should be applied only after the decals have been sealed.



### Appendix Building the model with extended flaps

To build this version you need the following additional material, not supplied in the kit:

- Four pieces of 5 x 23 mm of 0.5 mm styrene sheet for the wing and landing flap skin.
- A piece of 40 x 5 mm of 0.25 mm styrene sheet for the flap ribs.
- 50 mm of 0.5 x 0.25 mm styrene strip for the flap leading edge.

a. Prior to removing the control surfaces (step 4 of the basic model version) the wings (D03 and D04) must be glued to the lower fuselage (D01) according to steps 5 and 6 and using the jig (D02).



b. Cut the separations of flap and aileron in rib direction with a razor saw. Note that the flap continues slightly in the piece of the wing casted with the fuselage. Remove first the aileron from the port wing (D03) with razor saw, panel scribe and knife, supporting the fuselage on the jig (D02) when working on the lower wing surface. When working on the upper wing surface support the wing with (D02) and two pieces of 1 mm thick styrene sheet. Mark the aileron.



c. Trace the panel line for the flap at the wing underside as deep as possible. Use the razor saw to deepen the cut if possible. Carefully break away the flap part of the wing and clean the cut with a knife. The part of the wing where the flaps are located is not needed any more and can be discarded.



d. Repeat steps b. and c. for the starboard wing (D04).

e. Remove the rudders and elevator from the tail booms (D07) and (D09) and the stabilizer (D08) with razor saw, panel scribe and knife. Mark them. Remove the control surfaces separately from the flaps, mark them and set them apart.

f. Cut a piece from the 0.5 mm styrene sheet slightly larger than 4.5 x 22.5 mm. Make it fit smoothly in the wing upper surface of (D03) by trial and error. Glue it in place slightly above the wing upper surface. When dry sand the top surface flush with the wing upper surface, applying putty as required. Engrave the panel lines again. Sand the trailing edge as thin as possible from the inside of the cavity.



g. Repeat step f. for the starboard wing (D04).



h. Cut a piece from the 0.5 mm styrene sheet slightly larger than the cavity in the inboard port wing (D03). Make fit smoothly in the wing lower surface by trial and error. Sand the trailing edge as thin as possible from the topside of the flap.

i. Glue a piece of 0.5 x 0.25 mm strip to the top side of the flap at the flap leading edge.

j. Cut 7 ribs in a rectangular triangular form 1 mm high and 4 mm long. Glue them in place, equally distributed along the flap span with a minimum use of ultra-thin Tamiya glue.



k. Repeat steps h. though j. for the starboard wing (D04).

l. Paint the inside of the flaps and the wing cavity light grey. Glue them in place with 55 degrees deflection, when you are mounting the control surfaces (step 42). This completes the modification for the version with extended flaps. Continue with step 7 of the standard building order.



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Enjoy your model.

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*Model conception, masters and decal drawings by Rob Hamann, with the technical, commercial (and moral) support of Erwin Stam. Documentation from various books and from information provided by Hans Berfelo and the Aviodrome museum. The resin kit has been cast by Tilly Models, the decals have been printed by Arctic Decals, the canopy has been vacuum formed by Rob Taurus. Paint masks have been drawn and produced by Jan de Wit.*

A building report of the masters and the prototypes of the De Schelde S.20 model can be found at <http://www.hollandaircraft.nl/S04%20Schelde%20S.20.pdf>.



S 20 photographs

