

Fokker Super Universal Aeroporto Modelos 72¹ resin kit

Monoplane passenger

Scale 1:72

The Fokker Super Universal, factory designation Model 8, was the successor of the Universal passenger transport with a slightly larger capacity of six passengers and a larger engine, a 420 hp Pratt & Whitney Wasp. It also had a closed cockpit for pilot and co-pilot. It was the most successful North America Fokker, with 80 aircraft built by Fokker, 15 license-built in Canada by Canadian Vickers and 100 in Japan by Nakajima, some as a military version Nakajima Ki-6. Also some 40 may have been built in Manchuria. In total over 195 Super Universals have been constructed as land and float planes and on skis, which was a considerable number for the time, certainly in view of the economic conditions.

The Super Universal prototype, then named Universal Special, made its first flight in October 1927 and in March 1928 followed the first series machine, registered as NC 4453, which was much modified relative to the prototype. The customer was rear admiral Richard E. Byrd and the aircraft was intended for his expedition to the South Pole. The aircraft was assembled on the ice in Antarctica in January 1929 and made its first reconnaissance flight on February 18. On March 15, during the second reconnaissance flight, the aircraft was blown over by a storm and completely destroyed. The crew was rescued on March 19. The remains of the plane were found again not that long ago and projects are under way to recover the wreckage and put it back on display.

The aircraft was of the usual mixed construction: a full cantilever wooden wing and a steel tube fuselage, covered with linen. I am going to model Byrd's Super Universal, equipped with skis and with an extra fuel tank in the cabin.

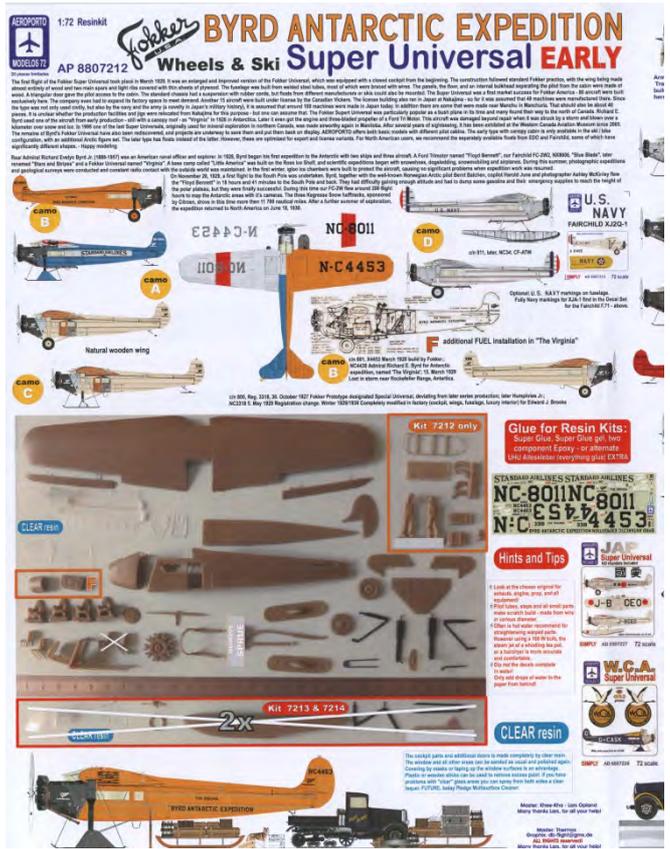


separately. With the nine clear resin parts the kit contains a total number of 56 parts.

A decal sheet is included to build the Virginia, Byrd's aircraft, or an aircraft of Standard Airlines, the NC-8011.

The kit comes in a sturdy carton box. The 48 grey resin and 8 black resin parts are packed in plastic and the fragile parts in clear resin for the canopy are packed





The instruction sheet is very limited. In fact it only contains information on where to place the decals and gives some hints on how to handle the clear resin parts and the decals. It contains, however, extensive art work showing many different configurations, both of the early and of the later configurations, and of aircraft in American, Canadian and Japanese livery.

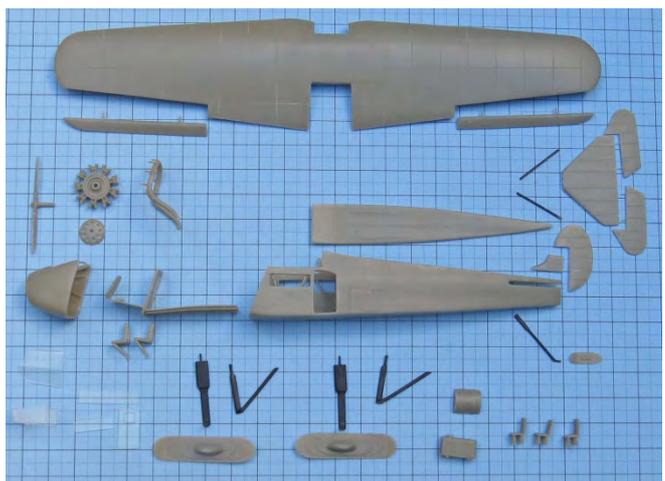
Hegener (ref. 1), Hooftman (ref. 2), van der Klaauw (ref. 3), de Leeuw (ref. 4) and van de Noort (ref. 5) report the dimensions of the Super Universal, while Hegener also shows a three-view drawing of the aircraft. Short movies of the aircraft can be found in refs. 6 and 14 through 16. Other data have been obtained via John Haas and from the Internet.

	Ref.	1:72	model
Span	15.44 m	214.4 mm	214.5 mm (100.0%)
Length	11.15 m	154.9 mm	156.0 mm (100.7%)
Height	2.72 m	37.8 mm	39.2 mm (103.7%)
Engine	Pratt & Whitney R-1340 Wasp; 420 hp		
Crew	1-2		
Passengers	6		

The model is excellent to scale.

Parts

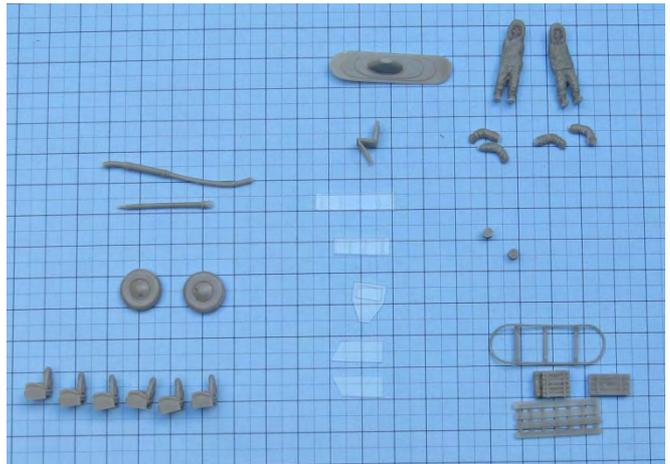
The parts are of very good quality, but are difficult to clean due to the casting method (strips of sprue attached to the part). This is especially the case for the black resin parts of the undercarriage, which are almost impossible to clean with a knife. Sawing and sanding was the only way to achieve that. However, this gives confidence that they will be able to support the rather heavy wing. I had to clean the transparent parts very carefully, as they are thin and the resin is rather brittle. Also, I will have to polish them to make them really transparent. I have found only one air bubble, unfortunately in the visible part of the windscreen.



I have separated the elevator halves and the rudder from the tail planes, as I will mount these in deflected position. In total the kit contains 65 parts. For building the Super Universal in the configuration on skis it was for the South Pole expedition 38 parts are required, of which seven are casted in the black resin for the undercarriage and the stabilizer struts and five in transparent resin for the windows of cockpit and cabin. In this configuration there is no place for the standard passenger seats due to the presence of additional fuel tanks in the cabin; only the smaller, four legged seat can be accommodated. The kit contains a two-blade propeller, as shown on

the photograph of the assembly in Antarctica. However, the wreckage shows a damaged three-blade propeller, which is not included in the kit.

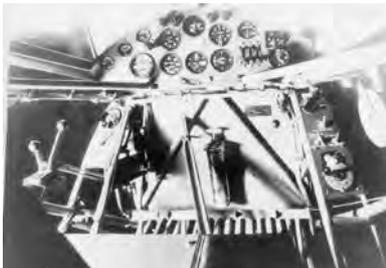
The kit also contains the parts to build a version with wheels, a different exhaust configuration and a cabin laid out for standard passenger transport (left on the picture). It contains extra parts to build two crew members in arctic clothing and a sled with assorted equipment on it (right on the picture). The sled was the only deformed part in the kit, but that was easily corrected with a warm bath. There were some spare parts present: one ski, one pilot seat an almost complete set of cabin windows and an additional door, only present on late Super Universal versions (in the center of the picture). Except for the pilot seats and the instrument panel printed on carton there is no cockpit furniture present.



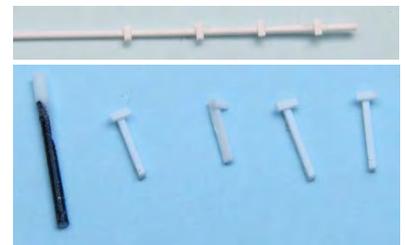
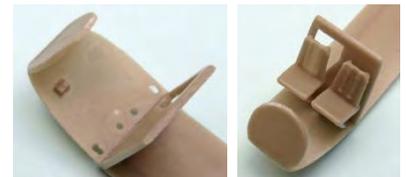
The large items on the decal sheet can be located based on the instruction sheet drawing; many of the very small ones are hardly readable and the location is not indicated. I got some additional information from the kit producer, which I have included in the appendix; most of these are bonus decals, to be used in this or other projects.



Cockpit



The cockpit detailing of the kit was very limited, place for the two seats of the crew, and some square shapes representing the rudder pedals. A picture of a later version of the Super Universal shows the rudder panels and a single control stick. I have modeled four rudder pedals from 0.5 x 0.5 mm and 0.4 x 0.25 mm styrene strip and a control stick from 0.5 and 0.7 mm rod.



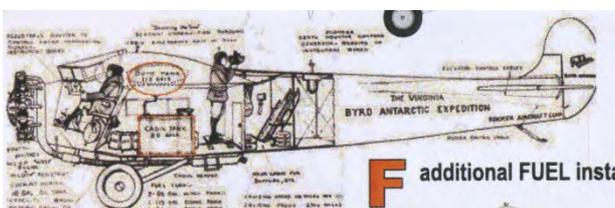
The floor and walls of the cockpit have been painted light grey and I have painted the rudder pedals and the control stick dark grey and have mounted them in the holes in the cockpit floor. The seat and back of the pilot and co-pilot chairs have been painted brown, the frame dark grey. I have painted the seat belts cast with the seat backs light grey with aluminium buckles. The other seat belts on the bottom of the seats came from my PE collection. I have glued the seat in the cabin, which completes the cockpit.



The last detail I have added in the cockpit is the instrument panel (early version), which was printed on carton. I have cut it out, painted the back dark grey and coated the front with transparent varnish and have glued it in the nose



Cabin



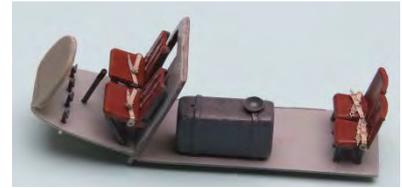
I have painted the floor and ceiling, formed by the underside of the wing and the top part of the cabin roof, of the cabin light grey. Under the ceiling protrudes part of the additional fuel tank, which is placed there between the wing spars, as shown in the illus-



tration in the kit. The tank has been painted dark grey.



I could not find any information about the finishing of the cabin walls, so I have painted them the same way I usually paint walls in Fokker aircraft of the period: a first layer of Vallejo Model Color mahogany, covered by a thin, streaky layer of Vallejo Model Air simulating the wood structure. The fuselage steel tubes have been painted light grey.



I have glued the second extra tank on the cabin floor approximately on the position indicated on the drawing. It appeared that there was no room to place for the third seat next to the tank, so I have glued two seats in front of the bulkhead. The seat belts came again from my PE stock. This completed the cabin decoration.



Fuselage

Fitting the nose to the fuselage showed that the rounded lower corners of the nose did not fit the rather angular corners of the fuselage, so some sanding was needed. Also, the first paint job of the nose showed a rather large irregularity on the top side of the nose.



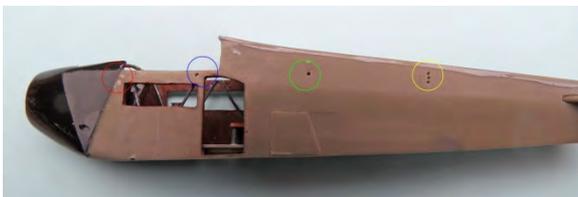
I have taped the sides of the nose, because the side view in the instruction sheet shows that the panel there has a dark grey colour. It also shows some exhaust there. Pictures of the aircraft do not reveal the function of this element.



I have glued the top surface on the fuselage. As the fuselage is narrower than the width of the top surface, this had to be done in steps: first the aft end and then bit by bit the remainder. The joints needed some additional work with putty. Also, the opening in the wing had to be adjusted, as it was too narrow to fit the nose section in. I have also glued the horizontal stabilizer in the slot of the rear fuselage.



The control cables run from the floor of the cockpit up along the cockpit rear wall to three wheels and are routed to the exterior just above the cabin windows. I have drilled there three slanted 0.3 mm holes in the fuselage wall (the red circle in the picture below). The cables run then under the wing above the windows and the door towards the tail planes. I want to route the cables through small eyelets, made from 0.25 mm metal wire, which have a diameter of 0.8 to 0.9 mm. There is not enough space above the door to place three eyelets next to each other, so they will be led there through one eyelet (the blue and green circle).



Halfway the aft fuselage the cables run through three eyelets. I have drilled 0.8 mm holes for the placement of the eyelets. The picture shows also that the nose has been painted black and the triangular panel dark grey.

I have glued the vertical tail plane to the fuselage top and have given the fuselage a coat of grey primer and have finished it with a 90/10 mixture of Humbrol tan and light buff paint.



Engine

The engine exhaust is missing the connection between the two lower cylinders and the main exhaust duct. I have modeled these exhaust stubs from 0.8 mm tinned copper wire on the temporarily assembled engine and exhaust and have glued them with thick cyanoacrylate glue to the exhaust. This was sturdy enough to stay in place once dried and after removal of the engine.

The engine has been given a coat of Vallejo Model Air gun metal. I have painted the housing of the valve rocker rods black and the housing of the valves aluminium. The front cover plate of the engine has been painted Vallejo aluminium and the exhaust Vallejo gun metal. As the exhaust does not show ageing or oxidation on the pictures of the aircraft, I will leave the exhaust as it is now. Also the propeller, a standard Hamilton Standard propeller, has been painted aluminium.



Wing and control surfaces

I have drilled slated holes in the top and bottom surface of the wing for the aileron control cables. I have enlarged the hole for the main undercarriage lag such that the pin of the leg passes smoothly in it. In the bottom surface I have also drilled two 0.3 mm holes in front and behind this hole to attach the cables running to the forward and aft end of the skis to keep them in the correct position before landing.



After adjusting again the fitting of the wing to the fuselage - apparently even a layer of paint was enough to destroy the perfect fit achieved before - I have glued the wing on the fuselage².

There were still some gaps on some places that I have filled with Vallejo putty, which has the advantage to be easily cleaned with a wet cotton stick.



Next I have painted the wing. Some gaps between wing and fuselage side walls still appeared not to be filled completely, so I have given them a second treatment with Vallejo putty.



Also the control surfaces have been painted. I have cut the control horns from 0.5 mm styrene sheet and have glued them in 0.8 mm superficial holes. They have been painted dark grey.



I have also engraved a hatch in the rear part of the cabin ceiling as shown in the illustration in the instruction sheet. The hatch probably is opened in flight to permit the use a sextant for position determination, as a compass is useless in Polar regions.

I have made rings from 0.25 mm metal wire for the control cable guidance and have mounted them in the holes drilled in the fuselage sides. I have mounted the control cables after application of the decals.



Decal application

As the places where the decals have to go are now still well accessible, I have applied the decals at this phase. I have first tested the compatibility of the decals with Microscale Set and Sol on a decal not needed for Byrd's Super Universal. That was successful, so I could start with the application.

Cutting out the decals from the decal sheet is quite difficult, as about every square millimetre of the sheet is filled, either with essential decals or bonus material. For a kit of this price it is a bit overdone to safe here probably half a euro on production cost. The instruction sheet contains the advice humidifying the decals only on the rear (backing paper) side. The reason for this is that the decals detach very fast from the backing paper, and start to float in the water, when immersed in it.



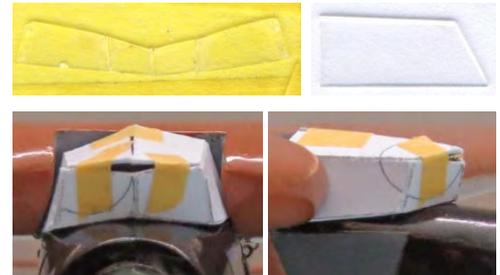
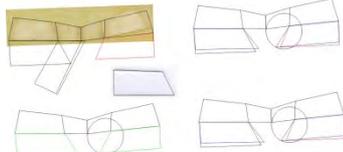
The decals are very thin, but quite strong. Nevertheless, as they have a continuous backing layer, the edges remain a bit visible after application. I have used all decals as far as shown on the illustration on the instruction sheet, three decals (5) for the gasoline tank and oil tank filler lids, two Hamilton Standard decals (8) on the propeller and a couple of the “bonus” decals: NO STEP decals (6) on the hatch in the ceiling and on the ailerons and door handles (10) for the cabin door and the door of the freight compartment.



Cockpit and cabin windows

The kit contained resin cast windows, which were not very transparent. In instruction sheet stipulates that they may be polished, but after several hours polishing they remained rather opaque. So I decided to make a new set of windows from transparent plastic sheet material, which seemed feasible as all windows are flat.

I have started to cut the resin windshield in separate windows, which I have glued on a wide piece of tape and put this under the scanner. I have also scanned one of the roof panels, which complete the canopy. Next I have imported the scans in CorelDraw and scaled them to the correct dimensions. I have constructed the canopy, have printed it on carton and cut it out to fit it to the model.



After three iterations I had a sufficient fit to start the production of the canopy. I have glued a paper print of the final product to a piece of transparent plastic sheet. The canopy has been carved lightly on the bending with a new scalpel. After peeling off the paper I have opey with water and cotton sticks, rubbing quite strong-Kristal Klear.

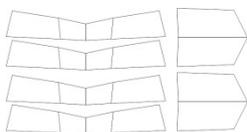


I have glued a paper print of the with Micro Kristal Klear. lines and has been cut out thoroughly cleaned the canly to remove the remaining

However, after bending the top window halves it appeared them fit correctly together, so I have remove them from front and side windows. The fit on the fuselage was not correcting the lower edge of the front windows for the



virtually impossible to make the canopy, leaving only the very satisfactory, even after nose curvature.



As I had anyhow to produce a new top window, I have drawn also the side and front windows, making them slightly higher. The top window I have made slightly oversized, as it had to be fitted by trial and error. A dry fit showed that now the canopy was correct.



I have chosen to make the frame of the windows by narrow strips of aluminium tape and have applied these to the front and side windows. Next I have glued the lower part to the fuselage with white wood glue and have made the top windows fit to the actual dimensions of the canopy. The top has been attached also with white glue and the frame has been made again from aluminium



tape. As the top came off when applying the tape to it (the white glue keeps the parts in place, but cannot resist handling forces), I have first applied the tape and have glued the top only afterwards.

I have measured the cabin window openings and cut the windows also from the sheet material, fitting them trial and error on their place. After application of the aluminium tape strips I have fixed the



windows in the openings with a small drop of white glue in each corner.

As the top again came off during later assembly I have finally glued it with Microscale Kristal Klear, which adheres better to the plastic.

Undercarriage

Before assembling the undercarriage, I have made the elevator and rudder control cables from black lacquered 0.06 mm fishing line. I have attached the six strings, cut to sufficient length to reach from the rear of the cockpit until the tail surfaces, in the slanted holes behind the cockpit and guided them through the eyelets. It appeared that the lower elevator cable would touch the horizontal stabilizer, when the elevator would be deflected upwards, so I have mounted an additional eyelet to prevent that. To prevent interference with the rudder control cable, I have provided that one also with an additional eyelet.



I have mounted the main undercarriage legs in the holes in the wing underside and the V-struts in the hole under the fuselage. I have used slow drying cyanoacrylate glue for that, allowing for adjustment before the glue set.

The tail skid strut has been shortened and mounted in a skewed hole drilled in the aft fuselage. I

have not mounted the skis yet, I will do that when engine and control surfaces have been mounted.



Final assembly

I have glued the stubs of the exhaust to the rear side of the engine and the engine to the nose. This did not go very easy; the exhaust interfered with the nose and the slotted ring on the rear side of the engine did not fit its counterpart on the nose. I had not expected this, because I had a successful dry fit between engine and nose prior to painting them. In the end I have widened the slotted ring of the engine and with some excess glue I managed to attach the nose. Next I have glue the slotted grid, which is typical for the Wasp engines, to the front.



I have mounted the skis to the undercarriage legs with slow drying cyanoacrylate glue, resting the front part of the skis on a strip of styrene to get them horizontal, compensating for the profile under the skis, which serves to give the airplane more directional stability during landing and take-off. The ski under the tail takes the correct position out of itself, when the model is resting on the main undercarriage.



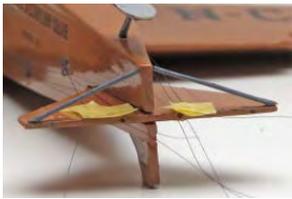
I have mounted the door in open position. I had painted the door in advance and placed a door handle decal on the inner surface. And I have placed the propeller on the engine.



Next the rigging for the skis, which keeps them in the right position prior to landing, has been applied. This has been done the same way as I usually do for (wing) rigging lines. First four pieces of black painted 0.06 mm fishing line have been glued in the 0.3 mm holes in the wing lower surface next to the main landing gear legs, and then the wires have been guided through the 0.3 mm holes drilled in advance at the front and rear of the skis. They have been tensioned with a piece of tape and fixed with a drop of cyanoacrylate glue on the underside of the skis.

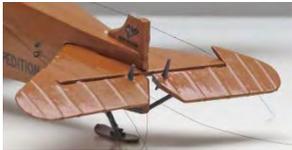
When the glue had dried I have cut off the wires and the excess glue with a sharp knife and I have painted the lower surface aluminium.





I have painted the struts supporting the horizontal tail plane dark grey, have cut them to the correct length and glued them in place.

From 0.4 brass wire and a piece of PE gauze I have produced the steps under the cabin door. The steps have also been painted dark grey and have been glued in place.



The elevator halves and ailerons have been casted with short stubs, fitting in holes in horizontal stabilizer and wing, defining their location well. I have shortened the stubs such that the gap between the control surface and the tail plane was realistic and have fixed the elevator halves in deflected position.



When dry fitting the rudder it appeared that it did not fit between the elevator halves and that it left an ugly gap between the vertical tail plane and the rudder. I have corrected that by removing a bit of material from one elevator half and from the vertical tail plane. I have glued the elevator upper control cables to the control horns, tensioned them with small pieces of tape and cut of the excess fishing line when the glue had set. The same procedure has been followed for the lower elevator control cables.



I have glued the rudder in place, but could give it only a small deflection, as there was still some severe interference with the elevator halves. This was partly caused by the fact that I had not well centered the horizontal stabilizer, but mainly the span of the elevator halves that is too large. Also my custom made control horns were too long. I have tensioned the rudder control cables and have glued them to the shortened

control horns.

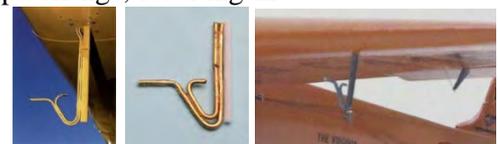
I have glued the ailerons in place, giving them a deflection. I have glued small pieces of black lacquered fishing line in the skewed hole in the upper and lower surface, have attached them to the control horns and cut the excess length off.



I have made a Venturi tube, visible on most photographs on the port fuselage of the aircraft, from 1.2 mm styrene rod, filed in the correct shape. The support has been made from a piece of 0.25 x 0.5 mm strip. I have painted it dark grey and glued it to the fuselage side.



Probably the aircraft also had a pitot tube for airspeed sensing, the Venturi tube not being very fit for that function due to sensitivity to icing and hence to shape change, resulting in inaccurate measurements. I found one on a picture of the CF-AAM, a restored Super Universal operating in Northern Canada. I have copied that with 0.4 mm brass wire and a piece of styrene strip. The pitot tube has been painted dark grey and glued under the port wing.



I have shaped the venting pipes on the fuel tanks from 0.4 mm brass wire and glued them in place.

I have glued edges to a piece of styrene and have filled it with Alabastine wall filler and have made traces in it with the third ski provided in the kit. When dry, I have covered it with Woodland Scenic Soft Flake Snow to resemble a snowy texture.



The kit contains some additional parts, which can be used as decoration in diorama style: a sled with crates and other equipment and two figures in arctic suits. The figures are too tall compared to the aircraft; they hardly can pass under the wing, so I have not used them. The sled and a fuel drum from my scrap box have got a place on the snowy support I have made.

As the picture of the wreckage shows The Virginia with a three blade Hamilton Standard propeller I have borrowed one from a Valom kit of the Fokker F.VIIb/3m, which contained some extra copies of the right diameter, and have applied Hamilton Standard logos to it. This way the model may be shown in both configurations.



Summary

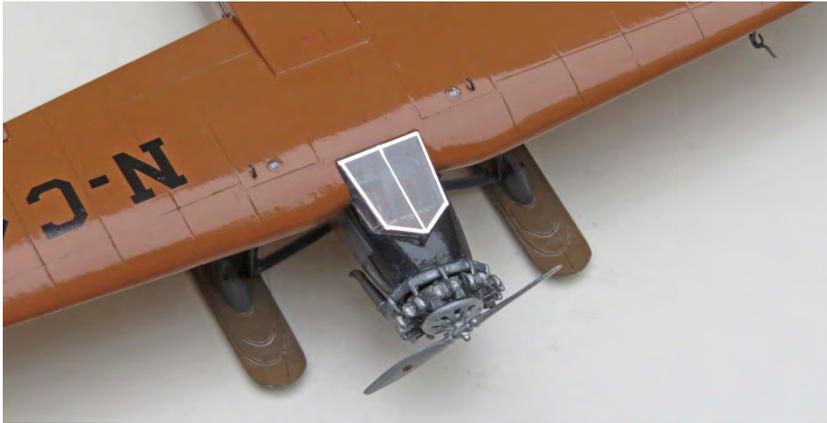
The kit is beautifully casted and relatively easy to build, and I could find only two shortcomings. The decal sheet carries many extras on a very limited space. As a consequence the decals are difficult to cut out and in some cases split in several small ones, requiring careful alignment of the parts. The clear resin parts are rather opaque, and even after hours of polishing (advised in the instruction sheet) show little improvement. It would have been better to include a vacuum formed canopy or a drawing of the canopy³ and a piece of transparent plastic for the windows in the kit.

In general the parts fit well and need little rework, with the exception of the fuselage top part and the wing fitting on the fuselage. The span of the elevator halves need to be shortened to allow a rudder deflection and to prevent interference of the control horns and cables. The instruction sheet is rather limited, and could have given a bit more information. The control cable routing shown in the instruction sheet probably is not correct; the lower elevator cable would interfere with the horizontal stabilizer structure.

Overall it is a very nice kit of a famous airplane. Below some pictures of the finished model are shown.









References

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14. Deleted.
15. <https://youtu.be/-rCS-gKo5BE>
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17. <http://www.admiralbyrd.com/1st-byrd-antarctic-expedition-1928-29.html>
18. <https://byrd.osu.edu/events/history-aviation-antarctica-and-recovery-byrd%E2%80%99s-fokker-ice>
19. Cockpit details: <http://www.pioneerairmuseum.org/blog/noel-wiens-fokker-super-universal#>
20. Drawings: http://smm.solidmodelmemories.net/Gallery/displayimage.php?album=45&pid=1354#top_display_media
21. Exhaust details: <http://www.explorenorth.com/library/aviation/images/aam3.htm>

Appendix Model modifications and corrections; paint table, pictures, drawings and other documentation of the Fokker Super Universal

Detailed data of decal sheet



1. Small, curved black decals: text and location unknown.
2. (Fast) hatch locks
3. (Fast) hatch locks
4. NO HANDLE markings typically on control surfaces
5. Filler caps for oil and fuel tanks
6. NO STEP markings typically on control surfaces
7. Propeller logo's later Super Universals
8. Propeller logo's later Super Universals
9. Propeller logo's later Super Universals
10. Door handles
11. DO NOT PUSH markings typically on control surfaces
12. Propeller logo's early Super Universal⁴
13. Function and location unknown
14. Text of these decals and location unknown
15. Function and location of small red decal unknown
16. INC is part of the Standard Airlines decal

Modifications & corrections

M = modification, C = correction

Change	Location/part	Modification or correction
C01	Cabin	Windows from clear plastic

Change	Location/part	Modification or correction
M01	Cockpit	Rudder pedals
M02	Cockpit	Control stick
C02	Cockpit	Canopy from clear plastic

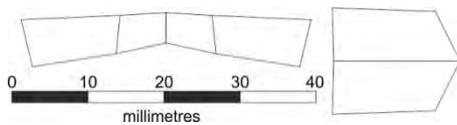
Change	Location/part	Modification or correction
M03	Engine	Exhaust tube between lowest two cylinders and main exhaust
M04	Engine	Three blade propeller
M05	Fuselage	Inlet for oil tank cooling in star-board side of the nose, exhaust hole in port side
M06	Fuselage	Hatch in cabin ceiling
M07	Fuselage	Rings to guide control cables
M08	Fuselage	Venturi tube on port side
M09	Tail planes	Rudder separated from fin
M10	Wing	Venting tubes on fuel tanks
M11	Wing	Pitot tube under port wing

Paint table

HE = Humbrol enamel, RA = Revel Aqua, RE = Revell enamel, VMA = Vallejo Model Air, VMC = Vallejo Model Color, WEM = White Ensign Models

Code	Colour	Where
HE 7/ HE 9	Light buff/ Tan, 10/90	Fuselage, wing and tail surfaces
HE	Dark brown	Luggage on sled.
HE	Black	Forward fuselage, valve rocker tubes, barrels on sled
HE 110	Natural wood	Ski top surface, top of sled, crates
HE 125	Dark grey	Fuselage tubing, seats tubing and back, rudder pedal, control stick, nose panels, undercarriage struts and details, frame of sled
HE 127	Light grey	Cockpit walls and floor, cabin floor and ceiling
HE 133	Brown	Seat cushions
VMA 71.036	Mahogany	Second layer cabin interior walls
VMA 71.062	Aluminium	Valve covers, underside skis
VMA 71.072	Gun metal	Engine cylinders, exhaust
VMC 70.846	Mahogany	Cabin interior walls

Templates



Template for windscreen

Pictures

If no source is given, the pictures have been taken from the Internet.



[Source: www.admiralbyrd.com]



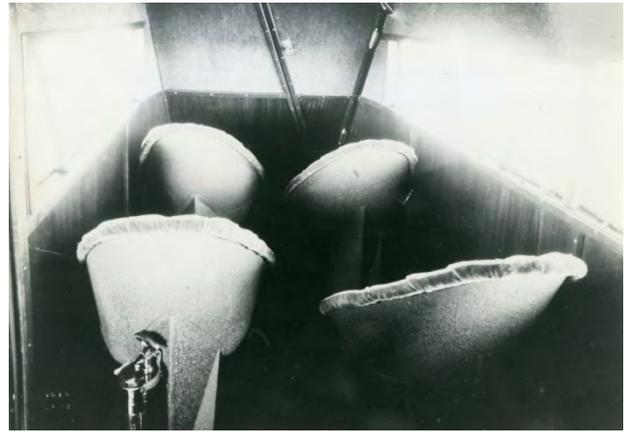
[Source: Ref. 6]



[Source: ref. 21]



[Source: www.armedconflicts.com]



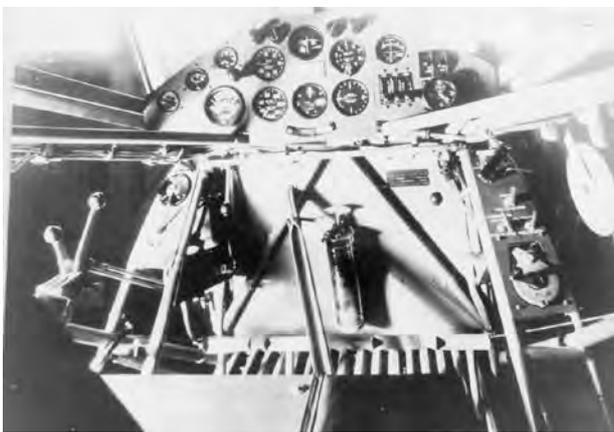
[Source: ref. 19]



[Source: Cradle of Aviation website]



[Source: ref. 19]

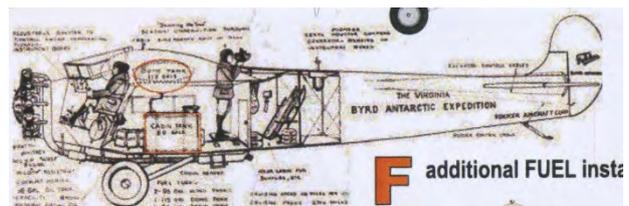


[Source: ref. 19]



[Source: ref. 19]

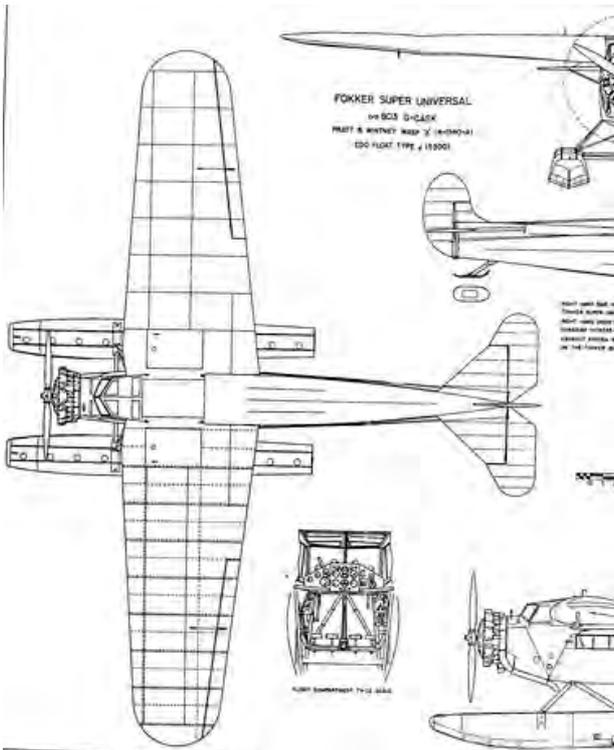
Drawings



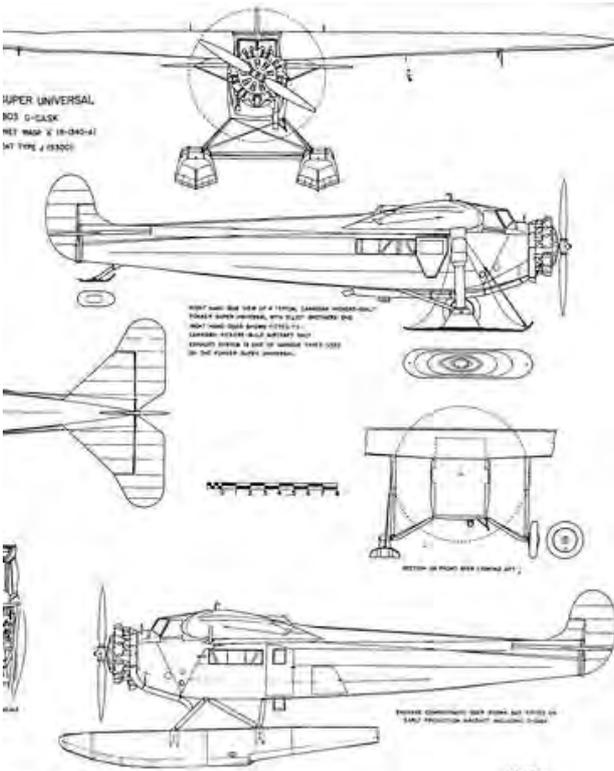
[Source: Kit instruction sheet]



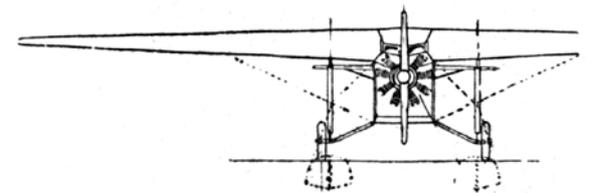
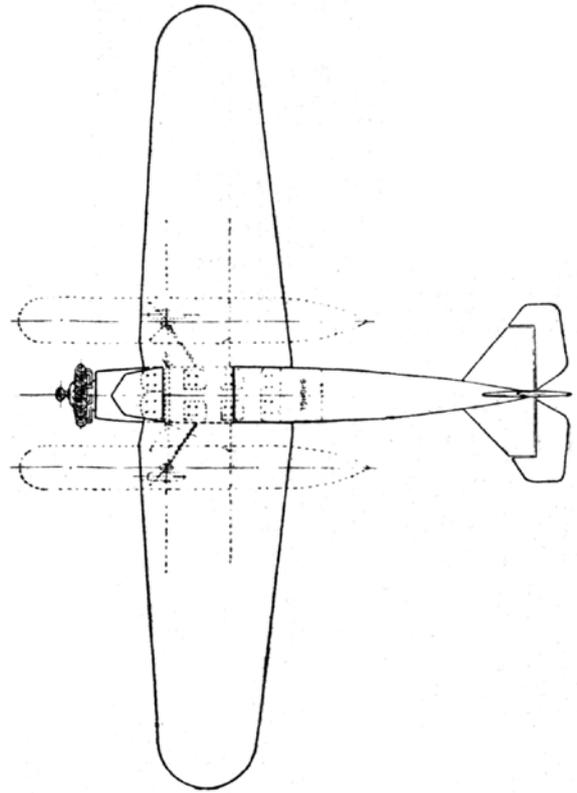
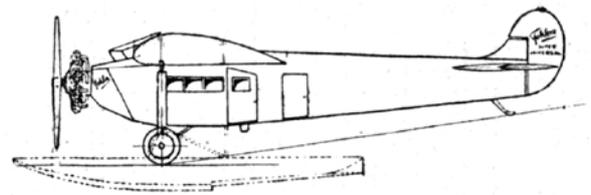
[Source: ref. 19]



[Source: ref. 20]



[Source: ref. 20]



[Source: Wikipedia]

¹ The [Aviation Megastore](#) is the sole distributor.

² I have not modeled the connection between the cabin mounted fuel tank and the one mounted between the spars in the wing center section. It was also virtually impossible to handle a piece of wire through the small cabin window openings.

³ I have included the scale drawing of the windscreen, which I have used, in the appendix.

⁴ On pictures I found only evidence of a logo shaped as the normal Hamilton Standard logo.