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https://scalesoaring.co.uk/phpBB3/

SHORT BROS NIMBUS SCALE 1:3.5

https://scalesoaring.co.uk/phpBB3/viewtopic.php?f=12&t=2314

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **VinceC** Posted: **28 Sep 2019, 16:55**

Ian Davis has something similar

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Barry_Cole** Posted: **28 Sep 2019, 13:17**

I think someone was building a model like that motor glider, some years back.

Anyone remember who it was????

BC

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **28 Sep 2019, 11:40**

What is next, well I did start scale motor glider some three years ago but lost interest. Bullt an ASW15 and Nimbus instead. Now I did restart the motor glider. It is a German design called Krahe or Crow in English. Some details attached. It has a pusher prop in an open frame fuselage. the construction is done for say 70% It will be electric driven.
crow-1.pdf
computer model 3D view
(41.01 KiB) Downloaded 84 times
2235880061_3cb62021d2.jpg

I did not start a build thread on this one and have not a complete drawing set ready for others to use. Could do this afterwards if there is any interest.
Working on a Computer design for Cliff Evans. It will have working Fowler flaps. Not sure if Cliff wants the model name to be broadcast at the moment so be patient.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Peter Balcombe** Posted: **28 Sep 2019, 10:19**

Very well done Jilles.
A lovely model & good to see a successful maiden flight.
What's next?

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Sean Fitzgibbon** Posted: **28 Sep 2019, 09:51**

Congratulations!
I've followed this build with great interest, a challenging subject to say the least! Superb

craftsmanship from design through construction and ultimately a fantastic maiden flight.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **28 Sep 2019, 08:45**

Today was the maiden flight of the Nimbus. It was inspected by an MAAA inspector, what is here in Australia required for over 7 kg models. all was approved and signed off. Wind was light but in variable directions and a bit bumpy. The maiden flight went well with a model still in one piece after landing.
The tow was easy, but is went a bit out of hand after I thought it was released(see reason on end of this story). got control back and it flew hands free without any trim changes
The elevator was a bit sensitive but improved after switching to half rate. I think adding bit of differential would bring this under control.
I tried some slow flying and it tends to tip stall. This was expected so I switched on some reflex that i had already programmed in , both ailerons up by 2 mm, This improved things in the slow flying mode. I will use this in future during landings. Deploying the air brakes resulted in the nose going down a bit, this is what I prefer so that is no issue. The model did not show any vices so I am happy with the result and will sleep very well tonight.
When I inspected the tow loop it was broken. So I thought I had released but it did not, The reason for some free of charge aerobatics when it broke.
It seems that the release servo stalls under heavy load even with a 16kg/cm servo. For this reason a second flight was not performed, Need to get this right first. there are two video's on You tube not edited at this stage, ask for Nimbus glider maiden in the search engine or use the following links

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **patte de loup** Posted: **11 Sep 2019, 16:38**

Ouah !!! congratulations for this homebuild.
Should be on the top with pilotes Inside ;)
Looking forward to seeing pics of her in the sky
Pat'

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **VinceC** Posted: **11 Sep 2019, 09:49**

Wow!

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **11 Sep 2019, 04:12**

The Nimbus was taken to the field today to get rigging experience on the field and do a range test.
I have a 16 channel Taranis TX. Two 8 channel receivers are fitted. Two 3S-2200 Lipos for power supply with individual power supplies for redundancy.
Both elevator halves have their own servo and channel divided over the two RX's, an other redundancy measure. Same for the ailerons.
In total 10 channels are used. Also on board a high precision Vario/altimeter from Taranus.
All my vario's are programmed that they beep when flying in lift. In normal sink no sound is emitted. Only when experiencing excessive sink a constant low pitch tone is heard.
Apart from adding approximate 150-200 grams in the nose and coming up with some cover strips over the wing-fuselage joints all is ready to fly
These cover strips are shown on pictures of the prototype so will be to scale. Much better than tape that rips of the paint after a while
The flying weight will be 11.9 kg so just under my goal of 12 kg max.
20190911_090050.jpg
20190911_090116.jpg
20190911_090125.jpg
20190911_090138.jpg

Attached some pictures of the occasion today. For a change I am in one of the pictures to give an idea of size. It won't happen to again.
This concludes this built thread with only more thread to come after the 28th with either the good or bad news.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Sean Fitzgibbon** Posted: **07 Sep 2019, 19:44**

Superb project, impressive in every aspect!

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Peter Balcombe** Posted: **07 Sep 2019, 14:59**

Very nice work as usual Jilles.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **VinceC** Posted: **07 Sep 2019, 09:13**

Beautiful Jilles. What a remarkable transformation

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **07 Sep 2019, 03:52**

Spray painted the top of the fuselage white, had an extensive masking exercise and sprayed the bottom red.
The masking was done three days after spraying the white otherwise the masking tape may pull the fresh white paint off.
Got some 6 mm wide black pin stripe tape to trim the joint line between red and white. I had 4 mm in mind but it comes in 3 or 6 mm so used 6 mm.
For the size of the model in the end it worked out better then 4 mm.
The color scheme is close to the original as it flew in the early seventies.

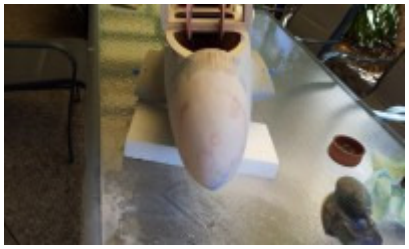
masked for red paint

The name Short Nimbus was painted on in the 1950's and not on the later paint job but I liked it, so used for the later version. Saves questions at the field what the model actually is.
Got some stickers made by my local supplier and the result is on the attached pictures
The last things to do are now fitting the main and tail skid, wheel and rudder. Then installing the electronic gear and do a final balance
Maiden flight is scheduled for the 28th of September.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **03 Sep 2019, 07:47**

Nose cone with ballast was fitted to the fuselage.Epoxy and four M4 bolts do hold it to the fuse. Also two layers of glass was added over the joint line. Plastered builder bog around it and sanded into shape. The fuselage is now covered with a layer of spray putty and primer. Waiting a day to let is cure than do the final sanding. I use automotive acrylic paint in spray cans.



For the once a year I do some painting it is not economical to invest in a compressor and spray gun. Not to mention the cleaning of the equipment required so it will work the next time.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Peter Balcombe** Posted: **28 Aug 2019, 09:53**

Very nice Jilles.
We all look forward to hearing about the maiden flight which cannot be too far away now

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **28 Aug 2019, 07:48**

A plaster mold was made with a 3D printed part with the contour of the inside of the 3D printed nose cone
This mold was made some month ago so it could dry out properly. I am told that when you pour liquid lead in a moist mold things can get interesting.
Cooked the lead and poured. the surface is a bit rough but that works for me.






Gives a good hold of the epoxy used to fit the weight in the nose cone.
Wednesday day morning is one of my flying days. I took the Nimbus to the field for a show and tell and got proper pictures because at home there is not much space. It was also a transport test to see if all works fine in the little truck.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **27 Aug 2019, 06:03**

Wings are all painted and gear installed. Today the model was assembled in full and the nose ballast measured.
I used a bucket of water connected to a temporary eye-bolt in the nose cone
Also used a luggage scale, these are accurate within 50 grams
the scale showed 2.16 kg, the bucket with water and eye bolt 2.19 kg, the difference being the eye-bolt the scale does not measure.
I had temporary bolts in the wing stubs were the C.O.G should be and the glider was carried on

those bolts by strings.
Because the pick up points are so low and the actual structural C.O.G on top of that, a stable attitude could not be reached.
It either moved forward or rearward when the required load was reached. A way to overcome this is to measure the model up side down, but I did not do this today.

balanced with bucket of water

luggage scale attached

With an estimated additional weight of 150 grams of fuselage paint the total flying weight will be 12 kg. This was my target so I am happy. with that.
I will now pour the lead weight into a plaster mold what will be shown on a future post.
The plan is to have the fixed nose weight at 1.9 kg so I can make final adjustments as required later and allow for additional weight to epoxy and finish the nose cone to the fuselage.
.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **VinceC** Posted: **19 Aug 2019, 09:54**

Nearly there, the assembly is going to be exciting and looking forward to it

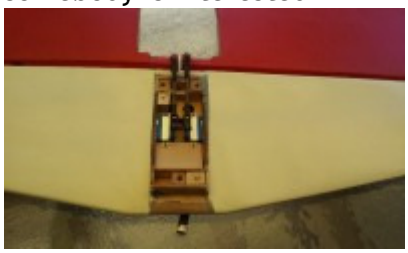
Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **19 Aug 2019, 03:26**

More progress with the less popular painting job. The R.H. wing is completed and all three servo's installed. L.H. wing needs the red paint pathes added. Stab elevator completed, each elevator halve operated with a separate servo. Rudder and canopy painted as required.
I do follow the color layout as evident on the prototype pictures of around 1971. The exception are the ailerons, they are totally red instead of the tip only. This is for me has a practical reason, we go up to 2000ft and even a large model becomes then hard to see. Even more so on a blue sky background. A receiver servo tray was made. I use a Taranis system and need 10 channels so two receivers are required. it also gives me the opportunity for some redundancy. Each RX will operate one elevator halve and one side of ailerons. The picture shows the 2 RX units and a Vario on the main RX.

one wing completed

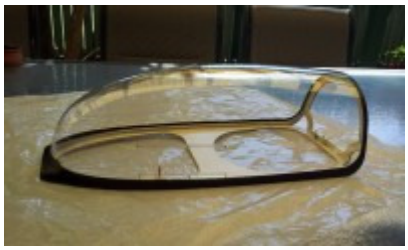
somebody is interested



stab/elevator top

stab/elevator bottom

finished rudder



finished canopy

receiver tray

Looking for a dual power supply. two 3S Lipo's will supply power but need to find a way to have two reliable voltage regulatorsto 6V that can be connected parallel in the end to the RX units without breaking the bank.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **05 Aug 2019, 07:23**

Because I can only carry 2.4 m long wings in my Ute, a box had to be made to carry the 2.7m long gull wings. the Horz,stab/elevator will be housed inside as well. Some pictures attached. The box is located on top of the existing canopy. Wings can be unloaded through the side . The canopy roof can still be lifted to access the models inside.

The Nimbus fuselage will fit inside the canopy. At the moment my 1:3.25 KA6E, 1:3 Fokker Baby and an electric glider are inside
Now returning to the Nimbus model for covering and painting

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **11 Jul 2019, 04:03**

Fitted the sliding window in the canopy. I had a scale 1:3 version in stock from TopModel Cz. The screws as specified as M1.2 but are actually M1
I did drill a test hole of 1 mm and found out they just fell through the hole. So a mini drill set was purchased and it worked out that a 0.8 mm drill did the trick

On the sliding window were two studs .These only allowed the sliding part to go into the rail by 1 mm only . I removed the studs so the sliding window can make full use of the groove depth in the rails. Hole were carefully drilled and rails fitted. All works well. There is however no lock in closed position so I presume if could be blown open by the airflow.
The finishing job of the model will now start in earnest.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **chris williams** Posted: **10 Jul 2019, 09:51**

Looking forward to the final result, Jilles...

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **10 Jul 2019, 07:00**

the model was weighted when is was all together. With all equipment includes except for 2 receivers it was 9.2 kg. required balance was close to 2 kg, but not cover and paint included in all this. The plan is to finish and paint tail bits and wings, prime the fuse, than workout the

balance weight minus 10%. I made a plaster mould to cast the lead to fit in the 3D printed nose cone. I add only 90% of the required balance in the nose before it is fitted for good. The other 10% will be in a ballast chamber just behind F1 so I can adjust either way as deemed necessary.
I wish I could give the model to Crish W. because he is very good in finishing and I am just average in that department.
Because the wings are in one piece there needs to be a special box fabricated for the wing transport because the tray on my Toyota Ute is only 2.4 m long.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **chris williams** Posted: **09 Jul 2019, 12:38**

Good job, Jilles...have you calculated how much Pb you will need in the nose? !2Kg seems tad optimistic?

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Peter Balcombe** Posted: **09 Jul 2019, 11:42**

Very nice Jilles

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **VinceC** Posted: **09 Jul 2019, 10:01**

Genius. That is one nice glider

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **09 Jul 2019, 05:55**

Today all parts were assembled for the first time. all things went together without a problem. Not one of my smaller projects
parts were weighted and required balance weight calculated. Estimated flying weight to be under 12 kg (25 lbs)
wing loading is then 68 gr/dm2 (23 oz/ft2). for this model seize a good outcome. Final figures will be known when all painting is completed and electronic equipment installed.

Now a sanding and finishing job is ahead of me. The fabric used will be Ikarex. A polyester fabric that does not need dope to close, will shrink as standard film but need the application of heat sensitive glue like Sig Stix-it or balsa block. Ikarex is also very suitable for painting

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **09 Jul 2019, 05:31**

The canopy frame was completed and test fitted on the fuse. the inside was primed and painted. To keep the frame level and true a temporary frame was made to keep the frame in check in a vertical attitude. This vertical attitude made adding clamps to keep the canopy in place on the frame mush easier
masking tape was used as well on those locations were a clamp did not want to stay in place due to curved edges of canopy and frame. After 24 hours clamps and tape removed and edges trimmed.

canopy frame inside painted

temporary frame for fitting canopy

canopy frame clampemd in place

canopy glued in place

canopy edges trimmed and test fitted
Canopy assembly fits in place without the need for adjustments
A rectangular hole was cut in the side to reach the canopy latch. This is in scale location and a sliding window will be added later.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **02 Jul 2019, 03:47**

Some progress again after a brief stop to visit the grand children.
Subject this time is the skid assembly. This was made from 2 sheets of 3 mm aircraft ply laminated together in the correct contour.
Because the main wheel is located well behind the C.O.G the model will be resting on the skid. To make the skid surface more wear proof a layer of 0.8 mm alu sheet was epoxied to the underside. The skid will be screwed only to blocks in the fuselage so possible future damaged to the skid can be fixed easily. The skid assembly comes in at 95 grams, this will help to get the COG in place with the relative short nose section
There is not much prototype info on the skid details. I did presume it was cushioned with rubber blocks and the gap covered with fabric/canvas as was the standard in those days. The model skid is fixed and 0.8 mm plywood sides to close the gap are added. For those that might not familiar with getting edges of panels of any kind curved in the correct shape I take this opportunity to show how I manage that my way.
Cute the edge of the panel roughly into shape and then locate in place. With a flat washer the proper contour is drawn by rolling the washer over the contact surface and hold a pencil to the washers internal hole. Cut the panel along this line and you have a perfect match. A M6 washer was used. One can use bigger washers but that will result in more waste of plywood/balsa
Attached pictures will explain how this works

skid attachment blocks to extended fuse formers

Skid assembly with alu sheet layer

skid side view

test fit of skid

rolling washer with pencil to get a contour

rolling over full length

result after trimming side along pencil line

side panel bottom line trimmed to suit skid

In this case one side was fabricated and then used as template for the other side. The plan is to paint these panels green to simulate canvas. If there is somebody that may know what the color was on the real glider please let me know. The plan is to paint the model as shown on pictures I have from 1971 and the stored wreck of 2018. White with a red/orange fuse bottom and wing tips. A black trim line between the white and red.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **15 Jun 2019, 09:02**

Hi all. it has been a while. The second wing is now done. the tail bits are built and test fitted. A start was made on the canopy frame. I received the canopy from the UK thanks to the help of Cliff. I decided to make the hinges myself from 3 mm alu strip and angle. A 1.5mm (1/16") hole was drilled in the hinge blades. 1/16" spring wire is used as hinge pins. The fuselage part of the hinges are epoxied in 3 mm ply pockets inside the fuse.
The fuse is curved in that area so the hinges are at an angle with the fuse surface but inline with each other. A 2 mm holes was drilled through the canopy cockpit base and hinges and a 2 mm pin fitted to lock it all in place

tail bits are made and test fitted

canopy hinges from 3 mm alu strip

hinges in fuse pockets and pinned

latch for the canopy lock

canopy frame in place and hinged

canopy lock in place

a piano wire restrict opening angle of canopy

detail hinges inside fuse pinned and screwed
the canopy hinge parts are epoxied to the frame and locked with a servo screw for extra security. A latch of 3 mm alu strip was fitted to the other side to keep the canopy locked with a standard brass spring loaded canopy lock. The original glider canopy had a large sliding window at that side. The model will have the same for access to the lock bar. To restrict the opening angle of the canopy a 1/16" piano wire at the rear of the canopy will take care of this. A string or leather strip could do this but from experience I know they will get stuck between all type of parts in that area.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **11 Apr 2019, 05:06**

Not many new things to report. the R.H wing built is in progress along the same lines as shown earlier in this thread for the L.H wing
Attached pictures show the second wing. The Balsa leading edge has been sanded into shape.

I did this outside to prevent the workshop becoming a dust bowl. The wing is now back on the building board and ready for the top plywood planking.
Temperatures are now in the mid 20's so much more pleasant to be in the workshop and outside

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **VinceC** Posted: **08 Mar 2019, 10:45**

Nice seeing the project coming together. This is going to be something different.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **08 Mar 2019, 07:30**

O yes we just have a record of 45 days in a row of temperatures between 30-38 degrees C. This also slows down the building time of the Nimbus

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **08 Mar 2019, 07:02**

The main building work on the LH wing is now complete. fitting the aileron horns and some 0.4mm planking on the aileron will complete the wing.
Work on the RH wing will start shortly. As mentioned before it will take 6 weeks or so and I will not bother you with pictures of this RH wing built.
You can be sure it will be the same except mirror reverse. There seems to be a story going around that somebody managed to built two RH or LH wings that will not happen here. 6 weeks might seem long but there is also a scale 1:3 Vintage Scale glider design on the way for Cliff Evans. time is divided between that, building and flying models, o yes I am married as well with grand children as the result.

LH wing result

LH wing result

LH wing result

LH wing result

had to raise the washing ling

fuse and wing mated together

I could not resist to make some outdoor pictures with the wing and fuse together. It was the first time they went together. No issues with the wing rod and incidence pin. That is the advantage of using NC cut parts, it fits and is at the correct place and angle.
The main wing rod is 20 mm dia carbon the incidence pin 1/4" alu bar

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **05 Mar 2019, 02:05**

That would be very nice, thank you The first wing build is nearly done, another 6 weeks or so for the second wing.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Lawrie P** Posted: **03 Mar 2019, 06:30**

Looking very good Jilles.
Following with interest.
Cheers, Lawrie.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **VinceC** Posted: **26 Feb 2019, 14:54**

Nice work Jilles

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Geoff Pearce** Posted: **26 Feb 2019, 13:23**

Jilles, that looking really nice, I like the gull angle.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **26 Feb 2019, 11:54**

The T/E is a 1.5 mm ply core (part of NC-laser kit) 1. 5mm balsa to top & bottom sanded back towards the rear edge until 1.5mm ply is just visible at the rear end

6 mm balsa fitted to aileron end ribs for stiffness against tension in future film of cloth cover
0.4mm ply planking prepared and glued to T/E. A steel bar is used to assist in clamping and keeping things straight. Future builders can use a solid balsa T/E if they wish but I like this setup on all my models. It is a bit time consuming but they result is a strong and straight edge . It stays straight over time as well.

aileron diagonal ribs fitted

1.5mm balsa added to T/E

0.4mm top ply T/E clamped with steel bar

T/E planked at inner section

top of inner section planked with all bits and pieces

T/E planking prepared for aileron

first aileron T/E planking fitted

top spars recessed for hinges

The prototype ailerons are hinged at the top. The model is the same with Dubro 257 Nylon hinges with removable cotter pins. The aileron is 1.2 m+ long so 6 pairs of hinges are used. I like these hinges because of the removable pins. 1 mm deep recesses were cut into the top spars of wing and ailerons to make the hinge blades flush with the underside of the future 0.4 mm ply planking. Because of the long aileron, like the prototype the ailerons is moved at two locations, two servos in the model. Each with its own channel

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **26 Feb 2019, 11:21**

The underside of the D-box is now planked completing the planking in front of the spar. the building tabs were only removed in front of the spar

The remaining tabs on the spar webbing and to the rib rear ends were used to check that the wing saw level and then secured to prevent a twist in the wing With the front planking now completed the wing is rigid.

wing underside

securing wing inner section to board

checking if wing is level

checking if wing is level

servo wire harness fitted

Front planking completed

Front planking completed
prior to closing the box the servo wire harness was fitted and double checked that all connections are as it should. because I can get them for free I do use high quality screw plugs used in professional electronic equipment. The female plug comes with a 3 meter wire fitted, 8 wires in my case. I removed the outer rubber protection for weight saving. I do prefer a single plug if more than one channel is involved. This wing has 3 servos/channels. This prevents mixing plugs at the field. I do not like the Multiplex connectors. hard to plug in or undo

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **RobbieB** Posted: **14 Feb 2019, 13:14**

On my Gull3 I too sheeted the radius gull transition with individual pieces, scarfed and wrapped right around the LE and continued underneath back to the spar in one piece with no balsa support underneath the sheeting and it it has been fine.
The resulting flat sections of sheeting over the gull transition were rounded out with thin layers of filler - again not visible under the paint.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **VinceC** Posted: **14 Feb 2019, 12:20**

Good work Jilles and coming along well. On my See Adler, with a very rounded Gull Break, I followed the full size system and panelled each rib bay individually, although I relied on a substantial ply support between the top and bottom spars

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **14 Feb 2019, 11:43**

To cover the D-Box over the gull radius I did the following. At radius area in the D-Box 6 mm balsa was fitted between the ribs and sand to the required contour. A ply section was cut to size and three grooves were cut running approximately from halfway to the front. The slots start with a zero width (knife cut) to 1 mm wide at the front. The ply was fitted with the PVA iron-on method and worked well.

Ply section cut and slotted

area is filled in with 6 mm balsa and radius sanded

final result

two more ply section added today

Because of the compound curve at the front there would be to much ply material, the three wedge type slots took care of this. This way would never be possible on a full scale because it would weaken the wing structure, but on this model with 6 mm balsa backing it is not an issue. There are probably other ways of doing this but for me it worked well .Because it will be a painted model the slots will be invisible. After this two more play sections were added, two more and the top of the D-Box is fully planked and I can start thinking of the bottom.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **12 Feb 2019, 06:17**

With the brake in place the balsa leading edge was fitted and sanded over the full wing length.
on top of the main spar balsa was fitted and sanded flush with the rib surface. 6 mm balsa sheets added between the ribs in the gull radius for future ply support.
My drawings specified 0.4mm ply on the D-box. Due to the larger area to cover I decided to go with 0.6 mm up to and including the gull radius.
Ply sections were prepared and ironed on with PVA. The ply section will be between 400 to 450 mm long. Longer sections are harder to control
When applying the PVA masking tape is used so only glue is added where required.

air brake ready

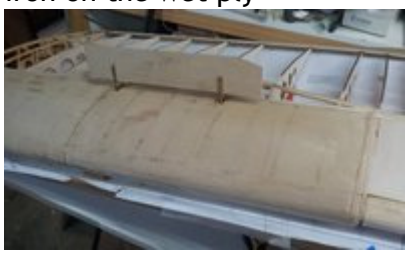
6mm balsa sheest between ribs at gull radius

l/e sanded , balsa to top of spar

cutting ply d-box sheeting

second sheet prepared glue area taped.
PVA added waiting for an hour now
PVA added waiting for an hour now

iron on the wet ply



second sheet in place
One could fit the top ply cover over the full wing length in one day was it not for the fact that we have here days of 35-38 degrees C. making it 40+ in my workshop. so only early morning working sessions are possible.
Note the leading edge was sanded only 5-10 degrees past the vertical at the bottom. I do not want to take the wing from the base board until all the top D-box ply is in place.
How things are kept in place for the bottom ply will be revealed later

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **12 Feb 2019, 05:55**

Spar front webbing at wing joiner sleeve and near gull radius added. Hinges and horn for air brakes fabricated. The hinges are fabricated from scratch from square brass tubing, The prototype has the brake blades behind the main spar but is hinged at the front to the spar. The hinge main body is a 5/32"x0.014 square tube the hinge bit a 1/8"x0.014 square tube. all brass from K&S engineering. The reason to go for square tube is that it gives a better contact area for hard soldering the parts together. The hinge pins are 3/32" brass round bar. It makes no difference if the round pin hinges in a round or square tube. Because the hinges are running over the main spar the spare is actually sunken below the rib surface top & bottom otherwise one has to make a slot in the main spar, what I did nor wanted for strength reasons. The brake fitted in to the wing, checked movement and added ply surface

ply webbing to front of spar

ply webbing at gull radius

brake hinges and horn
hinges and horn epoxied in place
hinges and horn epoxied in place

servo screws added from underneath

srews sanded flat and brake fitted in wing
checked movement
checked movement

ply surface added to brake
note in picture W11 that the sunken main spar has the advantage that the shoulder spars can run over the main spar resulting in a proper shear joint

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **terry white** Posted: **03 Feb 2019, 17:04**

Excellent work as always Jilles and a super build tread too. Well done.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **B Sharp** Posted: **03 Feb 2019, 11:20**

That is a seriously impressive piece of work Jilles.
Brian.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **03 Feb 2019, 07:21**

A building base was built to accommodate the building of the gull wings. I bought 16 mm thick craft wood panels from the local Hardware shop. They were seconds having damaged edges but otherwise straight but cheap. The surface of the building base was checked that is was straight and level The drawing set has two wing drawings, the inner and outer panel. They show the true view of the panels respectively. On these drawings a cut line were the joint of the two base plates is shown. When you go to the printer ask him to print both drawings mirror reverse as well for the R.H. wing, The building base is good for both the L.h. and r.h wing. A note on long paper drawing sheets they shrink or expand subject to moisture and temperature. In my part of the world it is at the moment between 30-35 degrees C and humid, as a result the outer panel drawing is longer (3mm) than it should. This is not an issue, the ply webbing of the spar has notches dictation the location of the ribs and other parts.The drawing on the board is only there to make sure the spar is straight and showing the parts that need to be fitted.

After the drawing is secured to the building base the spar is fitted kept in place by aluminium angle and screws. ribs are then test fitted and glued in position. the false L/E is also held in position by small wooden blocks. The spar webbing, false L/E and most ribs have tabs that rest on the building base. This makes sure all is at the correct location

W02.jpg

W06.jpg
W07.jpg
W08.jpg

Today the top spar was fitted. requiring lots of pegs to hold the ply webbing to the top spar member
Not mentioned before is that I have epoxied 10 x 0.5 mm carbon strip to the inside if the top & bottom spar section for additional strength (see pictures). they come a meter long and in this case go past the gull radius. The remainder of the outer spar (1.4m) does not have carbon strips

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Geoff Pearce** Posted: **28 Jan 2019, 14:00**

That looks awesome , I envy the space you have

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **28 Jan 2019, 07:46**

The wings are the next items I want to built. The spar sections are 1/2"x1/4" and need to be bend because we have a gull wing here
the spars were bend by steaming. It takes a while but not impossible. The bending template included in the NC parts laser kit is very helpful to get the result required.
the spar webbing was assembled and the bottom spar glued to the webbing. The False L/E was assembled as well. both spar webbing and L/E are assembled on a flat surface with a straight edge against the building tabs of the outer sections to keep things in-line. A building base has been erected from particle board with the correct gull angle. This base will be used for both l/h and r/h wing.
I have to go to the printer to get the wing drawing printed, they will be used on the base board

F072.jpg
F073.jpg
F074.jpg
F075.jpg
F076.jpg
F077.jpg
F078.jpg
Coming back on the transition of the wing stubs fronts. The original factory drawing was provided to me by Vince .He must have a very extensive library of many gliders.
The drawing is not 100% clear on the front transition and pictures of the full scale or what is left of it show the prototype had some variation in that area compared to the factory drawing. Suppose the builders used their imagination to get a practical result.

As for my workshop, I am proud of it and know roughly were everything is

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **VinceC** Posted: **27 Jan 2019, 12:19**

That looks an interesting transition which must have been a nightmare even for the full size builders. Nicely done Jilles

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Peter Balcombe** Posted: **27 Jan 2019, 01:00**

Jilles,
Certainly looks as if you are getting there.
Don’t let Brian Sharp see those pictures of your work area though 😀😀

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **27 Jan 2019, 00:42**

With all the festivities and holiday behind me it is time re-start the Nimbus build.
Attached pictures show how the nose area of the wing stubs were created. Pieces of 6 mm balsa were glued to the front then sanded into shape
A layer of epoxy wit 50% sanding filler applied and then sanded again.
F066.jpg
F067.jpg
F068.jpg
F069.jpg
F070.jpg
F071.jpg

I am happy with the result. More epoxy with sanding filler will be added to the total wing stub surface for final sanding but that is for a later date.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Barry_Cole** Posted: **10 Dec 2018, 14:06**

Brilliant Jilles. Merry Christmas and a Happy New Year.

BC

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **10 Dec 2018, 11:51**

The RH wing stub is now completely planked. the first layer of strip went on fine, the tail end has larger pieces of ply because it is only bend in one direction. The first layer was sanded smooth. After sanding the exposed layers of the ply show that the first layer of strip were not 100% inline with each other. This is not a problem. For the second layer a 12 mm wide 0,4 mm ply strip was added over the full length on the top and a approximate 20 mm wide strip from the edge of the root rib to the start of the fairing radius. This outer strip was widened at the front and covers the balsa leading edge all around to join the wing stub bottom planking, see picture F061.
To finish the second ply layer vertical strip were added again half a strip offset from the bottom strips. With the horizontal top & bottom strip there are two edges to hold the vertical strips in place. With the correct length of the vertical strips they follow the bottom contour with a little tension. No clamping required to hold them in place for the glue to set.
firs layer of strips sanded
firs layer of strips sanded
F059.jpg
the tail with larger ply slabs
the tail with larger ply slabs
F061.jpg
ply strips top & bottom
ply strips top & bottom
second layer of ply completed
second layer of ply completed
F064.jpg
second layer sanded
second layer sanded
Pictures F063-65 show the second layer lightly sanded. later epoxy mixed with sanding filler will be applied to fill little gaps between strips
The last bit at the front of the wing stub will be solid balsa sanded in shape as required.
This will be the last post on this subject for the year. Planking the LH wing stub will be done the same way so no use to show the same thing again
Christmas is coming up then a visit to offspring and their offspring in New Zealand. The built will resume the end of January.
A merry Christmas and happy new year to all SSUK followers
Jiles Smits

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **08 Dec 2018, 07:27**

the Iron on method is a bit tricky on a hollow surface unless you have a small iron. I once tried a

little iron that is used for attaching film but the one I have does not seem to be hot enough or because of the small size looses the heat to fast.
I prefer to put down a strip permanently and than test fit the next strip. It does not go must slower than the Iron on option because you do not have to wait an hour for the PVA to dry before starting the ironing process.
There is no date for this model to be finished, so building time is not an issue. Also I have three vintage glider designs in the pipeline, two for Cliff so time has to be divided between various projects.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **john greenfield** Posted: **07 Dec 2018, 10:33**

Jilles

I reckon you could put those strips on using the PVA and hot iron method. Once set up with the strips cut and the parts coated with PVA you could progress much quicker and not need the clamps.

Just a thought.

Regards

AEB

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Peter Balcombe** Posted: **07 Dec 2018, 10:05**

Very nice indeed Jilles.
Keep up the good work.
Peter

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **07 Dec 2018, 05:10**

There were several option in my mind how to plank the top of the wing stubs with those compound curves. Lawrie Prest suggested one of my options and I decided to go with that one.
1/8" square spruce stringers were added as shown on attached pictures. they run from the Main fuse former to trailing edge. To the front 4 mm balsa sheet was used due to the strong curve .
A 6 mm balsa support was added 20 mm from the outer rib, this area is in line with the wing surface until the fairing radius starts
20 mm wide 0.4 mm plywood strips are now added as shown with a cross grain.
I use Quick Set PVA for this job. One can remove the clamps after 10 minutes so it does not have to be that time consuming I do however wait 30 minutes
rear stringers fitted
rear stringers fitted
front stringer 4 mm balsa sheet
front stringer 4 mm balsa sheet
finished stringers
finished stringers
first 5 strips in place
first 5 strips in place
F057.jpg
The clamp holds the ply down from rib to the 6 mm balsa support to make sure this area is flat following the wing surface

every strip needs to be test fitted to make sure it is close to the adjacent strip but a little gap is not so much of a problem
The strips follow the natural curve and only a pin here and there is required to hold things in place.
due to the strong curve at the front The strisp will be 12-16 mm wide
When the total stub is covered a second 0.4 mm ply layer will be fitted.
This are either strips with the same orientation but half a strip offset or say 6 mm wide strips perpendicular running the full length of the wing stub.
Keep you posted.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **07 Dec 2018, 02:52**

Planking of the wing stubs has started. Bottom first because this side is relatively easy. It does not have the severe compound curves as the top does. attached pictures show how ply sheets were added and in what order.
rear ply sections in place
rear ply sections in place
rear view stub
rear view stub
center section with wheel opening in one piece
center section with wheel opening in one piece
bottom ply planking complete
bottom ply planking complete
tail skid support structure ready for planking
tail skid support structure ready for planking
M3 nuts in place
M3 nuts in place
The tail structure that will support the skid was prepared for planking, M3 Tee nuts or blind nuts depending where you come from are put in place to fit the tail skid later. My plan is to use nylon screws and hope they will shear if I manage a ground loop and not cracking the tail section.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **VinceC** Posted: **01 Dec 2018, 11:50**

That is quite some model, quite an engineering task, but the results are going to be good

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **01 Dec 2018, 06:58**

Some progress again, before planking the bottom of the fuse the two elevator servo wires were fitted as well as the pull-pull cables for the rudder
It would be nearly impossible to get these in place with planking fitted. Because of the long length of the pull-pull cables I added a support half way
(picture F040). the space between the first two fuse formers packed at the bottom with balsa to support ply strip planking. Due to high tension the front ply parts were fitted with cable ties to keep the parts in place during curing of the glue. The Iron on way would not work due to the high tension in the ply.
servo wires an p-p cables fitted
servo wires an p-p cables fitted
p-p cable support half way
p-p cable support half way
balsa support for ply strip planking
balsa support for ply strip planking

clamping sample of front ply sections
clamping sample of front ply sections
front planking completed
front planking completed
support formers in wing stub bottom
support formers in wing stub bottom
L/E to wing stub
L/E to wing stub
Additional support was added in bottom wing stub to support future ply planking in the form of balsa strips
The leading edge of the wing stub formed with solid balsa, this does not include future fairing radius to fuse surface planking.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **19 Nov 2018, 00:28**

The wing stubs on the fuselage will be interesting. Now I have the fuse together and see the size of it all there are have several ideas. Depending on the way I will get it together there may be some parts added to the cutting list for potential future builders to make it a bit easier. First the bottom planking needs to be added to the full length of the fuse then the stubs will be next.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **VinceC** Posted: **18 Nov 2018, 10:42**

Nice to see the fuselage coming together so well. How are you feeling now about the unusual geometrics of the wing stub and wing attachment?

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Lawrie P** Posted: **18 Nov 2018, 08:08**

Looking good Jilles.
Have to agree with Cliffs comments at top of the page.

Lawrie.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **18 Nov 2018, 03:19**

Progress again. Need to divide time for building the Nimbus and vintage glider designs for others.
The horizontal stab was planked top & bottom with 0.4 mm ply using the iron on method.
Test fitted the stab to the fuse and a frame was made for a top fairing. This is to builders preferences, no detail on the drawings for this. 3M magic tap to the top of the stab prevents the fairing frame to be glued to the stab. the fairing or cover has a 1/8" dowel at the front and a servo screw will retain the rear end onto the stab.
I will use a single plug and socket for both elevator servos. One channel each. This is as mentioned earlier a personal choice. other ways could be used.
I do like one plug, When the wires are soldered in the correct way in the first place no chance one have a mix up at the field or reverse the servo plugs.
The fairing was also planked with 0.4mm ply wood and the shape extended to the bottom of the fin structure with balsa. The fin also has 0.4 mm ply planking
filler and sanding will finish this area later .
planked stab test fit
planked stab test fit

fairing frame
fairing frame
check wiring plug
check wiring plug
fairing complete
fairing complete
brackets fabricated
brackets fabricated
F035.jpg
F036.jpg
fuse turned over
fuse turned over
ready to remove former stands
ready to remove former stands
I made some temporary stands so I can turn over the fuse. The front stand is located over the main former assembly, the rear is held in place buy two M4 socket head bolts , the same that will retain the stab in future
The fuse is now turned over and the building support stands on the bottom of some formers can be removed. An other planking session is now coming up after some work on the interior

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **08 Nov 2018, 11:51**

More Ply planking done to the fuse. closing in on the nose area. Compound curves so a bit more clamping force is required but so far so good
The planking is at the moment only at the top only with the main side stringer as guide. Except on top of the wing stub. The fairing radius is very large and reached nearly to the main stringer, In that area the ply was extended a bit lower When all top planking is done I can remove the fuse from the base and turn over for the bottom planking.
F028.jpg
F029.jpg
A 5 mm balsa support base is added between formers and stringers of the nose top. To much of a compound curve ply +/-8 mm wide tapered strips will be fitted here

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **04 Nov 2018, 11:56**

I hope to get a weight of approximate 12 kg in total. But with the short nose there will be a substantial piece of lead required in the nose, so who knows.
No to afraid of it. The Zephyrus of Vince is 15 kg at the same scale. We have a 6m Ka8 flying (Phoenix with substantial mods to keep it together in flight) in our scale group at 18 kg. Despite this it does not come down in a hurry. All to do with wing area of course.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **VinceC** Posted: **04 Nov 2018, 10:17**

Going together well Jilles

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **04 Nov 2018, 07:35**

Progress despite 35 degree heat wave . Main stringer S1 is bend and curved from former F10 forward. Instead of steaming the 3/8"X3/16" stringer is split with a knife, then glued into place. Glue is also applied to split surfaces, this way there is no high tension in bending S1.

Fin structure added.
6X6 mm balsa cross braces added between main stringers S1 at every former from rear of wing to tail. (anti squeeze bars)
Wing stub parts added including wing retainer plates with M4 Tee nuts
Test fitted an electrical plug for elevator servo wiring. This is a personal feature. I do not like loose servo wires for every servo. On he field swapping plugs or reversing is always possible. Type of plug is to builders preferences. plug will be hidden under future cap on top of Horz. stab.
Corner gussets in canopy area added to follow future canopy contour.
MAIN STRINGER SPLIT AT FRONT END
MAIN STRINGER SPLIT AT FRONT END
FIN FRAME ADDED
FIN FRAME ADDED


6x6 BALSA CROSS BARS ADDED


WING STUB PARTS ADDED


WING RETAINER PLATES WITH TEE NUTS


PLUG FOR ELEVATOR SERVO'S
CORNER GUSSETS FOR CANOPY FILLET
CORNER GUSSETS FOR CANOPY FILLET
CARD BOARD PATTERN 3RD SHEET
CARD BOARD PATTERN 3RD SHEET


PLY SHEET CUT AND LA[JOINTS SANDED
3RD PLY SHEET GLUED TO FUSE
3RD PLY SHEET GLUED TO FUSE
My drawing specifies 0.4mm ply planking for the fuse tail end. Due to the size of the fuse I now realize that it is a bit to flimsy. I decided to go for 0.8 mm plywood instead. Ply sheets are added two former bays long. Longer parts will be come more difficult to control during fitting. The pictures show applying the 3rd ply sheet working from the tail end. Patterns are made from thin cardboard. Plywood cut with the pattern and lap joint contact area's sanded. I did not use the Iron on method for this built but glued the ply sheets direct in place instead. Cable ties are used to wrap the ply tight to the formers. When the cable ties are really tight 12x3 mm spruce bars are wedged under the cable ties to create extra pressure. Up to now this has worked fine. With the use of cable ties as shown the anti squeeze bars mentioned earlier are essential.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **30 Oct 2018, 03:45**

95% of all NC fuse parts are now glued or epoxied together
The wing retaining bars with M4 tee nuts will be next together with teh wing stub end rib
now the fun starts with adding stringers and ply planking.
front fuse glued
front fuse glued
rear fuse glued
rear fuse glued
fuse frame 95% complete
fuse frame 95% complete
wing retaining bars with tee nuts
wing retaining bars with tee nuts
this will slow the built a bit. A challenge will be the fairing of the wing stubs
For the wing stub design I had access to the original factory drawings thanks to Vince C. The factory drawing and picture of the original show some difference in that area. I will keep you posted on this subject when I get there.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **30 Oct 2018, 03:36**

Started on the fuselage. First I made all the metal parts so that is out of the way.. My son 3D printed the nose cone (blue) and a internal nose cone (white). This last one will be used to make a plaster mold to cast the nose weight later. My home made tow release was tested inside the nose cone.The main former sub assembly with joiner sleeves was assembled together with a sub assembly of the tail parts. Then all fuse parts were dry fitted together to see if all is well and to determine the order of how the parts need to go together.

3d printed nose cone(s)
metal parts
metal parts
wheel support brackets
wheel support brackets
test fit tow release
test fit tow release

assembly tail formers with tee nuts
assembly tail formers with tee nuts
assembly of major center former assembly
assembly of major center former assembly
center assembly complete
center assembly complete
all fuse parts dry fitted
all fuse parts dry fitted
Some parts required adding missing notches and some had some mods done to make life easier later, that is the fun of a first (beta) built.
These parts with modifications will be sent to Cliff Evans so the next builder is good to go.

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Lawrie P** Posted: **27 Oct 2018, 09:05**

Hi Jilles,
Looking good.
Let the games begin.....

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **VinceC** Posted: **20 Oct 2018, 15:44**

This should be a very interesting build

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **chris williams** Posted: **20 Oct 2018, 11:06**

Jilles, have you scaled up the drawing from 1:3.5?

Re: SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **20 Oct 2018, 09:02**

For those interested attached the 3-view drawing of the model design
3-view concept drawing of model
3-view concept drawing of model
For those interested attached the 3-view drawing of the model design

SHORT BROS NIMBUS SCALE 1:3.5

by **Jilles** Posted: **20 Oct 2018, 08:42**

Time for a new glider project for myself. I always wanted to built a gull wing glider but not one that is very common. When Cliff Evans requested a scale 1:3 design of the Short Bros Rochester Nimbus my choice was made. Only one ever was built and is still somewhere but in a very sorry state.
Over time I will add to this built thread as I progress with the built. it will not be a fast built so be patient. Attached pictures of the horz. stab and elevator assembly to-date
plywood nc parts stab
plywood nc parts stab
false L/E prepared for lap joint
false L/E prepared for lap joint
test fit and assembly of stab centre section
test fit and assembly of stab centre section
test fit of both elevator servo's other brand will be used
test fit of both elevator servo's other brand will be used

little bridges to retain outer lug of servo
little bridges to retain outer lug of servo
bridges fitted
bridges fitted
bottom spar glued to spar webbing
bottom spar glued to spar webbing
stab assembled
stab assembled
suggested balsa corner gussets
suggested balsa corner gussets
elevator halve assembeld
elevator halve assembeld

I want the tail bit first so I can check everything is square and level when the fuse is built.
For redundancy the elevator is two (2) independent halves each with their own servo built in the stab. Each servo will have a separate channel on the TX

All times are UTC+02:00
Page **1** of **1**