INSTRUCAO

Hendrich Kurt

CONTENTS

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Front cover: Spoilers up and coming in, this is Chris Williams' 1:3.5 scale Spalinger S25a. Plan available for free from the Scale Soaring UK website along with a comprehensive build thread: <http://www.scalesoaring.co.uk/VINTAGE/ Documentation/Spalinger%20S25a/Spalinger_S25a.html> and <http://scalesoaring. co.uk/cgi-bin/yabb2/YaBB.pl?num=1363959516/9>. The incredibly realistic pilot is from Tailored Pilots <http://www.ytinternational.co.uk/tailored_pilots/tailored_pilots_ home.html>. Photo courtesy of Chris Williams and Tailored Pilots. Canon EOS 70D, ISO 100, 1/1,250 sec., f6.3, 70 mm

Back cover: The favorite flying site of Christian Etchamendy.

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RC Soaring Digest is published using Adobe InDesign CS6

In the Air

RC Soaring Digest has been "The Journal for RC Soaring Enthusiasts" for more than 30 years! Throughout this time, *RCSD* has relied on members of the RC soaring community for materials suitable for publication. The result has been nearly 400 issues filled with technical information, competitive and fun-fly event coverage, construction articles, reviews of aircraft, RC equipment, electronics and computer software, philosophical musings (always related to RC soaring of course), and an incredible number of photos. Ad free, *RCSD* is supported by voluntary donations.

The move to on-line digital distribution ten years ago not only allowed full color reproduction of photos, but was immediately effective at increasing circulation. Today *RCSD* is downloaded by thousands of enthusiasts around the globe and remains the only publication devoted solely to RC soaring.

RCSD is reader-written and we are always looking for submissions for publication in future issues. Guidelines are available as a two page PDF (47.7 KB) at <http://www.rcsoaringdigest.com/pdfs/Submissions.pdf>. Remember, if a subject is of interest to you, there are sure to be other *RCSD* readers with a similar interest.

The August 2014 issue featured the Dynamo laser-cut DLG designed by Felipe Vadillo. Shortly after the issue was put on-line, we received the following from Mark Miller of Isthmus Models:

> "The Dynamo will be available in the USA from Isthmus Models very shortly. I will be moving back to Madison Wisconsin very soon so I am packing my shop.

> "Thanks."

Mark Miller, Isthmus Models
http://www.isthmusmodels.com

Time to build another sailplane!

Writing an Airfoil Plot Program

Chuck Anderson, chucka12@outlook.com

I didn't start out to write an airfoil plot program but that's what I wound up with.

In 1982 I built several wings for my standard class sailplane to experiment with the new Eppler airfoils that were becoming available. I got tired of plotting Eppler airfoils from computer generated coordinates that did not fit the grid of the graph paper I was using to plot airfoils so I wrote a simple curve fit program in Commodore basic to convert published Eppler airfoil coordinates to coordinates that match the grid on my graph paper.

My dot matrix printer manual stated that it could print graphics so I did a little research and managed to print a dot at a calculated location on the paper. The next step was to calculate the airfoil coordinates at the print head pin spacing and I had a program that could print an airfoil with my dot matrix printer.

I took my first airfoil plot to the next contest and showed it to a friend. He thought it was nice and wondered if I could add skin thickness. I was soon able to print skin thickness as well as leading and trailing edges.

When word got out that I had a program that could plot airfoils on a Commodore 64 with an Epson dot matrix printer, I began receiving requests for copies of the program. That's how I wrote the first program for modelers that could plot airfoils from published coordinates.

Before an airfoil could be plotted, the coordinates needed to be available in a form that could be loaded into the plot program. During the initial development, coordinates were entered in a text file with a text editor and saved as a text file. Entering coordinates with a text editor was slow and difficult to check so the next program I wrote was a data entry program for entering, editing, and saving airfoil coordinates with a Commodore 64 computer.

Many of the sailplane coordinates were in NACA format, however Eppler and Selig computer generated coordinates were beginning to appear in model magazines so I had to provide for entering airfoils using both NACA and Eppler coordinates. Data Entry could accept both and save them in AIR format used by Airfoil Plot to plot airfoils. The plot and data entry programs made up the first version of my Airfoil Plot program for the Commodore 64 that I released in 1984.

There was at least one earlier PC program that could plot airfoils from coordinates but that program only drew straight lines between the coordinates. In 1985, even computer generated airfoil coordinates published in magazines had coordinates at fewer than 50 stations so drawing straight lines between coordinates did not give accurate airfoils near the leading edge.

Today, computer generated airfoil coordinates can be downloaded with coordinates at hundreds of stations so straight lines between coordinates give good enough airfoil plots without a curve fit, however a curve fit is still needed to get a good plot using NACA and early

model airfoils that had few coordinates ahead of 10% chord.

Herk Stokely learned of my program and publicized it in his *Flying Models* soaring column.

When I started selling programs, I decided to invest some of the money in advertising. A single ad in any major model magazine cost far more than the total monthly income for program sales so I decided to try a small ad in *RC Soaring Digest*. The *RCSD* ad produced enough sales to pay for the ad so I continued an ad every month until I stopped advertising my plotting programs in 2002.

Bill Forey also promoted my programs in his soaring column until Model Builder stopped publication. Herk Stokely, Jerry Slates, and Bill Forey all made significant contributions to the development of my plotting programs.

The first version of my Airfoil Plot was written in Commodore Basic and was extremely slow, taking over 30 minutes to plot a 10 inch chord airfoil. Even so, it was still easier than hand plotting and I could be doing something else while the program was running.

When I discovered a BASIC compiler sold for Commodore Pet business computers could compile C64 programs, I was able to cut the time required to plot most sailplane airfoils to less than 10 minutes.

The Commodore version was ported to Microsoft Basic for PCs running MSDOS. When I began using Microsoft Quickbasic to compile the MD DOS version, time required to plot an airfoil dropped again. Improvements in computers and printers have speeded up plotting and Airfoil Plot 9 now prints a 10 inch chord AG35 airfoil in 5 seconds on an HP LaserJet 1102 printer and an HP P6600 computer.

When COR and DAT airfoils became available for downloading from the internet, Airfoil Plot was modified to accept the original COR and DAT airfoil data files. Unfortunately some of the airfoils published on the internet were not in the original format and needed editing with a text editor to run on Airfoil Plot.

When I began using Microsoft Professional Development System 7 for compiling my DOS programs, the PDS 7 manual gave me enough information to add screen graphics and display the airfoil on the screen. Visual Basic for DOS provided an easy way to add mouse and pull down menus making the program easier to run. My DOS programs could run in a DOS window on Windows 95 but could only plot on Epson compatible dot matrix printers and HP compatible laser and inkjet printers.

Finally, in 1999, I was able to use Visual Basic 5 to write a Windows version that could use Microsoft's printer drivers to plot on most dot matrix, ink jet, and laser printers.

Then on New Year's Eve 1999, I had a minor stroke. I was able to finish the Windows version of Airfoil Plot and Model Design programs after a few months delay but sales had dropped until it was barely paying expenses so I stopped advertising and discontinued development of my plotting programs. Fewer modelers were scratch building and several free airfoil plotting programs were now available. Compufoil had evolved into a much more advanced program for plotting airfoils and CAD programs were being used by some modelers. While recovering from the stroke, I designed the LilAn RES sailplane so designing and building sailplanes again became the most important part of my hobbies.

I still support all the software I have sold and will continue do so as long as I am physically able. I have delivered replacement disks to users who have lost or damaged their programs. The Windows version of my plotting programs was written in Visual Basic 5 and run on Windows 95 through XP. The plotting functions still run on Windows 7 but the data entry and airfoil modification options will not run.

I still deliver an occasional program to modelers who prefer my simple easy to use programs over the more capable plotting programs now available.

Freeware Version

I have long considering making a freeware version of my 2002 Airfoil Plot program but couldn't come up with a simple way of running it without requiring the program be installed on a computer hard drive. I still have Airfoil Plot 8 installed on my main computer running Windows 7 but the data entry and modify airfoil options do not run and I must use my backup computer running XP to use these functions. Most modelers who bought my programs did not use these options so I deleted them from Airfoil 8 as a first step in creating a free version. The major problem was Airfoil 8 was written in Visual Basic 5, an obsolete programming language no longer supported by Microsoft and which does not provide a method of running programs without having associated DLL and OCX files installed on the computer.

I wanted to distribute the free version from a file that can be run from any drive on a computer as well as from a CD, DVD, or USB flash drive. Searching the internet for information about running VB5 programs from a CD containing the necessary DLL and OCX files turned up no useful information other than it is not recommended except for very simple programs.

All my test versions of Airfoil Plot 9 ran from a CD with the DLL and OCX files in the same folder as airfolilplot9.exe and plotted without problems so I decided to release that version of Airfoil Plot 9. I am also releasing Airfoil Plot 9 with an installation program to install the program and all necessary DLL and OCX files on the hard drive.

LilAn Bliss! Charlie Bair launches his Chuck Anderson designed LilAn at the Coffee Airfoilers field, Tullahoma Tennesee. Chuck says this photo is his substitute for the Microsoft Bliss wallpaper incorporated in Windows XP.

Airfoil Plot Installation

Airfoil Plot 9 consists of two data folders and Airfoil Plot 9.DOC. Be sure to download all three and copy them to a folder on a hard drive, USB flash drive, CD, or DVD. Airfoil Plot 9.DOC contains the program operating instructions. The Airfoil Plot 9 folder contains airfoilplot9.exe and the DLL and OCX files necessary to run Airfoil Plot 9. The Airfoils folder contains over 350 airfoil data files that can be plotted with Airfoil Plot 9. Most of the airfoils in the Airfoils folder have AIR file name extensions and will not run on other plotting programs. Most of the airfoils are either sailplane or free flight airfoils along with a few scale model and sport airfoils. Airfoil Plot 9 can plot some airfoil files with COR or DAT file name extensions downloaded from the internet. Appendix I of Airfoil Plot 9 Manual contains additional information about airfoil data files formats.

Airfoil Plot 9 can be run by clicking on airfoilplot9.exe in the Airfoil Plot 9 folder; however a safer way would be to copy all the files to a new folder on any available hard drive and run Airfoil Plot 9 from there. The program can be run from this folder by clicking on airfoilplot9.exe, however a safer way would be to create a shortcut to airfoilplot9.exe and copy it to the desktop. Now the program can be run by clicking on the shortcut and minimize the chances of accidently deleting or damaging any of the files. Airfoil Plot 9 is written in Visual Basic 5 and needs access to several Microsoft OCX and DLL files. If any of these files are damaged or deleted, airfoilplot9.exe will not run. If the program needs to be removed from the hard drive, the entire folder can be deleted without running Uninstall. The files can also be copied to a USB flash drive, DVD or CD disk and Airfoil Plot 9 run from there.

When I finished Airfoil Plot 9, I found that most of the DAT airfoils now available on the internet including almost all DAT airfoils on the UIUC data base would no longer run on Airfoil Plot 8 or 9. Examining the UIUC DAT files with Notepad revealed that most of the airfoils are not in the original DAT file format and many are in a totally different file format. Some of the Drela airfoils in the UIUC database do plot with Airfoil Plot 9 so I checked Mark Drela's airfoils from the Charles River RC Club web site. All COR and DAT files on charlesriverrc.org are in the original formats and plot on Airfoil Plot 9. Since many DAT and COR airfoils on the internet cannot be plotted with Airfoil Plot 9, I decided to include about 350 AIR airfoil files I have collected over the last 30 years. These include most Eppler and Selig airfoils as well as many Drela, MH, and EH sailplane airfoils. I also included some free flight, NACA, and other miscellaneous airfoils that I collected from users of my programs between 1985 and 2000.

In twenty years playing with computers, I sold over three thousand plotting programs for the Commodore 64, Macintosh, DOS, and Windows computers. It was not a profitable enterprise but it was fun and the only hobby I ever had that paid for its self.

The FREEWARE version of Chuck's Airfoil Plot program can be downloaded from the B2Streamlines web site.

<http://www.b2streamlines.com/Software/Airfoil_Plot_9.zip>

This ZIPped file contains the following:

- Airfoil Plot Installation.doc (reproduced in the sidebar)
- Airfoil Plot 9 Manual.doc
- Airfoil Plot 9 folder (exe and all necessary ocx and dll files)
- Airfoils (hundreds of airfoils in AIR format)

This photo was captured using a Mobius camera while flying at my local field here at South Coast Model Aero Sport club located at Currency Creek, South Australia, Australia. The glider is the Fly Fly DG808s 4m, fiberglass fuselage and built-up balsa Oracovered wings with flaps. A 1200kv brushless out-runner motor which usually is mounted via a pod on top was mounted in the nose with a 40mm Jet spinner and 10x8 Aeronaut prop.

This set-up runs on a 4-cell 4000mah LiPo pack and 100Amp ESC producing 915 watts. I use the Taranis transmitter with altitude and vario installed.

Video at <http://www.youtube.com/watch?v=FoqyvIXaxhI>.

— Adam Fisher, adamfisher63@gmail.com
<http://adamfisherphotography.com>

Vortex² f3k/dlg/sal

https://www.facebook.com/pages/Vortex-f3kdlgsal/167982523266281

The first goal of the Vortex² was to simplify the assembly and production. You can have the whole plane RTF in 4 to 5 hours and everything is put together with CA. Wings have top drive, and we use covers on the wing so you can easily change the servos if there is need of that... The wing is Rohacell and is made with 39g spread tow carbon. The Vortex 2 is very light, under 245g, down to 235g.

▼ *Wing molds with paint applied. Bit of a different color scheme, too.*

▲ *Second spar installed. This supports the throwing peg.*

◄ *Construction is fast. Almost like putting together LEGOs. Easily done on the dining room table.*

◀ *The Vortex Team at the June 2014 F3K contest in Ludbreg, Croatia.*

▲ *Possible colors:*
fluorescent red	*fluorescent orange*
fluorescent yellow	*fluorescent blue*
fluorescent green	*fluorescent pink*
	white

Vortex^2 has had great success in competition:

- 1st Place, Nikola Francic, Pribyslav, Czech Republic, EuroContest
- 2nd Place, Nikola Francic, Zapresic Cup Croatia, EuroContest
- 1st Place, Cederic Duss, Lons Le Saunier, France
- 2nd Place, Craig Greening, USA NATS
- 2nd Place, Milan Havelka, Vysledky, Czech Republic

Wingspan 1500mm	Wing area is 20.6dm^2
Chord 167mm	Wing weights are around 110-118g
Rudder span 218mm	Rudder area 2dm^2
Rudder chord 114mm	Rudder weight 6-6.3g
Elevator span 310mm	Elevator area 2.23dm^2
Elevator chord 88mm	Elevator weight 5.9-6.2g

Fuselage length: 1054mm
Fuselage weight 30-31 grams + canopy 2 grams

Video preview at:
<https://www.youtube.com/watch?v=S19HqrKcboY>.

In the next month we will have our web page and online store up and running: <http://www.ds-composites.eu>.

The Vortex Team:

Denis Skrabl	Gregor Urbancic
Mitja Zamuda	Joze Kramberger
Peter Repinc	

RCSD

Tom's Tips

Dressing the Blanik

Tom Broeski, T&G Innovations LLC, tom@adesigner.com

See the July 2014 issue of RCSD *to follow Tom's various techniques for removing the original Blanik graphics.*

The one thing I settled on right away is a red nose and red wing tips.

Photo 1: A trip to my favorite auto paint store to have them scan the red vinyl I figured I would be using. Large areas would be painted. Very expensive ($26 for a custom spray can), but worth it if you want an exact match. Since it would be over silver to save pre-painting white, I did a couple tests before accepting the final color. Matched okay both on silver and on white.

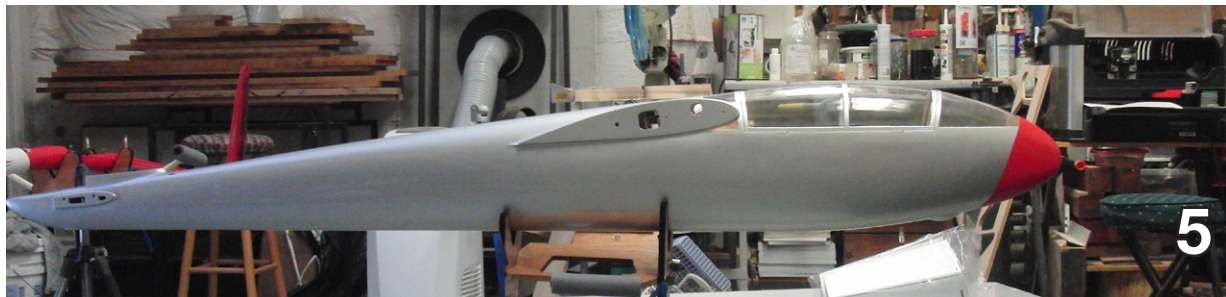Photo 2: The tips were dark blue, so primed them white before painting red.
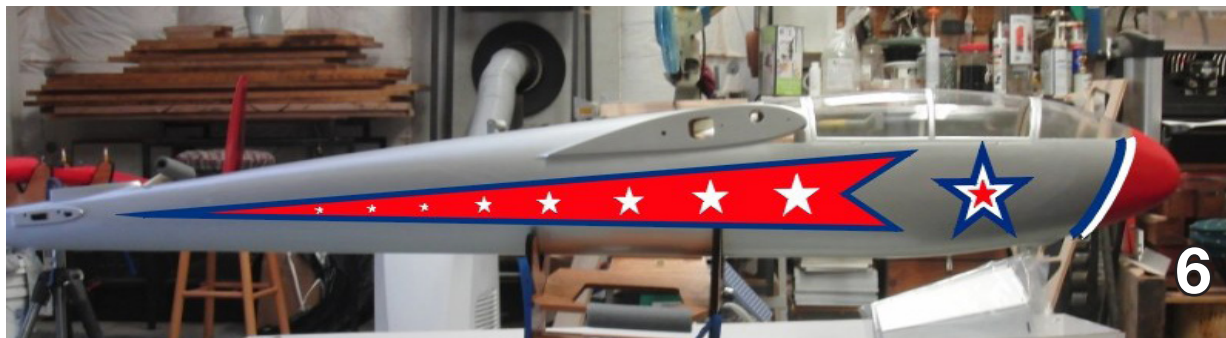
3

4

5

6

Photo 3: Some tape and plastic wrap, a couple coats of red and a final clear coat.
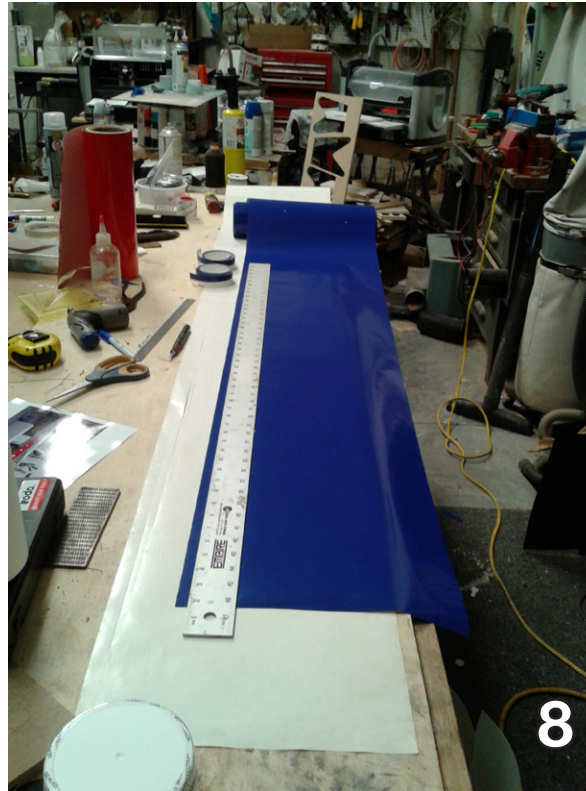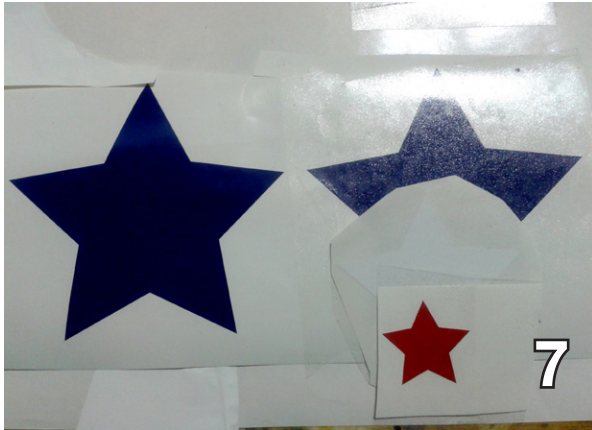
Photo 4: Just how I wanted it.

Photo 5: Next a side shot so I can play with layouts

Photo 6: After looking at hundreds of Blanik photos, and wanting to be totally unique, I settled on this for the fuse. This is simply a "Photoshopped" image.

Since the red area is large, I will be painting it before putting on the blue and white vinyl.

Now for the actual work.

Photos 7 and 8: Cut out some red white and blue stars (slightly different than original layout) and some white and blue striping

(You can buy striping, but it is very expensive. You can get 12" x 30ft roll vinyl from a sign supply for around $10)

Photo 9: I striped the nose and put on the star.

Photo 10: I rolled out and cut some masking for pattern. This is a way of being sure both sides will be the same.
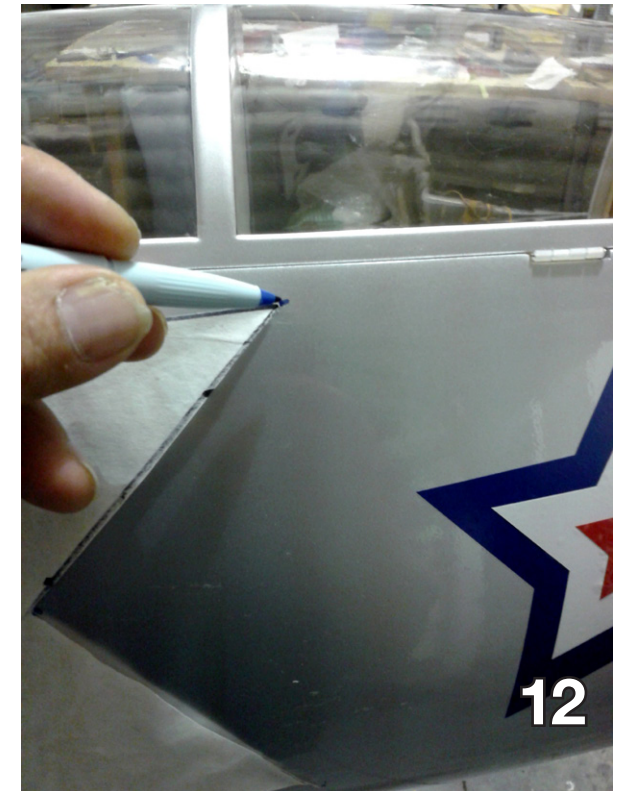
11

12

13

14

Photo 11: Put pattern on plane.

Photo 12: Marked pattern with water based marker. (These are great for marking then just wiping off with water.)

Photos 13 and 14: Then drew the lines.

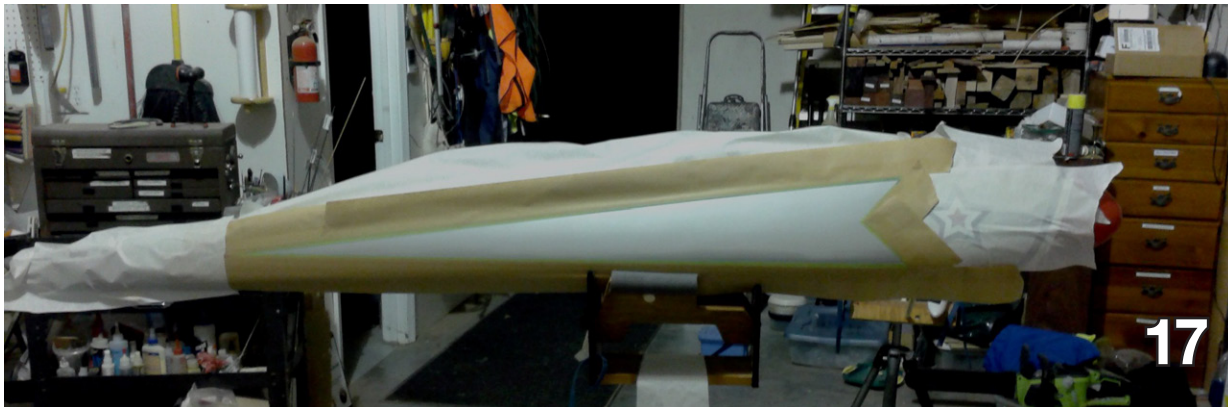Photo 15: Next I used green painter's masking tape.

Photo 16: Wiped off the blue marker with water. Cleaned the area thoroughly with alcohol. Sanded with 3000 grit just to be sure.

Photo 17: Masked the rest of the plane.

Photo 18: Two coats red followed by two coats Clearcoat.

Photo 19: Red done.

Photo 20: I used paper mask with only edge adhesive to layout star placement. Makes a good centerline and you can lift up to place the stars.
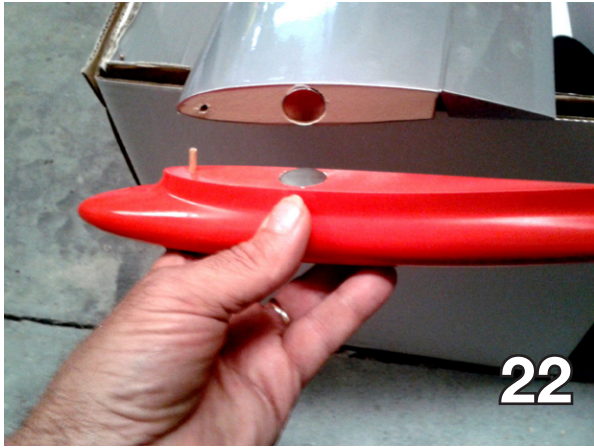
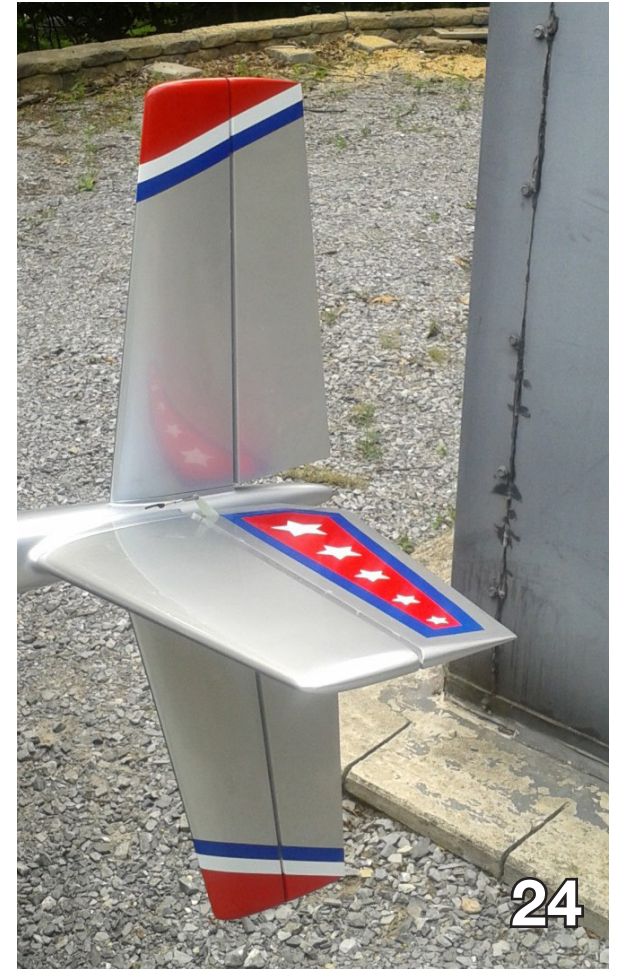Photo 21: Put on stars and all done with fuselage sides.

Photo 22: The tips are held on by very strong magnets (40lb pull) and an alignment pin. I angled the drill so that the top of the wing magnet fits into the tip a bit. Keeps it from twisting.

Photo 23: Wing done. Copied the nose design to the wing tips. Keeping it simple. Most of the full scale planes have little if any wing decoration.

Photo 24: Tail done.

Photo 25: Some minimal leather interior for comfort of the pilots.

Photo 26: Woody taking his girlfriend Rose for a ride....

Photos 27 and 28: All together and ready to take to the air.

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from bluelight-tech.com
new super bright leds

Bluelight-tech.com would like to share some details of our new Nav / Low Batt product:.

SUPER bright double blink strobe / beacons and landing lights - 8 lights, expandable to 11.

• Super Bright - 100 lumens per LED Navigation / Strobe / Landing (red, green, and white)
• Two low battery modes (Time and/or low Voltage)
• RC Tx input (Lights on/off, landing lights coincident with gear down)
• Servo output to activate parachute when low battery
• Small warning LED on controller board: Battery low or very low
• Redundant battery can be connected to the controller
• A 5V BEC output in case of LiPo failure or for other lights
• Set up via on-board DIP switches + free PC tool for advanced features
• Powered from 5v to 26V, no need to connect main LiPo

BL-NavLV-S

Underlined : Constant on (others flashing)

Included:
• Nav lights   : x 1 green, x 1 red, x 2 white
• Landing lights : x 3 white
• Strobe lights   : x 1 red
• Clip on lenses : x 8 (can remove if required)
• USB cable   : x 1 (for optional free PC tool)
• Controller   : x 1 (DIP switches for set up)

Please visit our website to learn more:
<http://www.bluelight-tech.com/productsNavLights.htm>

GROB-Werke HALE G600

## a High-Altitude Long-Endurance aircraft suitable for modelling

Our thanks to Mark Nankivil for suggesting this aircraft for inclusion in RC Soaring Digest. *Mark made the comment that it would make a great slope 'ship or even a viable flat land thermal flyer due to the small engine nacelles. <http://www.spyflight.co.uk/grob new.htm>*

Although GROB-Werke is a relatively small Bavarian company best known for producing trainer aircraft, GROB have also built two unique high-altitude reconnaissance aircraft, the G520T Egret and the G850 Strato 2C. HALE aircraft are employed by various government agencies, such as the CIA and DEA, during operational activities as high-level radio relay stations and platforms for electro-optical sensors and ELINT packages.

This June at the Paris Air Show GROB unveiled a stretched version of its G180 SPn business jet, designed as a manned or unmanned high altitude surveillance and communications platform, known as the GROB HALE G600. The aft section of the basic G180 fuselage will be extended and fitted with a new 116.8ft span high aspect ratio all composite wing and the aircraft will be powered by two Williams FJ44-4A engines each producing 3,500 lbs of thrust.

Still in the concept stage, GROB have stated that they have received "substantial" European military interest in the G600. If the company secures just one launch customer it estimates that it would be able to fly the aircraft within 13 months and then secure full certification and customer delivery within another 11 months.
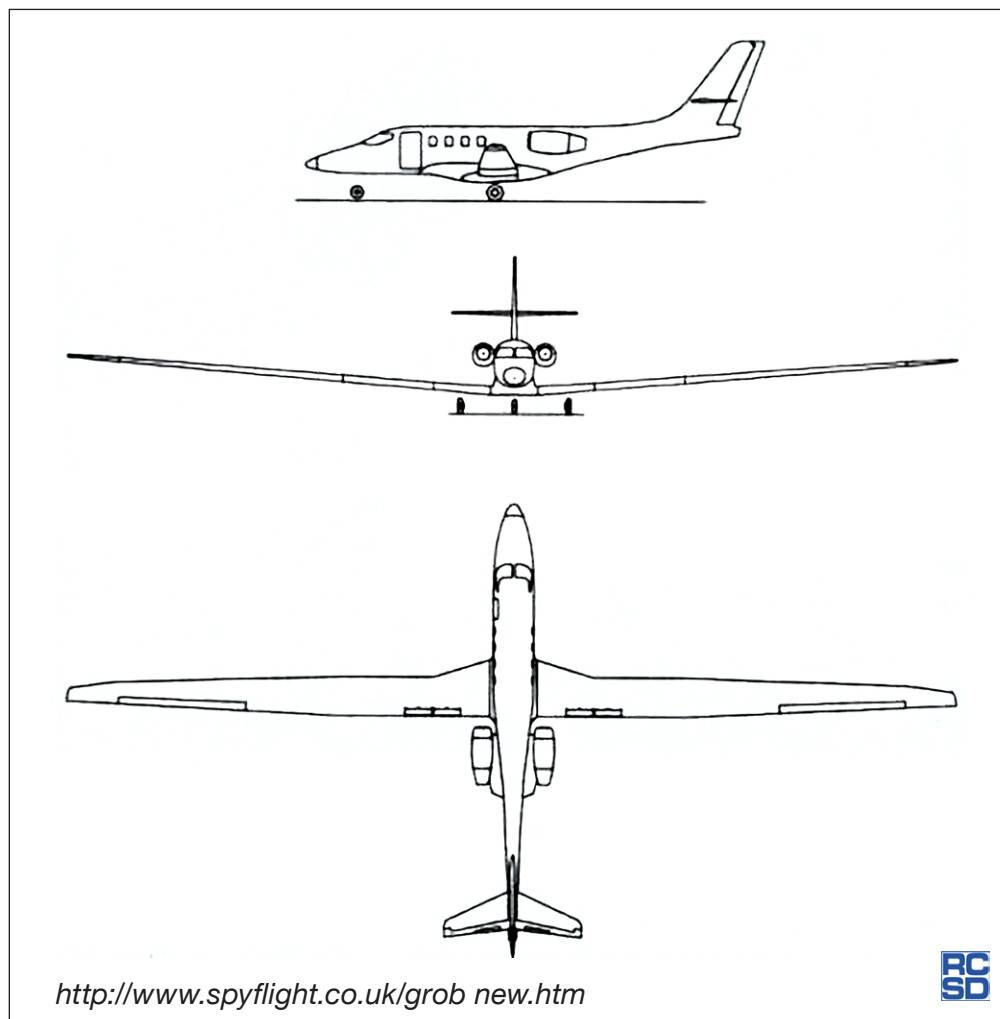
http://www.spyflight.co.uk/grob new.htm