MODEL SPECS.

August 2016

Models built prior to July 2006 were powered with nicad battery packs. The weight and wing loading shown was with the original nicad batteries. With the Li-Po batteries now available, the wing loading will be lighter and flight time longer. Most of the models were designed to fly on one, or sometimes two nine-cell packs of Nicads. One 3S pack of Li-Po cells can be used in place of a nine-cell pack of nicads and will give a slight increase in power. The added power, along with a significant weight reduction, will result in a considerable improvement in performance. Even great increases in performance and flight time are achieved now with brushless motors.

When choosing an outrunner brushless motor, try to match the propeller size and power to the prototype. A motor with lower KV rating will use a larger prop which will be more efficient for sport flying, and in scale models will usually be closer to scale size.

Seagull, (1994) Non scale flying boat with pylon mounted motor. Span 60 ins. Wing area 550 sq ins. Length 48 ins. Weight with nine N-1900 SCR nicads, 55ozs. Wing loading: 14.5 oz/sq.ft. Motor, Magnetic Mayhem with 2½:1 ratio gear reduction, driving 10 x 8 folding prop. Static thrust 32 oz at 7,800 RPM drawing 23 amps. Selig 3021 airfoil gives glider like performance. Is capable of doing 15 minute flights with 25 to 30 "Splash and Go" circuits.

Update: 2007 The Seagull now flies on a 3S Li-Po battery and has over 500 flights logged off water. With usually doing about 15 “splash-and-go’s” per flight, that is a lot of take offs and landings. It is still a great “fun” machine to have at the lake.

2011. Now has an Astro Flight 020 geared inrunner brushless motor. Coming up on 700 flights. Quite the performer!

2015 Now flies with an E-Flite Park 450 motor

D.H. Rapide. (DH 89) (1994) Scale 1/7.5. Span 76 ins. Wing area 1100 sq ins. Length 56 ins. Originally powered with two 27 turn Kyosho car motors, wired in series from 16 cells, driving 11 x 7 props through 2 1/2:1 ratio gearboxes. Thrust 50 oz static at 5,800 RPM on 18 amps. Weight 113 oz on wheels, 125 oz on floats. To save weight and achieve slower more realistic flight, it has been found better to use two Magnetic Mayhem motors in parallel from nine cells turning 11 x 7 APC-E props 6,000 RPM through 3:1 ratio gearboxes. Static thrust 52 oz on 32 amps, 16 amps to each motor. These are original plans that have not been upgraded, so the quality of the drawings is not up to that of later plans, but there is adequate detail for experienced builders. This model is capable of slow scale-like flight, but needs co-ordination of rudder and aileron. In slow speed gentle turns in a model like this, adverse aileron is sometimes

necessary to keep the angle of bank from increasing. “Mixing” aileron and rudder is not the answer.

De Havilland Comet, D.H. 88. (1995) Scale 1/6.6 Span 80 ins. Wing area 750 sq. ins. Length 54 ins. Weight with eighteen 1700 mAH nicads is 108 ounces giving a wing loading of 20.7 oz/sq.ft. Airfoil is Eppler 374. Two Trinity Ruby 16 turn motors wired in series from 18 cells drive 12x8 APC-E props through 4.3:1 superboxes,. Static load is 30 amps with props turning 7,000 RPM, giving static thrust of 74 ounces. NACA leading edge cuff on outboard wing section controls tip stall and makes this a safe flyer capable of doing impressive aerobatics.

Avro Lancaster. (1996) 1/12 scale (1996) Four Master Airscrew (Mabuchi 540)
can motors with 3:1 ratio in series on 25 RC-1700 nicads driving 13 x 8 three blade props at 3,750 RPM. Static current 22 amps. Span 103 inches. Wing area 1,300 sq.ins. Length 70 ins. Weight 12 lb 11 oz. (203 oz) Wing loading 22.4 oz/ sq.ft. Retracts and flaps. Airfoil Eppler 197 with NACA leading edge cuff on outboard panels. Wing is built in three sections for ease of transportation. The plans are not of good quality, but there is plenty of detail. The retracts are not easy to build and only recommended for experienced builders.

July 2003: Recommendation.
In 1999 the can motors were replaced with lighter racing car motors rewired into a series parallel configuration and the model flown with eighteen cells. The weight saving resulted in a flying weight of 183 oz and wing loading of 20.3 oz/sq. ft. For future builders, the 22 turn Magnetic Mayhem car motor is recommended, with the four motors being wired series parallel from 18 cells. The Magnetic Mayhem motors have a slightly longer armature and are significantly more efficient than regular car motors. They are also available with timing for reverse rotation, and these should be used if a simple single stage gear reduction is employed. When the original model was built, it was necessary to make the three blade props from blades that were cut from regular two blade wood props. Master airscrew now makes plastic 3 blade 13x8 props, so these are made to order for the Lancaster. A gear reduction of 5:1 should be used. The superbox available from MEC in Seattle is suitable. Static load is 34 amps to the batteries, resulting in 17 amps to each motor with series parallel wiring. This is very light loading for these motors, coming within their efficiency range. This results in good flight endurance and long motor life.

2006: With Li-Po batteries, this model would fly very well on Speed 480 motors.

Shoestring “62.” (1997) 1/4.5 Span 62 ins. Wing area 640 sq ins.
Length 49 ins. Weight 67 ozs with nine N-1900 SCR nicads. Wing loading: 15 oz/sq.ft. Eppler 374 airfoil. An Atomic Force 17T Motor with Great Planes GD-600 3.8:1 ratio gearbox turns an 11 x 7 APC –E airscrew at 7,500 RPM. Static thrust is 34 oz at 30amps.. A great aileron trainer and good for relaxing aerobatics.

Auster J5F (1997) Scale: 1/5.1. Span 75 in. Wing area 850 sq. in.
Length 51in. Weight 72oz with nine 1700 nicads. Wing loading 12.2 oz/sq ft. Eppler 195 airfoil. Kyosho Atomic Force 17 turn motor with 6.0:1 gearbox turns 14 x 12 prop APC-E prop 4,100 RPM at 29 amps on nine cells. Does very good aerobatics on low power. The J5F had a slightly shorter wing than other Austers, and larger ailerons. It was built as an aerobatic trainer.

2011. Now has an Astro Flight Geared 25 inrunner brushless with 13x10 prop. On 4S will about go vertical. Not quite “Auster like,” but huge fun.

De Havilland Chipmunk (1998) Scale 1/5.6 Span 74 ins. Wing area 820
sq.ins. Length 55 ins. Weight 83 ozs Wing loading: 14.6 oz/sq.ft. Airfoil Eppler 205. Kyosho Atomic Force 17 turn motor with 5.5:1 superbox turns 14 x 12 prop APC-E prop 4,200 RPM at 32 amps on nine cells. A beautiful model for scale aerobatics.

PBY-5A Catalina 600. (1999) 1/12 scale Span 100 ins. Wing area 1350 sq ins
Airfoil is Eppler 195 with NACA leading edge cuff outboard. Length 63 ins. Wing is built in three sections for ease of transportation. Weight with sixteen N-1900 SCR nicads is 147 ozs giving wing loading 15.7 oz / sq. ft. Motors are Magnetic Mayhems (reverse) with 2.5:1 gearboxes, drivng Master 11 x 8 three blade props. Props turn 6,000 RPM at 22 amps static giving 60 oz thrust. Six channels provide for retractable landing gear (own design) and retractable tip floats. Excellent performer off water as well as land. Hull is 1/32" ply and fuselage sides 1/16 balsa covered, with silkspan and nitrate dope for water resistance. The news on the retracts is “good and bad”. They are very reliable and absorb the bumps well on rough surfaces, but they are very difficult to build. Not recommended for any but experienced builders with a lot of time and patience. The plans are quite old and not of very good quality, but have adequate detail.

Bristol Beaufighter (1999) 1/10 scale. Span 73 ins. Wing area 765 sq. ins
Airfoil is Eppler 374 with NACA leading edge cuff outboard. Length 49 ins. Weight with eighteen N-1900 SCR nicads is 124 ozs giving wing loading of 23.4 oz / sq. ft. Slotted flaps and retracts, (own design.). Trinity “Speed Gem” 16 turn motors wired in series with 6.2:1 gearboxes turn 15 x 10 APC-E prop 4,400 RPM at 30 amps giving 85 ounces static thrust. The retracts are difficult to build in the confined space of the nacelles in this model.

Bristol Freighter. (June 2000) 1/12 scale Span 108 ins Wing area 1480 sq.
ins Airfoil Eppler 197 with NACA leading edge cuff outboard. Length 71 ins. Weight with sixteen N-1900 SCR nicadsc is 157 ozs giving wing loading of 15.2 oz/sq. ft. Motors are Kyosho 17 turn Atomic Force car motors running in series drivng four blade 15 x 10 Zinger wood props through 7.2:1 ratio super box. Current is 25 amps static, and props turn 3,200 RPM giving static

thrust 86 ozs. Slotted flaps to Andy Lenon formulae are very effective. Wing is built in three sections for ease of transportation. Sturdy fixed undercarriage is good for rough grass strips.

DH Mosquito 600 (2000) 1/9 scale. Span 74ins. Wing area 825 sq ins,
airfoil, Eppler 374 with NACA leading edge cuff outboard. Length 55.4 ins. Weight with eighteen RC-1700 cells is 114 ozs for wing loading of 20.0 oz/sq.ft. Trinity Ruby 16T motors with 6.2:1 ratio superbox drive 14 x 12 APC electric props at 4,800 RPM. Current draw 31amps giving static thrust 67 ozs. Retracts. A very smooth flyer and capable of impressive aerobatics.

Shoestring "58." (2001) 1/4.8 scale Span 58 ins. Wing area 500 sq ins.
Length 46 ins. Weight 56 oz with nine N-1900 SCR nicads. Wing loading: 16.1 oz/sq.ft. Eppler 374 airfoil. Magnetic Mayhem 22 turn motor with 3.0:1 ratio gearbox driving 12 x 10 APC-E prop at 5,000 RPM draws 28 amps static. Very fast and aerobatic, especially on a 3S Li-Po battery.

Martin Mars. April 2001 1/20 scale. Span 120 ins. Wing area 1,515
sq.ins. Airfoil, Eppler 197. with NACA leading edge cuff from outboard motors to tip. Wing is built in three sections for ease of transportation. Fin and rudder may be made removeable for the same reason. Set up at the flying site only takes a few minutes and does not require any tools. Batteries are accessible without removing the wing. Length 72 ins. Weight with 18-1700 cells is 10 lb 5 ozs for wing loading of 15.7 oz/sq.ft. Flies
adequately on 16 cells, but better climb rate with 18 cells. Mabuchi 540 (or Speed 600) can motors with 3.5:1 Master airscrew gearboxes driving four blade 10 x 7 airscrews at 5,400 RPM were used in the prototype. Each airscrew made from two regular 10 x 7 Master Airscrew GF nylon props, notched at centre and crossed. Motors wired series/parallel with differential power for water steering. Current draw 28 amps (14 amps each motor) giving static thrust of 84 oz. The well used Mabuchi 550 can motors that were used in this model were 'left overs' from electric glider days and have now flown several seasons. This model does not need much power. For future builders I would recommend using 22 turn Magnetic Mayhem reverse motors. With gear ratios of 3:1, they should draw about 14 amps, the same as at present, but give a better climb. Extra power is not really needed, since the original prototype is often taken off and climbed on partial power for added realism. Using 3.5:1 ratios with Magnetic Mayhems should give the same performance as the prototype but result in a longer flight time because of lower current draw. It is presently about 10 minutes. From experience, the Magnetic Mayhems are very efficient when used like this at about 14 amps per motor. Fuselage is stick construction sheeted below water line and on top. Covering below the water line is silkspan applied with nitrate dope and painted with touch up lacquer. Wing is built in three sections for ease of transportation.

Update: June 2006. The Mars now flies on four Jamara 480 HS BB motors with MP Jet 4.1:1 ratio gearboxes and 10 x 7 APC electric props. The landing speed is slower because of the weight saving, and flights are longer.

Richard Pearse Monoplane 370. Park Flyer. 2002. Span 36 ins. Wing area 432 sq. ins. Length 20 ins. Weight 14 oz. Wing loading 6.2 oz / sq.ft (75% equivalent for flying wing.) Motor, GWS EPS-300C-AS (Speed 370) with 3.75:1 reduction, driving 8 x 6 APC slow flyer prop. 8-720 NiMH cells give 5,000 RPM static at 7.5 amps. Aerobatic park flyer. Model of first plane built by Pearse, and claimed by historians to have flown in New Zealand in March, 1903.

SHORT SEALAND 600. July 2002. Scale 1/9.5 Span 75 ins, Wing area 830 sq.ins. Airfoil, Eppler 205 with NACA leading edge cuff on outboard sections. Length 58.5 ins. Weight with nine N1900 SCR nicads, 90 ounces. Wing loading 15.6 oz/sq.ft. Motors are two Magnetic Mayhem reverse with Master Airscrew 3:1 reduction, driving 11 x 7 APC electric props. Motors are wired parallel, static current 32 amps at battery, 16 amps to each motor. Static thrust 52 ounces at 6,000 RPM. Plug in wheels for flying from land. Construction and covering same as Mars. Quite aerobatic. Can fly for 10 minutes with conservative use of power, and longer on larger cells.

Richard Pearse Monoplane 600. ¼ Scale. Jan 2003. Span 60 ins. Chord 20 ins. Wing area 1,200 sq. ins. Length, 35 ins. Weight with nine Sanyo CP-1700 SCR cells is 60 ozs. Wing loading, allowing for 75% efficiency of flying wing, is 9.6 ozs/sq.ft. Motor is Magnetic Mayhem – reverse timing. Master Airscrew gearbox 2½:1. Prop is 12 x 8 APC-E turning 6,700 RPM at 27 amps, giving a static thrust of 38 ozs. General. Construction of all models is basically very traditional with Balsa (lots of 3/16" stick) and moderate amount of Basswood. Very little ply and epoxy. Covering mostly low temperature film with Mica film on lower surfaces of wing for weight saving and added strength. Weights given are with Sanyo RC-1700 nicads.

SHORT SOLENT 400. March 2004. Scale 1/16.5. Span 82 in. Wing area 905 sq.in. Length 65 in. Airfoil, Selig 7055 with NACA leading edge cuff on outboard sections. Weight with eight N1900 nicads, 83 ounces. Wing loading 13.2 oz/sq.ft. Four GWS Speed 400 geared drive motors, “E” series with gear ratio 3.4:1 driving GWS 9x7 three blade props (EP9070x3) and GWS 35mm three blade spinners. Motors are wired parallel, static current 35 amps at battery, 8.25 amps to each motor. Static thrust 48 ounces at 4,900 RPM. Construction and covering as for Sealand. Flies for 9 minutes on eight 1900 mAH nicads or 15 minutes on nine 3,000 NiMH cells . Alternate power would be “F” series gear drives with 3.9:1 reduction from nine nicads. This should give the same power for a 12% reduction in current, resulting in longer flight duration. If difficulty is encountered in finding the GWS three blade props, two blade 9x6 APC slow flyer props can be used. This may sound smaller than what would be expected, but it is because of the difference in loading from different manufacturers. The APC slow flyer props give the same performance on less amps that that required for the GWS three blade props, so the flights are longer.

PARTENAVIA P-68 Victor. May 2004 Scale 1/6.6 Span 70 in. Wing area 730 sq in. Length 56½ in. Airfoil, Selig 7055. Weight with nine N1900 SCR nicads, 77 ounces. Wing loading, 15.2 oz/sq.ft. Two Magnetic Mayhem 22 turn motors, reverse timing, wired parallel, with Master Airscrew 3:1 ratio gear boxes turning 11 x 7 APC-E props.
Static thrust 52 ounces drawing 32 amps, 16 amps to each motor. Basic entry level twin, very easy to build, with good flight characteristics and very aerobatic. Performs extremely well at lighter wing loading with CP-1700 SCR nicads. Flies for 9 minutes on 1900 nicads or 15 minutes with 3000 NiMH cells. The motors are running at maximum efficiency with this relatively low power, so are far below what they are capable of producing. This makes for long motor life. In view of this, the motors can be operated on 10 cells for enhanced performance, but if using a BEC, watch the limitations set by the manufacturer for the number of servos that are allowed.

Upgrade 2006. This model flies very well on Speed 480 or Cobalt 400 motors, especially with a 3S Li-Po battery. It is the easiest of the twin motor models to build and is recommended for anyone building their first electric twin.

“Mini-Cat.” PBY-5 Catalina flying boat for Speed 400 motors. August 2004. Scale 1/15. Span 83 in. Wing area 835 sq.in. Length 52 in. Airfoil Selig 7055. Weight with eight CP-1700 SCR nicads is 64 oz. Wing loading 11 oz/sq.ft. Two GWS geared motors “E” series with 3.4:1 reduction wired parallel driving GWS 9x7 three blade props. Static current is 18 amps, 9 amps to each motor. Prop speed, 5,200 RPM. Average flight time is 15 minutes. Flies 27 minutes on eight 3,000 mAH NiNH cells. Retractable tip floats. The “Mini-Cat” is to a pond what a “Park Flyer is to a “Park,” so I guess it qualifies as a “Pond Flyer.” If difficulty is encountered in finding the GWS three blade props, two blade APC slow flyer props can be used. They should be 9 x 6. This may sound smaller than what would be expected, but it is because of the difference in loading from different manufacturers. The APC slow flyer props give the same performance on less amps than that required for the three blade props, so the flights are longer. This model is a real floater and the scale like flight looks great in calm conditions, but with the small size of the hull, and large wing, it is more difficult to fly than other model flying boats in windy conditions when the water is rough. Weight can be critical if using the specified Speed 400 brush motors.

GRUMMAN ALBATROSS. December 2004. Scale 1/12. Span 84 in. Wing area: 945 sq. in. Length 62 in. Airfoil: Selig 7055. NACA leading edge cuff on outboard sections. Can fly on eight to ten cells. Weight with nine N1900 SCR nicads, 93 ounces. Wing loading 14.2 oz/sq.ft. Two Magnetic Mayhem 22 turn motors, reverse timing, wired parallel. Great Planes “GD-600” 3:1 reduction, driving 11 x 7 APC electric props. Static current with nine cells is 32 amps at battery, 16 amps to each motor, giving a static thrust of 52 ounces at 6,000 RPM. Fuselage is stick construction, sheeted below water line and on top. Covering below the water line is silkspan applied with nitrate dope and painted with lacquer. Upper fuselage, tail surfaces and wing are covered with film. The Albatross is slightly larger in size than the Sealand, has a lower wing loading and flies a little slower.
May 2005 update. The same motors can be used with 12 x 8 APC electric props and Master Airscrew 3.5:1 gearboxes, or Great Planes GD-600 gear drives. Static current draw with nine cells and 3.5: ratio is 30 amps (15A to each motor), giving a static thrust of 54 oz at 5,100 RPM.

Flight time on an eight cell 3,000 NiMH battery is 17 minutes. Alternate props are Master 11x8 three bladers, but flight time is shorter.

September 2005. Because of the Magnetic Mayhem motors no longer being available, the Albatross was used to test a pair of Multiplex Permax 7.2 volt Speed 480 motors, flying on eight or nine cells. It can fly and land considerably slower because of the weight saving. 12 x 8 APC electric props were used with 4.1:1 ratio gearboxes. With a nine cell pack of CP-1700 SCR nicads the flying weight is 81 ounces for a wing loading of 12.2 ounces/sq.ft. On an eight cell 3,000 NiMH battery the flight time is 28 minutes.

DHC-6 Twin Otter 600. May 2005. Scale 1/9.3 Span 84 inches. Wing area 956 sq.in. Length 65 in. Airfoil: Selig 7055. NACA leading edge cuff on outboard sections. Flies on eight to ten cells. Weight with nine N1900 SCR nicads is 100 ounces giving a wing loading of 15.0 oz/sq.ft. Two Magnetic Mayhem 22 turn motors, reverse timing, wired parallel. Master Airscrew 3.5:1 gearbox, or Great Planes GD-600 gear drive, 3,8:1 ratio. 12x8 APC electric props. Static current draw with nine cells and 3.5:1 ratio is 30 amps (15A to each motor), giving a static thrust of 54 oz at 5,100 RPM. Has optional slotted flaps. Can be flown with 11x8 three blade MasterAirscrew props.

SHORT SEALAND 480. August 2005. A scaled down version of the Sealand 600. (July 2002) Scale 1/10. Span 74 ½ inches. Wing area 695 sq. in. Length 53 in. Airfoil: Selig 7055. NACA leading edge cuff on outboard sections. Flies on eight or nine cells. Weight with eight CP-1700 SCR nicads is 61 ounces for a wing loading of 12.6 oz/sq.ft. Two Jamara Pro 480 HS BB motors wired parallel. MP-Jet Speed 400 gear boxes, 4.1:1 ratio drive 10 x 7 APC electric props. Static current draw with eight cells is 23 amps (11.5A each motor) giving 30 ounces thrust at 5,900 RPM. Has flown 32 minutes on an eight cell 3,000 NiMH battery. Very lively performer. Handles wind and rough water extremely well for a model of this size. The Sealand 480 can also be flown with Multiplex Permax 7.2 volt plain bushing Speed 480 (long can Speed 400) motors with MP-Jet Speed 400 gearboxes, 4.1:1 ratio, and 11 x 7 APC electric props. Pitch speed is not as high with these motors as with the Jamaras. The Sealand 480 is 5.5 inches shorter than the Sealand 600 and the wing area is 135 sq. inches less. However, the span is almost the same as the larger Sealand, but the chord is narrower and the aspect ratio higher, more in keeping with that of the full scale plane.

DHC-6. Twin Otter 480. December 2005. Scale 1/12 Span 67.5 inches. Wing area 612 sq.in. Length 52 in. Airfoil: Selig 7055 with leading edge cuff on outboard sections. Flies on eight to ten cells. Weight with eight CP-1700 SCR nicads is 60 ounces giving a wing loading of 14.1 oz/sq.ft. Two Jamara Speed 480 HS BB motors, wired parallel. MP-Jet 4.1:1 gearboxes with 10 x 7 APC electric props. Static current draw is 23 amps (11.5A to each motor), giving a static thrust

of 30 oz at 5,900 RPM. Weight given is without optional flaps. Flying weight and wing loading will be considerably lower with brushless motors and LiPo battery.

KZ-IV March 2006. Scale 1/7.8 Span 80 inches. Wing area 765 sq. in. Length 48 in. Airfoil: Selig 7055 with NACA leading edge cuff on outboard section. Flies on eight or nine cells. Weight with nine CP-1700 SCR nicads is 68 ounces for wing loading of 12.8 oz/sq.ft. Two Jamara Pro 480 HS BB motors wired parallel. MP-Jet Speed 400 gear boxes, 4.1:1 ratio drive 10 x 7 APC electric props. Static current draw with nine cells is 26 amps (13A each motor) giving 38 ounces thrust at 6,200 RPM. The KZ-4 is a lively performer and quite aerobatic.

SHORT SOLENT 480. May 2006. Scale 1/14.5 Span 99 inches. Wing area 1,200 sq. in. Length 73.5 in. Airfoil Selig 7055 with NACA cuff on outboard sections. Weight with ten 2,600 NiMH cells is 124 ounces for a wing loading of 14.9 oz/sq.ft. Four Permax 480 can motors are wired parallel. MP-Jet 4.1:1 gearboxes drive 10 x 7 four blade props 4,600 RPM. Static current is 38 amps (9.5 amps each motor). Static Thrust: 60 ounces. The propellers are regular Master Airscrew two blade nylon props that are notched at the centre where they cross, and bolted together on the shaft.

May 2007 update. The Solent is now flying on 3S Li-Po batteries. It will fly on a single 3S1P 2800 mAH Li-Po, but even with the battery right up in the nose, there is hardly enough weight to bring the C of G forward enough. Instead of using additional ballast in the nose, it is felt better to add an extra 3S Lo-Po battery parallel. This gives the needed ballast as well as increasing the endurance. It also makes it easier on the battery because the load is being divided between the two packs and the discharge rate of each battery is half of what it would be for a single pack.

May 2008. With difficulty in finding a reliable ESC to handle the amperage of all the motors wired parallel, the wiring has been change to series parallel. The motors on each side are wired parallel with each other, and the pair on the port side are in series with the starboard pair. Power is from a 6S pack of LiPos. The voltage is double, but only half of it goes to each motor. The amperage from the battery at 21 amps is now about half of what it was formerly, but each motor is only drawing half of this, 10.5A. The pleasant surprise in this configuration has been the increased efficiency overall. The prop speed is now 5,100 RPM giving 75 ounces of static thrust. For enhanced performance, the model may be powered with 7S LiPos, but check the voltage limit on the ESC. Also check the BEC limit. The BEC in most speed controls is suitable for 3S operation such as used with all the motors parallel, but with series – parallel wiring and 6S operation, it is usually necessary to disconnect the BEC and use a separate receiver battery.

ANGEL. August 2006. Scale 1/7. Span 68 inches. Wing Area 640 sq ins. Length 56 inches. Airfoil Eppler 205 with NACA leading edge cuff on outboard sections. Weight with 4S1P Lo-Poly 2,800 mAH battery is 61 ounces for wing loading of 13.7 oz/sq.ft. Two 28/30/16T RAM

TECH brushless motors, 700 RPM/V outrunners, turn 10 x 7 APC-E props at 7,500 RPM giving a static thrust of 52 ounces at 24 amps, 12 amps each motor. Plans not available.

BLACKBURN BEVERLEY. August 2007. Scale 1/15.5 Span 125 inches. Wing Area 1,700 sq.in. Length 77 inches. Airfoil Selig 7055 with NACA leading edge cuff on outboard sections. Slotted flaps. Wing built in three sections. The nose section of the fuselage is removable to give access to the battery and make adjustments to the nose wheel mounting, as well as reducing the size of the fuselage for transportation. The tail plane and main landing gear are all removable for transportation. Weight with a 6S Li-Po 2800 mAH battery is 164 ounces giving wing loading of 13.9 oz/sq.ft. Four “Speed 600” (Mabuchi 550) can motors wired series-parallel, with 3.5:1 Master Airscrew reduction gearboxes, turn 10x6 four blade props at 6,500 RPM. Static thrust is 110 ounces at 32 amps (16 amps to each motor). Each airscrew is made from two regular 10 x 6 Master Airscrew GF nylon props, notched at centre and crossed. These are held in place by bolting together on the propeller shaft. It is not necessary to glue them. The four motors used in the prototype are the same ones that were used in earlier years in the Lancaster and Mars before those models were upgraded to other motors. The Beverley has a lower wing loading than the other models these motors were used in, so it has a better climb rate on similar power. Because the 6S Li-Po batteries being used in this model have a slightly higher voltage than the 18 nicads being used in the older models, the pitch of the propellers was decreased. The previous four-motor models used 10x7 props. The Beverley is flying on 10x6 props. The four blade props are strictly for looks. The performance would be better with regular two blade APC electric props. This model would fly on Speed 480 motors. The wing loading would be lighter and the endurance would be increased. In selecting a speed control, use one that does not have a brake engaged permanently. It makes for smoother landings if a little power is left on, and this is not always possible with a brake on the ESC. The Castle Creation 35 amp Pegasus is one possibility. When using the Pegasus 35 with 6S Lo-Pos, the BEC should be disconnected, and a separate receiver battery used.

DH 86 EXPRESS. August 2008 Scale 1/7.9 Span, 98 inches. Wing area 1,507 square inches. Airfoil Selig 3021 modified towards the tips. Length 71 inches, Weight with 6S 2800 Li-Poly battery, 114 ounces. Wing loading is 13.5 ounces / square foot (allowing for 80% efficiency of biplane wings.) Four Jamara 480 HS BB motors are used, wired series-parallel, driving 10 x 7 APC-E props through 4.1:1 ratio gearboxes. Static Thrust is 76 ounces at 6,200 RPM drawing 26 amps from battery. (13 amps each motor.) The wings have a very high aspect ratio. Efficiency comes from using the thin Selig 3021 airfoil, but as in sailplanes, it makes for a challenge in accurate construction. Wing joiners are optional, but demand good workmanship because of the thin airfoil used. Likewise, the undercarriage is a tight fit in the fairings, but they add to the streamling of the model. The torsion bar suspension used on the main gear gives very good operation on rough fields Flight characteristics are excellent. A safe, easy to fly model.

MOSQUITO 480. (August 2011) 1/11.2 scale. Span 58 inches. Wing area 501 sq inches. Length 43¼ inches. Airfoil, Eppler 374 with NACA leading edge cuff outboard. . Weight with 4S 2,200 mAH Li-Po is 55 ounces for a wing loading of 15.8 ounces/square foot. The prototype uses Ram Tech 28/30/16 motors, 700 KV turning 10 x 7 APC electric props turn at 7,200 RPM. Total static current draw is 22 amps giving 52 ounces thrust. For flying on 3S LiPo batteries, a good choice is the E-Flite Park 400 or 450. The Turnigy or E-Flite 450 motors could also be used. The A-2217-8 motor available in the USA from BP Hobbies is another option.
Servo less electric retracts are Hobby King HKD-312.

DH 90 Dragonfly. August 2012. Scale 1/7 Span, upper wing , 74 inches. Lower wing, 66 inches. Wing area 1,026 square inches. (80% biplane equivalent is 820 sq.ins.) Primary airfoil; Selig 3010 modified towards the tips. Length 54 inches, Flying weight 78 ounces. Wing loading is 13.7 ounces / square foot (allowing for 80% efficiency of biplane wings.) Motors, brushless 450 or 480. Battery, one 3S 3.6 AH li-po. (Or one 4S 3.0 AH li-po, depending on motor choice.) Efficiency comes with the high aspect ratio tapered wings using the thin Selig 3010 airfoil. But as in sailplanes, they make for a challenge in accurate construction. Likewise, the undercarriage is a tight fit in the slim nacelles and wheel fairings, but these add to the streamlining of the model. The torsion bar suspension used on the main gear provides for good operation on rough fields. Flight characteristics are excellent. The prototype is fitted with a split flap as used in the full scale plane. It adds drag, and helps in making a steeper approach, but this kind of flap does not add much lift. Aerobatics are not a scale manoeuvre for the Dragonfly, but if you want the occasional change from scale-like flying, the model is quite capable of doing very large graceful loops, stall turns and Cuban eights. Rolls are on the slow side but can be done. Spins depend on the C of G location and tail surface throws. The inter plane wing struts are held in place with small rare earth magnets, so assembly at the field is fast. It is a robust model that can be thrown about and enjoyed.

LakeMaster. August 2015. Span with optional tips, 53 inches; wing area 410 sq. ins; Length 39 ins; Motor, Park 300 or equivalent. Prop 8x4 or 8x6. Battery 3S Li-Po 1300 mAH. Flying weight 25 ounces, Wing loading 9.5 os/sq.ft.

The LakeMaster started out to be a scaled down version of Ivan's "Seagull" which has been a fantastic model for over 20 years. The Seagull is virtually a powered sailplane; pure fun to glide in and touchdown gracefully as it has done for an estimated 13,000 water landings. The Seagull was built in the days of heavy brushed motors and nicad batteries when the way to get performance was to build a model on the large size in order to carry the weight of the equipment. With the much lighter batteries, motors and radio equipment now available, it is possible to build a model smaller and still get good performance. Hence the reduced size of the LakeMaster. It is very convenient for transportation, even when assembled ready to fly. Further to that, construction of the LakeMaster is more basic than that of the Seagull.

The past year there has been increased interest in float flying in our local area. Inspiration for designing the LakeMaster came from seeing the need for an easy build flying boat that would be a good entry level model for those wanting to get into wet flying.

This project started out being called “Flying Boats 101.” It is not just about building another model, but educating future float flyers about things they should know before they start into this activity. At the same time, it might encourage some self taught float flyers to do a refresher course in the finer point about float flying. As a prerequisite, I encourage every builder to carefully read the article “Flying from water. Great fun!” A link to it is at www.ivansplans.com After reading that article, it should be noted that the LakeMaster follows many of the qualities that are desirable in a model that flies off water, plus some others.

*It is a flying boat rather than a float plane, so is not prone to being easily blown upside down when taxi-ing in windy conditions. Very little dihedral helps in the same regard.

*Differential ailerons help directional control on the water.

* An extension to the bottom of the rudder, attached to a sub fin, acts as a very effective water rudder.

*A thin airfoil and light wing loading make for a great floater. The flat glide angle makes for a nice slow approach with easy transition to flare and soft touchdown.

*The battery can be changed without removing the wing. The long nose allows the battery to be accessible without hands being close to the arc of the propeller in the case of an inadvertent start up.

*A flat bottom hull makes it possible to easily take off and land from a grass field.

*The model is fully aerobatic, so makes for more fun than just flying around in circles.

*The stab and elevator are mounted high enough to be out of most of the spray.

*The sub fin below the tail leads to an extended lower section of the rudder that serves as a very effective water rudder.

Druine Turbulent. August 2016. Scale 1/5. Span 50.3 inches; wing area 406 sq. ins; Length 40 ins; Motor, Park 450- 890 KV. Prop 10 x 7. Battery 3S Li-Po 1600 mAH. Flying weight 28.2 ounces, Wing loading 10 oz/sq.ft.

The Turbulent was a popular home built plane in the fifties and sixties. Of wooden construction, it was designed in France and considered to be an easy scratch build. The wing span is 21 feet 6

inches and at first it used a 25 h.p. Volkswagen engine. The performance was enhanced considerably when the 1200 cc VW engine was introduced producing 36 h.p. Even with the 1200 cc engine, the climb rate on a hot day with a heavy pilot was not very impressive, but it could cruise at a healthy 90 m.p.h. and go a long way on a gallon of gasoline. The design of the Turbulent lends itself to an easy build for a model, and could be a good choice for a first time scratch builder. With generous dihedral, it is very stable, making it a great aileron trainer. An added advantage is that being quite aerobatic; it is more fun to fly than a model that just goes around in circles. With a Park 450 motor it will pretty well climb vertical. A Park 400 motor would be quite adequate for anything but aggressive aerobatics.

This is the third Ivan designed Turbulent, the first one in the glow powered days prior to electrics and the second one electric, but before plans were published. Great memories of the delightful handling qualities of the earlier models led to the design of the present easy build model. Both of the earlier models were flown at times on floats and proved to be very suitable for water flying.

The battery can be changed without removing the wing and is accessible without hands being close to the arc of the propeller in the case of an inadvertent start up.

A thin airfoil and light wing loading results in a slow flat glide, and makes for an easy transition to flare and soft touchdown.

2012 update. The lowest recommended power weight ratio for electric models used to be 40watts/ pound. Now it seems that the recommended figure is usually over 60 watts/lb. This figure however is influenced by wing loading and size. The prototype PBY-5A Catalina with its original can motors flew quite well on 35 watts/pound because of its low wing loading and large size. Larger models with low wing loading fly on surprisingly little power. Motors and batteries continue to improve, so the figures quoted a few years ago seem to be ridiculously low by the standards used today