

## Spring 2014 Newsletter

### Welcome

Welcome to 2014 and the latest chit chat from PMP. So we have said goodbye to 2013 and have hopefully recovered from the end of year festivities in more senses than one! Looking back over 2013 we can say that it was more like what we would call a normal summer. We certainly got in more flying than in the previous years. Well I have, if only to properly test fly the new models we introduced to our range in 2013. They now number 10 with number 11 having been built and test flown well under way. Sales are showing some signs of improvement but it is very small and largely aided by our hard to get bits and our kits. Test flying of the gliders is usually carried out at St Agnes in Cornwall whilst the electric models are test flown at Little Haldon Nr. Teignmouth in S Devon. If you ever take a holiday in either place try and smuggle a model in with the luggage, both are very pleasant places to fly and there are no restrictions other than no electrics at St Agnes. The location of Little Haldon can be found on [www.dartmoorsoarers.co.uk](http://www.dartmoorsoarers.co.uk) website.

### Hindsight 1

Most of us, if we are honest, have a PhD in hindsight and I am no exception. I lost my Mystique last September and despite many fruitless hours trudging the inhospitable terrain did not find it until the end of November, after the foliage had died back. The model was a wreck and weighed a ton (full of rain). Fortunately, after a few minutes scrabbling around in the dead leaves I located all the bits. The LiPo still had 51% charge left although balance leads were covered in green corrosion (verdigris). Once I had cleaned and dried all the RC equipment I was able to investigate the cause of radio failure. Everything worked except for the elevator channel on the Rx. I had lost control of the model at about 500ft (130m) some 200 yards away when, with wings level, the model went into a 15-20 degree dive. Wagging the stick appeared to have no effect. With the benefit of hindsight i.e. knowing that I had only lost the elevator I could have retrieved the situation using the remaining controls, including the throttle, to bring it back and hopefully land it safely. My only excuse is that the model was some distance away, and whilst I waggled the stick I did not discern any control response.

PS Anyone want a damaged but repairable Mystique fuz. Free, just arrange collection.

### Hindsight 2

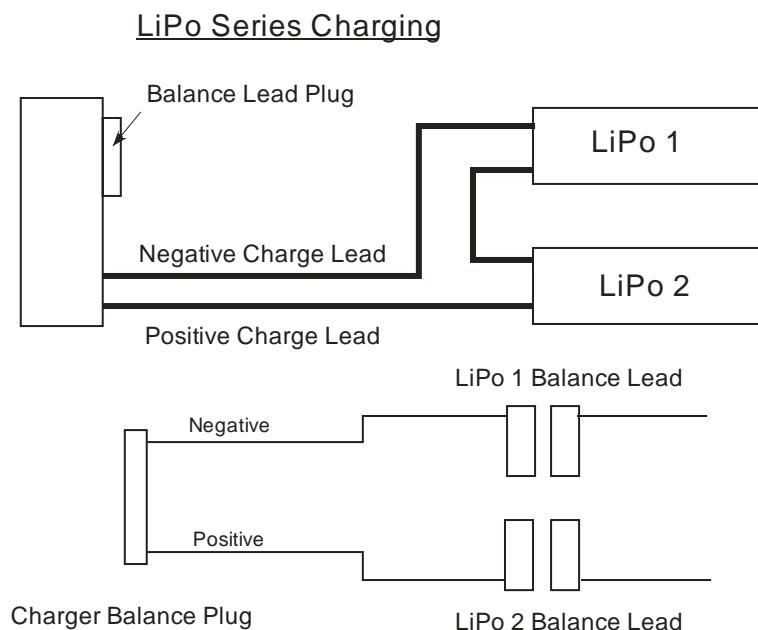
The second hindsight incident concerned a customer with an electric sports ARTF kit. The model was carefully built, ready to go, just needed control / motor checks. Prop was balanced, motor was checked without a prop for correct rotation. Prop fitted, throttle slowly opened, motor pulled mounting bulkhead out of its housing damaging fibreglass cowl motor mounting box assembly. The subsequent investigation revealed no glue on one side of the pre-assembled motor mount assembly and very little elsewhere. It was an accident waiting to happen. It also highlighted another ARTF 'disease' that of too many lightening holes in critical places. When one wing on my Mystique failed I attributed this to lightening holes in the ribs supporting the wing joining tube. The moral of the story is check all critical glue joints, particularly around motor mounts. If you think it looks a bit fragile in this area strengthen with a bit of triangular strip where possible. This also applies to the undercarriage!

Incidentally the distributor of the model was not very sympathetic despite it being quite an expensive kit.

### Connecting LiPos in Series

It is common practice to connect 2S and 3S LiPo batteries in series to make 4,5 or 6S packs. This makes good sense as should one cell fail then you have only lost a 2S / 3S pack. The advantages of using higher cell count LiPos is more efficient operation and cheaper, lower current speed controllers. Also the packs can be used as 2S / 3S 1P packs in other models. A word of caution, only connect packs in series that are of the same specification and from the same source!

It is also common to charge these pack in series to speed up charging using a balance lead adapter to connect the balance leads in series. Please study the diagram below. BAT 1 provides the Negative charging lead whilst BAT 2 provides the Positive lead to the charger. This means that BAT 1 must also provide the negative balance lead connection to the charger. If BAT 1 balance lead is plugged into the BAT 2 socket then there is a short circuit!!! When charging packs in series remember to check that the charge watts required is within the capability of the charger. The formula is No. of Cells x 5 x Charge current = Watts required (LiPos require a charge voltage of 5v per cell). One final point, if increasing the cell count do not forget to reduce the prop size.



To avoid a short circuit it is important that the polarity of the Balance Lead and the Charge Lead of each LiPo connected to the charger are the same.

### Flap Servo Travel

Recently we had a customer burn out a number of flap servos. Occasionally a servo will burn out but not more than one without a reason. As the customer was a long standing modeller I did not ask any questions the first time but after a second burn-out I started looking for reasons. It turned out that at full flap deflection the servo was hitting the internal stop without reaching the commanded position. Solution, return all stick settings to neutral and offset servo arm from centre to reduce lost linear

movement. Remember as the servo arm rotates, linear sideways movement increases at the expense of fore and aft movement.

### Noisy Motors

We have had a couple of instances locally of noisy electric motors coupled with poor performance. In both instances this was due to the fitting of too large a propeller. Reducing the prop size not only silenced the motor but improved model performance. The efficiency curve of electric motors is very 'peaky' so using the correct propeller is vitally important. Once you have 'gone over the top' re the efficiency curve the thrust per watt drops off quite dramatically and although the current draw has gone up quite significantly the power/thrust produced has not, if anything it has dropped off. There could of course be other reasons for a noisy motor such as loose magnets, worn out bearings or the ESC thermal trip cutting in and out.

### Choosing RC Equipment

I frequently get asked what servos etc would you recommend for model X. Quite often the sub-text is what is the cheapest I can get away with? The advice I always give is that if it meets any of the following criteria then the model is not fitted out with basement priced equipment. So if the model is heavy or fast or was expensive or took a long time to build then you fit better quality equipment to minimise the risks involved. If you loose a model through fitting inappropriate equipment then you can add at least a nought to the money you saved buying cheaper as the resultant loss.

### Graupner SJ Radio

Having at last acquired a performance F5J model (electric mouldy) I have decided it was time I equipped myself with a suitable fully functional 2.4ghz RC set having avoided the issue for so long. My trusty old JR 9x2 is more than adequate for my aerobatic slopers. I have been using the MPX cockpit for my less sophisticated electric models and it has served me well. As I have written in the past it is quite a powerful set for the money and easy to program. Being in the business means I have the choice of what is on the market and as I stock all the main brands can pick the one most suited to my needs. High performance moulded gliders do not have a lot of room to house the RC gear so the size and layout of the airborne equipment is very important. Finding a space for a GPS or Vario is bad enough. Finding room for a sensor station and a satellite receiver is nigh on impossible so when a UK distributor for the new Graupner HOTT RC radios was appointed I decided to check it out. Some brands are more glider orientated than others and Graupner is one. Others seem to have added glider functions as an afterthought! Some are still missing a trick or two in that they do not have a high performance 7ch single layout Rx with end pins at a sensible price. Enter the Graupner MZ18 and MZ24. Full telemetry, no satellites, end pins, compact size, clear touch screen, sensible pricing and more functionality than 99% of us are ever likely to use. My only criticisms are it does not have a built-in Tx aerial (knuckle joint aerials can be easily broken) and the 2000mAh Flat Rx battery (MZ18) only lasts about 2 1/2hrs so carrying a spare Flat Rx battery pack is recommended for long flying sessions. The MZ24 however is fitted with a 4000mAh LiPo. Price wise the MZ18 that comes with an 8ch and 6ch Rx is good value for money at a recommended price of £334.99. The higher spec MZ24 which comes with its own bespoke Tx case has an RRP of £399.99. Take a look at [www.LogicRC.com](http://www.LogicRC.com)

### Club Talks

Being a committee member of the Dartmoor Slope Soaring Club I am more than aware of how difficult it is to keep attendances up at club meetings. We have no control over the sites we use so there is very little to discuss at our monthly meetings other than members latest acquisitions and the previous / next Devon Glider day at Little Haldon. With this in mind if your club would like invite me to be a guest speaker for the evening at one of your monthly meetings and the venue is within a reasonable travelling distance then please contact me.

Time to Sign off.

I hope you have enjoyed reading this newsletter. I have enjoyed writing it. If you have any topics you would like me to discuss please drop me an email and I will do my best. Please spend a few minutes visiting our website. We have added a lot of new items in the last few weeks so much so we have had to sub-divide some sections to make them more user friendly. There are still a few more items to be added as we have opened an account with Hobbyco. One of the more prominent additions will be Monokote. This polyester covering material has been around a long time and is highly regarded.

#### Final Comment!

If you are experiencing the occasional intermittent loss of signal on 2.4Ghz check Rx aerial positioning and condition of Rx battery / switch harness. If using a BEC (battery eliminator circuit) check the current rating. It could be that when the servos initially switch on under load this over-stresses the battery / BEC and there is a momentary voltage drop causing the Rx to drop out!

Happy landings

Stan and Sheila

PS Have a look at the KST245MG servo – 8mm thick! We are impressed.

[Pictures of the new Electric Wingbat 48E](#)







