PMP Spring Newsletter 2016

Welcome

The dark evenings have almost disappeared. Customers are slowly drifting back as the days get longer and the weather becomes more benevolent for flying. We have been busy over the winter adding new products to our inventory and designing a new model to add to our ever growing range. As I write this newsletter on a train to Heathrow for a working holiday in Boston, putting Pepperpot development on hold for a few days. The model is built, plan, instructions and kitting list 98% complete. All that is left to be done is get flying shots for box label and the actual kitting!

Hopefully there is plenty of newsworthy stuff in this newsletter to keep you reading to the end. As with precious newsletters most of the topics discussed are the result of conversations with modellers over the last couple of months.

Spektrum DX9 Transmitter On/Off Switch

We have been advised that the DX9 Tx On/Off switch is a soft switch and does not disconnect the battery from the main control board (PCB). When the Tx is switched off power is maintained to the motherboard to allow the microprocessor to shut down in an orderly manner and maintain system settings. The reason for discussing this is our local club is very hot on checking the failsafe is working and correctly setup. The motor should go to failsafe within a few milliseconds of contact being lost. This was not happening during ground testing as it takes the micro processor several seconds to shut down. On contacting the service department at Horizon we learnt that the micro processor can take up 20 seconds to shut down. Fortunately this problem has been addressed in the latest version of the software which can be downloaded from the Horizon website. Before you can download the latest version of the software you must first register your transmitter on the Horizon website. Also, you must backup Tx data on the SD card. If your Tx is not operating the latest version of the software then, as a last resort, to carry our a failsafe check first tether the model in a safe place with no one standing in front of the model. Then disconnect the Tx battery with motor running at low idle. The motor should shut down immediately. Quite often during failsafe checks the motor does not always shutdown completely. The main reason for this the throttle pulse width is too narrow (control travel throw (EPA)). In parallel with this to arm the speed controller we sometimes have to increase control travel. The opposite can also apply to the low throttle setting. It could of course be due to the throttle not being in the low throttle position when binding / paring!!

Jittery Servos

There are a number of reasons for servos to be jittery, some of which were covered in our last newsletter. The main one being, dirty or worn feedback pot. On servos with carbon track feedback pots the ‘wiper’, over time, can ‘scrape’ carbon from the track. This builds up on the ‘wiper’ causing the servo to be continually looking for the correct demanded position. A second common cause is a worn gear train. This appears to be more common on metal gear servos. Another reason for slack in the gear train is slop between the output shaft and the servo case top. This is also a common problem with some budget servos.

Since the introduction of 2.4Ghz some 8yrs ago transmitter frame rates have shortened from 20 milliseconds (50Hz) to less the 10mS (100Hz) on some Txs. Some servo amplifiers cannot cope with this faster frame rate particularly with the increased positioning accuracy associated with going from 1024bit to 2048 bit. As a consequence the servo spends all its time chasing its proverbial tail eventually burning itself out ala the Hitec HS65MG+ problem (I am still awaiting a response from

Hitec!). Another jittery servo problem we have had experience of is worn transmitter stick pots. In addition to causing servos to jitter they can also fail intermittently. When this happens Channel 2 becomes Channel 1 and 3 goes to 2 etc. One more possible reason for jittery servos. The voltage of 6v NiMH battery pack when taken off charge can be in excess of 7.5v, This high peak voltage can sometimes make the servo amplifier become unstable causing it to oscillate. If left the servo will get very hot and burn out. Batteries when taken off charge are best left to rest for a while before being used. This used to be recommended practice for transmitters. Many a Tx fuse has been blown after switching a transmitter on just after the Tx was taken off charge.

Speed Controllers (ESC)

We are often asked why we nearly always recommended a higher current speed controller than recommended by other purveyors of motors and ESCs. There are two reasons (one not being to extract more money from customers!). The first is that should the motor demand more current than the recommended maximum, either as a result of too large a propeller being fitted or a mechanical / electrical fault with the motor it is better that the motor fails than the ESC if you are using the ESC Battery Eliminating Circuit (BEC) to power the radio equipment. If the BEC (ESC) fails then the model is going to crash!! The second reason is the less stressed the ESC is the more efficiently it works. I am aware that most ESCs have a thermal cut-out to protect it from current overload but we do not want this to cut in at a critical time in the flight.

Two clues the motor is drawing too much current than it should be are the motor making a funny noise or the ESC continually cutting in and out. The first could be due to an oversize prop or a loose permanent magnate in the motor. The second too low a current rated ESC.

PS. When programming an ESC (best done with a programming card) set the motor to soft start unless you specifically want it otherwise. The reason being, if the throttle is accidentally moved rapidly from low throttle to full throttle there is an almost instantaneous transition from zero torque to maximum torque which is more often than not sufficient to rip most motors from their mounts.

Copydex

As a result of unintentionally donating another model to Neptune (more later) I needed to build a replacement. So after spring cleaning, unused for many years, my remaining Step Four CNC foam wing cutter and relearning the basics of DOS I cut myself another set of XPS blue foam core wing panels. Fortunately I still had a supply of obechi veneer but no Copydex! I did not realise how difficult it would be to find a local source or for that matter how expensive it was. Not wishing to pay £40.00 plus for 5 litres not mention a £25.00 carriage bill (next size down was an inadequate 250ml) I searched for a possible water based substitute. It had to be water based as a spirit based adhesive would attack the foam. I finally settled on StikaTak Carpet & Vinyl Adhesive at a very reasonable £5.99 at the likes of B&B although I only paid £2.99 at a local cut price store. I must confess I had used it before with mixed results hence my search for a real latex based adhesive. When using Copydex both surfaces are coated with slightly watered down adhesive and leaving them to dry before joining. Both surfaces must be dry before mating to avoid the veneer splitting as it dries out. The problem with the StikaTak is that it needs to be ‘tacky’ when the two surfaces mated. To overcome this problem I coated both surfaces with watered down adhesive (StikaTak is very thick in the tub). Left them overnight to dry as before but before joining them I coated both surfaces with a more watered down thin coat of Stika Tak, to make them tacky again before joining them. I hoped, using this new technique the veneer would not split. Success. I then replaced the wings in their cores and left them under heavy weights for 24hrs. Later inspection of the cores revealed that other than

the edges where there was inadequate adhesive coverage the bond was, in my opinion, stronger than that of Copydex and at a fraction of the price!

Tip: If cutting foam cores include the leading edge and extend the trailing edge beyond the rear spar. Trim veneer to the edge of the foam. After veneering trim, down to size using a bandsaw. It is much easier than trying to accurately trim the veneer using a knife!

Another Gift for Neptune!

A couple of weeks ago I launched my favourite aerobatic slope soarer into quite a stiff blow after carrying out control checks etc. The model gained a little height but failed to penetrate in the strong wind. The last time I flew my Super Bedlam the wind was much lighter and the model was flown with a touch of up trim. I put in a small amount of down elevator to penetrate in the very stiff breeze and the model responded by going into a shallow dive. After franticly waggling the sticks for a short time and getting no response I watched the model dive into a very rough sea. The reason for writing about this sad tale is that it raised a number of cautionary issues. From file records on the Step Four computer it would appear that I made the model in 2006 so it was almost 10 years old. The 35Mhz RC equipment was new when fitted and other than replacing a rudder servo nothing else had been replaced except the Rx battery. The model had not been flown for several weeks so before charging I checked the battery with a battery checker. The red and yellow LEDs illuminated. I took this as a healthy sign so charged the battery. After charging the two green LEDs lit up to complete the set. We tend to take our RC equipment for granted and tend not to service it regularly. Rx batteries tend to have a life of 3-4 years no matter how little they are used so need to be cycled every few months as a health check. Also when using a battery checker to check the Rx battery check at both the battery plug end and the Rx plug end of the switch harness. If the switch harness gives a lower reading than the battery terminal replace the switch harness as this could indicate a faulty switch or black wire corrosion.

Black wire corrosion is an ever present threat particularly when moisture is present. Whilst all my models are stored in what we would consider a dry environment over 10 years it would be easy for black wire corrosion to rear its ugly head. The moral here is to disconnect the battery from the switch harness at the end of a flying session to prevent the corrosion spreading to the switch harness. Another cause for anxiety is oxidisation of the connector terminals. Most are gold flashed to minimise oxidisation but in the early days most equipment manufacturers did not gold flash their connectors. To remove any oxidisation just disconnect and reconnect terminals a few times to clean them. This also applies to transmitters fitted to modules (it was recommended on JR equipment). I will never know what caused my Super Bedlam to go to a watery grave but I must say a big thank you to my flying companions who risked life and limb helping me search for it on the St Agnes cliff face.

CorelDraw

For local customers I occasionally laser cut parts for them on the condition they produce the cutting files so that all I have to do is load them into my Laser computer and cut the parts. Laser cutting parts is quick and easy but producing the cutting files is a time consuming task. I produce all my cutting files and plans using CorelDraw Suite 4 so I get my customers to either produce the cutting files on CorelDraw (preferred) or to supply a DXF file which I can import into CorelDraw and amend as required. I feel I am cheating using a graphics package rather than a CAD package but could not get my head around AutoCAD! CorelDraw is much easier to use. Recently two customers availed themselves on this service. One downloaded a 30 day trial of the latest full version CorelDraw Suite 7 to produce his files, the other bought the cut down Home / Student version. Neither produced CDR files compatible with my version of CorelDraw. They are not backwardly compatible. The customer

with the 30 day full trial version was able to save the file in DXF format so we were able to import them into my version of CoralDraw and cut the parts. The customer with the cut down Home / Student version was unable to save his files in DXF format so had to download the full 30 day trial version. He has since bought a second hand Suite 4 version for future use. The Home / Student version of CorelDraw later than Suite 4 does not allow files to be saved in the DXF format as this would allow the files to be used commercially. Also files produced on later versions of CorelDraw cannot be accessed on earlier versions of the program.

Spektrum DX6i Countdown Timer

We recently had a DX6i transmitter returned to us as faulty? Every 8 or 9 seconds the timer skipped a digit. I checked a number of DX6i Txs we had in stock and they all skipped a digit every 8/9 seconds. When I contacted the service department at Horizon they were unaware of the issue and on checking a number of their DX6i Txs got the same result. We discussed this further and came to the conclusion that the Tx's micro processor was taking slightly longer than a second to update the LCD display, hence every few seconds it had to play catch-up and skip a digit. Other than skipping a digit every few seconds the timer kept perfect time and other Tx functions performed as per the label on the box. The customer, who was not known to us, wanted a second Tx for a meeting that weekend and was worried there may be problem with his Tx after allegedly dropping it. It was late Thursday afternoon and insistent that it was next day delivery. I had a curt email from him a few days later saying he was returning the Tx as it was faulty and demanding a refund. I courteously replied to his email asking what the problem was. No reply. The Tx duly arrived back a few days later and we refunded the customer's money. I also emailed him re the results of our investigation into the 'fault'. Again no reply. This upset us as it made us suspicious that we had been used and the customer had pre knowledge of this anomaly and for whatever reason needed another Tx for the weekend. When we got the Tx back we found model memory Nos. 1-7 empty but 8,9,10 occupied. Had the customer had the decency to talk to us we would have done our best to help him even if it meant lending him a Tx for the weekend.

Brass Aileron Horns

This tip was passed on to us by a well known large scale scratch build modeller. He uses M3 brass closed loop connectors as aileron horns. These are screwed into an M3 tapped hole in hardwood blocks mounted in the control surface. After setting up the controls the horn is locked in position using thin Cyno. Thank you Chris.

Pepperpot

As mentioned in the introduction our latest release will be the Pepperpot. An odd name you may say but there is a story. Our daughter recently called her mother Mrs Pepperpot after said named children's story character. Implying that her mum was shrinking! Research on the internet revealed Mrs Pepperpot is a registered trade mark and also after the age on 38 we allegedly shrink by 1/2 in (12.5mm) every 10 years. I am not sure how true this is as we seem to have only shrunk at half that rate! Anyway back to Pepperpot. As you can see from the photos it is a 49in (1250mm) span low wing sport aerobatic model for 3536/42 size motors around 400 watts using the economically priced 2200 / 2700 3S LiPos. Those who have seen the model in the flesh have passed favourable comments re its looks styling and flying. Construction follows our now standard practice of a fully sheeted built up wing with balsa / ply reinforced fuselage sides.
Incidentally we have received a number of very favourable comments on the kitting of the Shindig and how much they have enjoyed building it.

Goodbye!

This newsletter is a bit of a tomb so congratulations if you have genuinely got this far without falling asleep. Our hobby is continually evolving and since the introduction of 2.4Ghz the pace has hotted up considerably hence the variety of topics discussed in our newsletters. Before signing off a plug for our on-line www.phoenixmp.com Please pay it a visit. A lot of new items have been added since the last newsletter. We still have plenty of Spektrum DX6is in stock at the silly price of £74.95 (£25.00 cheaper than most retailers and still DSM2 compatible). We consider this set one of the best entry level sets available as it is so easy to program and has all the functions you will need in the early stages of your flying career and beyond. We use one for all our sport electric models.

Happy landings

Stan & Sheila

PS. PMP has just celebrated it's **40th** Birthday. Lets hope we have a few more.

Pepperpot photographs


Pendulum

Super Bedlam