

Rotorworld

3D CHAMPIONSHIP SPECIAL

Reports from AIR, XFC, Bulls and Heli Masters

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Align 850MX Dominator worth over £200

ON TEST

T-Rex 250

Align's baby T-Rex returns, but now it has a DFC head

HOW TO

Flybarless set-up

Our guide to programming the Ace-RC GT 5.1 FBL controller

TECHNOLOGY

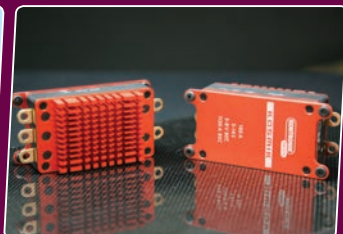
Align 850MX

We take a look at the powerful new Align Dominator motor

Kyle Dahl wins the toughest 3D championship in the world! Full report

HELI MASTERS 2013

Inside: TT FBL head • Cool Kosmik • Silverlit helis • Test update



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Cover image by Neil Mead

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Practice makes perfect

I've just returned from a hot weekend of the best 3D action at the Heli Masters competition held in Venlo, The Netherlands. Although there have been previous Heli Masters events held in Germany, this was a new one launched as part of a 'world series'. The organisation was generally very good considering it was a new event, but what really made it special was the incredible displays of skilful 3D flying by the pilots. With possibly the best quality field of world class heli pilots ever assembled it was always going to be a very hard fought contest. What it delivered was some of the most spectacular 3D I have ever witnessed. It was clear who the eventual winner in the Professional class would be right from his first flight. Kyle Dahl from the USA, and lead pilot in the Mikado 'all star' team, was just on another level all weekend, producing manoeuvres which were perfectly executed and

he never put a foot wrong. As his main rivals pushed to, and in some cases, beyond the limit whilst trying to catch him, Kyle kept to his game plan and delivered perfect flight after perfect flight.

So what's his secret? Well he obviously has amazing natural ability and unbelievable spacial awareness which is a prerequisite for 3D flying and of course he has great machinery that's perfectly set up, but his real secret, which isn't all that secret, is that he practices and practices a lot. He puts in flight after flight until he's happy he can pretty much fly with his eyes closed so when it comes to a big competition he can just relax and to a certain extent zone out and go into autopilot. So the sport of 3D RC model helicopter flight is just like any other, to be the best takes practice and dedication.

Of course I realise we can't all become 3D gods, and many of us don't even aspire to be, but the one

thing we do all want is to be better. To have a great flight every flight and minimise mistakes which can of course lead to costly crashes. So the only answer is to practice. Easier said than done I know, and I speak from personal experience as with a busy work and family life finding a decent amount of flying time is always tricky. Luckily these days there is always the simulator available when time is short or the weather's not on your side so it's worth spending some time on this when you can.

And that brings me back to the Heli Masters and something else that stood out for me was the age of the pilots. I realise I am obviously getting older, but the competitors at these events are definitely getting younger to the point that at the Heli Masters the youngest competitor was just eight years old. Sakkarin 'CD' Konthon from Thailand is not just young and managing to pilot an RC helicopter and do some mild 3D



sense

manoeuvres, no, he is a full-on 3D expert who finished in fifth place at the biggest 3D contest in the world which is just incredible and he earned the utmost admiration from everyone at the event.

Like many sports these days, 3D is becoming a young person's game, but that doesn't preclude those of us who are slightly more advanced in years than CD from having a go, and more importantly, enjoying ourselves and getting some self satisfaction when we have a good flight. I guess what I'm trying to say in a nutshell is get out there, practice when you can, but make sure you enjoy every minute of it as at the end of the day flying RC helicopters of any shape, size, type or scale should above all else be a fun exercise.



Neil Mead

**DON'T MISS
THE NEXT ISSUE
OF ROTORWORLD
ISSUE 90 (OCTOBER 2013)
ON SALE 6th SEPTEMBER
SEE PAGE 71
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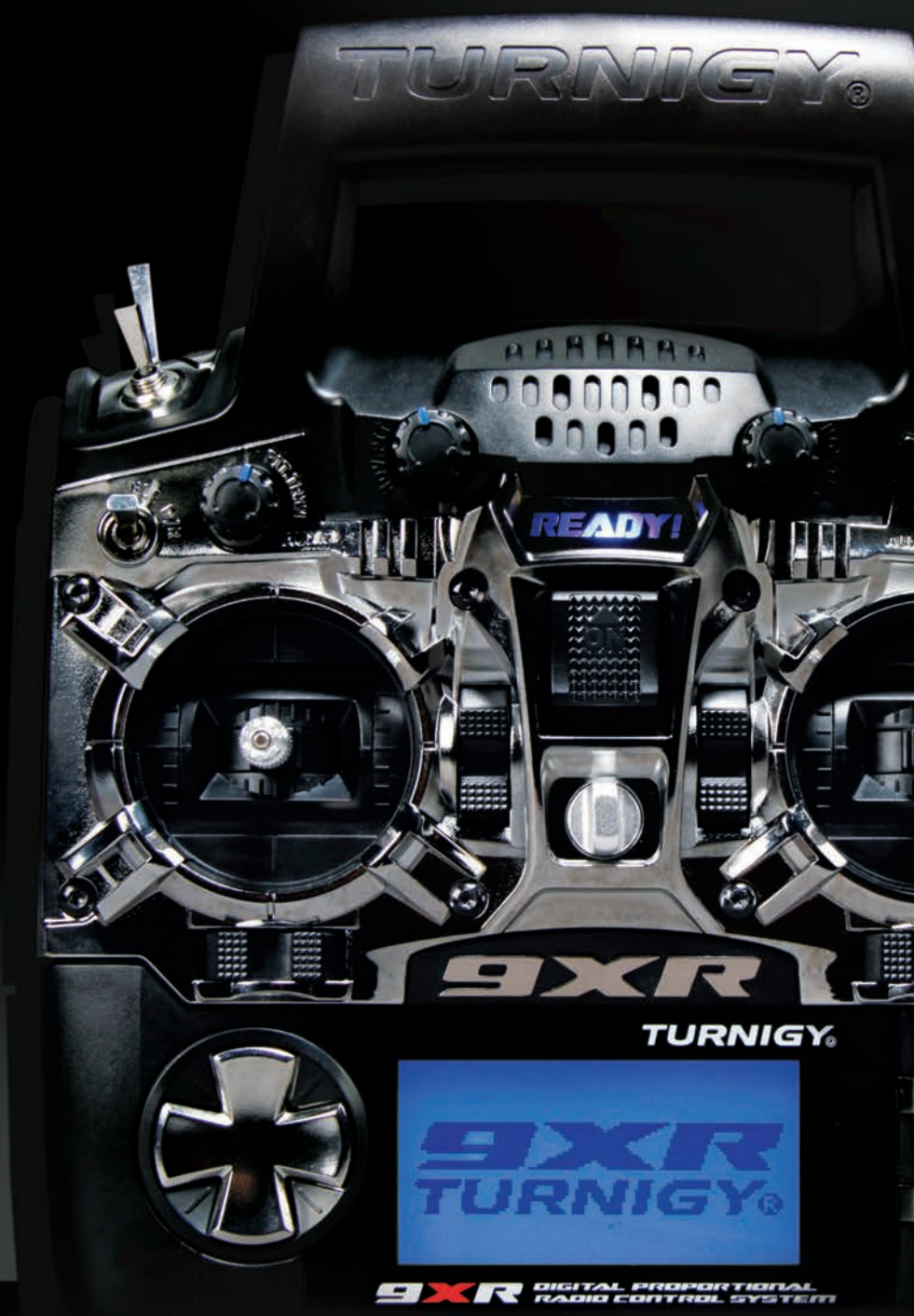


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Kyle Dahl wins the Heli Masters

The Heli Masters World Series 3D competition took place on the first weekend of July at TrafficPort, Venlo, The Netherlands. With one of the best quality fields of RC heli pilots ever brought together, the competition was always going to be hot. And so it was, and as the pilots battled it out over three days of set manoeuvres, freestyle and flights to music, they put on a fantastic display for the 5,000 fans who attended the event.

After a weekend of intense 3D action, it was the USA's Kyle Dahl who put everything together and produced a faultless performance earning a maximum score from the judges and taking the first Heli Masters world championship title in the Professional class with his Mikado Logo 700. Duncan Bossion from France was a close second place with his TSA Infusion 700E, with Michael Wisbacher of Germany third also flying a Logo 700.

The competition was just as tough in the Advanced class, but it was Italy's Mirko Cesena who took the honours also with a Logo 700 followed by Oftek Katzav of Israel second with yet another Logo 700 and Luca Pescanti of Italy third flying an Align T-Rex 700E DFC. The entire event was extremely well organised thanks to Christoph Dietrich and his team and the commentary was top notch thanks to Nik Johnson and Bert Kammerer.

Turn to page 20 of this issue to read the first part of our in-depth report from the event.

Amerang and Model Zone in administration

Just as the last issue went to press with news of a new branch of Model Zone opening in London, we received news that holding company Amerang Group, distributor of Thunder Tiger products in the UK, has been put into administration.

According to both the Amerang and Model Zone websites: "On 26 June 2013, Richard Michael Hawes, Nicholas Guy Edwards and Robert James Harding of Deloitte LLP were appointed Joint Administrators of Modelzone Holdings Limited, The Amerang Group Limited, Modelzone Limited and Amerang Limited (together the "Companies"). The affairs, business and property of the Companies are being managed by the Joint Administrators. The Joint Administrators act as agents of the Companies only and contract without personal liability. The Joint Administrators are authorised by the Institute of Chartered Accountants in England and Wales (ICAEW). All licensed Insolvency Practitioners of Deloitte LLP are licensed in the UK."

This is obviously bad news for the UK model trade and we are hopeful that both companies will be rescued and continue to exist in some shape or form. We'll keep you posted on progress.

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PILOT BELIEVED TO BE KILLED BY HIS HELI

It is with great sadness that we report the death of 41-year-old, Swiss heli pilot, Regie Von who is thought to have died following injuries sustained while out flying his Gaiu X7 RC helicopter alone.

Regie's body was discovered by a walker, about 25km from Lucerne in the Mauensee area of Switzerland. It is reported that he had severe cuts on his arms and head. Local police have launched an investigation into the matter, and while the exact circumstances surrounding his death still haven't been disclosed, it's likely to assume that the helicopter caused the injuries.

Though RC helicopter related deaths are rare, they do happen on occasion: In 2003, a Texas RC instructor, Ronald Kyle, was struck in the throat by an out of control remote-control helicopter, and other deaths have been reported in both Hong Kong and Brazil.

It is obviously very bad news to hear of a fellow heli pilot losing his life doing what he loves and it's a stark reminder to all of us that RC helis can be dangerous and flying alone is a bad idea. Always make sure you have someone with you, or at least tell someone where you are going, and always treat an RC heli with respect and fly safe for your own sake as well as others around you. Our condolences to Regie's friends and family at this time.

As Rotorworld went to press, members of the RC heli community were discussing the possibility of setting up a memorial fund for Regie. We will keep you informed of any further news.

Alexei Nezdayminov wins 3DX Open Moscow

Another successful 3DX Open Moscow took place at the Ulyankovo Aeromodel Club in the Mitishy Province just to the north of Moscow on 21 - 23 June. 3DX is very much alive and well in Russia, the first 3DX Russia was in 2008, organised by Vladimir Golubev, who appeared at 3D Masters in the same year. Since then, the organiser has been Dmitry Derigin, who has also visited 3D Masters as a spectator along with Igor Kulichik, main sponsor of the event and Head of Organisers

For 2013 the field was drawn from 25 Sportsman pilots (who would fly set manoeuvres and freestyle or flight to music) and five Experts, who would fly set manoeuvres, freestyle and music.

In the Sportsman Class, Petr Kokorev took the victory, followed by Ilya Volkov, Ury Mironov and Yaroslav Lubimov. The Expert Class was dominated by Alexei Nezdayminov, with Euginiv Dyakov, Vadim Lukyashko and Dmitry Franchuk close behind.

In addition to a prize of 100,000 Roubles (around \$2,000), Alexei was presented with a magnificent 3DX Russia brooch made from gold and encrusted with 75 real diamonds.

We will have a full report from this latest 3DX event in the next issue.



Midland Helicopter Club fun-fly another success

The Midland Helicopter Club wants to formally thank all those who supported the club's recent annual fun-fly once again this year. In times of such economic difficulty as we are currently experiencing, it is amazing how many companies continued to support the club and the sport and it is greatly appreciated by the membership and all those who visited over the weekend.

While Saturday was a little quieter than normal (possibly due to a clash with MK Grassroots comp) Sunday was very busy indeed and the event enjoyed very good weather all weekend.

We were visited by a number of new faces and new club members which shows there is still a growing interest in our hobby and then by many of the long standing 3D fraternity. Almost all of the Midland Helicopters sponsored pilots attended so we really enjoyed watching flights from the likes of Rob Turnbull and Duncan Osborne. One thing which surprised me a little was the amount of nitro machines in the line up this year, as it had really dwindled over the previous 12 months and when talking to Rob Turnbull (of Midland Helicopters), he commented that the new and larger nitro engines are now a match for electric helicopters in all but the highest of torque situations.

The raffle was met with the usual enthusiasm and amazement for both the volume and quality of the items donated, it is without doubt the best I have ever seen at any event and required us to put out a second table for the first time ever! We always label up prizes so the recipient is clear who they are

receiving it from and we also run through the entire list of prizes and sponsors at the start of the raffle.

Let me again thank everyone for the amazing support and kind generosity on behalf of myself and all of the members at MHC.

Darren Swales,
MHC Chairman



Horizon Hobby introduces SAFE flying

Horizon Hobby has long been a leader in bringing game changing technology to the world of RC hobbies. The company pioneered 2.4GHz control for RC models and its exclusive AS3X stabilisation technology has tamed the effects of wind, turbulence and torque so RC aircraft can fly better than ever before. Now Horizon Hobby is introducing SAFE technology - another breakthrough innovation that is claimed to vastly improve the way modellers experience the wonder of RC flight.



The groundbreaking SAFE (Sensor Assisted Flight Envelope) technology is said to make RC flight incredibly easy even for the least experienced user. Its capability gives a model aircraft spatial awareness making it possible to provide flight envelope protection and a degree of security that new pilots especially have never had. Every pilot's needs are different, that's why multiple levels of flight envelope protection are selectable through the transmitter so that when flight conditions change, so can the level of protection. SAFE technology only limits the attitude of the aircraft. It in no way interferes with the freedom of control within the limits chosen by the pilot. In addition, SAFE technology makes smooth flight easier by battling windy conditions for you so that you can focus on guiding the aircraft the way you want.

Best of all, sophisticated SAFE technology doesn't require any work to enjoy. Every aircraft with SAFE installed is ready to use and optimised to offer the best possible flight experience. SAFE technology delivers: Flight envelope protection you can enable at the flip of a switch; smoother flight capability that battles windy conditions for you; and multiple modes let you adapt SAFE technology to your skill level

Flight envelope protection - Multi-axis sensors combined with unique software create an intelligent aircraft that understands its position in the air relative to the horizon.

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Find out more on the Horizon Hobby UK website at www.horizonhobby.co.uk

Latest AR.Drone is a hit with TV presenter Jason

Gadget Show presenter, Jason Bradbury was recently happy to be photographed with the latest Parrot AR.Drone 2.0 Power Edition Quadricopter.

Flying Toys are delighted to learn that Gadget Show Presenter Jason Bradbury loves the brand new Parrot AR.Drone 2.0 Power Edition Quadricopter. Already acknowledged as a firm AR.Drone 2.0 fan, Jason has just received the latest version, and can't wait to fly it, with two bigger capacity batteries, and three extra sets of different colour propellers.

We understand that the Parrot AR.Drone 2.0 Power Edition and sensational Parrot GPS Flight Recorder, will be featured on a future episode of The Gadget Show, as soon as their schedule allows. Meanwhile, both Jason and Rachel look forward to testing these exciting new products personally, at the earliest opportunity.

For further details contact UK Distributor Flying Toys on 01702 295110 or see:

www.flyingtoys.com

(Picture courtesy of Peter Gray & North One Television.)





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ON TEST

Baby's Back and Better



AS ALIGN CONTINUES TO UPDATE ITS ENTIRE RANGE OF HELICOPTERS, THE COMPANY HAS FINALLY GOT TO THE SMALLER END OF THE SCALE AND HAS ADDED A DIRECT FLIGHT CONTROL (DFC) ROTOR-HEAD TO ITS LITTLE T-REX 250. HERE, DAVE DIJKMANS TESTS OUT THE 'PLUS' VERSION WHICH IS SUPPLIED IN AN ALMOST 'BIND AND FLY' PACKAGE





Align has now launched a new version of the T-Rex 250. The first prototype of this little machine was first seen back in

2008 at the Align Fun Fly in Taiwan and captivated all the pilots. Its design was like a big helicopter but small in size and it was also able to fly 3D! In 2009, Align launched for sale the first T-Rex 250 in flybar version, then the SE and Pro versions came along. Five years after its launch the company has now released a BTF ('Bind To Fly') version. It is supplied fully assembled by the factory and after some small setting changes you just have to link it to your transmitter and fly. This version incorporates the new 3GX MRS flybarless system, DFC rotor-head and affordable plastic parts that keeps the cost down.

UNBOXING

Align supplies this model in a slightly bigger box than normal as it comes fully assembled. Inside the box you'll find some foam pieces to protect the helicopter during transport. Also included is a piece of paper that tells you that the manual can be found on the CD ROM included and some other important safety notices. Lastly there's a small bag with some velcro and other flybarless system accessories. The first impression of the helicopter is very good and reminds me of the T-Rex 450 Plus DFC.

The assembly of the helicopter is very well done and all wiring has been carefully placed. You only need to do a quick check on the mechanics, the configuration of the transmitter and install a battery to fly. The good news is that the MRS 3GX flybarless system is compatible

This is what you will find when you open the box, the hard work is already done

with Futaba, JR and Spektrum. It's nice to open the box and see that you are able to fly the model the same day, as all the hard work is already done for you.



Features at a glance...

- T-Rex 250 Plus DFC BTF ('Bind To Fly') complete package is assembled and tuned at the factory. Suitable for Futaba S-FHSS 2.4Ghz system/JR DSM2 and Spektrum DSM2/DSMX system transmitter to bind and fly.
- New style linkage rod design: complete assembly increases linkage rod rigidity, allowing the pitch slider (follower) to be omitted, resulting in a head assembly that is much simplified and rigid. Equipped with newly released 3GX MR flybarless system, with FHSS 2.4GHz built in receive function, support Spektrum DSM2/DSMX or JR DSM2 satellite. For simpler and more direct setup, with setting optimised for T-Rex 250 Plus DFC, resulting in more stable and more preferable control feel than ever before.
- Designed specifically for DFC rotor-head system, improving DFC connecting rod's strength and minimising linkage detachment during extreme flight manoeuvres.
- Material integration technology used in frames, improving rigidity and simplifies maintenance. New style quick removable gyroscope mounting platform integrated with rudder servo mount, effectively utilises frame's inner space for simplified maintenance.
- New anti-rotation guide.
- Strengthened landing skids enhanced its durability.
- High efficiency shaft tail drive system, effectively increase rudder performance and decrease power loss.
- Utilises newly developed, highest spec and superior anti-wear material to increase the overall strength and durability for torque tube drive gear. Effectively minimise gear stripping and crash damage.
- Single unit tail belt unit with the new counter weighted tail blade grips make it easier assembly and improving rudder efficiency.
- Utilises dual point attachment design for zero play and higher precision control feel.
- Newly styled aerodynamically canopy for the ultimate fit.

ROTOR-HEAD

Herein lays one of the strengths of the new T-Rex 250. It incorporates the new DFC head which is already completely implemented throughout the whole Align T-Rex family. In the BNF version Align decided to include plastic blade grips and arms. Personally I see an advantage in terms of cost because in case of a crash this arm just breaks and the rest doesn't suffer much damage and must just be replaced with a new arm. The swash-plate included is the aluminum DFC version. With the DFC system we lower the CG (centre of gravity) which improves speed and power for the demanding 3D manoeuvres and reduces drag in flight. It also includes 205mm carbon fibre blades.

MAIN FRAME

The main frame is composed of four sides and manufactured in carbon fibre. The lower frames carry plastic spacers with some kind of plastic rails where a carbon fibre tray is located in the rear part. The 3GX MSR flybarless system is installed on this tray as well as the tail servo. The servos are mounted into the incorporated plastic pieces in the frame and tightened directly with screws. The main-shaft passes through two plastic bearing blocks. The front of the frame houses the speed controller and on top the 3S 800mAh battery.

The bottom plate is plastic and the

View of the new tail gear case and torque tube system



The menu screen of the included CD-ROM

The 3GX MR flybarless system comes installed in the lower part of the frame



This small T-Rex has a very attractive appearance



skids are screwed directly into the bottom plate by four screws. The skid has been redesigned and uses the same construction as the T-Rex 450 Pro, in one solid piece and made out of plastic. In the tail gear case the new black torque tube gears are already mounted, they should be stronger than the previous white ones. The canopy is attached to the frame by two aluminium canopy supports. Align has decided to include a plastic painted canopy, with a very good finish.

If you want to do some maintenance on this helicopter you need to acquire the special tools for the 250. These are normally always included in the kit of a T-Rex 250 but in the BTF version they are not. The tools needed for this helicopter are the H0T00007 – Hexagon Screw Driver, H25080 – Philips screw driver and the H25070 – 250 Ball Link Plier to remove the ball links.

TAIL

The tail uses the new torque tube drive. I remember that with the first T-Rex 250 that came with tail belt drive, it was very difficult to adjust it to get it working perfectly, in fact it was almost impossible. The tail gear case is made of aluminium and comes with the new black tail gears. The blade grips are also aluminium, but the tail pitch assembly is made out of plastic. It utilises dual point attachment design for zero play and higher precision control feel.

The tail boom brace and the vertical fin are from carbon fibre. It uses a traditional control rod with one ring mounted to the tail boom. In my opinion it is a good move to use the torque tube design in this Plus version, since due to its small size it will work better than the belt drive.

ELECTRONICS

The kit includes very good standard electronics. Three cyclic servos, Align DS415M (2.4K-0.08sec/6V), a tail servo Align DS425M (1.2K-0.05/6V), the new RCE-BL15P speed controller, 250MX brushless motor (3600KV) and the 3GX MRS flybarless system. It is important to leave the flybarless system installed as it comes pre-assembled and do not change the position, the manual indicates that you may have problems in terms of the direction in the sensors if you do so. The motor comes standard with a 15T pinion. In the manual it explains how to programme the speed controller, the 3GX system and the set-up for Futaba, JR and Spektrum transmitters. If you use Futaba you can bind it directly to the MSR unit, in case you use a JR/Spektrum transmitter you need an additional satellite receiver.

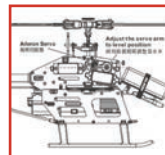
3GX MRS SETTINGS

After you bind the 3GX MSR unit to the transmitter you need to connect power. If the LED is green it means that you had a successful power up. The set-up procedure is as follows:

After system initialises, press 'SET' once to enter 3GX MRS set-up mode. While in set-up mode, the status LED will flash a number of times indicating the correct setting selection. Press the 'SET' button to skip to next setting. 3GX MRS must complete all six settings before they are memorised.

Note: the throttle stick must remain in centre position during set-up, pitch curve must be at 50% position and remain fixed.

• AILERON SERVO NEUTRAL POINT



Diagrams from the manual which indicates clearly every step you need to do for adjusting the MSR 3GX flybarless system



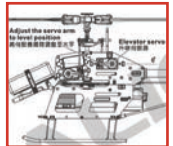
Adjust it in your transmitter, connect the battery and this is all you have to do to fly

SETTING: At this time you can use RUD on the transmitter to trim the neutral position of servo 1 (aileron)

• ELEVATOR SERVO

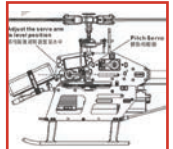
NEUTRAL POINT

SETTING: At this time you can use RUD on the transmitter to trim the neutral position of servo 2 (elevator)



• PITCH SERVO NEUTRAL POINT SETTING:

At this time you can use RUD on the transmitter to trim the neutral position of servo 3 (pitch)



• RUDDER GYRO

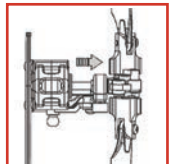
DIRECTION SETTING:

Use RUD on transmitter to reverse the direction.



• RUDDER LEFT TRAVEL

LIMIT SETTING: At this time the rudder will drift to one side, use RUD on transmitter to set the maximum end

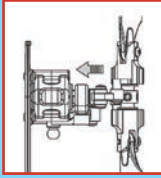


Although it's small, it is a very stable helicopter and very suitable for 3D

point on the left side.

• RUDDER RIGHT TRAVEL LIMIT

SETTING: At this time the rudder will drift to one side, use RUD on transmitter to set the maximum end point on the right side.



This new BTF version can be a good toy to fly during weekdays

IN FLIGHT

The same day I received the helicopter I made the first test flights. The helicopter comes completely finished and ready to fly which is a great advantage. Although it is a small helicopter, I like to fly it outdoors. I took off with the little T-Rex at approximately 4,000rpm and left it hovering for a while to check its behaviour. Despite its small size it is a very stable model, even more impressive considering there was a light breeze. I set the helicopter up as per the manual for this review. With these settings the helicopter has a smooth and easy performance, ideal for those with a basic level of flight.

After some hovering around I activated idle up one and the rotor spooled up to approximately 4,500-5,000rpm and I did some fast forward flying and I noticed that the T-Rex 250 behaved very linear. When performing 3D manoeuvres I realised that there was little travel and the response was slow, so opted for removing the exponential and modified the roll rate on the 3GX MSR unit. With this I got a faster cyclic response for more demanding manoeuvres.

The throttle curve was set at 90% and I noticed it lacked some power for my type of flying. If you want to get more head speed it's a good idea to change

The T-Rex 250 is a helicopter that can be flown in small spaces but enjoyed as a big helicopter




the motor pinion to 16T instead of 15T. Something to keep in mind is that this flybarless system does not allow certain 3GX settings as it carries a very basic configuration.

Regarding the tail behaviour I must say that it has improved significantly with the torque tube system as with the belt. Also the tail is much more accurate.

Equipment used...

Blades:	Align 205
Flybarless:	3GX MRS
Cyclic Servo:	DS415M
Tail Servo:	DS425M
Battery:	OptiPower 3S 850mAh
Motor:	BL250MX
Speedcontroller:	RCE-BL15P

components included in the kit are very good. It comes fully assembled and factory set which can be a good option for those pilots who do not have much time for building, or for beginners who have never assembled a heli of this size.

The mechanics are very simple and easy to access for maintenance. The kit comes with certain parts in plastic which is a good option financially when crashed. That Align has chosen to include the torque tube system in this more affordable version is a fantastic idea for better tail performance. I personally think that this size is a bit small for those who are new to the hobby because it is less stable and more nervous. The T-Rex 250 is a model with which you can fly in very small spaces, but despite its size, you will still have big fun in style. 

Dave Dijkmans

THE VERDICT...

The T-Rex 250 Plus DFC can be considered excellent value for money. The electronic

Tech Spec...



T-Rex 250 Plus DFC BTF

Height:	150mm
Length:	431mm
Main rotor diameter:	460mm
Tail rotor diameter:	100mm
Main blade length:	205mm
Motor pinion gear:	15T
Drive gear ratio:	1:8:4.28
Weight (with motor):	Approx. 250g
Price:	£254.99

Available from:All good model shops
UK distributor:Align
Web:www.align.com.tw





Midland

HELICOPTERS



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Check the website for much more. Click www.modelhelicopters.co.uk



KITS

Align	
T-Rex 100X Super Combo	£79.99
T-Rex 250 PRO DFC Super Combo	£279.00
T-Rex 450 PRO DFC Combo	£344.99
T-Rex 450 Sport V2 Super Combo	£289.00
T-Rex 500E Super Combo	£334.99
T-Rex 500E Pro DFC Super Combo	£554.99
T-Rex 550E PRO DFC Super Combo	£689.99
T-Rex 600EFL Pro Super Combo	£634.99
T-Rex 600E PRO DFC Super Combo	£799.99
T-Rex 600N PRO DFC Super Combo	£669.99
T-Rex 600 Nitro V2 Limited Edition	£557.99
T-Rex 700E F3C Super Combo V2	£1089.99
T-Rex 700E DFC Super Combo	£1069.99
T-Rex 700E DFC Top Combo	£1279.99
T-Rex 700E PRO DFC HV Super Combo	£1369.99
T-Rex 700N DFC Super Combo	£879.99
T-Rex 800E DFC TREKKER Super Combo	£1399.99

Avant	
Aurora Ultimate 90	£699.99
Aurora Electric 90	£649.99

Century UK	
Razor CX 2.4 Ghz	£161.99
Spirit CX V 2.4Ghz	£107.99
KDS 450 QS Helicopter Complete	£229.99

E-Flite	
Blade mSR X RTF	£71.99
Blade 120SR RTF	£112.99
Blade 130X BNF	£149.99
Blade 300X BNF	£229.99
Blade 450 X BNF	£299.99
Blade 500 X BNF	£569.99
Blade 550 X Pro Series Kit	£449.99
Blade CX4 RTF	£169.99
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Blade mCPX V2 BNF	£79.99
Blade mCX2 RTF	£89.99
Blade mQX Quad Copter BNF	£79.99

GAUI	
GAUI NX4 Nitro Kit Combo B	£839.99
GAUI X5 Complete Kit	£449.99

Hirobo	
MANY KITS AVAILABLE, CALL OR GO ONLINE	

JR	
Forza 450 Assembly Kit	£211.45
Forza 450 Combo with Motor/ESC/Servos	£359.95
Vibe 50 NEX Flybarless Kit	£389.99
Vibe NEX E6 550 Flybarless Kit	£529.99
Vibe NEX E8 Leggero Flybarless Kit	£359.99
Vibe 90 SG E12 Hiroki Ito Flybarless Kit	£899.99

PLEASE GO ONLINE TO VIEW EVEN MORE KITS!

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Logo 400 3D Kit and VBar Head	£259.99
Logo 400 SE Scorpion/VBar/Edge Combo	£564.99
Logo 500 Superb Combo	£679.99
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Logo 500 SE Scorpion/Jive/VBar/Edge	£949.99
Logo 550 SX Kit	£429.99
Logo 550 SX Kit	£429.99
Logo 600 SX Scorpion/YGE/VBar/Edge	£1087.99
Logo 600 SE Scorpion/Jive/VBar/Edge	£859.99
Logo XXtreme 700 Kit	£939.99
Logo XXtreme 700 Combo	£1759.99
Logo XXtreme 800 Kit	£1039.99
Logo XXtreme 800 Combo	£1839.99

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Fury 55 Flybarless Kit	£399.99
Whiplash 90 Electric Flybarless Kit	£769.99
Whiplash 90 Gasser Flybarless Kit	£799.99

Outrage	
Fusion 50 Electric Flybarless Pro Kit	£359.99
Velocity 50 N2 Flybar Kit	£329.99
Velocity 90 Flybar Kit	£399.99
Velocity 90 Flybarless Kit	£599.99

Thunder Tiger	
Innovator MD530 (Beginner)	£179.99
Innovator Expert (3D)	£229.99
Mini Titan Sport FBL ARTF	£224.99
Mini Titan FBL Kit	£174.99
Raptor 50 Titan SE Kit	£179.99
Titan X50 Kit/Blades	£287.99
Titan X50 Torque Tube Kit	£329.99
Titan X50 Torque Tube Kit/Engine/Muffler	£449.99
Titan X50 Electric FBL Torque Tube Kit	£299.99
Raptor 90 G4 Nitro Flybar Kit	£649.99
Raptor 90 G4 Nitro Flybarless Kit	£674.99
Raptor E700 Electric Flybarless Kit	POA
Raptor E720 Electric Flybar Kit	£674.99
Raptor E720 Electric Flybarless Kit	£629.99
Raptor E720 Electric Flybarless Combo	£1410.00
Raptor E820 Electric Flybarless Kit	£699.99

Twister	
Micro Twister Ninja RTF	£19.99
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Hawk Army 2.4Ghz RTF	£79.99
Coastguard 2.4Ghz RTF	£79.99
Skylift 2.4Ghz RTF	£104.99
Police Helicam RTF	£149.99
Twister CPX 2.4Ghz RTF	£179.99
Twister 400S Sport RTF	£79.99
Storm 3DX 400 RTF	£249.99

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Futaba 8FG 2.4 Ghz	£294.99
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Futaba 14SG 2.4Ghz Combo	£494.99
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JR XG11 DMSS 2.4Ghz	£589.99
JR DSK12 2.4Ghz	£1799.99
Spektrum DX6i	£114.99
Spektrum DX7S	£185.99
Spektrum DX8	£295.99
Spektrum DX8 Transmitter only	£219.99
Spektrum DX18	£549.99

FLYBARLESS

Align 3GX	£119.99
BeastX MicroBeast + USB Interface	£139.99
Futaba CGY750	£249.99
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Helicommand HC3-SX	£399.99
JR TAGS01	£174.99
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Go online to choose from a massive selection.

GYROS

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Spartan Quark (Black Plastic)	£59.99
CSM SL720	£112.50
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Futaba GY520	£134.99
Futaba GY701 Gyro/Governor Combo	£159.99
JR G770T	£186.99
JR SGS01	£114.99
Align GP900	£115.99

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OS 50 SX-H Hyper Max	£174.99
OS 55 HZ	£229.99
OS 91 HZ-R 3D	£294.99
OS 105 HZ	£335.99
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YS60 SR	£299.99
YS120 SR	£389.99
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Irvine / SC / Webra and Toki engines also available.	
Comprehensive range of engine spares in stock.	
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Lipo Battery

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We also carry Overlander, Fromeco, Scorpion, Spektrum, Thunder Tiger, Twister and Arrowind packs.

Midland Helicopters highly recommends Thunder Power Chargers and Lithium Batteries for excellent performance and the best Warranty available.

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Phoenix RC Simulator V4 USB	£81.74
Phoenix RC Simulator V4 + DX5E Tx	£124.99
Phoenix RC Simulator V4 + DX6 Tx	£169.99
Reafflight G6.5 Heli with Interlink	£159.99
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ALIGN T-REX 700N DFC Super Combo

THE ULTIMATE CREATION

IN 91-120 CLASS
GLOW POWER

3GX
Compact

Specification:

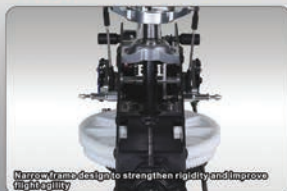
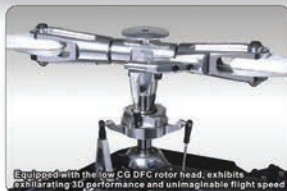
- Length: 1346mm
- Height: 385mm
- Main Blade Length: 690mm
- Main Rotor Diameter: 1562mm
- Tail Rotor Diameter: 281mm
- Engine Pinion Gear: 14T
- Main Drive Gear: 112T
- Autorotation Tail Drive Gear: 104T
- Tail Drive Gear: 21T
- Drive Gear Ratio: 1:8:4.95
- Weight (With Power System): Approx. 4200g

[RH70N01XT]

ALIGN T-REX 700N DFC Super Combo

ALIGN

Focus shots:



Accessories:

- T-REX 700N DFC Kits Set x 1 set
- 3K Carbon Fiber Tail Boom x 1
- 690 3G Carbon Fiber Blades x 1 set
- 3GX Flybarless system x 1
- DS65 Digital servo x 3
- DS65 Digital servo x 1
- B6T 2 in 1 Voltage Regulator x 1 set
- Governor Sensor x1
- 105mm 3K Carbon Fiber Tail Blade x 1 set

THIS IS JUST A SMALL SELECTION OF THE HIGH QUALITY PRODUCTS DISTRIBUTED IN THE UK BY ROBBE SCHULTER UK LTD.

Super Combo
TREX 800E DFC TREKKER
[RH80E01XT]

ALIGN



3GX
Compact

Design Features:

- ★ Designed specifically for aerial photography and cinematography. The long 800mm main blades provides superior flight stability and high payload capacity.
- ★ Equipped with DFC flybarless main rotor system, the extreme low CG design effectively lowers aerodynamic resistance and improves flight stability characteristics.
- ★ Carbon material integration technology is used in frame plate structure, resulting in simple maintenance and operation convenience. Posses both carbon and plastic material advantages, which supplements carbon material to achieve rigid and hard characteristics, not the traditional rigid but brittle characteristics.

- ★ Frame has mounting location for the optional Align aerial gimbal system upgrade, which can be mounted without any modifications.
- ★ Dedicated rudder servo wire routing hole on tailboom mount and tailboom to simplify rudder servo wire run, cleaning up the tailboom's aesthetics.
- ★ Utilizes high spec MOD1 110T CNC helical main gear and MOD 1 tail drive helical gear to increase gear mesh area, and minimize gear noise during flight.
- ★ High quality new tail gearbox design, combined with new dual point mounted tail pitch control assembly to minimize slops and increase rudder control precision.

Super Combo
TREX 800E DFC TREKKER

ALIGN

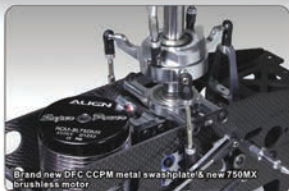
Focus shots:



Equipped with the low CG DFC rotor head, exhibits exhilarating 3D performance and unimaginable flight speed



Innovative sliding battery tray is imbedded into the side frame, providing easy battery access and protection



Brand new DFC CCPM metal washplate's new 750MX brushless motor



Utilizes high spec MOD1 110T CNC helical main gear and MOD1 tail drive helical gear



Frame has mounting location for the optional Align aerial gimbal system upgrade



Dedicated APS control unit and brushless ESC mounting platform to simplify installation



Precision CNC machined aluminum pieces including the servo mount & bottom plate



High quality pre-painted vertical carbon tail fin & new 15.5mm 3K carbon fiber tail blades with thickened 6.24mm tailboom



High quality new tail gearbox design, combined with new dual point mounted tail pitch control assembly



SPEC:
KV: 60KV
Max output power: (Approx. 4400W/750V) x 1
750MX Brushless Motor



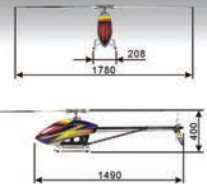
BL750H SPEC:
Start torque: 8.5kg-cm@6.0V
7.0kg-cm@7.4V
Max speed: 0.865sec/60 (15.0V)
0.832sec/60 (17.0V)
BL750H High Voltage Brushless Servo



SPEC:
Start torque: 15.0kg-cm@6.0V
20.0kg-cm@7.4V
Max speed: 0.865sec/60 (15.0V)
0.865sec/60 (17.0V)
BL750H High Voltage Brushless Servo



Castle ICE2 HV 120 Brushless ESC



Specification:

- Length: 1490mm
- Height: 400mm
- Main Blade Length: 800mm
- Main Rotor Diameter: 1780mm
- Tail Rotor Diameter: 301mm
- Motor Drive Gear: 13T
- Main Drive Gear: 110T
- Autorotation Tail Drive Gear: 104T
- Tail Drive Gear: 22T
- Drive Gear Ratio: 1:8.46:4.73
- Weight (With Motor): 3516g

Accessories:

- TREX 800E DFC TREKKER Kits Set x 1set
- 3K Carbon Fiber Tail Boom x 1
- 800 Carbon Fiber Blades x 1set
- 750MX Brushless Motor(450KV) x 1
- 3GX Flybarless system x 1
- BL700H High Voltage Brushless Servo x 3
- BL750H High Voltage Brushless Servo x 1
- Castle ICE2 HV 120 Brushless ESC x 1
- 115mm 3K Carbon Fiber Tail Blades x 1set

3D MASTERS



TRAFFICPORT AIRPORT, VENLO, THE NETHERLANDS WAS THE LOCATION CHOSEN AT WHICH TO STAGE THE LATEST HELI MASTERS COMPETITION.

PART OF THE HELI MASTERS WORLD SERIES OF EVENTS, DURING THE 5, 6 AND 7 JUNE, 55 PARTICIPANTS FROM 14 COUNTRIES COMPETED TO BE CROWNED THE BEST 3D PILOT IN THE WORLD. MORE THAN 30 HOURS FULL OF EXCITEMENT, NERVES, FUN AND ADRENALINE RESULTED IN AN EXCITING CHAMPIONSHIP WITH EPIC MOMENTS. THIS WEEKEND WILL BE UNFORGETTABLE FOR EVERYONE INVOLVED

WORDS: RAQUEL BELLOC
PHOTOS: DAVE DIJKMANS



The location chosen for the Heli Masters 2013 was not new to us, as this is the same place that the famous 3D Masters was held

in 2011 and 2012. Surprisingly the layout of the site this year was different than before. The Heli Masters organisers, led by Christoph Dietrich, decided to build a complete 'city of tents' where the sponsors of the event could show their products. We calculated that each one of the tents was about 70 square metres! Looking back to the last two years

the weather was pretty wet, so a wide covered walkway in the front of all trade booths was prepared where the public could shelter from the rain or sun. This was something really appreciated by the visiting fans. The central area was given over to a German catering service that provided the food during the whole weekend. In this dining area Heli Masters placed some large TV screens so that when you were eating you didn't need to miss any flights as the live stream channel was visible all day long. The entire public viewing area was filled with tables and benches so that the spectators could sit

The facilities, the environment and climate were in perfect condition to hold a world championship

55 pilots coming from 14 different countries, ready to compete for the world's best 3D pilot title in 2013

and rest while watching so many hours of flying.

On the left side of the field they built an impressive mobile stage fitted with spotlights, sofas and speakers specially designed for holding the daily seminars by different brands during the whole weekend and also for the after party with a DJ on Saturday night. Protective fences were used to secure the flight line and the pilot's area. The blue Rotorworld booth was present during the whole weekend in the centre of the field.

On the flight line just behind the flying spot there were the five seats for the



ER CLASS

judges who would decide the champion and just behind them a special relaxing couch for Bert Kammerer and Nik Johnson the commentators of Heli Masters 2013.

The organisation prepared the facilities in such a way to guard against possible rain, but what no one expected was that we would enjoy temperatures up to 37 degrees! There is no doubt that a good event with sunny weather makes it even better.

WHAT IS HELI MASTERS?

In simple words, Heli Masters is an international F3N championship where it's decided who is the best 3D pilot in the world in both Advanced and Professional class. Pilots have to fly three rounds during Friday and Saturday (set manoeuvres, freestyle and flight to music). The top five in each category continues to the final on Sunday. The scores are then reset back to zero and the top five have to repeat all three rounds and perform three flights so the judges can decide who is the best. Saturday evening there is a night flying competition where pilots have to fly with music and surprise the audience, because basically they are the ones who choose who the champion is.

COMPETITORS

This year a total of 55 participants (22 in the Professional and 33 in the Advanced category) took part in the event. Each pilot had to choose six manoeuvres from a list of 24 with difficulty from K5 to K10. F3N is a format where the manoeuvres are

quite different from those of a 3DX format.

Pilots participated from 14 countries and all ages but predominantly as usual the most were quite young. It is incredible that the fight for the title of world's best pilot is usually between 14 to 20 year olds!

Herein lays the key to success. Pilots now start in the hobby very young, spend many hours practicing both on the simulator as well as flying real model helicopters and generally have to follow a very hard training routine. An exception is the small Sakkarin 'CD' Konthon who is just eight years old! And among the most veteran pilots were Rob Turnbull, Alvin Chai and Jonathan Bossion.

Finally some of the most renowned pilots like Daniel Jetchin, Alon Barak, and Colin Bell didn't compete at Heli Masters 2013.

COMPETITION

On Friday, the day started at 8am with a group photo. All the participants posed with their helicopters at the flight line. We want to be honest about our experience during the weekend and the reality is that the opening ceremony and the pilots' briefing was not been the best we've seen. There was some disorganisation at this point.

A few spectators, some very early risers, placed themselves in a line behind the fence and came prepared with chairs, coolers, food and drink and eager to have fun. Friday as usual was a quiet day without many public and when the set manoeuvres rounds are undertaken as this is the least interesting part of the

The 5 judges, including: Alan Szabo Jr., Chris Walton, Dominik Haegele, Sylvere Rey, and Tom Kreuzberger



Compass Model Team, with pilots like Sebastian Zajonz and Daniel Jetschin



The big Gaui team with some famous pilots like Bobby Watts, Jonathan Bossion, Eitan, and CD





In this year's Heli Masters there were several Goblins competing. The 700 model is the most used



Mikado remains a trusty helicopter during competition. Many participants relied on the Logo 700



Special made by Canomodel a Heli Masters 2013 edition of the Gaudi X7



The secret behind the canopy of the T-Rex 700 DFC of Jamie Robertson



The only E-Flite Blade 700 we could see during the competition flown by its designer James Haley

competition, although this year with all the new F3N manoeuvres it was quite entertaining to see. Saturday was the day with the most visitors and Sunday was a short day as the event ends earlier.

The judges of this year's Heli Masters were Alan Szabo, Chris Walton, Dominik Haegele, Sylvere Rey, and Tom Kreuzberger. With the judges in position and the pilots ready, the competition began.

ADVANCED LEVEL

The first round of the championship was the set manoeuvres. At this level pilots choose lower difficulty K manoeuvres. This year's big surprise was the 14 year old Ofek Katzav, brother of the famous Daniel Katzav. He competed with a Mikado Logo 600, and choose K9 and K10 manoeuvres like for example the Palm, the Ball and Twin Peaks. His flight was very good and accurately performed at a slow speed, which shows that you have greater skills. It should be noted that this pilot has been flying for only eight months! He counts on a good teacher and mechanic, his brother and father. We can imagine that during this time he is almost asleep with his radio transmitter in his hands.

He was followed closely by the Italian pilot Luca Pescanti flying with a T-Rex 700E Pro DFC. He also choose four K10 manoeuvres and the other two K9 like the Sunglasses, this got him into second position. Jonathan Yaffe with Gaudi X7 opted for K9 and K10 manoeuvres including: Palm, Twin Peaks, and Sidewinder. The execution was very good getting the third position in this round. Although the set manoeuvres rounds are the most boring ones, they are the most difficult to execute. The manoeuvres are very complicated with reverses, piro, different orientations, etc... usually the set manoeuvres is the round which the pilots are not so keen on. The set manoeuvres require a perfectly adjusted helicopter and less head speed to fly at lower RPMs

to get better results. We cannot forget Mirko Cesena's flight with his Mikado Logo 700, he also chose maximum K manoeuvres like Twin Peaks, Pirouetting Globe Reversal and Sidewinder. This pilot has improved incredibly over the last few months and this is reflected in his score. The young Sakkarin better known as 'CD' went for some very high K rated manoeuvres like the Palm, Twin Peaks, The Ball, etc .. getting in seventh position after this round.

Friday afternoon started with the freestyle round. It consists of a three minute free flight in which the pilot has to show their full potential. The scores are divided in four categories: difficulty (33%), creativity (25%), harmony (25%), and accuracy (17%). During this flight pilots try to invent new manoeuvres to impress, risk near the ground, and try to perform a variety of figures and that the whole flight appearance is attractive to the judges.

The first to go out in the advanced freestyle round was Wicharid with the new Agile 7.2 model made by KDS. He was flying a good freestyle round until he crashed into the fences in front of the flight line! That was not the only accident that would affect the fence. The second pilot to come out was Stefan Simmons with his Gaudi X7, the flight was very spectacular until he came down from a tail slide and smashed his helicopter into the fence. This will be the most remembered crash of Heli Masters 2013! It sounded like a bomb. Ofek made a very attractive flight that positioned him in fifth position. Mirko Cesena performed the best flight of the round doing lots of quick reverses, changes of direction and braking at very low height. The Spanish pilot Sebastian Serra performed his flight with a Compass 7HV and showed very good skill getting him into fourth position. The freestyle flight of little CD just left everybody's mouth wide open and he got a deserved second place.



The annual Heli Masters gets together the best pilots in the world. And there are many visitors who do not want to miss this chance to see them live

The Professional category is always more attractive to watch, but this year we were very surprised by the Advanced level pilots. It was truly spectacular and there were flights done at a very high level. In my opinion several of the advanced pilots should have participated in the Professional category. In the flight to music round pilots have to fly for three minutes to the rhythm of their own music. The scoring in this round is very similar to freestyle round: creativity (33%), difficulty (25%), harmony (25%) and accuracy (17%). It is very important that the helicopter follows the rhythm of the music, pilots often choose a mix of different songs with fast and slow rhythms to combine the manoeuvres from a more spacious flying to a more pitch pump kind of flying. It definitely has to look like the helicopter is dancing to the music.

Mirko showed us that his Mikado Logo 700 can dance very well. The helicopter was dancing during the whole flight, he added some complex manoeuvres and performed them with total accuracy. He had a good selection of music accompanied by some very creative and fun movements. It was a flight hard to beat, but then I saw Luca Pescanti, who did a great flight. The judges have a very hard task judging all these good flights. A flight which was really enjoyed by the public was the one of CD, but unfortunately he stayed out of the top five with this flight.

Advanced class top five in each round...

Position	Manoeuvres	Freestyle	Flight To Music
1	Ofeq Katzav	Mirko Cesena	Mirko Cesena
2	Luca Pescanti	CD	Luca Pescanti
3	Jonathan Yafe	Christian KaiBer	Jonathan Yafe
4	Mirko Cesena	Sebastian Serra	Ofeq Katzav
5	Niklas Solle	Ofeq Katzav	Sebastian Serra

PROFESSIONAL CLASS

Normally everyone is excited to see the masters fly in the Professional category because they execute only high level K manoeuvres to achieve the best score, but during this Heli Masters we could see that even the Advanced level pilots flew the K10 manoeuvres to perfection.

In this first round the American pilot Kyle Dahl with his Mikado Logo 700 positioned himself in first place, obtaining the maximum score for this round. The way he flew the manoeuvres was perfect, with full control over the model at all times doing all movements very slow but steady and at a low altitude.

Duncan Bossion followed him with his TSA Infusion 700E who chose three K10 and three K9 manoeuvres. His flight was very correct in symmetry at a constant speed throughout all the manoeuvres. His brother Jonathan gave us some great times throughout the weekend, his flying level has increased a lot since the last time we saw him flying and this has been noticed in his scores. Jonathan used

the Gaui X7 to compete. Both chose the same manoeuvres except for one. It is very important to choose the right manoeuvres, for example, it is better to perform a perfect four point tick-tock reversal than a Ball for only 50%, this will get you better scores at the end although it has a lower K rating.

It would have been good to include some autorotation in the set manoeuvres, which are always very popular with the crowd. We saw Kyle Stacy doing his set manoeuvres at a high speed with lots of head speed, which resulted in less accuracy and lower scores; he came in 16th position during this round. Bobby Watts who hasn't participated in a tournament like this for a long time came in one of the last positions in his set manoeuvres round. There is no doubt that he is a pilot who likes more freestyle and flight to music.

The freestyle round was very closely fought as all the pilots flew at a very high level which makes it very difficult to decide who is the best. Duncan Bossion made a spectacular flight, 100% adrenaline throughout the whole flight. Jamie Robertson made a good flight doing his characteristic style and use of the tail. He also did a different and attractive manoeuvre which was a globe with non-stop rolls. The judges decided to stop the flight of Takafumi Oka for safety reasons. The exact problem is not known but his Align T-Rex 700E started to make very strange sounds in flight.



Midland Helicopters team



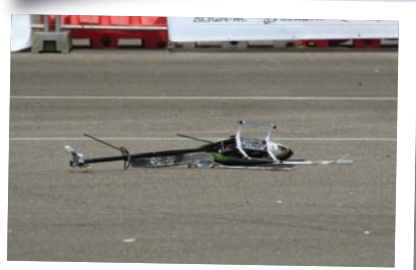
Some of the helicopters were not lucky enough to land alive



This pilot was not very happy after having a boom strike with his T-Rex 700E DFC



Images like this are very common when you see world's best pilots fly - Gaui X7 of Johantan Bossion



The high speed and even higher head speeds we fly nowadays make the impacts of a crash very hard



The Goblin is a helicopter that has a very good look in flight thanks to its exterior design

It is unusual to see a nitro in competition, but Steffen Richter went for it with the new T-Rex 700N DFC



Until three years ago it was quite normal to compete with a nitro helicopter. After that it was a fifty-fifty between electric and nitro and today almost 100% of the pilots lay trust in electric models



Spectacular demonstrations of the Kontronik pilot Oliver Jellen doing speed flights over 240kmph with his Henseleit TDR



Raquel Bellot together with Heli Masters voice, Nik Johnson



Some of the world's most desired trophies



Without commentators like Bert Kammerer and Nik Johnson, it wouldn't have been the same

Timo Cürlis has advanced in level at a phenomenal pace and his flight was really good, but he only managed to get in fifth position. Kyle Dahl did not disappoint and as always did one of those flights where you cannot take your eyes from his heli. He flew at high speed with changes in direction, low-altitude manoeuvres, good links between different manoeuvres and a nice autorotation to finish his flight. This flight gave him the win in the freestyle round as well. There is no doubt that Kyle Stacy likes speed and therefore a Goblin is his best ally, he performed a fast, aggressive and low flight, just spectacular!

The flights with music are always the most fun to see and are really liked by the public. Timo Cürlis flew with a very soft kind of music which had a complicated rhythm to follow. Then Kyle Dahl, the golden star Mikado team pilot prepared an exciting and very attractive flight. He flew fast, introducing complex manoeuvres at a very low altitude, a flight which held him in the lead and on to win this year's Heli Masters.

The flights were finished very late in the afternoon, with the sun in an awkward position on the left side of the pilot which made the helicopter look very dark. With Jonathan Bossion on the flight line the French always stood out of the crowd and cheered him on. He did one of the best flights to music of this competition. He used songs which are all well known to most. He really took his helicopter to the limit by performing very low manoeuvres, with many changes in the pitch direction and throwing the heli in all possible positions. Very good and fun flights to see. Although they are rivals, Dunkan expressed great pride in his brother's flight.

FINAL

The finals took place on Sunday. The five finalists from each category had to fly all three rounds again. The scores were placed back at 0 and it was time to return to show the judges who was the best. In the Advanced category classified pilots were: Ofek, Luca, Jonathan Yaffe, Mirko and CD. In the professional category: Dunkan and Jonathan Bossion, Kyle Stacy, Kyle Dahl and Michael Wisbacher.

Something never done before at a 3D Masters was that before the finals the organisation opened the flight line for the finalist to fly for one hour to practice their flights in advance. There was a lot less public than the previous day. After two long days of flying, pilots have to recover 100% of their concentration. To see the final is definitely the best moment of the competition. This is where a small failure or mistake can cost you the champion's title!

One of the saddest moments was the flight to music by Kyle Stacy, who crashed his Goblin behind the fences. Michael Wisbacher had a complicated end when flying his music round because of problems with his speed controller, which lost power and he had to land. He took his opportunity to do a re-flight as this is allowed as long as it's a mechanical failure of the helicopter. This had to be decided by the judges and after a long discussion and looking at the replay of his flight at the live stream they decided to give him a second chance. What Michael did not expect was that his second chance was going to end very soon because he didn't strap his flight packs in and they came out in the first manoeuvre.

His luck was that the worst of the three rounds will be deleted so he still had a chance to get on the podium. Kyle Dahl was the most consistent pilot throughout the whole competition, so it was obvious that he was going to claim this year's victory. In the Advanced category Mirko was the best candidate to be this year's champion.

The awards ceremony took place on stage, which seemed to be a perfect place. The trophies, certificates and prize

Professional class top five in each round...

Position	Manoeuvres	Freestyle	Flight To Music
1	Kyle Dahl	Kyle Dahl	Kyle Dahl
2	Dunkan Bossion	Dunkan Bossion	Kyle Stacy
3	Michael Wisbacher	Kyle Stacy	Jonathan Bossion
4	Jonathan Bossion	Jamie Robertson	Timo Cürlis
5	Eitan Goldstin	Timo Cürlis	Michael Wisbacher





Helimasters organiser, Christoph Dietrich



Champions of the Advanced category



Champions of the Professional category



Christoph together with little CD (5th ranked in Advanced category) and the youngest in competition

money were ready to know who the champions were! Nik Johnson and Bert Kammerer were in charge of doing all the commentary. All participants received a certificate with their name, position, and final score. This was a nice detail by the organisers. The top five in each category received cash prizes and the top three a nice Heli Masters trophy. The champion of the Advanced category was Mirko Cesena who won €1,500. And the world champion was Kyle Dahl in the Professional category winning the title, trophy and €3,000. This year's Heli Masters was a victory for Mikado, they had four pilots on the podium.

CONCLUSION

This first international Heli Masters was a great success on many levels, including the organisation, pilots, public, facilities and of course the weather. The only thing we missed were those brands who had scheduled seminars and the after party on Saturday, both of which were promised but never materialised. The entire event was streamed live over the internet by RC Medien. It seems like a good idea to me,

this way everyone can follow and enjoy this competition from home and raises the profile of our great hobby a little more. Congratulations to all the winning pilots and their victory and simply everyone involved who made this possible.

Congratulations to the judges, who worked very hard during the whole weekend and gave many hours to judge every single flight. To the best speakers in the world, Nik Johnson and Bert Kammerer! They really made this event big with their comments, encouraging at all times, and jokes that gave everyone a laugh. Without them the event would not have been the same.

And not to forget the organiser, Christoph Dietrich and the rest of the team who made the event possible and unforgettable. Andy Rummer and

Albert worked very hard and did a superb organisation at all times. And of course congratulations to the winner of the Advanced class, Mirko Cesena and the overall Heli Masters Professional class champion, Kyle Dahl. In fact congratulations to all who took part and I hope to meet you at Heli Masters 2014. ☺

Raquel Bellot

Below: The large Mikado team took five trophies back home thanks to Mirko Cesena, Ofek Katzav, Kyle Dahl, and Michael Wisbacher

Next month...

In the next issue we will cover the very entertaining Heli Masters Night Flying competition, the large number of excellent demo flights, discuss the live streaming in more detail and interview some of the pilots who took part.

Heli Masters 2013 Results...

ADVANCED FINAL CLASSIFICATION

Position	Name	Helicopter	Country	Score
1	Mirko Cesena	Mikado Logo 700	Italy	3000.00
2	Ofek Katzav	Mikado Logo 700	Israel	2859.66
3	Luca Pescanti	Align T-Rex 700E	Italy	2836.67
4	Jonathan Yafe	Gauji X7	Israel	2511.58
5	Sakkarin 'CD' Korntan	Gauji X7	Thailand	2484.37

PROFESSIONAL FINAL CLASSIFICATION

Position	Name	Helicopter	Country	Score
1	Kyle Dahl	Mikado Logo 700	USA	3000.00
2	Dunkan Bossion	TSA Infusion 700E	France	2880.53
3	Michael Wisbacher	Mikado Logo 700	German	2679.86
4	Kyle Stacy	Goblin 700	USA	2463.92
5	Jonathan Bossion	Gauji X7	France	2267.70



TREX 450PRO DFC

[KX0150877]

ALIGN



3GX Compact

Design Features:

- Equipped with 3GX Flybarless head assembly, with extremely low CG design to minimize wheel resistance, providing more direct and precise flight control response and sharper tip speed.
- New style rotor hub and rotor blades with improved efficiency, built-in servo, built-in servo, built-in servo.
- Emergency battery and ESC mounting platform, with advanced battery position to achieve the most optimal CG position.
- New improved frame side plates with differentiated ESC mounting location, to simplify servo management and overall aesthetics.
- Vertical rotor servo mount design, for clearer CG, maximizing the significance of 3D flight.
- Highly efficient torque tube tail drive design, dramatically reduces power loss found on tail drive system.

- New style servo mounting platform with added design.
- Higher rotor and tip speed efficiency for faster flight.
- New style rotor hub supported tail control assembly for step free take, improving on rotor resistance and control.
- Equipped with Align's brand new MX series Align efficiency brushless motor.
- Highly efficient torque tube tail drive design, dramatically reduces power loss found on tail drive system.

TREX 450SPORT V2

[KX0150877]

ALIGN



Design Features:

- New style servo mounting platform with added design.
- Higher rotor and tip speed efficiency for faster flight.
- New style rotor hub supported tail control assembly for step free take, improving on rotor resistance and control.
- Equipped with Align's brand new MX series Align efficiency brushless motor.
- Highly efficient torque tube tail drive design, dramatically reduces power loss found on tail drive system.

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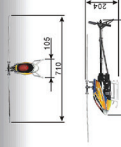
Constructors Championship



TREX 450PRO DFC

ALIGN

Focus shots:



Specification:

- Length: 64mm
- Height: 105mm
- Main Rotor Diameter: 320mm
- Tail Rotor Diameter: 71mm
- Main Drive Gear: 12:1
- Autotension Tail Drive Gear: 16:1
- Drive Gear Ratio: 1:10.08:4.24
- Weight With Motor: 57g

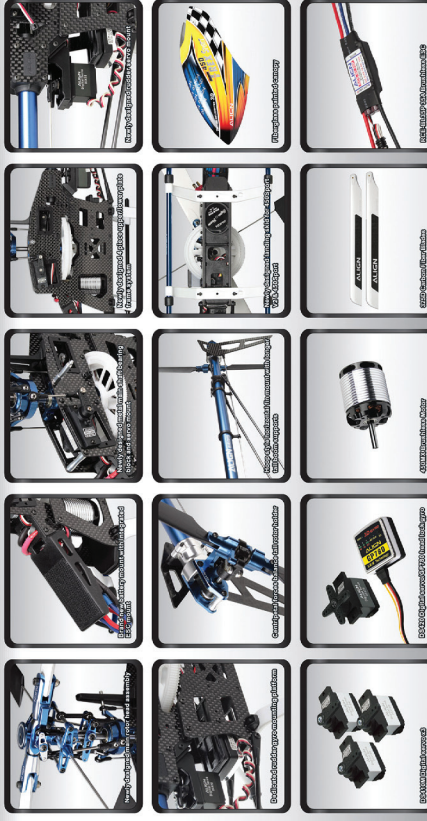
Accessories:

- TREX 450 PRO DFC Kit Set X1
- 3250.50 Custom Blades x 1set
- 85415M Digital Servo x 3
- MCR-26.5P 25A Brushless ESC x 1

TREX 450SPORT V2

ALIGN

Focus shots:



Specification:

- Length: 83.4mm
- Height: 110mm
- Main Blade Length: 320mm
- Tail Rotor Diameter: 71mm
- Main Drive Gear: 12:1
- Autotension Tail Drive Gear: 16:1
- Drive Gear Ratio: 1:10.08:4.24
- Weight With Motor: 57g

Accessories:

- TREX 450SPORT V2 Kit Set x1
- 3250.50 Custom Blades x 1set
- 85415M Digital Servo x 3
- MCR-26.5P 25A Brushless ESC x 1

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Flying fun in the Spanish sun



AN INTENSE WEEKEND FULL OF BREATHTAKING

FLIGHTS IN ALL ITS ASPECTS. WITH THE BEST NATIONAL PILOTS AND SEVERAL INTERNATIONAL PILOTS DOING SHOW FLIGHTS AND ALL OF THIS ACCOMPANIED BY THE PERFECT WEATHER. A FUN-FLY WHERE THE PRIMARY GOAL WAS TO HAVE FUN. ENTER THE BULLS SMACKDOWN 2013



Bulls Smackdown is an event that marks a before and after in the events calendar in Spain. I

remember around 17 years ago when I accompanied my father to various helicopter events in Spain, with more than 80 pilots subscribed. At the time when I started to fly the number of pilots at the events was around 50. And nowadays the most important events or competitions in our country only get together about 30 helicopter pilots. Over the years the events termed 'fun-fly' were forgotten and almost not organised anymore.

ABOUT THE BULLS

My intention with Bulls Smackdown was to organise an event to a highest level of fun leaving the competition aside as we already have the traditional F3N championships. I really wanted the pilots to enjoy the fun-fly without the nerves and pressure of a competition. I wanted to reunite the best pilots of the country and enjoy demo flights from various well known international pilots like Timo Curllis, Simon Von Baur, Timo Wendtland and Simone Zunterer and help the old school pilots relive the good old days and show the new pilots the essence of our hobby!

Bulls Smackdown was organised



Peter Taylor and the Peach brothers Darren and Mark from the UK with their Align T-Rex 700 Nitro machines





on the 8th and 9th of June at the local flying club, 'The Falcons' near the city of Murcia. We chose the best airfield in this area, provided with the best facilities and a 250m tarmac runway. Murcia is a coastal city located south-east of Spain, a city that hosted the 3D Masters in 2009. Many pilots visited the beaches that are only 10 miles away from the flying site. The weather was simply spectacular! This time of the year we can enjoy a warm climate but with refreshing wind breezes thanks to the proximity of the sea.

Two flight stations were created so two pilots could fly simultaneously. The organisers created a shaded area with tables for all pilots. Now adays electric helicopters are more widely used than nitro so we created a battery charging area so that the pilots didn't stop flying and for fans of nitro there was a refuelling station with free Optifuel for the whole weekend. Many thanks to Optifuel for their support during Bulls Smackdown. The food was arranged in collaboration with the famous Italian restaurant 'O Mammamia' who offered throughout the whole weekend exquisite pizzas and pasta.



The small David from the Spinblades team is really passionate about helicopters



Everybody with the cameras in their hands to not miss the exciting demos!



Mikado Logo 700 stretched to 750 size of Timo Wendtland



Timo Wendtland was one of the Bulls honour pilots and offered us a great time with his flights



The Logo 700 flying at a extreme low head of only 800rpm



The Raptor E820 of Simone Zunterer





FLIGHT LINE

Friday afternoon the pilots from all over the country started arriving at the field. While the organisation was preparing the facilities the pilots were able to fly. Bulls Smackdown has an official website (www.bullsmackdown.es) where you can follow all the news, see the needed information and where pilots can register themselves to be able to fly.

On Saturday the pilots only needed to pass by the registration table to pick up their bag which included their passes, schedule, stickers, free lunch tickets, special edition T-Shirt, etc. On this occasion there were about 50 registered pilots who didn't want to miss the opportunity to fly here. After the registration of the pilots I did a briefing for all pilots to inform them about all the safety standards. For the opening ceremony and opening the flight line Timo Wendtland did a demonstration with his Logo 700 and left all the pilots with their mouths open. His flying style is spectacular, flying at low RPM and performing very technical manoeuvres down on the deck.

After this, the pilots were encouraged to go out and fly. The good thing about this fun-fly is that pilots could fly 3D, sport flying, fly scale models and from beginners to professionals. Amongst the registered pilots were some old school pilots, Spanish champions and beginners with less than one year's experience.

GREAT ATMOSPHERE

The mood between the pilots was very good during all weekend; it was obvious that all enjoyed watching the flights and also helping pilots to rebuild after a crash. During the weekend there were various demo flights performed by AreA51-RC.es, Optifuel, SpinBlades and TSA Model. During the demos we closed the flight stations and opened a special one in the middle of the flight line so that everyone could enjoy and have a better view. We secured the show with the guest pilots and some of the best pilots in Spain. Timo Cürlis and Simon did a synchro flight to music. Simone Zunterer flew with the new Thunder Tiger Raptor E820. The sound and the looks in flight of this model are really great. Her flight level has improved a lot and she is one of the few women in the world that practices 3D flight.

We also enjoyed individual demonstrations from Timo Cürlis, who took his TSA 700N to the limit every flight! His was flying with the new prototype Summer Blades from Spinblades



The shaded pit box area had a great atmosphere between all the pilots



Raquel Bellot with several of the pilots, including Daniel Pachon and Javier Verdegay



Scale models also had their place. The Align Airwolf with T-Rex 500 mechanics of Jorge Herreros



One of the pilots with his Align T-Rex 500 Cobra fuselage



The pit area was full of high-end helicopters such as this Mikado Xtreme and the Goblins



TSA factory team pilots flying with their Infusion 700 Nitro models. We can appreciate a perfectly synchronised flying between these two pilots



Timo Cürlis and Simon Von Baur who made us vibrate with their risky and spectacular demonstrations





called Matt 'Yellow'. His 'smack down' flying style was really noticeable using the asphalt runway to play and rub skids, scratch blades and he even did an inverted autorotation landing on the runway. In other words, Timo simply is a showman. The atmosphere between the pilots was very good and the pilots were not only enjoying the flights but the company of them. Daniel Pachon and Jose Luis Pardo, two 3D champions, made spectacular flights with the TSA 700N and the SAB Goblin 630.

FUN AND ENTERTAINING

On Saturday evening all pilots moved to the Airemar restaurant where we reserved a special room exclusively for Bull Smackdown. The pilots enjoyed great Spanish food and drinks, atmosphere and lots of laughs.

Sunday continued with an early start with the same routine as Saturday. In one of the demonstrations we placed two beach flags on the flight line and Timo Cúrlis began to blow his TSA 700N between the flags trying to dodge them while manoeuvring at very low altitude, this was quite a sight! The public cheered every minute more and more but Timo finished his flight saving the flags. Simon and Daniel Pachon also gave it a go with their TSA 700N but did not have the same luck as both of them destroyed a flag and their heli.

After this last demo flight we proceeded with the trophies as a souvenir for the best flights of Bulls Smackdown, including: Best 3D Nitro Flight, Electric 3D Flight, scale model, blade scratcher and amateur. After this the flights continued until late in into the evening and some pilots kept on flying. The pilots used the last minute of sunshine to enjoy Bulls Smackdown.

REWARDING EXPERIENCE

This first event was great fun and a rewarding experience, and due to its success, we are working on the preparation of a second edition of Bulls Smackdown. We want to invite all the pilots from other countries to participate and enjoy an authentic Spanish fun-fly! 🇪🇸

Raquel Bellot



The demonstrations with the TSA models were among the most spectacular



The helicopter of Timo Cúrlis was constantly flying to the limit



Timo likes to scratch his blades. Here we see the new yellow 'Summer Blades' of SpinBlades



The trophies waiting for the pilots and sponsors

More info...

If you fancy taking part in next year's Bulls Smackdown, or just want to find out more about this year's event and get all the latest news, check out the event's website at www.bullsmackdown.es



The invited international pilots were a big attraction during Bulls Smackdown

The SpinBlades trophies were given to the best 3D nitro, electric, blade scraper, scale model and amateur flights



ALIGN T-Rex 500PRODFC

ALIGN T-Rex 550E DFC

CRAFTED TO PERFECTION EXPERIENCE THE UTMOST POWER

MULTI-DIMENSIONAL FLYING CHARACTERISTIC SATISFYING THE MOST DEMANDING NEEDS!

3GX Compact

3GX Compact

- Specifications:**
- Total Length: 520mm
 - Height: 130mm
 - Main Blade Length: 425mm
 - Main Rotor Diameter: 390mm
 - Total Weight: 520g (w/ 3S LiPo)
 - Motor Output Gear: 1:37
 - Main Drive Gear: 1:37
 - Autotration Tail Drive Gear: 1:47

- Specifications:**
- Total Length: 520mm
 - Height: 130mm
 - Main Blade Length: 520mm
 - Main Rotor Diameter: 188mm
 - Total Weight: 520g (w/ 3S LiPo)
 - Motor Output Gear: 1:37
 - Main Drive Gear: 1:37
 - Autotration Tail Drive Gear: 1:37

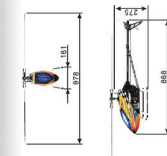
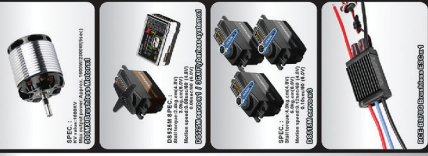
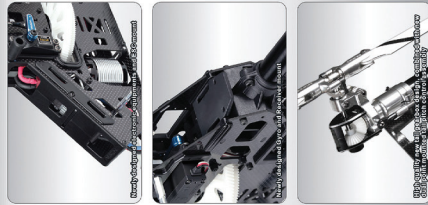
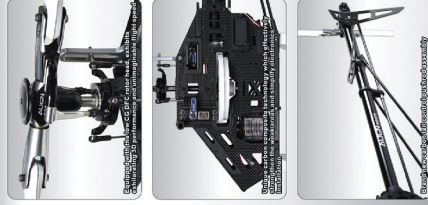
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ALIGN T-Rex 500PRODFC

ALIGN T-Rex 550E DFC

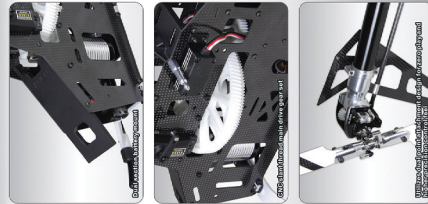
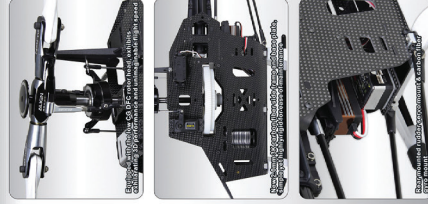
Focus shots:



- Accessories:**
- T-Rex 500PRODFC Plus Set x 1 set
 - Aluminum Tail Booms x 1
 - 230 Carbon Fiber Blades x 1 set
 - 85515M Digital Servo x 3
 - 85515M Digital Servo x 1
 - 3mm JK Carbon Fiber Tail Blade x 1 set

ALIGN

Focus shots:



- Accessories:**
- 85515 Digital Servo x 1
 - 85515 Digital Servo x 1
 - Castle Tronix 90A Brushless ESC
 - 230 Carbon Fiber Blades x 1
 - 85515 Digital Servo x 3

ALIGN

ALIGN

Top Combo

TREX 700E DFC

[KX018E157]



3GX
Compact

Design Features:

- Kopter with the 3GX DFC new head, effectively reduces air resistance during flight, providing the most direct and precise control over the rotor blades, and enhances maneuvering 3D performance and unimagined flight speed.
- Lighter weight, 20% reduction in weight, 40% reduction in weight of details, pre-pull timing system, timing frame and more precise control reaction.
- A new design of the rotor hub bearing, allowing cables to be mounted directly onto the bearing, reducing the weight of the rotor hub.
- Utilizes composite carbon material integration technique on frame structure for ease of maintenance and high rigidity.

- Innovative sliding battery tray fully incorporated into the 3X 540 frame, with patented spring loaded locking mechanism, allowing for quick battery access as well as battery protection.
- 3GX DFC has a new design of the rotor hub, with raised base and fan to dramatically increase cooling effect, and improve overall power output.
- A new design of the rotor hub bearing, allowing cables to be mounted directly onto the bearing, reducing the weight of the rotor hub.
- Utilizes composite carbon material integration technique on frame structure for ease of maintenance and high rigidity.

ALIGN

HV BRUSHLESS SERVO



ALIGN

Super Combo

TREX 600E PRODFC

NEXT GENERATION MODEL WITH EXPLOSIVE PERFORMANCE AND ATTRACTIVENESS!

3GX
Compact

Specification:

- Main Blade Length: 66mm
- Height: 210mm
- Main Blade Length: 60mm
- Motor Pinion Gear: 13T
- Main Drive Gear: 112T
- Motor Pinion Gear: 13T
- Main Drive Gear: 112T
- Motor Pinion Gear: 13T
- Main Drive Gear: 112T

ALIGN

Top Combo

TREX 700E DFC

Focus shots:



Specification:

- Height: 210mm
- Main Blade Length: 66mm
- Tail Rotor Diameter: 261mm
- Motor Pinion Gear: 13T
- Tail Drive Gear: 112T
- Weight (With Motor): 2900g

Accessories:

- 3X Carbon Fiber Tail Boom x 1 Set
- 3X Carbon Fiber Blanks x 1 Set
- 3X Brushless Motor (30KV) x 1
- 3X 700H High Voltage Brushes
- Servo x 3
- High Voltage Brushes
- Servo x 3
- 3X Carbon Fiber
- 3X Carbon Fiber

ALIGN

Super Combo

TREX 600E PRODFC

Focus shots:



Accessories:

- TREX 600E Pro DFC Kit x 1
- 3X Carbon Fiber Blanks x 1 Set
- 3X Carbon Fiber Blanks x 1 Set
- 3X Carbon Fiber Blanks x 1 Set
- 3X Carbon Fiber Blanks x 1 Set
- 3X Carbon Fiber Blanks x 1 Set
- 3X Carbon Fiber Blanks x 1 Set

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INSANE



AS ELECTRIC-POWERED HELICOPTERS CONTINUE TO GROW IN POPULARITY, THE TECHNOLOGY BEHIND THEM CONTINUES TO DEVELOP. WITH LIPO BATTERIES NOW OFFERING MORE POWER THEN EVER, WE NEED MOTORS THAT CAN MAKE THE MOST OF IT. ENTER THE ALIGN 850MX DOMINATOR, ONE OF A NEW BREED OF MOTOR THAT DELIVERS PERFORMANCE IN SPADES. JAMIE COLE PUTS IT THROUGH ITS PACES



Over the last 18 months or so we have reviewed a number of 700 size machines including those from the Align range of helis and as we know the guys at Align never sit still and are always pushing the boundaries.

Dave Dijkmans recently reviewed the Align 800 motor which is now shipped as standard with the 700E DFC Pro helis. This motor is a powerhouse of insane having it large power. I was lucky enough to get one a few months ago and it pulls like a steam train offering lots of power with great efficiency leaving the motor cool despite being worked really damn hard.

Align 800 specs...

The version shipped with the 700E Pro the 520KV (a 440KV version is also available) and is as follows:

Input Voltage:	DC11.1V-50.4V
Max Continuous Current:	115A/250A (2sec)
Max Output Power:	5100W/11000W (2sec)
KV Value:	520KV
Stator Arms:	12
Magnet Poles:	10
Dimension:	Spindle 6x56.7x93.5mm
Weight:	508g
RRP:	£184.99

The stats below are crazy in their own right and have seen the review 700E DFC be rocketed to what seems like orbit in seconds and that is all with great efficiency and little heat from the motor but most important of all at a price of just £184.99 which makes it very good value. This will work off the Castle Creations 120Amp controller with no issue and has been well proven by the pros.

SO WHERE DO WE GO FROM HERE?

The answer is clear... MORE POWER.... and enter the 850MX Dominator. So what is it? Well the 850MX builds on the success and foundations of the 800MX but now boasts even more power. The motor is longer and heavier with the continuous peak output rated at 5,330W.

850MX Dominator specs...

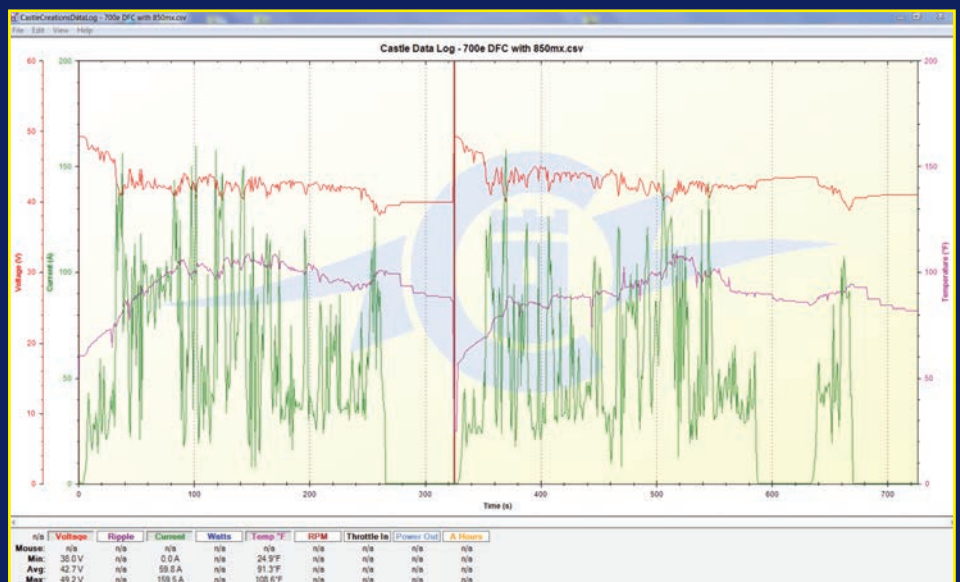
Input Voltage:	12S
Max Continuous Current:	120A/250A (2 sec)
Max Output Power:	5,330W/11,000W (2 sec)
KV Value:	540KV
Stator Arms:	12
Magnet Poles:	10
Dimension:	Spindle 6 x 56.7 x 112.5mm
Weight:	570g
RRP:	£224.99

The 800MX is still a current motor and is included in the new Align T-Rex 700E DFC Pro kits

We were offered the chance to try one and jumped at the opportunity to shoehorn this into the 700E DFC - as can be seen from the install pics there is not much room to spare around the motor and the frames but nonetheless it fits fine in the 700 DFC. If you intend to install this into a 700 V2 then you will need to change the elevator servo mount and you will need to flip it 180 degrees to make the servo mount clear the motor. It's a minor mod but bear it in mind if you want to use the 800MX or the 850MX. The 850MX is actually the same diameter as the 800, but just a bit taller.



POWER



The one downside with this motor is that if you are using a 120 amp controller it is time to upgrade to a new 160 amp unit such as the Castle Creations Phoenix HV2 or the Castle Creations Edge 160. The power draw is simply too close to the limits. Moving over to the 160 amp controllers you understand how much more it can handle.

So having shoehorned both the motor and what felt like shoehorning in the Phoenix Ice 160 I set about checking the setup. The 540KV motor is about spot on for hardcore 3D flight with this set-up in my opinion. With a gear ratio of 9.33:1, which is the stock 112 tooth main gear and 12 tooth pinion, you end up on the range of 2,000 to 2,250 and good governing of the head speed with the in-built castle creations governor. I actually settled for a three-speed set-up on the Castle ICE 160 with a range of 1,900, 2,100 and 2,250. The 2,250 definitely hits the sweet spot.

I actually left all the motor settings as standard which was default motor timing, default governor gain and the PWM set to out-runner. This is as per the Align out of the box settings.

So the install was a no brainer and with some charged packs I went off to the field to get some stats for the review.

TESTING

For me to sit here and say this is great and this is awesome is subject to so many variables it's crazy. You have the batteries you use, you have the flybarless system you use, the amount of degrees pitch you pull, the blades you use etc. So for this test I kept it simple: a stock 700E DFC with stock blades and a stock 3GX, but I was pulling 13.5 degrees pitch. Not recommended, but my mission was to heat up this motor and load the hell out of everything.

INITIAL FLIGHTS

The initial flights consisted of me basically beating the hell out of this motor. Initially it was a straight vertical test for as long as I dare and it became clear that this motor is near un-boggable as it climbed in to orbit before an unnecessary decent towards the floor at full negative -13.5 degrees pitch and I have to say that I still believe it went faster up than it did down. Needless to say there were no surprises. Next up was fast forward flight and my god was it just that, in fact it was the fastest fast forward flight I have ever seen. The extra pitch and the pull of the motor resulted in 120mph+ passes which sounded like nothing I have heard before.

Above left: The 160 amp ESC vs the 120 amp Castle Creations speed. The new 850MX needs the 160 amp controller to handle the extra power

Above: A graph showing the data logging results from the Castle Creations ESC

The motor just kept on pulling. After four minutes of flight I landed to see a little fewer than 10% left in the OptiPower Ultra 50 cells.

Flight number two consisted of just plain pitch abuse and tick tock city and



Here from top to bottom we have the 800MX on mounting plate, the 850MX and the 750MX

'if you are power hungry and you think, like me, you can never have enough power, then you need one of these in your life...

as we all know the tick-tock is one of the most demanding of any power set-up, especially when you throw in pirouettes to the right at the same time. It was at this stage I realised yet again that this motor really seems to be un-boggable for everything we currently throw at these machines, short of pulling even more pitch I don't see how I could load it more.

The timer for the motor is set to four minutes which I get and I am happy with when using tip top cells, this is 30 seconds down on the 800MX times I get which is another 30 seconds down on the 750MX. But that is a safe four minutes with a varied flight.

STATS AND LOGS

When you get a look at the stats of the ICE 160, one key benefit of the Castle Creations range is the logging. Post flight I was able to pull some logs to see what was going on and to monitor the peaks of power output by amps etc.

The result of the 850MX test is included on the graph and show that it peaked at 159.5 amps and to be honest this wasn't the hardest flight so you get an idea of the power it is capable of pulling. We also used a temperature probe and it never got above 57 degrees even on the hotter days, although a tame flight would see mid 40s on the motor, this is good!

What is interesting is if you look at what this is in C rating on a 5,000mAh pack. The calculation is quite simply the peak current divided by the capacity

of the pack which in this case is 159.5 amps/5 amps which is the capacity of the OptiUltra Packs. The result is 31.9C being pulled from the packs at peak power. This is well within reach of my OptiPower packs but the latest generation 50C packs are noticeably more up to the challenge and seem to hold better under prolonged load as well as keeping the machine cooler. The moral of the story is if you are using low rated packs, you will kill them with this motor! Use decent high C rated packs and real world C rated packs.

THE VERDICT...

Many years ago I used to fall out with my dad as we were replacing another IC/ nitro engine in my competition spec 60 size machines. We used to fall out as I used to get glow plugs outliving engines as I was trying to get more and more power out of the engines and tweaking the mixture to tune it that little bit more whilst riding the motor on the limit. He would always argue I had enough power and would say things like.... "well how much do you need?" Well I can now say, some 20 years later, dad, I have enough power, although it took 20 years, 30 engines and many battery packs to get there!

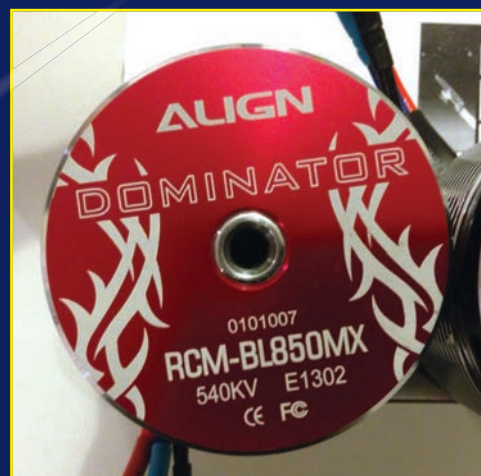
The short of this is if you are power hungry and you think, like me, you can never have enough power, then you need one of these in your life. It might just fill that hole.... until the next one. 🛫

Jamie Cole

A side-by-side of all the motors. There was no need to cut any shafts as they all slotted right into place



This is the 540Kv Dominator 850MX, there is also a 490Kv for anyone wanting a slower head speed



This is the 800MX for comparison. It is the same diameter as the 850 but a little lighter due to being slightly shorter. Note that it is a 520Kv so spins slower than the 850MX tested here



This is the 750MX which originally shipped with the 700E DFC, smaller all round than the 850MX



Installed and good to go. There is not much space around the edge of the motor, but just enough



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MINI MODEL MATURES

SUBJECT: Align T-Rex 250 Plus DFC

PHOTO: Dave Dijkmans

LOCATION: Mosa Trajectum Golf Resort,
Murcia, Spain

CAMERA: Canon EOS 5D
(Canon EF 24-105mm lens)

September 2013

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Radio Control
Rotorworld





CAMERA QUAD

i After the stunning success of the X4 Quadcopter, Hubsan have followed it up with the a new cramera edition.

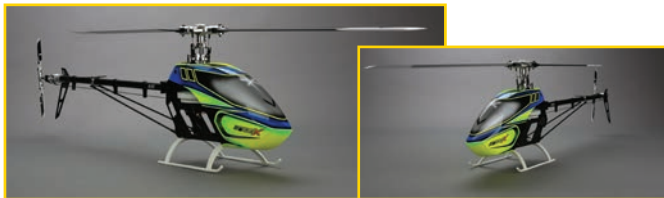
i Based on the X4 platform the camera edition enjoys some new updated features including LED lights for night flying, new colour scheme main bodies, improved motor placement with soft rubber feet for better durability and protection and the option to club on a protection cover frame around the whole quad. But the main feature is the inclusion of a new 0.3MP micro camera in the front to allow for inflight recording. Possibly the smallest camera quad on the market the X4 Camera is an absolute blast and a must have for heli fans or people just looking for the latest must have gadget.

Specifications

- Motor (x4): Coreless Motor
- Frequency: 2.4GHz
- 4 channels
- Battery: 3.7V 380mAh
- Flight time: around 7 minutes
- Charging time: 40 minutes
- Super stable flight
- Lightweight airframe with good durability
- Latest 6-axis flight control system with adjustable gyro sensitivity
- 4-ways flip(left, right, forward, backward)
- USB charging cable
- Flying outdoor ability
- Transmitter: 2.4Ghz 4 channels
- Camera: 0.3 MP
- Video recording module included (requires a micro SD card - not included)

€/\$ **H107C - £59.99 RRP - Due mid August**

@ **Contact the UK distributors, CML Distribution on 01527 575 349 or visit www.cmldistribution.co.uk for more details.**



FINE FLAGSHIP

i Following on from the successful launch of the Blade 550X and 600X models, Horizon Hobby has taken things to a whole new level with the release of the 700X Pro 3D RC helicopter.

i The Blade 700X is the flagship of the Pro Series line. It has been engineered to not only dominate the 700-class, but redefine its standards for performance. The centrepiece of the 700X design is its unique servo mounting geometry that virtually eliminates any mechanical inefficiency between the cyclic servos and swash-plate. The result is flawless cyclic and collective response that feels almost telekinetic. With its optimised cyclic servo geometry, quick change battery tray, helical main gear and its lightweight low parts count design, the 700X is surely a helicopter that will turn heads at the field.

Key Features

- Integrated bearing block servo mount design with optimised geometry
- Direct-to-swash, flybarless head design
- 2mm carbon fiber main frames
- CNC machined aluminium head block
- CNC machined aluminium swash-plate
- Dual ball bearing supported, 12mm hollow steel main shaft
- Motor mount with integrated pinion support
- Configurable, quick change battery tray
- Torque-tube driven tail with aluminium tail boom and case
- Dual point tail pitch slider and balanced tail grips
- Captured servo ball link arms
- Two flybarless unit mounting locations (forward and aft)

€/\$ **RRP: £749.99 - Blade 700X Pro kit
£1149.99 - Blade 700X Pro kit combo**

@ **For more details visit www.horizonhobby.co.uk or go to the dedicated Blade Helis website at www.bladehelis.com**

XG14

TELEMETRY

XBus



TRUE CONTROL

i Combining advanced programming with the highest possible feeling, the new XG14 transmitter from JR Propo uses the XG11's advanced software in the XG8's ergonomic body. Furthermore the XG14 employs the DSX-12's premium grade gimbals with CNC machined aluminium bases for a first-class smoothness of stick control.

i The XG14 is a middle to high class RC set with pro class quality and features. These include next generation of DMSS dedicated Serial Communication System XBus which is able to assign the channels to XBus servos and change their characteristics individually. It means the XG14 is one of the only RC systems on the market to offer 'a true 14 channels'. While some other large channel systems only offer 10 or less 'non-shared' channels and achieve the additional channels through sharing (splitting update rates between channels to expand) or expansion, JR's XG14 is a true 'non-shared', full 14-channel system. Also, the current PWM servos are usable through a dedicated converter. The operation system is selectable from the two modes, Mode-A for original JR communication protocol for the gyros and servos, Mode-B for universal compatibility with third party hardware such as V-Bar and Beast X flybarless systems. It has been designed for easy and precise operation by RC modellers.

The 'super premium grade' gimbals feature a large sized double bearing mechanism, as used in the flagship model DSX12, with CNC machined aluminium stick bases to improve the rigidity and durability drastically. Therefore JR has achieved what it calls 'superfine stick feeling' and 'the best stick operation in the RC industry' with the XG14.

With its ergonomic design, silver and black finish and large blue backlit LCD screen, the XG14 certainly looks like a premium device and we can't wait to test it.

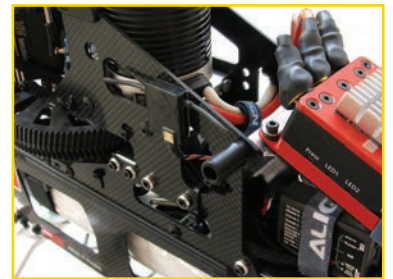
€/\$ **RRP: £499.95 - XG14 X-Bus Aero/Heli/Glid W/RG731BX
£489.95 - XG14 X-Bus Aero/Heli/Glid W/RG831B
£539.95 - XG14 X-Bus Aero/Heli/Glid W/RG1131B**

@ **To find out more, visit the UK JR distributor's website at www.macgregor.co.uk or go direct to the JR Propo website at www.jrpropo.co.jp**

MEGA MOUNT

i The new KDE Direct Align T-Rex 700/800 Series Flybarless System Mount is now available.

i The new upgrade provides the ideal mounting location for the flybarless system electronics, with a location protected internal to the carbon frames and centrally-aligned to the helicopter for optimum control. The new design allows for larger-class power systems to be used (HV160A+ ESCs) in the T-Rex 700/800 helicopters, without the need for canopy modification to achieve proper fit. In addition, the design uses an anti-vibration, ABS mounting surface for the flybarless system; supported by a lightweight aluminium 6061-T6 frame for ultimate strength and flybarless optimization. The ABS mounting surface is 29.5mm wide by 34.0mm long, providing full support of the Align 3GX, Mikado V-Bar, BeastX/Spektrum AR7200BX, and other common flybarless controllers.



@ **Check out the design presentation and installation diagram (PDF) for more assembly details and tips on the KDE Direct website at www.kdedirect.com**

€/\$ **RRP: \$32.95**

Competition

Visit www.align.com.tw for more details about the entire Align product range.

You've got the power!

THIS MONTH, THANKS TO ROBBE SCHLUTER UK, DISTRIBUTORS OF THE ALIGN RANGE OF PRODUCTS, WE HAVE THE LATEST DOMINATOR 850MX MOTOR, AN ALIGN HOODY AND THE LATEST DFC T-SHIRT AS WORN BY THE PRO TEAM PILOTS, LIKE XFC CHAMPION JAMIE ROBERTSON, FOR ONE LUCKY ROTORWORLD READER TO WIN*



To meet the power and torque requirements of enthusiasts, the high output 850MX motor was born in Align's R&D lab. With dramatic increase in torque and power output, capable of 5,330 watts continuous power output and 110,000 watts of burst power! Inherited from the previous 800MX, the 850MX features high efficiency, superior power, excellent torque, low current draw and low temperature. It's capable of maintaining much more consistent torque and head speed through continuous 3D manoeuvres, which is particularly special design for 3D flights. The 850MX motor incorporates a radial fan in its end bell, creating powerful airflow to dissipate heat. Tweaks to motor design and reduction in weight not only contributes to dramatic power increase, the high efficiency cooling system enables cooler operating temperature during and after flights when compared to motor of previous generation. The 850MX motor armatures are dynamically balanced to eliminate typical imbalance found in other out-runner motors. It is maintenance-free, high torque, high efficiency, stable and low noise.



PRIZE WORTH OVER £250

Specification...

Input voltage:	12S
Max continuous current:	120A/250A (2 sec)
Max output power:	5,330W/110,000W (2 sec)
KV value:	540KV or 490KV
Stator arms:	12
Magnet poles:	10
High-speed ball bearings, powerful magnetic out-runner rotor. Suitable for T-Rex 700E series helicopters and other 700 level models	
Dimension:	Spindle 6 x 56.7 x 112.5mm
Weight:	570g



HOW TO ENTER - For the chance to win this great prize, simply fill in the coupon below with your answers to the three easy questions and your name and address details and send to: Rotorworld/Align Dominator Competition, ADH Publishing, Doolittle Mill, Doolittle Lane, Totternhoe, Beds. LU6 1QX

* Winners will be contacted and asked which Kv rated Dominator 850MX motor they require as well as what size hoody and T-shirt they would like.

ROTORWORLD 89 - ALIGN DOMINATOR 850MX COMPETITION

Q1. What is the maximum continuous output power the Align 850MX motor can supply?

A1.....

Q2. What is the maximum burst power the Align 850MX motor can supply?

A2.....

Q3. What KV ratings is the Align 850MX motor available in?

A3.....

Please send this form to the address above (photocopies of this form are acceptable).

Competition rules:

Usual terms and conditions apply. Only one entry per household. Photocopies of this form will be accepted. No purchase necessary. The prize awarded is final and there is no cash alternative. Closing date for entries is 30th September 2013. Winners will be notified and the results published in a future issue.

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ON TEST



M.I. Hover

→ Silverlit's innovative Motion Intelligent (M.I.) Hover helicopter introduces an entirely new system for flying, featuring an auto hover facility using onboard sensors, plus gesture control, to provide an exciting new experience for both the beginner and experienced pilot. The Hover is steered by simply tilting the infrared slimline Tx backwards or forwards, and rotating it left or right (like a Wii paddle), whilst operating a single button on the remote control to take off, hover and land. Similarly press and hold alternative throttle 'up' and throttle 'down' buttons to climb or descend on command. There is a powerful spotlight LED under the heli that can be switched on and off. We found that the Hover is extremely stable and fun to fly – as long as it is indoors and in a reasonable size room. Initial flights showed that it is remarkably robust and features unexpected light effects that activate automatically whilst hovering – great fun!

The M.I. Hover is just twenty centimetres long, incorporates a lightweight lithium polymer battery and will fly for up to ten minutes, whilst recharging direct from a computer USB port in less than half an hour. The Tx requires four AA size dry-cell batteries to power the Tx and the heli is charged via a USB lead supplied (e.g. from your computer).



An usual undercarriage and futuristic design helps the M.I. Hover to stand out from the crowd

'Exciting new experience for both the beginner and experienced pilot...'

Tech Spec...

M.I. HOVER

Rotor Diameter: 18cm
 Type: Contra-rotating head
 No. channels: Three
 Batteries required: 4 x AA dry cell (not supplied)
 Price: £39.99

Available from: All good model shops
 UK distributor: Flying Toys
 Web: www.flyingtoys.co.uk

An innovative infrared controller uses gestures to move the model in a similar way to a Wii video game



Hover. Aim. Shoot!

Three new micro helis from Silverlit...

YOU HAVE TO ADMIRE THE DESIGNERS AT THAT MOST PROLIFIC RC TOY COMPANY SILVERLIT – IT MUST BE VERY HARD TO KEEP COMING UP WITH NEW IDEAS FOR THEIR VAST RANGE OF SMALL INFRA RED AND 2.4GHZ RC CONTROLLED HELIS – BUT THE IDEAS KEEP COMING...



Cannon, MI Hover and the MI Archer. They are all three-channel control with the unique 'Gyro Direction

Featured here are the latest three from the 'Power in Air' and 'Motion Intelligence' ranges – the Air

Stabiliser' system. Control handsets differ, however. The Air Cannon has a conventional two-stick transmitter, the MI Hover has an all-new button only control unit and the MI Archer has a joystick control that looks like a full-size heli control stick! The names tell all, regarding the specialist features of the individual machines.

Power-in-Air - Air Cannon

→ The Air Cannon uses the normal two-stick Tx with throttle on left (height) and direction (left/right/forward/back) on the right stick, which means that with a bit of practice, the heli can fly under total control in all three axes, but with the added feature of being able to fire a single foam missile using one of the two buttons on the top of the Tx! The missile (two supplied) is made of foam with a plastic cap that has a small pad of Velcro on the nose, so that one of the many 'stickypad' targets available elsewhere can be used to improve accuracy. The trajectory of the

missile is semi parabolic, with a range of about six feet. To hit a target takes a lot of skill – hence a lot of fun can be had, individually, or taking it in turns to see who scores the highest. The Air Cannon is also available in two colours and on two bands, so it is also possible to shoot at each other!

The Tx requires six AA size dry-cell batteries to power the Tx and the heli is charged via an umbilical lead contained in the front of the Tx. The average flight time is up to 10 minutes, taking 30 minutes to recharge from the Tx.



The ultra-micro Air Cannon model is supplied with a traditional style infrared Tx and two foam missiles



'The trajectory of the missile is semi parabolic, with a range of about six feet...'



Being able to fire a missile up to six feet can be a lot of fun

Tech Spec...



POWER-IN-AIR - AIR CANNON

Rotor Diameter: 18cm
 Type: Single head
 No. channels: Three
 Batteries required: 6 x AA dry cell (not supplied)
 Price: £39.99

Available from: All good model shops
 UK distributor: Flying Toys
 Web: www.flyingtoys.co.uk

M.I. Archer

➔ The M.I. Archer uses the same auto hover system as the M.I. Hover (hence the 'Motion Intelligence' tag) and the onboard sensors, plus gesture control, built into the joystick controller, gives with the ability to move the heli forward and backwards and turn left or right, by moving the neat-looking joystick in the appropriate direction, just like the Hover controller. Again, it is very stable and responds well to the movement inputs – after a bit of practice!

Now we get to the REAL fun part! You can fire six missiles (orange plastic 'stick') one after the other, using the 'fire' button which, just like a full-size fighter, is hidden under a hinged safety cover on the joystick. To add value to this ability a free-standing target is supplied with three holes of different diameter for you to aim at! Do not use this to fire at cats, dogs, or small children – however strong the temptation may be! The missiles are loaded into panniers on either side of the heli (up to three in each) one on top of the other, giving you a sort of 'autoload'. The range of the missiles is about 10ft max, with a very parabolic trajectory, so

again accurate firing takes a lot of skill. Three plastic sprues are supplied with the heli set. Each containing 16 missiles, so a total of 48 are available (yes, they are easy to lose in the heat of battle!). A little refinement is that there is a storage facility on the bottom of the joystick which will hold up to eight spare missiles! For heli flyers used to the traditional Tx layout, the M.I. joystick takes a bit of getting used to, however, put it in the hands of a games console fanatic and they will have no problems at all! Of the three helis tested – this one was the hardest to prise out of the hands of each of the reviewing team.

The Tx requires five AA size dry-cell batteries to power the joystick controller and the heli is charged via an umbilical lead contained in the front of the stick. The average flight time is up to 10 minutes, taking 30 minutes to recharge from the joystick. ☒



A controller that looks just like a full-size heli joystick is the main feature of the new M.I. Archer. It uses gestures to control the model which does take some getting used to

Tech Spec...

M.I. ARCHER

- Rotor Diameter: 20cm
- Type: Contra-rotating head
- No. channels: Three
- Batteries required: 5 x AA dry cell (not supplied)
- Price: £49.99

Available from: All good model shops
 UK distributor: Flying Toys
 Web: www.flyingtoys.co.uk

The M.I. Archer is supplied ready to fly with the innovative joystick controller, missiles and practice target



'You can fire six missiles (orange plastic 'stick') one after the other...'

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How do you know if your engine mixture is right? Not too Lean (hot), Not too Rich (cold)

Firstly your engine will just sound just right (OK I know that is not very helpful but when it is there you WILL know) it will produce the most power and this is something you learn from experience.

Setting your throttle hold position to give a nice steady idle is a good start and then, if you are comfortable to do them, try auto rotating down and listen to the engine it should come down to the set steady idle within a second or two, if it does what's called "hanging on the pipe" then it means it's too lean so richen up the main needle a couple of clicks and try again, if you are not confident with auto's then simply land, throttle down or hit the hold as quickly as possible and listen to the engine for the same signs.

Conversely, if it comes straight down to an idle and you suspect you are not getting the best from your engine go in a click or two at a time and repeat until it just starts to hang and then go a couple of clicks richer to be on the safe side.

Another way of telling is to again land as quickly as possible and put your fingers on the engine's back plate, this should be the coolest part of the engine and you should be able to keep your finger there comfortably for a few seconds, if it's too hot to do this then again it's too lean, do not touch anywhere else on the engine or muffler or you're likely to lose some skin!

When setting up the engine it's a good idea to disable the engine governor as this will tend to hide some of the changes you are expecting to see when you change the mixer, once you're happy with it then enable the governor again.

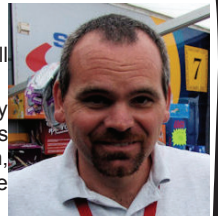
Some engines don't tolerate high nitro fuel without extra cylinder head shims, these are mainly some of the older OS 91 engines but the classic symptoms of being over compressed is that you find the engine is just a little rich, lacking power and RPM so you lean it out just a couple of clicks and all seems better for a few seconds but then the engine starts to sound harsh and lean, you land richen it back up a couple of clicks and you are back to too rich and lacking power again.

In this case you either need to run lower nitro fuel or add a shim or two.

Lastly, always run the engine dry at the end of the flying session by clamping the fuel off while the engine is idling, once it stops reattach the glow and start to start it until it stops firing at all, this will make your engine bearings last much longer.

Never run it dry in the air as it will go very lean before it stops!

For the full article go to www.skylinemodels.co.uk for the full article.



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Living with the GT5.1



WE LOOKED AT THE THUNDER TIGER ACE GT 5 BACK IN ISSUE 70. FOLLOWING SOME FURTHER TESTING WE CONTINUE OUR FLYBARLESS (FBL) SYSTEMS FINE TUNING BY LOOKING AT THE TWEAKED VERSION OF THE GT5.0 THE NEW GT5.1 WHICH IS A SLIGHT REVISION ON THE PREVIOUS VERSION THAT OFFERS EXTRA FEATURES SUCH AS SUPPORT FOR SPEKTRUM DSX SATELLITES RECEIVERS



Our original thoughts on the GT5.0 were all positive with good results. We loved the menu structure and the way you

navigate through the menus via the on-screen display. Our original verdict was as follows: "The ACE-RC GT-5 FBL three-axis controller has proved itself to be an extremely worthy contender. Fitting any flybarless system on a nitro powered R/C helicopter is a good test of the unit's capability, where the extra vibration caused by IC power can show up any unfortunate misgivings in the system."

The menu for interaction is a sensor on the side of the unit which acts as a slider



Our first test of the ACE-RC GT-5 on the X-50 means that this brand-new FBL controller has passed with flying colours.

With many interesting features, including the comprehensive display screen and funky touch-pad data input system, the GT-5 may be considered to be winner on the flybarless front. True, some of the tiny icons might be a little tricky for some people to see without a microscope, what really counts is the GT-5's outstanding performance and the true ability to make a flybarless machine feel unbelievably similar to one equipped with a mechanical flybar."

An attractive point here which was noted before but that is still the case is the price point of £149 which makes it a very accessible all in one unit.

DESIGN AND FUNCTION

So how does it work? Sure, it has the top notch MEMS (the bits that sense any movement) sensor in three axes to give your tail, then aileron and elevator stability, but the core understanding comes from working out how to programme and when to programme it.

Some FBL units use a push button, some use PC software but the GT5.1 uses a touch panel on the side to navigate through the menu and you are able to navigate the menus with the aid of the OLED blue back-lit screen which lets you know what you are selecting.

Best of all is the graph on the front screen to tell you the inputs it is receiving in an animated visual. It is this screen that forms the information on the menu choice and options.

Like most flybarless controllers on the market, the GT-5 has the capacity to work as the primary receiver, by using Spektrum or JR satellites, or can be routed through

a conventional Rx using the supplied patch leads; the 5.1 unit now includes the support of DSMX and of course still supports Futaba's S-Bus system.

MENU NAVIGATION

To enter the options menu from the booted up menu, you move your finger along the touch-pad until the cursor is aligned with the top ACE-RC logo. You hold it there for about three seconds which then returns to the main set-up menu. You know where you are by looking at all the symbols for each parameter. To select the menu you require you simply move your finger up and down to select what you want and then a tap on the pad it brings up. Each sub-menu item has an exit arrow tab to return to the previous main menu.

Before we go any further you need to know that the GT5.1 does everything for you, you just bring your transmitter to the table with default settings, no sub-trims, no eCCPM set-up but just a straight through set-up, which is like many of the systems we have looked at over the last few months. Clearly from this you can probably tell that you will need to program the GT5.1 with all of the core set-up data around trims, servo set-up and the like. The only mixing you will use on your transmitter is collective pitch and throttle mix to give your idle-ups.

So once in the set-up menu and once you have your head around the set-up you can run through the 17 steps to get ready to fly. I won't not run through all of them in detail but I will highlight the ones you need for a good base setup. This is a bit of a rough guide, but it should help you on your way to perfecting it.

PROGRAMMING AND SET-UP

Before entering the set-up menu on a fresh build I would do the first seven steps without the servos being plugged in to avoid damage to them.

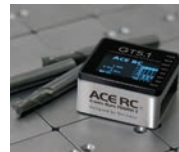
Step 1: Boot up of the GT5.1 and the core main menu, this displays the servo movements in a bar chart and more interestingly the battery voltage state including peak voltage, current and lowest. Handy stuff.

Step 2: Enter the main menu by pushing the cursor to the top of the screen and holding.

Step 3: Select Nitro or Electric machine, this can help the unit understand vibration as a nitro machine will always give out an engine vibration which can cause funny flybarless behaviour like drifting of inputs. A note here is to use both the included foams and even thicker pads in a machine known to have a thumpy engine, especially if you get that drifting feeling after having set it up perfectly!

Step 4: Select your swash-plate mixing from 90 degree, 120 degree, 135 and

You can plug satellites right into it to use it as a one piece unit



It makes a tidy one piece unit, compact and easy to navigate

When used with the Thunder Tiger machines the basic set-up is very good

You can install the unit with a separate receiver as seen here

Although you can use the separate receiver it is far neater and simpler to cable to use the receivers plugged directly in to the GT5.1

140. Obviously this is dependent on the machine that the GT5 is being installed, some of the Thunder Tiger helis use 120 degree and some use 140 degree.

Step 5: Set up servo frequency and speed, this is for cyclic and tail and includes frequency of the servo as well as the speed. Bbe careful on the speed though as you will need to convert the servos you own to the Thunder Tiger method as they require the input speed for 45 degree and not the 60 degrees that all other servo manufactures use. There is a conversion method in the manual, but just watch out. It can be difficult to get the servo frequency also but I find a good source is to 'Google it' or to check on the manufacturers' website.

Step 6: Receiver type, this can be Futaba S-Bus or Spektrum DSM2 or DSMX, you can also use the conventional receiver mode. **Step 7:** Auto exit, you can opt to have a different time from non activity so the unit in effect arms itself ready for action. This is to stop you taking off in set up mode (I have done this and it's interesting to say

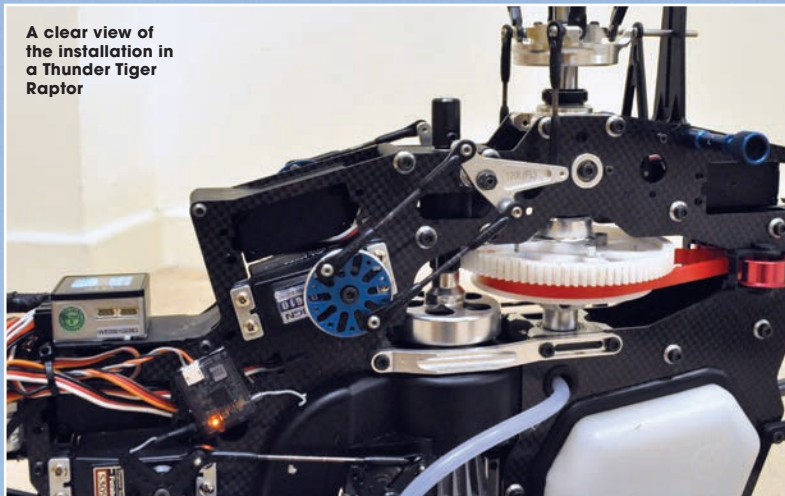
the least). Max this out for our set-up to 255 seconds; you can change it back to five seconds at the end to be safe.

It is at this stage I would add the servos to the mix and connect them all up. Before this point the frequencies and speeds could be wrong and you don't want to damage any servos. From here on in the set-up is on the servos, but don't connect the tail link at this stage.

Step 8: Swash-plate and servo directions allowing you to get the servos working in the right way together to give you your CCPM swash-plate.

Step 9: Swash-plate direction is the menu to check and correct the swash-plate correction. If you tilt the model forwards it should go back, and the same with the roll, tilt the machine left and the swash should correct to the right. If it's wrong,





A clear view of the installation in a Thunder Tiger Raptor

change it in the menu.

Step 10: Tail sensor direction: As above move the model in one direction and expect the servos to compensate in the other direction, i.e. move the nose right and expect a correction to push the nose left.

Step 11: Pirouette compensation - this allows the GT5.1 to help keep the model point where it should in the pirouettes, it's quite clever and during this set up menu will tilt the swash plate over to one extreme, as you move the model around in a pirouette around the shaft the swash-plate should appear to be pointing the same direction, if it is not select the option to reverse this with the slider and selector.

Step 12 (this is the really important one!): This is the root of that perfect set-up and you need to start with the removal of the head down to the swash-plate so you can get the swash-plate leveller in place. So with the swash-plate off and the swash-plate leveller on follow the following steps:
a. Reduce your servo travel on pitch in your transmitter to the middle point - make this 50% on Spektrum and JR or 0% on Futaba, this gives absolute zero with no guess work
b. Enter the set-up - servo centring menu, you can see it notes the servo, with the arm and the sub-trim values.
c. All servos will centre.
d. Make sure the physical arms are as close together as possible, move them around on the spines to get dead centre if possible, if you have a one arm or two arm servo arm this may not be possible so get it as close as possible so all arms are at 90 degrees to the servo, or horizontal if using certain installations. You will know what I mean when you see the machine; we are looking for everything to be straight and in line.
e. Now check out the servo arms and make sure they are level, if not level them with the on screen options using the side touch pad to move the values up or down.

f. Repeat for the cyclic servos only

g. Now look at the swash-plate leveller. Adjust the servos to make this level, if it is a fraction out and the servos look square by eye level it with the trims. If however adjusting the servo trim will move the servo visible off the centre point then mechanically adjust the link from the servo to the swash-plate, or the control arm to the swash plate. As always there are a few variables here including is the servo centred in its mounting block, are the rods the correct length etc.

h. Once level you will want to install the head and to check for zero degrees out put on the blades, but note you may need to re-enter the sub-trim menu to get the servos centred.

i. With the head on and whilst checking the pitch you may want to adjust the arms from the swash-plate down to get the correct zero degrees pitch at mid stick. You may need to also adjust the rods from the blades to the swash plate. My tip here is to check these vs. the manual to see what is out and adjust both options in turn, i.e. pitch control arms and the arms from the servos to the swash plate.

j. Once satisfied reset the travel in the transmitter to the normal travel limits.

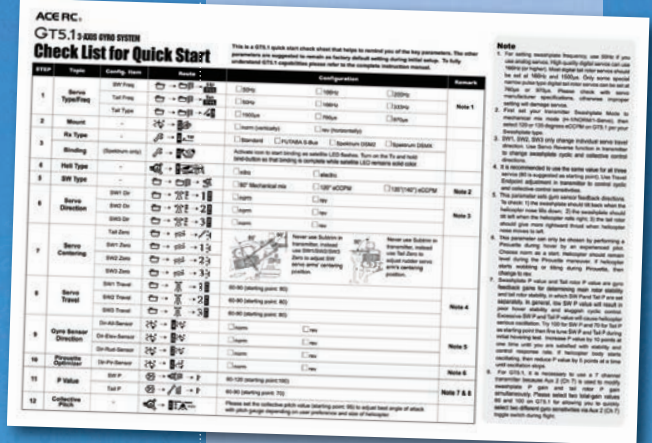
Finally don't forget to return the time out option to five seconds.

Step 13: This is the tail stick dynamic menu which dictates the feel of the tail and how sharp the tail control is. Leave this as default initially but tune it by increasing the value until you get what you want to get sharper stops, or of course decrease to slow it up

Step 14: Servo set-up - complete travel, this allows you to stop binding of servos at the extreme, but you do need to set each servo

Step 15: Overall servo limit, this can stay as is unless you really need to change the servo limits as you can't get enough adjustment in step 14.

Step 16: Pitch travel and agility - this allows



You get a quick reference guide which you will need to understand the icons the first few times



I love the display with the visuals of the inputs from the Tx

for min and max pitch deflections which will vary according to your motor and ESC set-up or nitro set. I would aim for 12 +/- as a minimum. Adjusting the Aileron and Elevator menu here will increase or decrease your rotation rates and agility based on increasing or decreasing pitch, obviously the more you have the faster it gets.

Step 17: Tail servo limit - as it says on the tin, this allows you to stop binding on the tail pitch slider and once set you can connect the tail push rod. Now there are a lot of other adjustments and my key ones would be the Feed Forward and I and P menus which are in essence the gain menus. The Feed Forward menu actually dictates how direct the control feel making for a sharper feel, play with this to see how you get on.

My new step 18: Put the time out option back to 5 or 30 seconds to avoid any mishaps later on when fine tuning.

FINE TUNING

You can do a lot of tweaking with the GT5.1, and arguably more than many other units, especially when at the field with no laptop. The options to fine tune



3D flying is lapped up by the GT5.1

Sport flying is equally performed by the the GT5.1

are vast and I would recommend playing with a few, but only make one tweak at a time to you knows what you have done. You should be able to get your perfect set-up with this unit based on all these parameters, but you just need to play and to tailor to your needs.

For many the default setting it a nice balance but for me I wanted it sharper and made the fee forwards more direct and go the gain as high as possible. It really is a matter of taste.

CONCLUSION

For a price tag of £149 this little unit is packing a punch and has a decent box of tricks up its sleeve.

I both love and hate the menu options with the adjustment bar on the side of the unit. I love it because it is a blue LED lit screen, but also because it is a unit that looks cool and is compact, but here is my main bug bear. In some machines you just won't get the room to adjust anything as

there is no space around it, for example in a smaller 450 or even 500 and 550 these units can be buried, however on the 600 and 700 machines it is easy to use. I guess you could program outside of the model but it would be a fiddle.

All in all though the adjustments and parameters you do have are great and would allow the most experienced guys to really push this unit to the limits.

There is no doubt it flies well and flies

well out of the box with lots going for it. Having played with it a bit I would say it is intuitive to use and the standard set-up is great. The newbie may struggle at first as the instructions are not great but they do more than achieve the job in hand.

All in all a nice little unit and a great update to an already good product. ↩

Jamie Cole

With no nasty vices or ugly surprises we like the GT5.1 and living with it is easy

Tech Spec...



TT ACE-RC GT-5.1

Product type:	Triple axis FBL Controller
Output display:	96 x 94 pixels OLED
Input:	Touch Pad
CPU:	32-bit high speed processor
Tail pulse:	1520 / 970 / 760
Tail frequency:	50Hz - 333Hz
Swash frequency:	50Hz - 200Hz
Swash type:	90° 120° 135° 140°
Dimensions:	29.5 x 32 x 16mm
Weight:	15g
Part No:	TT8085
RRP:	£149.99

Available from: All good model shops

Distributed by: Amerang

Web: www.amerang.co.uk

Manufactured by: Thunder Tiger

Web: www.tiger.com.tw



Getting serious

PHOTOS BY ROB BINGHAM



THE AIR HELI COMPETITION IS IN ITS SECOND YEAR AFTER A VERY SUCCESSFUL AND VERY WELL ATTENDED 2012. THE COMPETITION IS THE BRAIN CHILD OF RICHIE CLARKE AND MATTIE LODGE WHO HAVE BOTH BEEN ON THE SCENE FOR A NUMBER OF YEARS COMPETING IN MANY EVENTS AROUND THE UK. JAMIE COLE REPORTS...



Richie Clarke and Mattie Lodge may be an 'odd couple', but they are great guys who have a passion for this hobby and

enjoy every part of it. Off the back of these competitions they wanted to give something back and came up with a plan for a new competition with a new take on competing that is fun for all, most of all the pilots but also for the crowd, be them heli gurus or 'Joe Public'. And so 'AIR' was born.

The AIR competition is held at Weston Park Model Show in Telford as part of the 'Helifest' flight line which is exclusively reserved for helicopter flight. The model air show itself is actually quite a big deal with thousands of visitors over the weekend and some of the best RC plane pilots in Europe, but for us the major part the event is of course the AIR 3D heli competition which forms a major part of the weekend events. The before and after of the competition is a fun-fly hosted by Helifest which includes the evening and nighttime activities.

SO WHAT IS THE AIR COMPETITION?

In essence it is an all new format with three judges to satisfy and it's all set to music. For me the AIR competition is refreshing to see, we need as many comps in the UK as possible to help everyone have a chance of competing and putting their skills to the test in a nice and easy to use format. It also helps to progress and to satisfy the desire to compete. Having been involved in the hobby for 20 or more years it is the competition element that has driven skill levels so high, as they are today. The conventional competitions are great but they require a lot of dedication to get anywhere near the required standard for multiple disciplines such as set manoeuvres, flights to music and a freestyle round.

The AIR competition is simple, you come with some music prepared and you fly to it as best you can. It requires preparation to do well but it is so much simpler to get in to it.

In the words of Mattie and Richie: "The central aim of the AIR RC heli competition is to provide a simple to enter competition and to leave as many options open to the pilot as possible. Go for a class win or for an individual prize, it's up to you. It will not favour one particular style of pilot... just fly the way you want and fly your best!"

Every pilot flies at least twice in the competition with one flight on the Saturday and one flight on the Sunday. There are actually three classes to the competition: Sport, Advanced and Pro.

The distinction between the three categories is based on the organisers' and judges' opinions based on history and current skill level. The 'Sport' category is for anyone to have a go, you don't need to have entered a comp before or to be a 3D god, but you have to be able to fly to music and to keep the model safe. You will also need an A Certificate from the BMFA to start with.

The 'Advanced' category is for those with a BMFA B or higher with a possible history in competition or with a skill set to suit, i.e. you might be doing piro flips and more technical stuff but you won't be up to the standard of a pro

The 'Pro' category is for the best of the best pilots. The likes of Duncan Osborne and Stuart Mott. They are the cream of the cream.

PREPARATION

Prior to the event the organisers get together and with the help of knowledge of the pilots and the scene are able to categorise pilots in to their category, this happens very discreetly in the back ground before the classes are published. For many pilots this categorising of ability

A Raptor E720 in full on aileron tick-tock mode



Alex Rumble with his dad. Alex put on an awesome show, very good and one to watch



Gavin Murrell and Adam Melton post flight on the Saturday



Team Fast Lad put on a great display over the weekend with the team flights



One of the mix of machines at the event - this is an AleeS Rush





This is Ross Northcot, a lovely bloke but needs a poke in the eye for forgetting to fly to the music, very handy pilot though

Vs class is easy but it can be difficult as some pilots might have been practising hard and may no longer be classed as a Sport or Advanced pilots. For this reason the organisers reserve the result to bump a pilot from one class to another. I am sure you agree that a pilot with pro abilities cannot go up against those in the Sport class. This has only happened on a couple of occasions and has been welcomed as a compliment by all.

The pilots themselves have to submit their music in advance of the competition so that everything is good to go on the day.

JUDGING

This for me is a revelation. Having judged many events over the years it becomes clear that judging is a difficult and thankless task, at least when it comes those who didn't win! Sometimes it can be very subjective which some would argue makes some judging unreliable and inconsistent. I can say this with some experience having competed for years and judged for many, it can become very difficult to judge multiple criteria across 40 or so pilots. This is where AIR differs; there are four judges to judge the different elements, for the core of the competition the categories and splits are as follows:

- 100 of the marks will go to how well the flight was flown to the music - Judge: Jamie Cole
- 100 of the marks go to the technical content - Judge: Mattie Lodge
- 100 of the marks go to the entertainment value and flow of the flight - Judge: David Nolan

In the words of AIR: What are the judges looking for in your flying? More than anything the judges are looking to be entertained! They want to see a rounded flight, originality, not repetitive, well planned and flown in sympathy with the music.

So with a judge looking after one category only it means one

judge can own that area and reliably control and manage the score for that category. Better still it becomes less subjective as the definitions are clear.

One more important point here is that the competition scores were being collated by means of Richie Clarke's super duper technical innovation in the form of his secret scoring site which meant we were able to use iPads or smartphone to score the competitors and to instantly see the results and to publish them at the end of the round. Awesome!

I did mention earlier there are four judges and that fourth judge is the one who chooses the side awards for biggest air, most entertaining, and the low rider award. This year it was Matt Watkin or 'Matt the Splat' as he is also known. So that is the scene setting of the judges and we move swiftly on to the 2013 competition.

COMPETITORS

The entry for AIR is based upon a first come first served basis and this year priority was given to last year's competitors and after a week or so the entry forms went up this year for the remaining slots and were sold out within hours of being online. Better still, the day had a 100% turnout of competitors which is simply unheard of and a great result. The full list is published on the AIR website (www.air-competition.com) with a little description of each pilot, very funny stuff and worth a read!

AIR 2013 Pilot List...		
Pro Class	Advanced Class	Sport Class
Stefan Simmons	Mike Essington	Ali Humphrey
Rob Turnbull	Alex Rumble	Ahsley Moon
Stuart Mott	Adam Melton	Daniel Rose
Adam Turner	Andy Kirby	James Green
Duncan Osborne	Chris Newby	Joe Bailey
Pete Ayriess	Richard Anderson	Ben Thornley
Connor Sloan	Grant Cooper	Sam Burville
Dave Fisher	Alex Hawtin	Rachel Plant
Dean Goffe	Swale Smith	Gavin Murrell
Richard Middleton	Dave Saban	Mike Kendall
Ben Britton	Paul Houghton	Tony Street
Chris Broughton	Harry Driscoll	Rob Bingham
Jack Bishop	Ross Northcott	Rob Barnes
Steven Gerrard	James Moon	

Despite the 50mph forecast we were welcomed with bright blue skies



This is Ross following his poke in the eye! He spanked it on the Saturday towards the end of the freestyle flight



Some may call it cruel, but a full public breakdown of the crash was offered to all pilots that spanked it by the one and only Mike Eddington



Rob Turnbull's ready to go, this was before the can of Red Bull or whatever changed between Saturday and Sunday



Rob Helping out a fellow Northern Monkey, Rob Barnes, both tip top guys. Actually it could be Barnes helping out Turnbull?



Rachel Plant did a good job with the Raptor G4 which she seemed to love



The one and only Rachel Plant heading back with a machine in one piece





A massive quad and camera rig of Peter Ayris. It was a beast and on hand to capture some footage of the event

FRIDAY HELIFEST

Friday is a big fun-fly day where you can arrive and fly. You will also find many choose to camp over the course of the weekend whilst enjoying the Helifest part of the weekend events. I did not get to make it on the Friday so can't report much other than the fact it was rumoured fun was had by all until the early hours with fun family-friendly fun.

SATURDAY

Saturday was the big start to the event and despite being forecast for 50mph winds we seemed to get away with it. With the competition underway by about 10.30 the pilots were rolling through one by one with only a couple of interruptions to flights with the rain. Conditions were tough, but they could have been worse. Nik Johnson was the commentator for the weekend and akin to Murray Walker with his ad libs and information but a thoroughly funny chap and he did a great job of keeping all informed.

The Sports pilots all did an fantastic job, I don't think I needed to run from my chair on one occasion for fear of my own personal safety, although there were a couple of 'edge of your seats' moments. One thing that was clear was that some pilots had forgotten to play to the judge's key scoring of technical, entertainment and of course music. I have to say that the standard of this class is very high but an important note is to try to play to all of the judges at the same time and although some of the Sports class pilots could have done better with the flights to the music, the results were very good. A few flights stood out for me including Ben Thornley for how far he has come and then Rob Bingham who had an Angry Birds styled Goblin flying to Angry Birds music. He did a great job of keeping some basic beats to the music and keeping an entertaining flight, great stuff.

The Advanced class saw some amazing flights from many of the pilots but a few of them stood out above any others. Mike Eddington put on an interesting flight

which was actually perfectly timed to the music as was Pete Gray's. Swale Smith and Alex Hawtin both stood out as awesome displays and would have probably won a straight freestyle flight but both completely missed the beats to music to the point the flight represented nothing in common with the music which was a great shame as they were on it!

The Pro class pilots were all doing an amazing job but at the end of day one there were a couple of clear leaders with the likes of Jack Bishop putting on massively entertaining flights whilst wearing a pink tutu! Yes a ballet dancers pink tutu as he embarked upon a flight to music that was near perfect to the mood and the tempo as well as hitting many beats to the music, an awesome demonstration of how to fly to music.

Somehow we made it through day one having covered some 40 or more competitive flights to music and being treated to SAB Heli Division team pilot Bert Kammerer of 'Smack Talk' fame wringing the neck out of his Goblins and putting on a simply stunning show in front of the crowds, an amazing demo pilot. We also had flights from many of the events sponsors such as team Fast Lad, team Midland Helicopters, Team Align-Trex. co.uk and a few more.



Bert Kammerer is a legend! And he was at Air doing demo after demo



Not sure if this is Bert's Goblin, but if it was it was mental, and he is mental but awesome

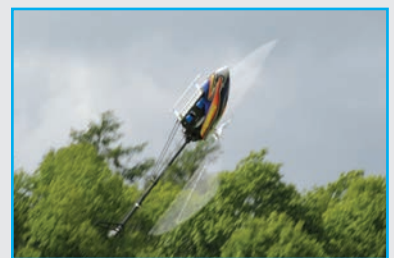
Optifuel was a fuel for champions at this event



Optipower Ultra 50s were the battery of choice for most of the top pilots



The 700E seemed a very popular choice for the weekend winning in many categories



Stu 'The Rock Star' Moff looking onto the competition and readying himself for his mentalistic flight



Dave and Julie fisher returning from the flight line



Nik Johnson commented all weekend with the help of Mike Eddington keeping us all entertained





One of team Align-Trex.co.uk pilots giving it large

The results for each category were released after each event so everyone could make some assessments on their flight for the following day.

SUNDAY

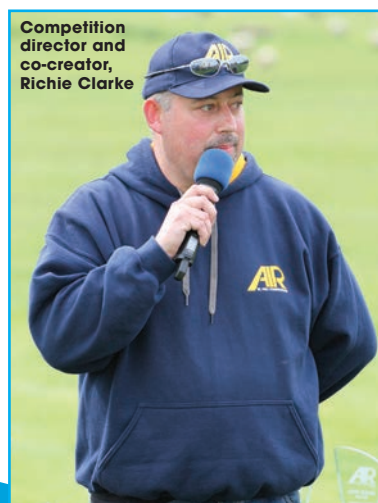
With an earlier start, kicking off at 10am the competition was underway. The competition started with the Sports again and then straight in to the Advanced, across both categories it became clear that the heat had been turned up significantly. I am not sure if this was down to better weather conditions or the fact that the challenge was on and everyone was rising to it but in short the standard improved significantly in almost every area. In Sports Ashley Moon turned it up in to what seemed like a use it or lose it flight which he hit hard and the representation to music was clearly one of the best in the Sports category and indeed would have done well to get high scores if judged as an Advanced pilot. Ben Thornley also did a stunning job and only narrowly missed beating Ashley to the top spot. In the Advanced category it was a tough call between Chris Newby who did a stunning flight with lots of low entertaining stuff and a nice technical score. This was closely fought by Alex Hawtin but although his first minute of the flight was great to music the sync to music died off after that first minute or he would have been in a chance of winning.

Pete Gray looked sick when he finished his flight as day number one was a much better flight despite the conditions being better on the Sunday. One of the flights I was enjoying the most was Grant Cooper who put in a surprise, super low, super on it flight covering lots of scoring bases but he spanked it a couple of minutes in to the flight and didn't have the opportunity to finish what would have been a high scoring flight. Another one of surprise was Harry Driscoll who has clearly improved massively over the last couple of months: a few more tweaks to his flight and hitting a

few beats and this chap could win a competition like this with ease.

The Advanced class was again an interesting one with lots of changes in places vs day one. Rob Turnbull must have had his Weatabix, Redbull and something else before he flew and he really tuned up the heat to put on a stunning flight that was super sharp and on it. On day one he flew like he had background music but on day two he had disco fever and hit every beat with his heli.

At the top of the Advanced class on day two the heat was really turned up, Jack Bishop, again with pink tutu on performed a stunning flight to music again hitting nearly every beat with an interpretation of that bat with his heli; you have to watch this with the link from the AIR website. Most impressive of all was him turning up the heat to perform a number of new moves such a remote tail in rolling circle, again in time to the music, he also pulled a lot of new stuff out of the bag that he didn't do the day before. Top of the tree though was a battle between two of the top UK Align pilots with Duncan Osborne and Stuart Mott. Duncan put on an awesome flight, as you would expect, that was super accurate and had some new stuff in there which looked effortless but that you knew had taken lots of practice. Stuart put on an equally impressive performance but managed to



Competition director and co-creator, Richie Clarke

A Raptor E720 - they were well represented in the comp



Pete Gray's Logo 600 did a good job in the wind



Another Raptor E720



And yet another Raptor E720



A T-Rex 700 DFC Nitro, not that many nitro machines were in the competition



Bert's Goblins were mental, that poor sheep didn't know if Monday would come!



One of the winning 700E DFC machines



Trevor Wallinger, owner of Midland Helicopters and Chris Walton, owner of Fast Lad almost shake hands. They love each other really!



edge in front of Duncan with a flight that was a little more varied in tempo and had some crowd pleasing low level aggressive flying whilst also managing to get some bigger smoother stuff in. It was this and his flight to the music that put him in front of Duncan. Two very different styles of flying, and two awesome flights.

AIR 2013 Results...

Sport

- 1st Ashley Moon
- 2nd Ben Thornley
- 3rd Rachel Plant

Expert

- 1st Chris Newby
- 2nd Peter Gray
- 3rd Alex Hawtin

Pro

- 1st Stuart Mott
- 2nd Duncan Osbourne
- 3rd Jack Bishop

Winner of the Special Awards

Low Rider:

Alex Hawtin for a grass cutting super low and on it on it flight

Big Air:

Joe Bailey for a super smooth and big flight

Most entertaining:

Jack Bishop

HARDWARE

Which models of helicopters were being used over the weekend is an interesting one. There was a good mix of mainly 700 size models even in the Sport category, which was a surprise as I expected more 550 and 600 size machines however it was mainly large electric helis although there were a couple of nitro machines present as well.

Interestingly our recently reviewed 700E DFC, which we loved, came out top in advanced with 1st, 2nd and 3rd places and also placed 1st and 3rd in Advanced and 1st in Sports with Ashley Moon.

There were also a number of TT Raptors in the competition with the E720 doing very well and couple of G4s thrown in for good measure. It was clear the large electric machines were a benefit over the nitros, especially in a competition.

CONCLUSIONS

It's easy to get wrapped up in these events and to believe your own hype, especially as we as heli pilots think that our hobby is so awesome, but for me the icing on the cake was comments from people that were non heli pilots. I got chatting to a few of the crowd and many said they had actually come to Weston Park for the weekend to see the flying on the main flight line but were tempted over to the way of the helis as the flight line seemed to be buzzing with action and excitement. They stayed for much of the weekend to simply watch something that they classed as being fun, exciting, entertaining and just a damn good show. And that for me sums it up, they didn't care who won but they did enjoy the show.

For me it was one hell of a show and I look forward to be invited to the next one.

So to Grant Cooper - I take a bow to you for putting on the event in the first place and to Mattie Lodge and Richie Clarke I take my hat off to you for an absolutely fun filled tip top event. You need to get along to either compete or to watch next year. 🇬🇧

Jamie Cole



This was the podium for the night flights



The Pro winners, left to right - Jack Bishop, Stu Mott and Duncan Osbourne

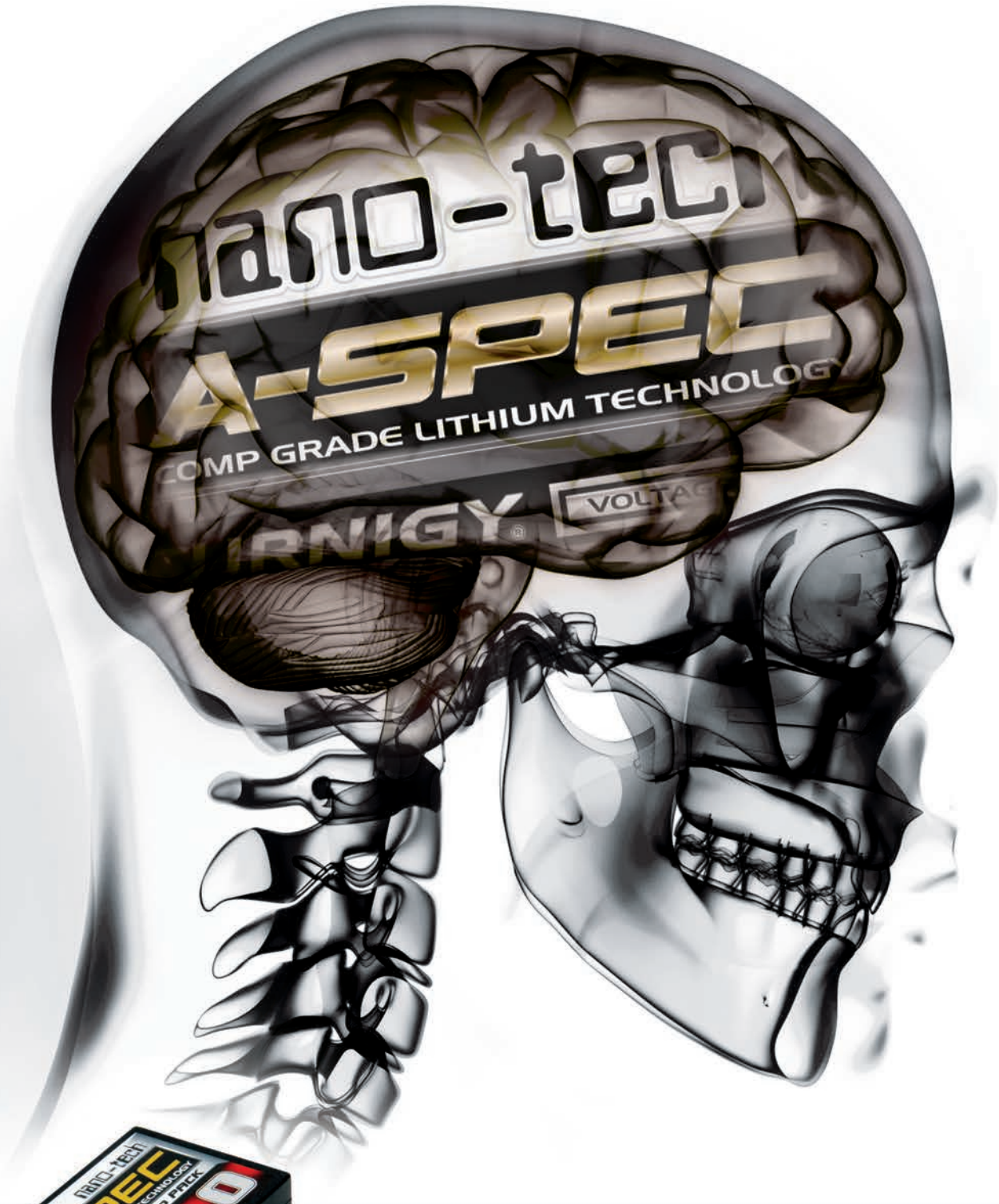


The Advanced class winners, left to right - Alex Hawtin, Chris Newby, Pete Gray

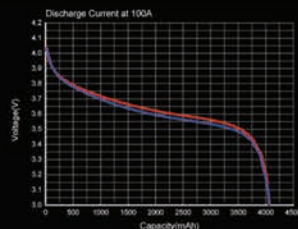


Sport winners, left to right - Rachel Plant, Ashley Moon, Ben Thornley

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HEAD TURNER



FOLLOWING THE SUCCESSFUL LAUNCH OF THE VALUE FOR MONEY RAPTOR 550S, THUNDER TIGER IS NOW OFFERING A FLYBARLESS HEAD CONVERSION FOR THOSE PILOTS WISHING TO UPGRADE THEIR MACHINE AND JOIN THE GROWING NUMBER OF FLYBARLESS FLYERS. DAVE DIJKMANS GIVES IT A TRY



Thunder Tiger has an optional flybarless upgrade kit available for the Raptor to transform the traditional helicopter with flybar to flybarless. This kit works extremely well with the E550S, and takes only a short time to convert. You need to switch the gyro out for a three axis flybarless gyro, and the kit replaces the stock head.

UNBOXING

The flybarless conversion kit comes in a small cardboard box. On the outside it indicates the type of rotor, in our case the reference: Serial No. 3926 for Raptor 30/50. On the back it indicates the spare parts and reference with a photo. They also recommend using the flybarless rotor system together with the Thunder Tiger GT5 flybarless system. Upon opening the box, you'll find that the rotor is pre-assembled and placed in a foam tray. Two bags can be found within one the swash out arms, and in the other one the linkage rods, ball-links and necessary screws. The rotor-head is made entirely from silver anodised aluminium and looks very good.

CLOSER LOOK

The rotor has a simple design and has a good finish. I was surprised not to see the Thunder Tiger logo or name on any of the parts. This doesn't matter but it's just a missing detail that came to my mind.

Each blade holder is made out of two pieces which are joined by two M3 x 6 screws. The inner part of the blade holder can be disassembled by one M3 x 8 screw. The blade holder houses two radial bearings and a thrust bearing.

The linkage rods are turnbuckles according to the manual; although the included linkage rods in the kit were normal. The swash out arms are mounted directly to the central hub, this eliminates the traditional wash-out system with a collar clamping to the main-shaft. This ensures a perfect line up and no phasing in the rotor-head.

The feathering shaft has a 7mm and the main-shaft a 10mm diameter. The centre hub is secured to the main-shaft by two screws. The blade holders use M4 x 8 to secure the blades in place.

FLYBARLESS CONVERSION

The conversion process is pretty painless. I replaced the main-shaft with the one included in the flybarless kit, and replaced the original head (everything above the swash-plate) with the new flybarless head.

Although the rotor-head comes pre-assembled by the factory, I had to take it apart completely to review and apply grease and thread lock to all screws. I was surprised about the amount of grease used on the thrust bearings and it's good that the rotor head is pre-assembled.

It's important as well to check the position of the thrust bearings and verify correct mounting position. Apply silicone oil to the feathering shaft as indicated by the manual, as we always do. Thread lock should be applied on all screws threaded into metal. An exception are the two screws holding the main-shaft and centre hub because a locknut is used so thread lock is not required.

After this you should remove the gyro and install the flybarless system, in my case the Microbeast. Set-up with the Microbeast is a little more in-depth than with the stock gyro, but straightforward if you follow the instructions (we did a set-up guide in the last two issues of Rotorworld). The Microbeast is a great match for the E550S. With the conversion complete, it was time to fly!

IN FLIGHT

Thunder Tiger presents this conversion kit as a flybarless rotor-head which gives you more power and extended flight time because of the less mechanical and flybar drag. Also it should make the helicopter more agile and give better pitch response. Let's check the sensations of this rotor in flight.

As this was the RTF version of the Raptor E550S reviewed in a previous issue of Rotorworld I left all the set-up identical as for the throttle curve. In normal mode we get approx 2,200rpm. I noticed the

The rotor-head comes very well presented in a box with foam trays



Comes pre-assembled by the factory and made fully out of aluminium



These are the components that are included in the conversion kit



The look of the Raptor changes dramatically with the flybarless rotor, with the flybarless head you get a very nice and clean look of the mechanics



The flight performance of the helicopter with this conversion kit in comparison with the standard flybar is very good. We managed to get better agility, greater precision and stability



helicopter a little unstable when hovering, but it was agile. I activated idle up one with 80% throttle curve raising the head speed to approx 2,500rpm and started to do some quick forward flying and the performance was pretty good. With respect to traditional flybar rotor-head I must say that after installing this new flybarless rotor-head that it became much more agile and quicker on cyclic response. I started doing some 3D manoeuvres such as hurricane, pie-dish, chaos, tick-tock... and the helicopter was moving well. The Raptor servos included in the RTF version work well with flybarless system but have a very basic performance and they cannot take full advantage of the system and the flybarless rotor.

The E550S is absolutely more nimble and responsive with the flybarless head, and the conversion really turned it into a different animal! For anyone looking to take their E550S to the next level, this is definitely the way to go!

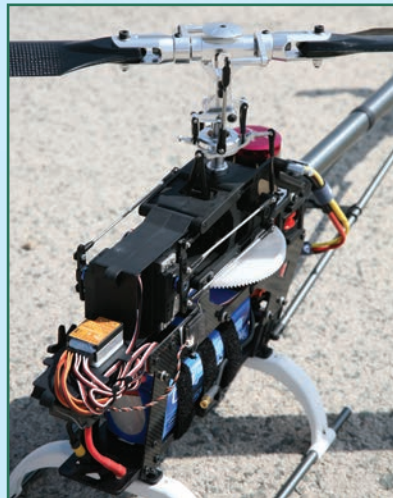
THE VERDICT...

With the Raptor FBL Conversion kit it was extremely easy to convert our Raptor E550S Sports kit over, and the E550S became a whole other helicopter. You'll get better performance in flight, more agility, stability, response and power. There's no doubt this rotor-head upgrade is an excellent choice for better flight performance. 📧

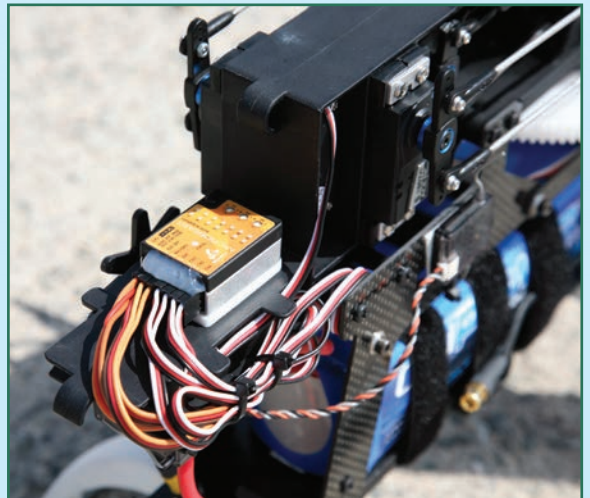
Dave Dijkmans



The flybarless rotor-head rises the level of this Raptor E550S



With this kit we easily transform our Raptor into a higher performance machine



We decided to install the Microbeast flybarless system. Easy, fast and with excellent performance

'There's no doubt this rotor-head upgrade is an excellent choice for better flight performance'



Having less resistance of the rotor-head we got more power, more cyclic response and agility

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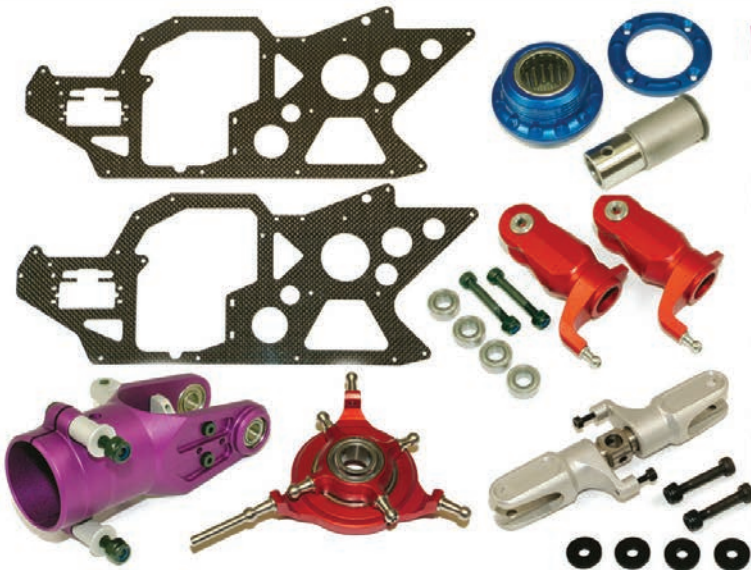
515mm main blades

430mm main blades

350mm main blades

Quick Link

PERFORMANCE PARTS



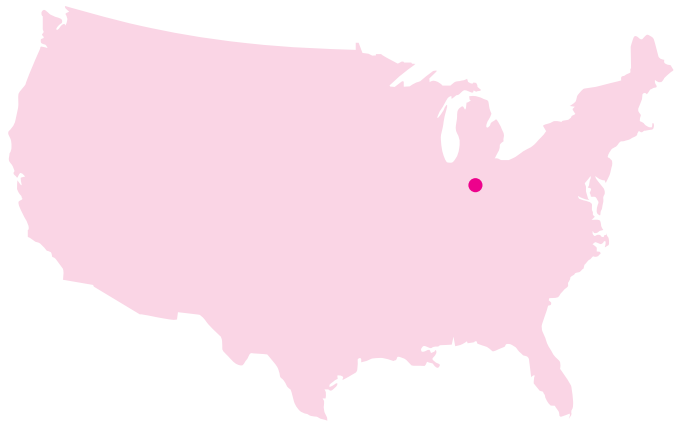
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ROTORWORLD'S US CORRESPONDENT, TIM DIPERI REPORTS FROM THIS YEAR'S XTREME FLIGHT CHAMPIONSHIP (XFC) WHICH TOOK PLACE AT THE AMERICAN NATIONAL FLYING SITE IN MUNCIE INDIANA (AMA)
PHOTOS: XFC JUDGE - GORDIE MEADE



Xtreme Flight Championship



The XFC event is one of the prime model aviation competitions held today.

In addition to having some of the biggest model helicopter talents around, this unique competition also draws some of the biggest and best names in the model airplane community. Truly, the best of the best, both

rotary and fixed wing, fight it out to be named 'XFC Champion'.

FREESTYLE FLIGHT COMPETITION

The XFC is currently the only formal 'freestyle' flight competition held in the United States. Most every competitor, airplanes as well as helicopters, is invited to participate which really assures the very best pilots are involved. Unfortunately, this year, several competitors were

unable to accept their invitation; thus allowing for some additional last minute qualifiers to fly.

The XFC began a number of years ago and has developed into the premiere event for 3D competition in the United States. For the past few years, Hobbico has been the event coordinator and sponsor as well as Align Helicopters being the 'helicopter title sponsor' for 2013.

XFC 2013 invited pilots...

Plane

Altuz, Gabriel	.....	Puerto Rico
Archer, Ryan	.....	USA
Arnold, Seth	.....	USA
Dussia, Jase	.....	USA
Garib, Hugo	.....	Brazil
Garle, Aaron	.....	Australia
Gritter, RJ	.....	USA
Hicks, Jamie	.....	USA
Holman, Daniel	.....	USA
McGrath, Devin	.....	USA
Pauzuolis, Donatas	.....	Lithuania
Pinzon, Nicolas	.....	Canada
Santos, Manuel	.....	Mexico
Smith, Joe	.....	USA
Stringer, Matt	.....	USA

Heli

Bell, Colin	.....	Canada
Bossion, Duncan	.....	France
Bossion, Johnathan	.....	France
Brandenburg, Eric	.....	USA
Dahl, Kyle	.....	USA
Gittin, Jacob	.....	USA
Haley, James	.....	USA
Jestschin, Daniel	.....	Germany
Marozas, Mitch	.....	USA
Maxwell, Nick	.....	USA
Miller, Wilson	.....	USA
Robertson, Jamie	.....	USA
Stacy, Kyle	.....	USA
Storick, Ben	.....	USA



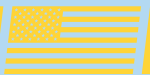
The 2013 Champion, Jamie Robertson (centre), Kyle Dahl second (right) and Kyle Stacy third (left)

HOT SHOT PILOTS

As mentioned earlier, there is also a 'last minute' qualifier. The event planners wanted to provide the opportunity for that 'hot shot' pilot to have the chance to compete with the pros and have a chance at the big money too.

The four day event, including Thursday for practice and for the last minute qualifiers to get a spot, was held in the middle of June at the American national flying site in Muncie Indiana (AMA). This is the same 1,000 acres in which the AMA/ American Nationals and IRCHA Jamboree are held.

The results were determined via a combination of the preliminary



Adding the final tweaks to the model before flight



Canada's top 3D pilot, Colin Bell



Everyone has a sense of humour

p (XFC) 2013

round and the fly-off rounds. Only the top 'magnificent seven' pilots would get the chance to compete in the fly-off portion.

During Friday and Saturday, each pilot was allowed one 'unknown' flight and one 'known' competition flight per day. The three known manoeuvres were as follows:

Big Ben Reversal - The pilot will start with a tail in hover on the centre line. When the pilot starts the tick tick, the tail will be in the 6 o'clock position and the blades will be facing the judges and pilot. The pilot will then perform a counter-clockwise tick-tick hitting all 12

points. They will end back at the 6 o'clock position in a tail in hover and will hold that hover for two seconds. After two seconds passes, the pilot will then do a 180-degree pirouette. The helicopter will now be in a nose in hover, and the skids will now be facing the pilot. The pilot now repeats all 12 points of the tick-tick (clockwise) ending back at 6 o'clock in a nose in hover for two seconds. The pilot will be judged on altitude control and also hitting all 12 points of the clock with precision.

Vertical Rolling Figure 8 with Roll Reversal - The pilot will start from fast forward flight coming from the

left or right. On the centre line the pilot will start rolling and enter into the 1st half of the rolling 8. When the pilot completes the first half of the manoeuvre and the model reaches the centre line at the top of the vertical 8, the roll direction reverses and the pilot will complete the second half of the rolling eight while rolling the opposite direction. The pilot will be judged on the consistent speed of the manoeuvre, positioning and making it a recognisable vertical 8.

Pirouetting Flipping Reversal Loops -

The pilot will start this manoeuvre flying from either the left or right. From fast forward flight when the model hits the centre line, the pilot will start the first pirouetting flipping loop while pirouetting. When the pilot completes the first loop and the model hits the centre line, the pirouette direction will switch to the opposite from the first loop. The pilot

will then start the second pirouetting flipping loop while pirouetting.

The pilot will be judged on making the loops round and keeping consistent speed through both of the loops and also positioning.

Everyone had to be proficient at these and the manoeuvres have been posted for some time. With the cast of talent at the event, there was no room for mistakes and the ones who made them were out of the running quickly.

THE COMPETITION

Shortly before the event began, several invited pilots backed out (for various reasons) including defending XFC champion, Nick Maxwell. I did not chat with Nick at the event but was told he had a business trip scheduled a few days after the event.

The first round on Saturday ended with Kyle Stacy winning



That's a high angle



Fixed wing freestyle flight



the 'unknown' flight schedule and (former champion) Jamie Robertson winning the 'known' flight schedule essentially tying the two competitors. Kyle Dahl (another former champion) was able to keep his normalised scores in good condition throughout Friday and Saturday to be in the running on Sunday.

At the end of Saturday, it was painfully obvious that this dog fight was not over; the top three finishers were so close at that time, it was anyone's contest to lose. The seven helicopter finalists were:

- In no particular order (BTW, the order they finished in was the same order they flew the finals in):
- Bell, Colin Canada
 - Dahl, Kyle USA
 - Haley, James USA
 - Marozas, Mitch USA
 - Robertson, Jamie USA
 - Stacy, Kyle USA
 - Storick, Ben USA

FINALS DAY

Sunday arrived soon enough and there was a good deal of excitement since this event would not be a blowout; someone would win it today and no one for sure knew who it was.

Like so many sports, this event was going to be won by the pilot making the fewest mistakes. At this level, the judging had to be very tough since the 'normalised' points that separated the champion from the runner up was only seven (7) out of two-thousand (2,000)! How the judges picked this out I'm amazed.

The final two (sets) of rounds had Jamie Robertson winning both of the 'known' manoeuvre flights and Kyle Dahl winning both of the 'unknown' flight rounds. At the end of the day, Jamie had enough 'less' errors to become the XFC champion 2013. Kyle Dahl was a close runner-up and Kyle Stacy was a close third place. ☑

Tim DiPeri



Former champion, Kyle Dahl



Third place, Kyle Stacy from New York, USA



Multi-time champion, Jamie Robertson



James Haley, Team Horizon product developer getting ready to fly



Former XFC champion, Nick Maxwell demonstrates a new Thunder Tiger model



One of the team GAUI pilots readying his X7 model



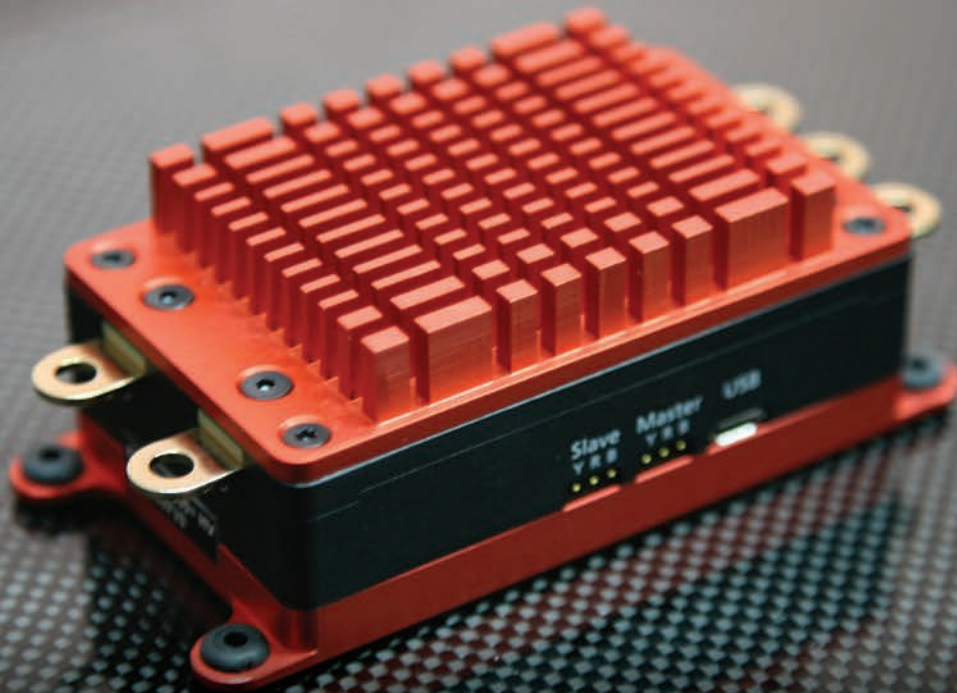
The seven helicopter finalists

More info...

To find out more about the Xtreme Flight Championships, visit the event's official website at www.xfc-rc.com

Some of the airplanes lining up for a turn





King of Cool



IN THE WORLD OF ELECTRIC-DRIVE TECHNOLOGY, KONTRONIK IS CERTAINLY ONE OF THE WORLD'S LEADING MANUFACTURERS AND OFFERS VERY HIGH QUALITY MOTORS AND SPEED CONTROLLERS. THEY ARE EXTREMELY POWERFUL OUT OF THE BOX AND REQUIRE LITTLE TECHNICAL KNOWLEDGE OF THE RESPECTIVE USER, SINCE THE PROGRAMMING AND INSTALLATION ARE VERY SIMPLE. THE LATEST GENERATION SPEED CONTROLLER IS CALLED COOL KOSMIK THAT STANDS OUT FOR MANY SPECIAL FEATURES. THIS RED POWER MONSTER IS AVAILABLE IN A 160 AND 200 AMPERE VERSION AND ALSO AS 'NORMAL' AND 'COOL' VERSIONS. WE TESTED THE LATEST 160A HV COOL KOSMIK IN DETAIL. BY DAVE DIJKMANS



The Kosmik, with its performance and technical features, is designed so that almost all pilots, from the scale modellers

up to 3D pros can control and use this system. The continuous output is an incredible 10 kilowatt (KW) and it should handle peaks up to 12kW according to the manufacturer and should be no problem for the new device.

Until recently the 700 class helicopters with a rotor diameter of 1,500 millimetres (mm) were really the top of the class! Today more and more manufacturers are releasing 800 sized helicopters which provide an entirely new demand for power. Helicopters from this class can easily weigh more than 6,000g which means that an original 700 class motor and speed controller combination will not provide sufficient power. The use of maximum 12S LiPo batteries, like with the traditional JIVE controller is usually not sufficient anymore so the trend goes to use a 14S LiPo flight pack set-up. Another upcoming trend is the use of high-voltage servos which are operated with a voltage of 8 volts to have an even more powerful control of the model. Therefore a good BEC is needed.

THE RIGHT DIRECTION

This is where the Kosmik comes in. Before, the JIVE was able to handle up to 12S but now the Kosmik takes it a step up and can handle up to 14S LiPo packs.

The BEC of the JIVE was for many years one of the best on the market, but it only provides a maximum output voltage of 6 volts and is therefore not suitable for the new generation of high-voltage servos. Here you can show off with the Kosmik because it allows you to set the BEC voltage range from 5 to 8 Volts and can be adjusted in steps of 0.1 volts. As already described before, a 160 and a 200 ampere version are available.

The two versions are identical to each other; you know which version it is when you see the data sheet engraved on the bottom part of the Kosmik. The BEC in the 160 Amp version can handle 7 ampere (A) continuous and 20A peak current for a short time, the 200 version got a BEC with 10 A continuous and 30 A peak current. All of this means that when you buy a Kosmik controller there will be no doubt about the performance of the speed controller today and in the future.

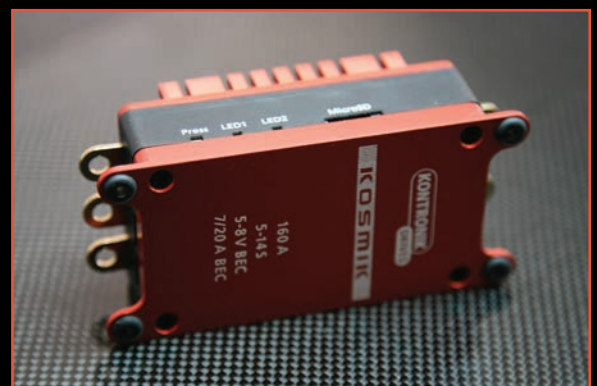
WITHOUT CABLES

When I opened the box and got a first look at this 90 x 54 x 29mm big red

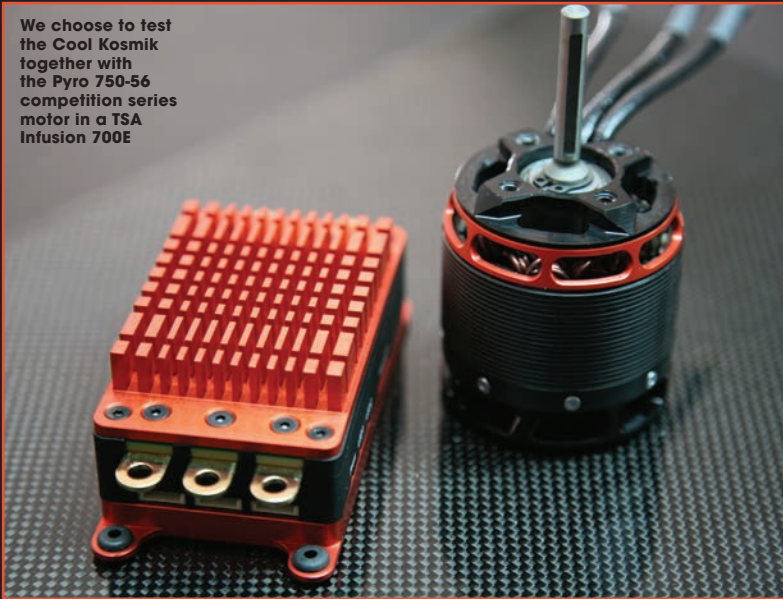
anodised housing I noticed that there are no cables anymore coming out of the ESC.

Kontronik decide to go a different way and made use of built-in gold plated lugs to which you screw the required cables. This not only provides a safe and solid power connection but also is ideal when the controller needs to be moved to a different model and another cable length is required. Now you can just order from the Kontronik Kosmik accessories some new cables and fit them. You don't need to force the old ones or shorten or extend them to the correct length which always looks ugly.

The new Kosmik is a completely different design compared to other speed controllers on the market. The Cool Kosmik has a compact aluminium case with a heatsink on top and a special SD Card slot for logging data



We choose to test the Cool Kosmik together with the Pyro 750-56 competition series motor in a TSA Infusion 700E



ALL INCLUDED

Of course included with the Kosmik is a complete cable including screws and lock nuts. Also included is a 200 amp fuse to be screwed, according to safety instructions, between the battery and controller. Besides this they include two BEC connector cables, in which a ferrite ring is integrated. Only when both cables are connected, the full power of the BEC can be used. For safety reasons Kontronik recommends to use a supporting battery. So just in case, the model has problems with the electronics the helicopter can still be landed safely. An absolute highlight is the integrated data logger. The Kosmik also includes a 2GB micro SD card which stores all relevant measured values, but more on this later.

As a test model I had the Align T-Rex 800 Trekker and the TSA Infusion 700E. While there are no space problems in the Align 800 and the Kosmik can simply be screwed to the available tabs, it was a little tight in the TSA Infusion 700E. Here it becomes clear that the Kosmik has been designed primarily for larger models. But wanting to equip their 700 size heli with this power combo in order to push through some brute power can always find a place for it to mount.

After finding the ideal position it is good to screw it tight and cover the connections with the supplied heat shrink tubing to avoid short-circuit danger when touching to other metal parts.

PROGRAMMING

After installation of the Kosmik it is time to start the programming. After studying the manual, owners with a JIVE, will notice right away that there are only six modes instead of the previous eleven. The only mode interesting for helicopter pilots is mode four with a real governor mode included.

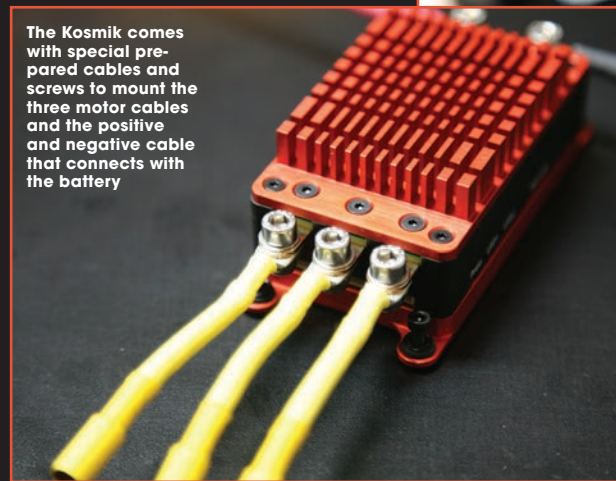
As usual we program a linear throttle curve in our transmitter from 0 to 100. After we connect the flight pack to the controller, which thanks to integrated

anti-spark function, proceeds without sparks you need to push the button placed on the side of the Kosmik to enter in programming mode.

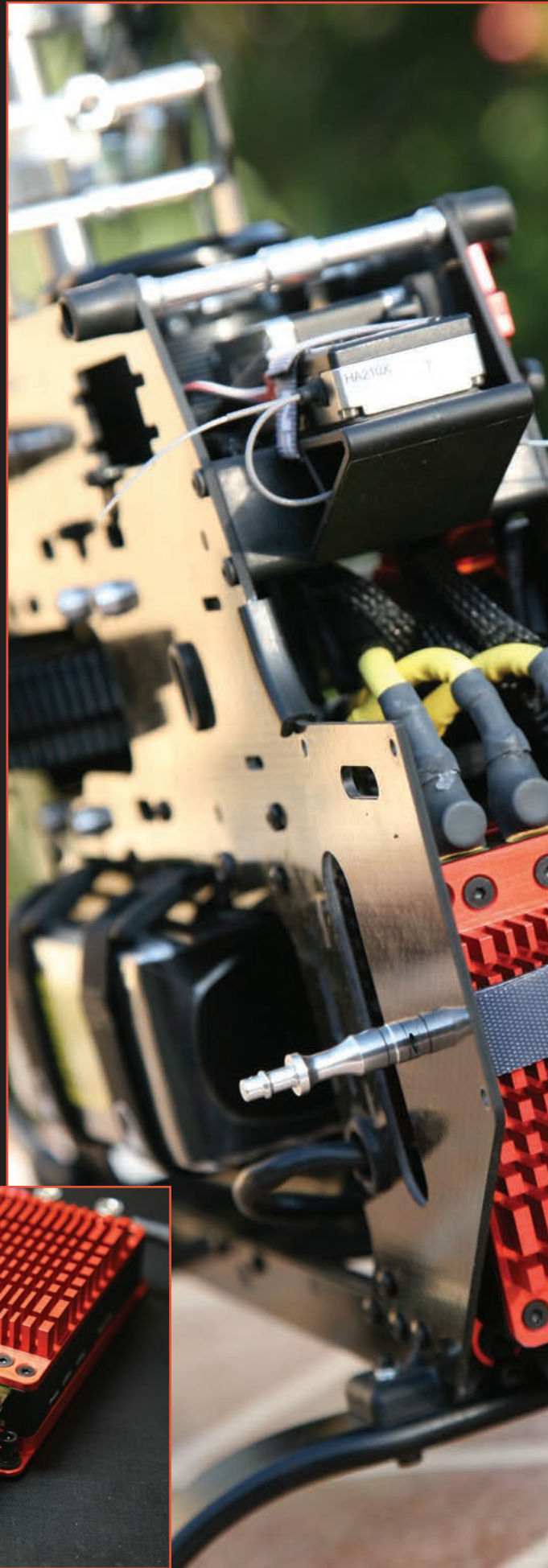
After four beeps we push the throttle stick to full throttle and the Kosmik acknowledged the setting with a series of tones. Alternatively to the tones you can see the status via the two LED which are located next to the SD card slot.

There is no other settings programmable than mode selection. Rotation direction and voltage setup from the BEC is only possible with the optional PROGDISC from Kontronik. So I recommend if you are thinking about buying a Kosmik you order directly this handy programmable PROGDISC device.

Before you first connect the Kosmik with PROGDISC you are not aware of the possibilities and settings available on the Kosmik. As soon as you connect it becomes visible which extensive set-up possibilities this controller offers. Besides the already known Gov-Store-Mode from the Hell-Jive where you can programme a fixed head speed regardless of the status of the batteries, you can also programme the spool up time up to 60 seconds which is an especially useful option for scale helicopter pilots.



The Kosmik comes with special prepared cables and screws to mount the three motor cables and the positive and negative cable that connects with the battery





Although it's bigger than other speed controllers we managed to mount it in a perfect spot where it is protected in case of a crash

In 800 size helicopters the space is not an issue. In our case we installed it on a 700 size helicopter. In this image you can see that it has been perfectly installed behind the front electronics tray

PROGDISC BEC programme screen, here you can programme a voltage range from 5 to 8 volts. The BEC included in the Kosmik is ideal for an HV set-up

Main menu of the PROGDISC when you connect it

To programme the Kosmik you need to update first to the latest version 4.0 software available from the Kontronik website to activate the Kosmik menu on the PROGDISC

New in the Kosmik is also the ever-active bailout function which needed to be specially programmed with the Heli Jive. This ensures that the motor for example during a bad auto-rotation for a very short time goes back to its original head speed.

This function was actually intended as a rescue function but nowadays many 3D pilots use this function to do spectacular manoeuvres in which the motor will be switched off briefly. Without this bailout function the controller would have spooled up again like when you lift off the first time after you start your flight.

GOVERNOR

After all settings are complete you need to set the autorotation throttle curve to a value of 25 per cent (%) and programme two flight modes with two straight throttle curves at 60 and 80% in the transmitter. I don't recommend to set the throttle curve higher than 80% because the Kosmik will then have no chance to regulate the head speed properly. It is always a great joy to hear the spool up of a Kontronik combo as this is done with a constancy and linearity as never seen.

After the flight you can take out the SD card and see the Log file of every flight made with the Kosmik. The log file is a text

form (.txt format) file. This can be read either with any text editor or you can use the programme Log View (www.logview.info) which is available free for download on the internet and can even present the data graphically.

The following information will be shown: motor speed in RPM, the battery voltage in Volt, the motor current in A, the temperature in degrees Celsius (C°), the PWM value in %, the throttle position in %, the BEC voltage in volts, the BEC current in A and the BEC temperature in C°.

As soon as the motor starts to rotate hundreds of data lines are written per second. With this information you can see exactly how efficient the motor and controller are working or how much power is drawn from the servos in flight. The files themselves are so small that several hundred flights can be stored on the SD card.

SENSORS

Kontronik presented at Heli Masters some of the sensors available for the Kosmik. In the future the Kosmik will be able to house three external sensors such as a GPS module which will be logged and stored on the SD card as well.

THE VERDICT...

With the Kosmik, Kontronik has achieved something beyond all speed controllers on today's market. The controller works extremely efficiently. Thanks to the carefully designed housing it can be easily mounted and should also be able to put away a good crash. New features such as the data logger and the high-voltage BEC are well done and groundbreaking for the future.

With a continuous load capacity of 160 and 200A, completely new paths can be followed by other brands. These controllers are not only for just the hardcore 3D fliers but can also add a lot to big scale model fliers.

At a first glance it seems to have a relatively high purchase price. However, a 200A speed controller is never cheap. If you need to buy a separate high voltage BEC and a data logger you will see that the total cost won't be so much cheaper. I think pilots who think that big helis is their thing and they are looking for a perfect head speed management the decision to buy a Kosmik will be justified. ←

DAVE Dijkmans



Tech Spec...

Cool Kosmik 160+ HV	
LiPo:	5-14, 20-59V
Continuous current:	160A
BEC continuous current:	7A
BEC peak current:	20A
Size:	108 x 53 x 44.5 mm
Weight:	250g without cable
RRP:	£564.99
Manufacturer:	Kontronik
Web:	www.kontronik.com

Long Term Commitments



WE CONTINUE OUR REVISIT OF REVIEWS OVER THE LAST 12 MONTHS AND LOOK AT HOW THEY ARE FAIRING UP AGAINST THE WEAR AND TEAR OF EVERYDAY USE



We have reviewed some fantastic models over the last few years, although there have been a few that weren't so good and never made it to print. However, those that have made it to the pages of

Rotorworld have stayed on the fleet for at least 12 months or more to be used, abused, broken and then repaired. Sure some models review well but the true review is how they stand up to the test of time and the cost of ownership, so here's an update to a couple of our favourite machines from the past 12 months.

T-Rex 450 Sport V2



Original conclusion and thoughts:
"Spending over £300 will get you all the gear to go in a T-Rex 450 Sport V2;

spending £299.99 will get you a Trex 450 Sport V2 with all the gear! Not only is this an exceptional value for money deal as a bundle the machine in this test has proved to be exceptional for a 'sport' machine which is arguable the entry level model in the Align range of 450 machine. The reality is that it is more than capable of being not just an entry level machine but actually a bloody good 3D machine that more than lives up to the pedigree of the Align Sport range and beyond.

"Having Owned a T-Rex 450 SE V2 and the T-Rex 450 Pro I have to say these machines, the spares back up, the spares cost and the performance are exceptional. Align set the bar and raise it time and time again.

"To be honest I didn't know what to expect here initially and I was dubious about a Sport V2 being different enough to even justify the V2 name but the reality is very different. The instructions are good, the build is quick and easy. A great build could be achieved by anyone that can follow the very well laid out manual, so it's good for the newbie to helis and the advanced alike. The best just got that bit better and with more power."



450 Sport V2 featured new style pitch mixer arms bolted to the main rotor-hub

The 3S flight packs are not included. Check for space beneath the canopy on certain brands of LiPo pack

GENERAL CONSENSUS OF OPINION:

When I took the 450 Sport V2 out for a thrashing many were surprised at how well it flew out of the box and I think this is due to the quality of all the components combining to be one great little machine with a tight control system. The net result is seen through flight and despite the fact the 450 Sport V2 is one of the few flybarred Align models still available in the range, most of the new stuff is now all flybarless, I reckon I could still out fly many with this set up thanks to the power to weight ratio and the quality of the overall machine. You then tell people the price tag and they are blown away. You get a metal model, high quality components with no real upgrades for £345

UPGRADES

The only real upgrade you could do to the 450 Sport V2 is to turn it flybarless with a DFC head conversion.

- DFC head conversion - H45162QNT: £37.50
- Align 3GX - HEG3GX01T: £169

There are of course other flybarless systems available but you should be able to get the 3GX discounted with a DFC head conversion. The result of the above conversion would be a model completely up to the Spec of a 450 Pro DFC, minus the side frames and the tube driven tail.

SPARES, REPAIRS AND MAINTENANCE

Believe it or not I have yet to properly spank the 450 Sport but looking around spares are readily available and stocked.

- Main-shaft: £8.99 for a pair
- Feather spindle / shaft: £4.99 for a pair
- Main gear: £5.50 for three
- Canopy: around £18.99 painted
- Undercarriage: £5.50 for a pair of plastic landing skids
- Boom: £5.25 per pair
- Blades: £14.99 depending on your own



particular preference.

- Main Frames: £10.75 upper per pair and £8.75 lower per pair

Total cost of a boom strike, £34.22 including blades, as with most of the Align stuff most parts come in spares so you get the second crash FOC! Except for the blades.

So far the model has proved easy to work with and little maintenance has been required.

FLIGHTS TO DATE

Around 70 flights to date, not all by me. In fact I loaned it to a young chap whilst his model was in for repair and he lapped it up practicing his budding young 3D skills, so it may be more than 70.

LIVING WITH IT/LONG TERM CONCLUSIONS

It really is difficult to say anything negative about this machine. Some may sneer at the fact this one has a flybar but my god does it go well, and as already stated is as capable as many of the flybarless machines. Personally I think it's a great little machine and an awesome or highly recommended starting point into the world of RC helis as nearly everything you need is in that box, all you need is a receiver and main battery and away you go.

The build element is easy but for a newbie it would help them understand the basics of the mechanics of it before moving on to more intense stuff. I still have a soft spot for this machine and it is currently the only flybarred model in the review collection. ☒



Because the swashplate had been trimmed and levelled on the bench, the very first hover was very stable



Flipping inverted you find the machine is nicely planted and well balanced

Blade 300X

Original conclusion and thoughts: "Love it! This is fantastic size model. Despite its size it doesn't behave like a baby but like a really

well behaved little gem. This could have been a scatty beast or a handful but Horizon Hobby have done a stunning job at making this just what I wanted it to be.

Due to its size and price this will appeal to the newbie and it would be highly recommended by me as a first conventional heli, even for the newbie and will definitely be forming part of our stepping stones series for Aaron to get some stick time in on. At under £300 excluding the transmitter it makes an awesome starting machine with a very simple mechanical set up that should prove easy to repair. Best of all it will be great in the summer season but also ideally suited to indoor flying at many of the weekly indoor events around the country.

"Out of the box for the intermediate to expert pilot means a well rounded machine that is very capable of all but the hardest of hard 3D. For the Pro you may want to up the control rates but again that is the beauty of the flybarless controllers, just tailor to your desired feel



The 300X is a fantastic machine to practice inverted flight as it's so cheap to bend and mend

and off you go. Fundamentally what you have here is one neat little out of the box package that will give you hours of fun and enjoyment be it that you are a beginner or pro. Yes there are upgrades, yes there are tweaks which you can

Tech Spec...



Product type:	.....450 size electric 3D heli
Length:	.....634mm
Height:	.....230mm
Main Blade length:	.....325mm
Main Rotor Diameter:	.....715mm
Tail rotor Diameter:	.....158mm
Motor pinion:	.....15T
Main Gear:	.....1510T
Gear ration:	.....1:10:4.24
Weight with motor:	.....540g
Weight (with battery):	.....825g
RRP:	.....£299.99

Available from: All good Align stockists
 UK distributor: Robbe UK
 Tel:01455 637151

spend your hard earner pennies on but rest assured with the support of Horizon Hobby you will not regret a Blade 300X, if you are off to the indoor season later in the year then just get your wallet out now."



Brushless motor is forward mounted between the LiPo pack and rotor-head

GENERAL CONSENSUS OF OPINION

The 300X got some really good vibes at the time around the size of the model and what it was capable of. We took it to a number of events and a number of people were eager to fly it. The initial reaction from most was one of surprise which is because, like me, they thought it would handle like a small agile, skitty heli but the reality was a docile little machine with the out of the box set-up and then something that came alive when you sharpened it up a little bit.

Believe it or not on reflection the stock head speed was pretty low and that was something that many 3D pilots fed back on. Most said that the model would do well with a higher head speed and some carbon fibre blades.

I know that a number of pilots went out and bought one thanks to the size and the overall cost effectiveness of the kit, especially the bind and fly version which came in at a silly retail price of under £279.

UPGRADES

The question here is how deep your pockets are! There is an entire range to



Blade 300X is supplied in a polystyrene lined box: very handy for transporting the machine

support the 300X including new canopies, coloured blades, aluminium tail drive pulleys, aluminium tail pitch sliders, aluminium tail cases, the list goes on and on. But for me I would probably upgrade to those parts when I spank it and need lots of spares but the real value in getting the 300X upgrades comes from the head components which I have listed below:

- BLH4507A – metal head block: £22.99
- BLH4502A – Metal blade grips: £25.99
- BLH4501C – carbon main blades: £24.98
- 3 x metal geared high speed digital servos: Circa£60 for cyclic.

The above will give you a machine you can wind the head speed up on and kick the hell out of and it will repay you with a super crisp and super capable performance.

The very first hover was pretty much perfect



SPARES AND REPAIRS

I have only managed to break the main gear on the 300X and also bend the tail hub in transit following it being shut in the boot! One of the dangers of leaving it in the car I suppose.

As with all the Blade range the spares are readily available and pretty cheap to repair, other than the carbon main blades, which I think are extortionate:

- Pair of main blade grips (plastic): £5.65
- Feathering shafts with screws x 2: £3.98
- Main frame set: £11.24
- Landing gear: £3.98
- Main-shaft x 2: £7.99
- Main gear x 2 - £6.65

All in all the spares are very reasonable and very readily available.

FLIGHTS TO DATE

Over 75 flights have been logged to the Blade 300X – it would have been more but the 450X was in the collection at the same time and that seemed to see more action over the summer months.

LIVING WITH IT/LONG TERM CONCLUSIONS

Battery packs are £34.99 for E-flite packs which are great quality, but you can get other branded packs for half that, and it is that for me that is very attractive, cost effective batteries for lots of flights in a day.

My one frustration with the out of the box version is that it gets upset when you up the head speed to what I would want it to be, in fact it starts to buzz. With the metal bits and carbon blades it is fine but that is annoying. Saying that it hasn't stopped me flying it at the recommended head speed and getting hours of fun out of it.

The key to the 300X is convenience, it is a definite park fly and it takes up so little room that on my trip to France last September I was able to slip it into the car without anyone noticing, so off we went to fly in the middle of nowhere in blazing sunshine in the west of France, simply awesome and I enjoyed every flight, until it got shut in the boot!

I have used this to learn some new stuff when perhaps I may not have even flown. I love this little thing but am going to fly it to death so we shall see what happens. ☺

Tech Spec...



Product type:	300-class electric flybarless collective pitch helicopter
Main rotor diameter:	550mm
Tail rotor diameter:	140mm
Gross weight:	491g
Length:	510mm
Main gear ratio:	15.5:1
Kit/ARF/RTF:	BNF
Control System:	120 degree CCPM
Rotor blade length:	245mm
Minimum age recommendation:	14 years
Experience level:	Advanced
Recommended environment:	Indoor/Outdoor
Assembly required:	No
RRP:	£299.99

UK distributor: Horizon Hobby UK
Tel: 01279 641097
Web: www.horizonhobby.co.uk



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SEPT.

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SEPTEMBER

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Guinness World Record Attempt.

7-8 North East Area Fly In
R/C Fixed Wing, Heli, Free Flight, Control
Line, Mini Goodyear Comp. Camping
on Site. At Cramlington DMAC. Off A1182,
East of Cramlington. Contact Allan
Davison on 01670 733096

14-15 Southern Model Show
Headcorn Aerodrome. Contact Heritage
Events, on 01689 300005 or
colin@synergyeventsuk.com or see
www.heritage-events.co.uk

15 Park Hall Helicopter Scale Heli Fly-in
Scale only. Park Hall Heli Club. West
Hallam, Nr Ilkeston, Derbyshire, DE7 6HR.
Contact Dave on 07889 188369 or Roy on
07734 590002 or www.parkhallheli.org.uk

27-29 3D Championship
Croft Farm Waterpark, GL20 7EE. See
www.3dchampionship.co.uk for details.

SEPT.

29 AHA Helicopter Event
Provisional Date. Probably F3C and
Sportsman. Tring. Contact Jason Markey
on 01403 226931 or 07889 486471 or Jason.
markey@trendcontrols.com

OCTOBER

5 Charmouth Autumn Fly-in
See www.theaha.co.uk/charmouth.htm
for details

**13 Beverley and District Model
Aircraft Club Autumn
Swapmeet**
9.00am to 12 noon at Tickton Village Hall.
Nr Beverley HU17 9RZ.
Contact www.badmac.net/ or
Simon Tweedale on
jansimon@tweeddale.karoo.co.uk
or on 01482 844914

NOVEMBER

**9 North London MFC Indoor
R/C Meeting**
6pm to 10pm. F/W 225g max, 36in max
span, Heli 400g max. Furzefield Sports
Centre, Potters Bar, EN6 3BW. J24, M25.
Contact Peter Elliott on 01707 336982

10 Medway MFC Indoor Flying
10am to 4pm. R/C and F/F. F/W up to
24in, Helis up to 250s. Fort Pitt Grammar
School, Chatham, Kent, ME4 6TJ.
Contact Colin Benham on 01634 317187
or colinbenham@blueyonder.co.uk or
see www.medwaymfc.org.uk

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Heli Masters 2013

In the second part of our in-depth
report we go behind the scenes
and interview the pilots



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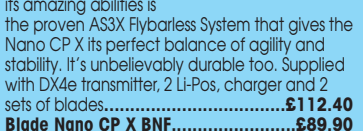
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