

**SPEC:** 2WD CARBON FIBRE CHASSIS **CLASS:** ON-ROAD COMPETITION **COST:** £209.99



# LINKED-IN

*Following the current trend of link design rear suspension 1:12 cars to suit the latest LiPo batteries, Xray have updated their XII accordingly so we put it to the test*



Last year, Xray launched into the well-established pan car market. As the original electric radio control car class, the technology was well developed with little change through recent years. Over the year that Xray have been involved in 1:12 scale, the class has however changed significantly, and with this change there was a need for a new type of chassis from Xray, the XII Link.

The traditional T-bar 1:12 chassis has long relied on the cells being placed on either side

of the central fibreglass T-bar. This was fine with the older sub-C cell technology where a link wire could be used to divide the cells, but now with LiPo technology, a single pack needs to be accommodated. This has led to the creation of a new breed of link design chassis', where the battery sits centrally. The format of a fixed pivot in the middle of the chassis, controlled by links on either side of the chassis allows the cells to be positioned across the centre line of the car. This results in a very

neat layout that accommodates the new generation of 3.7V LiPo batteries perfectly.

### ORANGE BOX

One thing that can now be taken for granted with Xray kits is the standard of presentation you are greeted with upon receiving and opening the box. Although the box may be orange, the Xray team have withheld the gaudy orange anodising of the touring car range and gone for the classic natural

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Nosram speed controller is still a popular choice in 1:12



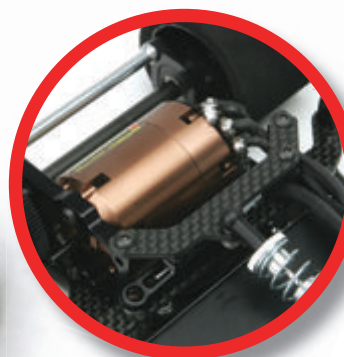
Threaded bodied, oil-filled centre shock is of the traditional design



Ready LiPo is securely located in the chassis with its shaped case and Xray's moulded retainers

## OPTION PARTS

- 372181 Front coil spring c=4.0 Silver
- 372182 Front coil spring c=5.0 Black
- 372183 Front coil spring c=6.0 Grey
- 376216 Centre graphite servo mount with alloy stands
- 372080 Front aluminium active brace - set



Rear pod is minimal to allow for installing the latest brushless motors

## VERDICT

- ⊕ Quality of kit / Adjustability of the kit Set-up manual
- ⊖ Tight fit of the side shock below the rear pod

**Racer Rating:** ★★★★★

silver look for all the alloy parts. In addition to the parts to build the car the box also contains a set of instructions and a set-up guide for those new, and not so new, to the intricacies of 1:12 set-up.

## PREPARATION

As always the first task to embark upon with the kit is the preparation of the carbon fibre parts. This is less essential on 1:12 cars as they don't grind on

tarmac as touring cars do, so the risk of delaminating carbon is reduced, but rounded edges and super-glued finished certainly helps aesthetically!

## FRONT SUSPENSION

The front suspension is the Xray's interpretation of the incredibly popular reactive caster double wishbone suspension. The lower wishbone is

fixed, with the top wishbone pivoting. The front suspension is infinitely adjustable, with static caster (the amount of angle on the king pin) being adjusted via spacers on the top wishbone, and reactive caster (the amount the angle of the king pin changes as the suspension is compressed) being adjusted by eccentric spacers on the inside of the front suspension mount. It may all sound complicated, but is actually incredibly simple to



Ball differential uses a proper thrust bearing for ultra-smooth operation and longevity

This suspension design is the standard in the 1:12 racing category

We chose to fit Parma Blackhawk wheels and tyres for testing

Reedy LiPo is a neat battery pack rated at 4.0C and 4600mAh capacity

## WHAT WE USED

### Electric Kit

Transmitter:	KO Propo Esprit III Universe
Receiver:	KO Propo KR-302F 40MHz
Servo:	Futaba S9650
Speedo:	Nosram Matrix Evolution Spec Racing
Motor:	Nosram Storm Evolution Spec Racing 10.5T
Battery:	Reedy 4900mAh LiPo
Body Shell:	Parma Zytek
Tyres:	Parma Blackhawk Magenta/Yellow

*"Adjusting the side springs to a harder rate allowed the car to stand up a little more through the corners and carry more exit speed."*

build. The set-up manual informs that more static caster is smoother in high traction, and less caster is better on lower traction and bumpier tracks. More reactive caster will allow the car to react more quickly, and less will smooth the car out. The front end of the car is built with the ride height set for medium-sized tyres. Ride height adjustments can be made via the king pin by inserting spacers, or by adding spacers below the suspension assembly. One tip worth bearing in mind when building the front suspension is to ensure you thread both camber links into the wishbone straight, this will ensure the same camber from side to side. The suspension is attached to the car via four screws and held rigid by a carbon brace, with an optional aluminium brace being available for lower traction

tracks (probably not needed in the UK).

### LINKED TOGETHER

The build continues with the areas that are totally new for this kit. The rear of the chassis differs from the T-bar car with the cells closer together and the outer edges of the chassis housing the links that connect to the lower rear pod plate. The rear pod attaches to the centre of the chassis via a pivot-ball and this allows a very free movement both left to right and in an arc up and down. The roll is controlled by plastic links on either side of the chassis. These keep the pod straight whilst still allowing roll and bump control. On T-bar cars, the side damping was largely controlled by the fibreglass material of the T-bar, but with the newer generation link cars, the roll

control is provided by springs and a side damper. This has several advantages over the previous design as you can make infinite changes to both the damping and spring rates for the roll control.

### REAR END

The rear of the car is constructed around a brushless-optimised rear pod. The side plates are made out of black anodised CNC-machined extra-hard Swiss 7075 T6 aluminium. These are mounted onto a carbon fibre plate and locked together with an aluminium tube at the rear of the pod. This box section is rigid whilst still giving room for instant access to the motor. The bottom plate is mounted to the chassis via the centre pivot and two links.

The axle mounts through the rear of the pod and >

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## ON TEST

We took our X11 to the fantastic Ardent Raceway facility near Nottingham for a shakedown test. We were very lucky that established 1:12 racer Nigel Hale had set up a workshop day at the club for established racers to share knowledge with those newer and less experienced at 1:12 racing. Tutorials covered everything from shell cutting to driving techniques and teachers included European Champion Crisis Kerswell and Worlds A Finalist Andy Griffiths. If you have never tried 1:12 racing, the spirit of this day shows what a great bunch of racers the 1:12 section are and how easily accessible knowledge is.

The Ardent track is a fantastic permanent indoor track with a large and fairly flowing layout for 1:12 cars. The first impression on driving the XII Link was that it felt very similar to the previous T-bar car, which is a good thing as the older style car worked really well. The new LiPo cells mean that the cars can now run at a much lower weight (730g), this gives them a far more nimble feel through the corners. The standard kit set-up proved a perfect starting point and with the rates turned down to 70 per cent the car felt great. As the day wore on, we found that the changes needed could all be achieved by changing the combination of tyres being used. Adjusting the side springs to a harder rate allowed the car to stand up a little more through the corners and carry more exit speed, which suited our throttle style and made for a faster lap time. We also made small changes to the camber to control the wear on the front tyres to ensure they ended the run flat. We ended the day having really enjoyed driving the car, and knowing with the kit and equipment on test the limiting factor was definitely the driver.



Front suspension is connected by a carbon fibre strut although an Aluminium Active Brace Set is available as an option

A Nosram 10.5T motor was a breeze to install into the Xray XII Link with lots of space around the pod area



Side-to-side roll is controlled by an oil-filled shock in the centre and springs at the side

the kit comes with five ride height adjusting spacers to keep your car running at the correct height no matter the size of tyre you are using. The differential builds onto the axle with a 64dp spur gear that contains 12 diff balls that make for an incredibly smooth differential action.

## SHOCKING

The link car uses two shocks – one for roll control and the other for absorbing bumps. The side (roll control) shock is a constant velocity shock that has a small fixed piston and a shaft that extends through both ends of the barrel avoiding the need for a diaphragm. This design ensures smooth consistent damping throughout the travel. The centre shock is a more conventional design that uses a diaphragm. Both shocks are easy to build with an air free action being easy to achieve. The centre shock comes supplied with a spring of undisclosed strength so it is difficult to know how this relates to anything else on the market.

## ELECTRICS

Wiring a 1:12 car is always a task that requires thought as the cars are small and the room is

limited. We chose to use a Futaba 9650 digital mini servo, which fitted perfectly onto the chassis, and thanks to the multiple inserts included in the kit, the servo saver also fitted perfectly. The speedo was the Nosram Evolution Spec Racing speedo that has higher punch settings for stock racing together with being able to handle anything a modified may throw at it. We removed the standard wire as this is too thick for 1:12 use and fitted 16 gauge wire which is easily enough to cope with four-cell/LiPo running and flexes more easily, allowing the motor pod to move freely. We were also lucky enough to be able to get access to one of Nosram's Pure Stock Spec 10.5T motors, which is designed for the popular stock class raced at UK nationals.

We topped the car off with a Parma Zytex shell sprayed by Graham at Custom Blitz. The Zytex shell has been the default shell on the UK scene for many years and is an easy starting point for any 1:12 racer. It is worth noting that with the higher front shock mount on the new car this low slung shell is a tight fit. This is no real problem as the newer generation of BRCA legal shells have more space and will fit perfectly. ■

## SPECIFICATION



MODEL:	XRAY XII LINK
SCALE:	1:12
CLASS:	ON-ROAD
APPLICATION:	COMPETITION
FORMAT:	KIT
POWER:	ELECTRIC
CHASSIS:	CARBON FIBRE
DRIVETRAIN:	2WD
TRANSMISSION:	DIRECT DRIVE
DIFFERENTIAL:	BALL
SHOCK:	OIL-FILLED
BEARINGS/BUSHES:	BEARINGS

## TECHNICAL DATA

LENGTH	328MM
WIDTH	170MM
HEIGHT	46MM
WHEELBASE	195MM
FRONT TRACK	165MM
REAR TRACK	170MM
WEIGHT	730G

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## SUMMARY

Once again Xray have designed a kit that will please experts and beginners. The build quality is first rate and the instructions and set-up book ensure that all the information you could ever need is at your fingertips. The design of the car isn't radical, but is well considered and effective. With this kit a selection of shock oils and potentially some alternative side and centre springs are all you will ever need to turn up and race competitively.