

KYOSHO

An RRC Kit Review by Jeff Gearing

From Japan's largest manufacturer of radio controlled models comes a new 4 x 4 controlled off roader. Named by Kyosho as the Jeep Indiana, the model is based on a CJ series Jeep but includes some original and unusual features never found on the real thing.

The model can hardly be described as a kit. The chasis comes completely assembled, requiring only the addition of the radio gear. The body, fixtures and fittings do have to be trimmed and fitted.

Chassis

This is a ladder frame structure made up from two aluminium longitudinal members and eight cross members, some of which double up as suspension mounts and gearbox support. The long aluminium members are drilled and tapped to take various brackets and the cross members. The plastic front bumper is bolted onto the front of the chassis.

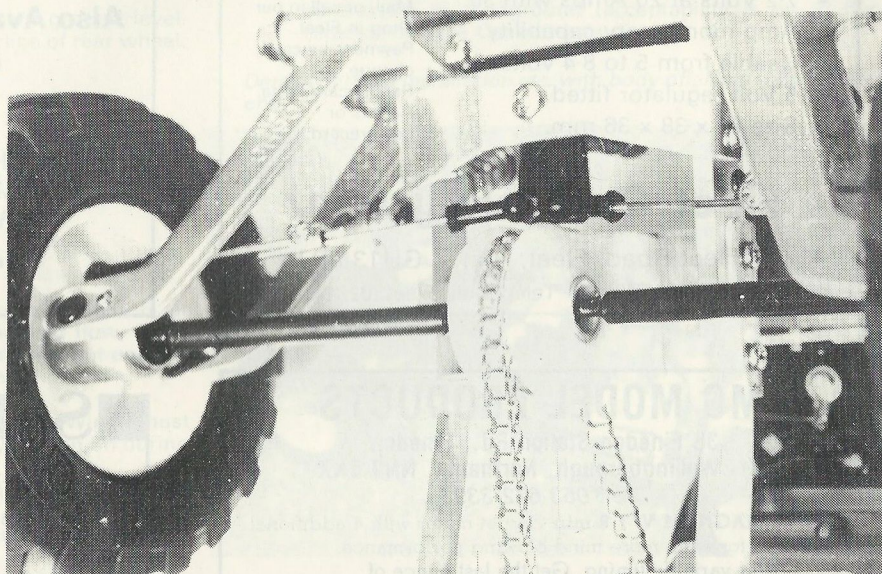
Suspension

Independent suspension all round is provided by swinging arm units with coil over shocker springing. The front suspension is of the parallel arm type, with the drive shaft fitted between the two arms. The arms themselves pivot on rods that reach across the chassis. Each rear suspension is a single swinging arm pivoting on a rod that also reaches across the chassis. The swinging arms are die cast and do not have any form of bushings fitted in them.

Both front and rear shockers are fitted at an angle, the rear shockers are at a particularly steep angle. I think that the suspension is on the soft side, the front is just about adequate but the rear suspension is not strong enough to return the vehicle to a normal ride height after encountering a few bumps. There is an alternative set of springs that can be fitted to the rear, but even these are in my opinion not strong enough. Another problem I encountered was that the rear suspension locked itself down. This turned out to be the two drive shafts being a little too long and as they passed the mid way point they acted like a toggle switch and stayed down. This was overcome by spacing the rear swinging arms a little further apart and fitting some washers between the arm and the chassis. On the credit side the suspension has extremely long travel, nearly 40mm at the rear. The dampers are excellent and really do keep the wheels in contact with the ground, this, with the long travel and soft suspension allow the Jeep to tramp over the roughest ground with ease.

Steering

The wheels pivot on ball joints fitted in the end of the swinging arms. Tie rods are adjustable to allow correct tracking to be achieved. These track rods are connected to a centre mounted servo saver. The ends of the track rods have plastic cups



Front suspension chain and drive.

fitting over brass balls, a fairly common type of track rod joint. The steering linkage operates through a bellcrank, fitted half way between the servo and servo saver. Nevertheless the rod that operates the steering is particularly long, and as such is particularly prone to flexing, making the steering a little wobbly; this probably has little noticeable effect in an off road vehicle. Steering lock is limited as the steering has to accommodate the drive joints in the hub, this is once again a fairly common problem with vehicles with the front wheels driven.

Transmission

This aspect of the Jeep is probably the most unusual. Power comes from a Mabuchi 540 motor which drives a 2-speed gearbox. The gearbox is designed to allow the vehicle to start in low gear, and as the speed increases so it will automatically shift into a higher gear. The gearshift mechanism is coupled to the resistor speed controller. As well as the normal type of shift mechanism the box also includes a centrifugal clutch that is coupled to the higher gear train. Low gear is 22:1 and high gear is 14:1. There is a

single speed reverse gear. I found the setting up of this linkage a bit tricky, and I must admit to being a little disappointed in the way it worked (or to be more accurate, did not work). From the gearbox the drive is taken, by a continuous chain of the wire link type, to drive centre mounted sprockets at the front and rear of the vehicle. A guard is provided under the Jeep that gives some protection to the chain (and to anyone handling the model); it also doubles up as a guide for the chain to the sprockets. The tension of the chain can be adjusted by moving the gearbox; slots are provided in the mounting bracket for this. Drive shafts to each wheel are taken from the centre mounted sprockets. On the ends of the drive shafts are ball and pin type universal joints. These joints can slide in and out of the cups to take account of differences in the pivot points of drive shafts and suspension arm. The front hubs incorporate an automatic free wheeling hub, but this is not manually lockable. The freewheeling hub is a neat, compact unit fitted in the wheel centre. It is made up of four rollers that will allow the wheel to spin freely in

one direction only. The wheels are held on the stub axles by means of a single nut that tightens the wheels onto a tapered shaft.

Construction

The model cannot be said to be a true replica of the original, what with swinging arm independent suspension and chain drive transmission. Nevertheless the mechanics are well thought out; although I still have some reservations about such a long length of chain driving front and rear wheels. For neatness and cleanness I would have preferred shaft drive, especially in an off road vehicle that is likely to be encountering mud and rubbish thrown up from rough ground. The springs at the rear in particular turned out to be definitely on the soft side, as once they had compressed they stayed that way until the car was lifted up again. This I consider to be a design error, and although it would be simple to correct, by either fitting additional or stronger springs, this should not be necessary. The vehicle has good and innovative engineering that is let down by a lack of attention to detail. For example the gearbox is compact and novel, but all the shafts rotate in holes drilled into the casting, no bushes or bearings being provided, likewise the swinging arms of the suspension have no bushes or bearings. On the credit side there are the tyres that are semi pneumatic, being sealed and then glued on the wheels. This glueing on is essential as I have had the tyres work themselves off the wheels. The radio box comfortably holds batteries and servos, a feature on many radio controlled cars that is often ignored with the radio gear being packed in like sardines in a can.

Body

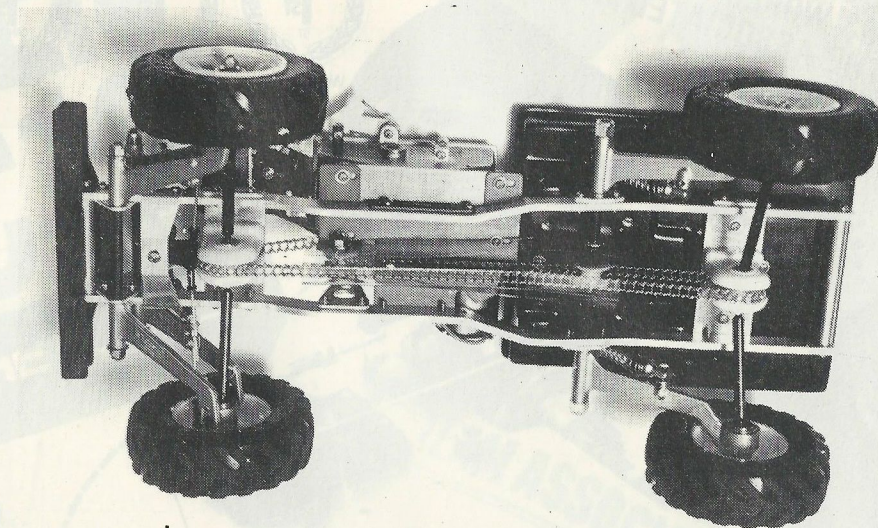
This is made from a single vacuum moulding with a few additional parts to add, such as the steering wheel, radiator grill and roll cage. The body is held on by a single body clip, I would have preferred to have seen two. The front of the body tends to rock about a bit with just the one clip. The body moulding is good for a vacuum forming and takes the inevitable off road knocks very well.

Performance

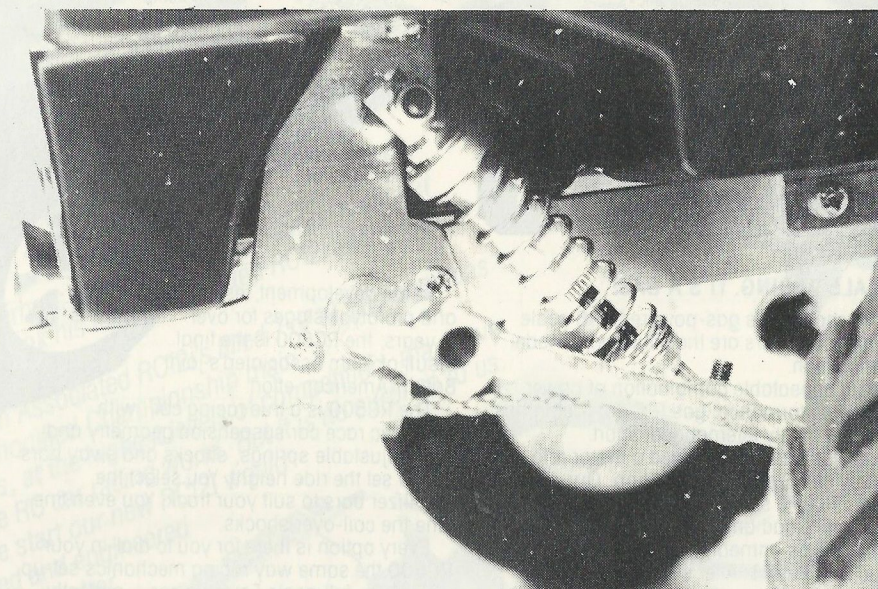
The Jeep is definitely not a racer, weighing in at 2.38kg and with the additional friction of 4-wheel drive it just would not be competitive. As a true off road vehicle it has great potential, the suspension would be good with the correct springs, and although I am not a fan of chain drive I must say that I cannot criticise the way it works in this Jeep. Climbing ability is good with the low gear engaged, but it must be remembered that the vehicle only has 4 x 4 drive when going forward, in reverse the freewheeling front hubs only allow the rear wheels to be driven. As far as reliability is concerned this will be better judged in a few months time. A critical point will be to keep the vehicle well oiled especially with all the exposed mechanisms.

To sum up the vehicle will be an excellent off roader and the initial niggling faults should now have been rectified.

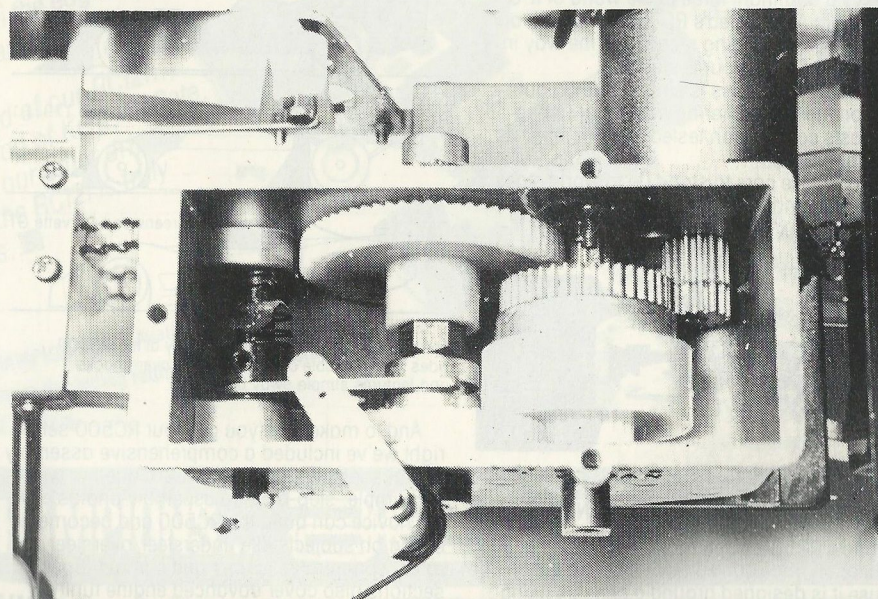
Distributed by Ripmax Models.



Underside of chassis.
A continuous chain drives front and rear axles.



Rear suspension with the coil over shocker.



Inside the gearbox.
The centrifugal clutch is inside the white drum.