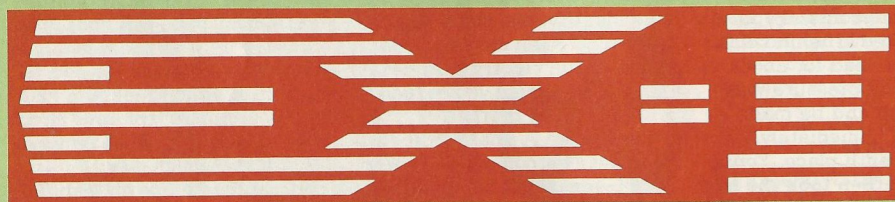




RRC looks at KO's latest 'steerwheel' R/C system.

# KO PROPO



Having used one of KO's superb Esprit II radio systems for the past five months, we were really looking forward to reviewing their new steerwheel system. The EX-1 shares many of the excellent features found on the aforementioned 'twin stick' radio. (In fact it could be said that the EX-1 is simply a steerwheel 'version' of the Esprit II because its 'features' are so similar.)

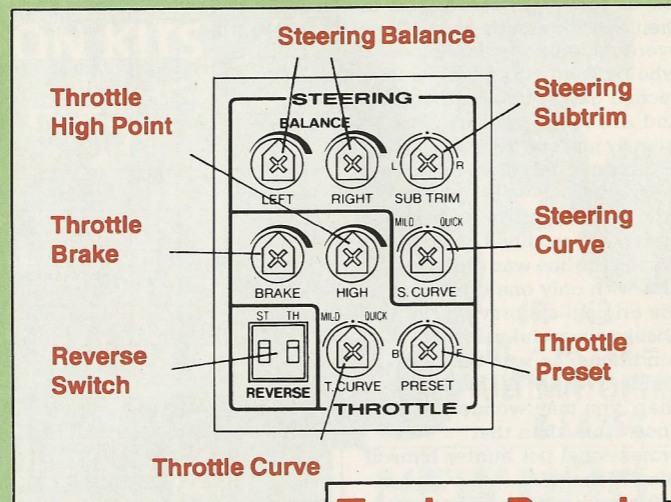
The EX-1 system given to us for review came with the transmitter, receiver, a separate four cell battery receiver pack and two of the latest PS-301BS ballraced servos (also available separately).

## Features and Controls

The EX-1 is loaded with special features designed with the R/C car racer in mind. Some are easily and quickly accessible on the body of the transmitter, and the rest are hidden behind a tuning panel to the left of the steer wheel.

One of the very best features of this system (and, incidentally, the Esprit II) is the fact that both 27MHz and 40MHz crystals can be used with the appropriate module. (A 40MHz module came as standard with our review unit.) The module is inserted into the back of the transmitter and can easily be removed. Because both types can be used you have the option of using every

The majority of the functions are concealed behind a plastic panel on the left of the transmitter.



The silver 'Throttle pre-set button' is perfectly positioned for use during a race.



**Grip Dial, Steering Travel**

**Throttle Preset Button**

Green coloured hand and trigger grip can be seen here.



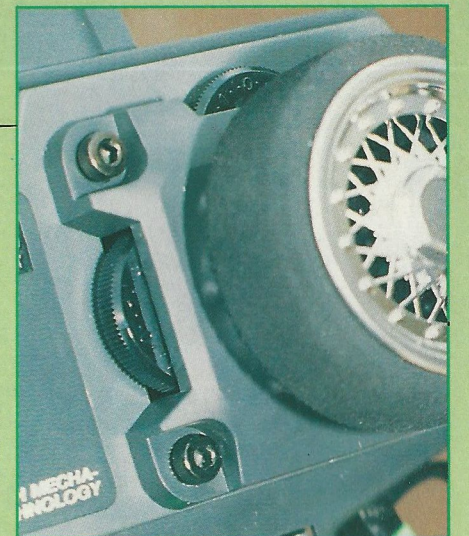
**Grip Colour Pad**



Adjustment dials can be seen above, and to the left of the steerwheel.

**Throttle Trim**

**Steering Centre Trim**



**Steering Wheel**

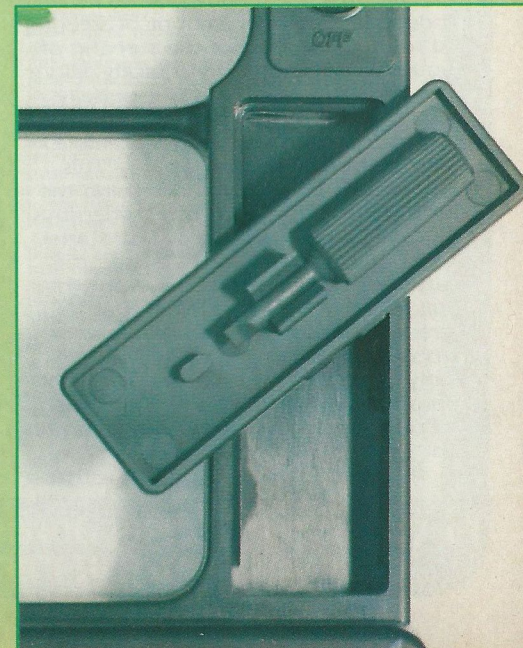
**Battery Meter**

**Pilot Lamp**

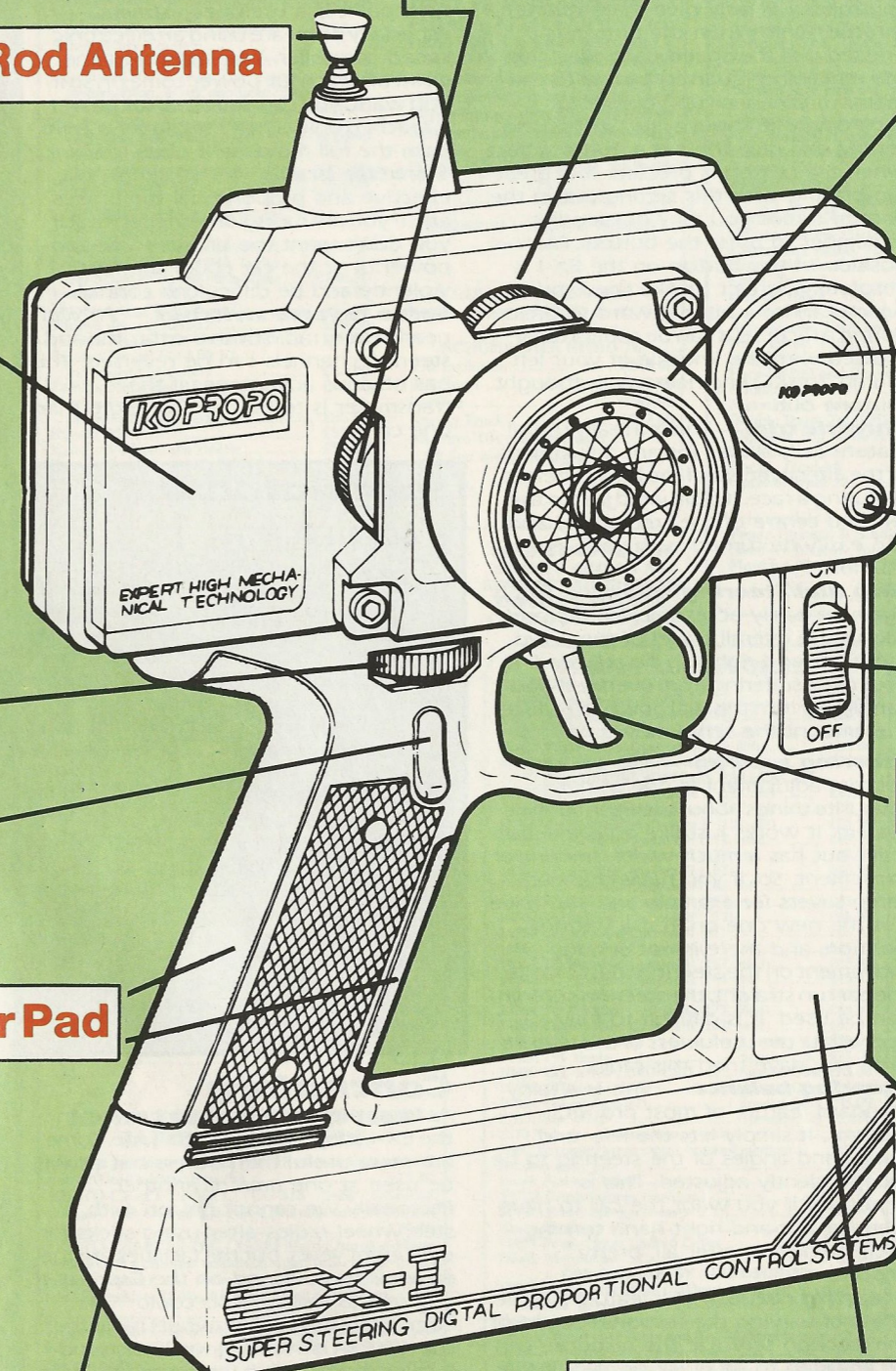
**Power Switch**

**Throttle Trigger (CH2)**

Adjustments are made easier by a small screwdriver hidden within the transmitter.

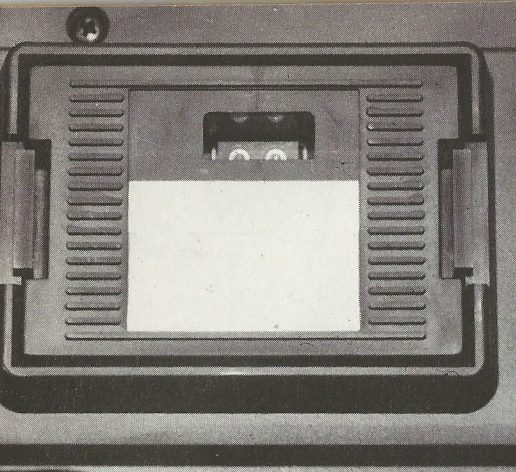


**Rod Antenna**

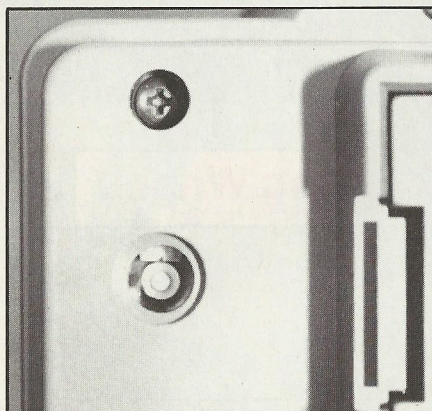


**Battery Compartment**

**Tuning Driver**



Ⓛ 40 mhz module (less crystal) can be seen here.



Ⓛ Nicad charging jack is situated at the rear of the transmitter.

possible crystal available for radio controlled model cars!

For maximum comfort and 'feeling' the throttle trigger control can be adjusted forwards and backwards to suit every size of hand. If you have small hands and short fingers you can move the trigger backwards by simply adjusting a single screw. A rather unique feature of the EX-1 is the inclusion of colour co-ordinated pads on the front and back of the pistol grip, and the front of the trigger. Not only do these maximise the comfort for your hand when holding the transmitter, they make it easy to identify your personal transmitter as different coloured pads can be bought separately.

**Steering centre trim** — This is quite a useful feature and allows the servo to be trimmed around the centre of the neutral position without effecting the overall turning circle (left or right) of the car. Because the 'centre trim' is independent to the amount of steering 'throw', fine tuning of the steering of your car can be done very quickly before the start of a race. (This is especially useful if you have changed suspension geometry or a servo saver for example.)

**Throttle pre-set button** — This button can be used for increasing the braking, giving max throttle when the button is pressed (for 'mega fast' starts), or as a 'turbo' button. (We used the latter for circuit racing so we only had full power when the button was pressed, for going down the straight. This allowed us to gear up as we were only using three-quarter throttle through the infield. We soon grew tired of this novelty, however, and resorted to 'trying' to drive smoothly!)

The idea behind this button is that it

can be preset for anywhere within the range of the throttle servo (or speed controller). If it is set at full braking position then when the button is pressed *maximum (and we mean maximum!!)* brakes are applied, even if the throttle trigger is fully depressed. (Note — the throttle preset button overrides any command on the transmitter at the time it is pressed.) If the throttle preset button is used in conjunction with the 'throttle high point' adjustment it can be set up three-quarters of the way on full throttle position, when the throttle trigger is fully depressed, therefore the speed controller will only give three-quarter throttle. Only when the button is pressed will the speed controller give the remaining (quarter) power to the motor. If you gear up your motor accordingly (ie about a few pinions) this setting can give the car a 'turbo' effect when the button is pressed. It is great fun playing with this setting but in the heat of a race you may not always remember to press the button. The position of this button on the EX-1 is absolutely perfect (unlike the Esprit II which can be a bit awkward to press during a race), as it can be comfortably pressed with the knuckle of your left thumb. The KO engineers really thought this one out!

**Throttle trim** — This is a really useful feature as it allows instant adjustment of the effectiveness of the brakes before or during a race. It is situated just to the left and centre of the steering wheel and can easily be turned with your left thumb.

**Grip dial/Steering travel** — This is again an easily accessible feature and allows the overall travel of the servo (both left and right) to be adjusted. If your car is suffering from oversteer you can simply turn this dial down to reduce the amount the servo moves.

**Steering subtrim** — The steering subtrim adjustment is one of our favourite things about the Esprit II stick system. It works just like a normal trim lever but has a much wider amount of movement. So, if you have changed servo savers for example and you have put the new one on in the wrong position, and there is not enough movement on the steering trim to make the car run straight, the steering subtrim can be used. It is difficult to fully appreciate the usefulness of this feature until you have tried this radio.

**Steering balance** — This is a fairly standard feature of most pro R/C systems. It simply lets the left- and right-hand angles of the steering to be independently adjusted. This is important if you want the car to have identical left-and right-hand turning circles which is, after all, pretty important!!

**Steering curve** — This feature has the effect of varying the response speed of the steering servo, ie the response can be adjusted to be quick or mild. If the steering curve is adjusted to be 'quick' then the servo becomes more sensitive

around the neutral point of the servo. If the curve is turned so the response is 'mild' then it has the same effect as exponential, making the servo less sensitive around the neutral point.

**Throttle curve** — This feature is very similar to the one above, except that it only works in one (forward) direction. If it is set to mild the response of the servo or speed controller is slower around neutral, giving the effect of a smooth throttle response. This can be useful on slippery tracks and can give similar effects to torque control speed controllers.

**Throttle high point** — The throttle high point is a useful adjustment, especially if you are using an electronic speed controller. You can adjust the point at which full power comes in so if you want, you can have it so full power is reached only when the trigger is 2mm from the full movement of its travel.

**Throttle brake** — This alters how effective and proportional the brakes are. If you are racing on a slippery track you don't want the brakes to be too powerful or the car could spin out violently and be difficult to control.

**Servo reverse switches** — As with nearly every radio both the throttle and steering channels can be reversed. This has obvious advantages if the transmitter is to be used for more than one car.

## Specifications

### Transmitter KT-291

Type ..... Wheel with pistol grip  
 Transmitting frequency ..... All bands(!);  
 uses interchangeable modules  
 Modulation ..... AM or FM PPM  
 Output ..... 500mW (Max.)  
 Neutral pulse ..... 1.55msec  
 Power supply voltage  
 ..... 9.6v (nicad) or 10.5v (UM3x7)  
 Current consumption ..... 200mA/10V

### Receiver KR-291F

Receiving method ..... FM-PPM  
 Receiving frequency ..... 27MHz band  
 (1 to 6), 40MHz band (61 to 89)  
 Sensitivity ..... 10kHz/-40dB  
 Attenuation ..... -30dB (Max.)  
 Antenna length ..... 60cm  
 Power supply voltage ..... 3.5 to 6.5v  
 Current consumption ..... 15mA  
 Dimensions ..... 48.5x33x20.5mm  
 Weight ..... 24g

## Conclusions

As far as the features are concerned on the EX-1, they are second to none. Some are more useful than others but all will be used at one time or another. Personally we cannot get on with steerwheel radios after using sticks for over eight years, but the facilities are the same as those found on the Esprit II. If you feel as though you could comfortably use a steerwheel radio then the KO EX-1 is a really good choice and is more than a match for the competition from the other famous R/C system manufacturers.●