

Benchmark

JR XR2 Steerwheel Radio and Ray-O-Vac batteries

One of the delights today that we have all come to accept without question, is the small size of our RC gear and batteries. When sizing up the pros and cons of the next project no one ever worries about getting the gear to fit - it's taken for granted it will. And what is more the latest gear has features built in that only a few years ago most of us would have thought 'if only!' All this came to mind when the latest offering from the Ed arrived on my bench for review - the JR Racing XR2 gear. One cannot mention JR in the same breath without MacGregor Industries who have handled JR gear in the UK for many years. Not so well known, except to old hands like myself, is that the MacGregor pedigree goes back a long way to the early days of RC and the introduction of transistors that made the biggest step possible for radio control. Out of interest I rummaged around in my museum of past gear and sure enough I found what had triggered off the JR-Mac connection. I thought a pic would be of interest if only to illustrate how much space was needed in those early days. It was not only the RX that needed more space - the batteries needed that as well and in some designs two were required. It was a luxury indeed if you could afford the first nicads. Most of us had to make do with good old dry cells and they were not the sealed 'dries' we know today. They were zinc carbon and you only left them once when they leaked - you just replaced the equipment! As the PM of the day said at the time 'You have never had so good' with today's equipment. But it needs just a few moments of your time to ensure that when you switch on you have thoughtfully prepared everything item of the gear to perform at 100% without failure. It can and it will but it needs that last one input - you!

Manual Labour

So what is required from the XR2? Firstly read the manual cover to cover before you even think of fitting the batteries but bear in mind that the manual is written for the American market. References to warranty and service repairs should therefore be ignored and the frequency reference carefully checked. This is important as the XR2 is a 27meg animal Amplitude Modulated (AM) and the gear supplied for review was fitted with Channel 6 crystals which did not have the frequencies marked on them. So checking the manual revealed that Ch6 was listed as 27.255MHz. This is 'Blue' and is one of the original prime colours within the 27meg band which in the UK is an operational CB channel. For those of you about to invest in



The JR XR2 with receiver and servos

'twenty seven' its worth bearing in mind that although the band is completely available for model use by all three disciplines the Radiocommunications Agency in their RA60 leaflet point out that:-

'Within the model control band there are five spot frequencies which are used by low power telemetry and telecommand devices but which are not operational channels for CB. These are 26.995, 27.045, 27.095, 27.145, and 27.195 MHz. Whilst it is possible that these channels may also suffer from interference they should provide the best operating frequencies for model control within the [new] 27MHz band'

I have bracketed [new] to avoid any misunderstanding. This was the statement made in the first issue of RA60 way back when 40megs was allocated for surface use and the 26.965MHz to 27.405MHz band, excepting those frequencies above, was allocated for CB Radio. It has always been there even in the latest revision dated July 1997.

(Incidentally Hugh is preparing a piece on our wave bands for 'Racing Ahead' which should prove very useful to new and old hands alike - Ed)

XR2 Description

Getting back to the gear the TX is in the now familiar pistol grip steerwheel configuration with the batteries in the base. Access to the battery compartment is via a slide out cover which I found at first difficult to remove. It needed considerable force to push the rear end down and at the same time slide it forward to release it. However easing the top of the locking plastic lip soon cured the problem. The TX is powered with 8AA size batteries in the usual spring loaded carrier. These can be either dry or rechargeable. It is regrettable there is no provision for an alternative welded pack. The carrier press stud type contacts to the internal electronics is via flat springs which need periodical maintenance to ensure 100% contact. If nicads are the choice 600mAh would be ade-

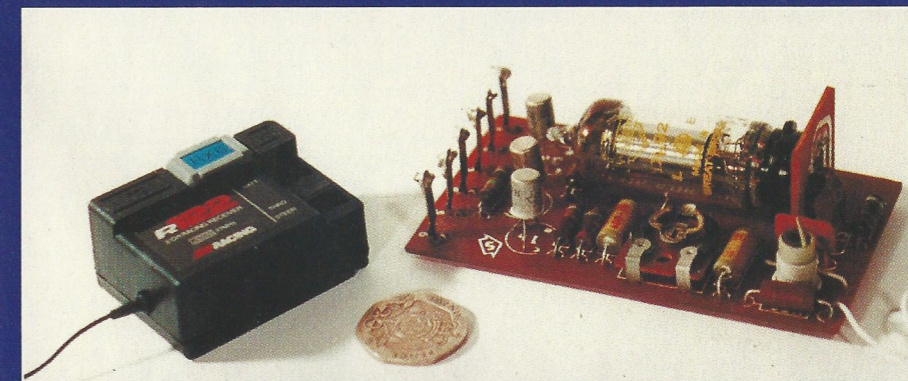
quate. Bear in mind that the TX charging jack centre pin is the negative connection. The throttle trigger is the usual enclosed type with squeezing for forward motion and pushing away for reverse. There is no option of changing to squeezing for reverse as the display is fixed for the former. There is of course servo reversal but this does not alter the throttle trigger working. The steering wheel is standard with the usual tension adjustment via a small Phillips type screw recessed immediately underneath the wheel. Conventional servo centring trims for both functions are digital electronic with steering trim above the

wheel and throttle trim to the right of the wheel. In use these trims were impressive for the 'fineness' of the servo movement per press of the TX button. Notionally these appeared to be of the order of three per degree once the servo slack had been taken up. The grip houses two keys A&B situated above where the thumb rests. A is the Brake Endpoint Adjustment and B Steering Dual Rate trim. To the left of the wheel is the LCD Display and to the right the four System Access Keys. These keys are not obvious being underneath a thin diaphragm printed with the key identity which activates when pressed. Very neat indeed! Above the diaphragm is the power switch with the charging socket on the adjacent end. The rear houses the crystal in a substantial holder recessed into the TX body. The fixed chrome plated aerial completes the TX but I would like to have seen it matt black to obviate distracting reflections as with all steerwheel TX's it is natural to hold it higher than a stick TX and closer to the users face.

Receiver and Servo

The two function RX is state of the art miniature electronics being 44mm long, 32mm wide and 22mm high. I could not resist looking inside and found a beautiful example of a glass fibre PCB engineered using a majority of Surface Mounted components. The crystal is housed in a substantial holder which fits snugly into the top of the RX. Throttle, Steering and Battery function sockets are clearly marked and interestingly the aerial is only 370mm long indicating the design is specifically intended for car or boat use. Battery Eliminator Circuitry (BEC) is built in.

The servo, JR Racing Z250, is labelled 'Standard Race Servo' appears to have been developed specifically for this gear. It is slightly smaller than a standard servo being 18.7mm x 38mm x 33mm with the usual end lug fixings. Its torque is a claimed respectable



And then you needed more space for the receiver battery! The latest JR receiver shows how times have changed

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40.3oz/in at a speed of 0.25secs through 60°. The motor is 3-pole ferrite type. The normal selection of servo horns are included. A switch harness with battery case and a very clear manual completes the outfit.

Connecting the RX follows normal practice with JR dedicated plugs. The power input to the switch is a two pin JR socket labelled in the manual as a BEC connector. This will connect either with the separate battery case 6v supply or a JR mechanical or electronic Speed Controller powered by a 7.2-8.4v pack for BEC working. The manual is faultless for the connection, installation and operating info especially the safety notes. Others please note.

Change the Program

The basic concept of a programmable system is to adjust both steering and throttle functions to suit the way a car is set up and its track performance. Once these settings are achieved they need to be memorised for that car so that they can be immediately retrieved when required. This is the basis of all computer gear now becoming a common sight at the trackside. At the top end of the price range are very sophisticated sets all on 40megs with many model memories. What is new with the XR2 it is 27megs, has only two memories but has the essential features for fine tuning a car's performance from mediocre to possible race winning. However what it won't do is to correct bad design and building, wrong choice of 'boots' and poor initial setting up of the car. It is an aid to give the driver that final edge and can always be repeatable once it is in one of the two memories. So how does it work? There are four Key inputs.

MODE Key is used to select the available functions.

CHANNEL Key selects a function alternative eg: Servo Reverse - Rev or Norm.

INCREASE or DECREASE is used to alter the function values.

The display screen is clear with high contrast and is NORMAL when showing MD1 and the TX voltage. There are three fail safe features. 1) A five year lithium battery is factory fitted which protects the memories should the eight AA cells fall below 9.0Volts or are removed for replacement.

2) If BAK ER appears at any time it indicates that any programming changes made since the last time the system was switched on must be saved.

3) If after saving the display BAK ER reapp-

pears the equipment must be returned for factory service.

To enter the system both MODE and CHANNEL keys are held down and the TX switched on. The system is now in Model Name Entry mode. MD1 is now displayed with M flashing. This can be changed from a choice of the full alphabet and numerals etc. using the INCREASE and DECREASE keys. To 'fix' and change to the next character the CHANNEL key is pressed. This sequence is repeated until the ID is completed. Errors or changes can be done using a Data Reset facility.

Once the two memories have been identified the Function mode is accessed using the MODE key. Either INCREASE or DECREASE key can select the model memory required and steering and throttle functions, using the MODE key and the INCREASE/DECREASE keys, are set to each individual car's desired performance and stored. Its that simple. Functions available are: Servo Reversing - Travel Adjust on steering with separate settings for right and left. - Travel Adjust on throttle with separate settings for forward and reverse or brake. - Steering Rate allows the servo travel to be increased or decreased as a percentage based on the travel adjust value as set above. - Sub-Trim is an electronic feature which allows for movement of the servo neutral point to be moved to adjust the servo linkage. This does not interfere with the electronic traditional trim positions which is accessible in the Direct Trim Mode as soon as the required trim lever is pressed. The screen will revert to NORMAL after five seconds from the last trim input.

Early on in this review two keys A & B were identified in the grip. Key A is the throttle servo endpoint adjustment which allows the driver to custom tailor the brake value to maximise the braking power to suit track conditions. This is shown as a percentage of the Travel Adjust values keyed in above. Key B is steering dual rate adjustment which allows the driver to either increase or decrease the value of the total Steering Rate, as keyed in above, within a range from 100% through to 40%. As soon as either key is pressed the relevant data appears and moving the key left or right will decrease or increase as required. Both functions are used 'on the hoof'.

Does it work? If it works on the track as well as it did on the bench JR have a winner. The servos response is what is expected from standard servos. Trade these in at the time of purchase for a quality servo from JR's range :- JRC3025 - JRC4735 - JRC579 - JRC2825 & JRC2855 with prices in the region of £49.00 to £78.00 you will reap the tight performance the whole is capable of and bring the gear into the realms of 'it's a cracker!' Warts? - not many. But you should know by now I can't let them escape! That TX battery compartment without the facility to plug in a nicad pack and being forced to use those awful spring contacts. The American Warranty and Frequency info needs to be deleted from the manual but its the best one I've seen for a very long time. Well done JR and MacGregor Industries.

'So with a steerwheel budget priced outfit now available with an up-market spec and an alternative to nicads perhaps we shall see more of these beasts around our meeting places'



The neat multi-charger provided by RayOVAC

Ray-O-Vac Batteries

Most of you I'm sure will have seen those OTT ads claiming that ordinary alkaline 'dry batteries' could have a further useful life by using the miracle charger in the ad. Well I have never believed the claims until I read in late '97 a very interesting technical report of work carried out by BTT in Canada and known as the RAM system. At that time there was just the one make available on the UK market - ABT's PURE ENERGY. It was inevitable that another manufacturer would be licensed to use the RAM system and this has now happened. Rayovac originating from Winconsin, USA, has operated in the UK since the 1980s and is now marketing rechargeable alkaline D, AAA and AA size cells and chargers from their Micropower Division in Tyne & Wear. The technical specs of the two makes is broadly the same and like the Pure Energy cells I am subjecting the RAYOVAC'S to long term tests in RC gear and will let you know later on these results. To date there is little difference but it is the chargers that are of more interest. For RC use you need twelve AA cells - eight for the TX and the RX four as a minimum. Ideally with another twelve one can cycle the whole set so that you always have fully charged gear available. However this means a large initial outlay in battery cost

which is hard to justify. With twelve as the minimum it now relies upon the charger capacity and charge time to ensure the gear is always fully charged. The Pure Energy system charger will only charge four cells at a time with the consequential long time span to bring the system back to a fully charged state. You would need three chargers to solve this time element with consequential high capital cost. This is where the RAYOVAC system scores as it offers two chargers - one with eight cell capacity and the other with four cell capacity. The eight cell unit will accommodate either eight AA size, or four AAA/ D size cells. The four cell unit takes either AAA or AA cells and plugs directly into a 13amp mains socket. The larger charger has a separate mains lead. With their initial cell voltage of 1.5V and 1400mAh capacity these AA cells offer an attractive alternative to nicads and merit serious consideration for at least TX use on cost alone. Initially they will last three times longer than a fully charged nicad and unlike a nicad which has to be charged before first time use they come fully charged. Compared with a three month nicad shelf life RAM system batteries have a shelf life of up to five years. Environmentally they score heavily as they can be disposed safely. To date the RAYOVAC system is available at Boots, B&Q, Focus DIY, Comet and Index. Battery price is £6.99 per card (four in AA size). Four way charger is rrp £9.99 with two AA batteries and currently with a £2 money back offer. The eight way charger includes four AA size batteries and retails at a rrp £19.99. with a useful user manual. Further info from RAYOVAC EUROPE Ltd., Washington, NE37 3HW. So with a steerwheel budget priced outfit now available with an up-market spec and an alternative to nicads - RAMS perhaps we shall see more of these beasts around our meeting places but whatever animal you favour - 'May the force be with you!' **RRGI**