

SANWA EXZES

COMPUTER CONTROL

part 2

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Part Two of the SANWA EXZES review The receiver, servo choice and programming the system.

The receiver and harnesses.

The RX is Type SRC-2305RZ three channel Ultra Compact, light weight (30gm with Xtal) and micro size - 48 L X 30 W X 19 H (mm).

It operates within a narrow band to reduce interference and although the input voltage can range over 4-8v to 8-4v it is claimed that the internal voltage is "reduced" to achieve "longer running time". The aerial length of 50cm is interesting being just over half the length of one of my other RXs. If the length is a problem don't shorten it. Lose the 'slack' by winding it onto a flat bobbin and mounting it well away from the electric motor, and associated power wiring, if this is your power drive. Two harnesses are supplied. One - the usual Switch/Battery/RX charging lead & second a Direct Servo Controller lead. This very useful function enables you to adjust all the system functions say between racing heats, without SWITCHING ON THE TRANSMITTER. The DSC jackplug when inserted into the TX 'kills' the master switch thus preventing RF radiation say during a competition. A reasonable English translation 33 page manual completes the kit.

Will it serv(o) you right !!

As I reported in part one the basic kit comes without servos. The rationale behind this is evident when you study the Servo Chart and the price of the recommended servos sinks in. Make no mistake. To obtain the full benefit from the system it must be used with the highest quality servos the budget can afford and further the linkages must also be of high quality with no 'slop' and with free movement. The piano wire linkage bent into 'Zs' and pushed into the servo horns is just not good enough if you expect to obtain all the benefits from the EXZES system. High quality ball & socket connections where the ball is bolted onto the servo arm or horn and the socket 'sprung' over the ball is one way. All bolts should be double nutted. Servo mounting is also vital. If you can do without the usual rubber grommets in the servo lugs then do so. The servo must have no movement on its mounting again to achieve full benefits of the system. Steering geometry and IC engine throttle pivots must also be 'slop' free so that when any linkage is held firm no movement can be detected. Again if you are going to get the full benefit from the EXZES system I recommend paying in depth attention to these details.

Quality doesn't come cheap.

Six servos are listed beginning with SRM 102. This is the standard Sanwa servo found in 'sports' gear and quite frankly if you are contemplating using this then you should not have invested in EXZES in the first place. Compared with the middle of the range SM 741 its speed and slightly

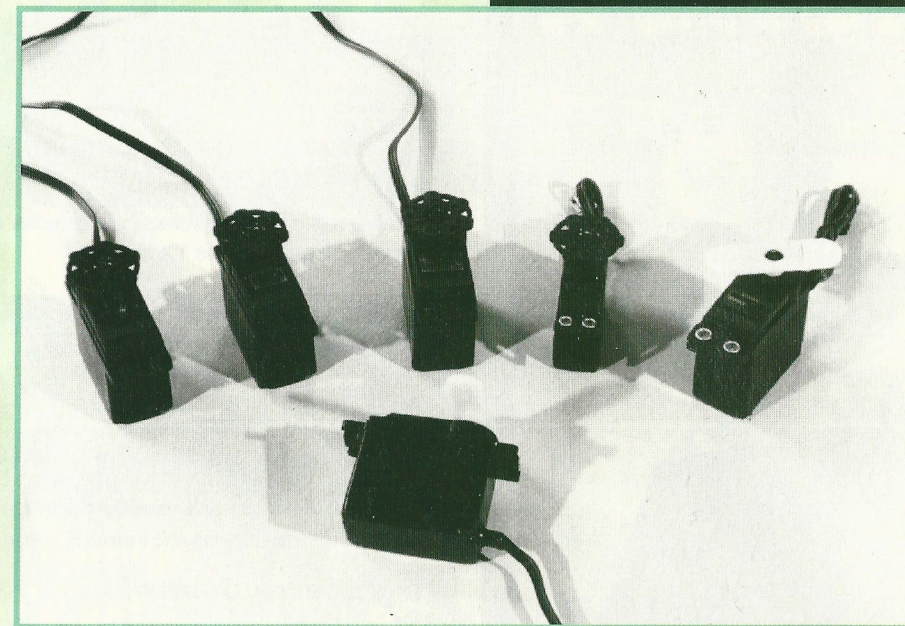
less torque make it tempting. But it will not produce a performance anywhere near any of the others listed. The reason quite simply accuracy. Check the performance of a standard servo and you will find that it never 'centres' in the same place from either end of its travel. Except for the 102, I found all the servos listed returned with extreme accuracy to any previous point of the servo arm arc. This is vital for steering accuracy at speed. If you want to achieve all the benefits from this high performance system then quality servos are a must so choose according to the duty expected of the servo. Other than SRM 102 all those listed are compatible with the system for accuracy.

Enough Torque?

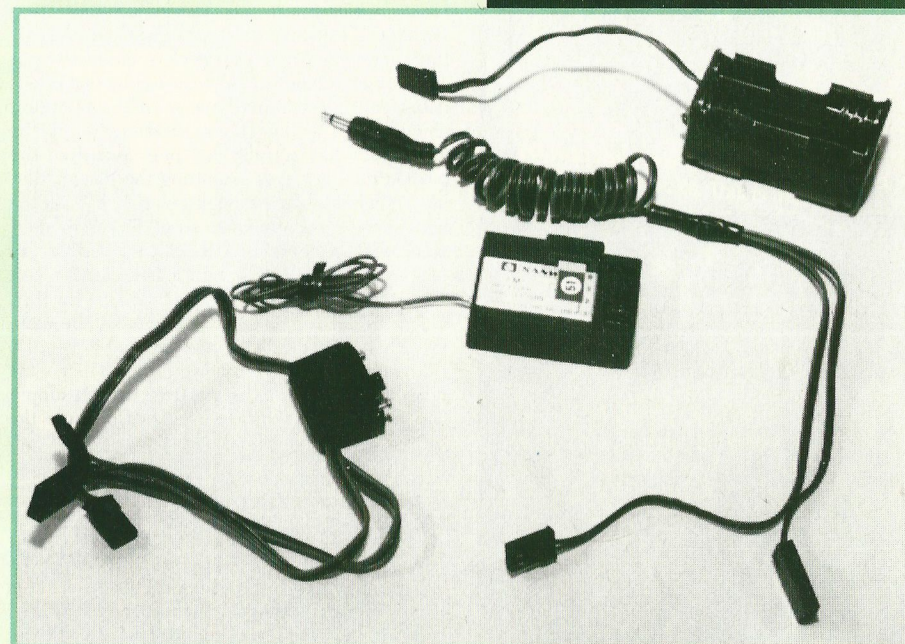
This value is the measure of the servo power over 60° within the listed time. These speed figures are milli-secs. eg: SRM 1322 will move through 60° with a power of 3-3Kg-cm running on 4-8v. Note that using a higher voltage of 6v the servo moves faster with increased torque. This is because it has been designed for dual voltage working and does not necessarily imply that increasing any servo voltage will have the same effect. To achieve this type of performance all the listed servos except 102 have either single or double ball bearing. SM 741 is a double and is fully sealed. Sanwa technical notes are silent as to the optimum working voltage for the 741. If space and weight is crucial then SRM 141 HR should be considered. Note the speed of 70mSecs but a low torque of 2-3 @ 6v. It also has the added advantage of universal fixing lugs with a weight of only 31gms. The ERG XZ is undoubtedly the Rolls Royce of Sanwa servos. At 6v it has a torque of 7-7 with a speed of 100mSecs. Fully sealed with the latest 'coreless' motor and double ball bearings with a heavy duty horn taking care of the load. Its not cheap but just consider the rest of the equipment in a competitive racing machine of the size that can justify and requires the performance of the XZ. The XS is comparable and is included as I understand that some of these may still be available at the price shown. It has been replaced by the XR with slightly higher torque and should be available in the near future. Price unknown.

All the servos listed were submitted for review and although not tested for torque and speed they, with exception of 102, all performed and centred as expected.

Type	Dimension (mm) LxWxH	Bearing	Wt (gm)	Speed Sec/60°	Torque Kg.cm	Price	Remarks
SRM 102	39x20x36	Plain	45	0.2	3.0	£14.95	
SRM 1322	39x20x36	Single	45	0.19 @ 4.8v 0.17 @ 6v*	3.3 @ 4.8v 3.6 @ 6v*	£29.95	
SM 741	39x20x35.5	Double	51	0.2	4.0	£39.95	Fully Sealed
SRM 141 HR	36x15x32.5	Single	31	0.07 @ 6v	2.3 @ 6v	£74.95	Universal fixing lugs*
ERG XZ	39x20x37.4	Double	59	0.1 @ 6v	7.7 @ 6v	£126.50	Fully Sealed. Supplied with heavy duty horn.*
ERG XS*	39x20x37.4	Double	59	0.08 @ 6v	5.2 @ 6v	£112.65	Fully Sealed. Supplied with heavy duty horn. Old stock superseded by XR*



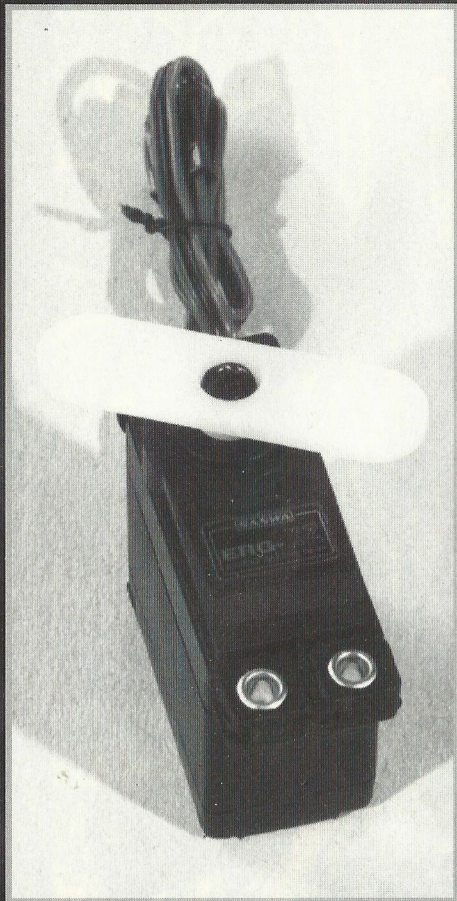
The servo "line up" clockwise as on the table. Note the smaller SRM 141 HR.



The RX, dry battery holder, switch harness and DCS harness. See text.

Electronic Speed Controllers.

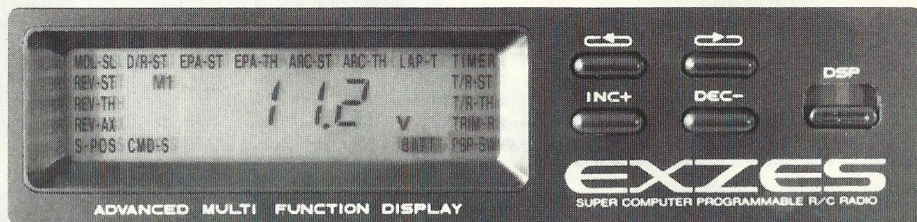
I obtained a Tekin 411P2, recommended by Irvine Engines, to test out on the gear which proved satisfactory. The gear should be compatible with any high quality ESC but check with Irvine Engines before committing hard earned cash on a new ESC. This doesn't mean that budget price ESC's won't work with the system but like servos its 'horses for courses'. Remember the gear is high tech so to get full benefit from your investment the ancillary 'bits' must be able to fully achieve the system potential.



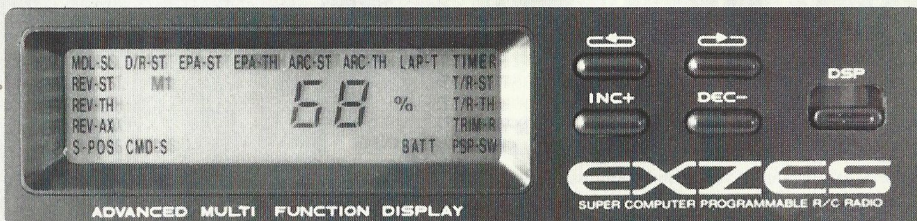
The heavy duty horn on the XZ & XS.



The '141' showing the double vertical mounting lugs.



Battery voltage on the TX display.



Throttle set for 68% of movement. (End point adjustment)

Direct Servo Control - DSC.

This is a feature of the system which I feel should be available on all gear regardless of price. DSC enables you to fully test/modify the set-up WITHOUT transmitting a signal. How many times have you wanted to check or modify the car at the trackside but can't because someone else is using your slot. Many have seen the resultant chaos caused by thoughtless switching on of TXs when they haven't got the 'peg' and then the perpetrators not even admitting the danger they have created by their thoughtless action. With the high speeds now attainable strict TX discipline is vital with serious accidents just waiting to happen. EXZES comes with a DSC lead, a jack socket on the TX and a DSC slot on the RX. Once the lead is plugged into the TX the main switch is disabled preventing the TX radio frequency section being powered up. The coding board then derives its power from the RX supply. The system can then be used to fine tune the settings between heats when racing.

The Programming.

The first thing that strikes you is the user friendly design of the system. Its WSIWYG - What You See Is What You Get. The first thing to appreciate is that all the settings for three cars can be stored in a memory and recalled at will. The memory is supported by a five year lithium battery replaceable only by Irvine Engines. There are three ways to power up the TX. One the DSC function. Two the conventional TX power switch and three the DSP button located on the right of the display. Switching on the TX 'bleeps' at you and you find the 'cursor', which is the dark background to either BATT or EPA-TH in the pics, flashing at the point it was when the TX last used. To the right of the display the two top buttons have left and right arrows indicating that you can scroll the cursor either way to the desired function. You start the programming by scrolling to the MDL-SL position. Note that M1 is displayed. If INC+ (INcrease +) is pressed you then select M2 and so on to M3. This model number is permanently displayed as you call up each set of data. However during the setting process it's repeated on the RH side of the display confirming you are programming. This model number disappears as you scroll to say EPA-TH function which is then displayed as a percentage of the servo movement. This can be set to say 60~ as shown in the pic using the INC+ or DEC- buttons. Its as easy as that. Scroll and

select a model number. Scroll and select a function and set it via the INC+ or DEC- buttons. There is no memory button. The action of either INC or DEC automatically programs the memory. Stored Functions available as follows. Steering and Throttle trims plus a reset function Steering and Throttle rate adjustment which can be further adjusted within an 'envelope' of "Quick" and "Mild" response. This function is coupled with a Response Control switch seen on TX top RH side in Part One. You can therefore switch this in or out as driving conditions demand. Throttle reverse when used with electric motors provides 'braking' via a thumbwheel on the top LH side of the TX. This braking can be set as a percentage of 'wheel' movement. Steering is of particular interest being programmable for over or understeer according to weather conditions/left or right hand courses. Both End Point Adjustment and Dual Rate is available. Servo reverse is available on both sticks and the Auxiliary. For the IC boys the throttle can be programmed to increase the idling position for starting. Once set this can be called up via an S-Pos-ON switch on the top left hand side of the TX. If the beeping becomes an annoyance it can be programmed 'off'. The Response Control Switch mentioned above can be further programmed as a proportion of "Quick or Mild" either side of Normal i.e. either steering or throttle movement from mid stick positions.

Well that as far as I can go. The equipment function variations are extensive and I've probably missed something. What is needed is installing in a car and using over a period to fully establish its capabilities. That's not possible in a review of this nature but I hope enough has been said to whet the appetite. Nice one Sanwa however I must mention the supplied manual. If one is paying serious money for gear and servos it deserves similar

quality in the Instruction Manual. Spelling mistakes I can live with but when I read "Set the response control swith at Quick you feel better movement at front but if the setting is not good, you can have good performance." I despair. Please, please Irvine Engines read the manual and correct the large number of odd instructions. In its present form it does the equipment a big injustice.

The Sanwa EXZES is imported by Irvine Engines Ltd., Unit 2, Brunswick Industrial Park, Brunswick Way, New Southgate, London. N11 1JL. tel: 0181361 1123 or Fax: 0181361 8684.

So once again May Your Programmable RC Force Never Leave