

Starting Point

DURING THE PAST two years the R/C sport of 1/8th scale Off-Road racing has grown dramatically in the U.K. Initially, all the kits to build suitable cars came from the Far East, but now there are both home produced and Continental European products available in large numbers. Just what do you need to do to take part in this exciting activity, what do you need to buy?

Fast, exciting, spectacular, noisy, challenging, all these adjectives apply to the rapidly growing sport of 1/8th scale off-road racing. If driving a rugged high powered scale model car in competition with others of a like mind, or just running it around on field or garden attracts you, then why not take the plunge and have a go.

R/C cars powered by Internal Combustion (I.C.) engines are most commonly built to a scale of 1/8th of full size, although there are a few kits for 1/10th scale I.C. cars around. Engine size is generally 0.21 cu.in. capacity (3.5cc) although a few engine manufacturers produce 0.25 cu.in. motors for sports use. These larger capacity engines are not eligible for competitions, but will almost certainly fit the cars designed for 0.21 cu.in. motors. Control of the car is by a two-function R/C system operating steering and throttle/brake control. A clever linkage system allows the throttle control stick on the transmitter

to work both brake and throttle. Engines are fitted with a centrifugal clutch which enables the engine to tick over with the car stationary.

Although the composition of the fuel is not limited, the capacity of the fuel tank is, only 125cc of fuel may be carried for competitions, most kits include a suitable size fuel tank.

Two types of chassis are commonly found on the cars, 'ladder' style or a flat plate which can be either a pressed metal pan or shaped G.R.P. (Glass

Reinforced Plastic) plate. To the chassis are bolted suspension mounting points, engine mounting blocks, a gearbox or some form of reduction gearing between engine and rear axle, fuel tank and R/C equipment.

Suspension falls loosely into two styles, swinging arm or wishbone. Although the swinging arm style of suspension does tend to result in greater suspension movement and thus potentially a bit better road

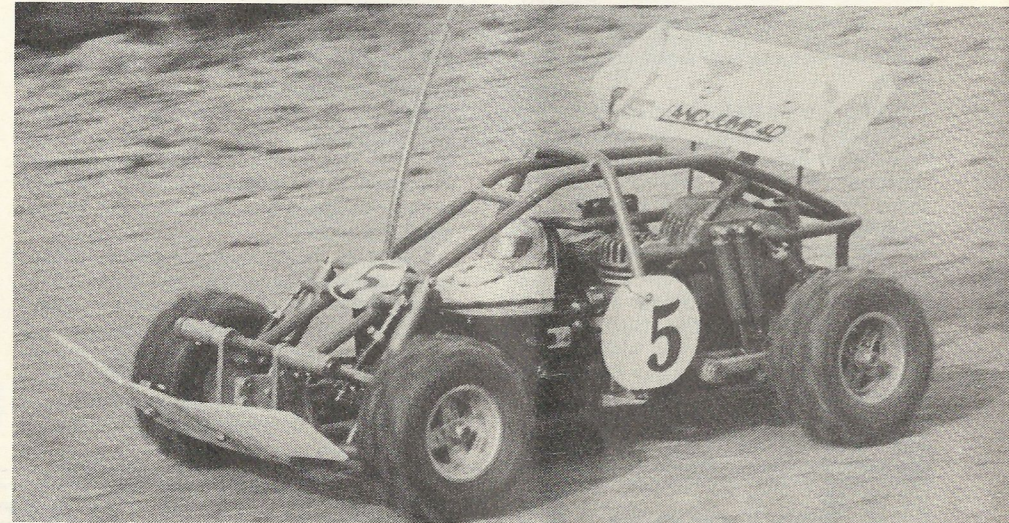
holding, if the suspension arms move a long way then the drive shafts and steering linkages have to also. These larger angular deflections do make problems, drive-shafts come out more easily and steering angles change a lot.

Wishbone suspension tends to keep steering under better control and also presents fewer problems with drive-shafts. Both styles of suspension can be seen on two-wheel and four-wheel drive cars with equal degrees of success. If the designer has got it right, there is little to choose between the two.

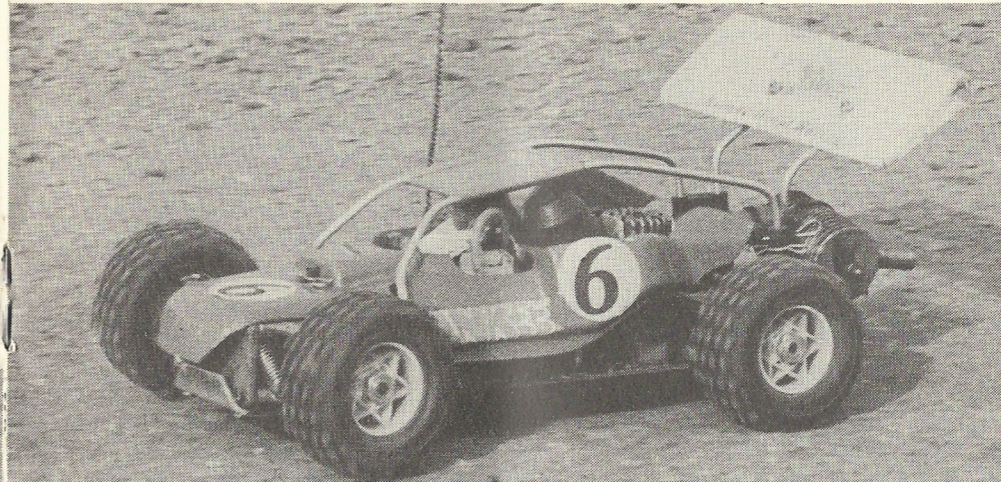
The engine, equipped with its centrifugal clutch, drives the wheels through a reduction gearing. This can be a simple two gear system or a more complex arrangement involving chains or further shafts and gears. The best cars will have all the rotating parts of the drive train supported on sealed ball-races to cut down friction losses and wear from grit, etc. A few cars use toothed belts in the transmission,

these should not be thought of as inferior in any way, such drive systems are capable of many hours of continuous use without undue wear or danger of breakage. Differentials are just as beneficial to the handling of Off-Road cars as they are to any other form of vehicle. Differentials enable the car to turn more easily without scrubbing tyres because they allow the wheels on the

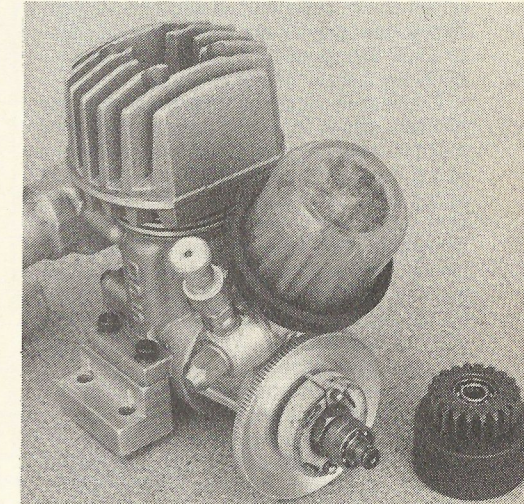
outside of the turn to rotate more than that on the inside. Up to three differentials can be fitted into 4-wheel drive cars, on each of the front and rear axles and the 3rd between front and rear in the drive shaft. The 3rd differential is a luxury, particularly when you consider that each extra differential will add around £30 to the cost of the car. Two-wheel drive cars are fitted with just a single differential on the rear axle.



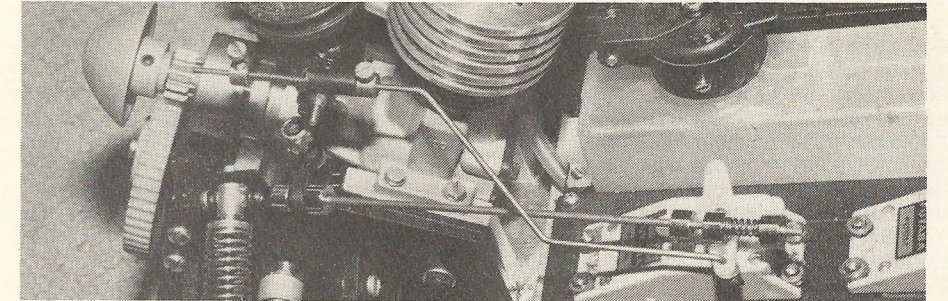
Below: the Kyosho 'Land-Jump,' one of the most successful and popular 1/8th Off-Roaders to hit the circuits.



Above: twice European champion in 1982 and 83, the Yankee 84 x 4 Enduro has found favour with a great many drivers in the UK.



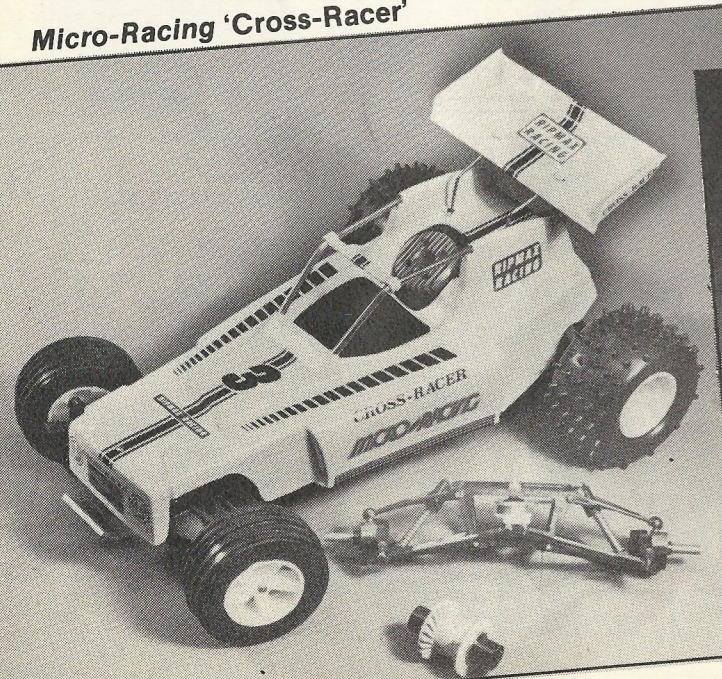
Above right: the SG centrifugal clutch system shown fitted to an OPS engine. PTFE clutch shoes pivot outwards and grip the inside of the clutch bell to produce drive. Below: throttle and brake over-ride system allows both functions to be controlled from the same transmitter stick.



1/8th Scale Off-Road

When the going gets tough - the tough get going!

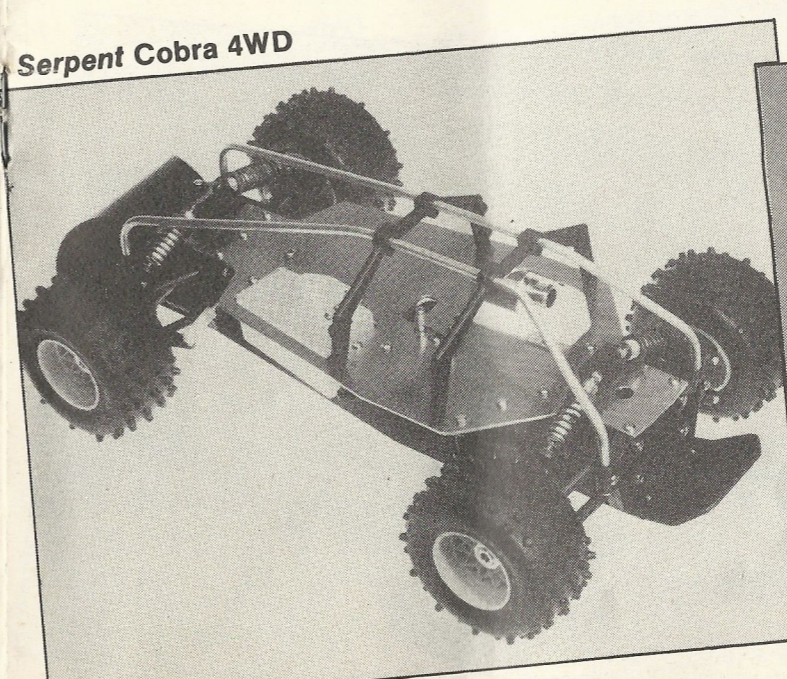
Micro-Racing 'Cross-Racer'



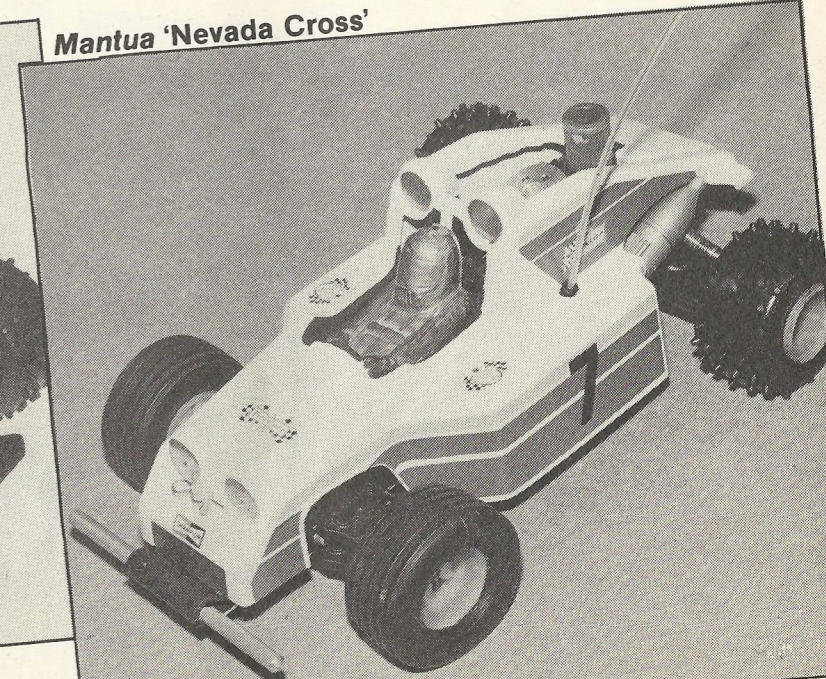
SG Leopard 4WD



Serpent Cobra 4WD



Mantua 'Nevada Cross'



Starting Point

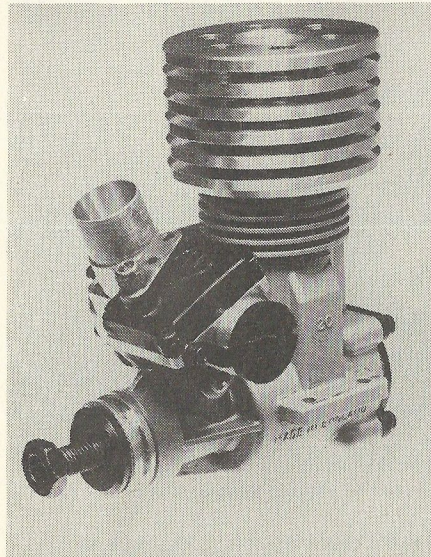
It is important to have an efficient braking system, this can be either a disc brake or a band style of brake operating against the engine clutch bell.

How to choose your Car

You must obviously decide in the first instance how much money you are able to afford. Cost limits can usually divide the possibilities straight down the middle with a wide choice of two-wheel drive cars in a range of £60 to £150 followed by a jump to around £200 for a four-wheel drive car.

Do bear in mind that there may well be hidden costs in what appears at first sight to be a bargain. Check out the kit to see if it includes a differential, flywheel and clutch to suit your engine, silencer, fuel tank, R/C equipment linkages, bodyshell and ball-races on all moving parts. You will probably need thread locking compound and glue for tyre fixing plus a few odds and ends in the way of fuel tubing, wire, the odd extra nut and bolt, etc.

If out and out competition is your aim then take a look at what the top drivers use in the way of cars. If just fun driving is all that you are interested in, you can safely choose almost any of the cars that are available within your chosen price range and enjoy yourself. For competition use, a competitive car on its own is not enough. It needs to remain competitive and it is essential that spare parts are easily obtainable so do check with the supplier that the car comes from a reputable source with adequate back-up facilities. If the basic kit is not supplied with such items as differential etc., do check that these are available and at what cost. You will almost certainly wish to update or uprate your car as time goes by.



Above: Irvine .20 car engine fitted with PB slide carburettor provides an ideal combination for 1/8th scale buggy applications.

Choosing an Engine

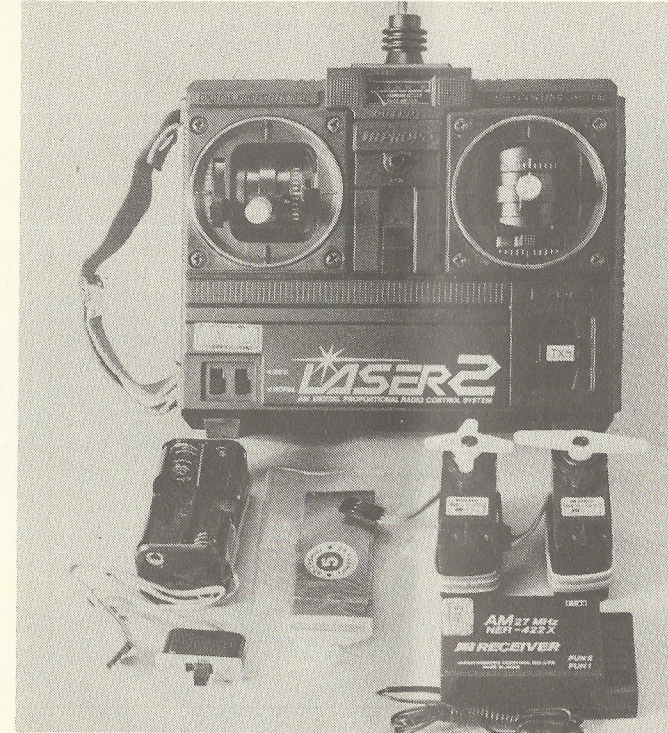
There are as many engines to choose from as there are cars, but if the car you have set your heart on is designed around a specific make you would be well advised to purchase that engine. It is possible to fit most engines to most cars, although there are exceptions to this rule, a knowledgeable dealer should be able to put you right here, but do not be misled into choosing an engine specifically for its power output. In Off-Road racing, absolute power is not necessary, if there is a buggy version of your chosen make of engine, choose this in preference to the circuit racing version. Do not buy the largest bore carburettor you can find or the most potent tuned pipe exhaust system. Stick to a 7mm bore carburettor and a standard exhaust

system to start with. The engine will be easier to adjust and the car easier to drive with only a moderately powerful engine. You may find that a specially shaped manifold or exhaust system connector is necessary and as such manifolds are specially matched to the engine, availability of manifolds can also dictate choice of engines. Finally, do choose an engine with ball-race supported crankshaft and preferably with an ABC cylinder. (Aluminium piston, brass cylinder, chrome plated).

Choosing an R/C System

No less bewildering but once again there are definite logical choices to be made. Assuming that you intend to use your buggy a lot, re-chargeable batteries are a must. It can be the case that dry battery R/C systems with separate Ni-Cad batteries added seem to be a good buy. Do beware of buying cheap Ni-Cad batteries. If you only buy the best there may be less price differential between a dry cell system and separate Ni-Cads and a full Ni-Cad system.

There is no real difference in practical terms between A.M. (Amplitude Modulation) and F.M. (Frequency Modulation) systems, they are just different. Not however sufficiently different for A.M. and F.M. systems on the same spot frequency (colour) to operate together! Once the re-chargeable/dry cell question is resolved the only question really remaining is that of servo choice. Choose the best you can afford. The servo is the item that does all the work and in a 1/8th scale I.C. engine powered car, there is plenty to do! Preferably select ball-raced servos with waterproofing already carried out by the manufacturer. Power is important, so you are looking for high power, ball-raced waterproof servos. These are not cheap but the



Above: ideal middle price range R/C system from JR/MacGregor Industries. Can be supplied in either dry-cell or Ni-Cad versions with a wide choice of servos to fit the user requirement.

investment is well worth it. Unsuitable servos will not last the distance and will cost dear in repair bills making it more economic to have bought better suited types in the first instance.

Ancillary equipment

Starting the engine really does require a proper starter. This can be hand-held operating from a 12-volt accumulator or built into a purpose-made start box. You will also need a hard rubber ring to fit onto the starter for the friction drive style of engine starting or alternatively most starters

are supplied with a suitable rubber cup for direct cone start systems. The 12-volt battery mentioned will be needed, at least 6Ah, plus a suitable charger (a mains operated trickle charger).

A glow-plug engine needs a booster battery (2 volt) to glow the plug and a suitable connector lead to couple up the battery to the glow-plug.

Finally fuel and a method of filling the fuel tank. Soft polythene bottles or 'quick-fill' bulbs are available specially for the job.

Overall, an extensive shopping list. Cash transactions can often be

accompanied by some discount or of course it is possible to spread the load using one of the various credit schemes operated by many model shops. Whichever way you decide to finance your chosen hobby, you can be sure of an enjoyable time. Finally, do visit your local model shop, he will be the best person to help and advise you on your purchases and in a good position to give you the lowdown on reliability, availability of spare parts and ease of use and assembly of the products he sells.

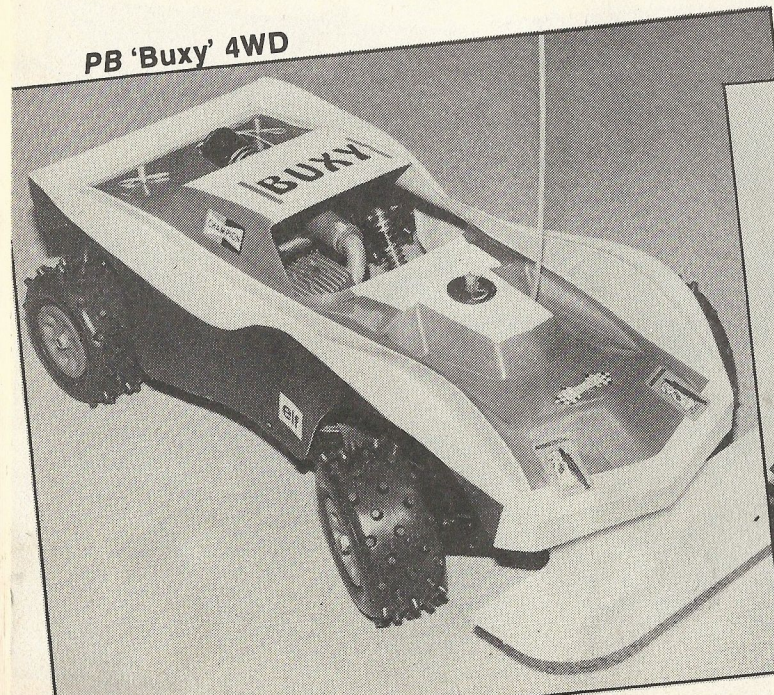
Good luck and good racing.

Choose your car

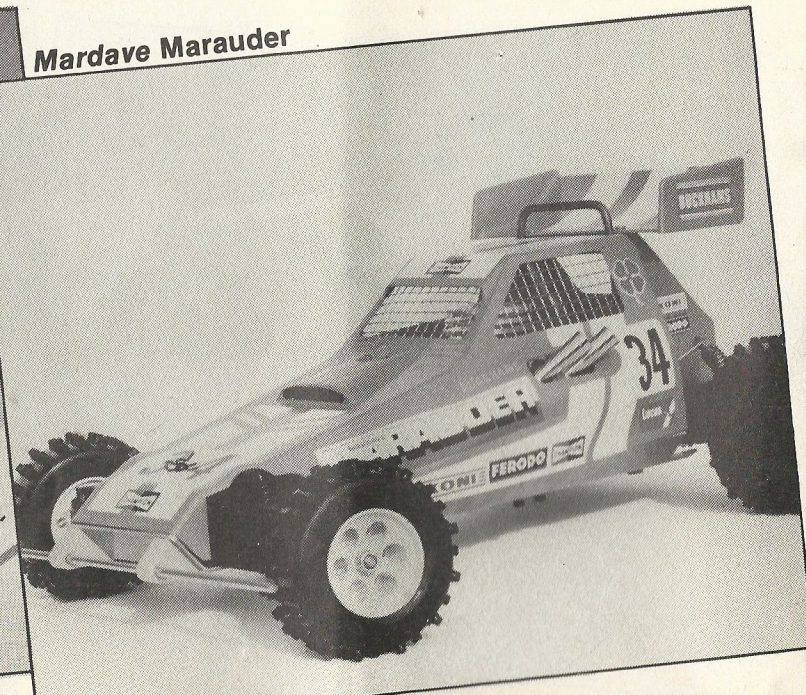
Make & Model	1	2	3	4	5	6	7	8	9	10
2 wheel drive										
4 wheel drive										
Clutch										
Silencer										
R/C accessories										
Engine mountings										
Engine mounting ready drilled										
Dampers										
Bodyshell										
Bumpers										
Instructions										
Fuel tank										
Differential(s)										

Tick the boxes, the more ticks the better!

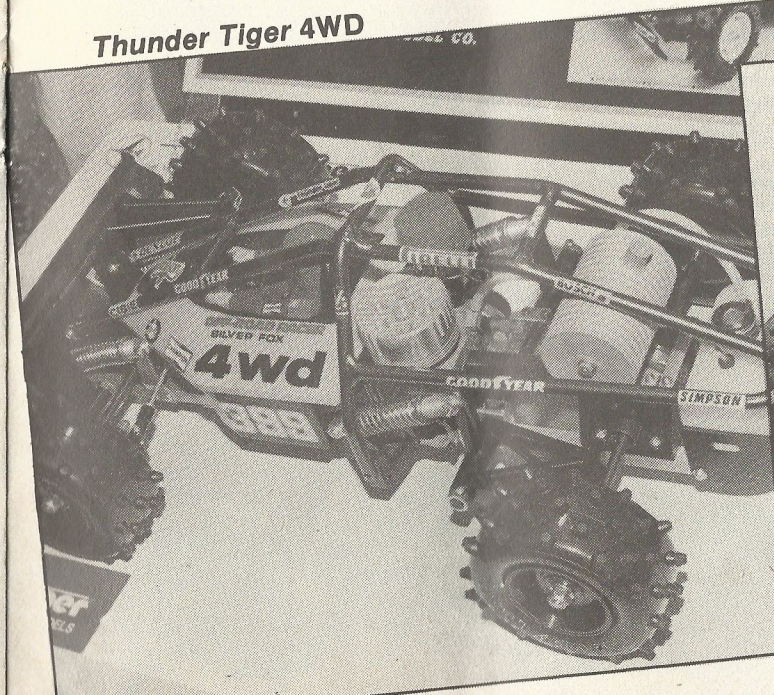
PB 'Buxy' 4WD



Mardave Marauder



Thunder Tiger 4WD



Kyosho Integra 4WD

