

MARDAVE MARAUDER

1/8 scale I.C. powered models are undoubtedly the ultimate in R/C cars and off-road racing is an exciting new branch of the hobby. Any field, waste ground or large lawn can be converted into a circuit after a few hours work with a lawn mower and roller. Grass is particularly suitable for racing as it is clean and will not damage car or engine.

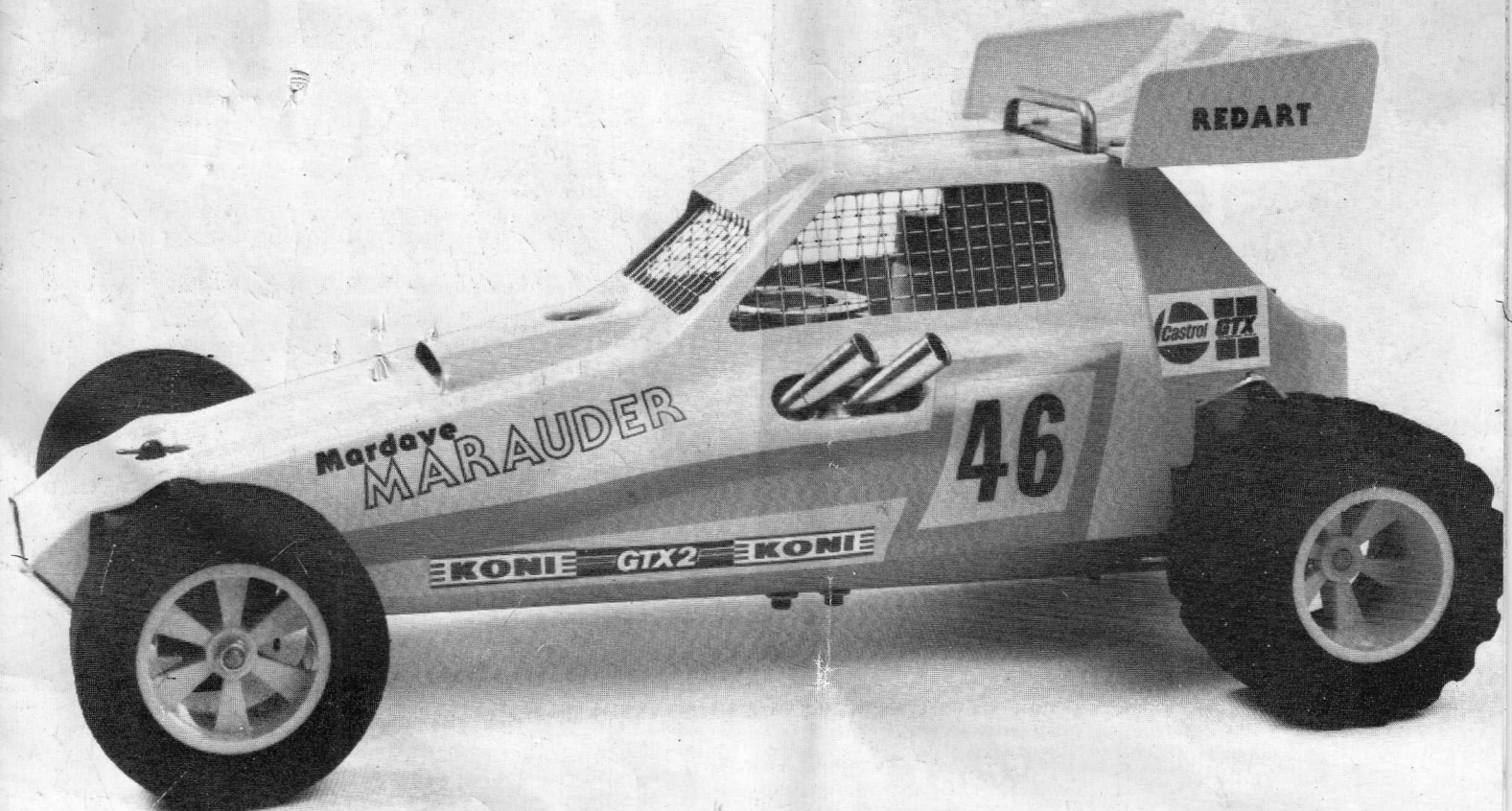
Mardave now have eleven years experience in R/C car manufacture and the Marauder embodies all that we have learned in this time. It's main features are the enclosed hardened steel bevel gear drive (preferred to belt drive systems previously used because belts tend to trap grass and dirt in the pulley teeth), the fully independent coil sprung suspension, the needle roller centrifugal clutch with hardened steel output gear, and the rigid formed dural chassis. Grooved and treaded tyres are provided for maximum grip and the strong A.B.S. bodyshell includes a rear aerofoil for increased traction on fast circuits.

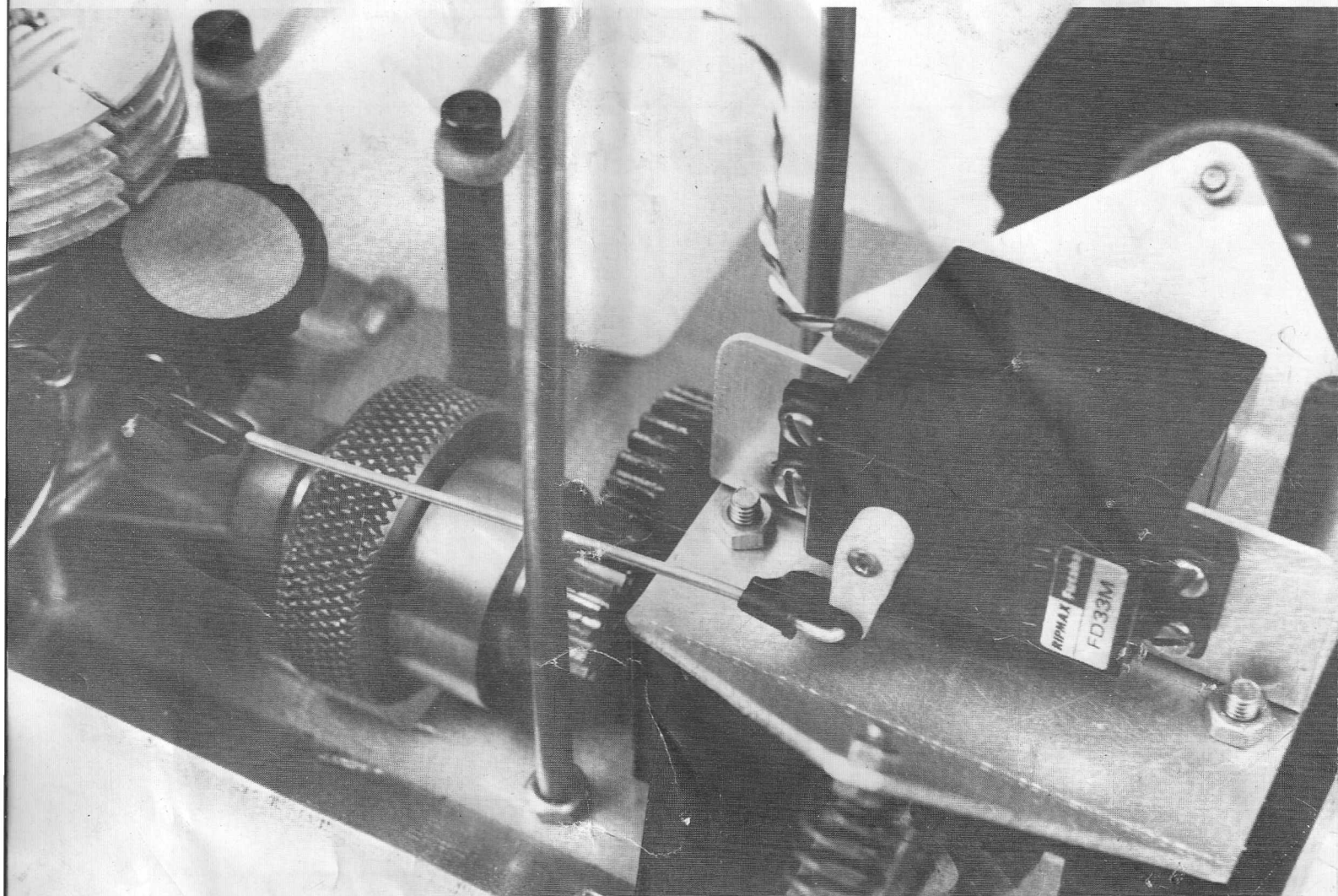
EXTRA EQUIPMENT REQUIRED

Radio control If you do not already have radio control gear, this should be of the two channel proportional type and a twin stick transmitter is recommended in preference to a steering wheel one.

Engine The car is designed around the veco 19/21 cu. in. glow plug ignition engine but most similar sized engines are suitable. The clutch adaptor supplied in the kit is threaded 1/4" UNF but a 6mm alternative is available and Mardave will exchange if returned with an S.A.E. Ball raced crankshaft engines, such as the Veco, have a longer life than plain bearing engines and so are recommended.

A heat sink for extra engine cooling and an engine silencer are essential. Suitable ones are produced by Mardave for the Veco engine but they should fit most other engines with a little modification. A carburettor air filter is also necessary and one is available to fit the Perry carb. as supplied with the Veco.





MARDAVE MARAUDER ASSEMBLY INSTRUCTIONS

The following are suggested methods and sequence of assembly. ✓

Wheels and tyres The tyres must be bonded to the wheels. Impact adhesives such as Evo Stick are most commonly used. Apply to wheel and tyre and fit immediately while still wet. Leave for a few hours to dry. ✓

Chassis (11) Remove sharp edges and corners and file a radius of approx 5mm on front corners. Paint if required (cellulose aerosol sprays are very suitable). ✓

Gearbox and rear axle assembly Fit half axles (22) through rear wheels from outside face and press fit until ends are flush with wheel bosses. ✓

Press fit hinge pins (24) through ends of wishbones (23) leaving an equal length each side. Apply some grease to the bevel gears and assemble lower gearbox moulding, (21), large bevel gear and shaft (25), small bevel gear and shaft with nylon spur gear (26) (27), the two wishbones and the gearbox cover plate (28) to the chassis with four 40mm long screws (29), M4 nuts and serrated washers. Assemble rear springs (32) to gearbox cover plate with M3 screws (34) and nuts (fit screw down through spring and hold with a slim screwdriver whilst tightening the first nut to secure screw to spring, then fix to plate with second nut).

Fit springs to wishbones by press fitting pins (33) through lugs on wishbones.

Assemble the universal joint flanged bosses (41) to the rubber 'O' rings (42) with M3 x 10mm long screws (34). Fit washers (43) between flange and rubber and lock screws in place with M3 lock nuts.

Fit the universal joints to either side of the gearbox output shaft and tighten the socket grub screws (44) with the key provided (45). Gearbox shafts should rotate freely. Fit rear wheels and half axles through wishbone bearings into universal joints and tighten screws to secure.

Front suspension assembly Press fit stub axles (51) into steering blocks (52) until axle is flush with inside of block (note: 1 L.H., 1 R.H.). ✓

Assemble upper (56) and lower wishbones (57) to centre block with 45mm long hinge pins (58) pressed into place.

Assemble steering blocks to uprights (54) with press fitted 27mm long king pins (53) and similarly assemble uprights to wishbones with 22mm long pins (55).

Fit springs (61) with four 6mm long self tap screws (62). Assemble front suspension unit and doubler plate (12) to chassis with two M4 x 35 screws (60), nuts and washers and securely tighten.

Attach front wheels with nyloc nuts (63).

Engine clutch unit Drill out engine mounting holes to 3.6mm diameter and attach engine mounts (101) using 10mm long socket screws (102). ✓

Remove circlip (89) from clutch unit and remove drum (86) and bearing (88).

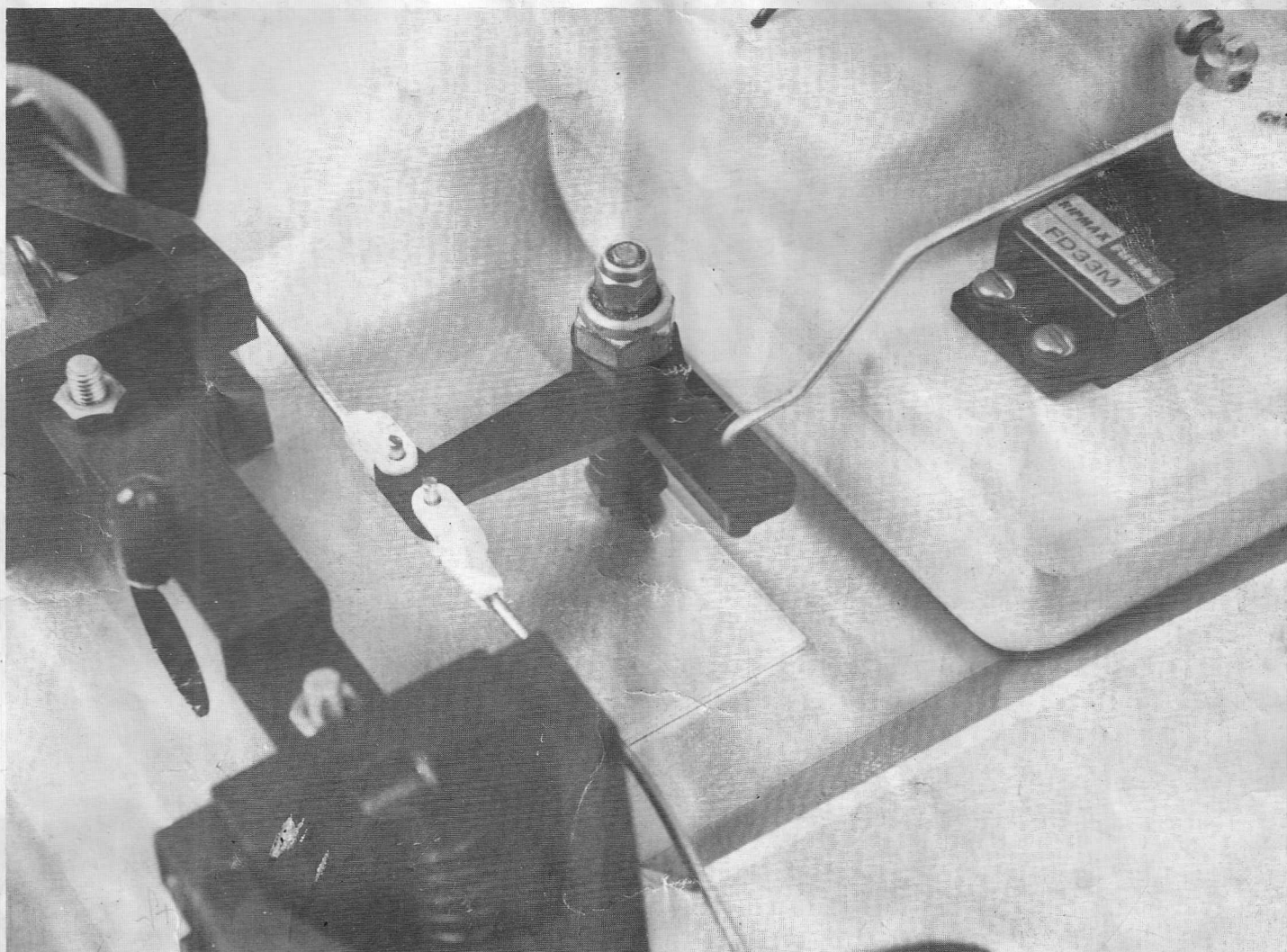
Remove nut and washer from engine crankshaft but leave the drive washer in place.

Assemble the flywheel (81) and adaptor (82) to the engine and tighten adaptor securely. Re-assemble clutch drum, bearings and circlip.

Fit engine into chassis using 10mm long socket screws (102) with large washers (103) under heads. Adjust position to provide correct gear position and mesh before tightening. For some engines it may be necessary to slot the holes in the chassis to obtain the correct engine position.

Fuel tank (91) Assemble tank mounting pillars (92) to chassis using self tap screws (93) align notches to suit tank and attach tank with suitable rubber bands. Connect tank to engine carburettor with flexible fuel tubing (not provided). A fuel filter is recommended to be fitted into the fuel tube. ✓

Radio installation The plastic radio crate (111) is intended to accommodate and protect the radio receiver, battery, steering servo, switch and aerial. Drill two holes in the base moulding 3mm diameter where marked and attach to the chassis with M3 x 10 screws (34) and nuts. Fit the lid and drill one hole through lid and base each side 2.4mm diameter for the lid attachment self tap ✓



screws. Open up these holes in the lid to 3mm diameter. Mark out, drill, cut and file the aperture in the lid for the steering servo. Drill four holes 2.4mm diameter for self tap screws (93).

Drill, cut and file the aperture for the switch and drill two holes to suit attachment screws supplied with the switch.

Drill and cut a slot in the rear top of lid to suit plug on throttle servo lead.

Mark out, cut and file throttle servo mounting plate (115) to suit servo. Drill four holes 2.4mm diameter for self tap screws attach rear body mounting stud (124) to plate with self tap screw (125).

Fit servos to radio crate lid and plate using self tap screws and rubber grommets provided with the servos.

Assemble throttle servo mounting plate to gearbox cover. The receiver aerial required varies with the radio used. In most cases taping or drilling and fitting to the crate lid is quite sufficient. If not satisfactory, a vertical whip aerial must be fitted.

Linkages – steering A spring loaded (servo saver) bellcrank (71) is provided to protect the servo gears from possible crash damage. Fit the 45mm long screw through the hole in the chassis and doubler plate and secure with a nut and serrated washer. Assemble bellcrank and nyloc nut. Do not tighten nut.

Make the two track rods from 16 SWG (1.5mm) piano wire as shown on drawing (note: 1 L.H., 1 R.H.) attach to the bellcrank with swing keepers (72). The wheels should toe in slightly. Before making the servo to bellcrank link from piano wire, switch on the radio and check the direction of rotation of the servos. Note: it is usual, with a twin stick transmitter, for the R.H. stick to be used for steering and for the car to turn to the right (going away from the driver) when the stick is moved to the right and for the throttle to open when the L.H. stick is moved forwards/upwards. The servo to bellcrank linkage can therefore go to the right or left of the servo arm to obtain the correct control.

The trim levers on the transmitter should be centralised whilst the linkages are being made.

The carb to throttle servo linkage can similarly go to the top or bottom of the servo output disc or arm depending on the direction

of rotation. Only half of the transmitter stick movement will be used to open the throttle. The trim lever can be used to adjust the engine idle speed. Make the linkage from 1.5mm piano wire and attach with swing keepers. Note: throttle is shown in the closed position.

Body Drill, cut and file windows to lines etched on body shell. Similarly trim body to fit around front and rear suspension. Drill one hole front and rear approx 7mm diameter where marked, to fit body mounting studs. Cut and file aperture as necessary to clear engine silencer. Drill and file aperture for switch. Trim rear wing as photos. Cut and file body to fit over roll bar. With body and wing in position, drill two holes 3mm diameter through wing and roof of body, behind the roll bar. Attach the wing with M3 x 10 screws, nuts and impact adhesive. Cut windscreen mesh to shape and bond in place with impact adhesive.

Cellulose aerosol sprays are suitable for painting the body.

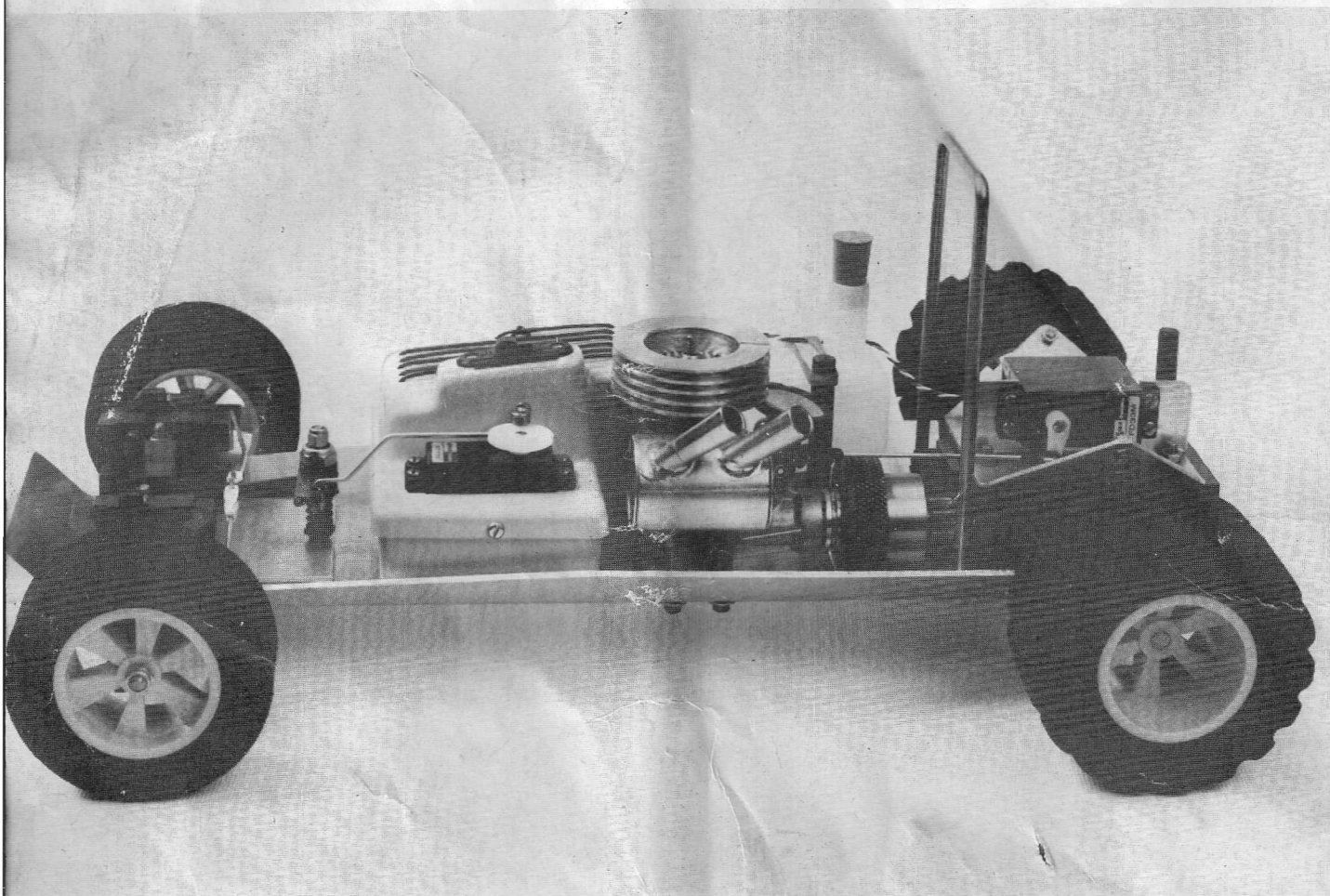
Operation and maintenance The engine is started by holding the flywheel against a rotating rubber wheel. This can be fitted to an aircraft type hand starter or preferably a home made starting box containing a 12 volt battery and a car starter motor. A suitable rubber wheel is available for this purpose. A glow plug lead and clip will be required together with a 1 1/2 or 2 volt battery depending on the voltage of the glow plug.

The engine should start with the throttle closed or nearly closed. A few drops of fuel can be primed directly into the carburettor but care should be taken not to flood the engine.

The bodyshell is normally removed for starting but it may be possible to start with it in place by removing the mesh from one side window to allow access with the glow clip.

Front axles and rear axle bearings should be lightly oiled regularly. The clutch bearing should be packed with grease whenever the engine is removed from the car.

Similarly grease the bevel gears and gearbox bearings if the gearbox is dismantled for any reason.

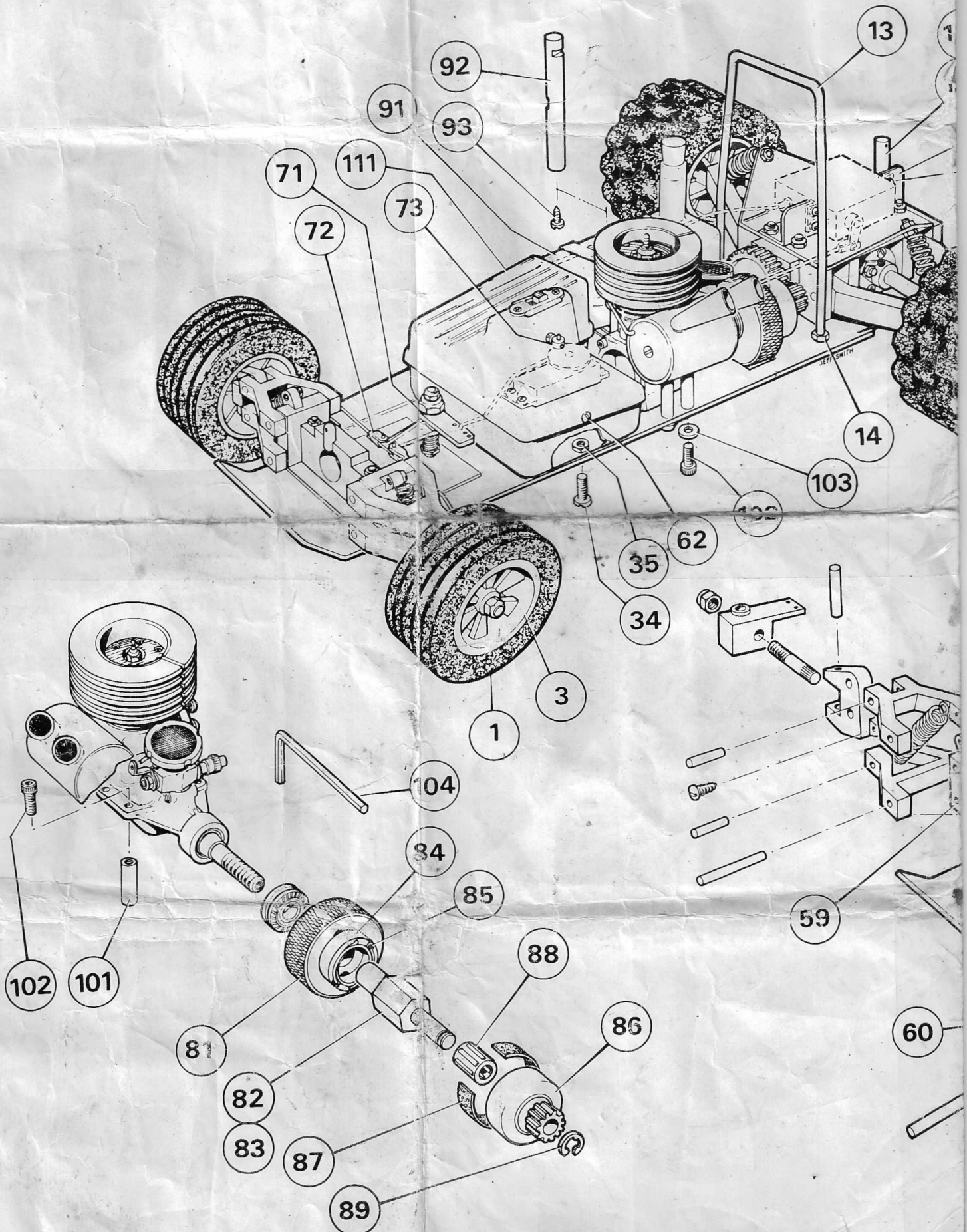


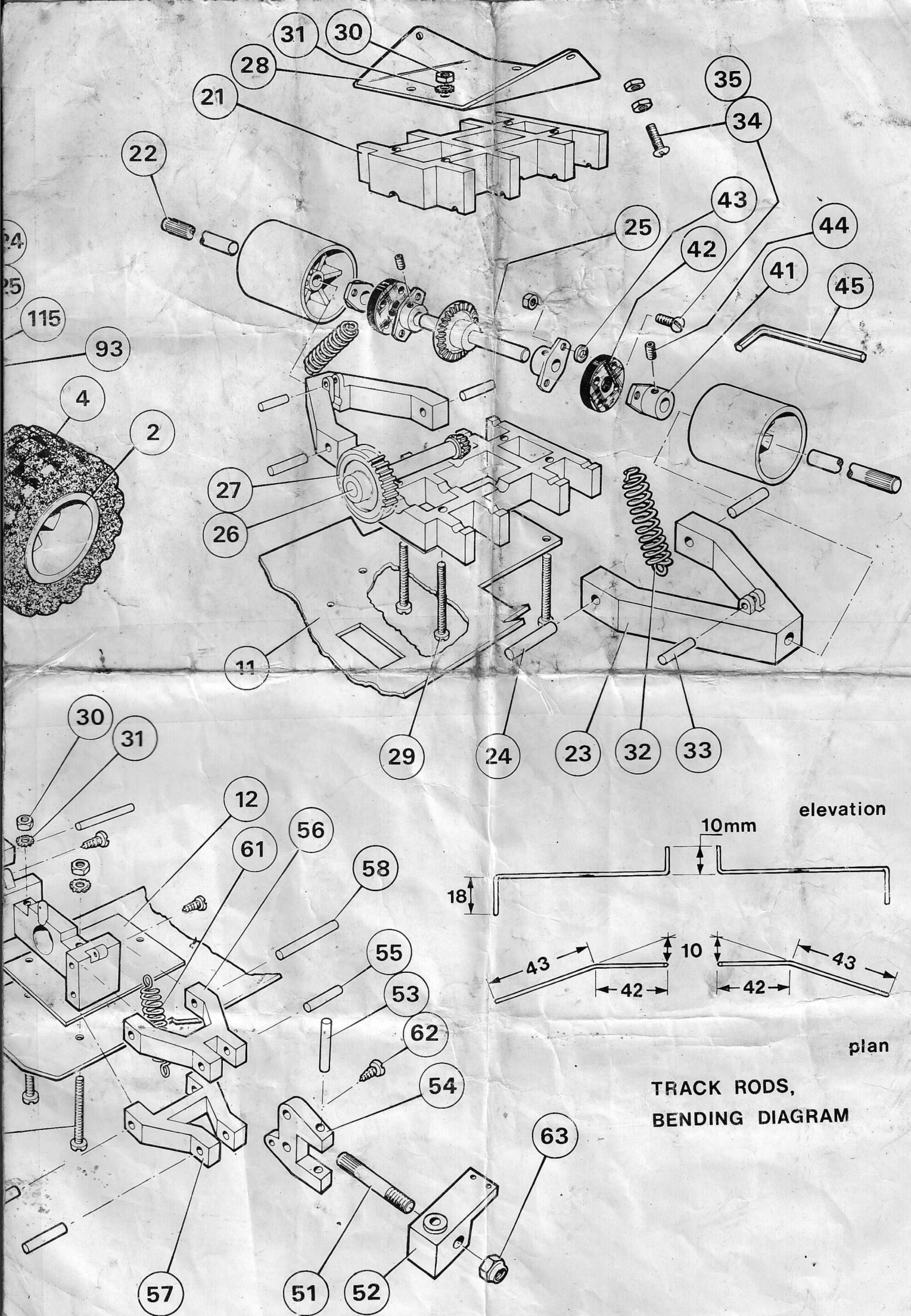
MARDAVE MARAUDER PARTS LIST

QTY PER CAR

M1	FRONT WHEEL	2	M61	FRONT COIL SPRING	2
M2	REAR WHEEL	2	M62	SELF TAP SCREW No. 4 x 1/4"	4
M3	FRONT TYRE	2	M63	WHEEL NUT 10/32 UNF NYLOC	2
M4	REAR TYRE	2	M30	M4 NUT	2
M11	CHASSIS	1	M31	M4 SERRATED WASHER	2
M12	FRONT DOUBLER PLATE	1	M71	STEERING SERVO SAVER BELLCRANK	1
M13	ROLL BAR	1	M72	SWING KEEPER	4
M14	10/32 UNF NUT	4	M73	COLLAR	2
M21	GEARBOX MOULDING	2	M81	FLYWHEEL	1
M22	REAR HALF AXLE	2	M82	CRANKSHAFT ADAPTOR 1/4" UNF THREAD	1
M23	REAR WISHBONE	4	M83	CRANKSHAFT ADAPTOR 6mm UNF THREAD (ALTERNATIVE)	1
M24	REAR WISHBONE HINGE PIN	1	M84	CLUTCH SHOE	2
M25	LARGE BEVEL GEAR AND SHAFT	1	M85	CLUTCH SHOE PIVOT PIN	2
M26	SMALL BEVEL GEAR AND SHAFT	1	M86	CLUTCH DRUM AND PINION GEAR	1
M27	NYLON SPUR GEAR	4	M87	CORK LINING	1
M28	GEARBOX COVER PLATE	4	M88	NEEDLE BEARING	1
M29	M4 x 40 SCREW	4	M89	CIRCLIP	1
M30	M4 NUT	4	M90	CLUTCH SPRING	2
M31	M4 SERRATED WASHER	2	M91	FUEL TANK	1
M32	REAR COIL SPRING	2	M92	FUEL TANK MOUNTING PILLAR	2
M33	REAR COIL SPRING ATTACHMENT PIN	2	M93	SELF TAP SCREW, No. 4 x 3/8"	2
M34	M3 x 10 SCREW	4	M101	ENGINE MOUNT	4
M35	M3 NUT	4	M102	ENGINE MOUNT SOCKET SCREW 4BA	8
M41	UNIVERSAL JOINT FLANGED BOSS	4	M103	ENGINE MOUNT WASHER	4
M42	UNIVERSAL JOINT RUBBER 'O' RING	2	M104	ENGINE MOUNT KEY	1
M43	M3 WASHER	8	M111	RADIO CRATE	1
M44	M4 x 4 SOCKET GRUB SCREW	8	M115	THROTTLE SERVO MOUNTING PLATE	1
M45	2mm KEY	1	M34	M3 x 10 SCREW	2
M34	M3 x 10 SCREW	8	M35	M3 NUT	2
M35	M3 NUT	8	M62	SELF TAP SCREW, No. 4 x 1/4"	2
M51	FRONT STUB AXLE	2	M93	SELF TAP SCREW, No. 4 x 3/8"	8
M52	STEERING BLOCK	2	M121	BODYSHELL AND WING	1
M53	KING PIN	2	M122	WINDSCREEN MESH	1
M54	FRONT UPRIGHT	2	M123	M3 NUT	2
M55	UPRIGHT HINGE PIN	4	M124	REAR BODY MOUNTING STUD	1
M56	UPPER WISHBONE	2	M125	SELF TAP SCREW, No. 4 x 1/4" CSK	1
M57	LOWER WISHBONE	2	M126	BODY CLIP	2
M58	WISHBONE HINGE PIN	4	M34	M3 x 10 SCREW	2
M59	CENTRE BLOCK	1	M131	BUILDING INSTRUCTIONS AND PARTS LIST	1
M60	M4 x 35 SCREW	2			

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TRACK RODS,
BENDING DIAGRAM