AUTOCROSS SPECIAL

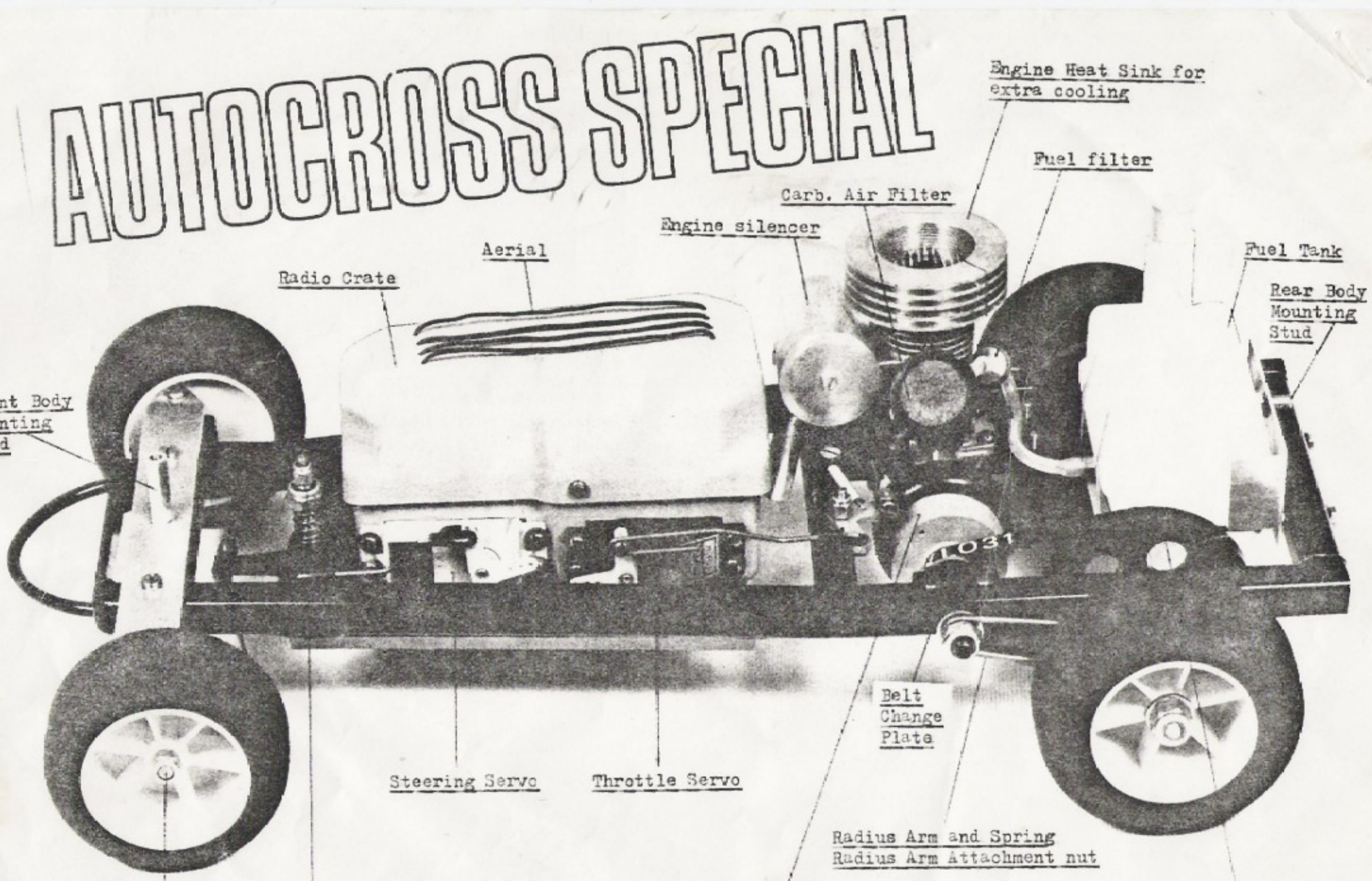

Photo 1

MARDAVE AUTOCROSS SPECIAL - ASSEMBLY INSTRUCTIONS - JUNE 1979

The following are suggested methods and sequence of assembly.

CHASSIS

The chassis should be painted before any assembly. Degrease and paint with brush or cellulose spray.

REAR SUSPENSION

Fit large pulley to rear axle with screw and nyloc nut provided. Assemble L.H. radius arm to stud with ¼" washer, spring and special nyloc nut. Fit rear axle through L.H. radius arm, fit belt over axle and assemble R.H. radius arm, spring, etc.

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 assemble immediately while still wet. Leave for a few hours to dry.
Assemble rear wheels to axle with washers and nyloc nuts. Fit front wheels to front stub axles and secure with nyloc nuts.

ENGINE

The car is designed around the Veco 19/21 cu.in. glow plug ignition engine but most similar sized engines are suitable although ball raced crankshaft types have the longest life. The crankshaft adaptor (which can be removed from the centre of the flywheel/clutch unit, supplied with the car) is threaded ¼" UNF. Alternative 6mm threaded adaptors are available. It is, therefore, important to check the thread on the engine before purchasing.
The engine mounting screws provided are 4BA and most engine holes will require drilling out to 9/64" (3.6mm) diam.
Check that the adaptor is clean of swarf inside and assemble flywheel to engine with adaptor. Hold in vice and securely tighten.
Fit the engine mount plates under the engine lugs with the 4 round head screws and nyloc nuts and securely tighten.
Assemble the engine into the chassis using the 4 socket head cap screws with washers under their heads. Fit the belt over the clutch drum and fix the belt change plate in position using the 2 self tap screws provided. The purpose of the belt change plate is to retain the clutch drum onto the adaptor shaft and to enable a new belt to be fitted without removing the engine. The engine and plate positions can be adjusted slightly so that the clutch drum is just clear of the plate and has minimal end float. The engine position can also be adjusted slightly to tension the drive belt. This drive belt tension is very important.

DRIVE BELT TENSION

If the belt is too tight, when the car is operated, the hole in the clutch drum will wear excessively. If the belt is too slack, it will jump over the clutch drum pulley teeth and wear them away. To check for a loose belt, hold the clutch drum between thumb and fingers of left hand and try to turn the rear wheels with the right hand. The belt should not jump the clutch drum teeth. Correctly adjusted, both belt and pulleys will last for many months of racing.

FUEL TANK

Assemble one 4BA nut to each tank support stud and assemble to chassis with rubber sleeves, tank plate and one 4BA nut on either side of chassis rear cross member. Attach tank with suitable rubber bands. Connect to engine with suitable fuel tube (silicon type recommended) including a fuel filter.

RADIO INSTALLATION

The plastic radio crate is intended to accommodate and protect the radio receiver, battery, two servos and switch. Mark out, drill out and file the base moulding

to suit the steering and throttle servos. Drill 8 holes to suit self tap screws or bolts as supplied with radio and fix servos with these and rubber grommets. Fit the lid and drill one hole through lid and base each side 3/32" (2.4 mm) diam, for the lid attachment screws. Open up these holes in lid to 1/8" (3.2 mm) diam. to clear the self tap screws provided.
Fit the switch to the base moulding at rear if possible for best access through body cockpit (see photo 2).
Fit receiver and battery into crate and position in car approx. level with rear of chassis undertray and drill two holes in suitable positions through crate base and undertray 9/64" (3.6 mm) diam. for attachment screws. Fit base to chassis with two 4BA round head screws and nuts.
The receiver aerial required varies with the radio used. In some cases, taping or drilling and fitting to the crate lid is quite sufficient but in others a vertical whip aerial may be necessary.

LINKAGES - STEERING

A spring loaded bellcrank is provided to protect the servo gears from possible crash damage. Fit this to the chassis in the hole at the front of the undertray, as photo 4. Assemble the screw to the tray first with a lock washer and nut and fit bellcrank and retaining 4BA nyloc nut. Make the two track rods from 16 swg (1.5 mm) piano wire of equal length 2¾" (70 mm). This should provide slight toe in for the front wheels.
Before making the servo to bellcrank link, switch on radio and check direction of rotation of servos. Note: it is usual, with a twin stick type 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 link can, therefore, go to the top or bottom of the servo arm and thus obtain the required control.
Secure all linkage wires with plastic swing keepers or metal collars.

LINKAGES - THROTTLE

It is recommended that an override system is also used for the throttle. This allows the throttle to be opened for engine starting and testing without the radio being switched on. In the system shown, the servo pulls the throttle open and a spring returns it.
The bellcrank screw and return spring screw are already fitted to the chassis. Fit the bellcrank to the screw and adjust and tighten the two 4BA lock nuts under it to suit the height of the carburettor arm. Make the carb. to bellcrank link next, as photo 2, and form ends of and fit return spring. Note: throttle is shown in the closed position. Fit a self tap screw into the servo output arm or disc (drill the hole out to 3/32" diam. if necessary) and make link to slide over screw as photo 1.

BODY

Mark out and cut suitable windows. Cut and leave open a large rear window for access to fuel tank and to engine etc. Cut wire mesh and bond in place with impact adhesive. Drill one hole at front 9/64" (3.6mm) diam. and one hole at rear 3/16" (4.8mm) diam. Assemble the rear body mounting stud to tank plate with 4BA nut and front body mounting stud to front axle plate likewise. Body is held in place by sliding forward over rear stud and securing with a 4BA round head screw in the front.
Cellulose aerosol sprays are the most suitable paints for the body.

FINAL ADJUSTMENTS AND OPERATING

An engine heatsink and silencer are essential. Suitable ones are produced by Mardave. A fuel filter and carburettor air filter are also recommended. The engine is started by holding the flywheel against a rotating rubber wheel. This is usually fitted to an aircraft type electric starter or a home made unit based on a 12 volt car starter motor.

Care should be taken not to flood the engine when starting or damage may occur. To increase the life of the slutch drum bearing, apply one drop of thick oil to the bearing each time the car is run. Similarly oil rear axle bearings, king pins and front wheels.
Check and clean out the clutch drum pulley teeth regularly, especially if the car is run on grass.

CAUTION! DO NOT RUN THE ENGINE WITHOUT THE CLUTCH DRUM IN PLACE.

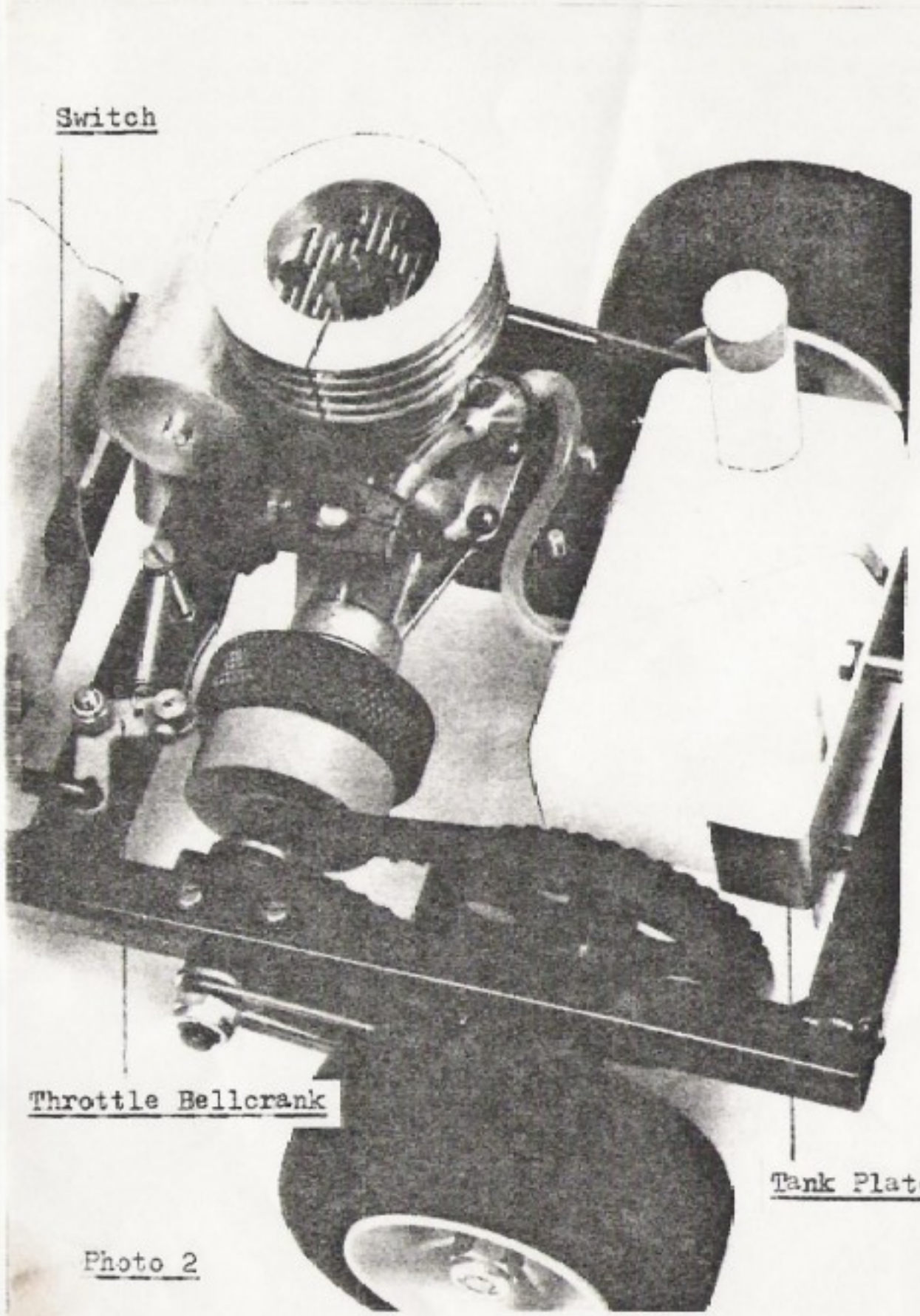

Photo 2

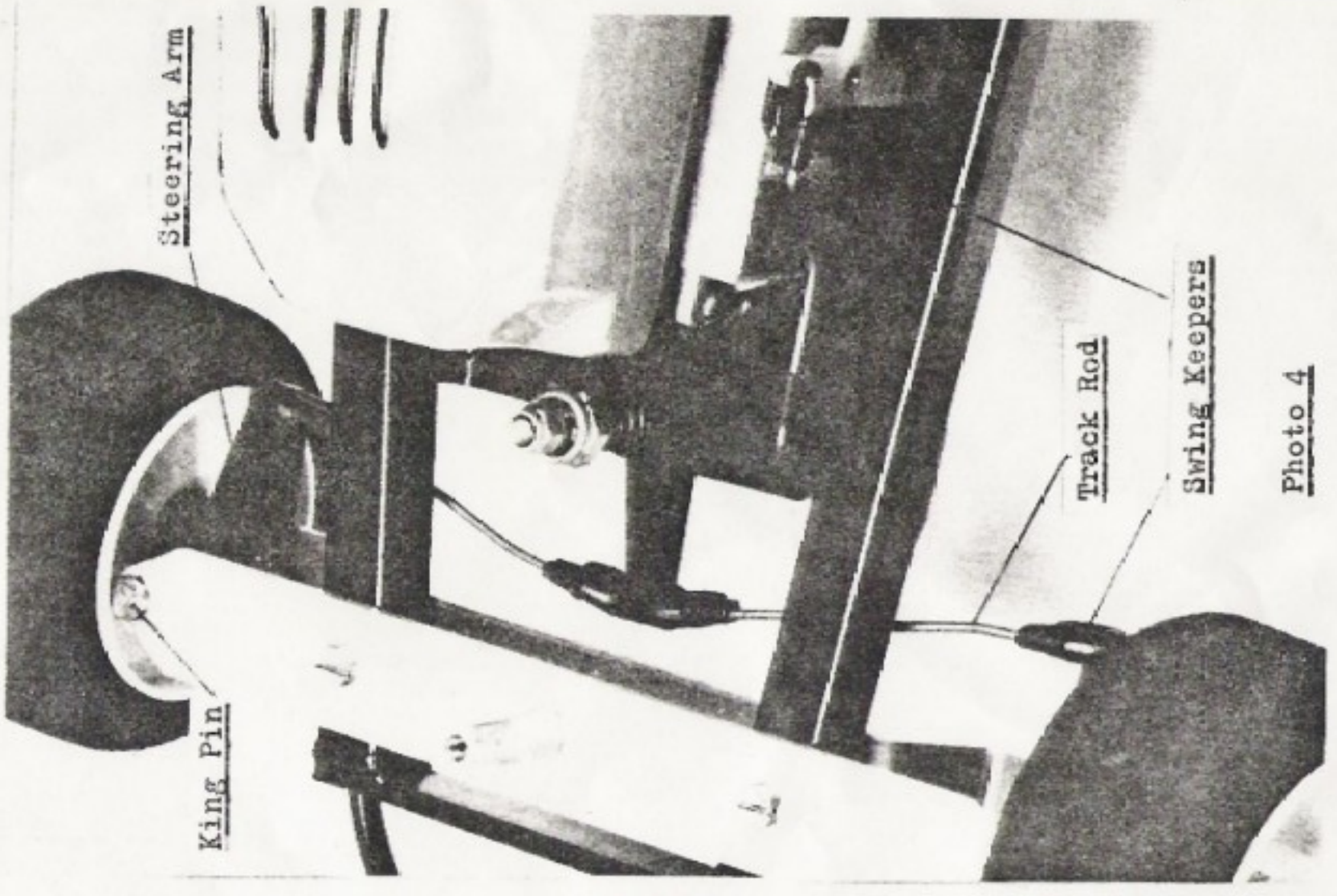

Photo 4

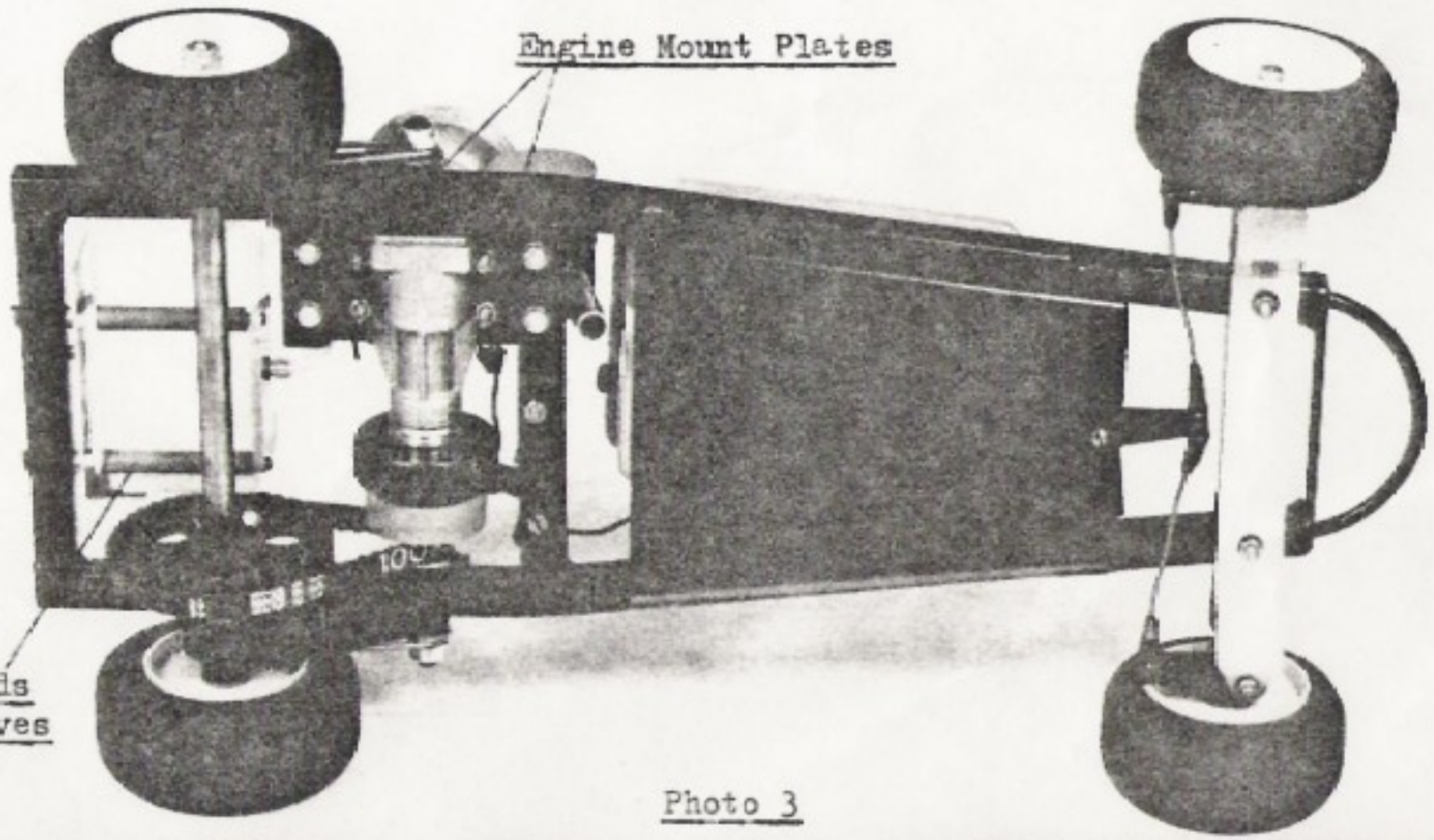

Photo 3