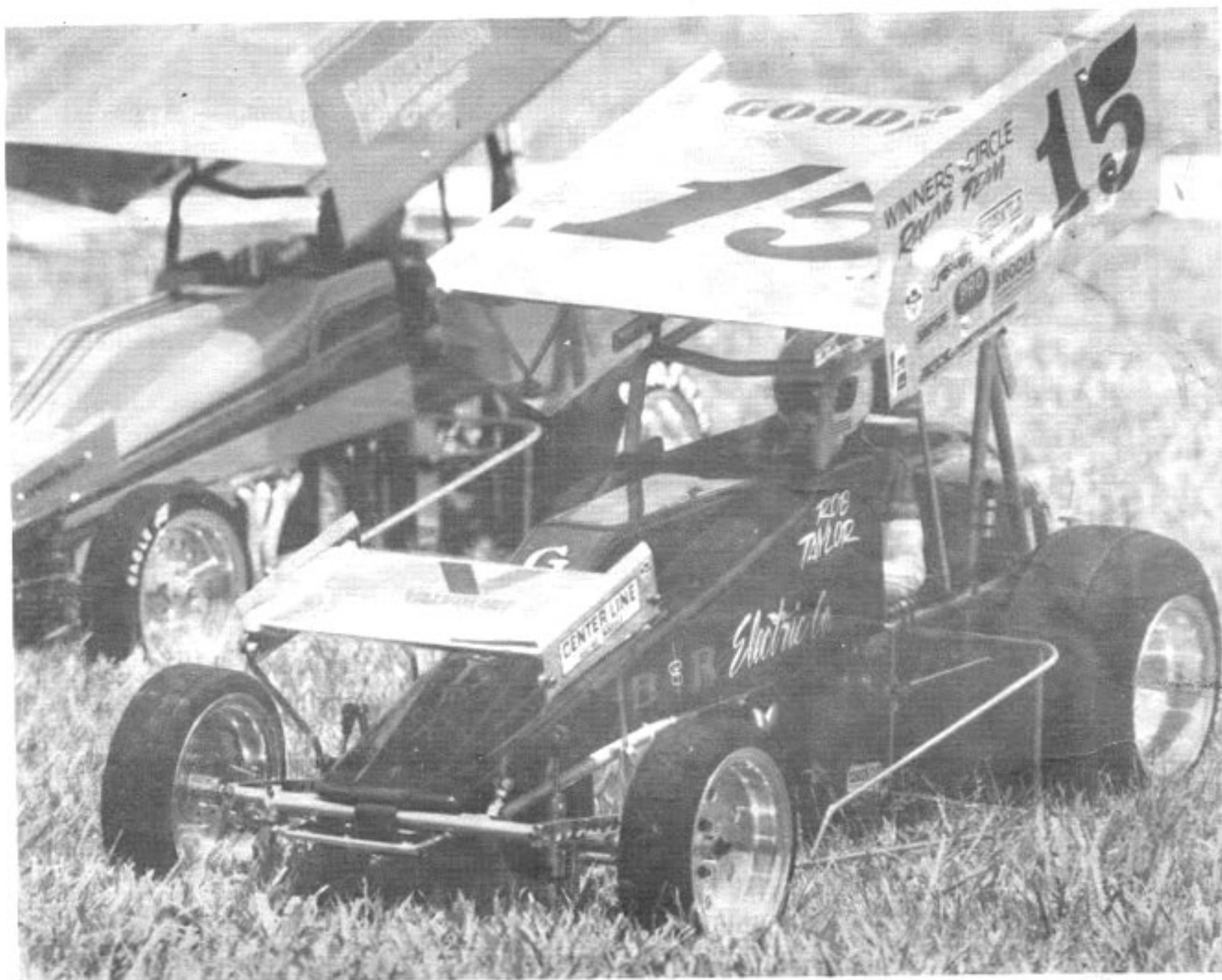


INSTRUCTION MANUAL
Quarter Scale Sprint Car

Price \$5.00



Incorporated

Buffalo, Texas • (214) 322-4869

A WEB SITE FOR THE SERIOUS RACER

Congratulations on your purchase of the Winner's Circle Quarter-size Sprint Car. This miniature racing car was designed and built after its full size counterpart -- the Outlaw Sprint Car, and more particularly, the Gambler Sprint Car. Our sprinter is a product of many, many hours of testing and racing; and, since we race our own cars, a fine quality raceable product is developed for you, our valued customer.

There are two major segments to this project; the building, and the racing. We feel that if you can mentally work in these two concepts, that you will enjoy both of them and they both will be rewarding experiences for you. Time and effort will have to go into building your car, so if you can divide racing from building right now, for a few hours, it will pay you big dividends. Although it is not necessary to follow the sequence of instructions as we have them laid out, they are for your convenience and are an efficient way to complete the project. We advise one to read the complete assembly manual prior to starting assembly as this can save valuable time and effort later on. We also suggest that as you work on different assemblies that you keep all parts segregated by bags that they come in -- to eliminate confusion and make the assembly process easier.

Cleaning and Preparing the Frame

The frame has not been cleaned since being welded; you will need to carefully prepare it for painting. Debur any drill holes in the frame, this can be done with a flat file. With a knife, carefully clean all the welded areas. The flux that is used will occasionally leave a thick glass-looking coat on places around the weld, and this needs to be removed. Carefully sand the entire frame with 320 wet or dry sandpaper, then polish with coarse steel wool. Finally use a solvent such as paint thinner or varsol to completely remove all grease, fingerprints, sanding dust, etc.

We feel that no paint can rival Dupont Imron. Imron does however have several drawbacks. It is extremely dangerous to use -- **you MUST use a charcoal-filtered respirator in a well ventilated area.** Imron is also expensive and difficult to buy in small quantities. Coverite Black Baron Epoxy is also a good paint choice. It, like Imron, is a polyurethane based paint, and is impervious to fuels such as gasoline, alcohol, and nitro. It comes in a 12 oz. spray can and can be purchased at most model shops. Allow at least 24 hours drying time before handling the frame. During the drying time, if you paint first, there is plenty else to do, so your time need not be wasted.

Shaping, Sanding and Polishing Aluminum Parts

As you work on different parts during the assembly process, return them to the appropriate shipping bag until final assembly on the car is made -- this will make your job of assembly easier in the long run. While shaping, sanding and polishing the aluminum parts in your kit is hard work and is time consuming; it will greatly enhance the final appearance of your race car so take the time for these steps. A belt sander works best for shaping, sanding surfaces, or radiusing corners, but a vise and a file will do the job suitably. Front torsion bar arms have been tapered as sent to you, but you may want to round the trailing edges as seen in the pictures in this manual (and as on the full scale sprint cars). The small flat bars of the Jacob's Ladder also need to be rounded. This can be accomplished by assembling the Jacob's Ladder and shaping the bar ends to the spacers. Several parts will need to be sanded with 320 wet or dry sandpaper to remove mill marks, and then sanded with 400 wet or dry sandpaper before polishing. If you do not have polishing facilities they are available at most good hardware stores. Also, Sears has a polishing kit that includes a cloth wheel and two or three grades of rouge for polishing. You will be well rewarded for time and effort spent polishing your parts. We also will be rewarded because your racing car will impress your friends and they too will want to own one. After your aluminum parts are polished, you will need to remove the caked on rouge. This can be done by washing in paint thinner or varsol, being sure to clean all holes and threaded areas. Again, RETURN ALL PARTS TO SHIPPING BAGS UNTIL FINAL ASSEMBLY ON THE CAR. (NOTE: Do not remove the color coding paint from the torsion bars.)

Suspension Group Assembly

Prepare an area to build your sprinter so that the painted and polished parts will not be scratched or damaged.

This assembly includes the torsion bar bushings, the torsion bars, the torsion bar arms and the torsion bar stops. (See Fig. #1) Install the bushings in the torsion bar tubes on the frame. If the fit in the torsion bar tubes is tight, using a small plastic hammer, tap the bushings until the shoulder is flush with the end of the torsion bar tube. The torsion bars are the same size and rate but have been color coded since each has 'flats' ground to fit a specific torsion tube. The set screws for the torsion bar arms and torsion bar stops will always be tightened against the flat, making certain that the flat is lined up perpendicular to the shaft of the fastener. Viewing the car from front to rear: the red torsion bar belongs in the front tube, the blue bar goes in the next tube back, the white bar goes in the third tube back, and the yellow tube, which is the left rear, in the rear tube. The torsion bars should fit loosely in the torsion bar bushings. If a bushing fits tightly on the bar, it is necessary to roll a small tube of fine sandpaper and sand the inside of the bushing.

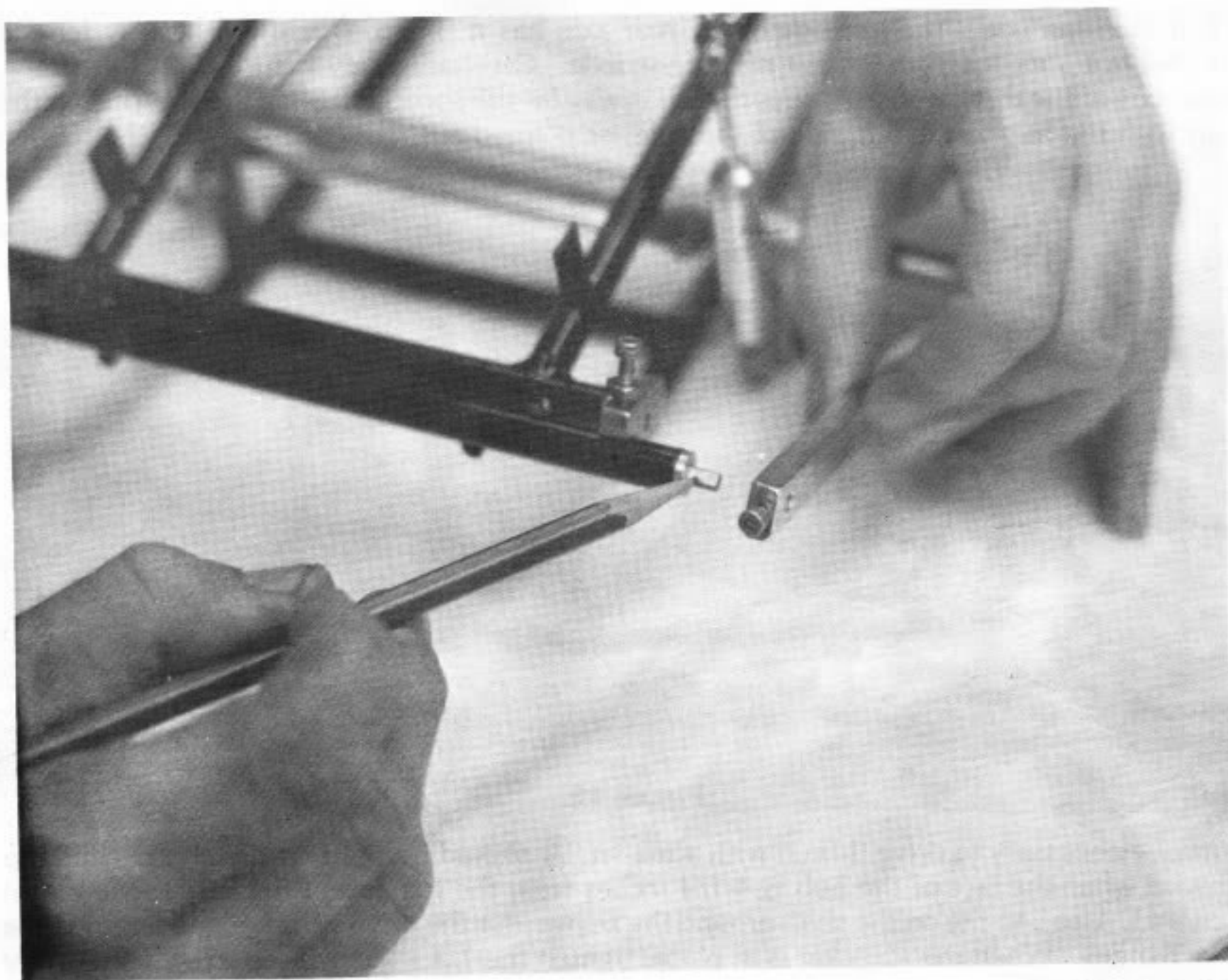


Figure #1

Let us clarify now that any future reference to left side or to right side of the race car will be as viewed looking forward from the driver's seat. All torsion bar stops are the same. However, all four torsion bar arms are different and must be located in their proper position. The front torsion arms are the longer of the four arms. The rear torsion arms each have a #10-32 metal rod end installed in the end and have shock mounting holes drilled in the side. The longer of the two front torsion arms is the left torsion bar arm, the other one should be installed on the right. Install the torsion bar stops so that the stop for the left torsion arm has the 6-32 x 5/8 inch adjustment screw underneath and the stop for the right torsion arm has the adjustment screw on top. Using 6-32 x 3/8 inch set screws in the end of the torsion bar arms and torsion bar stops, tighten snugly. Move to the rear of the car and install the rear torsion bar arms and stops in the same manner. The longer of the two torsion arms is the left rear arm, the other is the right rear. (NOTE: Torsion bar stops when positioned properly put downward force on the torsion arms when the adjustment screw is tightened.)

REAR AXLE ASSEMBLY AND INSTALLATION

Rear Axle Assembly and Installation

Orient the rear axle. The left side of the rear axle has a sprocket, and the keyway for the sprocket is 4.5 inches from the left end of the axle. Carefully study Figure #2 at this time. Use 320 sandpaper to lightly sand the rear axle until the rear birdcage/bearings and rear sprocket slide on the axle easily. Now install one of three woodruff keys in the keyway for the sprocket. Slide the sprocket on the shaft with the hub to the left side of the axle, or pointed out.

****PAGE4****

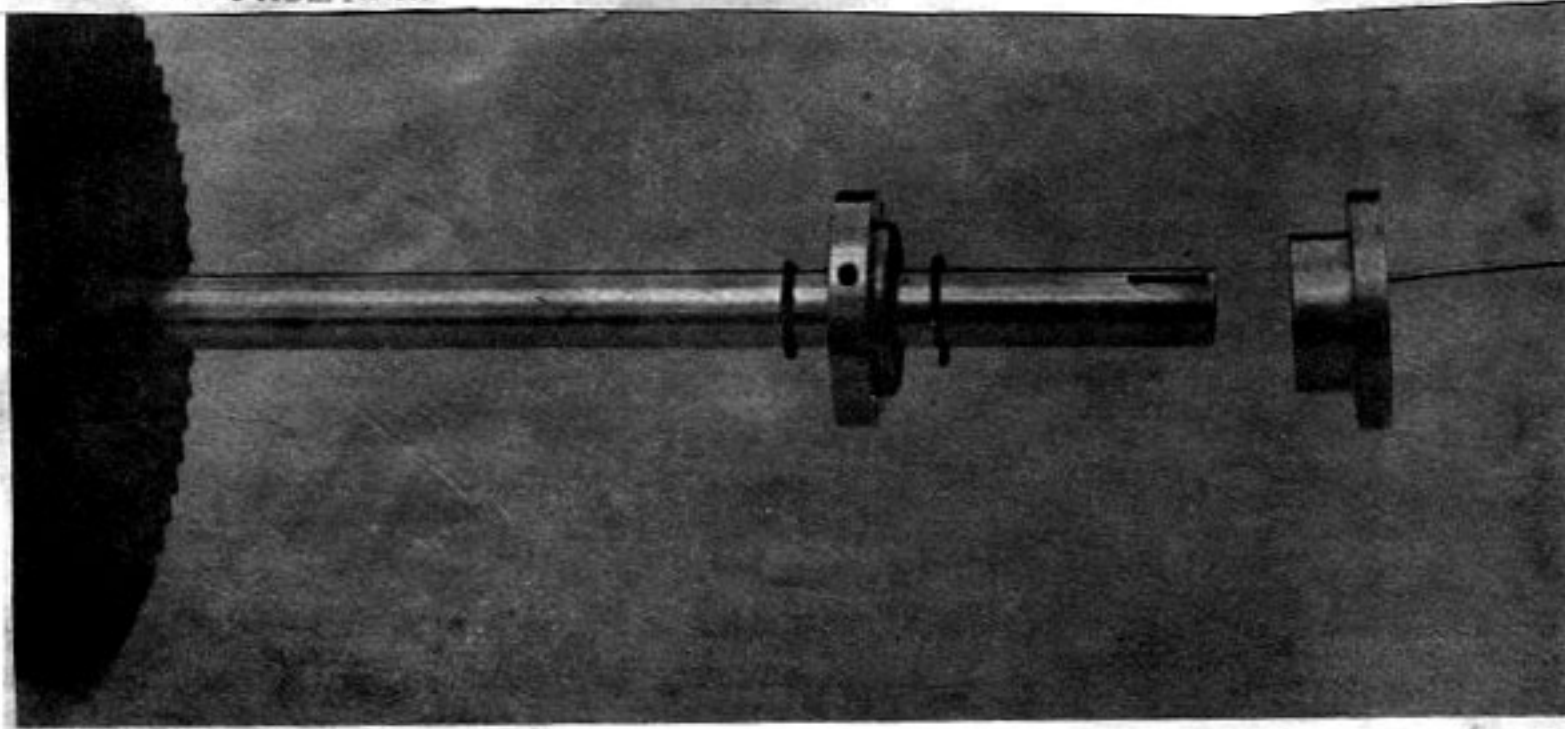


Figure #2

It should be a tight on the shaft. Stop the sprocket when the face of the hub is 4-1/4 inches from the left end of the axle as viewed in Figure #3. Use Loctite on the shaft around the keyway for the drive sprocket and later for the drive flanges. When the sprocket is in place, tighten the 1/4 x 20 inch set screw very firmly on the axle shaft.

****PAGE4****

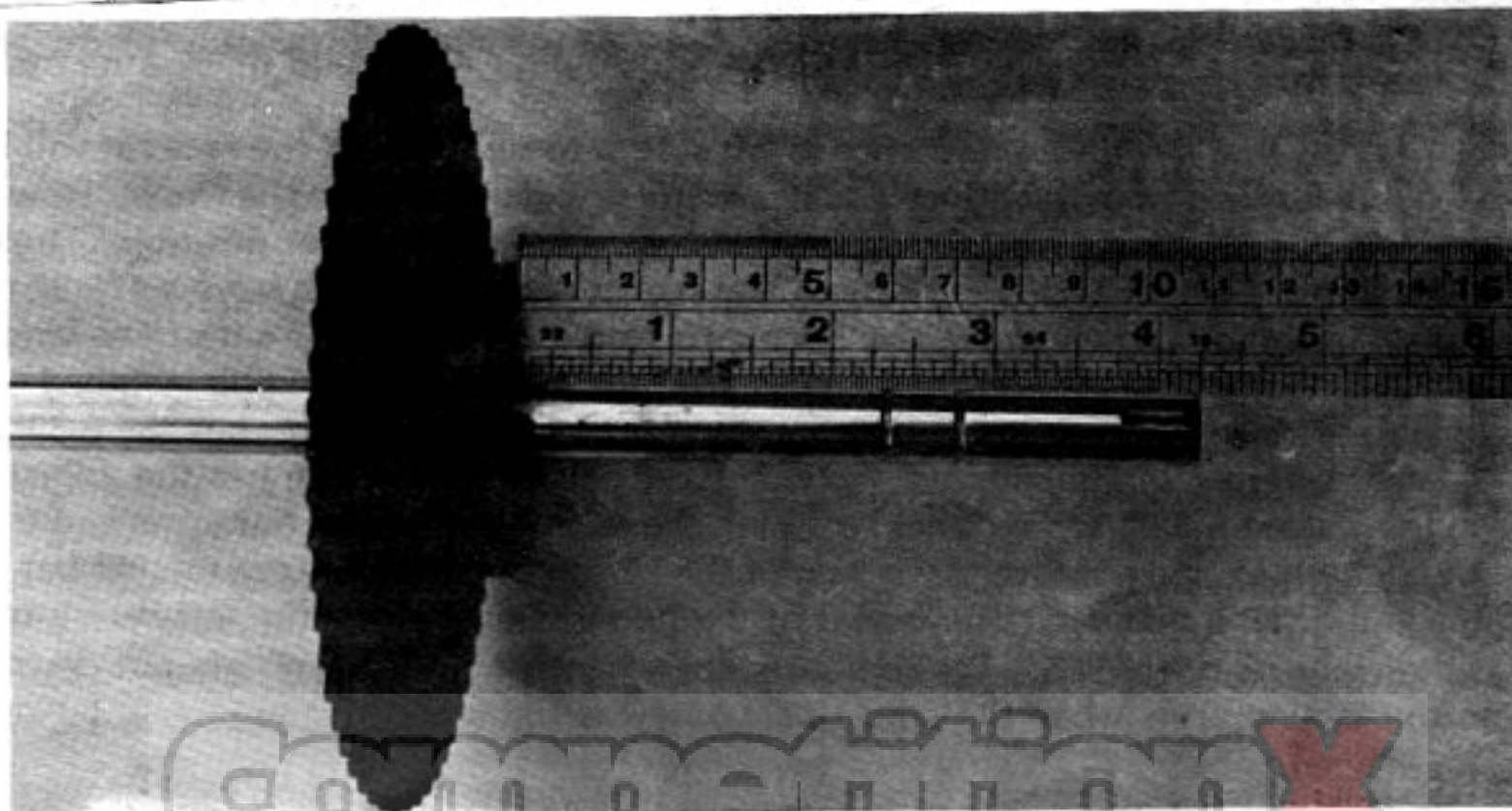


Figure #3

Once the sprocket has been positioned, slide the inside snap rings for the birdcage/bearings into position. The birdcage/bearing has a flat milled on its circumference, with a 10-32 hole drilled in the center of the flat. Slide both birdcage/bearings into position next to the snap ring with their flush sides towards the sprocket and install the outside snap ring. Next, install another woodruff key in one of the drive flange keyways. Put a coat of loctite around the keyway and slide the hub on until the drive flange is even with the end of the rear axle. Install the other drive flange the same way.

(NOTE: The threaded hole on the outside edge of the right birdcage/bearing faces forward in the car.) Take a 6-32 x 3/8 inch socket head screw and slide it through one of the rod end balls and screw it in the top hole on each birdcage/bearing from the inside and tighten securely. The 1/4 inch spacer and a 6-32 x 4 inch socket head screw will be used to secure the metal rod end in the end of each torsion arm into the lower hole of each birdcage/bearing. Slide the 6-32 BLANK 1/4 inch socket head screw (that came with the Ladder assembly) through the ball removed from the nut and (that came with the Ladder) and screw it into the threaded hole on the outside edge of the right birdcage/bearing. Tighten securely. The rear axle is complete, set it aside and ready for installation.

Screw the metal rod ends in the rear torsion bar arms so that center-to-center measurement for the left arm is 3-7/8 inches and for the right arm is 3-3/8 inches. Install rod ends into both ends of the rear radius rods. Adjust both rear radius rods so that from center to center of the rod ends measure 5-1/2 inches.

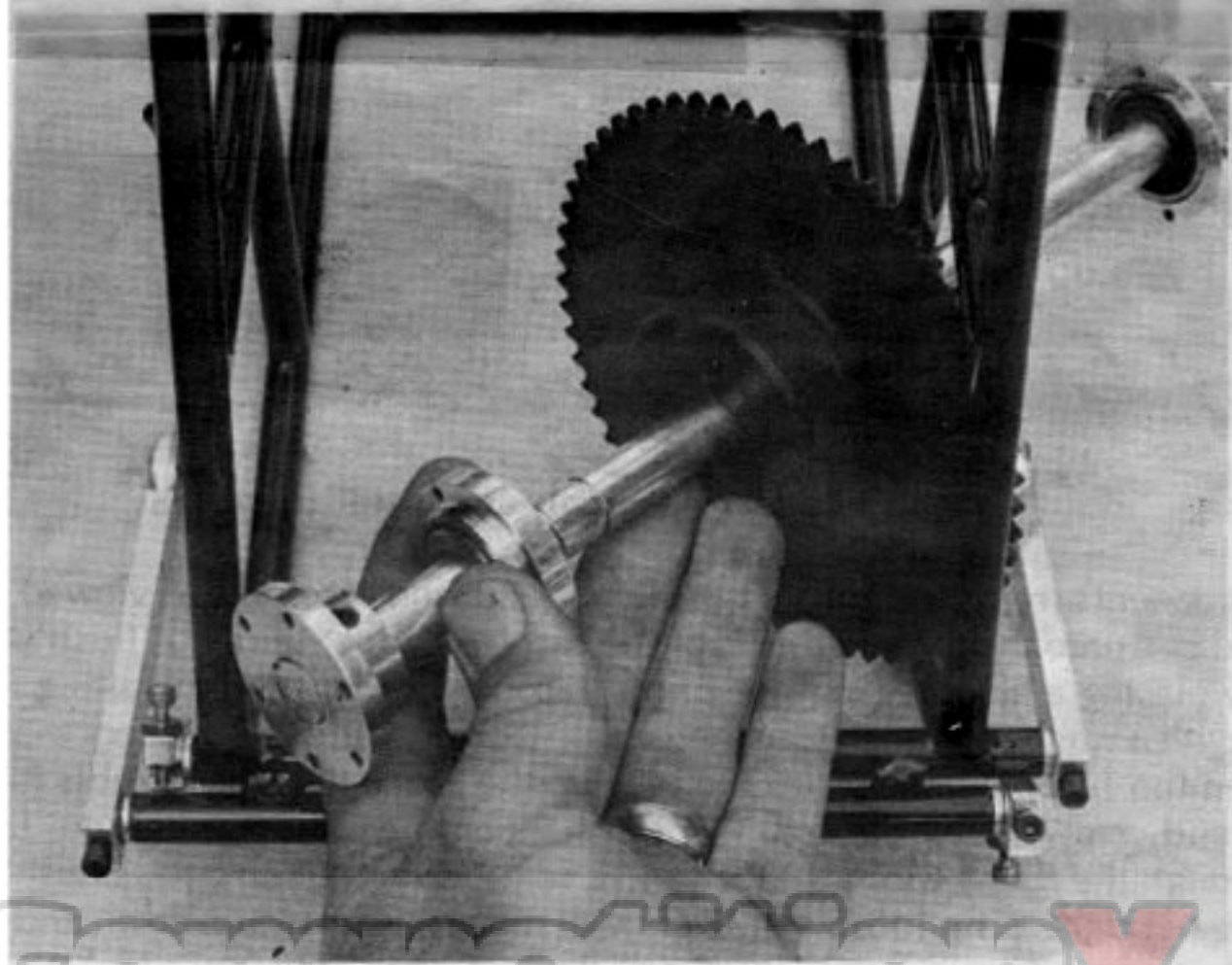
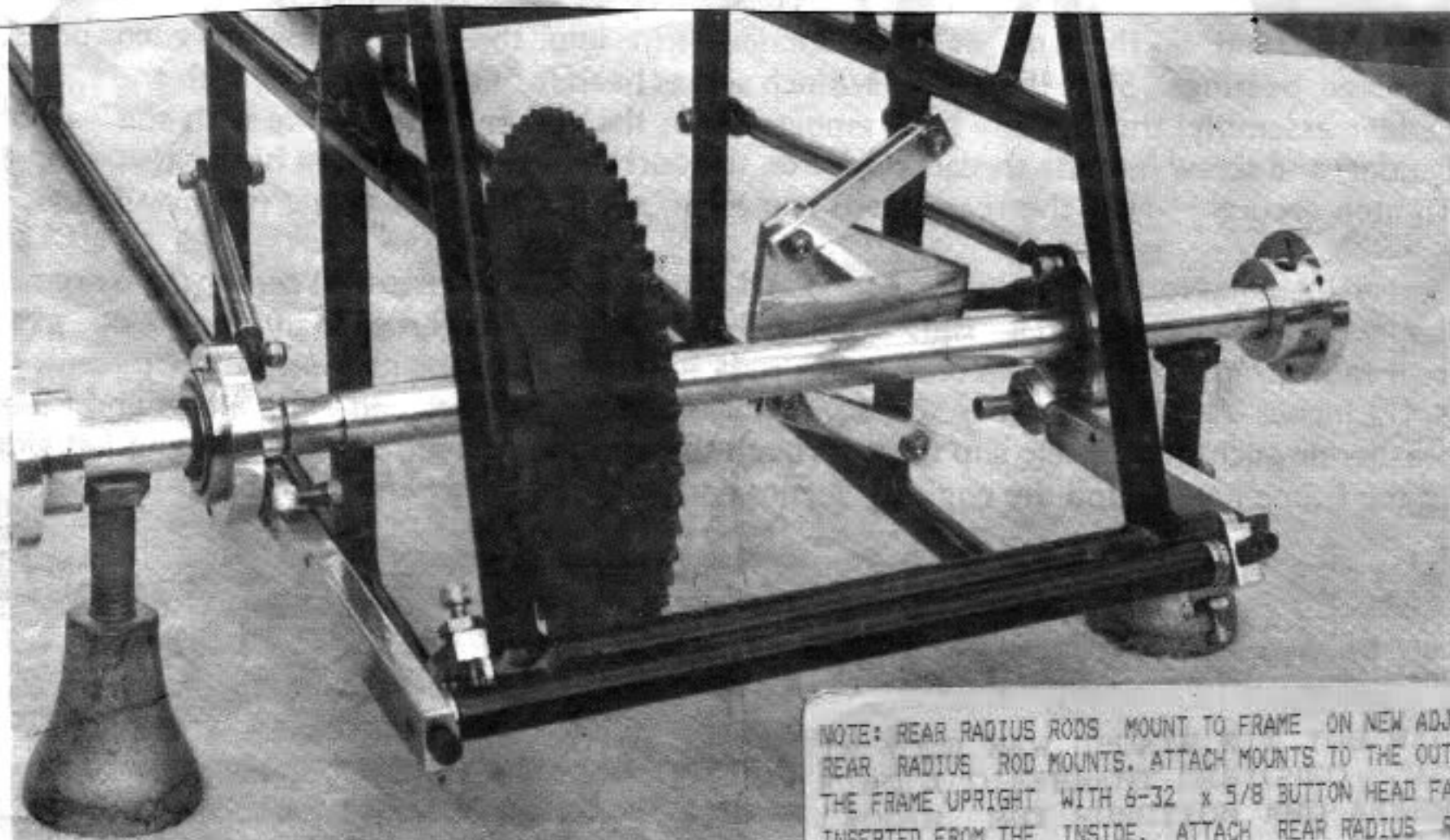


Figure #4

You are now ready to position the rear axle assembly within the frame sliding it through as shown in Figure #4. Study Figure #5 carefully and install the rear axle. Install the rear radius rods to the rear radius rod mounts and to the birdcage with a 10-32 x 5/8 inch socket head cap screw. Finish by attaching a 10-32 x 5/8 inch socket head cap screw through the spherical bearing of the Jacob's Ladder; use a #10 lock washer between the ball and the birdcage/bearing.

(NOTE: The threaded hole on the outside edge of the birdcage/bearing faces forward in the car.) a 10-32 x 1 socket cap screw will bolt through the metal rod end in the end of each torsion arm into the lower hole of the birdcage/bearings. This fastener will screw in only enough to put a jamb nut on the back side of the birdcage -- leaving most of the bolt on the metal rod end side.

*****PAGE6*****



NOTE: REAR RADIUS RODS MOUNT TO FRAME ON NEW ADJUSTABLE REAR RADIUS ROD MOUNTS. ATTACH MOUNTS TO THE OUTSIDE OF THE FRAME UPRIGHT WITH 6-32 x 5/8 BUTTON HEAD FASTENERS INSERTED FROM THE INSIDE. ATTACH REAR RADIUS ROD WITH 10-32 x 5/8" SOCKET HEAD CAP SCREW.

Figure #5

JACOB'S LADDER ASSEMBLY AND INSTALLATION

Take the components from the Jacob's Ladder package and assemble as viewed in Figure #6. Assemble by placing a link on each side of the Jacob's Ladder, and installing the 4-40 x 1/2 inch screws with a washer on each side and a self locking nut. The spacers that are supplied go in between the Jacob's Ladder links to take up the space that the Jacob's Ladder took up on the other end. Now install the 4-40 x 7/8 inch mounting bolts through the Jacob's Ladder links and through the frame with a self locking nut and a washer on both sides. Make certain that these are not tight. The Jacob's Ladder must move freely up and down and have 1/8 inch movement from front to rear as viewed from the side of the car.

*****PAGE6*****

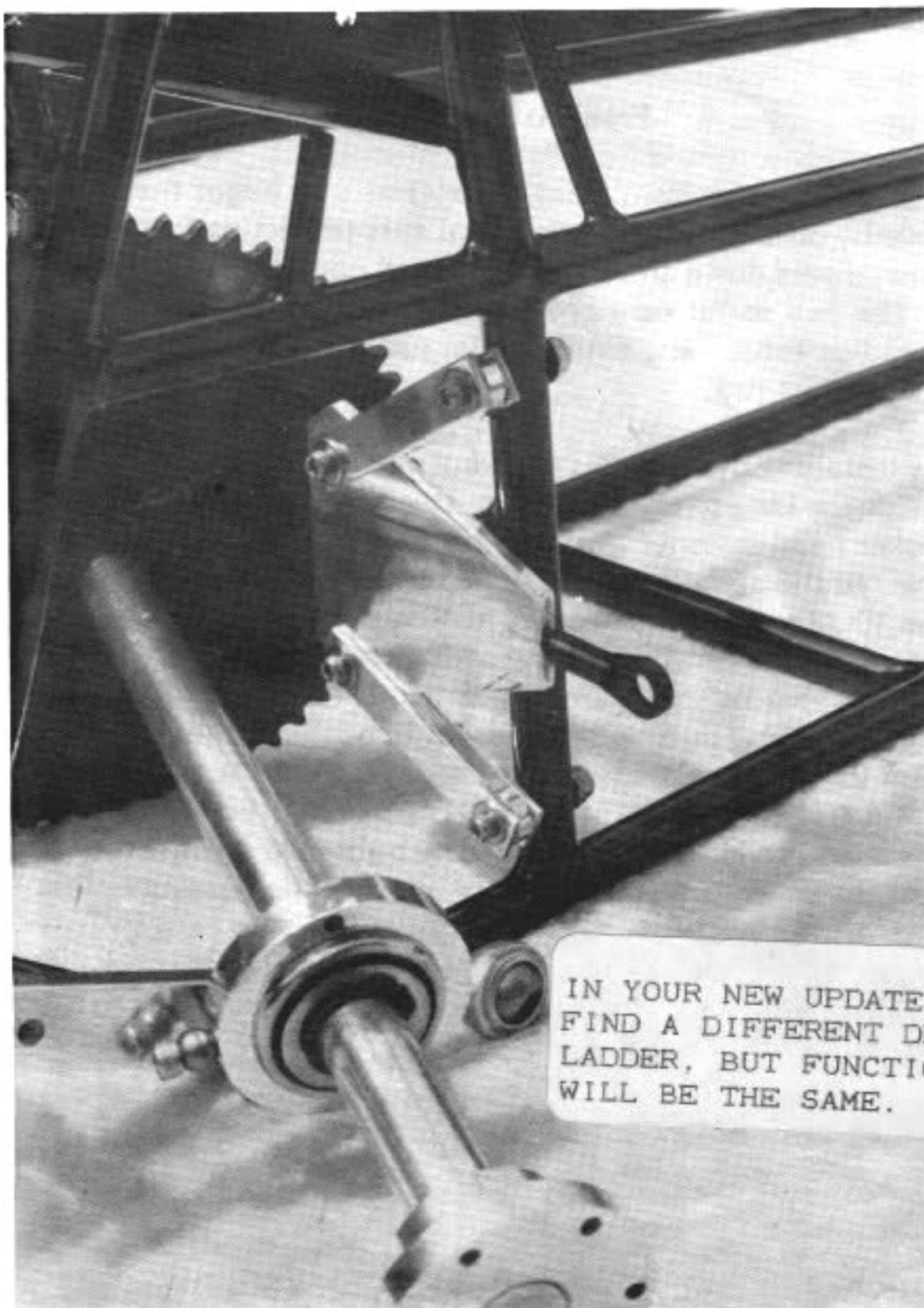
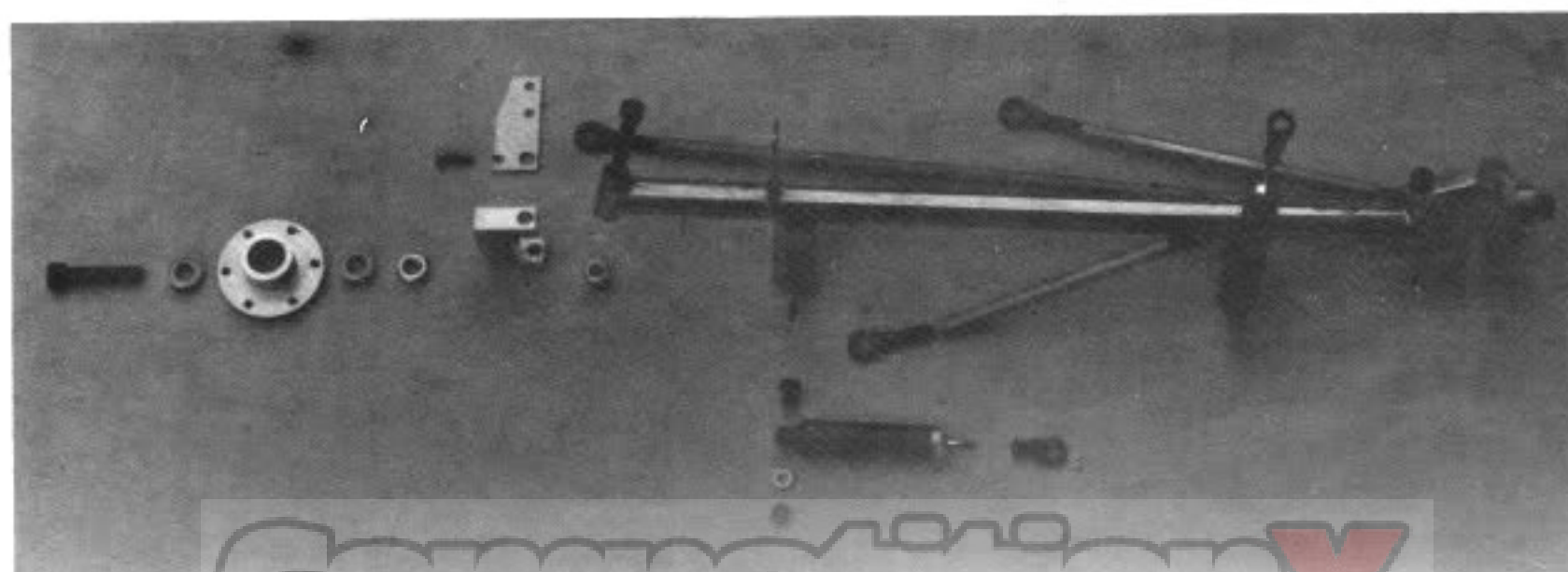


Figure #6

IN YOUR NEW UPDATE KIT YOU WILL
FIND A DIFFERENT DESIGNED JACOB'S
LADDER, BUT FUNCTION AND ASSEMBLY
WILL BE THE SAME.



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Figure #7

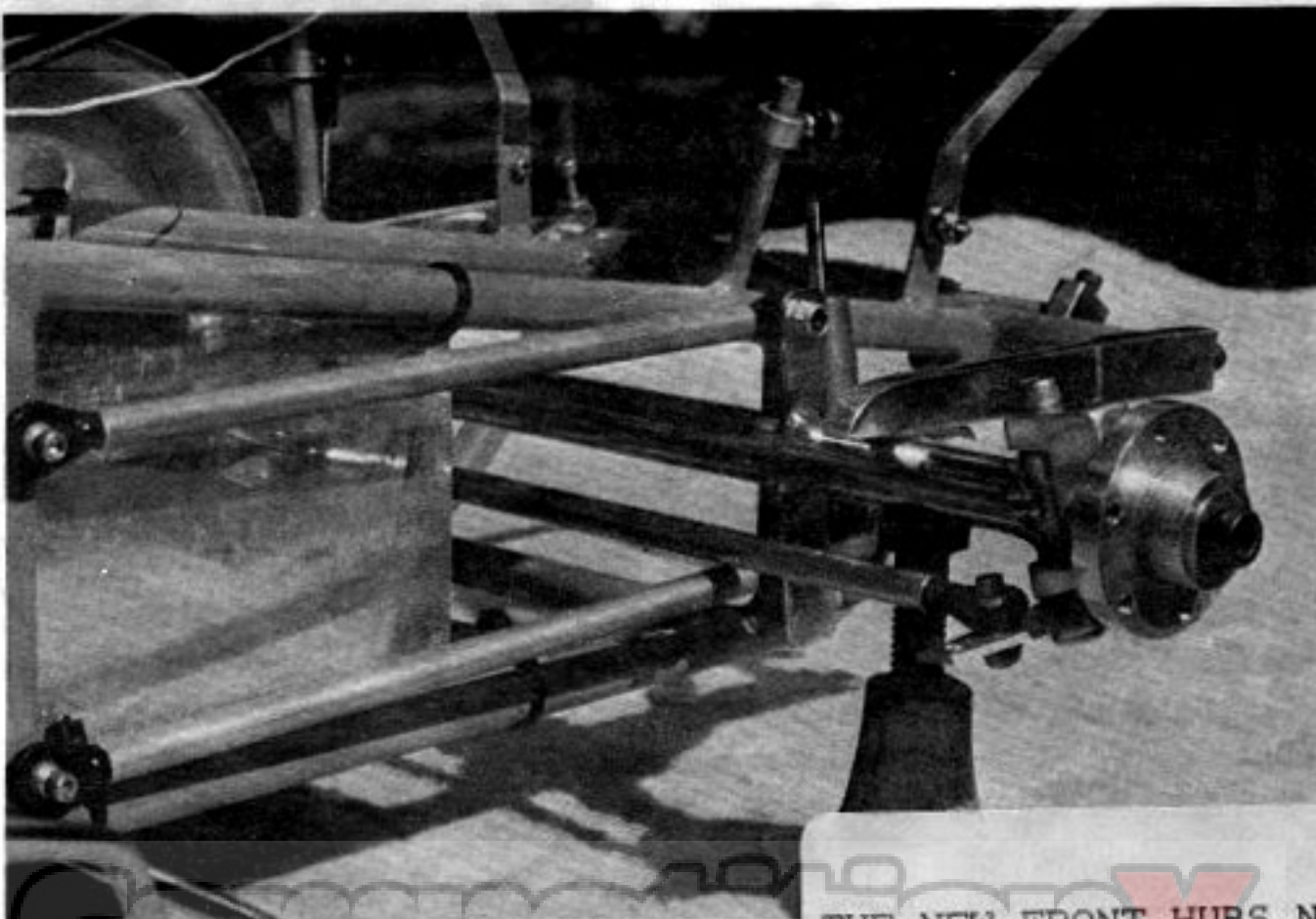
FRONT AXLE ASSEMBLY

Study Figure #7 carefully (View from front of axle) as you begin the front axle assembly. Orient the front axle by observing the three metal ears projecting from it. Holding the front axle with the two metal ears down and the single upper ear to the right, you are looking at the rear of the axle. The two metal ears project downward with holes for mounting the front shocks and lower radius rods. The single metal ear projects upward on the right side for mounting the upper radius rod.

Begin assembly by installing the spindles and king pins. The bottom of the spindle has a 6-32 hole tapped alongside the king pin hole: bolt the steering arm onto the spindle by attaching a black 6-32 x 3/8 inch socket head fastener through this hole and aligning the larger hole with the king pin hole. Next, fit the spindle into position on the king pin boss with the steering arm down and slide the 10-32 x 1-1/2 inch socket head fastener (king pin) through, tightening a locknut on the bottom. Make certain that the spindle moves freely in its arc. Assemble both sides at this time. The spindle shafts are 1/4 -28 x 1-1/4 inch socket head fasteners. Bearings have been installed on the inside and outside of the front hub. Slide the spindle shaft through the bearings and screw the nut provided on the inside, up until it is flush with the bearing. Screw the spindle shaft into the spindle.

The holes to the front of the two lower projecting ears are the lower shock mount holes. Insert 4-40 x 3/4 inch socket head fasteners through these holes from the rear to the front and secure each with a 4-40 hex nut.

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THE NEW FRONT HUBS NOW INSTALL IN REVERSE OF WHAT IS SHOWN HERE.

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FOR Figure #8

SERIOUS RACER

Next, screw rod ends into each of the six threaded metal tubes. NOTE: the drag link (measuring 4-1/4 inches) uses plastic rod ends in each end. (See Figure # 8.) With 10-32 x 7/8 inch socket head fasteners, bolt the two 4-3/4 inch radius rods into the lower hole of the frame's front uprights. The upper radius rod (4-5/8 inch aluminum tube) should be bolted in the same manner to the upright on the right side of the frame. Now slide the front axle into the frame, insuring that the torsion bar arms rest on top of the axle. Glue a small strip of velcro on the underside of the torsion arms where they lay on the front axle -- this will eliminate radio interference caused by 'metal to metal' contact.

Using the 10-32 x 5/8 inch socket head fasteners, bolt the forward ends of the radius rods into their respective positions on the axle and secure with hex nuts. Now, insert a 10-32 x 7/8 inch socket head fastener through the 3-1/4 inch panhard bar rod end and through the hole in the front axle and secure it with a 10-32 hex nut; fasten the other end to the short upright in the frame with a 10-32 x 7/8 inch socket head fastener and nut. The steering link attaches to the tie rod by slipping the collar over the threaded shank of the 10-32 metal rod end on the left side of the tie rod. A 6-32 x 3/8 socket head fastener inserts through the nylon rod end of the drag link into the collar; the other end of the drag link will be installed later on the steering servo. The 10-inch tie rod mounts through the remaining holes of the steering arm and is used to adjust 'toe in' or 'toe out'.

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Shock Absorber Assembly and Installation

Package Contents (Shock Pair):

- 2 Shock Cylinders
- 2 Cylinder caps
- 2 Piston Shafts
- 1 Seal Package (gaskets, 'O' rings, spacers, snap rings, 'E' clips)
- 1 Fastener Package (nuts, washers, bolts, rodends)
- 1 Piston Package (2 piston heads)

SHOCK ASSEMBLY

NOTE: Clear Table Area To Facilitate Working With These Small Parts)

Install seal package into the sealwell at the top (tapered end) of the shock cylinders as follows:

- A. Small plastic washer (first)
- B. Red 'O' ring
- C. Aluminum spacer
- D. Red 'O' ring
- E. Medium plastic washer
- F. Snap ring (top)

(NOTE: 'E' clips are for next step)

Install piston head onto piston shaft with 'E' clips. Lubricate shaft and seal well with 5W oil. Being careful not to damage 'O' rings, push the threaded end of the piston assembly up from the bottom of shock cylinder through the seal well as far as it will go. Invert the cylinder (threaded end on top) and install the large plastic washer over the threaded end of the cylinder. With the piston shaft still fully extended, overfill the cylinder with 5W oil (a bubble of oil should be above the rim of the cylinder). Install the end cup (NOTE: DO NOT OVERTIGHTEN -- you will only crush the plastic washer).

Check for action of the piston assembly. If the assembly will not compress all the way, there is an air bubble in the cylinder. Loosen the bottom cup, push the shaft all the way into the cylinder and retighten cup.

Installation of Shocks on Car

The tops of the front and rear shocks both mount on adjustable shock columns. Shock collars with a rod end ball and 6-32 x 3/8 inch allen head screw are positioned approximately 1/4 inch below the top of the frame shock tower. The ball orients toward the front of the car for the front shocks, and the ball orients toward the rear for the rear shocks. The female rod end is installed on the end of the piston shaft.

FRONT SHOCKS: Install the white plastic bushing in the shock cap hole and position on the axle shock mounting bolts with the shoulder of the bushing towards the axle. Finish the front shock installation with a washer and a 4-40 self-locking nut.

REAR SHOCKS: The lower portion of the rear shocks mount to the rear torsion arms. Using a 4-40 x 3/4 inch socket head fastener, screw the bolt through the torsion arm from outside to inside and tighten securely. Next, install the white plastic bushing in the shock cap hole and position on the shock mounting bolt with the bushing shoulder towards the torsion arm. Finish the rear shock installation with a washer and a 4-40 self-locking nut. (NOTE: DO NOT TIGHTEN THIS NUT -- excessive binding here will ruin the shock absorber)

Engine Installation

Remove the black plastic air cleaner cover by squeezing gently. Inside you will notice 2 screws which hold the carburetor assembly in position atop the engine -- loosen these 2 screws and remove the air cleaner assembly. Now replace the screws finger tight to hold the carburetor assembly in place until final radio servo installation and adjustment is made. Remove muffler until the engine has been mounted securely in the frame. Remove motor mount angle plate. Remove the 4 screws that secure the rope starter unit to the engine.

Insert the engine between the frame rails from below the frame (spark plug oriented to the front and carburetor on top). Replace the starter rope unit / right side engine mounts on the engine and bolt the right side mounts to the frame (outside) through the 4 holes provided (see Figure #9). Drill a hole into the engine housing case by inserting drill bit through the frame hole. With a nut super-glued to your finger, insert it into the housing and tighten. Replace the motor mount angle plate and drill two holes approximately two inches apart through the lower left frame rail and the motor mount angle plate using a 1/8 inch or #30 drill (NOTE: insure that the holes pierce the center of the frame rail). Mount with two 6-32 x 1 inch socket head fasteners and secure with two self-locking nuts. Now tie wrap the left side panel in place to cover the clutch drive mechanism. Replace the muffler assembly using Loc-tite or equivalent on the screws. Reinstall the air cleaner and cover after final radio installation and adjustment.

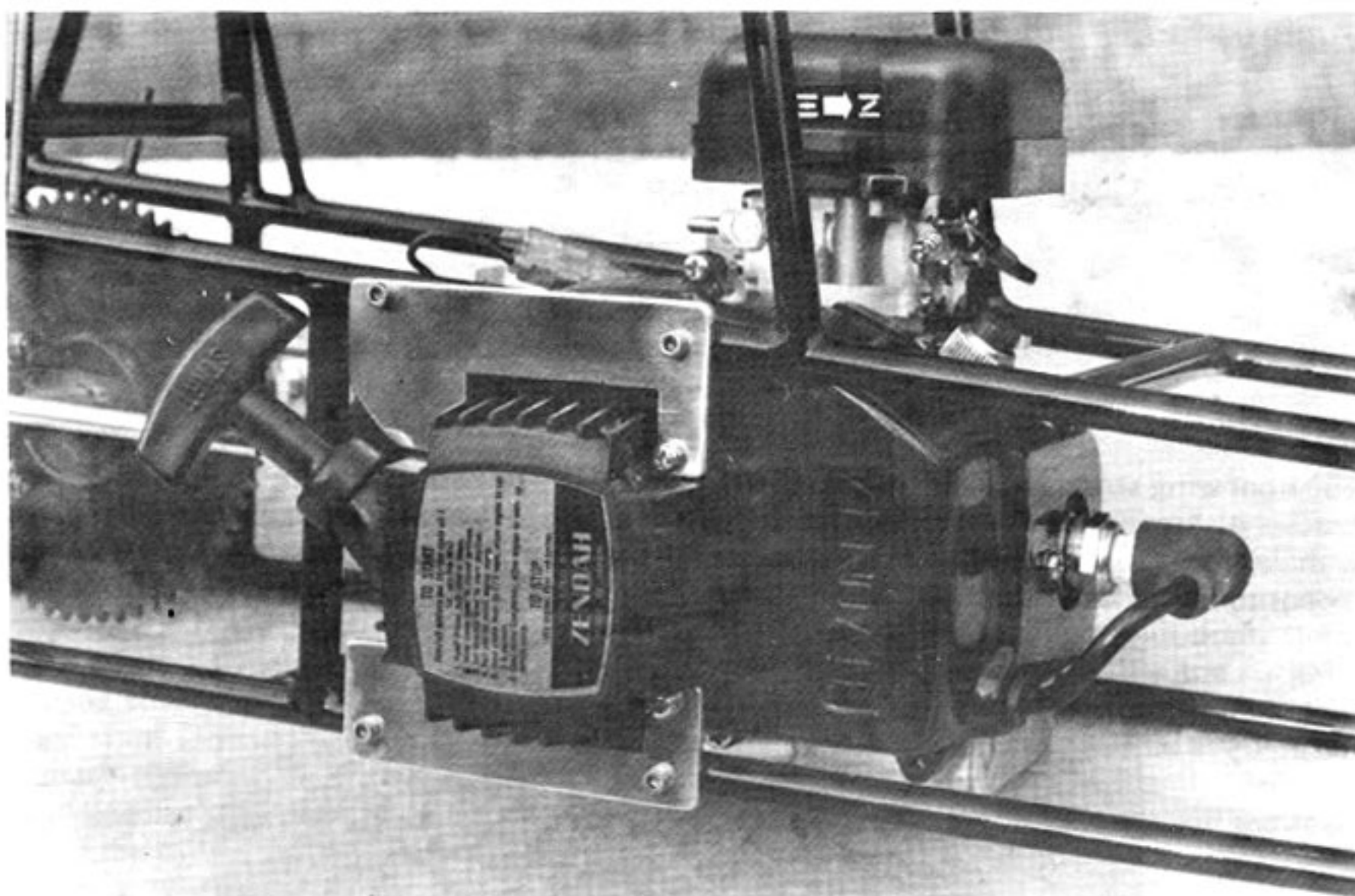


Figure #9

Front Wing Assembly

Form the air foil in Figure #10, by sliding the upper and lower wing panel together at the edge making certain that the outside edges are even. Fold down the rear edge using a rubber hammer. Position each side panel and glue in position with a 1/8 inch fillet of clear silicone glue (NOTE: if you plan to paint the air foil or side panels, paint prior to siliconing into position). Putting silicone around the seam will make the wing assembly virtually one piece and cause it to be very strong.

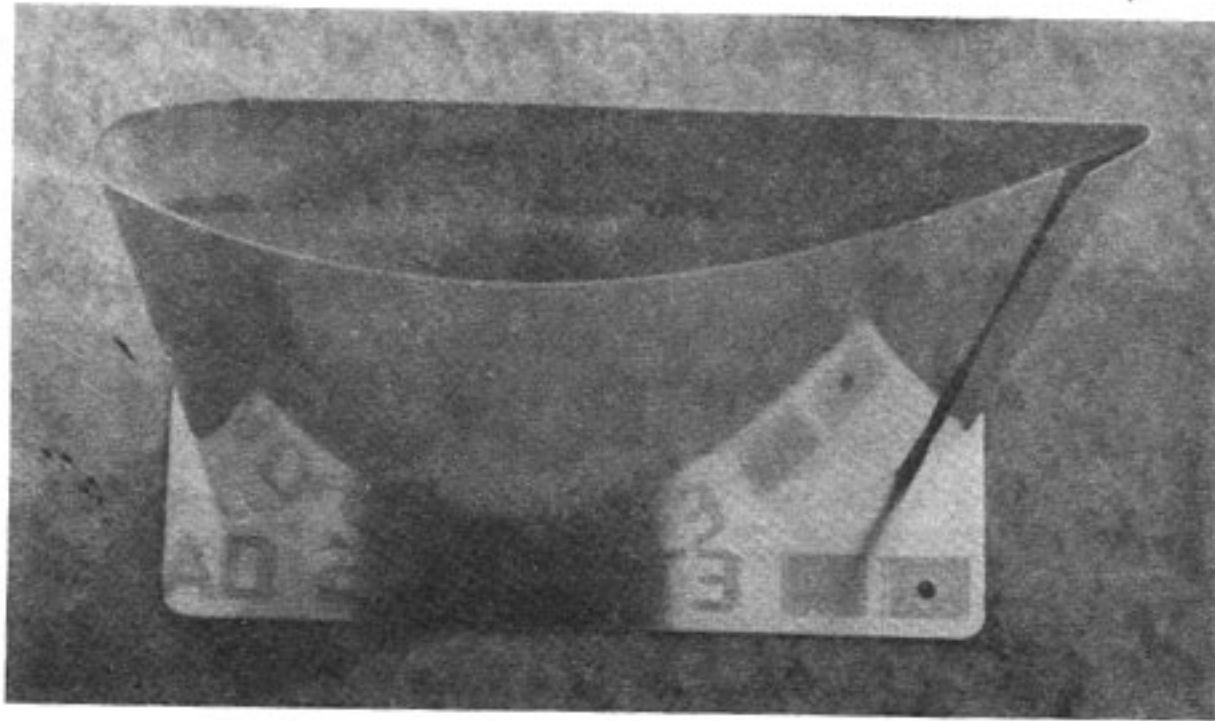


Figure #10

The front wing struts are all identical. (See Figure #11) The two front struts bolt to the frame bracket just rear of the front torsion bar tubes and attach to the outside edge of the sideboards with velcro strips. The two rear struts bolt to the bottom rear edge of the wing sideboards and mount to the sides of the hood with velcro.



Figure #11

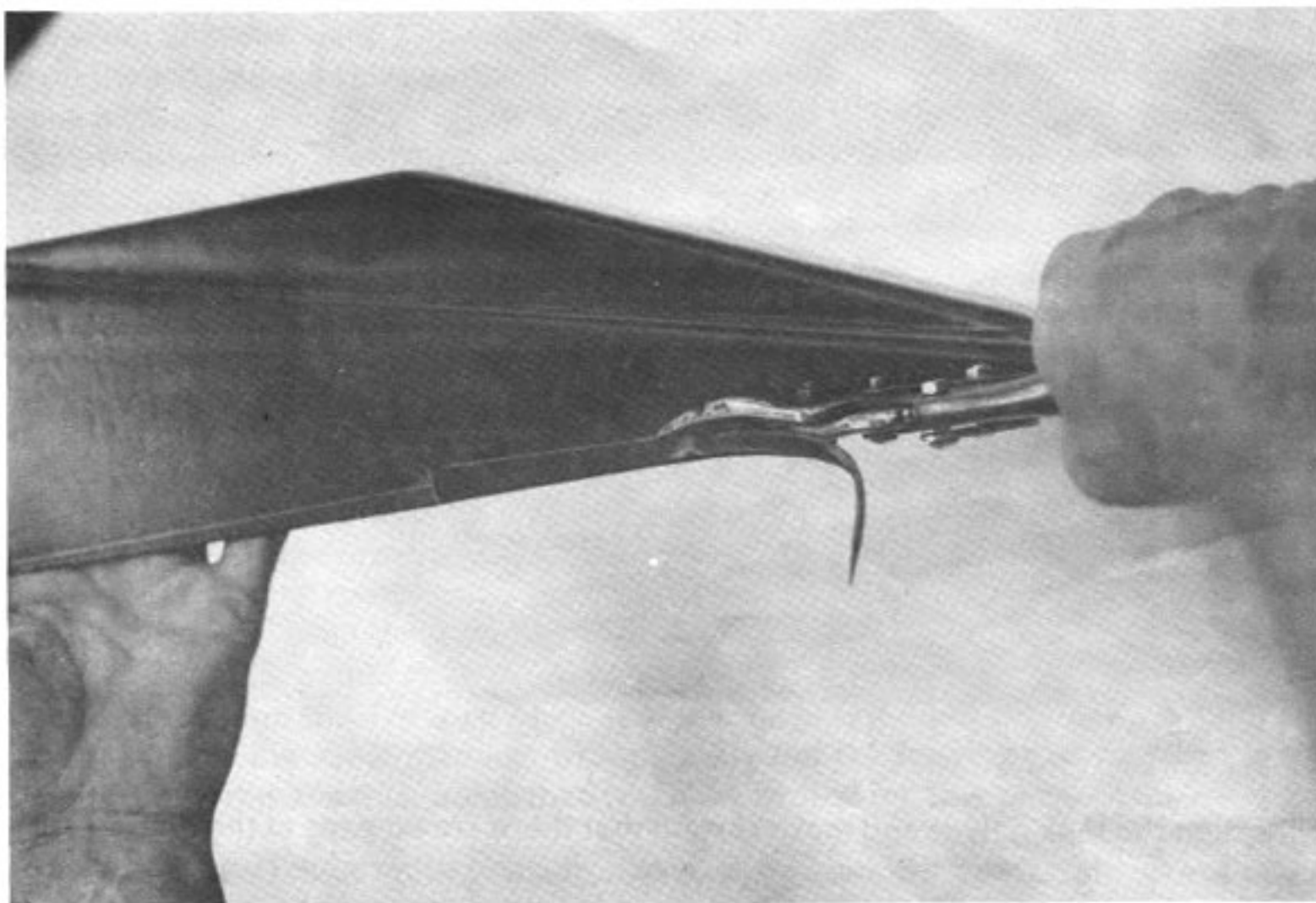


Figure #12

Preparation of the Hood

Remove the hood from the base material by scribing around the perimeter with an ice pick. Do not try to cut through the material the first time around. Be patient here since it will take several cuts. After the hood is free, measure back from the front edge of the hood along the lower edge 9-1/2 inches. Then measure up 90 degrees to a point 1/2 inch from the bottom edge. Using a straight edge, mark a line from this point to the lower front edge and cut this off using shears as in Figure #12. Cut both sides the same. Now, cut out the material in the area that fits around the roll cage. A sharp knife or shears can be used here. Sand a radius on all sharp corners. Your hood is now ready for sanding and painting. When the hood is completed use velcro strips to attach it to the car at the front torsion bar tubes and at the rear around the driver's compartment.

Fuel Tank Preparation and Assembly

Cut out the fuel tank halves in the same manner as you did the hood. Glue down a full sheet of #80 or #100 grit sandpaper on a flat surface. Sand each tank half flat as in Figure #13, making certain that there is at least 1/32 inch mating surface all around each half.



Figure #13

Carefully align the tank halves and make certain that there are no gaps at the mating surface. When you are comfortable with the fit, run a coat of thick super glue (such as "Hot Stuff" Super 'T' Gap Filling Instant Glue, Satellite City) all the way around one of the halves. If you start aligning the tank halves at the top front and move towards the rear, the part of the tank that counts most will be aligned properly. When you have aligned the entire seam, hold for 30 to 45 seconds, allowing the glue to set. Study Figure #14, cut out the area as shown, and drill the four 1/4 inch holes for mounting the tank.

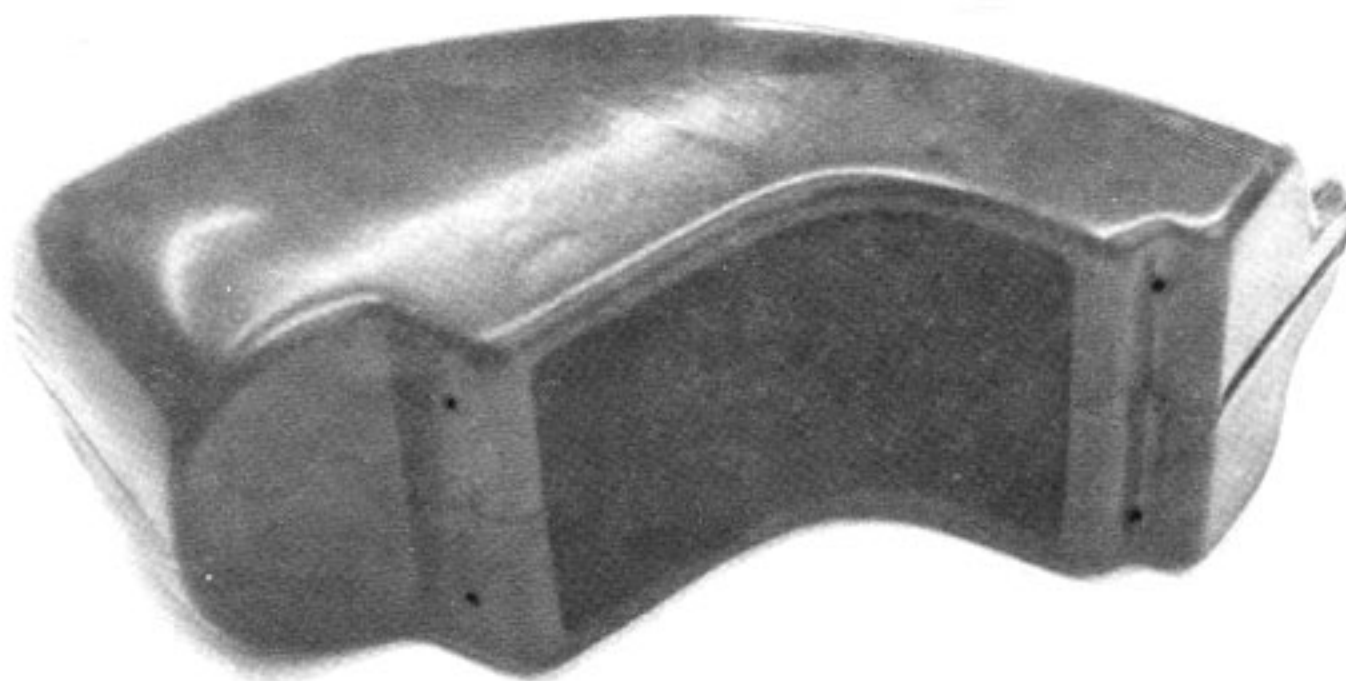


Figure #14

Now, pour out and mix some 5 minute epoxy. Each pool about the size of a fifty-cent piece should do the job. Mix it thoroughly, and with a spreader stick about 8 inches long, coat the entire seam inside the tank. (NOTE: Make certain that you do not exclude this operation.) Your tank is now ready for sanding and painting.

Your kit includes a bladder-type tank to hold fuel. Assemble this tank as per tank instructions, making certain to use the gasoline rated stopper and pick-up line that is provided. Do not use the silicone fuel line inside the tank. The fuel bladder should be wrapped with rubber such as carpet padding to hold it in place inside the rear tank assembly. Install fuel lines on all three brass tubes. (NOTE: The fuel filter must be inline between the fuel bladder and the carburetor bottom fitting (fuel pick-up); it can be positioned along the right frame rail inside the drivers area with a cable tie.) Run the vent line out and cable tie it, pointing down and to the rear, along the bottom of the rear bumper after the tail tank has been mounted in the frame. Run the third line to the top fitting at the rear of the carburetor. Now, position the tail tank assembly and tie wrap in position through the center of the rear torsion bar tubes and through the 1/4 inch holes that you have drilled in the tank. Mount the top front of the tank in the same manner, wrapping around the frame cross member in the roll cage and through the 1/4 inch holes that you have drilled for this purpose.

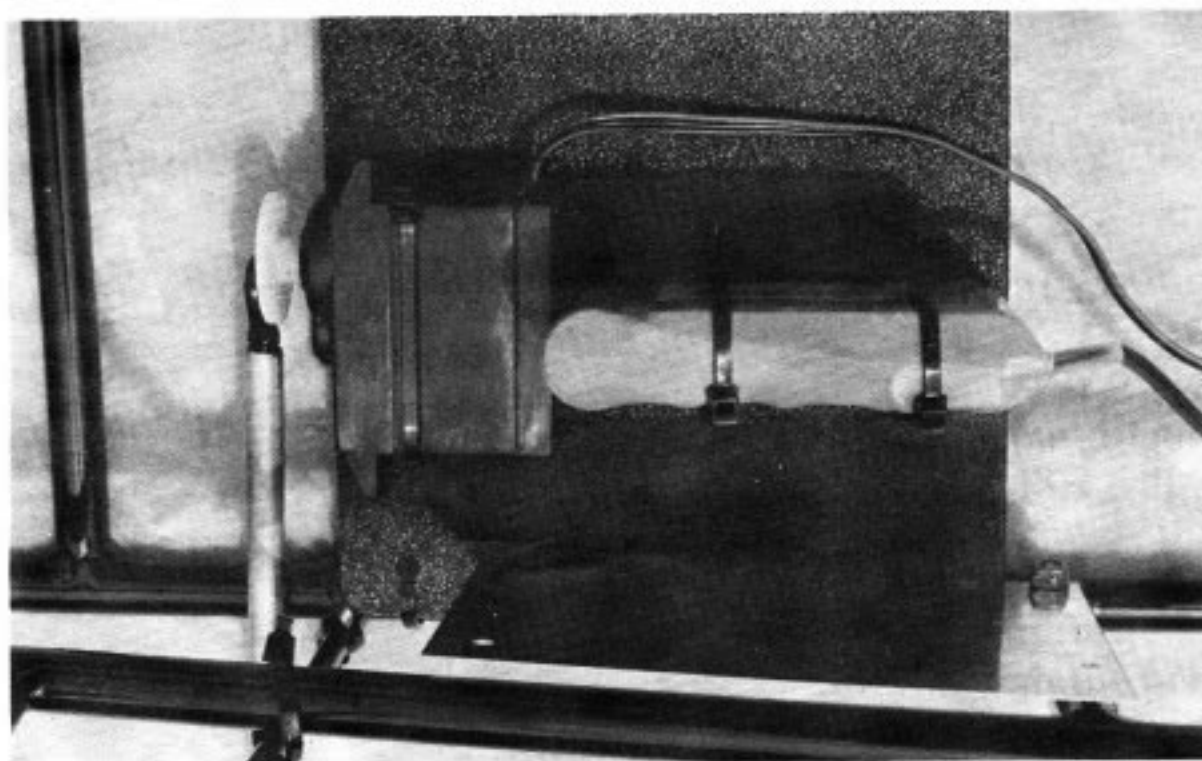


Figure #15

Assembly and Installation of the Radio Module

The floor pan is drilled for mounting the steering servo and the battery pack using cable ties. Install the front servo tray (see Figure#15) in the center of the frame tubes and back against the radius rod upright and cable tie in place. Install the antenna mast as in Figure #16, and cable tie securely in place. Remove the small phillips screw in the center of the servo wheel, remove the servo wheel, drill a #42 hole through any of the existing holes in the outer perimeter of the servo wheel, and reinstall the wheel. If you are familiar with radio control equipment, you can hook up the steering link now -- otherwise, this will be covered later.



Figure #18

Upper servo tray mounts throttle / brake servo and receiver. The receiver can be mounted to this tray using a velcro strip as a shock cushion. Cable tie the upper servo tray under the upper frame rails just forward of the engine. The notch should fit around the red kill button and the four holes for mounting the throttle / brake servo should be on the left side of the car. Cable tie the servo on the tray laying down with the servo arm towards the driver's seat. The servo arm (a single crossbar servo arm, see Figure #18) should be mounted vertically. The upper extent of the arm mounts the short throttle linkage; the lower extent of the servo arm moves against the brake lever to tighten the brake band. This uses only one servo for both throttle and brake. The brakes are positive, but only actuate on extreme rearward motion of the throttle.

Top Wing Assembly and Installation

The airfoil is a single aluminum sheet with a pre-rolled leading edge (see Figure #19). Draw a line down the center of the spar where they meet the wing panel; this will make assembly easier. Assemble front and rear spars as shown in Figure #19, with the wood screws supplied. Install the side panels exactly as shown in Figure #20, screwing the #2 x 1/2 inch wood screws into the spar centers. Use 4-40 x 3/8 inch socket head fasteners through the panel braces in the side panels, and #2 x 1/2 inch wood screws through the braces where they go into the spar. When this is complete run a 1/8 inch fillet of clear silicone around all the wing panels where they join the air foil, after painting.

Bolt the wing slider in place to the wing mount brackets on the frame, as in Figure #21. Cut two 4 inch strips of velcro and position between the two screws in each spar on the bottom side of the air foil. Position the matching velcro strip on the top of each U-shaped mounting bracket. The wing is a fully functional air foil and also absorbs energy during any rollover. The velcro allows the wing to 'breakaway' in a rollover reducing wing damage and still absorbing energy and reducing damage to the car.

Figure #19

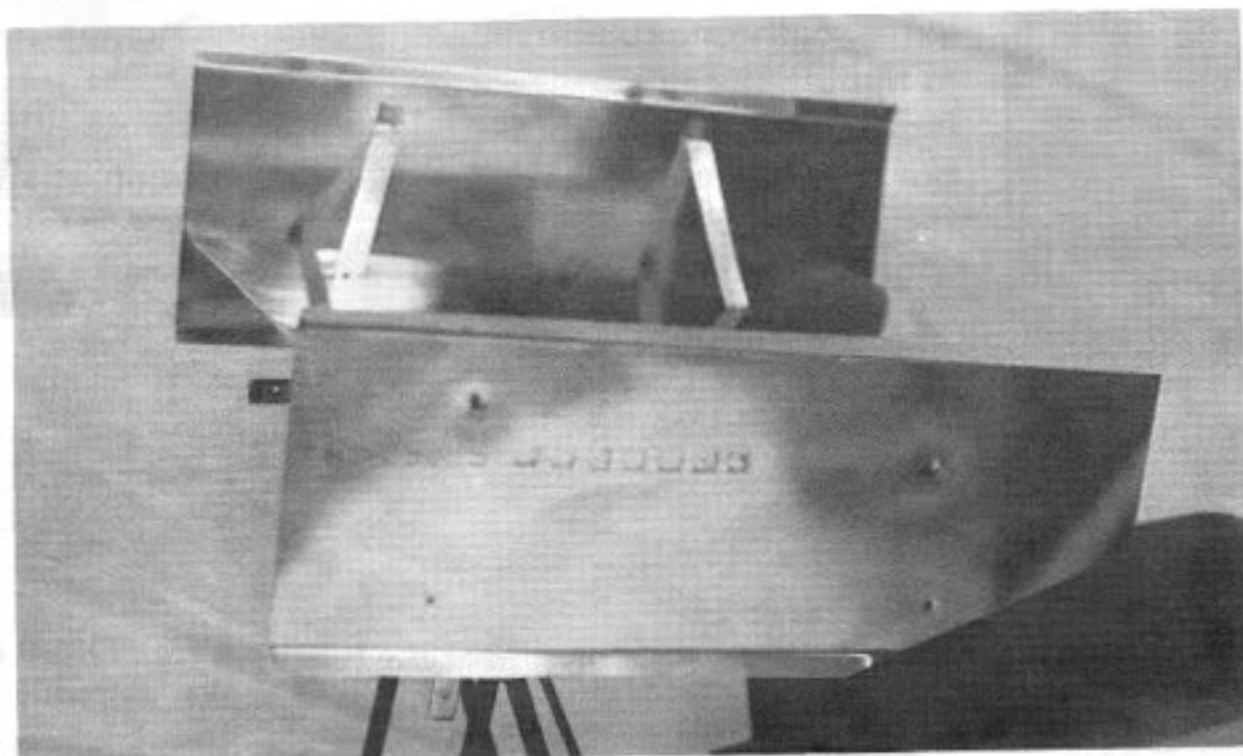
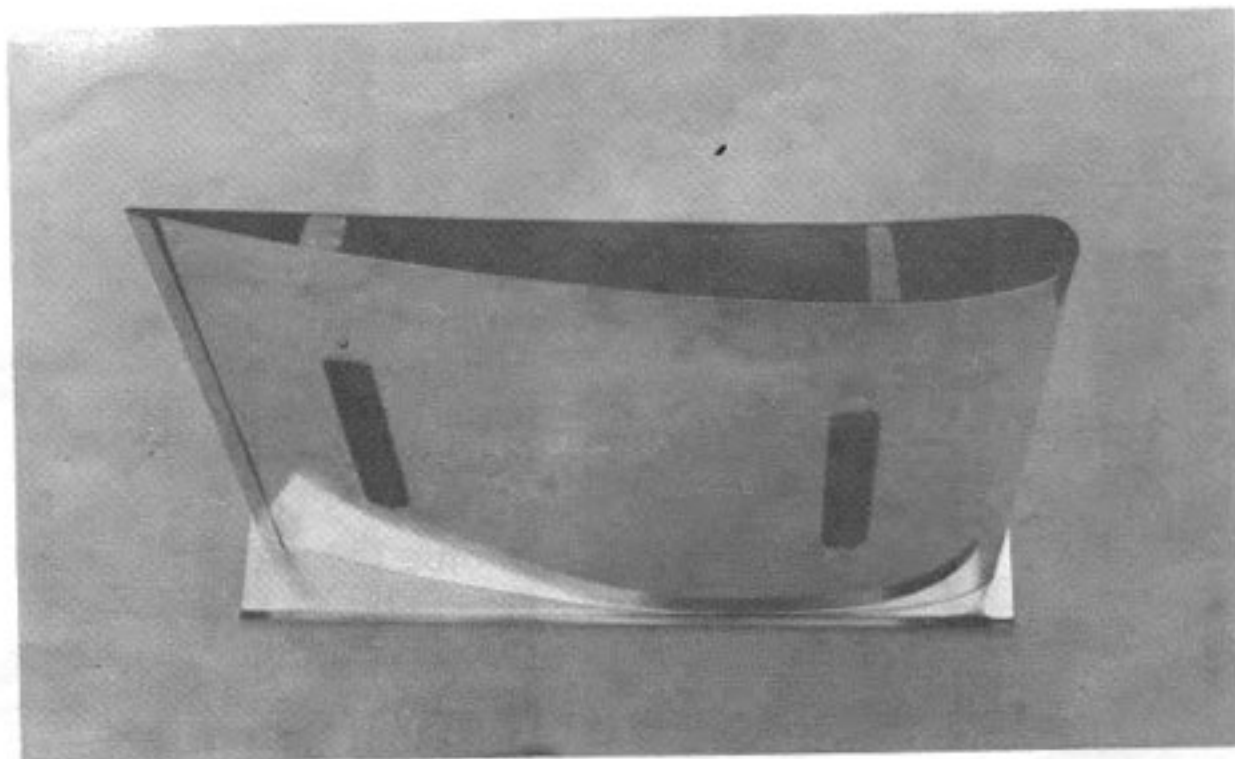


Figure #20

Figure #21



Wheel and Tire Installation

All tires must be glued to the wheels due to centrifugal force pulling the tires away from the wheels at high speed. In the area next to the bead of the rim, run a 3/4 inch heavy layer of 3M Weatherstrip Adhesive around the wheel. **Make certain when inserting the wheel halves into the tire that the bolt patterns are aligned.** Install the wheels now with 6-32 x 3/8 inch socket head fasteners and #6 washers. The right rear is the widest of the two rear tires.

Installation and Adjustment of Drive Chain

Snap off the left rear radius rod end from the ball at the upright in the frame. Loop the chain around the rear axle and the clutch sprocket and install the master link clip so that the open end is in the opposite direction of rotation. With wheels, tires and rear axle assembled, the Jacob's Ladder rod end is trimmed to adjust the left-right alignment of the two chain sprockets. Snap the radius rod back on its ball. With the weight of the car on the floor or a table top, adjust the chain (by adjusting the radius rods in or out) to where there is no sag in it.

Installation of Bumpers and Initial Set-up

Install the bumpers and nerf bars. Make certain to use the 6-32 x 3/4 inch nylon screws in the nerf bars only.

Radio Adjustments and Initial Set-up

WE RECOMMEND THAT YOU READ YOUR RADIO INSTRUCTIONS VERY CAREFULLY. When you have done this, hook up the throttle servo wire to its proper receptacle in the receiver, hook up the steering servo wire, and wire the on/off switch as described in the radio instructions. Feed the antenna wire up and through the antenna mast from the bottom. Pull out the slack and form a loop in the excess at the top and feed the end about 3 inches back down the antenna mast. Turn your transmitter on and then turn on your receiver. Move the steering wheel right and left, watching the movement of the servo wheel. Make certain that when you turn the steering wheel left that the car tires turn left as viewed from the top of the car. If they move backward, reverse the servo action on the transmitter as per your radio instructions. Center the trim lever and fasten the steering arm to the servo wheel in the #42 hole that you drilled using a 4-40 x 1/2 inch socket head fastener and a flat hex nut. If necessary, move the servo wheel on its splines to where the bolt and rod end are at the top when the servo is centered. Now with the radio still on, close the throttle trim lever on the transmitter. The throttle rod linkage has been factory assembled. Connect the rod end to the upper extent of the servo arm using a 4-40 x 1/2 inch socket head fastener and a flat hex nut as before; the lower extent of the servo arm will move against the brake lever when extreme reverse throttle is applied. (See Figure #22.) Now, make sure that the throttle operates properly. When the throttle lever is released, the carburetor should close completely. Now, turn both the receiver and transmitter off.

INSTRUCTIONS FOR KRAFFT ELECTRONICS
CHINESE RECEIVERS WITH NO INTERNAL CHOKE: cut receiver
antenna lead off as short as possible (2-3 inches) and
use whip antenna with pigtail and coil. Receivers with
internal choke or coil (e.g. NOVAC receiver) don't use
pigtail or coil. Solder connections and use heat shrink.

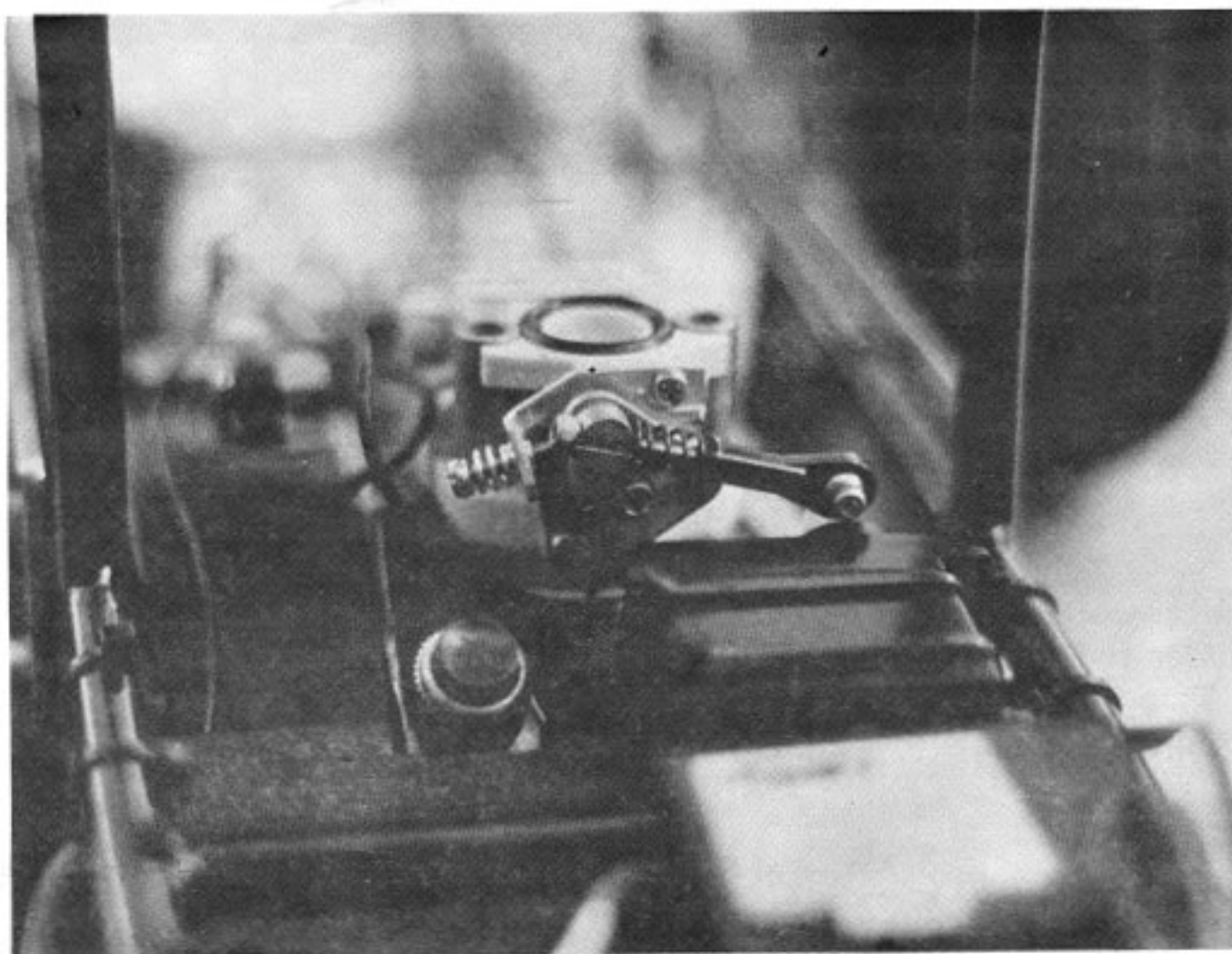


Figure #22

Adjusting the Chassis

Since we race our cars only on asphalt or concrete, only this set-up will be covered. To race on a dirt track, the track must be set up just like a full scale race track, which requires much work and preparation. It is much simpler to take the car to an asphalt or concrete parking lot where a track always awaits you.

Now to cover the chassis set-up. The chassis set-up is going to be fairly simple and straight forward. The racers will probably have their own preference. However, with our experience in racing these cars, we find that if you will follow these simple instructions, your car will be quickly 'dialed in'.

Set the car on a flat, level surface. By measuring to the floor from the center of each torsion bar, at the torsion bar arm, you can set the rake of the chassis, the lean of the chassis, the wedge and the ride height all at the same time. Starting at the left front, adjust the corresponding torsion bar stop so as to measure 3 inches to the floor. Now set the right front to measure 3-1/4 inches. Set the left rear to measure 2-1/4 inches. Set the right rear to measure 2-1/2 inches. Recheck all measurements, since each adjustment will effect the opposite corner. Several adjustments will be necessary as you approach the correct measurements. However, time and patience here should reward you with a good handling car.

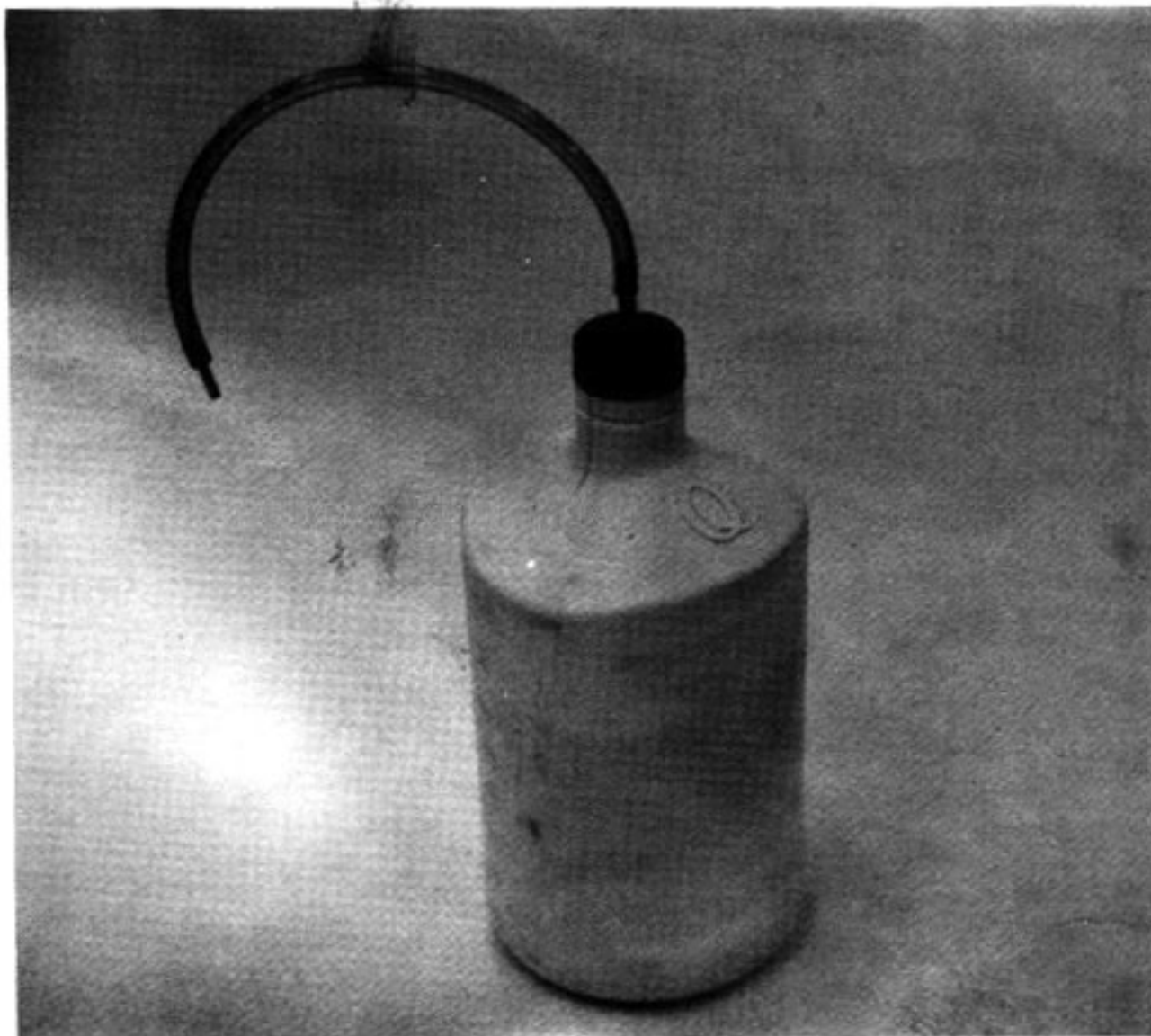


Figure #23

Another important check point is how fast or slow the steering ratio is adjusted. Be sure your steering is on the slow side, as quick steering promotes instability in your car. At a decent rate of speed, it takes very little wheel movement to steer your car. Full steering from left to right will only 'put you on you head'. We have found with these set-ups that we are fast on nearly any of the tracks, and adjustments are made only by sliding the wing forward or backward and changing the angle of its attack. Make no mistake, the wing is a very effective part of this race car combination. We encourage you, especially if this is your first run, not to leave the wing off to test run your car. The wing is a stabilizing force in the action of the car as well as a cushion (with its 'breakaway' action) should an unexpected flip occur.

Make certain now that you recheck, for security, every fastener on your race car, and check them periodically as you race to prevent avoidable mishaps.

If you do not have fuel filling facilities, such as a hand pump, (which we have found to be very undependable and inconsistent), you can make one as we did (see Figure #23). This is simply a cleaned, one-quart plastic oil container. Drill a hole in the cap, then insert a 1/8 inch length of brass tubing and glue in place (inside and outside), and install a length of plastic tubing.



Figure #24

We mix our fuel 20:1 (regular gasoline and two-cycle oil). At this time top off the fuel tank making certain that you fill it through the fuel pick-up line and not the vent line. If you have followed the instructions, your race car is now ready to run. If you do not have radio control model experience, we highly recommend that you find someone to assist you in the initial running of this race car. However, if you will carefully follow these instructions and hints, you should have few problems.

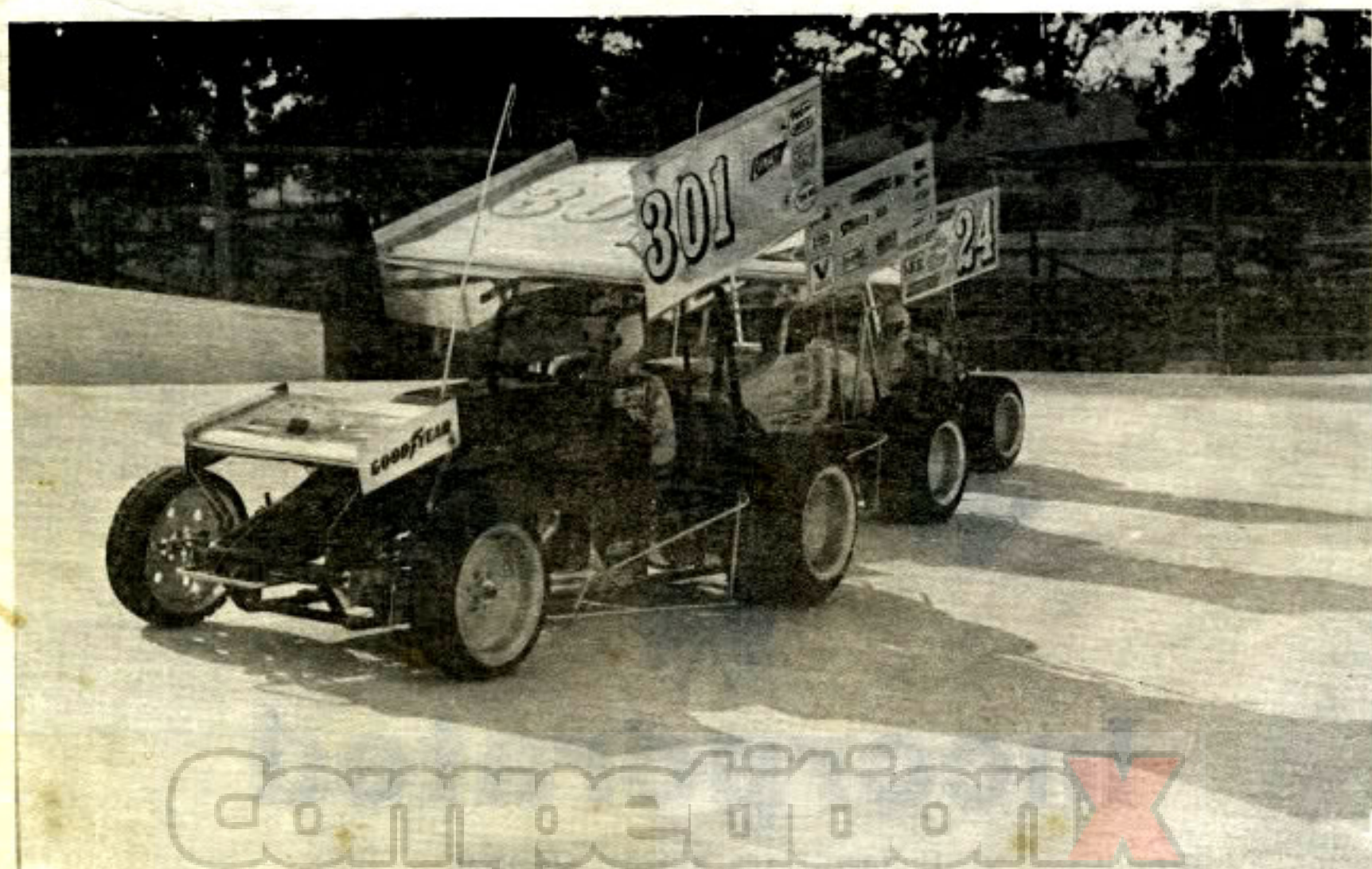
Set your race car on the ground. Turn on the radio transmitter and receiver. Watch the throttle arm at the carburetor and open the throttle trim to where there is approximately 1/8 inch gap between the idle set screw and the carburetor arm. Holding the race car by the rear roll cage loop (see Figure #24), close the choke. Pull the rope starter once or twice, then open the choke. Now the engine should start with one or two more pulls. Holding the race car with the wheels slightly off the ground, check to see that you have complete control of the throttle, brakes and steering. Make certain that you can idle the engine down slowly. Having successfully accomplished the pre-running of the race car, it is now time for the initial test drive. But first, there is one thing that needs to be made clear—when you are steering the race car, it is always as if you are sitting in the driver's seat. When the car is going away from you, a left turn on the steering wheel turns the car left; and, a right turn on the steering wheel turns it right. When the car is coming toward you the opposite is in effect. However, if you will imagine yourself in the driver's seat of the race car every time you turn the steering wheel, this transition will come very easily and quite rapidly for you.

NOTE:

USE 50:1 - GASOLINE TO 2-CYCLE
OIL MIX INSTEAD OF 20:1

A WEB SITE

FOR THE SERIOUS RACER



COMPETITION X
A WEB SITE FOR THE SERIOUS RACER

