

Welcome to the P B MAXIMA experience!

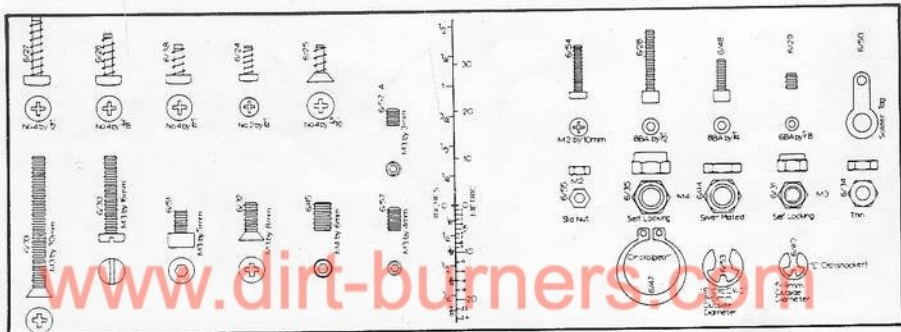
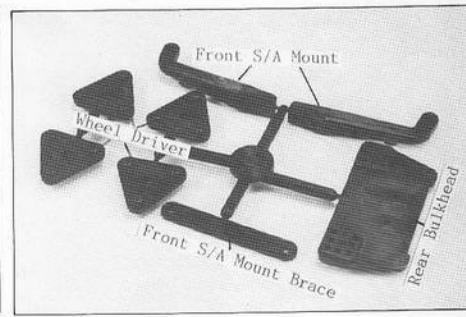
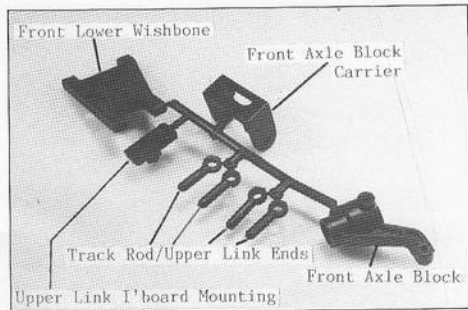
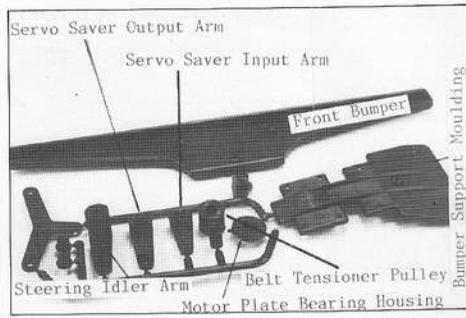
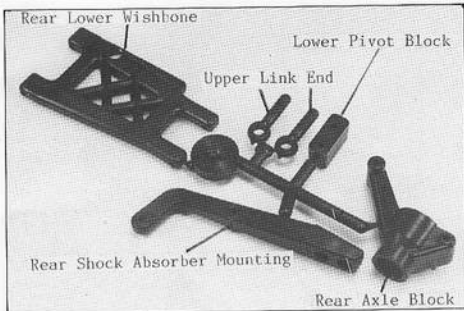
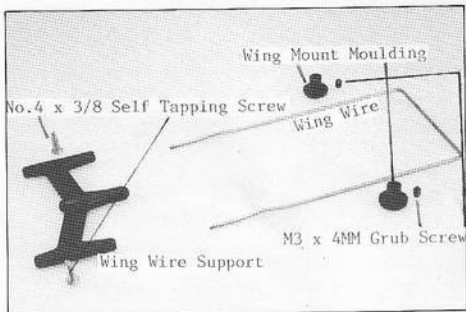
We have utilized our years of model car design and manufacturing experience coupled with the data gained from racing the Mini Mustang to bring you this state-of-the-art 1/10 scale racing car. The power train efficiency of the P B MAXIMA is second to none and the fully adjustable suspension system provides handling and ride to match the speed and power.

These building instructions are intended as a guide to allow you to construct this race-winning car in the most time efficient way so please build and set the car as described here and assess the "standard" set up before making any modifications which you may feel desirable.

The following list of tools and materials will help you to build the MAXIMA in the easiest, most efficient way.

Modelling knife, fine sandpaper, metric/imperial ruler, No. 1 positive screwdriver, thread locking compound, cyanoacrylate glue, pliers, 5.5mm across flats box spanner, 8mm across flats box spanner, a vice or large pair of adjustable pliers, standard screwdriver (5mm to 6mm blade), circlip pliers, 2mm across flats hexagon key, PVC insulation tape, soldering iron and solder, light oil, paint for the bodyshell, kitchen roll or rag, oil for the shock absorbers. You will also need 2 channel radio control with 1 servo and 1 electronic speed controller or with 2 servos and, additionally a resistor type speed controller, one 500 size electric motor, a six cell-1.2 ampere hour nicad pack and charger. Please take care to follow the manufacturers instructions regarding use of your nicad battery pack as misuse can cause loss of performance and even explosive damage!

It is a good idea to assemble your car somewhere where you can leave everything undisturbed between building sessions. You could build your car in only two or three hours but it is far better to take a little more time and get it right.



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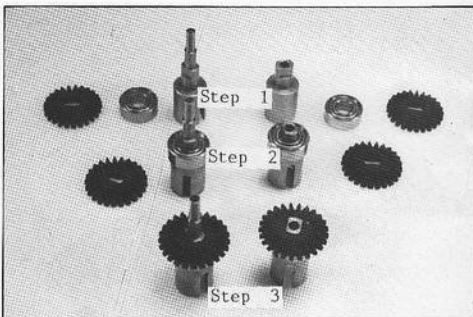
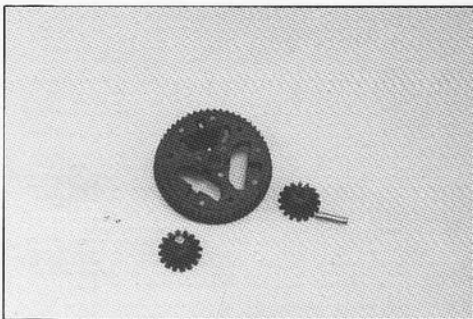
DIFFERENTIAL

PACKS

3/18 DIFFERENTIAL MOUNDINGS	6/14 BALLRACE PACK
6/15 SELF TAPPING SCREWS PACK	6/16 NUTS & BOLTS PACK
1/15 SUPPLEMENTARY PARTS MAX-B	

HELPFUL HINTS ON DIFFERENTIAL ASSEMBLY AND MAINTENANCE.

1. The 8BA x 1/4 screw (6/48) which fastens the half shafts together should be screwed fully into the long half shaft prior to assembly in order to check that there is no hardening scale in the hole. Immediately before final assembly of the differential, re-fit the screw into the half shaft with thread locking compound. Wipe off any excess compound and remove the screw. Now lightly oil the long half shaft where the large pulley fits AND where the short half shaft fits over.
The differential may now be assembled and the screw re-fitted.
NOTE The long half shaft should be **HAND HELD** when fitting the screw in order to avoid over tightening.
2. Using light oil lubricate all bearing and gear tooth surfaces of the differential i.e. Small bevel gears to their pins and long half shaft to large pulley.
Use only a small amount of oil as it is important to prevent the belt and belt pulleys being "splashed" with lubricant as the differentials rotate.
3. If there is any moulding "flash" protruding from the back (large diameter) face of the small bevel gears then place the gear, large side down, on a sheet of fine sandpaper and using a circular motion, lightly sand the back until smooth.
4. Ensure that the large belt pulley is a free, revolving fit on the long half shaft. If the pulley is tight then carefully ream the centre hole with a 4.1mm drill.
5. If the differential action is "notchy" after assembly re-meshing the large bevel gears in a different position relative to the small ones may help. In any case don't worry, the differential will "smooth-up" after a couple of races.
6. For identification purposes, the pins for the small bevel gears are slightly too large a diameter to fit in the slot in the half shafts.



ASSEMBLY INSTRUCTIONS

Open one of the "differential mouldings" packs (3/18) and remove the components from the runner taking care to trim off any moulding excess particularly where the gears are connected to the runner.

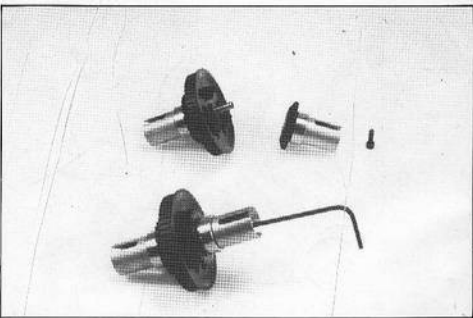
From the supplementary parts max-B (1/15) take three pins 2.5mm diameter, 9.8mm long(6/36). Pass a pin through one of the small bevel gears and press the assembly into the differential pulley. Check that the bevel gear rotates freely.

Repeat for the other two small bevel gears. If the small bevel gears do not rotate freely it may be that the back of the gear is not smooth (see Hints) or that the hole for the pin is slightly small. A light chamfer at each end of the hole should solve the problem.

Now take a long half shaft (3/22) and a short half shaft (3/23) from the supplementary parts max-B (1/15). From the ballrace pack (6/14) take two 6mm by 13mm ballraces (6/20) and fit them fully onto the two half shafts. Now fit the large plastic bevel gears to the half shafts so that the large diameter back of the gear fits against the ballrace.

Lightly chamfer the edge of both sides of the central hole in the large differential pulley. Push the long half shaft through the central hole in the large differential pulley and engage the teeth of the three small bevel gears with those of the large bevel gear. Check that the assembly turns freely. Now fit the short half shaft over the protruding end of the long half shaft and secure with a 8BA x 1/4" socket screw (6/48) taken from the nuts and bolts pack (6/12). This screw fits through the short half shaft and into the threaded hole in the end of the long half shaft. Check that the differential is free in operation.

The separate large pulley flange should now be fastened to the pulley with the no. 2 1/4" hex head self tapping screws (6/24). Note that the chamfered edge of the flange should face towards the pulley. Repeat the above procedure for the other differential.



FRONT AXLE BLOCKS, AXLE AND SUSPENSION PACKS

- 2/65 FRONT SUSPENSION MOULDINGS
- 1/14 SUPPLEMENTARY PARTS MAX-A
- 2/174 U/J AXLE/D'CHAFT PACK (ONE WAY)
- 6/14 BALLRACE PACK MAXIMA
- 2/64 FRONT S/A MFG.-REAR BULKHEAD-WHEEL DRIVERS

HELPFUL HINTS WHEN ASSEMBLING FRONT AXLE BLOCKS

- 1) DO NOT use a 4mm tap to thread the kingpin holes as you will weaken the finished assembly.
- 2) The axle should have about 0.6mm to 1.0mm end float when assembled but before fitting the wheel driver.
- 3) Do not over-tighten the wheel nuts onto the wheel drivers as you will cause damage.

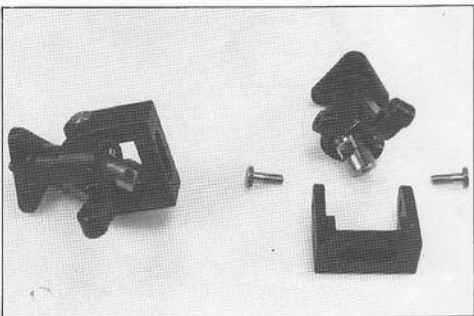
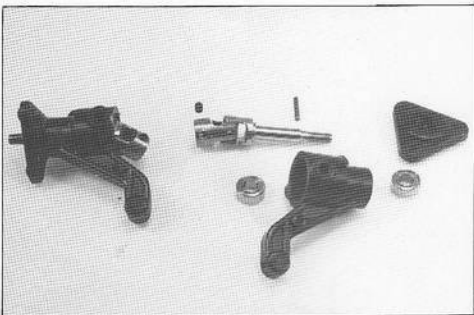
ASSEMBLY INSTRUCTIONS

Remove all the mouldings from the front suspension mouldings pack (2/65) and remove any excess "flash".

From the ballrace pack (6/14) take two 5mm inside diameter x 10mm outside diameter ballraces. Fit a ballrace part way into the outside (small diameter) of the axle block, fit another ballrace to the U/J-axle assembly (2/18) and push all the way on. Now fit the axle ballrace assembly through the large diameter side of the axle block, through the ballrace in the small side and push fully home. The outer ballrace may now be fully inserted and, taking a drive pin (6/29) which is 2mm diameter and 11.8mm long fit it through the cross hole in the outside end of the axle. The pin will start from one side easily but may require pliers to push to its final position with an equal amount protruding either side of the axle. Now fit a wheel driver, from the front shock absorber mounting pack (2/64), so that the groove in the wheel driver fits over the drive pin. Temporarily fit the M3 by 4mm grub screw from the U/J Axle pack, to the inboard end of the universal joint.

From the supplementary parts max-A (1/14) take two 10.5mm long by 4mm diameter king pin bolts (2/68) and check that they are a free fit in the top and bottom holes in the front upright carrier, if not then the holes should be reamed with a 4.1mm drill. The front upright/axle assembly should now be positioned in the front upright carrier so that the steering arm on the upright is on the same side of the carrier as the drive shaft clearance slot. Use the two kingpin bolts (2/68) to "self tap" into the upright to secure the assembly. The king pin bolts should be tightened until there is approximately 0.3mm clearance between the head of the bolt and the upright carrier. Check that the upright will swivel freely in the carrier.

Repeat the above assembly sequence for the other front upright /axle carrier.



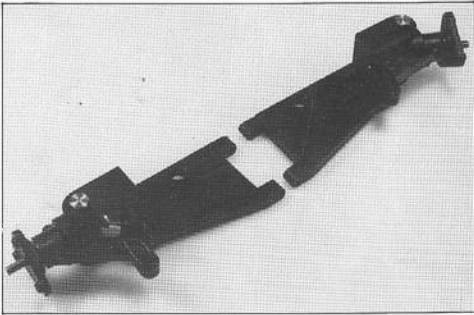
The front lower wishbones should now be assembled to the front upright carrier assembly by means of the 29.5mm long front outboard pivot pin (2/238) which is packed in the supplementary parts max-A (1/14). Be sure to make both left and right hand assemblies and check that the 7mm diameter hole in the wishbone is to the front and the front upright steering arms are to the rear. Please note that the pivot pin is a tight fit in the upright carrier but should rotate freely in the wishbone. Take care not to damage the components when tapping the pivot pin through the wishbone and upright carrier with a light hammer.

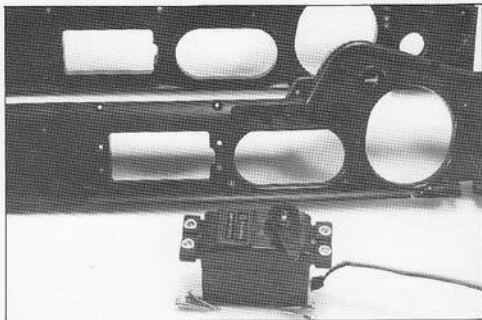
Fit a ball ended screw (2/31) from the supplementary parts max-A (1/14) to the upper hole in the front upright carrier so that the ball is facing backwards like the steering arm. A second ball ended screw should be fitted to the inboard mounting block so that the ball will face forwards when fitted to the chassis moulding; we recommend that you use the hole which is lowest and closest to the car centre line.

The front upper suspension link should now be assembled as follows - taking two track rod end mouldings from the front suspension mouldings (2/65) and a tie link (2/63) from the supplementary parts max-A (1/14) screw the mouldings equally onto the tie link until the overall length of the assembly is 59mm. Please note that the tie link is threaded left handed on one end and right handed on the other, this means that to fit the mouldings one will have to be screwed 'backwards'. In use, this left and right hand threading will allow the link to be adjusted, by means of the central hexagon, without removing it from the car.

Now snap fit the suspension link assembly to the ball ended screws on the upright carrier and the inboard mounting block and check that they swivel freely, any undue tightness may be relieved by nipping the outside diameter of the track rod end moulding with pliers, whilst it is on the ball ended screw.

Repeat this operation for the other front suspension assembly.



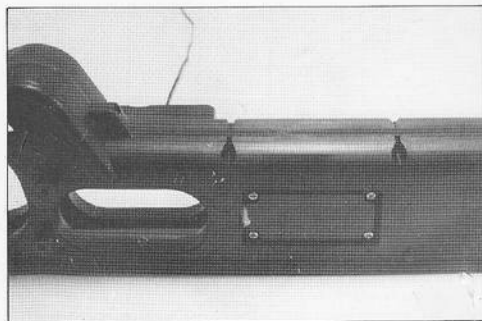
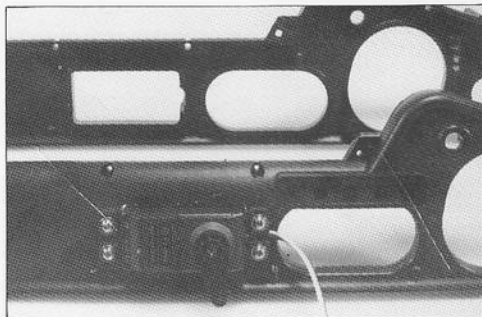


CHASSIS MOULDINGS & DRIVE

PACKS
 4/10 BUMPER & B'CRANK
 1/15 SUPPLEMENTARY PARTS MAX-B
 6/15 SELF TAPPING SCREWS MAXIMA

1/11 CHASSIS MOULDINGS
 6/16 NUTS & BOLTS-MAXIMA

Before assembling the chassis mouldings it is a good idea to fit your steering servo to the left hand side chassis moulding. The left hand side moulding is the one which has the raised rectangular section just above the oval battery hole. Depending on the size of your servo it may be necessary to make an additional cut out in the chassis mouldings (possibly both sides) but please make sure that your servo does not protrude more than 1mm above or 2mm lower than the moulded hole. If the servo lead comes from the bottom of the servo case it may be necessary to cut the right hand side chassis moulding to clear the wire. Use the screws provided with your radio equipment to secure the servo to the left hand side chassis moulding.



IDLER PULLEY/BRAKETS ASSEMBLY

From the "bumper & ballcrank pack" (4/10) remove the 12mm diameter by 11.5mm long belt tensioner pulley. After removing any excess moulding "flash" fit a 6mm by 2mm flanged ballrace(6/59) from the ballrace pack (6/14) to either side of the pulley and using the 2mm diameter by 26mm long pin (3/89) and the belt adjuster carrier (3/31) from the "supplementary parts max-B" (1/15) fit the pulley to the belt adjuster carrier.

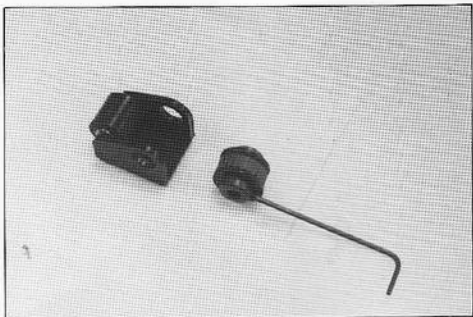
Check that the pulley assembly rotates freely.



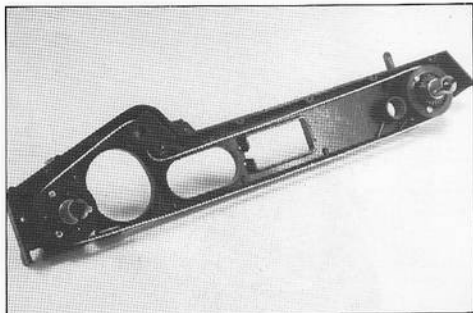
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BELT INSTALLATION

Fit a M3 by 4mm grub screw (6/57) to the 24 groove belt drive pulley and make sure that this screw is on the uppermost side of the pulley during the assembly process. This ensures that the grub screw will align correctly with the flat provided for it on the layshaft.



Take the left hand chassis moulding (the side with the battery contact fitting moulded in) and install the front and rear differentials, the belt tensioner assembly, the main drive pulley (3/17) and the belt (3/88). The photograph shows the correct way in which the belt should be routed around the various transmission components.



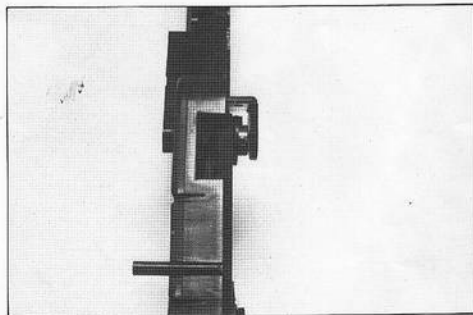
It is important that the belt tensioner assembly is located on the raised boss inside the chassis moulding. Do not worry if the main pulley appears to be very loose it cannot easily escape when the two chassis mouldings are fixed together. Taking care that the main pulley and the belt tensioner are correctly positioned install the right hand chassis moulding and secure with five No.2 x 1/4" self tapping screws and three M2 by 10mm bolts and nuts.

The fixing holes at the extreme front and rear of the chassis mouldings and adjacent to the belt tension adjuster screw are intended for M2 by 10mm bolts and nuts. The bolts should be fitted from the same side as the self tapping screws (right hand side) and the nuts from the other side, the front and rear nuts will locate in the hexagonal holes provided.

Do not over tighten the self tapping screws or you will strip the chassis moulding, if you do strip the screws it is easy to replace them with 2mm nuts and bolts.

It is necessary to stick pvc tape round the inside of the battery and motor holes in order to close off the gap between the chassis sides, and to fit soft foam inserts into the rectangular holes in the bottom edge of the chassis mouldings (use a small amount of cyanoacrylate glue to fix the foam to the upper edge only). These measures will keep the belt and differentials better protected against dust and dirt and are very important.

NOTE: - The foam inserts at the front will be compressed by the front lower wishbones when they are fitted - this is intended.



MOTOR PLATE AND LAYSHAFT

PACKS

1/15 SUPPLEMENTARY PARTS MAX-B

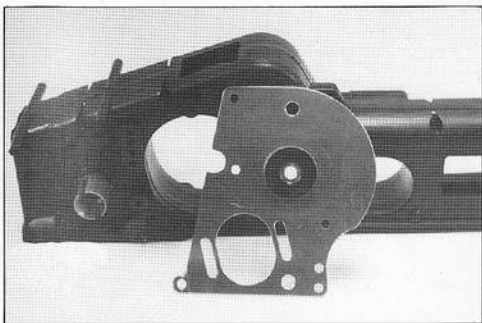
4/10 BUMPER & BELLCRANK PACK

6/15 NUT & BOLT PACK

6/15 SELF TAPPING SCREWS PACK

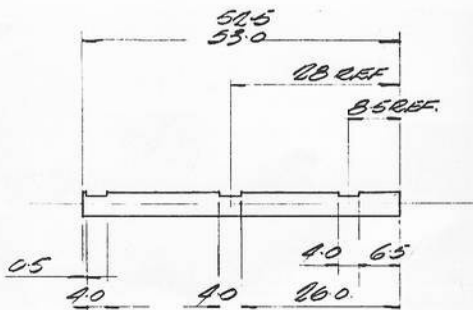
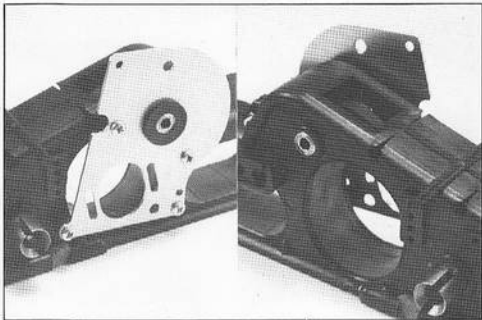
3/14 SINGLE SPEED PACK

Take the 17mm diameter bearing housing from the bumper and bellcrank pack and install a 4mm inside diameter by 8mm outside diameter ballraces then fit this assembly into the motor plate, check that you have the bearing in the correct side of the plate - see photograph. If the bearing housing is loose in the motor plate then apply a small quantity of cyanoacrylate glue to the assembly to guarantee a firm location.



The motor plate assembly should now be fitted to the chassis mouldings assembly with four no.4 x 1/4" pan head screws as shown.

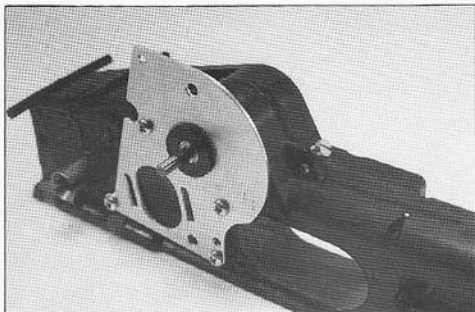
Fit a 4mm inside diameter by 8mm outside diameter ballrace to the left hand side chassis moulding (opposite the motor plate bearing).



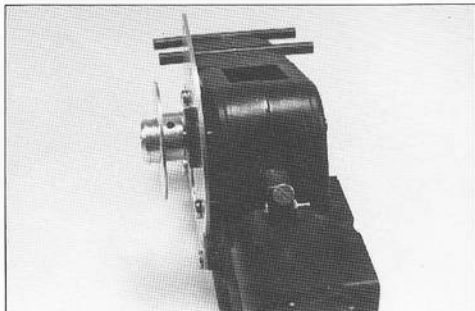
Take the layshaft (3/34A) from the single speed pack (3/14) and identify the right hand (drive) end, it has a 6.8mm long section before the first location flat. The drawing shows the positions of all the location flats. Holding the right hand end of the layshaft pass the other end through the motor plate bearing, the main drive pulley and the bearing in the left hand chassis moulding. With 12mm of the layshaft protruding from the motor plate bearing, locate the pulley grub screw on the flat provided and temporarily tighten down, with the pulley centrally located between the chassis sides.



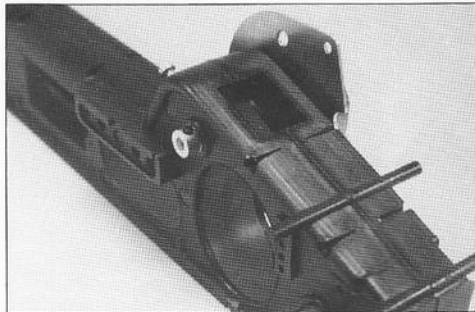
From the nuts and bolts pack (6/16) take a 3mm diameter by 16mm long bolt (cheese head) and screw it into the angled hole formed by the two chassis sides just in front of the layshaft. This screw is the belt tension adjuster, please take care when first inserting this bolt that it correctly locates on the belt tensioner carrier. Preliminary belt tension adjustment should be effected as follows - Turn the right hand end of the layshaft between finger and thumb and gradually tighten the adjuster screw; the belt resistance will remain fairly constant until it is over-tight when you will feel a significant increase in the "rolling resistance". Now loosen the adjuster screw (probably around half a turn) until the resistance returns to normal.



Take the 1.8mm long spacer (3/73) from the single speed pack (3/14) and fit it to the motor plate end of the layshaft, the gear carrier (3/62) should now be fitted with the circlip groove facing away from the motor plate. When the gear carrier is touching the spacer and the main drive pulley (3/17) is central in the chassis mouldings (not touching either side), secure the gear carrier by means of a M3 by 4mm grub screw which should locate on the flat provided on the layshaft. It may be necessary to slightly reposition the main drive pulley in order to obtain the necessary clearance. Fully tighten the M3 grub screw which secures the main drive pulley.



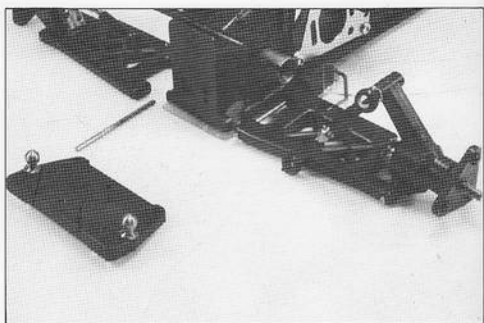
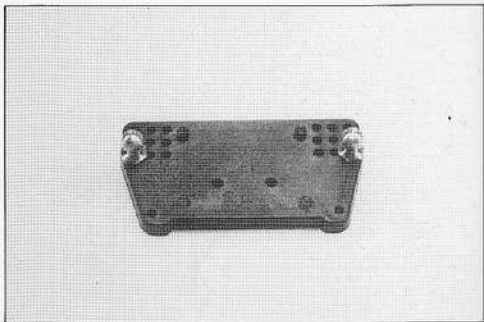
The 8mm outside diameter by 4mm inside diameter collar (3/37) may now be fitted to the other end of the layshaft and secured with a M3 by 4mm grub screw. Adjust this collar to allow about 0.2mm (0.008inches) side to side movement of the layshaft.



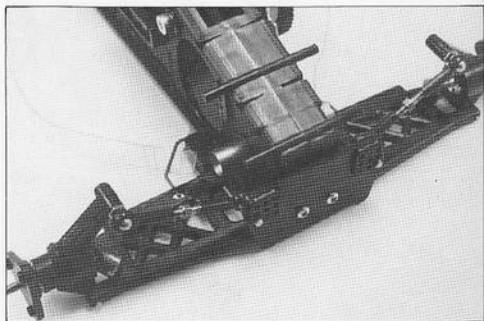
The plastic ring gear should now be taken from the single speed pack and checked for moulding flash. It is a good idea to lightly chamfer the edges of the central hole to allow easy installation. The hollow side of the gear should now be fitted to the gear carrier and the three locating pins on the gear engaged with the holes in the carrier. Use a large circlip (6/47) to secure the gear in place. Check that the circlip is correctly fitted in the groove in the gear carrier.



From the front shock absorber mounting mouldings pack (2/64) take the rear bulkhead and, from the supplementary parts max-A (1/14) take two 7mm long by 3/32 inch diameter inboard pivot pins (2/23) and two ball ended screws (2/31). Screw the ball ended screws into the rear bulkhead so that the balls are on the same side of the moulding as the two raised locating pins for the initial setting up of the car we recommend that the ball ended screws be fitted in the lower outboard holes - see photograph. Fit the pivot pins to the wishbones and check that they rotate freely, adjust if necessary in the same way as for the outboard pivot pins. Now insert the front end of the pivot pins into the forward mounting blocks taking care that the 7mm diameter hole in the wishbone is to the front and that the rear anti roll bar is located in the holes in the front edge of the wishbones. Now locate the rear ends of the pivot pins in the blind holes in the narrow (lower) edge of the rear bulkhead and locate the bulkhead on the back of the chassis mouldings. There are two projections on the bulkhead which should fit either side of the chassis mouldings and the assembly should be fixed by means of two No.4 by 1/2 inch pan head self tapping screws (6/27).



The inboard ends of the upper suspension link may now be snapped into position on the previously fixed ball ended screws. Please check that the suspension movement is free and not binding or stiff.



STEERING LINKAGES/SERVO SAVEE PACKS

- 1/14 SUPPLEMENTARY PARTS MAX-A 2/65 FRONT SUSPENSION MOULDINGS
- 4/10 BUMPER AND BELCRANK MOULDINGS PACK
- 6/16 NUTS AND BOLTS PACK-MAXIMA

From the supplementary parts pack max-A take the two short 3mm diameter rods with a thread at each end. These are the front track rods and should be fitted with a track rod moulding from the front suspension mouldings (2/65), at each end. Screw the mouldings on to the track rod until the overall length of the assembly is 52.5mm.

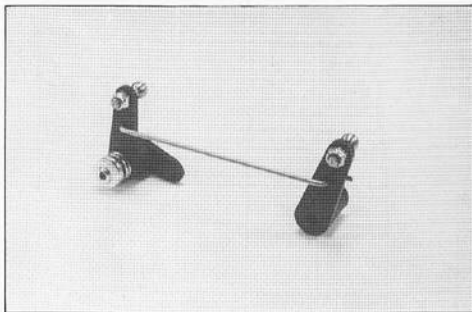
Fit a ball ended screw (2/31), from supplementary parts max-A (1/14), to the underside of each front axle block steering arm.



Remove the servo saver and idler arm mouldings from the bumper and bellcrank mouldings pack (4/10). The 24.5mm long by 5.6mm diameter headed, aluminium servo saver bush (2/56) and the 17mm long by 4mm diameter steel bellcrank post (2/57) should be taken from the supplementary parts max-A (1/14) along with the 10mm diameter aluminium servo saver adjuster ring (2/35) and the 10mm diameter by 10mm long servo saver spring (2/36). Assemble the servo saver as shown and fully hand tighten the adjuster ring. The spring will appear to be fully compressed but actually there will still be sufficient servo protection.

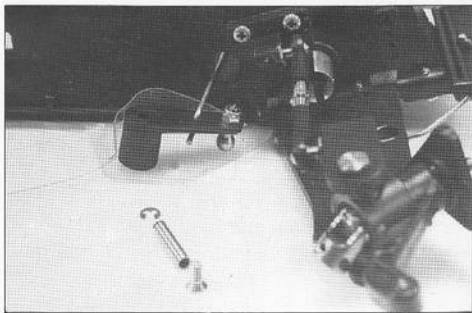


Take two ball ended screws (2/31) from the supplementary parts max-A (1/14) and fit them to the underside of the servo saver and steering idler arm mouldings as shown, securing them with M3 self locking nuts from the nut & bolt pack (6/16). Make sure that the 1.6mm diameter spring wire cross link fits into the smaller holes in the idler arm and servo saver mouldings. It may be necessary to slightly enlarge these holes either by drilling with a 1.7mm drill or by forcing the cross link into the holes and moving it in a circular motion to stretch the plastic. The input (short) arm of the servo saver should be shortened by removing all material outside the outside hole as shown. Drill the remaining hole as detailed above.



Fit the 1.6mm diameter spring wire steering cross link from the supplementary parts max-A (1/14) to the steering idler as shown. From the nuts & bolts pack take the M3 x 30mm countersunk screw (6/33), the M3 x 8mm countersunk screw (6/32), an M3 thin nut (6/34), and the 6mm outside diameter "E" clip (6/40).

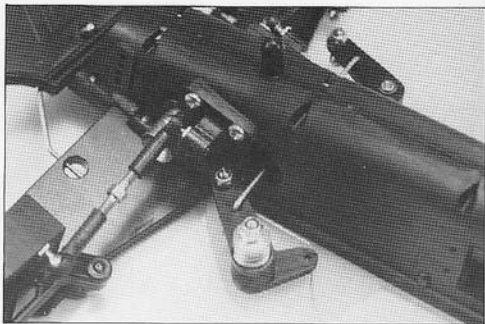
Pass the other end of the cross link through the hole in the chassis mouldings just below the front upper wishbone.



The steel bellcrank post (2/57) should now be passed down through the idler arm and secured to the chassis with the M3 x 8mm countersunk screw. Secure the idler arm with the 6mm outside diameter "E" clip.

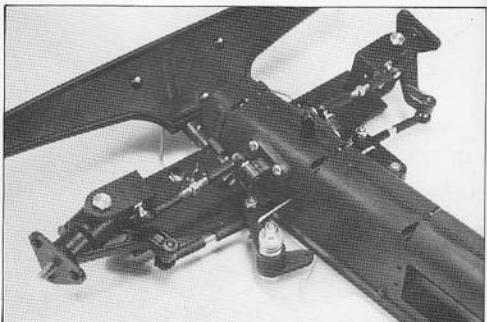


The servo saver should now be engaged with the cross link. Pass the 1mm x 30mm countersunk bolt up through the chassis plate, through the M3 thin nut, and the servo saver. Tighten the M3 thin nut down to secure the bolt. Take an M3 self locking nut (6/31) from the nut and bolt pack (6/16) and use it to secure the servo saver onto the M3 x 30mm bolt. Note that the servo saver assembly should be free to pivot on this bolt but should have minimum up and down movement.



The front track rods should now be fitted to the servo saver steering idler and axle blocks, as shown.

HINT - If the plastic track rod ends are tight on their ball headed screws then nipping the plastic across its diameter with pliers will easily adjust the fit to give free movement with virtually no slop.



SHOCK ABSORBER MOUNTINGS

PACKS
2/64 FRONT S/A BRKT.; REAR D'HEAD; WHEEL DRIVER PACK
2/66 REAR SUSPENSION MOULDINGS
6/15 SELF TAPPING SCREWS PACK
4/11 WING MOUNTING PACK

Take the two front shock absorber mountings and their brace from the front shock absorber bracket pack (2/64) and four No.4 by 3/8 pan head self tapping screws (6/26) and two No.4 by 1/4 pan head self tapping screws from the self tapping screws pack.(6/15). Using the four longer screws, secure the front shock absorber brackets to the chassis mouldings using the lower holes, please check that the raised boss on the side of the mountings is facing forward. The brace should now be secured to the front of the mountings by means of the two shorter screws.



From each of the two rear suspension mouldings packs (2/66) take a rear shock absorber mounting bracket (longer than the front mounting) and from the wing mount pack (4/11) take the wing support/body mount moulding. You will need four No.4 by 3/8 pan head self tapping screws (6/26) from the self tapping screws pack (6/15) and two from the wing mounting pack (4/11). Secure the rear mountings to the chassis mouldings in the same way as the front mountings again using the lower holes. The wing support/body mounting may now be secured to the front of the shock absorber mountings by means of two 3/8 long self tapping screws.



CHECK ABSORBERS ASSEMBLY

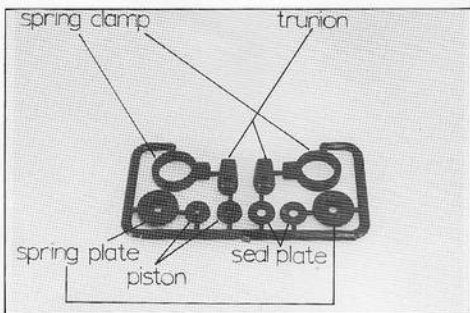
Contents:

- 2 x Bodico 2 x Shafts.
- 2 x End Cap 1 x Mouldings Set.
- 4 x Pins 2 x Small Black "O" Rings
- 4 x No.2x1/4 screws
- 2 x Medium White "O" Rings
- 4 x "E" Clips 2 x Large Black "O" Rings

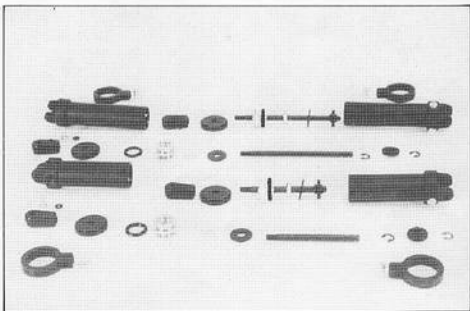
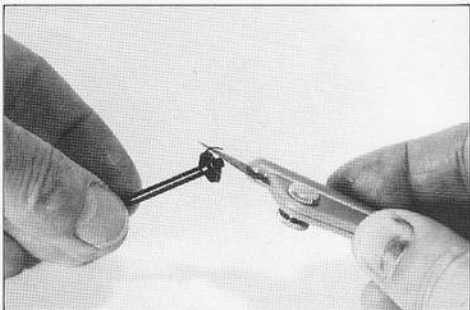
PACKS

- 2,13 FRONT SHOCK ABSORBER (SHORT)
- 2,14 REAR SHOCK ABSORBER (LONG)

Remove all the plastic components from the runner. The photograph shows the names of all the components.



The shock absorber pistons (which have two small holes through them) should be very carefully de-flashed. It is a good idea to cut a very small chamfer on the outside edges of the piston. You may find this easier after the piston is fitted to the shaft. Assemble an "E" clip to one of the grooves on the piston rod then fit a piston and secure with a second "E" clip.



Take the aluminium end cap and install the large black "O" ring to the more shallow groove which is at the end which has a 6mm counter bore. This "O" ring makes a seal between the end cap and the shock absorber case.

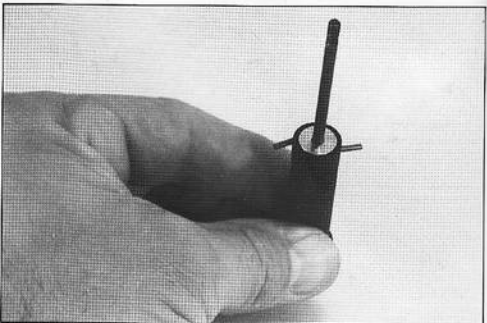
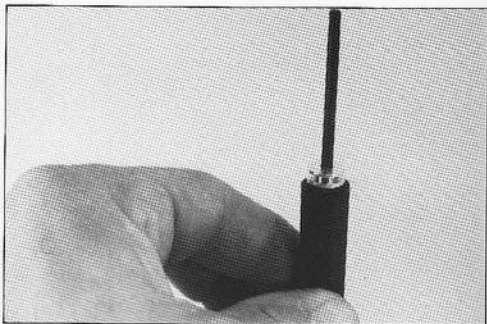
Now fit a small black "O" ring to one of the No.2 x 1/4" screws. This should be fitted in the side of the large diameter upper end of the shock absorber body and acts as a bleed screw. Take a plastic seal plate and place it on the long end of the shock absorber shaft and, after lubricating with oil, follow this with a white "O" ring (silicone). Now lubricate the 6mm diameter hole in the end cap and install the end cap on the shaft. Carefully push the white "O" ring into the 6mm hole in the end cap.



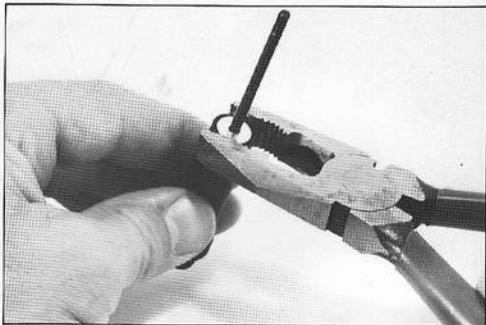
The following procedures will cause some oil to be spilled so you may wish to put paper or rag onto your workbench to protect it. You will also need some absorbent paper or rag for wiping your hands.

Holding the shock absorber body vertical, fill it with the oil which you have selected (see below) to a level 7.5mm below the top. There is a small shoulder inside the shock absorber body at this point.

Slowly insert the piston rod assembly (piston first) into the oil trying not to trap any air bubbles. The end cap should be pushed into the shock absorber body until the black "O" ring has just entered the hole.



Now push the shaft as far into the shock absorber body as it will go, oil will come out of the four holes in the side of the shock absorber body. The end cap may now be pushed all the way in, this will cause the piston rod to be pushed out as the oil is compressed. If you cannot get the end cap fully in the shock absorber body, it will be necessary to loosen the bleed screw one or two turns to allow some oil out. When the end cap is flush with the end of the shock absorber body fit two securing pins into the holes provided. Note:- It is easier to insert these pins one from each side.



Now stand the shock absorber vertically with the bleed screw at the top, this will allow any remaining air to collect next to the bleed screw. After about five minutes you should loosen the bleed screw (keeping the shock absorber vertical) and press the piston rod upwards fully in the shock absorber, some oil will be pushed out of the bleed screw. Now tighten the bleed screw. Repeat these steps for all four shock absorbers. The hydraulic part of the shock absorber is now complete and you may proceed to fit the spring mechanism.

OIL

For average outdoor tracks in temperatures between 17 and 25 degrees centigrade ST 90 gear oil will provide suitable damping for initial set up. It is very important to vary the "stiffness" of your shock absorbers to suit the particular track. To assist you in this we have kept the price of additional shock absorbers to a minimum in order that you may carry a range of pre-filled units of differing grades.

MAINTENANCE

After a long period of use you may wish to renew the seals in your shock absorbers and a "first aid kit" is available, part no. 2/15 which includes the "O" rings, the end cap, and the end cap retainer pins.



SHOCK ABSORBER FITTING

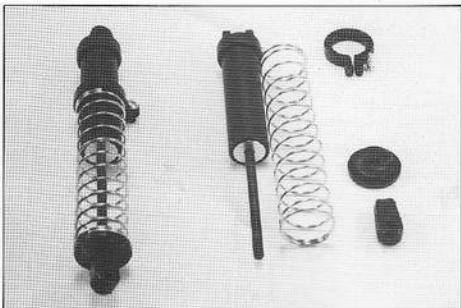
PACKS

2/12 SHOCK ABSORBER ACCESSORY MOUNDINGS
1/14 SUPPLEMENTARY PARTS MAX-A
2/13 FRONT SHOCK ABSORBER PACK
2/14 REAR SHOCK ABSORBER PACK

Take the two long (rear) shock absorber and fit spring clamps with no. 2 x 1/4" screws. Make sure that you make one left and one right hand shock absorber as shown.

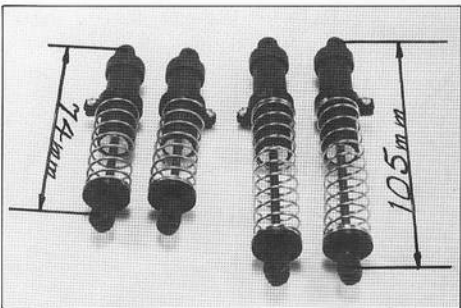
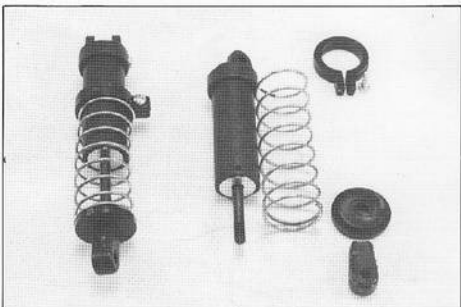
Now select the two long springs from the supplementary parts max-A (1/13) and fit them over the shock absorbers. The spring plate should now be fitted with the square recess facing away from the shock absorber body. Push the spring plate and spring a little way up the piston rod and, taking care not to damage its surface, grip the rod with pliers. The trunnion may now be screwed onto the piston rod until there is an overall distance of 105mm between the centre of the 3mm diameter cross hole in the trunnion and the centre of the 3mm diameter holes in the upper mounting lugs at the top of the shock absorber body.

It is very important to check that the overall length is accurately adjusted as described above as this dimension controls the position of the suspension in the "Full Down" position. Check that both rear shock absorbers are of equal overall length.



Repeat this operation for the two short (front) shock absorbers but this time use the two short springs from the supplementary parts max-A (1/14). Adjust the distance between the centres of upper and lower mounting holes to be 74mm.

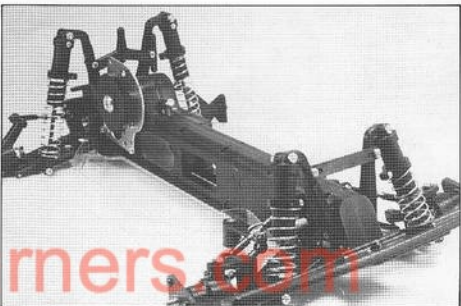
As for the rear shock absorbers, please check this adjustment carefully and ensure that both units are identical.



Now fit the short shock absorbers to the front edge of the front lower wishbones using two no. 4 x 1/2" self tapping screws. Fit the screws into the hole next to the most outboard hole. Please make sure that the screw is not so tight as to prevent the shock absorber trunnion from rotating slightly.

At the upper end the shock absorbers should be fixed to their brackets so that the spring clamp screw is outboard and facing forward. Fix the shock absorber with an M3 x 16mm bolt and M3 self locking nut.

The rear shock absorbers should be fitted in a similar manner except that the spring clamp screws should be inboard and facing the back and the lower mounting screw should be located in the outer hole in the wishbone.

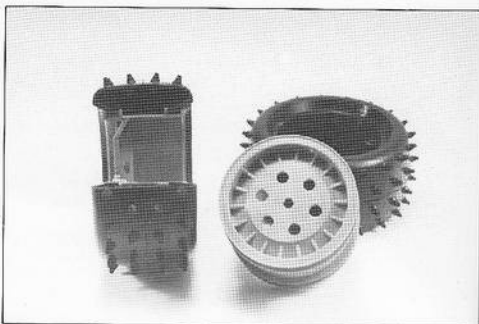


WHEELS AND TYRES

BUBBLE PACK IN KIT BOX

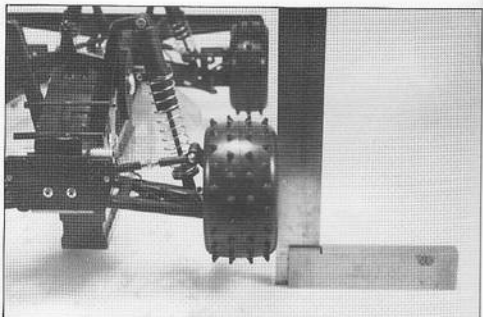
The widest tyres and hubs are for the rear of the car and the narrower ones for the front. The bottom of the tyre sidewall locates in the outer grooves in wheel rim, as shown in the photograph. Whilst it is not essential, you may prefer to glue the tyres in position and four holes are provided in the wheel rims to allow you to apply cyanoacrylate (super) glue without removing the tyres.

Secure the wheels to the axles by means of the M3 self locking nuts taken from the nuts and bolts pack (6/16). Do not over-tighten these nuts as this will cause damage to both wheel and wheel driver.



INITIAL SUSPENSION ADJUSTMENT

Support the assembled chassis on blocks so that the underneath of the chassis is parallel to the surface of the table upon which you are working and so that the wheels will not touch the table. Adjust the front and rear upper links until all four wheels are upright. Please check this adjustment with a set square and re-check each wheel after rotating it a half turn. If the alignment is different after rotating the wheel then remove the wheel and its triangular wheel driver and re-fit them after rotating the driver relative to the axle. Please do not over-tighten the M3 nut as you will damage the wheel and driver. A small amount of wheel "sobble" may be present and is not unacceptable but by changing the orientation of the components you should be able to virtually eliminate any error. If you are unable to totally eliminate the apparent sobble then adjust the upper link to make the average orientation of the wheel upright. The above upper link adjustment will provide a front suspension with virtually no camber at any point in its movement range and a rear suspension with an ever increasing amount of negative camber as the suspension is deflected upwards. This set-up will provide a very easy to drive yet very responsive car and is the recommended starting point for suspension adjustment.



DRIVE SHAFT INSTALLATION

- PACKS
- 2/16A UNIVERSAL JOINT PACK (STANDARD)
- 2/17A UNIVERSAL JOINT PACK (ONE-WAY)

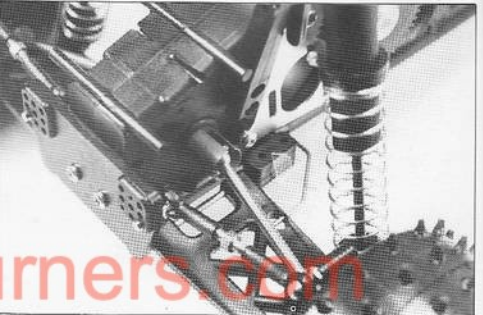
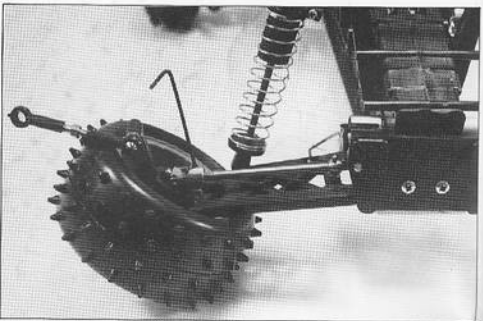
REAR DRIVE SHAFTS

Take the steel drive shaft assembly (2/19A) from the universal joint pack (standard) (2/16A) and fit the M3 grub screw to one of the rear universal joints. Disconnect one end of the upper tie link by "snapping" the plastic track rod end off its ball. Now fit the 4mm diameter end of steel drive shaft assembly into the hole in the inboard end of the universal joint assembly, lightly secure the shaft with the M3 grub screw making sure that the screw is located on the flat provided. With the rear suspension in the full down position adjust the drive shaft length until the drive pin is totally engaged in the inboard drive cup but only just so. Now lightly secure the shaft again. Check that the drive cup is pushed as far into the chassis mountings as it will go (there is approximately 2mm to 3mm end float).

Repeat for the other side.

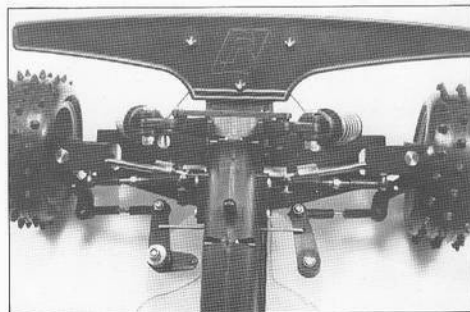
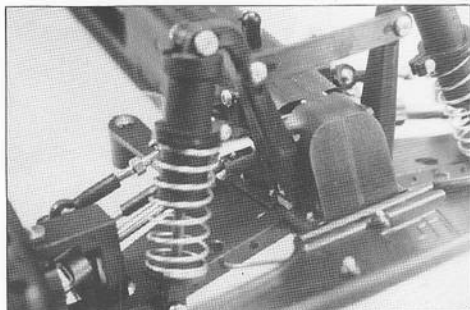
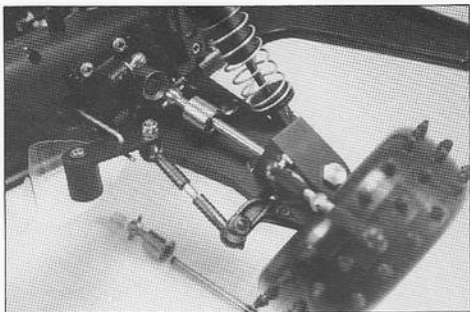
You should now find that the upward movement of the rear suspension is limited by the drive shafts bottoming in their drive cups, this is normal and should occur when the underneath of the wheel is just above the bottom of the chassis.

If all is in order apply a small quantity of thread locking compound to the M3 grub screws in the universal joints and fully tighten them.



FRONT (ONE WAY) DRIVE SHAFTS

Disconnect one end of the upper suspension link and insert the flatted end of the 4mm diameter steel shaft (3/90A) into the front axle universal joint. Lightly secure the shaft by means of a M3 grub screw (6/57). Take the blue silicone tube from the universal joint pack (2/17A) and cut a 5mm long piece, this is to be fitted into the inboard drive cup and acts as a thrust pad to keep the drive shaft one way assembly fully pushed onto the drive shaft. Now fit a one way assembly (7/11 or 7/12) to the steel shaft (3/90A) and check that the one way assembly will allow the steel shaft to rotate freely in a forwards direction and that it locks in the reverse direction. If the one way action is incorrect then fit the other one way assembly. The steel shaft and one way assembly should rotate freely in a forwards direction and that it locks in the reverse direction. With the suspension in the fully drooped position loosen the M3 grub screw in the universal joint assembly and adjust the length of the steel shaft until the one way assembly is just touching the silicone thrust pad. Please check that the ball shaft drive cup is pushed fully into the chassis moulding. If so then apply a little thread locking compound to the M3 grub screw and fully tighten it. Repeat the operation described above for the other front drive shaft assembly.



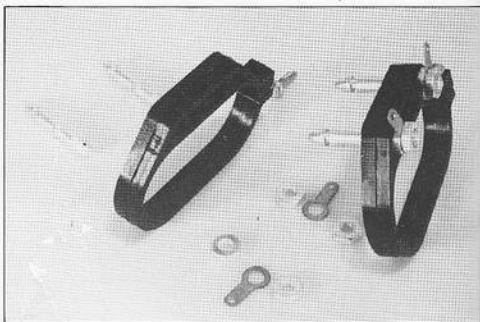
Please check that both one way assemblies remain in contact with their thrust pads at all positions of the suspension. Failure to correctly adjust the length of the steel shafts may result in damage to, or loss of, one or both one way assemblies.

MOTOR PINION	FINAL DRIVE RATIO 53 TO 24 OR 2.21 TO 1			
	RING GEAR			
	54.00	56.00	58.00	60.00
11.00	10.85	11.25	11.65	12.05
12.00	9.95	10.31	10.68	11.05
13.00	9.18	9.52	9.86	10.20
14.00	8.52	8.84	9.16	9.47
15.00	7.96	8.25	8.55	8.84
16.00	7.46	7.74	8.01	8.29
17.00	7.02	7.28	7.54	7.80
18.00	6.63	6.88	7.12	7.37
19.00	6.28	6.51	6.75	6.98
20.00	5.97	6.19	6.41	6.63
21.00	5.68	5.89	6.10	6.31
22.00	5.42	5.63	5.83	6.03

BATTERY CLAMP AND CONNECTORS

1/15 SUPPLEMENTARY PARTS MAX B 7/15 BATTERY CLAMP SET
6/15 SELF TAPPING SCREWS PACK 7/16 BATTERY CHARGE SOCKET

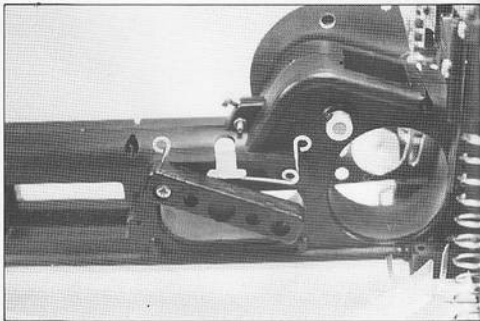
From the battery clamp set (7/15) take the battery clamp moulding and fit a No.4 x 3/8" self tapping screw which acts as a pinch bolt. When the clamp is fitted to the car this pinch bolt should be to the rear. Fit the two silver plated, pointed, contact pins (3/66) to the clamp plate so that the pointed ends will face the centre of the car. Secure the pins with two silver plated M4 thin nuts then fit two solder tags followed by two more silver plated M4 thin nuts.



The black plastic key plate, and two silver plated contact springs should now be taken from supplementary parts max-B (1/15). Two No.4 x 1/2" screws should be taken from the self tappers pack (6/15).

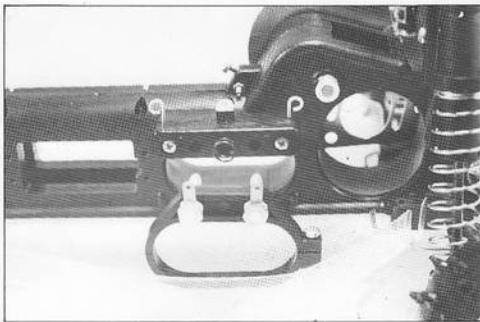
Fit one of the springs into the recess provided in the key plate and pass a No.4 x 1/2" self tapper through from the side marked with a + sign. This assembly should now be fitted to the left hand chassis moulding and the screw used to secure the key plate but not fully tight. The key plate should be able to twist downwards on the screw.

Now fit the release catch to the recess in the chassis side and the second contact spring.



Now twist the key plate anti-clockwise until the top of the plate lines up with the chassis moulding. Secure the plate with a second No.4 x 1/2" screw. Both fixing screws may now be fully tightened. If the release catch "binds" up when these screws are tightened either unscrew them slightly or remove the catch and sand or file it to make it thinner, and then re-assemble.

The release spring, which is dark in colour, 8.5mm outside diameter and 8mm long, should be taken from the supplementary parts max-B (1/15) and fitted into the hole in the outside of the key plate. Use a small amount of epoxy or cyanoacrylate glue to fix this spring.



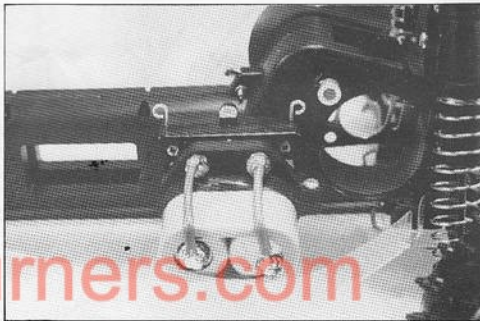
BATTERY CHARGE SOCKET

Pack (7/18) contains all the parts required to assemble a charging socket which should be built-up in the same way as the key plate/chassis assembly.

The battery clamp assembly should now fit into the key plate/contact spring assembly or the battery charge socket. You will see on the outside face of the key plate that the front contact is marked with (+) Plus and the rear on with a (-) Minus sign these are the recommended battery polarity connections for both key plate, battery clamp, and battery charge socket.

When fitting your nicad pack into the battery clamp it may be necessary (depending on your particular pack) to put two or three layers of tape on the nicads in order to obtain a secure fitting of the clamp.

If the contact pins are a little stiff in the key plate simply remove the key plate and enlarge the contact pin clearance holes slightly.

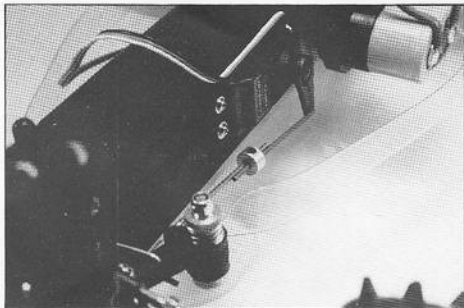


STEERING LINKAGE/RECEIVER MOUNTING PACKS

1/14 SUPPLEMENTARY PARTS MAX-A 6/16 NUTS AND BOLTS MAXIMA

The steering servo should now be fitted to the previously prepared left hand chassis moulding.

Fit one of the servo links to the servo and the other to the servo saver. The two links should overlap in the centre and an aluminium collar (2/5) and M3 grub screw are used to secure and adjust the linkage. The collar is from supplementary parts max-A (1/14) and the grub screw is from the nut and bolt pack (6/16).

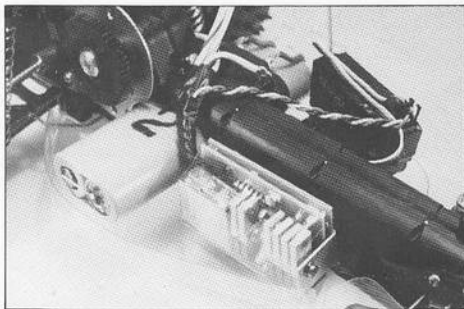


Mount the receiver to the polycarbonate undertray by means of two 25mm long pieces of the self adhesive 'Velcro' strip provided. The photographs show the receiver mounted adjacent to the steering servo and this is the recommended location. The aerial may be supported in a nylon tube which is fixed to the receiver case as shown. A suitable antenna tube is available from P B racing - part number 3/75.



SPEED CONTROLLER - ELECTRONIC OR RESISTOR

The photographs show where the speed controller or resistor should be mounted. Both systems are fixed to the chassis or chassis mouldings with self adhesive 'Velcro' strip. Solder the resistor/speed controller input leads directly to silver plated contact springs. The contact spring at the front should be used for the positive connection as shown on the key plate. If you find soldering a problem then a nut and bolt fixing may be employed. To remove the resistor/speed controller simply dismantle the key plate assembly.

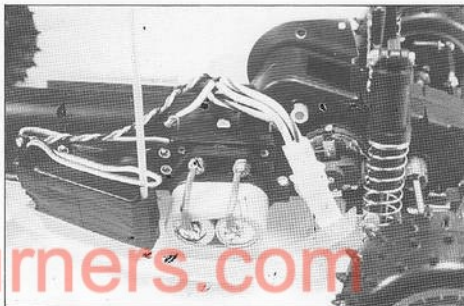


MOTOR CONNECTION AND INSTALLATION

In order to allow simple motor change, a plug and socket arrangement is recommended between speed controller and motor. Solder the battery wires directly to the tags on the battery clamp as shown but please remember that the terminal nearest the front of the car should be positive (+) and the rear-most one should be negative (-). This polarity will be correct if you have followed our markings on the key plate when fitting the speed controller.

The motor may now be fitted to the motor plate by means of two M3 by 2mm cap head screws and two M3 washers, all taken from the nut and bolt pack (6/16). The slots in the motor plate allow the motor to be moved closer to, or further away from, the pinion. This will allow correct meshing of the gear teeth as well as the use of different size ring gears and pinions.

Take the motor pinion and the M3 by 2mm grub screw from the single speed pack (3/14) and fit the pinion to the motor shaft in the correct position to ensure full width engagement of ring gear and pinion gear teeth. Secure the pinion by means of the M3 by 2mm grub screw.

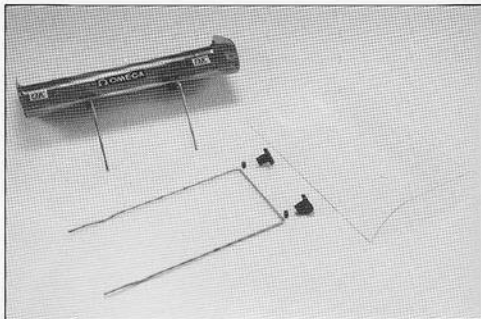


**BODYSHELL AND WING
PACKS**

4/27 BEE JAY BODYSHELL
4/11 WING MOUNT PACK

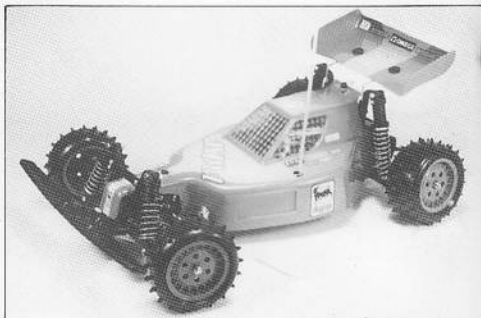
4/25 WING

Trim the wing as shown and make two holes where marked for the wing mountings. Bend the wing wire (4/31) as shown, approximately 50mm from the open end, and fit the wire to the wing mountings. The wing may be slid backwards and forwards along the horizontal section of the wing wire in order to adjust the aerodynamic effect. The wing position should be fixed by means of a M3 by 4mm grub screw fitted to the underneath side of each wing mounting.



The bodyshell has a trim line marked to assist you and, using small tin snips or strong scissors, the shell should be cut as shown.

Painting lexan or polycarbonate bodysells is best done using one of the paints, such as Hobbyknox or Parma, which are specially formulated for this material. Paint the bodyshell on the inside in order to allow the natural gloss of the lexan provide the finish and to protect the paint from damage in use. Please remember that some paints will attack the lexan and render it very brittle and that other paints may not adhere to the shell correctly and will fall off at the slightest provocation. Use two 20mm long pieces of "velcro" to provide left and right hand fixings between the widest part of the undertray and the lower edge of the bodyshell. These fixings allow the bodyshell to support the undertray and help to keep dirt away from the space inside the shell.



www.dirt-burners.com

SETTING UP AND HANDLING ADJUSTMENTS

If you have followed the instructions when building your Maxima you will find that the car handles in a delightfully precise yet stable manner. The following are just some of the ways in which you can adjust the drive "feel" of the car to match your driving style and local track. Please remember to make adjustments ONE AT A TIME so that you know the result of each one.

STEERING GEOMETRY

The front track rods have been carefully positioned to minimize steering changes due to suspension deflection caused by bump or roll.

The "amount" of steering available may be varied by adjusting the length of the track rods.

As standard the front wheels will be pointing straight ahead. It is possible to increase steering by lengthening the track rods slightly to make the front wheels "toe in". (The rear edges of the wheels are further apart than the front edges). This adjustment will cause the outside wheel to turn to a greater angle at full lock and so increase the available steering.

On the other hand, if you make the front track rods slightly longer than standard the wheels will "toe-out" and this will decrease the maximum steering availability.

Do not make large adjustments to toe-in, toe-out - you will notice a difference with surprisingly small changes in track rod length.

CAMBER

"Camber angle" is the amount by which wheels (front or rear) lean in at the top (negative camber) or lean out at the top (positive camber). You will see that your Maxima has negative camber at the rear and is neutral at the front. By adjusting the upper suspension links it is possible to change the camber settings on each wheel but please remember IF YOU CHANGE THE CAMBER SETTINGS IT WILL BE NECESSARY TO RE-ADJUST THE DRIVE SHAFT LENGTHS.

As you reduce the negative camber so the tyres will have less grip. In this way you can encourage your car to slide more than normal and so alter the drive "feel".

CAMBER CHANGE

The Maxima has provision for you to change the rate at which camber is altered as the suspension moves, the upper suspension links may be located in several different positions. The general rule is that the shorter the upper link the greater the camber change and the lower the mounting point of the inboard end of the upper link the greater the camber change. Thus you can see that on the Maxima you have the ability to move the upper link inboard mounting point in or out, to provide for longer or shorter upper link and/or up or down to provide for a greater or smaller steering angle.

The greater the rate of camber change the greater the grip is the basic rule here and this applies whether you are adjusting front or rear suspension. PLEASE REMEMBER THAT IF YOU ADJUST THE RATE OF CAMBER CHANGE YOU MUST RE-ADJUST THE DRIVE SHAFT LENGTHS.

ANTI ROLL BARS

By fitting harder (thicker) anti roll bars it is possible to reduce the grip of the tyres and, by fitting softer (thinner ones), you can increase grip.

FRONT

Harder anti roll bar - less steering.

Softer anti roll bar - more steering.

REAR

Harder anti roll bar - less grip more slide.

Softer anti roll bar - more grip less slide.

There are many different tread patterns and tyre compounds available which will fit your MAXIMA and so you can find the best grip on your particular track.

Any of the "Hot Shot" type tyres will fit the front and rear wheels of the MAXIMA. A range of dynamic tyres is also available.

SHOCK ABSORBER "HARDNESS"

This is a very difficult area to give advice on as track conditions vary so much, but try to use the softest shock absorbers which give a good ride. The Mini Mustang shock absorbers are very good value for money and it is a good idea to keep two or three sets each with a different grade of oil. In this way you can very quickly and easily try different settings.

WHEELS

The new front suspension system of the Maxima allows you the facility of using rear wheels and tyres on the front of your car. This facility is particularly useful when you encounter very low traction conditions or very large jumps when you will find that the larger wheels have a significant stabilising effect without reducing steering effectiveness.

RIDE HEIGHT

There are two ways of adjusting the MAXIMA ground clearance: You can increase its spring tension by moving the adjuster ring up or down the shock absorber body OR you can move the shock absorber brackets into their alternative upper or lower positions. The first method will change the suspension "hardness" and the second will only change the ride height. Adjust the overall ride height to give good ride over your particular track as a general rule the smoother the track the lower the ride height, the rougher the track the higher the ride height. Ride height also affects steering if you have the front high and the back low, you have less steering and front low, back high produces more steering.

ACCESSORIES

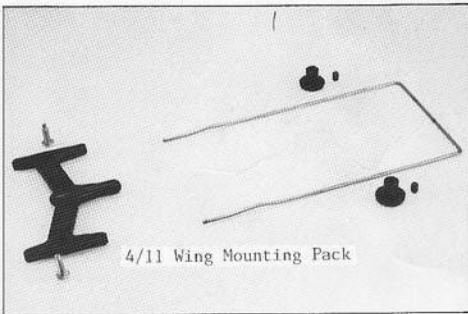
The range of P.B accessories for the 1/10 scale cars is growing all the time, please watch our advertising for the latest details.

7/15 Battery Clamp Set

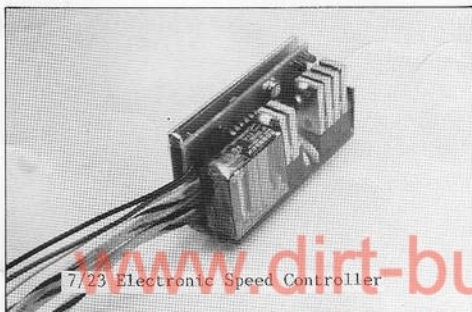
7/16 Battery Charger Socket



4/11 Wing Mounting Pack



7/14 Belt Upgrade Pack



7/23 Electronic Speed Controller

