

RADIO CONTROLLED ELECTRIC-POWERED SPECIAL RACING BUGGY

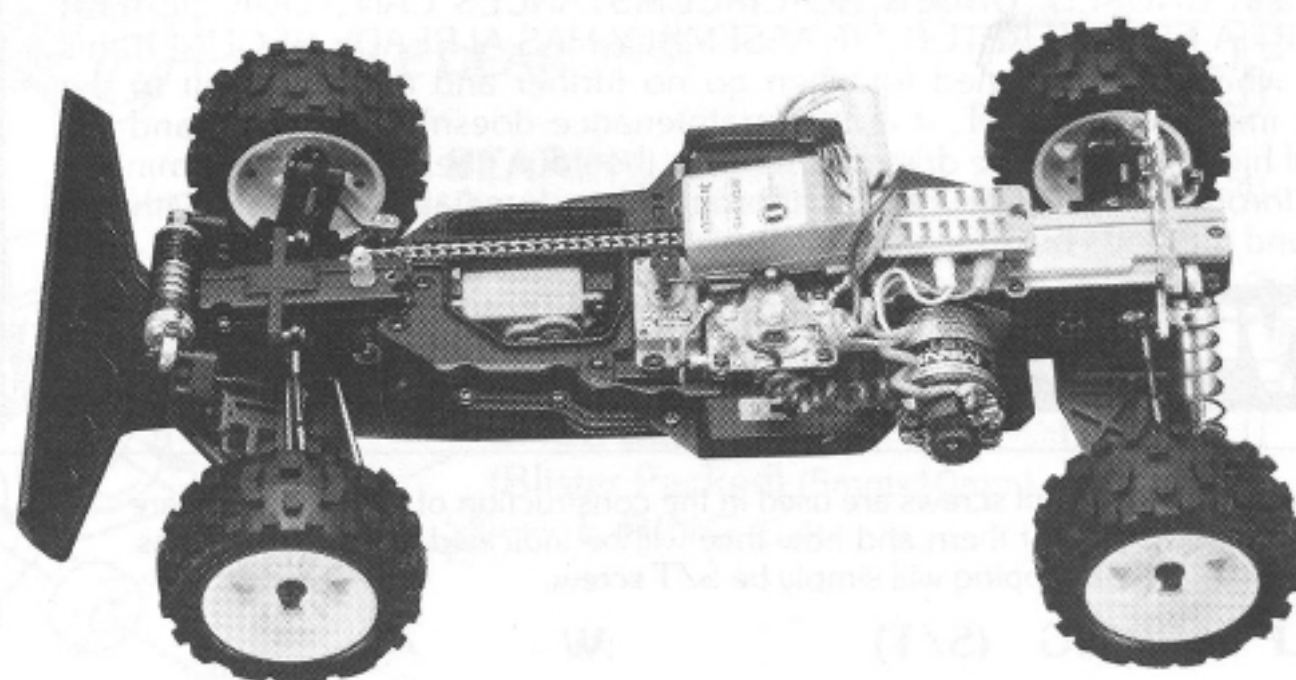
OFF-ROAD RACER Rocky 4WD™

- EXCITING PERFORMANCE FOR BOTH THE NEWCOMER AND THE EXPERIENCED DRIVER.
- EASY ASSEMBLY AND ADJUSTMENT, WITH GREAT POSSIBILITIES FOR HOP-UP MODIFICATIONS
- TOP QUALITY COMPONENTS USED THROUGHOUT: LIGHTWEIGHT CHAIN DRIVE, METAL-GEAR DIFFERENTIALS (2), CUSTOM-MADE RACING MOTOR (INCLUDED), OVERSIZE SHOCK ABSORBERS, ETC.
 - FOUR BALL BEARINGS FOR MINIMUM FRICTION (FULL BEARING SET OPTIONAL).
 - EXTRA-LONG SUSPENSION ARMS FOR MAXIMUM STABILITY ON ROUGH TERRAIN.
 - DOUBLE-WISHBONE SUSPENSION FRONT AND REAR.
 - STRONG CONSTRUCTION MATERIAL, SMOOTH BELLYPAN, ROUNDED BUMPER FOR MAXIMUM CRASH PROTECTION.
- TWO GEARSETS SUPPLIED FOR CHOICE OF POWER CHARACTERISTICS: WITH OPTIONAL EXTRA PINIONS, ROCKY CAN BE FINE-TUNED TO ANY COURSE.
 - MOTOR IS MOUNTED MIDSHIP FOR PERFECT BALANCE, BUT ALL COMPONENTS ARE EASILY ACCESSIBLE FOR SERVICING.
- SPECIAL LeMANS 240ST MOTOR CUSTOM MADE FOR SUPER PERFORMANCE.

1:10 SCALE

BATTERY: 7.2V-1200 mAh

RADIO: 2-Channel
(NOT INCLUDED)



KYOSHO
THE FINEST RADIO CONTROL MODELS
KIT No.3101

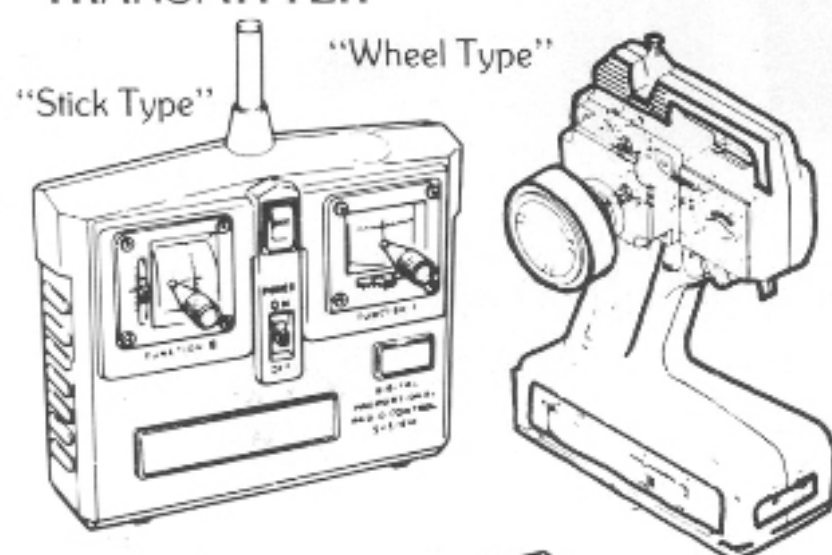
THINGS YOU WILL NEED BESIDES THIS KIT

OFF-ROAD RACER **Rocky™** 4WD

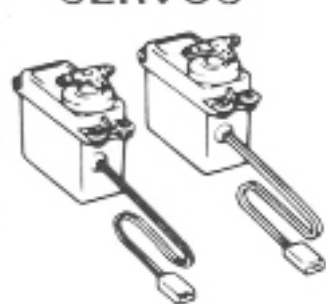
2 CHANNEL RADIO SYSTEM

A two channel, two servo radio control system is required for running the Rocky. The various components are pictured below.

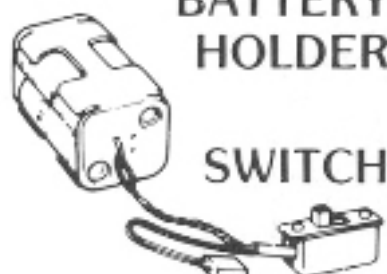
TRANSMITTER



SERVOS



BATTERY HOLDER



SWITCH

Note: use only radio frequencies specifically allowed to operate "surface" models such as R/C cars and boats. In the United States those frequencies fall within the "75 MHz" or "27MHz" bands. Use of any other frequencies is both illegal and dangerous.

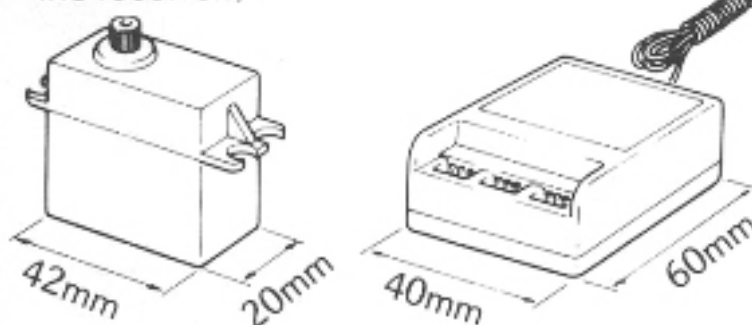
On Pages 23 and 24 there is a guide for the small parts used in each step. Simply cut out the sheet along the dotted line and use it to help you locate the particular parts and their shape used in each step.

Throughout the instructions the symbols ([R0-8]) correspond with the parts bags in the kit. Use these along with Pages 20 and 21 to help locate the parts needed.

CHECK YOUR RADIO SYSTEM

Follow the instructions that came with your radio system to check out its operation.

You will also need to supply your radio with the proper number of batteries (usually 7 or 8 in the transmitter and 4 for the receiver.)



SERVO

RECEIVER

BATTERY PACK

A 6-cell, 7.2V battery similar in shape to the one shown here is required. The Kyosho #2218 or #2306 are good choices.



CHARGER

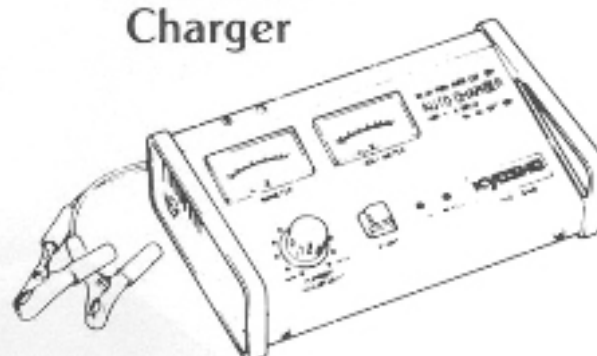
You'll need a charger to charge your battery. Kyosho offers three types:

Model	Name	Time	Rate %	Features
No. 2207	Quick Charger (DC 12V)	20 Min.	70%	Inexpensive. OK for sport use.
No. 1846	Multi-Charger (DC 12V)	20 Min.	100%	Full charge. Wide range of batteries.
No. 1848	Auto Charger (DC 12V)	20 Min.	100%	The best, fully automatic operation. Easy to use, suitable for competition.

No. 2207 Quick Charger



No. 1848 Auto Charger



REQUIRED TOOLS

These ARE included with the Rocky.

1.5mm Allen Wrench

Silicone Grease

These ARE NOT included with the Rocky.

Flathead Screwdriver

Phillips Screwdriver

5/16" Nut Driver

Scissors

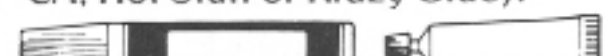
Needle Nose Pliers

Wire Cutters

Awl

Sharp Hobby Knife

Cyanoacrylate glue (such as Jet, CA, Hot Stuff or Crazy Glue).



Masking Tape

Paint



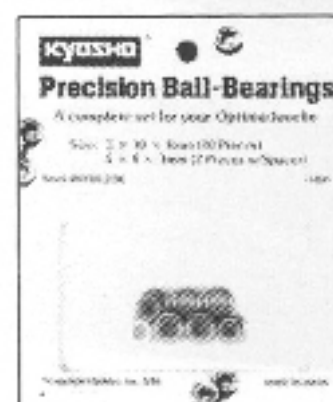
Paint Brush

OPTIONAL MOTORS



480G

The Rocky comes with a LeMans 240ST motor as stock. You may wish to upgrade the performance by purchasing a different Kyosho LeMans motor. We have found the best ones to be the 480G, 360PT, 360ST and 240SB.



BALL-BEARINGS

Ball Bearings greatly improve performance and reduce maintenance. The Kyosho #1972 is a complete set of optional bearings for your Rocky.

IMPORTANT! BEFORE YOU BEGIN

This is a sophisticated model with a large number of moving parts. Before you begin assembly, take a look through the box and these instructions carefully to decide whether or not you are ready for this challenge! If you do not feel that this type of model is for you, it may be returned to the dealer as long as it is NEW and UNUSED. UNDER NO CIRCUMSTANCES CAN YOUR DEALER ACCEPT A KIT FOR RETURN IF ASSEMBLY HAS ALREADY BEGUN! If this is not what you bargained for, then go no further and return this kit to the dealer immediately. BUT, if a little maintenance doesn't bother you and the thrill of high performance driving is for you, then don't hesitate another minute! Read through this entire manual thoroughly to familiarize yourself with the parts and methods of construction used before actually starting to build.

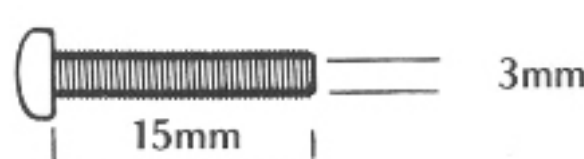


ENTIRE CONTENTS
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METRIC NUTS AND BOLTS

All nuts and bolts used throughout this kit are metric size. Therefore, some of the notations may not be familiar to you. An M3 nut is a 3 millimeter (3mm) nut. An M3 x 15 screw is 15mm long and 3mm in diameter. Some round parts may be labeled as a "4 Ø Washer" (this would be a washer with a 4mm inside

M3 x 15 SCREW



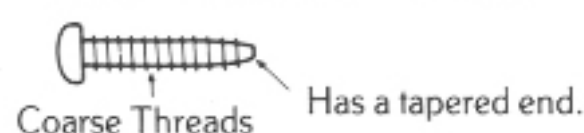
4 Ø WASHER



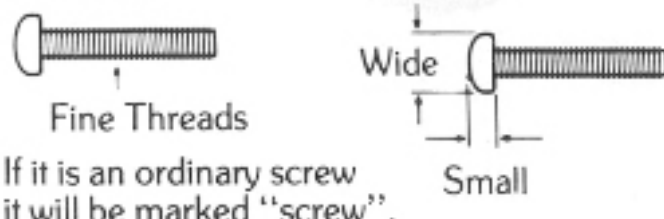
diameter) or a "3 Ø Bushing" (a bushing with a 3mm inside diameter). At various points throughout the manual these parts are labeled and pictured in their actual size on the left hand side of the page. For your reference, 1 millimeter equals approximately .039 inches.

A few different types of screws are used in the construction of your model. Here are some examples of them and how they will be indicated in the instructions. For example, Self Tapping will simply be S/T screw.

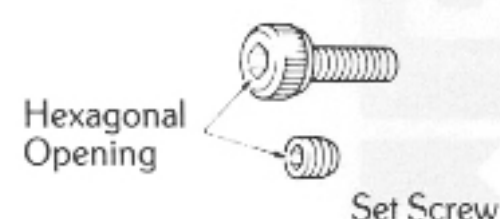
SELF TAPPING (S/T)



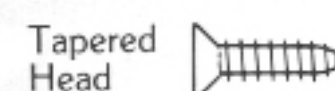
SCREW



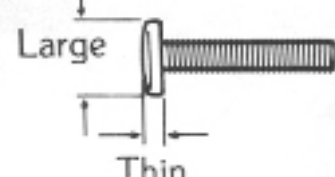
ALLEN HEAD SCREW (A/H)

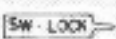



FLAT HEAD SCREW (F/H)



PAN HEAD SCREW (P/H)





In addition to the shock oil (red liquid) you will also find a small tube labeled "screw cement". This bluish-green locking compound may be used on all nuts and bolts in the car to ensure reliability. We have labeled those parts of the car where it is **ESPECIALLY IMPORTANT** to apply the compound with this symbol 

Use this type of cement only on the nuts and bolts. When it calls for cement in the manual, use an "instant" type of glue such as Jet, CA, Hot Stuff or Krazy Glue. Another small tube of "silicone grease" (lubricant) is also included. Use it where you see the  symbol.

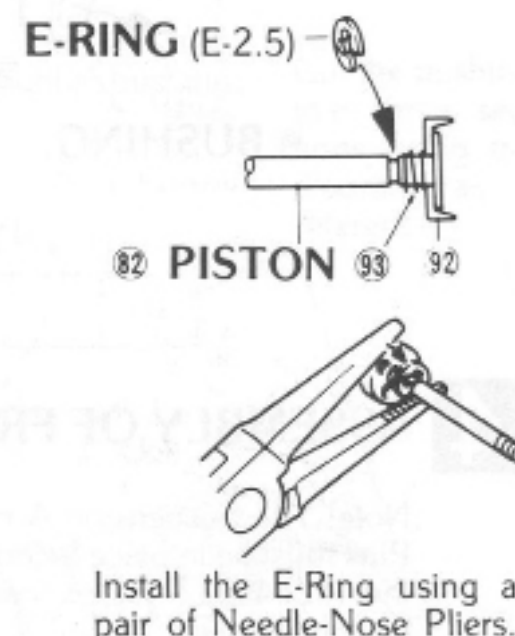
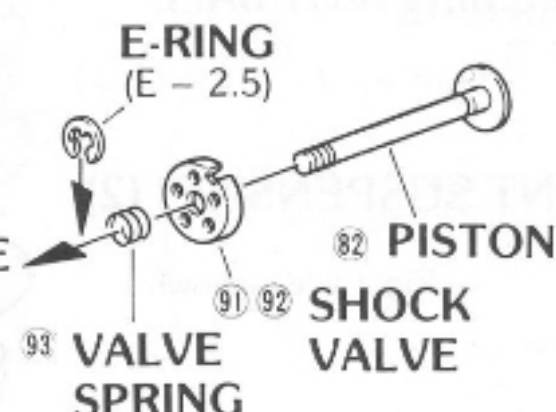
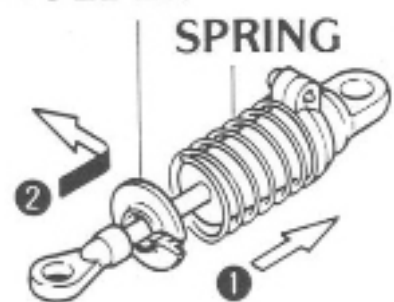
1 ASSEMBLY OF SHOCKS

- A** Compress the Spring and remove the Spring Holder by sliding the holder off of the piston.
- B** Remove the Spring.

- C** Remove the Piston Guide  and the 5.8mm Ball Link  rotating them counter-clockwise. Be sure to use the proper piston when assembling front and rear shocks. For Front Shocks use the (5) Hole Piston. For the Rear Shocks use the (6) Hole Pistons.

(Disassemble Steps 1 to 5 in order.)

SPRING HOLDER

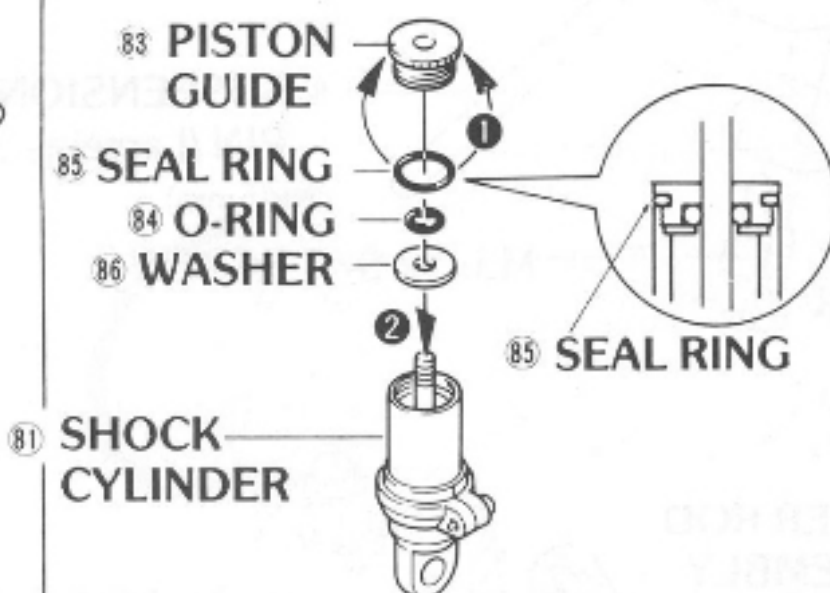


Install the E-Ring using a pair of Needle-Nose Pliers.

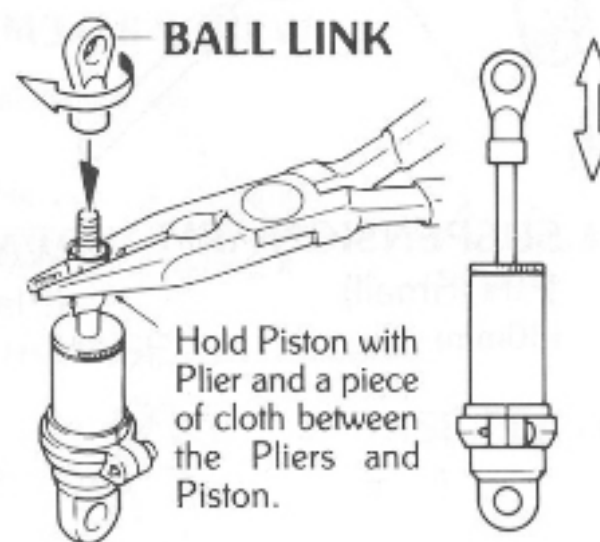
- 1.** Press the Piston all the way down then fill the cylinder with Shock Oil up to the rim inside the cylinder.



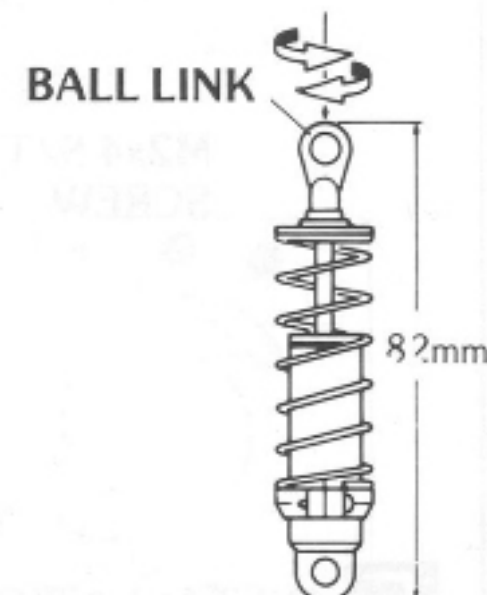
- 2.** Reassemble in the order shown.



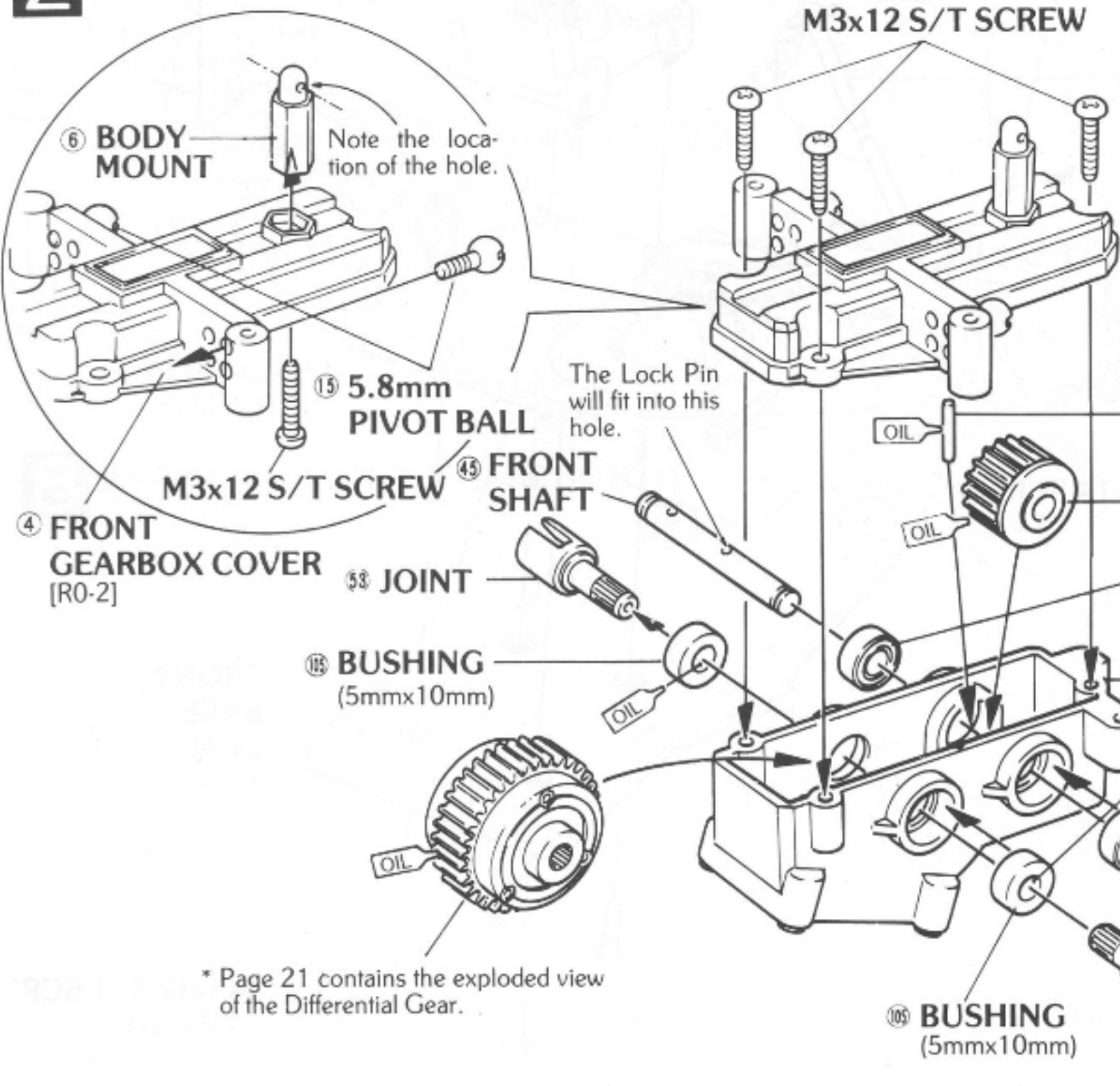
- 3.** Install Ball Link as shown.



- 4.** Rotate Ball Link left or right to obtain the correct length.



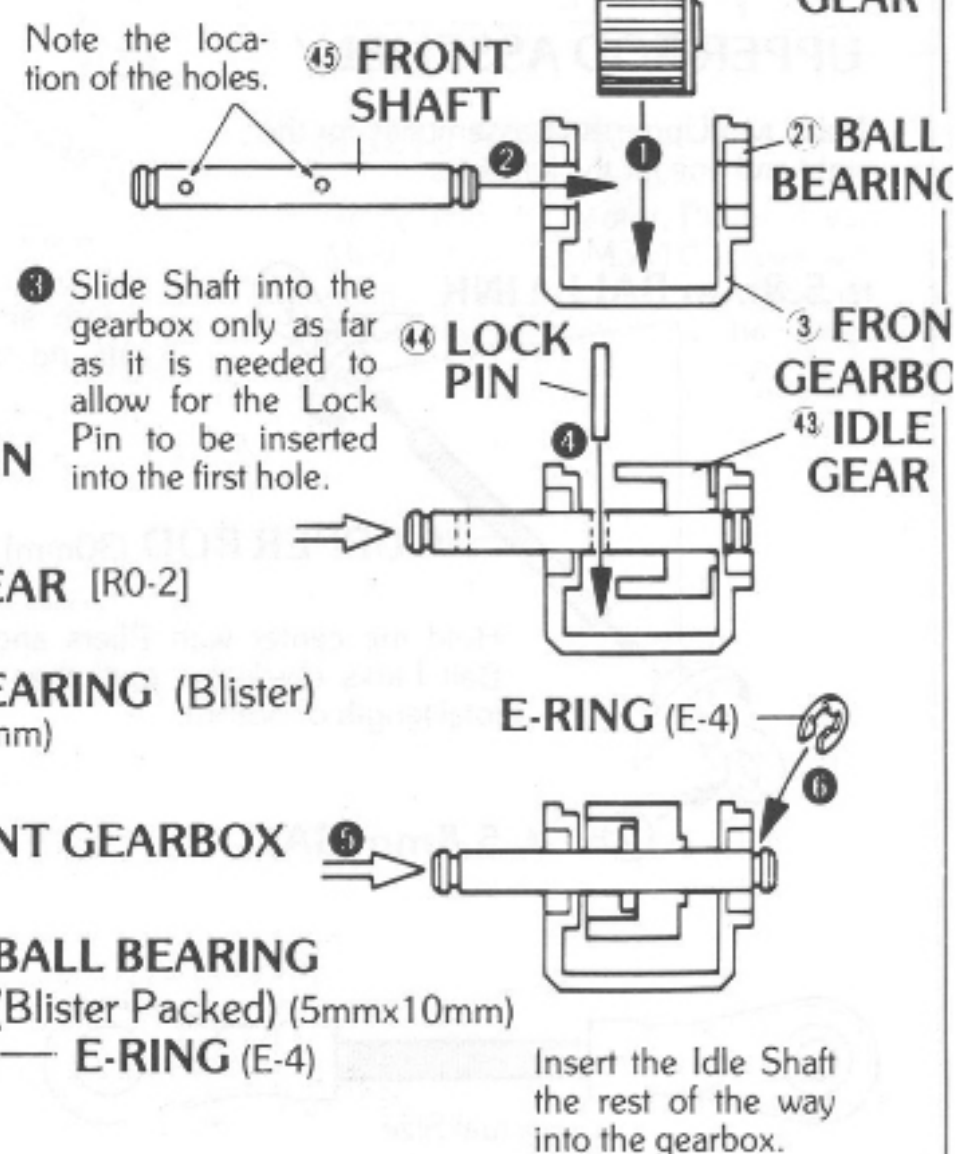
2 ASSEMBLY OF FRONT GEARBOX



* Page 21 contains the exploded view of the Differential Gear.

IDLE GEAR

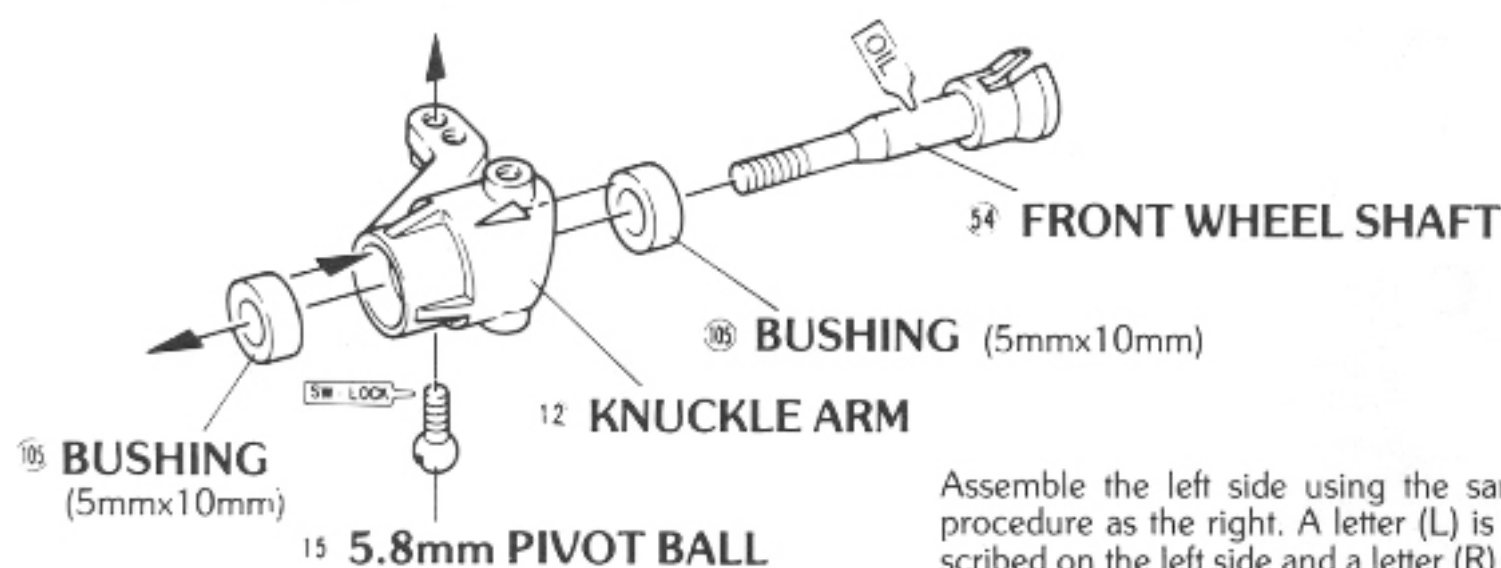
Assemble Steps 1 to 6 in order.



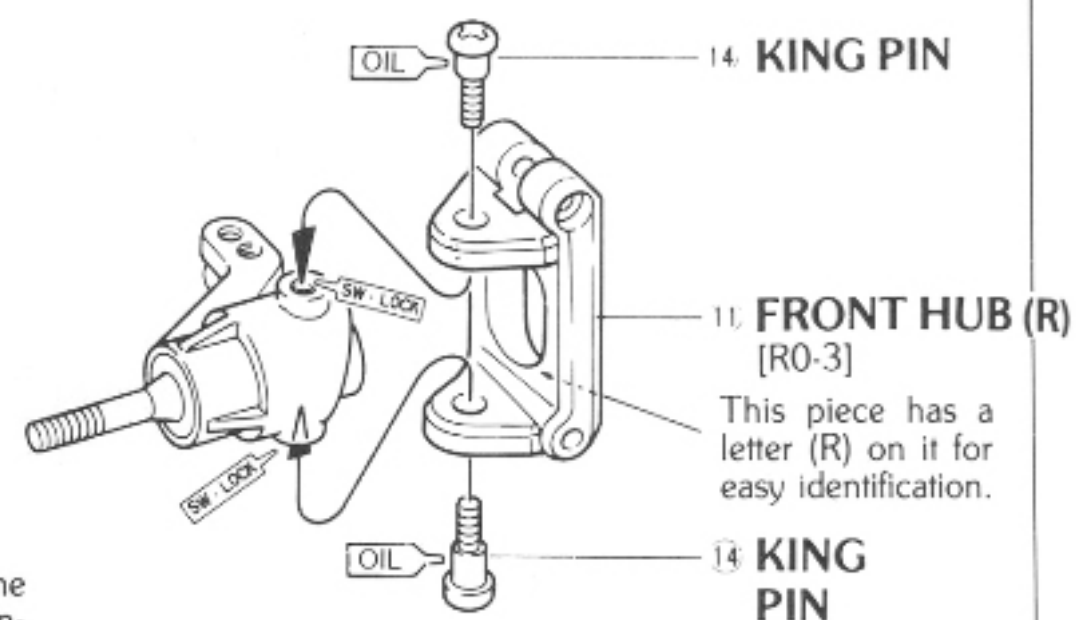
- 1** Slide Shaft into the gearbox only as far as it is needed to allow for the Lock Pin to be inserted into the first hole.

Insert the Idle Shaft the rest of the way into the gearbox.

3 ASSEMBLY OF FRONT SUSPENSION (1) (Right Side is shown.)



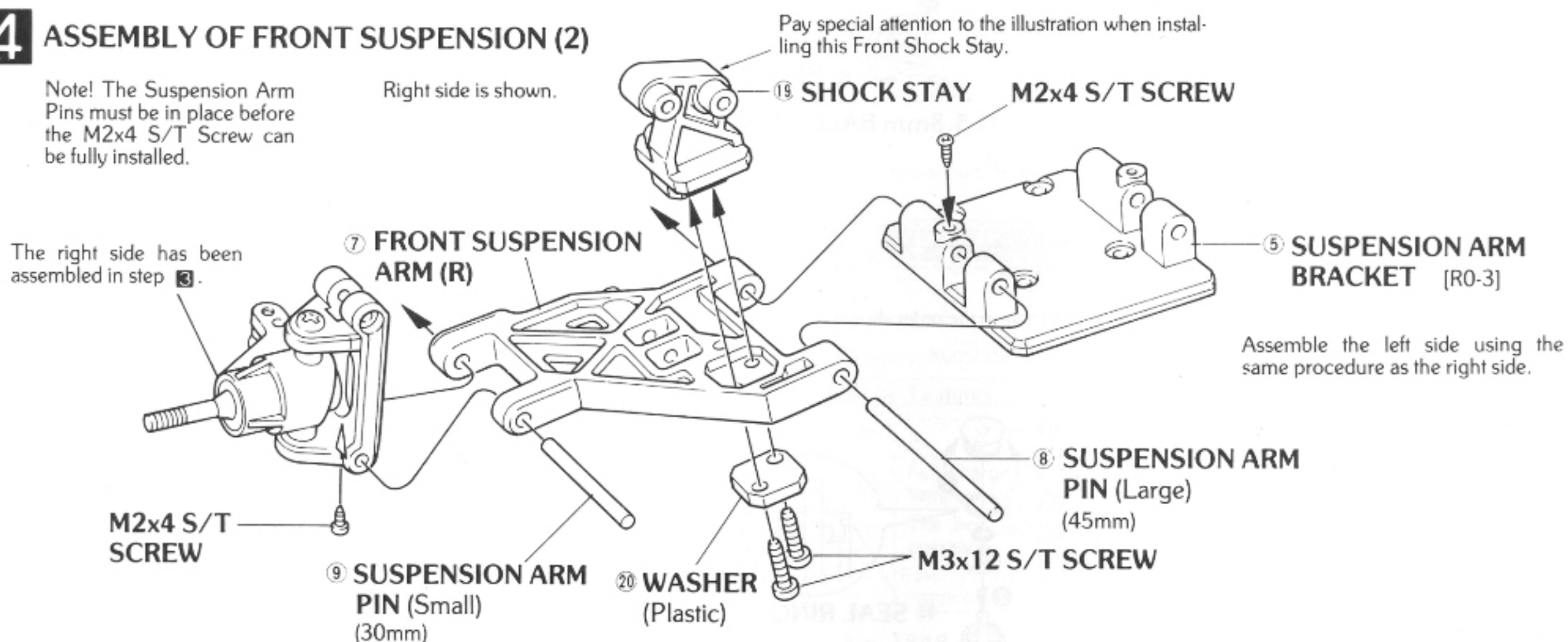
Assemble the left side using the same procedure as the right. A letter (L) is inscribed on the left side and a letter (R) on the right side.



4 ASSEMBLY OF FRONT SUSPENSION (2)

Note! The Suspension Arm Pins must be in place before the M2x4 S/T Screw can be fully installed.

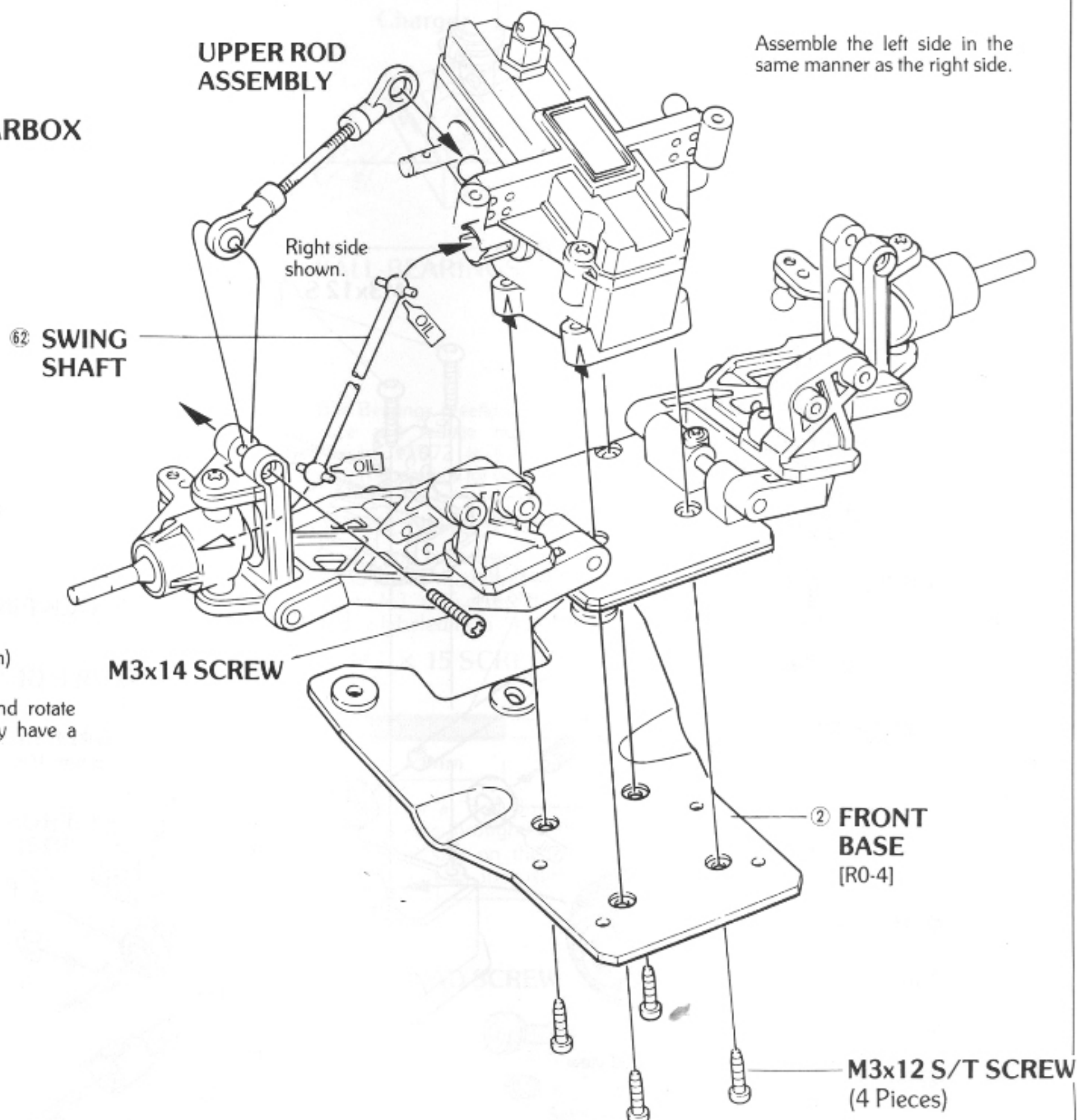
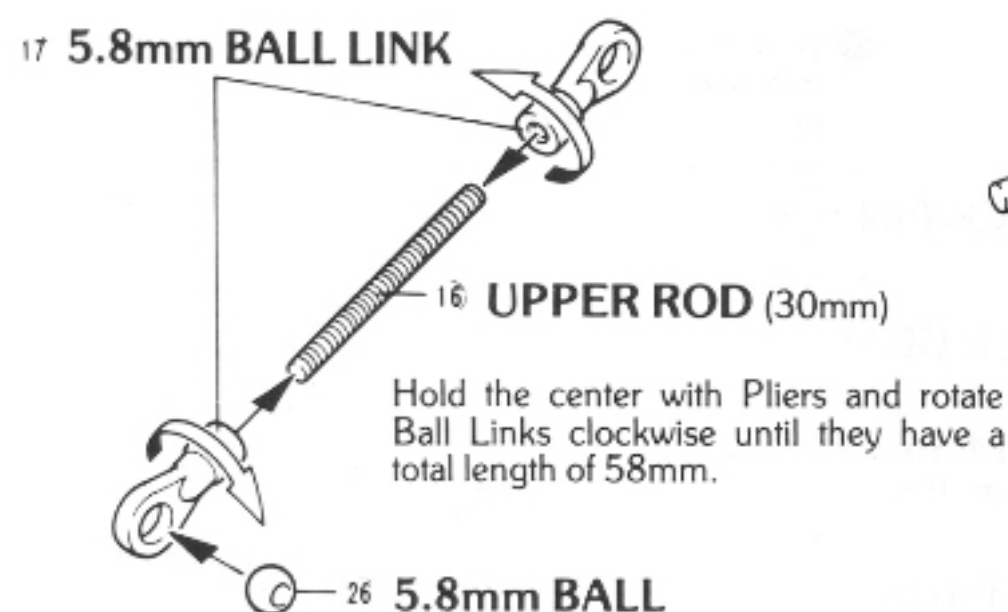
Right side is shown.



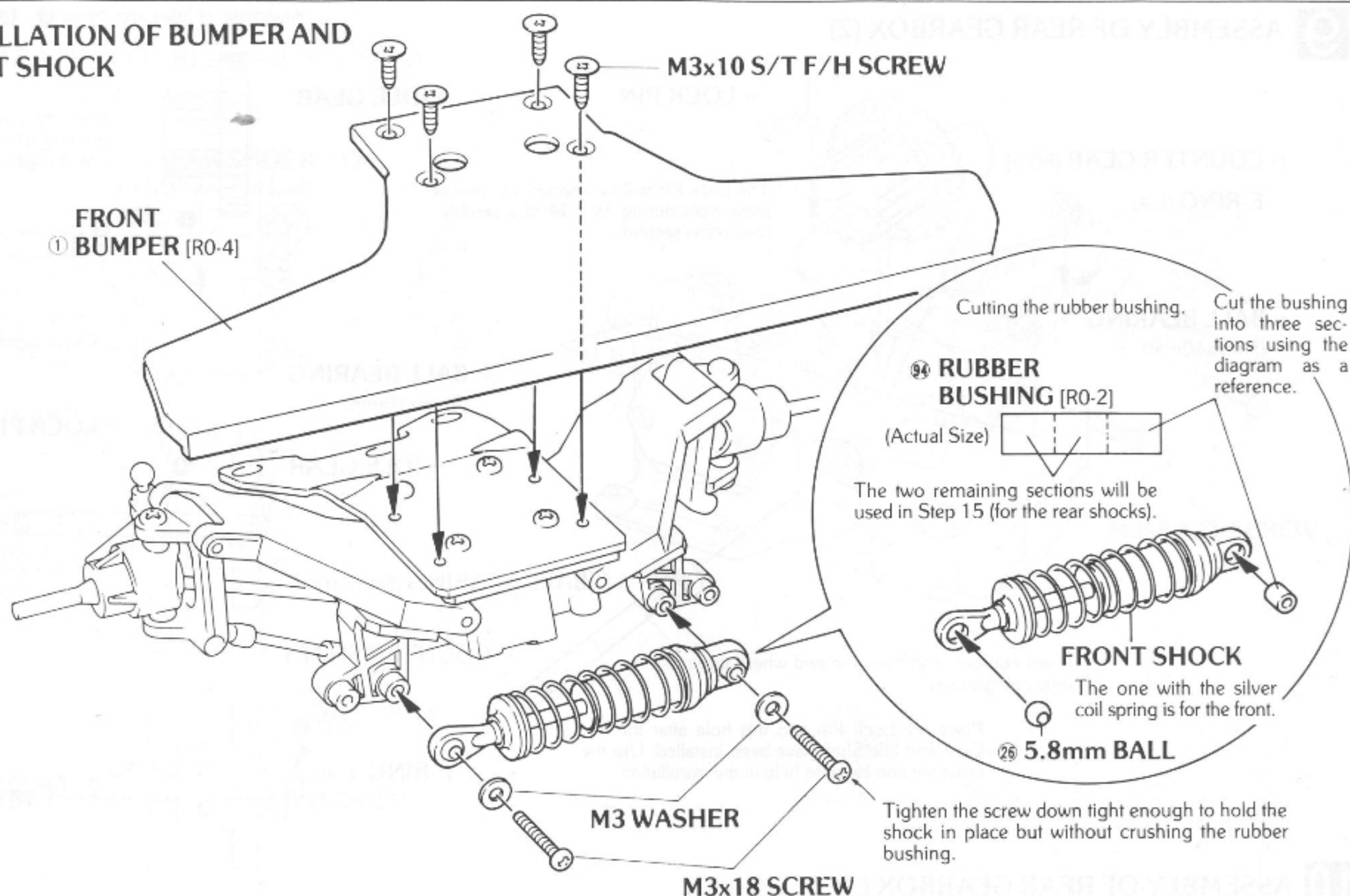
5 INSTALLATION OF FRONT GEARBOX

UPPER ROD ASSEMBLY

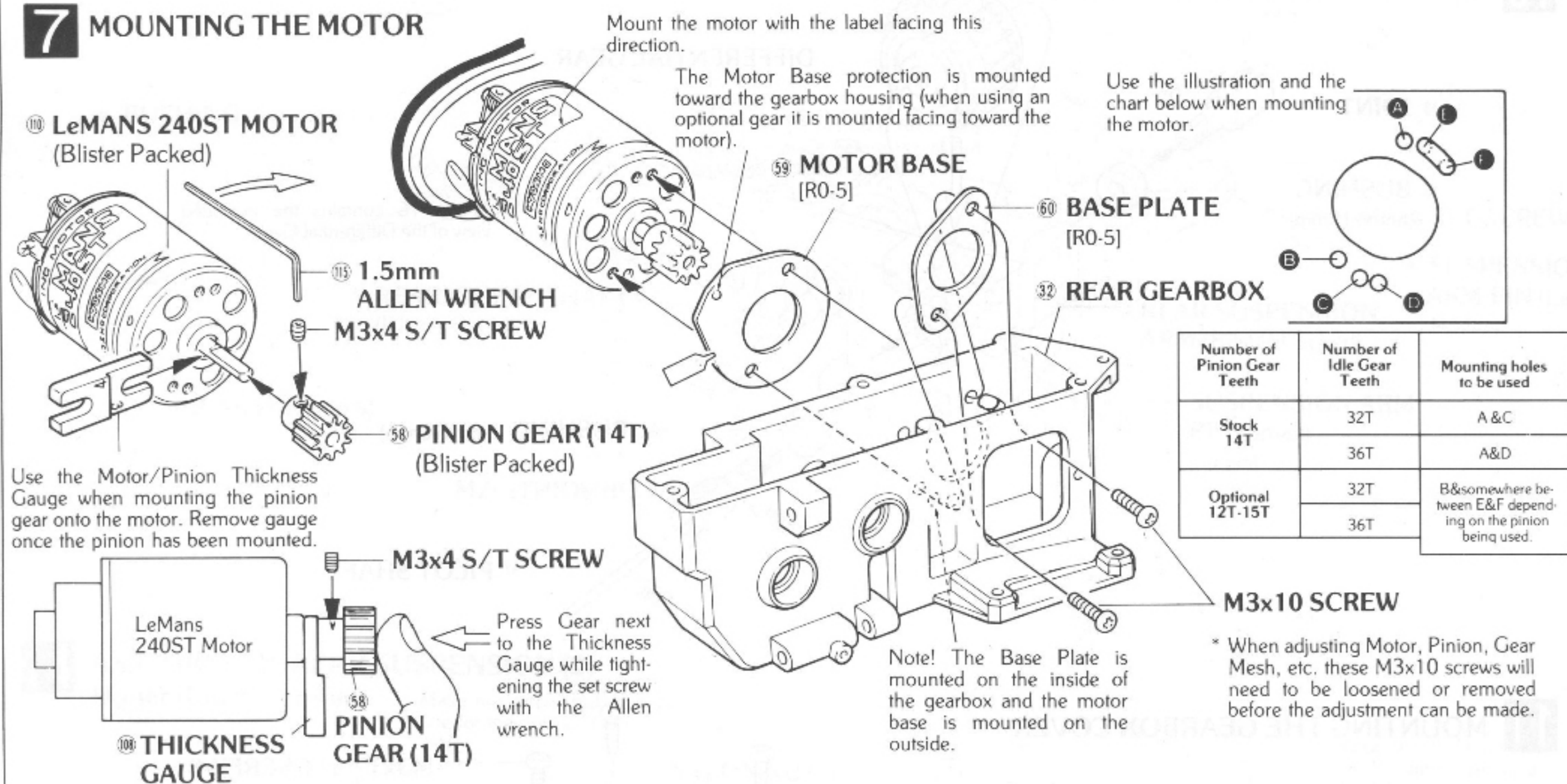
Make two Upper Rod assemblies for the right and one for the left sides.



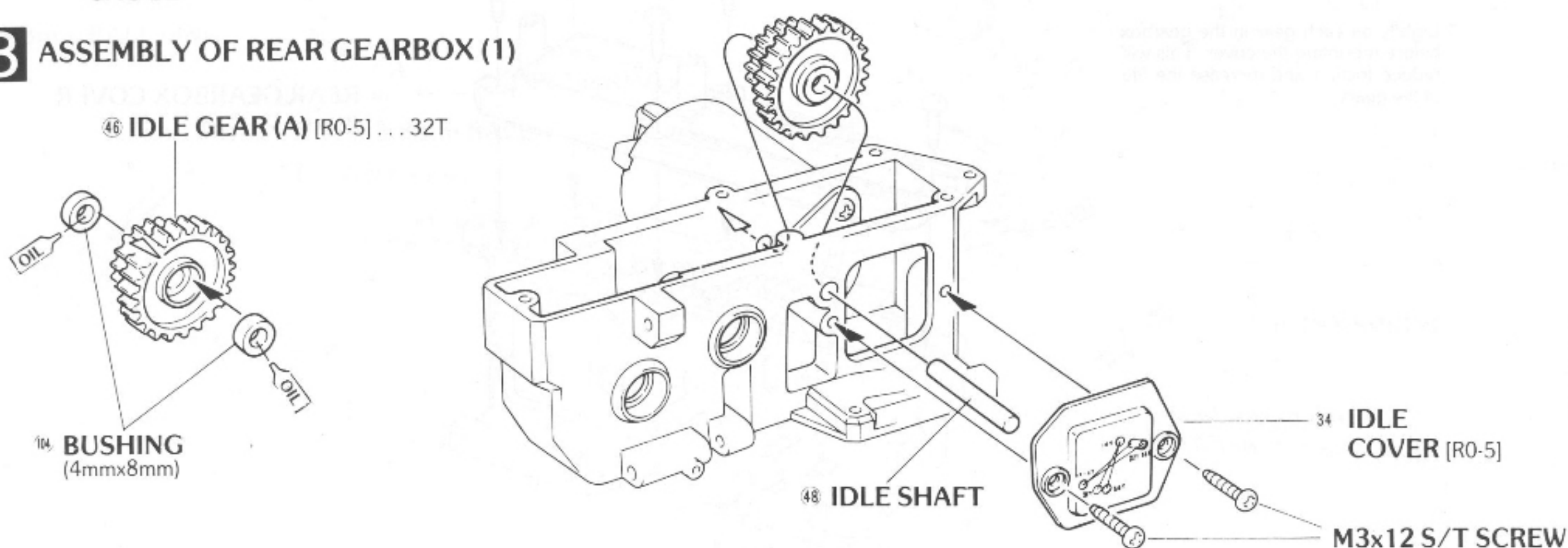
6 INSTALLATION OF BUMPER AND FRONT SHOCK



7 MOUNTING THE MOTOR

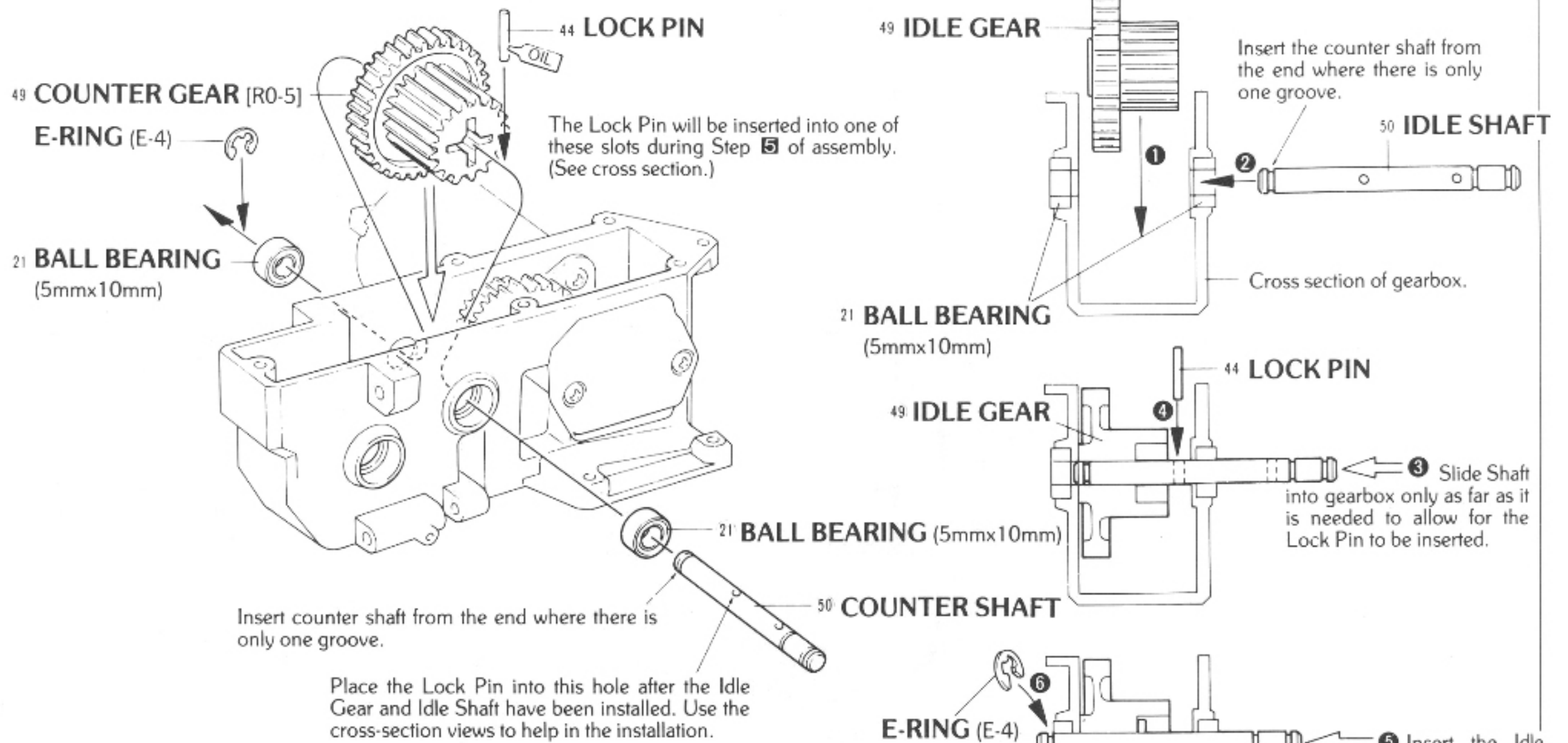


8 ASSEMBLY OF REAR GEARBOX (1)

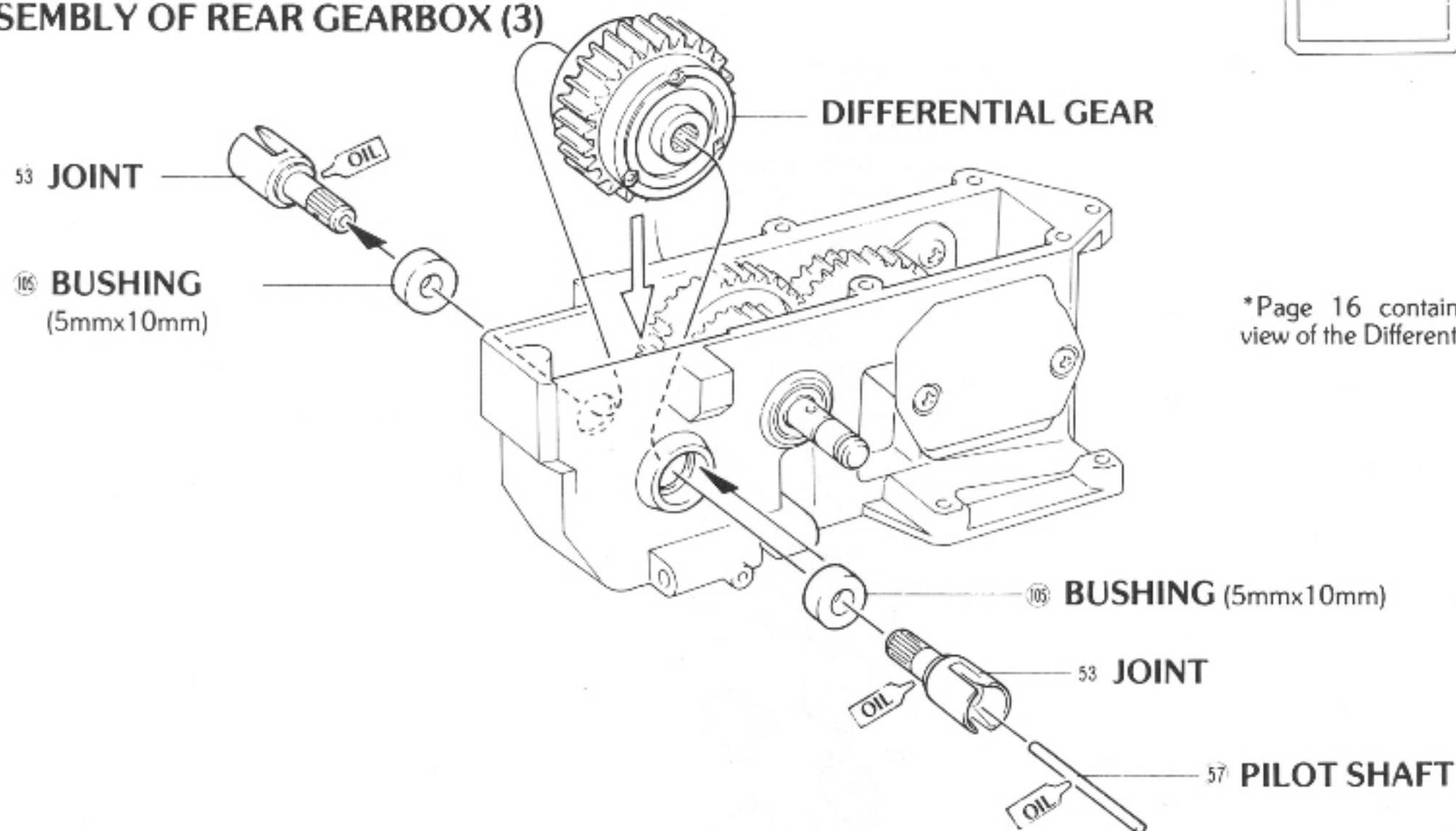


9 ASSEMBLY OF REAR GEARBOX (2)

Assemble 49 Idle Gear. Steps 1 - 6 in order.

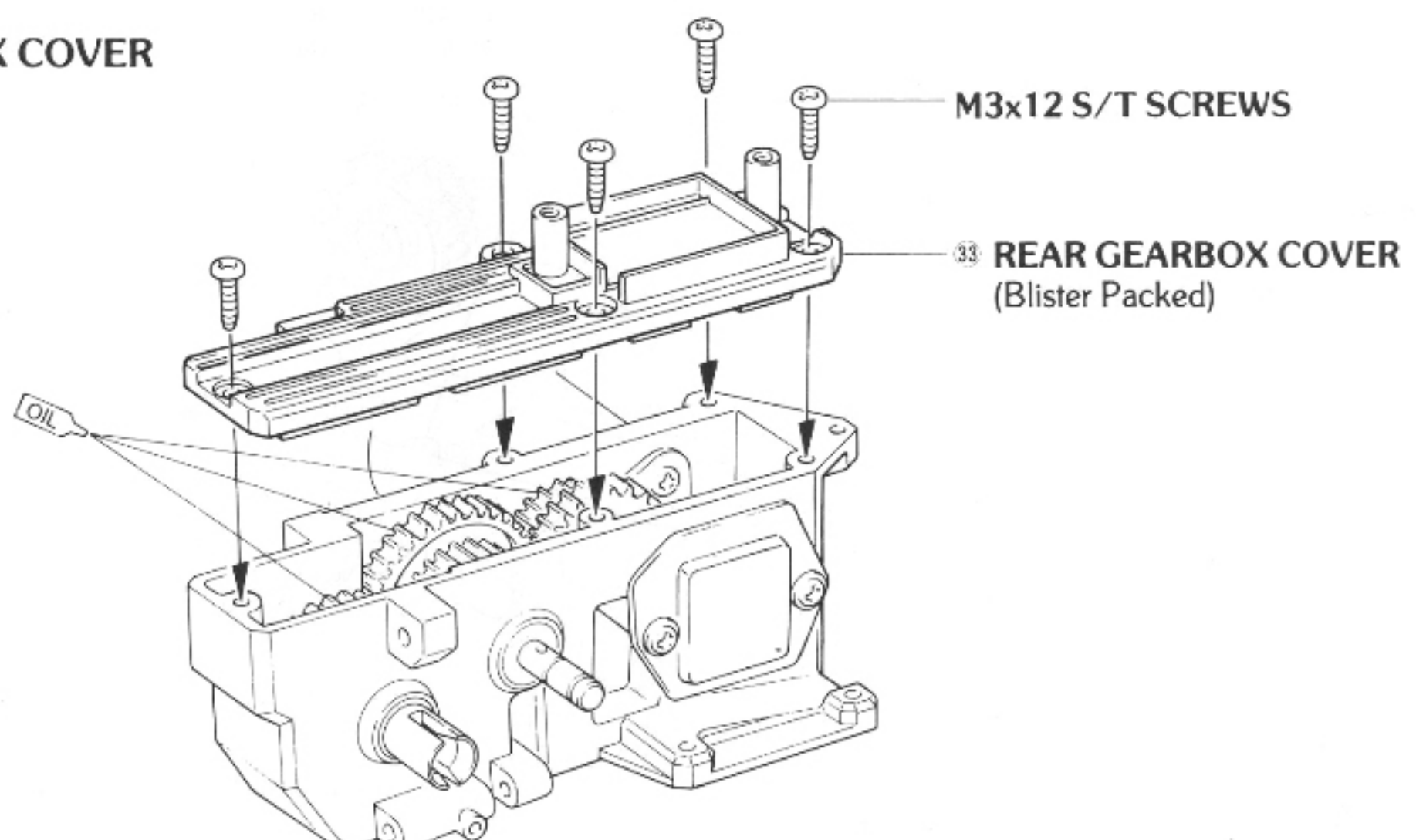


10 ASSEMBLY OF REAR GEARBOX (3)

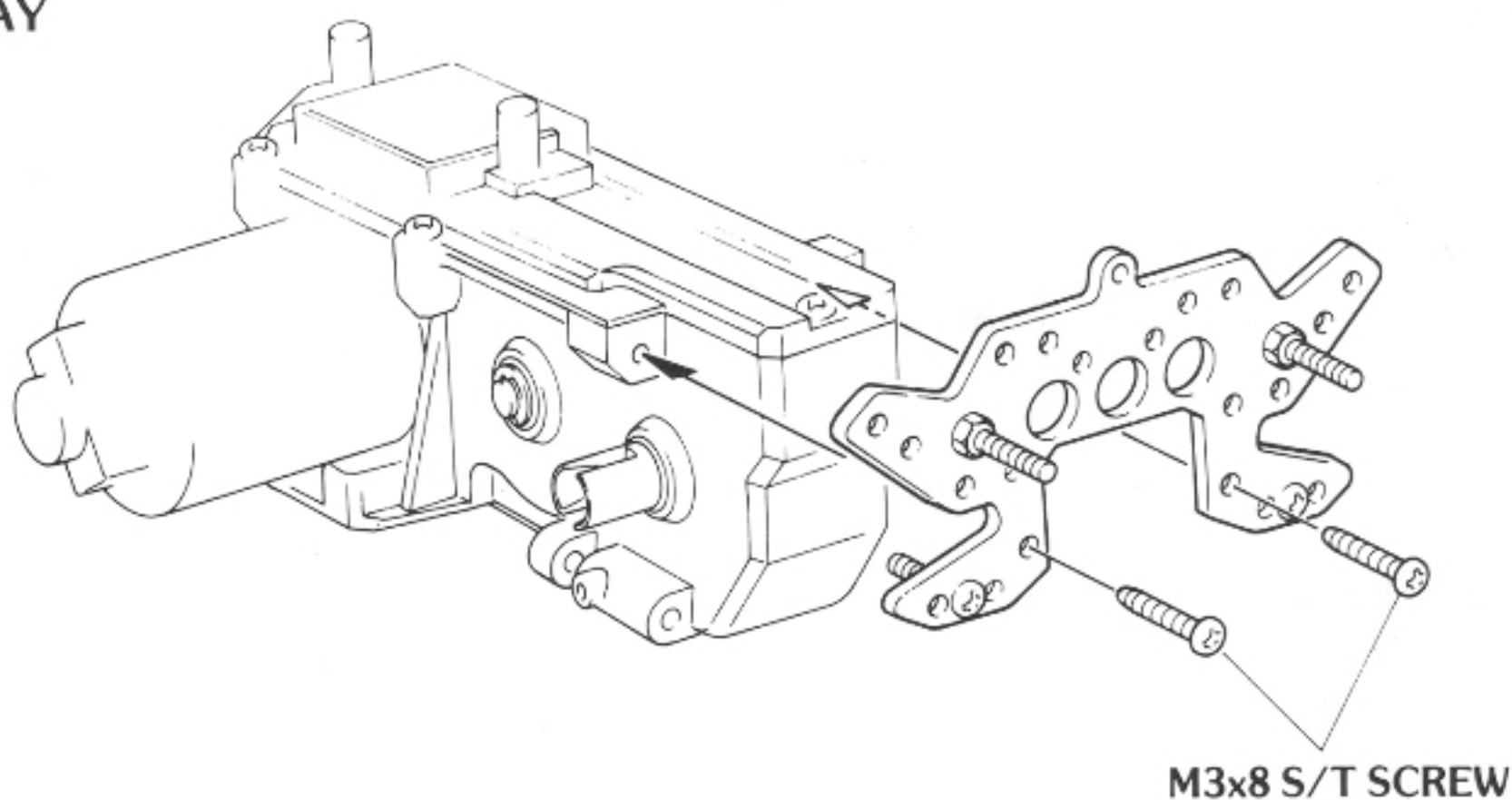
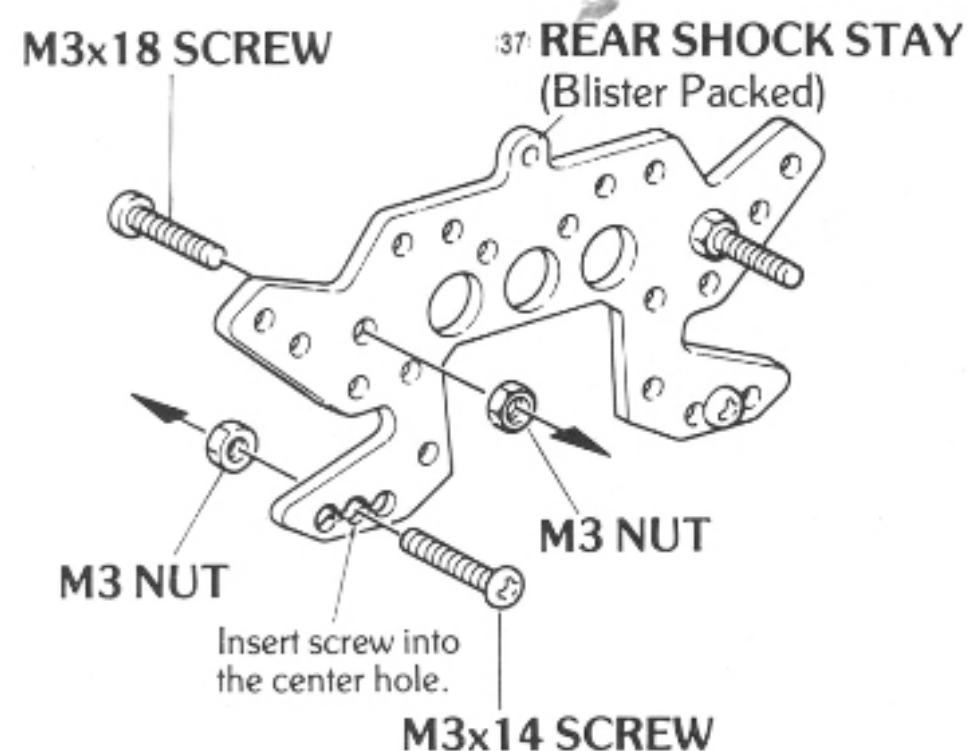


11 MOUNTING THE GEARBOX COVER

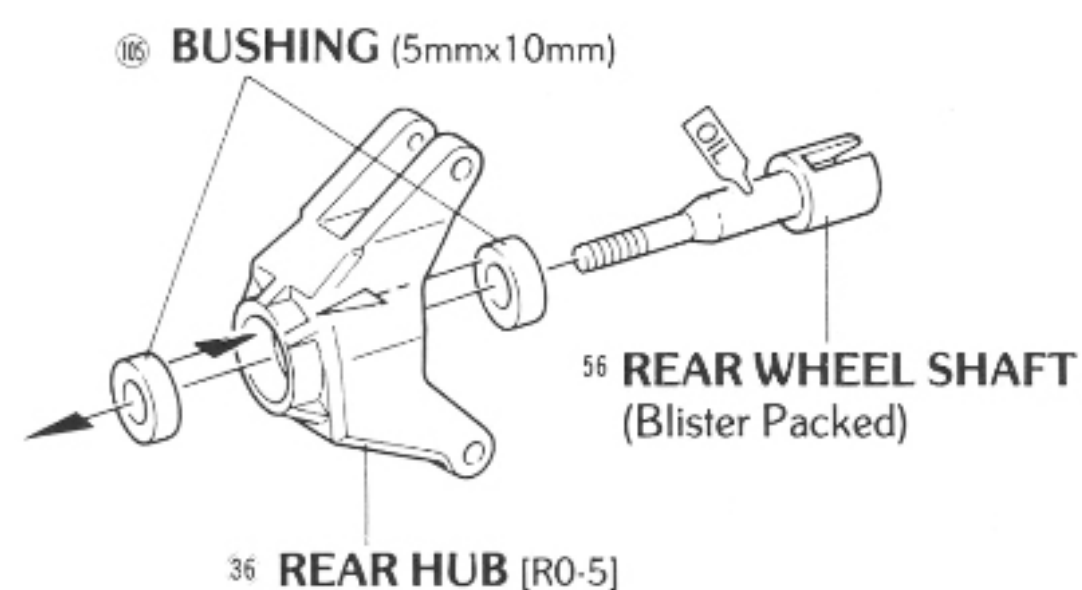
* Lightly oil each gear in the gearbox before mounting the cover. This will reduce friction and increase the life of the gears.



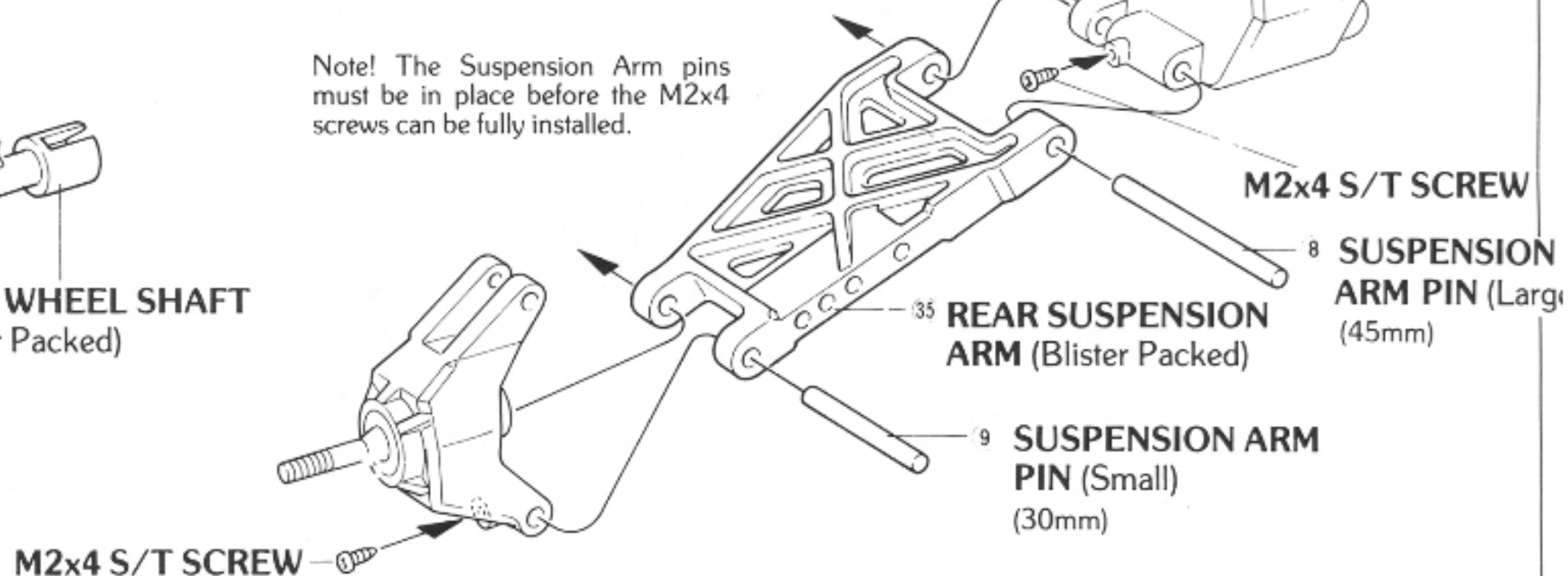
12 INSTALLATION OF REAR SHOCK STAY



13 ASSEMBLY OF REAR SUSPENSION (1)

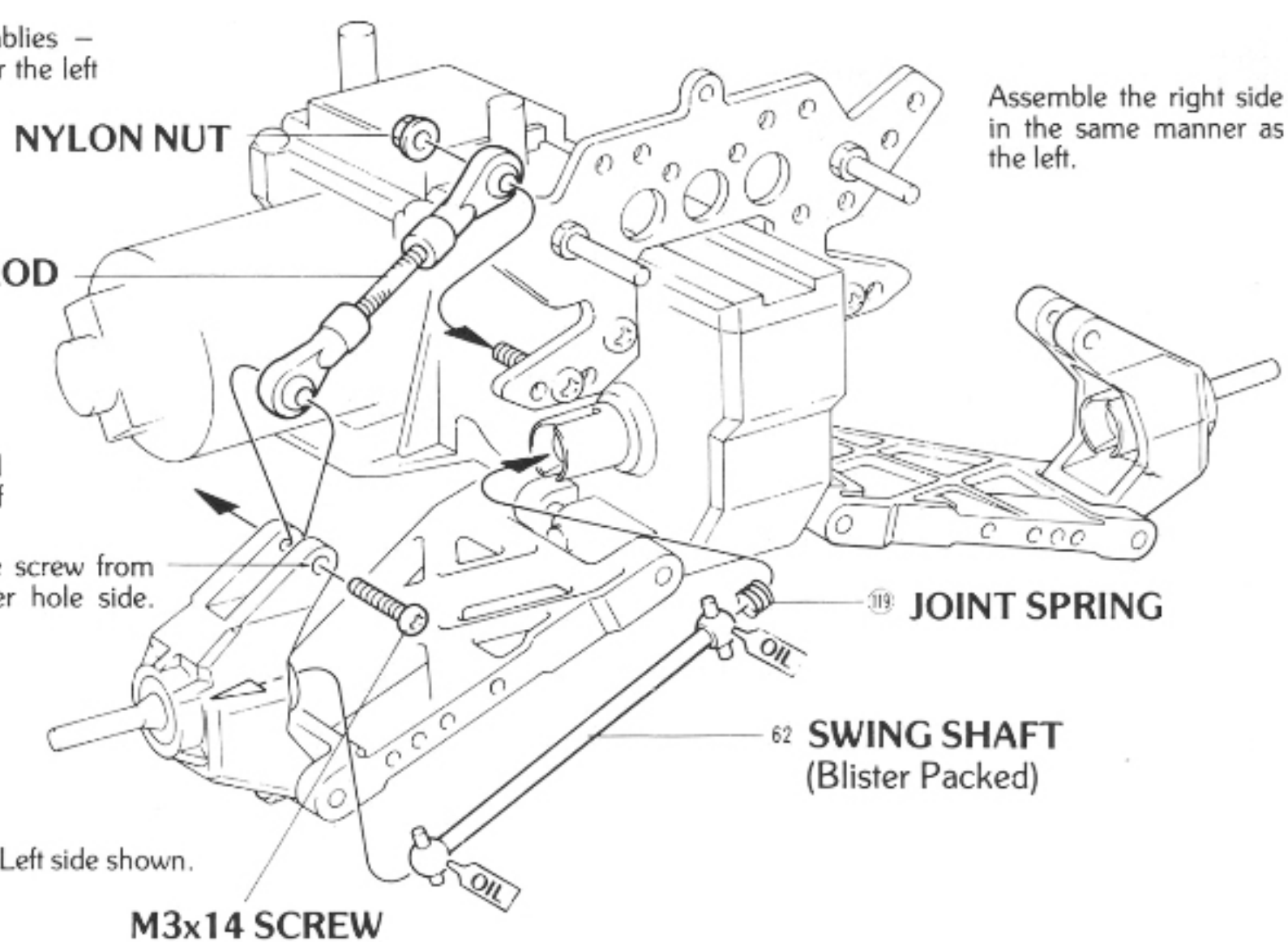
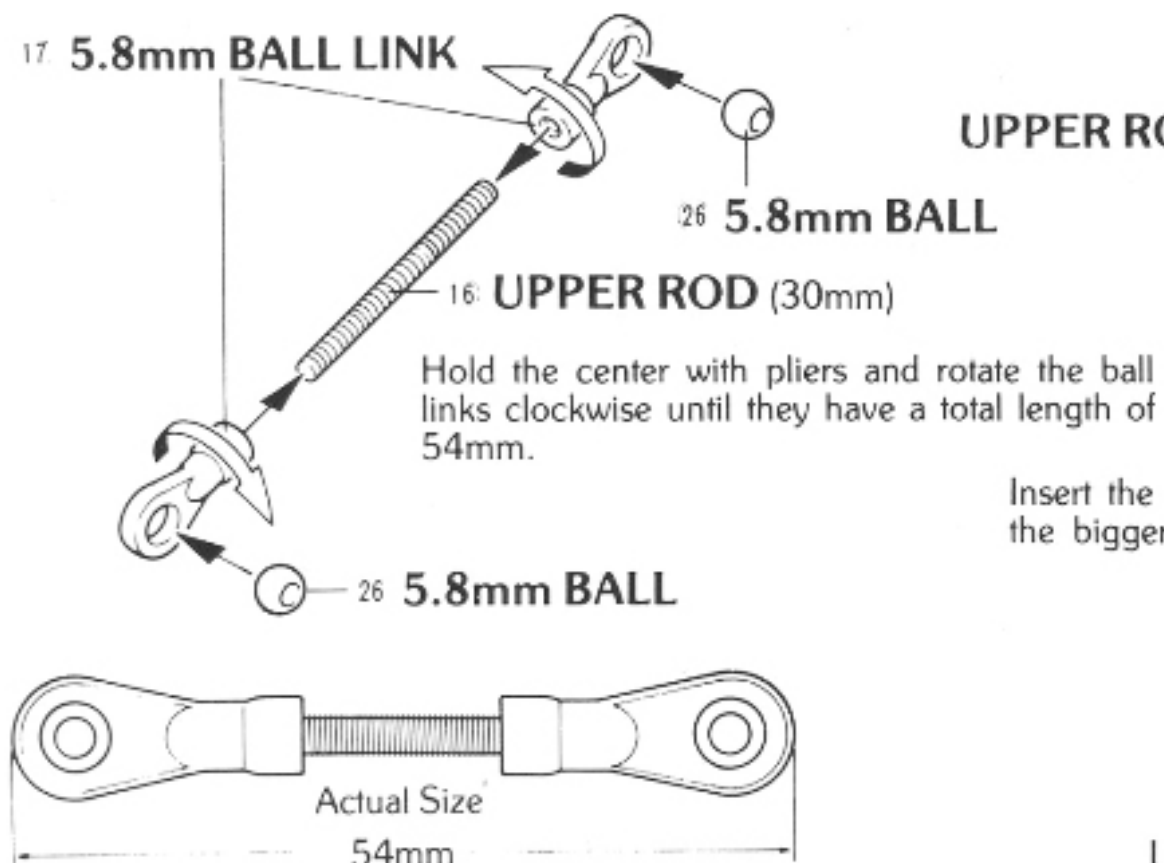


Note! The Suspension Arm pins must be in place before the M2x4 screws can be fully installed.



14 ASSEMBLY OF REAR SUSPENSION (2) Upper Rod Assembly

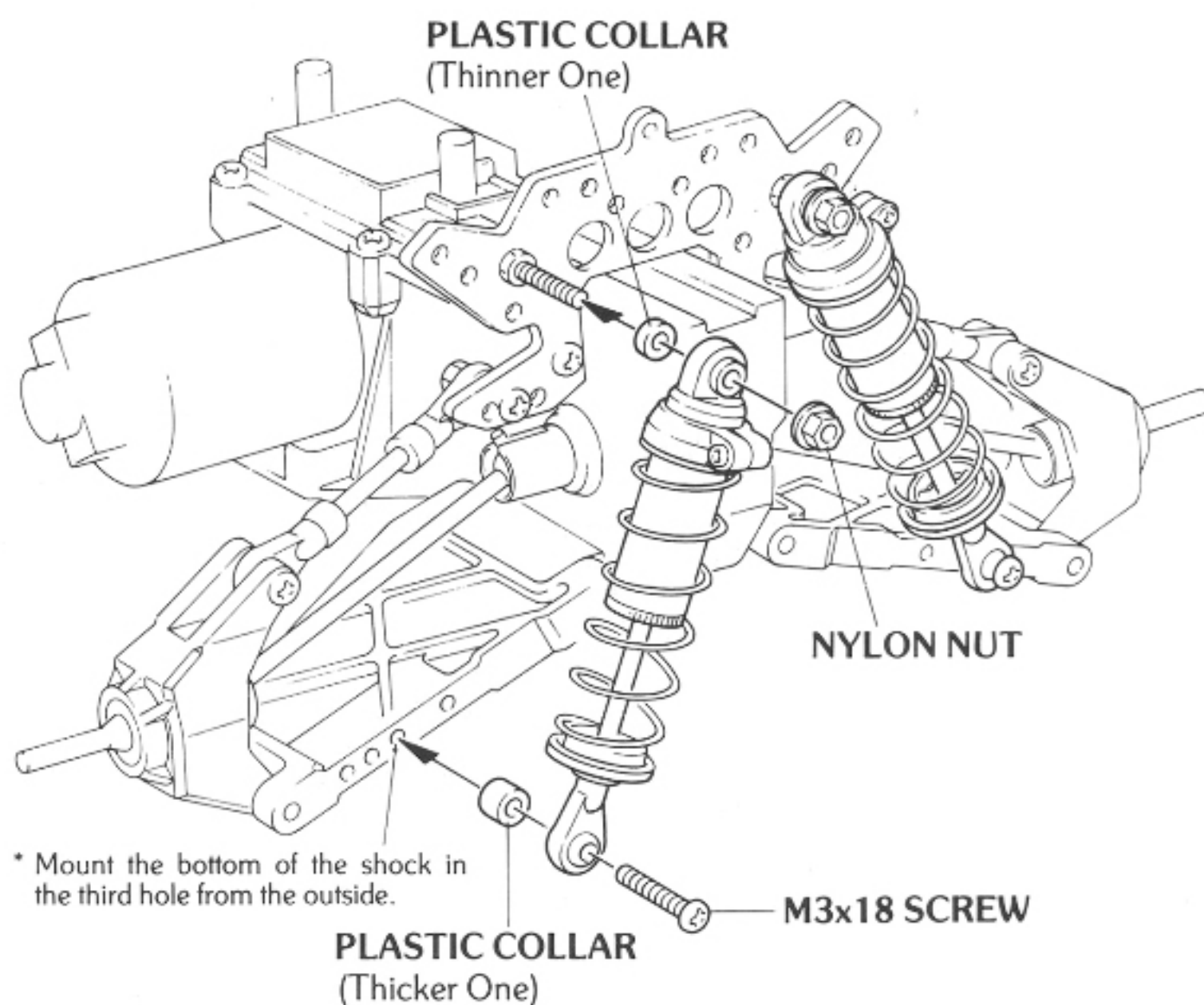
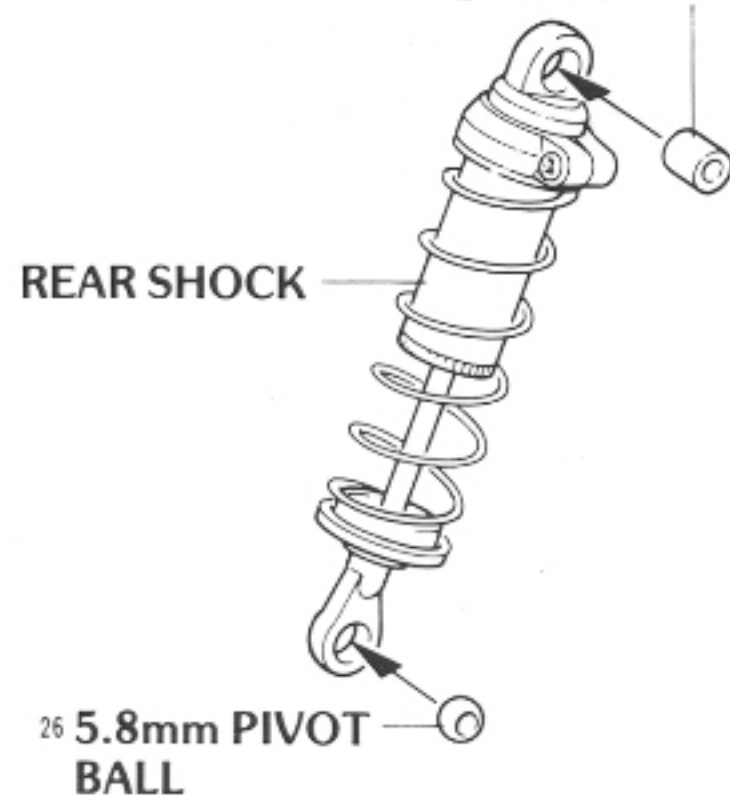
Make two upper rod assemblies – one for the right and one for the left sides.



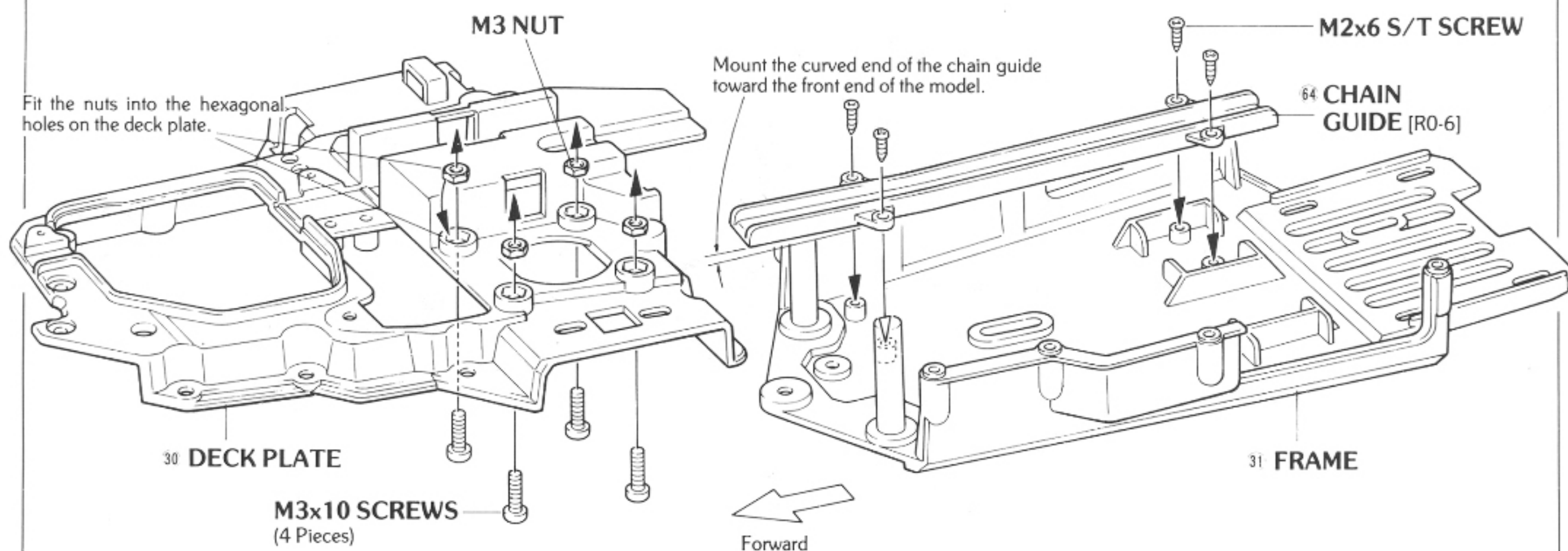
Assemble the right side in the same manner as the left.

15 INSTALLATION OF THE REAR SHOCKS

Use the rubber bushings 94 that were cut to length in Step 8.

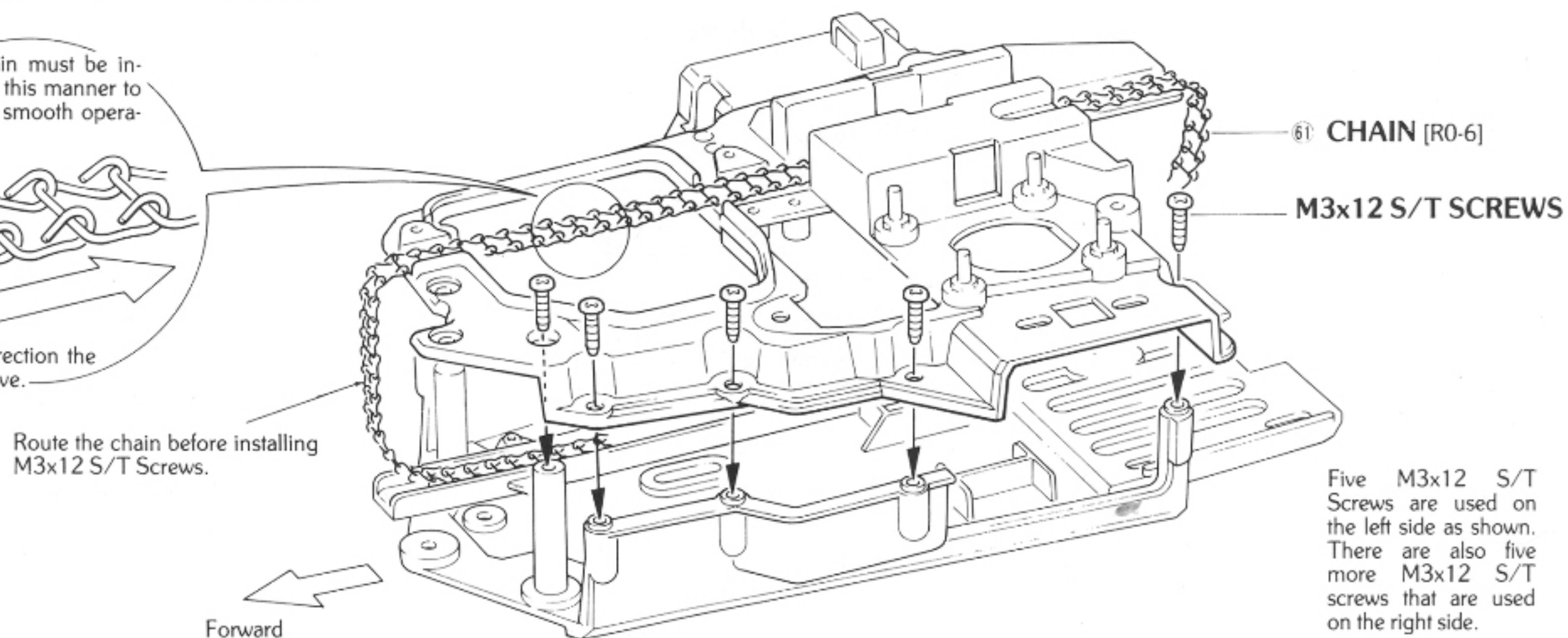
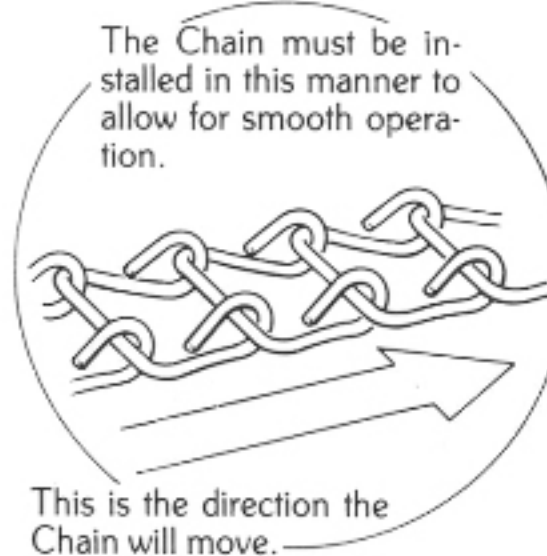


16 MOUNTING THE DECK & REAR PLATE



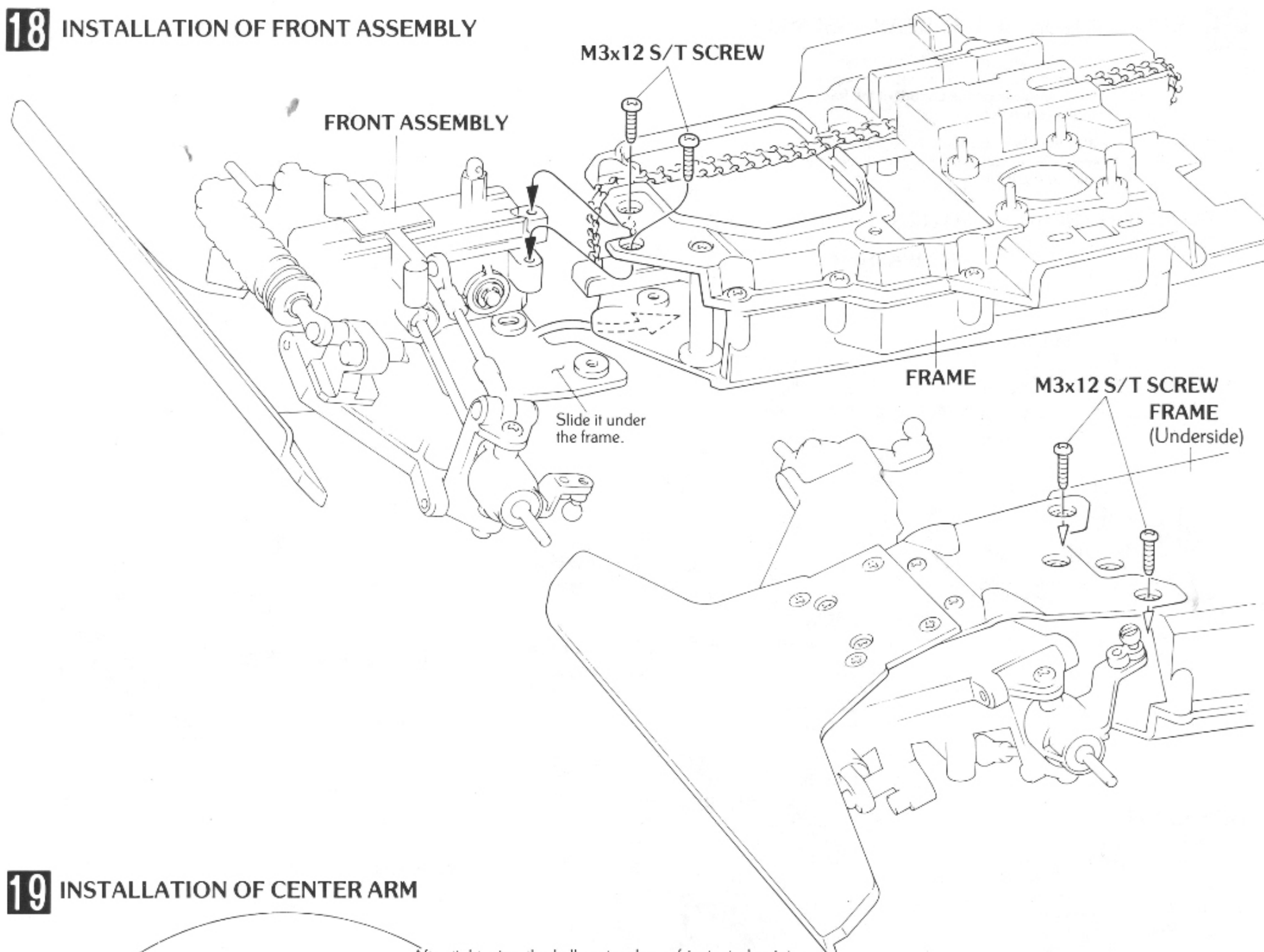
Tighten the screws tightly now. Later during or after assembly it will be difficult to retighten them.

17 ASSEMBLY OF THE FRAME

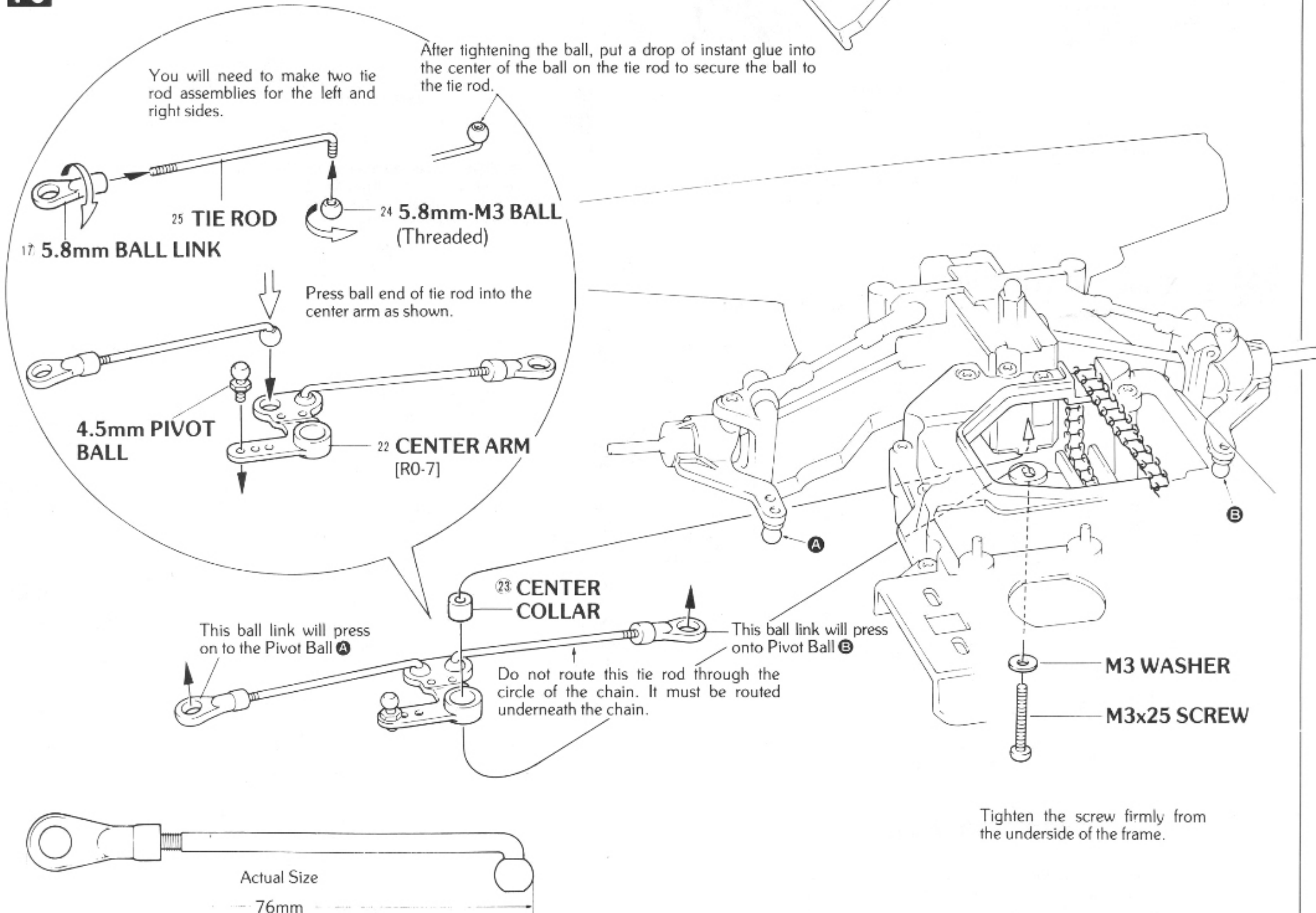


Five M3x12 S/T Screws are used on the left side as shown. There are also five more M3x12 S/T screws that are used on the right side.

18 INSTALLATION OF FRONT ASSEMBLY



19 INSTALLATION OF CENTER ARM



20 INSTALLATION OF THE REAR ASSEMBLY

- * Bolt the rear assembly onto the frame using the screw and washers at one point on the top of the frame and five places on the bottom of the frame through the long oval holes.
- * Adjustment of the chain tension will be done using these six screws by loosening them and sliding the rear assembly back and forth.

(See Page 17 for the adjustment of the chain.)

M3x12 S/T SCREW

M3 WASHER

Two nuts on the right side of the frame.

M3 NUT

M3x12 S/T SCREW

(3 on the left side)

M3 WASHER

(5 on the underside)

M3x8 SCREW

(2 on the right side only)

Align the pin with a slot in the sprocket.

44 LOCK PIN

E-RING (E-4)

E-Ring will go onto the shaft here.

51 SPROCKET (18T) [R0-5]

44 LOCK PIN

Align the pin with the slot in the sprocket.

E-RING (E-4)

51 SPROCKET (18T) [R0-5]

- * Two kinds of sprockets are available, one with 18 teeth and the other with 19 teeth. In this step the 18 tooth sprockets are shown and this is the standard set up procedure.

(See Page 18 for modification of rotation - front to rear bias - using the 19 tooth sprocket).

IMPORTANT!

Do not apply grease or oil on the sprocket or chain at any time or under any circumstances. These lubricants attract mud and dirt and hold them to the chain. The design of this chain is such that it does not need lubrication.

Note! When tightening the screws, tighten them in order from ① to ⑤ using the pattern shown. This will prevent warping of the wheel.

21 ASSEMBLY OF THE TIRE

M2x6 S/T SCREWS

(5 per wheel)

96 WHEEL (B) [R0-8]

98 TIRE

97 INNER WHEEL [R0-8]

Cross-section of the assembled tire.

M2x6 S/T SCREW

97 INNER WHEEL

96 WHEEL (B)

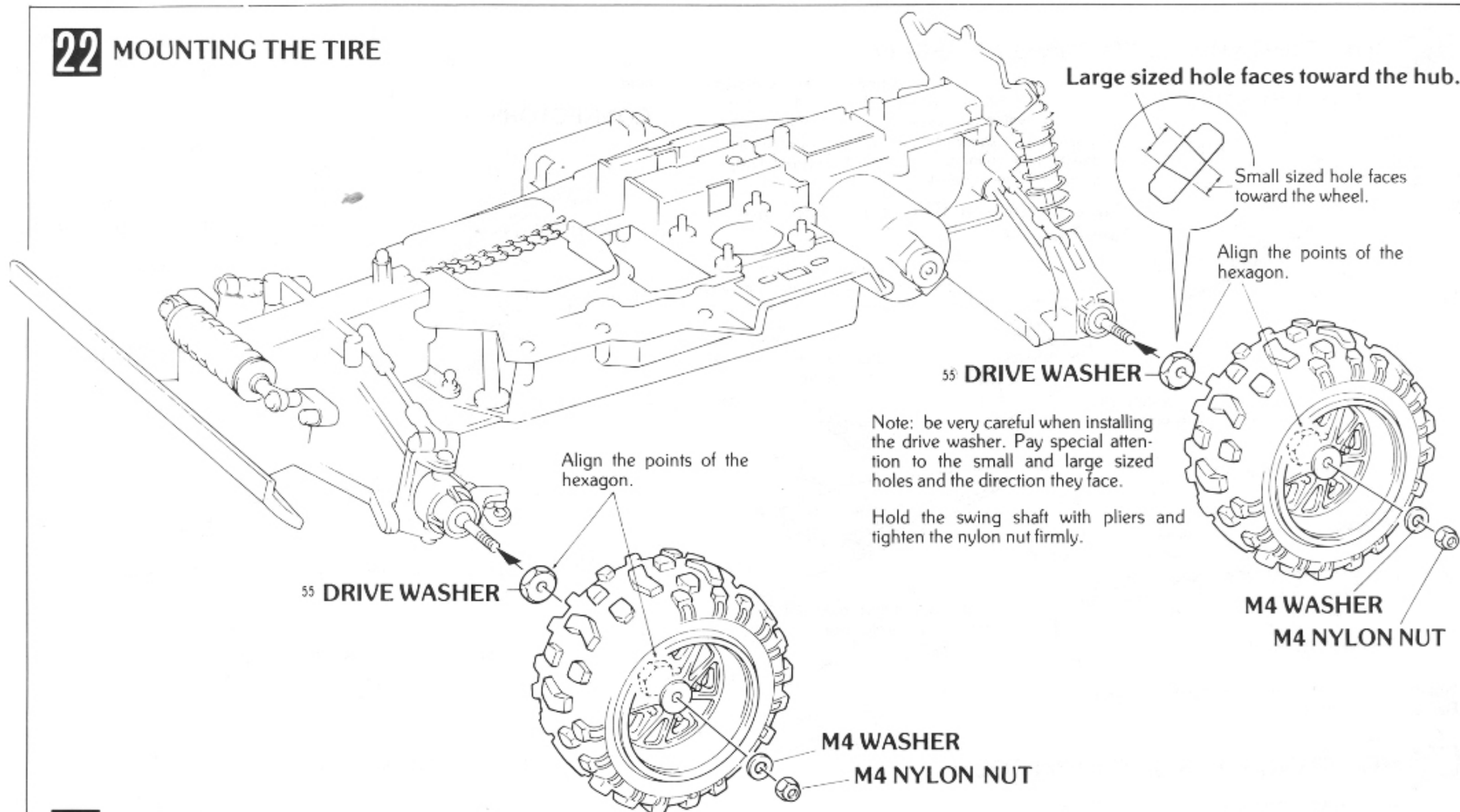
95 WHEEL (A)

98 TIRE

95 WHEEL (A) [R0-8]

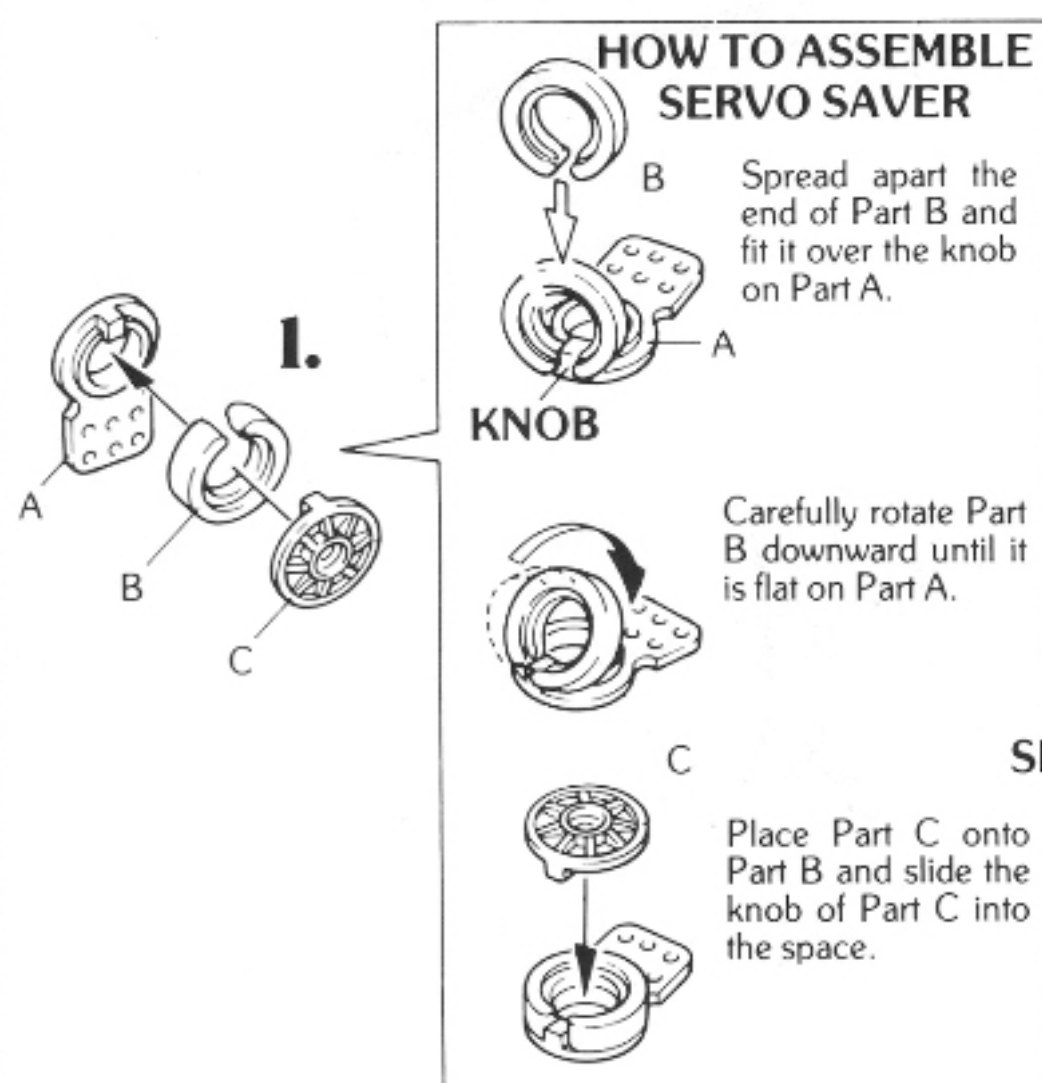
- * Put the inner ring into the tire by widening the tire and bending the inner ring until the inner ring is completely inside the tire.

22 MOUNTING THE TIRE

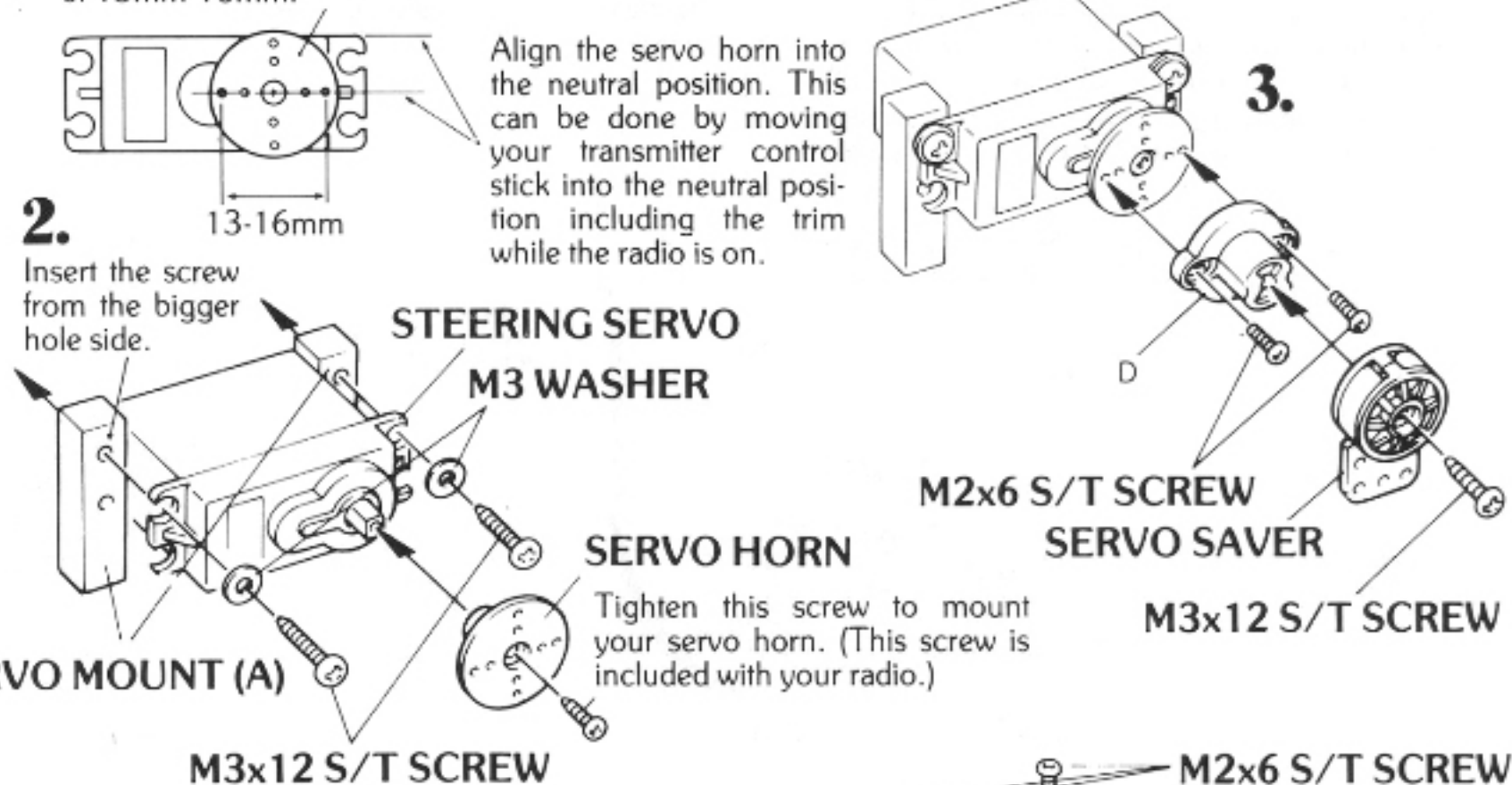


23 MOUNTING THE SERVO SAVER

(A-D) [R0-9]



Use a servo horn that has a hole spacing of 13mm-16mm.



24 MOUNTING THE STEERING SERVO

IMPORTANT!

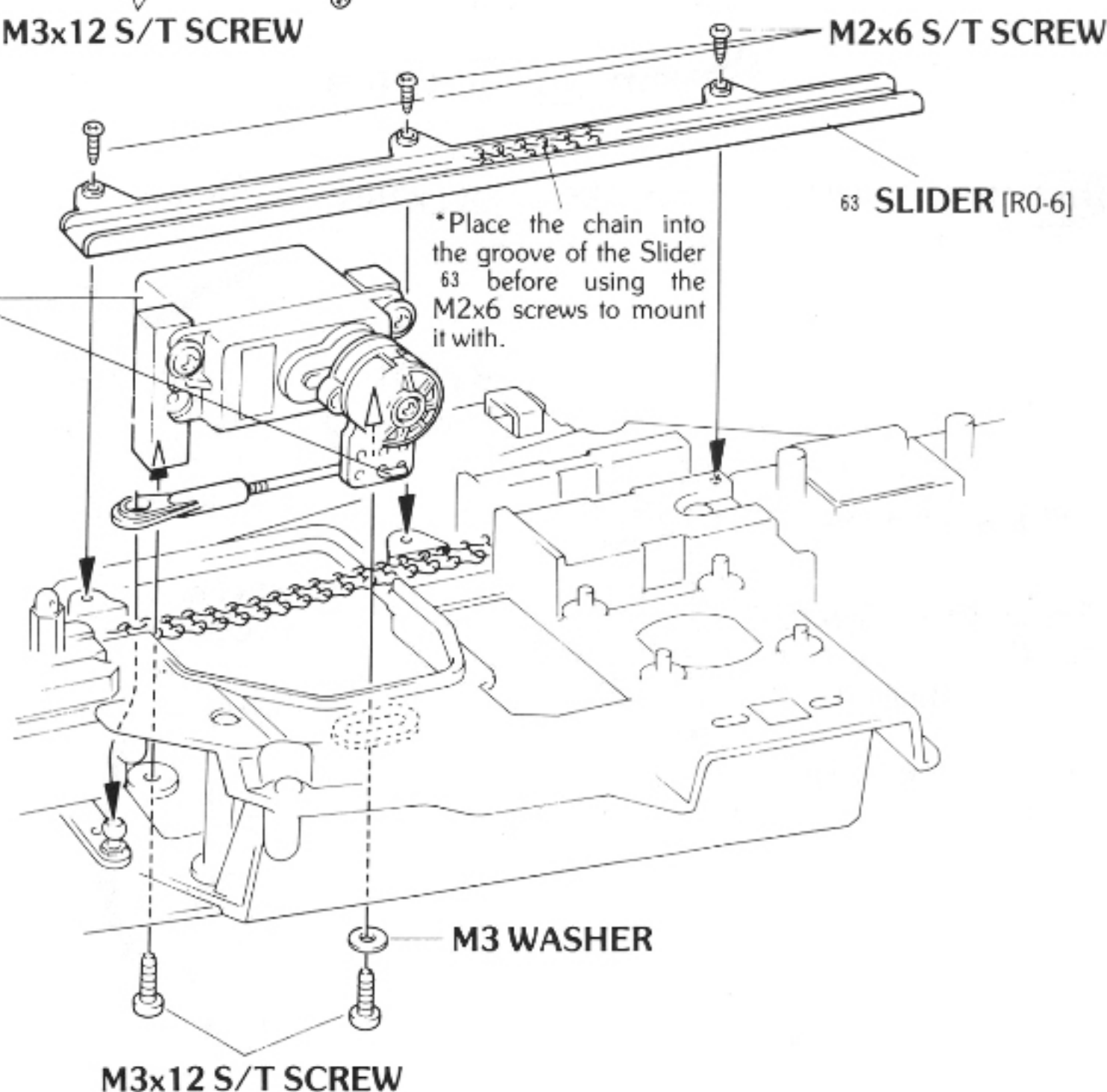
The linkage rod will need to be inserted into the center hole of the servo saver then the steering servo can be mounted. (All of this must be done before the Slider 63 can be mounted.)

Screw the ball link onto the steering rod.



* Adjust the ball link so that the front wheels face straightforward and the steering control stick is in the neutral position.

* It will be easier to adjust the ball link when it has already been mounted if the servo horn is moved to the forward position.



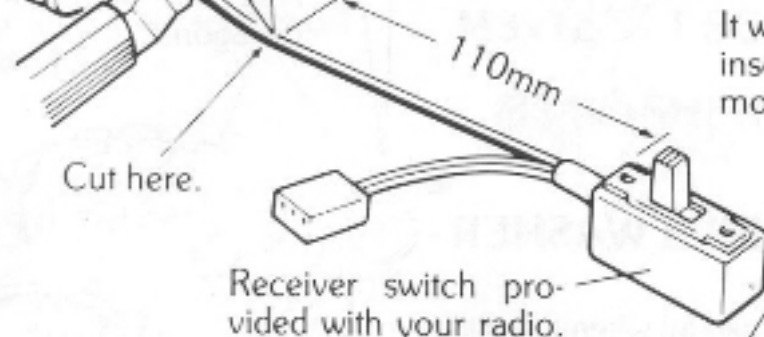
25 MOUNTING THE SPEED CONTROL SERVO

BATTERY BOX
(Not Used)

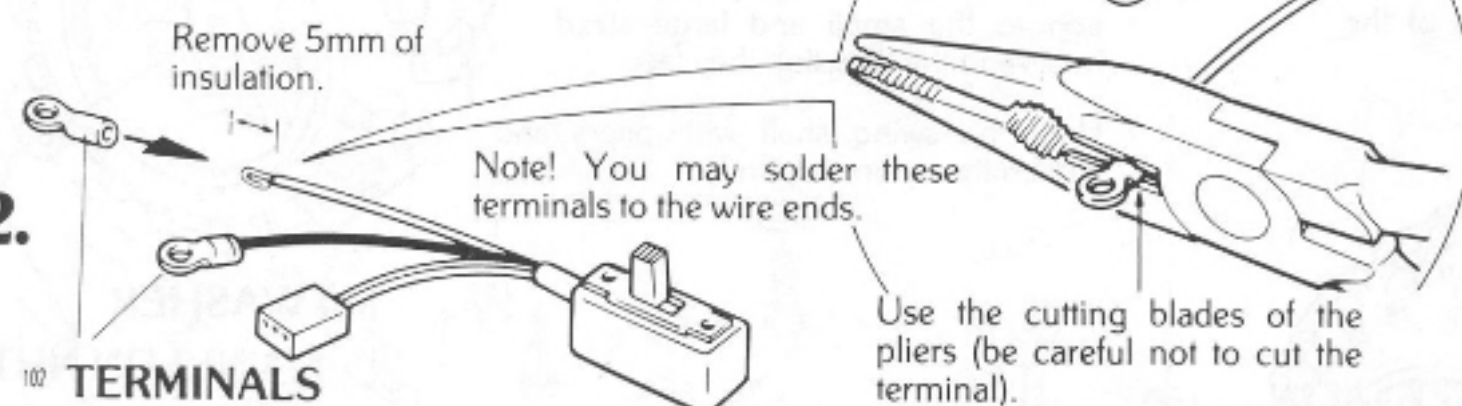
* A 7.2V Nicad battery pack will be used as the motor battery and also to power the receiver of your radio. The switch harness of your radio may need to be modified as shown below. Cut the wires leading to the receiver battery holder to the proper length and attach the terminals to the ends.

*If you have a BEC equipped radio, see Page 16.

1.



2.



M3x12 S/T SCREW

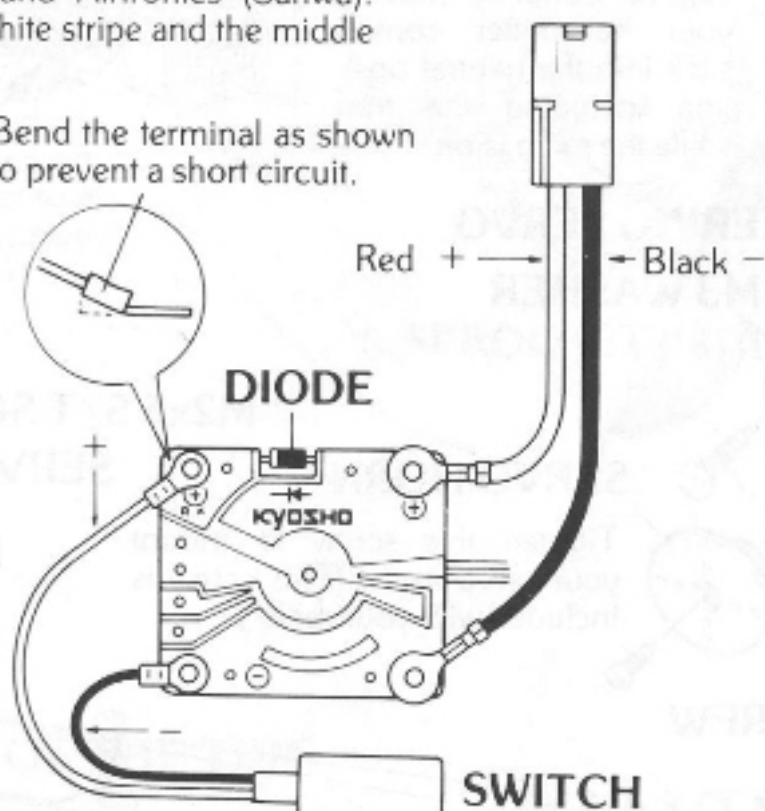
Note! The wires are very thin and are delicate. Be careful while handling them.

26 MOUNTING THE SPEED CONTROL

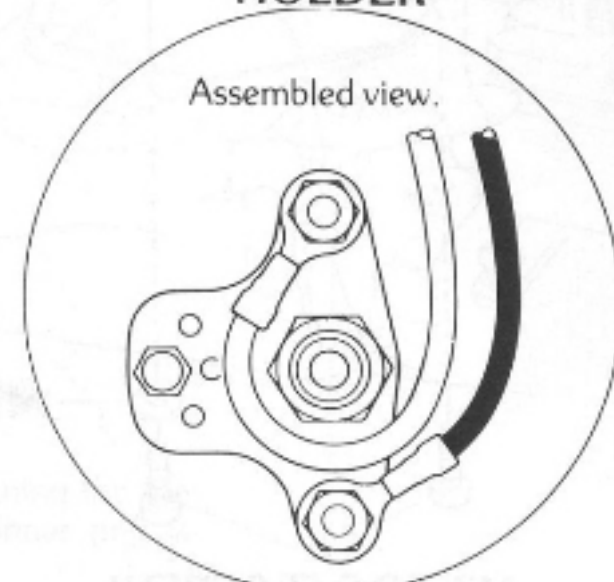
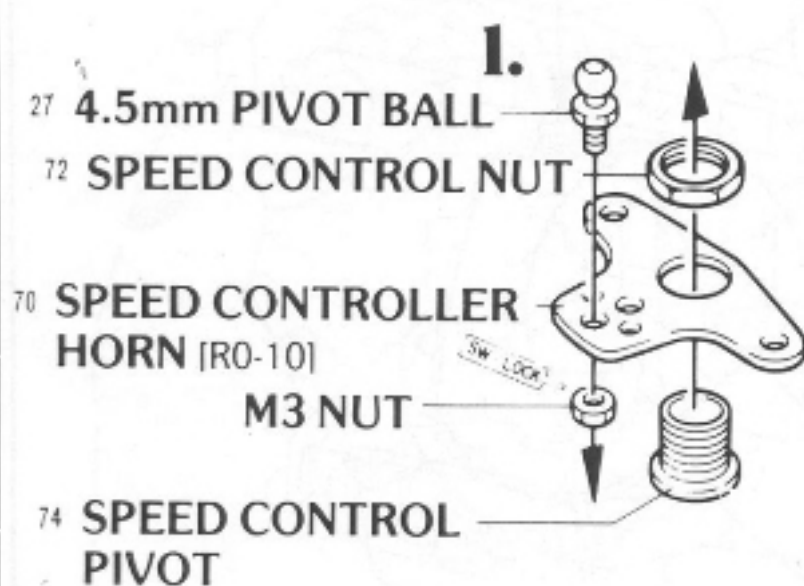
Be careful when connecting the lead wires to the speed control. Recheck to make sure that the wires that you are using have the correct polarity. If the wires are connected in reverse polarity the receiver may be permanently damaged. The colors of the lead wires are different depending upon radio manufacturer. Most use red for positive (+) and black for negative (-). The exception being Cox and Airtronics (Sanwa). Their (+) lead has a white stripe and the middle lead is (-).

2 The diode (—|—) functions as a voltage regulator to adjust the receiver voltage down from the main battery to the proper level. Do not connect the battery directly to the receiver.

Bend the terminal as shown to prevent a short circuit.

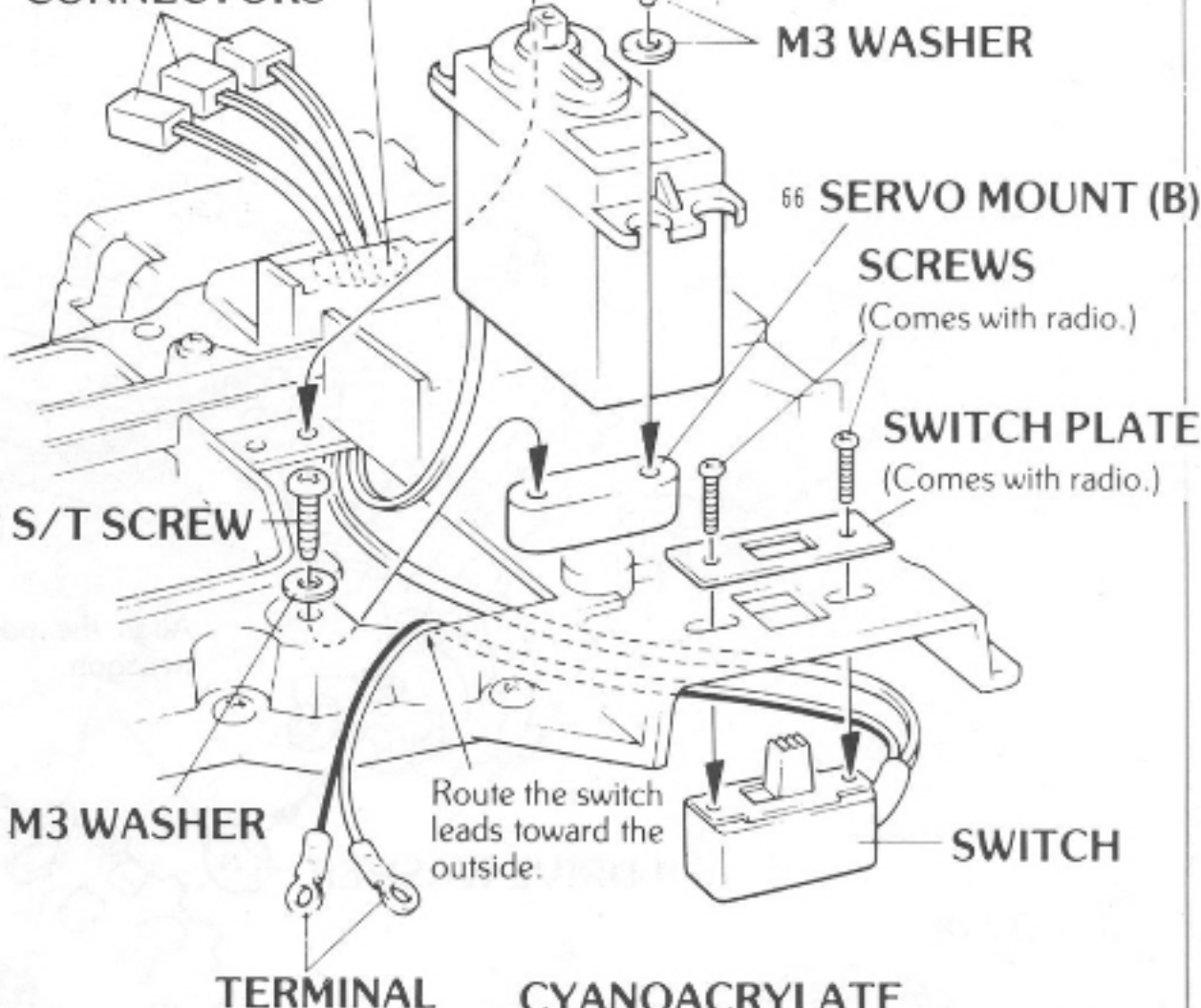


27 MOUNTING THE CONTROLLER HORN



Route the connectors of the servos and switch through this hole.

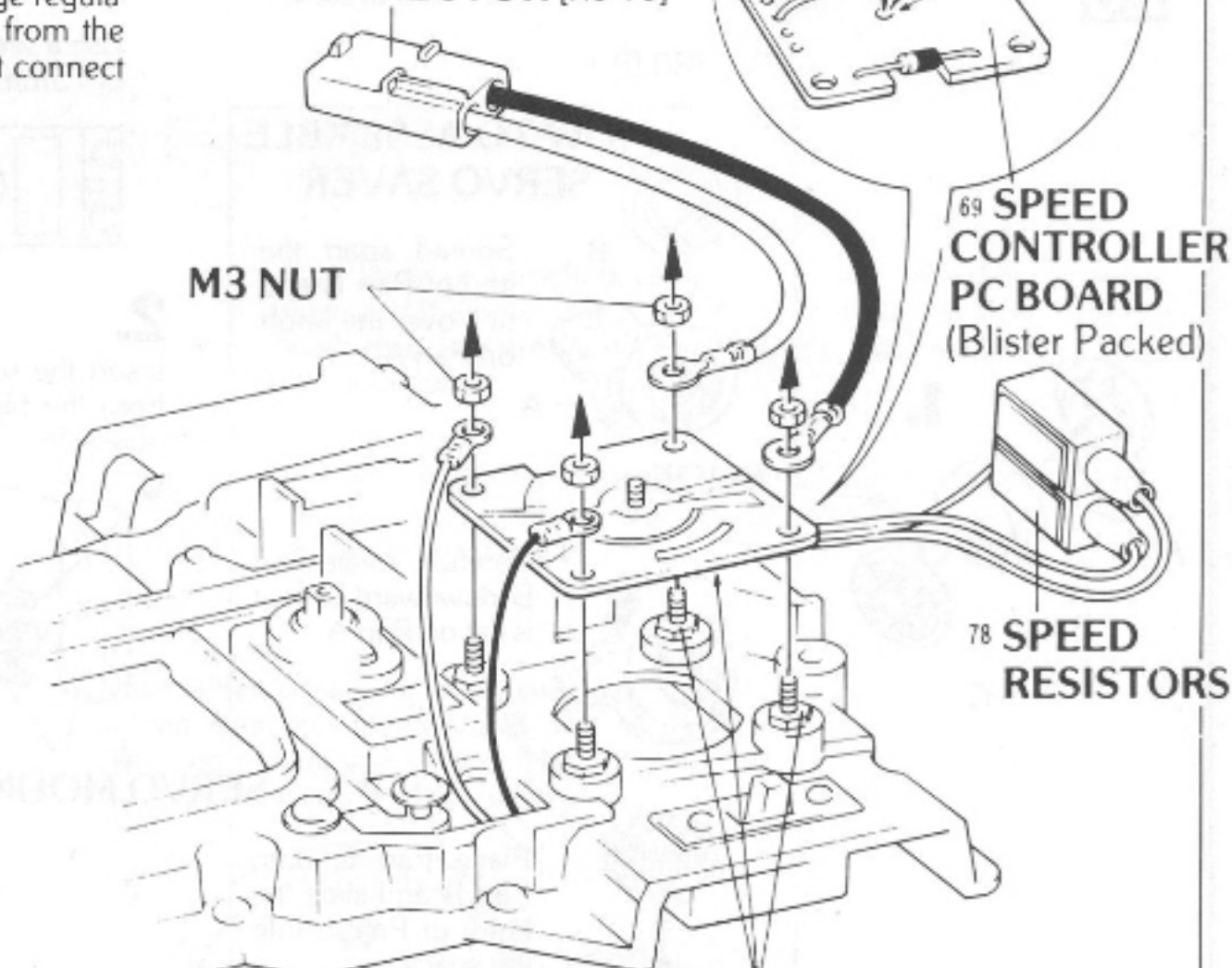
CONNECTORS



TERMINAL CYANOACRYLATE ADHESIVE (Zap, Hot Stuff)

M2.6x6 BIND SCREW

77 CONNECTOR [R0-10]

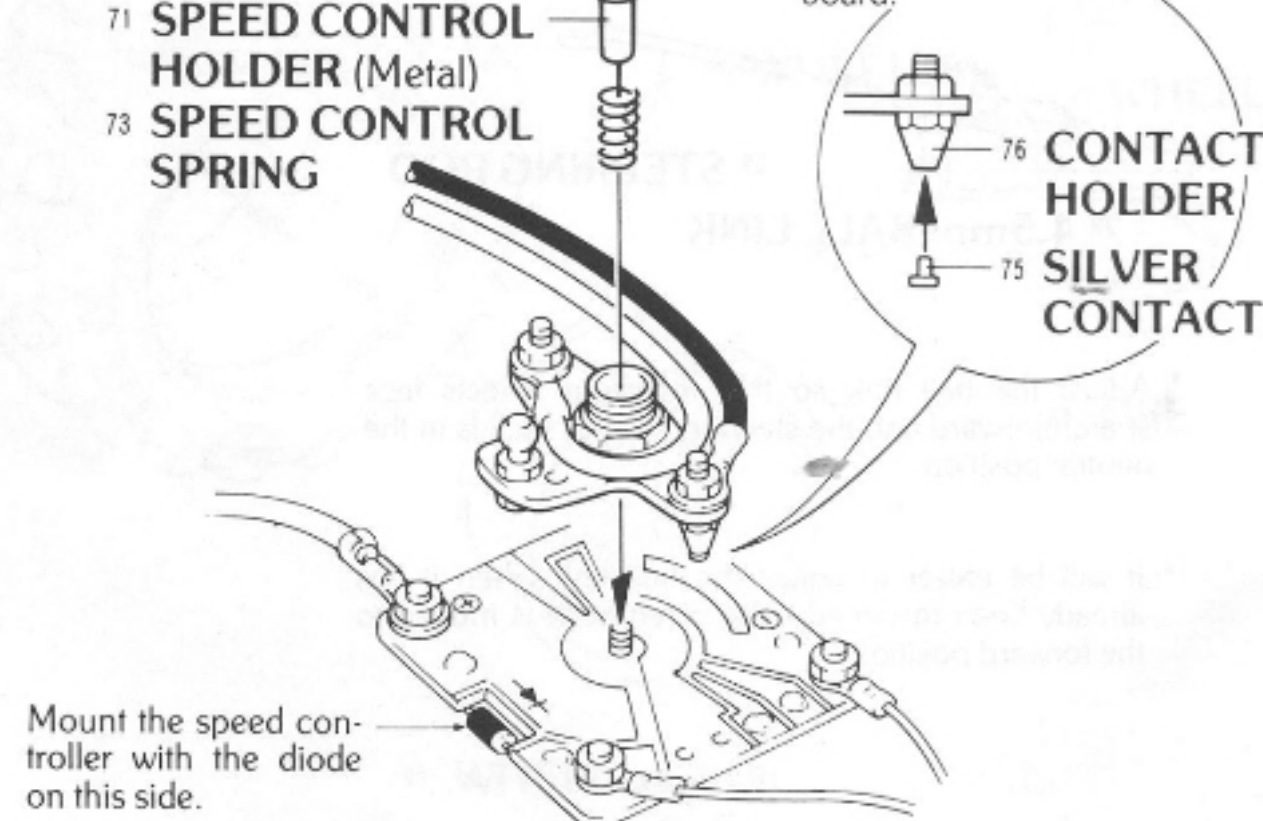


When mounting the PC board be careful not to pinch the resistor wires between the mounting bolts and PC board.

3. SLOT-HEAD SCREW DRIVER

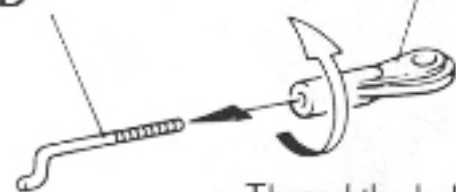
71 SPEED CONTROL HOLDER (Metal)
73 SPEED CONTROL SPRING

*It is very easy to lose the silver contacts because they are so small. Insert them last just before the speed control horn is mounted to the PC board.



28 SPEED CONTROL ROD AND RESISTOR COVER

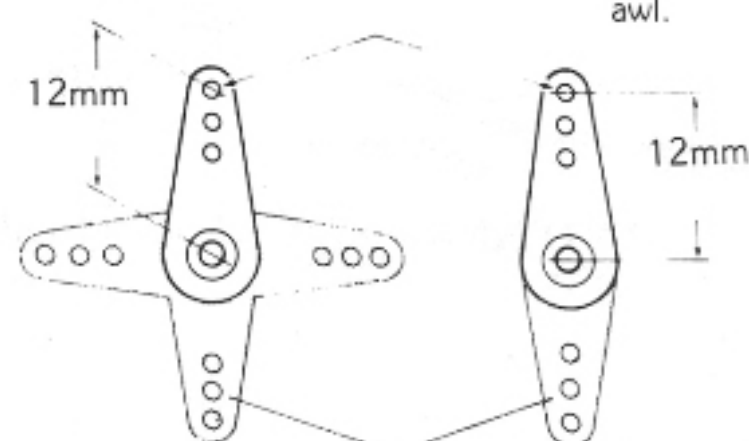
80 SPEED CONTROL ROD 28 4.5mm BALL LINK



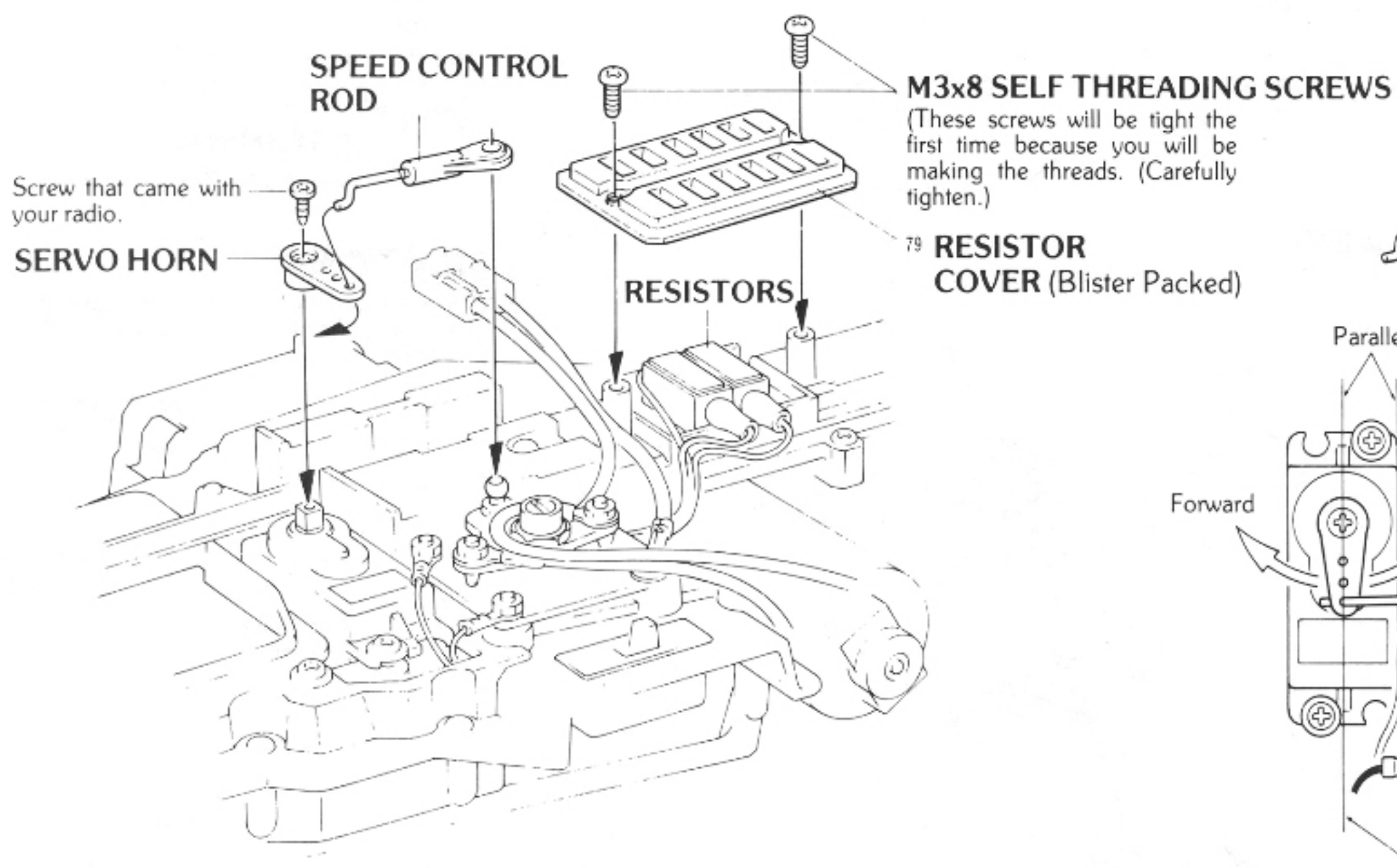
Thread the ball link onto the threaded rod.

Use a servo horn that has a hole 12mm away from center mounting hole.

Enlarge the hole that will be used for the control rod with an awl.



Cut off the shaded areas.



Screw that came with your radio.

SERVO HORN

SPEED CONTROL ROD

RESISTORS

M3x8 SELF THREADING SCREWS

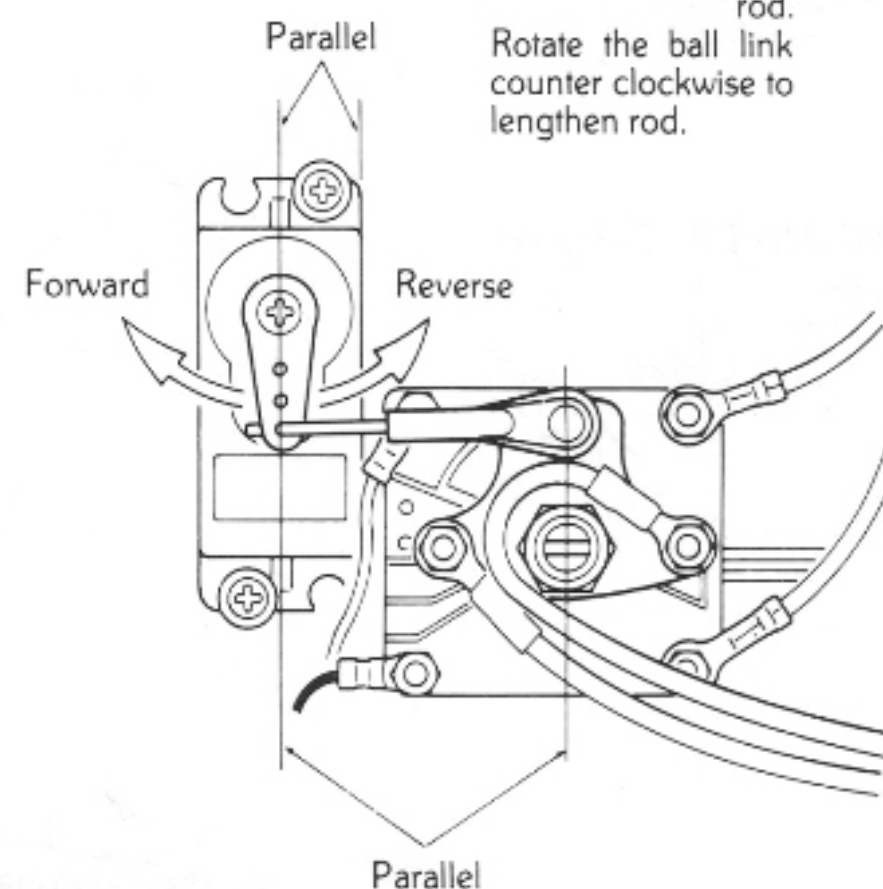
(These screws will be tight the first time because you will be making the threads. (Carefully tighten.)

79 RESISTOR COVER (Blister Packed)

Adjust the ball link to the length needed to obtain a parallel servo horn and speed control horn as shown in the drawing below.



Rotate the ball link clockwise to shorten rod.



Rotate the ball link counter clockwise to lengthen rod.

29 MOUNTING THE RECEIVER

Plug the servo and battery connectors into the receiver and check to make sure the servos are on the correct channel spot in the receiver before wrapping.

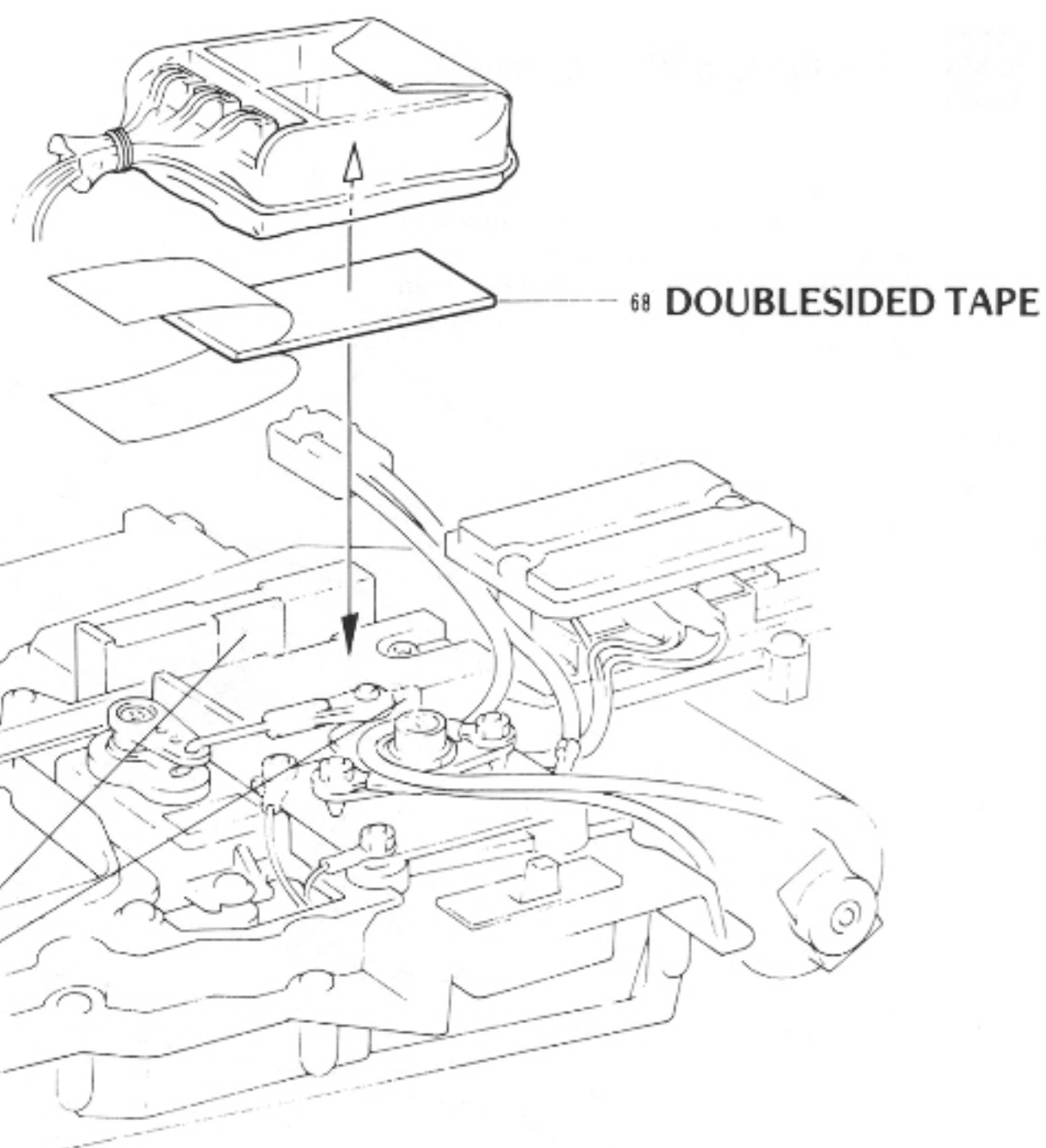
Wrap a rubber band around the end several times to seal the bag.

RECEIVER

PLASTIC BAG

Fold loose ends to the top of the package and secure them with tape.

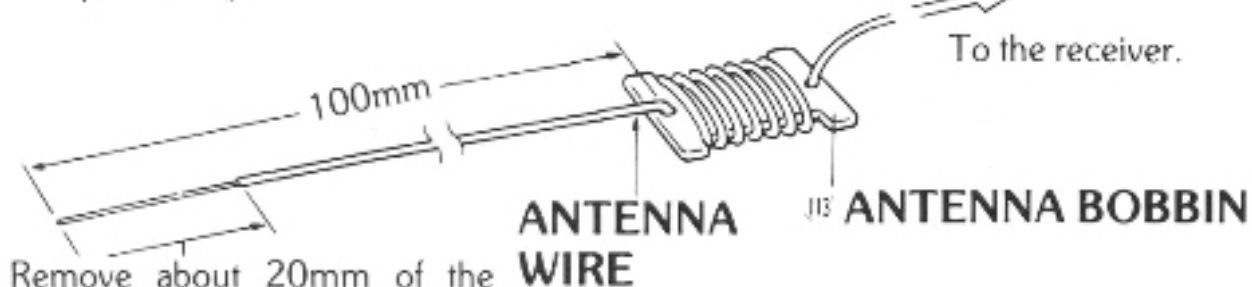
An extra cable tie (Black) should be used to secure the receiver to the frame using the holes in the frame to thread the tie through.



68 DOUBLESIDED TAPE

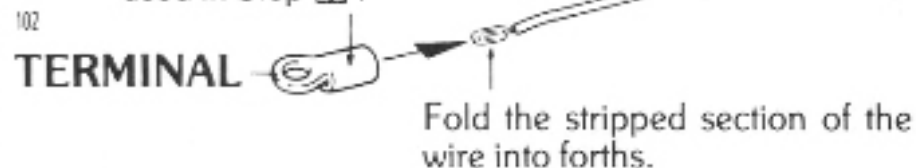
30 MOUNTING THE ANTENNA

1. Wind the antenna wire around the antenna bobbin leaving about 100mm extra on the end (unwound).



Remove about 20mm of the insulation from the end of the antenna wire. But **do not** shorten the wire itself!

2. Insert the folded section into the terminal and crimp the terminal using the same procedure as is used in Step 24.

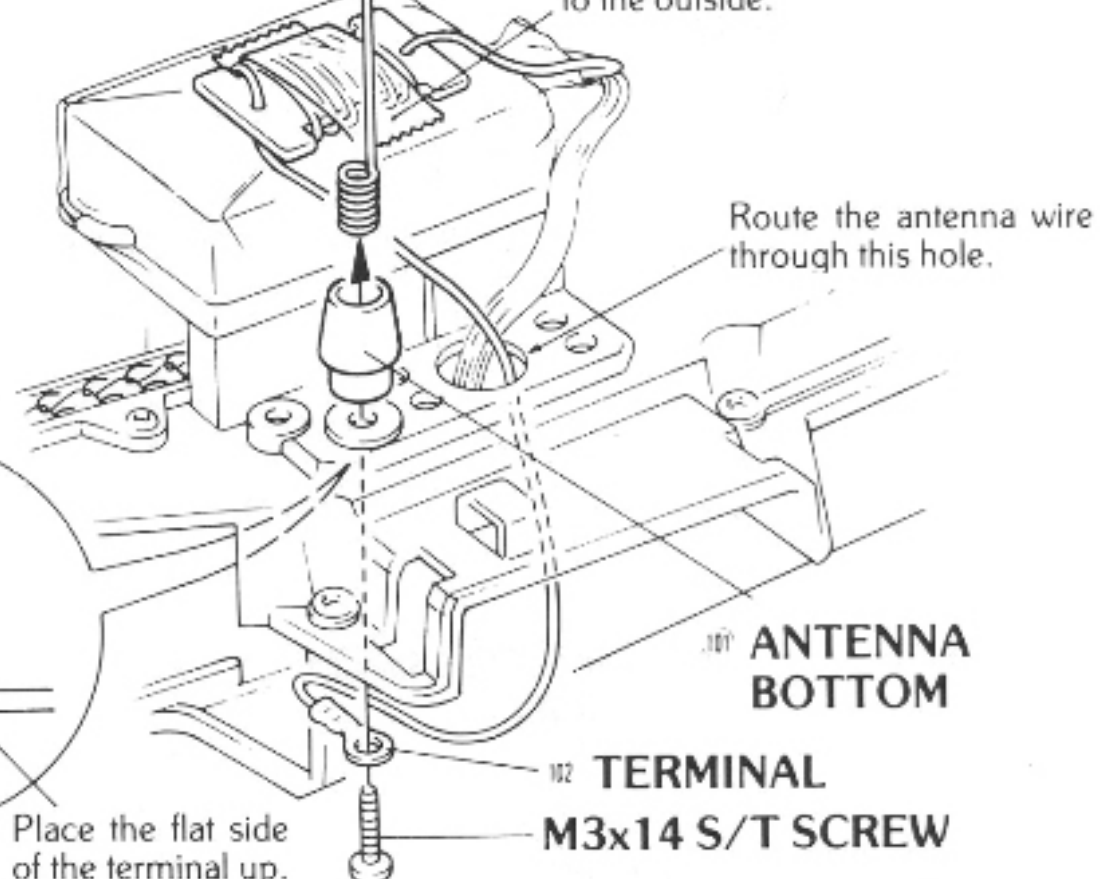


Screw the antenna top onto the antenna.

3.



Put the antenna bobbin either inside the plastic wrap or tape it to the outside.



TERMINAL

Place the flat side of the terminal up.

31 CUTTING OUT BODY & WING

Remove the shaded areas of the body with a knife, scissors or such.

3mm holes for wing mounting.

10mm hole for the antenna.

BODY MOUNTING HOLE

(Make a 5mm oval hole.)

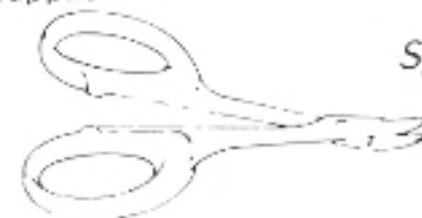


BODY MOUNTING HOLE
(Make a 5mmx5mm hole.)

105 BODY

KYOSHO

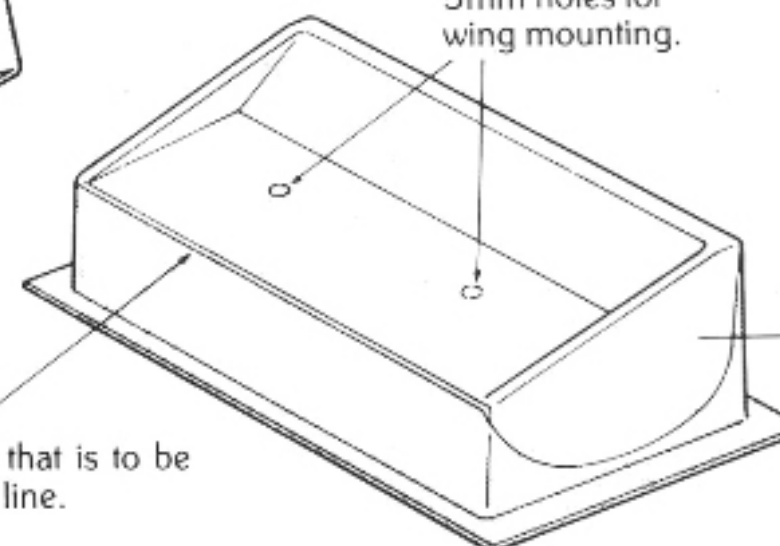
We offer special *Lexan Scissors* that make trimming bodies a breeze. See your hobby supplier.



Special Curved Blades

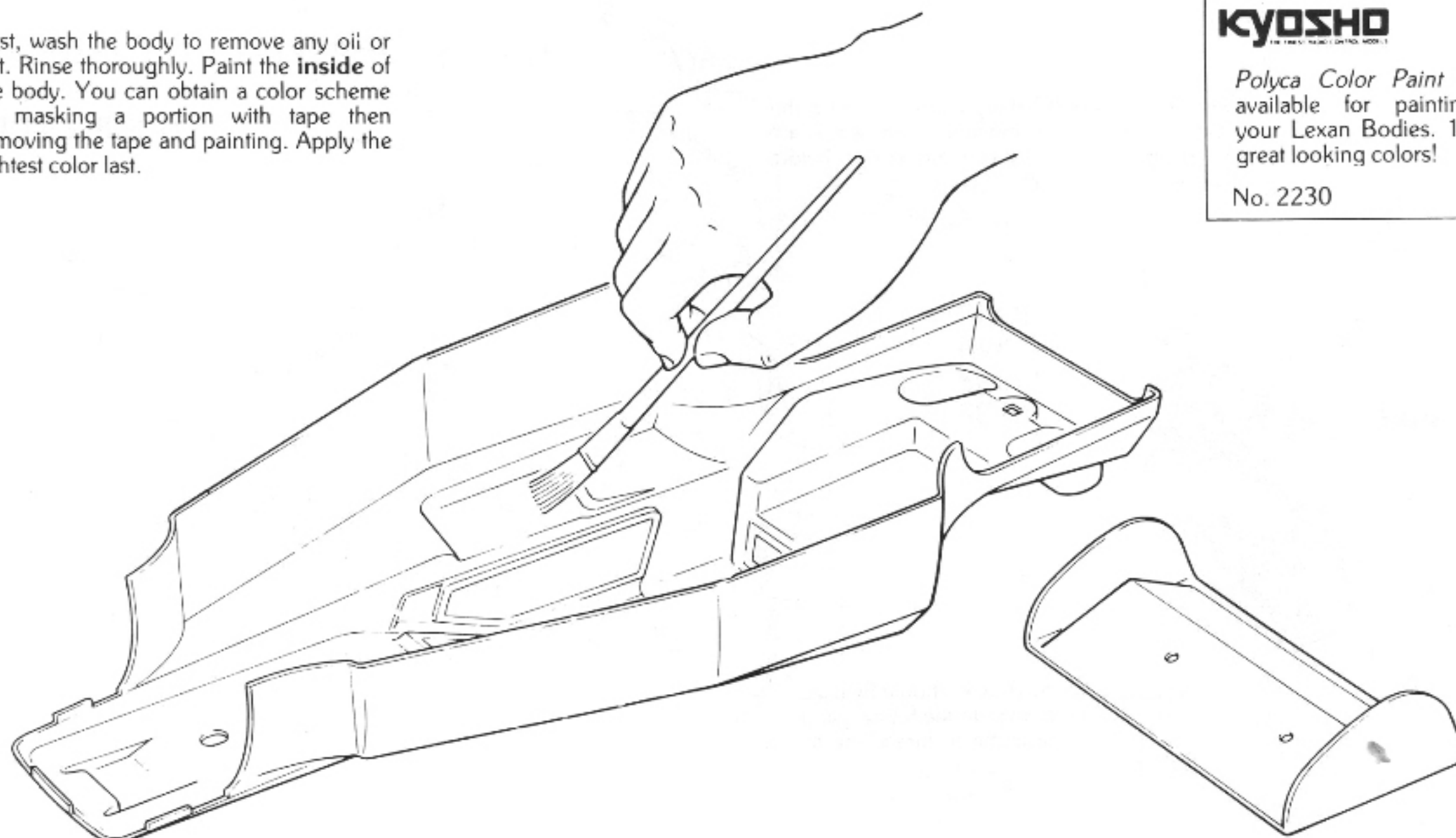
No. 1829

3mm holes for wing mounting.



32 PAINTING BODY & WING

First, wash the body to remove any oil or dirt. Rinse thoroughly. Paint the **inside** of the body. You can obtain a color scheme by masking a portion with tape then removing the tape and painting. Apply the lightest color last.



KYOSHO

Polyca Color Paint is available for painting your Lexan Bodies. 12 great looking colors!

No. 2230



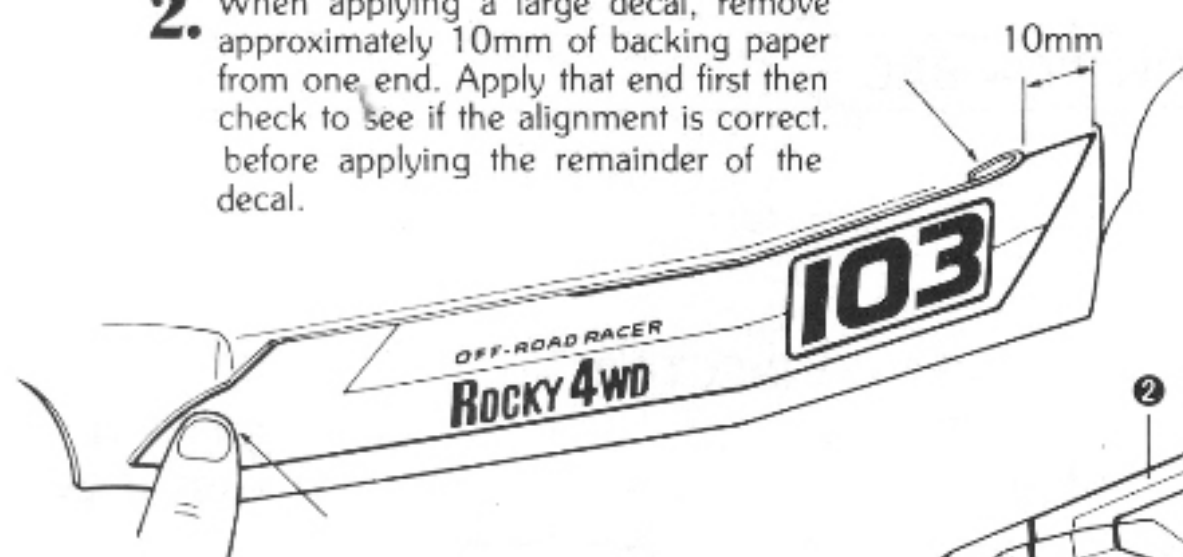
33 APPLYING THE DECALS

1. Cut as close as you can to the decal. This will produce a better finish.

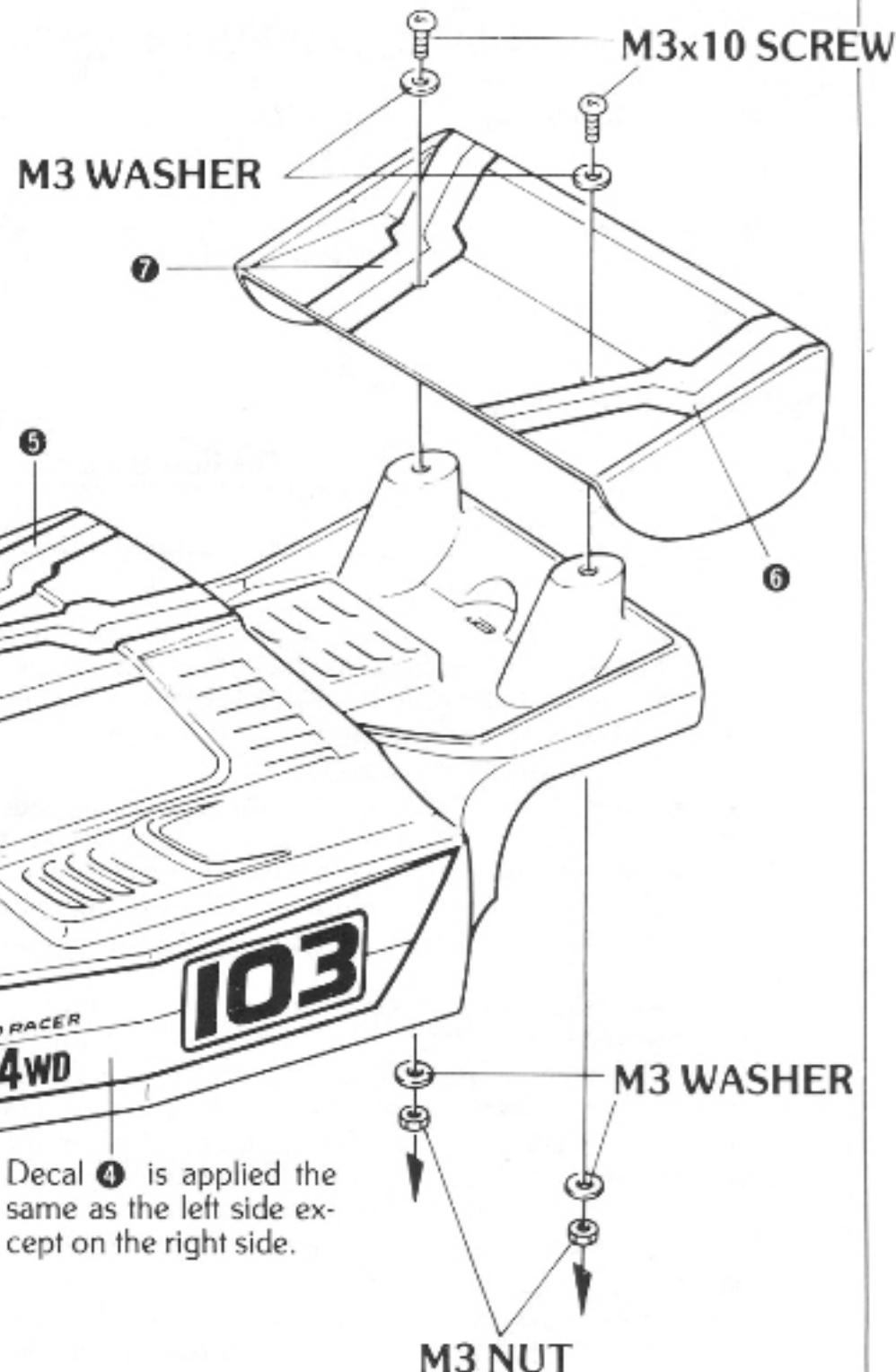
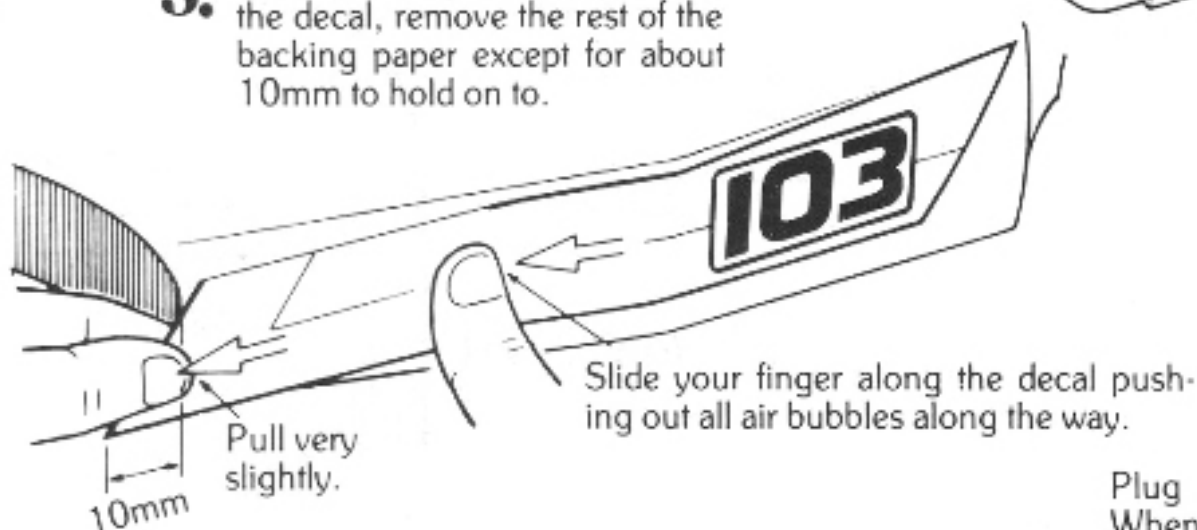


*Apply the decals using Steps 1 - 7 in order.

2. When applying a large decal, remove approximately 10mm of backing paper from one end. Apply that end first then check to see if the alignment is correct, before applying the remainder of the decal.



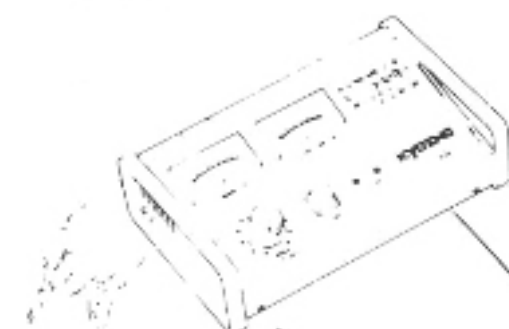
3. After deciding where to place the decal, remove the rest of the backing paper except for about 10mm to hold on to.



Decal 4 is applied the same as the left side except on the right side.

34 MOUNTING THE BATTERY

Fully charge your battery before operating your model every time.



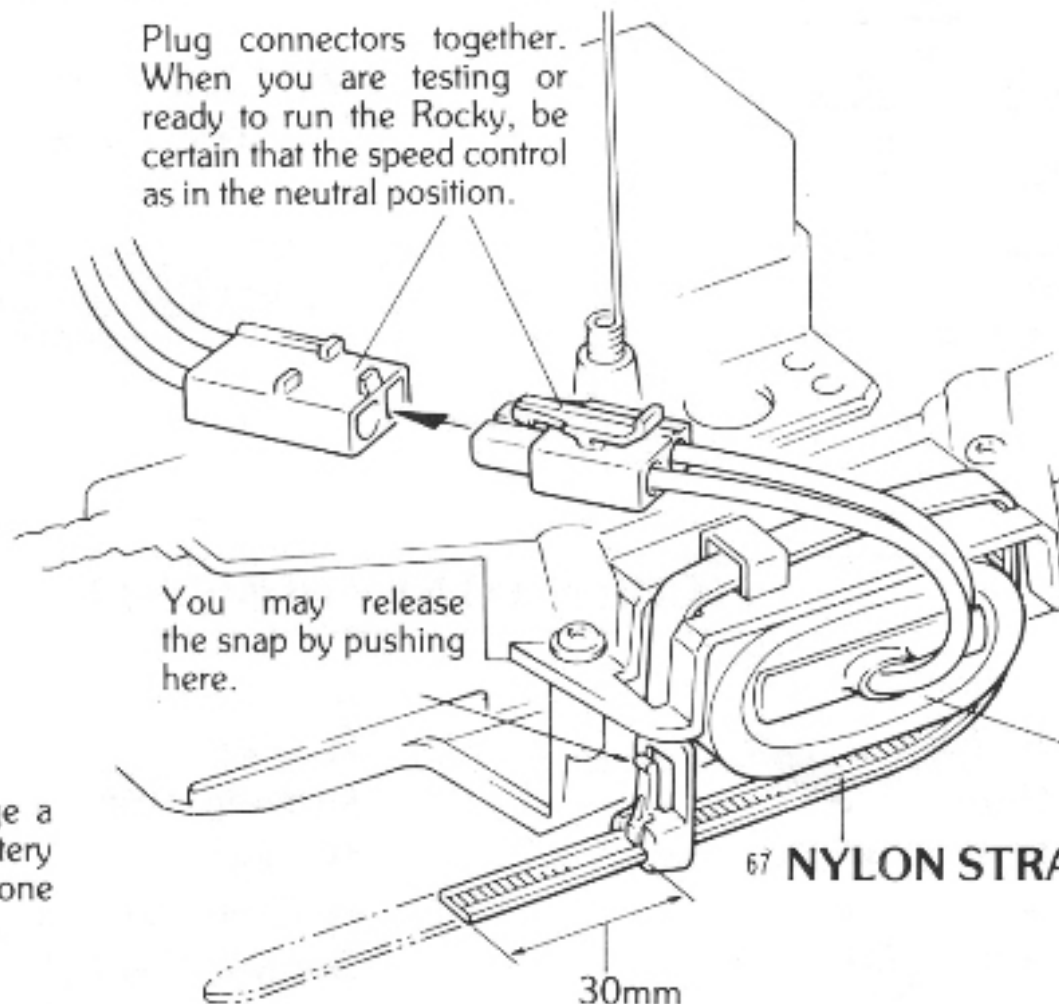
AUTO CHARGER

Quick chargers can charge a completely discharged battery pack in 15 minutes. The one you use is your preference.



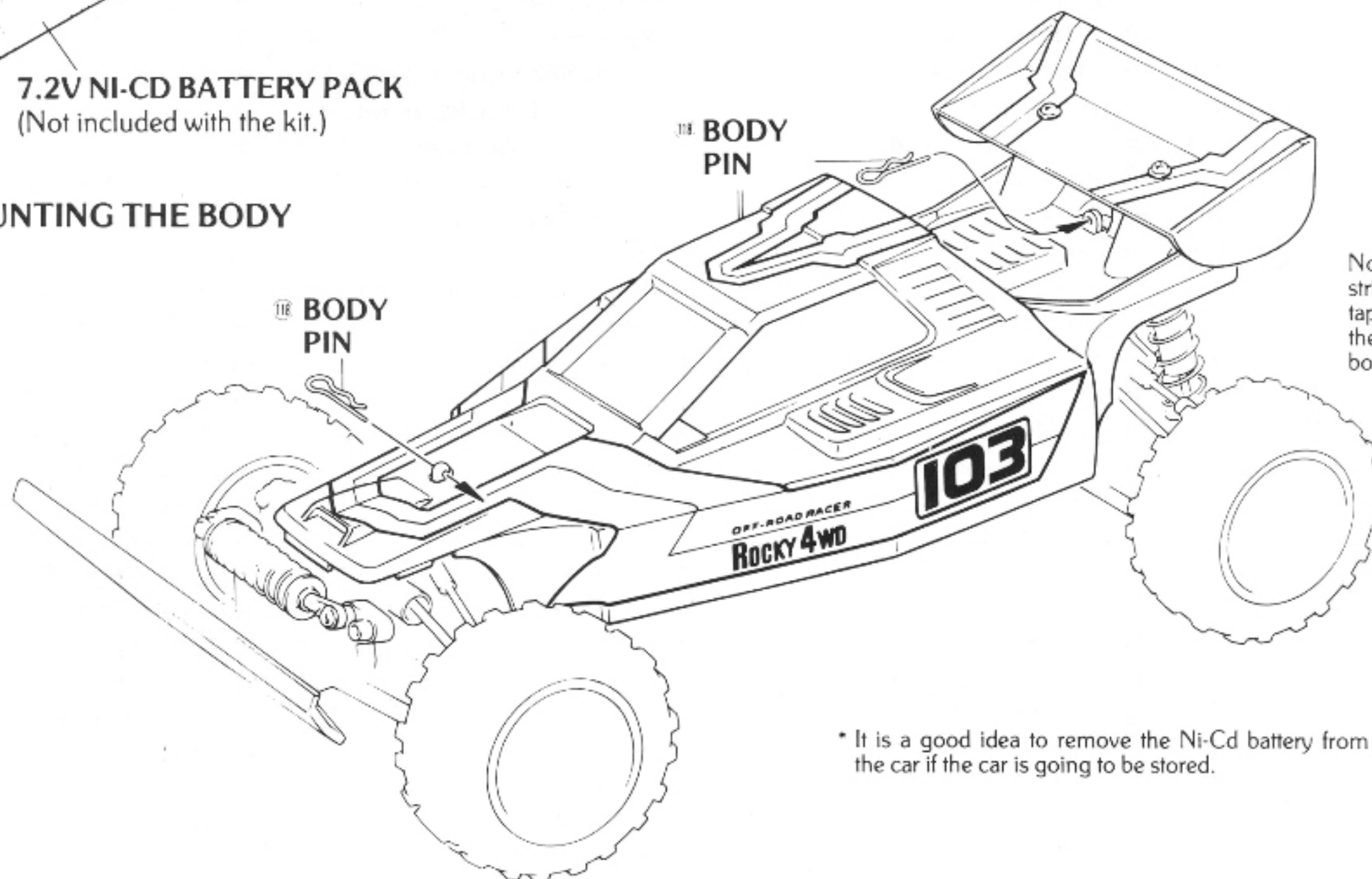
7.2V NI-CD BATTERY PACK
(Not included with the kit.)

Plug connectors together. When you are testing or ready to run the Rocky, be certain that the speed control as in the neutral position.



For maximum performance, use a high performance battery. The Kyosho 7.2V Power Battery or Racing Battery is recommended.

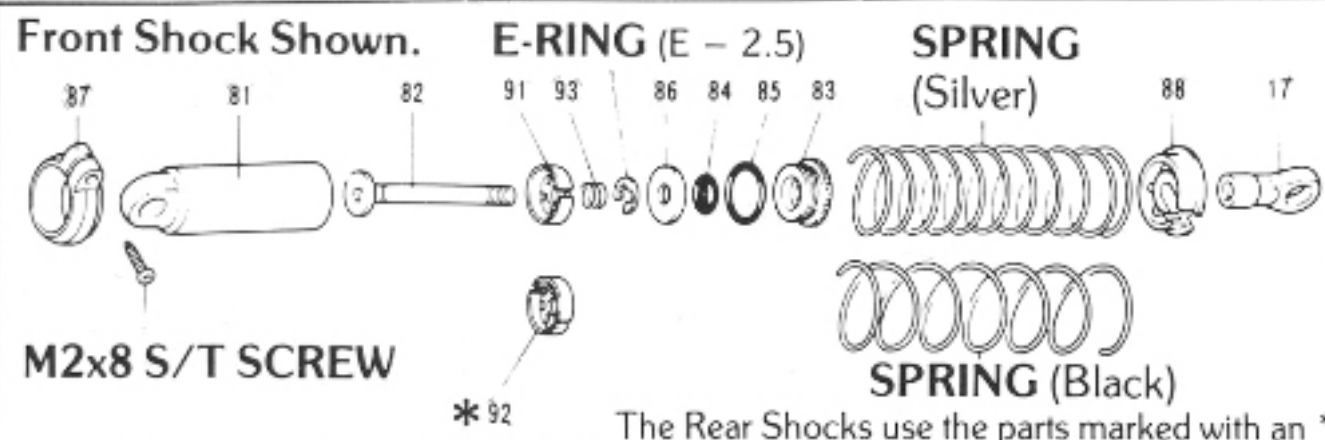
35 MOUNTING THE BODY



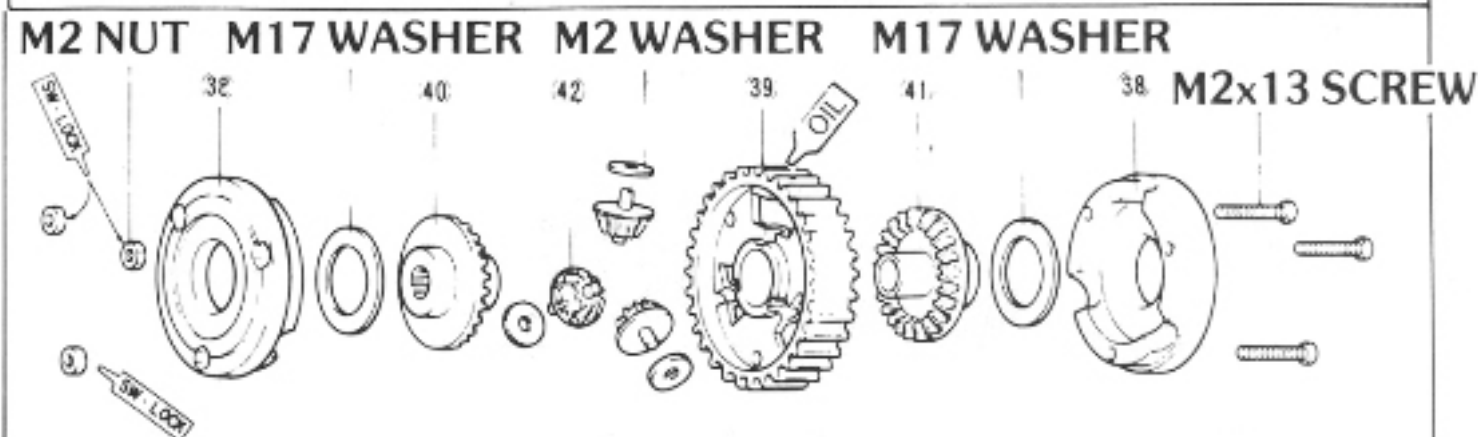
Note! We suggest that a strip of nylon reinforcing tape be used on the inside of the body just under the rear body pin mounting hole.

* It is a good idea to remove the Ni-Cd battery from the car if the car is going to be stored.

EXPLODED VIEW OF SHOCK



EXPLODED VIEW OF DIFFERENTIAL GEAR



BATTERY ELIMINATOR CIRCUITRY - BEC

What is BEC? BEC stands for Battery Eliminator Circuitry, which is exactly what it sounds like, a circuit that eliminates the need for a receiver battery. In the United States, use of the BEC system in radios is not widespread so chances are that you do not have it. But if you **do**, then read on!

The actual BEC circuitry lies within the receiver of your radio, not in your car/buggy. Some car/buggies have circuits that do eliminate the need for a receiver battery. But most cars labeled "BEC EQUIPPED" simply include a BEC type connector that your radio's switch harness plugs into. Rocky allows both methods.

The basic difference between the two is how much voltage goes to the receiver. A BEC type receiver can accept an input voltage of 7.2V and higher, depending on the state of charge of the 6-cell battery, which is where the receiver and servos get their power. In receivers other than BEC Equipped types the input voltage needs to be from 4.8V to 6V which is generally the voltage supplied by four "AA" batteries.

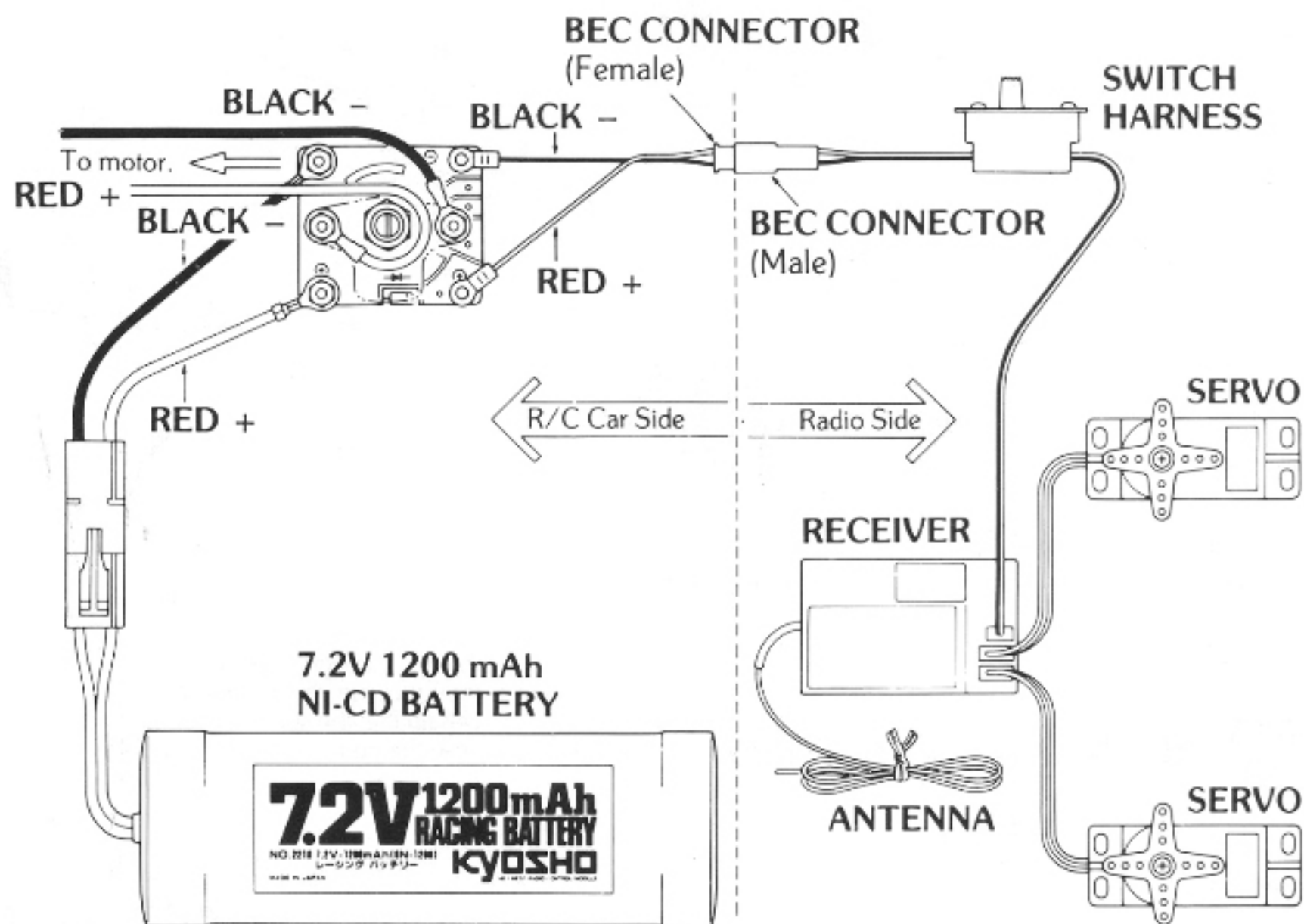
If your radio is not BEC Equipped you should use the method shown in Steps 25 and 26 to power your receiver. If your receiver is BEC Equipped, then you can use the BEC connector that is supplied with this kit. Your radio's switch harness has a matching BEC connector attached.

If the BEC connector is not already installed on the speed control, proper care should be taken when installing it. The polarity of the wires is very important and special attention should be given to get it correct. Remember to always connect Red (+) to Red (+) and Black (-) to Black (-). (Negative sides are not always black, sometimes they are white or other colors.) The BEC wires should be soldered on, where the battery wires go into the speed control.

Note, if polarity is reversed, even for an instant, permanent damage to your receiver could result. BE CAREFUL.

This diagram will help you in understanding the BEC system and how it is used on the Rocky.

For more information about the BEC system, contact your radio's manufacturer.



* Use Step 25 for installation of terminal ends on the BEC wiring connectors.

GUIDE TO KEY NUMBERS

① Front Bumper1	③① Frame1	⑥① Chain1	⑨① Shock Valve Front (5 Hole) . . .2
② Front Base1	③② Rear Gear Box1	⑥② Swing Shaft4	⑨② Shock Valve Rear (6 Hole) . . .2
③ Front Gear Box1	③③ Rear Gear Box Cover1	⑥③ Slider1	⑨③ Valve Spring3
④ Front Gear Box Cover1	③④ Side Cover1	⑥④ Chain Guide1	⑨④ Rubber Bushing1
⑤ Arm Bracket1	③⑤ Rear Suspension Arm2	⑥⑤ Servo Mount (A)2	⑨⑤ Wheel (A)4
⑥ Body Mount1	③⑥ Rear Hub2	⑥⑥ Servo Mount (B)1	⑨⑥ Wheel (B)4
⑦ Front Suspension Arm2	③⑦ Rear Shock Stay1	⑥⑦ Nylon Strap1	⑨⑦ Inner Wheel4
⑧ Arm Pin (45mm)4	③⑧ Differential Case4	⑥⑧ Double Sided Tape1	⑨⑧ Tire4
⑨ Arm Pin (30mm)4	③⑨ Differential Carrier2	⑥⑨ Speed Controller PC Board . . .1	⑨⑨ Antenna Top1
⑩ Front Hub (L)1	④① Bevel Side Gear (A)2	⑦① Speed Controller Horn1	⑩① Antenna1
⑪ Front Hub (R)1	④② Bevel Side Gear (B)2	⑦② Speed Controller Holder Metal . .1	⑩② Antenna Bottom1
⑫ Knuckle Arm (R)1	④③ Bevel Pinion Gear6	⑦③ Speed Controller Nut1	⑩③ Terminal3
⑬ Knuckle Arm (L)1	④④ Idle Gear (C)1	⑦④ Speed Controller Spring1	⑩④ Servo Saver1 Set
⑭ King Pin4	④⑤ Lock Pin4	⑦⑤ Speed Controller Pivot1	⑩⑤ Bushing (4mmx8mm)2
⑮ 5.8mm Pivot Ball4	④⑥ Front Shaft1	⑦⑥ Silver Contact2	⑩⑥ Bushing (5mmx10mm)12
⑯ Upper Rod (30mm)4	④⑦ Idle Gear (A)1	⑦⑦ Contact Holder2	⑩⑦ Body1
⑰ 5.8mm Ball Link13	④⑧ Idle Gear (B)1	⑦⑧ Connector1	⑩⑧ Wing1
⑱ Shock Stay (L)1	④⑨ Idle Shaft1	⑦⑨ 3 Speed Resistor1	⑩⑨ Thickness Gauge1
⑲ Shock Stay (R)1	④⑩ Counter Gear1	⑦⑩ Resistor Cover1	⑪① Decal1
⑳ Washer2	④⑪ Counter Shaft1	⑧① Speed Control Rod3	⑪② LeMans 240ST Motor1
㉑ Ball Bearing (5mmx10mm) . . .4	④⑫ Sprocket (18T)2	⑧② Shock Cylinder3	⑪③ Rear Wire1 Set
㉒ Center Arm1	④⑬ Sprocket (19T)1	⑧③ Piston3	⑪④ Shock Oil1
㉓ Center Collar1	④⑭ Joint4	⑧④ Piston Guide3	⑪⑤ Antenna Bobbin1
㉔ 5.8mm-M3 Ball2	④⑮ Front Wheel Shaft2	⑧⑤ O Ring3	⑪⑥ M3 Nut (Gold)2
㉕ Tie Rod2	④⑯ Drive Washer4	⑧⑥ Seal Ring3	⑪⑦ 1.5mm Allen Wrench1
㉖ 5.8mm Ball7	④⑰ Rear Wheel Shaft2	⑧⑦ Washer3	⑪⑧ BEC Connector1
㉗ 4.5mm Pivot Ball2	④⑱ Pilot Shaft2	⑧⑧ Spring Holder (B)3	⑪⑨ Screw Locking Compound . . .1
㉘ 4.5mm Ball Link2	④⑲ Pinion Gear (14T)1	⑧⑨ Spring Holder (A)3	⑫① Body Pin2
㉙ Steering Rod1	④⑳ Motor Base1	⑧⑩ Spring (Front)1	⑫② Joint Spring2
㉚ Deck Plate1	⑤① Base Plate1	⑧⑪ Spring (Rear)2	

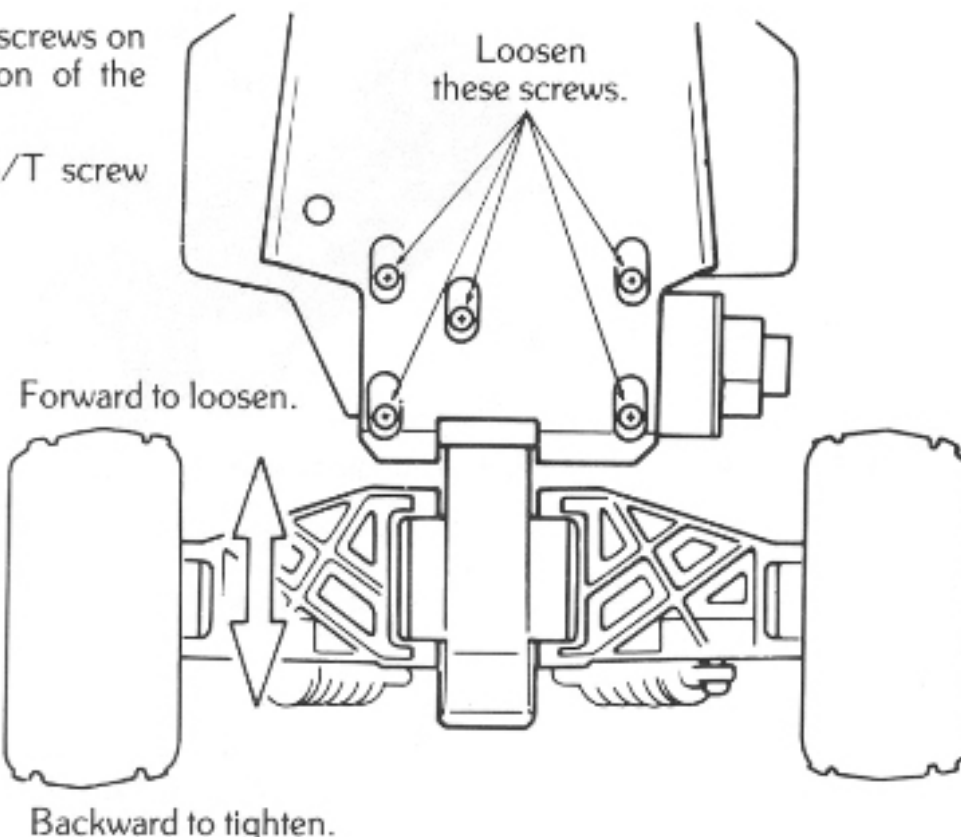
BASIC ADJUSTMENT GUIDE FOR THE OFF-ROAD RACER ROCKY 4WD

When the Rocky is assembled you will need to adjust or check the adjustment of the following items:

ADJUSTMENT OF CHAIN TENSION

*Loosen the five S/T screws on the bottom rear portion of the frame.

*There is also one S/T screw on the top.

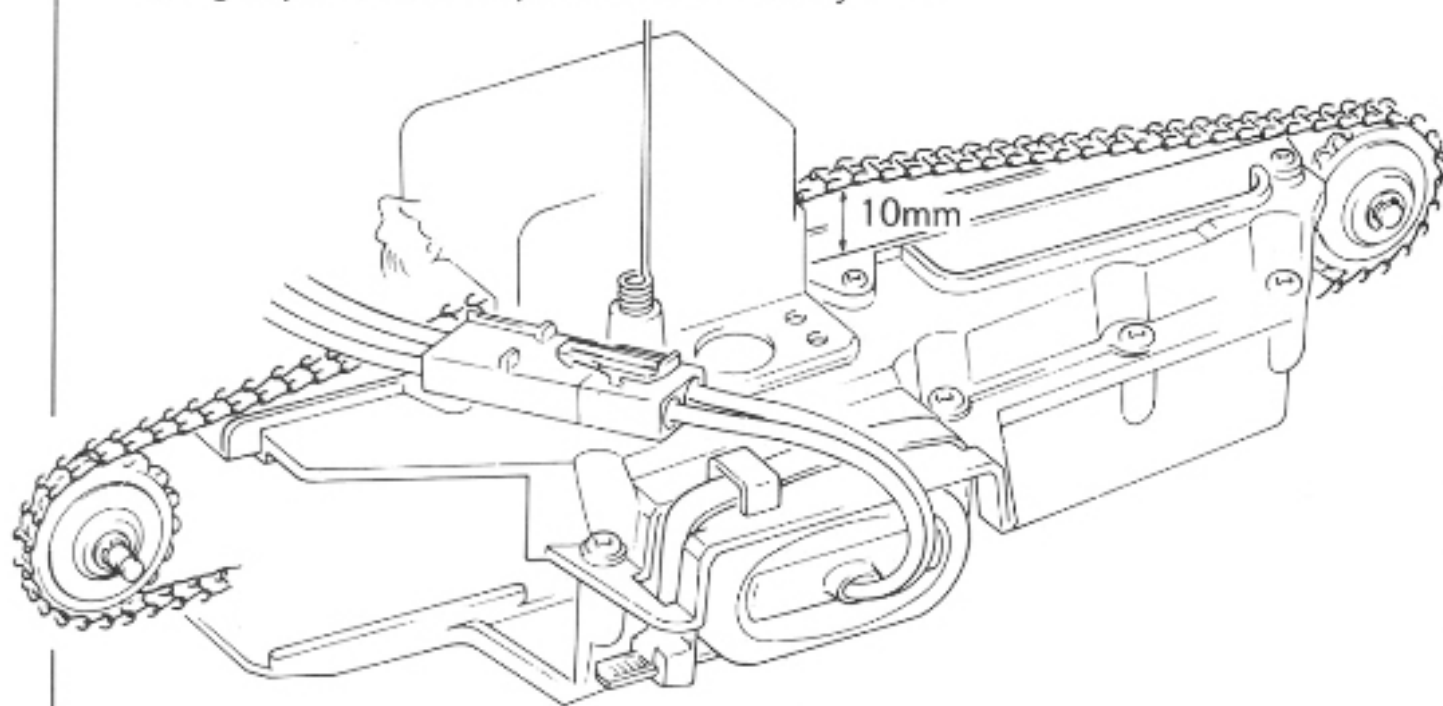


The receiver will need to be removed to loosen the chain.

To adjust chain tension, move the rear gearbox backward or forward.

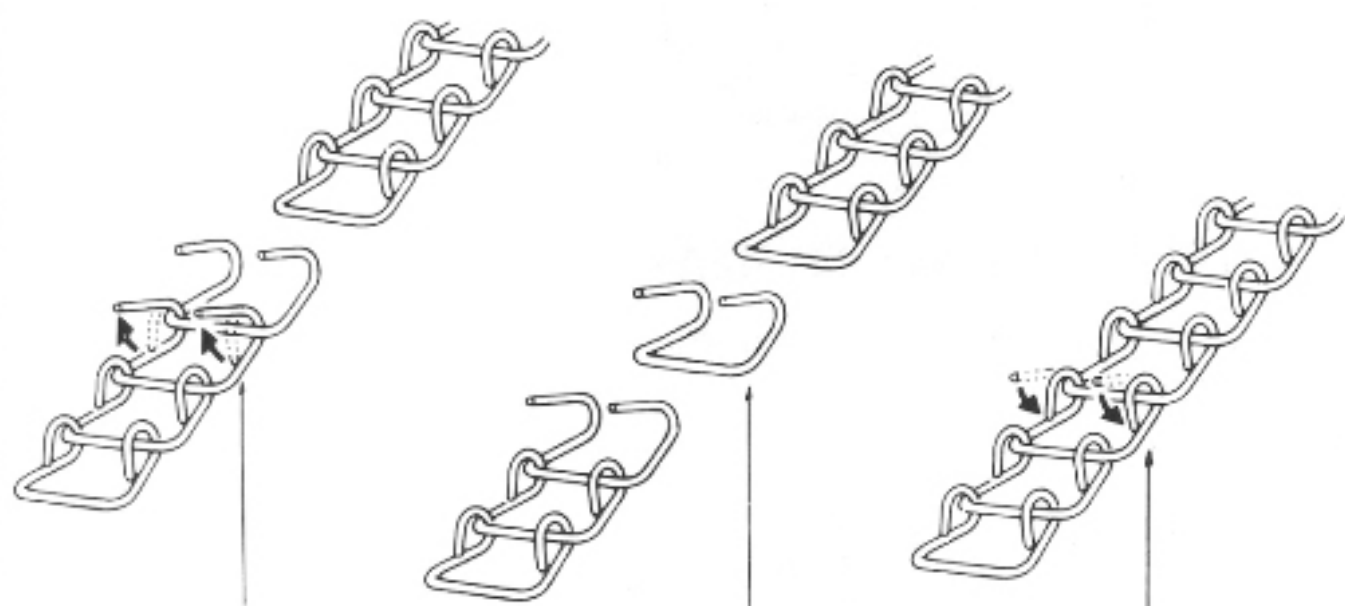
THE IDEAL CHAIN TENSION

Set the chain tension so that it can be lifted 10mm at the center of the slider. This will give you a smooth operation of the drive system.



If the chain is too tight, it will decrease the power output and shorten the run time. It may also cause motors and speed controls to overheat. If the chain is too loose, it will flop around and not deliver as much power as it should.

During use, the chain will loosen up. This is normal and can be expected. Check the tension from time to time. When the chain has been stretched beyond adjustment, remove one link out of the chain and readjust the tension.



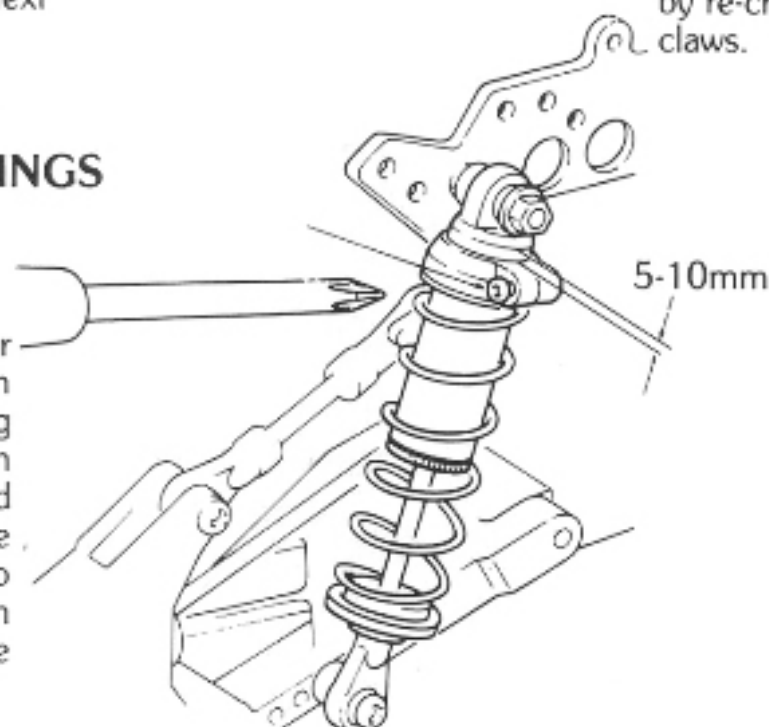
A) Lift up the two claws on one link and the one next to it.

B) Remove the link.

C) Connect the chain by re-crimping the claws.

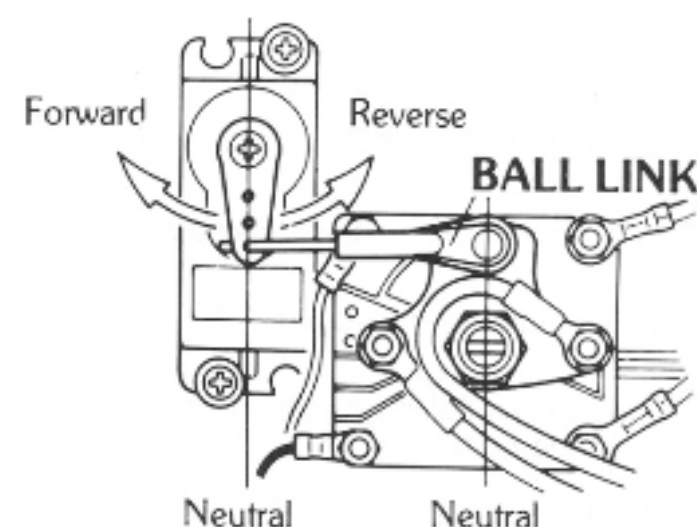
ADJUSTMENT OF SUSPENSION SPRINGS

Loosen the screw for adjustment of suspension springs. Slide the spring holder (B) up or down until you reach the desired setting. Do not raise the holder too high. Be sure to leave between 5-10mm from the top rim of the shock cylinder.



ADJUSTMENT OF SPEED CONTROLLER

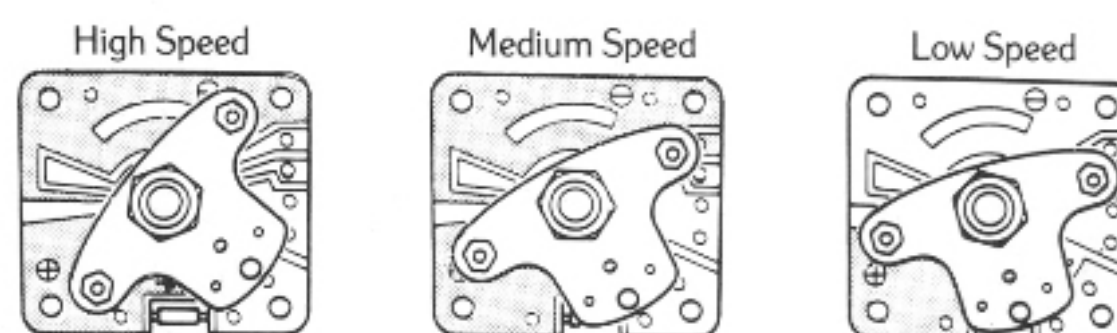
Plug in the 7.2V Battery Connectors and operate the throttle. Adjust the linkage until the servo horn is parallel to the speed control horn.



Place a small box under the frame to keep the wheels off the ground while adjusting the speed control.

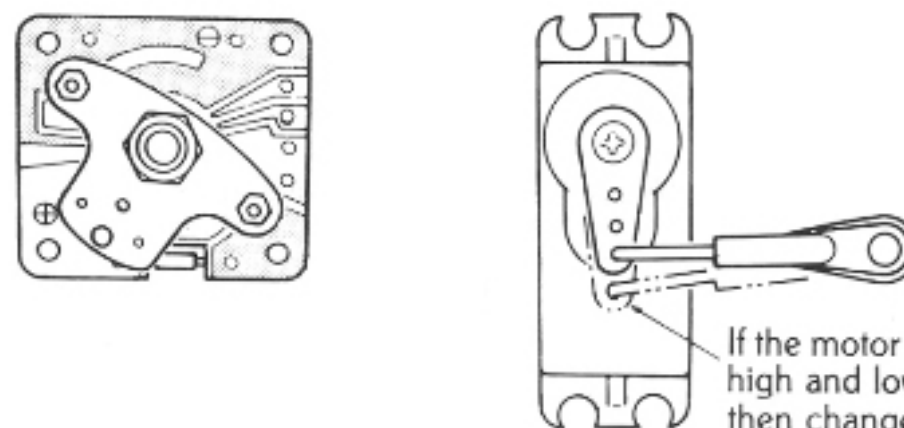
① ADJUSTMENT OF HIGH SPEED

When the throttle is fully advanced the controller should activate the motor at high speed. By listening to the motor, you should be able to tell what speed the motor is at.



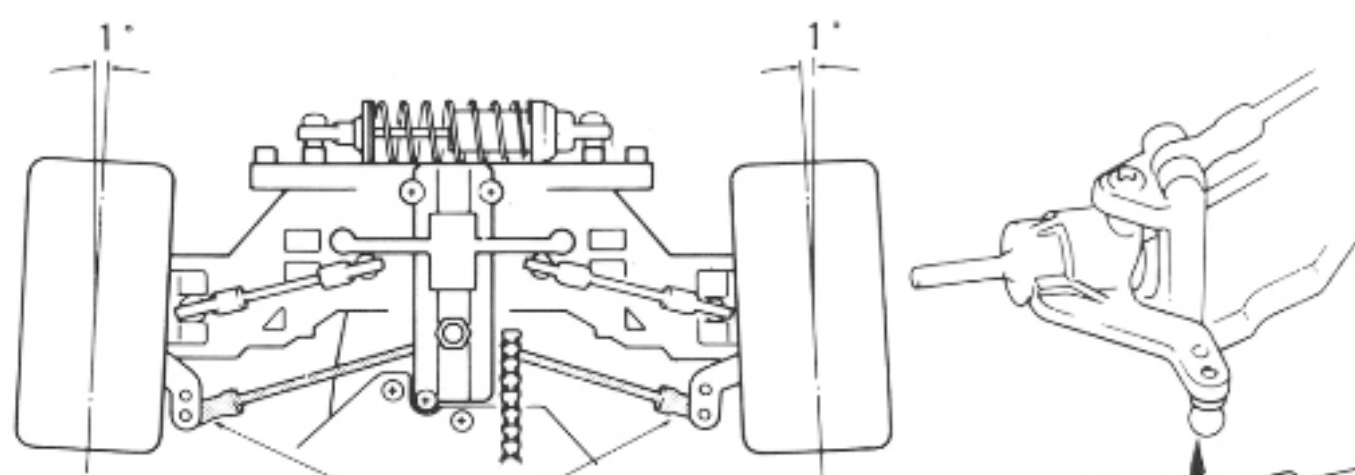
② ADJUSTMENT OF LOW SPEED

When the throttle is fully retarded motor should run in reverse.



If the motor does not run in both high and low speed and reverse then change the control horn to a larger one to achieve enough movement.

TOE-IN ADJUSTMENT



Adjust the toe-in angles of the wheels with the rod ball links to achieve approximately 1 degree of toe-in.

Rotate the ball links in or out to the desired length.

OILING

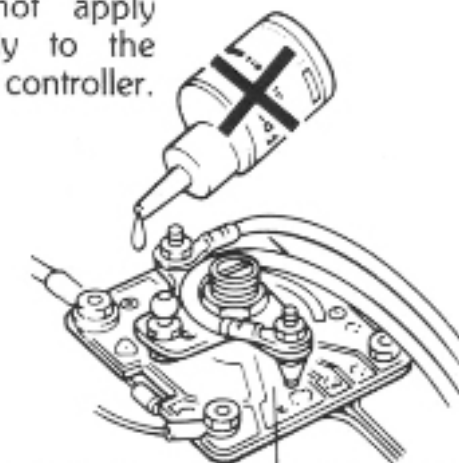
① Applying a small amount of light oil such as Frontier Hobby Oil to the shafts, bearings and ball joints. Wipe off any excess oil with a cloth. Do not use heavy oil or grease as this type attracts and retains mud and dirt while running the car.

Kyosho #1883 Frontier Hobby Oil



Do not apply directly to the speed controller.

② Do not oil the speed controller directly. This may short circuit your speed control and cause damage. If you feel the speed controller needs lubrication, wipe the PC Board with a cloth lightly dampened with oil.



SPEED CONTROLLER

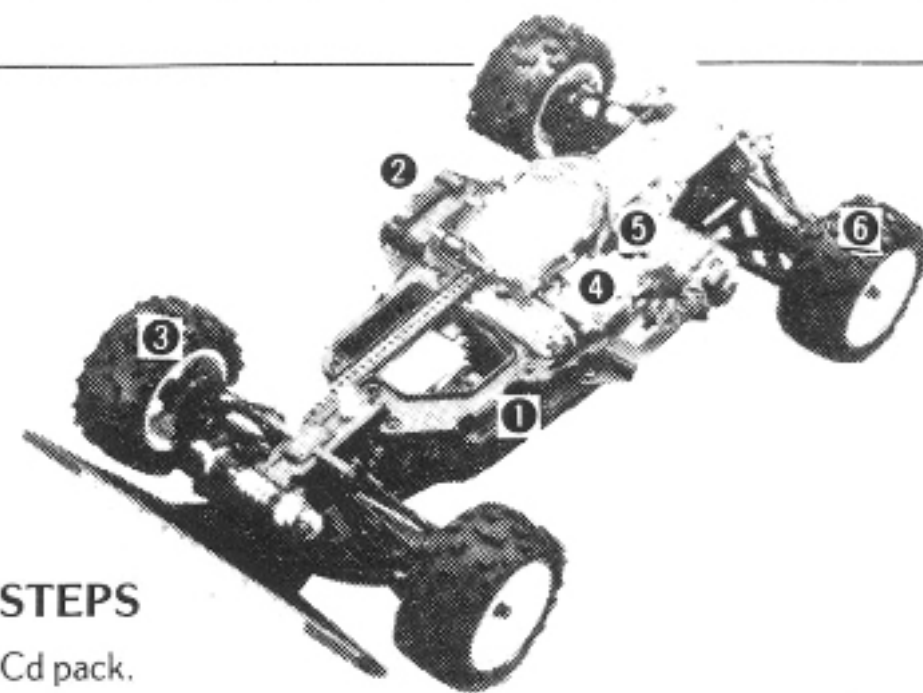
CHECKING BEFORE RUNNING

Before running the car, check the parts in order using the picture as a reference.

★ On the first time, operate the car slowly. Check to make sure the car is operating correctly. Look for nuts, screws and bolts loosening up and tighten as necessary.

- 1 Check to see if all nuts and bolts are securely tightened.
- 2 Check to see if the batteries for the transmitter, receiver and motor are fully charged.
- 3 Check to see if the front wheels steer in the direction that the transmitter control stick is moved.
- 4 Also check the forward and reverse controls to see if they properly work in the correct directions.
- 5 Make sure all wires are properly insulated with all wiring routed that it will not get caught or rub on any moving parts.
- 6 Check to see that the rear and front wheels can easily be turned by hand.

★ The receiver battery and servos in Rocky are powered from the same battery which drives the motor. If the car slows down considerably, stop the car and turn off the receiver. If you continue to run the car, the battery will get so low on power that you will lose control of it.



OPERATING STEPS

- A Install main Ni-Cd pack.
 - B Turn transmitter switch to the on position.
 - C Turn the receiver switch to the on position.
 - D Check to make sure the controls work in the proper directions. (Right and left, forward and reverse.)
- ★ When turning off the switches, turn off the receiver switch before the transmitter switch. This will keep the speed control from jumping in to forward or reverse if the transmitter was turned off before the receiver.

TIPS FOR RUNNING ROCKY

STEERING ADJUSTMENTS

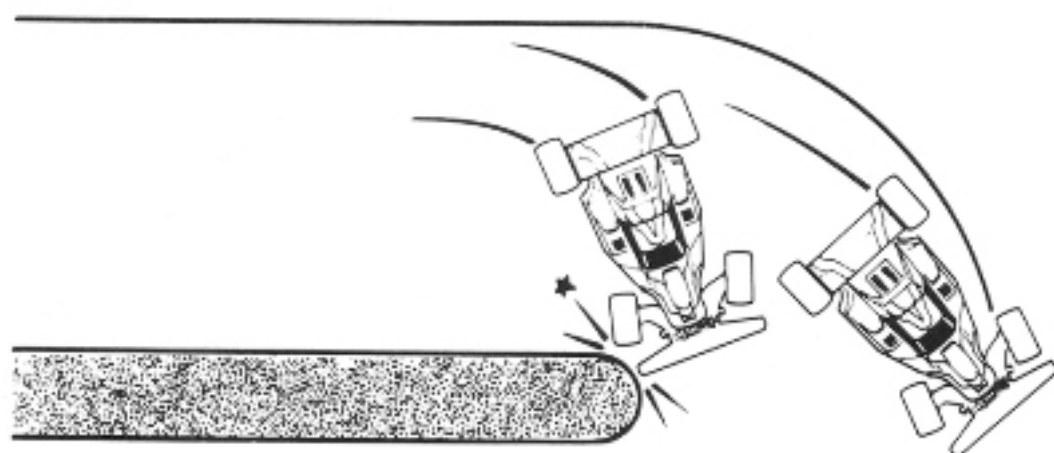


1 If the car has the tendency to wander without any inputs from you, check these items:

- Increase the toe-in for more stable tracking.
- Check all steering linkages for looseness and correct if necessary.

2 If the car is uncontrollable and spins out.

- Again, check the linkage. Any looseness or stiffness will reduce the performance of steering response.
- Check the steering throw of the wheels (reduce the amount).

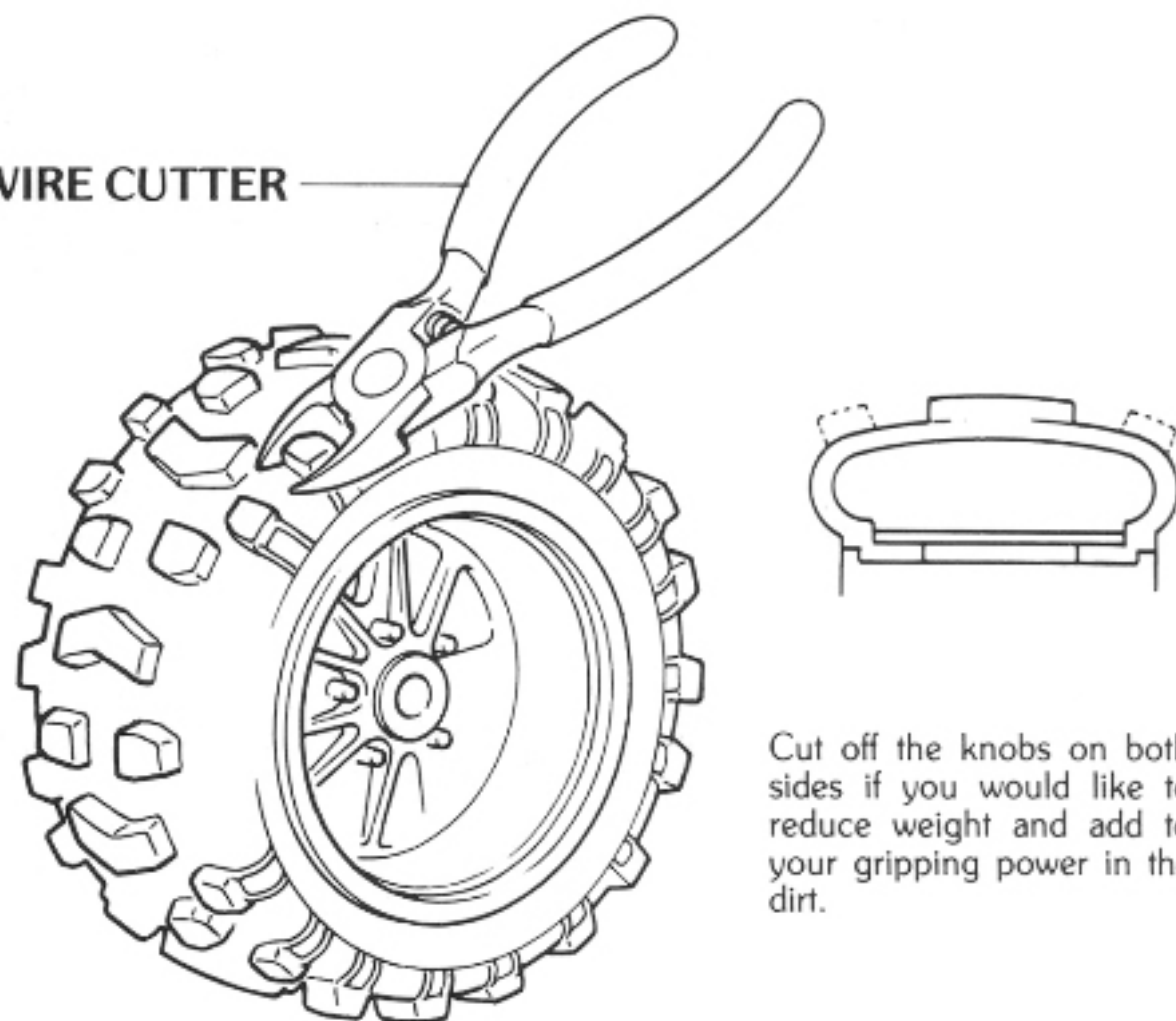


If the car has a tendency to be very sensitive to your steering inputs, reduce the amount of steering throw until you get used to it. Also, you might notice that if you slow down your speed, the car will turn sharper than at a high speed. With some practice, you will be able to judge just how much speed and steering input you will need to round the corners.

TIRES

The #RK-15 Tires are designed as an all-around tire. The side knobs are very important in regard to the traction. When they become worn, the traction is reduced. To increase the traction remove the side knobs. This puts all of the power on the remaining center knobs for more "bite".

WIRE CUTTER

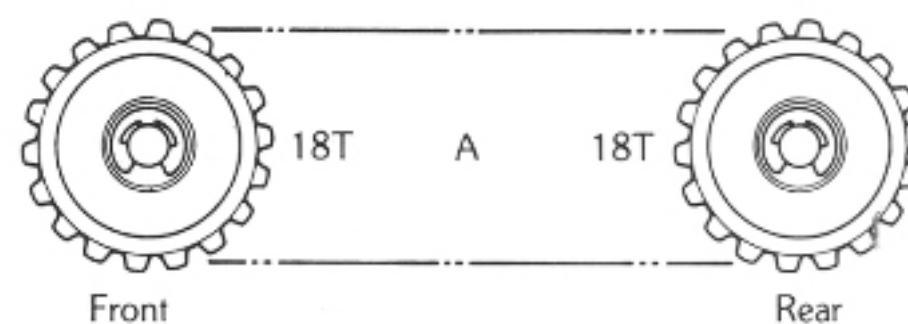


Cut off the knobs on both sides if you would like to reduce weight and add to your gripping power in the dirt.

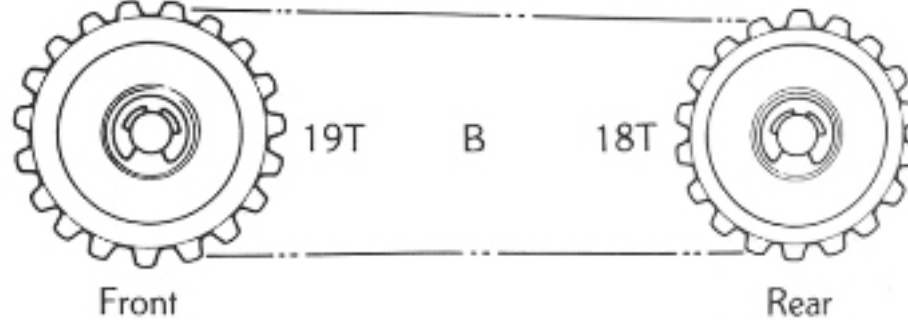
ALTERING FRONT TO REAR POWER BIAS

To alter the traction between the front and rear tires, you can change the size of the sprockets.

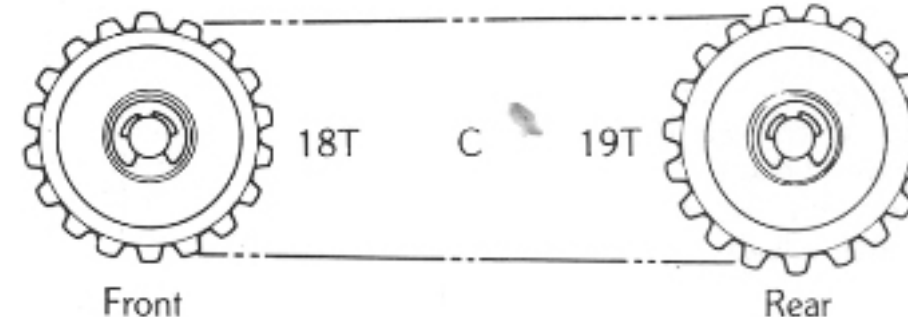
A. Normal: Front and rear turn at the same rate.



B. Rear wheels have slightly more power.

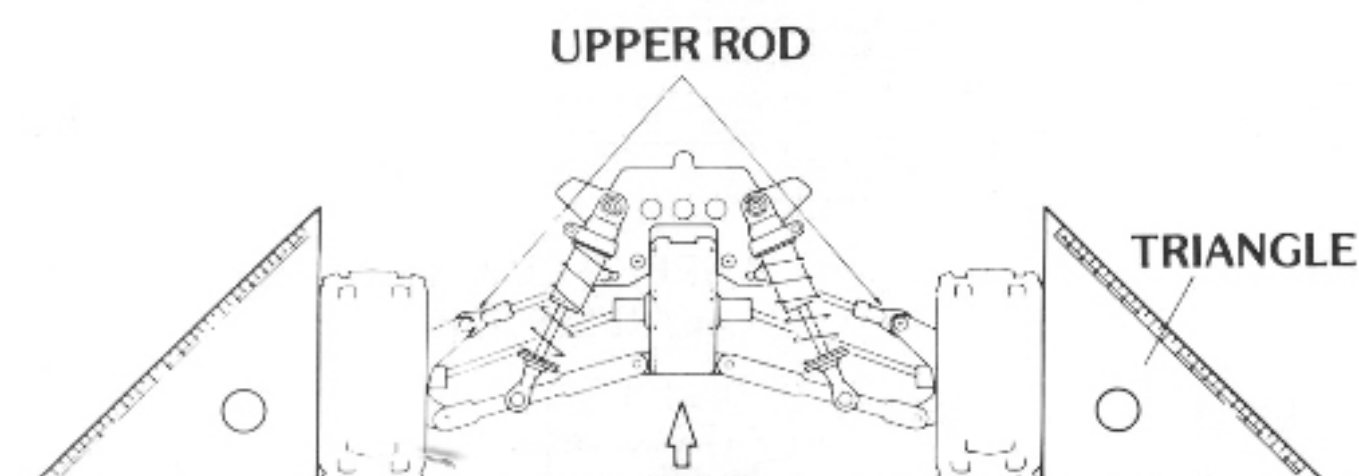


C. Front wheels have slightly more power.

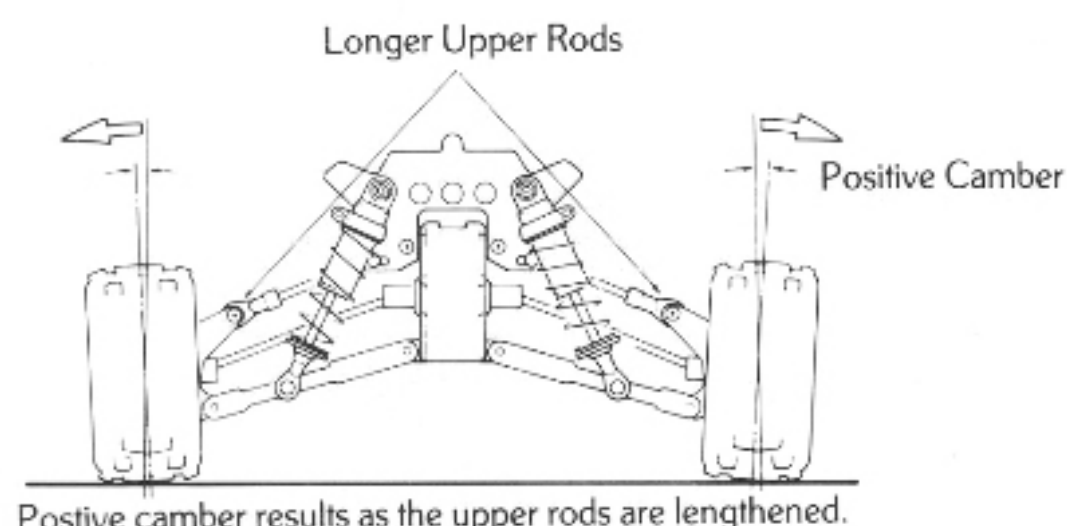
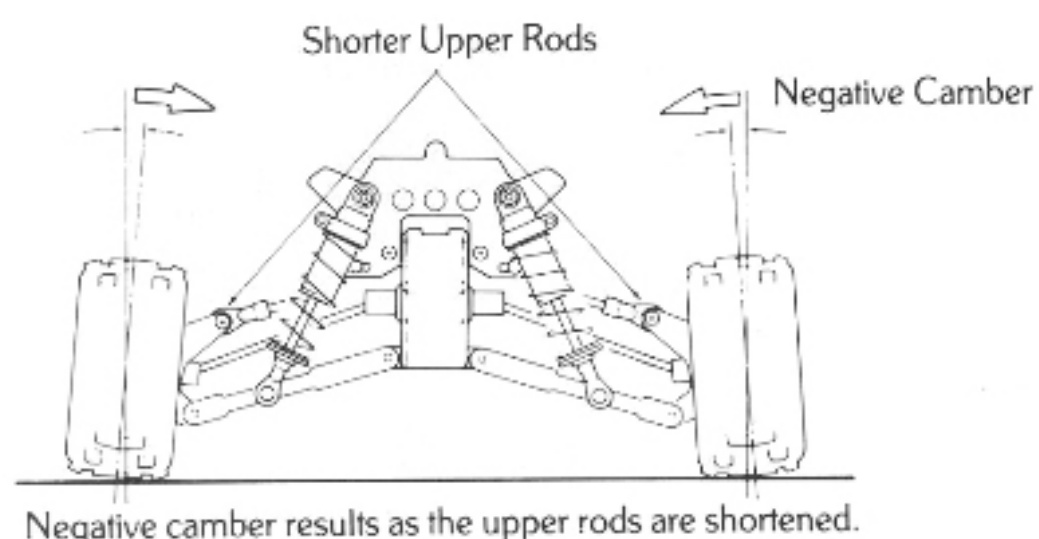


CAMBER ADJUSTMENT

Note: make this adjustment with the car at full racing weight (i.e. battery, radio equipment and body installed).



Place the car on a flat surface with the chassis raised as high as necessary and adjust the length of the upper rod in such a way that the tires stand at right angles to the ground.



WARNINGS BEFORE RUNNING THE CAR

The electric R/C car powered by a highly efficient Ni-Cd battery runs unexpectedly fast. So great care is required when you handle the car and the battery so drive carefully.

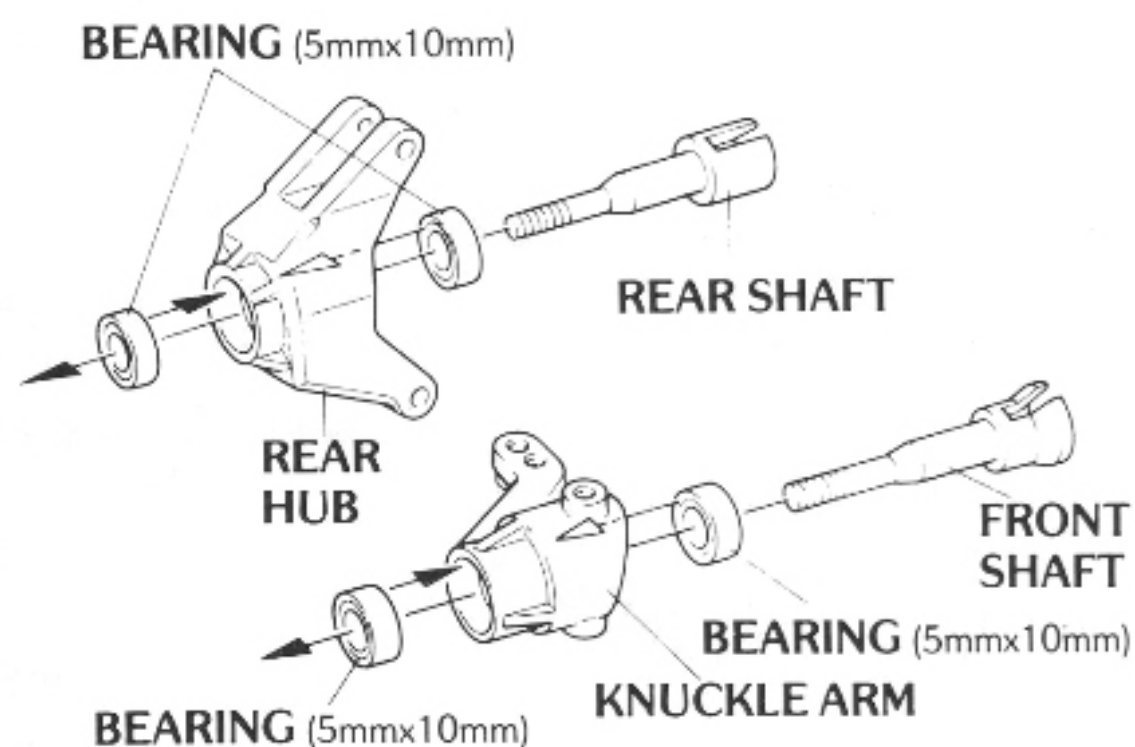
- Do not run the car in a crowd or in the street.
- Check the frequency bands for someone else also trying to run their car at the same time with you. Radio control systems on the same frequency will interfere with each other and cause them to go out of control.
- If your car suddenly stalls, or is caught up in some obstacle, do not try to make the car go further. It may result in burning the motor or wiring or damage the speed controller.
- Do not try to hold the rotating wheels forcibly. This may also cause damage.
- When connecting the Ni-Cd battery, be sure that the speed controller is in the neutral position.
- Any binding or drag on the bearing portion of the driving system imposes a heavy load to the motor and battery, thus causing overheating of the components or that the car does not gain speed. So check to see always if the driving system will turn smoothly. Application of oil is also very important.
- With those cars which have only one battery powering both the motor and the radio control units, the cars come to be out of control as the battery voltage is being dropped down. So whenever you will find your car losing speed, stop running the car.

HANDLING THE MOTOR

- The motor will become hot while running. Let the motor cool down before running it again. This will help the motor last longer.
- After several runs of the car, the motor may lose some power. This is caused from a carbon build up from the brushes and commutator of the motor. If it happens, remove the pinion gear and run the motor without load for a few minutes.
- Oil the bushings of motor periodically.

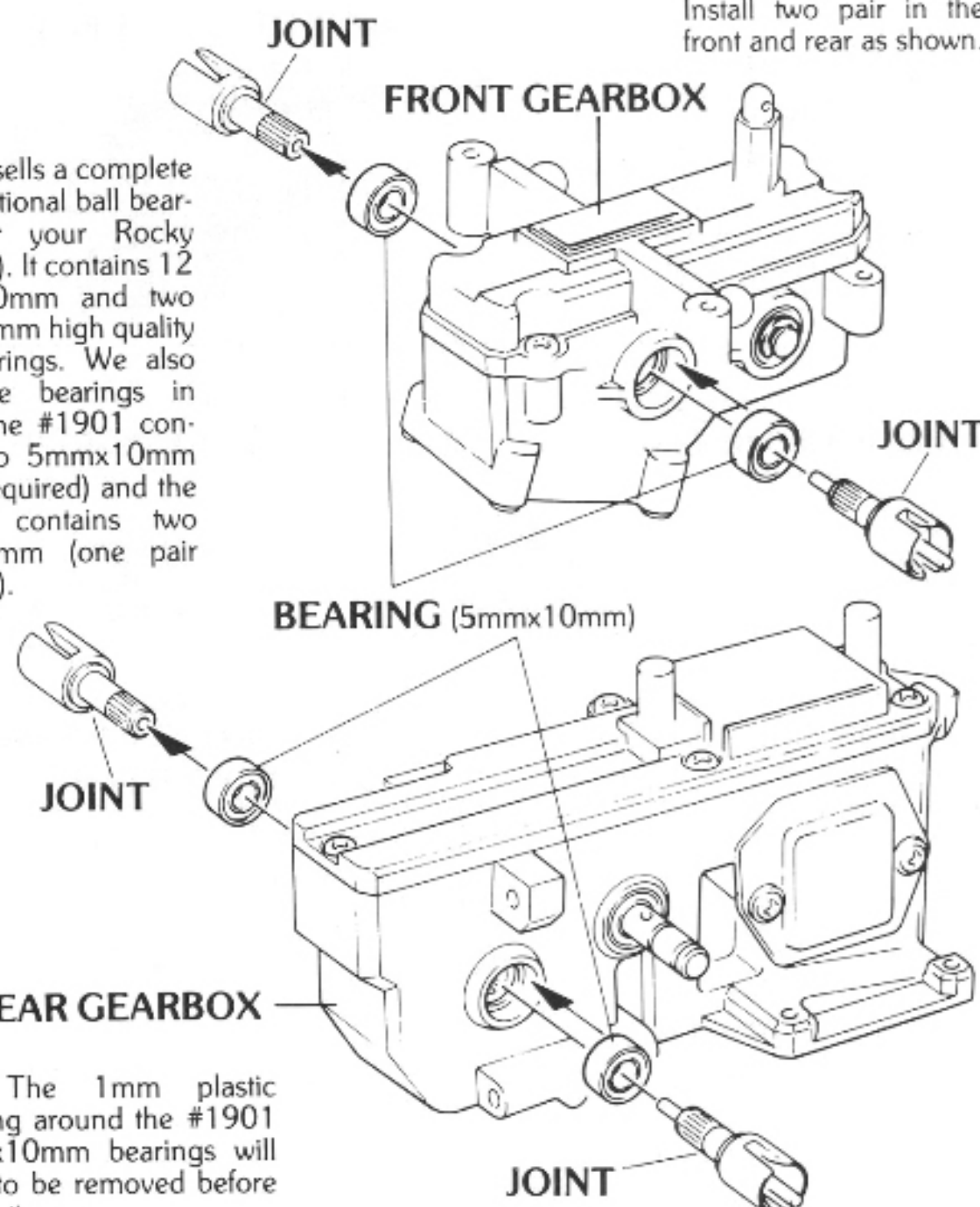
OPTIONAL BALL BEARINGS

The single most important improvement you can make on your Rocky is adding ball bearings to your car. They increase performance and reduce maintenance.

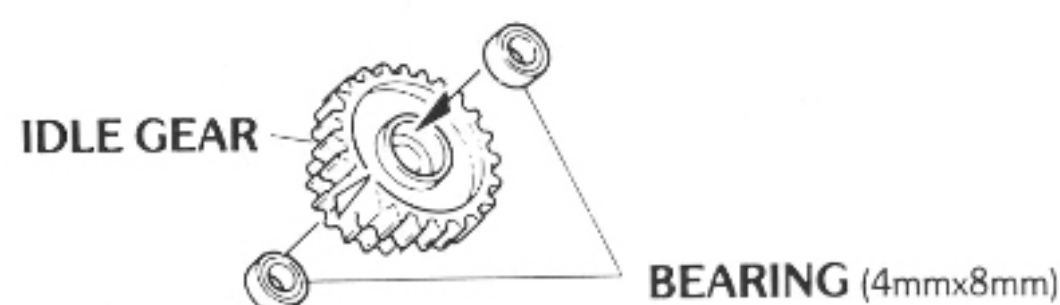


Install two pair in the front and rear as shown.

Kyosho sells a complete set of optional ball bearings for your Rocky (#1972). It contains 12 5mmx10mm and two 4mmx8mm high quality ball bearings. We also offer the bearings in pairs! The #1901 contains two 5mmx10mm (6pair required) and the #1903 contains two 4mmx8mm (one pair required).



Note: The 1mm plastic bushing around the #1901 5mmx10mm bearings will need to be removed before installation.



GEAR RATIOS AND OPTIONAL MOTORS

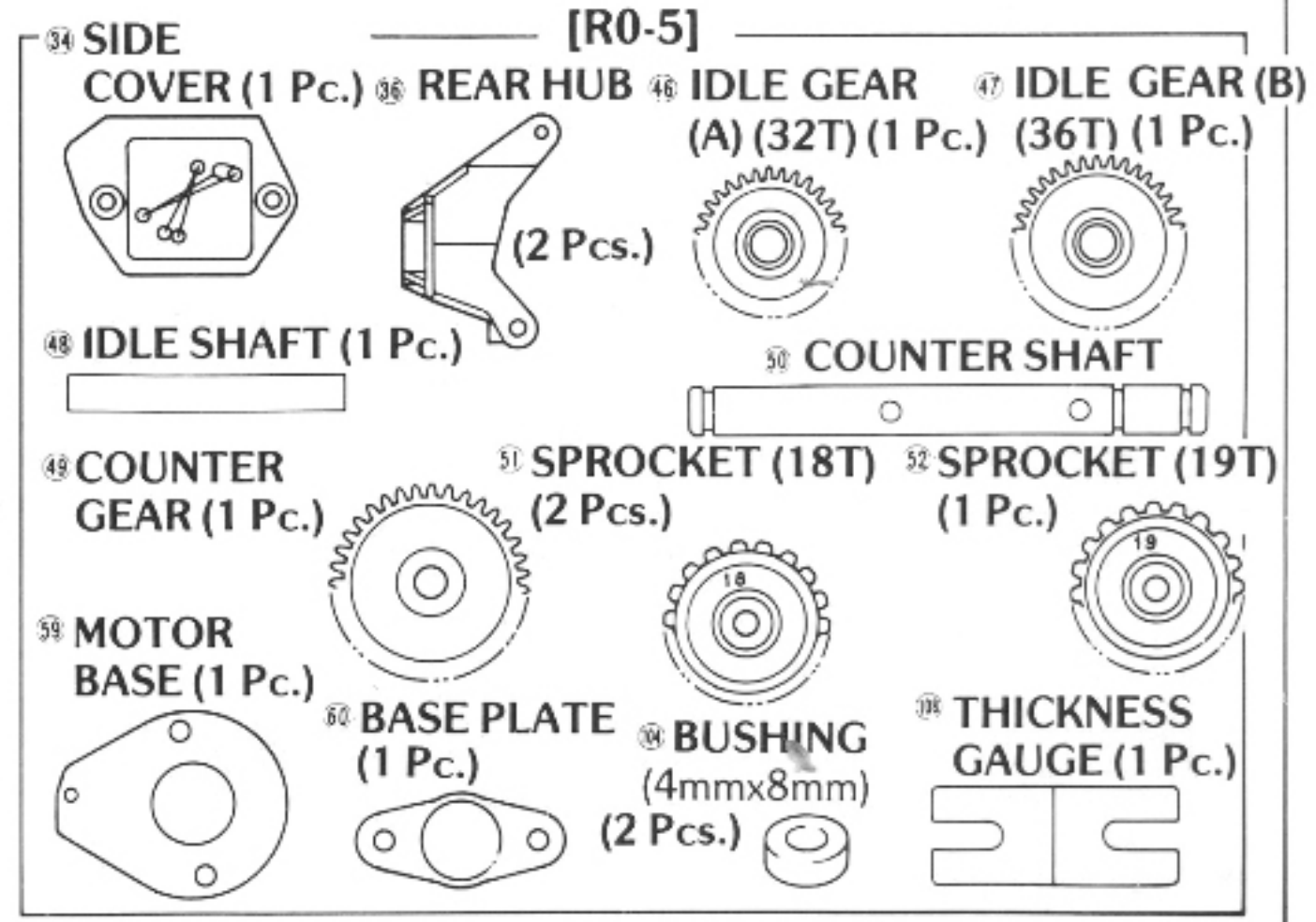
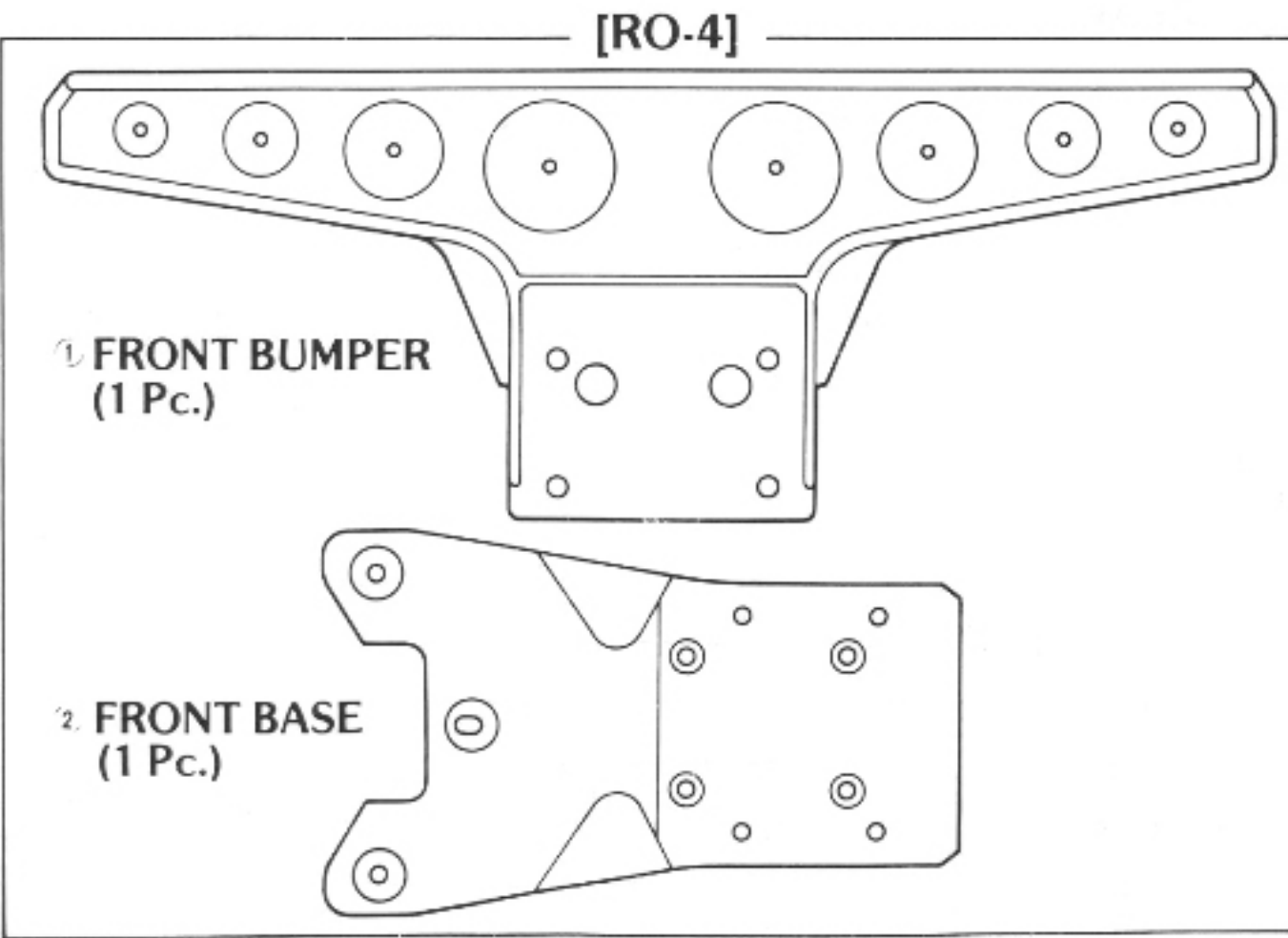
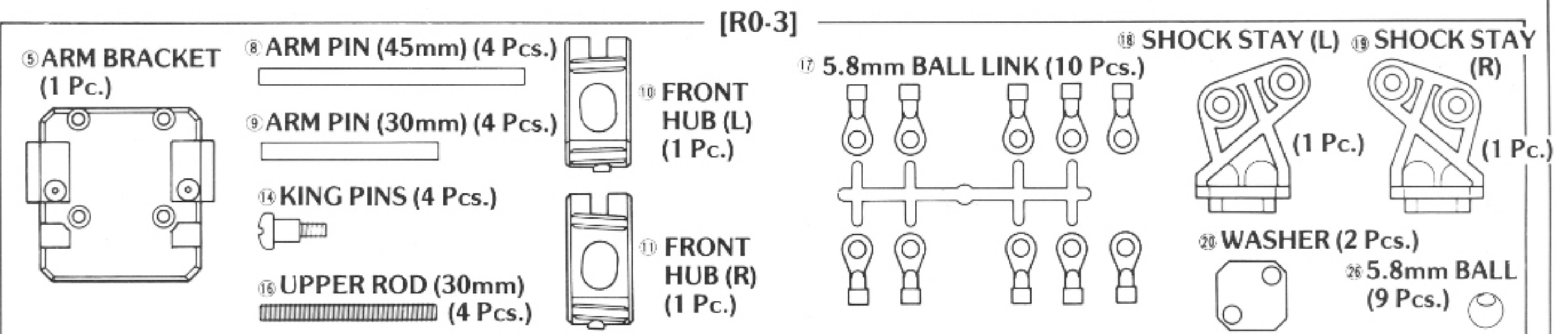
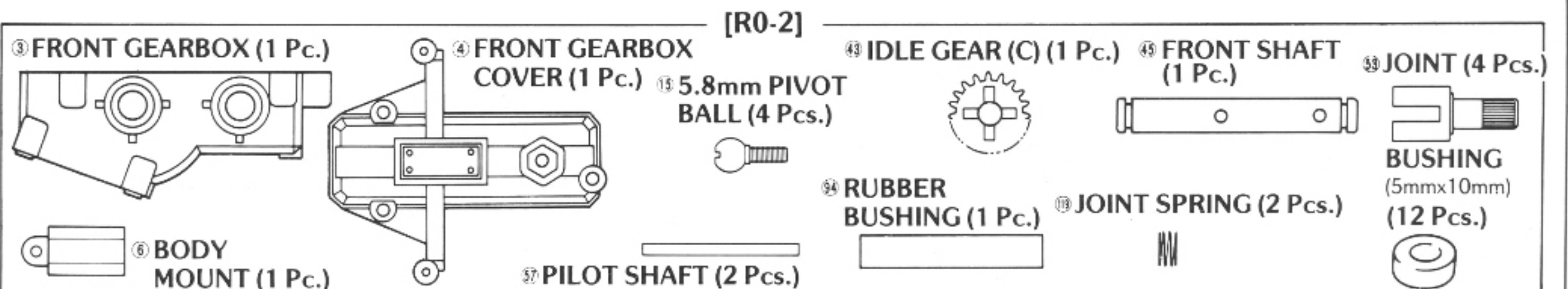
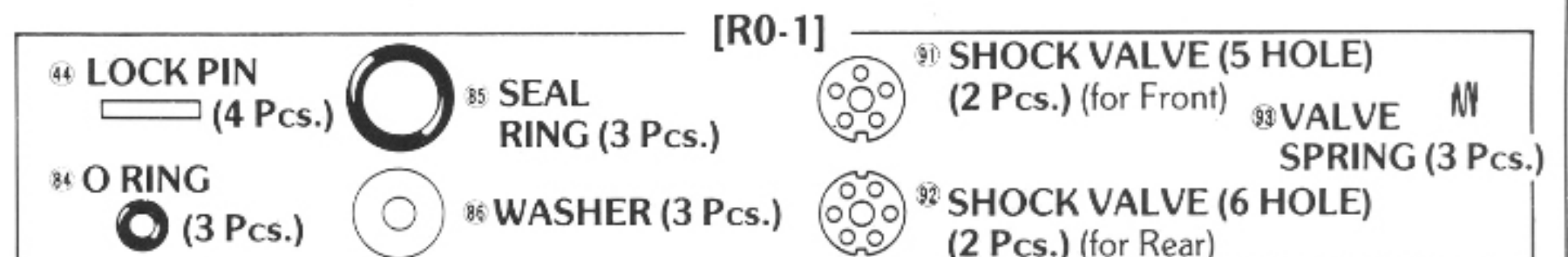
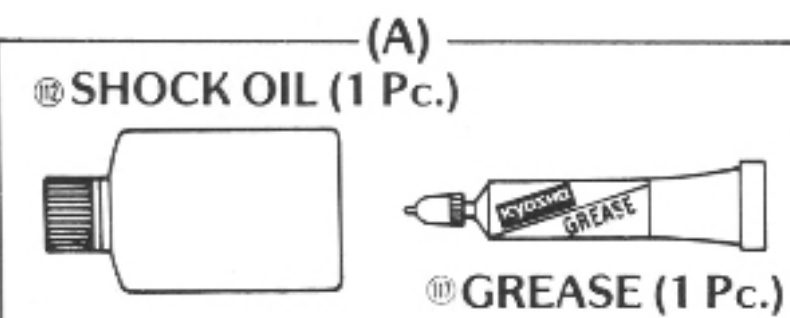
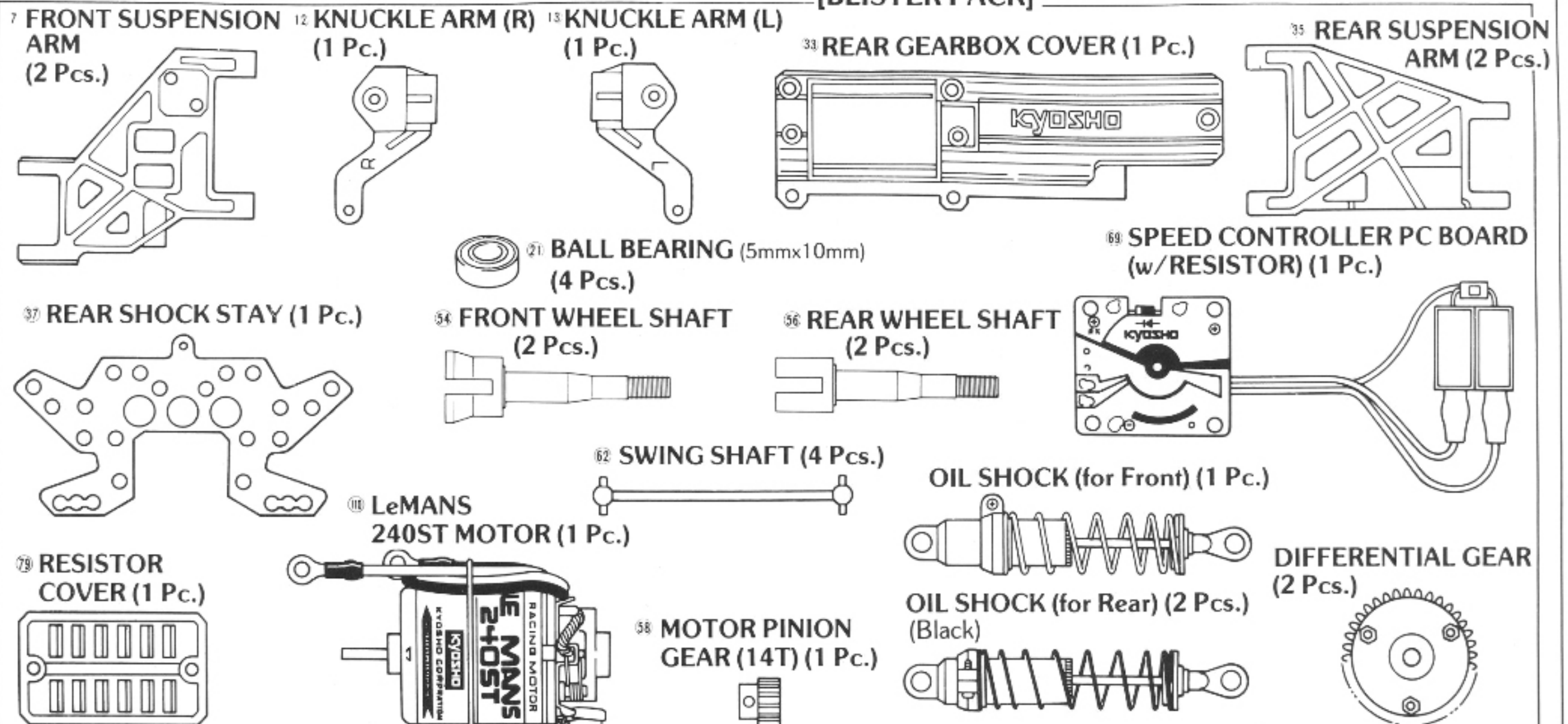
The motors listed below show the gear ratio range for which they be best suited. In the Rocky kit the gear ratio can be changed by both the pinion gear and by changing the gear depending on the gear you choose (the 32T or the 36T). This will change your ratio.

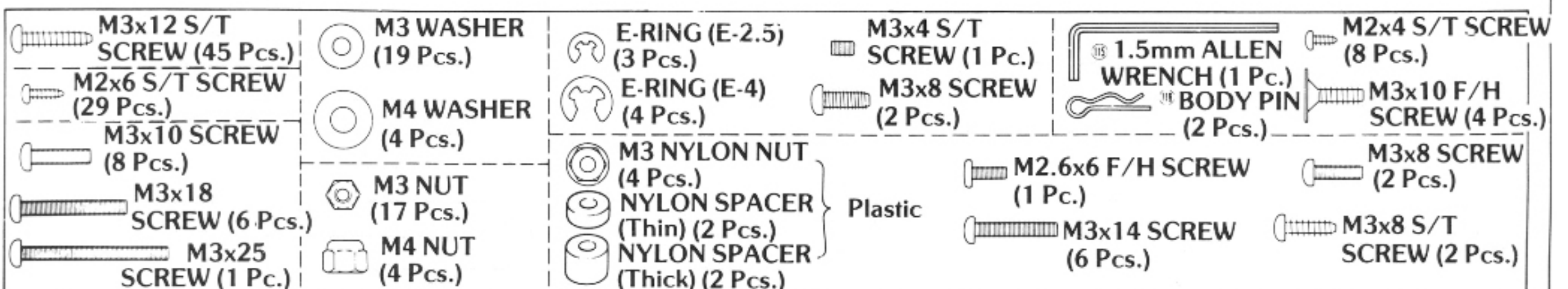
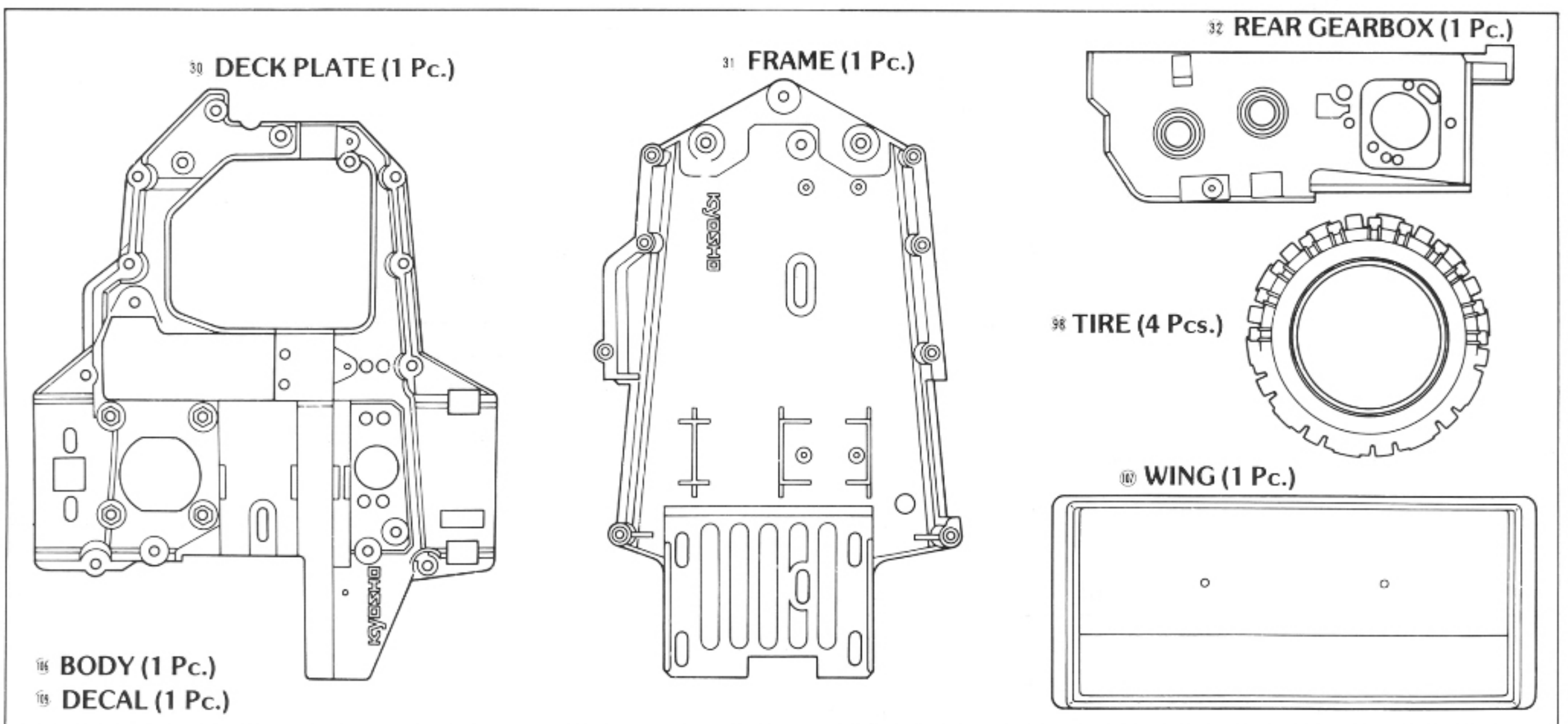
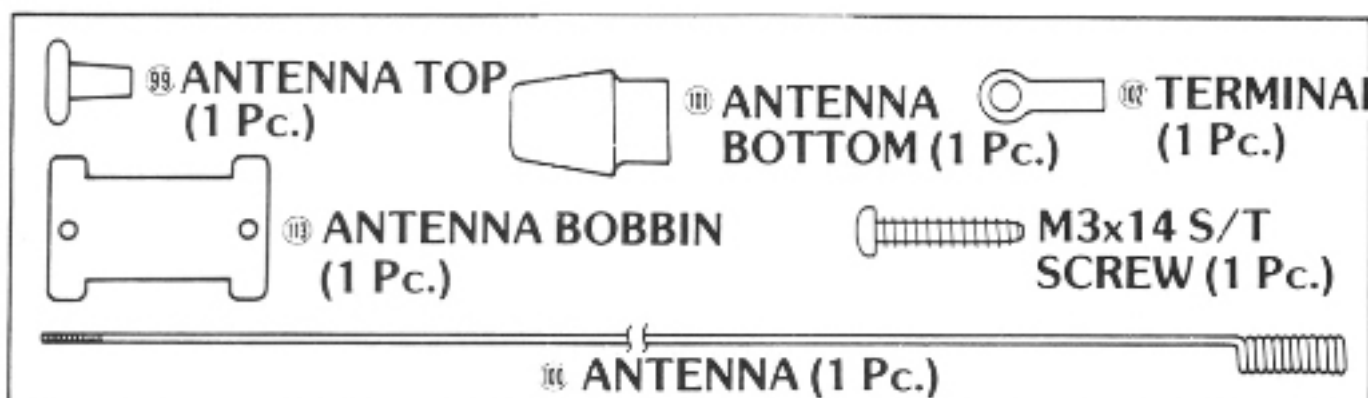
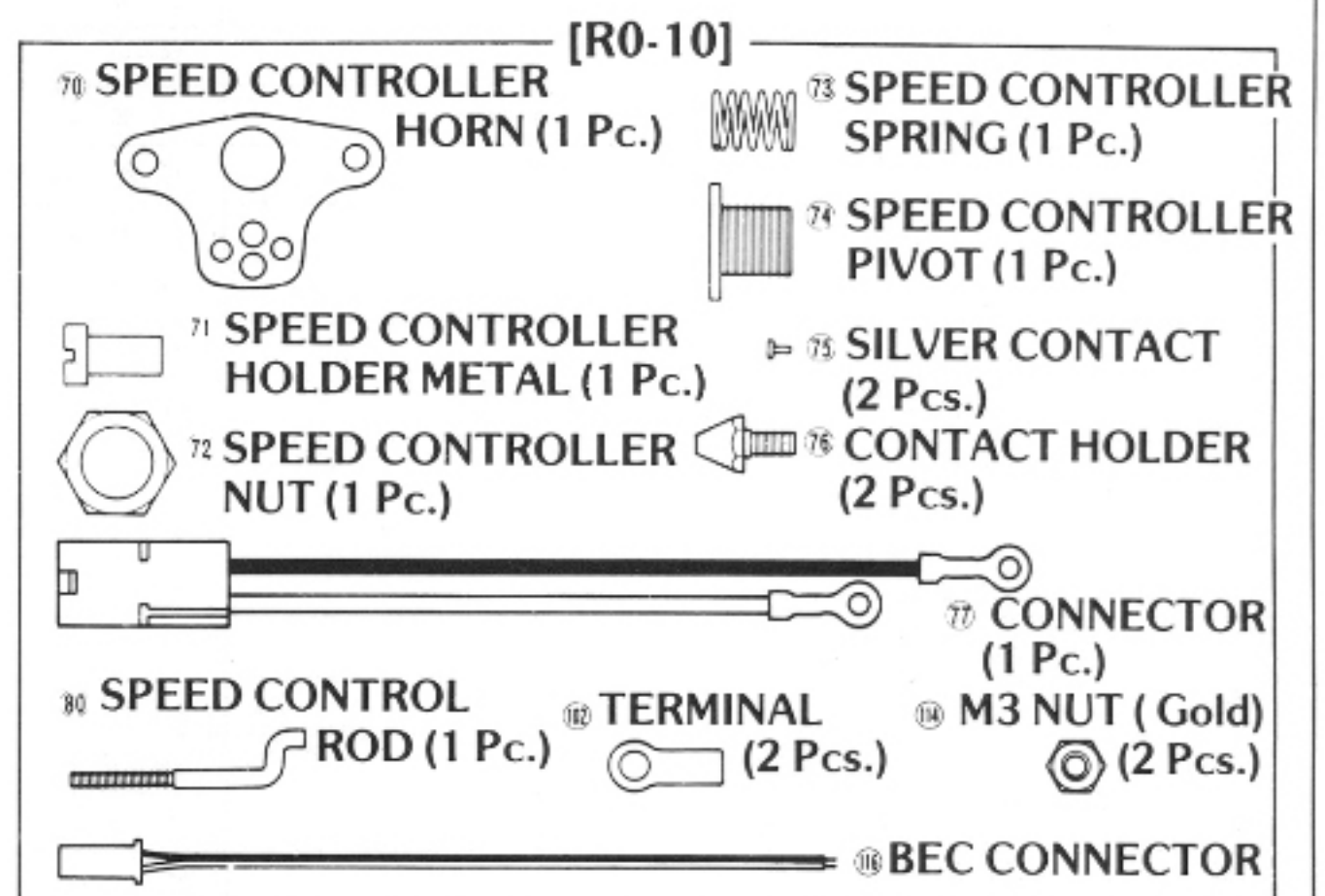
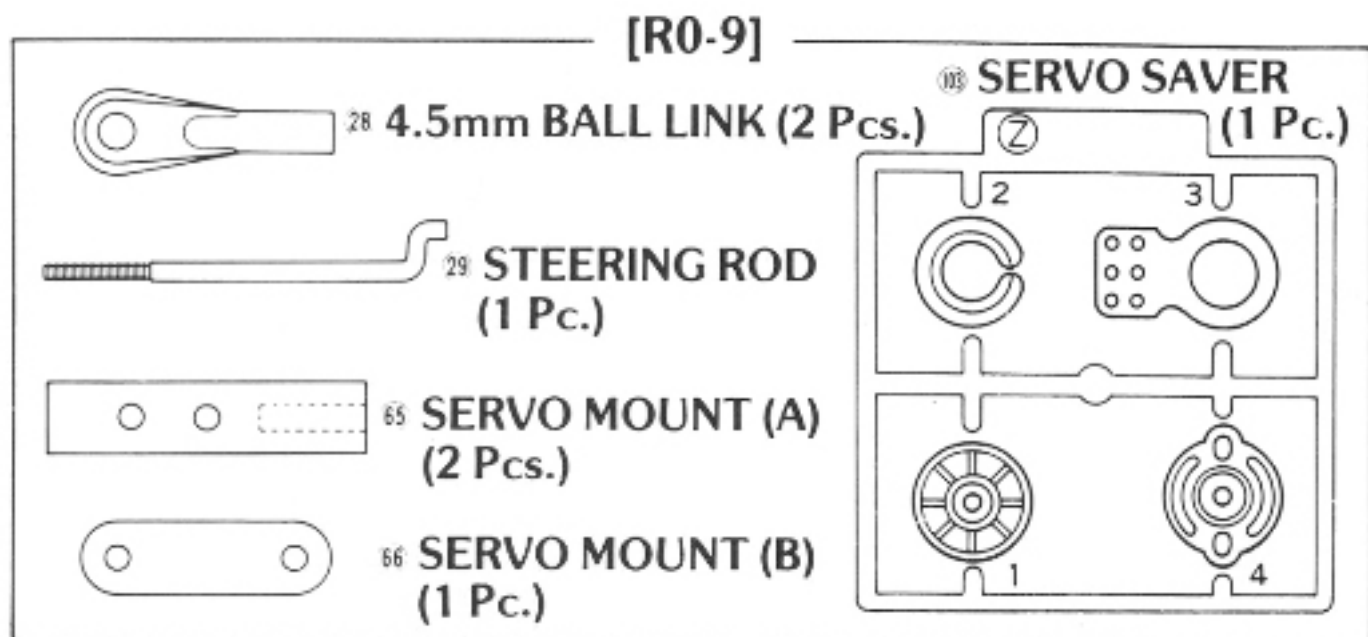
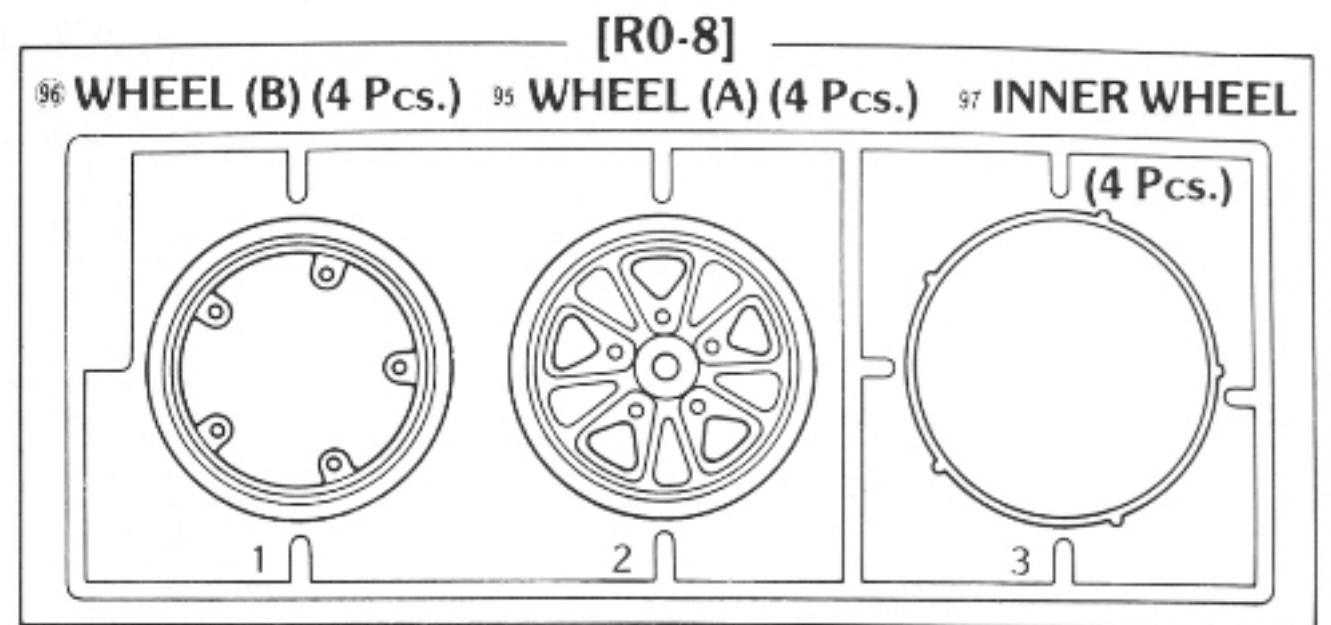
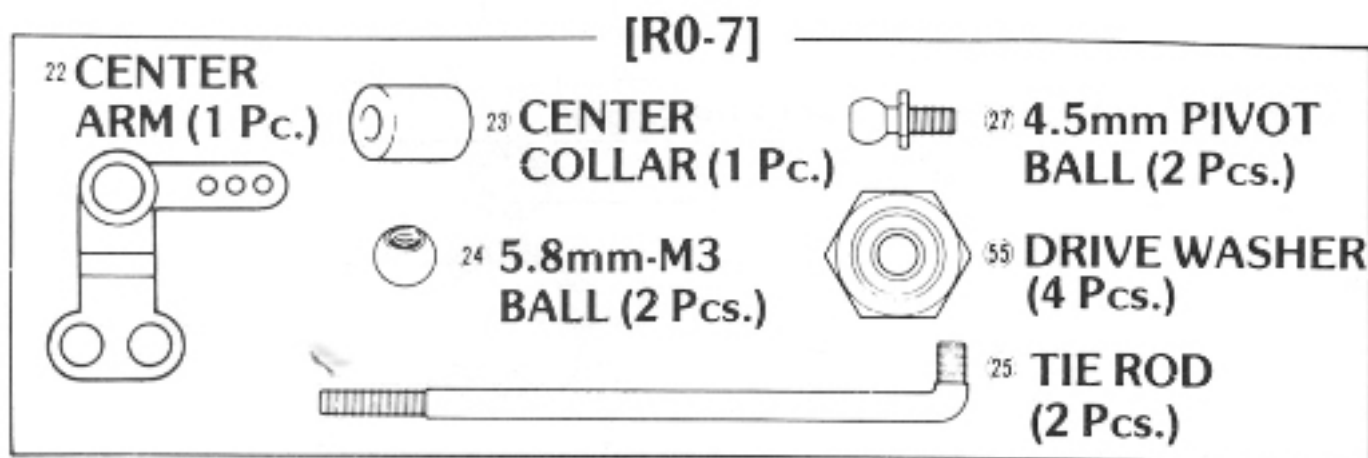
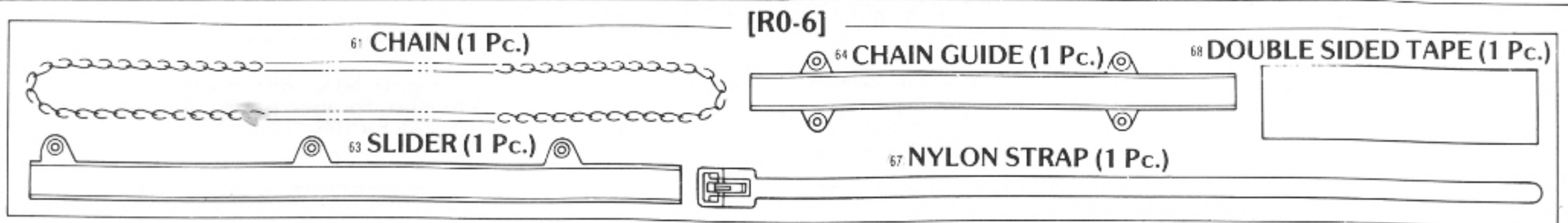
(Use the chart below as a reference.)

Pinion Gear	15T	14T	15T	13T	14T	12T	13T	12T
Idle Gear	32T	32T	36T	32T	36T	32T	36T	36T
Gear Ratio	9.0	9.6	10.1	10.3	10.8	11.2	11.6	12.6
LeMans 240S								
LeMans 240SB								
LeMans 360PT								
LeMans 360 Gold								
LeMans 480S								
Speed	High Speed							
Running Time	Short Time							
	Low Speed							
	Long Time							

CONTENTS OF PARTS BAG

[BLISTER PACK]





PURCHASING PARTS FOR YOUR KIT

You can purchase replacement and optional parts for your kit. All of the parts identified by key numbers (see page 16 for a complete list) are usually not available singularly, but we offer these parts in convenient parts "packs" which can be purchased separately. To figure out which parts pack you need, find the key number for that part within the

manual. Then consult our parts pack guide, below. When referring to the parts you need, always use the **Parts Pack Number**. For instance, if you need a Counter Shaft (Key #50) ask your dealer for Kyosho Parts Pack RK-25 (Shaft Set).

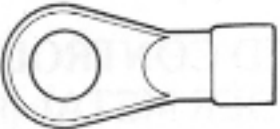






SPARE PARTS LIST

Number	Parts Name	Key Number and Consisting of
RK-01	Front Bumper	1 × 1
RK-02	Wheel Set	95 96 97 × 2
RK-03	Differential Gear Set	39 40 41 × 2 38 × 4 42 × 6
RK-04	Front Gearbox	3 × 1 4 × 1
RK-05	Plastic Parts Set	2 5 6 22 23 66 108 × 1 65 × 2
RK-06	Suspension Arm Set	18 19 × 1 7 20 35 × 2
RK-07	Knuckle Arm Set	12 13 × 1 14 × 2
RK-08	Deck Plate	30 × 1
RK-09	Frame	31 × 1
RK-10	Hub Set	10 11 × 1 36 × 2
RK-11	Ball Link Set	29 80 × 1 24 25 27 × 2 15 16 28 × 4 17 26 × 8
RK-12	Rear Gearbox Set	32 33 34 59 60 79 × 1
RK-13	Gear Set	43 46 47 49 52 58 × 1 51 × 2
RK-14	Slider Set	63 64 × 1
RK-15	Tire Set	98 × 2
RK-16	Shock Set	89 94 × 1 90 91 92 × 2 81 82 83 84 85 86 93 × 3 17 87 88 × 4
RK-17	Body (Rocky)	106 107 × 1
RK-18	Bushing Set	104 × 2 105 × 12
RK-19	Chain	61 × 1
RK-20	Swing Shaft	62 × 2
RK-21	Joint	57 × 1 53 119 × 2
RK-22	Front Wheel Shaft	54 × 2
RK-23	Rear Wheel Shaft	56 × 2
RK-24	Drive Washer	55 × 4
RK-25	Shaft Set	45 48 50 × 1 8 9 44 × 4
RK-26	Rear Shock Stay	37 × 1
RK-27	Screw Set	1 Set
RK-28	Servo Saver Set	103 × 1
RK-29	Decal	109 × 1
1885	Antenna Set	99 100 101 102 113 × 1
PG-40	Speed Controller Set	69 70 71 72 73 74 78 × 1 75 76 102 114 × 2
PG-41	Speed Controller PC Board (w/Diode)	69 × 1 102 × 2
PG-42	Contact Set	76 × 2 75 × 4
PG-43	Connector, Lead Wire Set	77 111 × 1
PG-52	3 Speed Resistor	78 × 1
EF-039	Nylon Strap	67 × 1
SC-046	Double Sided Tape	68 × 1
EP-22	Body Pin	118 × 5
1901	Ball Bearing (5mmx10mm)	21 × 2

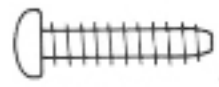

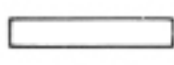

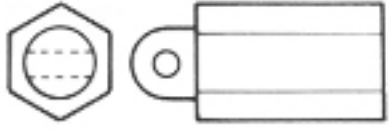

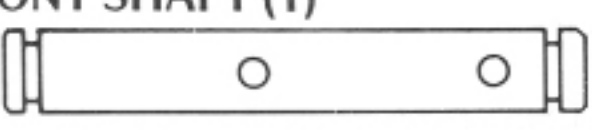
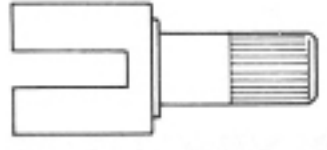


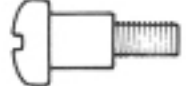
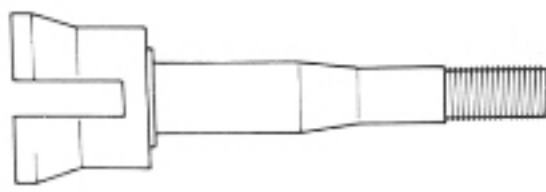


OPTIONAL PARTS

1903	Ball Bearing (4mmx8mm)	2 Pieces
1972	Complete Bearing Set for Rocky 4WD	5mmx10mm (12 Pieces), 4mmx8mm (2 Pieces)
OT-23	Pinion Gear (12T)	Gear Ratio 4.8-12.93
OT-50	Pinion Gear (13T)	Gear Ratio 4.8-12.93
OT-24	Pinion Gear (15T)	Gear Ratio 4.8-12.93
SC-080	4 Speed Resistor	3 resistors for 4-speeds
W-5002	Pressure Oil Shock (L)	2 Pieces
W-5021	Large Size Wheel	2 Pieces
W-5031	Low Profile Tire (for Hard)	2 Pieces
W-5032	Low Profile Tire (for Soft)	2 Pieces
LM-15	Cooling Plate	For LeMans Motor
1951	Shock Oil Set (S. M. H.)	Soft, Medium, Hard
1863	Sponsor Decals	2 Sheets of numbers, letters and brand names
LM-100	Ball Bearings for Motor	2 pieces
SC-040	Rubber Motor Boot	



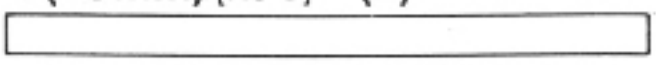



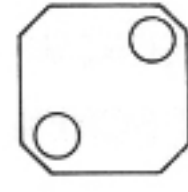
1 ASSEMBLY OF OIL SHOCK

- E-RING (E-2.5) (3) 
- 17 5.8mm BALL LINK [R0-3] (3) 
- 84 O-RING (3) [R0-1] 
- 85 SEAL RING (3) 
- 86 WASHER (3) 
- 91 SHOCK VALVE (5 HOLE) (for Front) (1) 
- 92 SHOCK VALVE (6 HOLE) (for Rear) (2) 
- 93 VALVE SPRING (3) 


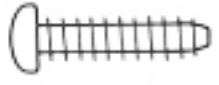



2 ASSEMBLY OF FRONT GEARBOX

- M3x12 S/T SCREW (4) 
- E-RING (E-4) (1) 
- 44 LOCK PIN [R0-1] (1) 
- 21 BALL BEARING (5mmx10mm) (Blister) (2) 
- 6 BODY MOUNT [R0-2] (1) 
- 15 5.8mm PIVOT BALL (2) 
- 45 FRONT SHAFT (1) 
- 53 JOINT (2) 
- 57 PILOT SHAFT (1) 
- 105 BUSHING (5mmx10mm) (2) 
- 3 ASSEMBLY OF FRONT SUSPENSION (1)**
- 14 KING PIN [R0-3] (4) 
- 54 FRONT WHEEL SHAFT (Blister) (2) 
- 15 5.8mm PIVOT BALL [R0-2] (2) 
- 105 BUSHING (5mmx10mm) (4) 

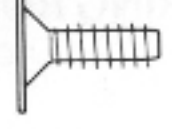



4 ASSEMBLY OF FRONT SUSPENSION (2)

- M2x4 S/T SCREW (4) 
- M3x12 S/T SCREW (4) 
- 8 ARM PIN (45mm) [R0-3] (2) 
- 9 ARM PIN (90mm) (2) 
- 18 SHOCK STAY (L) (1) 
- 19 SHOCK STAY (R) (1) 
- 20 WASHER (Plastic) (2) 




5 ASSEMBLY OF FRONT PORTION

- M3x14 SCREW (2) 
- M3x12 S/T SCREW (4) 
- 16 UPPER ROD (30mm) [R0-3] (2) 
- 17 5.8mm BALL LINK (4) 
- 26 5.8mm BALL (2) 

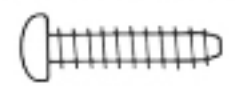
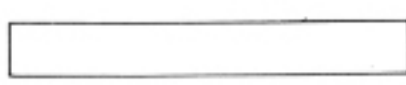
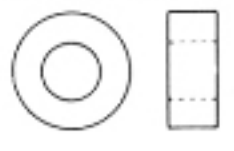
6 ATTACHMENT OF BUMPER AND FRONT SHOCK

- M3x10 S/T (F/H) SCREW (4) 
- M3x18 SCREW (2) 
- M3 WASHER (2) 
- 26 5.8mm BALL [R0-3] (1) 



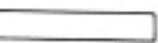
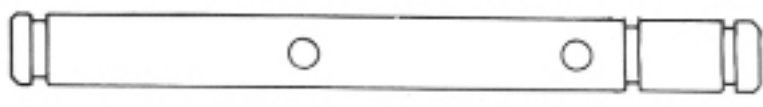
7 MOUNTING OF MOTOR

- M3x4 SET SCREW (1) 
- M3x10 SCREW (2) 
- 106 THICKNESS GAUGE [R0-5] (1) 

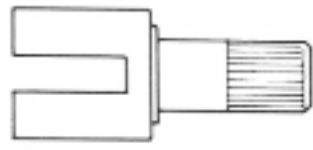
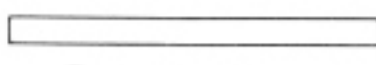

8 ASSEMBLY OF REAR GEARBOX (1)

- M3x12 S/T SCREW (2) 
- 48 IDLE SHAFT [R0-5] (1) 
- 104 BUSHING (4mmx8mm) (2) 

9 ASSEMBLY OF REAR GEARBOX (2)

- E-RING (E-4) (1) 
- 21 BALL BEARING (5mmx10mm) (Blister) (2) 
- 44 LOCK PIN [R0-1] (1) 
- 50 COUNTER SHAFT [R0-5] (1) 





10 ASSEMBLY OF REAR GEARBOX (3)

- 53 JOINT [R0-2] (2) 
- 57 PILOT SHAFT (1) 
- 105 BUSHING (5mmx10mm) (2) 

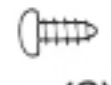
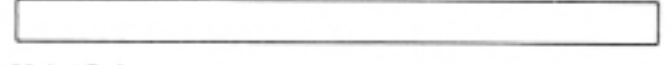
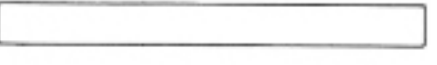
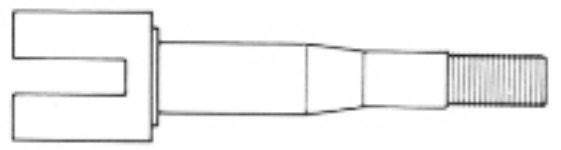

11 FIXING OF GEARBOX COVER

- M3x12 S/T SCREW (5) 




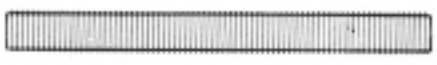


12 INSTALLATION OF REAR SHOCK STAY

- M3x8 S/T SCREW (2) 
- M3x14 SCREW (2) 
- M3x18 SCREW (2) 
- M3 NUT (4) 

13 ASSEMBLY OF REAR SUSPENSION (1)

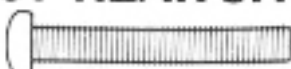
- M2x4 S/T SCREW (4) 
- 8 ARM PIN (45mm) [R0-3] (2) 
- 9 ARM PIN (30mm) [R0-3] (2) 
- 56 REAR WHEEL SHAFT (Blister) (2) 
- 105 BUSHING (5mmx10mm) [R0-2] (4) 

14 ASSEMBLY OF REAR SUSPENSION (2)


- M3x14 SCREW (2) 
- NYLON NUT (Plastic) (2) 
- 119 JOINT SPRING [R0-2] (2) 
- 16 UPPER ROD (30mm) [R0-3] (2) 
- 17 5.8mm BALL LINK (4) 
- 26 5.8mm BALL (4) 


SMALL PARTS USED IN EACH ASSEMBLY STEP


15 INSTALLATION OF REAR SHOCK

M3x18 SCREW (2) 

NYLON NUT (Plastic) (2) 

COLLAR (Plastic, Thicker) (1) 

COLLAR (Plastic, Thinner) (1) 

26 5.8mm BALL [R0-3] (2) 

16 MOUNTING THE FRAME AND DECK PLATE

M2x6 S/T SCREW (4) 

M3x10 SCREW (4) 

M3 NUT (4) 


17 ASSEMBLY OF FRAME


M3x12 S/T SCREW (10) 


18 INSTALLATION OF FRONT PORTION

M3x12 S/T SCREW (4) 

19 FIXING OF CENTER ARM

M3x25 SCREW (1) 

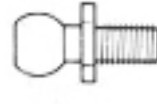
M3 WASHER (1) 

17 5.8mm BALL LINK [R0-3] (2) 


23 CENTER COLLAR [R0-7] (1) 

24 5.8mm-M3 BALL (2) 


25 TIE ROD (2) 

27 4.5mm PIVOT BALL (1) 


20 INSTALLATION OF REAR PORTION

M3x8 SCREW (2) 

M3x12 S/T SCREW (4) 

M3 NUT (2) 

M3 WASHER (6) 

E-RING (E-4) 


44 LOCK PIN [R0-10] (2) 

21 FABRICATION OF TIRE

M2x6 S/T SCREW (20) 

22 MOUNTING OF TIRE

M3 NYLON NUT (4) 

M4 WASHER (4) 

55 DRIVER WASHER [R0-7] 

23 MOUNTING OF SERVO SAVER MOUNT

M2x6 S/T SCREW (2) 

M3x12 S/T SCREW (3) 

M3 WASHER (2) 


65 SERVO MOUNT (A) [R0-9] (2) 


24 MOUNTING OF STEERING SERVO

M2x6 S/T SCREW (3) 

M3x12 S/T SCREW (2) 

M3 WASHER (1) 


28 4.5mm BALL LINK [R0-9] (1) 


29 STEERING ROD (1) 

25 MOUNTING OF SPEED CONTROL SERVO AND SWITCH

M3x12 S/T SCREW (3) 


M3 WASHER (3) 

66 SERVO MOUNT (B) [R0-9] (1) 


102 TERMINAL [R0-10] (2) 

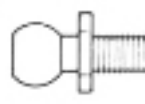
26 MOUNTING OF SPEED CONTROLLER

M2.6x6 P/H SCREW (1) 


M3 NUT (4) 


27 FIXING OF CONTROLLER HORN

M3 NUT (1) 

27 4.5mm PIVOT BALL [R0-7] (1) 

71 SPEED CONTROLLER HOLDER METAL [R0-10] 

72 SPEED CONTROLLER NUT (1) 

73 SPEED CONTROLLER SPRING (1) 

74 SPEED CONTROLLER PIVOT (1) 


75 SILVER CONTACT (2) 

76 CONTACT HOLDER (2) 

114 M3 NUT (Gold) (2) 

28 FIXING OF SPEED CONTROL ROD AND RESISTOR COVER

M3x8 SELF THREADING (2) 


28 4.5mm BALL LINK [R0-9] (1) 

80 SPEED CONTROL ROD [R0-10] (1) 

30 FIXING OF ANTENNA (Antenna Set)

M3x14 S/T SCREW (1) 


99 ANTENNA TOP (1) 

101 ANTENNA BOTTOM (1) 

102 LUG TERMINAL 


33 APPLYING DECALS AND FIXING WING

M3x10 SCREW (2) 

M3 NUT (2) 

M3 WASHER (4) 

35 MOUNTING OF BODY

118 BODY PIN (2) 

SUGGESTED FURTHER READING

A wealth of hints, tips and general information about R/C cars is available at your favorite hobby store. We suggest the "Completely Cars" book by Harry Higley which is packed with hundreds of photos and great "Tech-Tips". "R/C Car Action" a magazine published quarterly by Air-Age Publications will keep you on top of all the latest developments in the R/C car hobby.

