RADIO CONTROLLED ELECTRIC POWERED SPECIAL RACING TRUCK

OUTLAW RAIDER ARR®

- ALMOST READY-TO-RUN, JUST INSTALL THE RADIO EQUIPMENT ,TRIM THE BODY AND YOU'RE OFF TO THE RACES.
- FULLY-INDEPENDENT SUSPENSION WITH OIL-FILLED, PRESSURE-TYPE SHOCKS.
- LONG SUSPENSION TRAVEL FOR TOP HANDLING ON EVEN THE ROUGHEST TRACKS.
- QUICK, EASY ADJUSTMENT FOR TOP PERFORMANCE.
- PRECISION NYLON GEARS ENCLOSED IN A DUST-PROTECTED GEARBOX.
- AN EXCELLENT ENTRY LEVEL TRUCK WITH NO COMPROMISE IN PERFORMANCE.
- HIGH GROUND CLEARANCE MAKES THE TRUCK UNSTOPPABLE.
- MANY HIGH-PERFORMANCE OPTIONAL PARTS ARE AVAILABLE.

1:10 SCALE

Requires: Are not included in this kit.
Battery: 7.2V-1200/1700 mAh (Stick Pack)
Radio: 2-Channel with two servos
Charger: 7.2 Volt Quick Charger

KYOSHO®

KIT NO. 3162H

V1.0

BEFORE BEGINNING TO BUILD

BEFORE BEGINNING TO BUILD YOUR OUTLAW RAIDER ARR, MAKE SURE IT'S THE RIGHT MODEL FOR YOU!

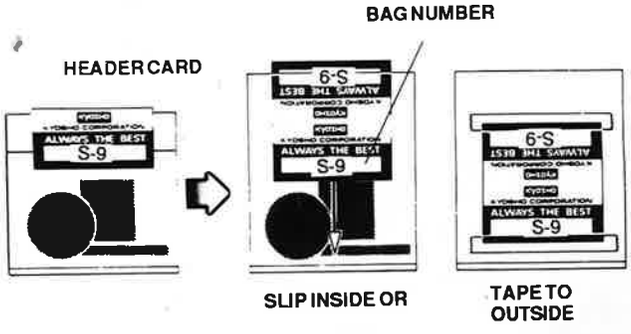
We want your first experience building an R/C model to be a success. So before you remove any parts from their packages and begin building:

- Read through the entire manual carefully. Are you sure you have the skills necessary for assembly and operation?
- If for any reason you think this model may not be for you, please note: Your hobby dealer cannot accept a model kit for return after assembly has begun. Return it immediately if you have doubts.

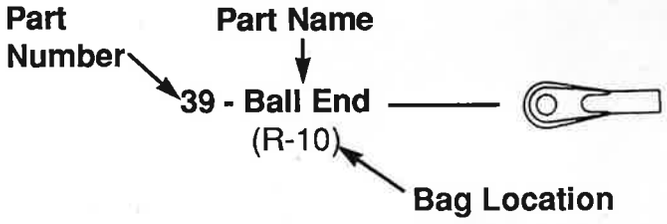
Your Kyosho Outlaw Raider ARR is a sophisticated, high-performance model with many moving parts. Unlike toy like radio-control models, this professional style kit is designed to give you all the skills you'll need to keep it running for many years. If you're ready for fast, exciting racing... and welcome the chance to know your car inside and out... you're ready for the Outlaw Raider ARR.

DON'T LOSE YOUR PARTS

This Kyosho instruction manual uses a unique cross reference system to help you locate all of the bagged parts. DO NOT open each bag and dump out the parts. Carefully remove the header card from the bag and discard the staple. Slip the header card into the bag or tape it to the outside of the bag so that the bag number shows. These bag numbers will be used throughout the assembly process and will prove invaluable when locating parts.



In each step of assembly each part will be labeled with 1) The part number, 2) Part name, and 3) Bag location.

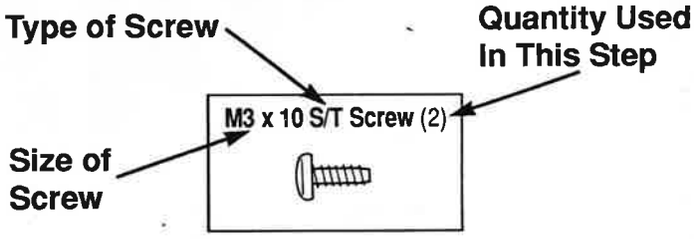


COMPLETE PARTS LISTING

On Page 22 you will find a complete list of parts used in this kit including the part number and total quantity supplied in the kit. When ordering replacement or optional parts, see pages 24-28 for a complete listing of parts and stock numbers.

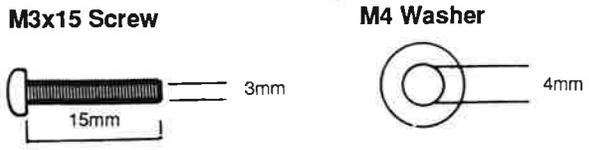
FINDING THE SMALL PARTS

The box in the left margin of each page shows the small parts that will be used in each step. For ease of identification, these parts are shown actual size enabling you to place a screw directly on the picture to ensure you have selected the appropriate size.



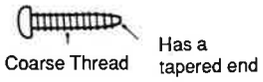
FINDING THE CORRECT SCREWS AND WASHERS IN THIS KIT

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 3mm in diameter and 15mm long. Some round parts may be labeled as a "M4 Washer" (a washer with a 4mm inside diameter) or a "3mm 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 the page. For your reference, 1 millimeter equals approximately .039 inches. Also on page 15 a metric ruler is provided.



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

Self Tapping (S/T)

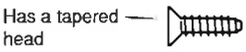


A self tapping screw has a coarse thread and is used to screw into plastic. Be careful not to tighten the screw too much-this might strip the plastic.

Screw

Screws have a fine thread and are used with nuts most of the time. They are for high stress joints where strength is required.

Flat Head Screw (F/H)



Flat head screws have a fine thread and a tapered head. This allows the head of the screw to be flush with the part it is holding so that the screw does not catch on anything.

HELPFUL HINTS

Some precautions need to be observed when building your Kyosho kit to avoid problems:

1.) Take your time and read the directions thoroughly. It's not how fast you can assemble the kit but how fast it goes once it is assembled.

2.) Try to avoid working over a shag carpet. In the event that a small part or screw should fall onto the carpet, it will be difficult to find.

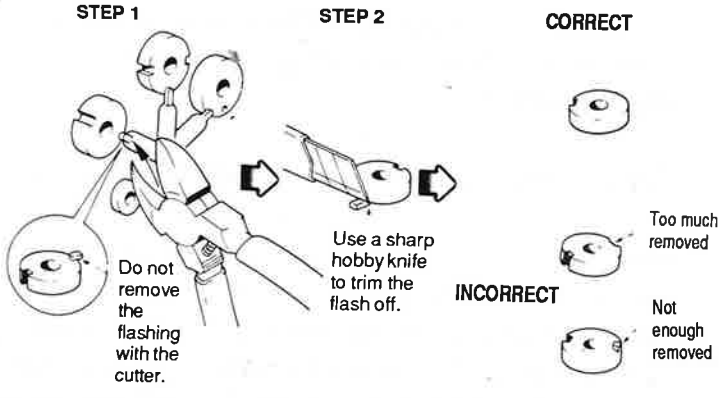
3.) Place a mat or towel on the work surface where you will be building the kit. This will prevent parts from rolling off and will protect the work surface at the same time.

4.) Use a muffin tin or egg carton to separate screws, nuts, washers, etc. This will make it easier to locate the correct part.

5.) Avoid getting products like motor cleaner or screw lock on the plastic parts. They can melt the plastic which will have a serious effect on the model.

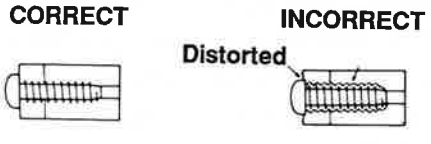
6.) Avoid running the model in very cold temperatures. Both plastic and metal parts become brittle at low temperatures. In addition, grease and oil become very thick causing premature wear and deficient performance.

7.) Remove all flashing from parts before assembly as shown in the example below.



8.) Trial fit all parts to ensure proper fit before attaching them permanently.

9.) Do not use excessive force when tightening self tapping type screws into plastic. Overtightening will cause the threaded portion of the plastic to strip. It is recommended to stop tightening when some resistance is felt after the threaded portion enters the plastic.



Threads Stripped

10.) Ensure that all parts are well lubricated where the instructions indicate the use of grease.

11.) Avoid using power screwdrivers when assembling your kit. They tend to overtighten screws.

SPECIAL SYMBOLS YOU WILL SEE

Certain symbols are used throughout the instructions. Pay attention to their location.

Points where Grease/Oil should be applied. (This will reduce wear and friction and provide a smoother operating joint.)

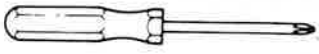
REQUIRED TOOLS

THESE ARE INCLUDED IN THE KIT.

Hex Wrench

Grease

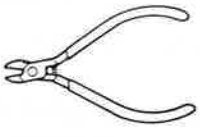
THESE ARE NOT INCLUDED IN THE KIT.



Phillips Screwdriver

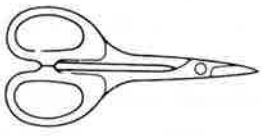
Hobby Knife

Needle Nose Pliers



Wire Cutters

Awl



Lexan Scissors

Striping Tape

Cyanoacrylate (such as Jet, Zap, Hot Stuff or Bullet CA).

WARRANTY INFORMATION

WHAT THE OUTLAW RAIDER ARR WARRANTY MEANS TO YOU

- For 90 days after you purchase your Outlaw Raider ARR, Kyosho will either repair or replace, at no charge, any incorrectly made part.

- Make sure you SAVE THE RECEIPT OR INVOICE you were given when you bought your model! It's your proof of purchase - and we must see it before we can honor the warranty.

- To send your Outlaw Raider ARR in for repairs covered under warranty, you should send your Outlaw Raider ARR to Kyosho's authorized U.S. repair facility:

  Hobby Services
  1610 Interstate Drive
  Champaign, Illinois 61821
  Attn. Service Department
  Phone: (217) 398-0007

- For details on your return, be sure to follow steps 1-4 under the "Repair Service Available Anytime" section.

Limit of our Liability:
Our liability under this warranty is limited to the repair or replacement of defective parts by Hobby Services and does not include cost of shipping to us. Hobby Services does pay the shipping expense to return warranty items to you.

Exclusion and/or Voidance of Warranty:
This warranty does not apply to damage or defects resulting from misuse, abnormal service, damage in shipment, damage resulting from a crash, or damage to the car caused by the batteries. The warranty is voided if the model is modified, altered, or repaired by anyone other than Hobby Services. This warranty gives you specific legal rights, and you may have other rights that vary from state to state within the U.S. We are sorry, but we cannot be responsible for crash damage and/or resulting loss of kits, engines, accessories, etc.

REPAIR SERVICE AVAILABLE ANYTIME

- After the 90-day warranty has expired, you can still have your Outlaw Raider ARR repaired for a small charge by the experts at Kyosho's authorized U.S. repair facility.

Hobby Services
1610 Interstate Drive
Champaign, Illinois 61821
Attn. Service Department
Phone: (217) 398-0007

- To speed up the repair process, please follow the instructions listed below:

1.) Under all circumstances, return the ENTIRE system: Radio, Battery, Car, Charger...etc.

2.) Disconnect the receiver battery switch harness, and make sure the transmitter is turned off. Make sure all batteries are disconnected.

3.) Send written instructions which include: a list of all items returned, a THOROUGH explanation of the problem and the service needed, and your phone number where you can be reached during the day. If you expect your repair to be covered under warranty, be sure to include proof of date of purchase (your store receipt or purchase invoice).

4.) Also include your full return address.

Repair charges and postage may be prepaid or billed C.O.D. Additional postage charges will be applied for non-warranty returns. All repairs shipped outside the United States must be prepaid in U.S. funds only.

RADIO OPERATIONAL CHECK

Thoroughly read and follow the instructions supplied with your radio system. The following instructions are a general procedure for testing the operation of your radio system.

An operational check of your complete radio system prior to installation is a must. This check will locate possible defective components BEFORE they are installed in your model. See the diagram below for the set-up of the radio system. Gently plug the switch harness and servo connectors into the proper receptacles on the receiver. The connectors are normally polarized and will fit only one way. If they do not plug in easily, turn them around and try again. (DO NOT FORCE.) Plug the BEC (red connector) from the speed control into the switch harness. BEC stands for Battery Eliminator Circuitry, which allows the receiver to work off of the 7.2V battery eliminating the receiver battery. Install the batteries into the transmitter. See page 18 on how to hook-up the resistor to the speed control and set the speed control to the neutral position. Plug a 7.2V NiCd battery into the speed control.

Unravel the receiver antenna wire and turn on the transmitter, then turn on the receiver switch. The servos may move a little bit at this point but this is normal. Check to make sure that the transmitter is on when switched on and if it is, continue. If it is not, recheck your installation of batteries. You should now be able to move the servos' arms using the transmitter throttle and steering controls. Notice how the servos move. They should move the same amount as you move the controls. Also, notice the direction of rotation of the servos, then switch the servo reversing switches, if so equipped. Notice how the rotation of the servos changes. This allows you to adjust servo control direction to suit a particular control operation in your model.

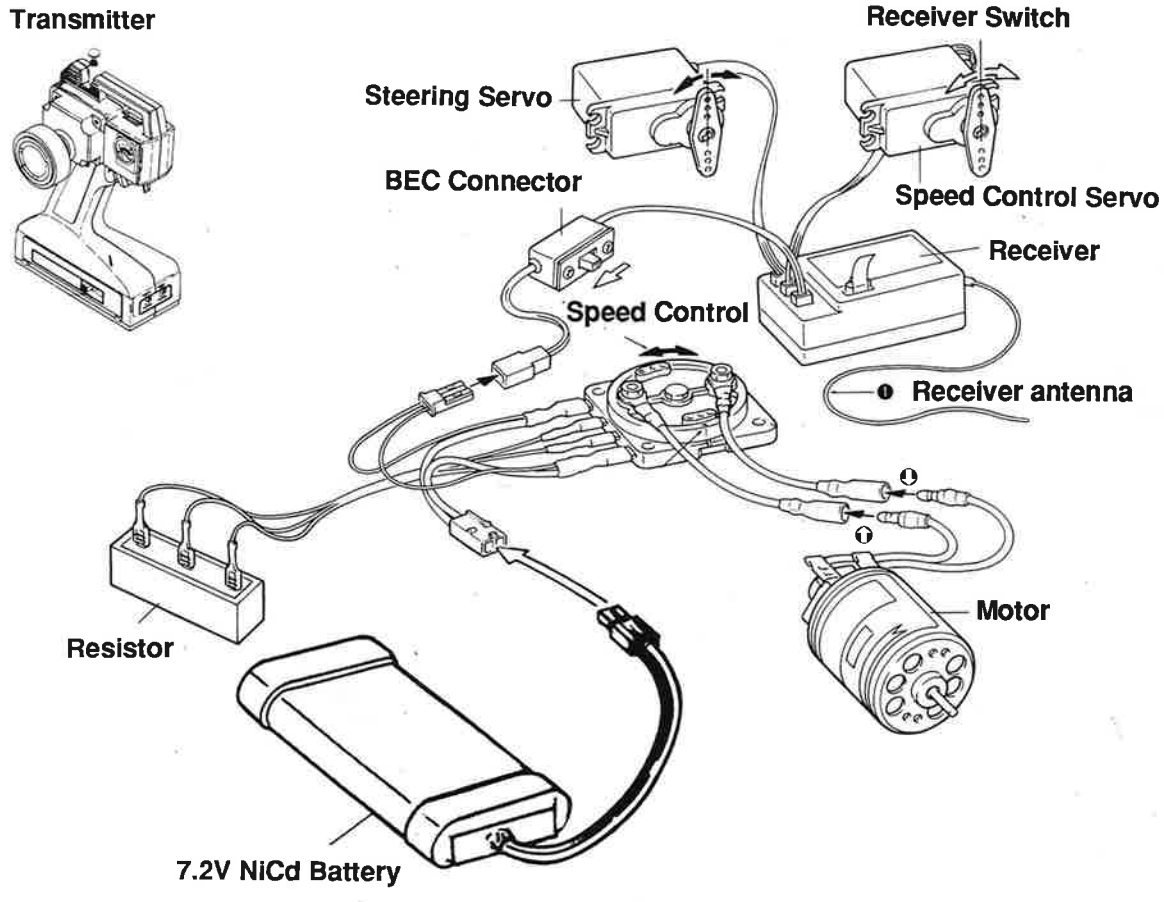
Decide whether your radio is in proper working order. If you decide that it is defective, check the warranty procedures described in the radio instruction manual. When turning off the system, always turn the receiver off first, then the transmitter. This will prevent the receiver from responding to stray signals which can cause damage.

ADJUSTING THE RADIO SYSTEM

When installing the radio system in the car the servos will need to be centered. This means that the servo trim has equal amount of adjustment in both directions. To adjust the servos turn the transmitter then the receiver on. The transmitter will have trim levers or wheels to adjust the trim. Check the radio's instruction manual for the location of the trim adjustments. Set the servo trims to the center position. Now turn the receiver off then the transmitter. The servos are now centered. When installing the servo arms on the servos during construction. do not manually turn the servo arms. If turned the servos will have to be re-centered.

RADIO FREQUENCY NOTICE

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 "27 MHz" bands. Use of any other frequencies is both illegal and dangerous.

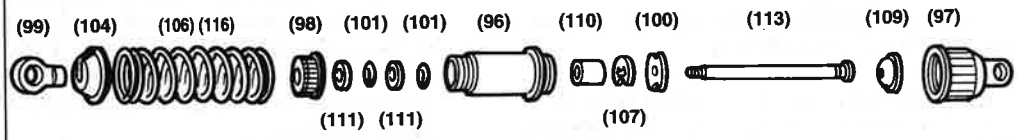


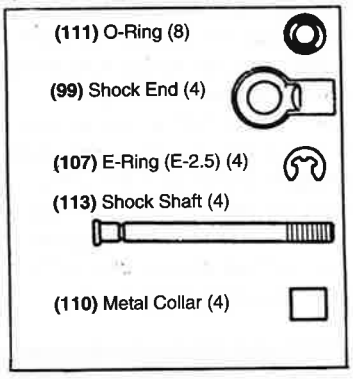
1 ASSEMBLY OF SHOCKS

IMPORTANT:
These instructions show how to build the Outlaw Raider ARR from a kit, this will help you locate and replace worn or broken parts later on. The Outlaw Raider ARR comes 80% assembled yet some assembly is still required. Remove the shocks and follow step 1 to fill the shocks with oil. Next go to step 6 and install the Front Body Mount.

Assemble four **Shocks** as shown.

EXPLODED VIEW OF SHOCK





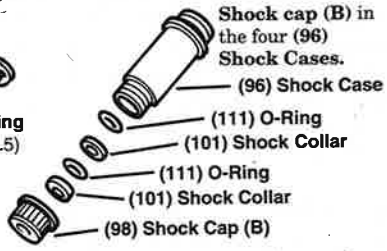
STEP 1

The **(102) (103) Spring Spacers** can be installed before the **Shock Springs.** This will make the Shock Springs harder.

Install the **(100) Shock Pistons** onto the four **(113) Shock Shafts**. Secure the piston with a **(107) E-Ring.** Note: A needle nose pliers works great for installing E-Rings.

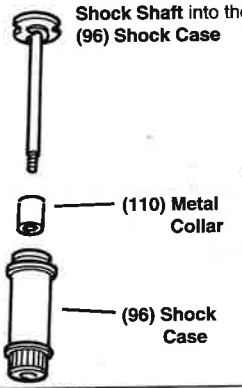
STEP 2

Install the **(111) Shock O-Ring, (101) Shock Collar** and **(98) Shock cap (B)** in the four **(96) Shock Cases.**



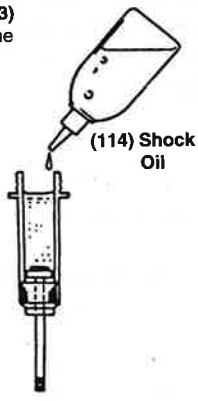
STEP 3

Install the **(110) Metal Collar** onto the four **(113) Shock Shafts.** Then install the **(113) Shock Shaft** into the **(96) Shock Case**



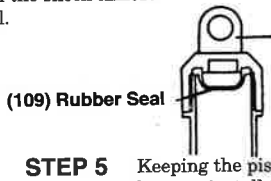
STEP 4

Push the piston all the way down and put the oil in little by little while carefully moving the piston up and down about 1/4" to 1/2". This will help remove air bubbles. Fill the shock almost full.



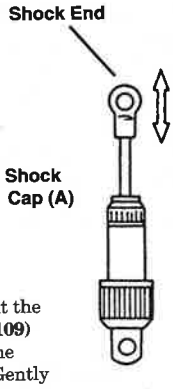
STEP 5

Keeping the piston at the bottom, install the **(109) Rubber Seal** into the **(96) Shock Case .** Gently screw the **(97) Shock Cap (A)** onto the Shock Case.



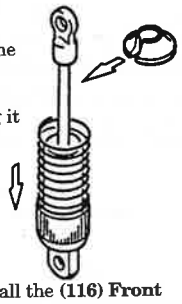
STEP 6

Install the **(99) Shock End** on the four **(113) Shock Shafts.** Wrap a piece of paper around the shock shaft and hold it with a pliers. Check to see if the **(100) Shock Piston** moves freely by moving it up and down.



STEP 7

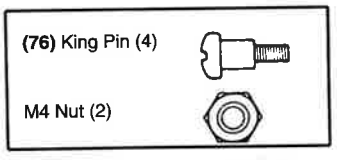
Install the **(116) Front Spring (Black)** and **(106) Rear Spring (Silver)** over the **(96) Shock Case.**Install the **(104) Spring Stopper** by sliding it over the **(113) Shock Shaft.**



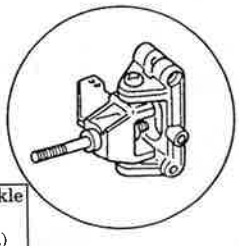
OPTIONAL:
The Outlaw Raider ARR shocks may be replaced with the optional:

W-5001 KYOC5693 Gold Shock Long
W-5004 KYOC5704 Platinum Shock Long

2 ASSEMBLY OF FRONT KNUCKLE ARM



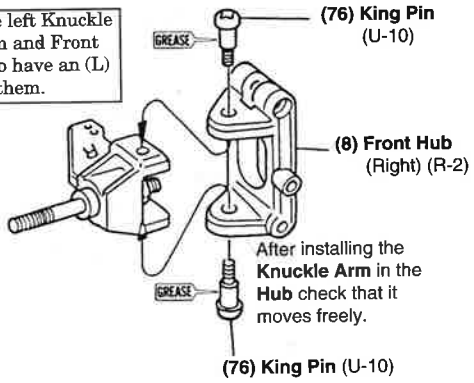
Assembled view of right knuckle arm.



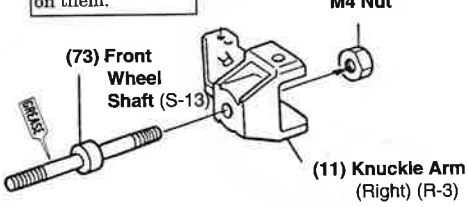
The right Knuckle Arm and Front Hub have an (R) on them.

NOTE: Assemble the left side knuckle arm the same as the right.

The left Knuckle Arm and Front Hub have an (L) on them.



Install the **(73) Front Wheel Shaft** in the **Knuckle Arm** and tighten the **M4 Nut** to secure it.



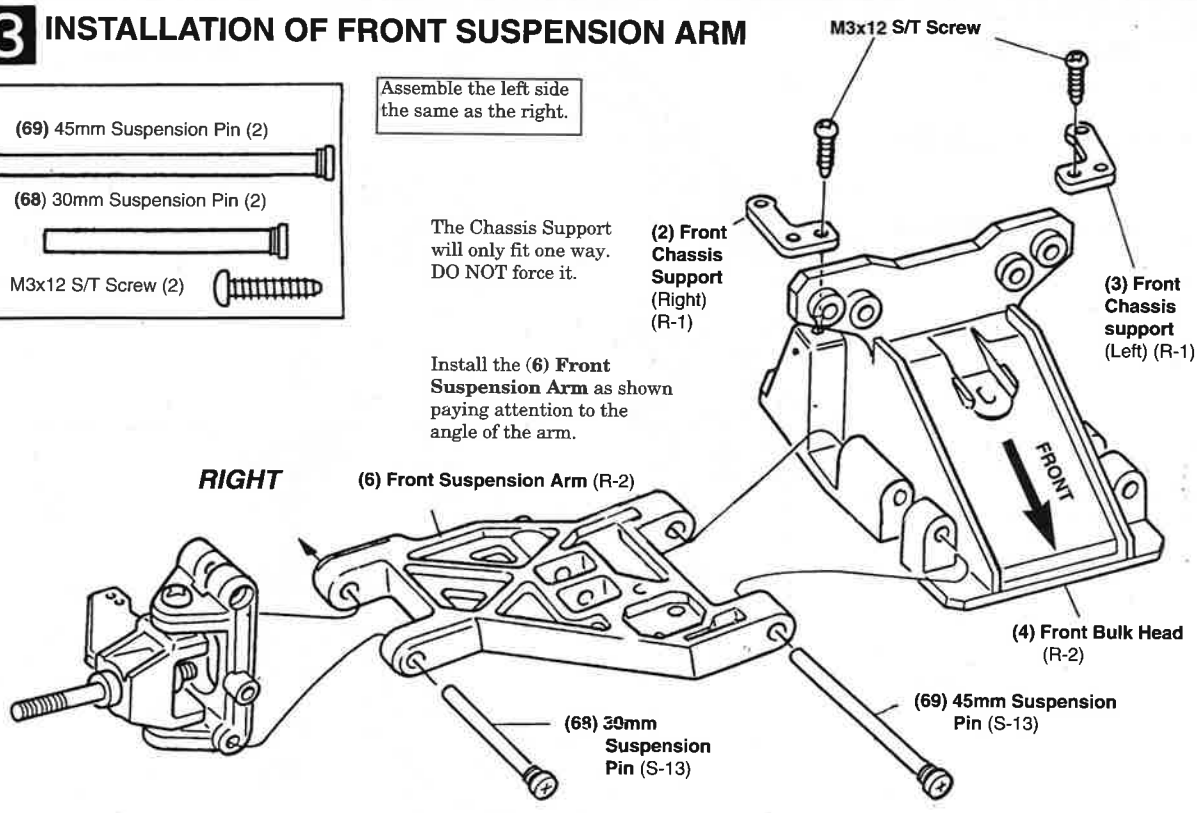
After installing the **Knuckle Arm** in the **Hub** check that it moves freely.

3 INSTALLATION OF FRONT SUSPENSION ARM

Assemble the left side the same as the right.

The Chassis Support will only fit one way. DO NOT force it.

Install the **(6) Front Suspension Arm** as shown paying attention to the angle of the arm.

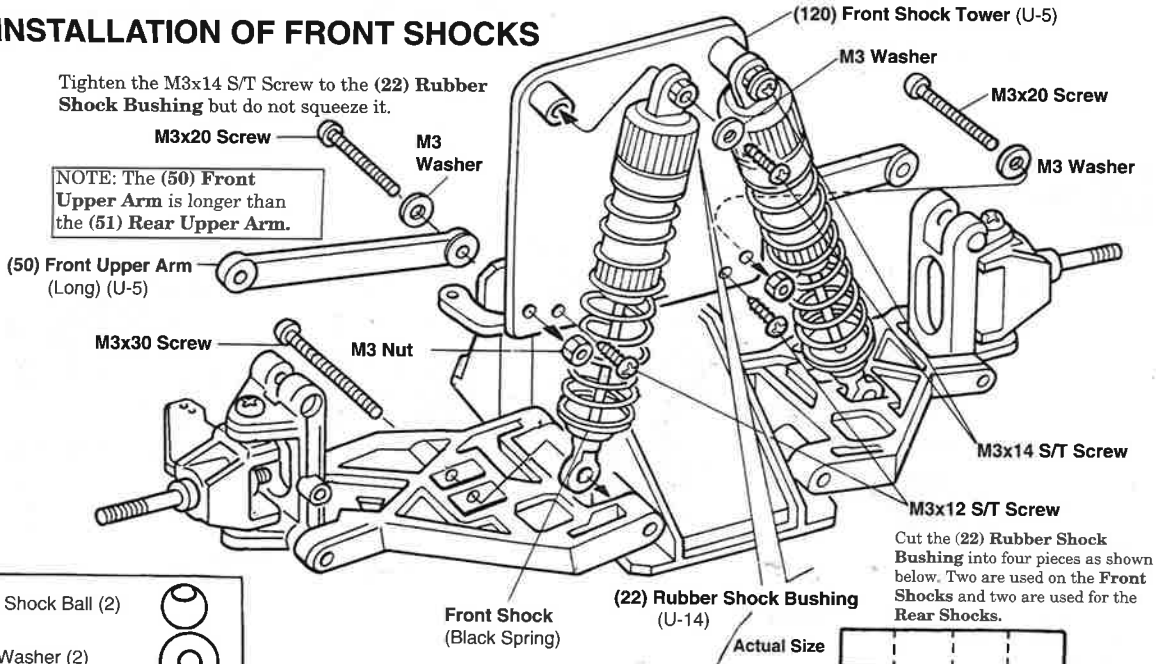


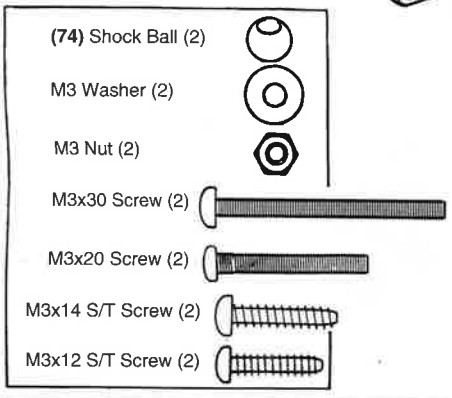
Screw the **Suspension Pins** into the **(6) Front Suspension Arms.**

4 INSTALLATION OF FRONT SHOCKS

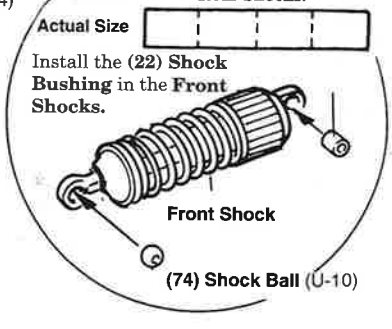
Tighten the M3x14 S/T Screw to the **(22) Rubber Shock Bushing** but do not squeeze it.

NOTE: The **(50) Front Upper Arm** is longer than the **(51) Rear Upper Arm.**





Cut the **(22) Rubber Shock Bushing** into four pieces as shown below. Two are used on the **Front Shocks** and two are used for the **Rear Shocks.**

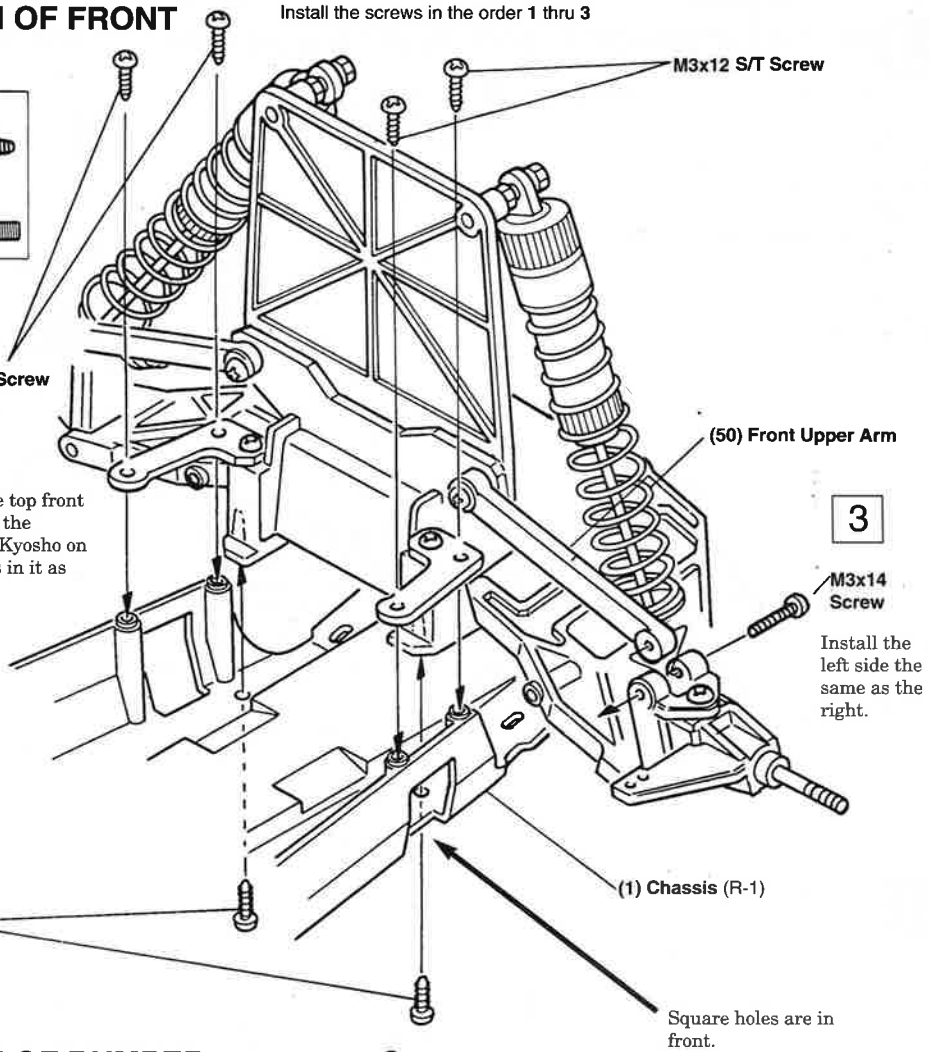


5 INSTALLATION OF FRONT BULKHEAD

Install the screws in the order **1** thru **3**

M3x12 S/T Screw (6)

M3x14 Screw (2)

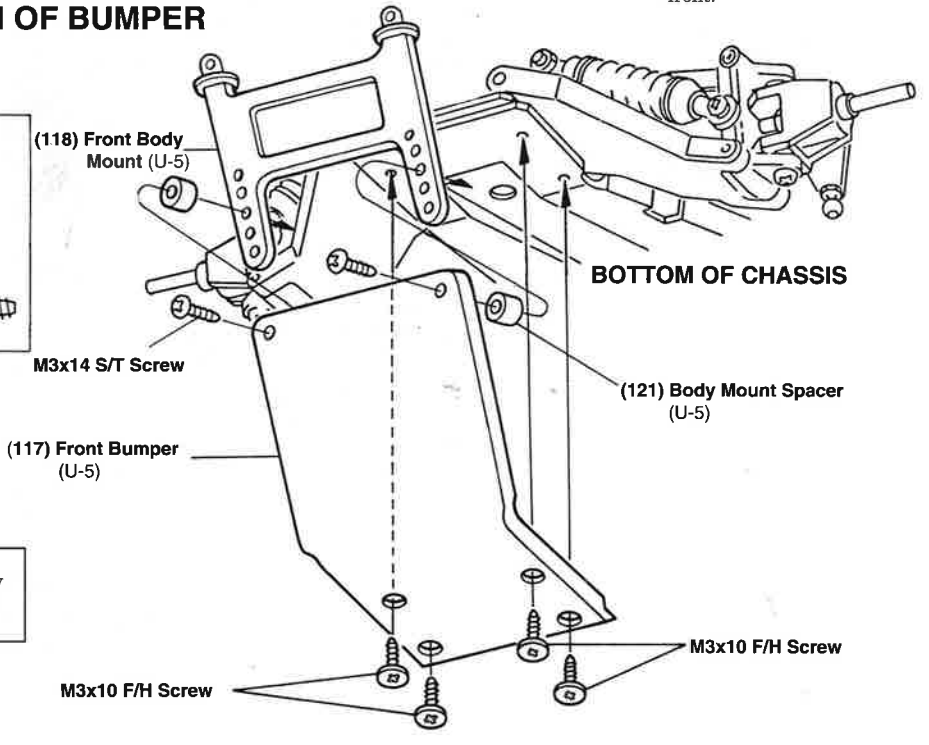


Install the Front Bulkhead on the top front of the **(1) Chassis.** The bottom of the Chassis is flat and has the name Kyosho on it. The front has two square holes in it as shown below.

6 INSTALLATION OF BUMPER

M3x10 F/H Screw (4)

M3x14 S/T Screw (2)



Mount the **(121) Body Mount Spacer** between the **(117) Front Bumper** and the **(118) Front Body Mount**, the **Front Body Mount** is installed behind the **Front Bumper.**

IMPORTANT:
After installing the Front Body Mount, go to step 15 to install the Rear Body Mount.

7 MOTOR INSTALLATION

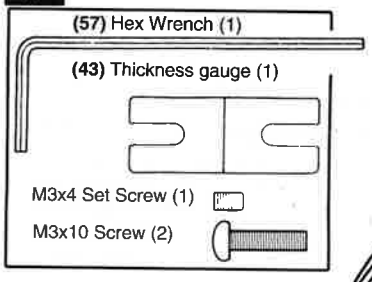
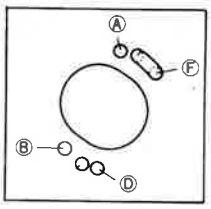


Chart for pinion gear and installation holes.

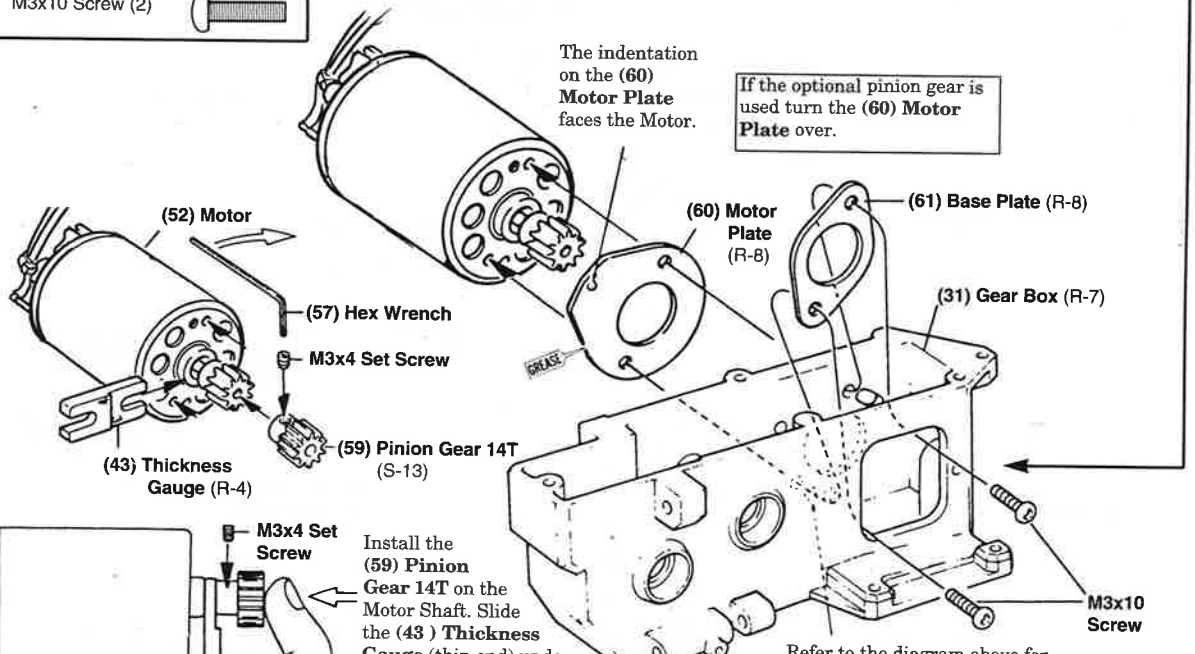
Pinion Gear	Idle Gear	Installation Hole
Kit 14 Tooth	36 Tooth	A and D
Optional 15 Tooth	36 Tooth	B and F



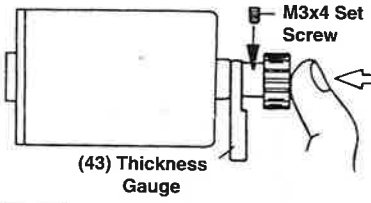
The diagram at the left refers to the mounting holes on the **(31) Gear Box.**

The indentation on the **(60) Motor Plate** faces the Motor.

If the optional pinion gear is used turn the **(60) Motor Plate** over.

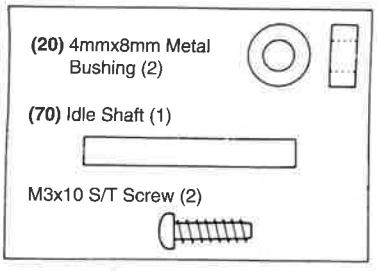


Refer to the diagram above for the mounting holes.

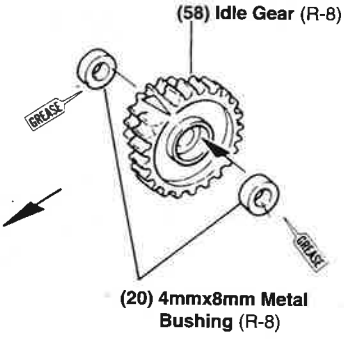


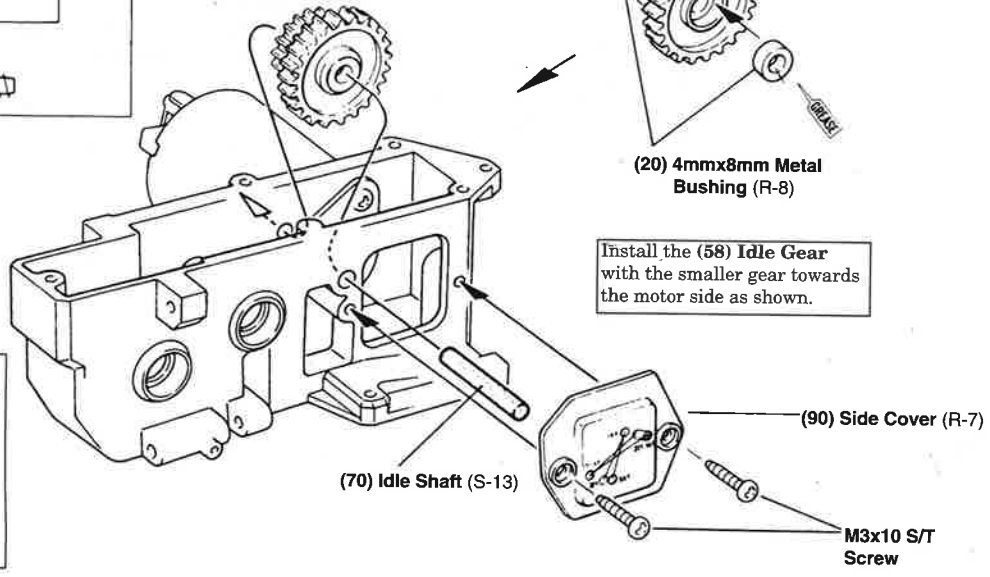
Install the **(59) Pinion Gear 14T** on the Motor Shaft. Slide the **(43) Thickness Gauge** (thin end) under the Pinion Gear. Tighten the **M3x4 Set Screw** on the flat of the Motor Shaft then remove the thickness guage.

8 INSTALLATION OF IDLE GEAR



Important: Install the **(20) 4mmx8mm Bushings** in the **(58) Idle Gear** before installing the gear in the **(31) Gear box.**



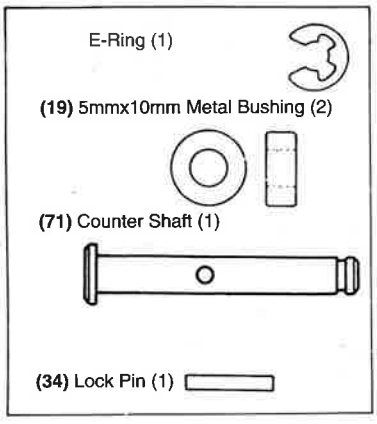


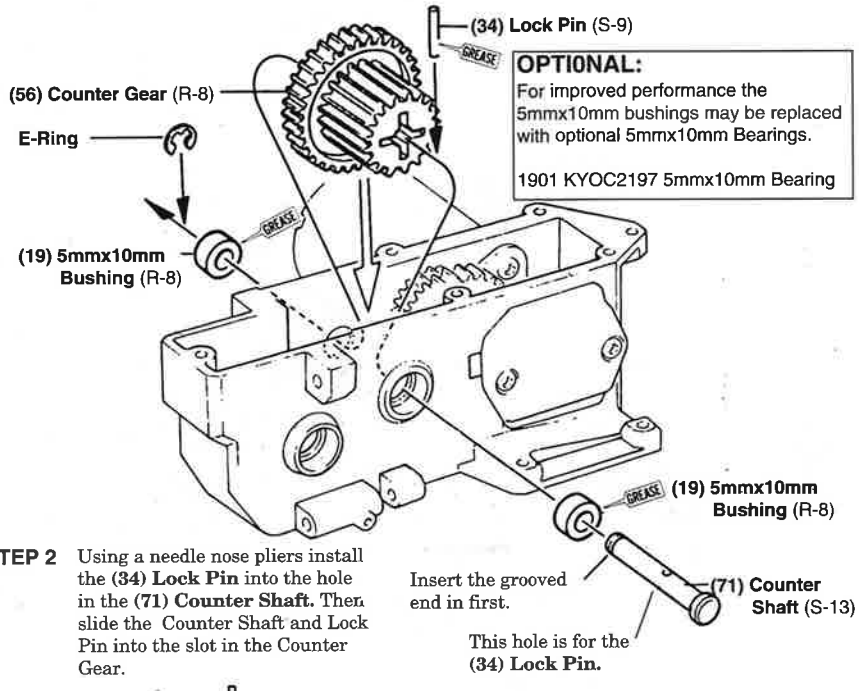
Install the **(58) Idle Gear** with the smaller gear towards the motor side as shown.

OPTIONAL:
For improved performance the 4mmx8mm bushings may be replaced with optional 4mmx8mm Bearings.

1903 KYOC2207
4mmx8mm Bearing

9 INSTALLATION OF COUNTER GEAR



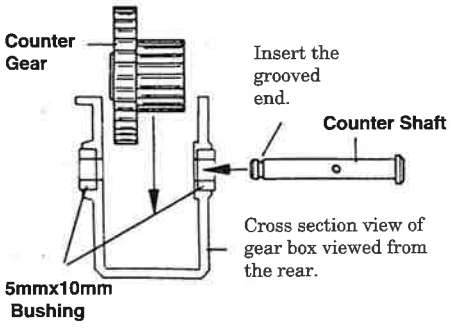


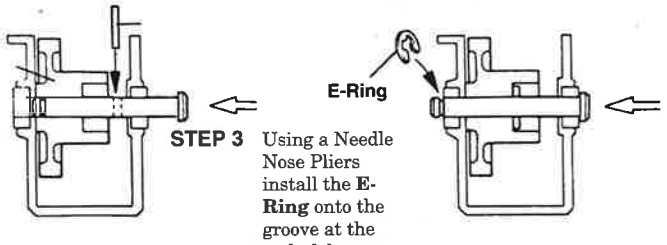
OPTIONAL:
For improved performance the 5mmx10mm bushings may be replaced with optional 5mmx10mm Bearings.

1901 KYOC2197 5mmx10mm Bearing

STEP 1 Install the **(56) Counter Gear** and slide the **(71) Counter Shaft** through the gear.

STEP 2 Using a needle nose pliers install the **(34) Lock Pin** into the hole in the **(71) Counter Shaft.** Then slide the Counter Shaft and Lock Pin into the slot in the Counter Gear.



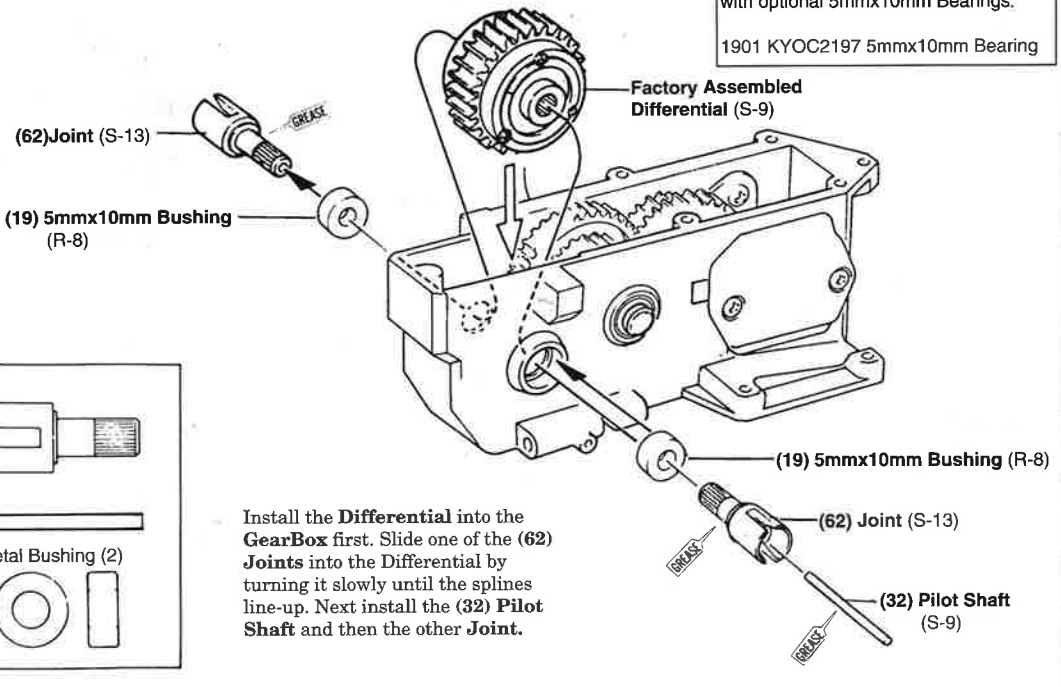


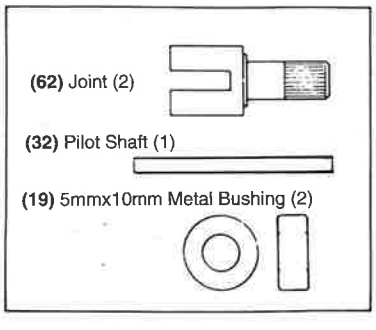
STEP 3 Using a Needle Nose Pliers install the **E-Ring** onto the groove at the end of the **Counter Shaft.**

10 INSTALLATION OF DIFFERENTIAL

OPTIONAL:
For improved performance the 5mmx10mm bushings may be replaced with optional 5mmx10mm Bearings.

1901 KYOC2197 5mmx10mm Bearing

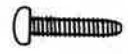




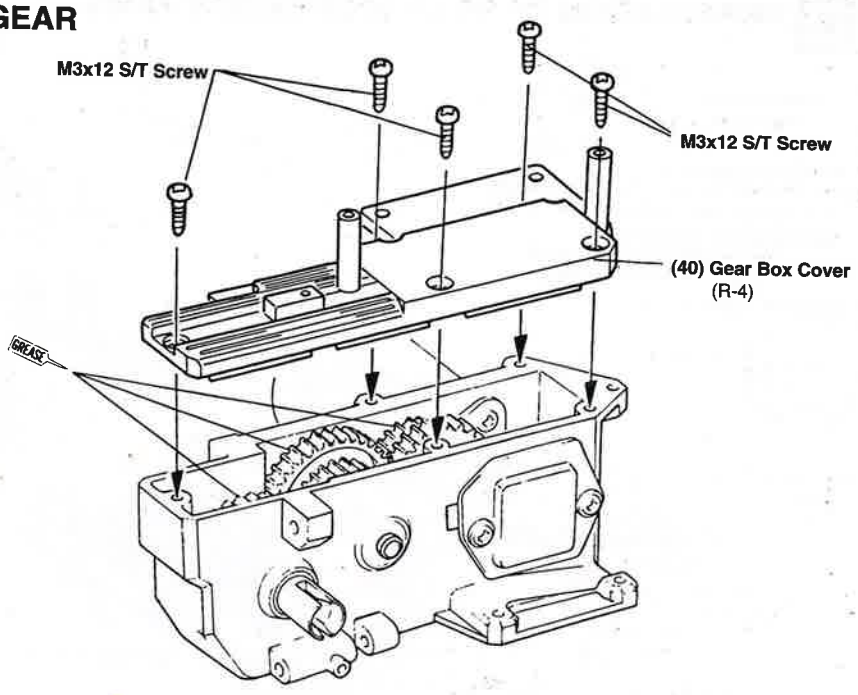
Install the **Differential** into the **GearBox** first. Slide one of the **(62) Joints** into the Differential by turning it slowly until the splines line-up. Next install the **(32) Pilot Shaft** and then the other **Joint.**

11 INSTALLATION OF GEAR BOX COVER

M3x12 S/T Screw (5)



IMPORTANT: Apply plenty of grease to the gears before installing the **(40) Gear Box Cover**.

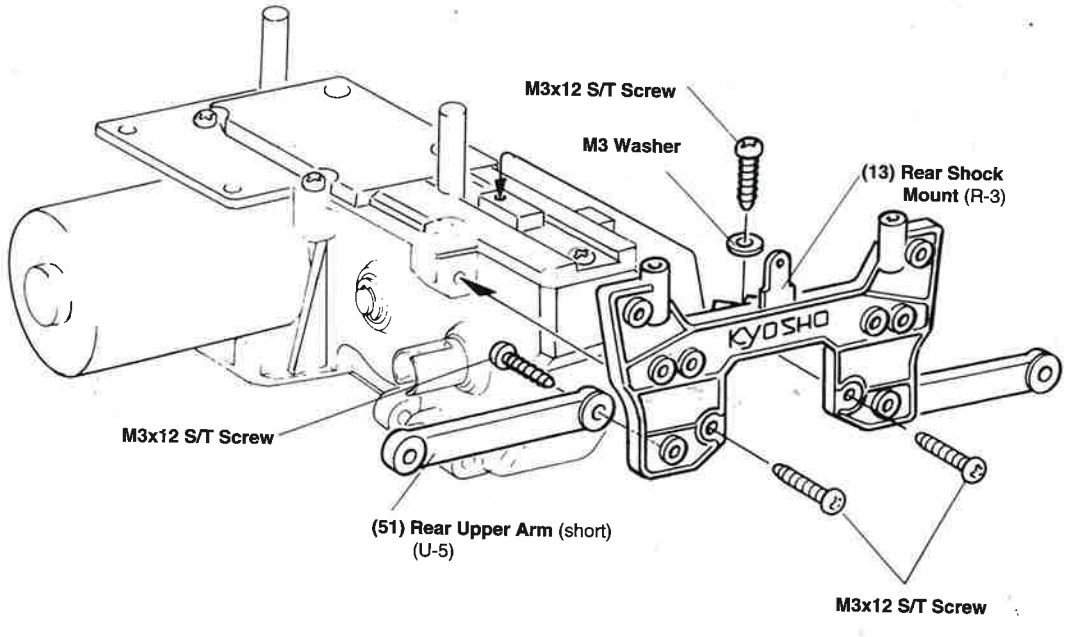


12 INSTALLATION OF REAR SHOCK MOUNT

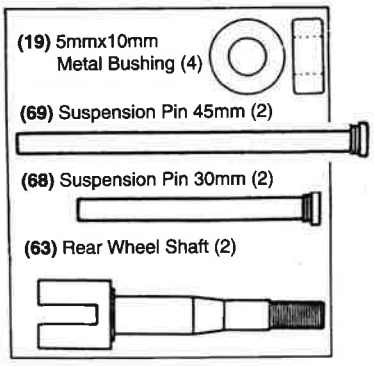
M3x12 S/T Screw (5)

M3 Washer (1)

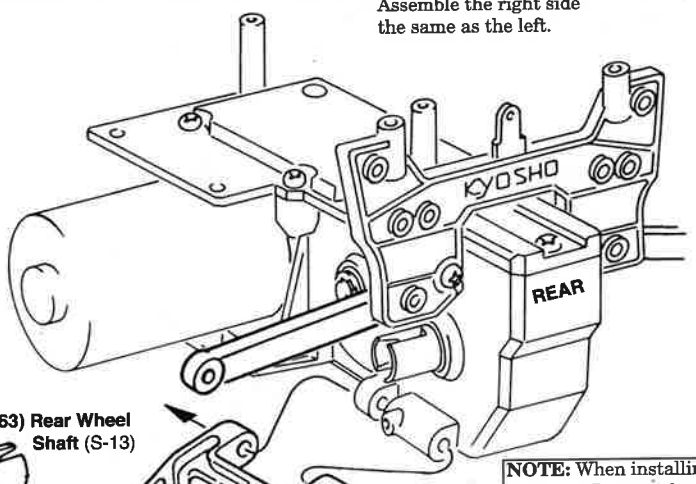
Install the **(51) Rear Upper Arm** to the **(13) Rear Shock Mount** before installing the Shock Mount on the Gear Box.

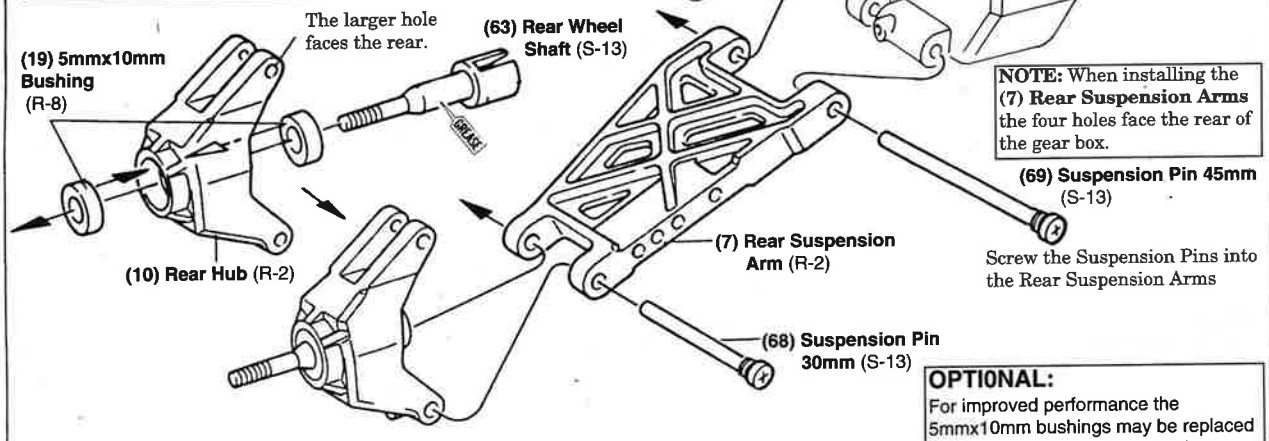


13 INSTALLATION OF REAR SUSPENSION ARMS



Assemble the right side the same as the left.





NOTE: When installing the **(7) Rear Suspension Arms** the four holes face the rear of the gear box.

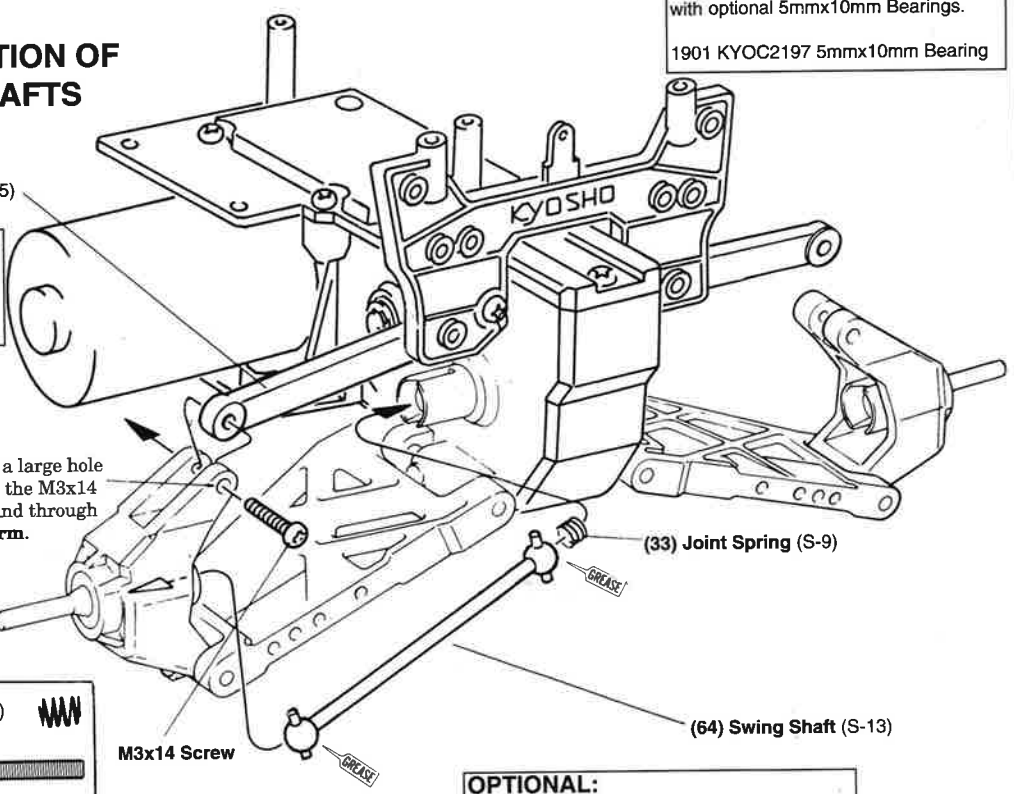
(69) Suspension Pin 45mm (S-13)

Screw the Suspension Pins into the Rear Suspension Arms

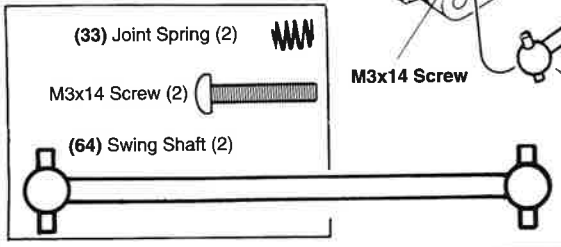
OPTIONAL:
For improved performance the 5mmx10mm bushings may be replaced with optional 5mmx10mm Bearings.

1901 KYOC2197 5mmx10mm Bearing

14 INSTALLATION OF SWING SHAFTS



IMPORTANT: Install the **(64) Swing Shafts** and **(33) Joint Springs** before attaching the **(51) Rear Upper Arm.**



OPTIONAL:
For smoother operation the Rear Wheel Shafts and the Swing Shafts may be replaced with the optional Universal Swing Shafts.

W-5062 KYOC6128 Universal Swing Shaft

15 INSTALLATION OF REAR SHOCKS

M3x10 S/T Screw (4)

M3x20 Screw (4)

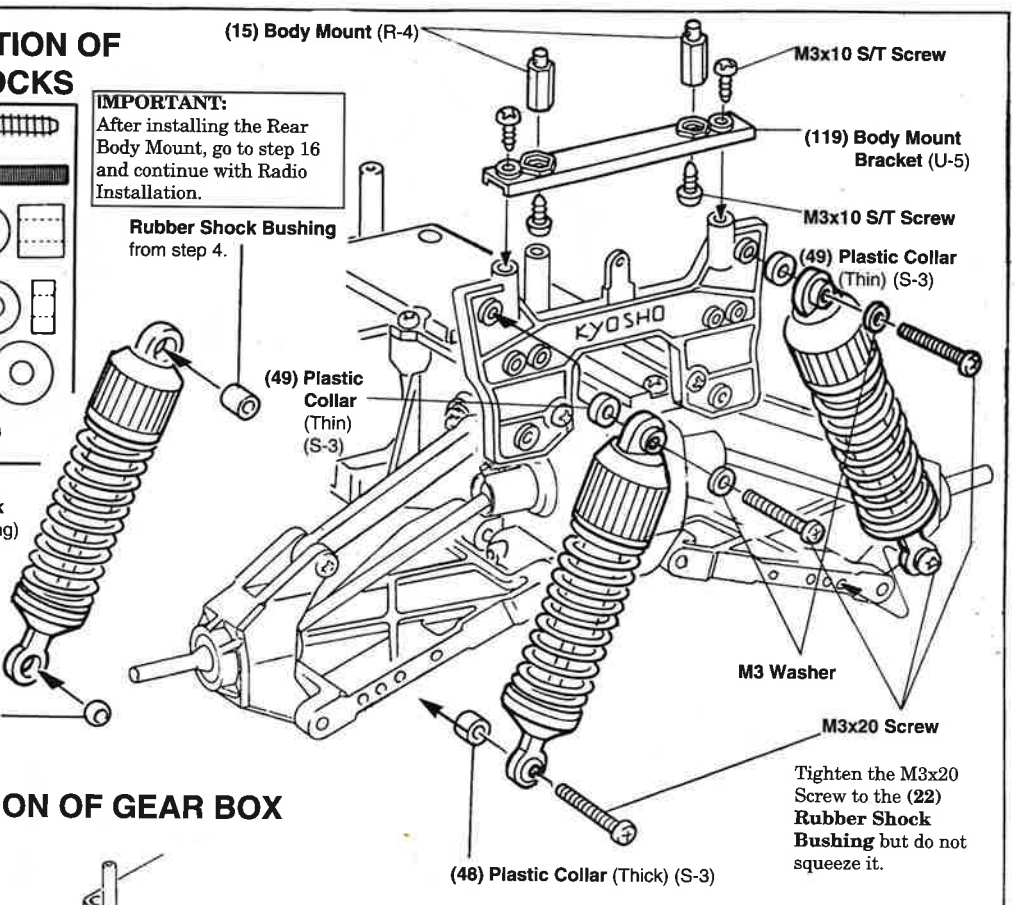
(48) Plastic Collar (Thick) (2)

(49) Plastic Collar (Thin) (2)

M3 Washer (2)

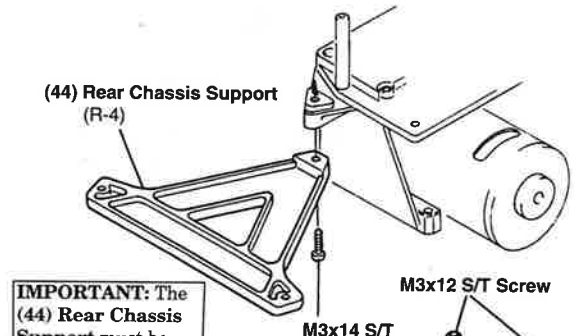
(74) Shock Ball (2)

IMPORTANT:
After installing the Rear Body Mount, go to step 16 and continue with Radio Installation.

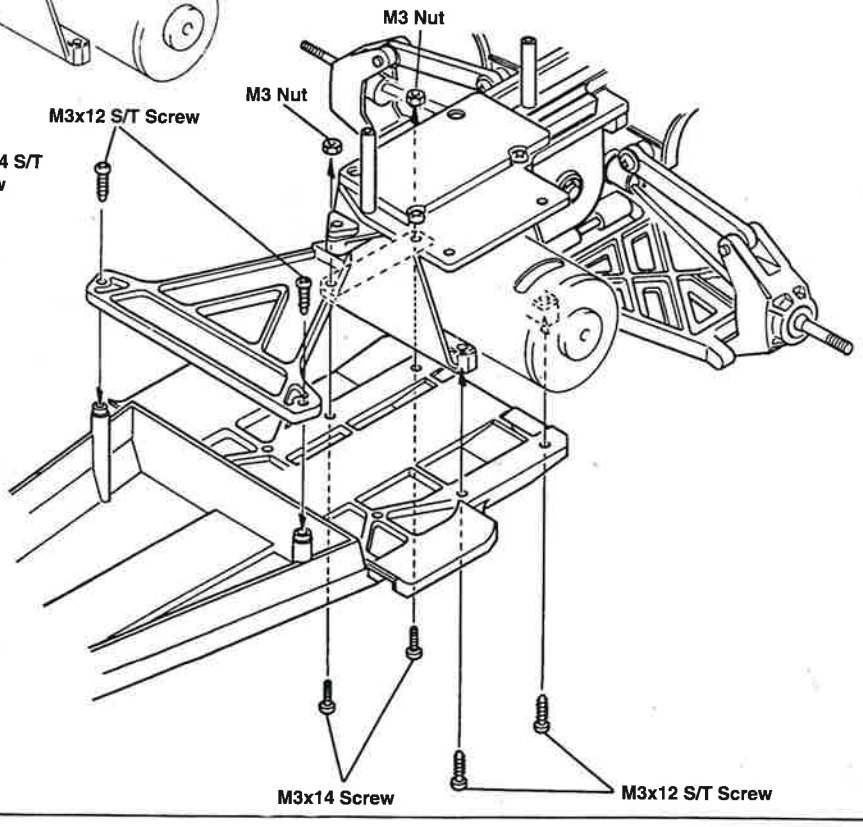


Tighten the M3x20 Screw to the **(22) Rubber Shock Bushing** but do not squeeze it.

16 INSTALLATION OF GEAR BOX



IMPORTANT: The **(44) Rear Chassis Support** must be installed to the **Gear Box** before the **Gearbox** is installed on the **Chassis**.



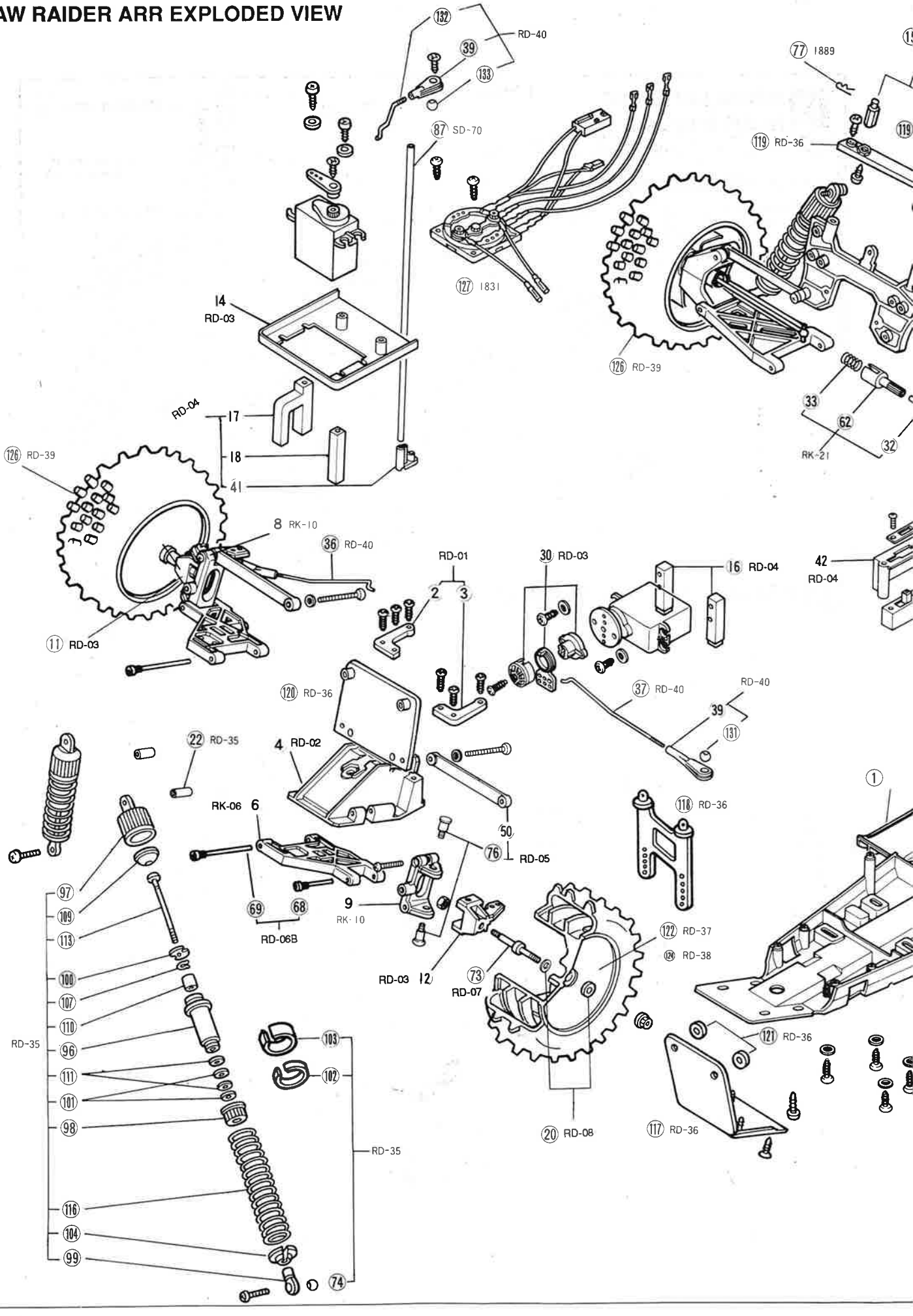
M3x12 S/T Screw (4)

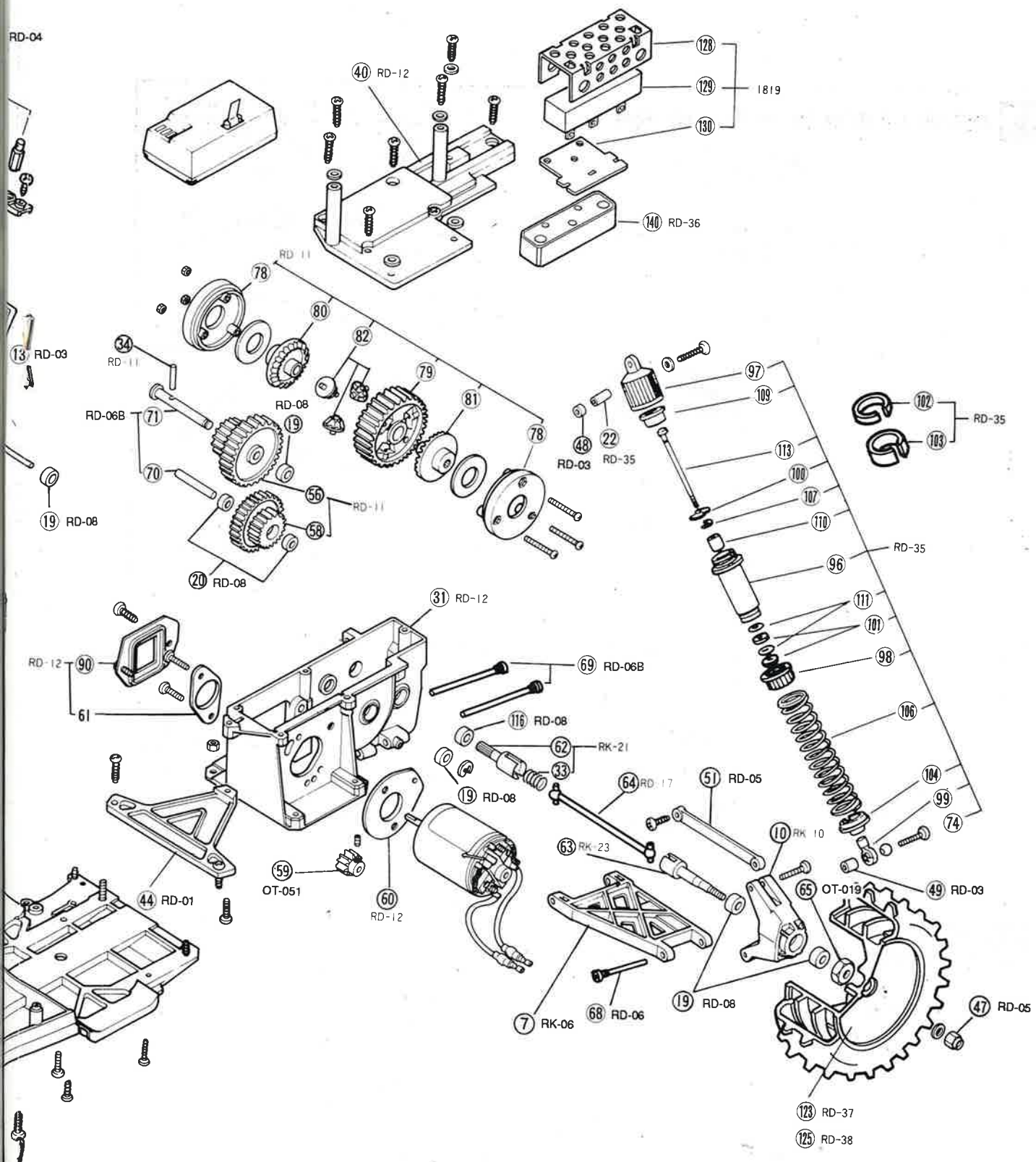
M3x14 Screw (2)

M3 Nut (2)

M3x14 S/T Screw (1)

OUTLAW RAIDER ARR EXPLODED VIEW




RD-04
40 RD-12
128
129
1819
130
140 RD-36
78
80
82
79
81
78
34
RD-11
13 RD-03
RD-08
RD-06B
71
19
70
56
RD-11
58
20 RD-08
19 RD-08
48 RD-03
22 RD-35
97
109
113
100
107
110
96
RD-35
111
101
98
106
104
99
74
102
103
RD-35
31 RD-12
RD-12
90
61
69 RD-06B
116 RD-08
62 RK-21
33
19 RD-08
64 RD-17
51 RD-05
10 RK-10
63 RK-23
49 RD-03
65 OT-019
44 RD-01
59
OT-051
60
RD-12
7 RK-06
68 RD-06
19 RD-08
47 RD-05
123 RD-37
125 RD-38

17 INSTALLATION OF SERVO SAVER

M3 Washer (2)

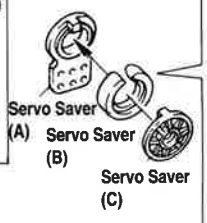
M2x6 S/T Screw (2)

M3x12 S/T Screw (3)

(39) 4.5mm Ball End (2)

NOTE: The Servo Saver parts are packed in bag 1.

STEP 1



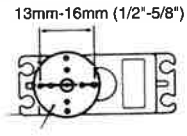
Snap **Servo Saver (B)** onto **Servo Saver (A)** as shown.

Slowly lower **Servo Saver (B)** so not to dislocate the fitting.

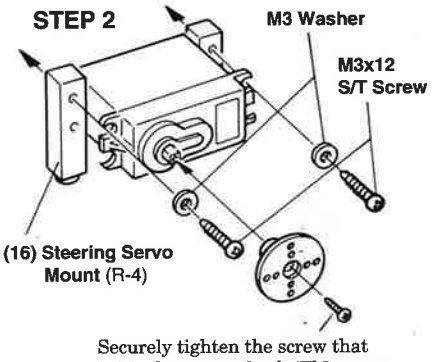
Snap **Servo Saver (C)** onto **Servo Saver (B).**

With the servo in the neutral position as described on page 5, install the servo wheel so that the holes are parallel to the side of the servo.

Use a round servo wheel that has holes spaced 13mm to 16mm(1/2"-5/8") apart.

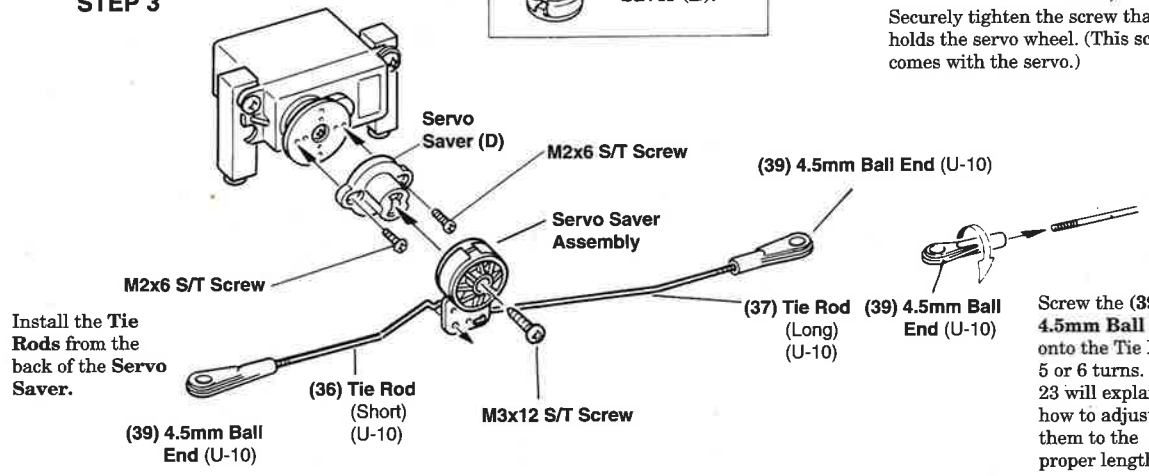


STEP 2



Securely tighten the screw that holds the servo wheel. (This screw comes with the servo.)

STEP 3



Install the **Tie Rods** from the back of the **Servo Saver.**

Screw the **(39) 4.5mm Ball End** onto the Tie Rods 5 or 6 turns. Page 23 will explain how to adjust them to the proper length.

18 INSTALLATION OF STEERING SERVO

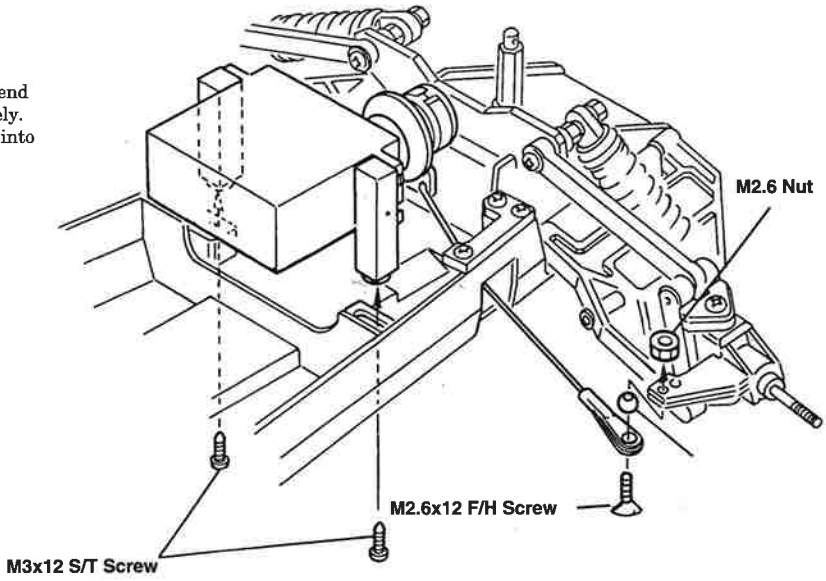
If the **Tie Rods** hit the **Chassis**, bend them slightly so they can move freely. Snap the **(131) 4.5mm Ball (gold)** into the **(39) 4.5 Ball End.**

M3x12 S/T Screw (2)

M2.6x12 F/H Screw (2)

M2.6 Nut (2)

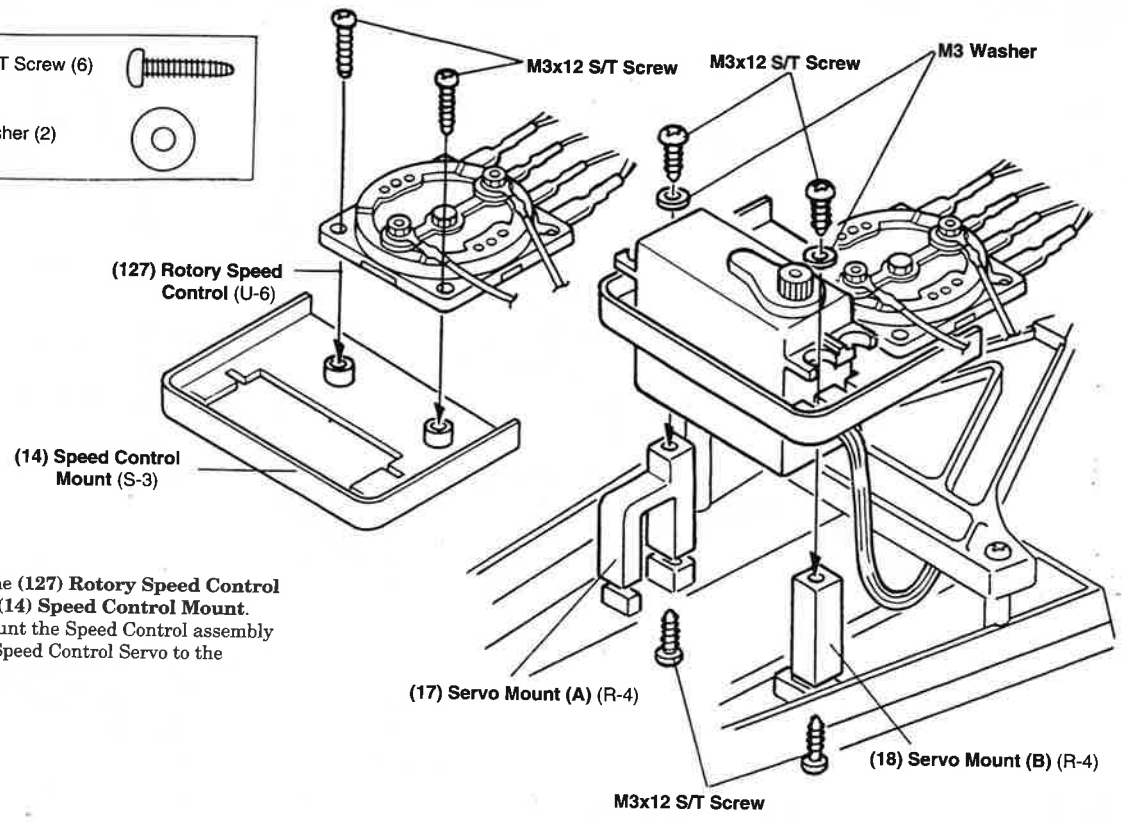
(131) 4.5mm Ball (Gold) (2)



19 INSTALLATION OF SPEED CONTROL

M3x12 S/T Screw (6)

M3 Washer (2)



Install the **(127) Rotory Speed Control** onto the **(14) Speed Control Mount**. Then mount the Speed Control assembly and the Speed Control Servo to the Chassis.

20 INSTALLATION OF SPEED CONTROL ROD

M3x10 S/T Screw (4)

M2x6 S/T Screw (1)

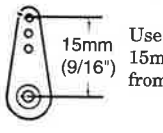
M2x4 Screw (1)

(132) Speed Control Rod (1)

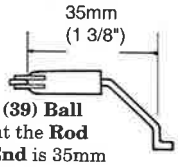
(29) Heat Resistant Washer (2)

(133) 4.5mm Ball (Silver) (1)

(39) 4.5mm Ball End (1)

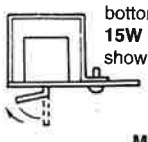


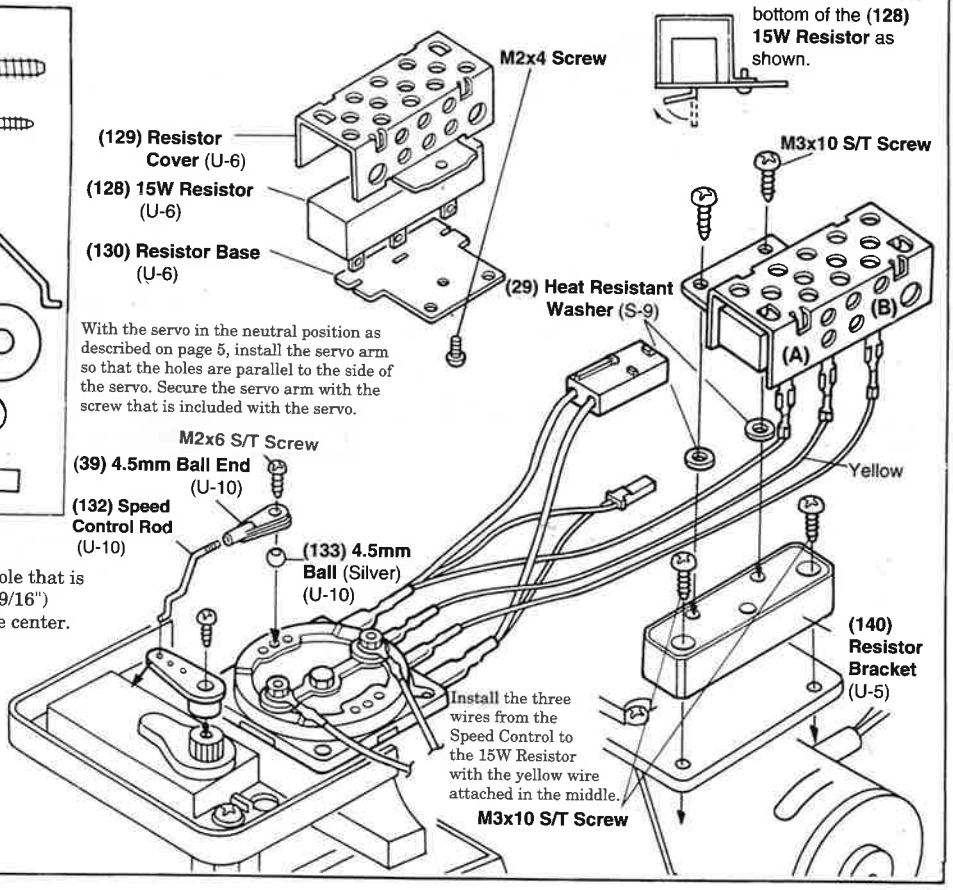
Use a hole that is 15mm (9/16") from the center.



Install the **(39) Ball End** so that the **Rod** and **Ball End** is 35mm (1 3/8") long.

Bend the tabs on the bottom of the **(128) 15W Resistor** as shown.





With the servo in the neutral position as described on page 5, install the servo arm so that the holes are parallel to the side of the servo. Secure the servo arm with the screw that is included with the servo.

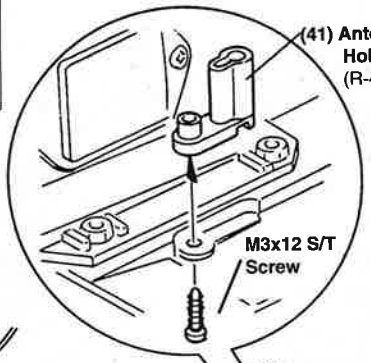
Install the three wires from the Speed Control to the 15W Resistor with the yellow wire attached in the middle.

21 INSTALLATION OF RECEIVER

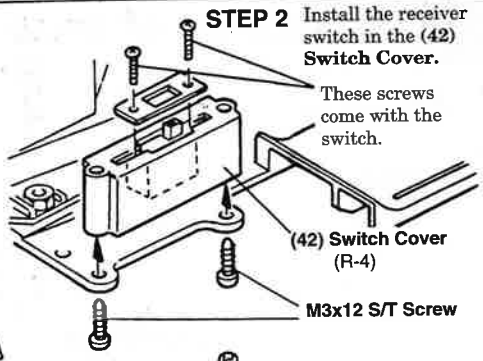
M3x12 S/T Screw (5)

M3 Washer (2)

STEP 1 Install the **(41) Antenna Holder** to the right side of the chassis.

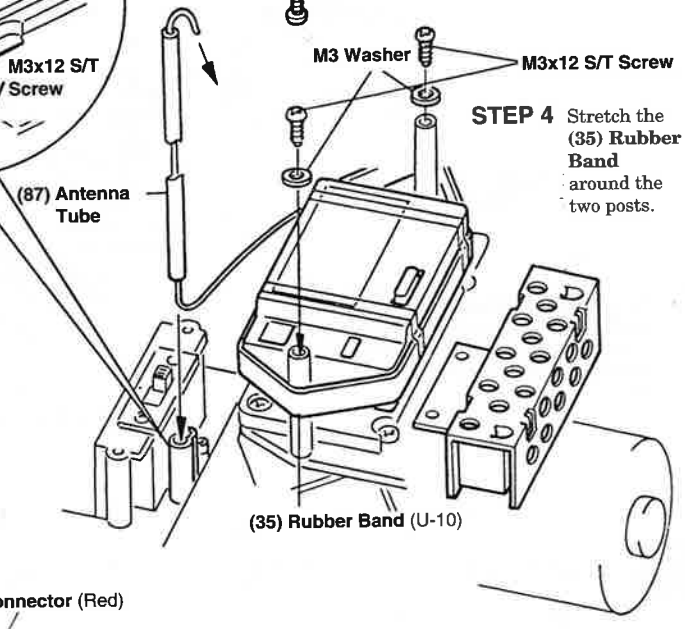


STEP 2 Install the receiver switch in the **(42) Switch Cover.**

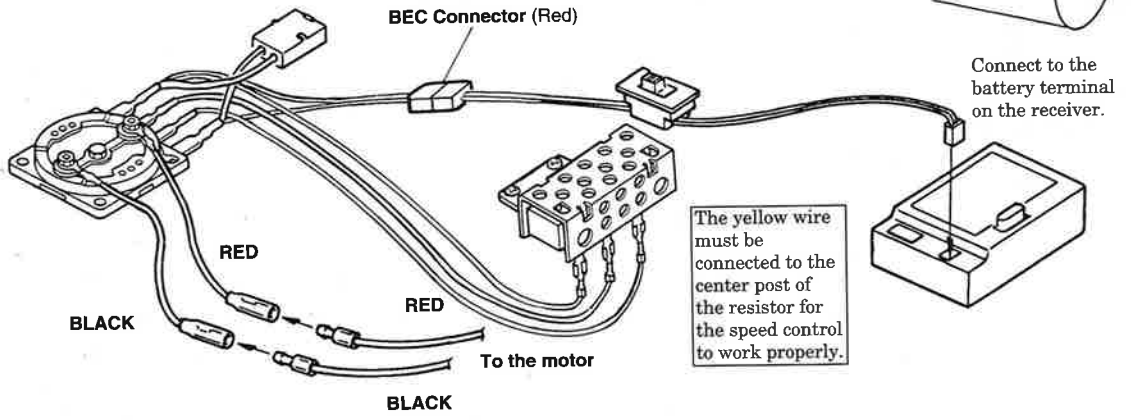


STEP 3 Secure the **(35) Rubber Band** to the receiver with a spare section of the decal sheet or tape.

STEP 4 Stretch the **(35) Rubber Band** around the two posts.

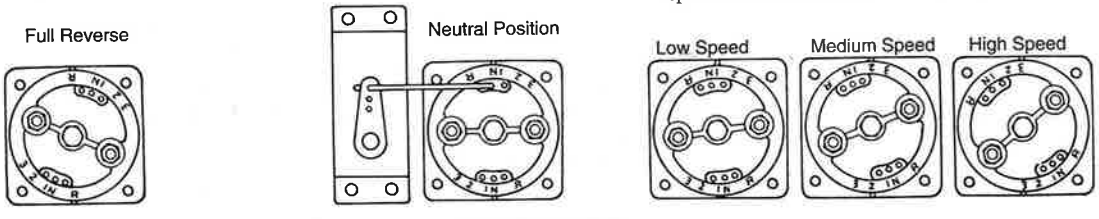


22 WIRING OF SPEED CONTROL

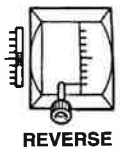


23 SPEED CONTROL ADJUSTMENT

Check that the speed control movements correspond with the speed control stick movements.



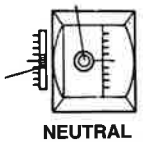
Speed Control Stick



REVERSE

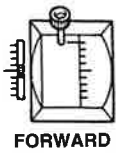
The speed control stick is at its lowest position. On a "Pistol" type radio the trigger is pushed forward.

Trim Lever



NEUTRAL

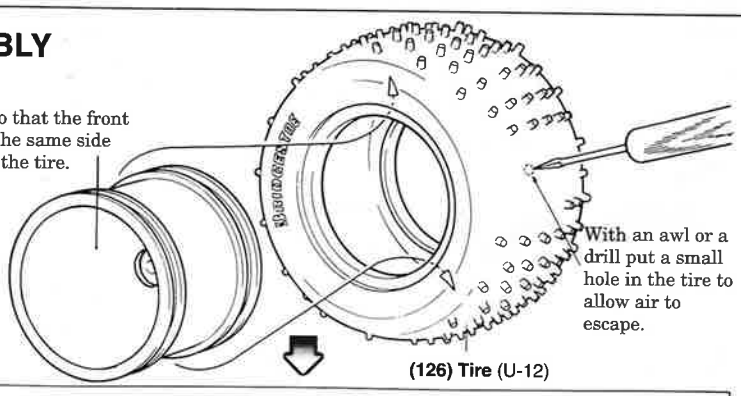
The speed control stick is at center position. On a"Pistol" type radio the trigger is centered.

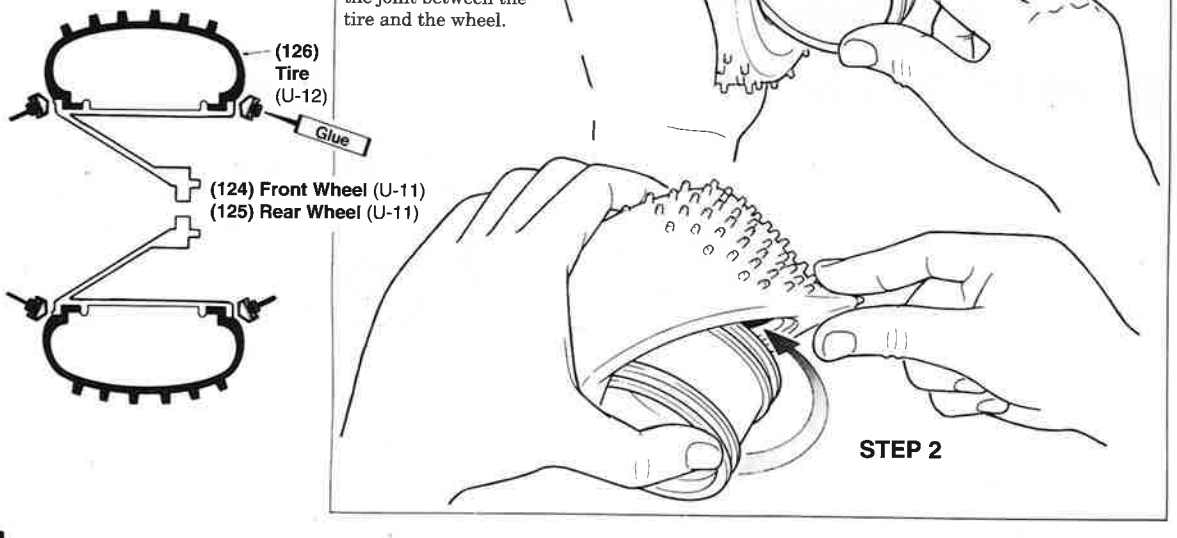


FORWARD

The speed control stick is at its highest position. On a "Pistol" type radio the trigger is squeezed.

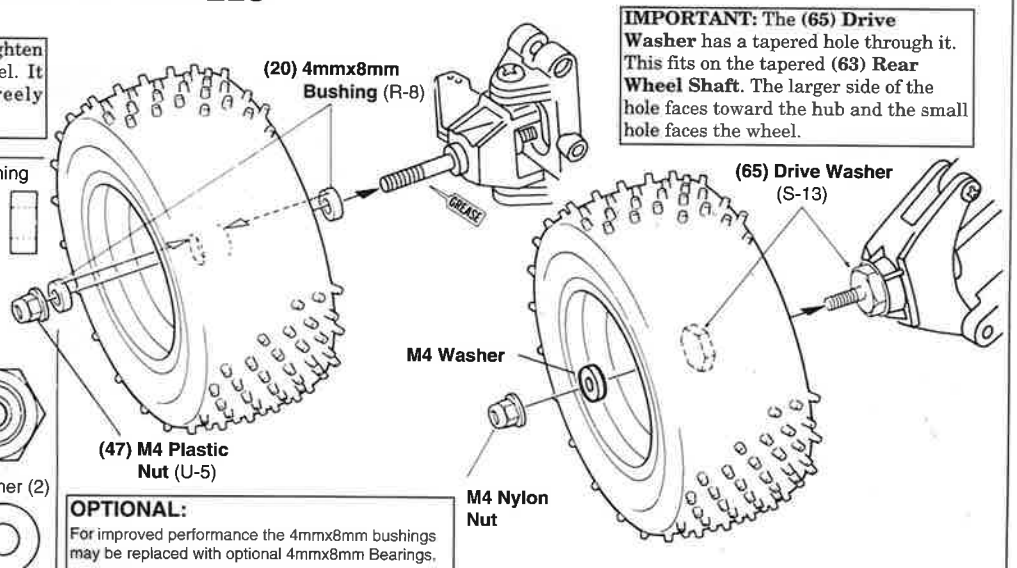
24 TIRE AND WHEEL ASSEMBLY





25 INSTALLATION OF WHEELS

CAUTION: Do not overtighten the nut on the front wheel. It must be able to spin freely without any side play.



IMPORTANT: The **(65) Drive Washer** has a tapered hole through it. This fits on the tapered **(63) Rear Wheel Shaft**. The larger side of the hole faces toward the hub and the small hole faces the wheel.

OPTIONAL:
For improved performance the 4mmx8mm bushings may be replaced with optional 4mmx8mm Bearings.

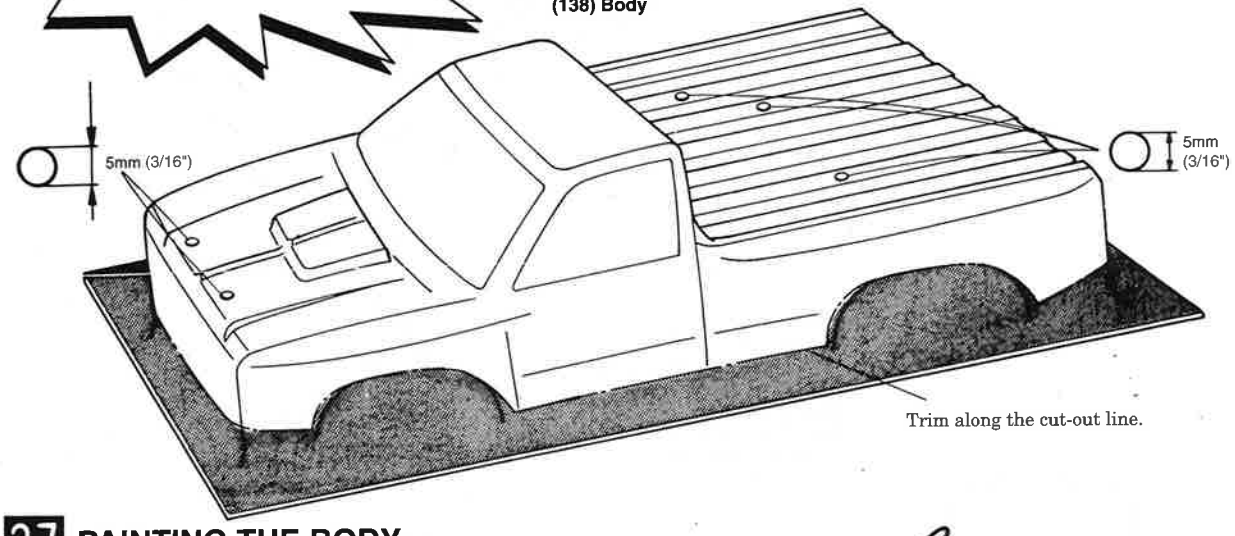
1903 KYOC2207 4mmx8mm Bearing

26 TRIMMING THE BODY

(The Outlaw Raider ARR body comes prepainted)

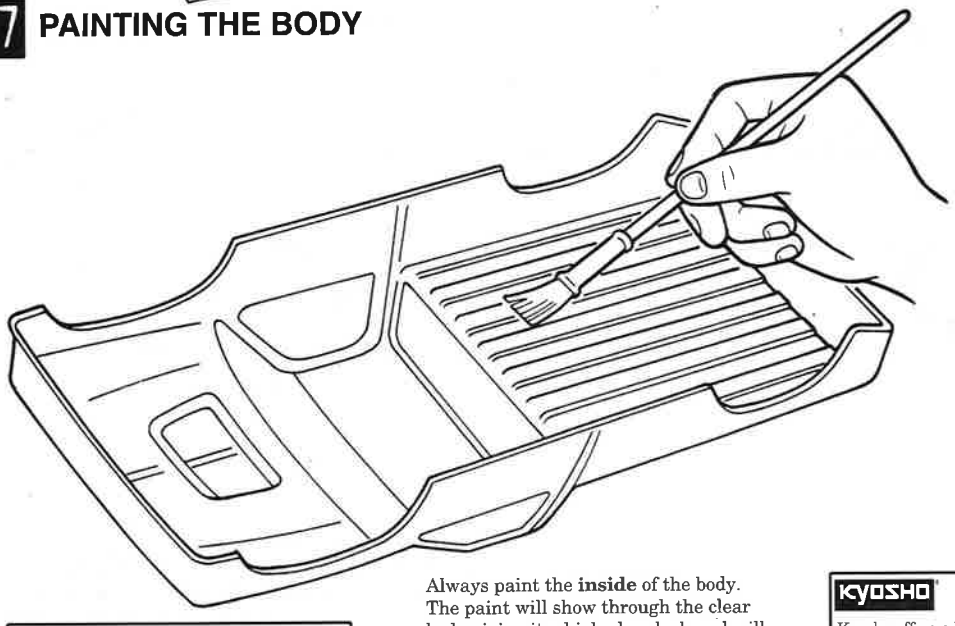
Drill 5mm (3/16") holes at the indentations on the front and rear of the body for the body mounts and the antenna.

(138) Body



Trim along the cut-out line.

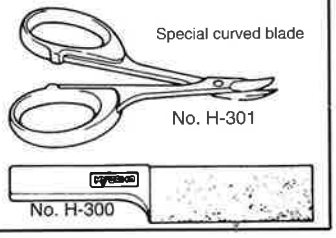
27 PAINTING THE BODY



Always paint the **inside** of the body. The paint will show through the clear body giving it a high gloss look and will be less likely to get scratched while running the truck. To paint the body, first wash it with soap and water to remove any dirt and oil. Rinse and dry thoroughly. You can obtain a paint scheme by putting pin striping tape on the outside of the body and painting between the lines on the inside.

KYOSHO KYOR1010

These special Lexan scissors make trimming bodies a breeze and the sander helps clean-up the rough edges..



KYOSHO

Kyosho offers a Black Micron Line Tape in .4mm and .7mm sizes. This tape is great for striping around doors and windows.

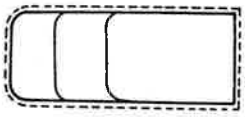
NO.1859 .4mm KYOQ1100
NO.1860 .7mm KYOQ1101

KYOSHO

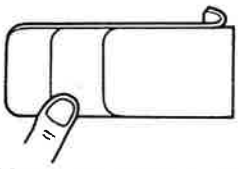
Polyca color paint is available for painting your lexan bodies. Twelve great looking colors are available.

28 APPLYING DECALS

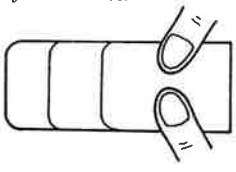
Cut the decal as close to the cut-out lines as possible.



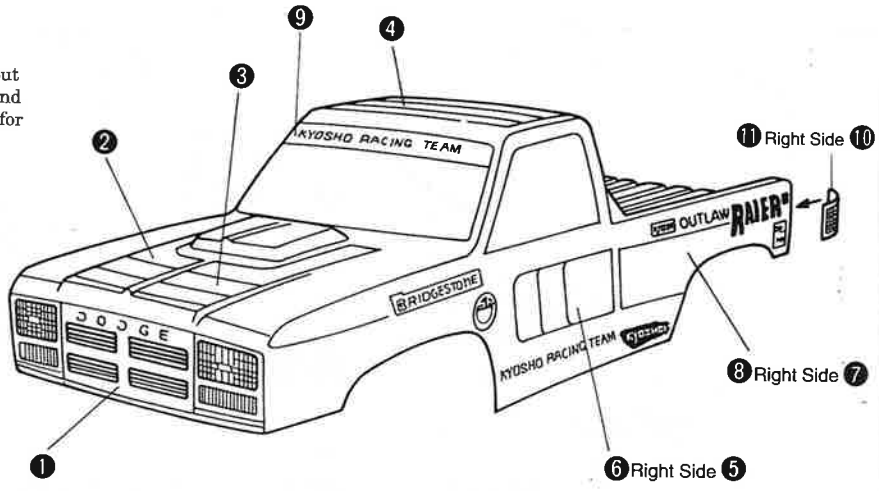
To attach a large decal, remove about 1/2" of the backing from the decal and place the decal in position to check for fit and placement.



After checking the placement of the decal remove the backing as you press the decal down working out any air bubbles.

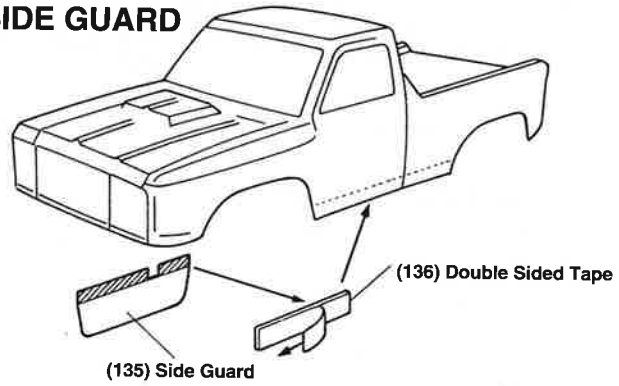


Each decal is numbered corresponding to a position on the body shown below. The un-numbered decals may be placed anywhere on the body.



29 INSTALLATION OF SIDE GUARD

Attach the **(136) Double Sided Tape** to the top of the **(135) Side Guard** as shown below. The top is where the notch is cut out. When installing the Side Guard to the Body the notch goes where the cab meets the truck bed. The Side Guard is attached to the inside of the Body. Install one Side Guard on each side of the Body.

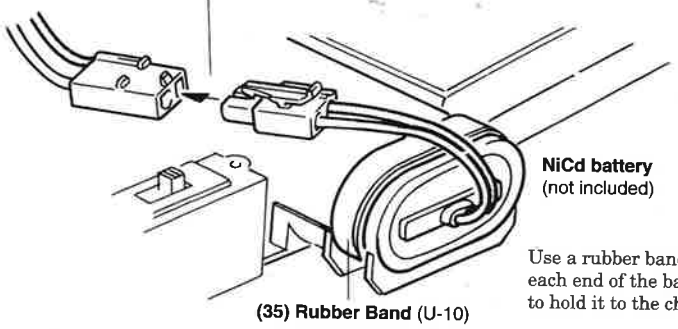


30 INSTALLATION OF BATTERY PACK

Always remove the battery to charge it. The battery will get warm while running the car and while charging it. It is best to let the battery cool before charging it. Heat may shorten the batteries' life over time.

Plug the connectors together. **DO NOT** force them-they fit only one way.

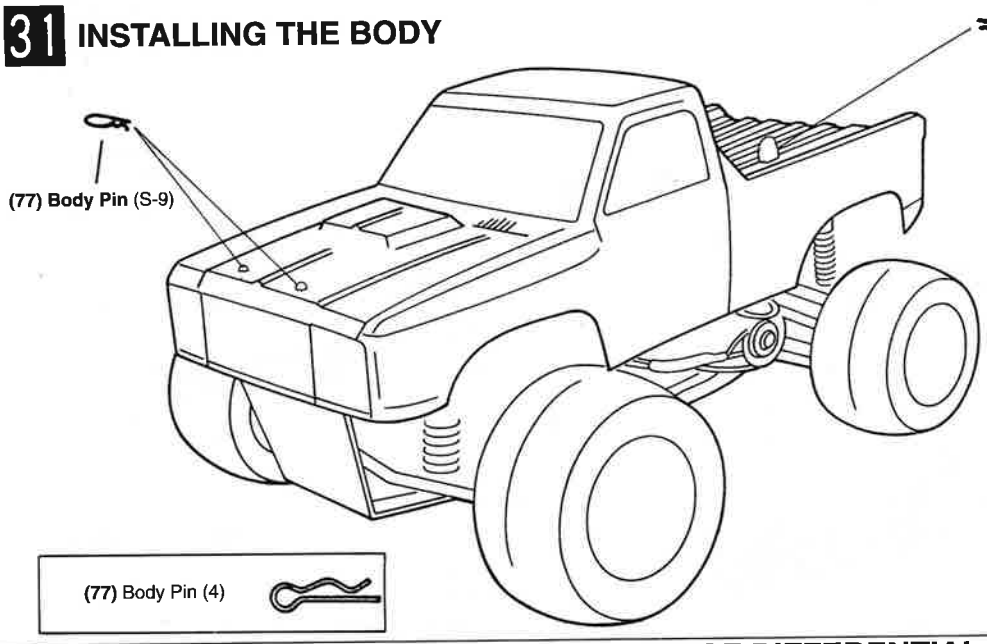
Kyosho offers several types of batteries that work well in your car. One of them is the:
No. 2330B 1700 Speed SCE



Use a rubber band on each end of the battery to hold it to the chassis.

NOTE: Always remove the battery when the car is not in use.

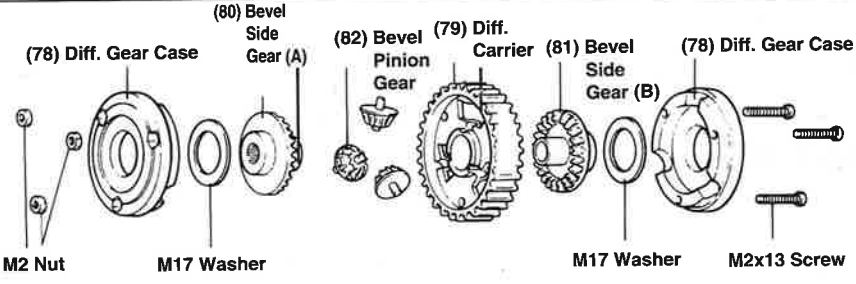
31 INSTALLING THE BODY



(77) Body Pin (4)

EXPLODED VIEW OF DIFFERENTIAL

Apply grease to each gear.



Use thread locking compound on the screws.

OUTLAW RAIDER ARR KEY NUMBERS

Key #	Part Name	Qty.
1.	Chassis	1
2.	Front Chassis Support (Right)	1
3.	Front Chassis Support (Left)	1
4.	Front Bulkhead	1
6.	Front Suspension Arm	2
7.	Rear Suspension Arm	2
8.	Front Hub (Right)	1
9.	Front Hub (Left)	1
10.	Rear Hub	2
11.	Knuckle Arm (Right)	1
12.	Knuckle Arm (Left)	1
13.	Rear Shock Mount	1
14.	Speed Control Mount	1
15.	Body Mount	2
16.	Steering Servo Mount	2
17.	Servo Mount (A)	1
18.	Servo Mount (B)	1
19.	5mmx10mm Metal Bushing	6
20.	4mmx8mm Metal Bushing	6
21.	Hobby Grease	1
22.	Rubber Shock Bushing	1
29.	Washer	2
30.	Servo Saver	1
31.	Gear Box	1
32.	Pilot Shaft	1
33.	Joint Spring	2
34.	Lock Pin	1
35.	Rubber Band	3
36.	Tie Rod (Short)	1
37.	Tie Rod (Long)	1
39.	4.5mm Ball End	2
40.	Gear Box Cover	1
41.	Antenna Holder	1
42.	Switch Cover	1
43.	Thickness Gauge	1
44.	Rear Chassis Support	1

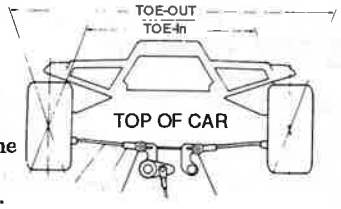
Key #	Part Name	Qty.
47.	M4 Plastic Nut	2
48.	Plastic Collar (A)	2
49.	Plastic Collar (B)	2
50.	Front Upper Arm	2
51.	Rear Upper Arm	2
52.	Motor	1
56.	Counter Gear	1
57.	Hex Wrench	1
58.	Idle Gear	1
59.	Pinion Gear 14T	1
60.	Motor Base	1
61.	Base Plate	1
62.	Joint	2
63.	Rear Wheel Shaft	2
64.	Swing Shaft	2
65.	Drive Washer	2
68.	Suspension Pin 30mm	4
69.	Suspension Pin 45mm	4
70.	Idle Shaft	1
71.	Counter Shaft	1
73.	Front Wheel Shaft	2
74.	Shock Ball	4
75.	4.5mm Pivot Ball	2
76.	King Pin	4
77.	Body Pin	4
78.	Differential Gear Case	2
79.	Differential Carrier	1
80.	Bevel Side Gear (A)	1
81.	Bevel Side Gear (B)	1
82.	Bevel Pinion Gear	3
87.	Antenna Tube	1
90.	Side Cover	1
96.	Shock Case (Long)	2
97.	Shock Cap (A)	4
98.	Shock Cap (B)	4
99.	Shock End	4

Key #	Part Name	Qty.
100.	Shock Piston	4
101.	Shock Collar	8
102.	Shock Spacer (Thin)	4
103.	Shock Spacer (Thick)	4
104.	Spring Stopper	4
106.	Rear Spring (Silver)	2
107.	E-Ring	4
109.	Rubber Seal (Large)	2
110.	Metal Spacer	4
111.	Shock O-Ring	8
113.	Shock Shaft	2
114.	Shock Oil	1
115.	5mmx10mm Bearing	2
116.	Front Spring (Black)	2
117.	Front Bumper	1
118.	Front Body Mount	1
119.	Body Mount Bracket	1
120.	Front Shock Tower	1
121.	Body Mount Spacer	2
124.	Front Wheel	2
125.	Rear Wheel	2
126.	Tire	4
127.	Rotary Speed Control	1
128.	15W Resistor	1
129.	Resistor Cover	1
130.	Resistor Base	1
131.	4.5mm Ball (Gold)	2
132.	Speed Control Rod	1
133.	4.5mm Ball (Silver)	1
135.	Side Guard	2
136.	Double Sided Tape	2
138.	Body (Painted)	1
139.	Decal	1
140.	Resistor Bracket	1

SUSPENSION TUNING

Toe Angle Adjustment

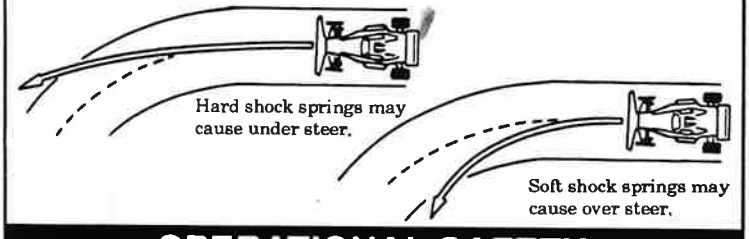
The toe angle effects both straight running stability and steering response. Toe angle is when the front of the tire angles in or out when the steering is centered. Toe-in is when the front of the tire angles in more than the rear. It is best to have 1°-2° toe-in. To adjust the toe angle, turn the ball ends on the end of the tie rods in or out. Make sure that both front wheels angle in the same amount.



TOP OF CAR

Shock Adjustment

By lowering the spring adjuster the shock spring will become harder and the car may under steer. Under steer is when the car will not turn as tight as you want it to.
By raising the spring adjuster, the shock spring will become softer and the car may over steer. Over steer is when the car turns sharper than you want it to. See the diagram below.



OPERATIONAL SAFETY

Radio controlled model trucks are powered by quick discharge NiCd batteries which allow the trucks to obtain high speeds. **Caution** is required when operating R/C trucks.

The same battery powers the radio and motor. As soon as the truck starts to slow down, stop and recharge the battery. Otherwise, you will **quickly** lose control.

DO NOT run the truck on the street.

Check to make sure no one else is on your frequency. If so do not turn your radio on.

If your truck is stopped by an obstacle, do not continue running the truck. Remove the truck manually. Failure to do so may ruin the motor and wiring.

Do not grab the tires.

Always charge the batteries outside of the truck and never store the truck with the battery in it.

Before connecting the NiCd battery, check that the speed control is in the neutral position.

RUNNING THE TRUCK

Check Before Every Run

Check to see that all bolts and nuts are tight.

Check to see that the battery is fully charged.

Check to see if the steering and speed control works in proportion to your control of the transmitter.

Check to see that all wiring is properly installed and insulated.

Check to see that all the parts move smoothly.

Operating Procedures

Turn transmitter switch on.

Plug the NiCd battery in.

Turn receiver switch on.

Check to see that the radio system is working properly.

Too much slow speed running may burn out the resistor.

When turning the truck off, always turn the receiver off first then the transmitter.

MAINTENANCE AFTER RUNNING THE TRUCK

Wipe the dirt off of the truck.

Make sure all the switches of the radio system are off.

Clean and grease the moving parts periodically.

Check and tighten all nuts and screws.

Always disconnect and remove the battery.

Wipe the speed control off with a rag or brush. If the metal contacts get very dirty, clean them with a pencil eraser.

MOTOR CARE

To keep your motor in top condition, keep it clean and inspect it often. The motor was designed for use with 7.2 volt (6-cell) battery packs. It is a good idea to avoid battery packs greater than 8.4 volts (7-cell). Using more voltage will shorten motor life.

Cleaning The Motor

To clean the inside, we suggest one of the new motor cleaners such as "Blast-Off" electric motor cleaner. Follow the instructions on the cleaner. Never spray the cleaner on the plastic parts of the car or use spray lubricants such as WD-40 on the motor.

Oil the front and rear bushings with a light machine oil such as 3-IN-1 Oil. Don't allow any oil to get inside of the motor and contaminate the commutator.

Occasionally check the motor terminals for oxidation or other contaminates.

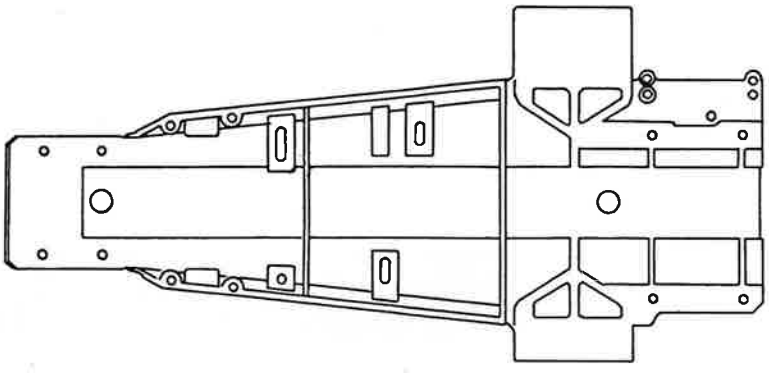
TROUBLE SHOOTING GUIDE

PROBLEM	PROBABLE CAUSE	POSSIBLE SOLUTION
Servo does not operate.	Weak transmitter or receiver battery.	Check batteries and charge if necessary.
	Improper radio installation.	Correct as per instructions on page 5.
Truck stops while running.	Discharged NiCd truck battery.	Recharge battery.
	Broken or loose wire.	Check all wires and fix. Wrap all splices in wire with electrical tape.
Motor runs but truck doesn't.	Loose pinion gear on motor.	Tighten the set screw on the pinion gear.
Truck runs but is slow.	Problem with speed control.	Clean the speed control with a pencil eraser.
		Check all wiring on the back of the speed control. A solder joint may have come loose.
		Make sure speed control moves freely.
	Loose connectors.	Check that all motor and battery connectors are tight.
	Loose rear axle nut.	Check and tighten rear wheel nuts.
	7.2 volt battery may be going bad.	Recharge battery or replace if found to be bad.
Truck does not stop.	Speed control not adjusted properly.	See page 18 for proper speed control adjustment.
		Make sure speed control moves freely and returns to neutral when throttle is released
		Check that the speed control rod is not loose in its mounting holes. Replace worn parts.
Truck does not run straight.	Steering trim not adjusted properly.	Adjust the tie rods as suggested above in Toe Angle Adjustment. Also adjust the steering trim on the transmitter.
Truck works on high speed only.	Burnt out speed control resistor.	Replace resistor and avoid running at continuous slow speeds.

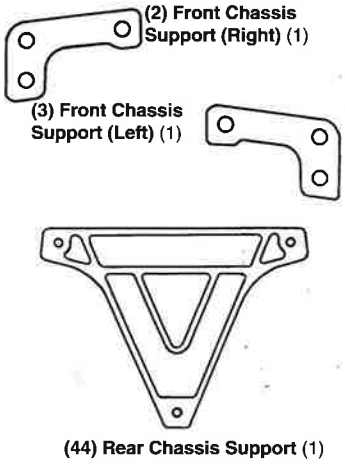
PURCHASING PARTS FOR YOUR KIT

You can purchase replacement and optional parts for your kit. All of the parts identified by key numbers (see page 22) are usually not available singularly, but we offer these parts in convenient parts "packs" which can be purchased separately. To figure out which 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 Rear Hub (Key #10) ask your dealer for Kyosho Parts Pack RK-10 (KYOC4239).

Chassis Set
RD-01 (KYOC2886)



(1) Chassis (1)

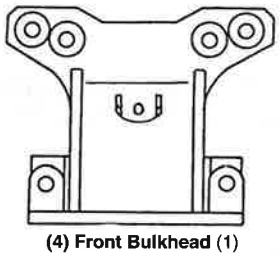


(2) Front Chassis Support (Right) (1)

(3) Front Chassis Support (Left) (1)

(44) Rear Chassis Support (1)

Front Susp. Mount
RD-02 (KYOC3821)

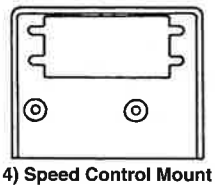


(4) Front Bulkhead (1)

Plastic Parts Set A.Z
RD-03 (KYOC4848)

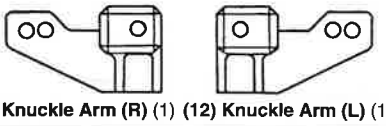
(48) Plastic Collar (A) (2)

(49) Plastic Collar (B) (2)

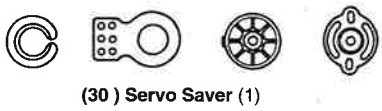


(14) Speed Control Mount (1)

(13) Rear Shock Tower (1)



(11) Knuckle Arm (R) (1) (12) Knuckle Arm (L) (1)

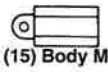


(30) Servo Saver (1)

Plastic Parts Set A.Z
RD-04 (KYOC4841)

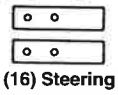
(17) Servo Mount (A) (2)

(41) Antenna Holder (1)

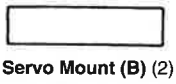


(15) Body Mount (2)

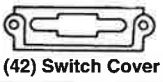
(43) Thickness Gauge (1)



(16) Steering Servo Mount (2)



(18) Servo Mount (B) (2)

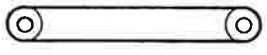


(42) Switch Cover (1)

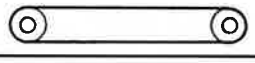
Upper Arm King Pin Set
RD-05 (KYOC6289)

(76) King Pin (4)

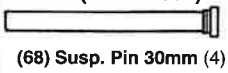
(50) Front Upper Arm (2)



(51) Rear Upper Arm (2)

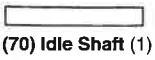


Shaft Set
RD-06B (KYOC5802)

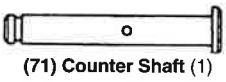


(68) Susp. Pin 30mm (4)

(69) Susp. Pin 45mm (4)



(70) Idle Shaft (1)



(71) Counter Shaft (1)

Front Wheel Shaft
RD-07 (KYOC3906)

(73) Front Wheel Shaft (2)

Bushing Set
RD-08 (KYOC2740)

(19) 5mmx10mm Bushing (8)

(20) 4mmx8mm Bushing (6)

Gear Set
RD-11 (KYOC4171)

(34) Lock Pin (1)

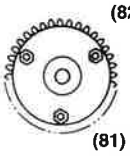
(80) Bevel Side Gear (A) (1)

(82) Bevel Pinion Gear (3)

(56) Counter Gear (1)

(58) Idle Gear (1)

(59) Motor Pinion Gear(1)



(78) Diff. Case (2)

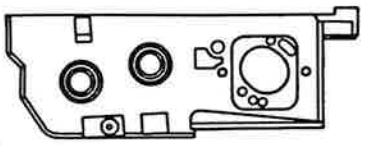
(79) Diff. Carrier (1)

(81) Bevel Side Gear (B) (1)

PURCHASING PARTS FOR YOUR KIT (2)

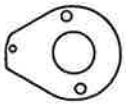
Gearbox

RD-12 (KYOC4046)

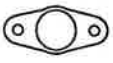


(31) Gearbox (1)

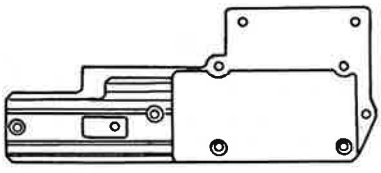
(90) Side Cover (1)



(60) Motor Plate (1)



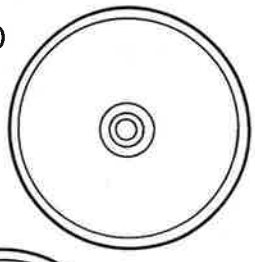
(61) Base Plate (1)



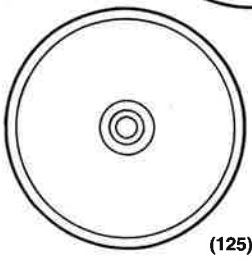
(40) Gearbox Cover (1)

Wheel Set

RD-38 (KYOC6512)



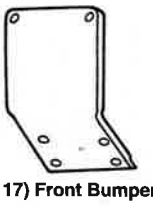
(124) Front Wheel (2)



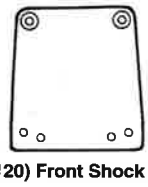
(125) Rear Wheel (2)

BODY MOUNT SET

RD-36 (KYOC2541)

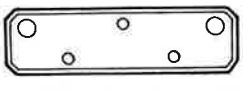


(117) Front Bumper (1)

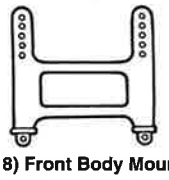


(120) Front Shock Tower (1)

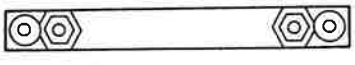
(121) Body Mount Collar (1)



(140) Resistor Bracket (1)



(118) Front Body Mount (1)



(119) Front Body Bracket (1)

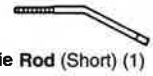
Tire

RD-39 (KYOC6214)

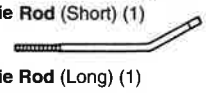
(126) Tire (4)

Rod Set

RD-09 (KYOC5286)



(36) Tie Rod (Short) (1)



(37) Tie Rod (Long) (1)

(39) 4.5mm Ball End (3)

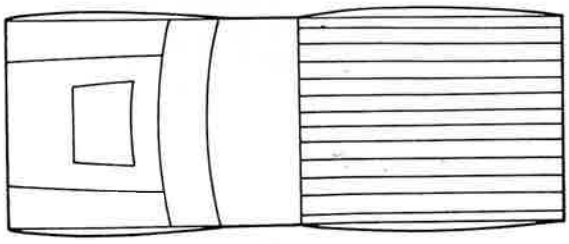
(131) 4.5mm Ball (Gold) (2)

(133) 4.5mm Ball (Silver) (1)

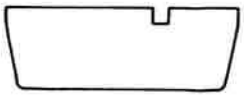
(132) Speed Control Rod (1)

BODY SET

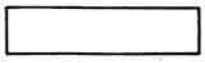
RD-43 (KYOC2444)



(138) Body (1)



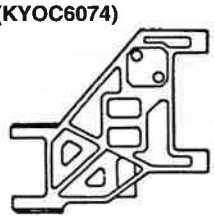
(135) Side Guard (2)



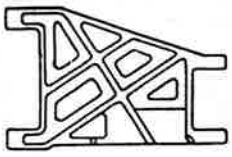
(136) Double Sided Tape (2)

PURCHASING PARTS FOR YOUR KIT (3)

Suspension Arm Set
RK-06 (KYOC6074)



(6) Front Suspension Arm (2)



(7) Rear Suspension Arm (2)

Hub Set
RK-10 (KYOC4239)

(8) Front (Right) (1)

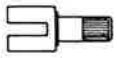
(9) Front Hub (Left) (2)

(10) Rear Hub (2)

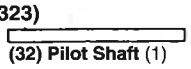
Swing Shaft
RD-17 (KYOC6126)

(64) Swing Shaft (2)

Joint
RK-21 (KYOC4323)



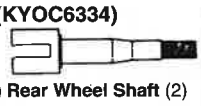
(62) Joint (2)



(32) Pilot Shaft (1)

(33) Joint Spring (2)

Rear Wheel Shaft
RK-23 (KYOC6334)

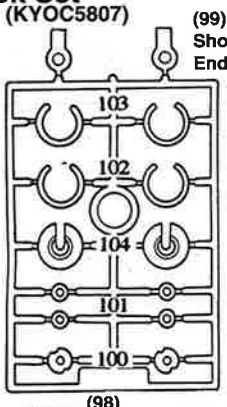


(63) Rear Wheel Shaft (2)

Drive Washer
OT-019 (KYOC3332)

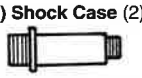
(65) Drive Washer (4)

Shock Set
RD-35 (KYOC5807)



(99) Shock End (2)

(96) Shock Case (2)



(113) Shock Shaftl (2)

(23) O-Ring (4)

(74) Shock Ball (2)

(110) Metal Spacer (2)

(106) Rear Spring (Silver) (2)

(116) Front Spring (Black) (2)

(98) Shock Cap (B) (2)

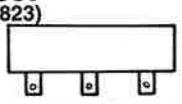
(97) Shock Cap (A) (2)

(107) E-Ring (2)

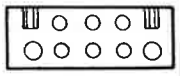
(109) Rubber Seal (2)

Resistor Set
1819 (KYOC5823)

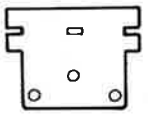
(128) 15W Resistort (1)



(129) Resistor Cover (1)

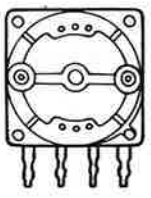


(130) Resistor Base (1)



SPEED CONTROL
1831 (KYOC5785

(127) Rotary Speed Control (1)



RD-14	(KYOC5453)	Screw Set	(1)
RD-44	(KYOC3211)	Decal Set	(1)
SD-79	(KYOC2055)	Antenna Tube	(5)
OT-051	(KYOC4777)	Pinion Gear 14T	(1)
1889	(KYOC2517)	Body Pin	(5)

Once you've mastered Kyosho's Outlaw Raider ARR, there's more speed and power to keep you challenged.

OUTLAW ULTIMA
Fast stadium truck action.

KYOC0210

- Start your truck racing career at the top!
- Includes a powerful, 28,000 RPM-peak motor.
- Detailed Ford F-250 body with hot decals.

OUTLAW RAMPAGE
With gas power's speed and long run times.

KYOC0184

- Stadium truck racing with gas power's roaring realism!
- Includes an O.S. .12 CZ-R engine already installed.
- Easy pull-start.

LAZER ZX SPORT
4WD power tames the roughest tracks.

- The perfect entry into serious 4WD competition.
- Economical—but packed with the high-tech details that win.
- Features twin-belt drive, oil-filled shocks, ball bearings and much more.

KYOC0102

KYOSHO®

Racing the Outlaw Raider ARR, you pick up skills and strategies that become mighty weapons in competition... especially when you're controlling a full-blooded racing machine. Reach your next performance peak with one of these proven Kyosho champions.

Add even more speed, power, and run time to your Outlaw Raider ARR with inexpensive hop-up parts.

Ask any experienced R/C racer. Half the fun of owning a radio controlled car is figuring out new ways to make it run faster, longer, and more efficiently. That's what "hopping-up" your model is all about. You add to or change some of your car's original parts to create a hotter machine.

Kyosho has designed your Outlaw Raider ARR to accommodate many hop-up parts that your hobby dealer keeps on hand. Some of the most popular include:

BALL BEARINGS—By reducing power-robbing friction, ball bearings are an inexpensive way to increase your Outlaw Raider ARR's speed and run time.

TIRES—Numerous tread designs have been developed to provide the best traction on different racing surfaces. Keep a selection on hand so you'll be prepared to match any track.

MOTORS—These too are engineered for specific racing demands. You can immediately enjoy faster speeds from your Outlaw Raider ARR, just by dropping in a hotter motor.

SPEED CONTROLS—An electronic speed control will make your Outlaw Raider ARR respond with greater precision to your commands. It also helps your model use power more efficiently.

OIL-FILLED SHOCKS—Functioning exactly like the shocks on full-size cars, oil-filled shocks improve your model's handling and directional stability. They also reduce the effects of bumps on your car's components.

When you're ready for stronger performance from your Outlaw Raider ARR, ask your hobby dealer for hop-ups including those listed on the following pages. You won't spend much—and you won't believe the ride!

Smooth Acceleration...

DTXM1010 DuraTrax Speed Control w/Kyosho Connector

DURATRAX DTX-4 ELECTRONIC SPEED CONTROL

Enjoy professional quality with this dependable electronic speed control—priced for a beginner's budget. You'll get the split-second response you need for accelerating quickly out of the hole, and for harnessing your motor's power to stay in control through the turns. TEMPFET® technology protects your DTX-4 from overloads. Includes a 120-day warranty.

TEMPFET® is a registered trademark of Siemens Components, Inc.

Get the Right Tread for Every Track.

KYOC6219

DTXC9700

DTXC9700 DuraTrax Front Mounted & Trued Foam
DTXC9701 DuraTrax Rear Mounted & Trued Foam
KYOC6219 Kyosho Spike Tires

DURATRAX & KYOSHO OUTLAW RAIDER TIRES

Your Outlaw Raider ARR always performs best with the right tires for the occasion. Kyosho's pin spikes dig into the track and turn engine RPMs into great speeds. DuraTrax pre-mounted and trued foam slicks convert your Outlaw Raider ARR into an on-road machine--and their 3.5" outside diameter gives you extra foam for long wear. All tires are sold in pairs.

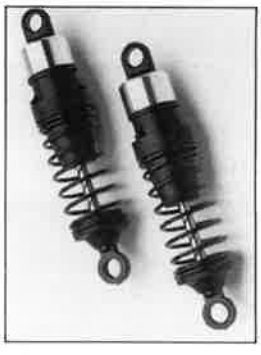
Ban Power-Robbing Friction!

KYOSHO BALL BEARING SET

This one set includes a total of 14 precision stainless steel ball bearings that virtually eliminate the friction that steals away motor power. This easy and inexpensive hop-up will increase your Outlaw Raider ARR's speed and run time.

KYOC2201 Kyosho Outlaw Raider ARR Ball Bearing Set

Beat the Bumps.



KYOSHO BLACK OIL-FILLED SHOCKS

R/C Car Action magazine named Kyosho's Black Shocks in their list of Top Ten "Low Buck" hop-ups. They provide the superior dampening of oil-filled shocks, with three sets of pistons included for matching bump absorption to the track and feature a Kelron™ body for low weight. Shock oil not included.

KYOC5722 Kyosho Black Shocks—Long (pair)
KYOC5681 Kyosho Shock Oil Set

ROAR-Legal Racing Power.

KYOSHO ROAR 24° STOCK MOTOR

For fast racing, arm your Outlaw Raider ARR with the high-torque ROAR 24 Stock. Wet magnet technology gives this motor competition-level power. It features 27 turns of .65mm wire, plus a heatsink endbell for cooler running and high RPM.

KYOG2024 Kyosho ROAR 24° Stock Motor

Drop in a Burst of High RPMs.

KYOSHO OUTLAW STOCK MEGA MOTOR

The Outlaw Stock is packed with some of today's best motor technology, including wet magnets, pre-set timing and metal bushings. The result is a tiny dynamo that pours out 22,000 RPM for a blast of speed in all kinds of racing.

KYOG2476 Kyosho Outlaw Stock Mega Motor

Mega Motors is a registered trademark of Darda, Inc. USA, manufacturer of Darda racing cars and track sets.

Smooth Rides Made Easy.

DURATRAX COMPETITION SHOCKS

You can improve your Outlaw Raider ARR's handling easily by installing DuraTrax oil-filled Competition Shocks. Their gold-anodized bodies offer a gleaming touch of class to your machine. A silicon O-ring seal and non- stick guide add to their effectiveness at softening the bumps. These shocks are extremely easy to use—you just add oil (not included). Sold in pairs.

DTXC3501 DuraTrax Competition Shocks—Long Rear (4")
KYOC5681 Kyosho Shock Oil Set

How the Pros Carry Their Gear.

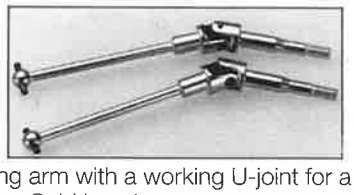
KYOSHO FIELD BAGS

Store your Outlaw Raider ARR, radio, and essential track gear together in Kyosho's roomy, durable, bright-red field bags: the 17"x9"x10" Standard size, or 22"x13"x11" Extra Large. Then, when you're ready to race, just grab your field bag and go...no lost time looking for your equipment!

KYOP6000 Kyosho Standard Field Bag
KYOP6100 Kyosho Extra-Large Field Bag

The United Power Delivery System.

KYOSHO UNIVERSAL SWING SHAFTS



Reduce drag and friction for race-winning efficiency! Universal Drive Shafts unite your Outlaw Raider ARR's drive shaft and swing arm with a working U-joint for a "lose-proof" power delivery system. Sold in pairs.

KYOC6128 Kyosho Universal Swing Shafts

EASY, EXCITING TRIMS.

KYOSHO MICRON LINE TAPE

Kyosho Micron Line Tape lets you add style and definition to your Outlaw Raider ARR's finish. It can follow almost any curve and sticks with just the touch of your finger. With each roll, you get approximately 26 feet of tape...more than enough to let you create the wildest designs you can imagine.

KYOQ1100 Kyosho Micron Line Tape--.4mm Wide
KYOQ1101 Kyosho Micron Line Tape--.7mm Wide

Full Battery Charges Mean Long Run Times.

HOBBICO 900 SERIES AC/DC CHARGERS

These chargers put the best features right at your fingertips. Both offer the convenience of at-home or trackside charging, plus fuse protection and 5-year warranty protection. They charge 6-cell batteries in 15 minutes, or 7-cell packs in about 30 minutes.

Model 910 AC/DC Variable Rate Charger includes a current adjust knob and plug-in voltmeter output. A charge rate chart on the faceplate makes it especially easy to use.

HCAP0175 Hobbico Model 910 AC/DC Variable Rate Charger

Model 920 AC/DC Digital Auto-Charger adds easy-to-read digital readout on current and voltage and a volt/AMP select switch.

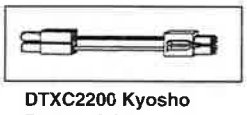
HCAP0190 Hobbico Model 920 AC/DC Digital Auto-Charger

Get More Speed And Longer Runs.

DURETRAX P-170 SCR BATTERIES

DTXC2200 DuraTrax P-170 SCR Racing Battery

You can get faster speeds and longer run times, just by installing the revolutionary DuraTrax P-170 SCR battery pack in your Outlaw Raider ARR. Perfect for racing, these 6-cell packs combine the rapid discharge of SCR batteries with the extended run times of 1700 mAh SCE packs. P-170 SCRs come assembled and require the use of an inexpensive Kyosho adapter for use with the Outlaw Raider ARR.



DTXC2200 Kyosho Battery Adapter

For the Most-Admired Body at the Track.

KYOSHO LEXAN BODY SCISSORS & SANDER

Specially designed for easy cutting around the curves and angles of Lexan car bodies, Kyosho,s Body Scissors feature comfortable plastic handles and a curved, stainless steel blade. The Sander has an ABS plastic handle with both flat and curved surfaces, matched to the body surfaces you'll be sanding, and comes with three sheets of adhesive-backed sandpaper.

KYOR1000 Kyosho Lexan Body Scissors
KYOR1030 Kyosho Lexan Sander
KYOR1010 Kyosho Scissors with Sander

PRINTED IN KOREA