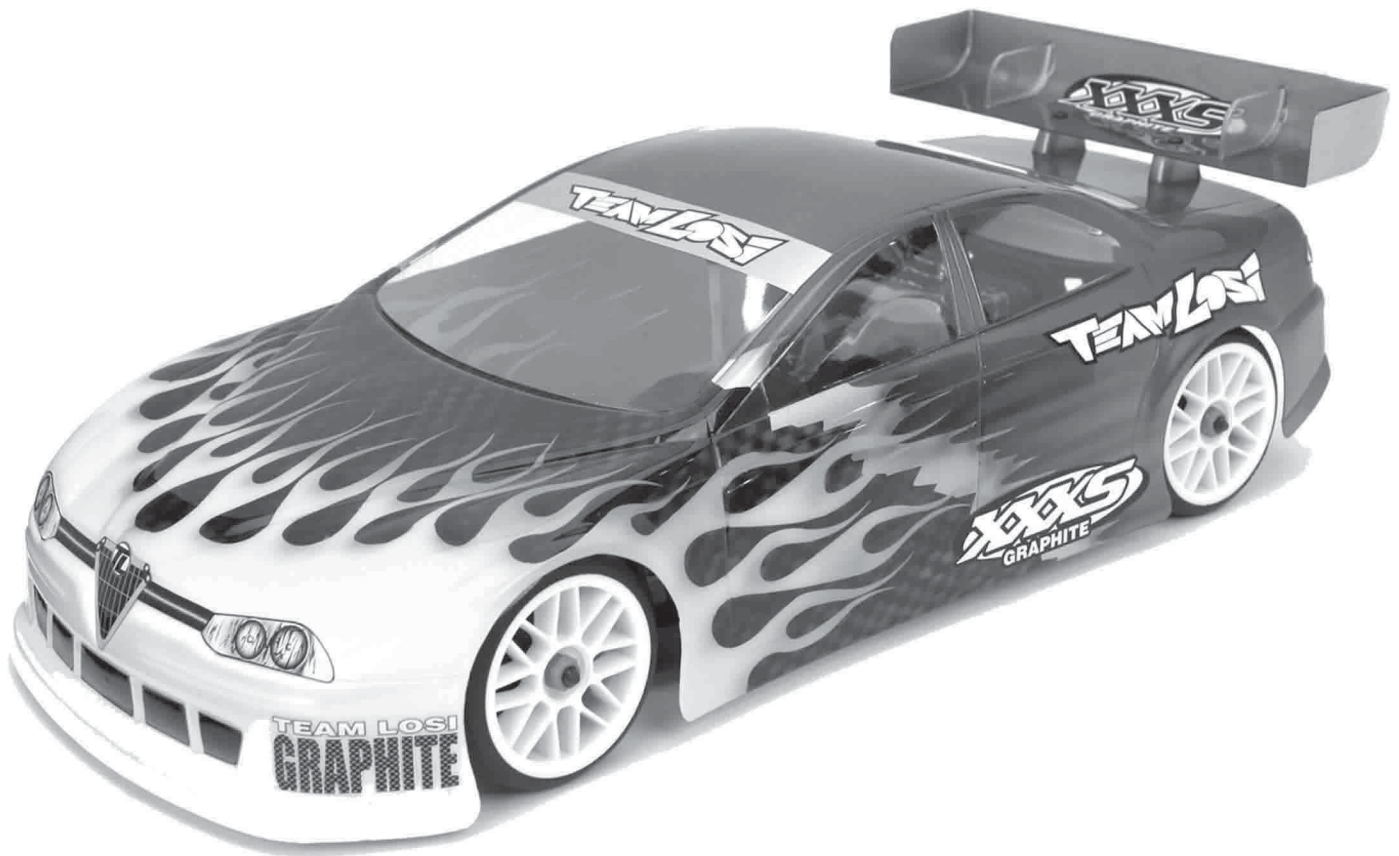


XXX-S GRAPHITE

OWNER'S MANUAL



- ⑦ Carefully read through all instructions to familiarize yourself with the parts, construction techniques, and tuning tips outlined in this manual. Being able to grasp the overall design of your new XXX-S Graphite Plus touring car before beginning the construction process will ensure a smooth assembly.
- ⑦ Take your time and pay close attention to detail. Keep this manual for future reference.

TEAM LOSI

Always Racing Towards The Future.

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MADE IN THE UNITED STATES OF AMERICA

P/N 800-0193
JAC, RWW

Welcome Team Losi XXX-S Owner!

Thank you for selecting Team Losi and the XXX-S Graphite Plus as your new racing sedan. As you will see, we have made every effort to design and produce a kit that is not only the most competitive, but easy to build and maintain. The simple bag-by-bag assembly sequence and unmatched easily followed instructions, combined with Team Losi's world famous quality-fitting parts, should make building your new XXX-S a most enjoyable project.

Before you open the first bag or start any assembly, please take a few moments to read completely through the following instructions. This will familiarize you with the various parts as well as the tools you will need. Taking an extra moment before starting can save you a good deal of time and assure proper assembly.

Once again, thank you for choosing Team Losi.

Good luck and good racing!

1. INTRODUCTION

XXX-S COMPLETED KIT DIMENSIONS

Overall Length: 16-5/8"
Wheelbase: 10-1/8"

Front Width: 7-7/16"
All dimensions at ride height.

Rear Width: 7-15/32"


Height: 4-3/4"
Weight will vary depending on accessories.


NOTES & SYMBOLS USED

Step A-1

This is a common step number found at the beginning of each new illustration throughout the manual.

1. Each step throughout the entire manual has a check box to the left of it. As you complete each step, mark the box with a check. If you need to take a break and return to building at a later time you will be able to locate the exact step where you left off.

 This is a common note. It is used to call attention to specific details of a certain step in the assembly.

 **IMPORTANT NOTE:** Even if you are familiar with Team Losi kits, be sure and pay attention to these notes. They point out very important details during the assembly process. Do not ignore these notes!



In illustrations where it is important to note which direction parts are facing, a helmet like this one will be included in the illustration. The helmet will always face the front of the car (as the driver would sit). Any reference to the right of left side will relate to the direction of the helmet.

KIT/MANUAL ORGANIZATION

The kit is composed of different bags marked A through H. Each bag contains all of the parts necessary to complete a particular section of the XXX-S. Some of these bags have subassembly bags within them. *It is essential that you open only one bag at a time and follow the correct assembly sequence, otherwise you may face difficulties in finding the correct part.* It is helpful to read through the instruc-

tions for an entire bag prior to beginning assembly. Key numbers (in parenthesis) have been assigned to each part and remain the same throughout the manual. In some illustrations, parts which have already been installed are not shown so that the current steps can be illustrated more clearly.

For your convenience, an actual-size hardware identification guide is included with each step. To check a part, hold it against the silhouette until the correct part is identified. In some cases extra hardware has been supplied for parts that may be easy to lose.

The molded parts in the XXX-S are manufactured so that they interlock. *When screws are tightened to the point of being snug, the parts are held firmly in place.* For this reason it is very important that screws not be overtightened in any of the plastic parts.

To ensure that parts are not lost during construction, it is recommended that you work over a towel or mat to prevent parts from rolling away.

IMPORTANT SAFETY NOTES

1. Select an area for assembly that is away from the reach of small children. *Some parts in this kit are small and can be swallowed by children, causing choking and possible internal injury.*

2. The shock fluid and greases supplied should be kept out of childrens' reach. *They are not intended for human consumption!*

3. *Exercise care* when using *any* hand tools, sharp instruments, or power tools during construction.

4. *Carefully read all manufacturers' warnings and cautions* for any glues, chemicals, or paints that may be used for assembly and operating purposes. *When you are using glues, chemicals, and paints you should always wear eye protection and a mask.*

TOOLS REQUIRED

Team Losi has supplied all necessary allen wrenches and a special assembly wrench that is needed for assembly and turnbuckle adjustments. The following common tools will also be required: Needle-nose pliers, regular pliers, medium grit sandpaper, hobby knife, scissors, and body cutting/trimming tools. A soldering iron may be necessary for electrical installation. 3/16", 1/4", and 11/32" nut drivers are optional.

RADIO/ELECTRICAL

A suggested radio layout is provided in this manual. Your high-performance R/C center should be consulted regarding specific questions pertaining to radio/electrical equipment.

HARDWARE IDENTIFICATION

When in question, use the hardware identification guide in each step. For screws, the prefix number designates the screw size and number of threads per inch (i.e. 4-40 is #4 screw with 40 threads per inch). The second number or fraction designates the length of the screw. For cap head and button head screws, this number refers to the length of the threaded portion of the screw. For flat head screws, this number refers to the overall length of the screw. Bearings and bushings are referenced by the inside diameter x outside diameter. Shafts and pins are referred to by diameter x length. Washers are described by inside diameter or the screw size that will pass through the inside diameter. E-clips are sized by the shaft diameter that they attach to.

MOTORS AND GEARING

The XXX-S includes an 90-tooth, 48-pitch spur gear. The internal drive ratio of the XXX-S is 1.83. The pinion gear that is used will determine the final drive ratio. To calculate the final drive ratio, first divide the spur gear size by the pinion gear size. For example, if you are using a 20-tooth pinion gear, you would divide 90 (spur gear size) by 20 (pinion gear size). $90/20 = 4.50$. This tells you that 4.50 is the external drive ratio. Next, multiply the internal drive ratio (1.83) by the external drive ratio (in this case 4.50). $1.83 \times 4.50 = 8.235$. This means that by using a 20-tooth pinion gear with the standard 90-tooth spur gear, the final drive ratio is 8.235:1.

Consult your high-performance shop for recommendations to suit your racing style and class. The chart below lists some of the more common motor types and recommended initial gearing for that motor. Ratios can be adjusted depending on the various track layouts, tire sizes, and battery types.

RECOMMENDED INITIAL GEARING FOR COMMON MOTORS

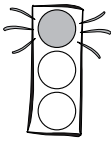
TYPE OF MOTOR	PINION	SPUR
24° Stock	26	90
8-Turn Modified	16	90
9-Turn Modified	17	90
10-Turn Modified	18	90
11-Turn Modified	19	90
12-Turn Modified	20	90
13-Turn Modified	21	90
14-Turn Modified	21	90
15-Turn Modified	22	90

TABLE OF CONTENTS

1. INTRODUCTION	i	4. BAG C	8-11
Completed Kit Dimensions	i	5. BAG D	12-16
Notes & Symbols	i	6. BAG E	17-21
Kit Manual Organization	i	7. BAG F	22-24
Important Safety Notes	i	8. BAG G	25
Tools Required	ii	9. BAG H	26-30
Radio/Electrical	ii	10. Checklist Before Your First Run	31
Hardware Identification	ii	11. Tips From the Team	31-33
Recommended Gearing	ii	12. Spare Parts List	34-36
2. BAG A	1-3	13. Blank Set-up Sheet	37
3. BAG B	4-7		

Team Losi is continually changing and improving designs; therefore, the actual part may appear slightly different than the illustrated part. Illustrations of parts and assemblies may be slightly distorted to enhance pertinent details.

BAG A



STOP! There are two, complete differential assemblies in the XXX-S Graphite Plus kit. Both Differentials are identical front and rear. Proceed through the Bag A instructions twice - once for the front differential, and once for the rear differential. The XXX-S kit was designed using the stock 42T drive pulleys in the front and rear of the car. There is an optional 41T pulley included in Bag H of this kit, This feature can be used to apply under-drive or over-drive in the vehicle. See set-up tips at the end of this manual.

Step A-1 Diff Nut With Belleville Washers Assembly



- ❑ 1. Locate the 1/16" Allen wrench (159) supplied with the kit. Place the Diff Nut (2), "T" side first, over the Allen Wrench towards the "L-end."
- ❑ 2. Stack the six 1/8" Belleville Washers (3) over the Wrench, up against the Diff Nut. The Washers should all point the same direction and open away from the Diff Nut as shown in Figure 2B.

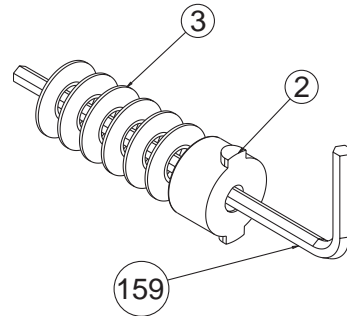


Figure 1A

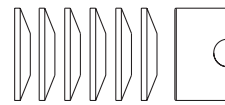


Figure 1B

Step A-2 Diff Nut to Male Outdrive Assembly

- ❑ 1. Insert all of the parts that are stacked on the Wrench (159) into the Male Plastic Outdrive (7) (the one with the post). Line up the tabs on the Diff Nut (2) with the slots in the Outdrive. Press the parts all the way into the Outdrive.

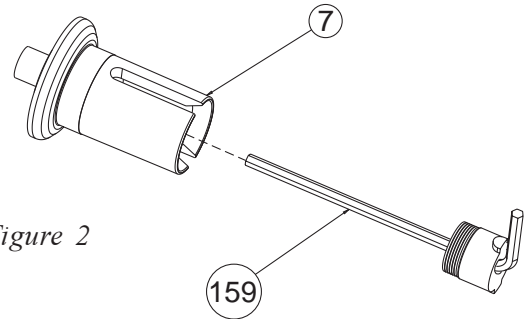

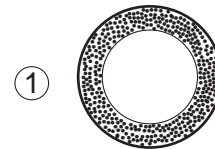


Figure 2

Step A-3 Front Spool Option


 You have the option of building your XXX-S with either a front Differential, or a front Spool (Solid Axle). Refer to the "Tips from The Team" section in the back of this manual to help you decide which is best for you. If you decide to build your XXX-S with the front Spool, refer to the addendum included in the bag with the front Spool Pads (1). Otherwise continue on to Step A-4.

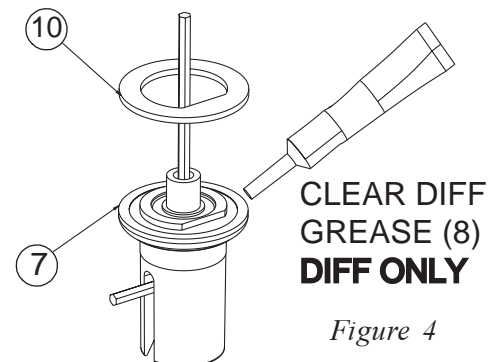


Step A-4 Diff Drive Ring to Male Outdrive

- ❑ 1. Apply a small amount of Clear Diff Grease (8) to the outside ring of the Male Plastic Outdrive (7). Attach a Diff Drive Ring (10) to the Outdrive by lining up the flat section of the Ring with the flat section on the Outdrive.

**NOTE: Only a small amount of Grease is needed. It is only used to hold the Drive Ring in place.*

 **IMPORTANT NOTE:** Do not glue the Drive Rings to the Outdrive/ Diff Halves. Doing so may not allow the Rings to mount flat.



CLEAR DIFF GREASE (8) DIFF ONLY

Figure 4

BAG A (Continued)

Step A-5 Diff Pulley Assembly



- 1. Insert a 5mm x 8mm Bearing (13) into the center of the 42T Diff Pulley (11).

**NOTE: Do not use any of the large diameter Diff Balls (14) (referring to the front assembly only!) when building the optional front Spool.*

- 2. Press a 3/32" Diff Ball (14) into each of the small holes in the Diff Pulley as indicated in Figure 5.

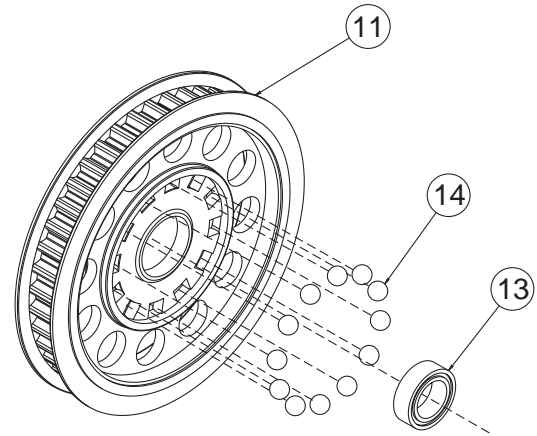


Figure 5

Step A-6 Diff Pulley to Male Outdrive Assembly

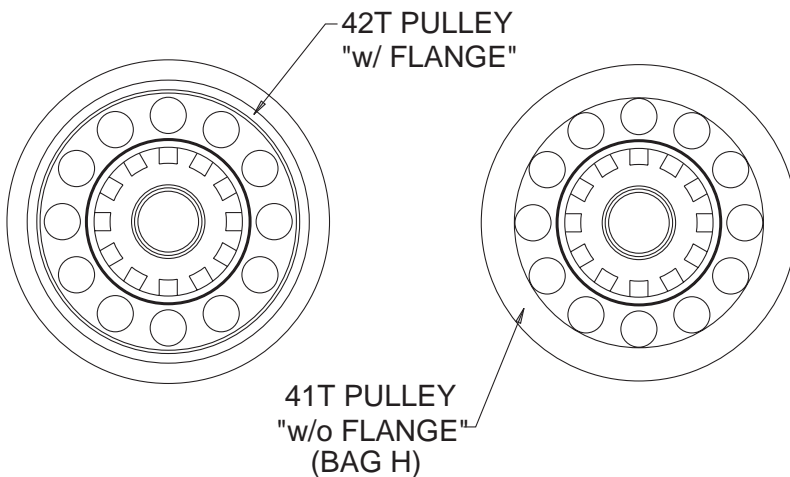
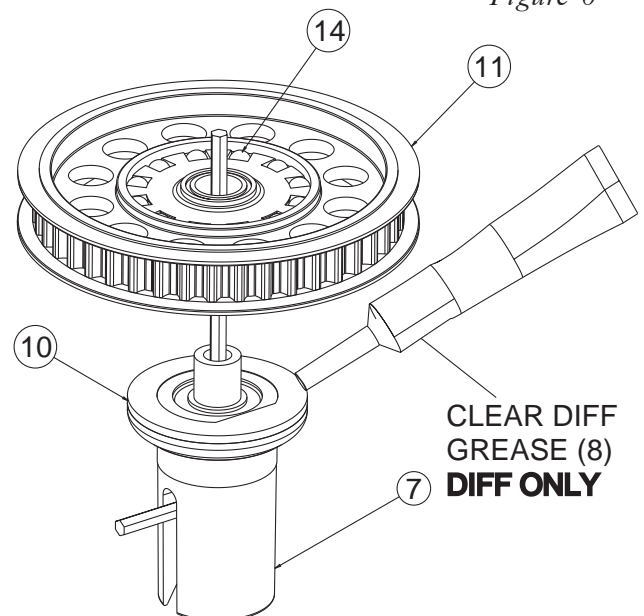


Figure 6

Refer to the "Tips From the Team" section in the back of this manual to help you decide if you should build your XXX-S with the Optional Over/Under-drive using the Pulleys Identified above.

**NOTE: Do not use any Clear Diff Grease (8) (referring to the front assembly only!) when building the optional front Spool.*

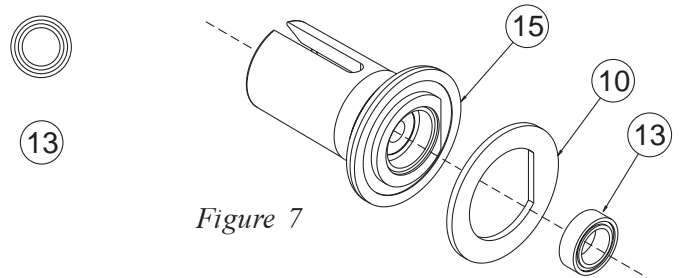
- 1. Apply a heavy coat of Clear Diff Grease (8) to the exposed side of the Diff Ring (10) that is already attached to the Male Outdrive (7).
- 2. Carefully place the Diff Pulley (11) over the post on the Outdrive so that the Diff Balls (14) and Diff Pulley rest against the greased Drive Ring. Leave the assembly with the 1/16" Allen wrench (159) standing as shown in Figure 6.



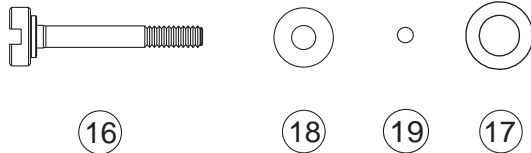
BAG A (Continued)

Step A-7 Diff Drive Ring to Female Outdrive

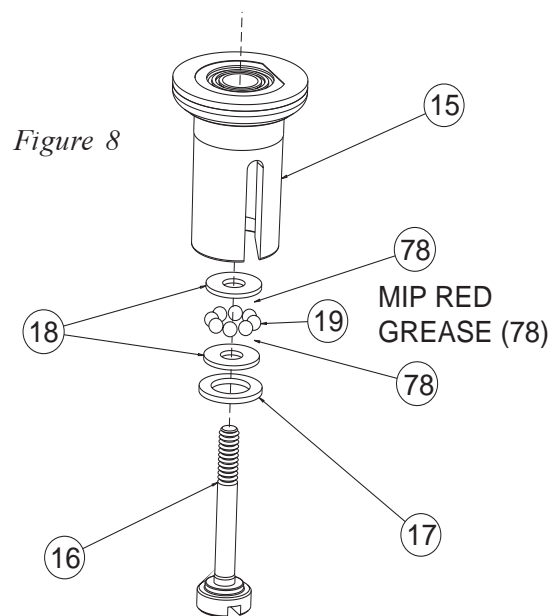
1. Press a 5mm x 8mm Bearing (13) into the center area of the Female Plastic Outdrive (15) as indicated. The edge of the Bearing should be flush with the front of the Outdrive.
2. Apply a small amount of Clear Diff Grease (8) to the outer ring of the Outdrive. Install the second Drive Ring (10), again aligning the flat sections of the Outdrive and the Drive Ring.



Step A-8 Thrust Bearing Assembly and Install

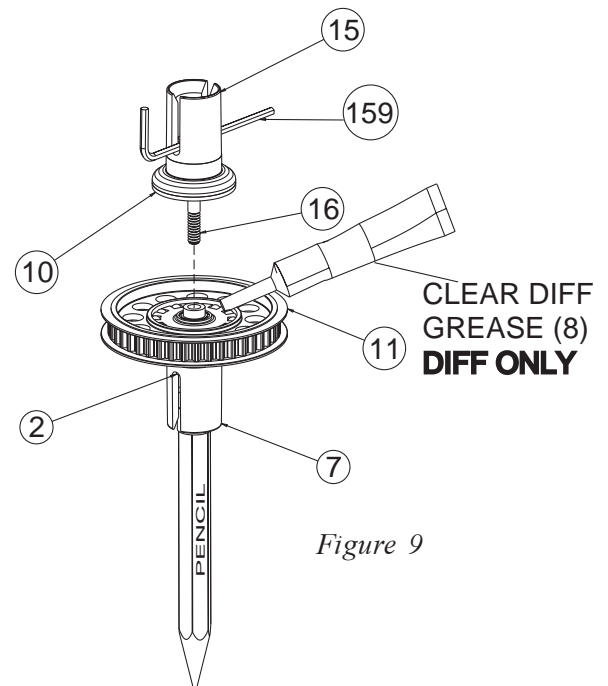


1. Place the Foam Thrust Bearing Seal (17) over the shoulder of the Diff Adjusting Screw (16).
2. Place one of the 1/8" x 5/16" Thrust Bearing Washers (18) over the Diff Screw.
3. Using the Red MIP Grease (78), apply a fairly heavy coat of Grease to the Thrust Washer and position eight of the 5/64" Thrust Balls (19) in a circular pattern around the Diff Screw. Apply another coat of Red MIP Grease over the Thrust Balls and place the second Thrust Bearing Washer over the Screw, against the Thrust Balls.
4. Insert the Diff Screw into the Female Outdrive. Pull the threaded end of the Screw until the Thrust assembly rests against the inside of the Outdrive.



Step A-9 Final Differential Assembly

1. Carefully remove the Allen Wrench (159) from the Male Outdrive (7) and replace it with a pen or pencil. Place the Allen Wrench in the slot of the Female Outdrive (15) containing the Diff Screw (16). The pen will be used to hold the Diff Nut (2) and Belleville Washers (3) in the bottom side.
2. Apply a fairly heavy coat of Clear Grease (8) to the exposed side of the Diff Balls (14) in the Diff Pulley (11) on the Male Outdrive (7).
3. While holding the Female Outdrive with Allen Wrench inserted, carefully assemble it to the Male half.
4. Make sure that the slot in the Diff Screw is lined up with the slot in the Female half. While holding the Male Outdrive half, slowly turn the Female Outdrive until the threads of the Diff Screw engage on the threads of the Diff Nut. Remove the pencil from the male half and thread the two Outdrives together until the Screw just starts to snug up.
5. Tighten the Diff until the Pulley cannot be turned while both of the Outdrives are being held firmly. Final diff adjustment should be made after completion of the XXX-S.



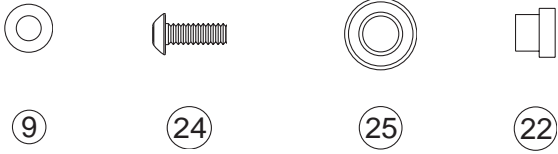
T When tightening the Diff, tighten the Screw a little and then "work" the Diff a little. Then tighten the Screw a little more and "work" the Diff again. Continue this until the Diff doesn't slip. This ensures that the parts in the Diff are properly seated. Refer to tech tips for final adjustment. "Working" the Diff is done by rotating the Outdrives in opposite directions.

BAG B

NEVER PINCH THE BELT

NEVER OVER TIGHTEN THE SCREWS IN THE CHASSIS - Team Losi has designed interlocking features into the XXX-S chassis, when screws are to the point of being snug the parts are held firmly in place.

Step B-1 Idler Pulley to Belt Tensioner



- ❑ 1. Snap a 3/16" x 3/8" Bearing (25) into the right side of the Idler Pulley (23). The Bearing will snap past the ridge in the Pulley and stop.
- ❑ 2. Place the Idler Pulley Shaft (22) through the Idler Pulley from the Bearing side.
- ❑ 3. Slide a #4 x .020 Washer (9) over the 4-40 x 5/16" Button Head Screw (24).
- ❑ 4. Insert the 4-40 x 5/16" Button Head Screw through the Idler Pulley Shaft and secure it to the Belt Tensioner Arm (21) as shown in Figure 10.

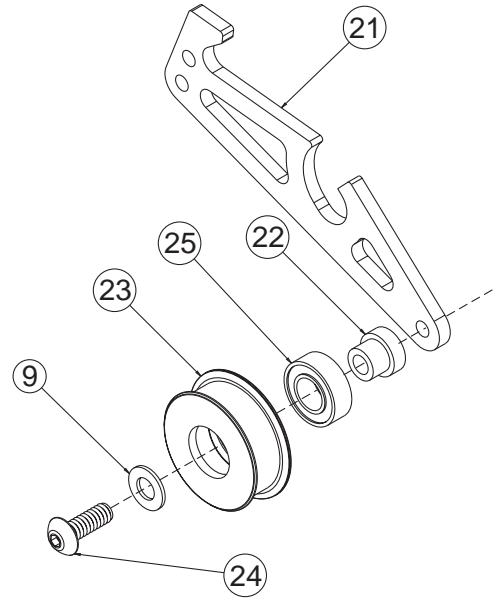



Figure 10

Step B-2 Belt Installation

NEVER PINCH THE BELT

Pinching the Belt can reduce the life of the Belt.

- ❑ 1. Position the Chassis (27) upside-down on your work bench. Insert the Belt (26) and pull it through both ends of the Chassis.
- ❑ 2. Pull the Belt out, just slightly, through the bottom of the Chassis and insert the Steering Tunnel (28), tall end forward, into the slot in the front of the Chassis. Press into position as indicated in Figure 11.

 The Steering Tunnel should now be located in between the Belt, with the Belt still slightly hanging out of both ends of the car.

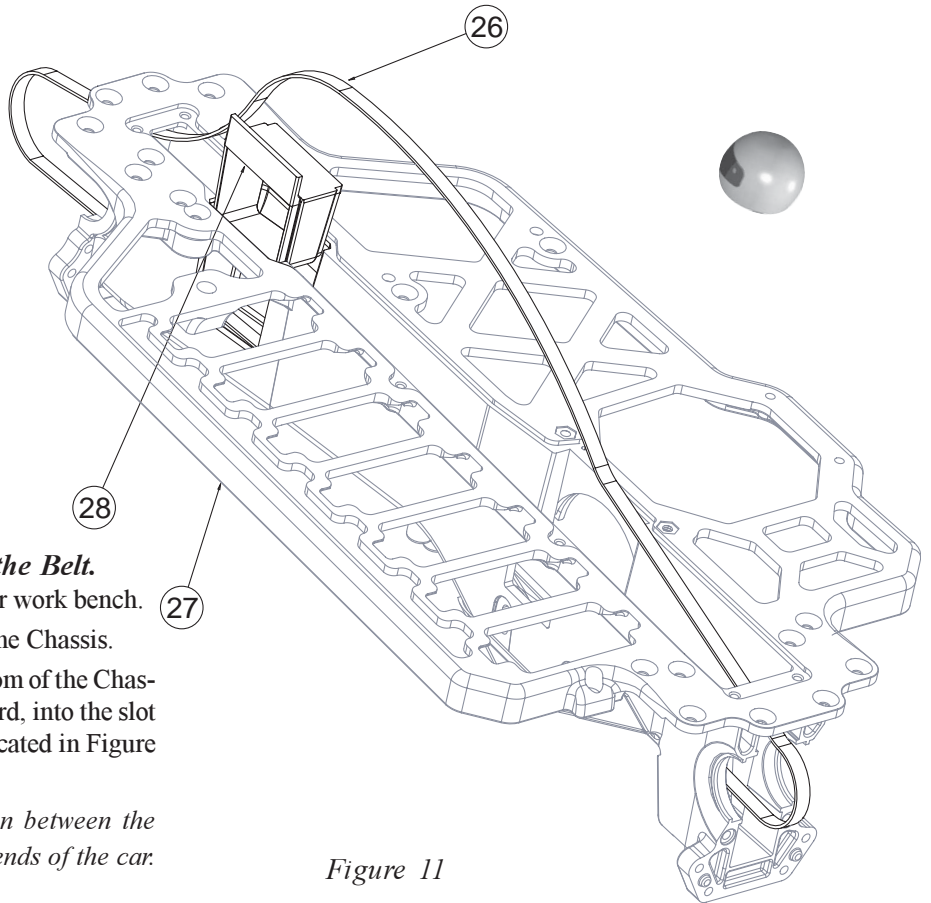
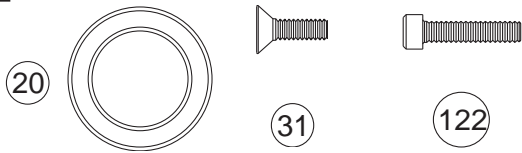


Figure 11

BAG B (Continued)

Step B-3 Front Diff Install



❑ 1. Slide one 1/2" x 3/4" Bearing (20) over each of the Outdrive Cups (7),(15).

The Diff adjustment Screw should be facing the drivers left side of the Chassis.

❑ 2. Pull the Belt (26) slightly out of the front of the Chassis (27) and install a Diff assembly into the slots as indicated in Figure 12. Pull the slack from the Belt through the rear of the Chassis.

❑ 3. Secure the Diff assembly by installing the Front Diff Cover (29) with two 4-40 x 1/2" Cap Head Screws (122) through the Diff Cover into the two holes in the Chassis.

❑ 4. Flip the Chassis over and install the two 4-40 x 3/8" Flat Head Screws (31) through the bottom of the Chassis into the Front Diff Cover as indicated in Figure 12.

There is a short thread-cutting screw included in the wrench bag. This screw can be used to tap threads in the holes in the main Chassis and the bottom of the Diff Cover. Pre-tapping these holes makes it easier to install the Screws during assembly.

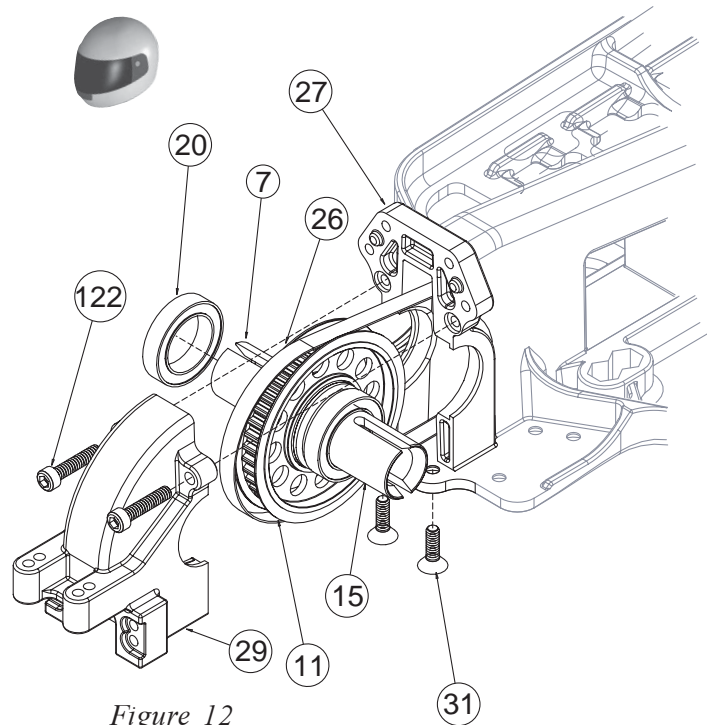
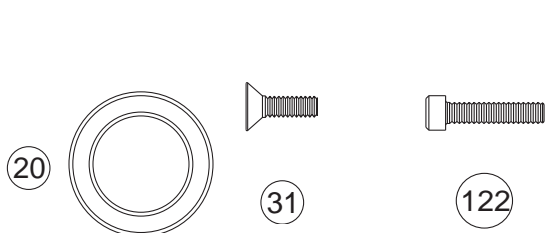


Figure 12

Step B-4 Rear Diff Install



❑ 1. Slide one 1/2" x 3/4" Bearing (20) over each of the Outdrive Cups (7),(15) on the remaining Differential.

Once again, the Diff Adjustment Screw should be facing the drivers left side of the Chassis.

❑ 2. Spread the Belt (26) apart and install the Diff assembly into the slots of the Chassis (27) as indicated in Figure 13. Once the Diff assembly is in place, pull the slack up through the center of the Chassis from the top side.

❑ 3. Secure the Diff assembly by installing the Rear Diff Cover (32) with two 4-40 x 1/2" Cap Head Screws (122) through the Diff Cover into the holes in the rear of the Chassis.

❑ 4. Flip the Chassis over and install the two 4-40 x 3/8" Flat Head Screws (31) through the bottom of the Chassis into the Rear Diff Cover as indicated in Figure 13.

There is a short thread-cutting screw included in the wrench bag. This screw can be used to tap threads in the holes in the main Chassis and the bottom of the Diff Cover. Pre-tapping these holes makes it easier to install the Screws during assembly.

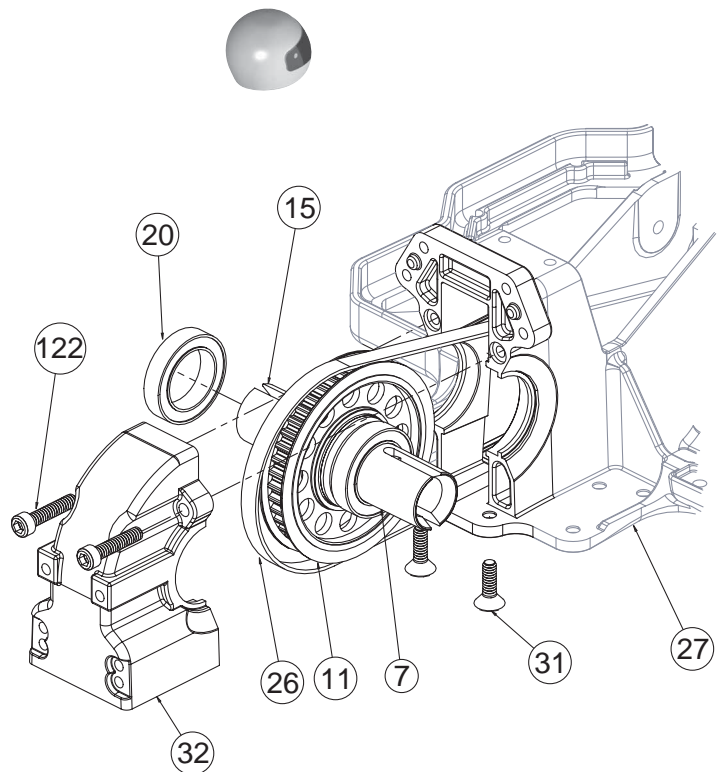
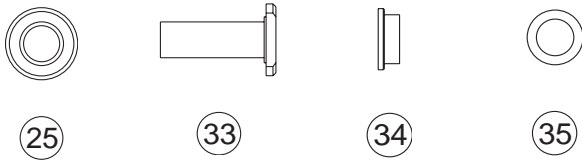


Figure 13


BAG B (Continued)

Step B-5 Top Shaft Assembly



❑ 1. Press a 3/16" x 3/8" Bearing (25) into the "Spur Gear" side of the Drive Pulley (36). Slide the Top Shaft (33) through the Bearing in the Drive Pulley from the Spur Gear side.

❑ 2. From the "Drive Gear" side of the Drive Pulley slide the Top Shaft Spacer (35) over the Top Shaft. Place a second 3/16" x 3/8" Bearing (25) over the Top Shaft and press the Bearing into the "Drive Gear" side of the Drive Pulley.

 If the sealed bearing has a teflon seal (colored, woven looking) in it, position the seal to the outside of the drive pulley.

❑ 3. Slide the Belt Tensioner Bushing (34) over the Top Shaft with the flanged side of the Tensioner Bushing towards the Drive Pulley.

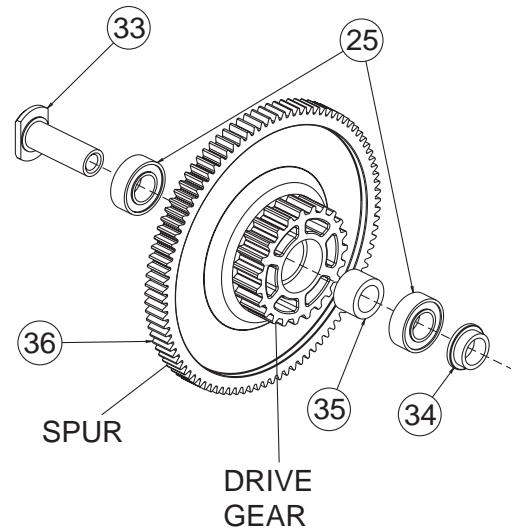
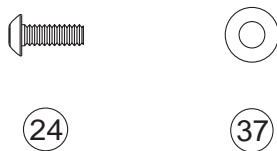



Figure 14

Step B-6 Top Shaft Install



❑ 1. Holding the Drive Pulley assembly, with thumb and index finger, pull the Belt (26) up through the Chassis (27), as shown in Figure 15, and line up the Top Shaft (33) with the holes in the Chassis.

❑ 2. Place a #4 Hardened Washer (37) over a 4-40 x 5/16" Button Head Screw (24) and insert it through the left side of the Chassis threading it into the Top Shaft as indicated in Figure 15.

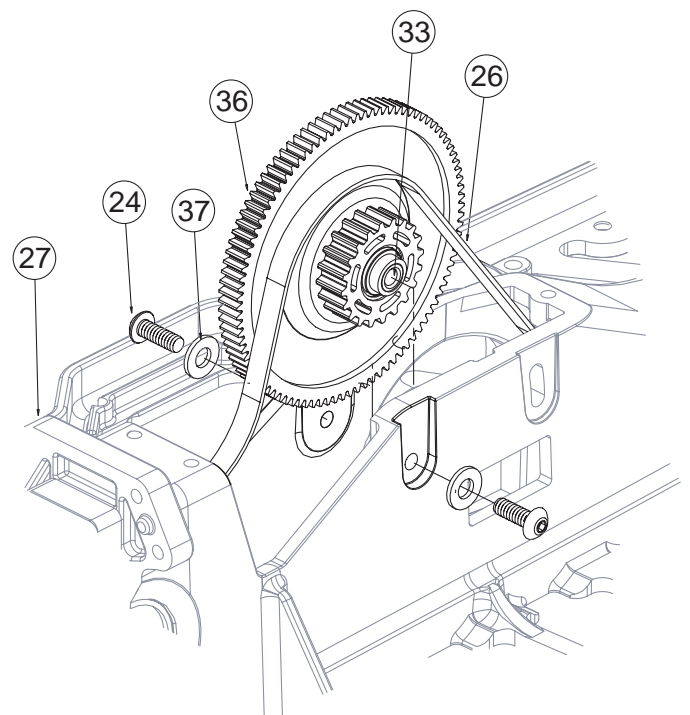
 You may need to slightly pinch the Chassis to install the 4-40 x 5/16" Button Head Screw.

❑ 3. Once again, place a #4 Hardened Washer over a 4-40 x 5/16" Button Head Screw and insert it through the Chassis and thread it into the right side of the Top Shaft located in the Drive Pulley assembly.

Leave the right side Screw a bit loose until the Belt Tensioner Arm is installed.

 **IMPORTANT NOTE:** Never pinch the Belt as it will result in a shorter life of the belt and cause your vehicle to stop running.

Figure 15



BAG B (Continued)

Step B-7

Belt Tensioner Arm Install



37

38

- ❑ 1. Slide the Tensioner Arm assembly down over the Belt (26) and connect the slot in the Tensioner Arm (21) with the Tensioner Arm Bushing (34) as indicated in Figure 16A.
- ❑ 2. Slowly start rotating the Tensioner Arm around the Tensioner Bushing in a clockwise direction as shown in Figure 16B. While rotating the Tensioner Arm assembly, slightly pull upward to keep the Tensioner Arm locked and rotating on the Tensioner Bushing. The Belt must be positioned between the Drive Pulley (36) and the Tensioner Arm.
- ❑ 3. Place a #4 Hardened Washer (37) over a 4-40 x 1/4" Button Head Screw (38).
- ❑ 4. Once you have the Belt wrapped around the Drive Pulley, and Belt Tensioner in position, as shown in Figure 16C, secure the Tensioner assembly by threading the 4-40 x 1/4" Button Head Screw, with Washer, through the Chassis (27) into the bottom hole in the Tensioner Arm.


 *The Belt should move 1/4" (6mm) to 3/8" (9.5mm) up and down for the ideal tension.*

Figure 16A

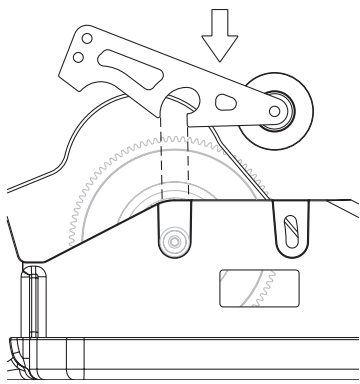


Figure 16B

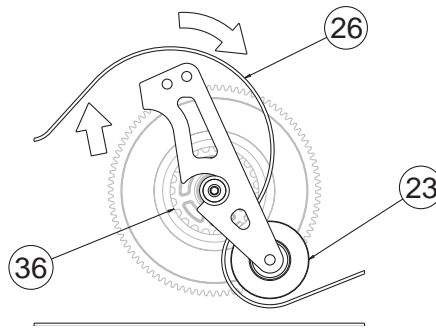
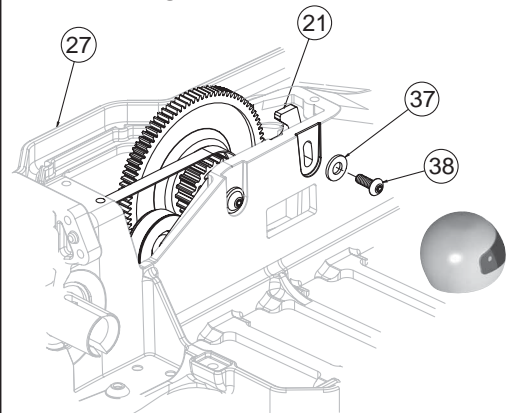


Figure 16C



Step B-8

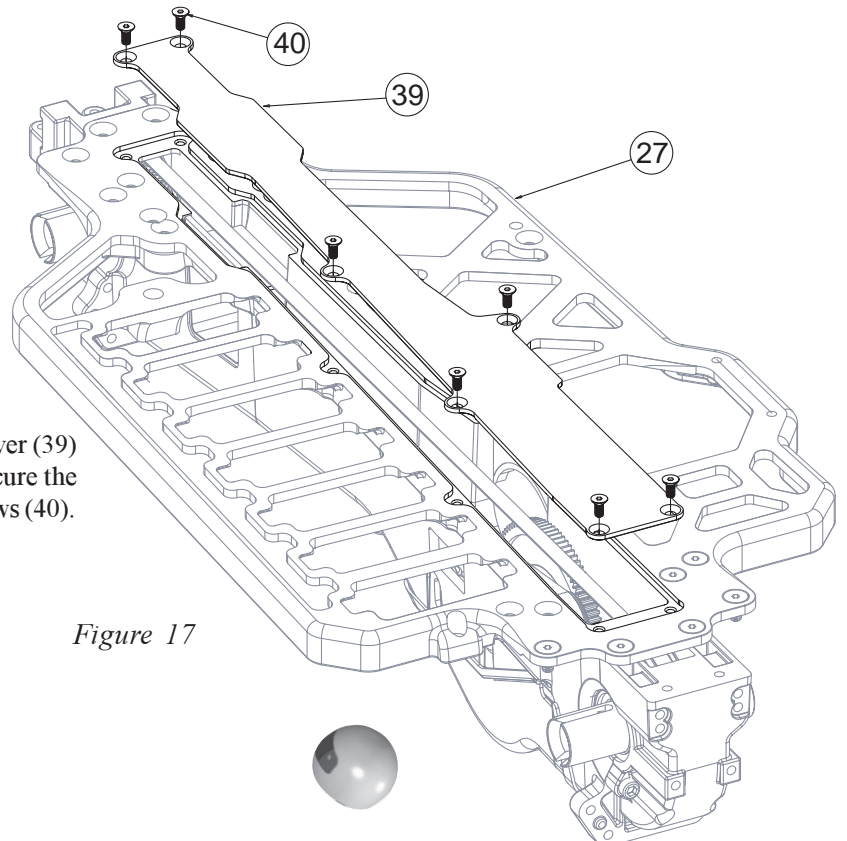
Chassis Bottom Cover Install



40

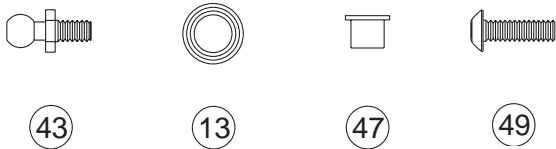
- ❑ 1. Seal the drive train by placing the Bottom Chassis Cover (39) with the flat side towards the bottom of the Chassis (27). Secure the Bottom Chassis Cover with seven 2-56 x 1/4" Flat Head Screws (40).

Figure 17



BAG C

Step C-1 Steering Bellcrank Assembly



- ❑ 1. Thread a 3/16" Ballstud (43), from the top side, into each of the Left (42) and Right (41) Bellcranks.
- ❑ 2. Insert a 5mm x 8mm Bearing (13) into the top and bottom of the Left and Right Bellcranks.
- ❑ 3. Thread a 3/16" Ball Stud (43) into the small hole from the top side of the Draglink (48).
- ❑ 4. Insert the 2 Carrier / Steering bushings (47), into the bottom side of the Draglink (48) and then rest it on the top of the Left and Right Bellcranks.
- ❑ 5. Thread a 4-40 x 3/8" Button Head Screw (49) through the Carrier / Steering Bushing and into each Bellcrank.

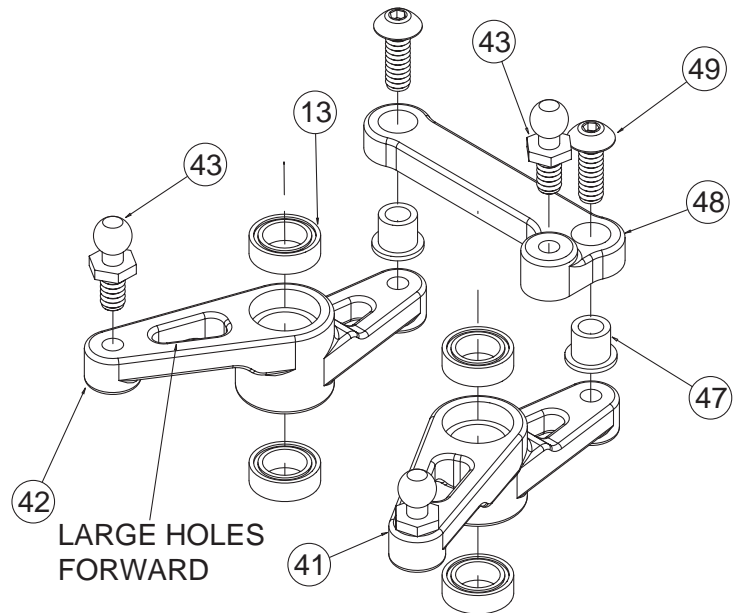
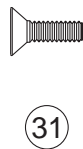



Figure 18

Step C-2 Steering Bellcrank Install



- ❑ 1. Line up the Hex on the Steering Post (44) with the rear Hex area on left side of the Chassis (27). Press the Steering Post to the bottom of the Hex. Thread a 4-40 x 3/8" Flat Head Screw (31) through the bottom of the Chassis and into the Steering Post.
- ❑ 2. Repeat step 1 for the right side steering post.
- ❑ 3. Slide the Steering Assembly from step C-1 through the Steering Tunnel (28) with the large holes facing forward, and then slide the Left Bellcrank (41) over the Steering Post on the left side of the Chassis.
- ❑ 4. Sliding the Right Bellcrank (42) over the Right Steering Post will need to be done at the same time as the Left Bellcrank.

 The bellcrank should rotate freely.

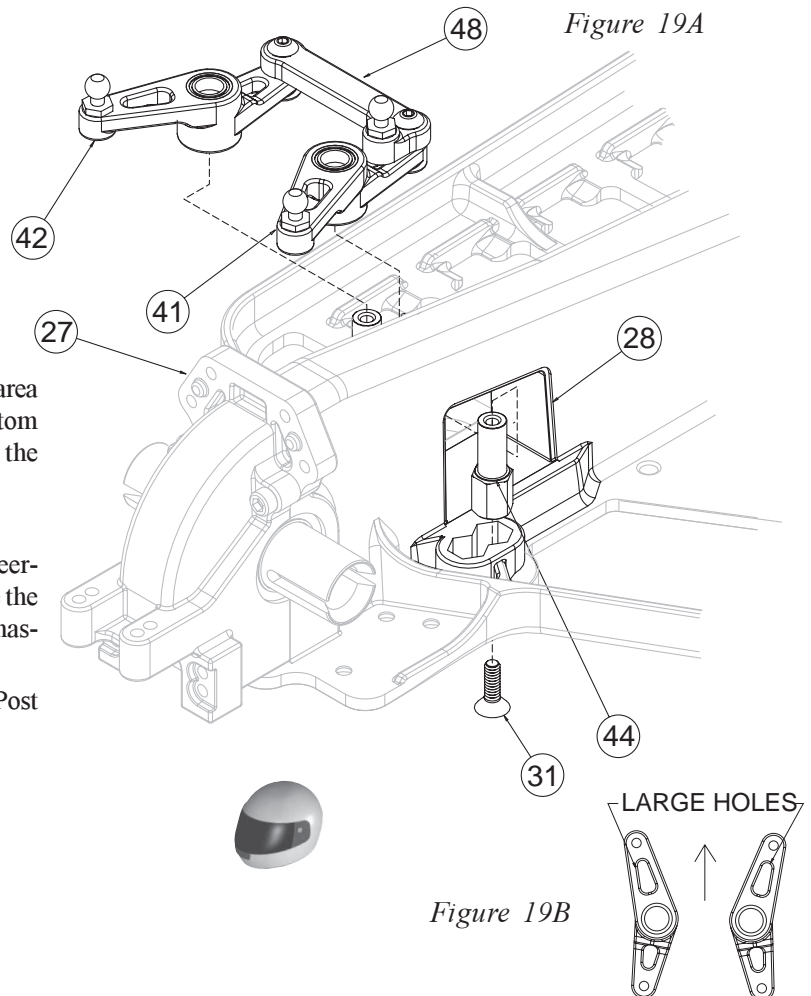
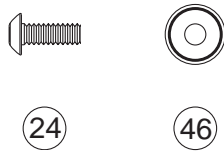


Figure 19B

BAG C (Continued)

Step C-3 Steering Bellcrank Install Cont.



- ❑ 1. Place a Steering Cap (46) (flat side up) over two 4-40 x 5/16" Button Head Screws (24).
- ❑ 2. Thread each of the Screws into the top of both the Left and Right side Steering Posts (44) to capture the Left (41) and Right (42) Steering Bellcranks.


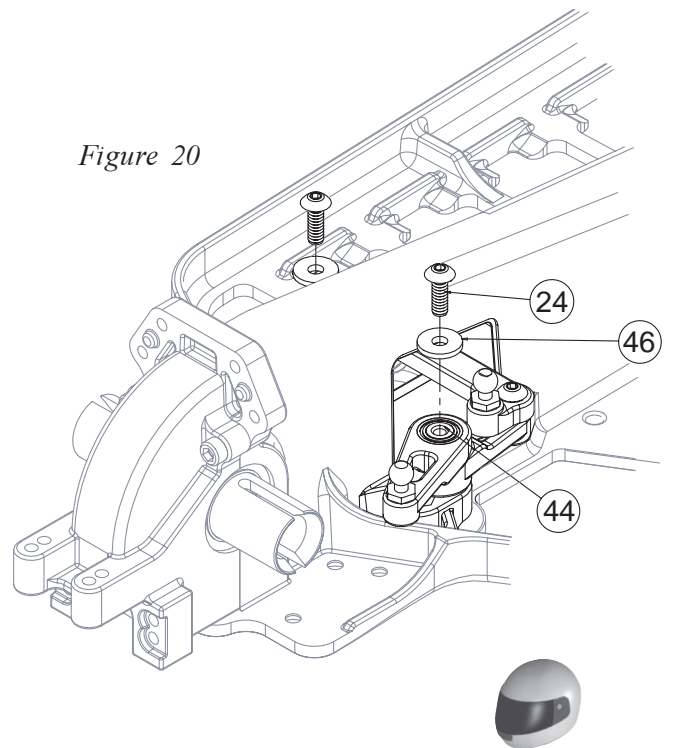

 *The steering assembly should rotate freely. Be sure that the screws are not too loose but, not too tight.*

Figure 20



Step C-4 Servo Saver Assembly and Install

 *All standard servos should use only one Silver Spring and one Gold Spring. All hi-torque & high-speed servos will use all three Springs.*

- ❑ 1. Using Table 22 (on the following page), determine which Servo Saver Base (51) is required for your servo. If your particular servo is not listed, try using the Arm recommended for another servo made by the same manufacturer.
- ❑ 2. Thread a 3/16" Ball Stud (43) into the outer Servo Saver Arm (53) from the front side as indicated in Figure 21.
- ❑ 3. Plug the servo into the radio system's receiver (*not included*). Make sure that there is power to the receiver, and turn the transmitter on followed by the receiver. Be sure that the trim settings for the steering on your transmitter are set to the center. With the radio system still turned on, attach the Servo Arm to the output shaft so that the Arm is vertical as shown in Figure 21.
- ❑ 4. Turn off your receiver then radio, slide one of the two "Silver" Servo Saver Springs (4) over the Servo Arm which is connected to the servo. Fit the second of the "Silver" Springs over the first Spring followed by the "Gold" Spring (6). The Springs should all be pressed against the back of the Servo Saver Base.
- ❑ 5. Press the outer Servo Arm into the Servo Saver Base. Insert the Servo Saver Washer (54) into the Outer Servo Saver Arm. Secure the assembly to the servo with the servo arm screw supplied with the servo.

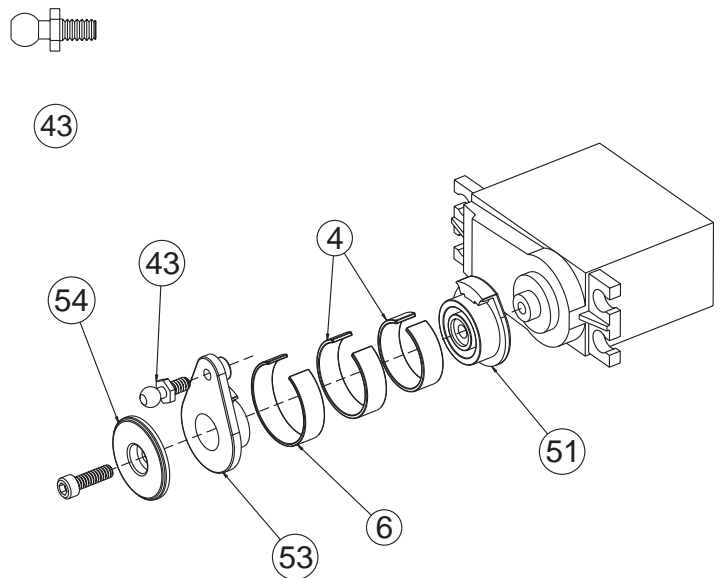


Figure 21

BAG C (Continued)

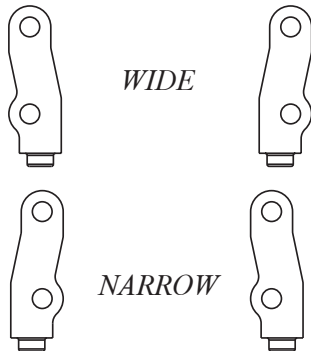


Figure 22

SERVO TYPE	OFFSET	REQUIRED SERVO ARM
AIRTRONICS ALL	NARROW	23
FUTABA S131, S131SH, S148, 23001, S3003, 25101, S9101, S9201, S9304, S9401, S9403	WIDE	25
FUTABA S3401, S9402, S9404, S9450	NARROW	25
HiTech ALL	NARROW	24
JR NES-507, NES-513, NES-517, NES-901, NES-4000, NES-4131, NES-4721, NES-4735, NES-9021, DS-	NARROW	23
JR Z4750, Z8450	WIDE	23
KO PS-702, PS-703, PS-1001, PS-1003	WIDE	23
KO PS-901BH, PS-902	NARROW	23
MULTIPLEX ALL	NARROW	23

Table 22

Step C-5 Servo Mount Install

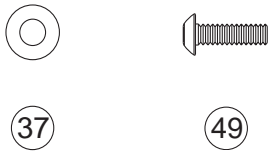
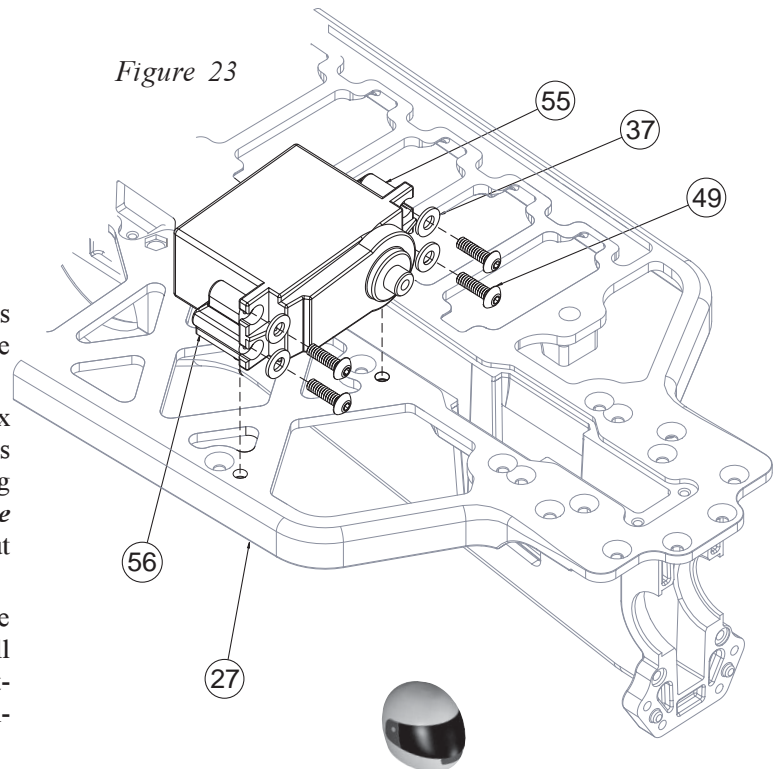



Figure 23



- ❑ 1. Use Figure 22 to determine how the Servo Mounting Posts (55), (56) should be attached to the servo (*not included*) in the Wide or Narrow position.
- ❑ 2. Place a #4 Hardened Washer (37) over each of the four 4-40 x 3/8" Button Head Screws (49) and attach the Servo Mounting Posts to the servo by threading the Screws through the servo mounting ears into the Upper and Lower holes in each Post. **Do not tighten the screws yet!** Just snug them up so that the posts are held in place, but can still be moved from side to side with a little resistance.
- ❑ 3. As shown in Figure 23, you will use the Chassis to determine the exact spacing needed for your brand servo. With the Screws still loose, push the Pins on the Servo Mounts into the holes in the bottom of the Chassis (27). Slide the mounts until the Screws are centered on the servo, and tighten as indicated in Figure 23.

 The servo should be as close to centered between the two Posts as possible.

BAG C (Continued)

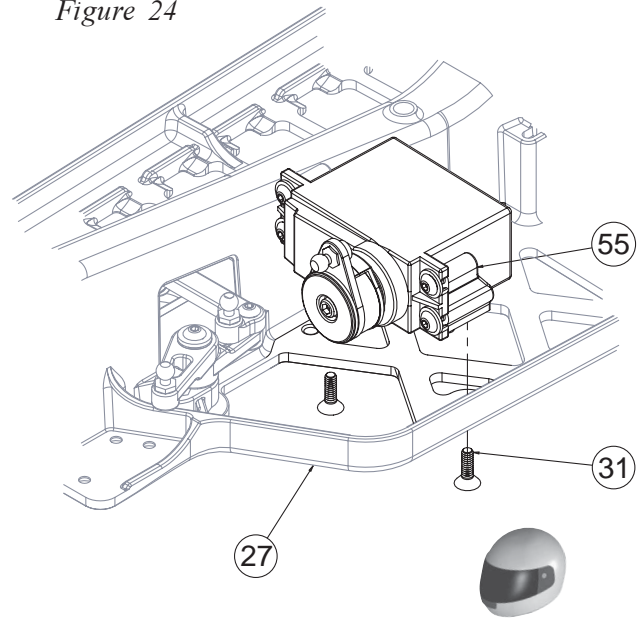
Step C-6 Servo Install



31

- ❑ 1. Install the servo into the Chassis (27) as shown in Figure 24. The pins from both Servo Mounting Posts (55), (56) should fit into the holes and sit flat against the Chassis.
- ❑ 2. Secure the servo to the Chassis with two 4-40 x 3/8" Flat Head Screws (31).

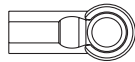
Figure 24



Step C-7 Servo to Draglink Turnbuckle



57



58

- ❑ 1. Thread a Short Plastic Rod End (58) onto each end of the 4-40 x 5/8" Threaded Rod (57). Tighten both sides equally until the Turnbuckle is the same length as the one shown in Figure 25B.

Figure 25A

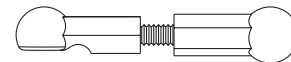
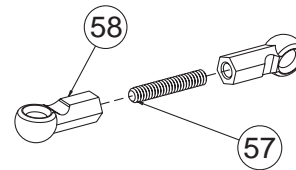
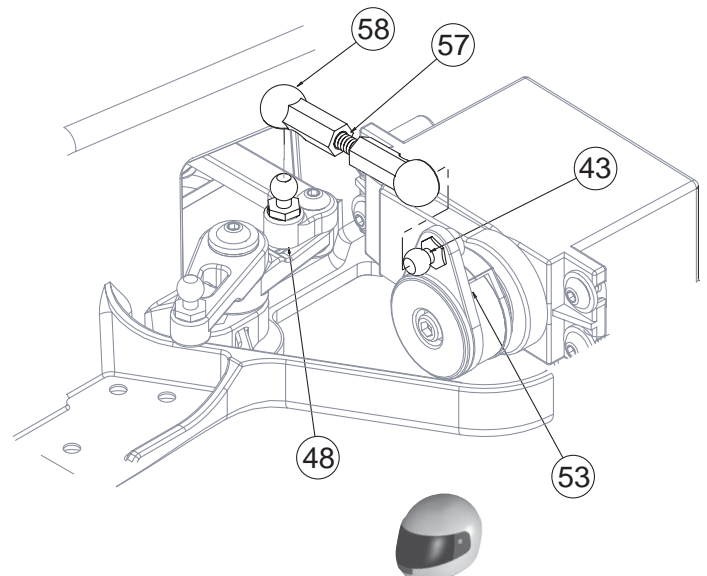


Figure 25B

Step C-8 Servo to Draglink Turnbuckle Install

- ❑ 1. Attach the Rod End (58) to the Ball Stud (43) in the Servo Saver Arm and the other to the Ball Stud in the Draglink (48) as indicated in Figure 26.

Figure 26



BAG D

Step D-1 Front Inner Pivot Install



(31)

T There are optional "Low Roll Center" pivot blocks included in Bag H of this kit. See set up tips at the end of this manual for their uses.

1. Install the Left Front Pivot Block (59) by threading two 4-40 x 3/8" Flat Head Screws (31) through the bottom of the Chassis, and into the Pivot Block as indicated in Figure 27.
2. Repeat step 1 for the Right Front Inner Pivot Block (60).

T The Left and Right Inner Pivots are marked with L & R.

T There is a short thread-cutting screw included in the wrench bag. This screw can be used to tap threads in the holes in the Inner Pivots. Pre-tapping these holes makes it easier to install the Screws during assembly.

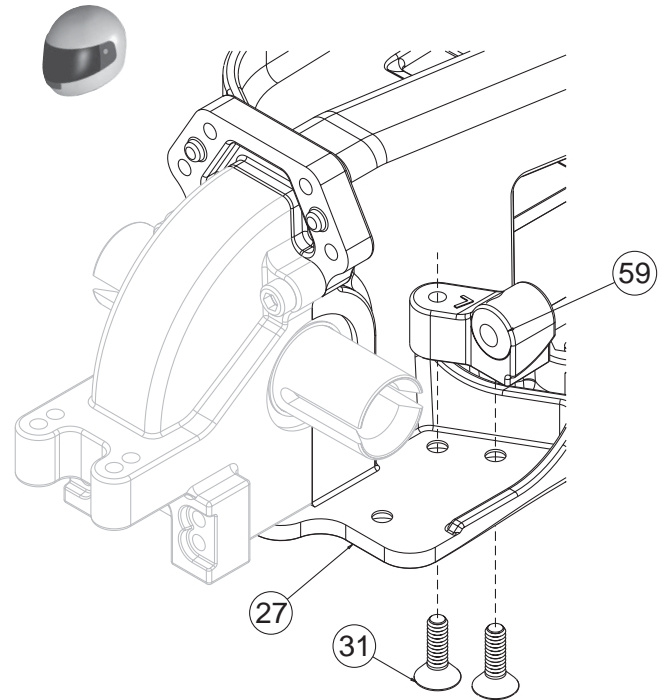


Figure 27

Step D-2 Front Arm Install



(151)



(61)



(62)

1. Slide a 1/8" Inner Hinge Pin (62) through the larger holes of each of the two Front Arms (63).
2. Position the Arm so that the Shock mount hole faces away from the front of the Chassis (27). Slide two .060" Spacer (61) over the back side of the Pin as indicated in Figure 28A. Insert the Arm into the Inner Front Pivot Blocks (59), (60). Capture the Front Arms by placing the Front Main Block (65) marked with "OF" onto the Inner Hinge Pins as shown in the illustration in Figure 28B. Secure the Front Main Block by threading two 4-40 x 1/2" Flat Head Screws (151) through the Main Block into the upper holes in the Front Diff Cover (29).

T Before you tighten the Main Block it may be necessary to slightly loosen the Screws in the Inner Pivots about 1 full turn. Once this is done, tighten the Main Block, followed by tightening the Inner Pivots. This will ensure you get the correct Pin angle in the Arms.

T There is a short thread-cutting screw included in the wrench bag. This screw can be used to tap threads in the holes in the Front Diff Cover. Pre-tapping these holes makes it easier to install the Screws during assembly.

Figure 28A

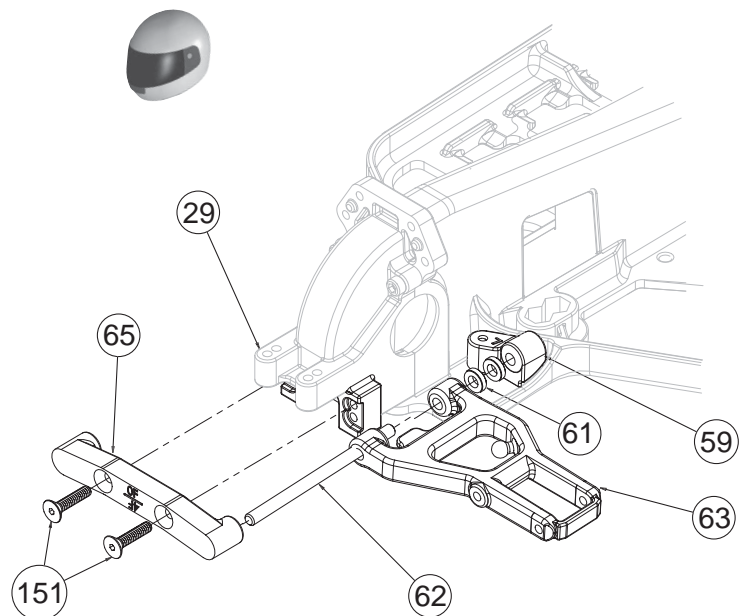
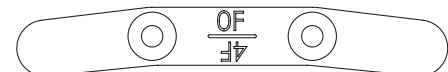


Figure 28B



ASSEMBLE MAIN BLOCK
IN THIS DIRECTION

BAG D (Continued)

Step D-3

Front Shock Tower Assembly



66

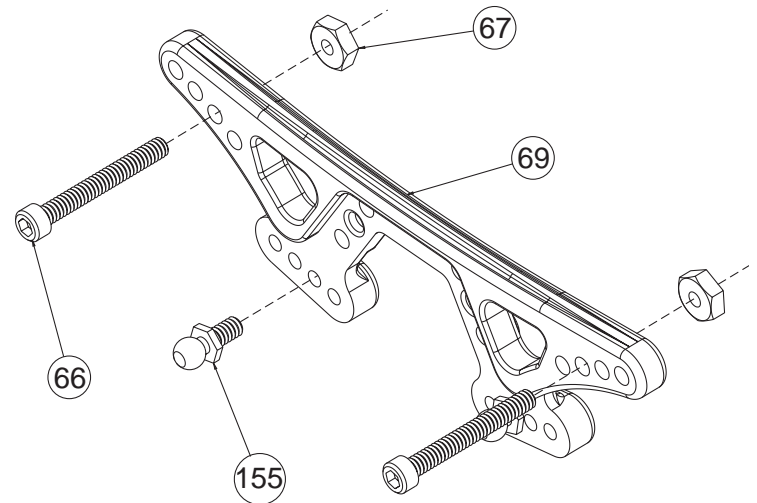


67



155

Figure 29



- 1. Insert a 4-40 x 7/8" Cap Head Screw (66) on either side of the Shock Tower (69) through the second hole out from the middle on the top of the Shock Tower. Secure the Screws to the Tower by threading a 4-40 Zinc Nut (67) over each Screw and tightening.

The screws should extend away from the recessed area in the front shock tower.

- 2. Thread a 0.200" Short Head Ball Stud (155) into the second hole out from the middle of the Shock Tower in the lower four holes on either side of the Shock Tower.

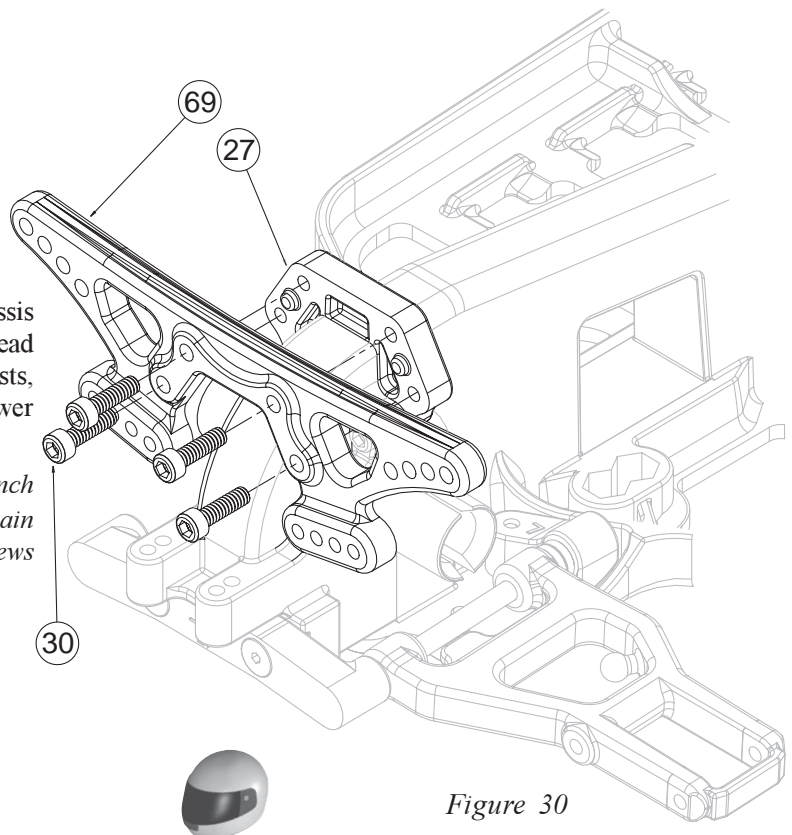


Step D-4

Front Shock Tower Install



30



- 1. Attach the Front Shock Tower (69) to the Front of the Chassis (27) with four 4-40 x 3/8" Cap Head Screws (30). The Screws thread into the top-most and bottom-most holes, surrounding the posts, which stick out of the front of the Chassis (27). The Shock Tower should interlock with the posts on the Chassis.

There is a short thread-cutting screw included in the wrench bag. This screw can be used to tap threads in the holes in the main Chassis. Pre-tapping these holes makes it easier to install the screws during assembly.

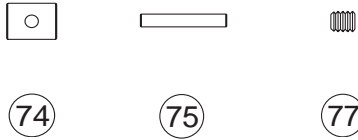


Figure 30

BAG D (Continued)

Step D-5

Front CVD Assembly



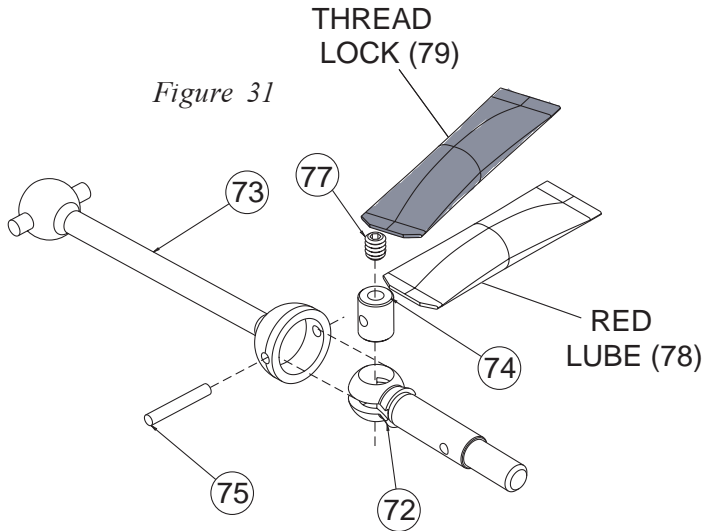
1. Apply a thin coat of Red MIP Thrust Bearing/ Assembly Grease (78), in the White Tube, to the outside of the CVD Coupling (74). Insert the greased CVD Coupling into the large hole in the CVD Axle (72) so that the cross-hole in the Coupling can be seen through the slots in the Axle.

2. Place the CVD Dogbone (73) over the CVD Axle. Align the holes in the CVD Dogbone with the hole in the CVD Coupling. Secure all three parts by inserting a 1/16" x 7/16" (solid) Pin (75) through the holes in the CVD Dogbone, the slots in the CVD Axle, and the hole in the CVD Coupling.

3. Center the pin in the CVD Dogbone and secure it by applying a small amount of MIP Thread-Lock compound (79) to a 4-40 x 1/8" Set Screw (77), and thread it into the end of the CVD Coupling.

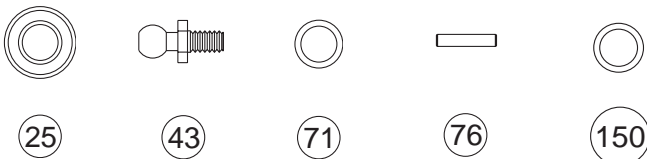
4. Repeat Steps 1-3 for the second front CVD assembly.

T Apply the enclosed Thread-lock to the Set Screw before threading it into the CVD Coupling. If Thread-lock is not used, the Set Screw will loosen during operation. This will cause your car to stop running.



Step D-6

Front Spindle Carrier Assembly



1. Thread a 3/16" Ball Stud (43) into the top side of the Left Spindle Arm (70) as shown in Figure 32A.

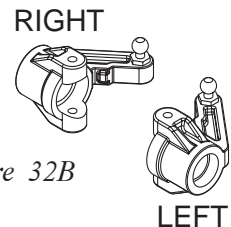
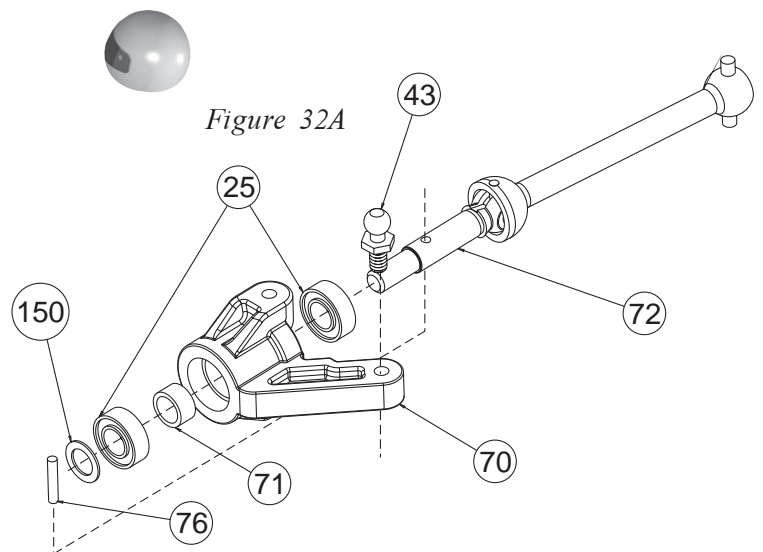
2. Press a 3/16" x 3/8" Bearing (25) into the outside of the Spindle (70).

3. Slide a 3/16" x 3/8" Bearing (71) over the Axle (72). Next, slide an Axle Spacer (76) over the CVD Axle against the Bearing.

4. Press the Axle with Bearing into the Spindle (70) from the inside through the Bearing in the outside of the Spindle.

5. Place a 3/16 x .015" Shim (150) over the Axle and secure the CVD Axle and the Shim by inserting a 1/16" x 5/16" (spirol) Pin (76) through the small cross hole in the CVD Axle. The Pin should be centered in the Axle.

6. Repeat Steps 1-5 for the Right Spindle (70).



BAG D (Continued)

Step D-7 Front Spindle Carrier Assembly

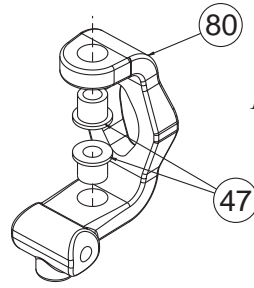
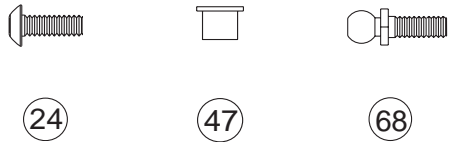


Figure 33A

- ❑ 1. Insert two Carrier/Steering Bushings (47) into the upper and lower holes in the Left 4 degree Spindle Carrier (80), (Marked with "4 L") from the inside as shown in Figure 33A.
- ❑ 2. Attach the Left Spindle (70) to the Left Spindle Carrier by sliding the CVD Dogbone (73) through the Spindle Carrier as illustrated in Figure 33B. Line up the holes in the Spindle and the Spindle Carrier. Thread a Long, Short Head Ball Stud (68) through the Carrier Bushing (47) into the Spindle from the top of the Spindle Carrier. Thread a 4-40 x 5/16" Button Head Screw (24) through the Carrier Bushing into the Spindle from the bottom of the Spindle Carrier.
- ❑ 3. Repeat Steps 1-2 for the Right Spindle (70) and Right 4 degree Spindle Carrier (80), (Marked with "4 R") assembly.

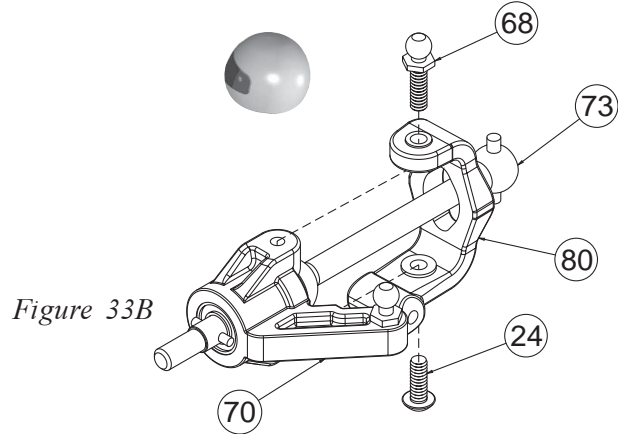


Figure 33B

Step D-8 Front Arm Assembly

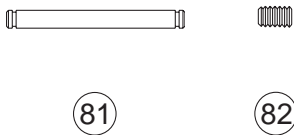
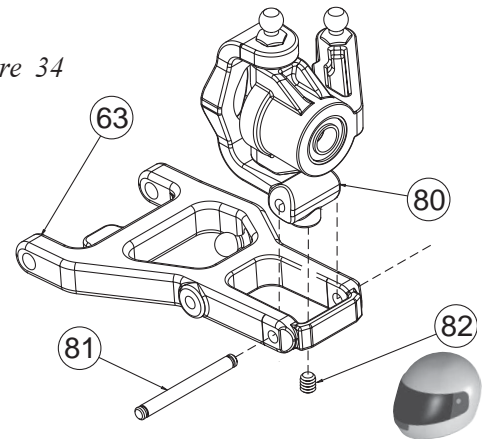
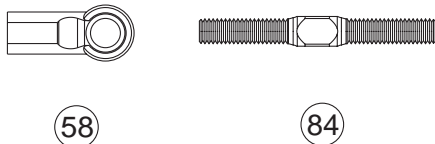


Figure 34


- ❑ 1. Attach the Left Spindle and Carrier assembly to the Left Front Arm (63) by aligning the holes in the Spindle Carrier (80) with the holes in the Front Arm. Insert a 3/32" x .930" Hinge Pin (81) through the Arm and the Spindle Carrier.
- ❑ 2. Make sure the Hinge Pin is centered between the ends of the Arm. Secure the Hinge Pin by threading a 5-40 x 3/16" (82) Set Screw into the bottom of the Spindle Carrier.
- ❑ 3. Repeat Steps 1-2 for the Right Arm (63) assembly.



Step D-9 Turnbuckle - Camber Link Assembly



- ❑ 1. Thread a Plastic Rod End (58) onto each end of a 1.250" Titanium Turnbuckle (84). Tighten both Rod Ends equally until the Tierod is the same length as the Tierod in Figure 35B. Make two of these Tie rod assemblies.

 Each end of the Turnbuckle is threaded opposite. One end has right-hand threads, the other has left-hand threads. This allows the length of the rods, once installed, to be adjusted without removing them.

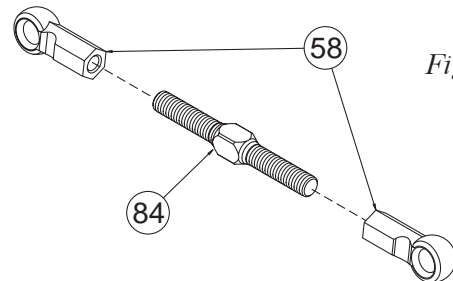


Figure 35A

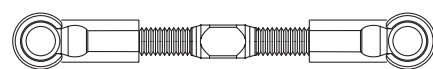



Figure 35B

BAG D (Continued)

Step D-10 Turnbuckle - Camber Link Install

 The "Foam Things" are primarily for use on dusty, out-door tracks and surfaces. Their use is left to your discretion.

- ❑ 1. Place a "Foam Thing" (85) over the Ball Stud (68) located in the top of the Spindle Carrier (80). Place a second "Foam Thing" over the Ball stud (155) located in the Shock Tower (69).
- ❑ 2. Snap the end of the Turnbuckle assembly with the Right-Hand Threads to the Ball Stud in the Spindle Carrier. Snap the other end to the Ball Stud in the Shock Tower.
- ❑ 3. Repeat Steps 1-2 to attach the other Turnbuckle assembly to the Right Spindle (70) assembly.


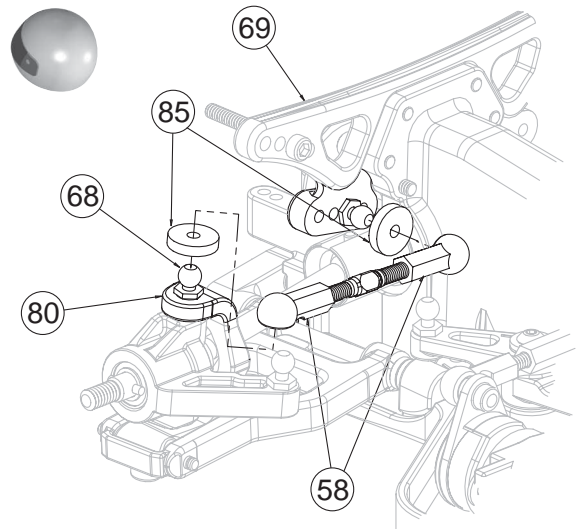
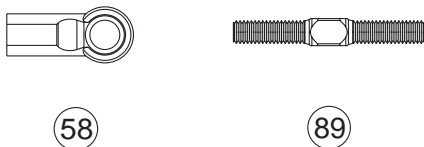
 Assure that the right-hand threads on the turnbuckle are located towards the outside of the chassis for easier adjustment later.


Figure 36



Step D-11 Turnbuckle - Steering Link Assembly



- ❑ 1. Thread a Plastic Rod End (58) onto each end of a 1" Titanium Turnbuckle (89). Tighten both Rod Ends equally until the Tierod is the same length as the assembled Tierod in Figure 37B. Make two of these assemblies.

 Each end of the Turnbuckle is threaded opposite. One end has right-hand threads, the other has left-hand threads. This allows the length of the rods, once installed, to be adjusted without removing them.

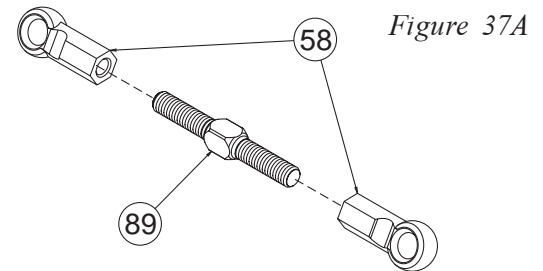
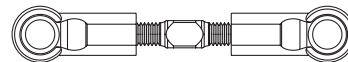


Figure 37B



Step D-12 Turnbuckle - Steering Link Install

- ❑ 1. Snap the end of the Turnbuckle assembly with the Right-Hand Threads to the Ball Stud (43) in the Left Spindle (70). Snap the other end to the Ball Stud in the Left Bellcrank (41).
- ❑ 2. Repeat step 1 to attach the other Turnbuckle assembly to the Right Bellcrank (42) and the Right Spindle (70).

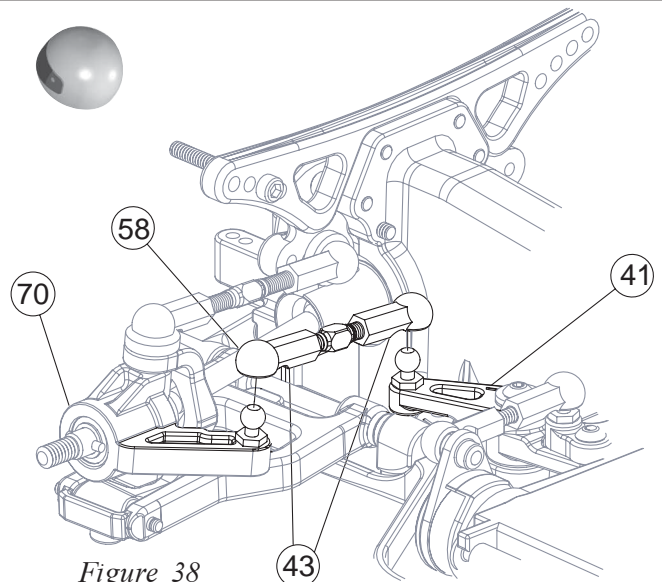


Figure 38

BAG E

Step E-1

Rear Inner Pivot Install

Figure 39

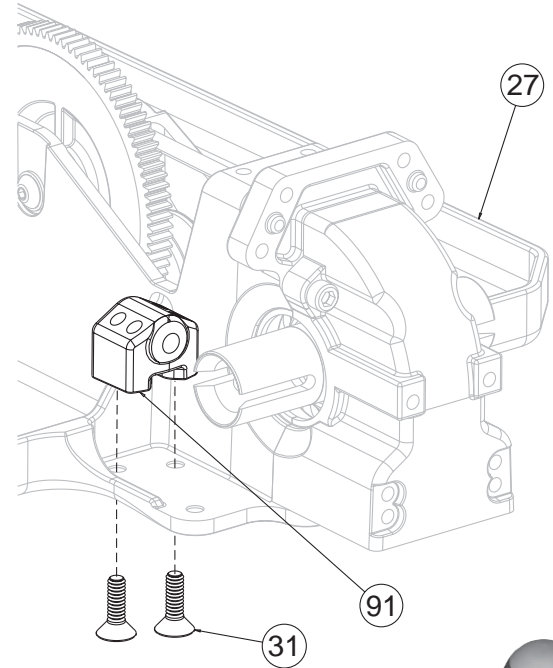


31

T There are optional “High Roll Center” pivot blocks included in Bag H of this kit. See set up tips at the end of this manual for their uses.

1. Install a Rear Inner Pivot Block (91) by threading two 4-40 x 3/8" Flat Head Screws (31) through the bottom of the Chassis (27) into the Pivot Block as indicated in Figure 39. Repeat for the right Rear Inner Pivot Block (91). The Rear Inner Pivot Blocks are interchangeable from left to right.

T There is a short thread-cutting screw included in the wrench bag. This screw can be used to tap threads in the holes in the Rear Inner Pivots. Pre-tapping these holes makes it easier to install the Screws during assembly.



Step E-2

Rear Arm Install



151

61

62

1. Slide an Inner Hinge Pin (62) through each of the two Rear Arms (92) farthest away from the Shock mounting holes.

T Before you tighten the Main Block it may be necessary to slightly loosen the screws in the Inner Pivots about 1 full turn. Once this is done, tighten the Main Block, followed by tightening the Inner Pivots. This will ensure you get the correct Pin angle in the Arms

2. Position the Rear Arms (92) so that the Shock mount holes face away from the back of the Chassis (27). Slide a .060" Spacer (61) over each side of Inner Pins as indicated in Figure 40A. Insert the Arms into the Inner Rear Pivot Blocks (91). Capture the Rear Arms by placing the Rear Main Block (93) onto the Inner Hinge Pins as shown in the illustration in Figure 40B. Secure the Rear Main Block by threading two 4-40 x 1/2" Flat Head Screws (151) through the Main Block into the Lower Holes in the Rear Diff Cover (32).

T There is a short thread-cutting screw included in the wrench bag. This screw can be used to tap threads in the holes in the Rear Diff Cover. Pre-tapping these holes makes it easier to install the Screws during assembly.

Figure 40A

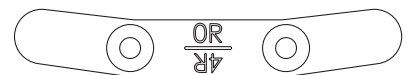
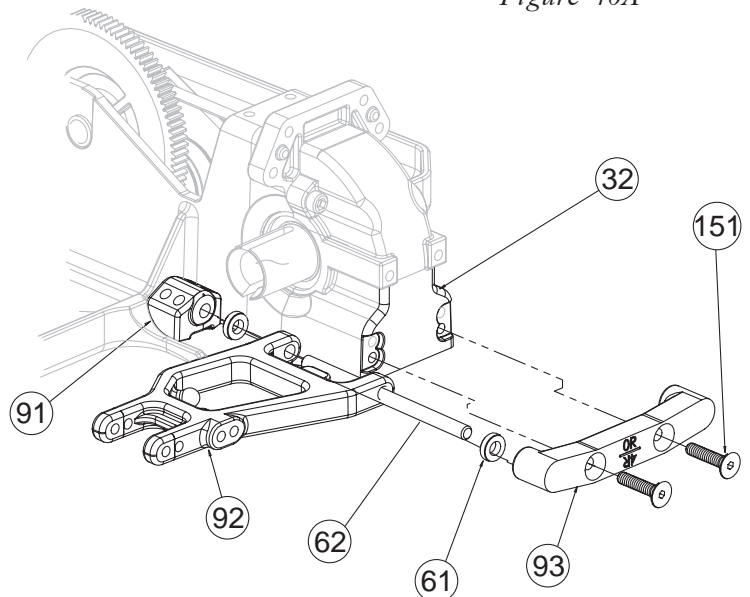
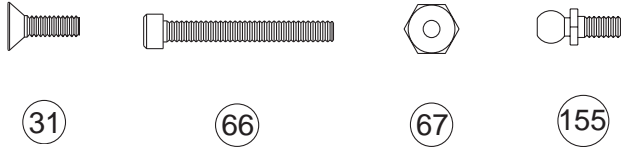


Figure 40B

ASSEMBLE MAIN BLOCK
IN THIS DIRECTION


BAG E (Continued)

Step E-3 Rear Shock Tower Assembly

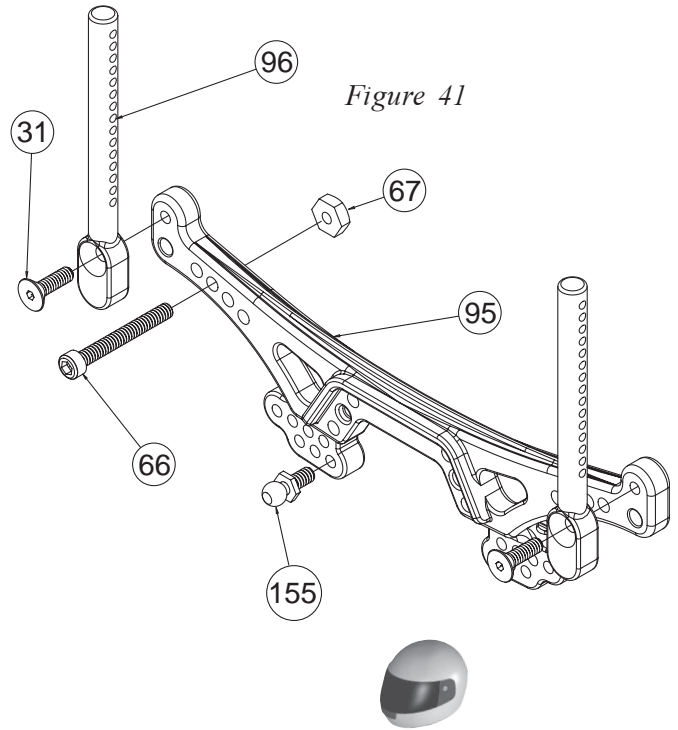


1. Thread a 0.200" Short Head Ball Stud (155) on each side of the Shock Tower into the closest hole to the middle of the Shock Tower in the lowest set of camber holes.

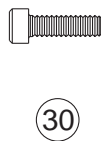
2. Insert a 4-40 x 7/8" Cap Head Screw (66) one on either side of the Shock Tower (95) into the third hole out from the middle in the upper set of four holes. Secure the Screws to the Tower by threading a 4-40 Zinc Nut (67) over each Screw and tightening.

 The Screws should extend away from the recessed area in the Rear Tower and face towards the back of the Chassis.


3. Install the Rear Body Mounts (96) by interlocking the post on the Body Mount with the blind hole in the Shock Tower and lining up the through holes. Secure the Body Mounts by threading a 4-40 x 3/8" Flat Head Screw (31) through the Body Mount and into the Rear Shock Tower as indicated in Figure 41.



Step E-4 Rear Shock Tower Install



1. Attach the Rear Shock Tower (95) to the Rear of the Chassis (27) with four 4-40 x 3/8" Cap Head Screws (30). The Screws thread into the top-most and bottom-most holes surrounding the posts, which stick out of the rear of the Chassis. The Shock Tower should interlock with the posts on the Chassis.

 There is a short thread-cutting screw included in the wrench bag. This screw can be used to tap threads in the holes in the main chassis. Pre-tapping these holes makes it easier to install the screws during assembly.

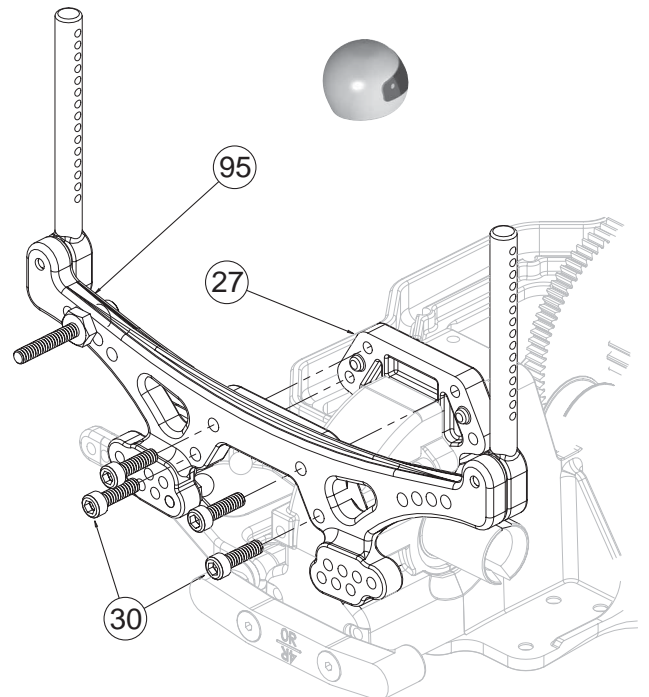
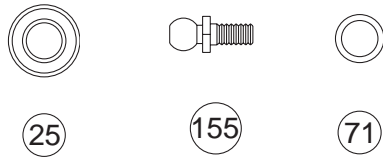


Figure 42

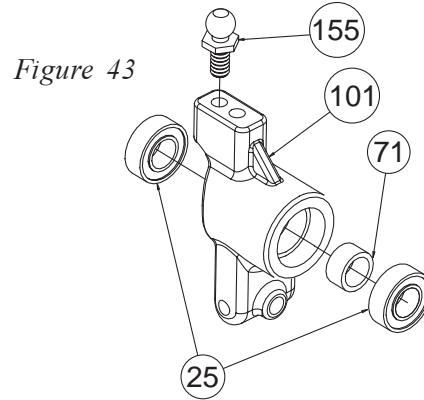
BAG E (Continued)

Step E-5

Rear Hub Carrier Assembly



- ❑ 1. Thread a 0.200" Short Neck Ball Stud (155) into the inside hole ("A") in the top of the Left Rear Hub Carrier(101) as indicated in Figure 43.
- ❑ 2. Insert a 3/16" x 3/8" Bearing (25) into the back-side of the Left Rear Hub Carrier. From the front-side, insert a Bearing Spacer (71) as illustrated in Figure 43. Capture the spacer with another 3/16" x 3/8" Bearing, from the front side of the Hub. Make another assembly for the Right Rear Hub (101).



Step E-6

Rear CVD Assembly

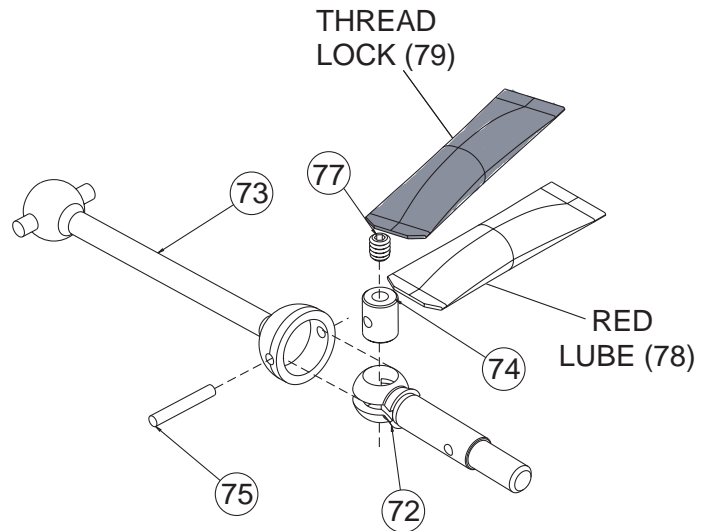


- ❑ 1. Apply a thin coat of Red MIP Thrust Bearing/ Assembly Grease (78) to the outside of the CVD Coupling (74). Insert the greased CVD Coupling into the large hole in the CVD Axle (72) so that the cross-hole in the Coupling can be seen through the slots in the Axle.
- ❑ 2. Place the CVD Dogbone (73) over the CVD Axle. Align the holes in the CVD Dogbone with the hole in the CVD Coupling. Secure all three parts by inserting a 1/16" x 7/16" (solid) Pin (75) through the holes in the CVD Dogbone, the slots in the CVD Axle, and the hole in the CVD Coupling.
- ❑ 3. Center the Pin in the CVD Dogbone and secure it by applying a small amount of MIP Thread-Lock compound (79) to a 4-40 x 1/8" Set Screw (77), and thread it into the end of the CVD Coupling.

Apply the enclosed Thread-lock to the Set Screw before threading it into the CVD Coupling. If Thread-lock is not used, the Set Screw will loosen during operation. This will cause your car to stop running.

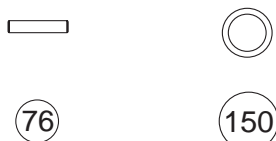
- ❑ 4. Repeat Steps 1-3 for the second Rear CVD assembly.

Figure 44



Step E-7

Rear Hub Assembly



- ❑ 1. Insert the CVD through the 3/16" x 3/8" Bearing (25) from the inside of the Hub (101) until the shoulder of the CVD Axle (72) stops at the Bearing. Slide a 3/16" x .015" Shim (150) over the Axle (72) against the outside Bearing. Secure the axle and shim by placing a 1/16" x 5/16" (spirol) Pin (76) through the cross hole in the Axle. The Pin should be centered in the Axle.
- ❑ 2. Repeat for the Right Rear Hub (101) assembly.

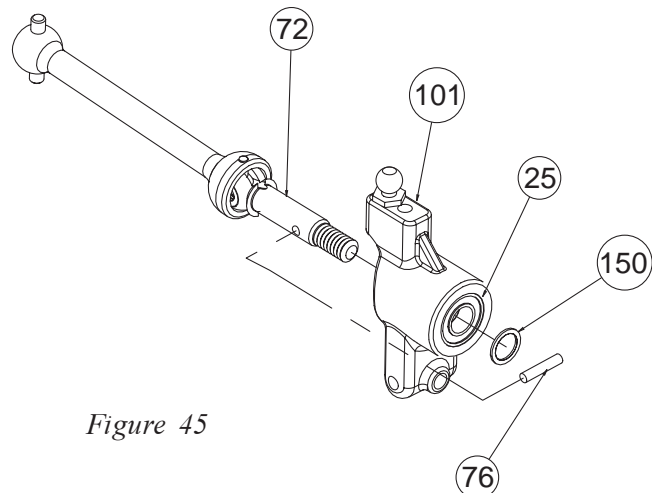
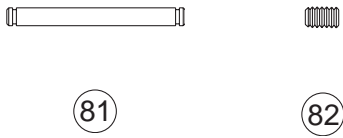


Figure 45

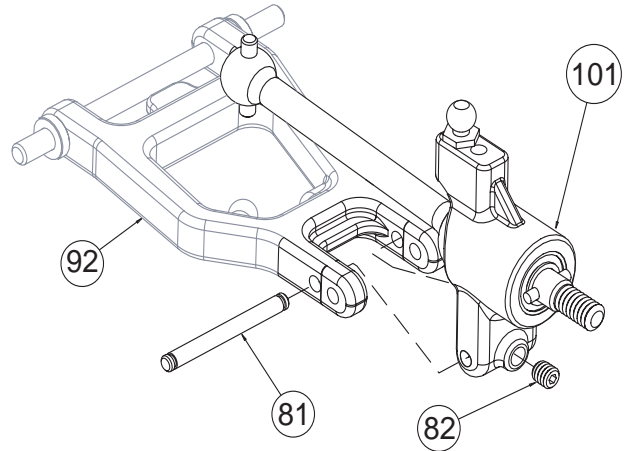
BAG E (Continued)

Step E-8 Rear Hub Assembly Install



- ❑ 1. Attach the Left Rear Hub (101) assembly to the Left Rear Arm (92) by aligning the holes in the Rear Hub with the inner-most of the outer holes in the Rear Arm. Insert a 3/32" x .930" Hinge Pin (81) through the Arm into the Hub as indicated in Figure 46.
- ❑ 2. Make sure the Hinge Pin is centered between the ends of the Arm. Secure the Hinge Pin by threading a 5-40 x 3/16" Set Screw (82) into the outside of the Rear Hub.
- ❑ 3. Repeat Steps 1-2 for the Right Rear Hub (101) assembly.


Figure 46



Step E-9 Turnbuckle - Rear Camber Link Assembly



- ❑ 1. Thread a Plastic Rod End onto each end of a 1.125" Titanium Turnbuckle (83). Tighten both Rod Ends (58) equally until the overall length is the same as the Tierod in Figure 47B. Make two of these Tie rod assemblies.

 Each end of the Turnbuckle is threaded opposite. One end has right-hand threads, the other has left-hand threads. This allows the length of the rods, once installed, to be adjusted without removing them.

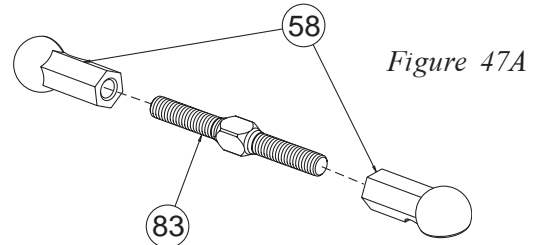
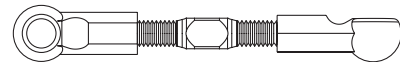




Figure 47B

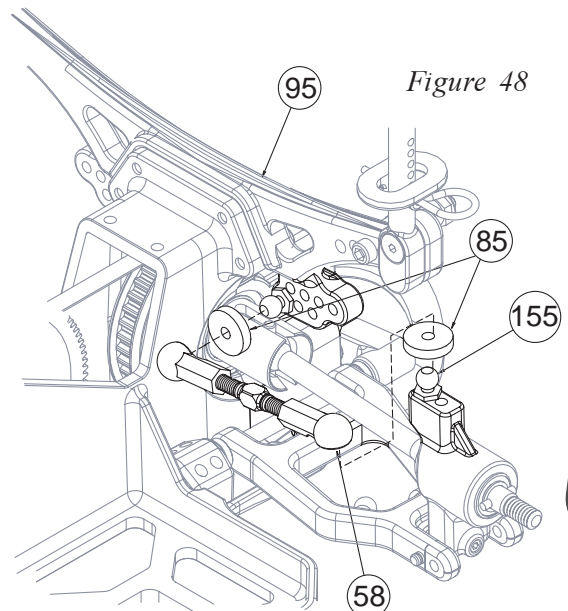


Step E-10 Turnbuckle - Rear Camber Link Install

 The "Foam Things" are primarily for use on dusty, out-door tracks and surfaces. Their use is left to your discretion.

- ❑ 1. Place a "Foam Thing" (85) over the Ball Stud (155) in the Rear Hub (101). Place a second "Foam Thing" over the Ball Stud in the Rear Shock Tower (95).
- ❑ 2. Snap the end with the Right-Hand Threads on the Turnbuckle assembly to the Ball Stud in the Left Rear Hub. Snap the other end to the Ball Stud in the Rear Shock Tower.
- ❑ 3. Repeat Steps 1-2 to attach the other Turnbuckle assembly to the Right Rear Arm (92) assembly.

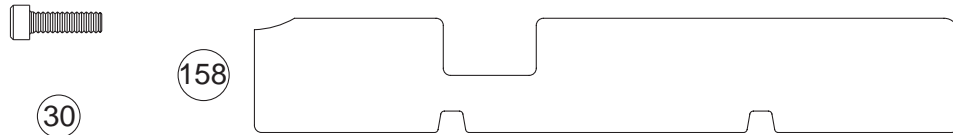
 Assure that the Right-Hand Threads on the Turnbuckle are located towards the outside of the chassis for easier adjustment later.



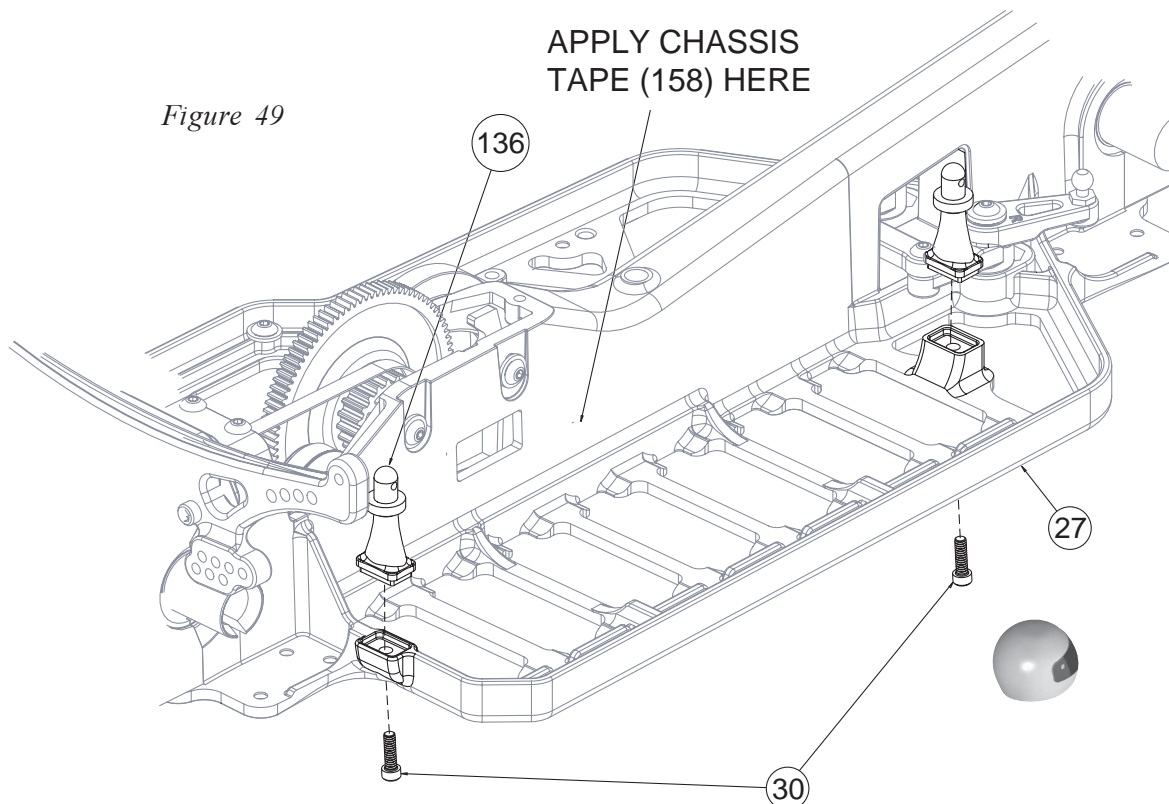
BAG E (Continued)

Step E-11

Battery Post Install

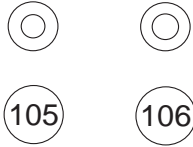


- ❑ 1. Install the Battery Strap Posts (136) to the Chassis (27), as shown, by placing the square base of the Post in the countersunk pockets on the drivers right side of the Chassis.
- ❑ 2. Thread a 4-40 x 3/8" Cap Head Screw (30) through the bottom of the Chassis into each of the Battery Mounting Posts and tighten.
- ❑ 3. Peel the backing off of the Chassis Tape for the Battery (158) and align the cut-outs in the tape with the appropriate places on the Chassis and apply the Tape to the Chassis as indicated in Figure 49.



BAG F

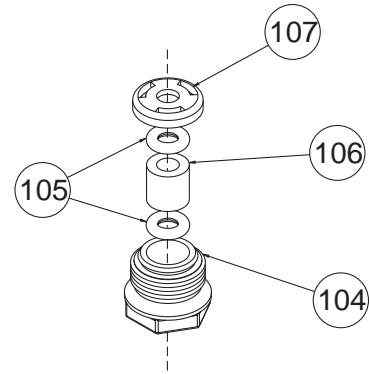
Step F-1 Shock Cartridge Assembly



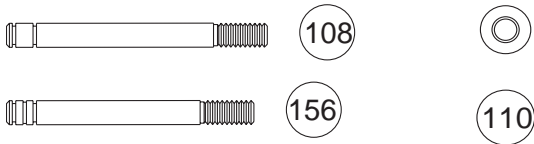
- ❑ 1. Place one Shock O-ring (105) into the Cartridge Body (104), making sure that the O-ring sits flat in the bottom of the Cartridge Body.
- ❑ 2. Insert the Cartridge Spacer (106) into the Cartridge Body followed by a second O-ring.
- ❑ 3. Once the second O-ring is inserted, and is flush with the top of the Cartridge Body, press the Cartridge Cap (107) onto the Cartridge Body until it snaps in place.
- ❑ 4. Make four Cartridge assemblies.

Cartridges in some kits may be pre-assembled at the factory.

Figure 50

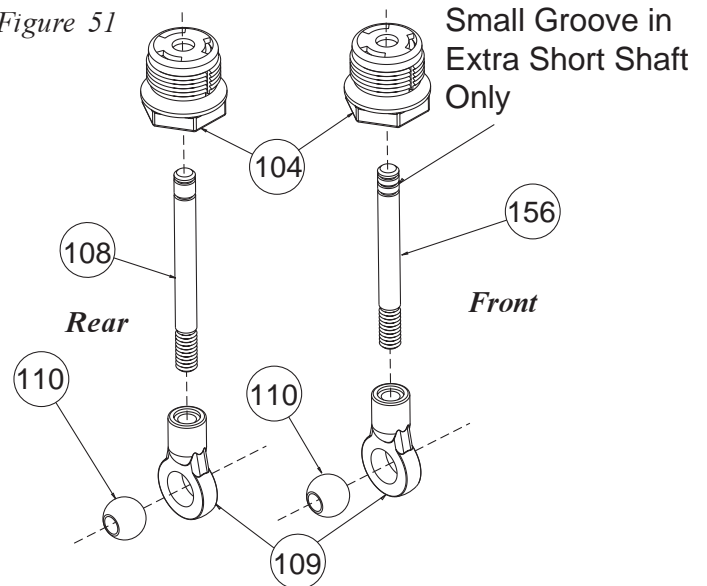


Step F-2 Shock Shaft Assembly



- ❑ 1. Place a drop of Shock Fluid (115) on the grooved end of each Front Shock Shaft (156), and each Rear Shock Shaft (108). Slide a Cartridge, hex end first, down the Shock Shaft towards the threads as shown in Figure 51, on all four Shafts.
- ❑ 2. Using pliers or small vise grips, grasp the Shock Shaft between the grooves and thread a Shock End (109) all the way onto the Shaft until the threads stop.
- ❑ 3. Repeat Step 1-2 on all four Shock Shafts.
- ❑ 4. Carefully snap a 1/4" Aluminum Shock Mount Ball (110) into each of the Shock Ends on each of the four Shock Shafts.

Figure 51

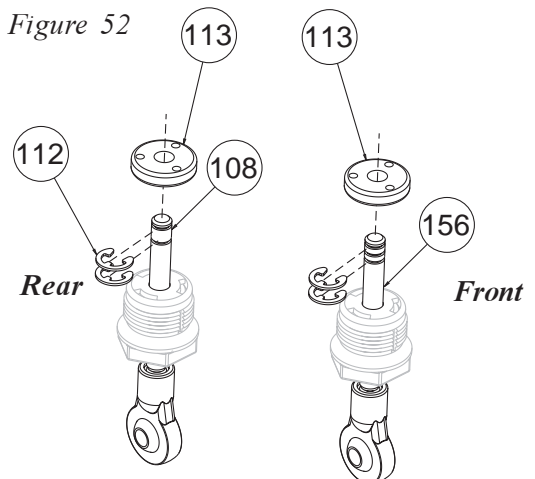


Step F-3 Shock Piston Install



- ❑ 1. Snap a 1/8" E-clip (112) into the groove closest to the Cartridge on both Front (156), and Rear Shock Shafts, (108).
- ❑ 2. Slide a "Red", #56 Shock Piston (113) onto all four shock shafts until the Piston rests against the E-clip (112). Secure the Pistons to the Shafts with a second E-clip.

Figure 52



BAG F (Continued)

Step F-4 Shock Assembly

❑ 1. Match the short Front Shock Bodies (157) with the short Front Shock Shaft (156) assemblies, and the Rear Shock Bodies (Long) (114) with the "Long" Rear Shock Shaft (108) assemblies. Fill a short Front Shock Body with 30wt. Pure Silicone Shock Oil (115) up to the bottom of the threads inside the Shock Body.

⚠ Be sure to keep the Front and Rear shock assemblies separated until they are assembled to the Chassis.

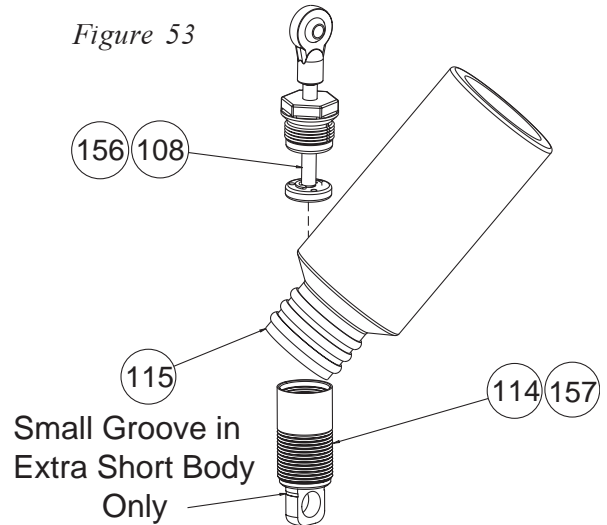
❑ 2. Insert the Front Shaft assembly with the Cartridge against the Shock Piston (113). Slowly tighten the Cartridge about two full turns only. With the Cartridge still slightly loose, slowly push the Shock Shaft assembly into the Shock Body. This will bleed the excess Shock Fluid out of the Shock. Once the Shaft assembly is all the way down, tighten the Shock Cartridge the rest of the way.

❑ 3. Now, with the Shaft assembly still all the way in, secure the cartridge by tightening with pliers or a 7/16" wrench approximately 1/8 of a turn. There should be no air in the Shock as you move the Shaft in and out. If there is, you need more Fluid. If the Shock does not compress all the way, the shock has too much Fluid.

❑ 4. Repeat this for the remaining Front Shock assembly and the two Rear Shock assemblies.

⚠ If leaking persists around the outside, tighten the Cartridge.

Figure 53



Step F-5 Shock Spring Install

❑ 1. Snap a Shock Spring Cup (119) onto each of the Front and Rear Shock Shafts and push down onto the Shock End (109) until it stops.

❑ 2. Slide a 1" purple spring (117) down over each of the two "Short" Front Shock assemblies so that it rests against the Shock Cup.

❑ 3. Slide a 1" silver spring (116) down over each of the two "Long" Rear Shock assemblies so that it rests against the Shock Spring Cup.

❑ 4. Place a Spring Retainer Nut (118) over the top of each Shock Body (114), (157) with the ridge facing the Spring. Thread the Nut onto the Shock Body and adjust for proper Spring Pre-load.

⚠ Final ride height adjustments will be made in the "Final Checklist" portion of this manual.

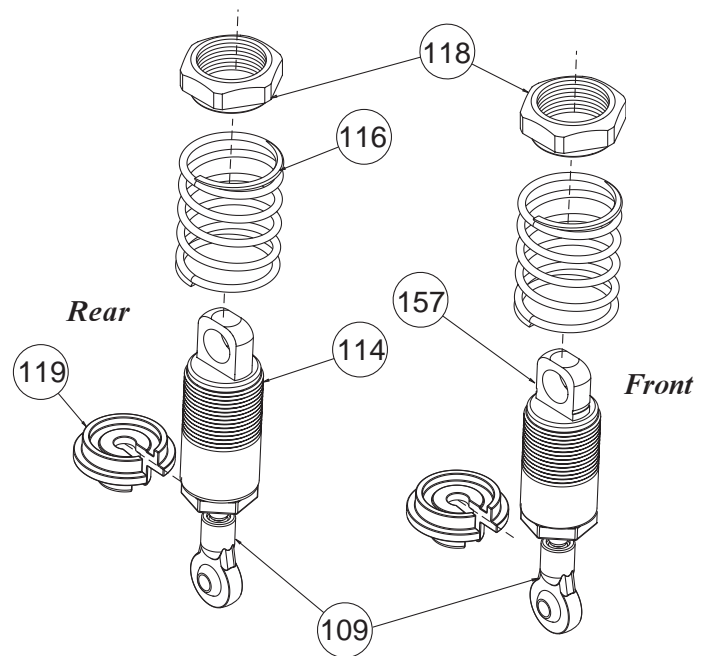
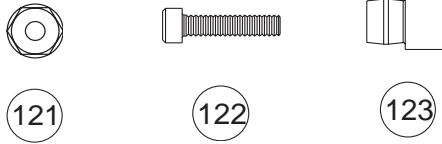


Figure 54

BAG F (Continued)


Step F-6 Rear Shock Install



❑ 1. Position the bottom of an assembled "Long" Rear Shock in front of the Shock mounting area on the Left Rear Suspension Arm (92) as shown in Figure 55. Align the hole in the Shock Mount Ball (110) with the Outside Hole in the Arm.

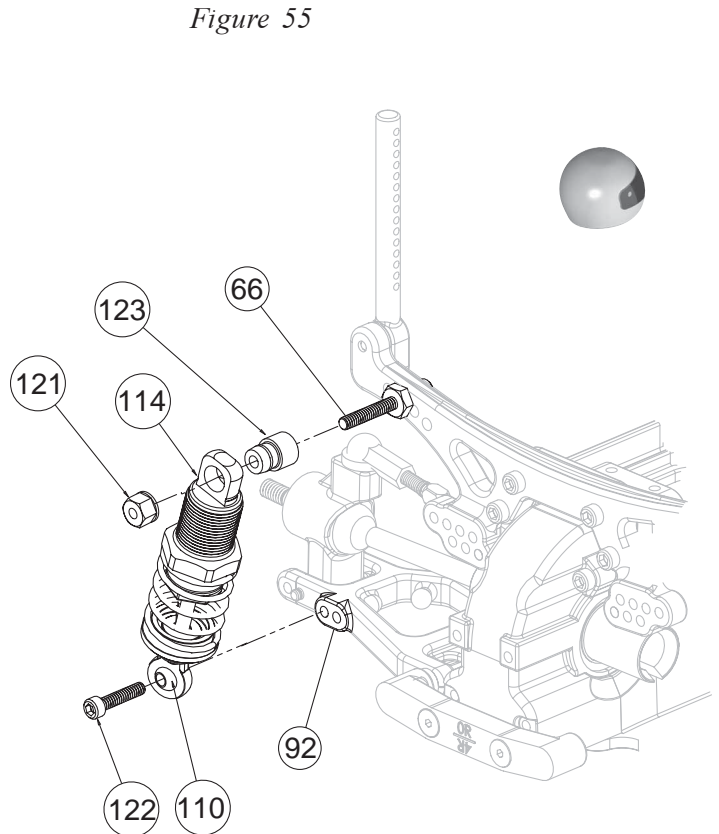
❑ 2. Attach the Shock to the Rear Arm by threading a 4-40 x 1/2" Cap Head Screw (122) through the Shock Mount Ball into the outside Shock mounting hole in the Suspension Arm.

❑ 3. Slide a "Long" Shock Mount Bushing (123), large side first, over the Screw (66) on the left side of the Tower.

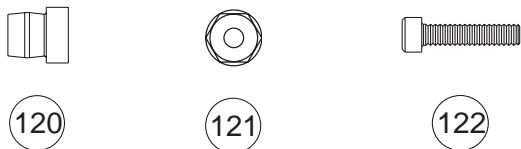
 Before attaching the top of the shock, make sure that the dogbone is in place in the outdrive.

❑ 4. Place the top of the Shock Body (114) over the Shock Mount Bushing. Secure the Shock to the Tower by threading a 4-40 Nylon Locknut onto the Shock Mount Screw.

❑ 5. Repeat Steps 1-4 for the Right Rear Shock assembly.




Step F-7 Front Shock Install



❑ 1. Position the bottom of an assembled "Short" Front Shock in front of the Shock mounting area on the Left Front Suspension Arm (63) as shown in Figure 56. Align the hole in the Shock Mount Ball (110) with the Middle hole in the Arm.

❑ 2. Secure the Shock to the Arm by threading a 4-40 x 1/2" Cap Head Screw (122) all the way into the Arm from the front.

❑ 3. Slide a "Short" Shock Bushing (120), large side first, over the Screw (66) on the Left side of the Front Shock Tower.

 Once again, before attaching the top of the shock, make sure that the dogbone is in place in the outdrive.

❑ 4. Place the top of the Front Shock Body (157) over the Shock Mount Bushing on the Tower. Secure the Shock assembly to the Tower by threading a 4-40 Nylon Locknut (121) onto the Shock Mount Screw.

❑ 5. Repeat Steps 1-4 for the right shock assembly.

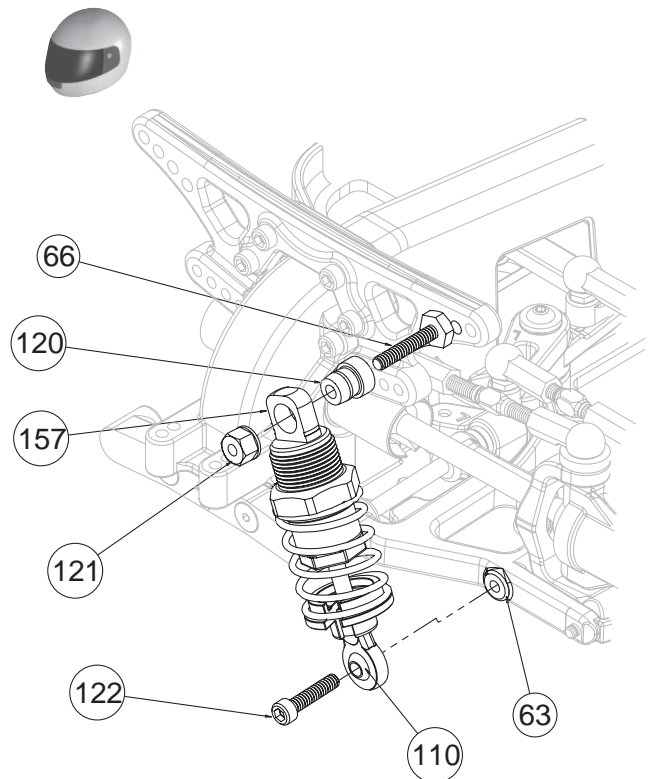
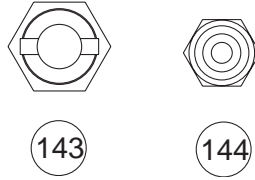



Figure 56

BAG G


Step G-1 Tire Assembly and Installation




- ❑ 1. Inspect the inside of the Tires (125) for any excess material. If present, trim the excess rubber to ensure proper seating of the Tire on the Wheel (124).

 Do not set the Tires on furniture as they may leave permanent stains!

- ❑ 2. Locate the four Molded Tire Inserts (126). The length of each of the four Foam Strips should be 6-7/8" (17.5cm). If any of the Strips are excessively long, trim them to 6-7/8" (17.5cm) before continuing.

 It is very important that the edges of the insert be trimmed as straight as possible. Straight cuts will make it much easier to glue the inserts into rings.

 **IMPORTANT NOTE:** Always wear eye protection, a mask, and always read and follow the manufacturer's safety warnings regarding the use of any adhesives.

- ❑ 3. Using a high-quality contact cement, glue the Tire Inserts into rings. The narrow side of the Insert must be to the inside of the ring when complete.
- ❑ 4. Once the contact cement has completely dried, install the Tire Inserts into the Tires. Pull the Tire over the Wheel and squeeze the Tire to properly seat it into the grooves of the Wheel. Make certain that the Tire Insert is not pinched between the Tire and the Wheel.
- ❑ 5. The Tires now need to be glued to the Wheels. This can be done by using a fast-curing superglue or cyanoacrylate (CA) glue available at your local hobby shop. Team Losi Tire Glue (A-7880 Thick, A7881 Thin) is the best glue available for gluing R/C car tires. This glue was produced specifically for this purpose.
- ❑ 6. With the Tire well seated in the grooves of the Wheel, slightly pull back on the Tire to expose the bead. Apply a small amount of glue in *at least* four places, per side. You can help the thinner glues to spread around the Tire by rotating the Tire at a slight angle. Allow the glue to dry thoroughly before continuing.
- ❑ 6. Slide the four "Large (12mm)" Hex Adapters (143), slot-side first, over each of the CVD Axles (72). Line up the Pin (75) with the slot in the Hex Adapter and press the Adapter over the Pin against the Shim.
- ❑ 7. Attach a Wheel to the Left Rear Axle by lining up the Hex in the Wheel with the Hex Adapter.
- ❑ 8. Secure the Rear Wheel by threading an 8-32 Locknut (144), (*supplied with your CVD kit*), onto the Rear Axle and tighten.
- ❑ 9. Repeat Steps 7-8 for the remaining Tire assemblies.

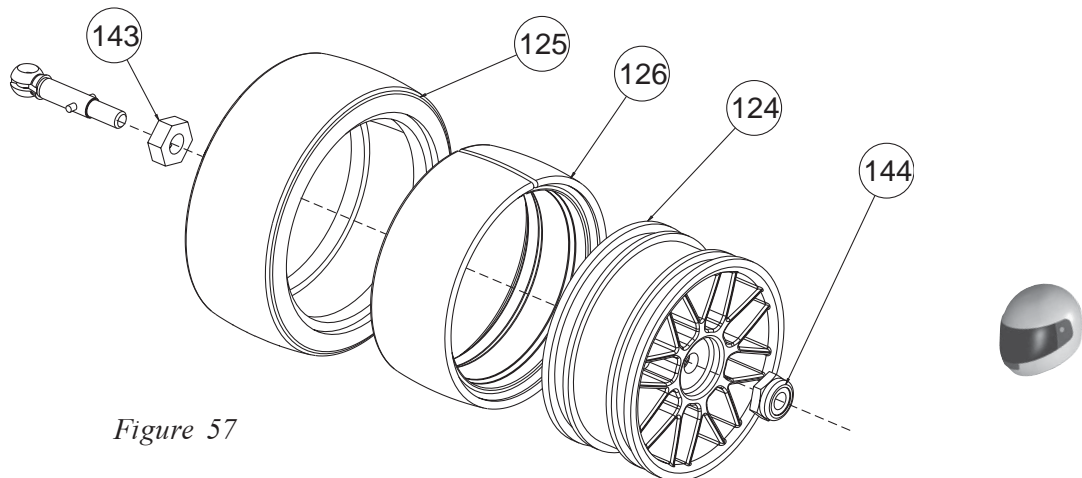


Figure 57

BAG H

Step H-1

Front Bottom Bumper Install



30



86



88

1. Holding the car upside-down, install the Front Bumper (87) by lining up the holes in the "fork" of the Front Bumper with the holes in the Chassis (27). It should rest on the Front Diff Cover (29). Secure the Front Bumper by threading two 4-40 x 1/4" Flat Head Screws (86) through the Chassis into the two holes in the back of the Front Bumper as indicated in Figure 58.

2. Thread two 4-40 x 3/8" Cap Head Screws (30) through the Front Bumper into the Front Diff Cover.

3. Thread the two 4-40 x 5/16" Droop Limiter Set Screws (88) into the Front Bumper, until the Hex of the Screw is positioned half-way into the bottom of the Bumper, as indicated in Figure 58.

You want to make sure that the Droop Limiter Screws are even on both sides of the car. The Droop Screws limit the down travel for the Arms. Refer to Tips from the Team in the back of the manual for more information on Droop Screws!

There is a short thread-cutting screw included in the wrench bag. This screw can be used to tap threads in the holes in the Front Diff Cover. Pre-tapping these holes makes it easier to install the Screws during assembly.

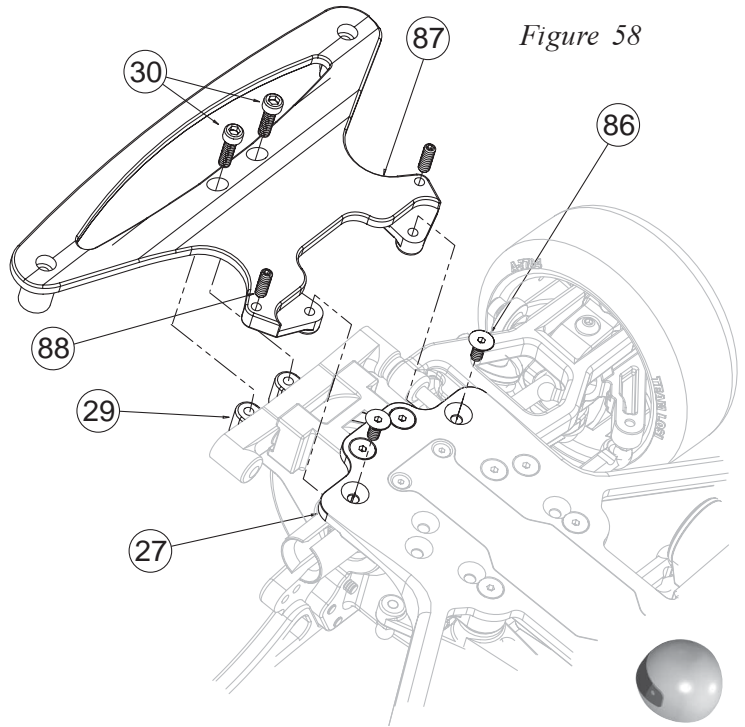


Figure 58

Step H-3

Rear Bumper Install



31



86



45

1. Install the Rear Bumper (102) by lining up the holes in the "fork" of the Rear Bumper with the holes in the back of the Chassis (27). Thread two 4-40 x 1/4" Flat Head Screws (86) through the Chassis into the holes in the Bumper as indicated in Figure 59, and tighten.

2. Thread two 4-40 x 3/8" Flat Head Screws (31) through the Bumper into the Rear Diff Cover (32), and tighten.

3. Thread the two 4-40 x 3/16" Droop Limiter Screws (45) through the Rear Bumper, until the Hex of the Screw, is positioned half-way into the bottom of the Rear Bumper as indicated in Figure 59.

Once again, you want to make sure that the Droop Limiter Screws are even on both sides of the car. The Droop Screws limit the down travel for the Arms. Refer to Tips from the Team in the back of this manual for more information on Droop Screws!

There is a short thread-cutting screw included in the wrench bag. This screw can be used to tap threads in the holes in the Rear Diff Cover. Pre-tapping these holes makes it easier to install the Screws during assembly.

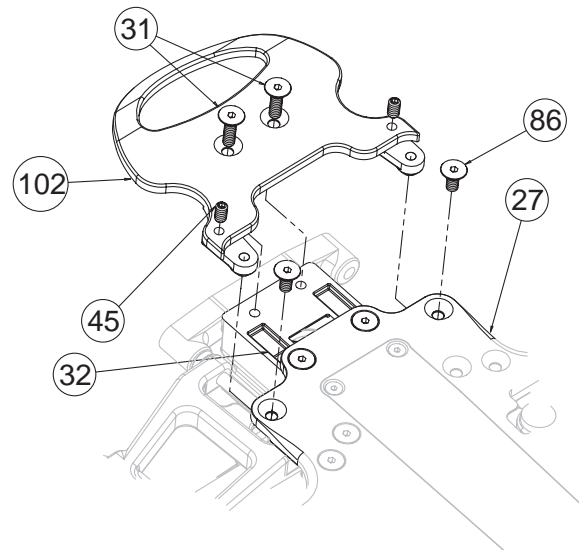


Figure 59

BAG H (Continued)


Step H-3 Motor Plate Install



128

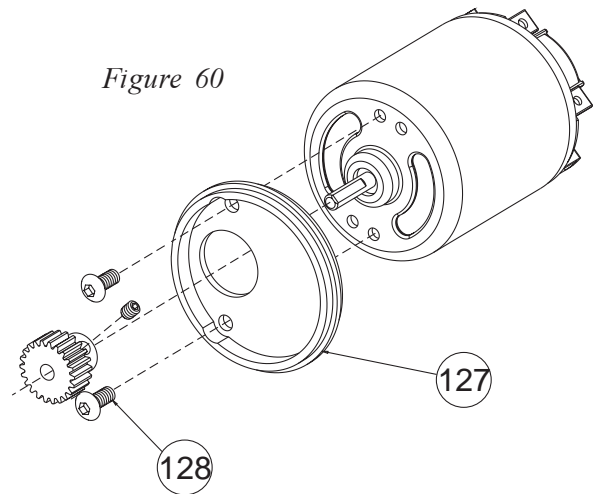
❑ 1. Place the Motor Mount (127) against the motor (*not included*) so that the shaft on the motor is centered in the large hole in the Motor Mount and the flat surface of the Motor Mount rests against the motor as shown in Figure 58. Align the holes in the Motor Mount with the holes in the motor as indicated in Figure 60.

❑ 2. Secure the motor plate to the motor by threading two 3mm x 6mm Button Head Screws (128) through the two holes in the Motor Mount, and tightening..

 *If there are two sets of holes in the motor, thread the Screws into the set of holes that will allow the power tabs to face the speed control (ESC) with the motor in its lowest position in the Chassis. This is the optimal location for your vehicle.*

❑ 3. Attach the pinion gear (*not included*) to the motor shaft with the tooth section of the gear away from the motor as shown.

Figure 60



Step H-4 Motor Install



129

131

132

❑ 1. Press two Threaded Inserts (131) into the bottom of the Chassis (27) in the Holes with the Hex. Be sure that you line up the Hex on the Insert with the Hex in the bottom of the Chassis. The Inserts should be installed in the direction shown in Figure 61.

❑ 2. Install the Motor Mount (127), with the motor attached, in the groove on the left side of the Chassis. Check alignment of the pinion gear with the Spur Gear (36). If the two Gears don't align properly, remove the motor and adjust the position of the pinion gear. Check again for proper alignment.

❑ 3. Once the pinion gear is properly aligned with the Spur Gear, place the Motor Strap (130) over the Motor Mount as shown. Slide a Ball Stud Washer (129) over each of the 4-40 x 1.5" Cap Head Screws (132). Thread a 4-40 x 1.5" Cap Head Screw through the two holes in the Motor Mount Strap into the Threaded Inserts in the Chassis, but **don't tighten** the Screws yet. Check the gear mesh by looking through the opening in the right side of the Chassis. To adjust the gear mesh, rotate the motor - clockwise to tighten the gear mesh; and counter-clockwise to loosen the gear mesh. Once the gear mesh has been adjusted, tighten the Motor Clamp Screws.

❑ 4. Insert the rectangular, Gear Mesh Access Plug (133), bevelled side first, in the opening on the right side of the Chassis.


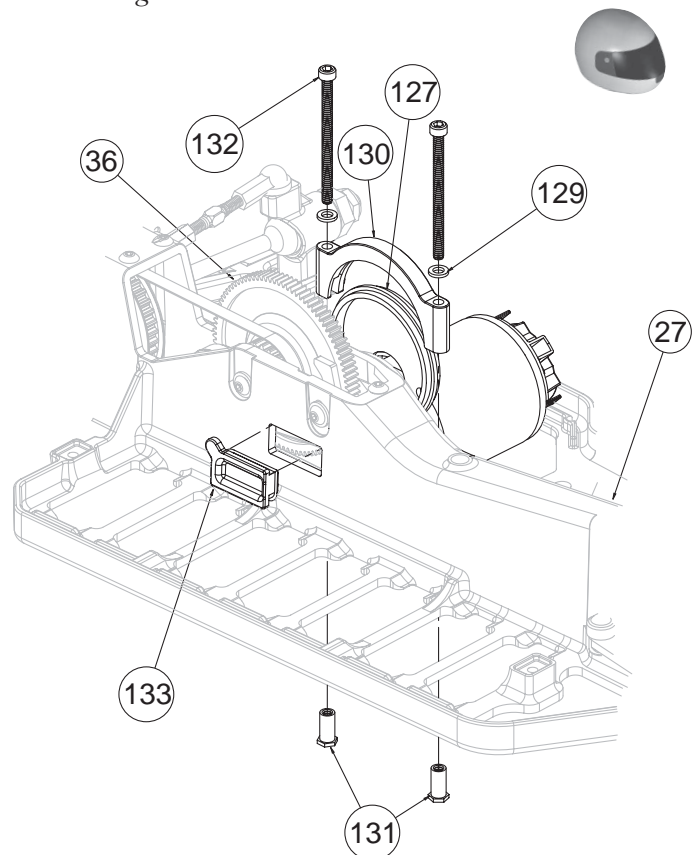
 *The gears need a small amount of backlash in order to function properly.*

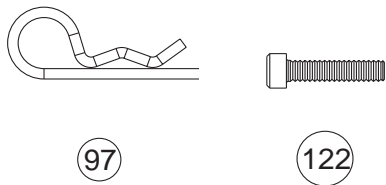
Figure 61



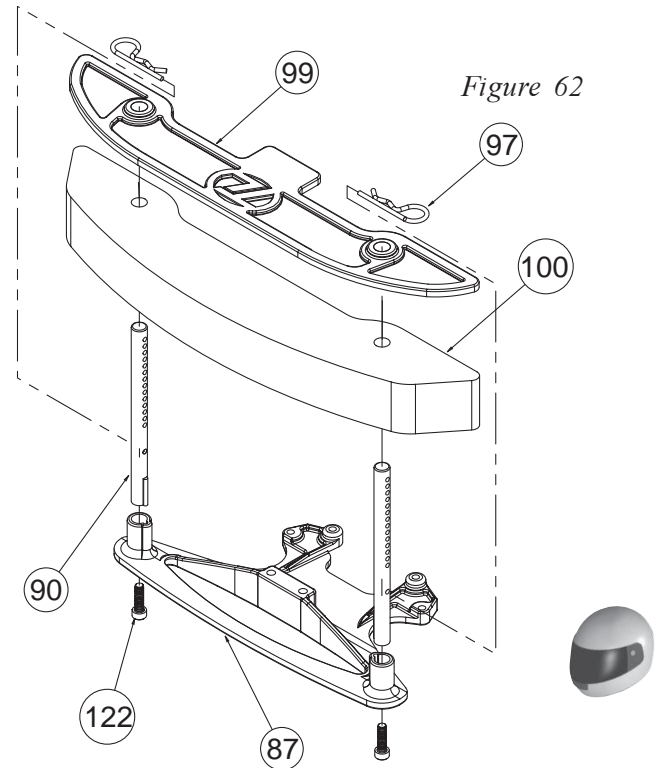
BAG H (Continued)

Step H-5

Front Bumper Assembly



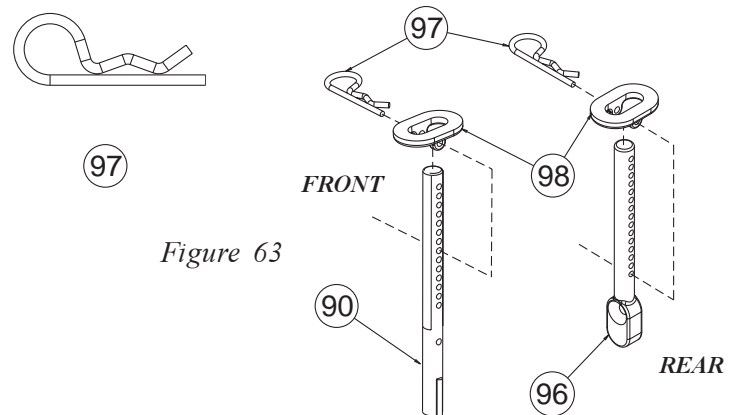
1. Install the Front Body Mounts (90) into the two holes in the Front Bumper (87) by lining up the tab on the Body Post with the slot in the Bumper. Secure the two Body Mounts with two 4-40 x 1/2" Cap Head Screws (122) through the bottom of the Bumper (87) into the Body Mounts (90).
2. Slide the Foam Bumper (100) over the two Body Mount Posts with the large curved side facing away from the front of the Chassis (27).
3. With the large curved side facing away from the front of the Chassis, slide the Front Top Bumper (99) over the two Body Mount Posts, down on top of the Foam Bumper.
4. Secure the Foam Bumper and Top Bumper with a Body Clip (97) through the bottom-most hole in each of the Body Mount Posts.



Step H-6

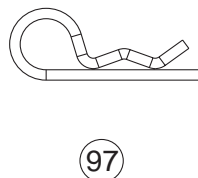
Body Mount Assembly

1. Position a Body Mount Swivel (98) over each of the two Front Body Mount Posts (90). Align the holes in the Swivel with the seventh hole up from the Body Clip in the Front Body Mount Post. Secure the swivels with a Body Clip (97) through one side of the Swivel and into the Body Mount into the Swivel again. Do this for both Front Body Mounts.
2. Position a Body Mount Swivel over each of the two Rear Body Mounts (96). Align the holes in the Swivel with the first hole up from the bottom of the Rear Body Mount. Secure the Swivels with a Body Clip through one side of the Swivel into the Body Mount, and into the Swivel again. Do this for both Rear Body Mounts.



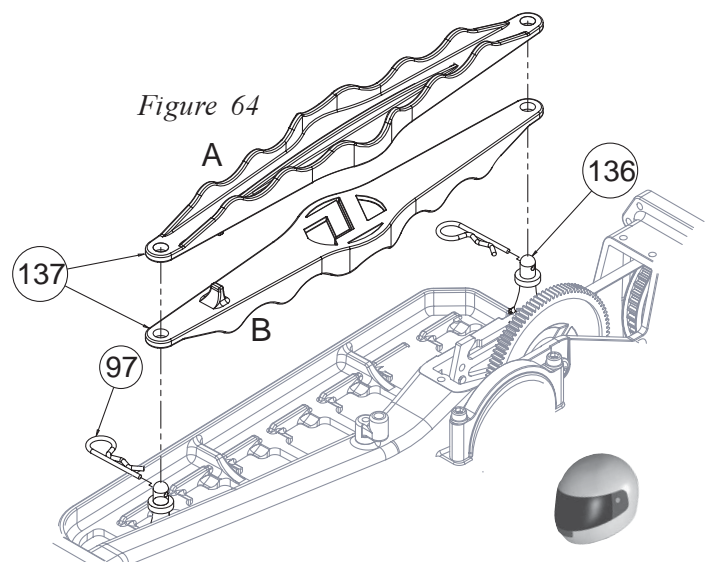
Step H-7

Battery Strap Install



The Battery Strap can be mounted in one of two ways to accommodate different styles of batteries. If you will be running matched-type cells, or individual cells laid out "side-by-side," the TL logo should be facing up, away from the top of the Chassis (27) as shown in Figure 64 "B". If, however, you are using a pre-assembled "stick pack," the TL logo should be facing down towards the top of the Chassis as shown in Figure 64 "A".

1. Once the battery pack (not included) is installed, the Graphite Battery Strap (137) will hold the batteries in place. The Battery Strap slides over the two Posts (136) on the right side of the Chassis. The Strap is secured to the Post with two Body Clips (97).



BAG H (Continued)

Step H-8 Receiver/Antenna Install

❑ 1. Cut a piece of Two-Sided Tape (135) to the same size as the bottom of the receiver (*not included*). Peel one side of the backing off and stick the Tape to the bottom of the receiver.

❑ 2. Make sure that the area on the Chassis (27), between the motor and the servo, is clean. Wipe this area off with a clean cloth or rag.

ⓘ *Rubbing alcohol can be used to clean any oily residue that may be present on the Chassis or receiver. Allow the alcohol to dry before applying the Two-Sided Tape.*

❑ 3. Peel the backing off the the Two-Sided Tape and install the receiver to the left side of the Chassis, between the motor and servo, with the antenna wire exiting the receiver towards the center of the car as shown in Figure 65.

❑ 4. Run the antenna wire from the receiver, through the small hole in the Antenna Mount (134). Press the Antenna Mount into the hole in the top of the center rib in the Chassis. Slide the antenna wire through the Antenna Tube (140) so that the wire comes out the other end of the Tube.

ⓘ *If antenna wire is shorter than the tube, remove the Tube and cut off enough of the Tube so that the wire will extend about 3/4" past the end of the Tube. DO NOT cut off any excess antenna wire. Doing so may cause you car to "glitch".*

❑ 5. While pulling the wire through the Antenna Tube, slide the Antenna Tube down and push it firmly into the Antenna Mount on the main Chassis.

❑ 6. Fold the wire down over the Antenna Tube and place the Antenna Cap (141) over the Tube, and excess wire (Figure 65).

❑ 7. Locate the receiver wire on your ESC. Place the wire into the channel on the left side of the Chassis. Hold the wire in the channel by placing a #4 x 0.030 Washer over two 4-40 x 1/4" Button Head Screws (38) and threading them into the two holes in the Chassis

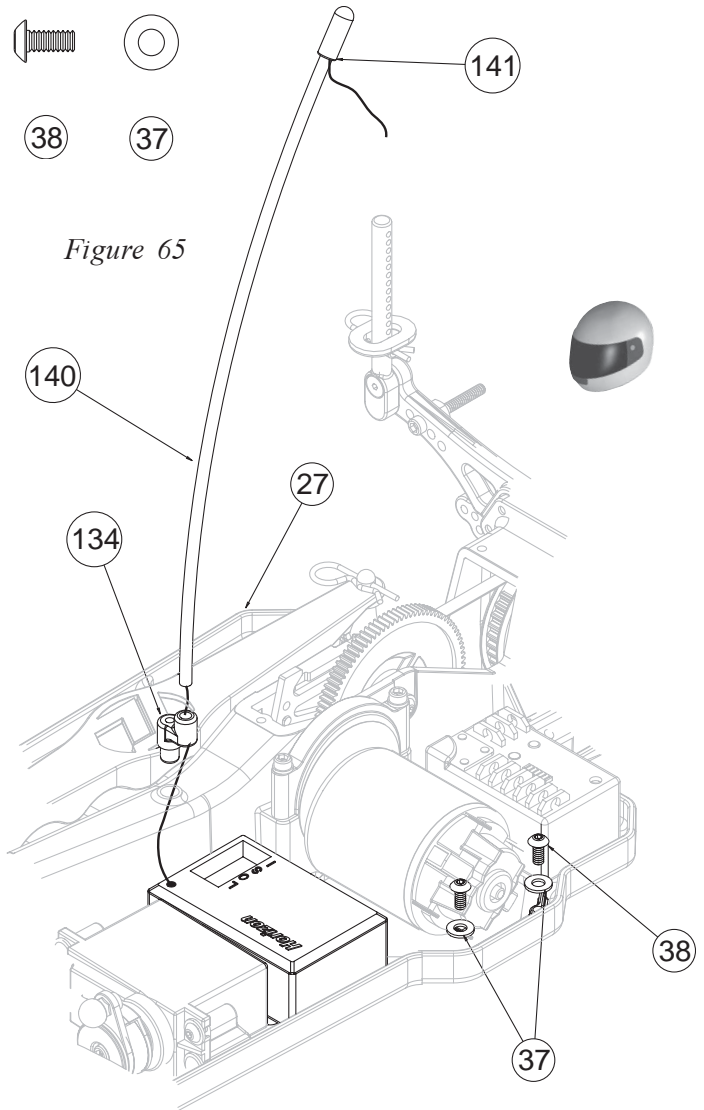


Figure 65

Step H-9 Gear Cover Install



139

❑ 1. Locate the Gear Cover (138) and cut the bottom side of it along the trim line as shown in gray in Figure 66B. Drill three 1/8" mounting holes in the gear cover at the three locations marked with dimples.

❑ 2. Place the trimmed Gear Cover over the Spur Gear (36) and secure it with three 4-40 x 1/8" Button Head Screws (139) through the three open holes in the top of the Chassis (27).

ⓘ *You may opt. to run the ESC wires through the gear cover with the small cut-out on the bottom of the Gear Cover shown in Figure 66A. If you will be running the wires over the gear cover you should leave that material there.*

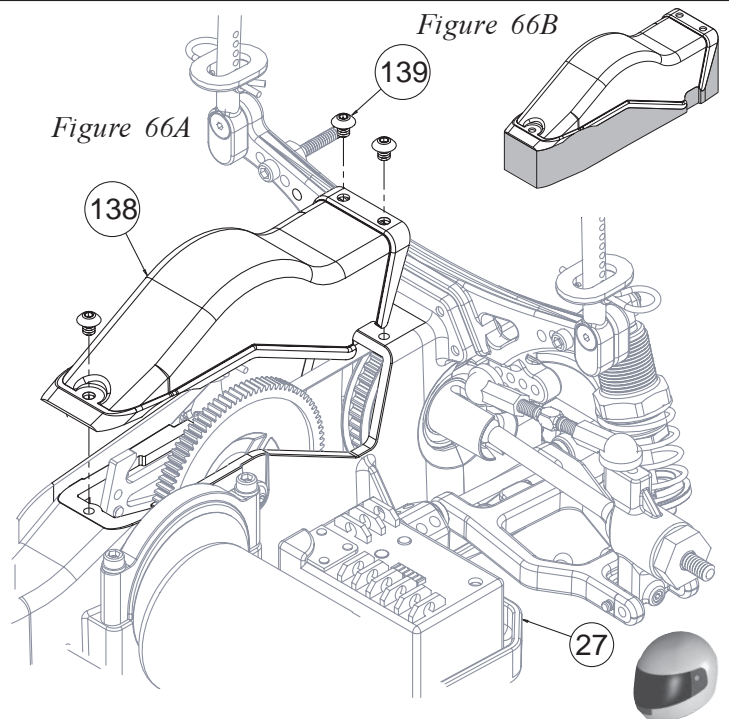


Figure 66A

Figure 66B

BAG H (Continued)

Step H-10 Trimming The Body

- ❑ 1. Trim the Body (149) and Wing along the trim lines as shown.
- ❑ 2. Once the perimeter of the Body is cut, place the Body on the car and line the Body up with the tires; front to back and right to left. Make four 3/16" diameter holes in the areas where the Body Mounts are touching and another where the Antenna Tube (140) will come through. There should be dimples in the Body to help guide you.
- ❑ 3. Place a piece of Clear Tape (147) over each gap in the bottom of the Wing to add stability. See Figure 67B.


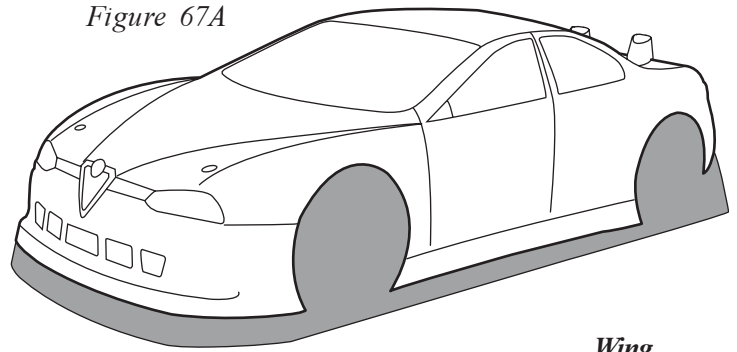
 Before installing the Body to the Chassis use scotch tape or strapping tape and run a piece from the inside of the Body over the Body Mount holes. Use a hobby knife or round file to open the hole back up. This will ensure your paint does not become rubbed off.

Figure 67A



Wing

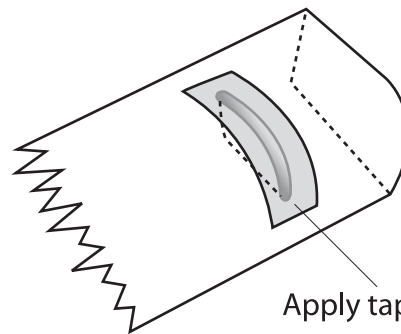
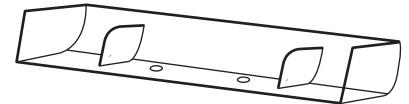


Figure 67B

Apply tape here.

Step H-11 Rear Wing Install

- ❑ 1. Make four 1/8" diameter holes: Two in the areas on the Wing (149) that are marked with dimples; and two in the areas marked with dimples on the wing mount stand-offs at the rear of the Body.
- ❑ 2. Align the holes in the Rear Wing (149) with the holes in the Wing Mount stand-offs at the rear of the Body. Slide a #4 Washer (37) over each of the two 4-40 x 5/16" Aluminum Button Head Screws (165). Insert the 4-40 x 1/4" Button Head Screw with Washer, down through the Wing, and through each of the holes in the Body.
- ❑ 3. Secure the Wing to the Body by threading a 4-40 Nylon Locknut (121) onto each of the two Screws.
- ❑ 4. Attach the Body to the rolling Chassis and secure the Body with four Body Clips (97): Two through the Front Body Mount Posts; and two through the Rear Body Mounts.

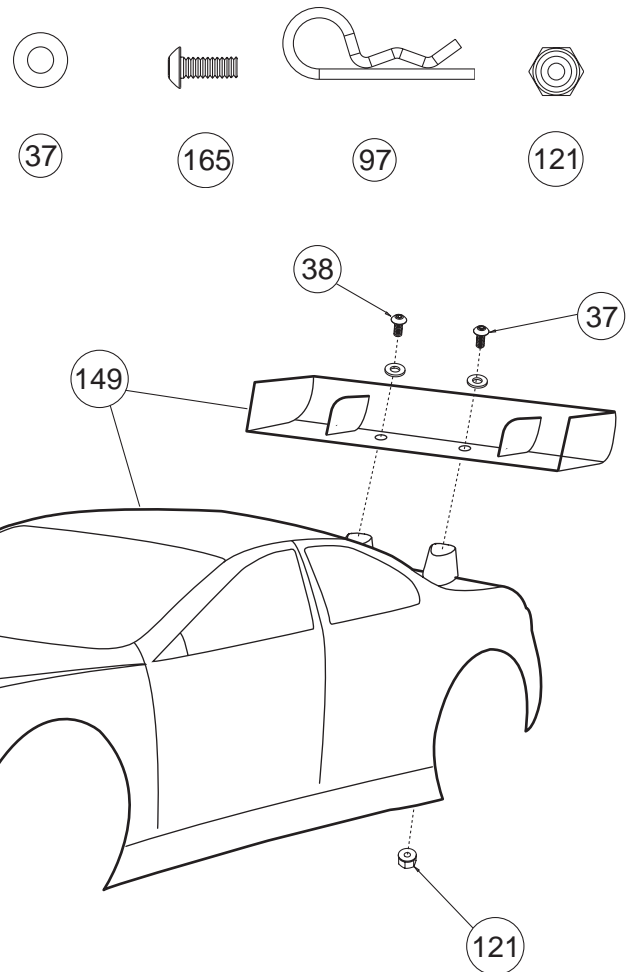


Figure 68

FINAL CHECKLIST

BEFORE RUNNING YOUR NEW XXX-S SEDAN for the first time, you should run down the following checklist - in order - and complete the listed tasks. I'm sure you're anxious to get out and run your new XXX-S Graphite Plus now that it's built, but following this simple checklist will help to make your first run with your new car much more enjoyable.

1. Adjust the differential

While holding the chassis with only the left side tires firmly on the ground give the car about a quarter throttle for ten seconds. The right side tires should spin freely during this time. Repeat this with the right side tires held firmly to the ground allowing the left tires to spin. Feel the diff action and tighten slightly if necessary.

2. Check for free suspension movement

All suspension arms should move freely. Any binds will cause the car to handle poorly. The steering should also operate very freely.

3. Set the ride height

Adjust the chassis ride height to 5mm. See the tips section for additional information on this.

4. Set the camber

Both front and rear tires should have 1 degree of negative camber (Top of the tire leans in). It is critical that both front tires and both rear tires be adjusted the same.

5. Set the front toe-in

Adjust the front tie rods so that, when the steering is straight on the transmitter, the front tires are both pointing straight. It is recommended that you start with the front toe-in set to zero (no toe-in or toe-out).

6. Charge a battery pack

Charge a battery pack as per battery manufacturer's and/or charger manufacturer's instructions so that radio adjustments can be made. Never plug the battery backwards into the speed control.

7. Adjust the speed control

Following the manufacturer's instructions, adjust your speed control, and set the throttle trim on your ESC so the the car does not creep forward when not applying throttle. Make sure that there is not too much brake being applied when the trigger/stick is in the neutral position. Some speed controls have a high/low setting for the throttle.

8. Set transmitter steering trim

The steering trim tab on the transmitter should be adjusted so that the car rolls straight when you are not touching the steering wheel/stick. If the servo was installed correctly, as per Tables 21A and 21B, the wheels should turn equally to the left and right. If this is not the case, refer to Table 21B and ensure that the steering servo and rod were properly installed. Make sure the throttle trim is set so that the motor does not run when in the neutral position. You may wish to run one "click" of brake to be safe.

TIPS AND HINTS FROM THE TEAM

Before you start making changes on your XXX-S Sedan you need to make a few decisions. Tires and how they are set-up have a tremendous impact on overall performance. Before you start making changes on the chassis take a moment to observe a few of the fastest cars and what type of tire and inner liner they are running. Also note the wheel diameter and width as this can also effect how the tires perform. When making chassis changes you should first decide where you feel the car needs to be different. This is commonly referred to as changing the "balance". Since the XXX-S is a four-wheel drive chassis you have two ends of the car working separately yet together. First decide if the front of the car needs to be adjusted or the back. You will want to work with the rear if the car enters the turn with the front end sticking and tracking well while the rear end either does not want to follow or simply doesn't know what it wants to do. The opposite is true if the rear end seems to want to push the front end through the corners or the front dives into the corner uncontrollably. You will notice that several different adjustments have similar effects on the handling as well. You will find the best adjustment will become a personal decision based on the "feel" that each of these adjustments yield. This also reflects on the "balance" we referred to earlier. Never make more than one change at a time. If the change you made works adversely or doesn't address your need return to the stock position and try something else. Team Losi's development team has put hundreds of hours on the XXX-S to arrive at the set-up we put in the instruction manual. If you find that you have lost the "handle" go back to the kit (stock) set-up as this has proven to be reliable, consistant, and easy to drive.

TIPS AND HINTS FROM THE TEAM

Front Shock Location; Leaning the shocks in (mounting them closer to the center of the tower) will give a smoother transition as you enter into turns and improve consistency but will yield less total steering and give a slower reaction. This might be helpful on high bite surfaces. Standing the shocks up (mounting them further out from the center of the tower) will increase responsiveness and generate more total steering. Forward traction is also increased, as is on-power steering. When moving the shocks to a more upright position you may find that you will have to change to a softer spring to smooth out the reaction. This might work well on shorter more technical tracks.

Front Toe-in/Out; is the parallel relationship of front tires to one another. Toe-in/out adjustments are made by changing the total length of the steering rods. If the front tires appear to be pointing inward to a spot in front of the car (toe-in) you can expect the car to react a little slower but have a little more steering from the middle of the turn out. The opposite is true if the front tires appear to be pointing to points in front and to either side of the car (toe-out). This (toe-out) will make the car turn into the corner better but will allow less steering from the middle of the corner out.

Front Camber Link; Making the camber link shorter (moving it further away from the center of the tower) tends to give more off-power steering into the turn but can also make the steering feel a bit erratic. Making the camber link longer (moving it closer to the center of the tower) will slow down the reaction of the steering but will make the chassis more forgiving.

Camber; refers to the angle of the wheels/tires in relation to the track surface when viewed from the front or back. Negative camber means that the top of the tire leans inward toward the chassis. Positive camber means the top of the tire leans out away from the chassis. You should never need to run positive camber and will always want to run at least a little negative camber. You can use any square object to check this by placing it so one edge is flat on the surface and the other is up against the outer surface of the wheel. There should always be at least a slight gap at the top of the wheel (negative camber). There should never be a gap at the bottom of the wheel (positive camber). Adding 1 degree front camber will typically increase steering but ideally the camber is adjusted to get even tire wear across the tire.

Front Kickup/Anti-dive; is the angle of the front arms in relation to the track surface. The kickup is controlled by the pivot blocks that mount the inner hinge pins of the front suspension arms to the chassis. You have three options with the included mounts, 0, 2, and 4 degrees. The front is marked with a "4F" and a "0F" at the middle of the surface facing forward. If this block is mounted with the "4F" at the top there is 4 degrees of kickup, if the "0F" is at the top there is no kickup. The other included pivot block is labeled "2F" and gives 2 degrees. The "4F" setting is best for bumpy surfaces and makes the car very forgiving. As you reduce the amount of kickup the steering will get more aggressive entering the turn. Reducing this will also improve front braking traction entering turns but will reduce the chassis' ability to handle bumpy surfaces.

Front Roll Center - We have included new roll center mounts with your XXX-S Graphite. The kit is built with high roll center in the front. From our testing we have found that the high roll center in the front has yielded the best results on most tracks. High roll center will make the front drive flatter through a turn and be more responsive. There is also an optional low roll center for the front to achieve different handling characteristics. The low front roll center will give the car more front roll which gives the car more front traction. We have found on carpet tracks with foam tires that low front roll center gives the car a good balance of steering and stability. When running the low roll center you will have to use the lower set of holes in the diff cover. **Please note, when using the low roll center in front, your kick-up increments will be different. Using the 0 F block will give you 2 degrees of anti-dive, 2F will give you 0 degrees of kick-up, and 4F will result in 2 degrees of kick-up.**

Caster; is the angle of the kingpin from vertical when viewed from the side. You will always run zero or a few degrees of positive caster where the top of the kingpin leans back toward the rear of the car. Total caster is determined by adding the amount of kickup and the amount of kingpin inclination of the front spindle carriers. The stock spindle carriers in the kit are 4 degree. Reducing total caster will give less off power steering while giving more on power steering on exit. More caster will give greater steering into the turn but less power as you exit.

Front Arm Spacing; allows you to change both the wheel base and driveshaft angle slightly. By placing the spacers between the front pivot block and the front of the arm (moving the arm back) on the hinge pin, you get a quicker reaction and slightly better forward grip. This is good for shorter/technical tracks. Placing the spacers all at the rear of the arm (moving the arm forward) adds stability and slows down the initial reaction which might help on longer high speed tracks.

Front Droop; is the amount of down travel the shocks allow the suspension arms to move. With standard 2.5" tall tires you will want to maintain between a 2mm and 4mm shock droop. This is easily measured by removing the front tires and setting the chassis on the droop gauge (included) so that the gauge extends across the chassis with the graduated notches to one side. Slide the gauge inward using the set screw boss on the bottom of the spindle carrier as your reference. The set screw boss should just clear the 2mm (minimum) step. Repeat this for the other side making sure that both sides are the same. Less droop makes the chassis react quicker but is not as good on bumpy tracks. More droop reduces steering into the turn and slows down the overall reaction. This will also make the chassis more stable on bumpy surfaces.

Front Diff; running the diff a little tighter will give less off power turn-in but increase on power steering as you exit a turn. Running it a little looser will give more initial turn-in but make the car want to "push" (lose steering) on exit.

Front Spool; Running the front spool will give your car less off-power steering, but like a oneway, it will give you more forward drive and more on-power steering. Also with the spool, your car will be more stable under braking, unlike a oneway.

Ride Height; is the height of the chassis in relation to the track surface. Initially, set the front and rear ride height to 1/4" (6mm). This will work well on parking lot and bumpy surfaces. This will also generate more weight transfer and chassis roll, which can help on slick surfaces. Lowering the ride height will make the car change direction quicker and should be helpful on high traction surfaces and carpet.

Battery Position; Moving the battery pack forward will give more steering and less rear traction. Moving the pack to the rear will increase rear traction and diminish steering slightly. Splitting the pack leaving an empty space in the middle will have various effects depending on the traction and size of the track.

Belt Tension; can be run a little looser on long tracks and with stock motors. It is normal for the belt to skip (2 or 3 clicks) under heavy braking without doing harm to the belt. Do not run the belt too loose or it will drag on the chassis and bottom cover hurting performance.

Rear Shock Location; leaning the shocks in (toward the center of the tower) frees up the back end of the car, allowing easier rotation in the turn. This might be helpful for fast flowing tracks where corner speed is critical. Moving the shocks out (away from the center of the tower) will give more forward traction but slows the initial reaction into the turn with a more abrupt rear rotation. This can be good for tight tracks.

Rear Camber Link; Moving the rear camber link to the outside position (shorter) on the tower and/or the inside position of the hub, will give more traction and chassis roll but less steering and stability. This should also carry more corner speed and help on slick surfaces. Moving the camber link to the inside position (longer) will increase stability but slow down rear rotation. Moving the link to the lower hole position on the shock tower will result in less forward traction and more sidebite in low speed turns. It will also increase corner speed on high speed, on-power sweeping turns. Moving the link to the outside position on the hub will give less chassis roll.

Rear Toe-in; There is 2 degrees of toe-in per side stock. Adding toe-in will create more forward traction and make the car freer on entering a turn. This is good for slick surfaces. Too much toe-in will make the car twitchy and hard to drive.

Camber; refers to the angle of the wheels/tires in relation to the track surface when viewed from the front or back. Negative camber means that the top of the tire leans inward toward the chassis. Positive camber means the top of the tire leans out away from the chassis. Adjust for optimum tire wear as noted for front camber.

Rear Anti-Squat; is like the "kick-up" at the front except it works slightly different. Marked and used like the front, you can choose from 0, 2, and 4 degrees of anti-squat (pin angle). Zero anti-squat is the starting point. Adding (from 0, 2, 4 degrees) will reduce rear grip and allow easier rotation into a turn and increase the traction out of the turn. This is good for slicker track surfaces.

Rear Roll Center - We have included new roll center mounts with your XXX-S Graphite. The kit is built with low roll center mounts in the rear. From our testing we have found that the low roll center in the rear has yielded the best results on most tracks, including carpet tracks on foam tires. Low roll center gives the car more roll in the rear, while increasing mid corner rotation. There is an optional high roll center for the rear to achieve different handling characteristics. We have found that high roll center keeps the car flatter through the turns and also transitions right to left quicker. When running high roll center you will have to mount the rear pivot in the higher set of holes on the diff cover.

SPARE PARTS LIST

<u>KEY #</u>	<u>KIT/PART DESCRIPTION</u>	<u>PART NO.</u>	<u>SPARE PARTS DESCRIPTION</u>
1	Spool Pads	A-3250	Spool Pads (XXX-S)
2	Diff Nut	A-2911	Diff Nut (XX/T/4, XXX/T/4/S)
3	Heavy Duty Belleville Washer	A-2909	Monster Diff Adjustment Screw & Hardware
4	Small Servo Saver Spring	A-1542	Steering & Servo Saver Hardware (XXX-S/4)
6	Large Servo Saver Spring	A-1542	Steering & Servo Saver Hardware (XXX-S/4)
7	Molded Outdrive, Male	A-3097	Molded Outdrive Set
8	Silicone Filled Tube	A-3065	Silicon Differential Compound
9	Washer, .250" x .130"	A-6350	#4 and 1/8" Hardened Washers
10	Diff Rings	A-3070	Differential Drive Rings
11	42 tooth Diff Pulley	A-3211	Front & Rear Pulley Set (XXX-S/4)
12	41 tooth Diff Pulley	A-3211	Front & Rear Pulley Set (XXX-S/4)
13	5mm x 8mm x Bearing	A-6907	5mm x 8mm Bearings
14	3/32" Diff Balls	A-6951	3/32" Carbide Diff Balls
15	Molded Outdrive, Female	A-3097	Molded Outdrive Set
16	Diff Screw	A-3078	Diff Screw, Hardware & Seal
17	Foam Diff Seal	A-3078	Diff Screw, Hardware & Seal
18	Thrust Waher	A-3098	Diff Thrust Bearing w/Carbide Balls
19	5/64" Thrust Balls	A-3099	Thrust Bearing, Full Compliment
20	1/2" x 3/4" Bearing	A-6910	1/2" x 3/4" Bearings w/ Shields
21	Belt Tensioner Arm	A-3239	Belt Tension Arm, Post & Hardware (XXX-S/4)
22	Idler Pulley Shaft	A-3239	Belt Tension Arm, Post & Hardware (XXX-S/4)
23	Idler Plley	A-3211	Front & Rear Pulley Set (XXX-S/4)
24	4-40 x 5/16" Button Head	A-6245	4-40 x 5/16" Button Head Screws
25	3/16" x 3/8" Bearing	A-6916	3/16" x 3/8" Bearings w/ Shields (Sedan)
26	Belt	A-3209	Flexible Main Drive Belt (Yellow, XXX-S)
27	Chassis, XXX-S	A-9918	Graphite Machined LW Main Chassis (XXX-S)
28	Steering Tunnel	A-9897	Graphite Bottom Chassis Cover Set (XXX-S)
29	Front diff cover	A-9899	Graphite Front & Rear Diff Cover (XXX-S)
30	4-40 x 3/8" Cap Head	A-6206	4-40 x 3/8" Caphead Screws
31	4-40 x 3/8" Flat Head	A-6210	4-40 x 3/8" Flat Head Screws
32	Rear Diff Cover	A-9899	Graphite Front & Rear Diff Cover (XXX-S)
33	Top Shaft	A-3238	Top Shaft, Spacer & Hardware (XXX-S/4)
34	Belt Tensioner Bushing	A-3238	Top Shaft, Spacer & Hardware (XXX-S/4)
35	Compound Bearing Spacer	A-3238	Top Shaft, Spacer & Hardware (XXX-S/4)
36	Spur Gear/ Drive Pulley	A-3946	90T 48 pitch Drive Pulley (Orange, XXX-S)
37	#4 x .030 Washer	A-6350	#4 and 1/8" Hardened Washers
38	4-40 x 1/4" Button Head	A-6234	4-40 x 1/4" Button Head Screws
39	Bottom Chassis Cover	A-9897	Graphite Bottom Chassis Cover Set (XXX-S)
40	2-56 x 3/16" Flat Head	A-9897	Graphite Bottom Chassis Cover Set (XXX-S)
41	Left Bellcrank	A-1540	Steering Bellcranks, Servo Saver & Mounts (XXX-S/4)
42	Right Bellcrank	A-1540	Steering Bellcranks, Servo Saver & Mounts (XXX-S/4)
43	3/16" Ball Stud	A-6001	Studded Balls w/ Rod Ends 3/16"
44	Steering Post	A-1542	Steering & Servo Saver Hardware (XXX-S/4)
45	4-40 3/16" Flat End Set Screw	A-4237	Xtra-Rigid Front & Rear Bumpers w/ Downstops (XXX-S)
46	Steering Cap	A-1540	Steering Bellcranks, Servo Saver & Mounts (XXX-S/4)
47	Carrier / Steering Bushings	A-1233	Spindle Carrier Bushings & Hardware (XXX-S/4)
48	Draglink	A-1540	Steering Bellcranks, Servo Saver & Mounts (XXX-S/4)
49	4-40 x 3/8" Button Head	A-6229	4-40 x 3/8" Button Head Screws
50	25 Tooth Servo Base	A-1540	Steering Bellcranks, Servo Saver & Mounts (XXX-S/4)
51	23 Tooth Servo Base	A-1540	Steering Bellcranks, Servo Saver & Mounts (XXX-S/4)
52	24 Tooth Servo Base	A-1540	Steering Bellcranks, Servo Saver & Mounts (XXX-S/4)
53	Outer Servo Saver	A-1540	Steering Bellcranks, Servo Saver & Mounts (XXX-S/4)
54	Servo Saver Washer	A-1540	Steering Bellcranks, Servo Saver & Mounts (XXX-S/4)
55	Servo Mount -A-	A-1540	Steering Bellcranks, Servo Saver & Mounts (XXX-S/4)
56	Servo Mount -B-	A-1540	Steering Bellcranks, Servo Saver & Mounts (XXX-S/4)
57	4-40 x 5/8" Set Screw	A-1615	Short Ball Cups & Threaded Rod
58	Short Rod End	A-1615	Short Ball Cups & Threaded Rod

SPARE PARTS LIST

<u>KEY #</u>	<u>KIT/PART DESCRIPTION</u>	<u>PART NO.</u>	<u>SPARE PARTS DESCRIPTION</u>
59	Left Front, Inner Pivot	A-9748	Graphite Front Inner Pivot Support Set (XXX-S)
60	Right Front, Inner Pivot	A-9748	Graphite Front Inner Pivot Support Set (XXX-S)
61	Arm Spacers	A-2127	'CR' Rear Hub Spacers (.060")
62	Inner Hinge Pin	A-2161	Inner Rear Hinge Pins 1/8" x 2.04"
63	Front Arms L/R	A-9737	Graphite Front Suspension Arms (XXX-S)
64	0-4 degree Main Block	A-9748	Graphite Front Inner Pivot Support Set (XXX-S)
65	2 degree Main Block	A-9748	Graphite Front Inner Pivot Support Set (XXX-S)
66	4-40 x 7/8" Cap Head	A-6216	4-40 x 7/8" Cap Head Screw
67	4-40 Zinc Nut	A-6300	4-40 Hex Nuts
68	Short Head Ball Stud	A-6007	Stud Balls "Short Neck", w/ Studs
69	Front Shock Tower	A-9744	Graphite Front Shock Tower (XXX-S)
70	Front Spindle L/R	A-9753	Graphite 4 degree Front Spindles & Carriers (XXX-S)
71	Rear Hub Bearing Spacer	A-6365	Hub Bearing Spacer & Shim (XXX-S)
72	CVD Axle Front & Rear	A-9928	MIP CVD Front & Rear (XXX-S)
73	CVD Bone Front & Rear	A-9928	MIP CVD Front & Rear (XXX-S)
74	CVD Coupling	A-9928	MIP CVD Front & Rear (XXX-S)
75	CVD Cross Pin	A-9928	MIP CVD Front & Rear (XXX-S)
76	CVD Wheel Pin	A-9928	MIP CVD Front & Rear (XXX-S)
77	CVD 4-40 Set Screw	A-9928	MIP CVD Front & Rear (XXX-S)
78	MIP Lube	N/A	N/A
79	MIP Thread Lock	N/A	N/A
80	Front Spindle Carrier	A-9753	Graphite 4 degree Front Spindles & Carriers (XXX-S)
81	Outer Hinge Pin	A-1146	Front Outer & King Pin 3/32" x .870"
82	5-40 x 1/8" Set Screw	A-6228	5-40 x 1/8" Hardened Set Screw
83	Titanium Turnbuckle 1 1/8"	N/A	N/A
84	Titanium Turnbuckle 1 1/4"	N/A	N/A
85	Foam Things	A-6003	Foam Things (Linkage Rings)
86	4-40 x 1/4" flat head	A-6213	4-40 x 1/4" Flat Head Screws
87	Front Bumper	A-4236	Front & Rear Bumpers Set (XXX-S)
88	4-40 x 5/16" Set Screw	A-4236	Front & Rear Bumpers Set (XXX-S)
89	1" Titanium Turnbuckle	N/A	N/A
90	Front Body Mounts	A-4229	Front & Rear Body Mount Set (XXX-S)
91	Rear Inner Pivots	A-1229	Low Roll Center Rear Inner Pivot Support Set (XXX-S)
92	Rear Arm L/R	A-9860	Graphite Rear Suspension Arms (XXX-S)
93	0-4 degree Rear Main Block	A-9848	Graphite Rear Inner Pivot Support Set (XXX-S)
94	2 degree Rear Main Block	A-9848	Graphite Rear Inner Pivot Support Set (XXX-S)
95	Rear Shock Tower	A-9845	Graphite Rear Shock Tower (XXX-S)
96	Rear Body Mounts	A-4229	Front & Rear Body Mount Set (XXX-S)
97	Body Clip	A-8200	Spring Body Clips
98	Body Mount Swivel	A-4229	Front & Rear Body Mount Set (XXX-S)
99	Front Top Bumper	A-4238	Upper Bumper/Body Mount Brace (XXX-S)
100	Foam Bumper	A-4233	Xtra-Resilient Foam Bumper (XXX-S)
101	Rear Hub	A-9854	Graphite 0 degree Off Set Rear Hub Carriers (XXX-S)
102	Rear Bumper	A-4236	Front & Rear Bumpers Set (XXX-S)
103	4-40 x 7/16" Set Screw	A-4236	Front & Rear Bumpers Set (XXX-S)
104	Shock Cartridge Body	A-5015	Double O-ring Shock Cartridge
105	Internal O-Ring	A-5015	Double O-ring Shock Cartridge
106	Shock Cartridge Spacer	A-5015	Double O-ring Shock Cartridge
107	Shock Cartridge Cap	A-5015	Double O-ring Shock Cartridge
108	Rear Shock Shaft	A-5025	.36" Shock Shaft
109	Shock End	A-5023	Spring Clamps & Cups
110	.250 Ball Joint	A-9940	Aluminum H.A. Swivel Suspension Balls
111	MIP Aluminum CVD Kit	A-9929	Aluminum MIP CVD Kit F/R (XXX-S)
112	E-clip .125"	A-6100	E-Clips, 1/8"
113	Shock Piston #56	A-5046	Teflon Shock Pistons #56 (Red)
114	Sedan Shock Body	A-5053	.36" Threaded Shock Body, Hard Anodized with Nuts
115	30 wt. Shock Oil	A-5224	Team Losi Certified Shock Fluid 30wt.

SPARE PARTS LIST

<u>KEY #</u>	<u>KIT/PART DESCRIPTION</u>	<u>PART NO.</u>	<u>SPARE PARTS DESCRIPTION</u>
116	Silver Spring	A-5123	1.15" Spring 12.6 Rate (Silver)
117	Purple Spring	A-5108	1" Spring 20.0 Rate (Purple)
118	Shock Nut	A-5057	Threaded Shock Body Adjustment Nuts
119	Shock Cup	A-5023	Spring Cups & Clamps
120	Short Shock Bushing	A-5013	Front & Rear Upper Shock Mount Bushings (All XXX)
121	4-40 Nylon Lock Nut	A-6301	4-40 Locking Nuts, Nylon
122	4-40 x 1/2" Cap Head	A-6204	4-40 x 1/2" Cap Head Screws
123	Long Shock Bushing	A-5013	Front & Rear Upper Shock Mount Bushings
124	Sedan Wheel	A-7809	Sedan Wheels, 24mm Mesh Racing Wheels (White)
125	Slick Tire	A-7704P	Sedan Slick 62mm x 24mm
126	Tire Inserts	A-7795	Molded (Low Profile) Tire Inserts
127	Lowerd Motor Mount Plate	A-3226	Lowered Motor Mount w/ Screws
128	3mm x 6mm Button Head	A-6238	3mm x 6mm Cap/Button Head Screws w/Washers
129	Ballstud Washer	A-6215	#4 Narrow Washers
130	Motor Mount Strap	A-4216	Motor Mount Clamp (XXX-S/4)
131	Threaded Insert	A-4224	Threaded Chassis Inserts
132	4-40 x 1.5" Cap Head	A-3034	4-40 x 1.5" Cap Head Screws
133	Gear Mesh Window Plug	A-3244	Clicker & Access Plug Set
134	Antenna Mount	A-4243	Battery Posts & Antenna Mount (XXX-S/4)
135	Servo Tape	A-4004	Servo Tape
136	Battery Post	A-4243	Battery Posts & Antenna Mount (XXX-S/4)
137	Battery Strap	A-9898	Graphite Droop Gauge & Battery Strap (XXX-S)
138	Gear Cover	A-4209	Gear Cover (XXX-S/4)
139	4-40 x 1/8" Button Head	A-6212	4-40 x 1/8" Button Head Screws
140	Antenna Tube	A-4002	Antenna Kit
141	Antenna Tip Cover	A-4003	Antenna Caps
142	Losi Hex Adapters	A-3260	Wheel Hex Drives, Standard & Metric
143	Metric Hex Adapters	A-3260	Wheel Hex Drives, Standard & Metric
144	8-32 Lock Nut	A-6310	8-32 Locknuts
145	Droop Gauge	A-9898	Graphite Droop Gauge & Battery Strap (XXX-S)
146	Assembly Wrench	A-6030	Assembly Wrench (Version 2)
147	Mylar Wing Tape	A-8053	ALFA 156 GTA 190mm Body & Wing
148	Window Mask	A-8053	ALFA 156 GTA 190mm Body & Wing
149	Body & Wing	A-8053	ALFA 156 GTA 190mm Body & Wing
150	3/16 x .015" Shim	A-6230	Shim Assortment (3/32", 3/16", 1/4", & 1/2")
151	4-40 x 1/2" Flat Head	A-6220	4-40 x 1/2" Flat Head Screws
152	Left Front LRC Inner Pivot	A-1229	Low Roll Center Rear Inner Pivot Support Set (XXX-S)
153	Right Front LRC Inner Pivot	A-1229	Low Roll Center Rear Inner Pivot Support Set (XXX-S)
154	Graphite Rear Inner Pivot	A-9848	Graphite Rear Inner Pivot Support Set (XXX-S)
155	Short Head Ball Stud 2.00"	A-6008	Studded Balls (.2 Short Neck) W/Ends
156	Front Shock Shaft	A-5058	.28" Titanium Nitride Shock Shaft
157	Front Shock Body	A-5052	.28" Threaded Shock Body Set with Nuts
158	Chassis Tape for Battery	A-9607	Battery Insulation-Precut (XXX-S/4)
159	1/16 Allen Wrench	N/A	
160	3/32 Allen Wrench	N/A	
161	5/64 Allen Wrench	N/A	
162	0.050 Allen Wrench	N/A	
163	Sticker Sheet	A-8333	XXX-S Graphite Plus Sticker Sheet
164	Alfa Grill Sticker Sheet	A-8053	ALFA 156 GTA 190mm Body & Wing
165	4-40 x 5/16" Alum. Button Head	A-8053	ALFA 156 GTA 190mm Body & Wing
166	Exploded View	N/A	
167	Owners Manual	Z-3011	XXX-S Graphite Plus Owners Manual