CUSTOMWORKS ENFORCER GBX2

THE DOMINANT FORCE IN DIRT OVAL RACING!

COMPETITION RACING KIT. DESIGNED FOR HIGH BITE, HARD PACKED DIRT OVAL RACING!!

#0928 ENFORCER GSX2 RACING KIT

Manufactured By:

CustomWorks RC Products LLC
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Denver, NC 28037
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CUSTOMWORKS R/C CARS

REQUIRED READING...UNDERSTAND THIS MANUAL!

Thank You and Congratulations on purchasing the **ENFORCER GBX2**! Within this kit you will find a race winning car with over 21 years worth of **CUSTOM WORKS** design and quality. In order for you to realize this race car's winning potential it is important to follow the written text along with the pictures included. The steps required to build this car are very easy, as long as you read before you build.

The instructional format for building this car is to open each bag in alphabetical order. Each bag of parts will be broken down into "Steps" thru the manual. All parts and hardware needed to complete all steps for each separate bag, will be found in each individual bag. There is no need to steal screws from other bags. In the rare event you need to look in a different bag for a certain part, it will be noted clearly in the instructions.

Considering the various dirt or clay surfaces that Dirt Oval cars are raced on today, the Enforcer GBX2 has been designed to be competitive on high bite and well groomed clay tracks with rubber or foam racing tires. The instructions will build the kit using the most verastale set-up Custom Works has found in testing on different types of tracks, however there are various other suspension configurations available to you that you may find more suitable for your local track. For updates and more proven set-ups login to CustomWorksRC.com.

All hardware (screws, washers, nuts, etc...) are referred to by size and type in the instructions. To help clarify which screw or nut the instruction is calling for refer to the HARDWARE REFERENCE supplement. The size of the screw or nut should match the "shadow" of the same piece very closely.

Screw ID's are: **FH**=Flat Head **BH**=Button Head **SH**=Socket Head **SS**=Set Screw

BUILDING TIPS:

-Using some type of thread locking fluid is suggested for all parts where metal screws thread into other metal parts. We suggest using a lite setting strength thread lock for the reason you may want to take the screw out one day. Remember it only takes a very small amount to secure the screw.

-Do **NOT** use power screwdrivers to drive screws into parts. The fast rotation speed can easily melt and strip plastic parts or cross-thread into the aluminum parts.

-Lightly sand the edges of graphite pieces using a medium grade sandpaper to avoid splinters. Run a thin bead of Super Glue around the edges to give pieces greater durability.

SUGGESTED TOOLS

400 Grit Sandpaper	Wire Cutters	Blue Loctite
Hobby Scissors	X-Acto Knife	3/16" Wrench
Small Needle Nose Pliers	Phillips Head Screw Driver	

Bag A Front Suspension

-Parts for Step#1


3332 Qty 1
1.5" Front Susp Brace


3255 Qty 2
Front Susp Arms


3257 Qty 2
Front Susp Mount


1255 Qty 2
Spacer


4240 Qty 2
Front Inner Susp Pin 1:1


5230 Qty 24
E-Clip

-Parts for Step#2


3314 Qty 1
Enforcer GBX Chassis


1270 Qty 1
Front Shock Tower


3228 Qty1
Long Body Post


3228 Qty 1
Post Collar

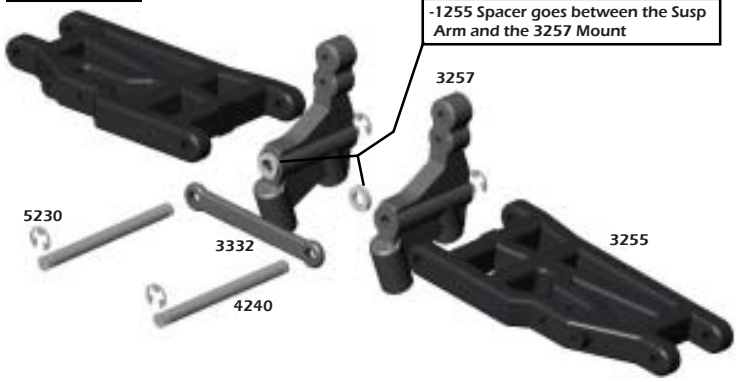

3228 Qty 1
Set Screw


5253 Qty 2
4-40 x 3/8 BH Screw


5263 Qty 4
4-40 x 3/8 FH Screw

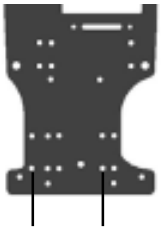

3229 Qty 1
8-32 x 1/2 FH Screw

STEP #1



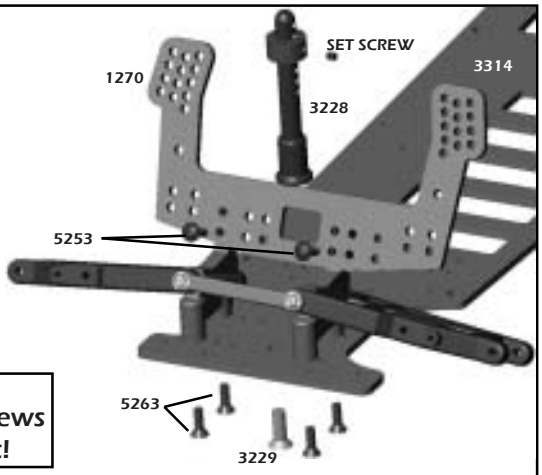
- Insert 4240 Inner Pin thru 3332 Susp Brace and thru the first leg of 3253 Susp Arm. The 1255 Spacer will go between the Susp Arm and the 3257 Susp Mount.
- Snap 5230 E-Clips to 4240 Susp Pin.
- Arms should pivot freely on the mounts.

STEP #2



Screw Mounting Locations for 3257 Suspension Mounts.

- Do NOT over-tighten the screws into the mount!



- Fasten the 1270 tower to the suspension assembly. THE REMAINING HOLES WILL BE COMPLETED IN "Bag B"!
- Fasten the suspension assembly and the 3228 Body Post to the 3314 Chassis.

Bag B Steering Components

-Parts for Step#1


5223 Qty 2
1 3/4" Titanium Turnbuckle


5225 Qty 2
2" Titanium Turnbuckle


5235 Qty 6
Ball Cup 1:1


5213 Qty 2
Ball End


5213 Qty 2
Pivot Ball

-Parts for Step#2


3202 Qty 2
Steering Block L&R


7209 Qty 2
Ball Stud King Pin 1:1


7209 Qty 4
Spacer


7200 Qty 2
Front Axle 1:1


5004 Qty 2
6-20 Set Screw


3203 Qty 2 (Left Shown)
25 Deg Castor Block


1255 Qty 4
Spacer


4241 Qty 2
Front Outer Susp Pin 1:1


5230 Bag A
E-Clip

-Parts for Step#3


3304 Qty 1
Steering Slide


3304 Qty 1
Steering Rack


8122 Qty 4
Ball Stud


5262 Qty 2
4-40 x 1/4 FH Screw 1:1

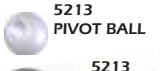

5257 Qty 2
4-40 x 3/4 BH Screw

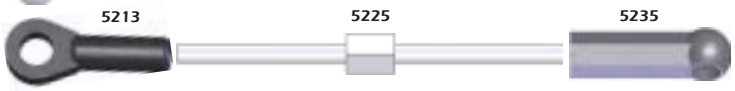

5217 Qty 2
4-40 Lock Nut

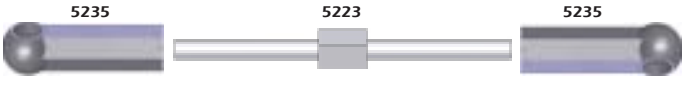
STEP #1

- Make (2) of each turnbuckle shown below, total of 4 linkages.
- The linkages with ball cups on each end will be STEERING LINKS.
- The linkages with a pivot ball on one end will be CAMBER LINKS.

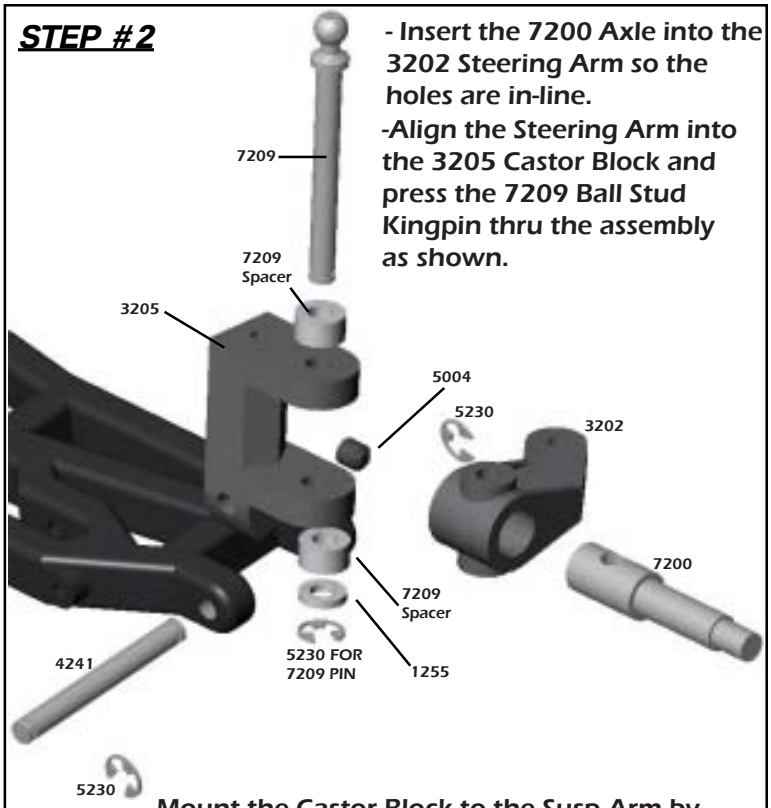
- NOTE: Turnbuckle has RIGHT and LEFT threads!


5213
PIVOT BALL





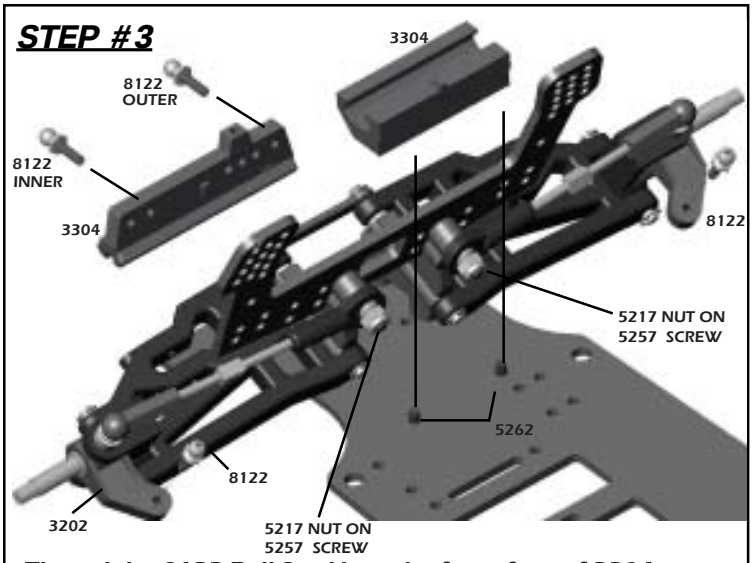
STEP #2



- Insert the 7200 Axle into the 3202 Steering Arm so the holes are in-line.
-Align the Steering Arm into the 3205 Castor Block and press the 7209 Ball Stud Kingpin thru the assembly as shown.

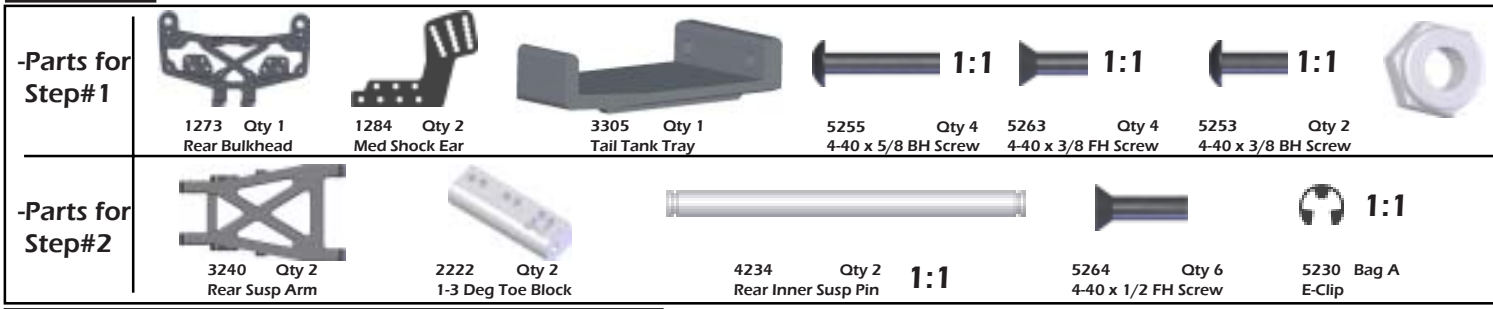
-Mount the Castor Block to the Susp Arm by inserting the 4241 Susp Pin thru the Susp Arm and Castor Block.
-Retain the Susp Pin by attaching 5230 E-Clips to each end.

STEP #3



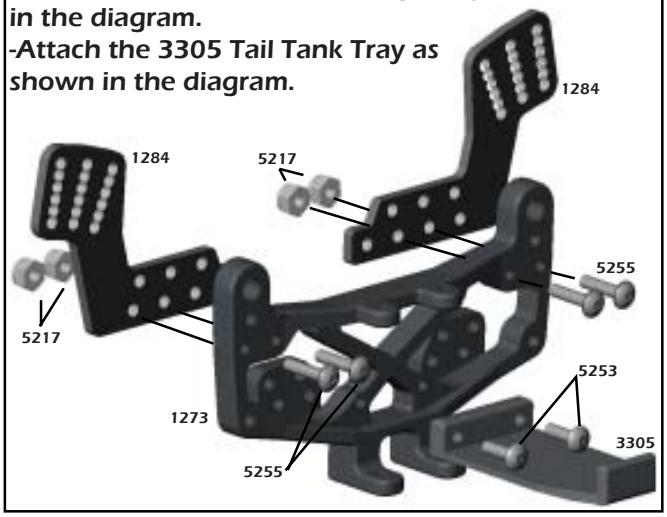
- Thread the 8122 Ball Stud into the front face of 3304 Steering Slide and top face of the 3202 Steering Arm.
- Insert the Steering Slide into the 3304 Steering Rack, mount the rack to the chassis using 5262 Screws.
- Mount the linkages from Step #1 by snapping the Ball Cups onto the Ball Studs.
- Secure the Ball Ends on the Camber Links to the back of the Susp Mounts by using 5257 Screw through the upper hole on the front of the Shock Tower like in Bag A/Step#2. The length of the thread will come thru the Susp Mount, slide the Ball End on the thread and secure with 5217 Nut.
- Attach the steering links by snapping the ball cups on the ball ends.

Bag C Rear Suspension

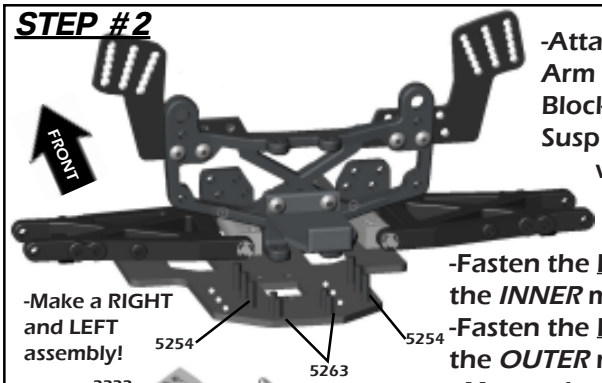


STEP #1

-Attach the 1284 Long Shock Ears to the 1273 Bulk to the side facing away in the diagram.
-Attach the 3305 Tail Tank Tray as shown in the diagram.



STEP #2



-Attach the 3254 Susp Arm to the 2222 Toe Block using the 4234 Susp Pin. Retain the pin with 5230 E-Clips.

-Fasten the LEFT assembly to the *INNER* most set of holes.
-Fasten the RIGHT assembly to the *OUTER* most set of holes.
- Mount the Susp Tower assembly using 5263 Screws.

NOTE: Mount the Toe Blocks to the chassis in the 3 deg position. The screw will pass thru the hole closest to the 3 machined in the part. The numbers on the part should be to the rear of the car.

Bag D Rear Suspension

-Parts for Step#1

3241 Qty 2
Bearing Carrier

1:1

1226 Qty 4
Ball Bearing

4235 Qty 2
Rear Outer Susp Pin 1:1

1255 Qty 10
Spacer

1:1

5230 Qty 24
E-Clip

-Parts for STEP#2

7211 Qty 2
CVD Coupling

7213 Qty 1
Short Dogbone

7214 Qty 1
Medium Dogbone

7216 Qty 2
Rear CVD Axle

1:1

7211 Qty 2
Rear CVD Pin

1:1

7211 Qty 2
CVD Set Screw

-Parts for STEP#3

5223 Qty 2
1 3/4" TI Turnbuckle 1:1

5235 Qty 4
Ball Cup 1:1

1:1

7047 Qty 8
Spacer

8122 Qty 4
Ball Stud

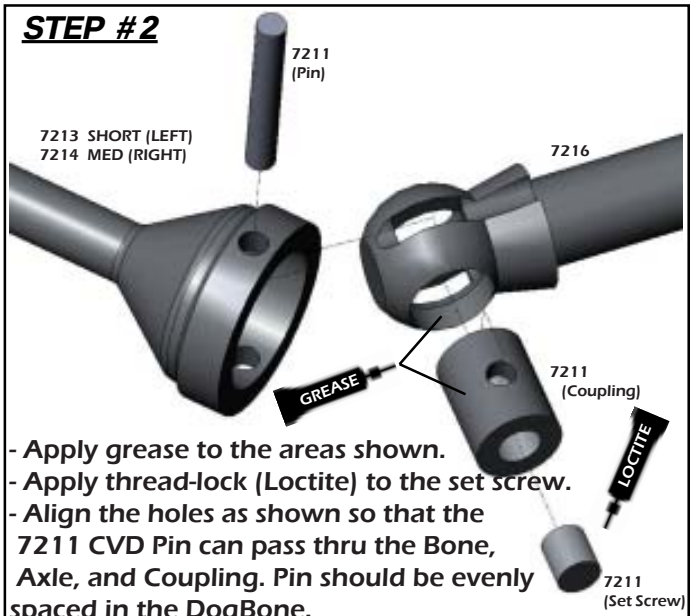
7203 Qty 2
Roll Pin

5217 Qty 2
4-40 Lock Nut

STEP #1

- Press 1226 Ball Bearings into the 3241 Bearing Carrier.
- Attach the Bearing Carrier to the Susp Arm using 4235 Susp Pin with (2) 1255 Spacers on each side of the Bearing Carrier.
- *NOTE: The Suspension Pin will pass thru the LOWER hole in the Bearing Carrier.*
- Retain the Susp Pin using 5230 E-Clips.

STEP #2



- Apply grease to the areas shown.
- Apply thread-lock (Loctite) to the set screw.
- Align the holes as shown so that the 7211 CVD Pin can pass thru the Bone, Axle, and Coupling. Pin should be evenly spaced in the DogBone.
- Tighten the Set Screw by angling the Bone and Axle so the set-screw is able to be tightened.

STEP #3

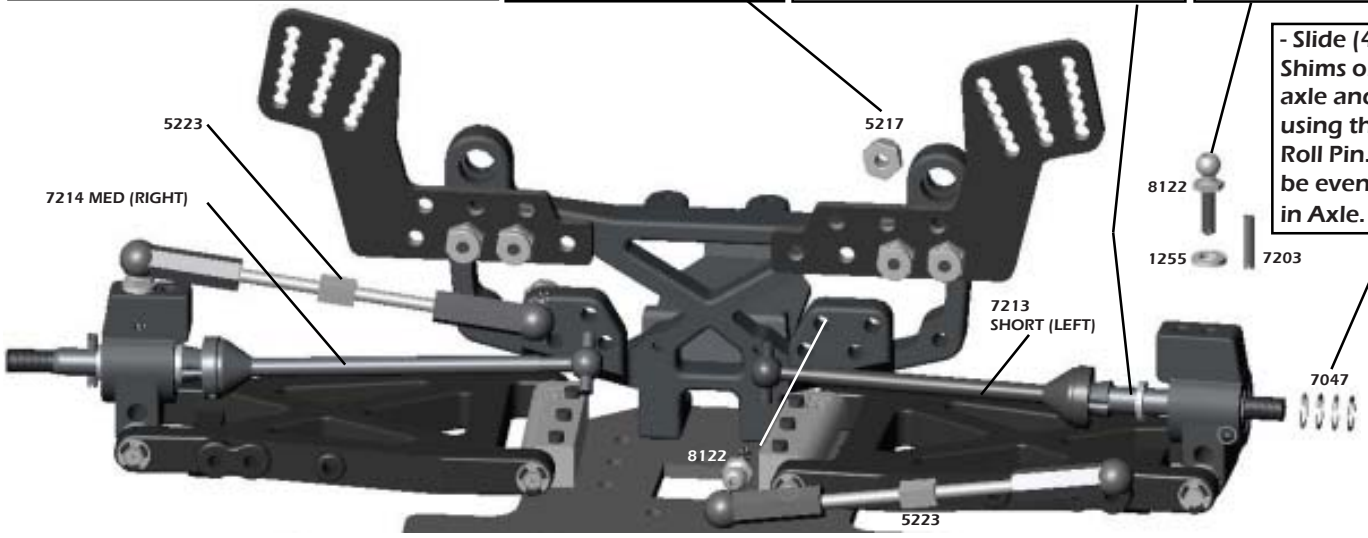
- Assemble the camber links by threading the 5235 Ball Cup on each end. Attach by snapping the Ball Cups onto the Ball Studs. *NOTE: The LONGER link goes on the RIGHT REAR suspension component.*

- Attach the 8122 Ball Stud to the Rear Bulkhead as shown using a 5217 Lock Nut.

- Slide the thick shim packaged with the CVD parts onto the CVD Axle, Insert the CVD assembly by sliding the axle thru the bearings.

- Slide a 1255 Spacer onto the Ball Stud and thread into the Bearing Carrier in the outer most hole.

- Slide (4) 7047 Shims onto the axle and retain using the 7203 Roll Pin. Pin should be evenly spaced in Axle.



Bag E — Diff Assembly

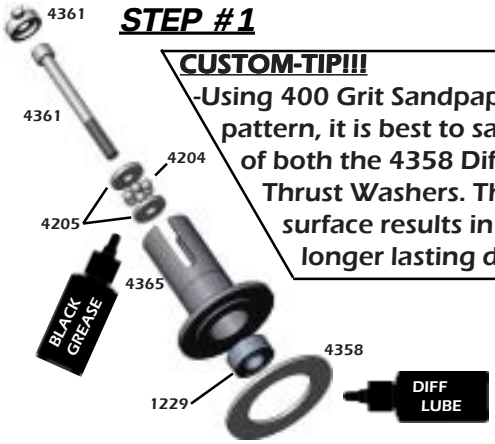
-Parts for Step#1

4365 Qty 1 — Right Outdrive
4358 Qty 2 — Diff Ring
4205 Qty 2 — Thrust Washer
4361 Qty 1 — Diff Bolt Cover
4204 Qty 6 — Thrust Balls
4361 Qty 1 — Diff Bolt
1229 Qty 2 — 5/32 x 5/16 Bearing

-Parts for Step#2

4364 Qty 1 — Left Outdrive
4362 Qty 1 — Diff Spring
4356 Qty 1 — Diff Gear
4357 Qty 12 — Diff Balls
4361 Qty 1 — Diff T- Nut

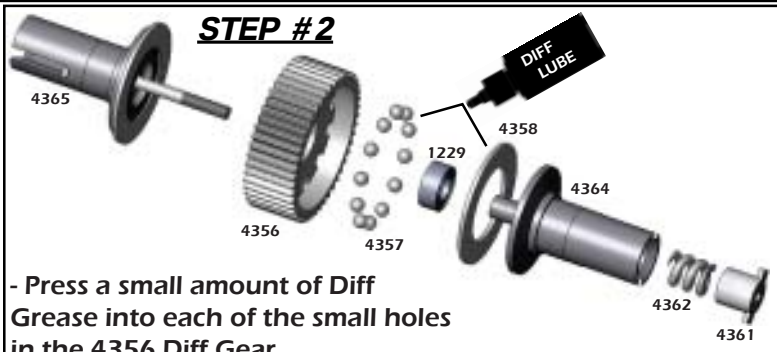
STEP #1



CUSTOM-TIP!!!
-Using 400 Grit Sandpaper in a"Figure 8" pattern, it is best to sand the surfaces of both the 4358 Diff Ring and 4205 Thrust Washers. The textured surface results in a smoother and longer lasting diff.

- Slide a 4205 Thrust Washer onto the Diff Bolt.
- Apply a thick layer of Black Grease to the Thrust Washer, press (6) 4204 Thrust Balls into the Black Grease.
- Slide the other Thrust Washer on the Diff Bolt and insert it into the 4402 Left Outdrive.
- Press (1) 1229 Bearing into the Outdrive.
- Put (1) 4404 Diff Ring on the Outdrive, apply Diff Lube as shown.

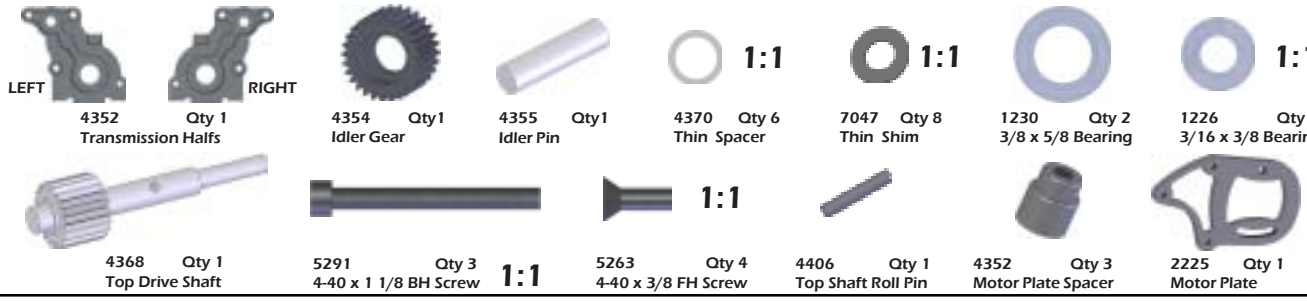
STEP #2



- Press a small amount of Diff Grease into each of the small holes in the 4356 Diff Gear.
- Press (1) 1229 Bearing and the (12) 4357 Diff Balls into the Diff Gear.
- Put (1) 4358 Diff Ring onto the 4364 Right Outdrive, apply Diff Grease as shown.
- Install the 4362 Diff Spring and 4361 T-nut into the Outdrive.
- Carefully slide the diff assembly together so the Diff Bolt passes thru the entire assembly and threads into the T-nut.
-Screw the Diff Bolt into the T-nut until you feel the Diff Spring fully compress. DO NOT OVERTIGHTEN!!!
- Back the Diff Bolt off EXACTLY 1/8 of a turn. Diff motion should be smooth and the Outdrives will turn in opposite directions.

Bag F — Transmission Casing

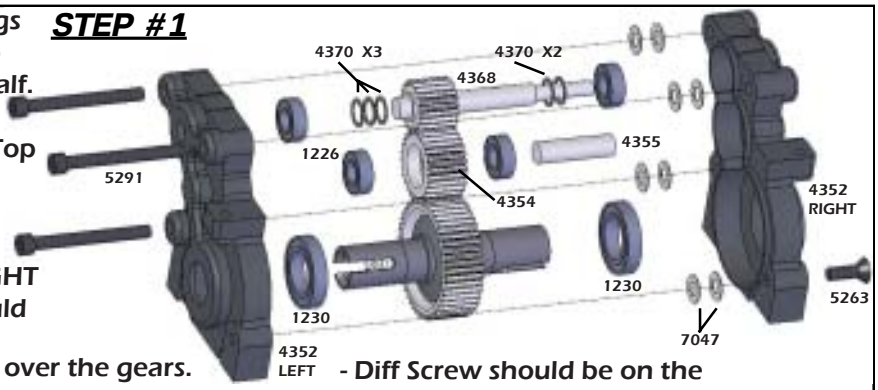
-Parts for Step#1 & Step#2



LEFT / RIGHT
4352 Qty 1 — Transmission Halfs
4354 Qty1 — Idler Gear
4355 Qty1 — Idler Pin
4370 Qty 6 — Thin Spacer
7047 Qty 8 — Thin Shim
1230 Qty 2 — 3/8 x 5/8 Bearing
1226 Qty 4 — 3/16 x 3/8 Bearing
4368 Qty 1 — Top Drive Shaft
5291 Qty 3 — 4-40 x 1 1/8 BH Screw
5263 Qty 4 — 4-40 x 3/8 FH Screw
4406 Qty 1 — Top Shaft Roll Pin
4352 Qty 3 — Motor Plate Spacer
2225 Qty 1 — Motor Plate

STEP #1

- Press the (2) 1230 Bearings and (4) 1226 Bearings into each 4352 Transmission Half.
- Slide 4370 Thin Washers on each side of the 4368 Top Drive Shaft as shown.
- Insert the Diff Assembly, Top Drive Shaft, 4352 Pin, and Idler Gear into the RIGHT Trans Half. Diff Screw should be on the RIGHT side!
- Align the LEFT Trans Half over the gears. Space the Trans Halves apart using (2) 1226 Shims per screw location.



- Diff Screw should be on the RIGHT side of the Trans!

STEP #2

- Press the 4406 Pin into the Drive Shaft.
- Fasten 2225 Motor Plate by tightening the 5291 Screws with 4352 Spacers.

Bag G Spur Gear Assembly

-Parts for Bag G


2228 Qty 1
Slipper Eliminator


4881 Qty 1
81T 48P Spur Gear


1:1
5252 Qty 2
4-40 x 1/4 BH Screw


2228 Qty 1
Spacer


1:1
5245 Qty 1
5-40 Locknut

- Press the 2228 Slipper Eliminator onto the Top Drive Shaft so that the Roll Pin keys into the grooves.
- Secure the assembly to the Top Shaft with the 2228 Spacer and the 5245 Locknut. Do NOT overtighten the nut on the Top Shaft!
- Mount the 4881 Spur Gear so the flat side faces AWAY from the transmission. Secure using (2) 5252 Screws.

Bag H Transmission Mount

-Parts for Bag I


3308 Qty 1
Transmission Brace


3229 Qty 1
Post Collar


1202 Qty 1
Trans Spacer


1:1
3229 Qty 1
8-32 x 1/2 FH Screw


1:1
5262 Qty 1
4-40 x 1/4 FH Screw


3229 Qty1
Short Body Post

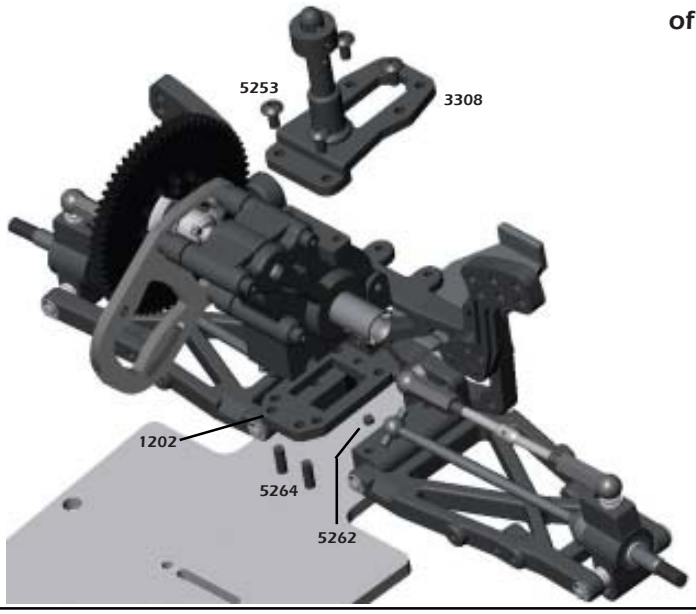

3229 Qty 1
Set Screw


1:1
5264 Qty 2
4-40 x 1/2 FH Screw

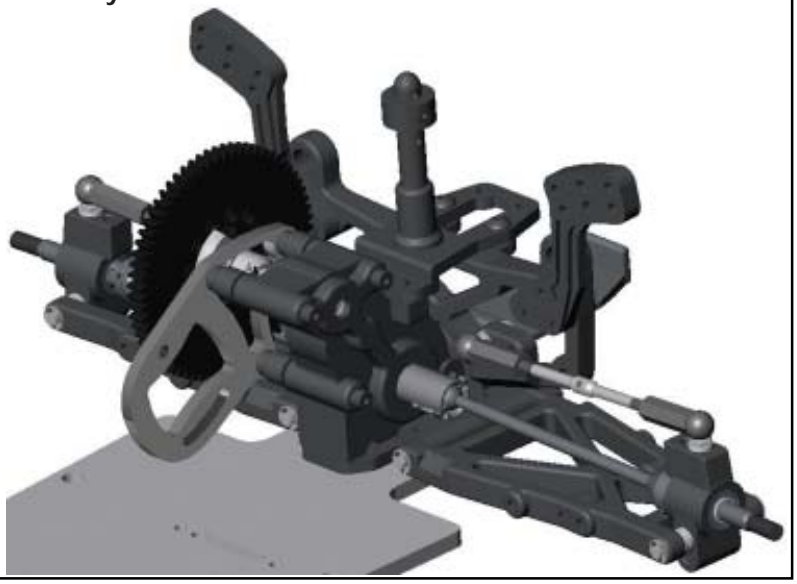

1:1
5253 Qty 4
4-40 x 3/8 FH Screw

- Attach 3229 Body Post to 3308 Trans Brace using 3229 Screw.
- Slide 3201 Post Collar onto the Body Post and secure using 3229 Set Screw.

- Mount the 1202 Trans Spacer to the Chassis using the 5262 Screw where shown.
- Secure the Trans to the Chassis using (2) 5264 Screws thru the 1202 Trans Spacer as shown.
- Attach the 3308 Trans Brace to the Trans and Rear Bulkhead using 5253 Screws.
- Mount the Trans Brace to the Trans and Rear Bulkhead using 5253 Screws.
- NOTE: Align the dogbone shafts into the outdrives of Trans as you mount the trans!



- NOTE: Align the dogbone shafts into the outdrives of Trans as you mount the trans!



Bag I Battery Mount

-Parts for Bag J

3224 Qty 1
Battery Tray

2004 Qty 2
Strap Mount

3009 Qty 1
Strap Buckle

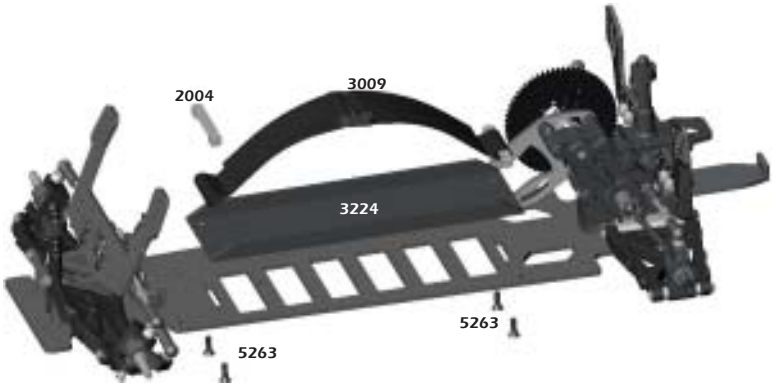
3009 Qty 2
Battery Strap

5263 Qty 4
4-40 x 3/8 FH Screw

STEP #1

- Slide the 2004 Strap Mount thru the small loop on the 3009 Battery Strap.
- Trim the 3224 Batt Tray so it sits flat to the chassis. On the marked spots, drill the (4) holes in the 3224 Battery Tray so they align with the holes in the chassis.
- Mount the Tray to the Chassis using 5263 Screws thru the Chassis and into the 2004 Strap Mount.
- Peel apart both 3009 Battery Straps. Insert one Strap end thru the Buckle and re-attach to itself. Then slide the end of the other Strap thru the Buckle, pull tight to the Battery and attach to the velcro.

NOTE: Battery packs come in a variety of widths, it may be necessary to alter the Tray by cutting away the left side of the tray and/or re-aligning the holes it mounts in.



Bag J Servo and Linkage Installation

-Parts for Steps #1&#2

5242 Qty 1
Large Servo Saver

8130 Qty2
Small Ball Cup

8122 Qty 2
Ball Stud

3234 Qty2
Spacer

5263 Qty 5
4-40 x 3/8 FH Screw

5240 Qty2
Servo Mount

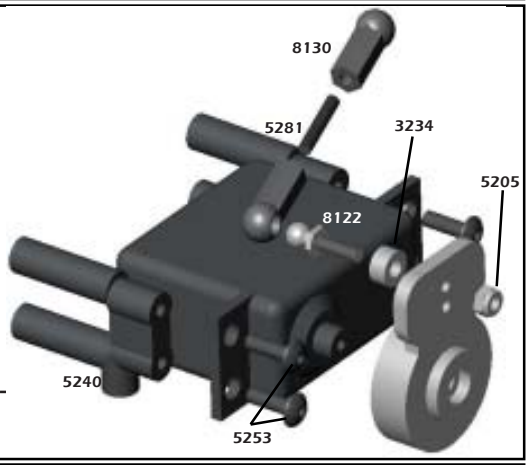
5281 Qty1
4-40 Stud

3209 Qty1
Antenna Mount

5253 Qty 4
4-40 x 3/8 BH Screw

STEP #1

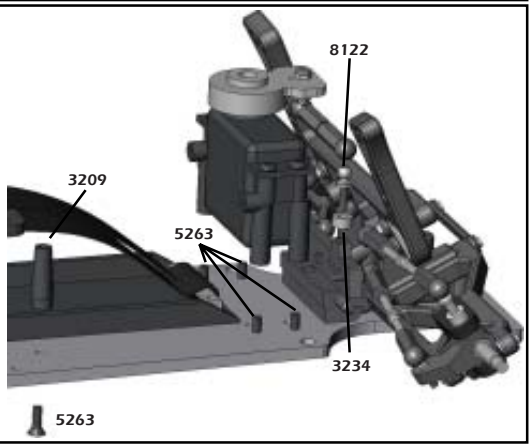
- Attach 5240 Servo Mounts to your steering servo in the position shown using 5253 Screws.
- Thread 8120 Ball Stud into the upper-most center hole in the 5242 Servo Saver.
- Attach both 8130 Ball Cups to one another using the 5281 Stud until the Ball Cups bottom out on one another. Snap a Ball Cup onto the Ball Stud on the Servo Saver.
- Determine which of the Spline Inserts are correct for your servo by pressing it over the drive on the servo. Align the servo so it has equal throw in both directions.
- Press the Servo Saver onto the Spline Insert so that the Servo Saver is perpendicular to the servo, attach using the screw that came with your servo.



STEP #2

- Mount the servos to the chassis using 5263 Screws as shown.
- Thread 8122 Ball Stud with the 3234 Spacer into the top of the Steering Slide.
- Snap the Ball Cup onto the Ball Stud threaded into the Steering Slide.
- Attach 3209 Antenna Mount in either of the two holes shown below.

NOTE: Steering movement should be bind free except for the restriction of the servo transmission.



Shock Bag

Shock Assembly

-Parts for Step#1

1426 Qty 2 Short Shock Body | 1425 Qty 4 Med Shock Body

1430 Qty2 Short Shock Shaft | 1429 Qty2 Med Shock Shaft

1434 Qty4 Shaft Guide

1250 Qty 8 O- Ring

1435 Qty 6 Reatining Clip

1436 Qty4 Piston

5230 Qty 10 E-Clip

-Parts for Step#2

1432 Qty4 Eyelet Cap

1431 Qty4 Threaded Cap

1437 Qty 4 Firm Bladder (BLACK)

1:1

5228 Qty4 Short Ball End

5228 Qty4 Pivot Ball

-Parts for Step#3

1433 Qty4 Spring Collar

1488 Qty4 Spring

1407 Qty4 Spring Bucket

1408 Qty4 Mount Ball

5277 Qty 4 4-40 x 7/8 SH Screw

5274 Qty 4 4-40 x 1/2 SH Screw

5217 Qty 4 4-40 Lock Nut

STEP #1

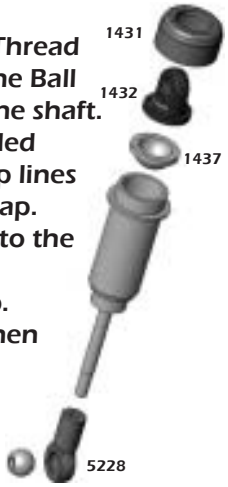
BUILD 2 SHORT & 2 MED LENGTH SHOCKS!
- USE #1429 SHAFT WITH #1425 BODY.
- USE #1430 SHAFT WITH #1426 BODY .

NOTE: Put a few drops of oil on the O-Rings!

- Attach 1436 Shock Piston to Shock Shaft using 5230 E-Clips to secure.
- Press 1250 O-rings into the Shock Body followed by 1434 Shaft Guide. Retain using 1435 Clip.

TIP: To press clip in easiest, compress the clip so the diameter is a little smaller.Insert open end of clip first, working counter-clockwise to the bent end as shown.

STEP #2



- Snap Pivot Ball into the 5228 Ball End. Thread the Ball End onto the Shock Shaft until the Ball End is flush with the end of threads on the shaft.
- Press 1432 Eyelet Cap into 1431 Threaded Shock Cap so that guide in the Eyelet Cap lines up in the recess in the Threaded Shock Cap.
- Press the 1437 Firm Bladder (BLACK) into the Threaded Shock Cap so the dome of the bladder points away from the Eyelet Cap.
- Fill the Shock Body with oil to the top then thread the Eyelet Cap assembly onto the Shock Body until tight.

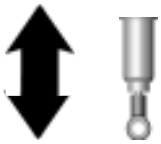
-NOTE: See shock filling tips for more instructions.

SHOCK FILLING INSTRUCTIONS:

1) Holding the shock upright, fill with oil until the top of the body.

SUGGESTED 40 WT R/C SHOCK OIL.

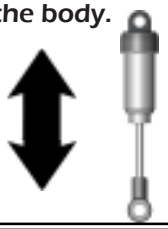
2) Slowly move the shaft up and down several times to allow air bubbles to escape to the top.



3) Refill with oil to the top of the shock body.

4) Thread the Eyelet Cap assembly onto the Shock Body until it is hand tight. Oil should seep out of the bleed hole in the Threaded Cap.

5) Move the shock shaft in and out a few times and then push it all the way in. It should be easy to push the shaft in until the eyelet hits the body.



6) Then the shaft should push itself out to its full length slowly.

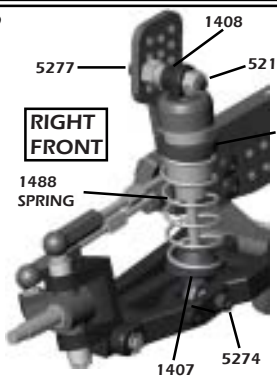
7) If the shock does not push out this far there is not enough oil in it. Add just a little oil and try steps 5-6 again.

8) If the shockrebounds too fast , or you cannot push the shaft in until the eyelet hits the body, there is too much oil. Loosen the cap about X full turns and pump out a small amount of oil by pushing the shaft in. Retighten the cap and try steps 5-6 again.

STEP #3

5277 Screw on the RF passes thru the outer most hole, 2nd from the bottom.

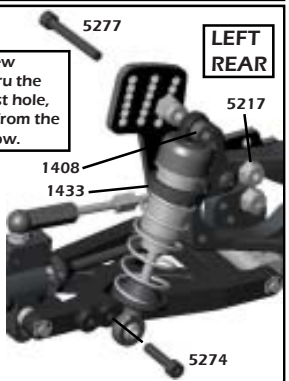
5277 Screw on the LF passes thru the inner most hole, 3rd from the bottom.



- Thread 1433 Spring Collar onto the shock. Slide 1488 Spring onto the shock and secure using the 1407 spring bucket as shown.

- Press 5277 Screws thru the locations shown. Fasten using 2214 Standoff.

5277 Screw passes thru the inner most hole, 4th hole from the bottom row.



- Install the shocks onto the screws with the shoulder of the 1408 Mount Ball facing away from the tower, secure with 5217 Nut.

- Attach the shock to the susp arms in the locations shown.

Cage Bag

Cage Assembly

-Parts for Step #1 & Step #2

Qty	Part	Description
Qty 2	3233	Rear Bumper
Qty1	3233	Bumper Connector
Qty1	3239	Front Cage Mount
Qty 4	5255	4-40 x 5/8 BH Screw
Qty 6	5254	4-40 x 1/2 BH Screw
Qty 2	5253	4-40 x 3/8 BH Screw
Qty 2	5262	4-40 x 1/4 FH Screw

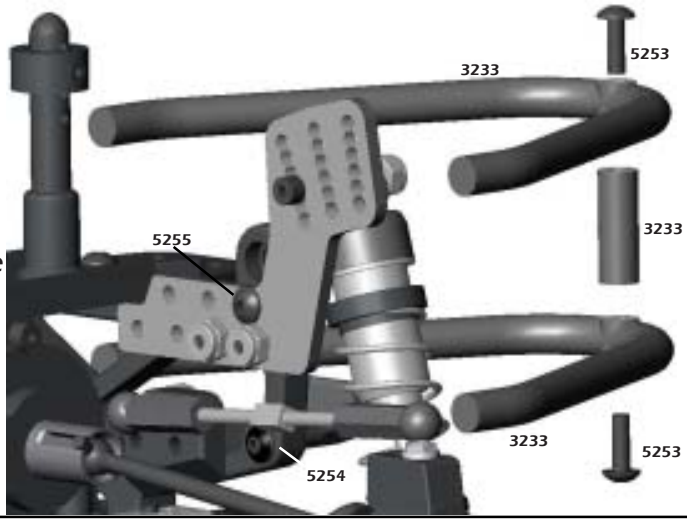
-Parts for Step#3 & Step#4

Qty	Part	Description
Qty 2	3235	Main Cage Half
Qty 1	3233	Front Bumper
Qty 1	3232	Nerf Bar L & R
Qty 1	3232	Nerf Support L & R
Qty 2	3235	Upper Cage Brace
Qty 2	3421	Wing Slide Bushing
Qty 2	5278	4-40 x 1" SH Screw
Qty 2	5279	Hole Head Screw LONG
Qty 2	5280	Hole Head Screw SHORT
Qty 4	5274	4-40 x 1/2 SH Screw
Qty 3	5264	4-40 x 1/2 FH Screw

STEP #1

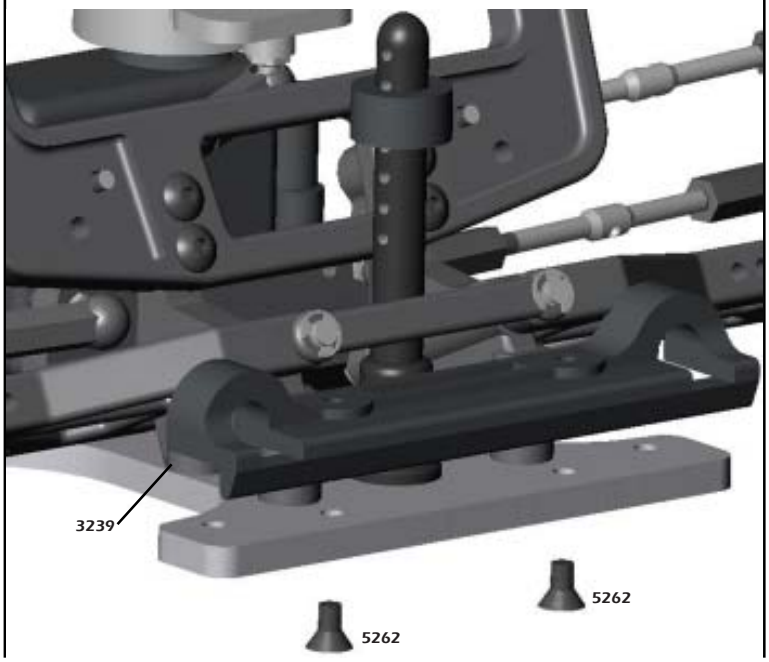
- Mount the (2) 3233 Rear Bumpers together using 5253 Screws and the 3233 Bumper Connector.

-Attach the Bumper Assembly to the Rear Bulkhead using 5255 Screw into the upper bumper and 5254 Screw into the lower bumper as shown.



STEP #2

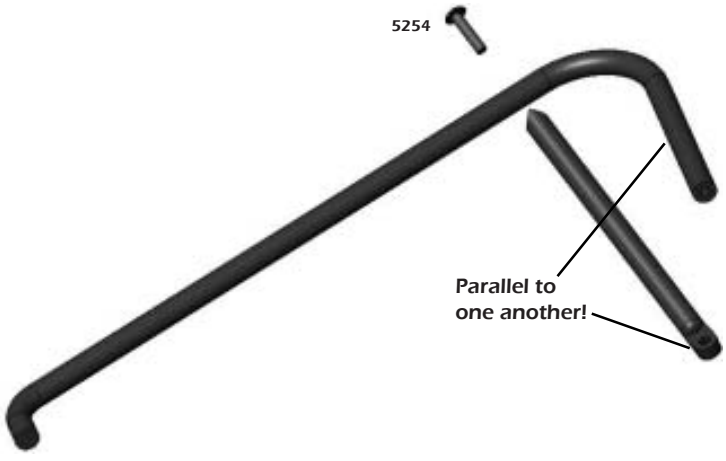
- Mount the 3239 Front Cage mount to the chassis using 5262 Screws.



STEP #3

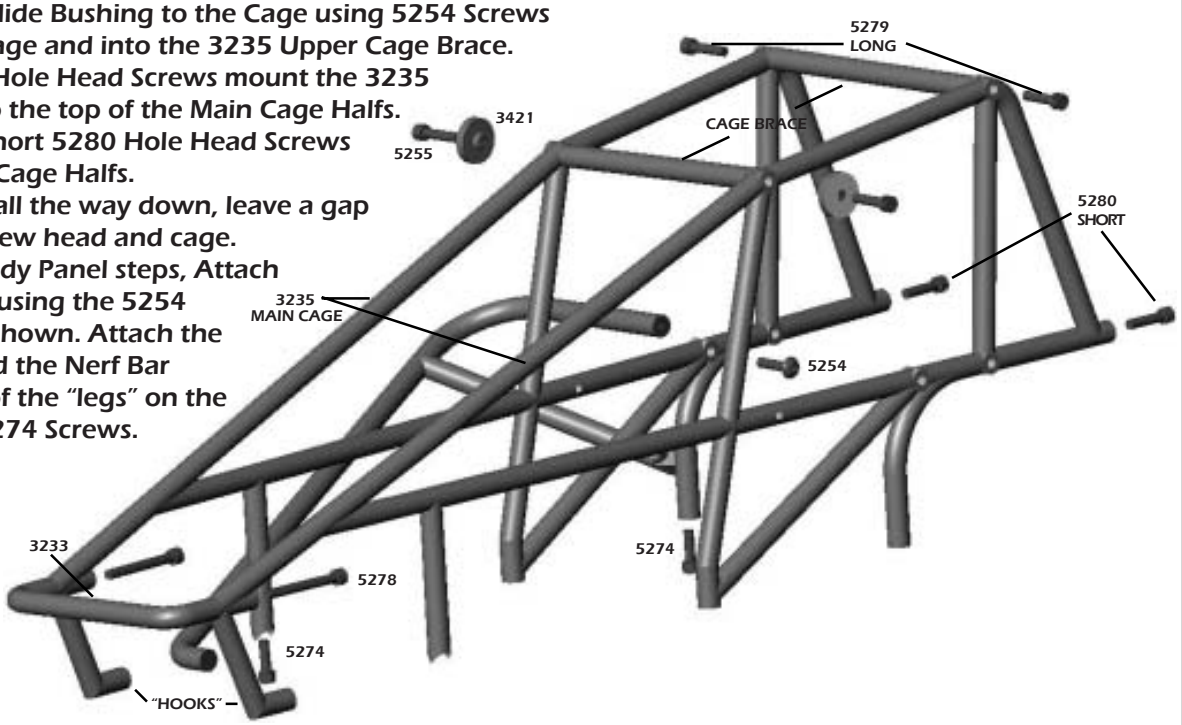
- Assemble the Nerf Bar and Nerf Bar Support using 5254 Screw.

NOTE: Right and Left Nerf Bars and Supports come in the cage kit. Shown is the RIGHT assembled part. When using the correct Support with the Nerf Bar, the bottom foot of the Support and the short leg of the Nerf Bar will be parallel.



STEP #4

- Mount 3233 Front Bumper using 5278 Screws.
- Mount the 3421 Wing Slide Bushing to the Cage using 5254 Screws thru the Bushing and Cage and into the 3235 Upper Cage Brace.
- Use the (2) Long 5279 Hole Head Screws mount the 3235 Upper Cage Braces onto the top of the Main Cage Halfs.
- Use the remaining (2) Short 5280 Hole Head Screws in the back of the Main Cage Halfs.
  NOTE: Do NOT tighten all the way down, leave a gap of .100"between the screw head and cage.
- After completing the Body Panel steps, Attach the rear of the Nerf Bar using the 5254 Screw thru the cage as shown. Attach the front of the Nerf Bar and the Nerf Bar Support to the bottom of the "legs" on the Main Cage Half using 5274 Screws.



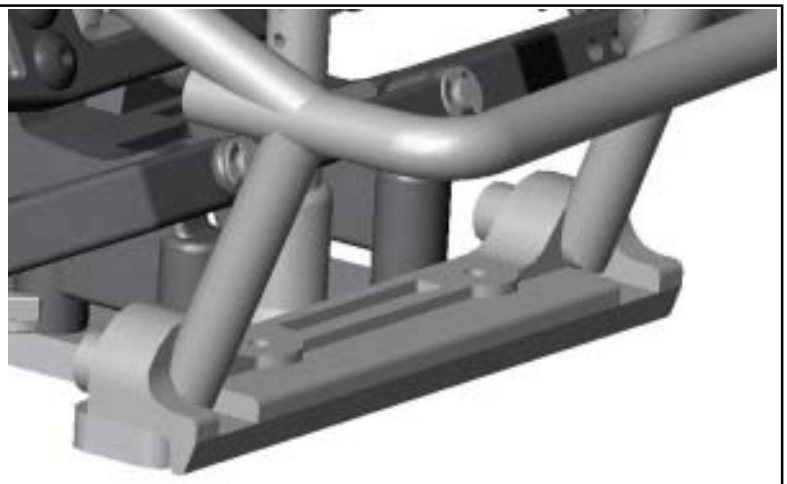
CAGE INSTALLATION AND REMOVAL:

- Place the cage between the front suspension tower with the "HOOKS" slightly further forward the the front edge of the chassis.

- Guide the "HOOKS" into the Front Cage Mount while guiding the Short 5280 Hole Head Screws into the Rear Bulkhead.

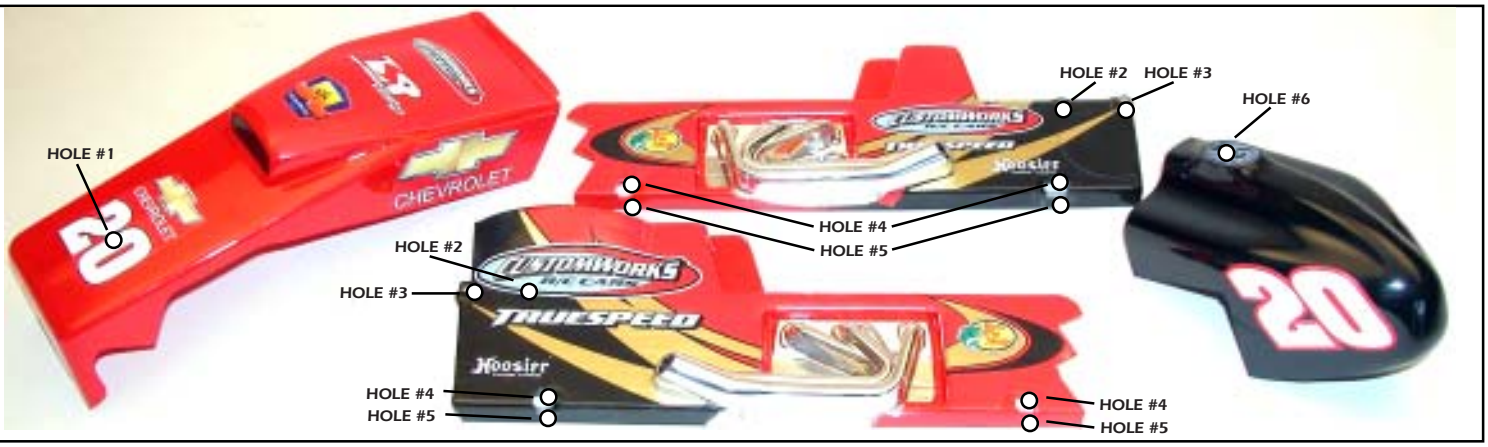
- Position the (2) 5274 Screws that mount the bottom portions of the nerf bars to the Cage Half into the holes in the Chassis.

- Lock the cage by placing 9936 Clip into the Hole in the Head of the 5280 Screw.



Body Panel Bag

Body Panel Prep & Mounting



- Do these steps BEFORE painting your body panels!!!

- Cut the 9024 Left Body Panel to fit the Body Template provided.
- Use the Body Template ONLY to cut the front edge of the Right Body Panel.
- Follow the molded lines on the 9029 Eagle Hood and 9026 Tail Tank.
- Addtional trimming may be required to clearance suspension movements.

BODY HOLE NOTES:

HOLE #1: Fit the Side Panels and Hood to the Cage, make a mark where the Body Post meets the Hood.

HOLE #2 & #3: Use the marks in the body panel, make a small hole only the screw can pass thru.

HOLE #4: Use the marks provided so the nerf bar can pass thru the body panel.

HOLE #5 & #6: Use the provided body line or mark molded into the Body Panel.

Top Wing

- Assemble the #9021 Wing Kit using the instructions provided inside the wing kit. Mount the wing to the car and it should now look just like the car shown below.

CONGRATULATIONS!!! You have now completed the assembly process of your new Custom Works Enforcer GBX2! In the next section of this manual you will find some basic setup hints and advice. It is important to remember that all tracks and racing surfaces are different. Therefore the suggestions we give you are general in nature and should by no means be treated as the only options.

MAINTENANCE:

Occasionally dirt will get into the moving and pivoting locations in your car. It is best to periodically clean your car to keep all the suspension components moving freely. Read the tips below to keep your car running at its best!

- Begin by removing the majority of the dirt using a small brush, toothbrush, or compressed air.
- Compressed air is ok to use, be mindful to not FORCE the dirt into the radio gear, transmission, bearings, or air filter. Typically these items only have dirt on them, hitting the dirt with the compressed air puts dirt ***IN*** these parts!
- Tires, either foam or rubber are best cleaned using water or cleaners like Simple Green (TM). Simple Green also does a great job cleaning car parts as well. Lightly spraying car parts (NOT radio components, transmission, air filter, or bearings) with Simple Green and blowing off with compressed air or wiping the parts using the paint brush is a great way to clean in a hurry.
- Another R/C friendly cleaner is WD-40 (TM). After the car is clean, very lightly spray the car components and bearings (NOT radio components, transmission, or air filter). Use your brush or compressed air to remove the extra WD-40. This will lube your bearings and leave a protective coating on the parts making it easier to remove dirt later.
- Differential Maintenance is needed when the action of the diff feels "notchy". Usually cleaning the diff parts, re-sand the thrust and diff plates with 400 paper, and lube appropriately will be all that is needed to bring back to new. Ignoring your differential will lead to handling woes and increase transmission temps, which will cause part failure.

TUNING TIPS:

These are some general guidelines for optimizing handling performance. None of these "tips" are EVER set in stone. On any given day this manual or any chassis engineering book or guru can be proved wrong by the stop watch. A good way to approach chassis set-up is to try one change, practice it, think how the car felt different from before, and compare lap times from the stop watch.....this will never fail.

Car Pushes (understeers):	Car Is Loose (oversteers):	Car Is Erratic:
- Decrease Wing Angle - Decrease Spoiler on Wing - Heavier Rear Spring - Softer Front Spring - Use Rear Sway Bar - Try Softer Front Compound Tire - Try Harder Rear Compound Tire - Lower Front Ride Height - Raise Rear Ride Height - Thread Shock Collar UP on Right Front - Thread Shock Collar DOWN on Right Rear - Decrease Rear Toe - Decrease Castor - Add Rear Toe Stagger or Increase the difference	- Increase Wing Angle - Add Spoiler to Wing - Softer Rear Spring - Heavier Front Spring - Use Front Sway Bar - Try Harder Front Compound Tire - Try Softer Rear Compound Tire - Raise Front Ride Height - Lower Rear Ride Height - Thread Shock Collar DOWN on Right Front - Thread Shock Collar UP on Right Rear - Increase Rear Toe - Increase Castor - Decrease Rear Toe Stagger or Decrease the difference	- Bent Suspension Pins: Remove shocks to check free movement. - Bound Ball Joint: Should spin free on balls while mounted to the car. - Bent or Loose Camber Links - Wore out Bearings or Completely Seized Bearings - Chunked Tire: Check to see if Foam or Rubber Tire is still glued to wheel. - Loose Screws: Especially Chassis Screws, add Blue Loctite to prevent. - Shocks: Either Bound-up or Out of Oil. Must swivel freely on mounts. - Foreign Objects: Unlucky Dirt/Stones preventing Suspension or Steering Movement. - Blown Differential - Radio Problem: Bad Servo, Weak Servo Saver Spring, Transmitter Pot blown.

SET-UP GUIDELINES:

When looking for the "perfect set-up" it is important to remember 2 things...

1) Keeping things simple is best.

2) As you are making your set-up change, the track is changing too! Ask a local racer what the track usually does from begining to end, especially day to night.

- Start your car's ride height with it equal at all four corners to start. Use the shock collars to adjust ride height by measuring the distance under the chassis when the car is sitting on a FLAT & LEVEL surface.

- Shock collars can only jack weight and adjust the car's handling when the car makes ALL 4 shocks squat when the car is set down. Use the RF shock collar to adjust how the car ENTERS the corner. Use the RR shock collar to adjust how the car exits the corner ON-POWER. Use the LF shock collar to make the car turn in less, and off the corner more.

- It is best to have a little bit of brake drag when you let off the gas, this will allow for a more controlable car in ALL conditions. Increasing how much the brake drags will make your car turn into the corner harder.

SET-UP GLOSSARY:

Caster: Angle of the kingpin in relation to a vertical plane as viewed from the side of the car. Increasing the angle will make the car more stable out of the turn and down the straights and increase steering entering a turn. Decreasing the angle will make the car feel more "touchy" at high speeds and help steering while exiting the turn.

Camber Gain: Angle of the Camber Link relative to the Suspension Arm. Lowering the camber link on the shock tower OR raising the camber link on the castor block will INCREASE the camber angle of the tire when the suspension is compressed. Raising the camber link on the shock tower OR lowering the camber link on the castor block will DECREASE the camber angle of the tire when the suspension is compressed. There is not a "correct" set-up and once again too much of anything is generally bad. This will help change the "feel" of the car thru the turns.

Camber Link Length: Comparing this to the length of the Suspension Arm from each pivot point and keeping the Camber the same, making the link *shorter* will decrease traction for that corner of the car while making it *longer* will increase traction for that corner of the car. Once the camber link is equal to or greater than the Suspension Arm pivots, the gain of traction ends. Also a shorter camber link will increase camber gain and a longer decrease camber gain.

Shock Angle: Leaning the shock toward the car is effectively like changing to a *softer* spring. Standing the shock closer to vertical is effectively like changing to a *stiffer* spring. Try when the car is working well and when one spring change is TOO much for your set-up.

Ride Height: Check by pushing the chassis down once or twice to simulate bumps on the track. Having the front end *higher* than the rear will make the car increase rear traction especially out of the turn. Having the front end *lower* than the front will make the car increase front traction especially entering the turn. Generally its safe to start the car with the ride heights even.

Rear Toe-In: Front edge of car tires point *toward* the chassis as viewed from above the car. Increasing the angle toward the car will increase rear traction while decreasing front traction. Decreasing the angle will do the opposite.

Rear Toe Stagger: Difference in the amount of Rear Toe-In among the rear tires. Typically used only on high bite tracks with MORE toe-in on the Left Rear tire than the Right so the rear of the car helps turn the car LEFT under acceleration.

Wheelbase (Front End): Wheelbase is the distance between the front and rear axles. Running the entire front end assembly in the forward position makes the wheelbase longer and therefore more stable on long/fast tracks with flowing turns. Running the entire front end assembly in the rear position make the wheelbase shorter and therefore more suitable for short-tracks where you are constantly turning.

Wheelbase (Rear End): This adjustment uses the plastic spacers on the kingpin the rear bearing carrier rides on. With the spacers in front of the carrier it will lengthen the wheelbase but will increase steering. If the spacers are behind the carrier it will shorten the wheelbase but increase rear traction. This is completely backwards from how it works for the Front End only because in the rear of the car you have the weight of the motor and the torque it creates. Shortening the wheelbase here makes more of the car hang over the rear tires and promotes more weight transfer.

Final Drive Chart: The chart provided below gives you the final drive of the motor to spin the axle 1 revolution. This chart is NOT just the pinion and spur, but has the transmission ratio included as well.

- To determine the final drive in your car:

1) Divide the Spur Gear by the Pinion Gear, which equals a "Ratio".
2) Multiply the "Ratio" by the "Transmission Ratio" which will equal your "Final Drive".
   Transmission Ratio = 2.4 for this car.

- Gearing choice can vary greatly depending on track size, surface type, amount of traction, you motor and driving style. For starters consult your local hobby dealer or fellow racer at your local track for the ideal gear choice for your application.

64 Pitch	Spur Gear							
Pinion	78	81	85	88	93	96	100	104
16	11.70	12.15	12.75	13.20	13.95	14.40	15.00	15.60
17	11.01	11.44	12.00	12.42	13.13	13.55	14.12	14.68
18	10.40	10.80	11.33	11.73	12.40	12.80	13.33	13.87
19	9.85	10.23	10.74	11.12	11.75	12.13	12.63	13.14
20	9.36	9.72	10.20	10.56	11.16	11.52	12.00	12.48
21	8.91	9.26	9.71	10.06	10.63	10.97	11.43	11.89
22	8.51	8.84	9.27	9.60	10.15	10.47	10.91	11.35
23	8.14	8.45	8.87	9.18	9.70	10.02	10.43	10.85
24	7.80	8.10	8.50	8.80	9.30	9.60	10.00	10.40
25	7.49	7.78	8.16	8.45	8.93	9.22	9.60	9.98
26	7.20	7.48	7.85	8.12	8.58	8.86	9.23	9.60
27	6.93	7.20	7.56	7.82	8.27	8.53	8.89	9.24
28	6.69	6.94	7.29	7.54	7.97	8.23	8.57	8.91
29	6.46	6.70	7.03	7.28	7.70	7.94	8.28	8.61
30	6.24	6.48	6.80	7.04	7.44	7.68	8.00	8.32
31	6.04	6.27	6.58	6.81	7.20	7.43	7.74	8.05
32	5.85	6.08	6.38	6.60	6.98	7.20	7.50	7.80
33	5.67	5.89	6.18	6.40	6.76	6.98	7.27	7.56
34	5.51	5.72	6.00	6.21	6.56	6.78	7.06	7.34
35	5.35	5.55	5.83	6.03	6.38	6.58	6.86	7.13
36	5.20	5.40	5.67	5.87	6.20	6.40	6.67	6.93
37	5.06	5.25	5.51	5.71	6.03	6.23	6.49	6.75
38	4.93	5.12	5.37	5.56	5.87	6.06	6.32	6.57
39	4.80	4.98	5.23	5.42	5.72	5.91	6.15	6.40
40	4.68	4.86	5.10	5.28	5.58	5.76	6.00	6.24
41	4.57	4.74	4.98	5.15	5.44	5.62	5.85	6.09
42	4.46	4.63	4.86	5.03	5.31	5.49	5.71	5.94
43	4.35	4.52	4.74	4.91	5.19	5.36	5.58	5.80
44	4.25	4.42	4.64	4.80	5.07	5.24	5.45	5.67
45	4.16	4.32	4.53	4.69	4.96	5.12	5.33	5.55
46	4.07	4.23	4.43	4.59	4.85	5.01	5.22	5.43
47	3.98	4.14	4.34	4.49	4.75	4.90	5.11	5.31

48 Pitch	Spur Gear							
Pinion	66	68	70	72	75	78	81	84
12	13.20	13.60	14.00	14.40	15.00	15.60	16.20	16.80
13	12.18	12.55	12.92	13.29	13.85	14.40	14.95	15.51
14	11.31	11.66	12.00	12.34	12.86	13.37	13.89	14.40
15	10.56	10.88	11.20	11.52	12.00	12.48	12.96	13.44
16	9.90	10.20	10.50	10.80	11.25	11.70	12.15	12.60
17	9.32	9.60	9.88	10.16	10.59	11.01	11.44	11.86
18	8.80	9.07	9.33	9.60	10.00	10.40	10.80	11.20
19	8.34	8.59	8.84	9.09	9.47	9.85	10.23	10.61
20	7.92	8.16	8.40	8.64	9.00	9.36	9.72	10.08
21	7.54	7.77	8.00	8.23	8.57	8.91	9.26	9.60
22	7.20	7.42	7.64	7.85	8.18	8.51	8.84	9.16
23	6.89	7.10	7.30	7.51	7.83	8.14	8.45	8.77
24	6.60	6.80	7.00	7.20	7.50	7.80	8.10	8.40
25	6.34	6.53	6.72	6.91	7.20	7.49	7.78	8.06
26	6.09	6.28	6.46	6.65	6.92	7.20	7.48	7.75
27	5.87	6.04	6.22	6.40	6.67	6.93	7.20	7.47
28	5.66	5.83	6.00	6.17	6.43	6.69	6.94	7.20
29	5.46	5.63	5.79	5.96	6.21	6.46	6.70	6.95
30	5.28	5.44	5.60	5.76	6.00	6.24	6.48	6.72
31	5.11	5.26	5.42	5.57	5.81	6.04	6.27	6.50
32	4.95	5.10	5.25	5.40	5.63	5.85	6.08	6.30
33	4.80	4.95	5.09	5.24	5.45	5.67	5.89	6.11
34	4.66	4.80	4.94	5.08	5.29	5.51	5.72	5.93
35	4.53	4.66	4.80	4.94	5.14	5.35	5.55	5.76

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R/C CARS

ENFORCER 4BX2

DRIVER:_____
DATE:_____
EVENT_____
CLASS:_____
TRACK:_____ LENGTH:_____

❑Clay ❑Hard Packed ❑Loose Dirt
❑Carpet ❑Asphalt ❑Concrete
❑Flat ❑Banked ❑True Oval ❑Tri-Oval
Traction: ❑High ❑Medium ❑Low

FRONT SUSPENSION

LEFT

CAMBER:_____
CAMBER LINK LOCATION
❑OUTER ❑INNER
CAMBER RATE SHIMS:
_____

ACKERMANN: ❑ ON SPINDLE
❑SHORT ❑MIDDLE ❑LONG

FRONT AXLE:
❑STOCK
❑EXTENDED

CASTOR: ❑0°
❑+5° ❑-5°
❑+10° ❑-10°

AXLE SHIMS: _____

TOE IN/OUT _____
RF ❑LEAD ❑TRAIL
AMOUNT:_____
SWAY BAR:❑NONE
❑.063 ❑.078"

KICK-UP: ❑25°
❑20° HIGH ❑20° LO
❑15° HIGH ❑15° LO

RIGHT

CAMBER:_____
CAMBER LINK LOCATION
❑OUTER ❑INNER
CAMBER RATE SHIMS:
_____

ACKERMANN: ❑ ON SPINDLE
❑SHORT ❑MIDDLE ❑LONG

CASTOR: ❑0°
❑+5° ❑-5°
❑+10° ❑-10°

FRONT AXLE:
❑STOCK
❑EXTENDED

AXLE SHIMS: _____

REAR SUSPENSION

LEFT

CAMBER LINK LOCATION
❑OUTER ❑INNER

HUB SPACING:
F❑❑❑❑❑❑❑R

CAMBER:_____
TOE-IN: _____

WHEEL SPACERS:
_____

SWAY BAR:❑NONE ❑.063" ❑.078"
REAR WIDTH (INNER/OUTER)
LR:_____ RR:_____
TOE-BLOCK SHIMS:
LR:_____ RR:_____
ANTI-SQUAT SHIMS:
LR:_____ RR:_____

RIGHT

CAMBER LINK LOCATION
❑INNER ❑OUTER

HUB SPACING:
F❑❑❑❑❑❑❑R

CAMBER:_____
TOE-IN: _____

WHEEL SPACERS:
_____

-SHADE IN MOUNTING LOCATIONS ON SUSPENSION ARMS, BEARING CARRIER AND SHOCK TOWER.

TIRES & TRACTION

TIRE TYPE: ❑FOAM ❑STREET RUBBER ❑LOOSE DIRT

	COMPOUND	DIAMETER	INSERT
RF:			
LF:			
RR:			
LR:			

TRACTION ADDITIVE:_____
_____
_____
_____

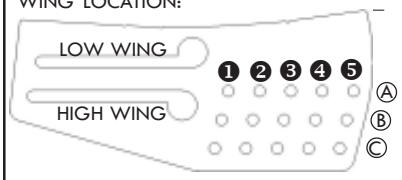
-SHADE IN AREAS OF TRACTION ADDITIVE AND DRAW IN TIRE GROOVES

LF RF

LR RR

WING

MAIN WING SIZE: ❑6X6 ❑7X7
FRONT WING SIZE:_____
SPOILER LENGTH:_____
WING LOCATION:

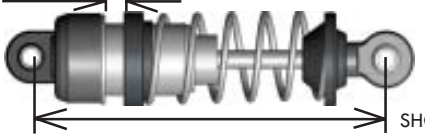


HOOD TYPE:_____

MISC...

BATTERY TYPE: ❑LIPO ❑NiMH
MOTOR: _____
PINION:_____ SPUR:_____
SPEED CONTROL:_____
PUNCH SETTING:_____
INTIAL BRAKE:_____
AUTO BRAKE:_____
_____
_____
_____
_____

SHOCKS



LEFT FRONT SHOCK
BODY LENGTH
❑SHORT ❑MED ❑LONG
SHAFT LENGTH
❑SHORT ❑MED ❑LONG
SPRING:_____
OIL:_____ PISTON:_____
BLADDER:_____
LENGTH:_____
COLLAR:_____

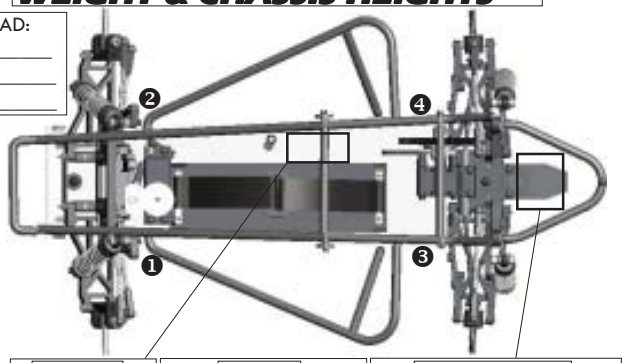
RIGHT FRONT SHOCK
BODY LENGTH
❑SHORT ❑MED ❑LONG
SHAFT LENGTH
❑SHORT ❑MED ❑LONG
SPRING:_____
OIL:_____ PISTON:_____
BLADDER:_____
LENGTH:_____
COLLAR:_____

LEFT REAR SHOCK
BODY LENGTH
❑SHORT ❑MED ❑LONG
SHAFT LENGTH
❑SHORT ❑MED ❑LONG
SPRING:_____
OIL:_____ PISTON:_____
BLADDER:_____
LENGTH:_____
COLLAR:_____

RIGHT REAR SHOCK
BODY LENGTH
❑SHORT ❑MED ❑LONG
SHAFT LENGTH
❑SHORT ❑MED ❑LONG
SPRING:_____
OIL:_____ PISTON:_____
BLADDER:_____
LENGTH:_____
COLLAR:_____

WEIGHT & CHASSIS HEIGHTS

ADDED LEAD:
FRONT_____
MIDDLE_____
REAR_____



RECIEVER
❑AS SHOWN
❑_____

BATTERY
❑FLAT ON CHASSIS
❑STOOD ON SIDE

SPEED CONTROL

CORNER WEIGHTS:
LF:_____ RF:_____
LR:_____ RR:_____

OVERALL WEIGHT: _____

CHASSIS HEIGHTS BY LOCATION:
1 _____ 2 _____
3 _____ 4 _____
MEASURED FROM:
❑TOP OF CHASSIS
❑BOTTOM OF CHASSIS