CUSTOMWORKS ENFORCER GBX3

PRO-COMP

INSTRUCTIONS

DIRECTDRIVE

#0924 ENFORCER GBX3 DD RACING KIT

Manufactured By:

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CUSTOMWORKS R/C CARS

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CUSTOMWORKS R/C CARS

REQUIRED READING...UNDERSTAND THIS MANUAL!

Thank You and Congratulations on purchasing the **ENFORCER GBX3 DD**! Within this kit you will find a race winning car with over 25 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 use the "named" bag titled at the top of each section. Each section will be broken down into "steps" thru the section . 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 GBX3 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:

-Parts are made with tight tolerance and held to the side of a "snug" fit as wear is expected over time. Try as we may, occasionally a burr may remain in a part and fit more tightly than desired. It is ok to use 400 Grit Sandpaper or a .125" drill to SLOWLY relieve a part from time to time. Suspension components should always pivot and swivel freely but not sloppily.

-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	

Front Suspension

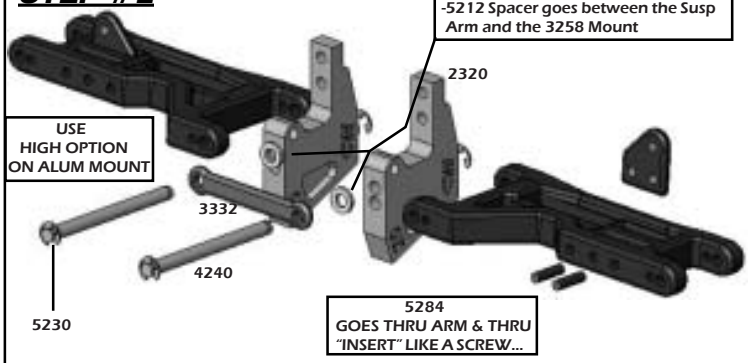
-Parts for Step#1

3332 Qty 1 — 1.165" Front Susp Brace
3251 Qty 2 — Front Susp Arms
2320 Qty 2 — 20 Deg F Susp Mt
5212 Qty 2 — Washer
5284 Qty4 — Set Screw
4240 Qty 2 — Front Inner Susp Pin
5230 Qty 24 — E-Clip

-Parts for Step#2

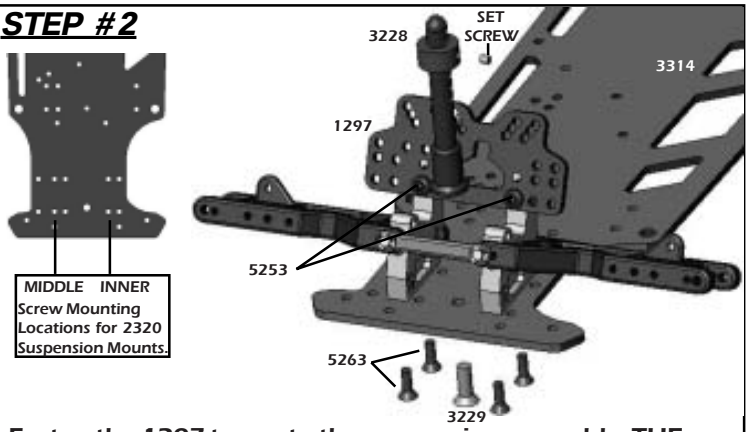
3314 Qty 1 — Enforcer GBX Chassis
1297 Qty 1 — Front Shock Tower
3228 Qty1 — Long Body Post
3228 Qty 1 — Post Collar
3228 Qty 1 — Set Screw
5253 Qty 2 — 4-40 x 3/8 BH Screw
5263 Qty 4 — 4-40 x 3/8 FH Screw
3229 Qty 1 — 8-32 x 1/2 FH Screw

STEP #1



- Insert 4240 Inner Pin thru 3332 Susp Brace and thru the first leg of 3253 Susp Arm. The 5212 Spacer will go between the Susp Arm and the 2320 Susp Mount.
- Snap 5230 E-Clips to 4240 Susp Pin.
- Arms should pivot freely on the mounts.

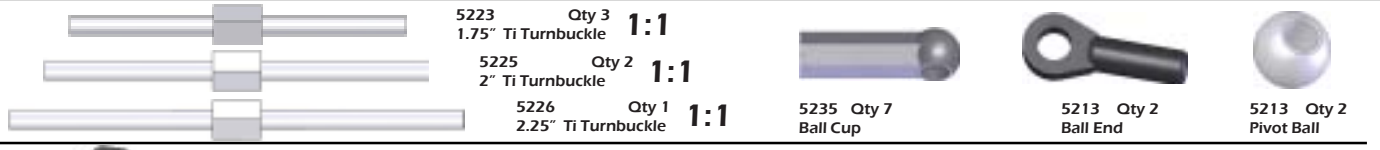
STEP #2



- Fasten the 1297 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 as shown above.

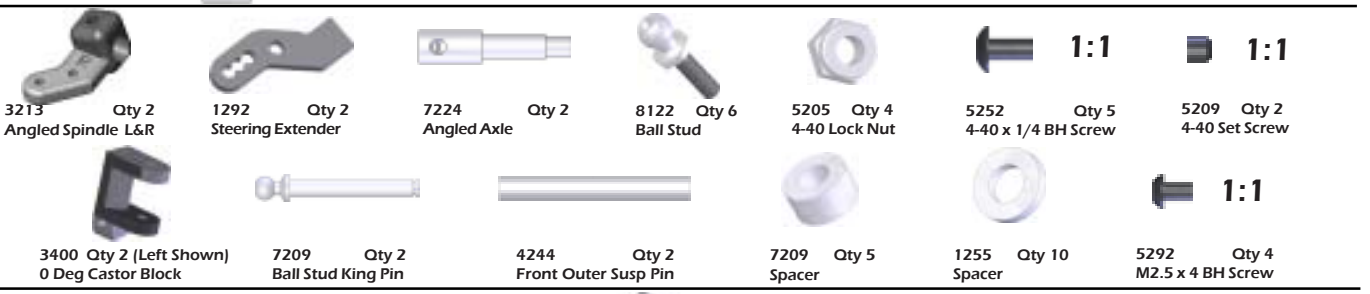
Steering Components

-Parts for Step#1



5223 Qty 3 — 1.75" Ti Turnbuckle
5225 Qty 2 — 2" Ti Turnbuckle
5226 Qty 1 — 2.25" Ti Turnbuckle
5235 Qty 7 — Ball Cup
5213 Qty 2 — Ball End
5213 Qty 2 — Pivot Ball

-Parts for Step#2



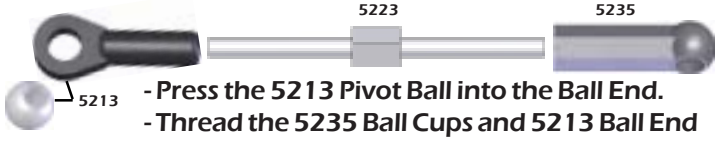
3213 Qty 2 — Angled Spindle L&R
1292 Qty 2 — Steering Extender
7224 Qty 2 — Angled Axle
8122 Qty 6 — Ball Stud
5205 Qty 4 — 4-40 Lock Nut
5252 Qty 5 — 4-40 x 1/4 BH Screw
5209 Qty 2 — 4-40 Set Screw
3400 Qty 2 (Left Shown) — 0 Deg Castor Block
7209 Qty 2 — Ball Stud King Pin
4244 Qty 2 — Front Outer Susp Pin
7209 Qty 5 — Spacer
1255 Qty 10 — Spacer
5292 Qty 4 — M2.5 x 4 BH Screw

-Parts for Step#3

3646 Qty 1 — Steering Post
7207 Qty 1 — Spacer
5242 Qty 1 — Servo Saver
2219 Qty 2 — Stand Off
5212 Qty 4 — Washer
5281 Qty1 — 4-40 Stud
8130 Qty1 — Ball Cup
3647 Qty 1 — Steering Pivot
2218 Qty1 — Stand Off
1233 Qty 2 — Flanged Bearing
5240 Qty2 — Servo Mount
5257 Qty 2 — 4-40 x 3/4 BH Screw
5263 Qty 1 — 4-40 x 3/8 FH Screw
5253 Qty 4 — 4-40 x 3/8 BH Screw

STEP #1

Makes (2) "Front Camber Links"

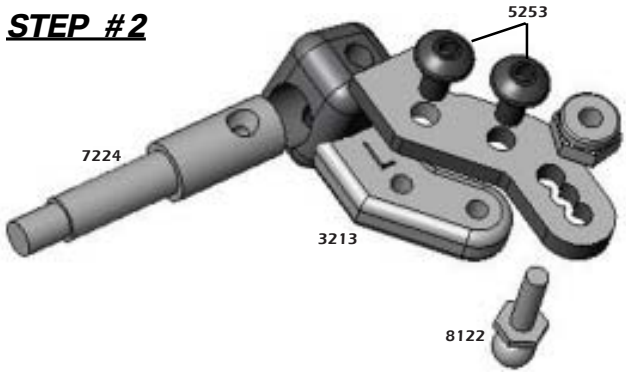


- Press the 5213 Pivot Ball into the Ball End.
- Thread the 5235 Ball Cups and 5213 Ball End onto the ends of (2) of the 5223 Turnbuckles.

5223: Makes "LF Steering Link"
5225: Makes "Rear Camber Links"
5226: Makes "RF Steering Link"

- Thread the 5235 Ball Cup onto the ends of the (1) 5223 Turnbuckle, (2) 5225 Turnbuckle, and (1) 5226 Turnbuckle

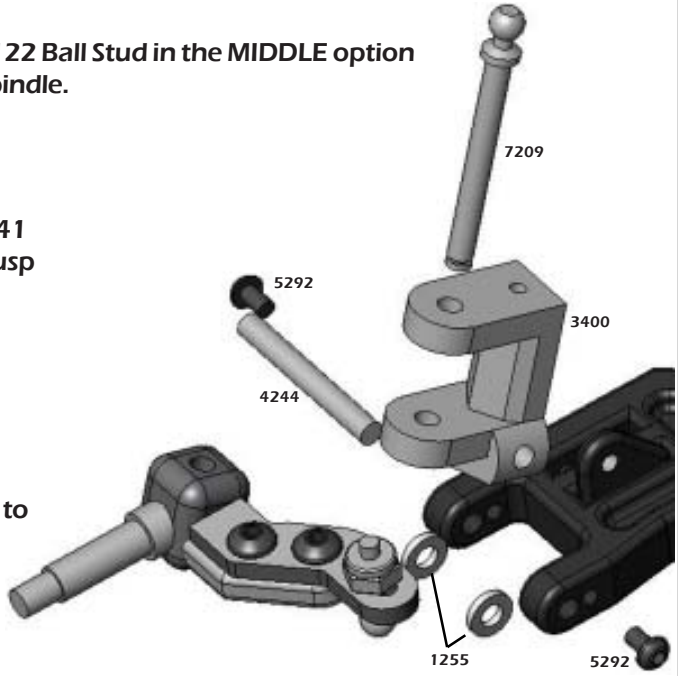
STEP #2



- Insert the 7224 Axle into the 3213 Steering Arm so the holes are in-line. This can be tricky with the angled hole. Once aligned, you may pass a .125 drill bit thru SLOWLY to assure the 7209 will pass thru.

- Mount the 1292 Steering Arm Extender to the Steering Arm using 5253 Screws.

-Attach the 8122 Ball Stud in the MIDDLE option on the each spindle.



-Mount the 3400 Castor Block to the Susp Arm by inserting the 4241 Susp Pin thru the Susp Arm, Spacer, and Castor Block. Retain the Susp Pin by attaching 5292 to each end of the susp arm.

-Align the Steering Arm into the 3400 Castor Block and press the 7209 Ball Stud Kingpin thru the assembly as shown.

- Use the remaining 7209 Spacers and E-Clip the Ball Stud King pin to retain within the Castor Block assembly.

STEP #3

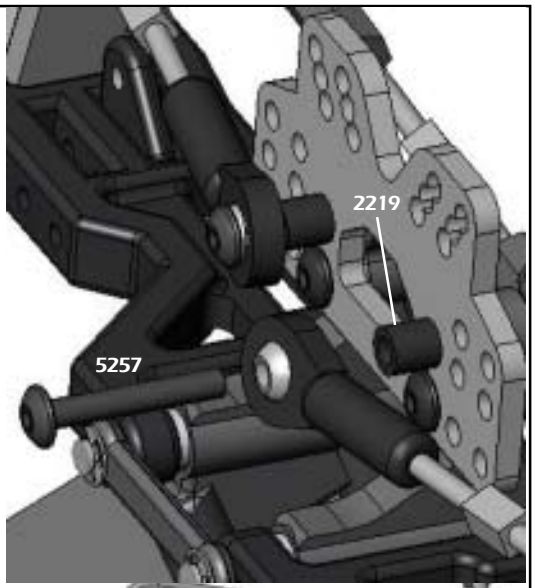
- Assemble the bell crank as shown in the diagram to the left. Use the thin shims on the 3646 Steering Post so there is ZERO slop with the movement of the bellcrank.

- Fasten the Steering Post to the chassis using 5263 screw and use thread lock on the screw threads.

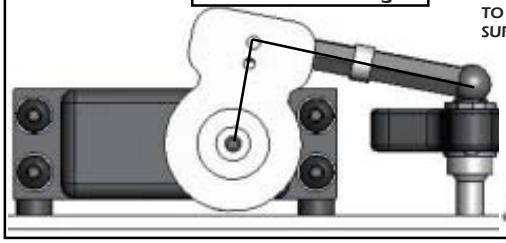
- Mount the "Front Camber Links" from Step #1 to the front of the shock tower using 5257 screw with 2219 Standoff as shown in diagram in the lower left. Snap the ball cup onto the 7209 Ball Stud King Pin.

-Snap RIGHT and LEFT Steering Links to the ball studs on the spindle and the bottom of the bell crank.

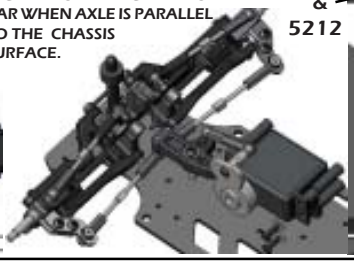
-Attach the 2218 Stand Off to the 5242 Servo Saver using 5253 Screw in the upper hole. Thread the 8122 Ball Stud to the 2218 as shown. Mount the servo to the chassis using (2) 5263 screws.

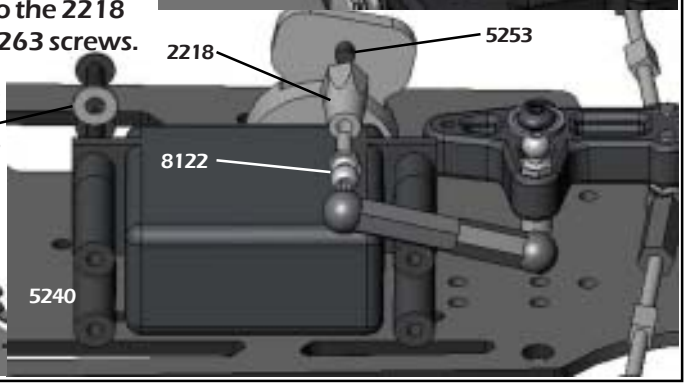


90° Degree When Bell Crank Is Straight.



*CASTOR BLOCKS SHOULD INCLINE TOWARD CENTER OF CAR WHEN AXLE IS PARALLEL TO THE CHASSIS SURFACE.





Direct Drive Diff

-Parts for Step#1

4125 Qty 1
Right Outdrive

8035 Qty 2
Diff Ring

4360 Qty 2
Thrust Washer

4361 Qty 1
Diff Bolt Cover

1:1

4359 Qty 6
Thrust Balls

4129 Qty 1
Diff Bolt

1:1

1:1

4133 Qty 2
3/8 x 1/4 Bearing

-Parts for Step#2

4126 Qty 1
Left Outdrive

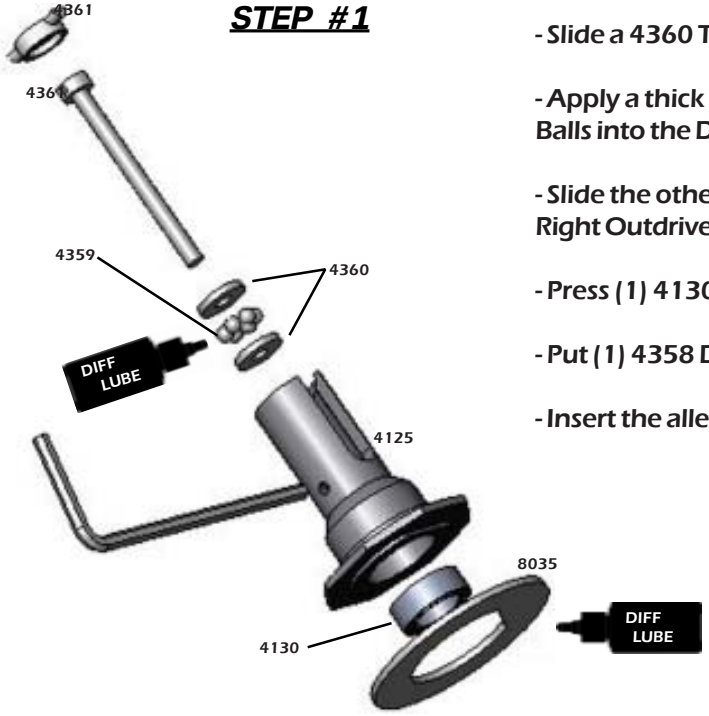
4362 Qty 1
Diff Spring

4887 Qty 1
Diff Gear

4132 Qty 12
Ceramic Diff Balls

4361 Qty 1
Diff T- Nut

STEP #1



- Slide a 4360 Thrust Washer onto the Diff Bolt.

- Apply a thick layer of Diff Lube to the Thrust Washer, press (6) 4359 Thrust Balls into the Diff Lube.

- Slide the other Thrust Washer on the Diff Bolt and insert it into the 4125 Right Outdrive.

- Press (1) 4130 Bearing into the Outdrive.

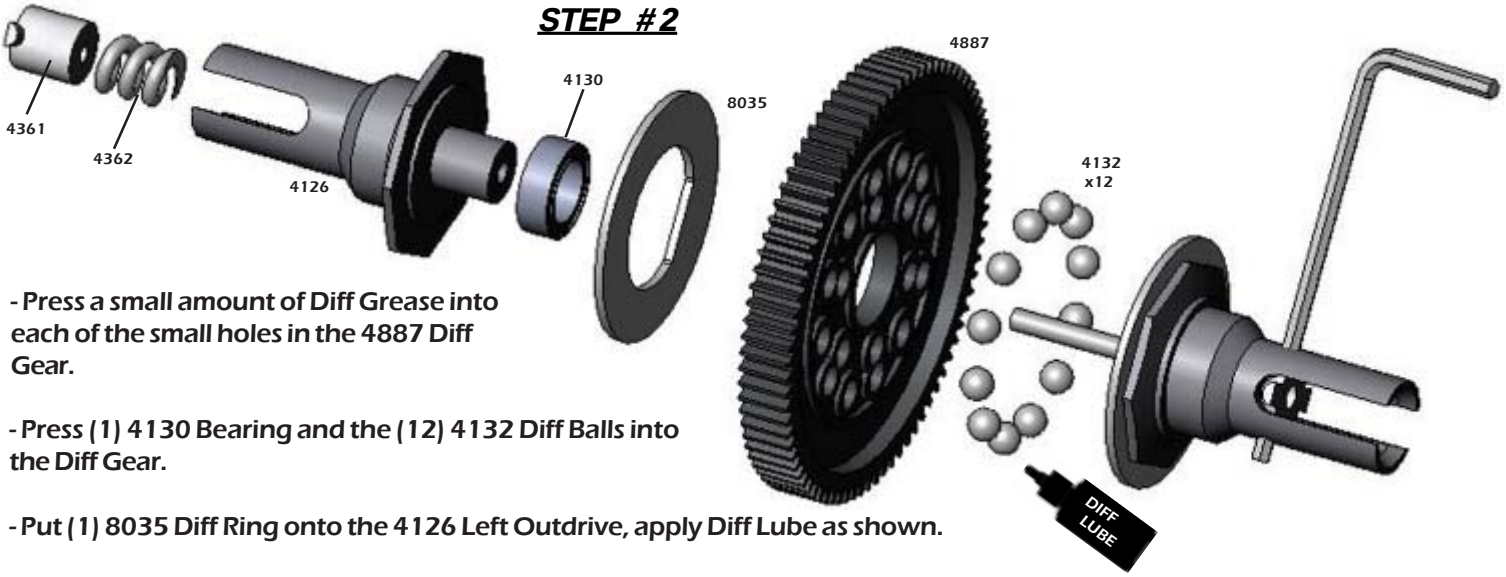
- Put (1) 4358 Diff Ring on the Outdrive, apply Diff Lube as shown.

- Insert the allen key as shown to temporarily retain the diff screw.

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 4360 Thrust Washers. The textured surface results in a smoother and longer lasting diff.

STEP #2



- Press a small amount of Diff Grease into each of the small holes in the 4887 Diff Gear.

- Press (1) 4130 Bearing and the (12) 4132 Diff Balls into the Diff Gear.

- Put (1) 8035 Diff Ring onto the 4126 Left Outdrive, apply Diff Lube 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.

- Thread the Diff Bolt outdrive with the allen key into the assembled outdrive with the T-nut until you feel the Diff Spring begin to compress. DO NOT OVERTIGHTEN!!!

Transmission

-Parts for DD Unit


4121 Qty 1
Left Bulkhead


4122 Qty 1
Bearing Carrier L


4123 Qty 1
Right Bulkhead


4124 Qty 1
Bearing Carrier R


4130 Qty 1
Body Post Mount


3229 Qty 1
Body Post


1279 Qty 1
Carbon Bulkhead


3229 Qty 2
Post Collar


4131 Qty 2
Main Bearing


3228 Qty 1
Set Screw

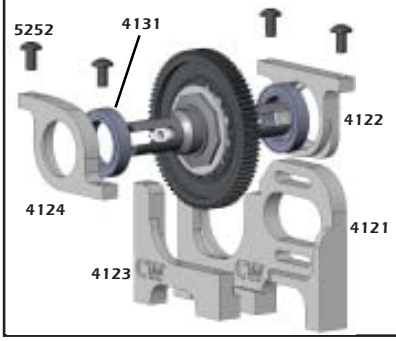
5252 Qty 15
4-40 x 1/4 BH

5283 Qty 1
8-32 x 1/2 FH Screw

- Press the 4131 Bearings into the 4122 & 4124 Carriers , Align the Carriers with the Diff Assembly as shown below into the Bulkheads and fasten using 5252 Screws in the mounting holes.

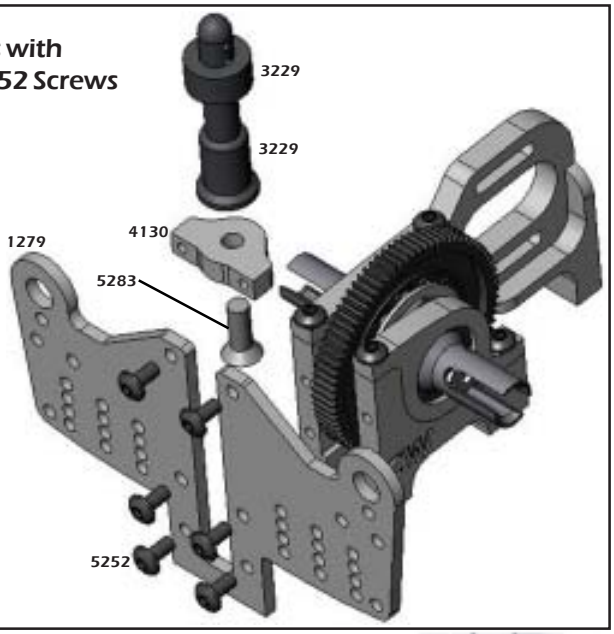
- Fasten the 1279 Carbon Bulkhead to the DD Unit using (4) 5252 Screws.

- Attach the 3229 Body Post to the 4130 Mount using the 5283 Screw.



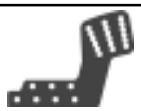
- Fasten the 4130 Mount to the 1279 Bulkhead using (2) 5252 Screws.

NOTE: Diff Assembly should have the outdrive with the "T" Nut going thru the 4122 Bearing Carrier (LEFT side of car).



Rear Suspension

-Parts for Step#1


1284 Qty 2
Med Shock Ear

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


5217 Qty 4
4-40 Lock Nut

-Parts for Step#2


3240 Qty 2
Rear Susp Arm


2222 Qty 2
1-3 Deg Toe Block


4247 Qty 2
Rear Inner Susp Pin

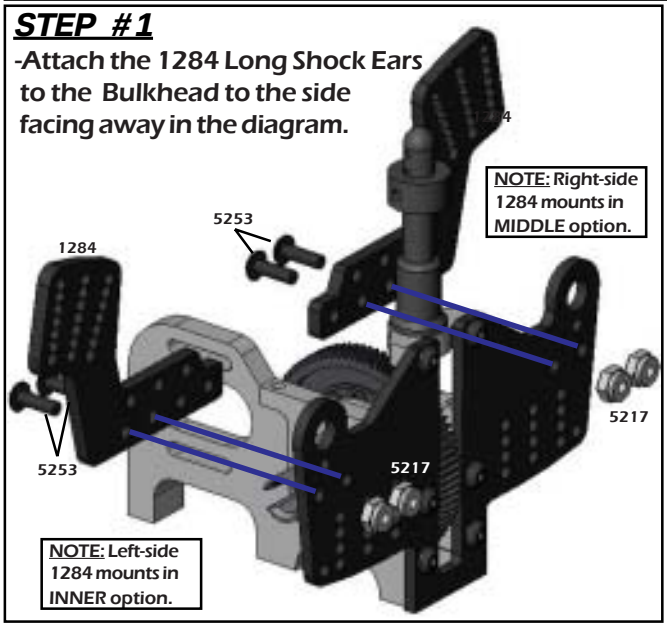

5264 Qty 6
4-40 x 1/2 FH Screw

5262 Qty 5
4-40 x 1/4 FH Screw

5292 Qty 4
M2.5 x 4 BH Screw

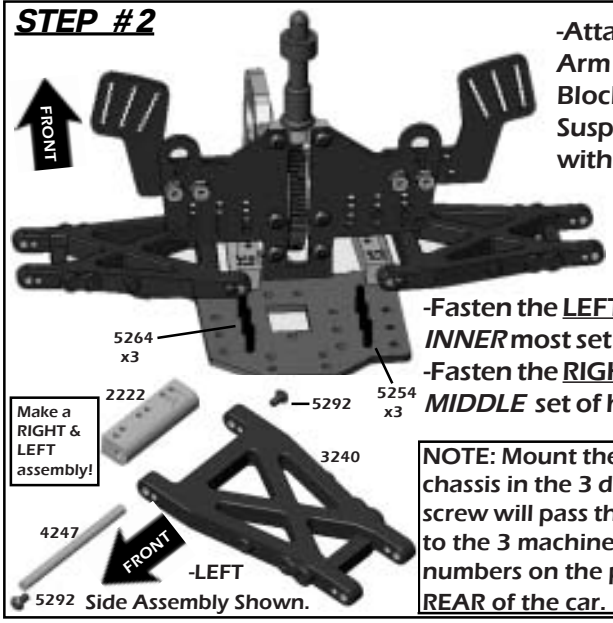
STEP #1

-Attach the 1284 Long Shock Ears to the Bulkhead to the side facing away in the diagram.



STEP #2

-Attach the 3254 Susp Arm to the 2222 Toe Block using the 4247 Susp Pin. Retain the pin with 5292 Screws.



-Fasten the LEFT assembly to the *INNER* most set of holes.
-Fasten the RIGHT assembly to the *MIDDLE* set of holes.

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.

CVD & Drive Assembly

-Parts for Step#1

3241 Qty 2
Bearing Carrier

1:1

1226 Qty 4
Ball Bearing

4245 Qty 2
Rear Outer Susp Pin

1:1

1255 Qty 10
Spacer

1:1

5292 Qty 4
M2.5 x 4 BH Screw

-Parts for STEP#2

4382 Qty 2
Outdrive Blade

7211 Qty 2
CVD Coupling

7215 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

5225 Qty 2
2" TI Turnbuckle

1:1

5235 Qty 4
Ball Cup

1:1

1:1

7047 Qty 8
Spacer

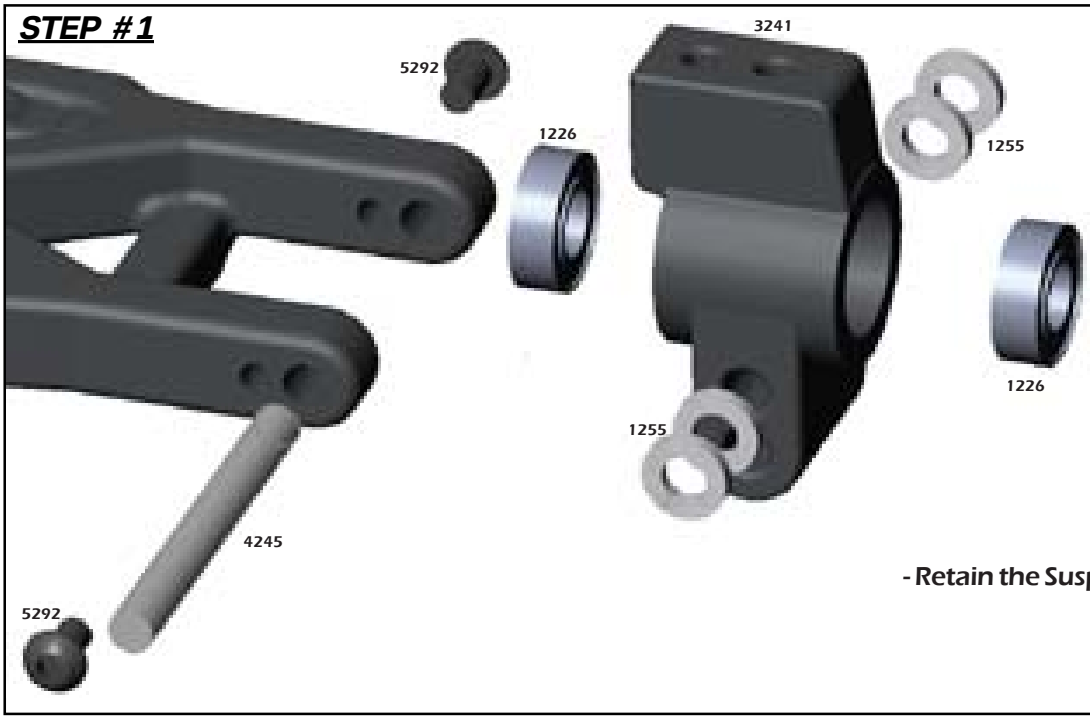
8122 Qty 4
Ball Stud

3234 Qty 2
Spacer

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 4245 Susp Pin with (2) 1255 Spacers on each side of the Bearing Carrier.

NOTE: The Suspension Pin will pass thru the UPPER hole in the Bearing Carrier.

- Retain the Susp Pin using 5292 Screws.

STEP #2

- Press one end of the dogbone pin into the hole of the 4382 Blade. Stretch the other end of the Blade over top of the other side of the pin.

- Apply grease to the areas shown and 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.

CUSTOM-TIP!!!

- Using a file or a Dremal, make a flat on the 7211 as shown below. This will allow the set screw to "key" into the pin and will greatly reduce the event of having the pin back out over long term use.

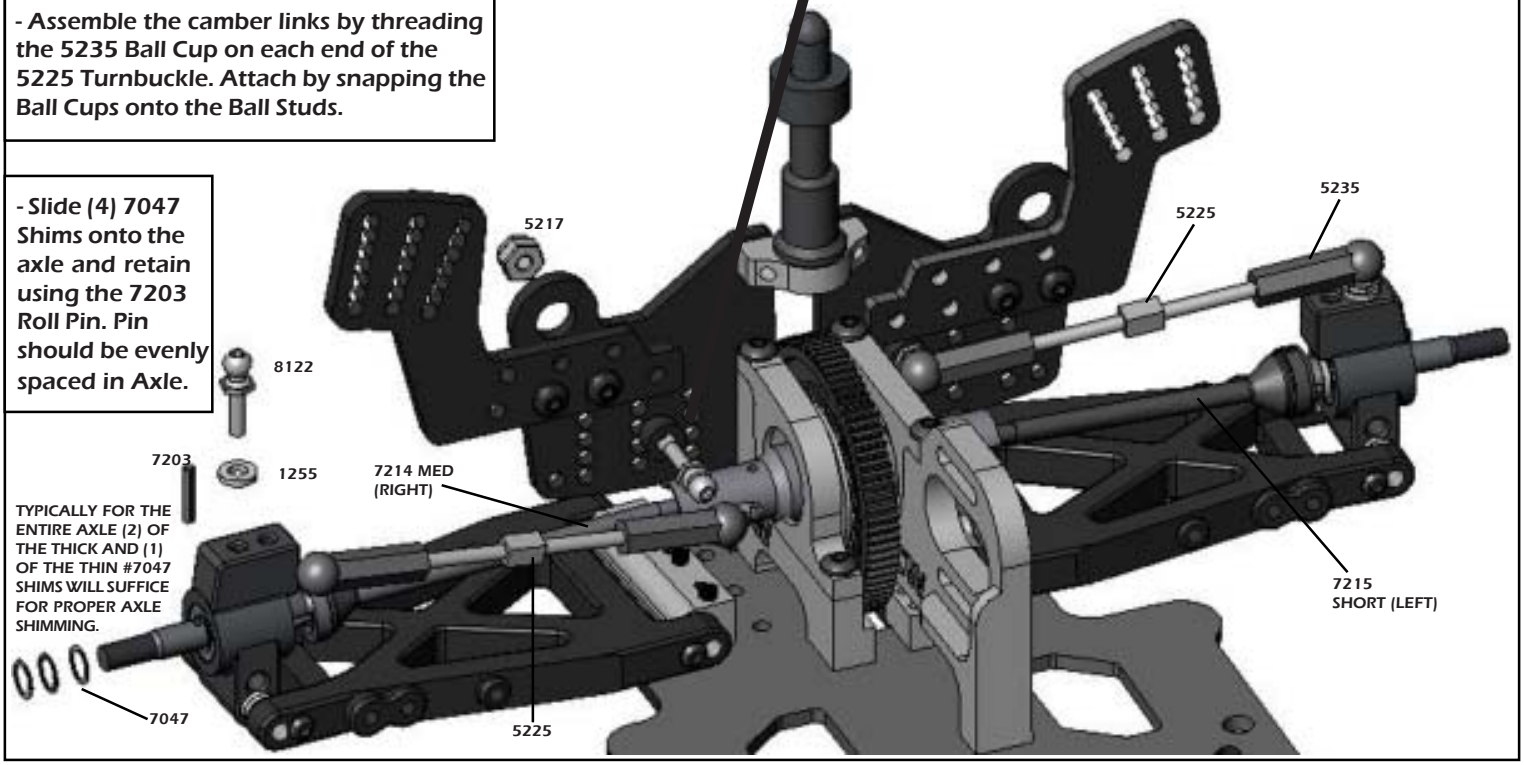
STEP #3

- Attach the 8122 Ball Stud to the Rear Bulkhead as shown using a 3234 Spacer and 5217 Lock Nut on the backside of the bulkhead.

- Slide a 1255 Spacer onto the 8122 Ball Stud and thread into the Bearing Carrier in the outer most hole.

- Assemble the camber links by threading the 5235 Ball Cup on each end of the 5225 Turnbuckle. Attach by snapping the Ball Cups onto the Ball Studs.

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

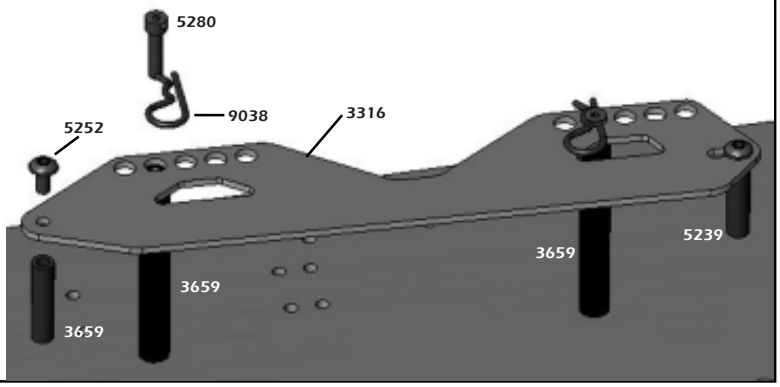


Battery Mount

-Parts for Battery Mount

3316 Batt Bracket w/Foam	Qty 1	3659 Batt Post	Qty 3	5280 Hole Head Screw SHORT	Qty 2	5239 Post	Qty 1	9038 Retaining Clip	Qty 2	5252 4-40 x 1/4 BH Screw	Qty 2	5253 4-40 x 3/8 BH Screw	Qty 2	5263 4-40 x 3/8 FH Screw	Qty 2

- Attach 3659 Battery Posts to the chassis using either 5253 or 5263 Screws.
- Thread 5280 Hole Head Screws into the top of the Battery Posts mounted to the chassis.
- Mount the 5239 Post on the slotted end of the 3316 Battery Bracket using 5252 Screws.
(Slotted hole is to adjust for varying battery lengths)
- Attach the remaining 3659 to the front of bracket.
- Stick the supplied foam tape to the under-side of the battery bracket.
- Align the Battery Bracket over the Hole Head Screw for the desired location and secure using 9038 Clip.



Shock Assembly

-Parts for Step#1

1425 Med / 1426 Short Qty 2ea
2 Med / 2 Short Shock Body

1429 Med / 1430 Short Qty2ea
2 Med / 2 Short Shock Shaft

1434 Qty4
Shaft Guide

1250 Qty 8
O- Ring

1435 Qty 6
Reatining Clip

1436 Qty4
Piston

5230 Qty 12
E-Clip

-Parts for Step#2

1438 Qty4
1 Piece Cap

1437 Qty 4
Bladder

1433 Qty4
Spring Collar

5235 Qty 2
Ball Cup

5228 Qty2
Short Ball End

5228 Qty2
Pivot Ball

-Parts for Step#3

1492 Qty2
12# Spring

1488 Qty2
8# Spring

1407 Qty4
Spring Bucket

1408 Qty4
Mount Ball

5212 Qty 2
Washer

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

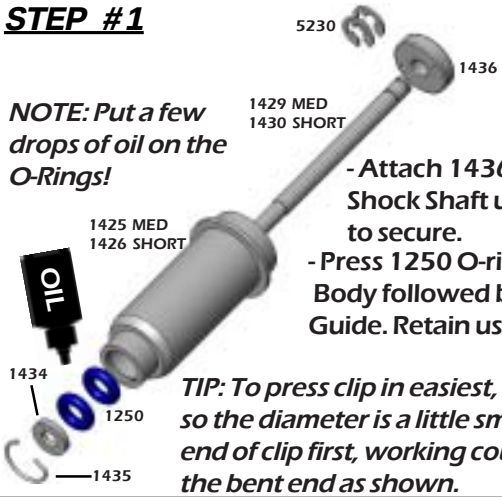
5274 Qty 2
4-40 x 1/2 SH Screw

8122 Qty 2
Ball Stud

2214 Qty 4
.250" Hex Spacer

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!

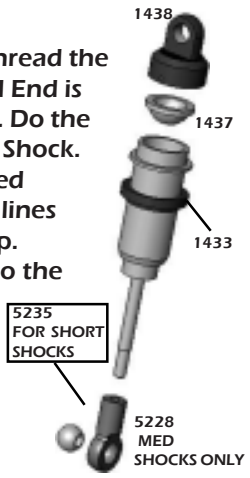
- Attach 1436 Shock Piston to Shock Shaft using 5230 E-Clips to secure.
- Press 1250 O-rings into the Shock Body followed by 1434 Shaft Guide. Retain using 1435 Clip.

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

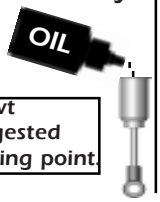
- Snap Pivot Ball into the 5228 Ball End. Thread the Ball End onto the Med Shock until the Ball End is flush with the end of threads on the shaft. Do the same with the 5235 Ball Cup to the Short Shock.
- Press 1432 Eyelet Cap into 1431 Threaded Shock Cap so that guide in the Eyelet Cap lines up in the 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.
- Thread 1433 Spring Collar onto the Shock Body.

-NOTE: See shock filling tips for more instructions.



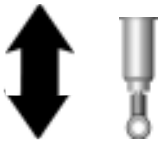
SHOCK FILLING INSTRUCTIONS:

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



40 wt suggested starting point.

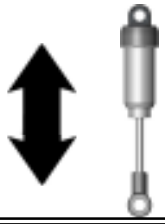
2) Slowly move the shaft up and down several times to allow air bubbles to escape to the top.



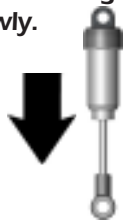
3) Refill with oil to the top of the shock body.

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.

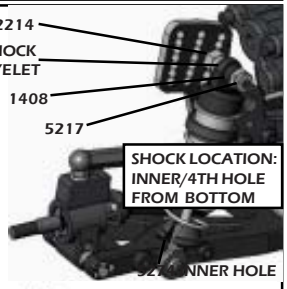
8) If the shockrebounds too fast , or you cannot push the shaft in until the eyelet hits the body, there is too much oil. Loosen the cap about 2 full turns and pump out a small amount of oil by pushing the shaft in. Retighten the cap and try steps 5-6 again.

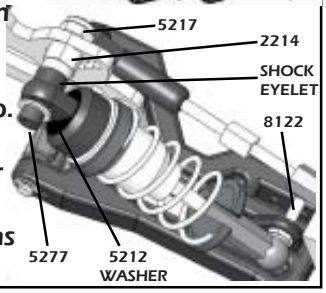
STEP #3

- Slide 1488 Chrome Springs on the Med Shocks, the 1492 Orange Springs on the Short Shocks. Secure using the 1407 Spring Bucket.

REAR SHOCK: Insert 5277 Screw thru hole shown in rear tower. Thread 2214 onto the screw. Place shock over screw and retain with 1408 and Nut. Fasten the shock to the arm using 5274 Screw.

FRONT SHOCK: Insert 5277 Screw thru 5212 Washer and then thru the Shock Cap. Slide the Shock Eyelet over the screw and tighten the 2214 to it. Attach to the tower by holding the 2214 and fastening with the Locknut. Thread the 8122 to the arm as shown and snap the shock ball cup to it.





Cage Assembly

-Parts for Step #1 & Step #2

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

-Parts for Step#3 & Step#4

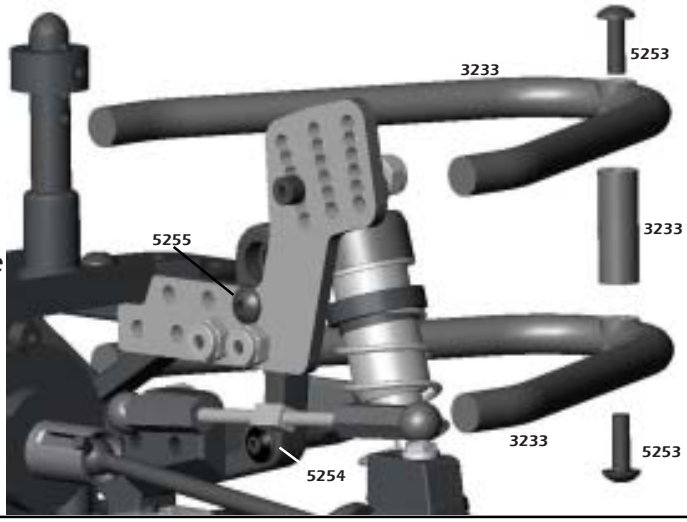
3235 Qty 2	3233 Qty 1	3232 Qty 1	3232 Qty 1	3235 Qty 2	3421 Qty 2
Main Cage Half	Front Bumper	Nerf Bar L & R	Nerf Support L & R	Upper Cage Brace	Wing Slide Bushing

5278 Qty 2	5279 Qty 2	5280 Qty 2	5274 Qty 4	5264 Qty 3
4-40 x 1" SH Screw	Hole Head Screw LONG	Hole Head Screw SHORT	4-40 x 1/2 SH Screw	4-40 x 1/2 FH Screw

STEP #1

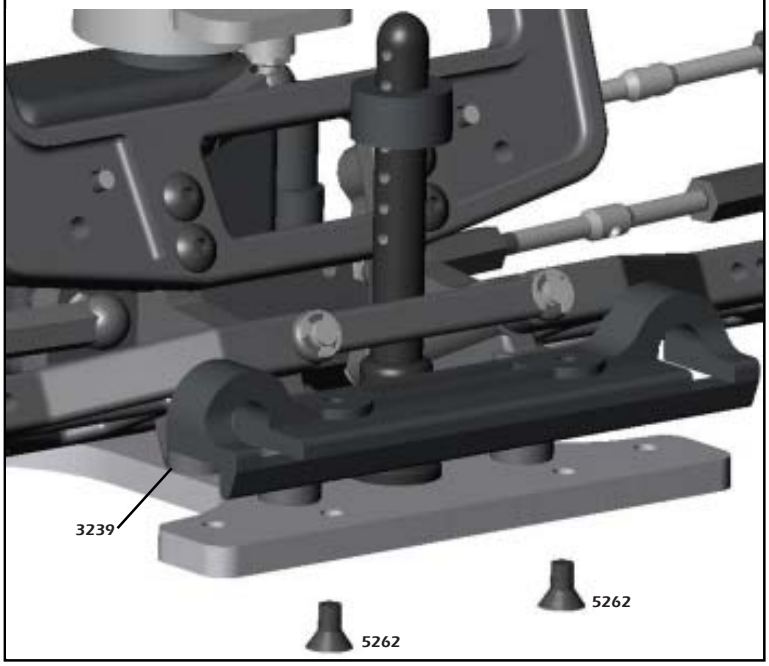
- Mount the (2) 3233 Rear Bumpers together using 5253 Screws and the 3233 Bumper Connector.

-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

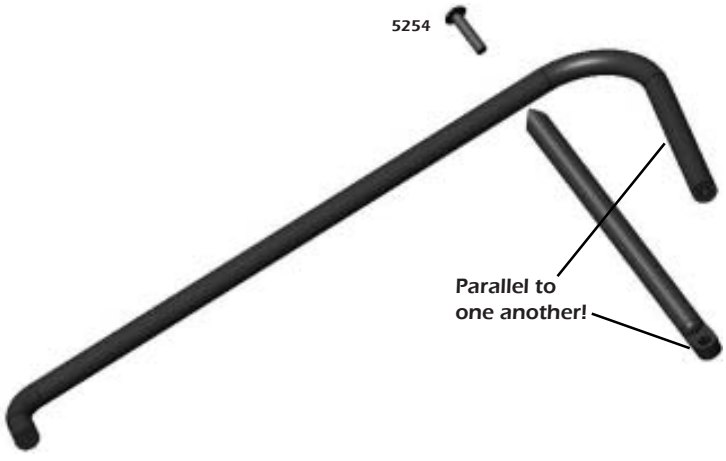
- Mount the 3239 Front Cage mount to the chassis using 5262 Screws.



STEP #3

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

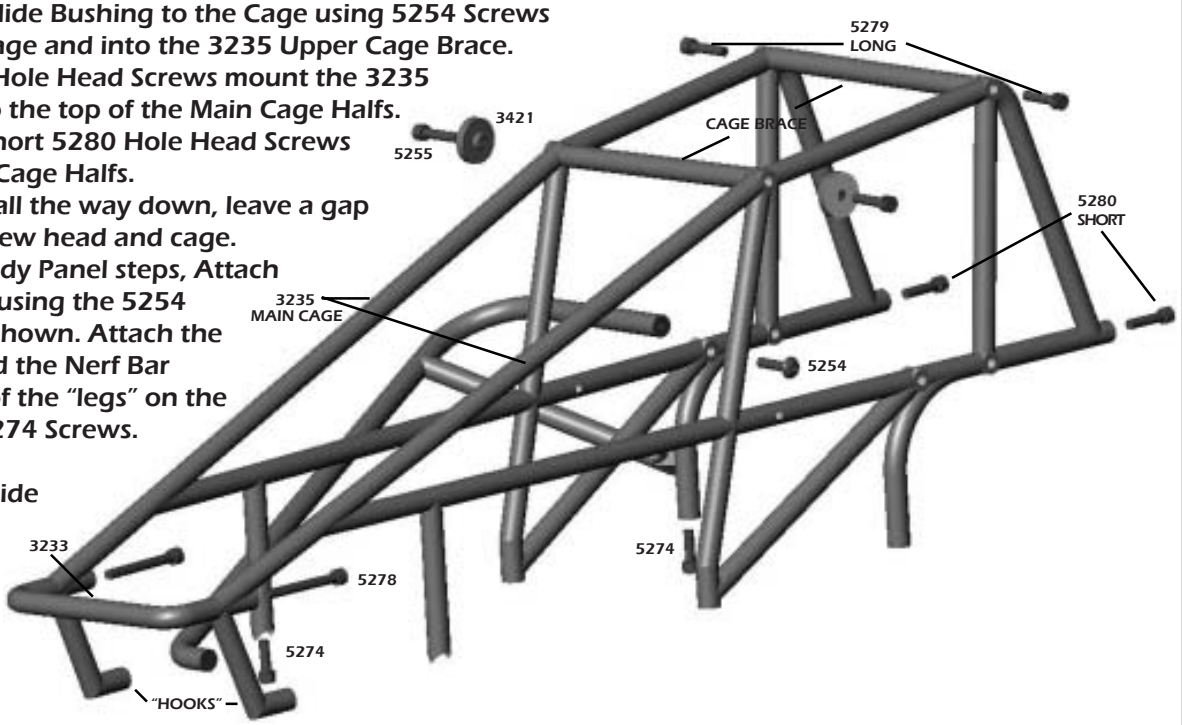
NOTE: Right and Left Nerf Bars and Supports come in the cage kit. Shown is the RIGHT assembled part. When using the correct Support with the Nerf Bar, the bottom foot of the Support and the short leg of the Nerf Bar will be parallel.



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.

NOTE: The 3421 Wing Slide Bushing is found in the "WING" bag.



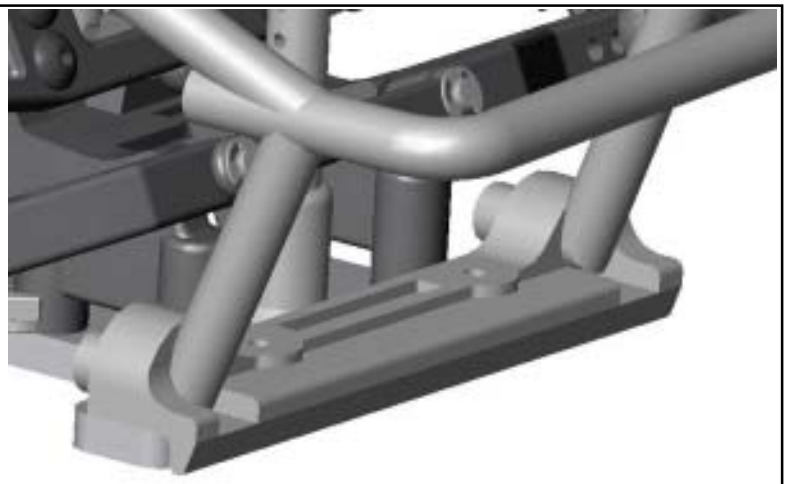
CAGE INSTALLATION AND REMOVAL:

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

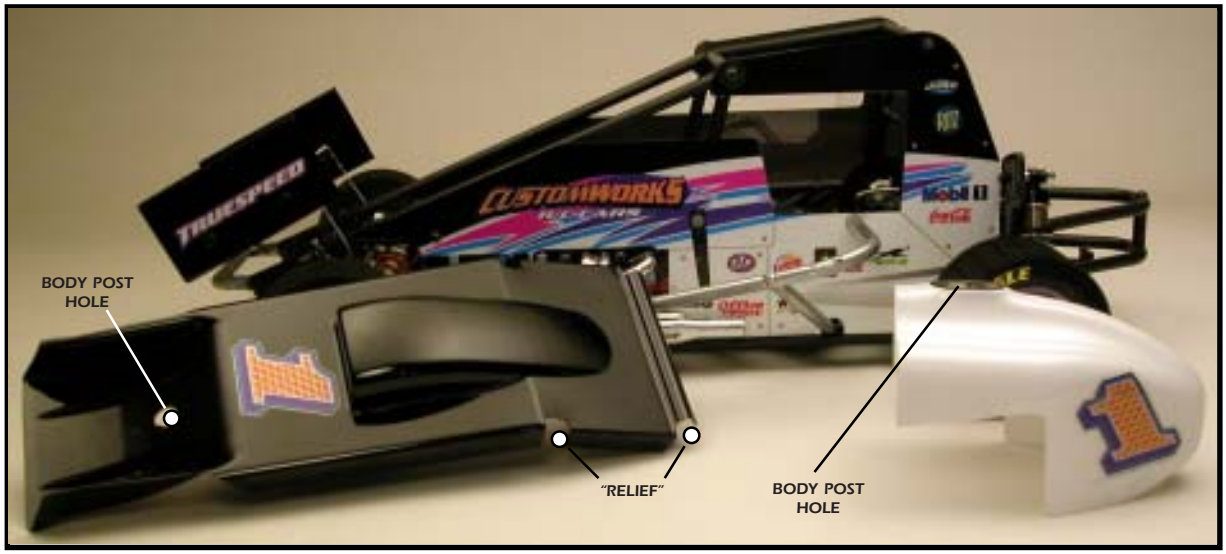
- Guide the "HOOKS" into the Front Cage Mount while guiding the Short 5280 Hole Head Screws into the Rear Bulkhead.

- 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 Prep & Mounting



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

- Follow the molded lines on the Headers, 9086 Salem Hood and 9026 Tail Tank to cut the parts out. The locations of the body lines are very accurate and will provide for the best result.

-Mounting the HEADERS: Mount the headers to the side panel using the screws and nuts provided as shown.

-Mounting the HOOD: Ream the hole marked in the hood for the body post to mount thru.Tuck the front "scoop" portion of the hood down between the front edges of the cage and onto the body post. Then align one side of the hood's edges between the cage and the body side panel. The down tubes of the cage will align into the "Relief" made in each side of the hood as noted. It will be necessary and ok to slightly bend the portion of the hood behind the hood scoop to tuck this in between the cage rails. Retain the hood at the front by using a body clip thru the body post.

-Mounting the TAIL TANK: Ream the hole marked in the fuel cap area as shown in the picture. Adjust the height of the body post collar so that the bottom of the tail tank is parallel to the ground to attain the proper look. Retain using a body clip.

Sprint Car Wing

- Assemble the #9052 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 GBX3! 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

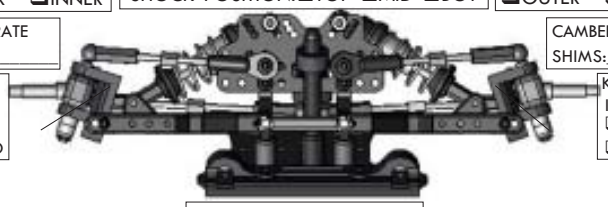
ENFORCER 4BX3

DRIVER:_____
DATE:_____
EVENT_____
CLASS:_____
TRACK:_____LENGTH:_____

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

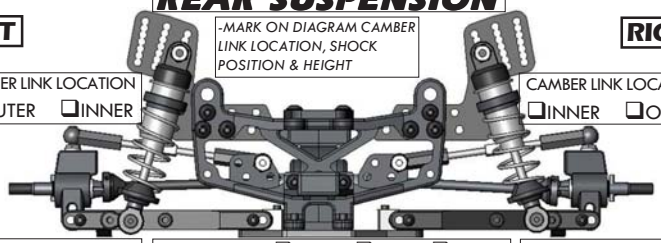
FRONT SUSPENSION

RIGHT		LEFT
CAMBER:_____	TOE IN/OUT AMOUNT:_____ RF ❑LEAD ❑TRAIL AMOUNT:_____	CAMBER:_____
CAMBER LINK LOCATION ❑OUTER ❑INNER	SHOCK POSITION:❑TOP ❑MID ❑BOT	CAMBER LINK LOCATION ❑OUTER ❑INNER
CAMBER RATE SHIMS:_____		CAMBER RATE SHIMS:_____
KINGPIN INCLINE ❑0° ❑ANGLED		KINGPIN INCLINE ❑0° ❑ANGLED
ACKERMANN: ❑ ON SPINDLE ❑SHORT ❑MIDDLE ❑LONG	SUSPENSION POSITION RF: ❑OUTER ❑MIDDLE ❑INNER LF: ❑OUTER ❑MIDDLE ❑INNER	ACKERMANN: ❑ ON SPINDLE ❑SHORT ❑MIDDLE ❑LONG
FRONT AXLE: ❑STOCK ❑EXTENDED	CASTOR: ❑0° ❑+5° ❑-5° ❑+10° ❑-10°	KICK-UP: ❑25° ❑20° HIGH ❑20° LO ❑15° HIGH ❑15° LO
	CASTOR: ❑0° ❑+5° ❑-5° ❑+10° ❑-10°	FRONT AXLE: ❑STOCK ❑EXTENDED
AXLE SHIMS: _____	SWAY BAR:❑NONE ❑.063" ❑.078"	AXLE SHIMS: _____



REAR SUSPENSION

LEFT		RIGHT
CAMBER LINK LOCATION ❑OUTER ❑INNER	-MARK ON DIAGRAM CAMBER LINK LOCATION, SHOCK POSITION & HEIGHT	CAMBER LINK LOCATION ❑INNER ❑OUTER
HUB SPACING: *SHADE IN 4 SPACERS* F❑❑❑❑❑❑❑R	SWAY BAR:❑NONE ❑.063" ❑.078" REAR WIDTH (INNER/OUTER) LR:_____RR:_____ TOE-BLOCK SHIMS: LR:_____RR:_____ ANTI-SQUAT SHIMS: LR:_____RR:_____	HUB SPACING: *SHADE IN 4 SPACERS* F❑❑❑❑❑❑❑R
CAMBER:_____ TOE-IN: _____		CAMBER:_____ TOE-IN: _____
WHEEL SPACERS: _____		WHEEL SPACERS: _____



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

TIRES & TRACTION

TIRE TYPE: ❑FOAM ❑STREET RUBBER ❑LOOSE DIRT

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

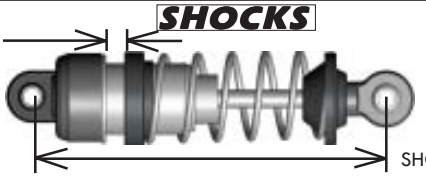
	COMPOUND	DIAMETER	INSERT
RF:	_____	_____	_____
LF:	_____	_____	_____
RR:	_____	_____	_____
LR:	_____	_____	_____

LF RF

LR RR

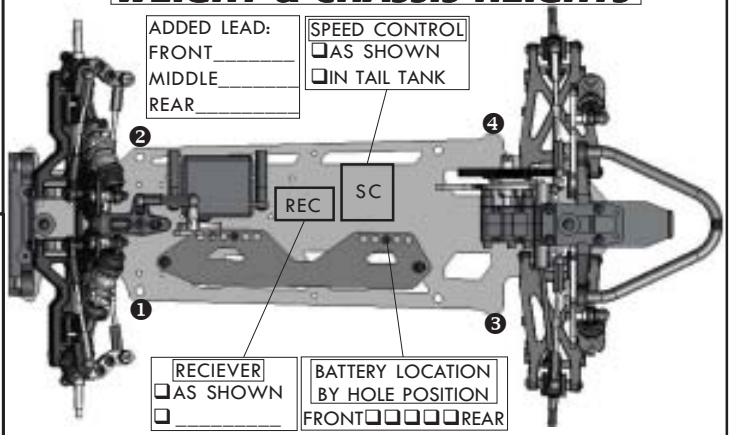
TRACTION ADDITIVE:_____
_____
_____
_____

SHOCKS



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

WEIGHT & CHASSIS HEIGHTS



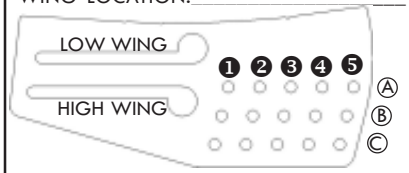
CORNER WEIGHTS:
LF:_____ RF:_____
LR:_____ RR:_____

OVERALL WEIGHT: _____

CHASSIS HEIGHTS BY LOCATION:
❶_____ ❷_____
❸_____ ❹_____
MEASURED FROM:
❑TOP OF CHASSIS
❑BOTTOM OF CHASSIS

WING

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



HOOD TYPE:_____

MISC...

MOTOR: _____
PINION:_____ SPUR:_____
SPEED CONTROL:_____
PUNCH SETTING:_____
INTIAL BRAKE:_____
AUTO BRAKE:_____
_____
_____
_____
_____