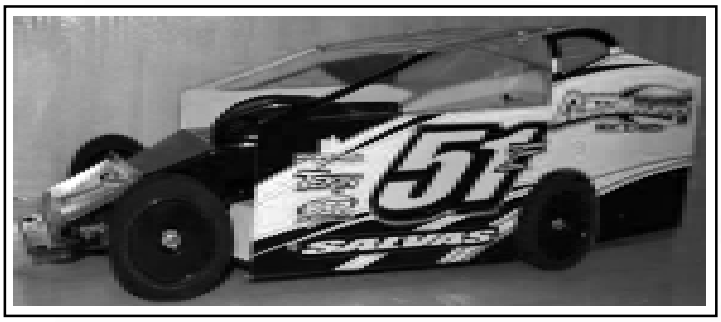
INTIMIDATOR SE3 PRO-COMP

INSTRUCTIONS



DIRECTDRIVE

#0914 INTIMIDATOR SE3 DD RACING KIT

Manufactured By:

www.customworksrc.com
CUSTOMWORKS R/C CARS

760-B Crosspoint Drive
Denver, NC 28037
www.customworksrc.com

www.customworksrc.com

CUSTOMWORKS R/C CARS

REQUIRED READING...UNDERSTAND THIS MANUAL!

Thank You and Congratulations on purchasing the **INTIMIDATOR SE3 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 Intimidator SE3 has been designed to be competitive on high bite clay 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 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 Front Susp


1293 Qty 1
INT SE Chassis


1287 Qty1
INT Front Clip


3229 Qty2
Short Body Post


3229 Qty2
Post Collar


3229 Qty2
Set Screw

5263 Qty 6
4-40 x 3/8 FH Screw

3229 Qty 4
8-32 x 1/2 FH Screw


5217 Qty 2
4-40 Lock Nut


5207 Qty 2
8-32 Lock Nut


3015 Qty1
INT Front Bumper


3332 Qty 1
.93"FrontBrace


1296 Qty 1
Front Tower


3251 Qty 2
Front Susp Arms


2320 Qty 2
20 Deg F Susp Mt

5284 Qty4
Set Screw

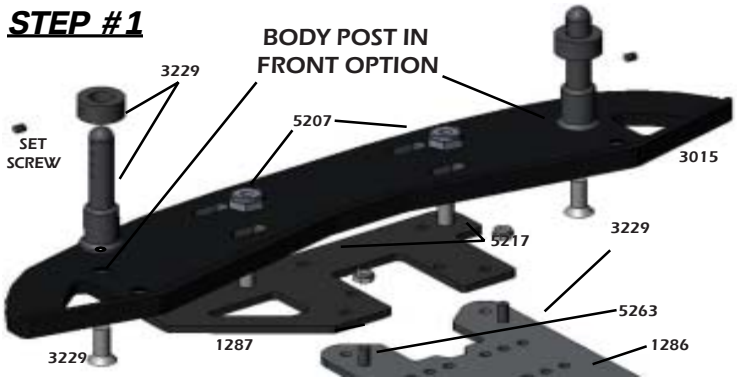

4240 Qty 2
Inner Susp Pin

5253 Qty 4
3/8 BH Screw


5212 Qty 4
Washer

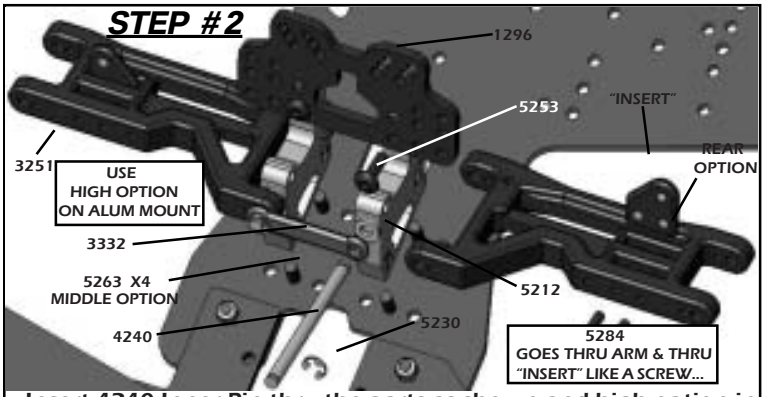
5230 Qty 24
E-Clip

STEP #1



- Attach the 1287 Front Clip to the 1286 Chassis using 5263 Screws and 5217 Locknut.
- Mount the 3012 Kydex Bumper to the Front Clip using 3229 Screws and 5207 Locknuts.
- Fasten the 3229 Body Posts to the Bumper as shown.

STEP #2



- Insert 4240 Inner Pin thru the parts as shown and high option in the 2320 Susp Mount. Retain 4240 pin using 5230 E-Clips.
- Attach the 1296 Front Tower using (2) 5253 Screws.
- Fasten the suspension assembly to the Chassis using 5263 Screws in the middle width location.

Steering Components

-Parts for Step#1


5223 Qty 2
1.75" Ti Turnbuckle


5225 Qty 4
2" Ti Turnbuckle


5235 Qty 8
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

5230 Qty 24
E-Clip

-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

3647 Qty 1
Steering Pivot

1233 Qty 2
Flanged Bearing

5240 Qty2
Servo Mount

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

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

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

STEP #1 - Make 2 of each linkages.

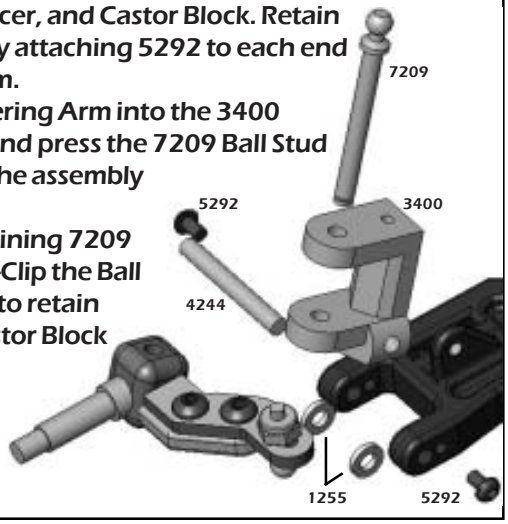
- NOTE: Turnbuckle has RIGHT and LEFT threads!

- Press the 5213 Pivot Ball into the Ball End.
- Thread the 5235 Ball Cups and 5213 Ball End onto the ends of the 5223 Turnbuckle.

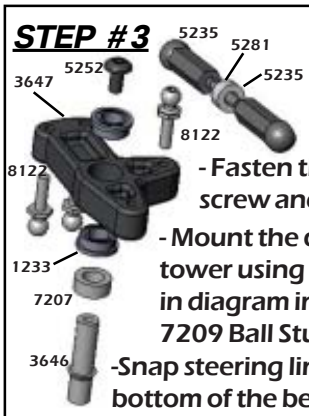
- Press the 5214 Pivot Ball into the Ball End.
- Thread the 5235 Ball Cup and 5124 Ball End onto the ends of the 5223 Turnbuckle.

STEP #2

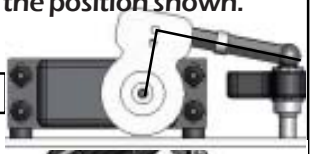
- Insert the 7224 Axle into the 3213 Steering Arm so the holes are in-line. This can be tricky with the angled hole. Once aligned, you may pass a .125 drill bit thru SLOWLY to assure the 7209 will pass thru.
- Mount the 1292 Steering Arm Extender to the Steering Arm using 5253 Screws.
-Attach the 8122 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.

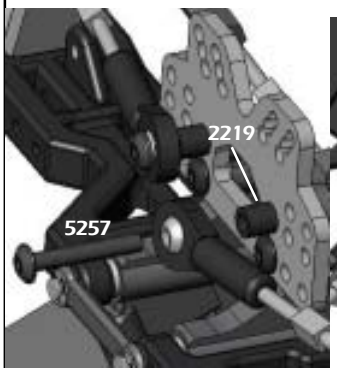


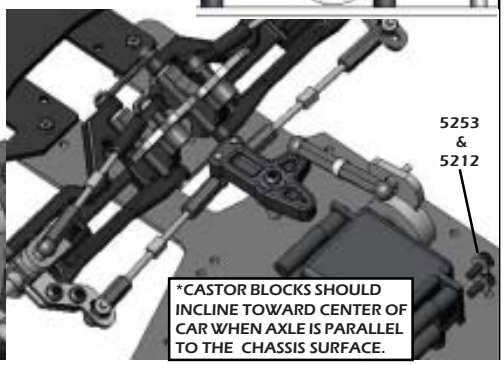
STEP #3



- 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 Loctite on the screw threads.
- Mount the camber link 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 steering links to the ball studs on the spindle and the bottom of the bell crank.
-Attach the 5240 Servo Mounts to your servo with 5253 Screws and 5212 Washers so that it will mount in the position shown.
-Mount the servo to the chassis using (2) 5263 screws.







Rear Suspension

-Parts for Step#1


1289 Qty 1
INT SE Rear Tower


2218 Qty 2
Camber Link Stand-Off


2224 Qty 2
Top Plate Block


1:1
5252 Qty 6
4-40 x 1/4 BH Screw

-Parts for Step#2


3240 Qty 2
Rear Susp Arm


2222 Qty 2
1-3 Toe Block


4247 Qty 2
Rear Inner Susp Pin

1:1

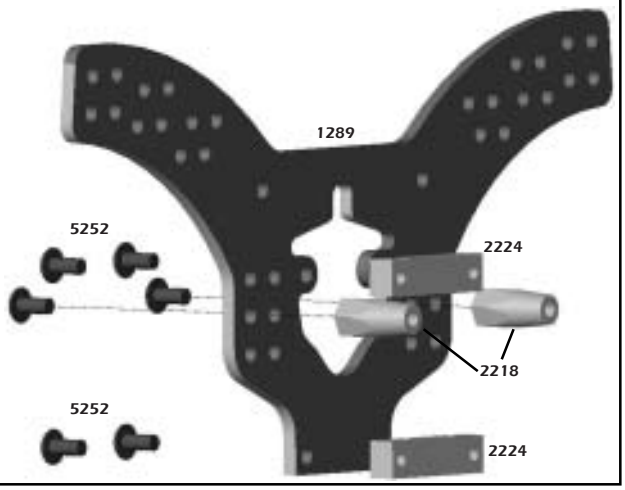

5264 Qty 6
4-40 x 1/2 FH Screw


1:1
5263 Qty 2
4-40 x 3/8 FH Screw


1:1
5292 Qty 4
M2.5 x 4 BH Screw

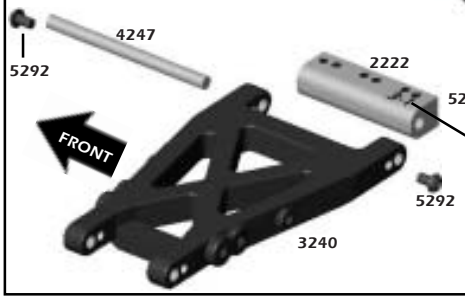
STEP #1

-Attach the 2224 Alum Blocks and 2218 Camber Link Stand-Offs to the 1289 Rear Tower.



STEP #2

-Attach the 3240 Susp Arm to the 2222 Toe Block using the 4247 Susp Pin.Retain the pin with 5292 Screws.
-Mount Susp and Rear Tower assemblies with screws in the locations shown.



"NUMBERS" GO TOWARD REAR OF CAR!!!

NOTE: Back side of Toe Block for proper direction!

-LEFT Side Assembly Shown.

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

7211 Qty 2
CVD Coupling

7215 Qty 2
Short 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

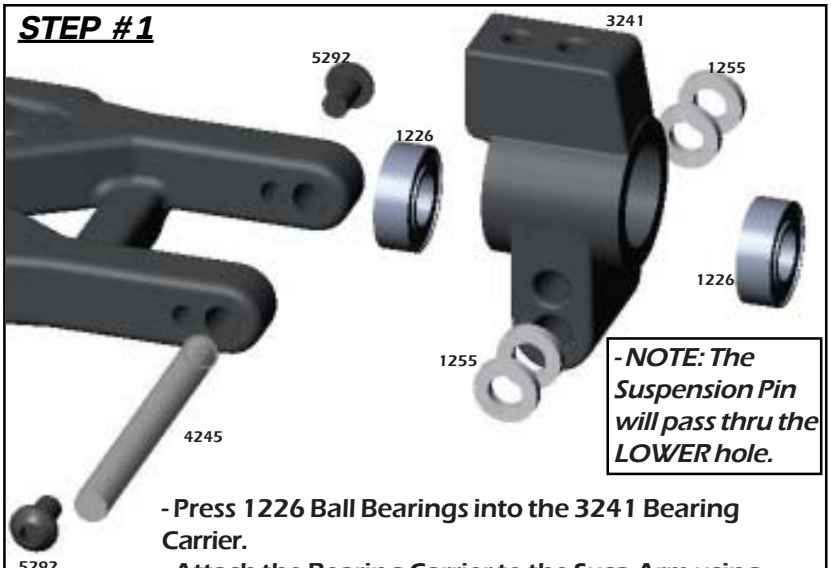
7047 Qty 6
Spacer

8122 Qty 4
Ball Stud

7203 Qty 2
Roll Pin

5217 Qty 2
4-40 Lock Nut

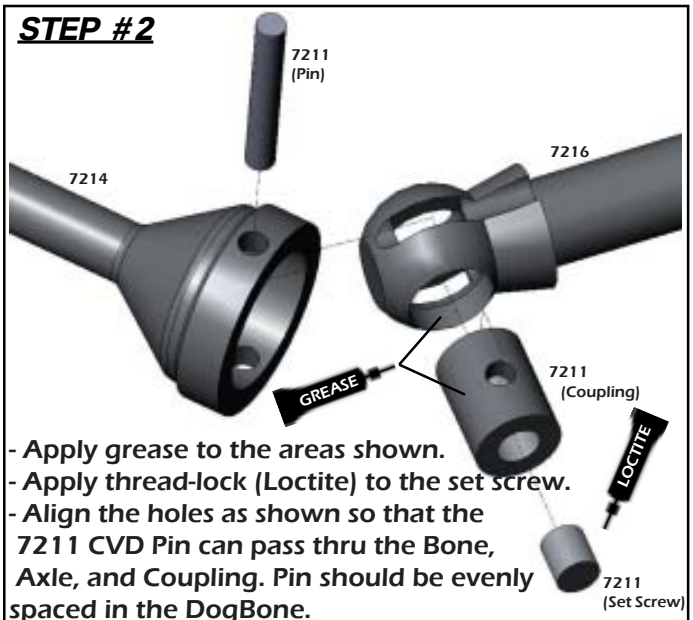
STEP #1



- NOTE: The Suspension Pin will pass thru the LOWER hole.

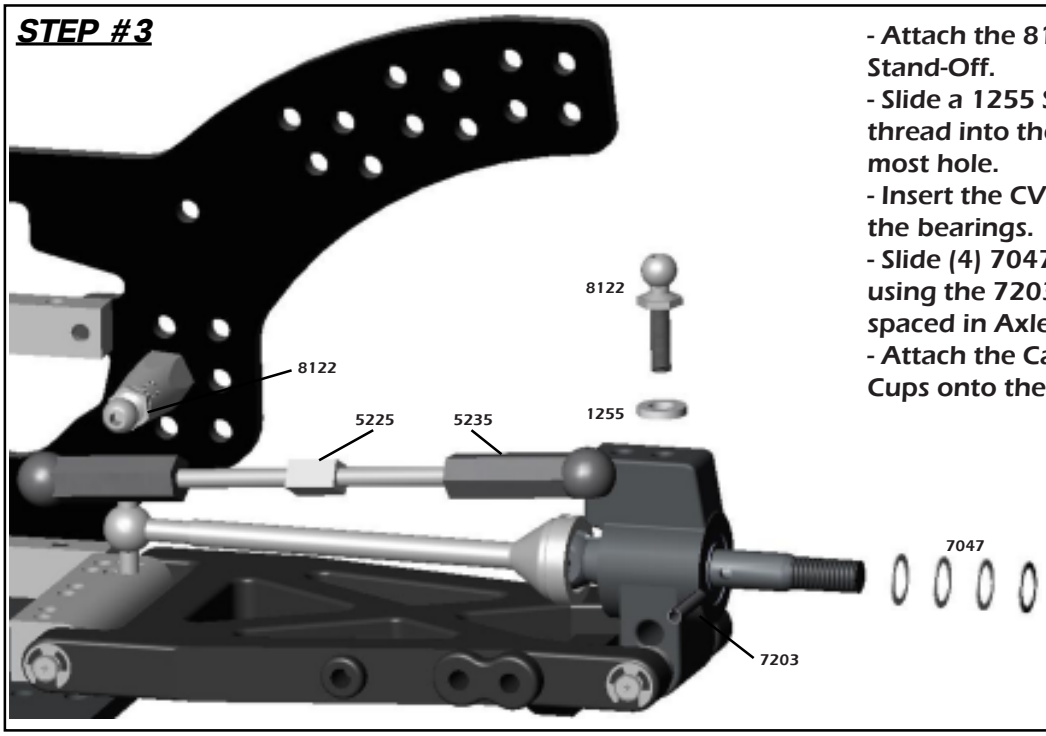
- Press 1226 Ball Bearings into the 3241 Bearing Carrier.
- Attach the Bearing Carrier to the Susp Arm using 4245 Susp Pin with (2) 1255 Spacers on each side of the Bearing Carrier.
- Retain the Susp Pin using 5292 Screws.

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



- Attach the 8122 Ball Stud to the Camber Link Stand-Off.
- Slide a 1255 Spcaer onto the Ball Stud and thread into the 3241 Bearing Carrier in the outer most hole.
- Insert the CVD assembly by sliding the axle thru the bearings.
- Slide (4) 7047 Shims onto the axle and retain using the 7203 Roll Pin. Pin should be evenly spaced in Axle.
- Attach the Camber Link by snapping the Ball Cups onto the Ball Studs.

TYPICALLY FOR THE ENTIRE AXLE (2) OF THE THICK AND (2) OF THE THIN #7047 SHIMS WILL SUFFICE FOR PROPER AXLE SHIMMING.

Diff Assembly

-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

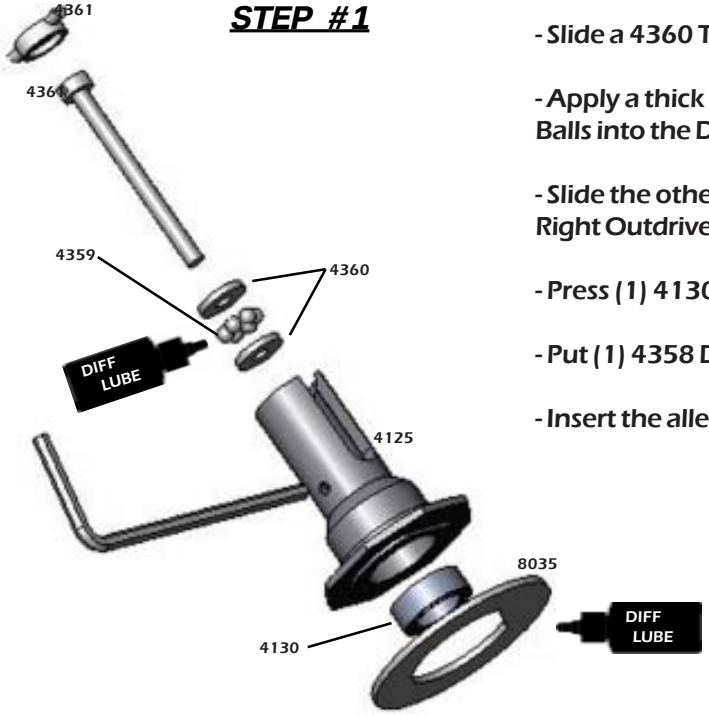
4362 Qty 1
Diff Spring

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 Trans


4121 Qty 1
Left Bulkhead


4122 Qty 1
Bearing Carrier L


4123 Qty 1
Right Bulkhead


4124 Qty 1
Bearing Carrier R


4131 Qty 2
Main Bearing


1290 Qty 1
Trans Brace

5252 Qty 5
4-40 x 1/4 BH

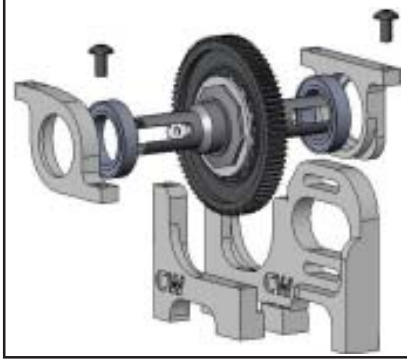
5262 Qty 5
4-40 x 1/4" FH

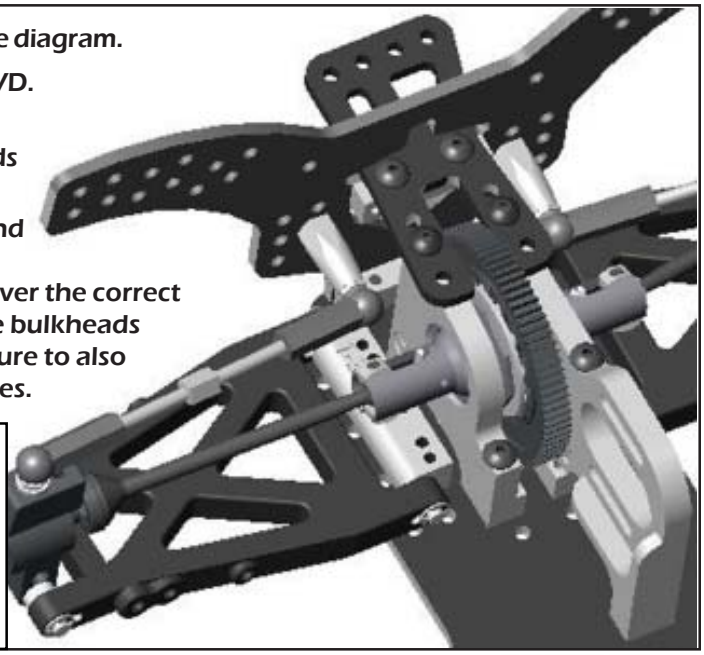
5253 Qty 2
3/8 BH Screw


4382 Qty 2
Outdrive Blade

- Install the new 1290 Trans Brace so that it mounts as shown in the diagram.
- Stretch the 4382 Outdrive Blade over the dogbone head of the CVD.
- 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 front mounting holes.
- Locate the DD Assembly under the 1290 Trans Brace as shown and use (2) 5253 Screws to mount the Trans Brace to the DD Unit.

This will locate the bulkheads over the correct holes in the chassis to fasten the bulkheads using 5252 or 5262 screws. Be sure to also align the CVD's into the outdrives.





Transmission Mount

-Parts for Trans Mount


1004 Qty 1
Rear Body Mount

3229 Qty2
Tall Body Post


3229 Qty 2
Post Collar


5209 Qty 2
Set Screw

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

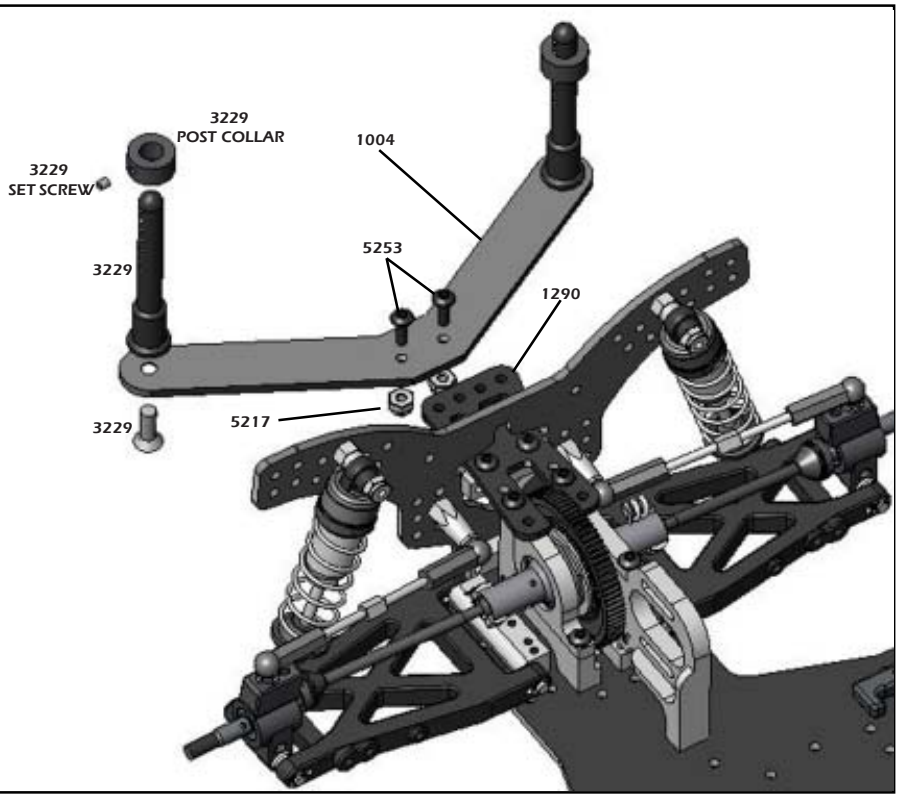
5253 Qty 2
4-40 x 3/8 FH Screw


5217 Qty 2
4-40 Lock Nut

- Fasten the 1004 Rear Body Mount to the 1290 Trans Brace in the holes as shown.

- Attach 3229 Body Post to Rear Body Mount using 3229 Screw.

- Slide Post Collar onto the Body Post and secure using Set Screw.



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

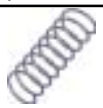
5235 Qty 2
Ball Cup

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

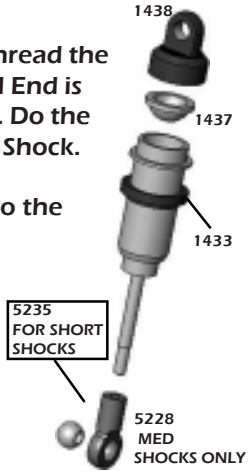
BUILD 2 SHORT & 2 MED LENGTH SHOCKS!
- USE #1429 SHAFT WITH #1425 BODY.
- USE #1430 SHAFT WITH #1426 BODY .

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 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.

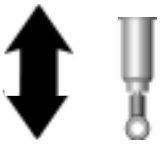
SHOCK FILLING INSTRUCTIONS:

Filling Shocks: Steps 1-4 ***Setting Shock Rebound: Steps 5-8***

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

40 wt suggested starting point.

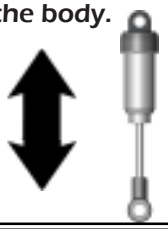
2) Slowly move the shaft up and down several times to allow air bubbles to escape to the top.



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.

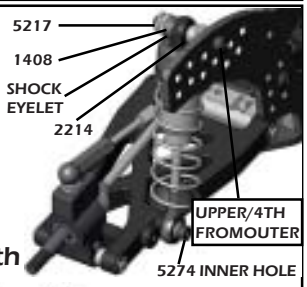


6) Then the shaft should push itself out to its full length slowly.

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.

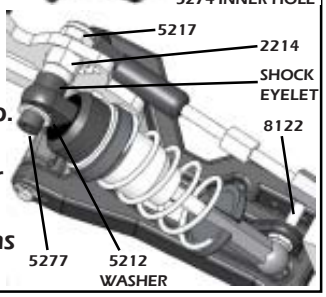
STEP #3



- 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 Shock Eyelet 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.



Battery Mount

-Parts for Battery Mount


1291 Qty 1
SE Side Mount


8110 Qty 2
Body Post


3229 Qty2
Post Collar


3229 Qty2
Set Screw


5217 Qty 2
4-40 Lock Nut


1:1
5263 Qty 5
4-40 x 3/8 FH Screw


3266 Qty 2
Li-Po Locator


3009 Qty 1
Strap Buckle

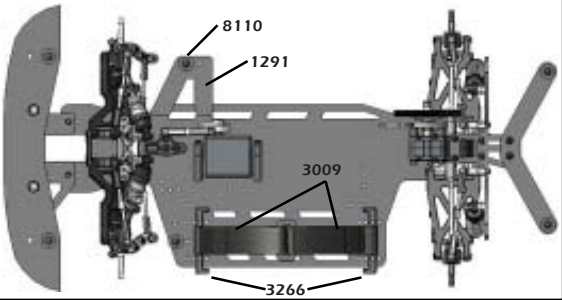

3009 Qty 2
Battery Strap


3209 Qty 1
Attn Post Mount


1:1
5253 Qty 4
3/8 BH Screw

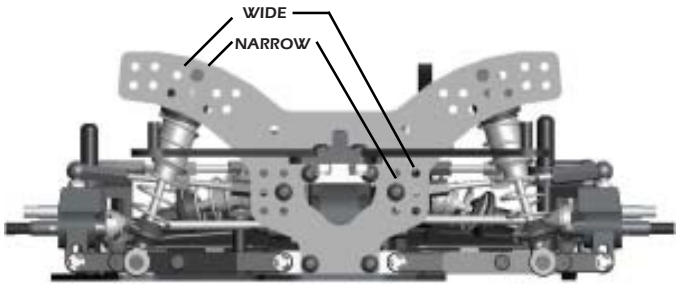
STEP #1

- Attach 1291 SE Side Mount onto the chassis as shown using 5263 Screws and 5217 LockNuts.
- Mount the 8110 Body Posts in the fwd/outer most holes on the Chassis and Side Mount as shown. Slide the 3229 Post Collar onto the Body Posts, use the 3229 Set Screws to hold the collar where needed.
- Insert the 3266 Lipo Locator thru the small loop on each 3009 Battery Strap. Mount to chassis using 5263 Screws.
- Fasten the 3209 Attenna Mount to any un-used hole near your receiver.



INT SE Chassis Design Explaination

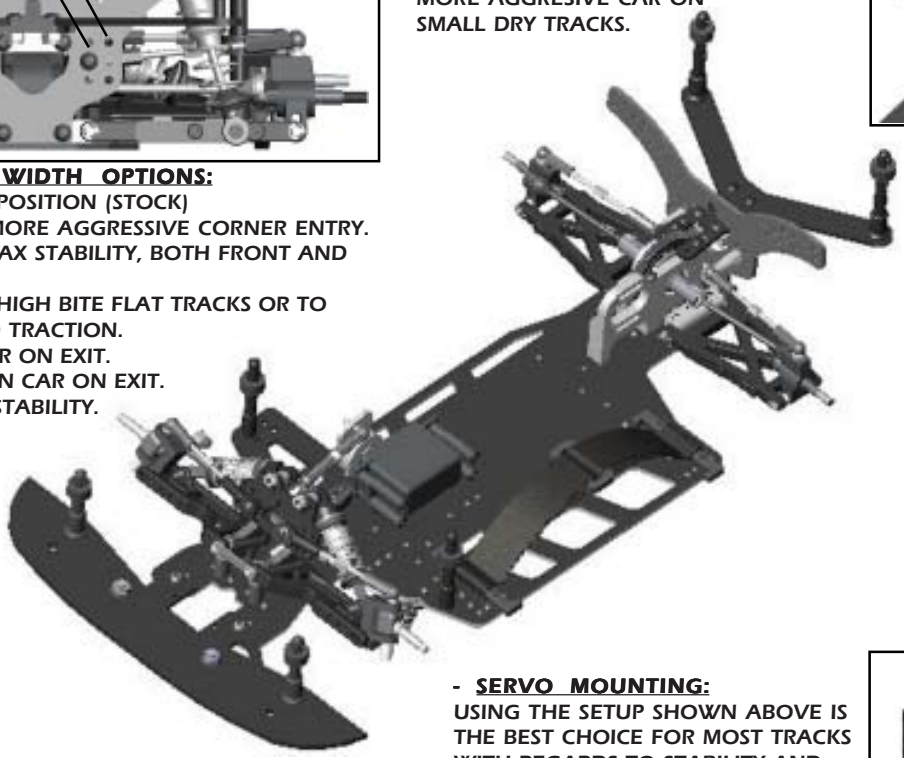
- Follow these diagrams to better adjust and utilize your INT SE for use as a LateModel or Dirt Modified.

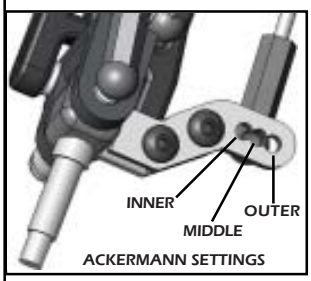


CHASSIS WIDTH OPTIONS:

- ALL PICS SHOW NARROW POSITION (STOCK)
- WIDEN RIGHT REAR FOR MORE AGGRESSIVE CORNER ENTRY.
- WIDEN BOTH SIDES FOR MAX STABILITY, BOTH FRONT AND REAR TOGETHER.
- WIDEN RIGHT FRONT FOR HIGH BITE FLAT TRACKS OR TO REDUCE RF TIRE WEAR AND TRACTION.
- PULL LF IN TO TIGHTEN CAR ON EXIT.
- EXTEND LF OUT TO LOOSEN CAR ON EXIT.
- WIDEN FRONT ONLY FOR STABILITY.

- WHEELBASE OF THE INT SE IS DETERMINED BY THE MOUNTING LOCATION OF THE REAR END. SHOWN HERE IS THE LONG SET-UP, THE ENTIRE REAR ASSEMBLY MOVES FORWARD TO CREATE A MORE AGGRESIVE CAR ON SMALL DRY TRACKS.





ACKERMANN SETTINGS

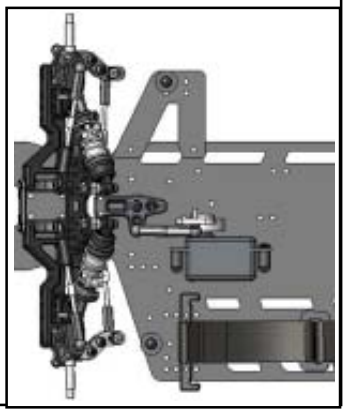
- ACKERMANN IS THE DIFFERENCE THE FRONT TIRES ROTATE DURING STEERING INPUT. TYPICALLY YOU CAN USE THIS ADJUSTMENT BY MOVING THE LF LOCATION ONLY.

- USING THE "FORWARD" SETTING WILL PROVIDE THE MOST ACKERMANN (LF OUT-TURNS THE RF). THIS WILL HELP TURN FROM THE CENTER OFF THE CORNER AND/OR MAKE THE CAR LOOSE.
- USING THE "REAR" ADJUSTMENT WILL REDUCE ACKERMANN AND ALLOW THE RF TO TURN THE SAME AS THE LF. THIS WILL HELP THE CAR TURN INTO THE CORNER QUICKER BUT COULD BE TIGHT OFF THE CORNER.

- BATTERY MOUNTING: USING THE MOST OUTBOARD OPTION IS THE BEST CHOICE FOR MOST TRACKS, AS SHOWN IN THE DIAGRAM. MOVING THE BATTERY FORWARD WILL INCREASE STEERING, MOVING THE BATTERY BACK WILL INCREASE REAR BITE AND OVERALL STABILITY. USING THE INNER BATTERY MOUNTING OPTIONS IS BEST FOR LOW-BITE CONDITIONS.

- SERVO MOUNTING:
USING THE SETUP SHOWN ABOVE IS THE BEST CHOICE FOR MOST TRACKS WITH REGARDS TO STABILITY AND ROOM FOR BATTERY ADJUSTMENT.

USING A "LOW PROFILE" SERVO YOU CAN MOUNT THE SERVO OFFSET TO INCREASE LEFT SIDE WEIGHT. ALSO YOU WILL NEED TO FLIP THE 3647 STEERING PIVOT OVER AS SHOWN ON THE RIGHT. THIS SETUP WORKS BEST FOR WELL PREPPED TRACKS.



CONGRATULATIONS!!! You have now completed the assembly process of your new Custom Works INTIMIDATOR SE3 DD! 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 you 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 Spoiler - 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 Spoiler - 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. 10-20% of Drag Brake is generally a good start for most speed controls.

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.

- CHECK OUT CUSTOMWORKSRC.COM for setup sheets and winning car set-ups!

64 Pitch

Pinion \ Spur Gear	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

Pinion \ Spur Gear	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

www.customworksrc.com
CUSTOMWORKS R/C CARS

INTIMIDATOR SE3

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

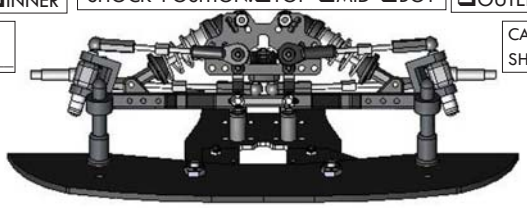
❑Clay ❑Hard Packed ❑Loose Dirt
❑Carpet ❑Asphalt ❑Concrete
❑Flat ❑Banked ❑True Oval ❑Tri-Oval
Traction: ❑High ❑Medium ❑Low

FRONT SUSPENSION

RIGHT

CAMBER:_____
CAMBER LINK LOCATION ❑OUTER ❑INNER
CAMBER RATE SHIMS:_____
KINGPIN INCLINE ❑0° ❑ANGLED
ACKERMANN: ❑ ON SPINDLE ❑INNER ❑MIDDLE ❑OUTER
FRONT AXLE: ❑STOCK ❑EXTENDED
CASTOR: ❑0° ❑+5° ❑-5° ❑+10° ❑-10°
AXLE SHIMS: _____

TOE IN/OUT AMOUNT:_____
RF ❑LEAD ❑TRAIL AMOUNT:_____
SHOCK POSITION:❑TOP ❑MID ❑BOT



SUSPENSION POSITION
RF: ❑OUTER ❑MIDDLE ❑INNER
LF: ❑OUTER ❑MIDDLE ❑INNER

KICK-UP: ❑25° ❑20° HIGH ❑20° LO ❑15° HIGH ❑15° LO
SWAY BAR:❑NONE ❑.063" ❑.078"

LEFT

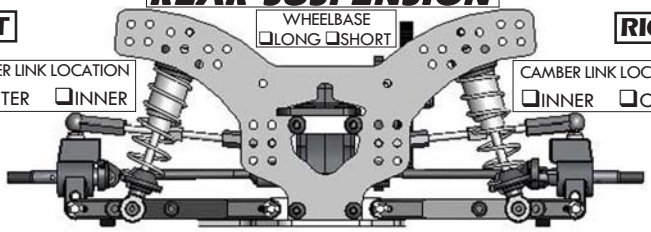
CAMBER:_____
CAMBER LINK LOCATION ❑OUTER ❑INNER
CAMBER RATE SHIMS:_____
KINGPIN INCLINE ❑0° ❑ANGLED
ACKERMANN: ❑ ON SPINDLE ❑INNER ❑MIDDLE ❑OUTER
FRONT AXLE: ❑STOCK ❑EXTENDED
CASTOR: ❑0° ❑+5° ❑-5° ❑+10° ❑-10°
AXLE SHIMS: _____

REAR SUSPENSION

LEFT

CAMBER LINK LOCATION ❑OUTER ❑INNER
HUB SPACING: *SHADE IN 4 SPACERS...* F❑❑❑❑❑❑❑R
CAMBER:_____
TOE-IN: _____
WHEEL SPACERS: _____

WHEELBASE ❑LONG ❑SHORT



SWAY BAR:❑NONE ❑.063" ❑.078"
REAR WIDTH (NARROW OR WIDE)
LR:_____RR:_____
TOE-BLOCK SHIMS:
LR:_____RR:_____
ANTI-SQUAT SHIMS:
LR:_____RR:_____

RIGHT

CAMBER LINK LOCATION ❑INNER ❑OUTER
HUB SPACING: *SHADE IN 4 SPACERS...* 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

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

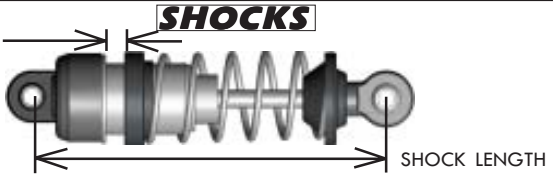
	COMPOUND	DIAMETER	INSERT
RF:			
LF:			
RR:			
LR:			

LF RF

LR RR

TRACTION ADDITIVE:_____

SHOCKS



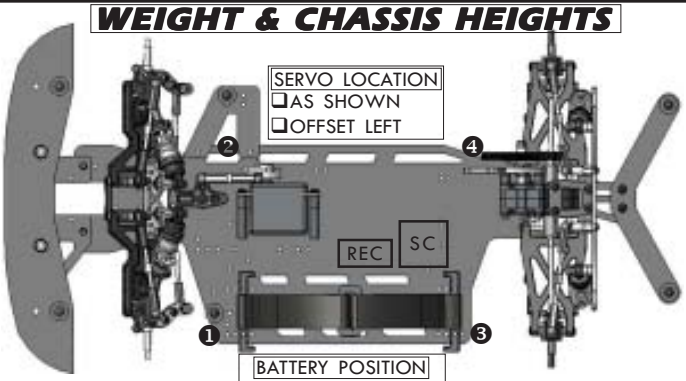
LEFT FRONT SHOCK
BODY LENGTH ❑SHORT ❑MED ❑LONG
SHAFT LENGTH ❑SHORT ❑MED ❑LONG
SPRING:_____
OIL:_____ PISTON:_____
BLADDER:_____
LENGTH:_____
COLLAR:_____

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



RECIEVER ❑AS SHOWN ❑_____

BATTERY POSITION ❑OUT: F❑❑❑❑R ❑INNER ❑MIDDLE ❑_____

SPEED CONTROL ❑AS SHOWN ❑_____

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

OVERALL WEIGHT: _____

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

MISC...

BATTERY TYPE: ❑LIPO ❑NiMH
MOTOR: _____
PINION:_____ SPUR:_____
BODY TYPE:❑MODIFIED ❑LATE MODEL
PART#_____
SPOILER ANGLE:_____
SPOILER LENGTH:_____
WICKERBILL:_____
BODY LOCATION FROM A BODY POST:
_____
_____