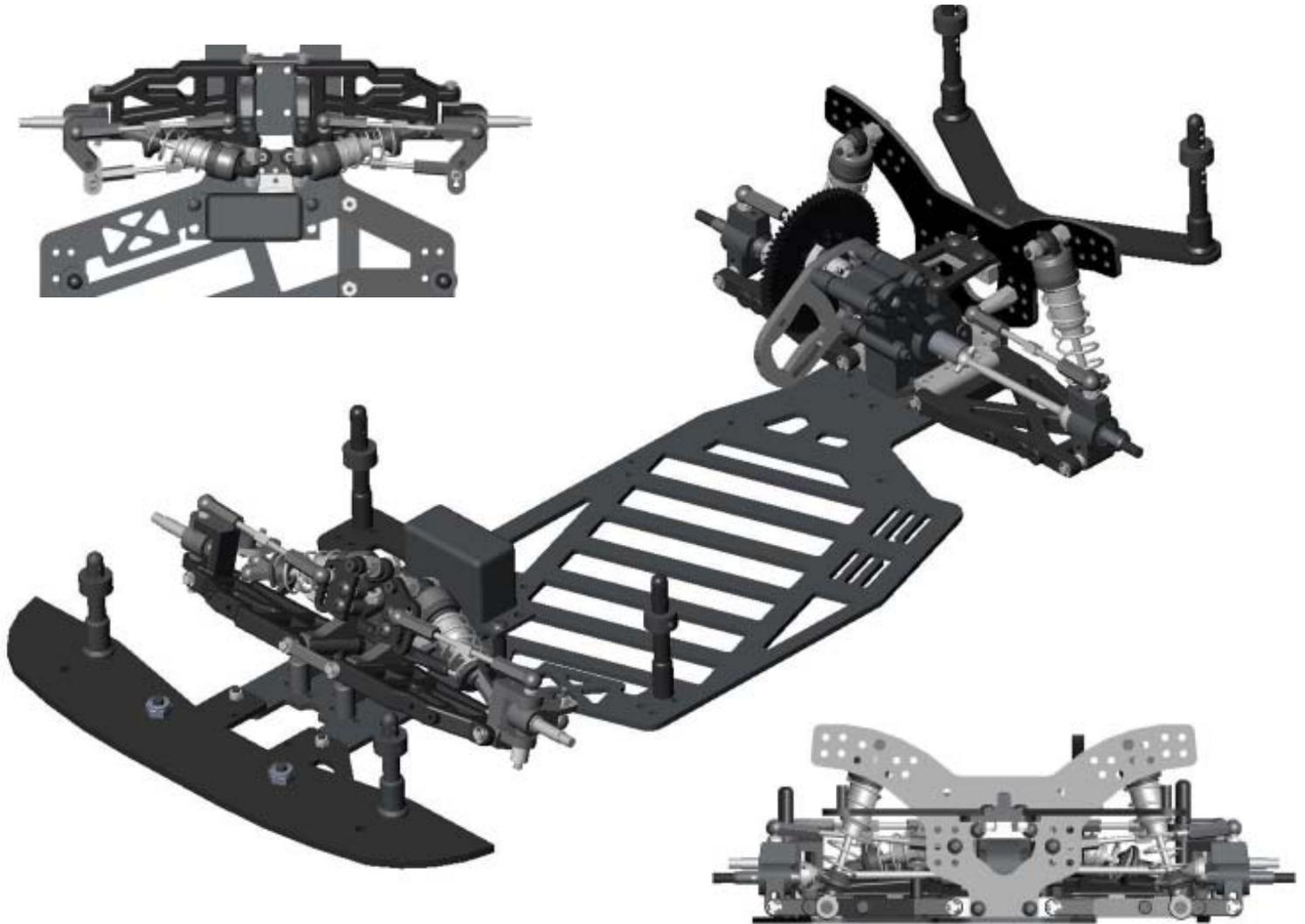


INTIMIDATOR

SE



#0912 INTIMIDATOR SE RACING KIT

Manufactured By:
Custom Works RC Products LLC
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Denver, NC 28037
www.customworksrc.com



REQUIRED READING...UNDERSTAND THIS MANUAL!

Thank You and Congratulations on purchasing the **INTIMIDATOR SE!** 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 Intimidator SE 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:

-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

Hobby Scissors

Small Needle Nose Pliers

Wire Cutters

X-Acto Knife

Phillips Head Screw Driver

Blue Loctite

3/16" Wrench

Bag A Front Suspension



-Parts for Bag A		1286 Qty 1		1287 Qty 1		3229 Qty 2		3229 Qty 2		3229 Qty 2		5263 Qty 6		3229 Qty 4		5217 Qty 2		5207 Qty 4
		3012 Qty 1		3332 Qty 2		1288 Qty 1		3255 Qty 2		3257 Qty 2		4240 Qty 2		5253 Qty 4		1250 Qty 2		5230 Qty 24

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. Snap 5230 E-Clips to 4240 Susp Pin.
- Attach the 1288 Front Tower using (4) 5253 Screws thru the 3332 Brace.
- Fasten the suspension assembly to the Chassis using 5263 Screws in the holes shown.

Bag B Steering Components



-Parts for Step#1		5223 Qty 4		5235 Qty 4		5213 Qty 2		5213 Qty 2		5214 Qty 2		5214 Qty 2
		3202 Qty 2		7209 Qty 2		7200 Qty 2		4241 Qty 2		5004 Qty 2		5205 Qty 4
-Parts for Step#2		3203 Qty 2		8120 Qty 4		7209 Qty 4		5230 Qty 24		5205 Qty 4		
		5242 Qty 1		1292 Qty 2		5204 Qty 2		5254 Qty 4		5253 Qty 4		5263 Qty 2
-Parts for Step#3		5241 Qty 1		5232 Qty 2		5239 Qty 2		5212 Qty 4		5201 Qty 2		5201 Qty 1

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 5214 Ball End onto the ends of the 5223 Turnbuckle.

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 3203 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 5230 E-Clips to each end.

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

- Fasten 8122 Ball Stud to the Extender thru the middle hole on the left assembly, thru the inner most hole on the right assembly.

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



STEP #3



Optional Front End Set-up Shown on the bottom-left corner of Page #9 allows for easier front shock removal.

- Attach the 5241 Servo Extender to the 5242 Servo Saver using 5201 Screw. Mount the Steering Links to the Extender using the hardware as shown above.

- Fasten the 5239 Servo Mounts to your servo using 5253 Screw with (1) 5212 Washer on both sides of the servo tabs.

- Attach the servo to the chassis using 5263 Screws. Servo Saver should be centered between the front end.

- Mount Camber Link Ball End to the Front Tower in the 2nd hole from the top using 5254 Screw and 5205 LockNut.

NOTE: The Servo Extender and it's screws should be as close to the chassis without hitting, use the extra nylon spacers to correctly mount your servo.

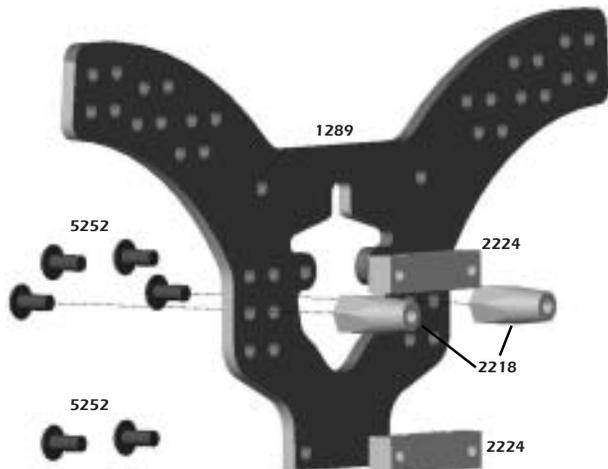
Bag C Rear Suspension



-Parts for Step#1	 Qty 1	 Qty 2	 Qty 2	 Qty 6		
-Parts for Step#2	 Qty 2	 Qty 2	 Qty 2	 Qty 6	 Qty 2	 Qty 24

STEP #1

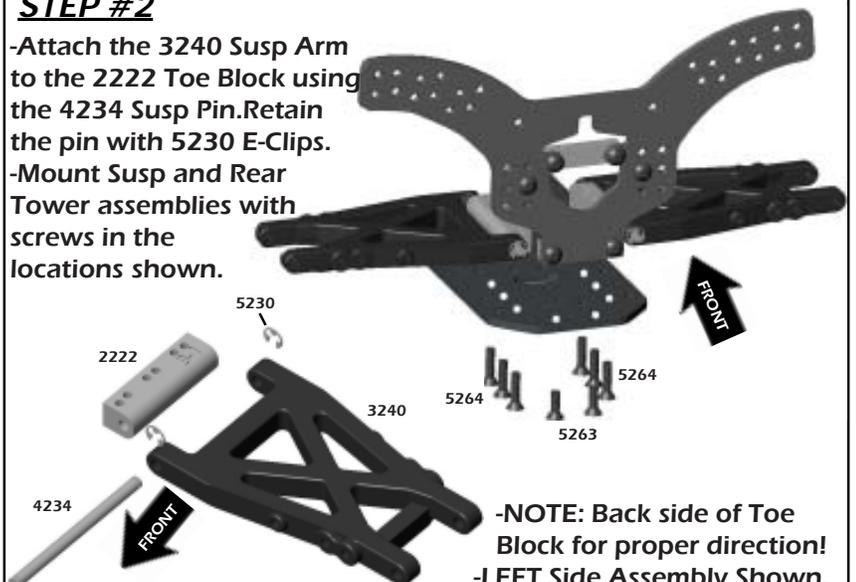
-Attach the 2224 Alum Blocks and 2218 Camber Link Stand-Offs to the 1289 Rear Tower.



STEP #2

-Attach the 3240 Susp Arm to the 2222 Toe Block using the 4234 Susp Pin. Retain the pin with 5230 E-Clips.

-Mount Susp and Rear Tower assemblies with screws in the locations shown.



-NOTE: Back side of Toe Block for proper direction!
-LEFT Side Assembly Shown.

Bag D

Rear Suspension



-Parts for Step#1	3241 Qty 2 Bearing Carrier	1226 Qty 4 Ball Bearing	4235 Qty 2 Rear Outer Susp Pin	1255 Qty 10 Spacer	5230 Qty 24 E-Clip	
-Parts for Step#2	7211 Qty 2 CVD Coupling	7215 Qty 2 Short Dogbone	7216 Qty 2 Rear CVD Axle	7211 Qty 2 Rear CVD Pin	7211 Qty 2 CVD Set Screw	
-Parts for Step#3	5225 Qty 2 2" TI Turnbuckle	5235 Qty 4 Ball Cup	7047 Qty 6 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 UPPER 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

- 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.

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	1:1	1229 Qty 2 5/32 x 5/16 Bearing
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-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
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STEP #1

CUSTOM-TIP!!!
 -Using 400 Grit Sandpaper in a "Figure 8" pattern, it is best to sand the surfaces of both the 4404 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	4352 Qty 1 Transmission Halves	4354 Qty 1 Idler Gear	4355 Qty 1 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	5285 Qty 3 4-40 x 1 1/8 SH Screw	1:1	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!

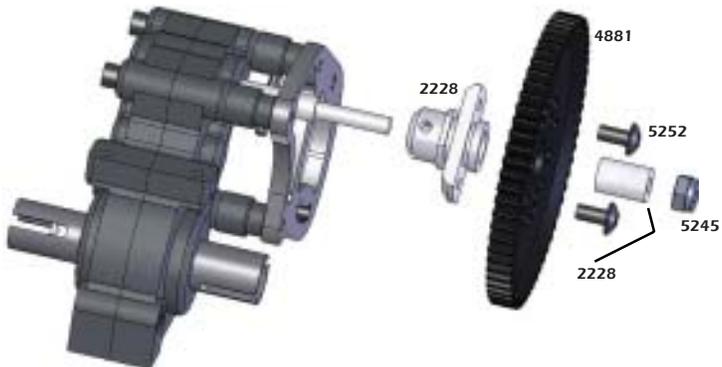
STEP #2

- Press the 4406 Pin into the Drive Shaft.
- Fasten 2225 Motor Plate by tightening the 5285 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	5252 Qty 1 4-40 x 1/4 BH Screw	2228 Qty 1 Spacer	5245 Qty 1 5-40 Locknut

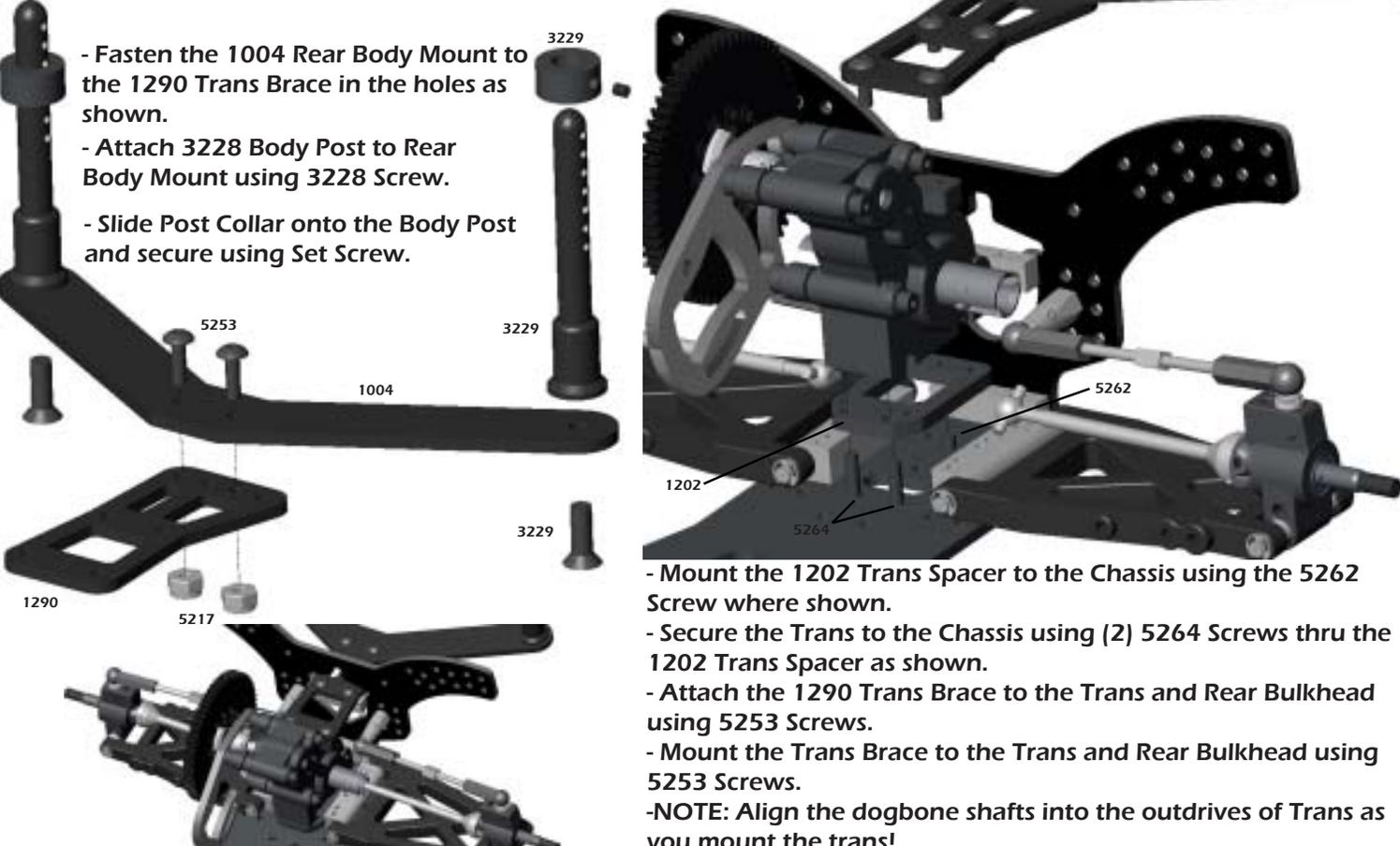


- Press the 2228 Slipper Eliminator onto the Top Drive Shaft so that the Roll Pin keys into the grooves.
- Secure the assembly to the Top Shaft with the 2228 Spacer and the 5245 Locknut. Do NOT overtighten the nut on the Top Shaft!
- Mount the 4881 Spur Gear so the flat side faces AWAY from the transmission.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

Bag H Transmission Mount



-Parts for Bag H					
	1004 Qty 1 Rear Body Mount	3229 Qty 2 Tall Body Post	3229 Qty 2 Post Collar	3229 Qty 2 Set Screw	3229 Qty 2 8-32 x 1/2 FH Screw
					
	1290 Qty 1 INT SE Trans Brace	1202 Qty 1 Trans Spacer	5264 Qty 2 4-40 x 1/2 FH Screw	5253 Qty 6 4-40 x 3/8 FH Screw	5262 Qty 1 4-40 x 1/4 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 3228 Body Post to Rear Body Mount using 3228 Screw.
- Slide Post Collar onto the Body Post and secure using 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 1290 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!

Shock Bag

Shock Assembly



-Parts for Step#1	1425 Med / 1426 Short Qty 2ea 2 Med / 2 Short Shock Body	1429 Med / 1430 Short Qty 2ea 2 Med / 2 Short Shock Shaft	1434 Qty 4 Shaft Guide	1250 Qty 8 O- Ring	1435 Qty 8 Retaining Clip	1429 Qty 4 Shaft Guide	5230 Qty 10 E-Clip	1:1		
-Parts for Step#2	1427 Qty 4 Shaft Guide	1426 Qty 4 Threaded Cap	1428 Qty 4 Firm Bladder (BLACK)	1432 Qty 4 Spring Collar	5235 Qty 2 Ball Cup	5228 Qty 2 Short Ball End	5228 Qty 2 Pivot Ball			
-Parts for Step#3	1444 Qty 2 Spring	1488 Qty 2 Spring	1431 Qty 4 Spring Bucket	1430 Qty 4 Mount Ball	1255 Qty 4 Spacer	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

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



STEP #2

- Snap Pivot Ball into the 5280 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 1427 Eyelet Cap into 1426 Threaded Shock Cap so that guide in the Eyelet Cap lines up in the recess in the Threaded Shock Cap.

- Press the 1428 Firm Bladder (BLACK) into the Threaded Shock Cap so the dome of the bladder points away from the Eyelet Cap.

- Thread 1432 Spring Collar onto the Shock Body.

-NOTE: See shock filling tips for more instructions.

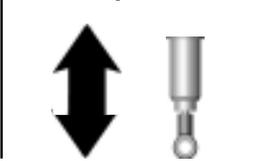


SHOCK FILLING INSTRUCTIONS: Filling Shocks: Steps 1-4 Setting Shock Rebound: Steps 5-8

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



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



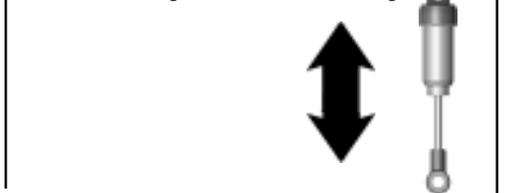
3) Refill with oil to the top of the shock body.



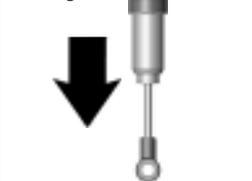
4) Thread the Eyelet Cap assembly onto the Shock Body until it is hand tight. Oil should seep out of the bleed hole in the Threaded Cap.



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 shock rebounds 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.

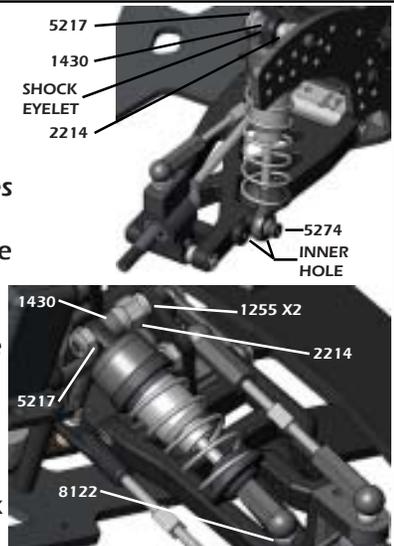
STEP #3

- Slide 1488 Springs on the Med Shocks, the 1444 Springs on the Short Shocks. Secure using the 1432 spring bucket.

- Insert 5277 Screws thru the holes shown on the Rear Tower, follow the sequence shown to mount the Med Shocks here.

- Mount the Front Shocks by inserting the 5277 Screw thru the upper hole in the Front Tower.

- Thread the 8122 into the arm where shown and snap the shock to it.



Bag I Dirt Modified Body Mounts (OPTIONAL for LateModel)



-Parts for Bag I

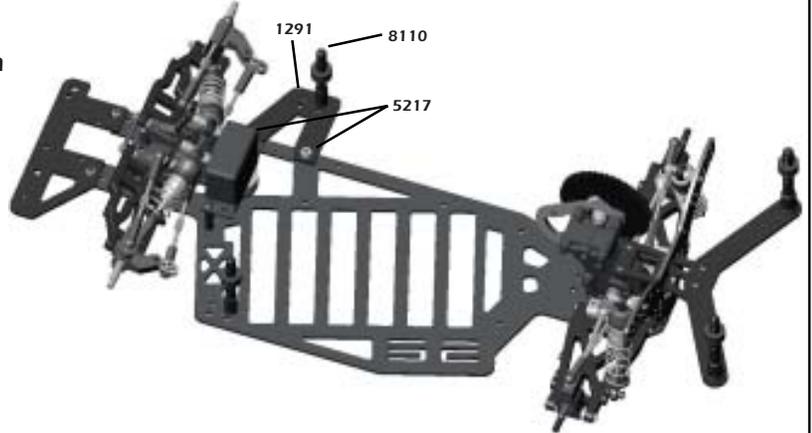


STEP #1

- Attach 1291 SE Side Mount onto the chassis as shown using 5263 Screws and 5217 LockNuts.

- Mount the 8110 Body Posts in the rear/right 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.

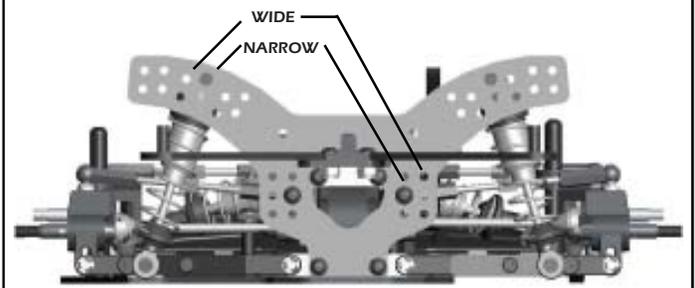


INT SE Chassis Design Explanation



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

- **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 AGGRESSIVE CAR ON SMALL DRY TRACKS.



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.

LONG
SHORT



- **BODY POSITION** FOR EDM BODIES.
CENTER BODY CAR WILL TURN IN LESS BUT WILL BE MORE STABLE ON EXIT, GOOD FOR LOW BITE AND BANKED TRACKS.
OFFSET BODY CAR WILL TURN IN HARDER AND CONTINUE TO TURN, FORWARD DRIVE GREATLY REDUCED OFF THE CORNER.

- **FRONT SHOCK OPTION:** INT SE IS DESIGNED TO HIDE THE FRONT SHOCKS FROM IMPACT IN EDM RACING. THE OPTION SHOWN BELOW ALLOWS FOR EASIER MOUNTING OF THE SHOCKS, ESPECIALLY HELPFUL IF RACING AS A LATEMODEL.

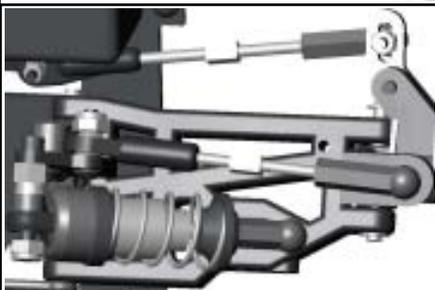
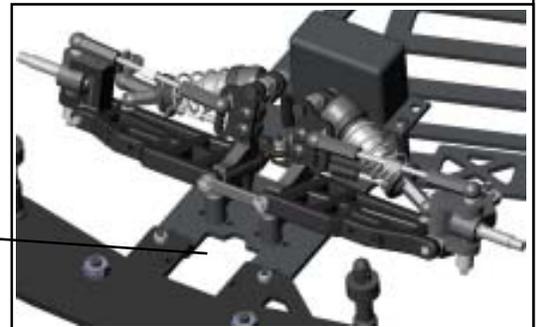


- **ACKERMANN** IS THE DIFFERENCE THE FRONT TIRES ROTATE DURING STEERING INPUT.

"FULL" LF TIRE TURNS MORE THAN THE RF. CAR WILL TURN HARDER THRU CENTER OF CORNER AND EXIT, CAN MAKE CAR LOOSE OFF OF CORNER.

"ZERO" LF AND RF TIRES TURN EQUALLY FOR THE RADIUS CORNER THEY ARE TRAVELING THRU. STILL THE LF OUT TURNS THE RF, ONLY TIRE SCRUB IS ELIMINATED.

"REVERSE" RF TIRE TURNS MORE THAN THE LF. OCCASIONALLY MAKES FOR MORE AGGRESSIVE CORNER ENTRY, ALWAYS MORE STABLE CORNER EXIT.



CONGRATULATIONS!!! You have now completed the assembly process of your new Custom Works INTIMIDATOR SE. 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.

<u>Car Pushes (understeers):</u>	<u>Car Is Loose (oversteers):</u>	<u>Car Is Erratic:</u>
<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 beginning 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 controllable 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 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	6.95	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	4.15	4.32	4.53	4.69	4.95	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	10.68	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	6.88	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	5.56	5.76



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