

# XRAY

THE ART OF PERFORMANCE



**XRAY T1** **EVO**  
**INSTRUCTION MANUAL**

# CONGRATULATIONS

The XRAY T1 EVO2 is arguably the most advanced 1/10-scale on-road electric touring car ever made for racing and is based on the extremely successful XRAY T1 concept. We have used the results of thousands of hours of racing and testing on both of asphalt and carpet tracks to offer you this next step in the evolution of XRAY T1.

You chose the T1 EVO2 because you recognize the outstanding quality of design, craftsmanship, and performance of this touring car chassis. The XRAY T1 EVO2 is the epitome of high-performance engineering that was built for the purpose of top competition races. The design is focused on blending of extraordinary materials with racecar lineage to offer a responsive ride, luxurious elegant design, finest quality, and best track performance.

This car was built purely for top competition races, and for that purpose, we gave the T1 EVO2 the highest number of adjustments possible to get the most performance out of any track condition. Even with the standard setup, the T1 EVO2's handling is stable and predictable enough on most surfaces for even novice drivers who choose the T1 EVO2 as their entrance into the R/C hobby. Every aspect of the T1 was examined not only to make it the best touring car on the market, but to also make it very easy to build, to work on, and to drive. This instruction manual strengthens our philosophy of providing our customers with only the best.

The assembly steps are illustrated with state-of-the-art rendered 3D models taken from our engineers' graphics workstations, and supported with clear and easy-to-understand descriptions of the assembly steps. Because suspension tuning can be a difficult step, we have produced a special Set Up Book to help you get your car to its maximum performance. In some of the assembly steps, references are made to a particular section of the Set-Up Book. Measurements should be applied immediately, although it will still be necessary to perform the set-up procedures again for fine tuning once the chassis is finished.

At the beginning of each section, there is an exploded view of the relevant assembly, including the parts for that section. All non-relevant and previously assembled parts have been faded. Each section indicates the bag containing all the appropriate parts. All hardware (screws, nuts, bearings, pins, clips, etc.) can be compared to the 1:1 scale diagrams on the left side of each assembly step. There should be no parts left over after you finish the given assembly section. If there

are any left, please go through the assembly steps again to ensure all parts have been used properly.

We have made every effort to make the instructions and Set-Up Book as easy to understand as possible. However, if you have any difficulties, problems, or questions, please do not hesitate to contact the XRAY support team at support@teamxray.com. Also, please visit our web site at www.teamxray.com. Our official web site contains all the latest updates, hot setup information, lists of hop-up parts, and many other goodies.

As the proud owner of an XRAY T1 EVO2, you are cordially invited to join TEAM XRAY. Use the MEMBERSHIP CARD with Certificate of Authenticity to register your T1 EVO2 at world's largest RC portal www.myTSN.com to get access to the special XRAY VIP ROOM --- we pride ourselves on really taking care of our customers.

Thank you very much for choosing the XRAY T1 EVO2 as your ultimate 1/10 electric touring car. We are sure it will bring you lots of enjoyment and rear racing excitement.

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## ADDITIONAL ITEMS REQUIRED:

Radio system (transmitter and receiver), steering servo, motor, battery pack (6-cell), speed controller, charger, 1/10-scale bodyshell (190 mm), tires, inserts, double-sided tape, CA glue, bearing oil.



## TOOLS REQUIRED:

Cutting Pliers, Needlenose Pliers, Snap Ring Pliers, Allen Wrench for Set Screws 1.5 mm, 2.0 mm, 2.5 mm, 3.0 mm and 5.0mm, Hobby Knife, Caster Clip Remover Tool, Soldering Iron.

For the most comfortable assembly we advise to purchase these HUDY high-quality tools: #111540, #112040, #112540, #113040, #115040, #107610.

In line with our policy of continuous product development, the exact specifications of the kit may vary. In the unlikely event of any problems with your new kit, you should contact the model shop where you purchased it, quoting the part number. We do reserve all rights to change any specification without prior notice. All rights reserved.

## R/C TIPS

- Read and fully understand the instruction manual before building.
- Always keep this instruction manual ready at hand for quick reference, even after completing the assembly.
- Make sure all screws are tight. Check them periodically. Make sure that the chassis screws do not protrude from the chassis.
- For the best performance, it is very important that great care is taken to ensure the free movement of all parts.
- Clean all ball-bearings so they move very easily and freely.
- Tap or pre-thread the plastic parts when threading screws.
- Self-tapping screws cut threads into the parts when being tightened. Do not use excessive force when tightening the self-tapping screws, or you may strip out the thread in the plastic. We recommended you stop tightening a screw when you feel some resistance.
- Ask your local hobby shop for any advice.
- Please support your local hobby shop. We at XRAY Model Racing Cars support all local hobby dealers. Therefore we ask you, if at all possible, to purchase XRAY products at your hobby dealer and give them your support like we do. If you have difficulty finding XRAY products, please check out [www.teamxray.com](http://www.teamxray.com) to get advice, or contact us via email at [support@teamxray.com](mailto:support@teamxray.com), or contact the XRAY distributor in your country.

### BEFORE YOU START

At the beginning of each section is an exploded view of the parts to be assembled. There is also a list of all the parts and part numbers that are related to the assembly of that section.

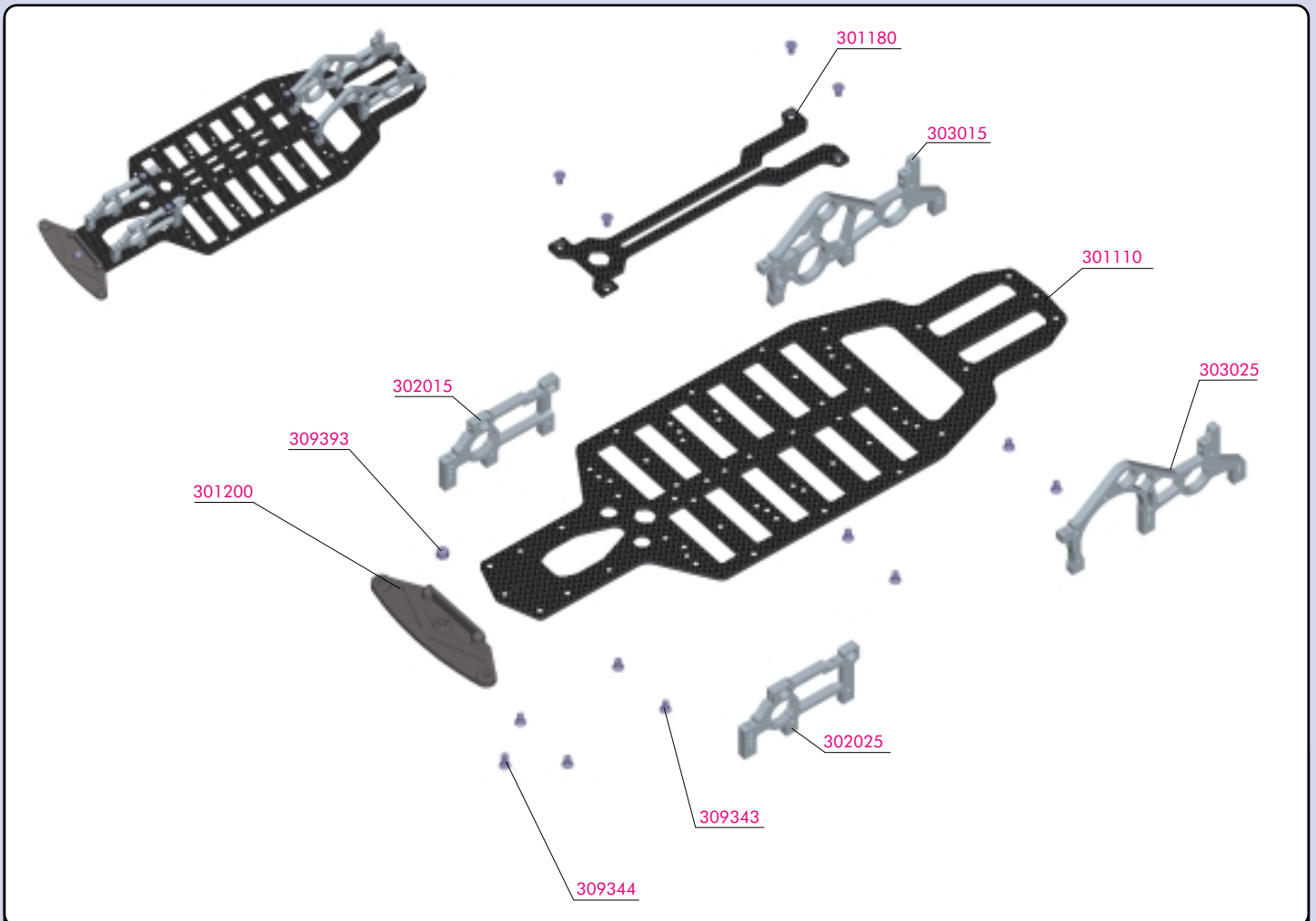
The part descriptions are color-coded to make it easier for you to identify the source of a part. Here are what the different colors mean:

Color BLACK -- indicates parts that are included in the bag marked for the section.

Color A -- indicates parts that were set aside in Section 0.

Color B -- indicates parts that are already assembled from previous steps.

## 0. KIT (FACTORY PREASSEMBLED)

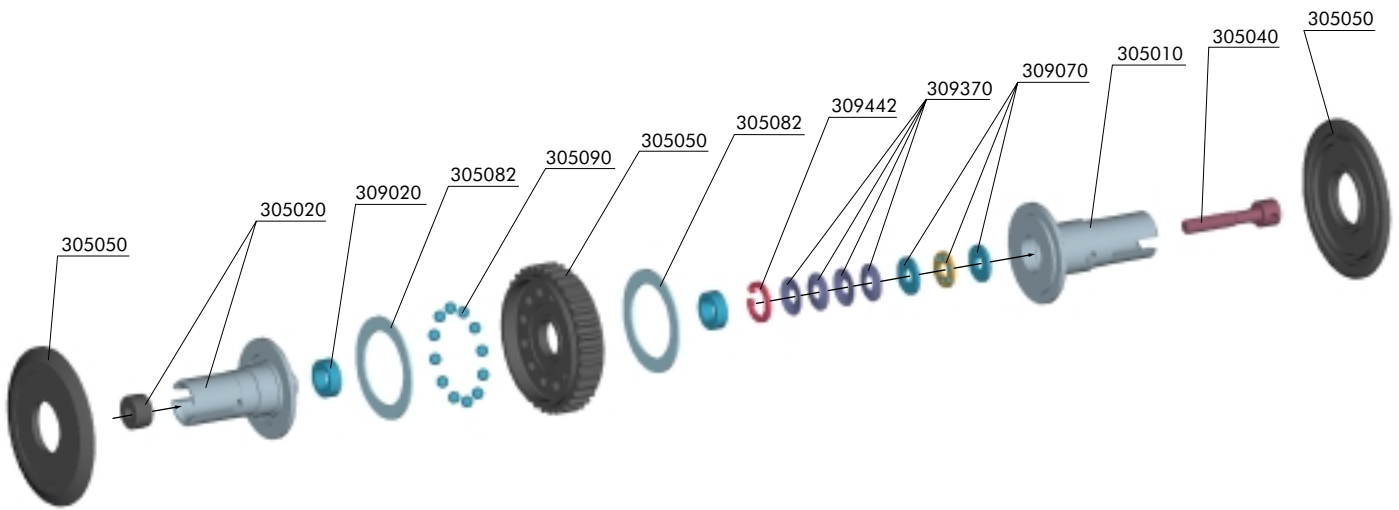


### KIT

30 1110	6-CELL CHASSIS 2.5 MM - GRAPHITE	30 3015	ALU SUSP. ADJUSTABLE BULKHEAD REAR RIGHT - HARD COATED
30 1180	FLEXIBLE TOP DECK - GRAPHITE	30 3025	ALU SUSP. ADJUSTABLE BULKHEAD REAR LEFT - HARD COATED
30 1200	NYLON BUMPER	30 9343	HEX SCREW SFH M3x6 (10)
30 2015	ALU SUSP. ADJUSTABLE BULKHEAD FRONT RIGHT - HARD COATED	30 9344	HEX SCREW SFH M3x8 (10)
30 2025	ALU SUSP. ADJUSTABLE BULKHEAD FRONT LEFT - HARD COATED	30 9393	NUT M3 (10)

The XRAY T1 EVO2 comes partially preassembled. Before starting assembly, please disassemble the chassis parts, and keep them, including the screw hardware, close at hand. In the assembly steps that follow, each section begins with a parts list. Parts indicated with color A are from previously disassembled chassis parts.

# 1. FRONT & REAR DIFFERENTIAL



**BAG  
01**

30 5010 ALU DIFF LONG OUTPUT SHAFT HARD COATED  
 30 5020 ALU DIFF SHORT OUTPUT SHAFT HARD COATED  
 30 5040 SCREW FOR EXTERNAL DIFF ADJUSTMENT - SPRING STEEL  
 30 5050 DIFF PULLEY 34T WITH LABYRINTH DUST COVERS  
 30 5082 DIFF WASHER 17x23x1 (2)  
 30 5090 BALL STEEL 2.4 MM (24)

30 9020 BALL-BEARING MR85ZZ 5x8x2.5 (2)  
 30 9070 BALL-BEARING AXIAL F3-8 3x8x3.5  
 30 9442 CH-CLIP 8 (10)  
 30 9370 CONE WASHER 3 x 8 x 0.5 (10)

Please note that properly functioning differentials are extremely important to the performance of the car. Therefore, it is imperative that you make sure that the differentials move freely after assembly or rebuilding, and after every run. For differential adjustment, please refer to the Set-up Book.



309442  
C 8



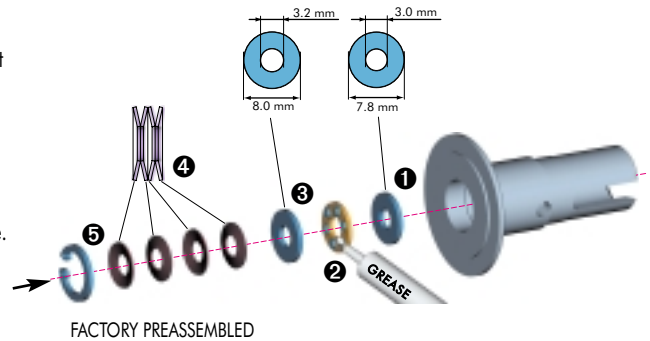
309370  
ST 3x8



309070  
BA 3x8

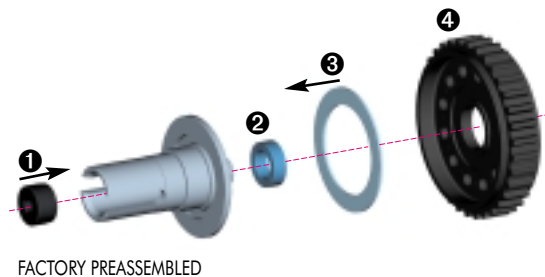
The long diff output shaft is preassembled at the factory. When it comes time to clean or rebuild the diff, please follow these steps:

1. Insert the smaller of the two thrust washers into the long diff shaft as shown in the diagram above.
  2. Apply a little grease to the balls in the caged thrust ball holder. Coat each side with grease. Insert the thrust ball cage into the long diff shaft.
  3. Place the larger thrust washer in the diff shaft.
  4. Insert the four cone washers according to the detail shown above.
  5. Secure the assembly with the #309442 (C 8) clip. There is a groove inside the diff shaft for the clip to seat into.
- Note: Assembly will be easier with snap-ring pliers.



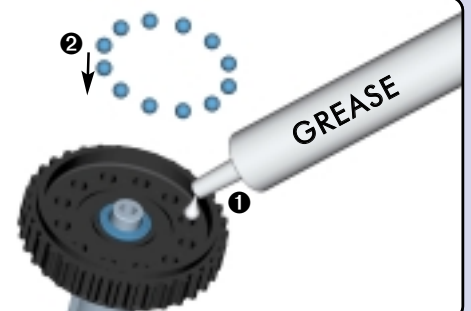
309020  
BB 5x8

1. The diff locknut is pre-installed in the short diff output shaft. If you need to replace the diff locknut, push it out from the opposite side with the tip of a wrench. Insert a new one into the short diff shaft.
2. Place one #309020 (BB 5x8) ball-bearing on the short center stub of the diff shaft.
3. Put a very thin coat of grease on the side of a diff washer, and place it on the diff shaft. The washer should seat centered on the diff shaft, and the layer of grease will hold it in place.
4. Press the diff pulley onto the ball bearing.



305090  
B 2.4

1. Apply a little bit of grease into each of the 12 holes in the diff pulley.
2. Place the 12 balls in the diff pulley holes.

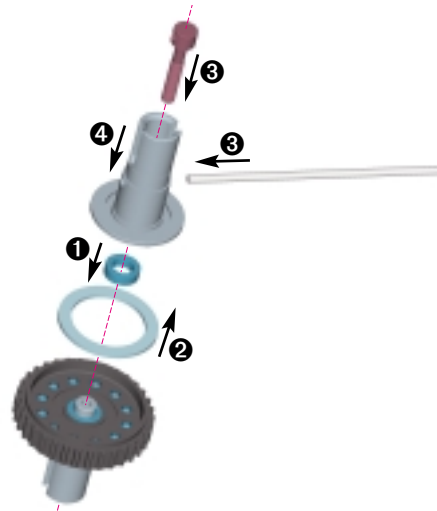




309020  
BB 5x8

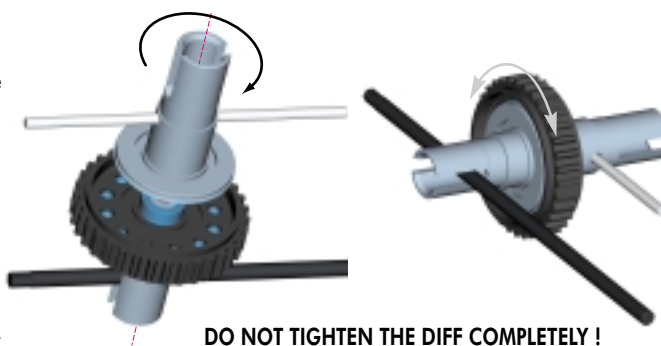
1. Hold the diff shaft with the installed pulley facing up. Place the other #309020 (BB 5x8) ball-bearing on the center stub on top of the other bearing.
2. Put a very thin coat of grease on the side of a diff washer, and place it on the long diff shaft. The washer should seat centered on the diff shaft, and the layer of grease will hold it in place.
3. Insert the diff screw into the long diff shaft and place a small Allen wrench through both pieces where the hole lines up. The end of the diff screw should extend about 8mm from the center of the diff shaft.
4. Lower the long diff shaft with the screw pointing down onto the short shaft with the pulley. Carefully thread the diff screw into the center of the short diff shaft. Keep tightening until the diff washer just touches the diff balls.

Place another wrench in the slot of the short diff shaft.



Tighten the diff until you feel some resistance. To check the diff, hold both wrenches in one hand and try to move the pulley with the other. It should take some force to get the pulley to slip between the two outdrives. Then remove both wrenches and rotate one of the diff halves while holding the pulley stationary. The action should feel smooth. If it doesn't, loosen the diff screw 1/16 to 1/8 of a turn. Final adjustment will be made with the diff in the car and on the track.

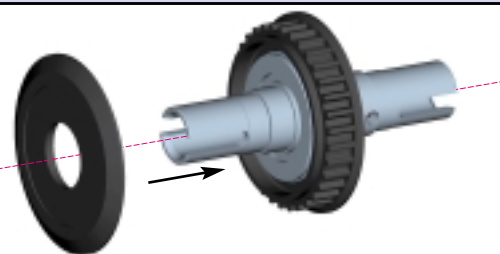
**Disclaimer:** When you build the differential, do not tighten it fully, the differential needs to break-in. That means that you should build the diff and tighten very gently. Afterwards you put it in the car, run the car for few minutes and tighten little bit the diff, make the same steps several times after you will have the diff completely tightened.



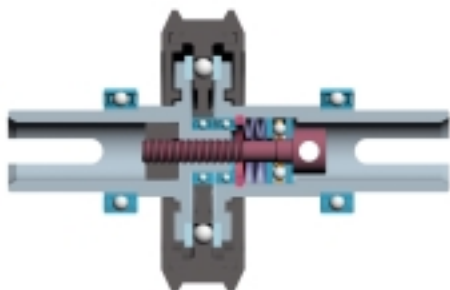
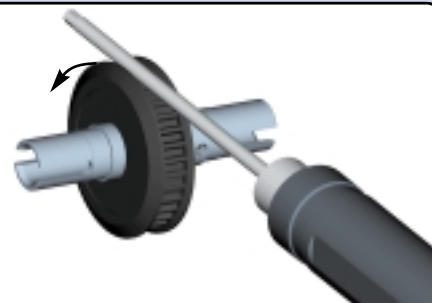
**DO NOT TIGHTEN THE DIFF COMPLETELY !  
THE DIFF MUST BE BREAK-IN !**

Cover each of the diff halves with the Labyrinth Dust Covers. The covers fit precisely and should "snap" into place. Once snapped on, the covers will seat perfectly.

**Repeat all the steps to build a second differential.**

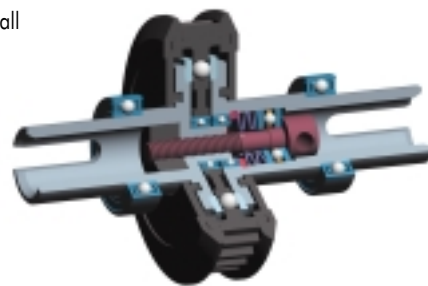


When you need to open the differential, use the shaft of a wrench to spread the dust covers apart to pop them off.

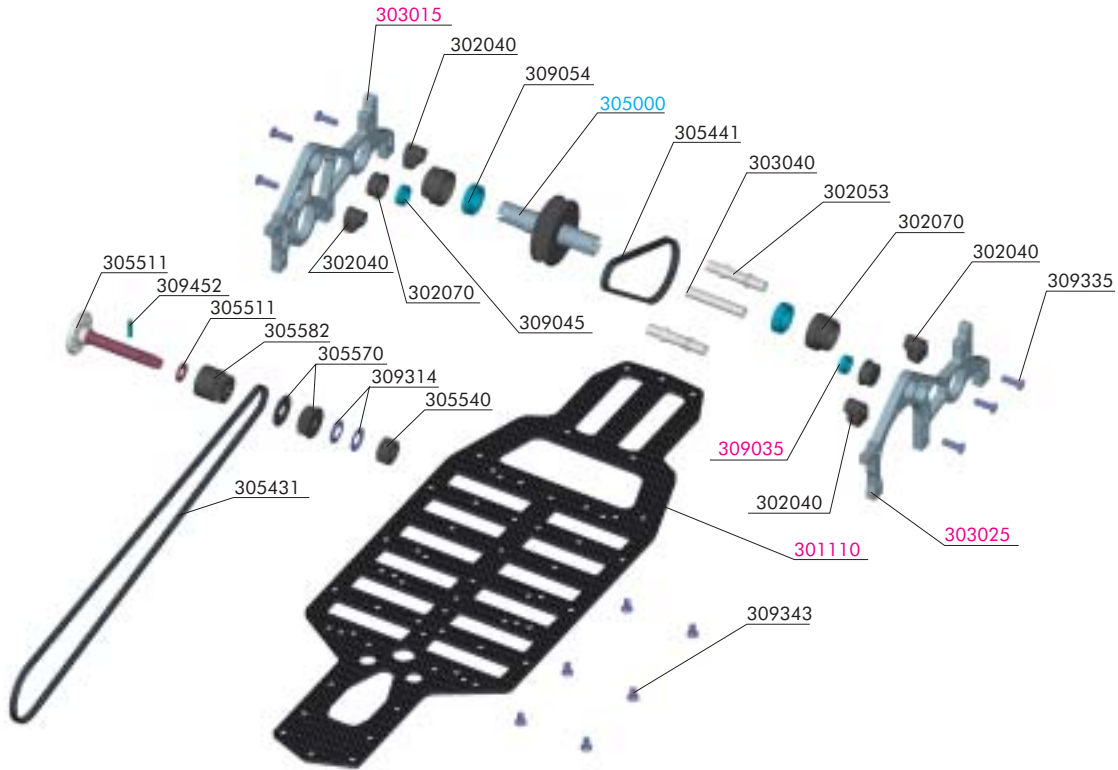


Please note the way that the cone washers need to face each other.

Cutaway view of the ball differential.



## 2. REAR TRANSMISSION



**BAG  
02**

30 2040	LOWER SUSPENSION HOLDER (SET 2+1+1)	30 9054	HIGH-SPEED BALL-BEARING 10 x 15 x 4 BLUE COVERED (2)
30 2070	ECCENTRIC NYLON HUB FOR BULKHEAD + COVERS (4+2)	30 9314	CONE WASHER ST 6 x 12 (10)
30 2053	ALU LOWER SUSPENSION HOLDER	30 9335	HEX SCREW SH M3x10 (10)
30 3040	ALU REAR BULKHEAD BRACE	30 9343	HEX SCREW SFH M3x6 (10)
30 5001	BALL DIFFERENTIAL - SPRING STEEL - SET (OPTION)	30 9452	PIN 2x10 (10)
30 5431	HIGH-PERFORMANCE KEVLAR DRIVE BELT FRONT 3 x 507 MM	30 1110	6-CELL CHASSIS 2.5 MM GRAPHITE - CNC MACHINED
30 5441	HIGH-PERFORMANCE KEVLAR DRIVE BELT REAR 4 x 180 MM	30 3015	ALU SUSP. ADJUSTABLE BULKHEAD REAR RIGHT - HARD COATED
30 5511	LAYSHAFT SPRING STEEL INTEGR. SPUR G. ADAPTER EVO2	30 3025	ALU SUSP. ADJUSTABLE BULKHEAD REAR LEFT - HARD COATED
30 5540	ONE-WAY ADJUSTMENT NUT M6	30 5000	BALL DIFFERENTIAL WITH LABYRINTH DUST COVERS™ - SET
30 5570	FIXED PULLEY 16T		
30 5582	ONE-WAY PULLEY 16T WITH GROOVED ONE-WAY BEARING		
30 9035	HIGH-SPEED BALL-BEARING MR95ZZ 5 x 9 x 3 BLUE COVERED (2)		
30 9045	HIGH-SPEED BALL-BEARING MR106ZZ 6 x 10 x 3 BLUE COVERED (2)		



309054  
BB 10x15



309045  
BB 6x10



309035  
BB 5x9

The new adjustable bulkheads enable you to easily adjust belt tightness.

1. Press in the plastic holders for the small ball-bearings into the bulkheads as shown. The plastic holder with the hole through it goes in the right bulkhead; the plastic holder without the hole through it goes in the left bulkhead.
  2. Press #309035 (BB 5x9) ball-bearing into the plastic holder in the right bulkhead. Press #309045 (BB 6x10) ball-bearing into the plastic holder in the left bulkhead.
  3. Press the large eccentric ball-bearing holders into the bulkheads. Align the tab of each holder with the middle notch in each bulkhead as shown.
  4. Press #309054 (BB 10x15) ball-bearings into the eccentric covers.
- Make sure the bearings turn freely and easily.

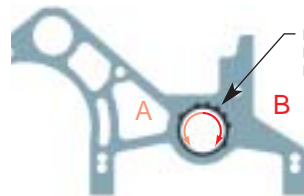
How to adjust the tightness of belt:

**To tighten rear belt:**

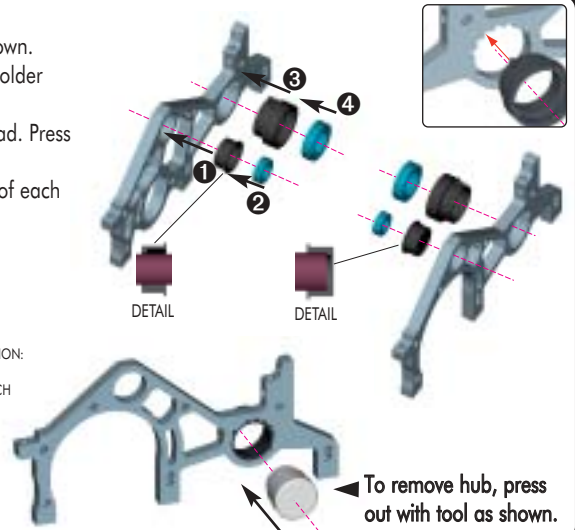
Rotate rear nylon hubs in arrow direction (A)

**To loosen rear belt:**

Rotate rear nylon hubs in arrow direction (B)



INITIAL POSITION:  
PLACE TAB  
IN THIS NOTCH



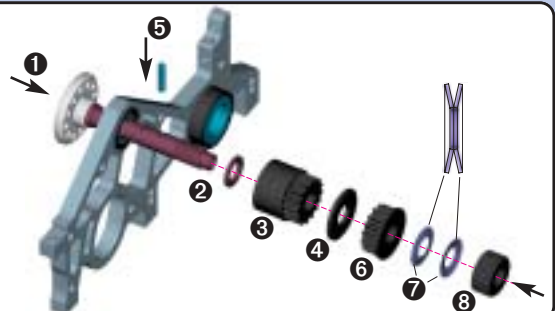
▶ To remove hub, press out with tool as shown.

309452  
P 2x10

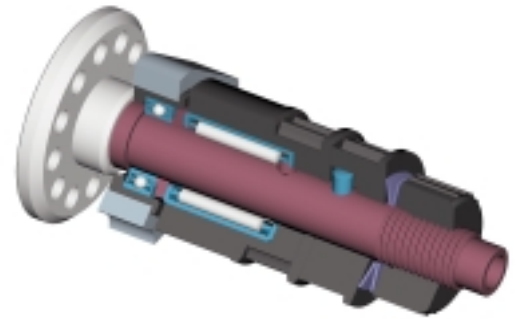


309314  
ST 6x12

1. Insert the layshaft with spur gear adapter through the preinstalled ball-bearing in the bulkhead.
2. Install the diff washer thrust shim.
3. Install the 16T one-way pulley. Make sure that the one-way pulley "free wheels" when rotated forward, but locks onto the layshaft when rotated backward.
4. Install the fixed pulley shim.
5. Press the #309452 (P 2x10) pin into the hole on the layshaft. Note that the pin should stick out from both sides equally.



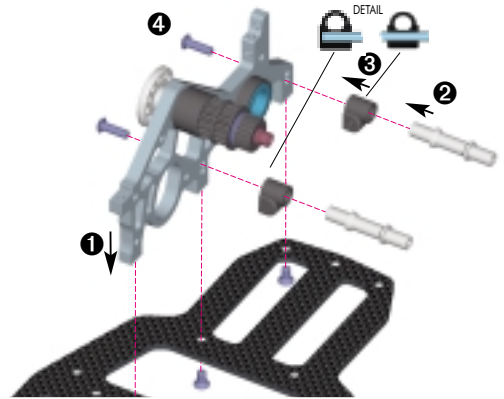
6. Install the 16T fixed pulley and seat it over the pin. The fixed pulley and fixed pulley shim should be flush against the one-way pulley and the pin should not be visible.
7. Install the two #309314 (ST 6x12) cone washers, making sure they face the right way. Check the detail for the correct orientation.
8. Install the #30 5540 one-way adjustment nut. Thread the nut onto the layshaft very carefully so it installs true onto the threads. If it installs crooked, back it off the thread until you feel the end of the thread "click", then start threading forward again until it is straight. There should be some resistance to the nut; if the movement is too loose, use a little threadlock compound to give the nut some resistance. Note: If the one-way adjustment nut does not tighten flat against the fixed pulley, irregular wear to the pulleys may occur.



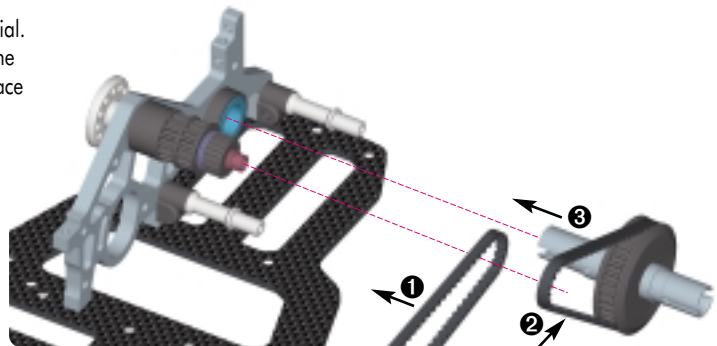
Cutaway view of the main layshaft. Please note the correct orientation of the cone washers.



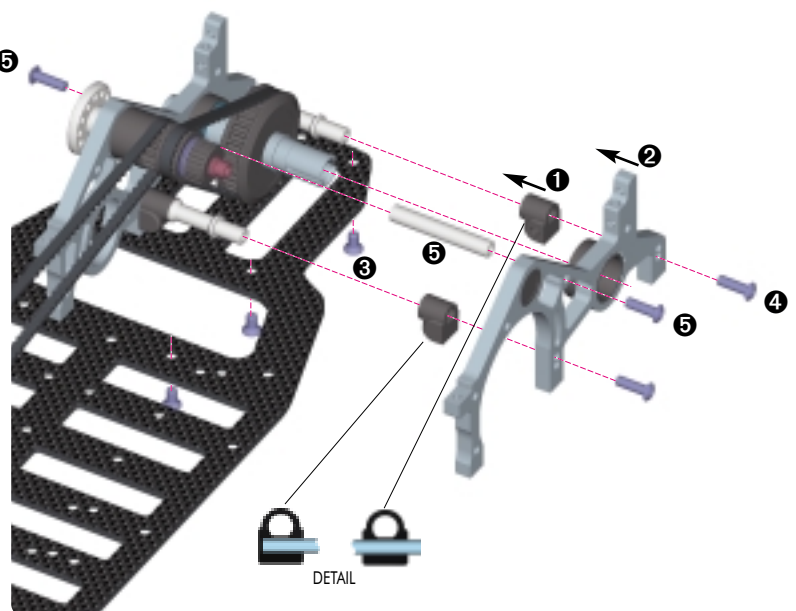
1. Mount the right bulkhead to the lower chassis using three #309343 (SFH M3x6) screws.
2. Insert the aluminum lower suspension holders into the plastic lower suspension hubs.
3. Mount the plastic lower suspension hubs onto the bulkheads. Please note that the rear lower suspension hub has a hole that goes all the way through and the forward one has a hole that doesn't go through all the way.
4. Use #309335 (SH M3x10) screws to mount the aluminum lower suspension holders and plastic lower suspension hubs. Make sure the pivot pin holes in the plastic hubs are at the bottom, just above the lower chassis. Do not tighten the screws all the way; final tightening will be done after installing the lower arms.



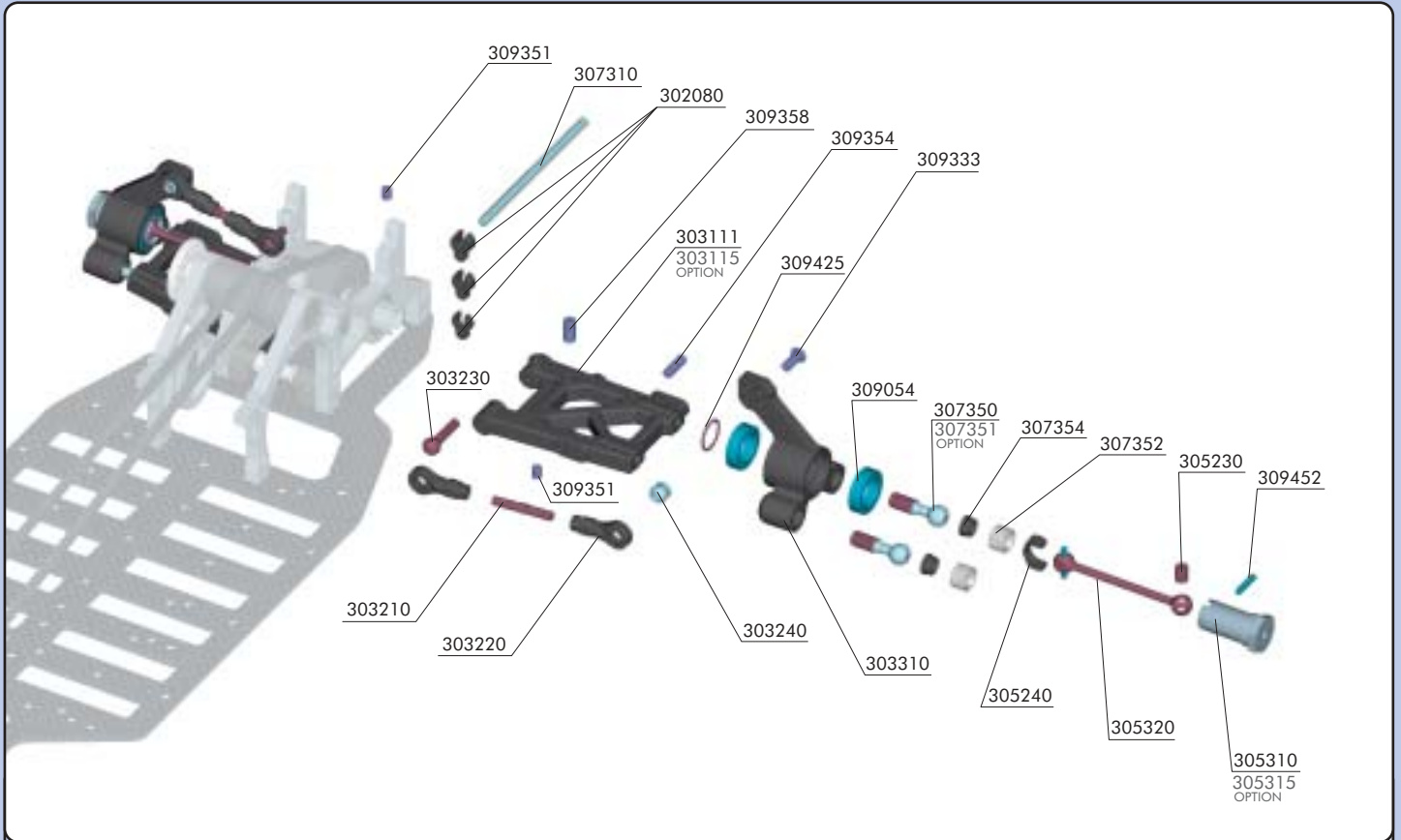
1. Place the long front drive belt on the one-way pulley.
2. Place the short rear belt on the assembled differential.
3. Insert the longer output shaft of the differential into the ball-bearing pressed in the right side bulkhead, then place the drive belt onto the fixed pulley on the layshaft.



1. Place the plastic lower suspension hubs onto the aluminum lower suspension holders that are already mounted onto the bulkheads. Note that the rear hub has a hole that goes all the way through. Be sure to check the orientation of the holes.
2. Insert the bulkhead onto the differential and the layshaft.
3. Mount the left bulkhead to the lower chassis using three #309343 (SFH M3x6) screws.
4. Mount the rear lower holders using two #309335 (SH M3x10) screws. Do not fully tighten them; final tightening will be done after installing the lower arms.
5. Mount the aluminum rear bulkhead brace with #309335 (SH M3x10) screws onto the bulkheads from both sides. Do not fully tighten it; final tightening will be done after installing the lower arms.



### 3. REAR SUSPENSION



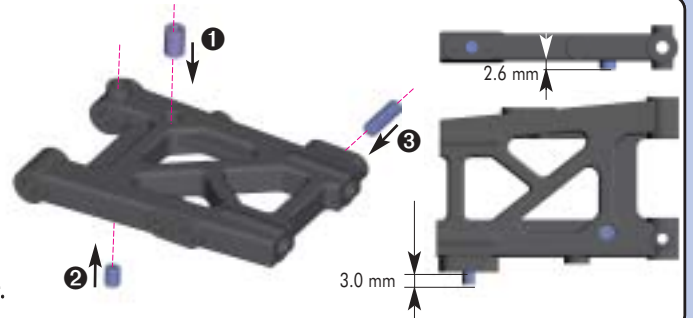
#### BAG 03

30 2080 CASTER CLIPS SET - 4,3,2,1 MM (2)  
 30 3111 SUSPENSION ARM REAR LOWER EVO2  
 30 3115 ALU REAR LOWER ARM 3 SHOCK POSITIONS (OPTION)  
 30 3200 ADJ. REAR TURNBUCKLE L/R 25 MM - SPRING STEEL (2+4)  
 30 3210 REAR TURNBUCKLE L/R 25 MM - SPRING STEEL (2)  
 30 3220 BALL JOINT 5.8 MM (4)  
 30 3230 ADJUSTABLE 5.8 MM BALL END - SPRING STEEL (2)  
 30 3240 BALL UNIVERSAL 5.8 MM HEX (4)  
 30 3310 UPRIGHT REAR  
 30 5230 DRIVE SHAFT COUPLING - SPRING STEEL (2)  
 30 5240 DRIVE SHAFT REPLACEMENT PLASTIC CAP 3 MM (4)  
 30 5310 WHEEL AXLE 22 MM - INTEGRATED HEX HUB - HARD COATED (2)  
 30 5315 WHEEL AXLE 22 MM -INTEGR. HEX HUB- SPRING STEEL (2) (OPTION)

30 5320 DRIVE SHAFT 51 MM - SPRING STEEL (2)  
 30 7310 REAR WISHBONE PIVOT PIN BOTTOM - SPRING STEEL (2)  
 30 7350 PIVOT BALL 6.8 MM - SPRING STEEL (2)  
 30 7351 ALU PIVOT BALL 6.8 MM - HARD COATED (4) (OPTION)  
 30 7352 ALU ADJUSTING NUT M8 x 1 (4)  
 30 7354 PLASTIC BALL CUP 6.9 MM (4)  
 30 9054 HIGH-SPEED BALL-BEARING 10 x 15 x 4 BLUE COVERED (2)  
 30 9333 HEX SCREW SH M3x6 (10)  
 30 9351 HEX SCREW SB M3x4 (10)  
 30 9354 HEX SCREW SB M3x8 (10)  
 30 9358 HEX SCREW SB M4x8 (10)  
 30 9452 PIN 2x10 (10)  
 30 9425 O-CLIP 10 (10)

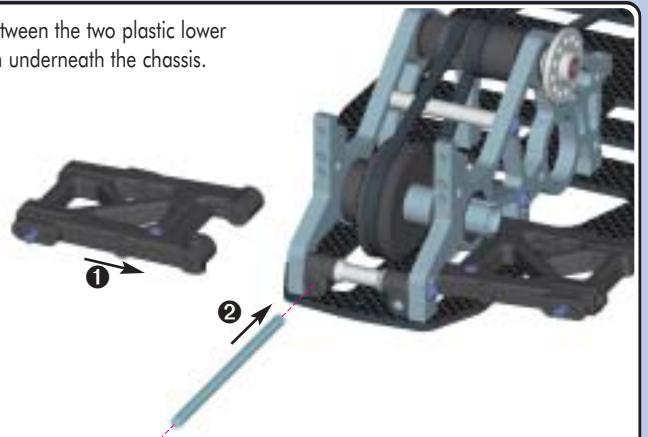


1. Thread one #309358 (SB M4x8) downstop adjustment screw into the rear lower arm. It must protrude 2.6 mm. This screw needs to be accessible from the top of the arm.
2. Thread one #309351 (SB M3x4) pivot pin set screw into the arm. Thread it just enough so it will stay in the hole; don't let it thread into the pivot pin area.
3. Thread one #309354 (SB M3x8) shock mounting screw into the hole located on the outside of the arm. It must protrude 3.0 mm.



Repeat for the other arm, making sure to mirror the screw placement.

1. Position the rear suspension arm in the rear bulkhead. It should seat between the two plastic lower suspension holders. Note that the pivot pin set screws should be seen from underneath the chassis.
2. Align the holes in the arms with the suspension holders and slide a rear pivot pin through the hole to secure them. The flat spot on the pivot pin must be towards the rear and facing the bottom.
3. Tighten the #309351 (SB M3x4) pivot pin set screw just until it touches the pivot pin.
4. Once both pivot pins are installed, tighten all the screws that were left loose in section 02 Rear Transmission:
  - Bulkhead brace #309354 (SB M3x8) screws
  - Lower chassis #309343 (SFH M3x6) screws
  - Lower suspension holders

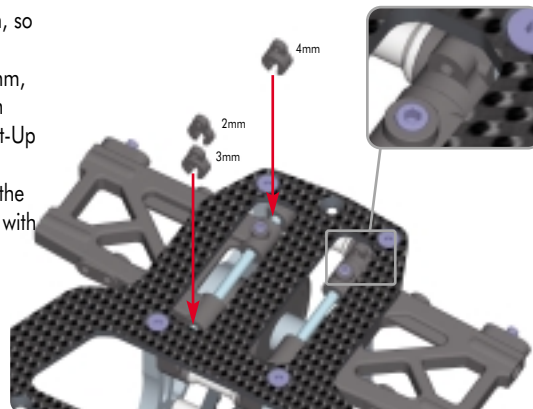


After all the screws are tight, check the arms for free movement.



1. Release the pivot pin set screw to allow the arm to slide back and forth on the pin, so you can install the wheelbase clips on the pivot pin.
  2. Install the #30 2080 wheelbase clips. Use only three clips (one each of 4mm, 3mm, and 2mm) on each arm. The initial setting is to install two clips (3 mm and 2 mm) in front of the arm, and one 4 mm clip behind the arm. For adjustment, refer to the Set-Up Book.
- Note: If you find that the arm does not move freely after installing the clips, remove the 4mm clip, lightly sand one side, and reinstall. Repeat this until the arm moves freely with all three clips installed.
3. Tighten the pivot pin set screws very lightly. Be careful not to overtighten them.

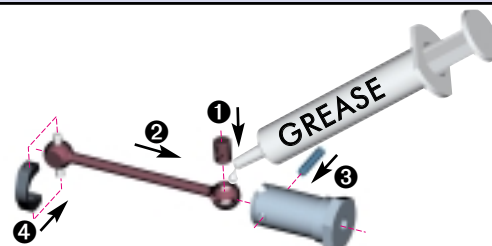
**Recheck the arms for free movement.**



309452  
P 2x10

1. Lightly grease a #30 5230 coupling and insert it into the drive shaft joint.
2. Slide the drive shaft joint into #30 5310 the wheel axle, aligning the holes.
3. Insert the #30 9452 (P 2x10) cross pin through the aligned holes in the coupling and wheel axle. Make sure it is evenly spaced on both sides of the wheel axle.
4. Install the plastic cap onto the drive shaft pin. First insert one hole of the plastic cap over a pin, then stretch the other hole over the other pin.

**Repeat for both axes.**

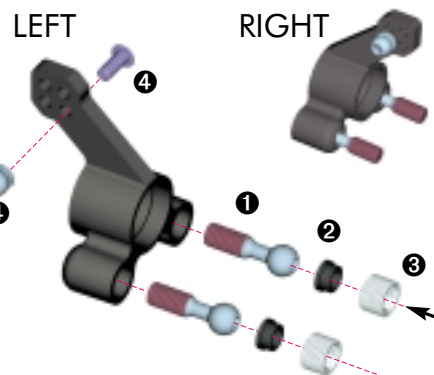


309333  
SH M3x6

Remove any excess plastic flash from the holes in the uprights before beginning assembly.

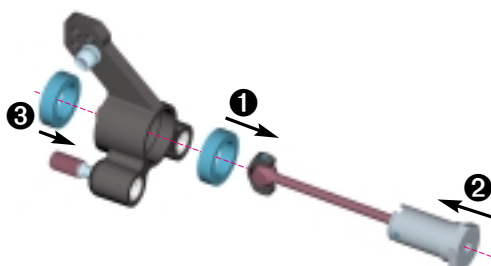
1. Insert a #30 7350 pivot ball through each of the pivot holes in the # 30 3310 rear uprights.
2. Place the plastic ball cups on top of the pivot balls. The concave (scooped) side goes against the pivot balls.
3. Thread the plugs into the tapped holes atop the pivot balls and ball cups. Adjust the plugs so the pivot balls have the least amount of play while still allowing free movement in the uprights.
4. Thread a #30 9333 (SH M3x6) screw through one of the upper holes on the upright, and into a #30 3240 pivot ball. Tighten the screw into the pivot ball until you feel a "snap".

**Repeat for both sides, but in step 4, the screw should go through the opposite side of the upright.**



309054  
BB 10x15

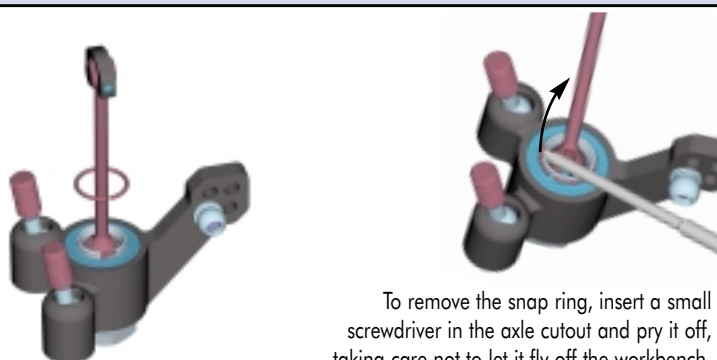
1. Slide a #309054 (BB 10x15) ball-bearing onto the wheel axle.
2. Insert the drive shaft through the upright until the bearing on the axle is seated. Note the direction of installation from the diagram.
3. Slide another #309054 (BB 10x15) bearing over the drive shaft. Press the bearing into the upright, making sure that it fits precisely.



309425  
C 10

Fasten the axle to the upright by installing a snap ring in the groove in the wheel axle (near the drive shaft joint). To make installation easier, place the hex portion of the wheel axle flat on a table. Put one end of the snap ring into the groove on the opposite side of the axle cutout, and use a slotted screwdriver to work the rest of the clip into the groove.

**Repeat for the other axle and upright.**

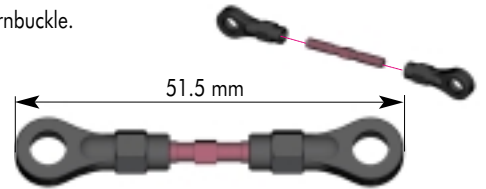


To remove the snap ring, insert a small screwdriver in the axle cutout and pry it off, taking care not to let it fly off the workbench.

# REAR SUSPENSION

Assemble the rear turnbuckles by threading ball joints onto the ends of the spring steel turnbuckle.

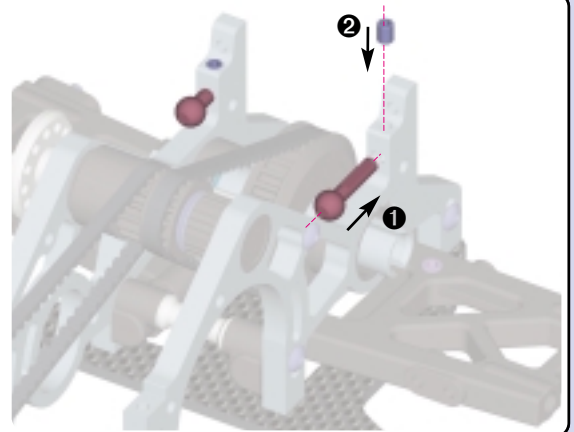
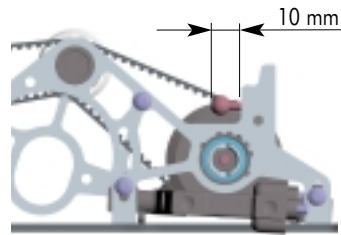
Note: The turnbuckle has a CCW thread on one end and a CW thread on the other end. Adjust the turnbuckles to a length of 51.5 mm, measured end-to-end.



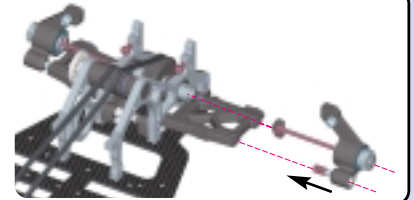
309351  
SB M3x4

1. Insert a #303230 ball end into the bulkhead hole as shown, with the flat on the shaft facing up. The ball end should protrude 10.0 mm from the bulkhead as shown.
2. Thread a #309351 (SB M3x4) set screw into the bulkhead as shown to secure the ball end.

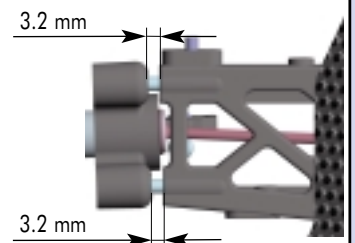
Repeat for other ball end.



Insert a 2.5mm hex wrench into the ends of the pivot balls. Thread the two pivot balls into the arms just enough so they are secured by a few threads. The holes in the arm are pre-tapped for easy installation. Turn each pivot ball only 1-2 turns at a time. Position the drive shaft's plastic cap in the differential outdrive slot. Continue threading in the pivot balls.

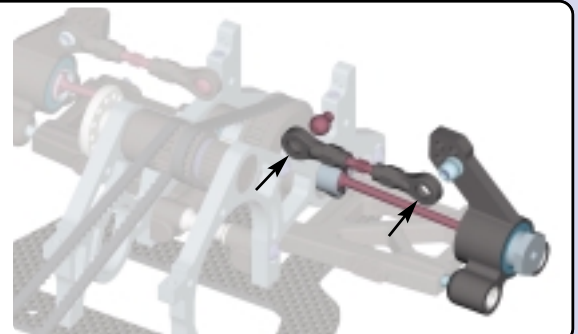


Adjust the pivot balls until there is a 3.2 mm gap between the upright and the end of the suspension arm as shown.

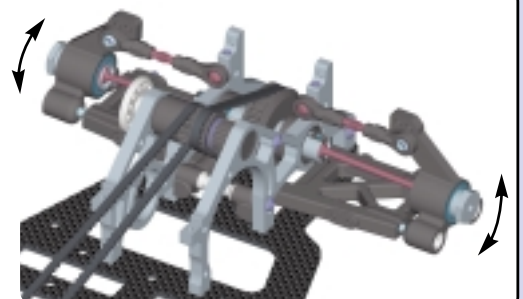


Snap the turnbuckle ball joints onto the balls on the rear uprights and the adjustable ball ends.

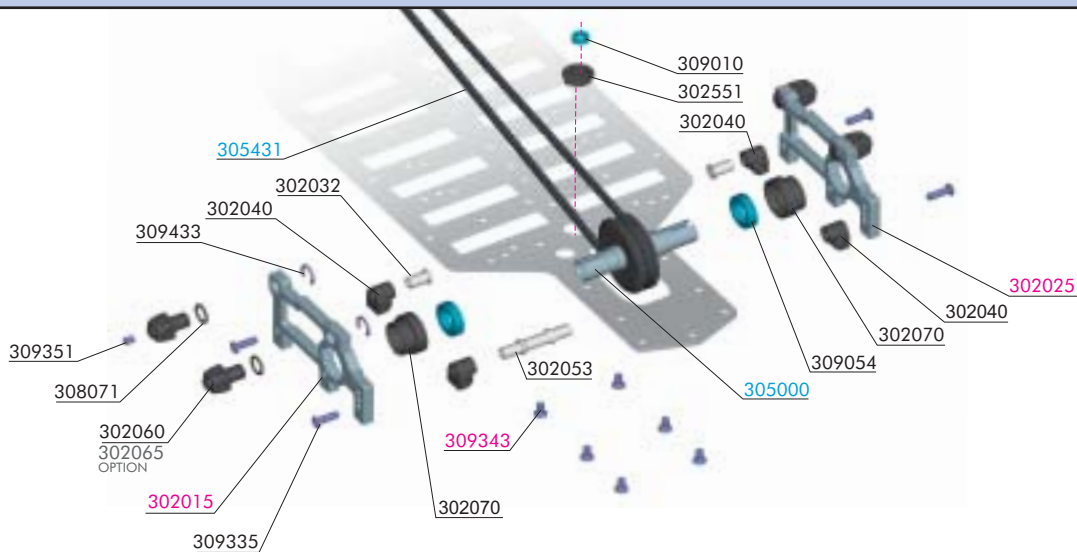
The suspension arms must be able to fall freely when lifted up, then dropped. If there is any binding that prevents the arm from falling freely, remove the ball joint from the ball and lightly squeeze it with a pair of pliers. Remount the ball joint and check the arm again. Repeat this process until there is no more binding.



The rear suspension is complete. Once again, make sure that the whole assembly moves freely and easily.



# 4. FRONT TRANSMISSION



## BAG 04

30 2032	ALU NUT (2)	30 9054	HIGH-SPEED BALL-BEARING 10 x 15 x 4 BLUE COVERED (2)
30 2040	LOWER SUSPENSION HOLDER (SET 2+1+1)	30 9351	HEX SCREW SB M3x4 (10)
30 2053	ALU LOWER SUSP. HOLDER	30 9433	C-CLIP 6,5 (10)
30 2060	FRONT UPPER SUSPENSION HOLDER (SET 4+8)	30 9335	HEX SCREW SH M3x10 (10)
30 2065	ALU ECCENTRIC FRONT UPPER PIVOT PIN HOLDERS (4)	30 2015	ALU SUSP. ADJUSTABLE BULKHEAD FRONT RIGHT - HARD COATED
30 2070	ECCENTRIC NYLON HUB FOR BULKHEAD + COVERS (4+2)	30 2025	ALU SUSP. ADJUSTABLE BULKHEAD FRONT LEFT - HARD COATED
30 2551	SERVO SAVER PLASTIC COVER - ECCENTRIC (2)	30 9343	HEX SCREW SFH M3x6 (10)
30 8071	O-RING 5x1 (4)	30 5000	BALL DIFFERENTIAL WITH LABYRINTH DUST COVERS™ - SET
30 9010	BALL-BEARING MR74ZZ 4x7x2.5 (2)	30 5431	HIGH-PERFORMANCE KEVLAR DRIVE BELT FRONT 3 x 507 MM



309054  
BB 10x15



309433  
C 6.5



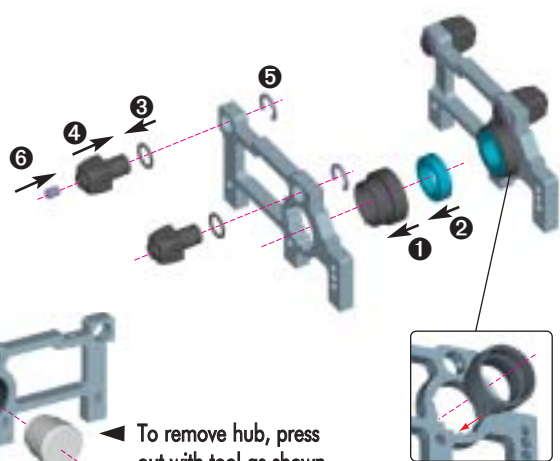
308071  
O 5x1



309351  
SB M3x4

The new adjustable bulkheads enable you to easily adjust belt tightness.

1. Press the large eccentric ball-bearing holders into the bulkheads. Align the tab of each holder with the middle (bottom) notch in each bulkhead as shown.
2. Press #309054 (BB 10x15) ball-bearings into the eccentric covers. Make sure the bearings turn freely and easily.
3. Put a #308071 (O 5x1) rubber O-ring on each of the four #302060 front upper suspension holders.
4. Insert the front upper suspension holders into the bulkheads.
5. Snap a #309433 (C 6.5) clip into the groove of the upper suspension holder.
6. Thread a #309351 (SB M3x4) set screw into each of the two rear upper rear suspension holders.



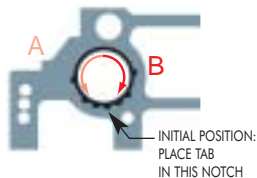
How to adjust the tightness of belt:

**To tighten front belt:**

Rotate front nylon hubs in arrow direction (A)

**To loosen front belt:**

Rotate front nylon hubs in arrow direction (B)



To remove hub, press out with tool as shown.



309335  
SH M3x10



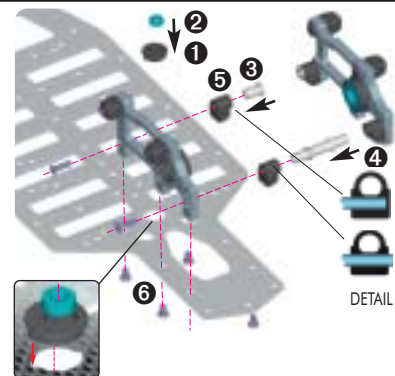
309343  
SFH M3x6



309010  
BB 4x7

1. Press the #302551 eccentric servo saver plastic cover into the corresponding hole in the chassis. Orient the cover so the tab fits in the notch on the right side of the chassis. See the illustration for the proper location.

2. Insert a #309010 (BB 4x7) ball-bearing into the plastic cover.
3. Insert a #302032 aluminum nut into each of the #302040 rear plastic lower suspension holders (with the CLOSED holes).
4. Insert the #302053 aluminum lower suspension holder into the plastic lower suspension holders (with the OPEN holes), and mount them to the right bulkhead using a #309335 (SH M3x10) screw. Make sure the pivot pin holes in the plastic hubs are at the bottom, just above the lower chassis.
5. Mount both rear plastic lower suspension holders (with the CLOSED holes) to the bulkheads with #309335 screws. Again, make sure the pivot pin holes in the plastic holders are at the bottom. Do not tighten the screws all the way; final tightening will be done after installing the lower arms.
6. Mount the right front bulkhead to the chassis using three #309343 (SFH M3x6) screws.

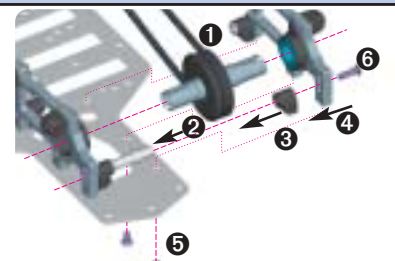


309343  
SFH M3x6

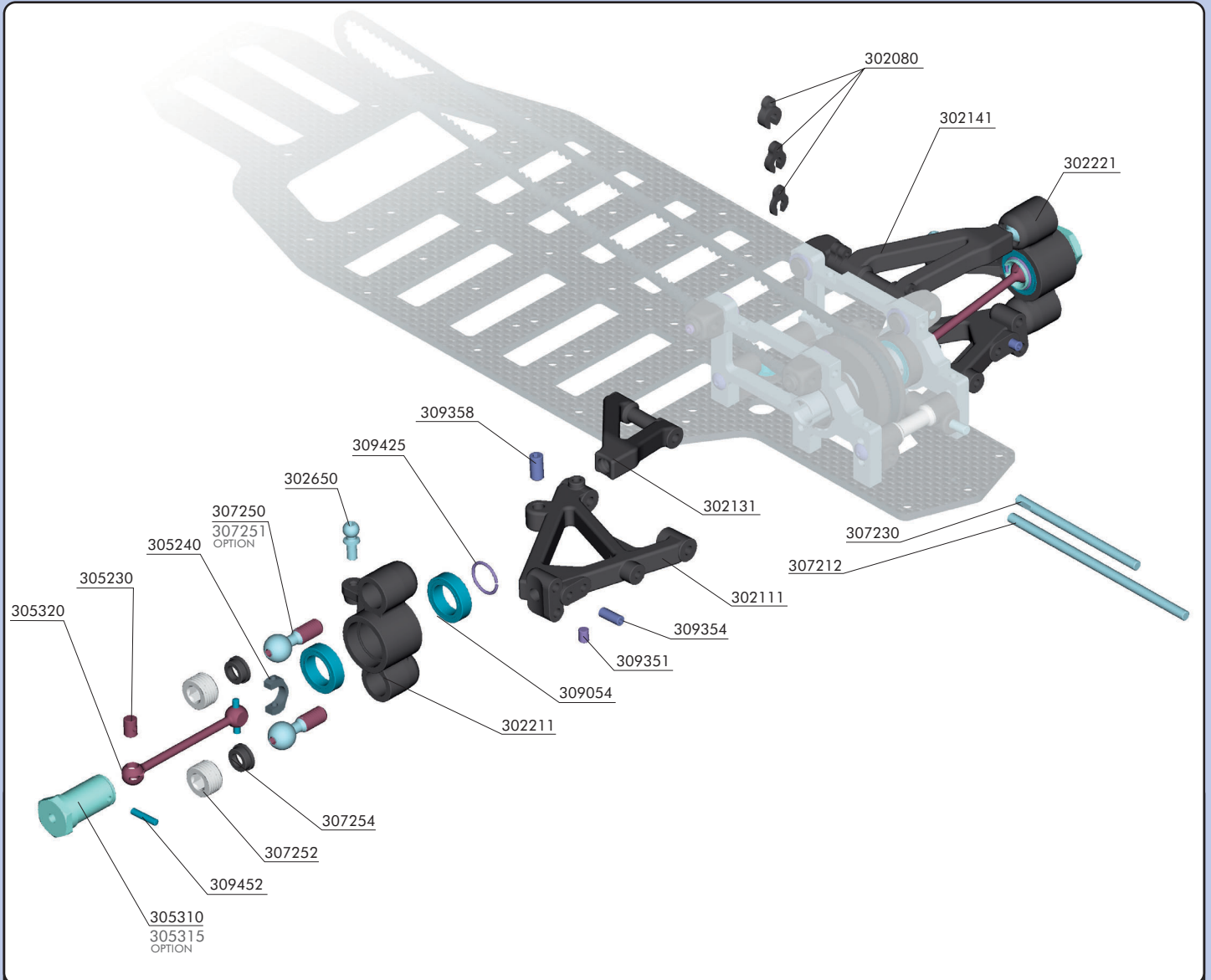


309335  
SH M3x10

1. Place the front drive belt onto the other assembled differential.
2. Insert the short diff shaft of the differential into the ball-bearing pressed into the right bulkhead.
3. Install the remaining open suspension holder onto the aluminum lower suspension holder.
4. Slide the left bulkhead over the diff shaft.
5. Mount the left bulkhead to the chassis using three #309343 (SFH M3x6) screws.
6. Fasten the lower suspension holder assembly to the left bulkhead with a #309335 (SH M3x10) screw.



# 5. FRONT SUSPENSION



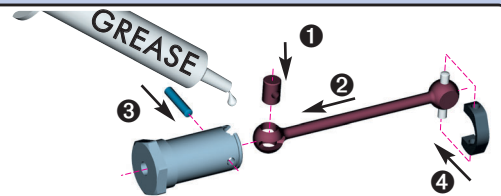
## BAG 05

30 2080	CASTER CLIPS SET - 4+3+2+1 MM (2)	30 7230	FRONT WISHBONE PIVOT PIN UPPER - SPRING STEEL (2)
30 2111	SUSPENSION ARM FRONT LOWER EVO2	30 7250	PIVOT BALL 8.5 MM - SPRING STEEL (2)
30 2131	SUSPENSION ARM FRONT UPPER RIGHT - WIDE	30 7251	ALU PIVOT BALL 8.4 MM - HARD COATED (4) (OPTION)
30 2141	SUSPENSION ARM FRONT UPPER LEFT - WIDE	30 7252	ALU ADJUSTING NUTS M10x1 (4)
30 2211	STEERING BLOCK RIGHT - WIDE	30 7254	PLASTIC BALL CUP 8.4 MM (4)
30 2221	STEERING BLOCK LEFT - WIDE	30 9054	HIGH-SPEED BALL-BEARING 10 x 15 x 4 BLUE COVERED (2)
30 2650	5 MM BALL END, WITH THREAD (6)	30 9351	HEX SCREW SB M3x4 (10)
30 5310	WHEEL AXLE REAR - INTEGR. HEX HUB - HARD COATED (2)	30 9354	HEX SCREW SB M3x8 (10)
30 5315	WHEEL AXLE REAR WITH HEX HUB - SPRING STEEL (2) (OPTION)	30 9358	HEX SCREW SB M4x8 (10)
30 5320	DRIVE SHAFT REAR - SPRING STEEL (2)	30 9425	O-CLIP 10 (10)
30 5230	DRIVE SHAFT COUPLING - SPRING STEEL (2)	30 9452	PIN 2x10 (10)
30 5240	DRIVE SHAFT REPLACEMENT PLASTIC CAP 3 MM (4)		
30 7212	FRONT WISHBONE LONG PIN - FOR ANTI-ROLL BAR (2)		



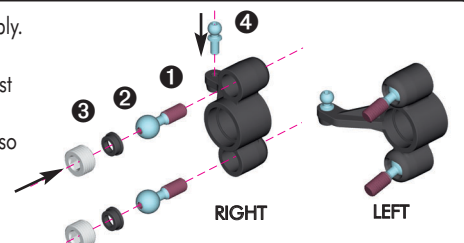
309452  
P 2x10

1. Lightly grease a #30 5230 coupling and insert it into the drive shaft joint.
  2. Slide the drive shaft joint into the #30 5310 wheel axle, aligning the cross holes.
  3. Insert the #30 9452 (P 2x10) cross pin through the aligned holes in the coupling and wheel axle. Make sure it is evenly spaced on both sides of the wheel axle.
  4. Install the plastic cap onto the drive shaft pin. First insert one hole of the plastic cap over a pin, then stretch the other hole over the other pin.
- Repeat for both axes.**



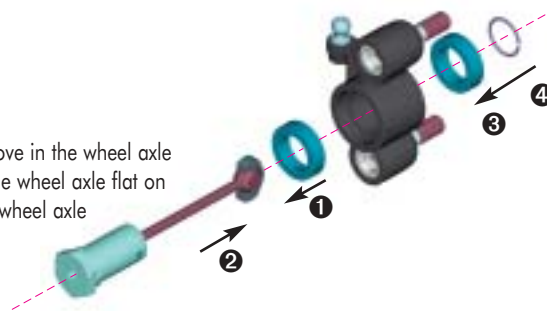
Remove any excess plastic flash from the holes in the steering blocks before beginning assembly.

1. Insert a #30 7250 pivot ball through each of the pivot holes in the steering blocks.
2. Place the plastic ball cups on top of the pivot balls. The concave (scooped) side goes against the pivot balls.
3. Thread the plugs into the tapped holes atop the pivot balls and ball cups. Adjust the plugs so the pivot balls have the least amount of play while still allowing free movement in the steering blocks.
4. Mount a #302650 ball end to the top of each steering arm.





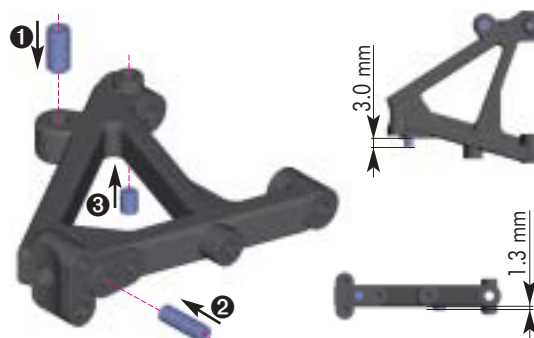
1. Slide a #309054 (BB 10x15) ball-bearing onto the wheel axle.
2. Insert the drive shaft through the steering block until the bearing on the axle is seated. Note the direction of installation from the diagram.
3. Slide another #309054 (BB 10x15) ball-bearing over the drive shaft. Press the bearing into the steering block, making sure that it fits precisely.
4. Fasten the wheel axle to the steering block by installing a snap ring in the groove in the wheel axle (near the drive shaft joint). To make installation easier, place the hex portion of the wheel axle flat on a table. Put one end of the snap ring into the groove on the opposite side of the wheel axle cutout, and use a slotted screwdriver to work the rest of the clip into the groove.



Repeat for the other wheel axle and steering block.



1. Thread one #309358 (SB M4x8) downstop adjustment screw into the front lower arm. It must protrude 1.3 mm. This screw needs to be accessible from the top of the arm.
2. Thread one #309354 (SB M3x8) shock mounting screw into the hole located on the outside of the arm, as shown. It must protrude 3.0 mm.
3. Thread one #309351 (SB M3x4) pivot pin set screw into the arm. Thread it just enough so it will stay in the hole; don't let it thread into the pivot pin area.

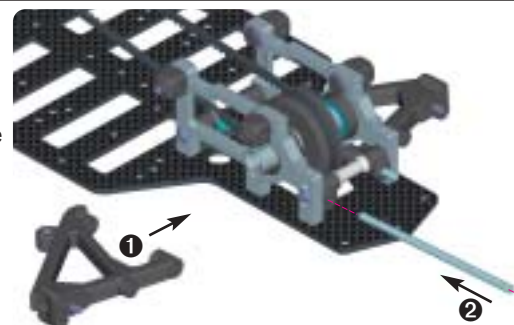


Repeat for the other arm, making sure to mirror the screw placement.

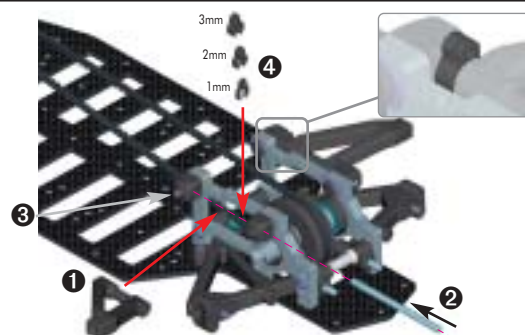
1. Position the lower front suspension arm in the front bulkhead. It should seat between the two plastic lower suspension holders. Note that the pivot pin set screws should be accessible from the 9mm holes underneath the chassis.
2. Align the holes in the arms with the suspension holders and slide a #307212 lower front pivot pin through the aligned holes. The flat spot on the pivot pin must be towards the rear and facing the bottom.
3. Tighten the #309351 (SB M3x4) pivot pin set screw just until it touches the pivot pin.
4. Once both pivot pins are installed, tighten all the screws that were left loose in section 04 Front Transmission:

- Lower chassis #309343 (SFH M3x6) screws
- Lower suspension holders

After all the screws are tight, check the arms for free movement.

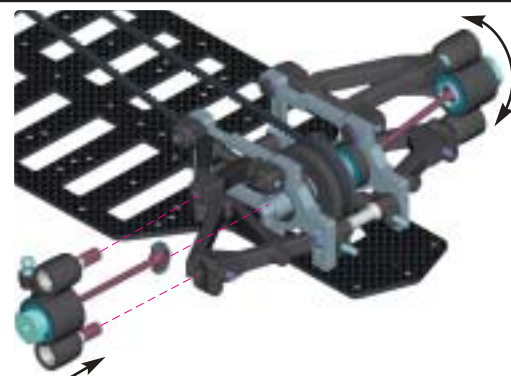
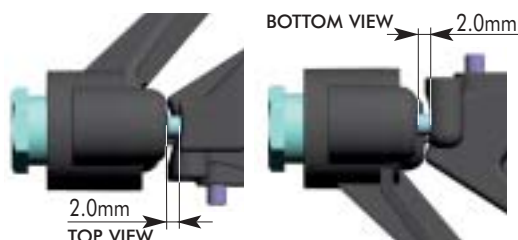


1. Position the upper front suspension arms in the upper suspension holders.
2. Slide a #307230 front upper pivot pin through the aligned holes in the holders and the arm. The flat spot on the pivot pin must be towards the side.
3. Tighten the #309351 (SB M3x4) pivot pin set screws just until they touch the pivot pins.
4. Install the caster clips. Use only 3 mm, 2 mm and 1 mm clips. The initial setting is to install one 2 mm clip in front of each arm, and install two clips (1 mm and 3 mm clip) behind each arm. For adjustment, refer to the Set-Up Book.



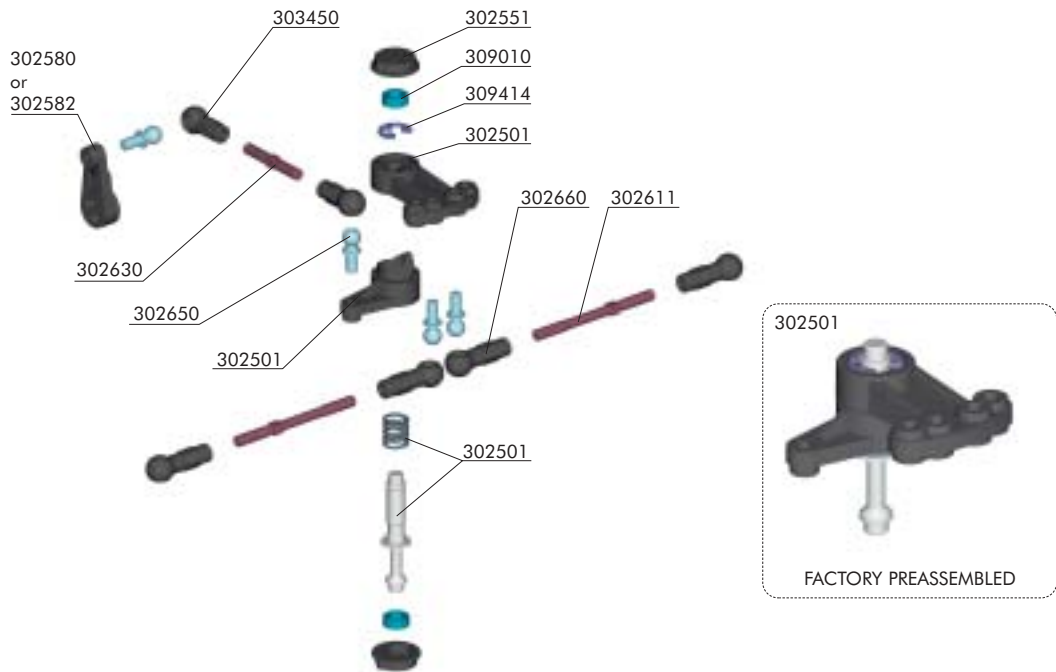
Insert a 2.5mm hex wrench into the ends of the steering block pivot balls. Thread the two pivot balls into the arms just enough so they are secured by a few threads. The holes in the arms are pre-tapped for easy installation. Turn each pivot ball only 1-2 turns at a time. Position the drive shaft's plastic cap in the differential outdrive slot. Continue threading in the pivot balls until there is a gap between the upper and lower portions of the steering block and the ends of the suspension arms, as shown in the detail illustration.

The front suspension is complete.



Make sure that the whole assembly moves freely and easily.

# 6. SERVO SAVER



## BAG 06

30 2501	DUAL-ACKERMAN CENTRAL SERVO SAVER (SET)	30 2650	5 MM BALL END, WITH THREAD (6)
30 2551	SERVO SAVER PLASTIC COVER - EXCENTRIC (2)	30 2660	BALL JOINT 5 MM (6)
30 2580	NYLON SERVO HORN - KO, JR, AIRTRONICS, MULTIPLEX	30 3450	NYLON BALL JOINT 5 MM - SHORT (4+2)
30 2582	NYLON SERVO HORN - FUTABA, ROBE	30 9010	BALL-BEARING MR74ZZ 4x7x2.5 (2)
30 2600	ADJ. STEERING ROD L/R 40 MM - SPRING STEEL + BALL JOINT (2+4)	30 9414	E-CLIP 4 (10)
30 2611	ADJ. STEERING ROD L/R 35 MM - SPRING STEEL (2)		
30 2630	ADJ. STEERING ROD L/R 20 MM - SPRING STEEL (2)	301180	FLEXIBLE TOP DECK - GRAPHITE - SET



309414  
C4

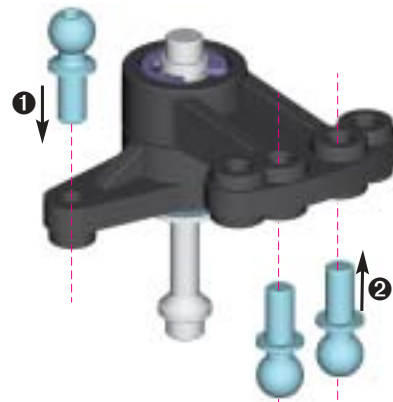
The servo saver is partially preassembled from the factory and requires only a few steps to finish.

If you need to assemble the parts yourself, perform the following steps:

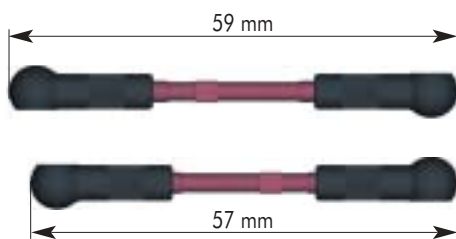
1. Place the servo saver spring on the steering post.
2. Place the lower servo saver arm on the steering post.
3. Place the upper servo saver arm on the steering post on top of the lower arm. Note that the upper and lower arms should interlock at a 90-degree angle. Check the illustration for proper orientation.
4. Press the servo saver arm down and secure the servo saver with a #309414 (C 4) clip. The clip snaps into a groove on the steering post.



1. Thread a #30 2650 ball end into the lower servo saver. Be sure that the ball is on top.
2. Thread two #30 2650 ball ends into the upper servo saver arm into the inner positions as shown. The two balls should be on the bottom.



Assemble the steering rods by threading ball joints onto the ends of the spring steel turnbuckle.  
 Note: The turnbuckle has a CCW thread on the long end and a CW thread on the short end.  
 Also note that the ball-joints should be 180-degrees to each other. Adjust the steering rods to the proper lengths as shown.



1:1



Assemble the servo link by threading a ball joint onto the ends of the spring steel turnbuckle.

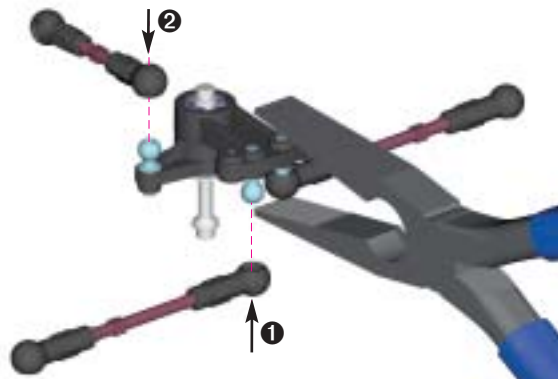
Note: The turnbuckle has a CCW thread on one end and a CW thread on the other end.  
 Also note that the ball-joints should be perpendicular (90-degrees) to each other.



1:1



- Using pliers, snap the steering rod ball joints onto the ball ends on the servo saver upper arm. Use the ball joints on the LONG end of the steering rods.
- Using pliers, snap the servo link ball joint onto the ball end on the servo saver lower arm.



- Choose the proper servo horn to fit your servo. See the parts list above to match your servo manufacturer to the proper servo horn.
- Thread a #302650 ball end into the servo horn. Note that the thread will extend through the servo horn, but will not affect operation. If desired, you can file off the exposed threads.
- Snap the other servo link's other ball joint onto the servo horn ball end.



309010  
BB 4x7

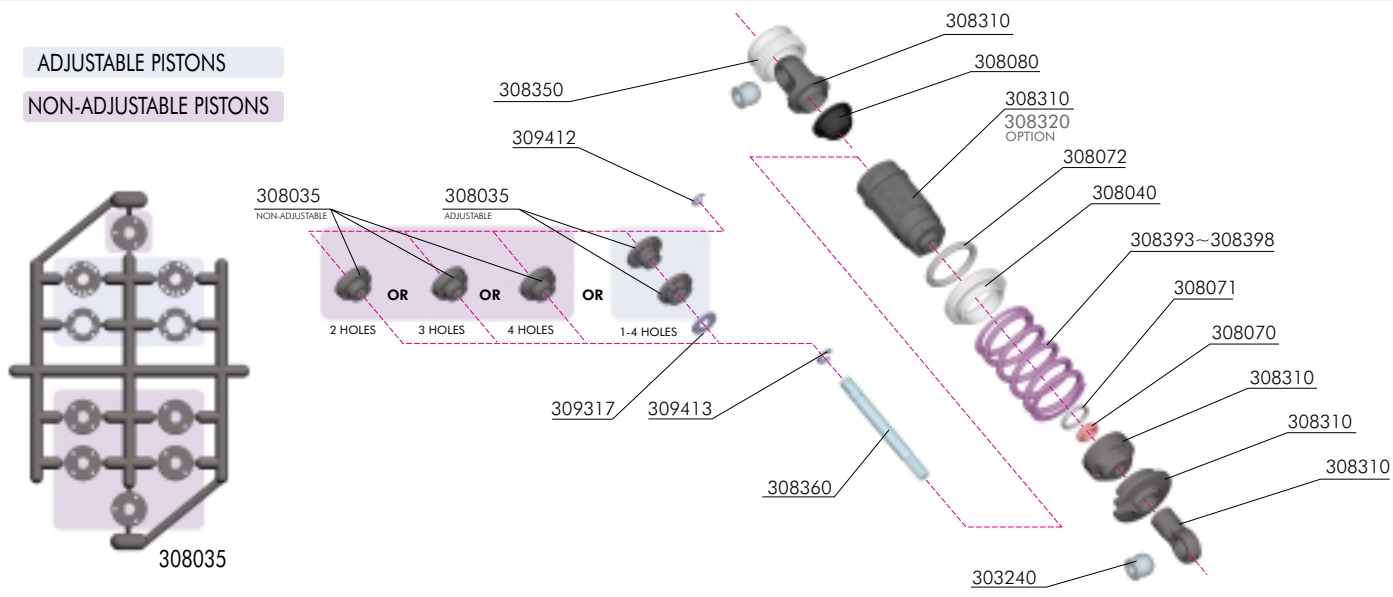
- Press the #302551 eccentric servo saver bearing plastic cover into the hole in the upper deck as shown. Orient the cover so the tab fits in the notch on the right side of the upper deck. See the illustration for the proper orientation.
- Place the #309010 (BB 4x7) ball-bearing in the plastic cap.



# 7. SHOCK ABSORBERS

## ADJUSTABLE PISTONS

## NON-ADJUSTABLE PISTONS



**BAG  
07**

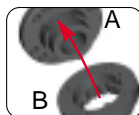
30 3240	BALL UNIVERSAL 5.8 MM HEX (4+4)	30 8360	HARDENED PISTON RODS FOR KEYED PISTONS (2)
30 8040	SHOCK ADJ. NUT ALU + O-RING (4+4)	30 8393	XRAY SPRING-SET D=1.3 YELLOW - SUPER-SOFT (OPTION)
30 8070	O-RING / SHIM + C CLIPS (4+12)	30 8394	XRAY SPRING-SET D=1.4 WHITE - SOFT (OPTION)
30 8071	O-RING 5x1 (4)	30 8395	XRAY SPRING-SET D=1.5 BLUE - SOFT-MEDIUM (OPTION)
30 8072	O-RING 12.1 x 1.6 (4)	30 8396	XRAY SPRING-SET D=1.6 VIOLET - MEDIUM (OPTION)
30 8080	SHOCKABSORBER MEMBRANES (4)	30 8397	XRAY SPRING-SET D=1.7 PURPLE - MEDIUM-HARD (OPTION)
30 8035	NYLON PISTONS ADJUSTABLE + NON-ADJUST. (SET 2+6)	30 8398	XRAY SPRING-SET D=1.8 RED - HARD (OPTION)
30 8310	NYLON FRAME SHOCK PARTS 4-STEP	30 9412	E-CLIP 2 (10)
30 8320	ALU SHOCK-BODY TEFLON (4) (OPTION)	30 9413	E-CLIP 3 (10)
30 8350	SHOCK CAP NUT ALU	30 9317	WASHER 3.2 (10)

Properly functioning shocks are one of the most important factors in the performance of your car. This XRAY shock set allows you to build four externally-adjustable or non-adjustable shocks. Both adjustable and non-adjustable shocks feature XRAY's unique keying system that positively locks the pistons to the shockrods.

When removing the parts from the frames, carefully remove the parts, then VERY carefully trim any excess flash with a sharp knife. We advise using extra-fine sandpaper to gently grind all small flashes. The side walls of the pistons must be perfectly round and smooth for proper operation.

## ADJUSTABLE PISTONS

Cut all shock parts free from the parts trees, carefully trim any excess flash, and lightly sand if necessary. The upper piston with holes (A) has a small tab that must exactly fit into one of the notches in lower piston (B).



Apply a drop or two of shock oil to the piston pieces. Press upper piston (A) into lower piston (B) as shown. Be sure to insert the upper piston into the lower piston so the tab sits in the notch.



309412  
C 1.9

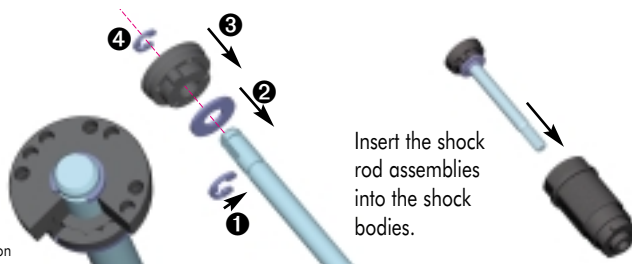
309413  
C 2.3

309317  
S 3.2

Assemble all four adjustable piston assemblies and shock rods as follows:

1. Press #309413 (C 2.3) E-clip into lower groove of shock rod.
2. Place #309317 (S 3.2) washer onto shock rod atop C-clip.
3. Press piston assembly onto shock rod, aligning flat in pistons with flat on shock rod.
4. Press #309412 (C 1.9) E-clip into upper groove of shock rod.

Cutaway view of the adjustable piston



Insert the shock rod assemblies into the shock bodies.

## NON-ADJUSTABLE PISTONS

Cut all shock parts free from the parts trees, carefully trim any excess flash, and lightly sand if necessary. Assemble all four non-adjustable piston assemblies and shock rods as follows:

1. Remove all four 3-hole non-adjustable pistons from the parts frames.
2. Press #309413 (C 2.3) E-clip into lower groove of shock rod.
3. Press 3-hole piston onto shock rod, aligning flat in piston with flat on shock rod.
4. Press #309412 (C 1.9) E-clip into upper groove of shock rod.

Insert the shock rod assemblies into the shock bodies.

309412  
C 1.9

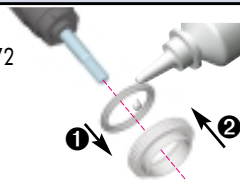
309413  
C 2.3



308072  
O 12.1x1.6


Perform for all four shock bodies:

1. Apply a drop or two of shock oil to the inside edge of the #308072 (O12.1x1.6) O-ring and insert it inside the groove of a #308040 threaded shock adjustment collar.
2. Thread the adjustment collar onto the shock body.




Cutaway view of assembled adjustment collar



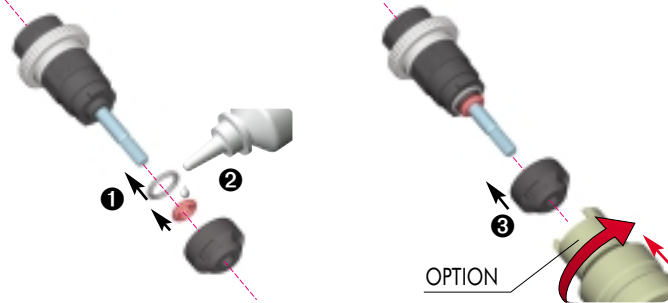


308070  
O 3.1x1.6

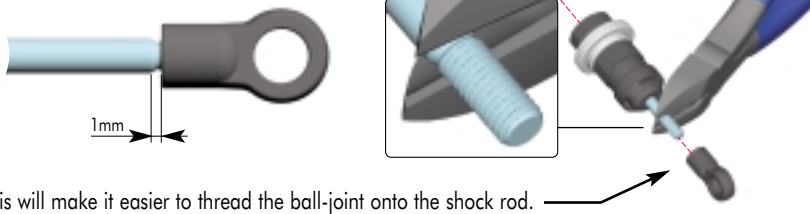


308071  
O 5x1

1. Insert the larger #308071 (O 5x1) O-ring onto the shock body, until it seats on the extended end of the shock body.
2. Lubricate the small #308070 (O 3.1x1.6) O-ring with a drop or two of shock oil. Taking care not to rip or damage the O-ring, slide it over the extended end of the shock rod.
3. Install the end-cap on to the bottom of the shock body. Lock it in place by pressing it on, then turning it about 1/8 of a turn CW. For easy assembly, use the #183010 HUDY Assembly Tool.

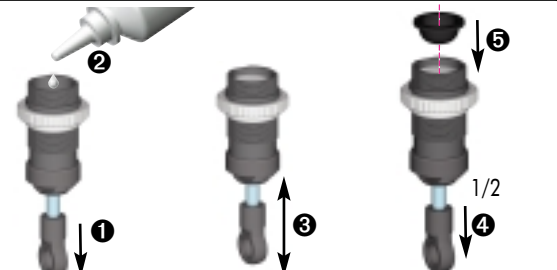


Grip the top of the exposed thread of the shock rod with side-cutting pliers and thread the ball-joint onto the shock rod until the joint ends approximately 1mm from the end of the thread. See the illustration.



Hint: Pre-thread the ball-joint using an M3 screw. This will make it easier to thread the ball-joint onto the shock rod.


1. Fully extend the piston rod so that the piston is at the bottom of the shock body.
2. Hold the shock upright and slightly overfill the shock body with oil.
3. Let the oil to settle and allow the air bubbles to rise to the top. Slowly move the piston up and down until no more air bubbles appear.
4. Move the piston out until it is about 1/2 way out of the shock body.
5. Place the rubber bladder on top of the shock body. Some oil should spill out.
6. Move the piston out very slightly so the bladder is sealed against the top of the shock body.



Place the top pivot-point on top of the bladder. Note the key notch on the top-pivot point. Place the #308350 aluminum collar over the top pivot-point, and thread it fully onto the shock body. Take care to match the key notch on the collar and top-pivot point. More excess oil may escape.

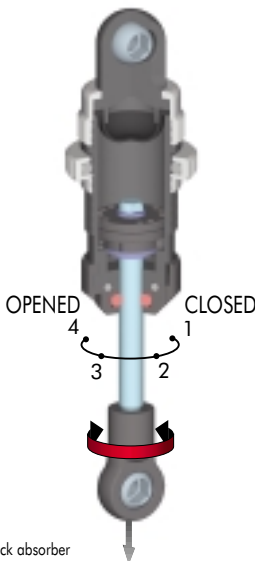
Check to make sure the shock absorber functions properly. The shock must move up and down freely with only "hydraulic" dampening. When you push the shock rod into the shock body then release it, the shock rod should not extend out by itself. If there is any air still left in the shock, open it again and start the bleeding procedure over.

**Shock length adjustment:**  
It is VERY important that the two shocks on each end of the car (front or rear) are equal lengths. Adjust the length of the shock by tightening or loosening the ball-joint on the shock rod.



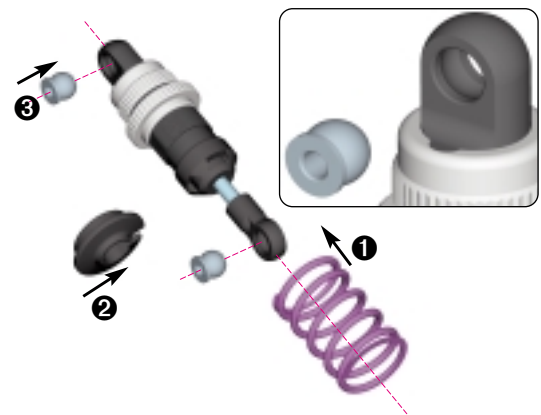
**Damping adjustment:**  
If you built the adjustable shocks, fully extend the shock rod and turn it slightly to lock the piston in the shock body. Turning the shock rod fully CCW aligns 4 holes in the pistons (softest damping). Turning the shock rod fully CW aligns one hole in the pistons (hardest damping). The shocks have four settings, each of which can be felt by a little "click".

Set all four shocks to position 3 (3 holes open -- medium)



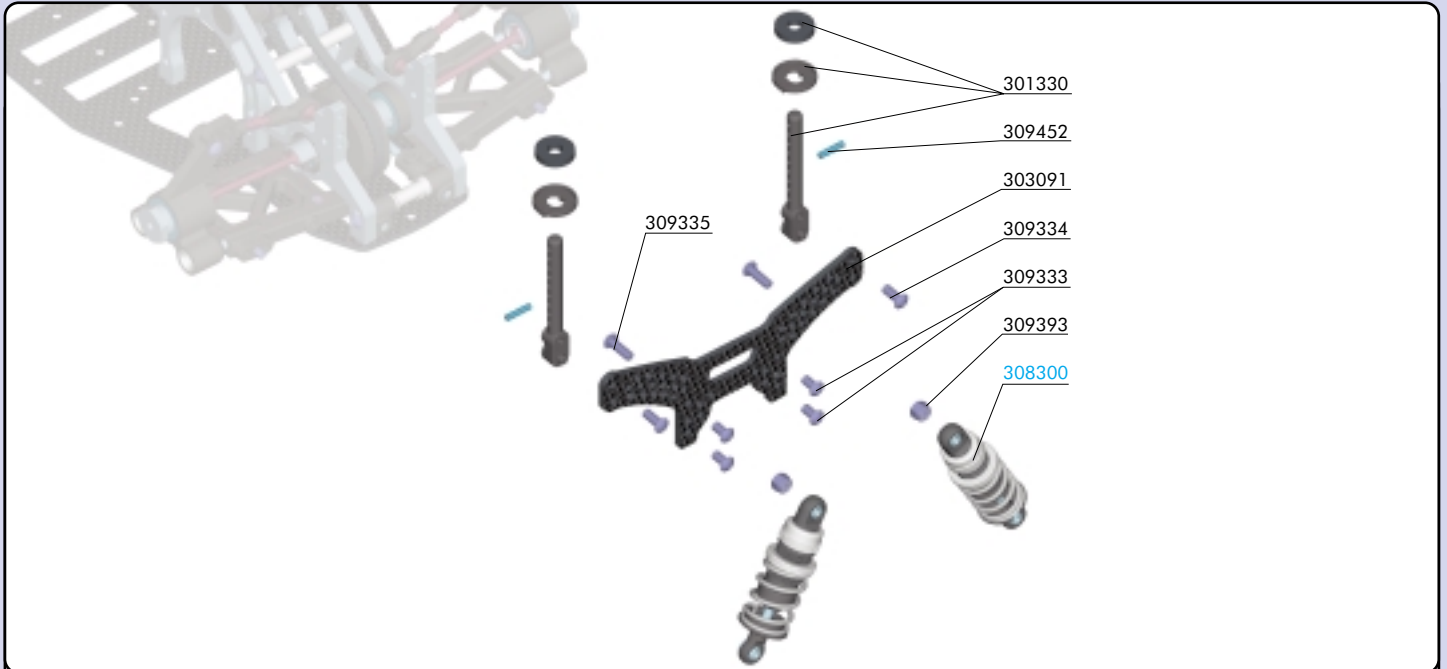
**Final shock assembly:**

1. Install the springs on all four shocks.
2. Secure the spring with a spring cup.
3. Use pliers to install two #303240 balls in each shock; one in each of the upper and lower eyelets.



Cutaway view of the assembled shock absorber

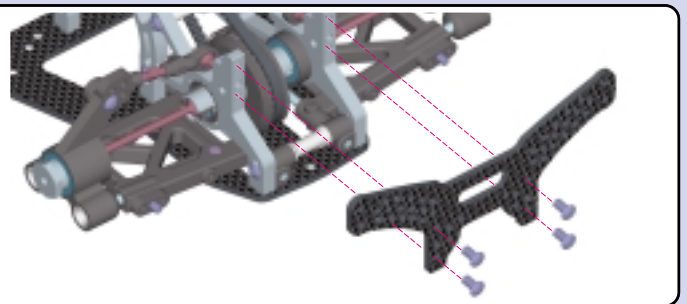
# 8. REAR FINAL ASSEMBLY



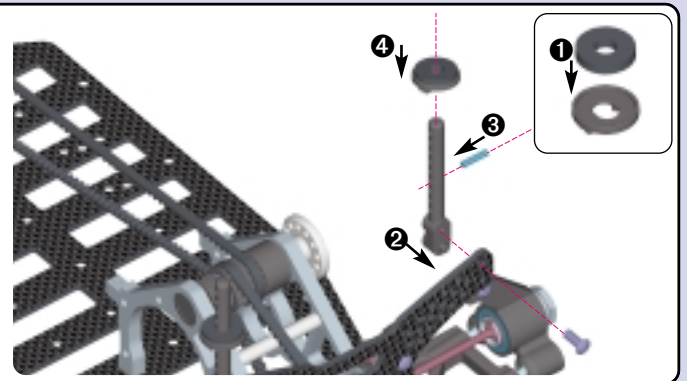
<b>BAG 08</b>	30 1330	REAR BODY MOUNT SET	30 9393	NUT M3 (10)
	30 3091	ULTRA-TUNE SHOCK TOWER REAR - 2.5 MM GRAPHITE	30 9452	PIN 2x10 (10)
	30 9333	HEX SCREW SH M3x6 (10)		
	30 9334	HEX SCREW SH M3x8 (10)	30 8300	XRAY SHOCK ABSORBERS
	30 9335	HEX SCREW SH M3x10 (10)		



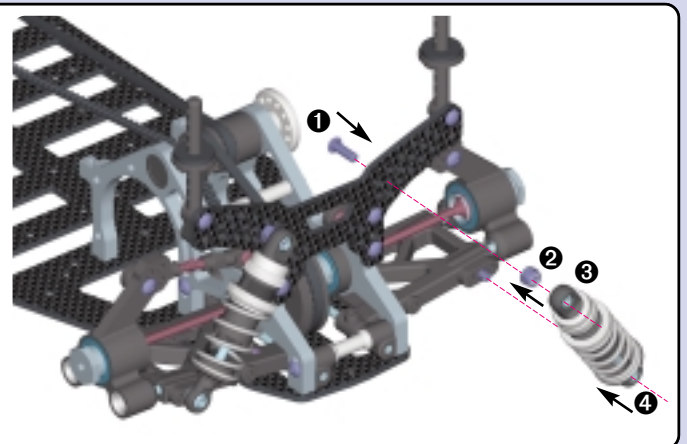
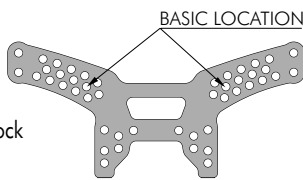
Mount the #303091 rear shock tower onto the rear bulkhead with #309333 (SH M3x6) screws.



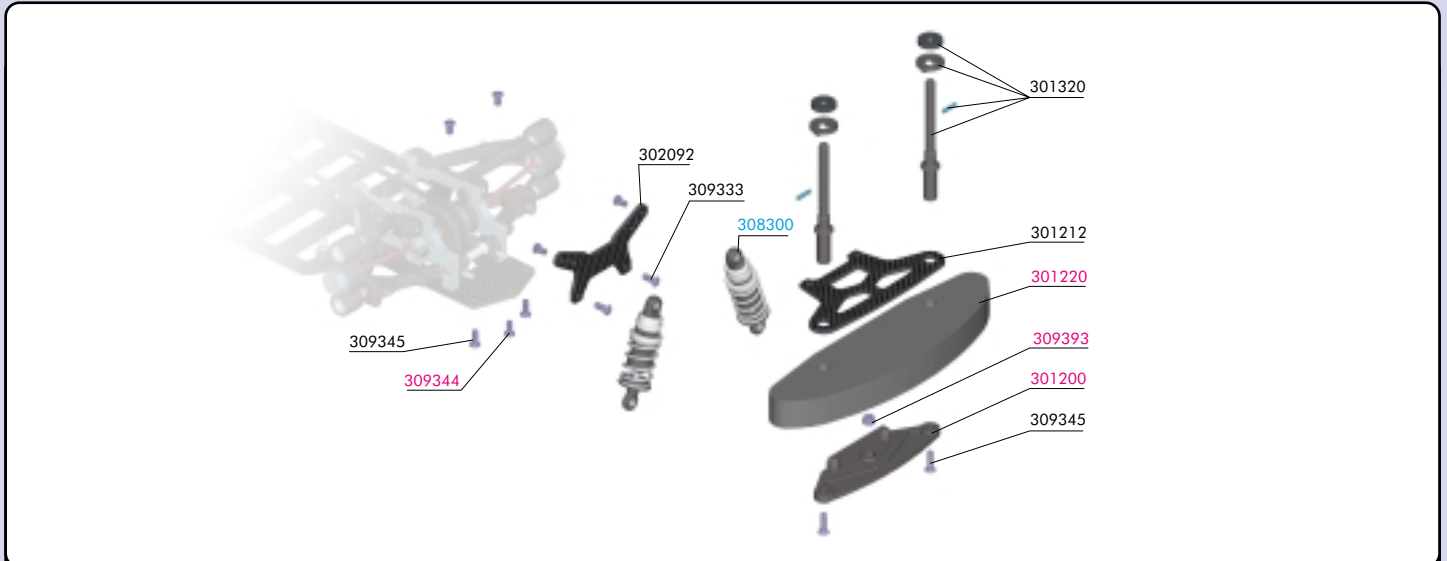
1. Glue the rubber washers onto the top of the plastic body post stops.
2. Mount the body posts to the front of the rear shock tower as shown; the bottom plastic pin fits into the bottom hole on the shock tower. Use a #309334 (SH M3x8) screw to fasten each body post to the rear shock tower.
3. Insert a #309452 (P 2x10) pin into one of the holes of the rear body post. Insert the other #309452 (P 2x10) pin into the same hole in the other body post.
4. Slide the body post stop down over the post, and snap it over the pin.



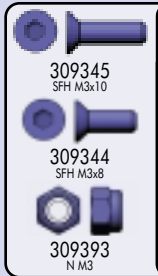
1. Push two #309335 (SH M3x10) screws through the indicated holes in the rear shock tower.
  2. Thread two #309393 (M3) nuts onto the screws and tighten onto rear shock tower.
  3. Thread the top pivot balls of the assembled rear shocks onto the ends of the screws.
  4. Thread the lower pivot ball of the assembled rear shocks to the exposed screws on the lower suspension arms.
- Refer to the Set-Up Book to gain a better understand of different shock mounting locations.



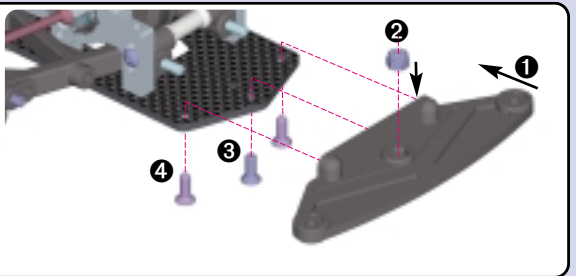
# 9. FRONT FINAL ASSEMBLY



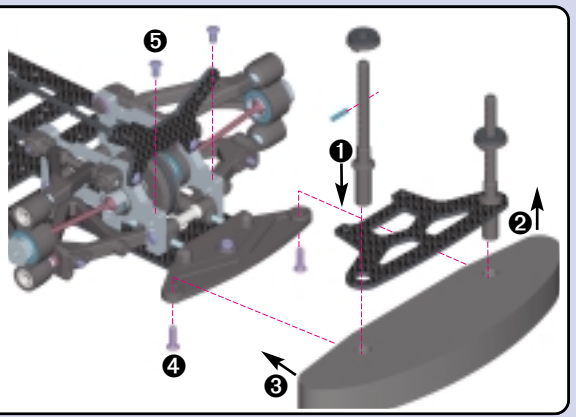
<b>BAG 09</b>	30 1212	BUMPER UPPER HOLDER - 2.5 MM GRAPHITE - CNC MACHINED	30 1200	NYLON BUMPER
	30 1320	FRONT BODY MOUNTS ( SET )	30 1220	FOAM BUMPER
	30 2092	SHOCK TOWER FRONT 2.5 MM FOR LARGER TIRES	30 9393	NUT M3 (10)
	30 9333	HEX SCREW SH M3x6 (10)	30 9344	HEX SCREW SFH M3x8 (10)
	30 9345	HEX SCREW SFH M3x10 (10)	30 8300	XRAY SHOCK ABSORBERS



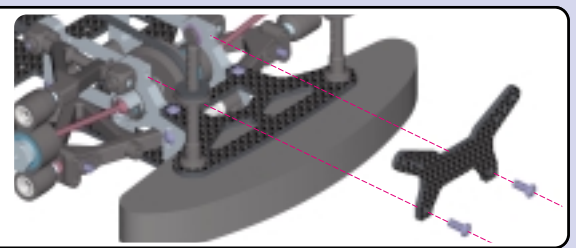
- Place the #301200 lower nylon bumper over the front of the chassis.
- Place a #309393 (N M3) nut into the hex recess atop the bumper.
- Thread a #309344 (SFH M3x8) screw up through the bottom of the chassis and through the bumper into the nut.
- Thread two #309345 (SFH M3x10) screws up through the bottom of the chassis and into the bumper.
- Tighten all screws to secure the bumper to the chassis.



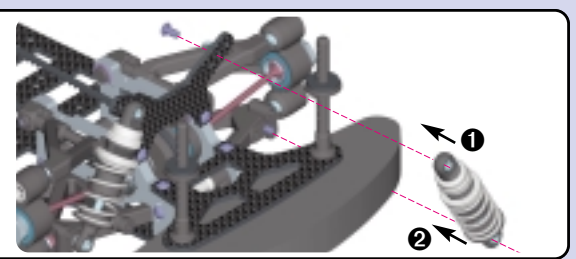
- Insert the front body posts into the holes of the #301212 upper bumper holder.
- Slide the #301220 foam bumper up onto the body posts; the posts should extend down through the foam bumper.
- Position the bumper assembly onto the lower nylon bumper.
- Secure the body posts to the lower nylon bumper from below with two #309345 (SFH M3x10) screws.
- Secure the graphite upper bumper holder to the bulkhead with two #309333 (SH M3x6) screws.
- Glue the rubber washers onto the top of the plastic body post stops.
- Insert a #309452 (P 2x10) pin into one of the holes of the front body post. Insert the other pin #309452 (P 2x10) into the same hole in the other body post.
- Slide the body post stop down over the post, and snap it over the pin.



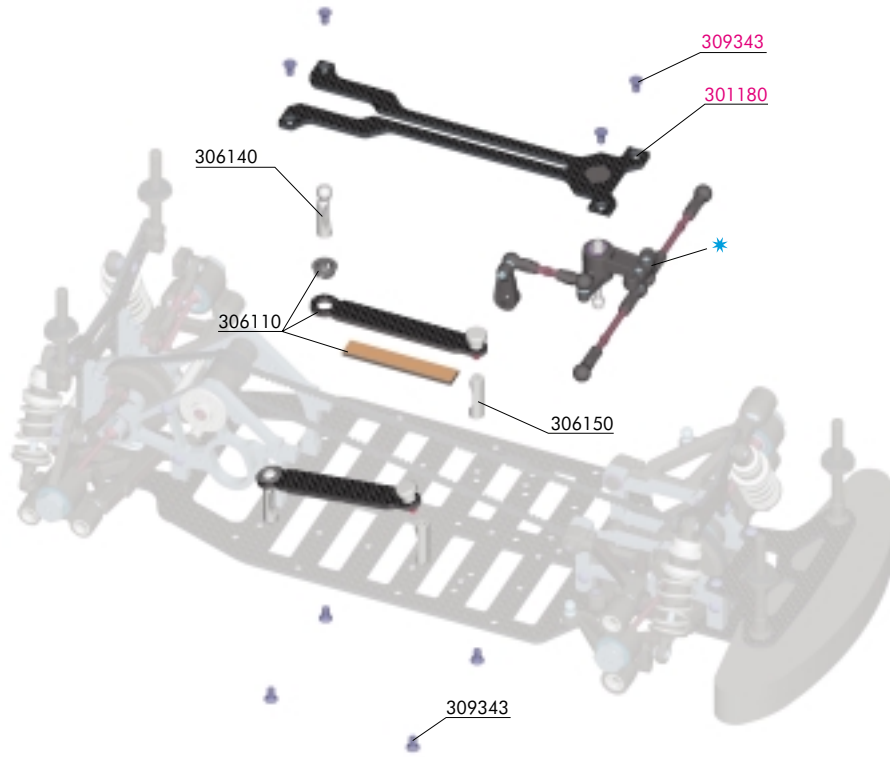
- Mount the #302092 front shock tower to the front bulkhead with two #309333 (SH M3x6) screws.



- Mount the top pivot ball of the assembled front shocks to the graphite shock tower using #309333 (SH M3x6) screws. Use the middle of the three holes on the shock tower.
  - Thread the lower pivot ball of the assembled front shocks to the exposed screw on the lower suspension arms.
- Refer to the Set-Up Book to gain a better understand of different shock mounting locations.



# 10. SERVO SAVER, BATTERY HOLDER & UPPER DECK ASSEMBLY



**BAG 10**

- 30 6110 BATTERY MOUNT STRAP - 2.5 GRAPHITE FOR 3 BATT. - (SET 2)
- 30 6140 BATTERY HOLDER MOUNT WITH BALL END (2)
- 30 6150 BATTERY HOLDER MOUNT WITH THREAD (2)
- 30 9343 HEX SCREW SFH M3x6 (10)

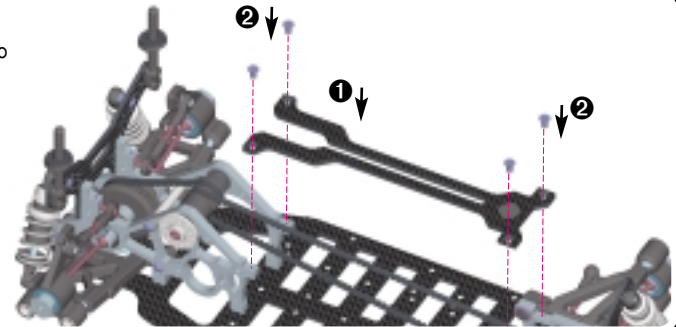
- 30 9343 HEX SCREW SFH M3x6 (10)
- 30 1180 FLEXIBLE TOP DECK - GRAPHITE

\* CENTRAL SERVO SAVER + STEERING RODS

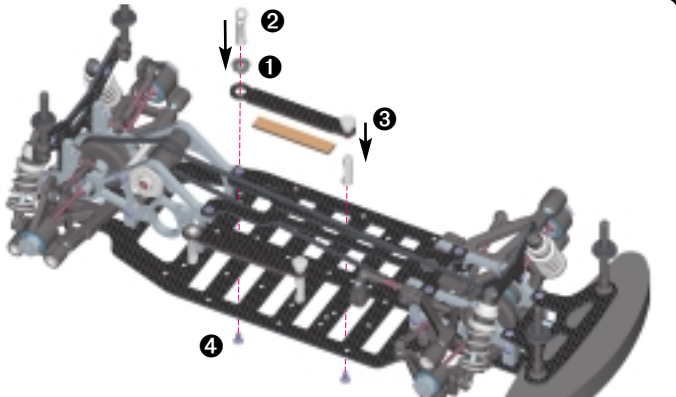
1. Work the steering rods through the front bulkheads and place the assembled servo saver on the chassis. Place the lower steering post of the servo saver into the ball bearing in the plastic cup on the lower chassis.
2. Use pliers to press the ball-joints onto the ball ends of each steering arm.



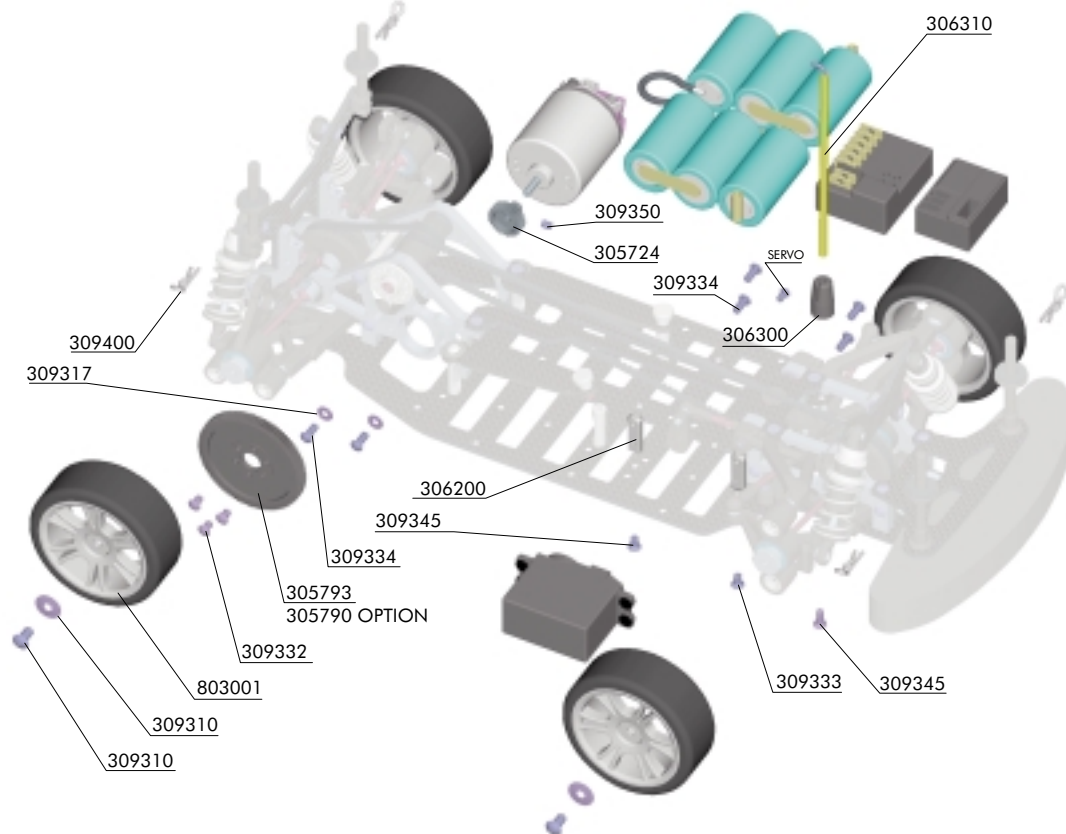
1. Place the graphite upper deck on top of the bulkheads. The #309010 (BB 4x7) ball-bearing pressed into the plastic cover needs to seat onto the steering post of the servo saver assembly. Be sure that the servo saver can move freely and easily.
2. Use four #309343 (SFH M3x6) screws to fasten the upper deck to the front and rear bulkheads. Note that the heads of the screws will protrude slightly from the upper deck. This is to make the chassis structure stiffer by locking the upper deck in place more securely.



1. Press a plastic hub into the large hole of each battery strap.
  3. Press the #306140 battery holder mount's ball end into the plastic hub; it will snap into place. Once installed, the ball end should pivot freely in all directions.
  4. Mount the separate #306150 threaded battery holder to the chassis with #309343 (SFH M3x6) screws. Orient the mounts so the battery will fit in the cutout.
  5. Mount the ball-ended battery holder mounts (with battery straps) to the chassis with #309343 (SFH M3x6) screws. Orient the mounts so the battery will fit in the cutout.
- Note: If there is a lot of play between the batteries and the battery strap, stick the foam battery cushion to the underside of the graphite battery strap.
- Repeat for the other battery holder.**

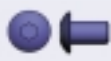


# 11. ACCESSORY INSTALLATION



## BAG 11

30 5724	PINION GEAR ALU HARD COATED 24T / 48 (INCLUDED)	30 9317	WASHER S 3.2 (10)
30 5720-34	PINION GEAR ALU HARD COATED 20T-34T / 48 (OPTION)	30 9332	HEX SCREW SH M3x5 (10)
30 5790	SPUR GEAR 90T / 48 (OPTION)	30 9333	HEX SCREW SH M3x6 (10)
30 5793	SPUR GEAR 93T/48 (INCLUDED)	30 9334	HEX SCREW SH M3x8 (10)
30 5796	SPUR GEAR 96T / 48 (OPTION)	30 9345	HEX SCREW SFH M3x10 (10)
30 5960	26 MM WHEELS (2) (OPTION)	30 9350	HEX SCREW SB M3x3 (10)
30 6200	ALU SERVO MOUNT (2)	30 9400	BODY CLIP (8)
30 6300	ANTENNA MOUNT	80 3001	HUDDY 24 MM WHEELS STARBURST - WHITE (4)
30 6310	ANTENNA (2)		
30 9310	WHEELS MOUNTING HARDWARE (4+4)		



309332  
SH M3x5



309334  
SH M3x8



309317  
S 3.2



309350  
SB M3x3

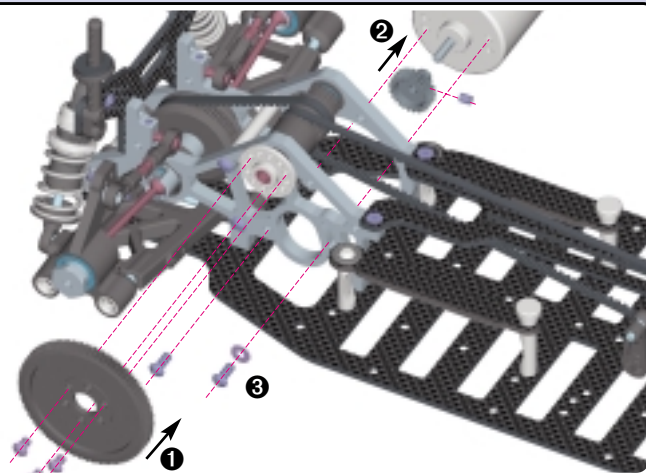


309333  
SFH M3x6



309334  
SH M3x8

1. Use #309332 (SH M3x5) screws to mount the spur gear on the layshaft.
2. Install a pinion gear on the motor shaft and secure it with the #309350 (SB M3x3) set screw.
3. Put one #309317 (S 3.2) washer each on two #309334 (SH M3x8) screws. Use these to mount the motor to the right rear bulkhead.
4. Adjust the motor and the pinion so that the pinion meshes with the spur gear. There should be just a tiny amount of play between the pinion teeth and the spur teeth.

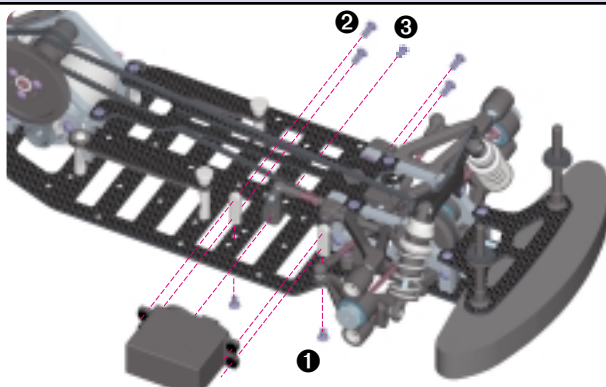


309333  
SFH M3x6



309334  
SH M3x8

1. Mount the aluminum servo mounts to the chassis using two #309333 (SFH M3x6) screws.  
Note: The forward servo mount is fixed, while the rear servo mount can go in one of two holes, depending on the width of your servo.
2. Secure the servo to the servo mounts using #309334 (SH M3x8) screws. We recommend using the rubber grommets supplied with the servo.
3. Connect the servo horn to the servo with a screw supplied with servo.

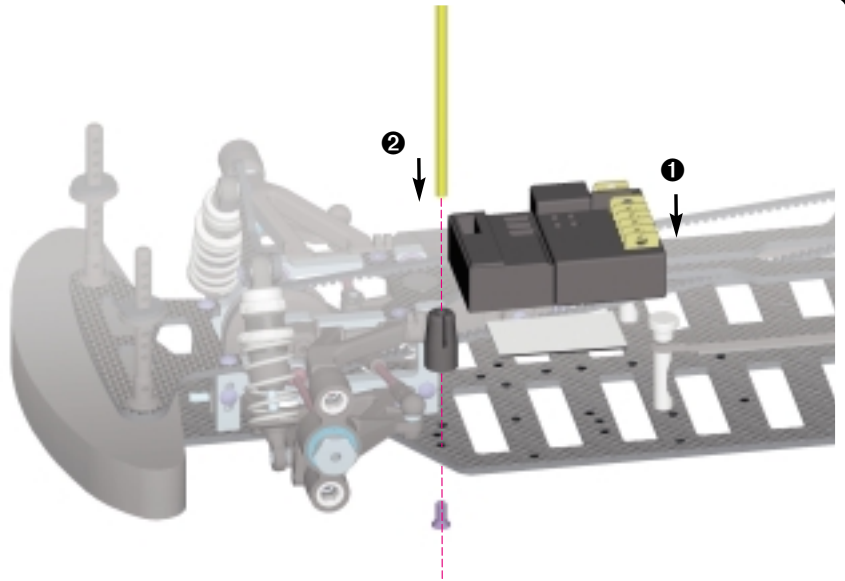


Refer to the Set-Up Book for more information on setting steering linkage correctly.



309345  
SFH M3x10

1. Mount the receiver and speed controller on the car using double-sided tape. For different receiver mounting possibilities, refer to the Set-Up Book.
2. Mount the #306300 antenna holder in an available position, depending on the position of the receiver. Thread a #309345 (SFH M3x10) screw from underneath the chassis into the antenna holder. Slide the receiver's antenna wire through the #306310 antenna tube, and then place the wire in the slot on the side of the antenna mount. Push the base of the antenna tube firmly into the hole of the antenna mount, making sure you don't pinch or cut the receiver's antenna wire.



The XRAY T1 EVO2 is a top competition racecar, and therefore does not come supplied with tires and inserts; every track and race requires different tires and inserts.

Use your own tires and inserts to prepare the tires:

1. Install a foam insert into each tire, making sure it is centred.
2. Slide the tire (with insert) onto the wheel.
3. Carefully glue the tires to the wheels with CA glue.

**Warning: Follow the adhesive manufacturer's instructions for proper use and safety. Wear proper eye and hand protection.**



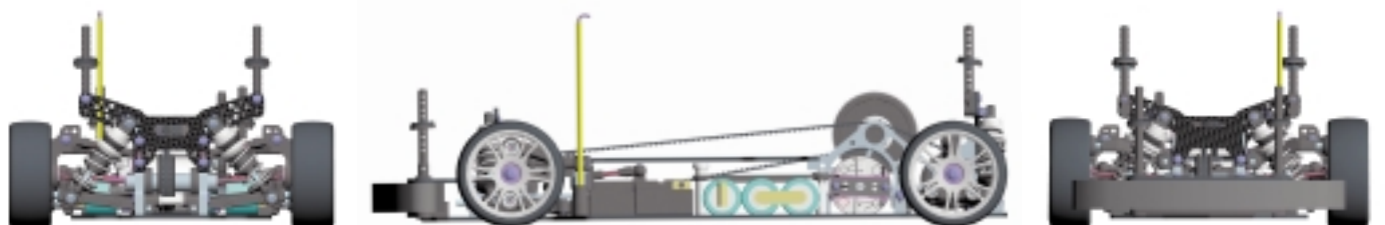
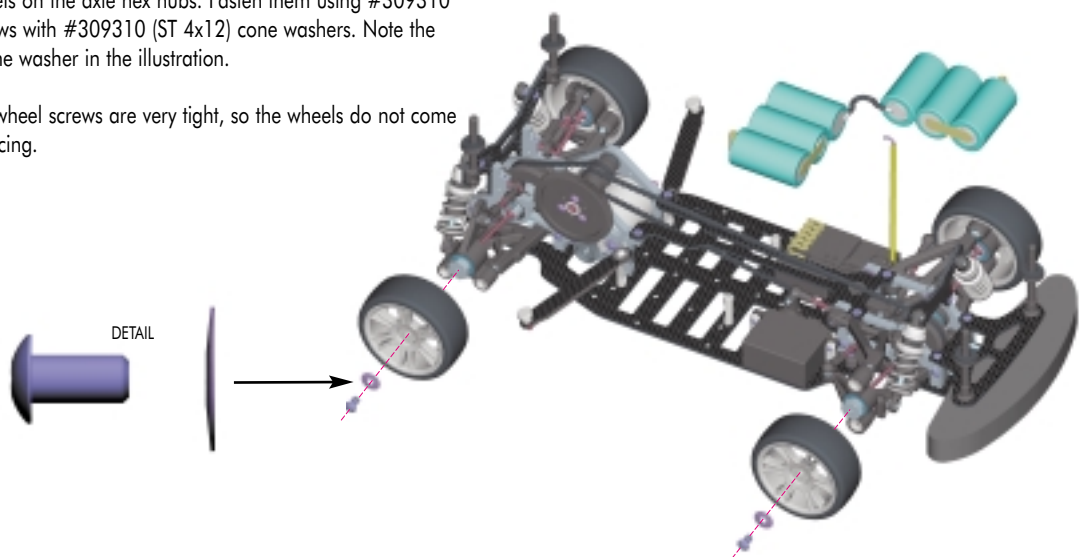
309310  
SH M4x8



309310  
ST 4x12

Mount the wheels on the axle hex hubs. Fasten them using #309310 (SH M4x8) screws with #309310 (ST 4x12) cone washers. Note the orientation of the washer in the illustration.

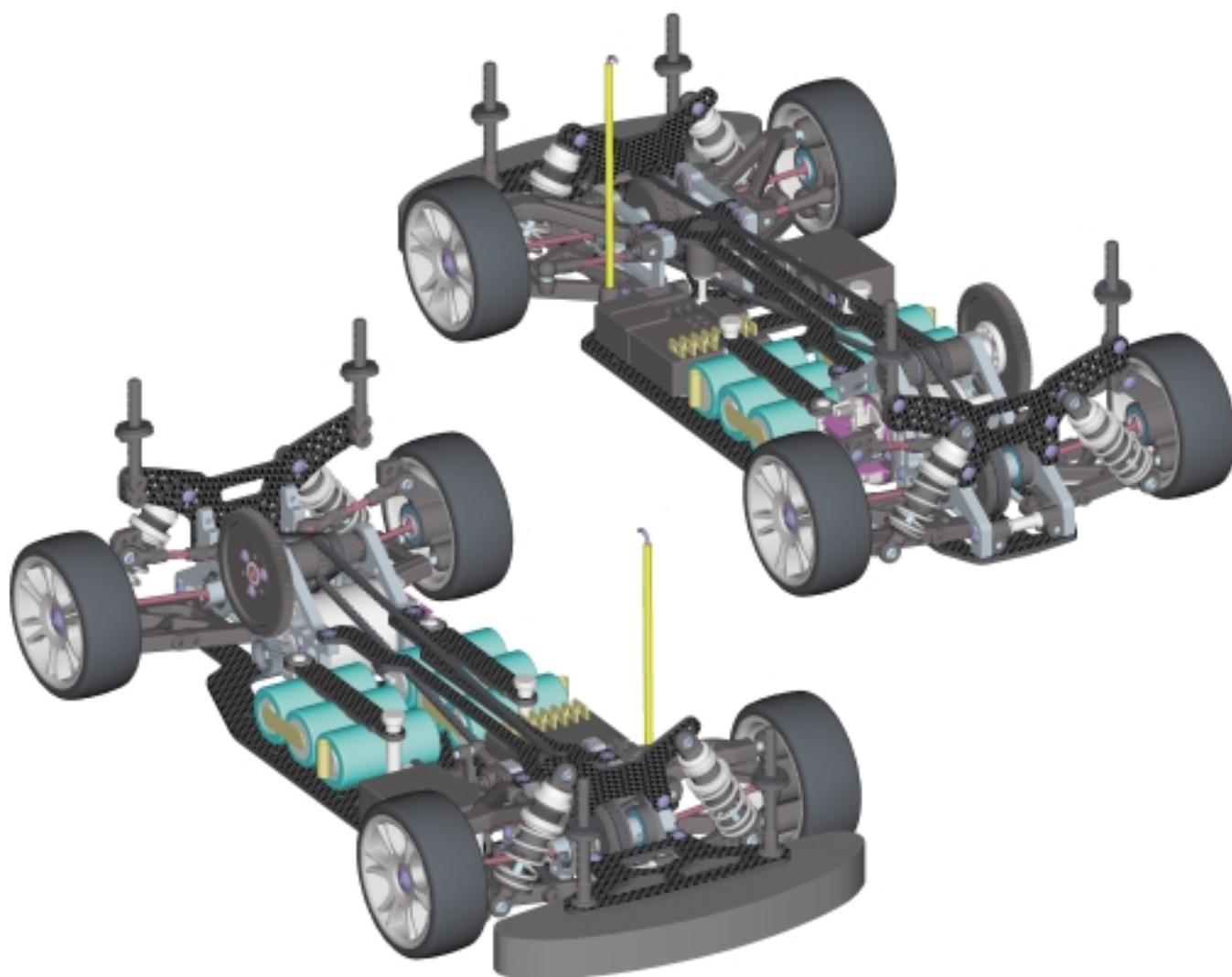
Make sure the wheel screws are very tight, so the wheels do not come loose during racing.



## CAUTION:

- This product is not suitable for children except under the direct supervision of an adult.
- First-time builders should seek advice from people who have building experience in order to assemble the model correctly and to allow the model to reach its performance potential.
- Assemble this kit only in places away from the reach of very small children.
- Exercise care when using any hand tools and sharp instruments during construction.
- Carefully read all manufacturers warnings and cautions for any parts used in the construction and use of your XRAY T1 EVO2.
- Take adequate safety precautions prior to operating this model. You are responsible for this model's assembly and safe operation! XRAY MODEL RACING CARS does not take responsibility for any injury, damage, or misuse of this product while assembling or operating it.
- Take care when building; some parts may have sharp edges. Keep small parts out of reach of small children.
- Do not put fingers or any objects inside rotating or moving parts!
- Right after use, do NOT touch equipment on the model because they may generate high temperatures!
- When learning to drive, go to an area that has no obstacles that can damage your car if you crash.
- Always turn off the receiver/speed control or disconnect XRAY T1 EVO2's battery pack before turning your transmitter off.
- Disconnect the battery pack before storing.
- Remove any sand, mud, dirt, grass or water before putting your model away.
- Use a recommended charger for the batteries and follow the instructions correctly. Over-charging or charging incorrectly using inferior chargers can cause the batteries pack to become dangerously hot.
- Regularly check the charger for potential hazards such as damage to the cable, plug, casing or other defects. Ensure that any damage is rectified before using the charger again.
- Do not allow the transmitter batteries to run flat so you don't lose control of the car, otherwise you may lose control of the car.
- Do not allow any metal part to short circuit the batteries or speed control.
- Be sure that your operating frequency is clear before running and never share the same frequency with somebody else at the same time!
- When the model is behaving strangely immediately stop the model and check and clear the problem.
- Do not stall the motor. The speed control will fail within seconds if power is applied to the motor when the car cannot move.
- Do not use your model:
  - near real cars, animals, or people that are unaware that an R/C car is being driven.
  - in places where children and people gather.
  - in residential districts and parks.
  - indoors and in limited space.
  - in wet conditions.
  - in the street.

Disregard of the above cautions may lead to accidents, personal injury, or property damage! XRAY MODEL RACING CARS does not take responsibility for any injury, damage, or misuse of this product while assembling or operating it.



Congratulations, your new XRAY T1 EVO2 model racing car is now finished.  
Proceed to the Set-Up Book to adjust the suspension geometry.