

XRAY[®]

*new generation
top competition*



**1/10
LUXURY
ELECTRIC TOURING CAR**



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XRAY is a member of www.myTSN.com
XRAY MODEL RACING CARS

P.O.BOX 103, 911 50 Trenčín, Slovakia, EUROPE, phone: ++421-905-402724, support@teamxray.com



XRAY T1

INSTRUCTION MANUAL

CONGRATULATIONS

The XRAY T1 is arguably the most advanced 1/10-scale on-road electric touring car ever made for racing.

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

This car was built purely for top competition races, and for that purpose, we gave the T1 the highest number of adjustments possible to get the most performance out of any track condition. But even with the standard setup, the T1's handling is stable and predictable enough on most surfaces for even novice drivers who choose the T1 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 that is often the subject of heated debates, 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 procedure. The measurements should be applied immediately, although it will still be necessary to perform the complete set-up procedure again for fine tuning once the chassis is finished.

At the beginning of each section, there is an exploded view of the assembly for that section, including the part numbers you will use for those steps. All non-relevant and previously assembled parts have been faded. Each section indicates what bag should be used. All the hardware (screws, nuts, bearings, pins, clips, etc.) can be compared to true-to-scale diagrams on the left side in 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 make sure there are no problems.

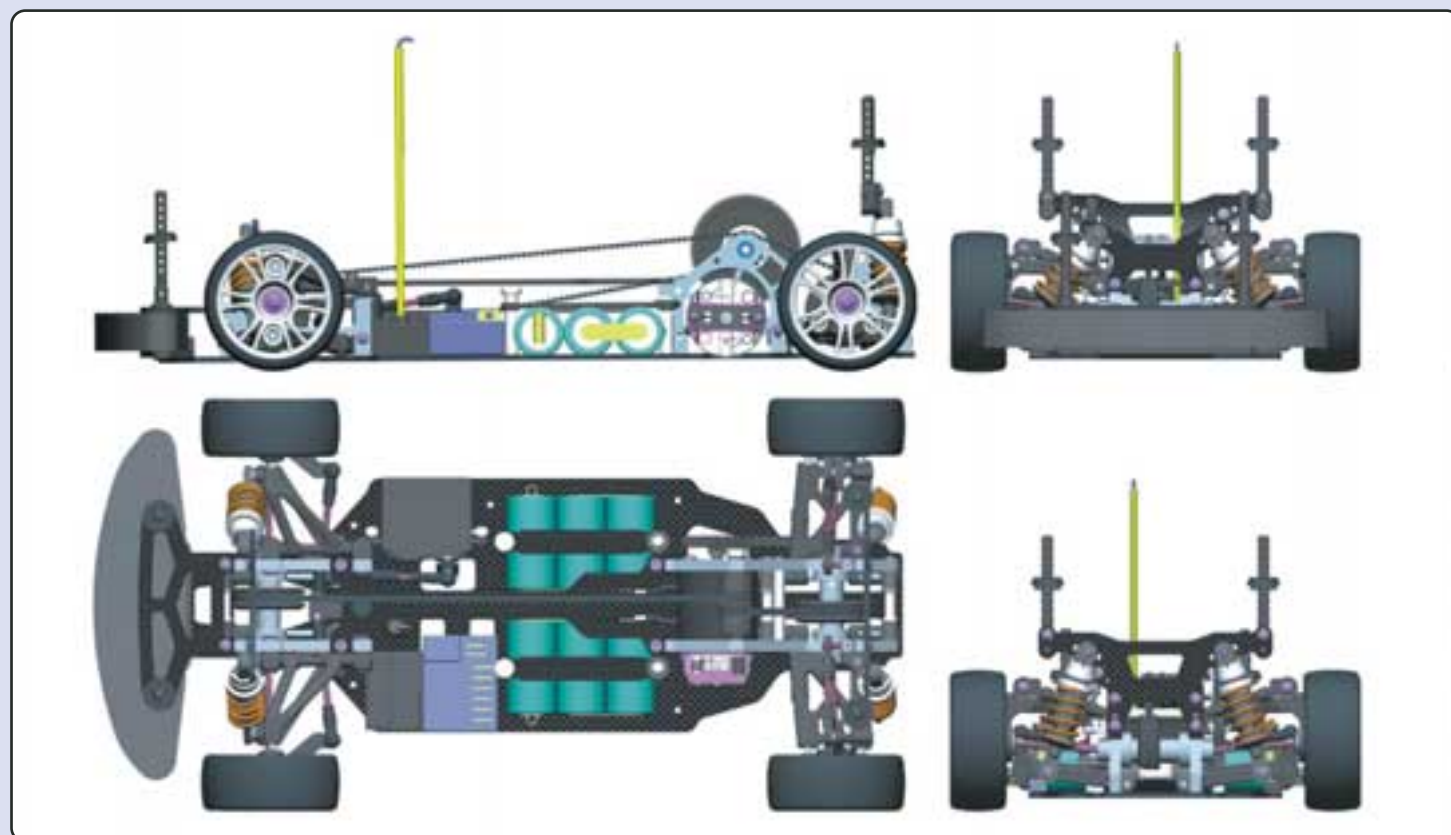
We have made every effort to make the instructions and set-up book as easy to understand as possible. However, if you do have any difficulties, problems, or questions, please do not hesitate to contact the XRAY support team at: support@teamxray.com Also, do not forget to visit our web site: www.teamxray.com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

As the proud owner of a T1, you are cordially invited to join TEAM XRAY. Use the MEMBERSHIP CARD and register your own personalised X-NET at www.teamxray.com Also, you can register your T1 on the RC portal www.myTSN.com --- we intend on really taking care of our customers.

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

CONTENTS

0. KIT	1
1. FRONT & REAR DIFFERENTIAL	2-3
2. REAR TRANSMISSION	4-5
3. REAR SUSPENSION	6-8
4. FRONT TRANSMISSION	9
5. FRONT SUSPENSION	10-11
6. SERVO SAVER	12-13
7. SHOCK ABSORBERS	14-15
8. REAR FINAL ASSEMBLY	16
9. FRONT FINAL ASSEMBLY	17
10. SERVO SAVER, BATTERY HOLDER & UPPER DECK ASSEMBLY	18
11. ACCESSORY INSTALLATION	19-20



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 book 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 the thread in the plastic. We recommended you stop tightening it when the threaded part on the screw goes into the plastic part and you feel some resistance from the tightening.
- 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 to get advice, or contact us via email at 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.

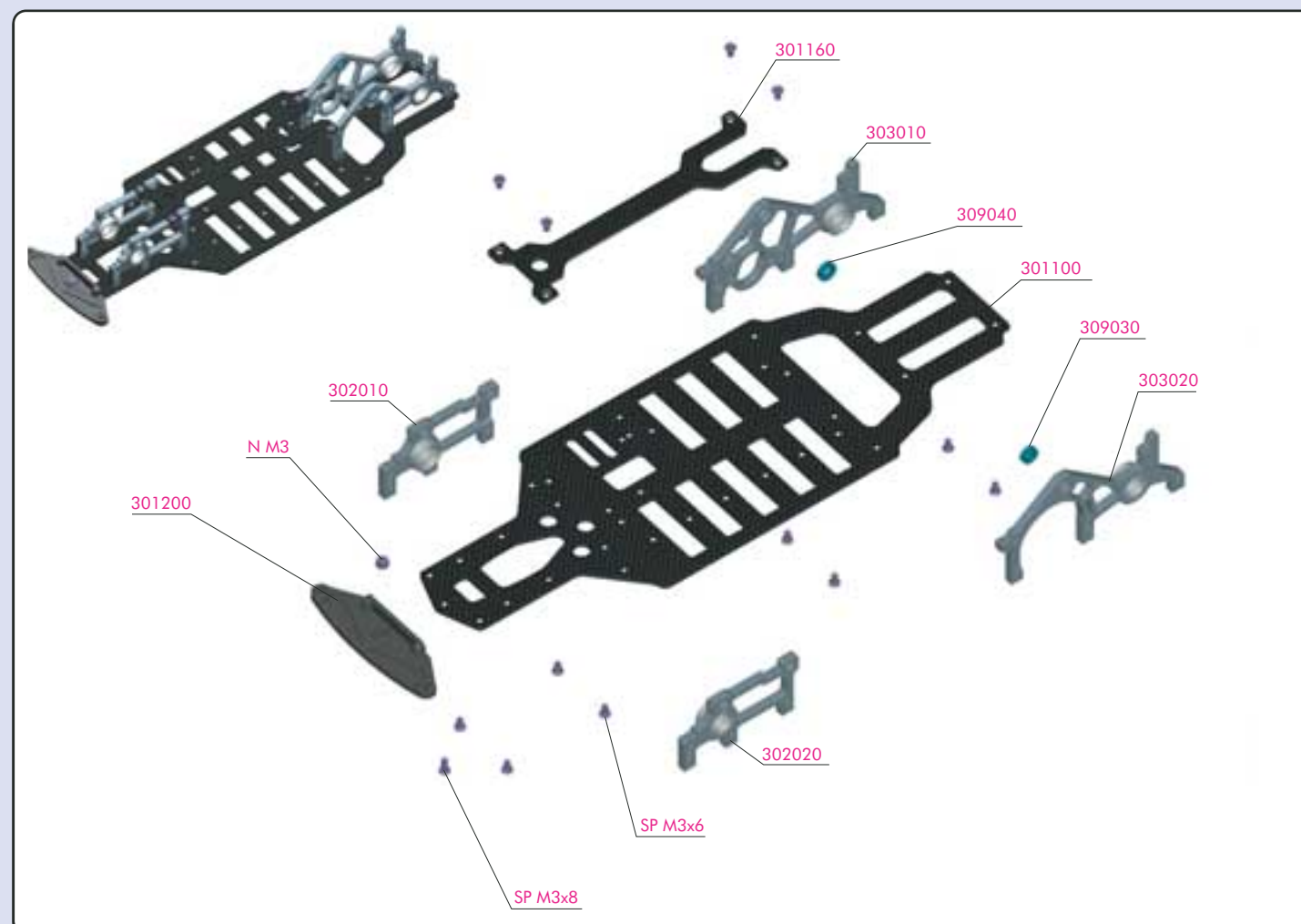
The part descriptions are color-coded to make it easier for you to identify the source of a part. Here is what the different colors means:

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)

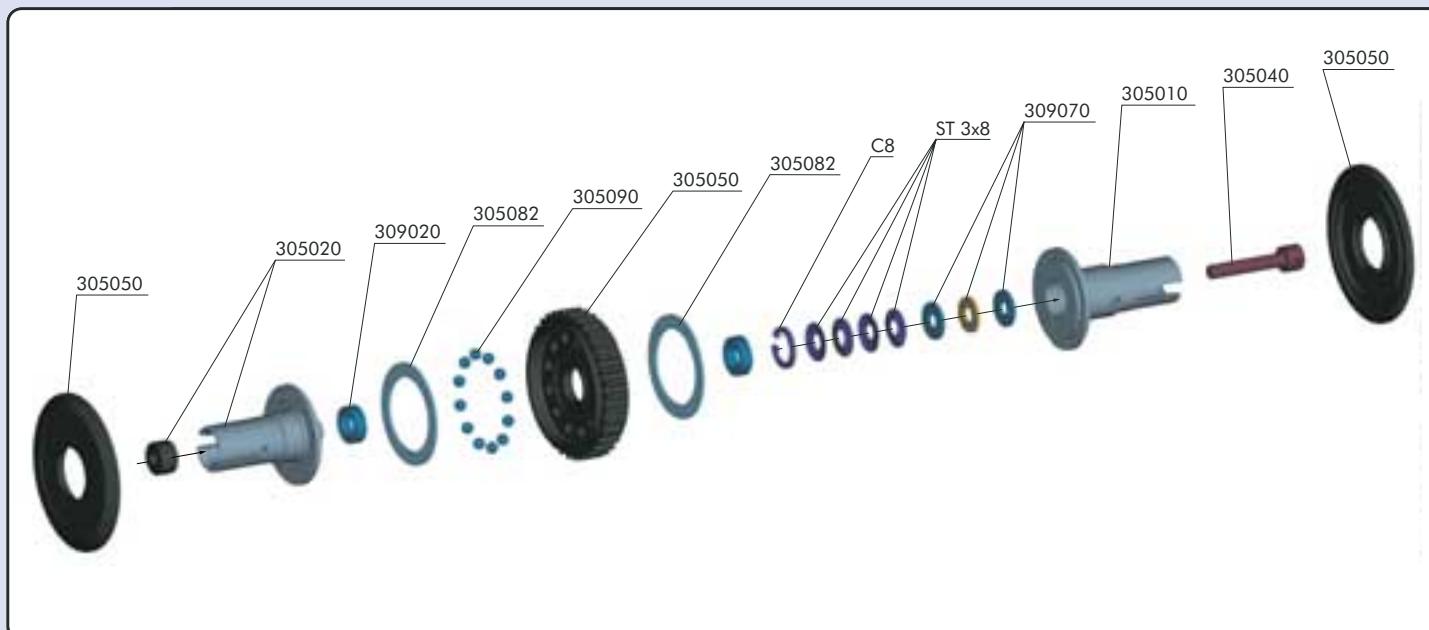


KIT

30 1100	CHASSIS 2.5 MM GRAPHITE - CNC MACHINED	30 3010	ALU SUSPENSION BULKHEAD REAR RIGHT - HARD COATED
30 1160	UPPER DECK - 2.5 MM GRAPHITE - CNC MACHINED	30 3020	ALU SUSPENSION BULKHEAD REAR LEFT - HARD COATED
30 1200	NYLON BUMPER	30 9030	BALL-BEARING MR95ZZ 5x9x3 (2)
30 2010	ALU SUSPENSION BULKHEAD FRONT RIGHT - HARD COATED	30 9040	BALL-BEARING MR106ZZ 6x10x3 (2)
30 2020	ALU SUSPENSION BULKHEAD FRONT LEFT - HARD COATED		

The T1 chassis comes partially preassembled out of the box. 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 list of parts. Any parts indicated with color A come from previously disassembled chassis parts.

1. FRONT & REAR DIFFERENTIAL



BAG 01

30 5010	ALU DIFF LONG OUTPUT SHAFT HARD COATED	30 5082	DIFF WASHER 17x23x1 (2)
30 5020	ALU DIFF SHORT OUTPUT SHAFT HARD COATED	30 5090	BALL STEEL 2.4 MM (24)
30 5040	SCREW FOR EXTERNAL DIFF ADJUSTMENT - SPRING STEEL	30 9020	BALL-BEARING MR85ZZ 5x8x2.5 (2)
30 5050	DIFF PULLEY 34T WITH LABYRINTH DUST COVERS	30 9070	BALL-BEARING AXIAL F3-8 3x8x3.5

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.



C 8



ST 3x8

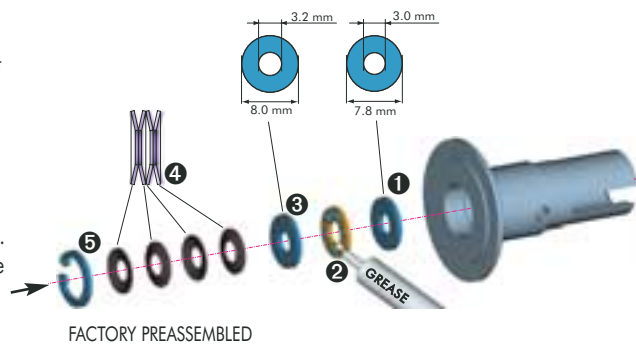


BA 3x8

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

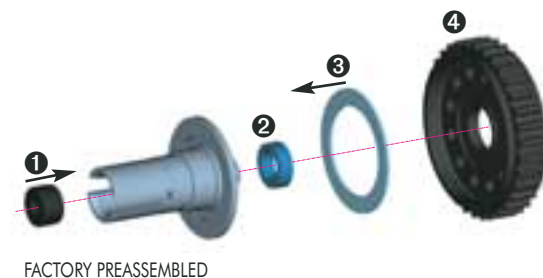
1. Insert the smaller of the two thrust washers into the long diff shaft as shown in the diagram above.
2. Apply a little grease to the balls in the caged thrust ball holder. Coat each side with grease. Insert the thrust ball cage into the long diff shaft.
3. Place the larger thrust washer in the diff shaft.
4. Insert the four cone washers according to the detail shown above.
5. Secure the assembly with the C8 clip. There is a groove inside the diff shaft for the clip to seat into.

Note: Assembly will be easier with snap-ring pliers.



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 5x8 ball-bearing on the short center stub of the diff shaft.
3. Each of the 17x23 diff washers has a front side (brightly polished) and a back side (ground, dull finish). The polished side will go against the diff balls and the ground side will go against the diff shaft. Put a very thin coat of grease on the back 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.



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.



FRONT & REAR DIFFERENTIAL



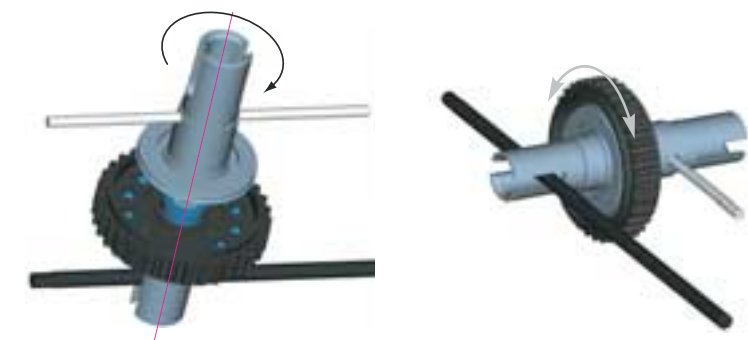
BB 5x8

1. Hold the diff shaft with the installed pulley facing up. Place the other 5x8 ball-bearing on the center stub on top of the other bearing.
2. The 17x23 diff washer has a front side (brightly polished) and a back side (ground, dull finish). The polished side will go against the diff balls and the ground side will go against the diff shaft. Put a very thin coat of grease on the back 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.

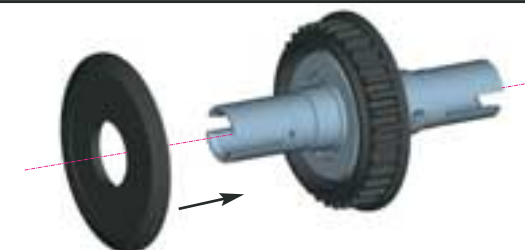
Place another wrench in the slot of the short diff shaft.



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.

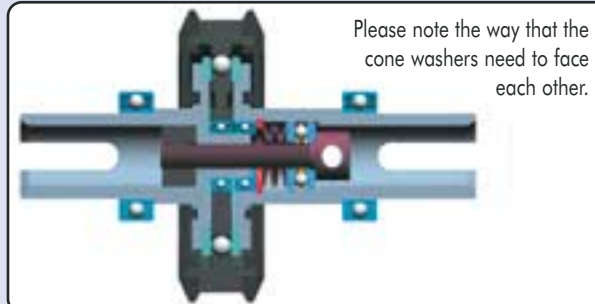
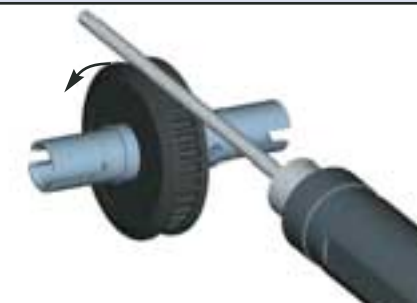


Cover each of the diff halves with the Labyrinth Dust Covers. The covers fit precisely and should "snap" into place. Once snapped on, the covers will seat perfectly.



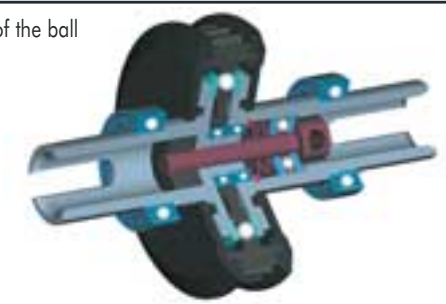
When you need to open the differential, use the shaft of a wrench to spread the dust covers apart to pop them off.

Repeat all the steps to build a second differential.

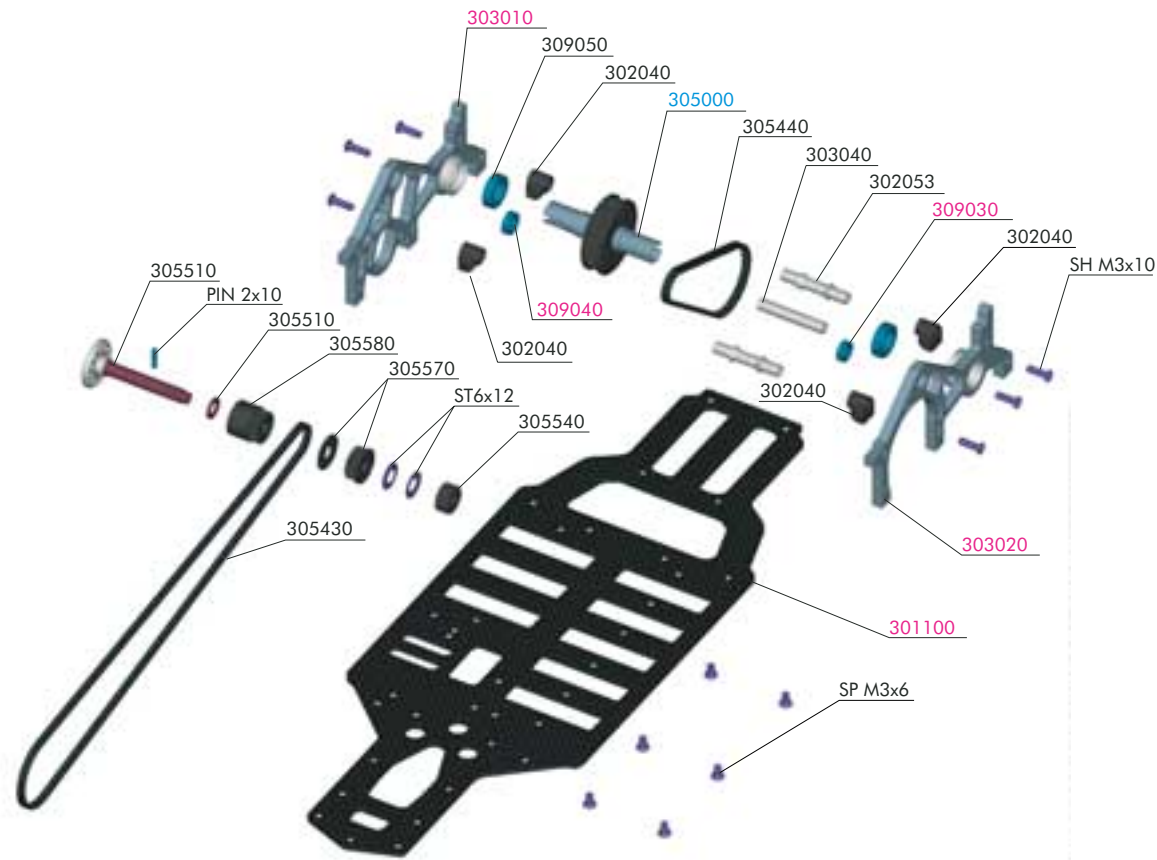


Please note the way that the cone washers need to face each other.

Cutaway view of the ball differential.



2. REAR TRANSMISSION



BAG 02

30 2040	LOWER SUSPENSION HOLDER (SET 2+1+1)	30 5510	LAYSHAFT SPRING STEEL WITH INTEGRATED SPUR GEAR ADAPTER
30 2053	ALU LOWER SUSPENSION HOLDER	30 5540	ONE-WAY ADJUSTMENT NUT M6
30 3040	ALU REAR BULKHEAD BRACE	30 5570	FIXED PULLEY 16T
30 5430	KEVLAR REINFORCED DRIVE BELT FRONT 3 x 507 MM	30 5580	ONE WAY PULLEY 16T
30 5440	KEVLAR REINFORCED DRIVE BELT REAR 4 x 180 MM	30 9050	BALL-BEARING 6700ZZ 4x15x4 (2)
30 1100	CHASSIS 2.5 MM GRAPHITE - CNC MACHINED	30 5000	BALL DIFFERENTIAL WITH LABYRINTH DUST COVERS™ - SET
30 3010	ALU SUSPENSION BULKHEAD REAR RIGHT - HARD COATED		
30 3020	ALU SUSPENSION BULKHEAD REAR LEFT - HARD COATED		
30 9030	BALL-BEARING MR95ZZ 5x9x3 (2)		
30 9040	BALL-BEARING MR106ZZ 6x10x3 (2)		



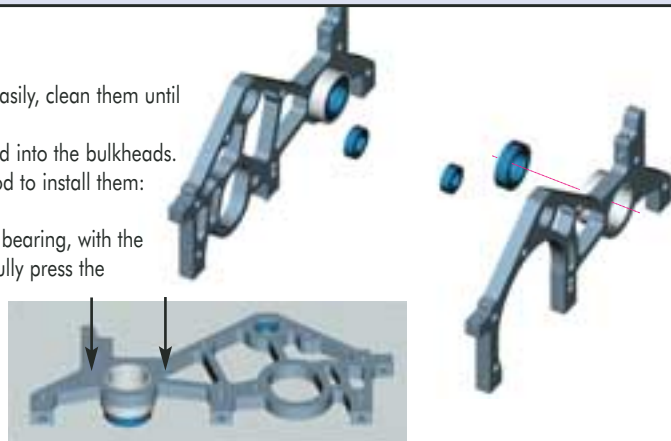
BB 10x15

The bulkheads feature preinstalled layshaft bearings 6x10 and 5x9.

Examine the two 10x15 ball-bearings. If they don't turn freely and easily, clean them until they do, then lubricate with light bearing oil. The ball-bearings go into the polished bearing hubs that are pressed into the bulkheads. The bearings are made to fit precisely and snugly, so use this method to install them:

Place the bearing flat on a table. Then place the bulkhead over the bearing, with the bearing hub centered on the bearing. Once they are aligned, carefully press the bulkhead onto the bearing, taking great care to do it evenly. After installation, be sure that the ball-bearing turns freely and easily.

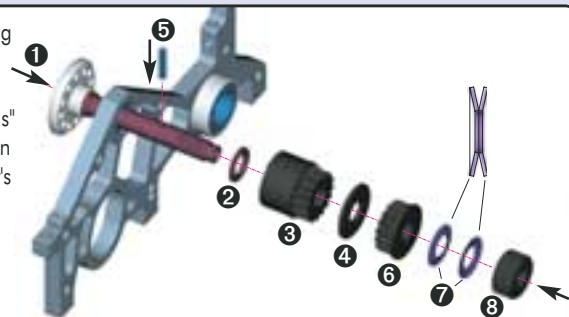
Repeat with the other bearing and bulkhead.



P 2x10

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. (When looking at the layshaft head-on with the spur adapter away from you, the pulley's forward rotation is counter-clockwise.)
4. Install the fixed pulley shim.



REAR TRANSMISSION

5. Press the 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 with the pin keyed into it. 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 cone washers ST6x12 making sure they are facing the right way. Check the detail for the correct orientation.
8. Install the one-way adjustment nut M6. Thread the nut on 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.



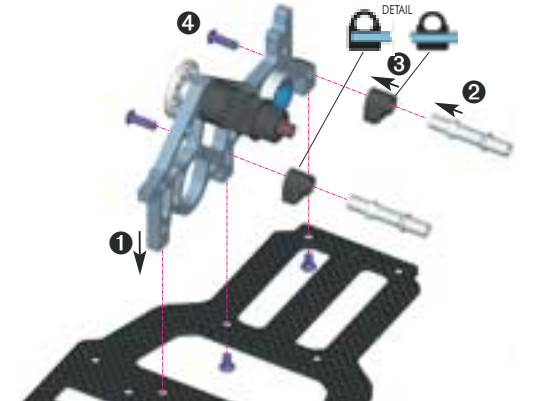
Cutaway view of the main layshaft. Please note the correct orientation of the cone washers.



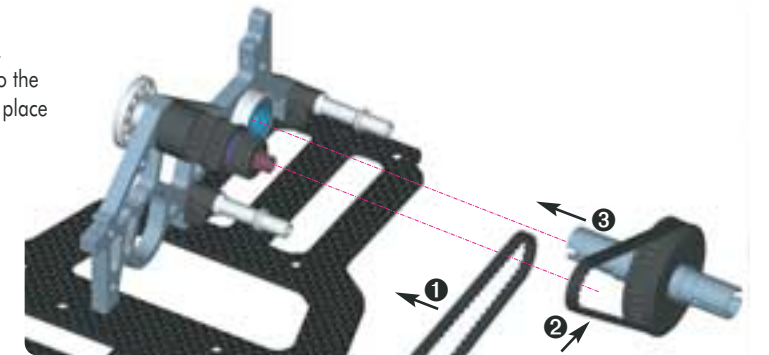
SP M3x6

SH M3x10

1. Mount the right bulkhead to the lower chassis using M3x6 screws from the bottom.
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 all the way through and the forward one has a hole that doesn't go through all the way.
4. Use M3x10 screws to mount the aluminum lower suspension holders and plastic lower suspension hubs. Make sure that the holes for the pivot pins 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.



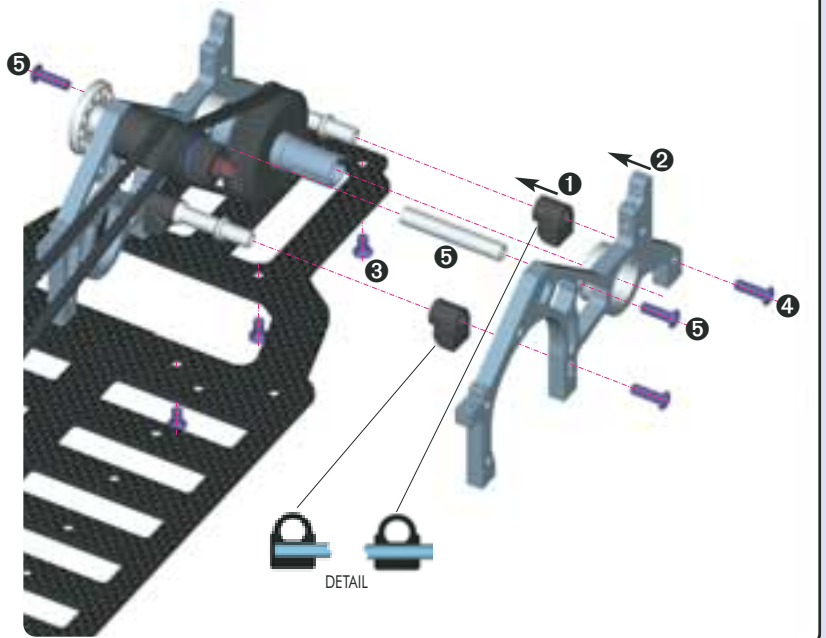
1. Place the front drive belt on the one-way pulley.
2. Place the rear belt onto the assembled differential.
3. Insert the longer output shaft of the differential into the ball-bearing pressed in the right side bulkhead, then place the drive belt onto the fixed pulley on the layshaft.



SP M3x6

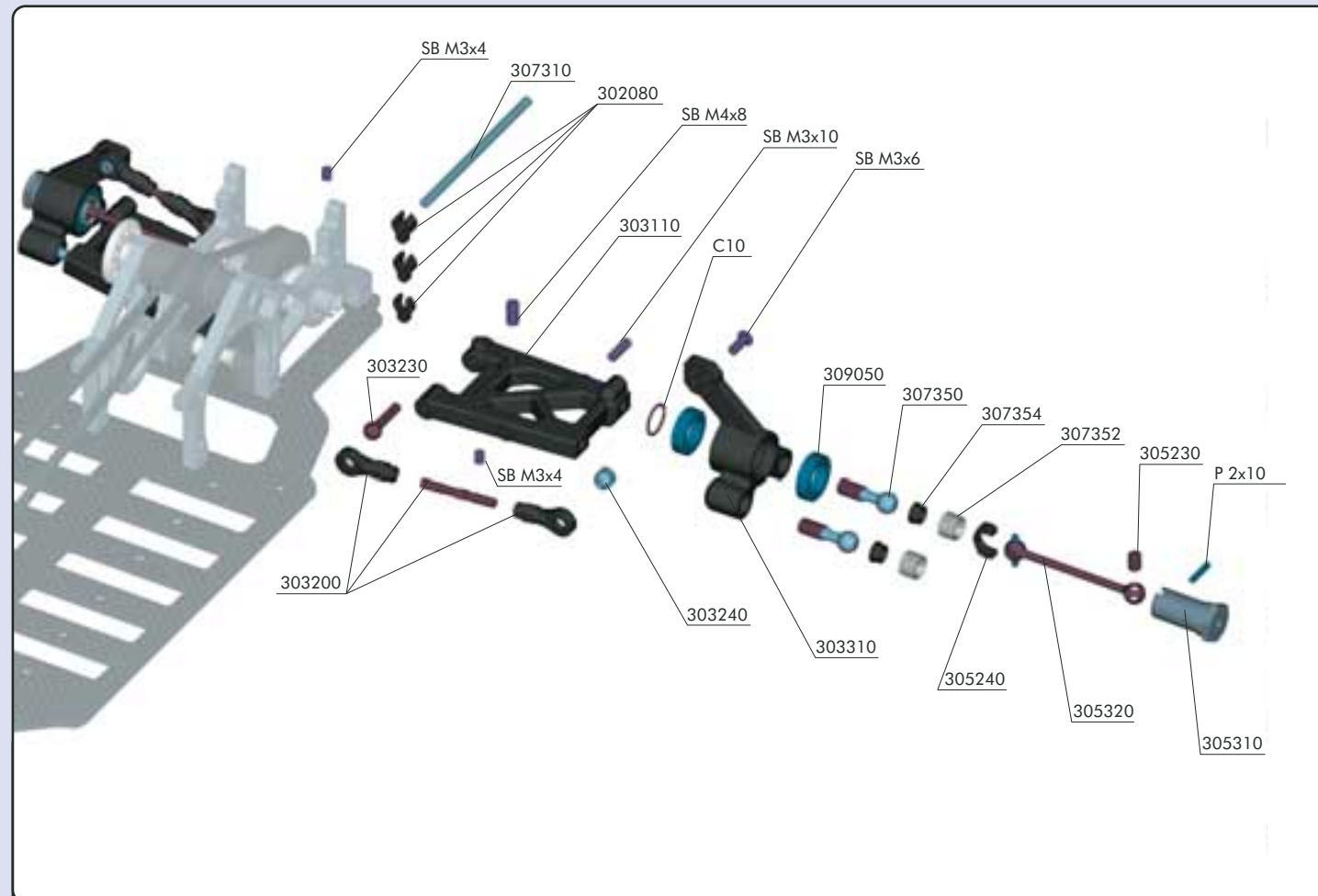
SH M3x10

1. Place the plastic lower suspension hubs onto the aluminum lower suspension holders that are already mounted onto the bulkheads. Remember that the rear hub is the one has a hole that goes all the way through, and be sure to check the orientation of the holes.
2. Insert the bulkhead onto the differential and the layshaft. The layshaft needs to fit into the preinstalled ball-bearing in the bulkhead.
3. Mount the left bulkhead to the lower chassis using M3x6 screws from the bottom.
4. Mount the rear lower holders using 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 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

REAR SUSPENSION



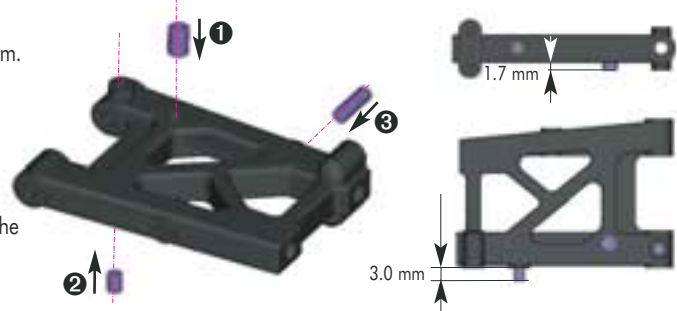
BAG 03

30 2080	CASTER CLIPS SET - 4,3,2,1 MM (2)	30 5310	WHEEL AXLE REAR - INTEGRATED HEX HUB - HARD COATED (2)
30 3110	SUSPENSION ARM REAR LOWER	30 5320	DRIVE SHAFT REAR - SPRING STEEL (2)
30 3200	ADJ. REAR TURNBUCKLE L/R 25 MM - SPRING STEEL (2+4)	30 7310	REAR WISHBONE PIVOT PIN BOTTOM - SPRING STEEL (2)
30 3230	ADJUSTABLE 5.8 MM BALL END - SPRING STEEL (2)	30 7350	6.8 MM BALL END WITH THREAD - SPRING STEEL (2)
30 3240	BALL UNIVERSAL 5.8 MM HEX (4)	30 7352	ALU ADJUSTING NUT M8 x 1 (4)
30 3310	UPRIGHT REAR	30 7354	PLASTIC BALL CUP 6.9 MM (4)
30 5230	DRIVE SHAFT COUPLING - SPRING STEEL (2)	30 9050	BALL-BEARING 6700ZZ 10x15x4 (2)
30 5240	DRIVE SHAFT REPLACEMENT PLASTIC CAP 3 MM (4)		



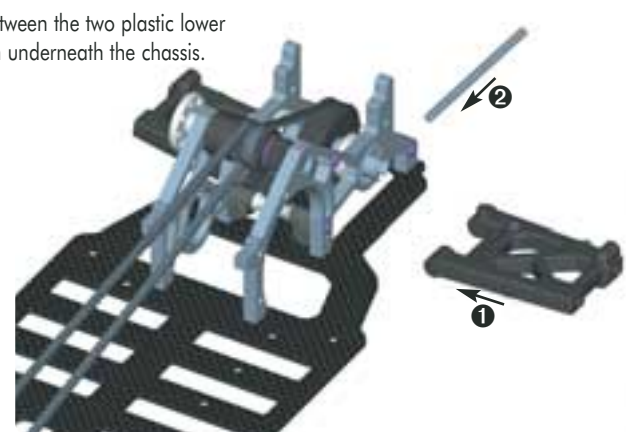
The left and right arms are identical, but mirrored.

1. Thread a downstop adjustment screw M4x8 into the rear lower arm. It must stick out as indicated in the picture. This screw needs to be accessible from the top of the arm.
2. Thread a pivot pin set screw M3x4 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 a shock mounting screw M3x10 into the hole located on the outside of the arm. The screw needs to stick out 3mm from the arm.



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 of the car.
3. Tighten the 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 M3x10 screws
 - Lower chassis M3x6 screws
 - Lower suspension holders

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

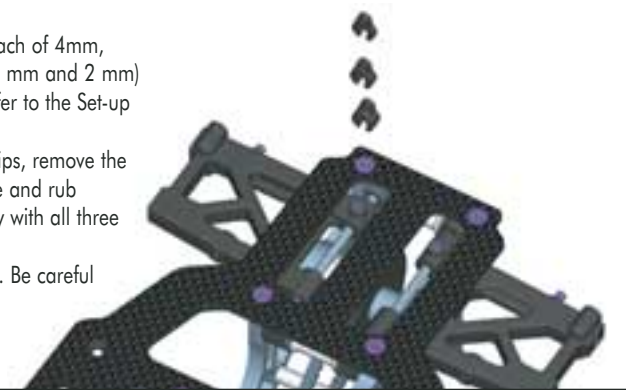


1. Release the pivot pin set screw to allow the arm to slide forward and back so that the wheelbase clips can be installed on the pivot pin.
2. Install the clips for wheelbase adjustment. Use only three clips (one each of 4mm, 3mm, and 2mm) on each arm. The initial setting is to install two clips (3 mm and 2 mm) in front of the arm and a 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 and lightly sand one side. Place the sand paper flat on a table and rub the clip on it in circles a few times. Repeat this until the arm moves freely with all three clips installed.

3. Secure the pivot pins very lightly in the lower arms with the set screws. Be careful not to overtighten them.

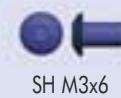
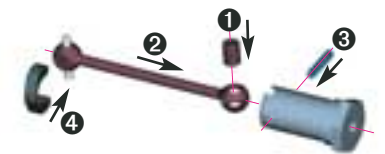
Now check the arms again for free movement.



P 2x10

1. Lightly grease a coupling and insert it into the drive shaft joint.
2. Slide the drive shaft joint into the wheel axle, aligning the cross holes.
3. Insert the cross pin, making sure it is evenly spaced on both sides of the wheel axle.
4. Install the plastic cap onto the pressed drive shaft pin. First insert one pin into a hole, then stretch the other hole on the plastic cap over the other pin.

Repeat for both axles.

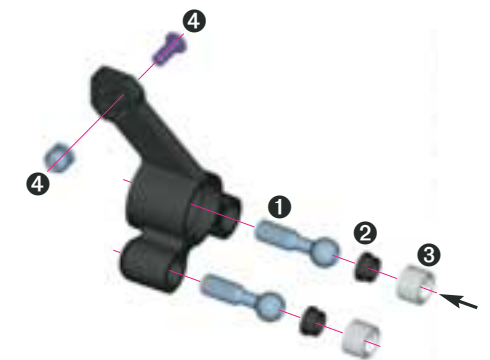


SH M3x6

Remove any flash (excess plastic) from the holes in the uprights before continuing.

1. Thread a pivot ball into each of the pivot holes in the rear uprights.
2. Place the plastic ball cups on top of the pivot balls. The concave (scooped) side goes against the pivot balls.
3. Apply some grease to the threads of the aluminum adjustment plugs. Thread the plugs into the tapped holes to cover the pivot balls and ball cups. Adjust the plugs so that the pivot balls have the least amount of play while still allowing free movement in the uprights.
4. Place an M3x6 screw through one of the upper holes on the upright into a steel pivot ball. Tighten the screw into the ball until you feel a "snap".

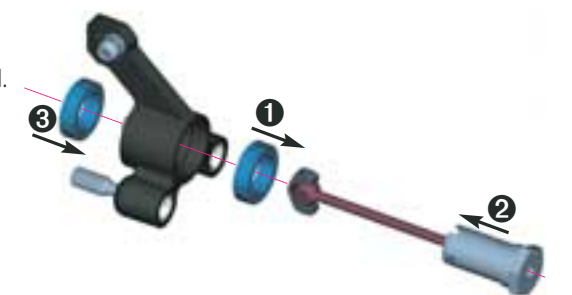
Repeat for both sides, but in step 4., the screw should go through the opposite side of the upright.



10x15

Clean and lubricate both 10x15 ball-bearings with light bearing oil.

1. Slide a 10x15 ball-bearing onto the 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 10x15 bearing over the drive shaft. Press the bearing into the upright, making sure that it fits precisely.



C 10

Fasten the axle to the upright by installing a snap ring in the groove on the axle by the drive shaft joint. To make it easier, place the hex portion of the 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 in place.

Repeat for the other axle and upright.

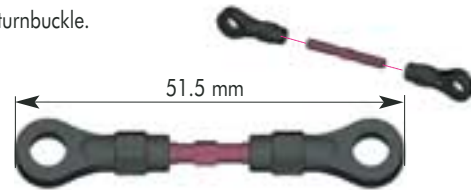


To remove the snap ring, insert a small screwdriver in the axle cutout and pry it off, taking care not to let it fly off the workbench.

REAR SUSPENSION

Assemble the rear turnbuckles by threading a ball joint onto each end of the spring steel turnbuckle.

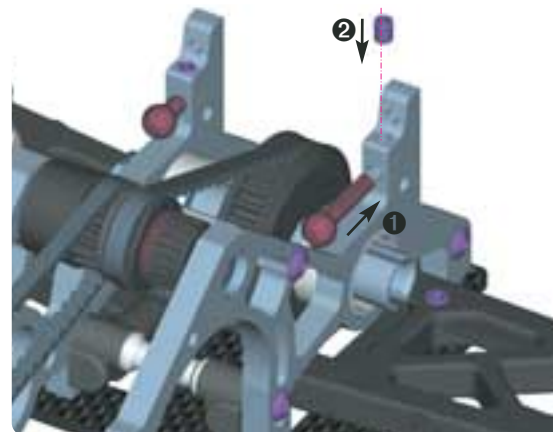
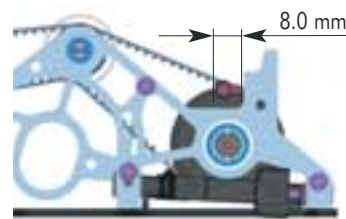
Note: The turnbuckle has a CCW thread on one end and a CW thread on the other end. Adjust the turnbuckles to a length of 51.5 mm, measured end-to-end.



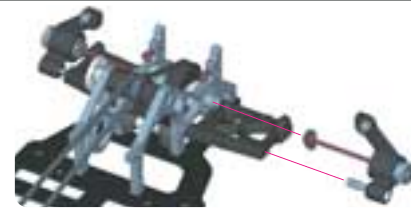
SB M3x4

1. Insert an adjustable 5.8 mm ball end into the hole on the bulkhead with the flat side facing up.
2. Secure the ball end using an M3x4 set screw in the threaded hole above where the ball end is installed.

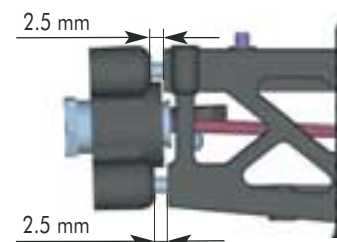
Install one in both the left and right bulkhead parts.



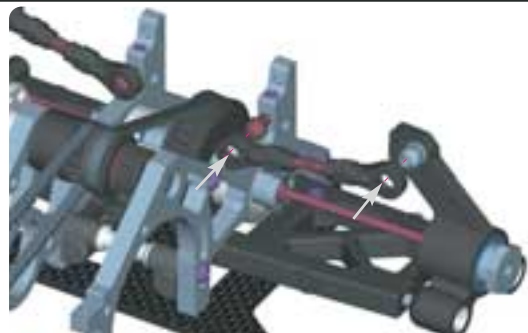
Start mounting the rear uprights by screwing the two pivot balls into the arm just enough so they are secured by a few threads. The holes in the arm are pre-tapped for easy installation. Turn each pivot ball only 1-2 turns at a time. Position the plastic end of the drive shaft in the differential outdrive slot. Now continue screwing in the pivot balls.



Adjust the pivot balls until there is a 2.5 mm gap between the upright and the end of the suspension arm, as shown in the detail illustration.



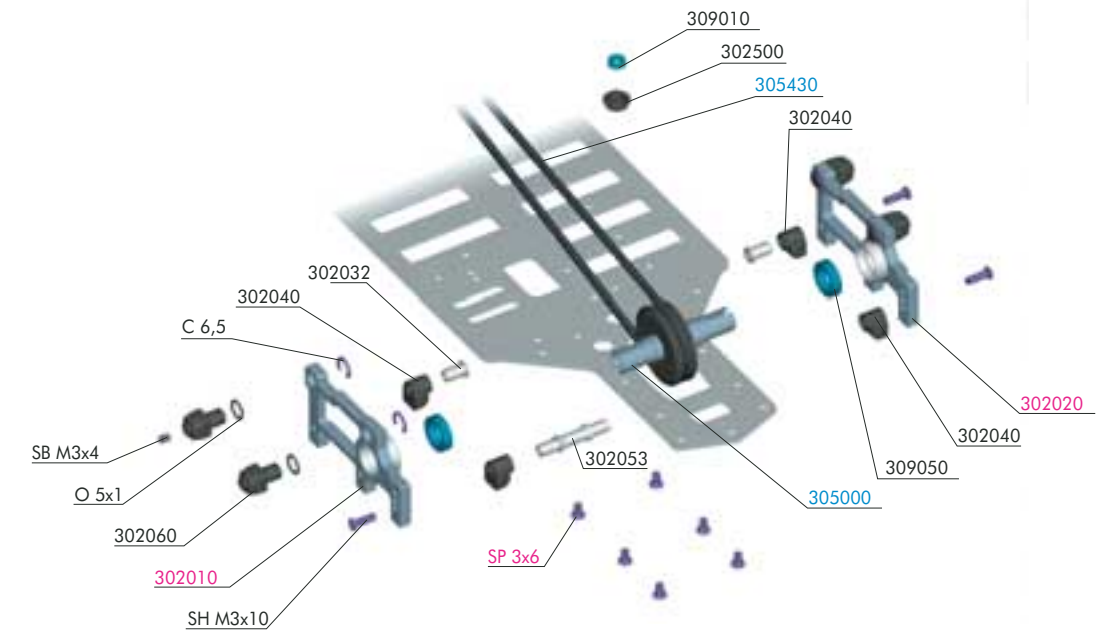
Connect the adjustable turnbuckles to the balls on the rear uprights and the adjustable ball end. The eyelets must be snapped onto the balls. The suspension arms must be able to fall freely when lifted up, then dropped. If there is any binding in an eyelet that prevents the arm from falling freely, remove it from the ball and lightly squeeze it with a pair of pliers. Remount it and check the arm again. Repeat this process until the eyelet has 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 2500 | CENTRAL SERVO SAVER (SET) |
| 30 2040 | LOWER SUSPENSION HOLDER (SET 2+1+1) | 30 9010 | BALL-BEARING MR74ZZ 4x7x2.5 (2) |
| 30 2053 | ALU LOWER SUSP HOLDER | 30 9050 | BALL-BEARING 6700ZZ 10x15x4 (2) |
| 30 2060 | FRONT UPPER SUSPENSION HOLDER (SET 4+8) | 30 5000 | BALL DIFFERENTIAL WITH LABYRINTH DUST COVERS™ - SET |
| 30 2010 | ALU SUSPENSION BULKHEAD FRONT RIGHT HARD COATED | | |
| 30 2020 | ALU SUSPENSION BULKHEAD FRONT LEFT HARD COATED | | |



BB 10x15



C 6.5

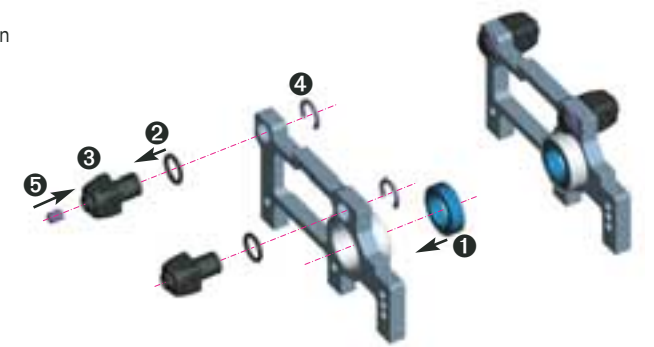


O 5x1



SB M3x4

1. Examine the two 10x15 ball-bearings. If they don't turn freely and easily, clean them until they do, then lubricate with light bearing oil. As in the rear, the ball-bearings go into the polished bearing hubs that are pressed into the bulkheads. Use the same method used to install the 10x15 bearings in the rear bulkhead. After installation, be sure that the ball-bearing turns freely and easily. Repeat with the other bearing and bulkhead.
2. Put a 5x1 rubber O-ring on each of the 4 front upper suspension holders.
3. Insert the front upper suspension holders into the bulkheads.
4. Fasten the upper suspension holders from the inside of the bulkhead with C 6.5 clips.
5. Insert an M3x4 set screw into each of the 2 rear upper suspension holders.



SH M3x10

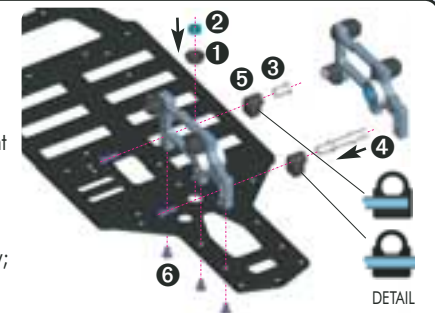


SP M3x6



BB 4x7

1. Install the servo saver plastic cover in the 9mm hole on the chassis. See the illustration for the proper location.
2. Insert a 4x7 ball-bearing into the plastic cover.
3. Insert an aluminum nut into both plastic closed lower suspension holders.
4. Insert the aluminum lower suspension holder into the plastic open suspension holder and mount them to the right bulkhead using an M3x10 screw. Make sure that the holes for the pivot pins are at the bottom, just above the lower chassis.
5. Mount both plastic closed suspension holders to both bulkheads using M3x10 screws. Again, make sure that the holes for the pivot pins 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 side bulkhead to the chassis using M3x6 screws.

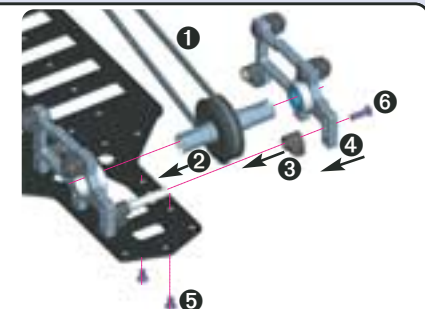


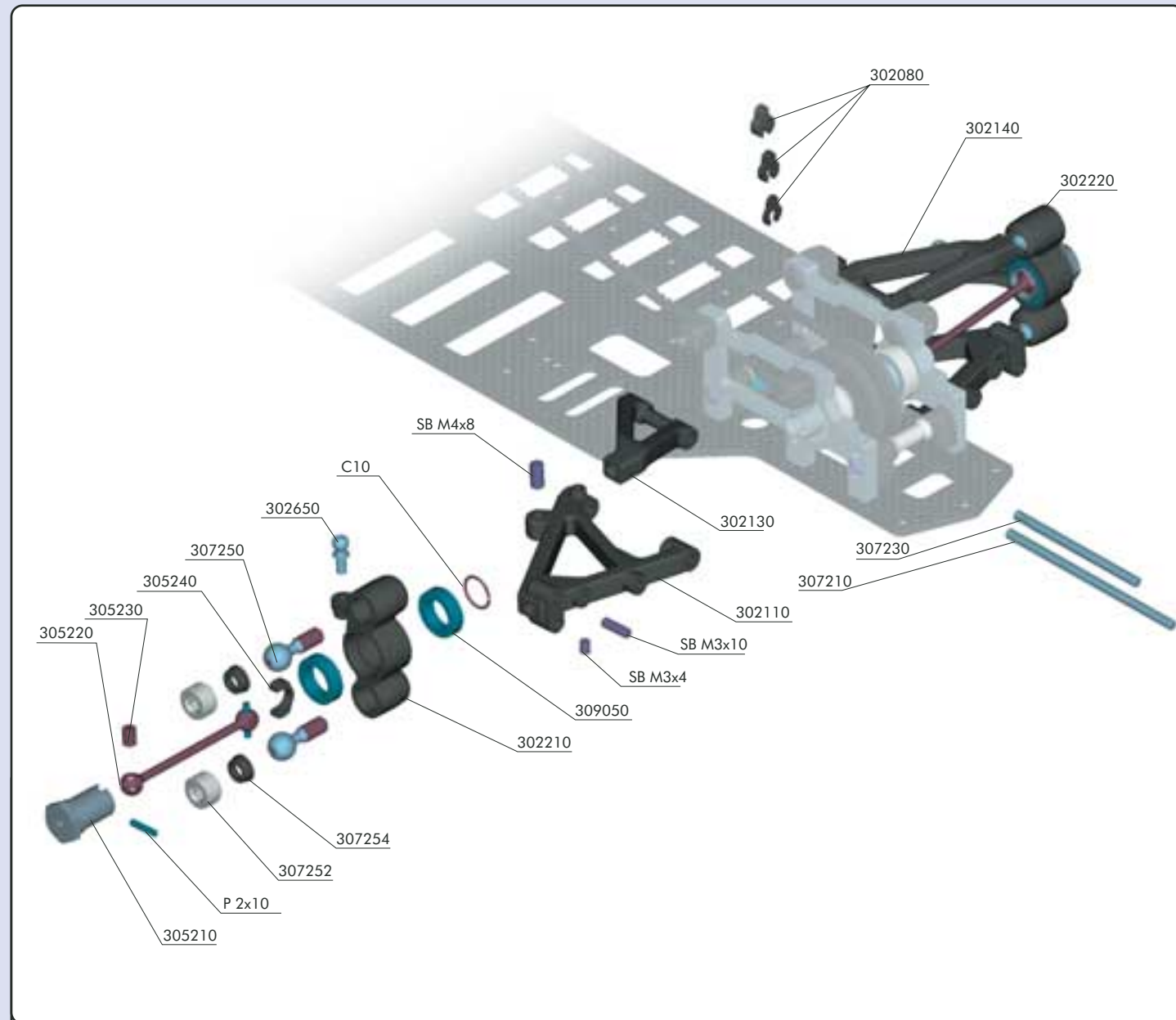
SP M3x6



SH M3x10

1. Put the front drive belt on the second differential.
2. Insert the short diff shaft of the differential into the bearing pressed into the right bulkhead.
3. Install the remaining open suspension holder onto the aluminum lower suspension holder.
4. Place the left side bulkhead onto the chassis. The diff needs to seat into the bearing pressed into the bulkhead.
5. Use M3x6 screws to fasten the left side bulkhead to the chassis.
6. Fasten the lower suspension holder assembly to the left side bulkhead with an M3x10 screw.



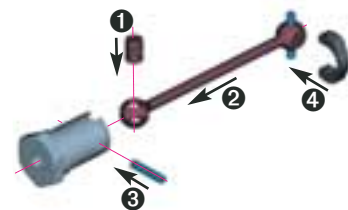


BAG 05	30 2080	CASTER CLIPS SET - 4+3+2+1 MM (2)	30 5230	DRIVE SHAFT COUPLING - SPRING STEEL (2)
	30 2110	SUSPENSION ARM FRONT LOWER	30 5240	DRIVE SHAFT REPLACEMENT PLASTIC CAP 3 MM (4)
	30 2130	SUSPENSION ARM FRONT UPPER RIGHT	30 7210	FRONT WISHBONE PIVOT PIN BOTTOM - SPRING STEEL (2)
	30 2140	SUSPENSION ARM FRONT UPPER LEFT	30 7230	FRONT WISHBONE PIVOT PIN UPPER - SPRING STEEL (2)
	30 2210	STEERING BLOCK RIGHT	30 7250	PIVOT BALL 8.5 MM - SPRING STEEL (2)
	30 2220	STEERING BLOCK LEFT	30 7252	ALU ADJUSTING NUTS M10x1 (4)
	30 2650	5 MM BALL END, WITH THREAD (6)	30 7254	PLASTIC BALL CUP 8.4 MM (4)
	30 5210	WHEEL AXLE FRONT - INTEGRATED HEX HUB - HARD COATED (2)	30 9050	BALL-BEARING 6700ZZ 10x15x4 (2)
	30 5220	DRIVE SHAFT FRONT (2)		

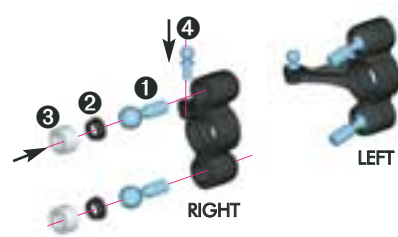


1. Lightly grease a coupling and insert it into the drive shaft joint.
2. Slide the drive shaft into the wheel axle, aligning the cross holes.
3. Insert the cross pin, making sure it is evenly spaced on both sides of the wheel axle.
4. Install the plastic cap onto the pressed drive shaft pin. First insert one pin into a hole, then stretch the other hole on the plastic cap over the other pin.

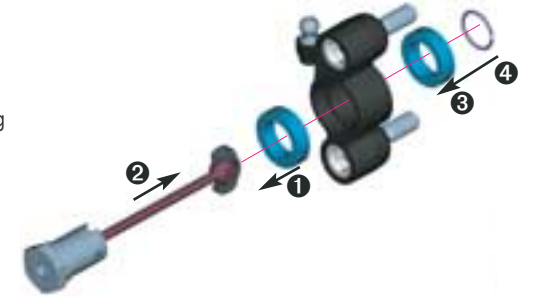
Repeat for both axles.



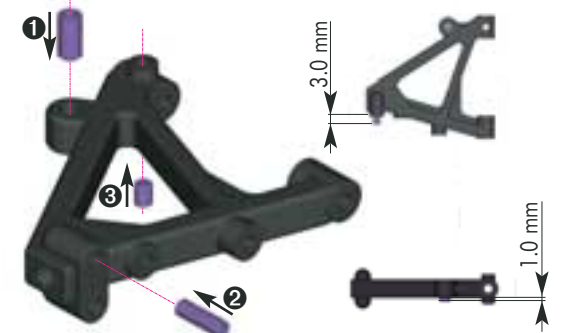
1. Insert a pivot ball into each of the pivot holes in the steering blocks.
2. Place the plastic ball cups on top of the pivot balls. The concave (scooped) side goes against the pivot balls.
3. Apply some grease to the threads of the aluminum adjustment plugs. Thread the plugs into the tapped holes to cover the pivot balls and ball cups. Adjust the plugs so that the pivot balls have the least amount of play while still allowing free movement in the steering blocks.
4. Mount a 5mm small ball end to the top of each steering arm.



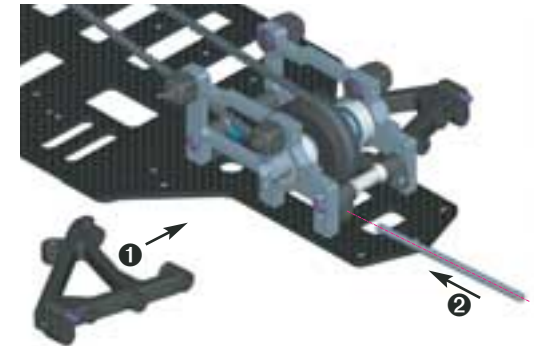
- Clean and lubricate both 10x15 ball-bearings with light bearing oil.
1. Slide a 10x15 ball-bearing onto the axle.
 2. Insert the drive shaft through the steering block until the bearing on the axle is seated. Note the direction of installation from the diagram.
 3. Slide another 10x15 bearing over the drive shaft. Press the bearing into the steering block, making sure that it fits precisely.
 4. Fasten the axle to the steering block by installing a snap ring in the groove on the axle by the drive shaft joint. To make it easier, place the hex portion of the 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 in place.
- Repeat for the other axle and steering block.



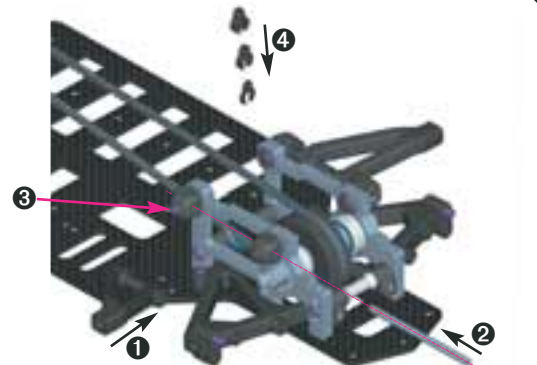
1. Thread a downstop adjustment screw M4x8 into the front lower arm. The left and right arms are identical, but mirrored, so be sure to check the orientation.
2. Thread a shock mounting screw M3x10 into the hole located on the outside of the arm. Check the illustration for the proper hole. The screw needs to stick out 3mm from the arm.
3. Thread a pivot pin set screw M3x4 into the arm from the bottom. Thread it just enough so it will stay in the hole; don't let it thread into the pivot pin area.



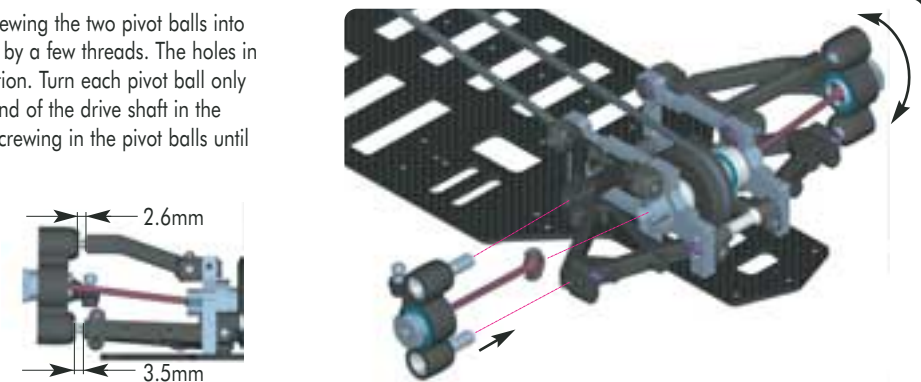
1. Position the lower front suspension arm in the front bulkhead. It should seat between the two plastic lower suspension holders. Note that the pivot pin set screws should be accessible from the 9mm holes underneath the chassis.
 2. Align the holes in the arms with the suspension holders and slide a lower front pivot pin through the hole to secure them. The flat spot on the pivot pin must be towards the rear and facing the bottom of the car.
 3. Tighten the 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 M3x6 screws
-- Lower suspension holders
- After all the screws are tight, check the arms for free movement.

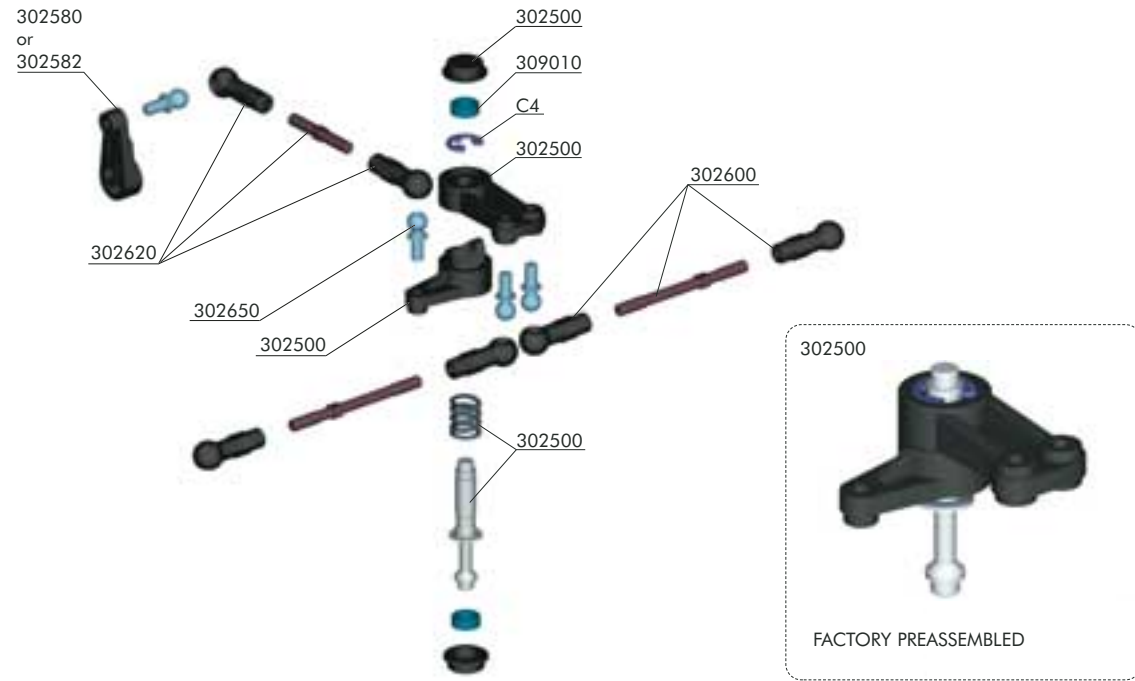


1. Position the upper front suspension arms in the upper suspension holders.
2. Slide an front upper pivot pin through the holders and the arm with the flat spots facing the side of the car.
3. Tighten the M3x4 pivot pin set screws just until they touch the pivot pins.
4. Install the caster clips. Use only 3 mm, 2 mm and 1 mm clips. Apply 2 mm clip in front of each arm and 1 mm + 3 mm clip behind each arm. For advanced set-up, refer to the Set-up Book.



- Start mounting the steering blocks by screwing the two pivot balls into the arm 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 plastic end of the drive shaft in the differential outdrive slot. Now continue screwing 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.





BAG 06

30 2500	CENTRAL SERVO SAVER (SET)	30 2620	ADJ. STEERING ROD L/R 22 MM - SPRING STEEL + BALL JOINT (1+2)
30 2580	NYLON SERVO HORN - KO, JR, AIRTRONICS, MULTIPLEX	30 2650	5 MM BALL END, WITH THREAD (6)
30 2582	NYLON SERVO HORN - FUTABA, ROBE	30 2660	BALL JOINT 5 MM (6)
30 2600	ADJ. STEERING ROD L/R 40 MM - SPRING STEEL + BALL JOINT (2+4)	30 9010	BALL-BEARING MR74ZZ 4x7x2.5 (2)

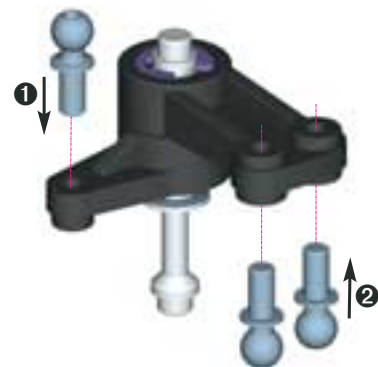
301160 UPPER DECK - 2.5 MM GRAPHITE - CNC MACHINED



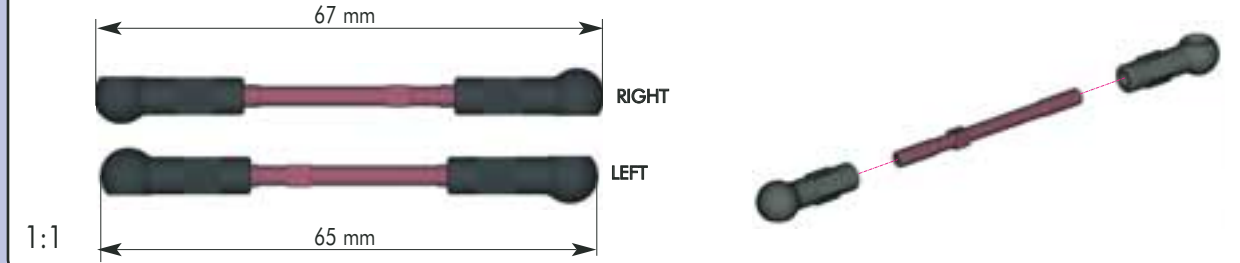
The servo saver is partially preassembled from the factory and requires only a few steps to finish.
 If you need to assemble the parts yourself, perform the following steps:
 1. Place the servo saver spring on the steering post.
 2. Place the lower servo saver arm on the steering post.
 3. Place the 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 C4 clip. The clip snaps into a groove on the steering post.



1. Thread a 5mm small ball end into the lower servo saver. Be sure that the ball is on top.
 2. Thread two 5mm small ball ends up into the upper servo saver arm. The two balls should be on the bottom.



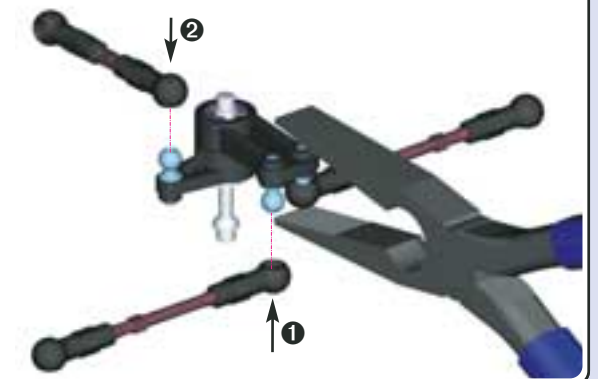
Assemble the steering rods by threading a ball-joint onto each end of the spring steel steering rods. Note that the steering rod has a CCW thread on the long end and a CW thread on the short end. Also note that the ball-joints should be 180-degrees to each other.



Assemble the servo link by threading a ball-joint onto both ends. Note that the rod has a CCW thread on one end and a CW thread on the other. Also note that the ball-joints should be perpendicular (90-degrees) to each other.



1. Using pliers, press the ball-joints of the steering rods onto the ball ends on the upper servo saver arm. Use the ball-joints on the longer end of the steering rods.
 2. Using pliers, press the ball-joint of the servo link onto the ball end on the lower servo saver arm.



1. Choose the proper servo horn for your servo. See the parts list above to match your servo manufacturer to the proper servo horn.
 2. Mount a 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 the exposed threads flat.
 3. Press the other ball-joint from the servo link onto the ball on the servo horn.

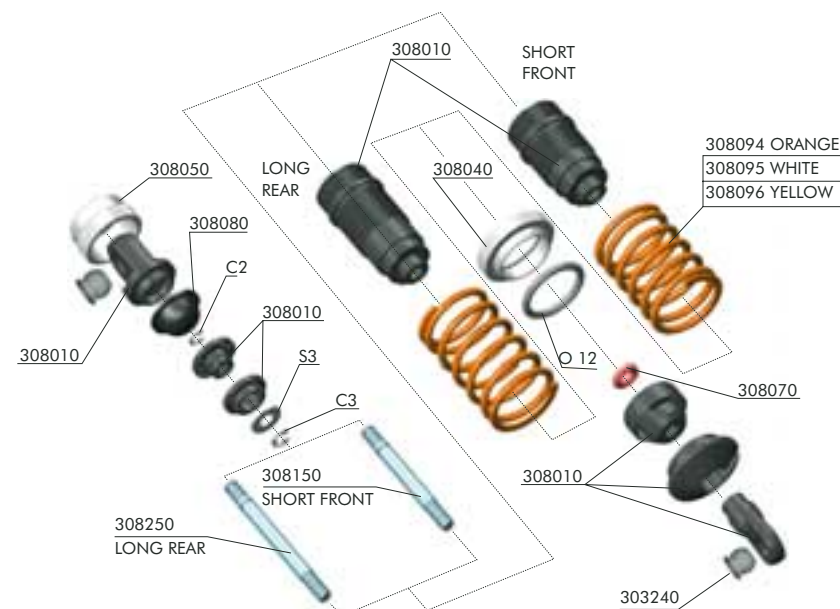


1. Insert the plastic cap into the upper deck from underneath. See the illustration for proper orientation.
 2. Place the 4x7 ball-bearing in the plastic cap.



7. SHOCK ABSORBERS

SHOCK ABSORBERS



BAG 07	30 3240	BALL UNIVERSAL 5.8 MM HEX (4+4)	30 8150	HARDENED PISTON RODS FRONT (2)
	30 8010	NYLON FRAME SHOCK PARTS 4-STEP	30 8250	HARDENED PISTON RODS REAR (2)
	30 8040	SHOCK ADJ. NUT ALU + O-RING	30 8095	SPRING-SET D=1.5 WHITE (2+2) (OPTION)
	30 8050	SHOCK CAP-NUT ALU	30 8096	SPRING-SET D=1.6 YELLOW (2+2) (OPTION)
	30 8070	O-RING / SHIM	30 8120	ALU SHOCK-BODY TEFLON FRONT (2) (OPTION)
	30 8094	SPRING-SET D=1.4 ORANGE (2+2) (INCLUDED)	30 8220	ALU SHOCK-BODY TEFLON REAR (2) (OPTION)

Shocks are one of the biggest factors in the proper performance of your car. These unique 4-step externally adjustable shocks must be assembled with extreme precision. After removing the nylon parts from the frame, make sure to remove any excess plastic flash with a sharp knife.

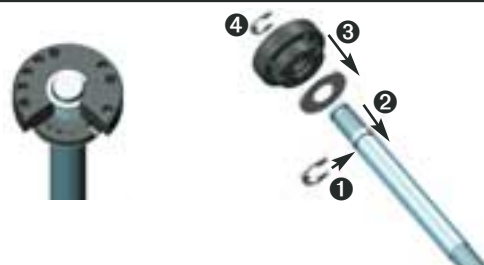
Cut all shock parts free from the parts tree. The upper piston has a small hole in the center. The lower piston has a large hole in the center. Press the upper piston into the lower piston, carefully noting the orientation from the illustration.



- C 1.9
- C 2.3
- S 3

Perform for all four upper/lower piston assemblies and 4 shock rods:

1. Install a C-clip 2.3 on the lower groove of the shock rod.
2. Place an S 3 washer on the shock rod.
3. Thread the upper/lower piston assembly onto the shock rod.
4. Install a C-clip 1.9 on the upper groove of the shock rod.



Match the shock rod assemblies with the proper shock bodies and insert the rods into the appropriate body:
 -- the long rods go with the long shock bodies (rear)
 -- the short rods go with the short shock bodies (front)



Perform for all four shock bodies:

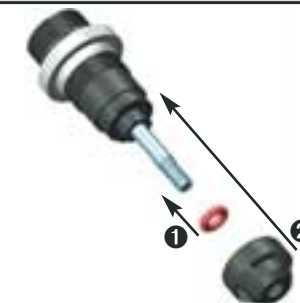
1. Insert an 12.1x16 O-ring inside the groove of a threaded shock adjustment collar.
 2. Thread the adjustment collar onto the shock body.
- Note: Apply a little shock oil to the O-rings to make installation onto the shock body easier.



Cutaway view of assembled adjustment collar



1. Lubricate a small O-ring with a couple of drops of shock oil. Taking care not to rip or damage the O-ring, place it over the extended end of the shock rod.
2. Install the end-cap on the bottom of the shock body. Lock it in place by turning it about 1/8 of a turn CW.



Grip the top of the exposed thread of the shock rod with pliers and thread the ball-joint onto the shock rod.

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



Shock filling and bleeding sequence (perform for all four shocks):

1. Fully extend the piston rod so that the piston is at the bottom of the shock body.
2. Hold the shock upright and fill the shock body with oil.
3. Let the oil 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. Place the rubber bladder on top of the shock body. Some oil should spill out.



Place the top pivot-point on the bladder. Note the key notch on the top-pivot point. Place the aluminum collar over the top pivot-point, taking care to match the key notch on the collar and top-pivot point, and fully thread it on the shock body. 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. If any air is still in the shock, open it again and start the bleeding procedure over.

Dampening adjustment:

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 dampening). Turning the shock rod fully CW aligns only one hole in the pistons (hardest). The shocks have 4 settings, each of which can be felt by a little "click". Set the front shocks to position 3 (3 holes open -- medium) and the rear shocks to position 4 (4 holes open -- lightest).



Shock length adjustment:

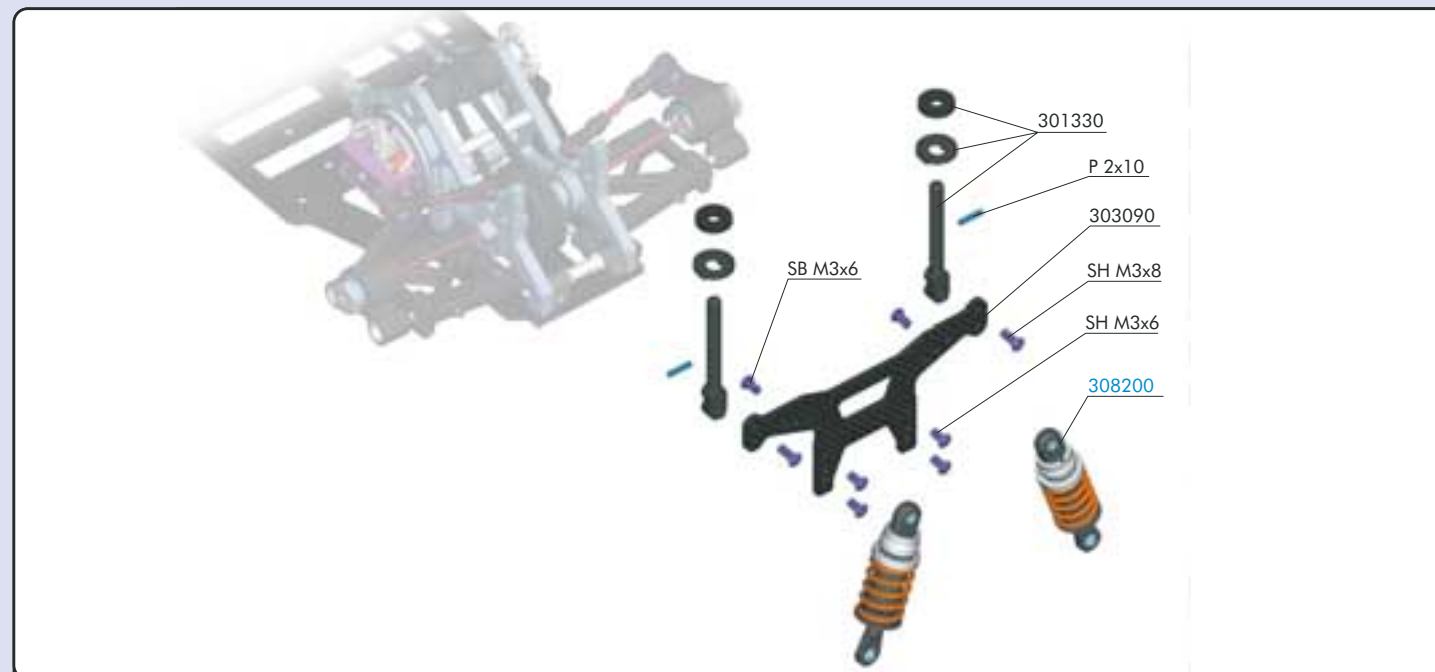
It is important that the two shocks on each end of the car (front or rear) are equal lengths. Adjust the length of the shock by tightening or loosening the ball-joint on the shock rod.

Fully extended front shocks: 68.0 mm
 Fully extended rear shocks: 77.0 mm

1. Install the springs on all four shocks. The short springs go on the short front shocks.
2. Secure the spring with a spring cup.
3. Use pliers to install a 5.8 mm ball universal into each upper and lower eyelet on the assembled shocks.

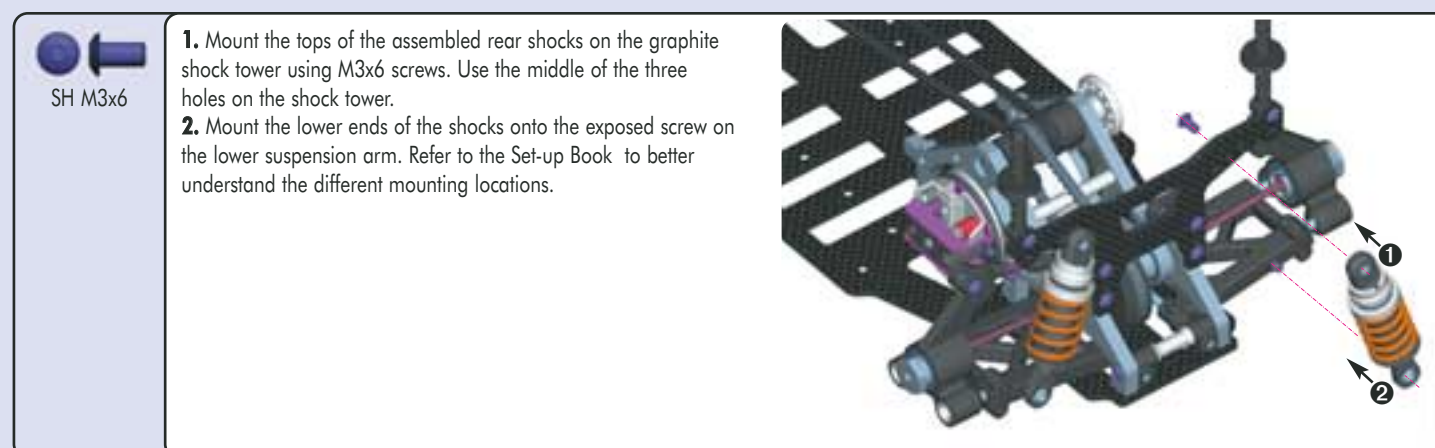
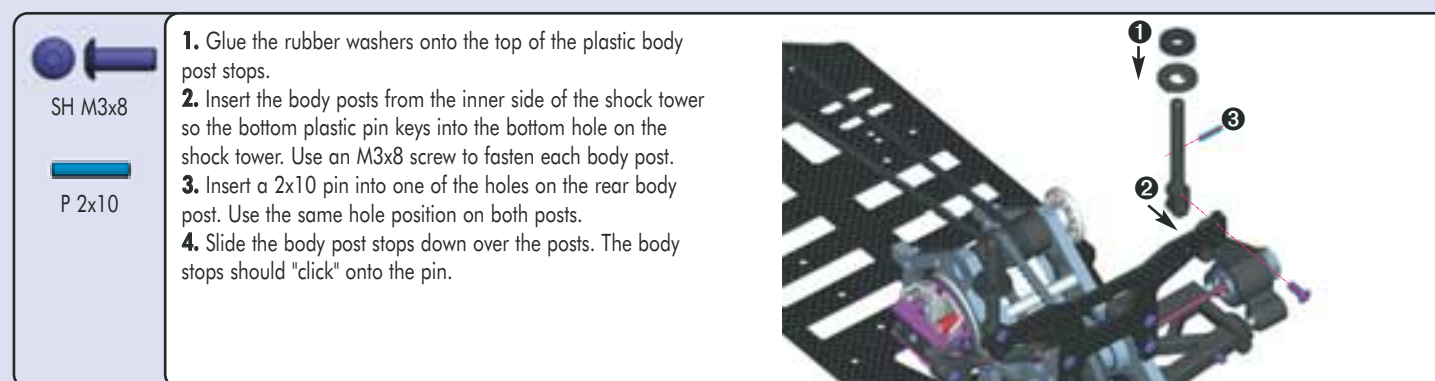


8. REAR FINAL ASSEMBLY

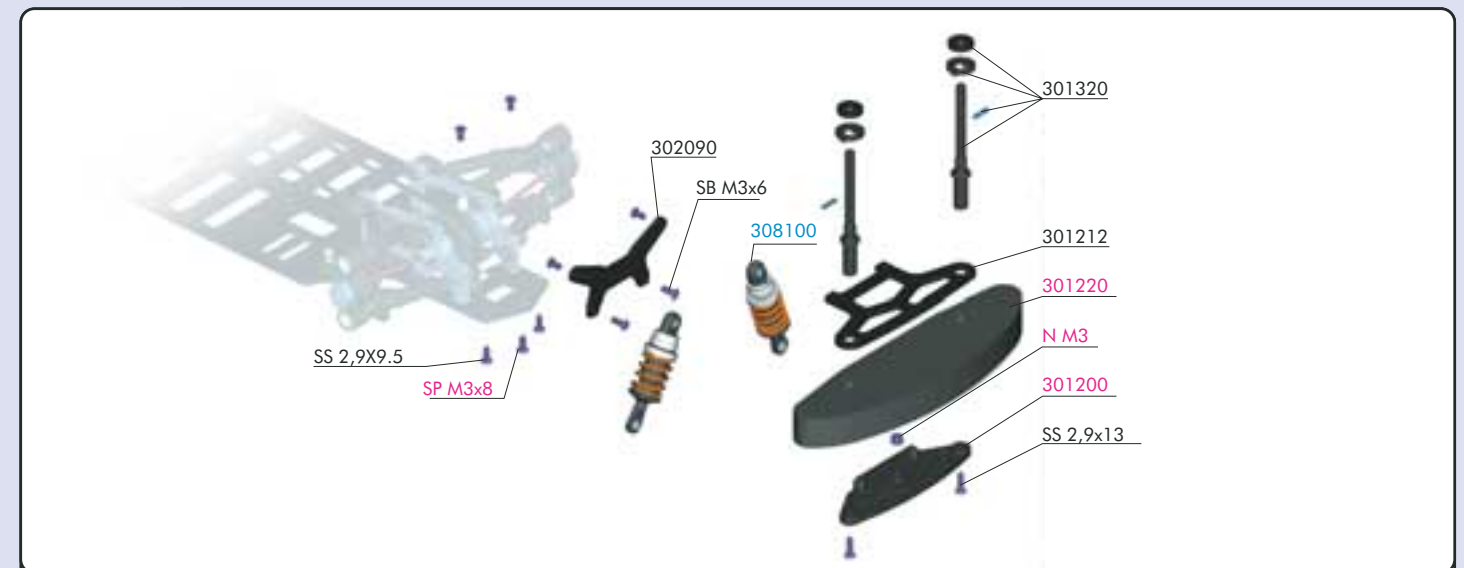


BAG 08

30 1330 REAR BODY MOUNT SET
30 3090 SHOCK TOWER REAR - 2.5 MM GRAPHITE - CNC MACHINED
30 8200 REAR SHOCK ABSORBER



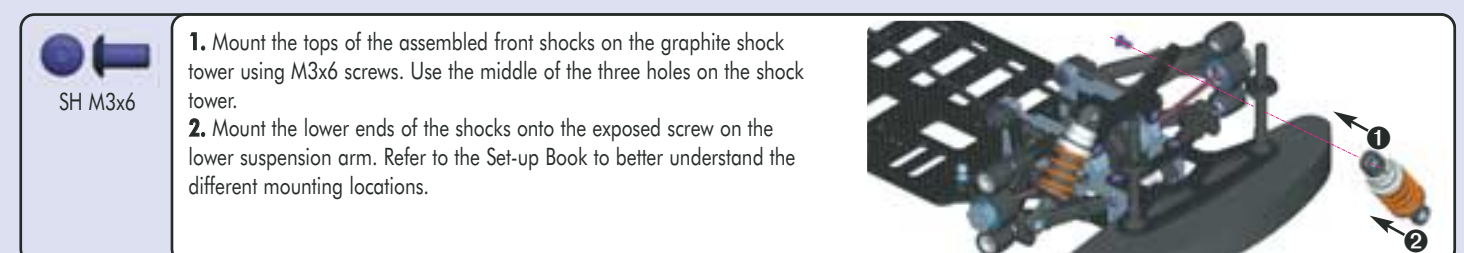
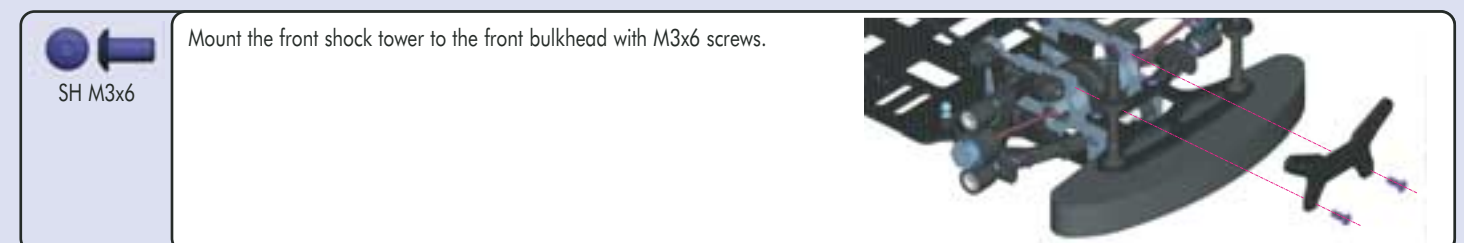
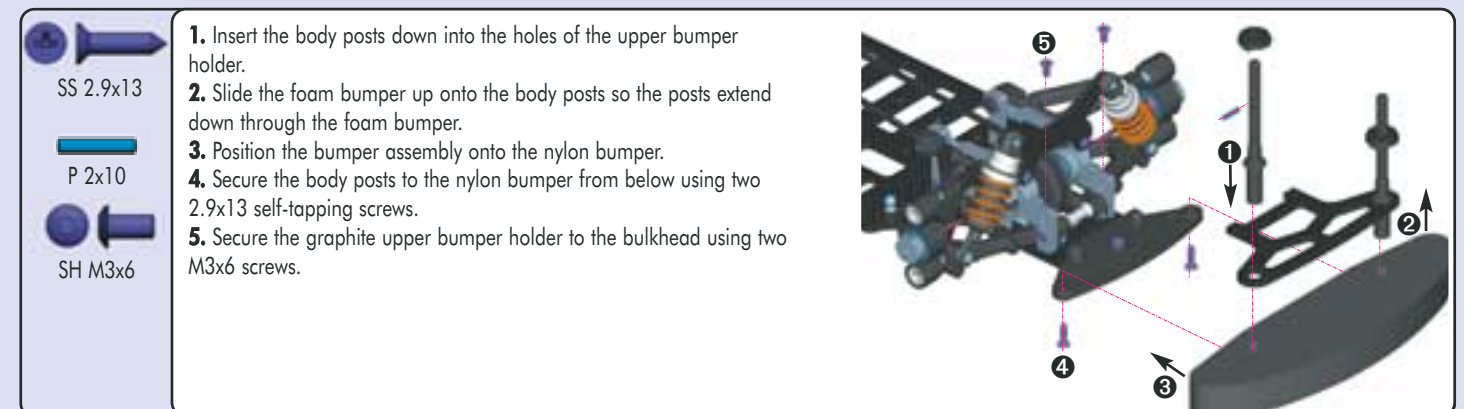
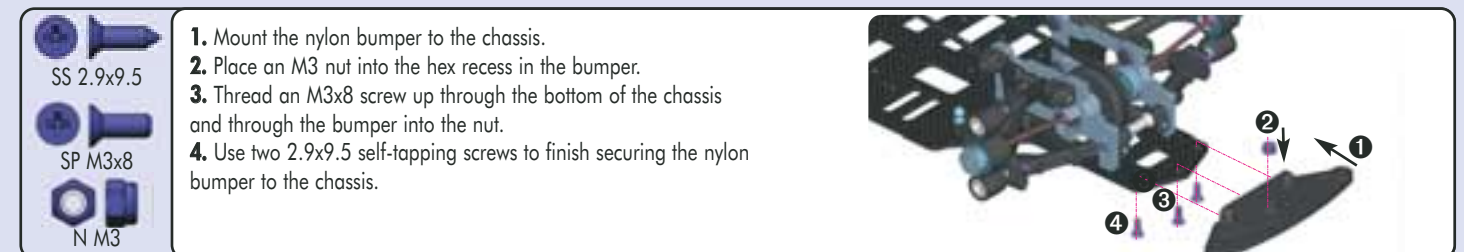
9. FRONT FINAL ASSEMBLY



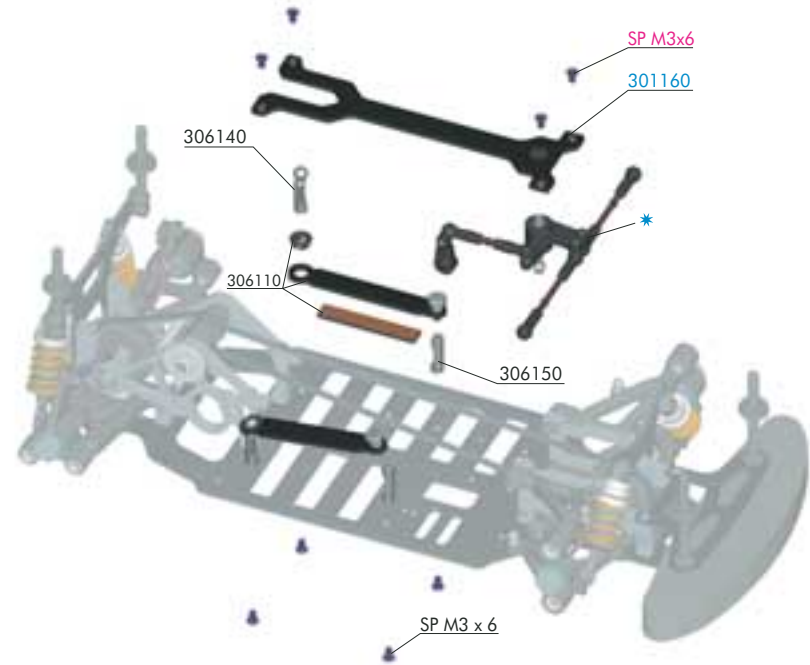
BAG 09

30 1320 FRONT BODY MOUNTS (SET)
30 1212 BUMPER UPPER HOLDER - 2.5 MM GRAPHITE CNC MACHINED
30 1200 NYLON BUMPER
30 1220 FOAM BUMPER
N M3

30 2090 SHOCK TOWER FRONT - 2.5 MM GRAPHITE CNC MACHINED
30 8100 FRONT SHOCK ABSORBER



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)

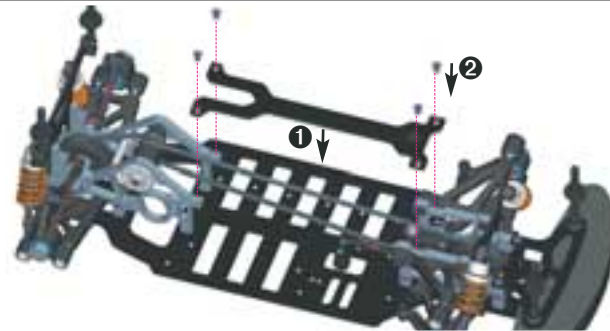
SP M3x6
 30 1160 * UPPER DECK - 2.5 MM GRAPHITE - CNC MACHINED
 CENTRAL SERVO SAVER + STEERING RODS

1. Work the steering rods through the front bulkheads and place the assembled servo saver on the chassis. It must seat 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.



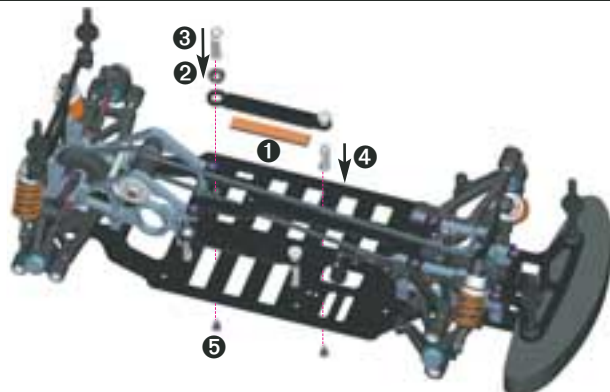
SP M3x6

1. Place the graphite upper deck on top of the bulkheads. The 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 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.

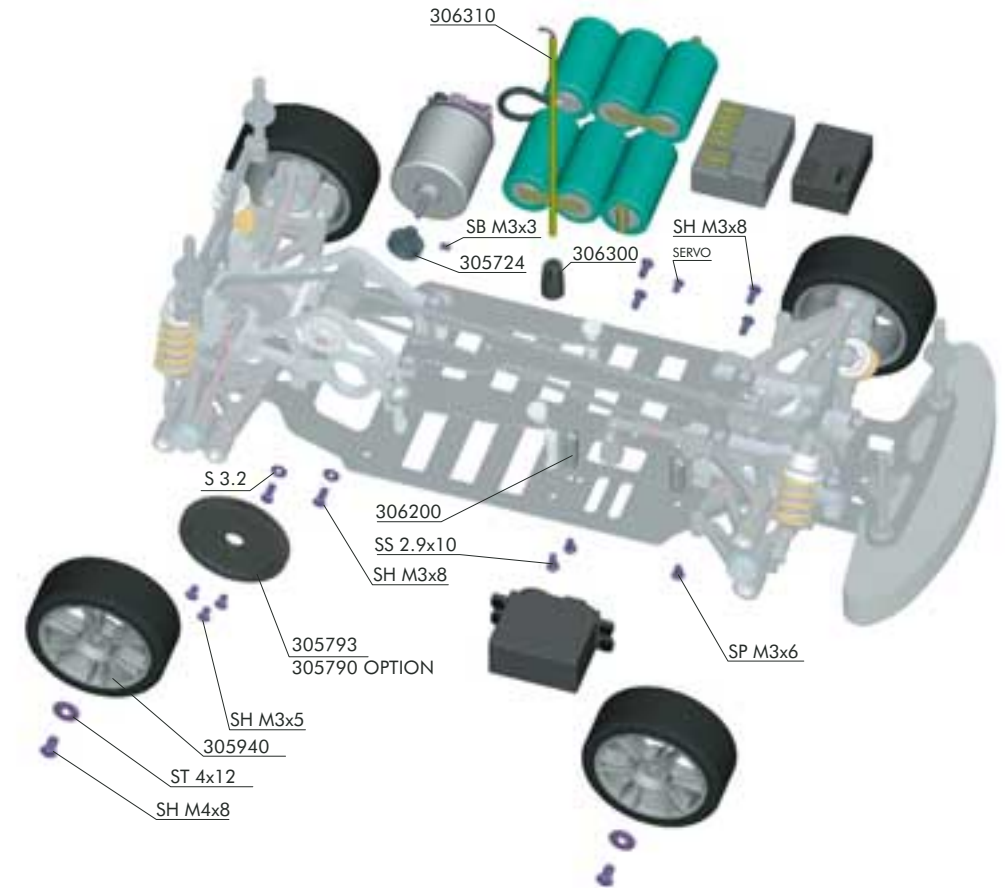


SP M3x6

1. Stick the foam battery cushions on the underside of each battery strap.
2. Press a plastic ball end hub into the large hole of each battery strap.
3. Install the battery holder mount's ball end into the plastic hub. They will snap in place. Once installed, the ball end should pivot in all directions freely.
4. Secure the threaded battery holder mounts onto the chassis with M3x6 screws. Orient it so the battery will fit in the cutout.
5. Secure the ball-ended battery holder mounts onto the chassis with M3x6 screws. Again, orient it so the battery will fit in the cutout.



11. ACCESSORY INSTALLATION



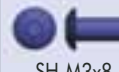
BAG 11

30 5724 PINION GEAR ALU HARD COATED 24T / 48 (INCLUDED)
 30 5793 SPUR GEAR 93T/48 (INCLUDED)
 30 5940 24 MM WHEELS (4)
 30 5940 26 MM WHEELS (2) (OPTION)
 30 6200 ALU SERVO MOUNT (2)
 30 6300 ANTENNA MOUNT
 30 6310 ANTENNA (2)
 30 5621 PINION GEAR STEEL 21T / 48 (OPTION)
 30 5622 PINION GEAR STEEL 22T / 48 (OPTION)
 30 5623 PINION GEAR STEEL 23T / 48 (OPTION)

30 5624 PINION GEAR STEEL 24T / 48 (OPTION)
 30 5625 PINION GEAR STEEL 25T / 48 (OPTION)
 30 5626 PINION GEAR STEEL 26T / 48 (OPTION)
 30 5627 PINION GEAR STEEL 27T / 48 (OPTION)
 30 5628 PINION GEAR STEEL 28T / 48 (OPTION)
 30 5725 PINION GEAR ALU HARD COATED 25T / 48 (OPTION)
 30 5726 PINION GEAR ALU HARD COATED 26T / 48 (OPTION)
 30 5727 PINION GEAR ALU HARD COATED 27T / 48 (OPTION)
 30 5728 PINION GEAR ALU HARD COATED 28T / 48 (OPTION)
 30 5790 SPUR GEAR 90T / 48 (OPTION)



SH M3x5



SH M3x8

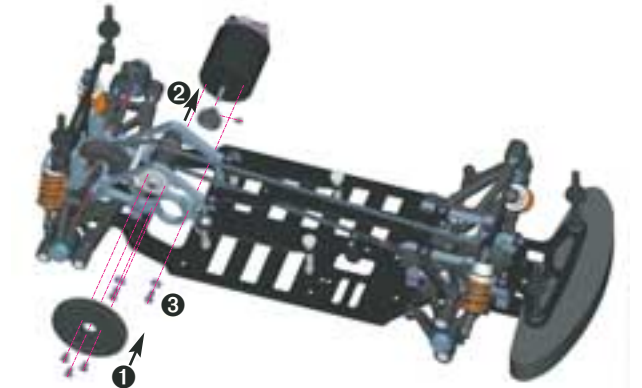


S 3.2

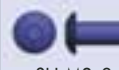


SB M3x3

1. Use M3x5 screws to mount the spur gear on the layshaft.
2. Install a pinion gear on the motor shaft and secure it with set screw M3x3 that comes with the pinion.
3. Put one 3.2mm washer each on two 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.

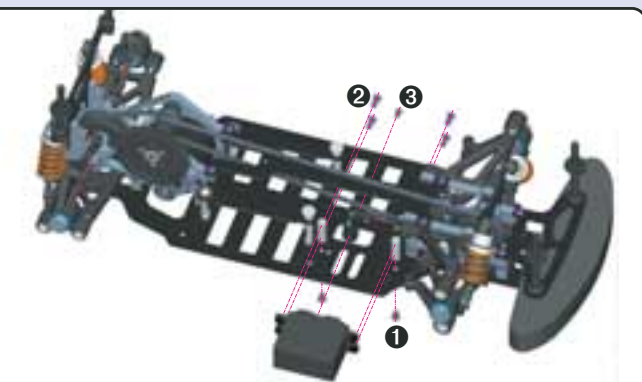


SP M3x6



SH M3x8

1. Fasten the aluminum servo mounts to the chassis using M3x6 screws. Note that the forward servo mount is fixed, while the rear servo mount can go in one of two holes, based on the width of your servo.
2. Secure the servo to the servo mounts using 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 Set-Up Book for more info on correctly setting steering linkage.

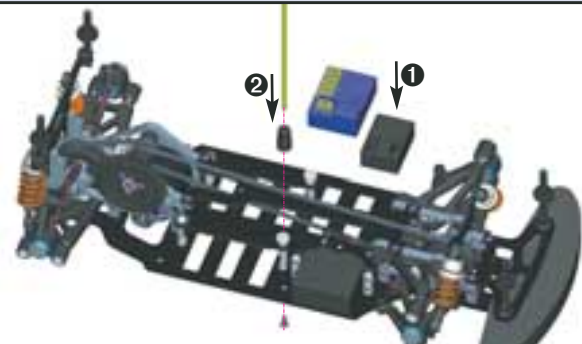


ACCESSORY INSTALLATION



SS 2.9x9.5

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 antenna holder based on the position of the receiver using a 2.9x9.5 screw from underneath the chassis. Slide the wire through the antenna tube, then push the base of the tube firmly into the mounting hole. The wire should fit through the slot on the side of the antenna mount.



1. Install a foam insert into each tire. Make sure the insert is centered in each tire.
 2. Slide the tire with foam insert onto wheel.
 3. Glue the tires to the wheels with super glue (CA glue) equally around each tire on both sides.
- Warning: Follow the adhesive manufacturer's instructions for proper use and safety. Wear eye and hand protection.

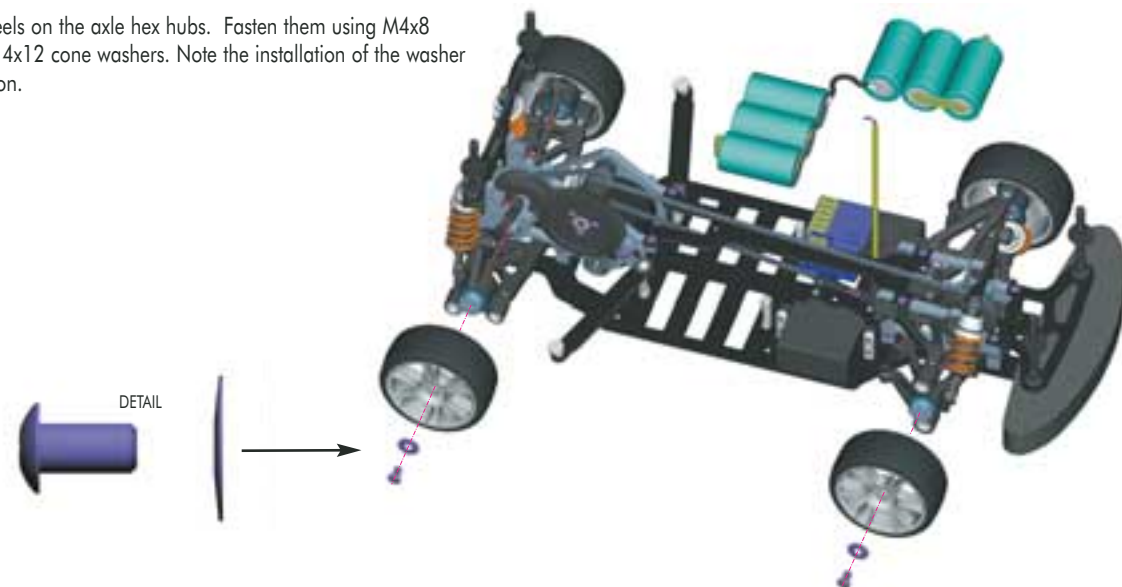


SH M4x8



ST 4x12

Mount the wheels on the axle hex hubs. Fasten them using M4x8 screws and ST 4x12 cone washers. Note the installation of the washer in the illustration.



ADDITIONAL ITEMS REQUIRED:

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



TOOLS REQUIRED:

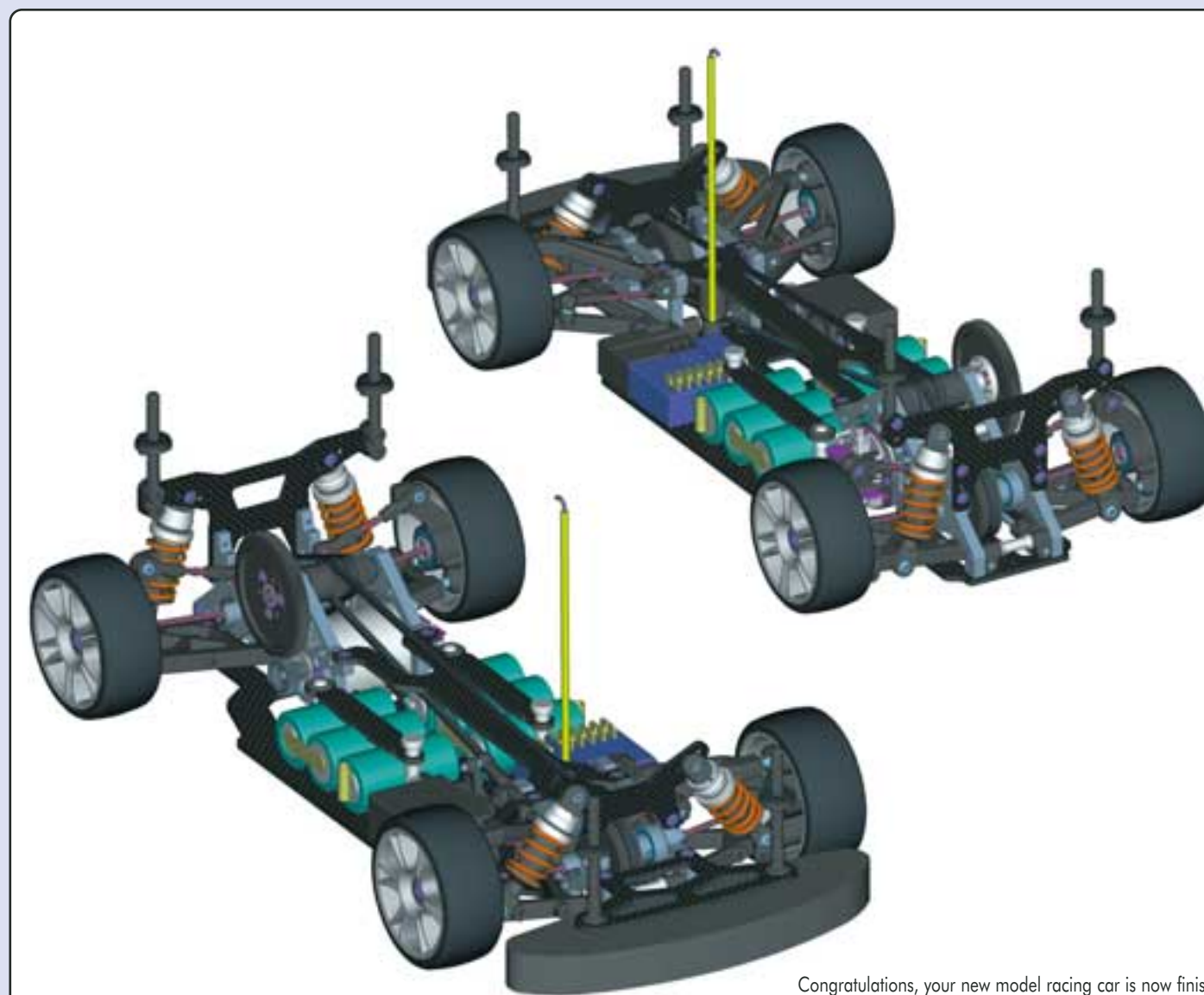
Cutting pliers, Longnose pliers, Screwdriver for Set Screws 1.5 mm, 2.0 mm, 2.5 mm and 3.0 mm, Phillips Screwdriver, Hobby Knife, Allen Key 5 mm, Caster Clip Remover Tool, Soldering Iron, Snap Ring Pliers

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.
- 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's battery pack before turning 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 unit 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.
- 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 can not 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 model racing car is now finished. Proceed to the set-up instructions for adjusting the suspension geometry.

XRAY T1