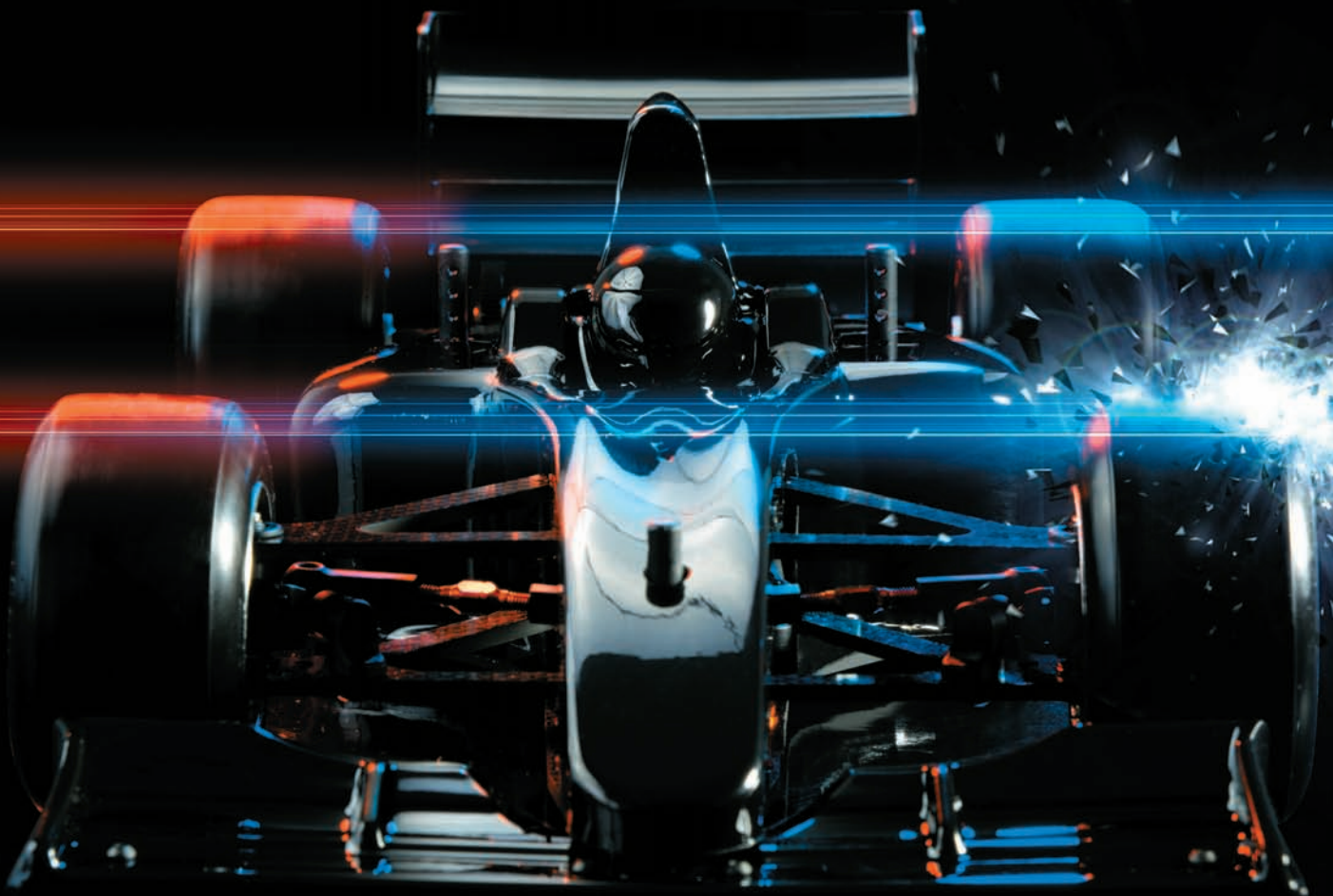


1/10 LUXURY ELECTRIC FORMULA

**XRAY**

**X41**

**INSTRUCTION MANUAL**



## BEFORE YOU START

The X1 is a high-competition, high-quality, 1/10-scale Formula car intended for persons aged 16 years and older with previous experience building and operating RC model racing cars. This is not a toy; it is a precision racing model. This model racing car is not intended for use by beginners, inexperienced customers, or by children without direct supervision of a responsible, knowledgeable adult. If you do not fulfill these requirements, please return the kit in unused and unassembled form back to the shop where you have purchased it.

Before building and operating your X1, **YOU MUST** read through all of the operating instructions and instruction manual and fully understand them to get

## CUSTOMER SUPPORT

We have made every effort to make these instructions 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 [info@teamxray.com](mailto:info@teamxray.com). Also, please visit our Web site at [www.teamxray.com](http://www.teamxray.com) to find the latest updates, set-up information, option parts, and many other goodies. We pride ourselves on taking excellent care of our customers.

You can join thousands of XRAY fans and enthusiasts in our online community at:

**[www.teamxray.com](http://www.teamxray.com)**

**Failure to follow these instructions will be considered as abuse and/or neglect.**

## SAFETY PRECAUTIONS

Contains:

LEAD (CAS 7439-92-1) ANTIMONY (CAS 7440-36-0)

**WARNING:** This product contains a chemical known to the state of California to cause cancer and birth defects or other reproductive harm.

**CAUTION: CANCER HAZARD**

Contains lead, a listed carcinogen. Lead is harmful if ingested. Wash thoroughly after using. **DO NOT** use product while eating, drinking or using tobacco products. May cause chronic effects to gastrointestinal tract, CNS, kidneys, and blood. **MAY CAUSE BIRTH DEFECTS.**

When building, using and/or operating this model always wear protective glasses and gloves.

Take appropriate safety precautions prior to operating this model. You are responsible for this model's assembly and safe operation! Please read the instruction manual before building and operating this model and follow all safety precautions. Always keep the instruction manual at hand for quick reference, even after completing the assembly. Use only genuine and original authentic XRAY parts for maximum performance. Using any third party parts on this model will void guaranty immediately.

## IMPORTANT NOTES - GENERAL

- This product is not suitable for children under 16 years of age without the direct supervision of a responsible and knowledgeable adult.
- Carefully read all manufacturers warnings and cautions for any parts used in the construction and use of your model.
- Assemble this kit only in places away from the reach of very small children.
- First-time builders and users 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.
- Exercise care when using tools and sharp instruments.
- Take care when building, as some parts may have sharp edges.
- Keep small parts out of reach of small children. Children must not be allowed to put any parts in their mouth, or pull vinyl bag over their head.
- Read and follow instructions supplied with paints and/or cement, if used (not included in kit).
- Immediately after using your model, do NOT touch equipment on the model such as the motor and speed controller, because they generate high temperatures. You may seriously burn yourself seriously touching them.
- Follow the operating instructions for the radio equipment at all times.
- Do not put fingers or any objects inside rotating and moving parts, as this may cause damage or serious injury as your finger, hair, clothes, etc. may get caught.
- Be sure that your operating frequency is clear before turning on or running your model, and never share the same frequency with somebody else at the same time. Ensure that others are aware of the operating frequency you are using and when you are using it.
- Use a transmitter designed for ground use with RC cars. Make sure that no one else is using the same frequency as yours in your operating area. Using the same frequency at the same time, whether it is driving, flying or sailing, can cause loss of control of the RC model, resulting in a serious accident.
- Always turn on your transmitter before you turn on the receiver in the car. Always turn off the receiver before turning your transmitter off.
- Keep the wheels of the model off the ground when checking the operation of the radio equipment.
- Disconnect the battery pack before storing your model.
- When learning to operate your model, go to an area that has no obstacles that can damage your model if your model suffers a collision.
- Remove any sand, mud, dirt, grass or water before putting your model away.
- If the model behaves strangely, immediately stop the model, check and clear the problem.
- To prevent any serious personal injury and/or damage to property, be responsible when operating all remote controlled models.
- The model car is not intended for use on public places and roads or areas where its operation can conflict with or disrupt pedestrian or vehicular traffic.
- Because the model car is controlled by radio, it is subject to radio interference from many sources that are beyond your control. Since radio interference can cause momentary loss of control, always allow a safety margin in all directions around the model in order to prevent collisions.
- Do not use your model:
  - Near real cars, animals, or people that are unaware that an RC car is being driven.
  - In places where children and people gather
  - In residential districts and parks
  - In limited indoor spaces
  - In wet conditions
  - In the street
  - In areas where loud noises can disturb others, such as hospitals and residential areas.
  - At night or anytime your line of sight to the model may be obstructed or impaired in any way.

the maximum enjoyment and prevent unnecessary damage. Read carefully and fully understand the instructions before beginning assembly.

Make sure you review this entire manual, download and use set-up book from the web, and examine all details carefully. If for some reason you decide The X1 is not what you wanted or expected, do not continue any further. Your hobby dealer cannot accept your X1 kit for return or exchange after it has been partially or fully assembled.

Contents of the box may differ from pictures. In line with our policy of continuous product development, the exact specifications of the kit may vary without prior notice.

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Improper operation may cause personal and/or property damage. XRAY and its distributors have no control over damage resulting from shipping, improper construction, or improper usage. XRAY assumes and accepts no responsibility for personal and/or property damages resulting from the use of improper building materials, equipment and operations. By purchasing any item produced by XRAY, the buyer expressly warrants that he/she is in compliance with all applicable federal, state and local laws and regulation regarding the purchase, ownership and use of the item. The buyer expressly agrees to indemnify and hold harmless XRAY for all claims resulting directly or indirectly from the purchase, ownership or use of the product. By the act of assembling or operating this product, the user accepts all resulting liability. If the buyer is not prepared to accept this liability, then he/she should return this kit in new, unassembled, and unused condition to the place of purchase.

## **IMPORTANT NOTES - ELECTRICAL**

- Insulate any exposed electrical wiring (using heat shrink tubing or electrical tape) to prevent dangerous short circuits. Take maximum care in wiring, connecting and insulating cables. Make sure cables are always connected securely. Check connectors for if they become loose. And if so, reconnect them securely. Never use R/C models with damaged wires. A damaged wire is extremely dangerous, and can cause short-circuits resulting in fire. Please have wires repaired at your local hobby shop.
- Low battery power will result in loss of control. Loss of control can occur due to a weak battery in either the transmitter or the receiver. Weak running battery may also result in an out of control car if your car's receiver power is supplied by the running battery. Stop operation immediately if the car starts to slow down.
- When not using RC model, always disconnect and remove battery.
- Do not disassemble battery or cut battery cables. If the running battery short-circuits, approximately 300W of electricity can be discharged, leading to fire or burns. Never disassemble battery or cut battery cables.
- Use a recommended charger for the receiver and transmitter batteries and follow the instructions correctly. Over-charging, incorrect charging, or using inferior chargers can cause the batteries to become dangerously hot.

## **R/C & BUILDING TIPS**

- Make sure all fasteners are properly tightened. Check them periodically.
- Make sure that 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 because 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.

## **WARRANTY**

XRAY guarantees this model kit to be free from defects in both material and workmanship within 30 days of purchase. The total monetary value under warranty will in no case exceed the cost of the original kit purchased. This warranty does not cover any components damaged by use or modification or as a result of wear. Part or parts missing from this kit must be reported within 30 days of purchase. No part or parts will be sent under warranty without proof of purchase. Should you find a defective or missing part, contact the local distributor. Service and customer support will be provided through local hobby store where you have purchased the kit, therefore make sure to purchase any XRAY products at your local hobby store. This model racing car is considered to be a high-performance racing vehicle. As such this vehicle will be used in an extreme range of conditions and situations, all which may cause premature wear or failure of any component. XRAY has no control over usage of vehicles once they leave the dealer, therefore XRAY can only offer warranty against all manufacturer's defects in materials, workmanship, and assembly at point of sale and before use. No warranties are expressed or implied that cover damage caused by what is considered normal use, or cover or imply how long any model cars' components or electronic components will last before requiring replacement.

Due to the high performance level of this model car you will need to periodically maintain and replace consumable components. Any and all warranty coverage will not cover replacement of any part or component damaged by neglect, abuse, or improper or unreasonable use. This includes but is not limited to

## **QUALITY CERTIFICATE**

XRAY MODEL RACING CARS uses only the highest quality materials, the best compounds for molded parts and the most sophisticated manufacturing processes of TQM (Total Quality Management). We guarantee that all parts of a newly-purchased kit are manufactured with the highest regard to quality. However, due to the many factors inherent in model racecar competition, we cannot guarantee

Recharge battery when necessary. Continual recharging may damage battery and, in the worst case, could build up heat leading to fire. If battery becomes extremely hot during recharging, please ask your local hobby shop for check and/or repair and/or replacement.

- 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. Modifying the charger may cause short-circuit or overcharging leading to a serious accident. Therefore do not modify the charger.
- Always unplug charger when recharging is finished.
- Do not recharge battery while battery is still warm. After use, battery retains heat. Wait until it cools down before charging.
- Do not allow any metal part to short circuit the receiver batteries or other electrical/electronic device on the model.
- Immediately stop running if your RC model gets wet as may cause short circuit.
- Please dispose of batteries responsibly. Never put batteries into fire.

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 [info@teamxray.com](mailto:info@teamxray.com), or contact the XRAY distributor in your country.

damage from crashing, chemical and/or water damage, excessive moisture, improper or no maintenance, or user modifications which compromise the integrity of components. Warranty will not cover components that are considered consumable on RC vehicles. XRAY does not pay nor refund shipping on any component sent to XRAY or its distributors for warranty. XRAY reserves the right to make the final determination of the warranty status of any component or part.

### **Limitations of Liability**

XRAY makes no other warranties expressed or implied. XRAY shall not be liable for any loss, injury or damages, whether direct, indirect, special, incidental, or consequential, arising from the use, misuse, or abuse of this product and/or any product or accessory required to operate this product. In no case shall XRAY's liability exceed the monetary value of this product.

**Take adequate safety precautions prior to operating this model. You are responsible for this model's assembly and safe operation.**

**Disregard of the any of the above cautions may lead to accidents, personal injury, or property damage. XRAY MODEL RACING CARS assumes no responsibility for any injury, damage, or misuse of this product during assembly or operation, nor any additions that may arise from the use of this product.**

**All rights reserved.**

any parts once you start racing the car. Products which have been worn out, abused, neglected or improperly operated will not be covered under warranty. We wish you enjoyment of this high-quality and high-performance RC car and wish you best success on the track!

**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.**

# SYMBOLS USED

<b>Part bags used</b> 	<b>Assemble in the specified order</b> 	<b>Assemble left and right sides the same way</b> 	<b>Pay attention here</b> 	<b>Assemble as many times as specified (here twice)</b> 	<b>Cut off remaining material</b> 	<b>Apply CA glue</b> 	<b>Detail view</b> 
<b>Apply oil</b> 	<b>Apply grease</b> 	<b>Use pliers</b> 	<b>Ensure smooth non-binding movement</b> 	<b>Tighten screw gently</b> 	<b>CORRECT</b>  <b>WRONG</b> 	<b>Assembly view</b> 	

# TOOLS REQUIRED

<b>HUDDY TOOLS: Allen: 1.5mm, 2.5mm, 2.0mm, 3.0mm</b> <b>Socket: 7.0mm</b> 	<b>Combination Pliers (HUDY #189020)</b> 	<b>Side Cutters (HUDY #189010)</b> 	<b>Hobby Knife</b>  <b>Scissors (HUDY #188990)</b> 	<b>Turnbuckle Wrench 4mm (HUDY #181040)</b> 	<b>Reamer (HUDY #107600) or (HUDY #107601)</b> 
---	--	--	--	---	--

# EQUIPMENT INCLUDED

<b>XRAY Premium Silicone Oil 600cSt (#359260)</b> 	<b>Diff Grease (HUDY #106211)</b> 
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# NOT INCLUDED

<b>SAMPLE OF OPTIONAL PARTS</b> <table border="1"> <tr> <td>#37XXX</td> <td>OPTION 1</td> </tr> <tr> <td>#37XXX</td> <td>OPTION 2</td> </tr> <tr> <td>#37XXX</td> <td>OPTION 3</td> </tr> </table>	#37XXX	OPTION 1	#37XXX	OPTION 2	#37XXX	OPTION 3	<p>XRAY offers wide range of optional tuning parts which are listed in a table like this. Please refer to the exploded view of each main section to verify which part is included in the kit while all other parts are available only as an optional part and must be purchased separately.</p>
#37XXX	OPTION 1						
#37XXX	OPTION 2						
#37XXX	OPTION 3						

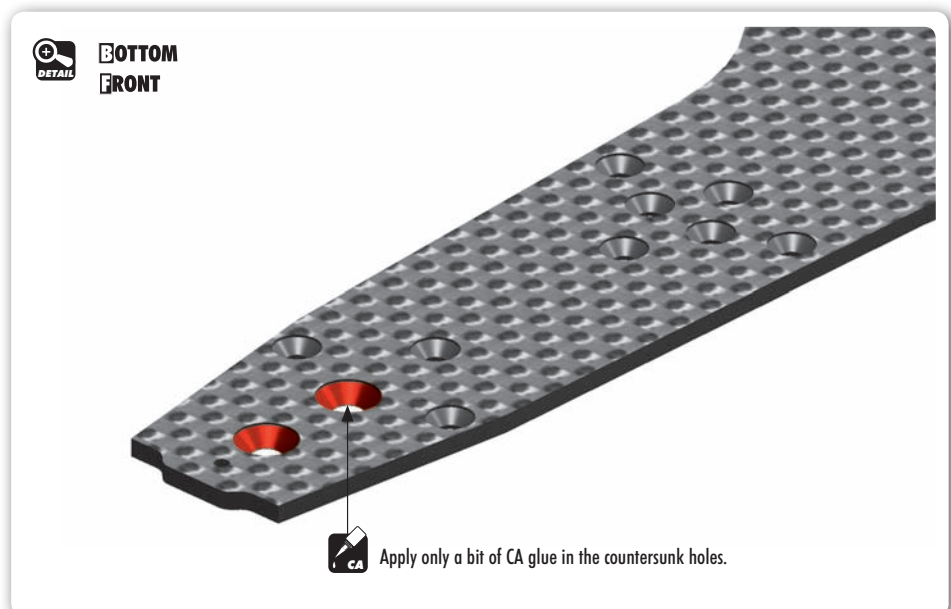
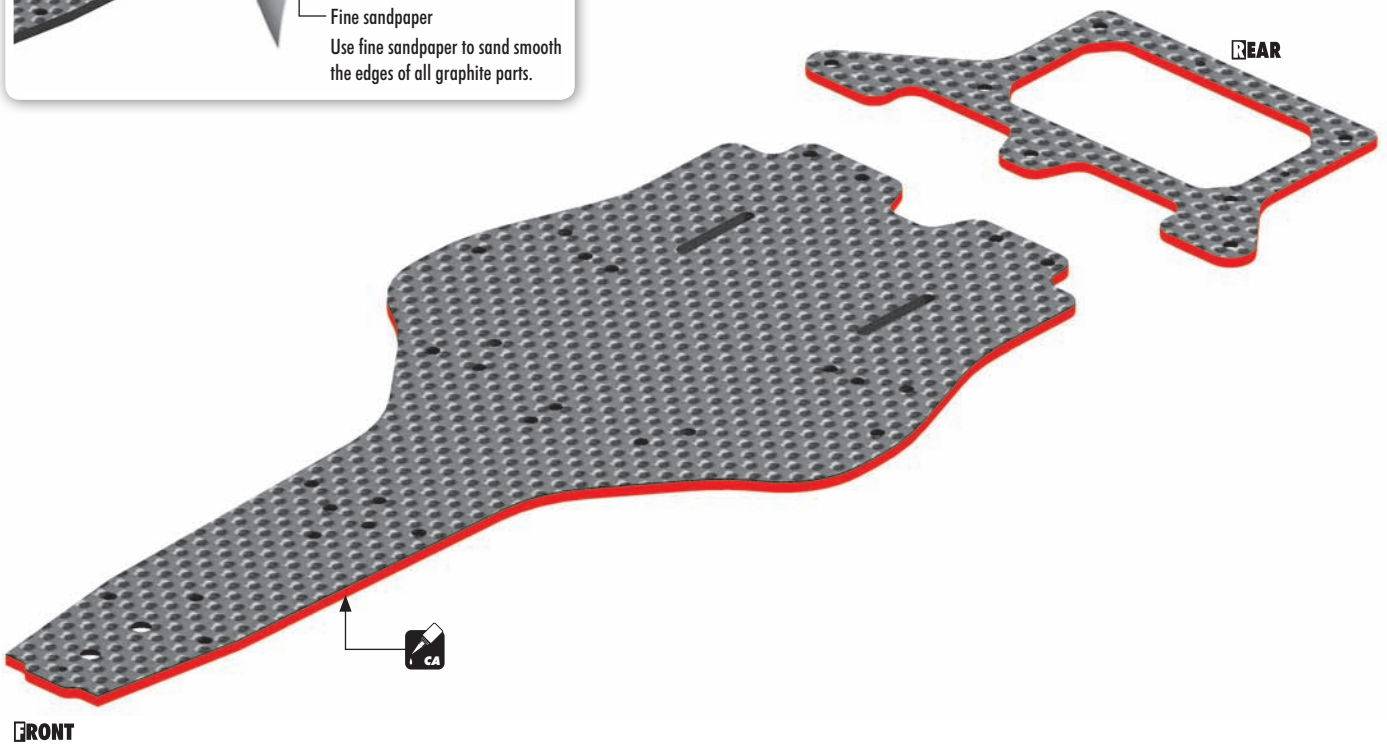
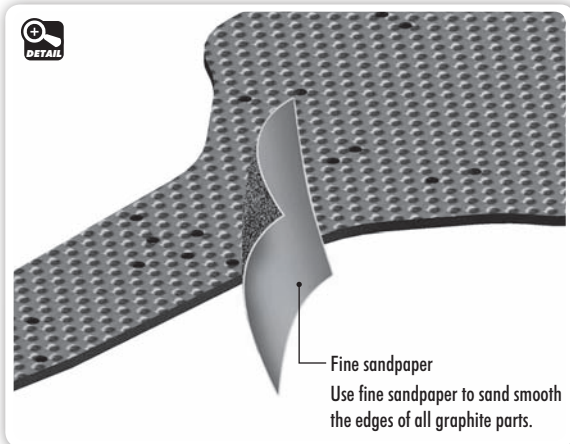
# EQUIPMENT REQUIRED

<b>Transmitter</b> 	<b>Receiver</b> 	<b>Steering Servo</b> 	<b>Electric Motor &amp;</b> 	<b>Pinion Gear and Setscrew</b> 	<b>Bearing Oil (HUDY #106230)</b> 
<b>Speed Controller</b> 	<b>LiPo Battery</b> 	<b>Lexan™ Paint</b> 	<b>Battery Charger</b> 	<b>Fibre Tape (HUDY #107870) Double-sided Tape</b> 	<b>Wheels &amp; Tires &amp; Inserts</b> 

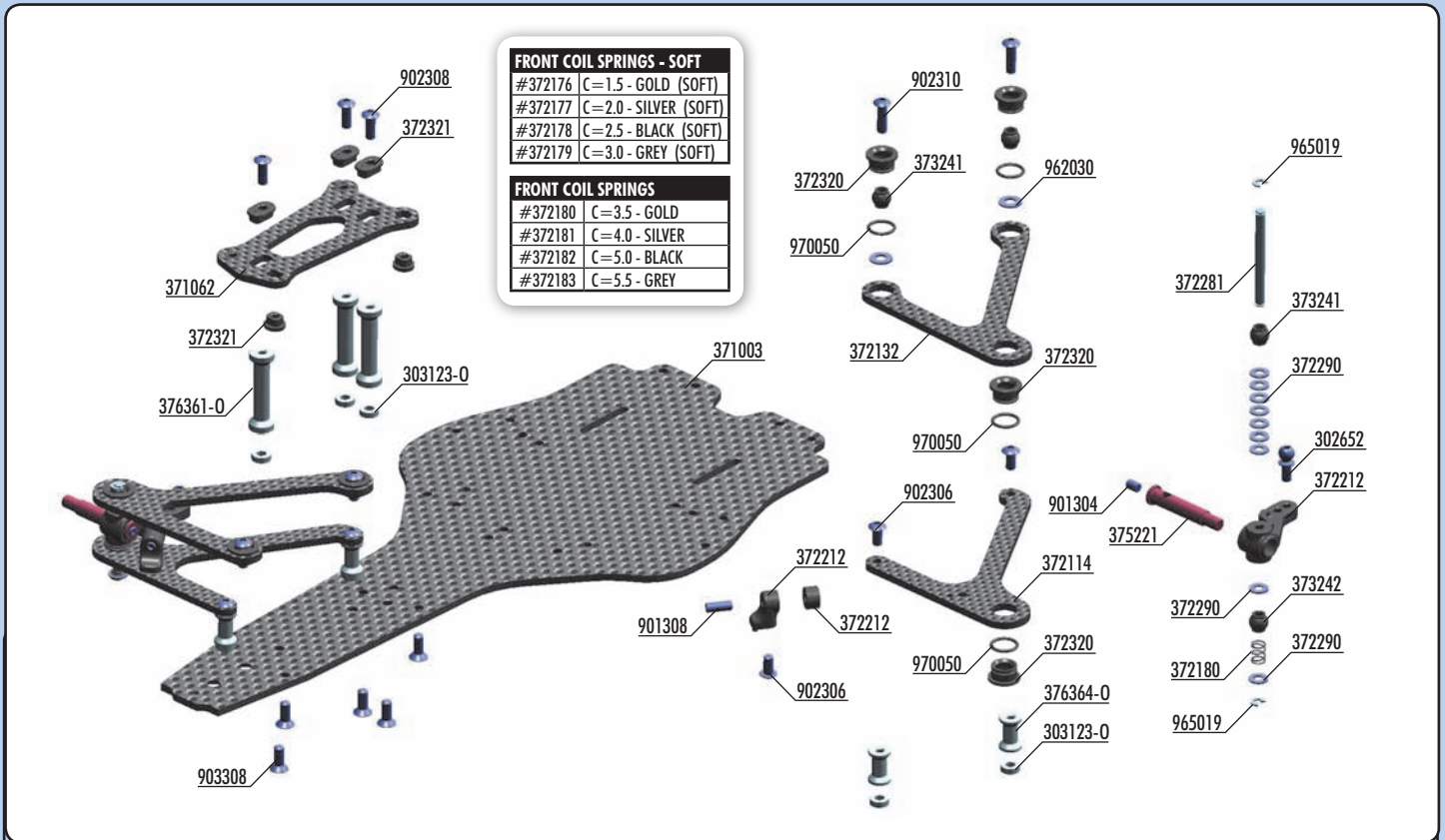
# CHASSIS PREPARATION

To protect and seal edges of graphite parts, sand edges smooth and then apply CA glue.

Do this for: chassis edges and countersunk holes.



# 1. FRONT SUSPENSION



FRONT COIL SPRINGS - SOFT	
#372176	C=1.5 - GOLD (SOFT)
#372177	C=2.0 - SILVER (SOFT)
#372178	C=2.5 - BLACK (SOFT)
#372179	C=3.0 - GREY (SOFT)

FRONT COIL SPRINGS	
#372180	C=3.5 - GOLD
#372181	C=4.0 - SILVER
#372182	C=5.0 - BLACK
#372183	C=5.5 - GREY

BAG

01

- 30 3123-0 ALU SHIM 3x6x2.0MM - ORANGE (10)
- 30 2652 BALL END 4.9MM WITH THREAD 4MM (2)
- 37 1003 X1 CHASSIS - 2.5MM GRAPHITE
- 37 1062 X1 GRAPHITE 2.5MM ARM MOUNT PLATE
- 37 2114 X1 GRAPHITE LOWER SUSPENSION ARM 2.5MM
- 37 2132 X1 GRAPHITE UPPER SUSPENSION ARM 2.5MM
- 37 2180 FRONT COIL SPRING 3.6x6x0.5MM; C=3.5 - GOLD (2)
- 37 2212 X1 COMPOSITE STEERING BLOCK & BACKSTOPS
- 37 2281 X1 KING PIN (2)
- 37 2290 ALU SHIM 3.2x4.8x0.5 (4)
- 37 2320 X1 COMPOSITE ARM BUSHING (4)
- 37 2321 X1 COMPOSITE CASTER & CAMBER BUSHING (2+2+2+2)
- 37 3241 COMPOSITE PIVOTBALL UNIVERSAL 6.0 MM (2)
- 37 3242 COMPOSITE PIVOTBALL UNIVERSAL 6.0 MM - SHORT (2)

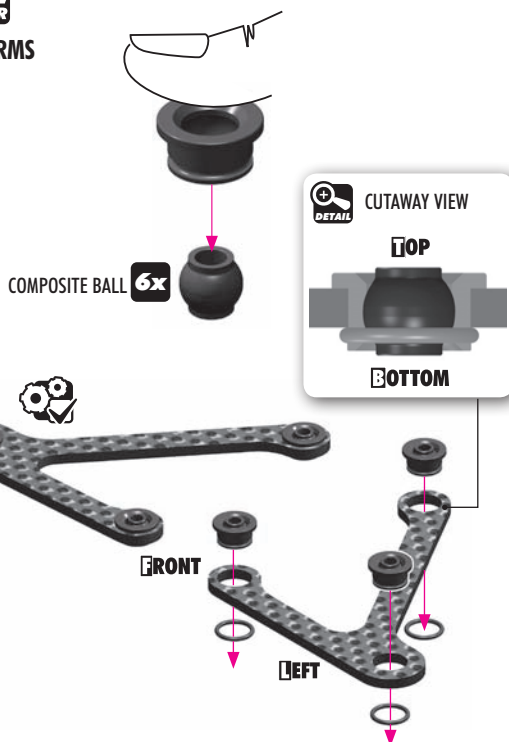
- 37 5221 X1 FRONT WHEEL AXLE - HUDY SPRING STEEL (2)
- 37 6361-0 ALU MOUNT 26.5MM - ORANGE (2)
- 37 6364-0 ALU MOUNT 10.8MM - ORANGE (2)
- 90 1304 HEX SCREW SB M3x4 (10)
- 90 1308 HEX SCREW SB M3x8 (10)
- 90 2306 HEX SCREW SH M3x6 (10)
- 90 2308 HEX SCREW SH M3x8 (10)
- 90 2310 HEX SCREW SH M3x10 (10)
- 90 3308 HEX SCREW SFH M3x8 (10)
- 96 2030 WASHER S 3x6x0.3 (10)
- 96 5019 E-CLIP 1.9 (10)
- 97 0050 O-RING 5x1 (10)



970050  
0 5x1

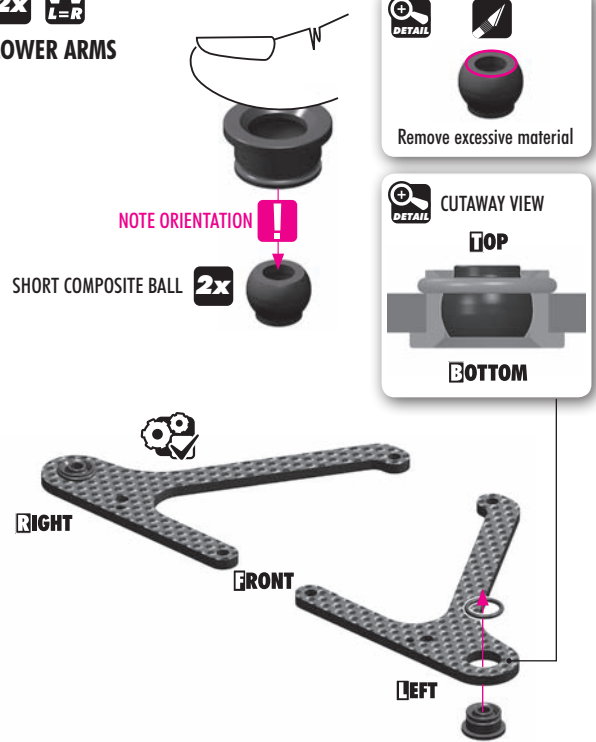
## 6x UPPER ARMS

L=R




## 2x LOWER ARMS

L=R

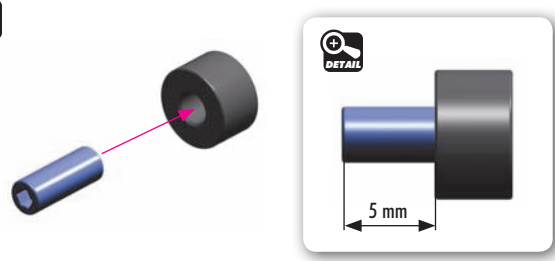


# 1. FRONT SUSPENSION

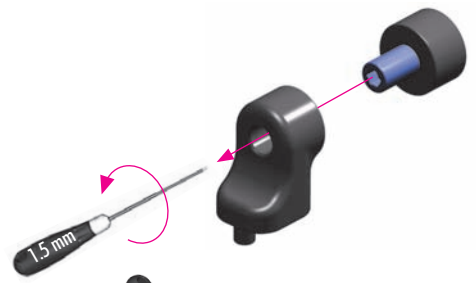
**2x**



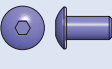
901308  
SB M3x8



**2x**

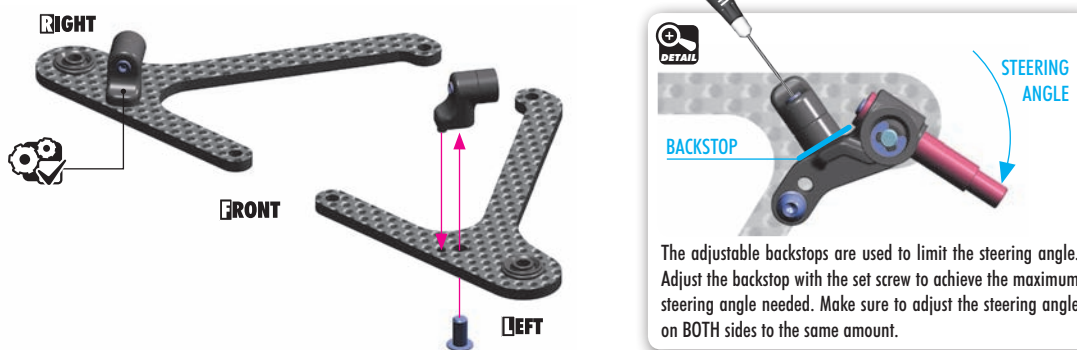


**2x** **L=R**



902306  
SH M3x6

**LOWER ARMS**




**RIGHT** **LEFT**


**BACKSTOP** **STEERING ANGLE**

The adjustable backstops are used to limit the steering angle. Adjust the backstop with the set screw to achieve the maximum steering angle needed. Make sure to adjust the steering angle on **BOTH** sides to the same amount.


**L=R**



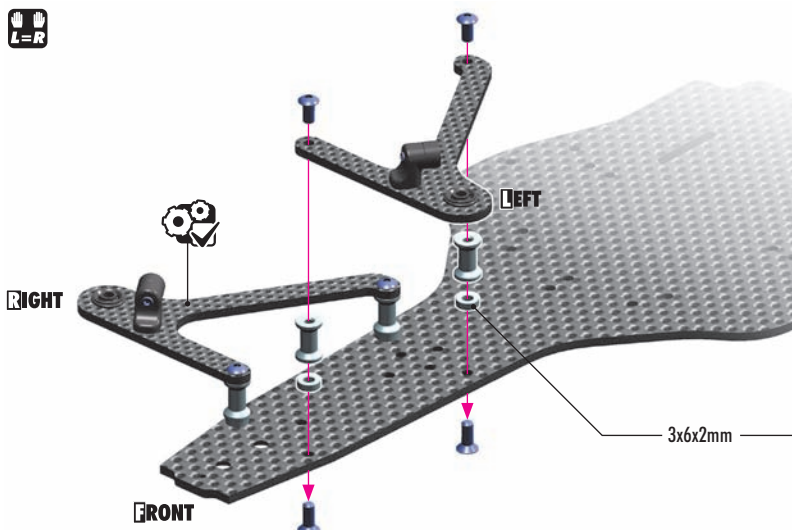
303123-0  
SHIM 3x6x2



902306  
SH M3x6



903308  
SFH M3x8



**RIGHT** **LEFT** **FRONT**


3x6x2mm

**OPTIONAL:** #372087 X1 Graphite Front Arm Brace 2.5mm


The brace makes the car easier to drive. Recommended for high-traction conditions.

This shim adjusts the roll-center of the front bottom arm as well as the front ride height. The thickness of the shim depends on the tire diameter. For initial setting, use the 3x6x2mm shim. **IMPORTANT!** Use the same shim thickness under all 4 posts.


**L=R**



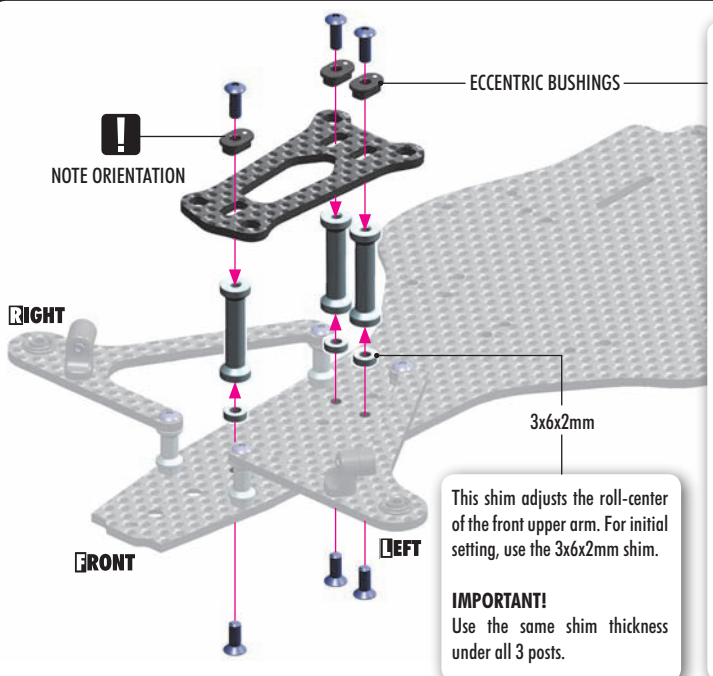
303123-0  
SHIM 3x6x2



902308  
SH M3x8



903308  
SFH M3x8



**RIGHT** **LEFT** **FRONT**

ECCENTRIC BUSHINGS

NOTE ORIENTATION

3x6x2mm

This shim adjusts the roll-center of the front upper arm. For initial setting, use the 3x6x2mm shim.

**IMPORTANT!**  
Use the same shim thickness under all 3 posts.

**IMPORTANT!**

All three bushings **MUST** have same orientation. These bushings adjust the front **CASTER**:

	= 3° CASTER
	= 6° CASTER
	<b>INITIAL SETTING</b> = 9° CASTER
	= 12° CASTER

These eccentric bushings adjust the front **CASTER**.

**MORE** caster angle = better cornering speed, increased traction rolling. Use on big, open tracks where cornering speed is needed.

**LESS** caster angle = more reactive steering. Use on technical tracks where a lot of steering response is needed.

# 1. FRONT SUSPENSION

**902310**  
SH M3x10

**962030**  
S 3x6x0.3

**FREE MOVEMENT**

3x6x0.3mm

3x6x0.3mm

ECCENTRIC BUSHINGS

RIGHT

FRONT

LEFT

**! IMPORTANT!**

All four bushings **MUST** have same orientation. These bushings adjust the front **CAMBER**:

● ● = 1.0° CAMBER

● ● = 1.5° CAMBER

**INITIAL SETTING**  
● ● = 2.0° CAMBER

● ● = 2.5° CAMBER

These eccentric bushings adjust the front **CAMBER**. The more camber angle, the more steering there is. However, it makes the car more sensitive and more difficult to drive. Use **LESS** camber angle for carpet and other high-traction tracks. Use **MORE** camber on asphalt and low-traction tracks.

**901304**  
SB M3x4

**2x** **L=R**

RIGHT

TIGHTEN GENTLY

LEFT

There are two Ackermann positions on the steering block:

**INITIAL SETTING**

**INNER** position: improved steering response  
**OUTER** position: easier to drive

**965019**  
C 1.9

**372290**  
SHIM 3.2x4.8x0.5

**2x** **L=R**

**DRIVERS USE HUDY SILICONE OIL**

LOW traction & bumpy track  
10K cSt (#106510 HUDY)

HIGH traction & flat track  
30K cSt (#106530 HUDY)

The number of the shims affects the front ride height. Determine the proper amount of shimming based on tire diameter.

3.2x4.8x0.5mm (5x)

3.2x4.8x0.5mm (2x)

3.2x4.8x0.5mm (1x)

3.2x4.8x0.5mm (1x)

**FREE MOVEMENT**

RIGHT

FRONT

LEFT

**2x** **L=R**

1

2

TIGHTEN FULLY

1.5mm

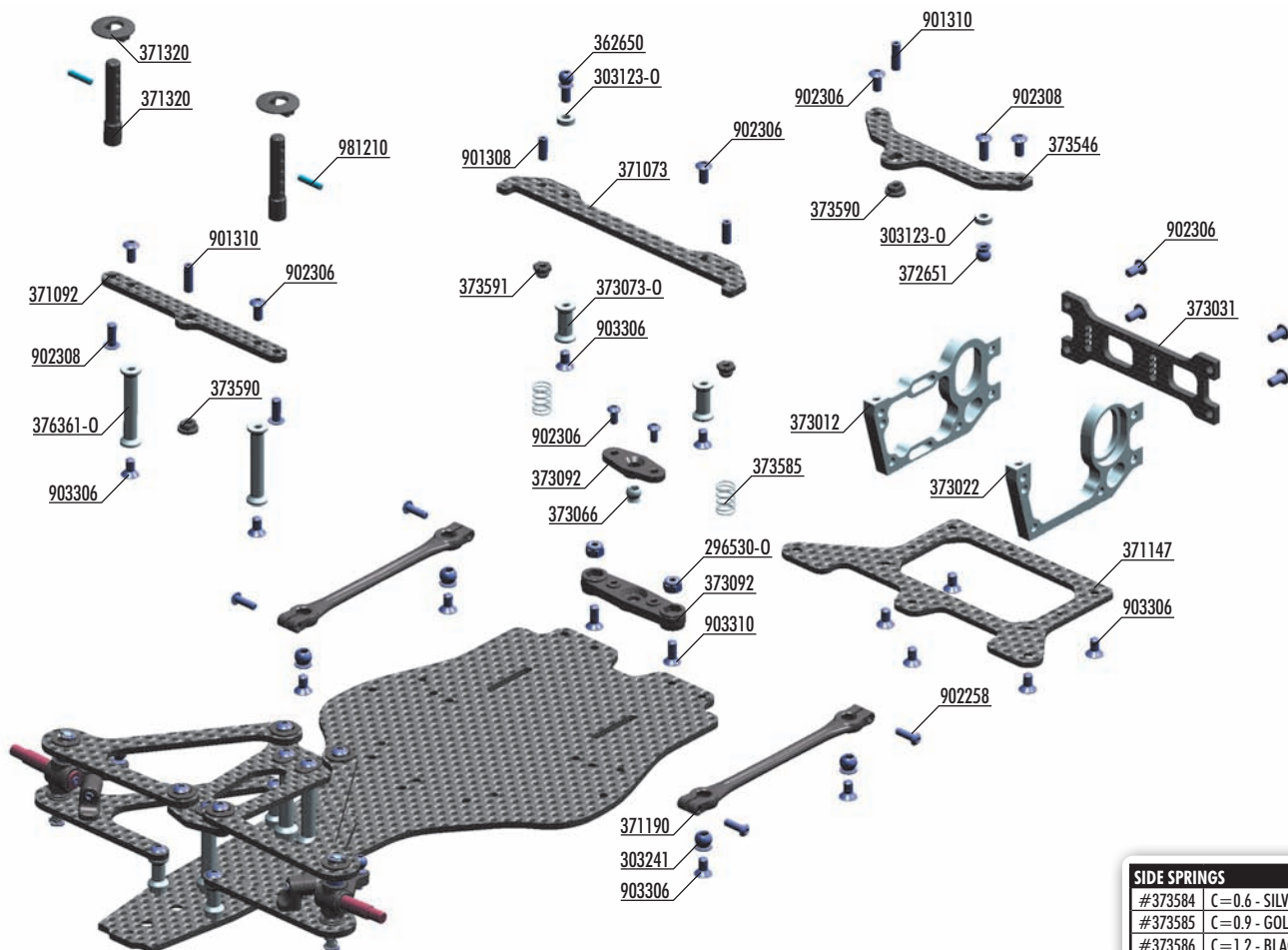
**L=R**

FRONT COIL SPRINGS - SOFT		FRONT COIL SPRINGS	
#372176	C=1.5 - GOLD (SOFT)	#372180	C=3.5 - GOLD
#372177	C=2.0 - SILVER (SOFT)	#372181	C=4.0 - SILVER
#372178	C=2.5 - BLACK (SOFT)	#372182	C=5.0 - BLACK
#372179	C=3.0 - GREY (SOFT)	#372183	C=5.5 - GREY

After assembling the steering block, loosen the set-screw slightly. Use your thumb to press down on the top of the kingpin, then use your other fingers to pull up the steering block. Then tighten the set-screw.



## 2. REAR SUSPENSION



SIDE SPRINGS	
#373584	C=0.6 - SILVER
#373585	C=0.9 - GOLD
#373586	C=1.2 - BLACK

### BAG

02

- 30 3123-0 ALU SHIM 3x6x2.0MM - ORANGE (10)
- 30 3241 PIVOT BALL UNIVERSAL 5.8 MM WITH HEX (4)
- 36 2650 BALL END 4.9MM WITH THREAD 6MM (2)
- 37 1073 X1 REAR BRACE - GRAPHITE 2.5MM
- 37 1092 X1 GRAPHITE PLATE FOR MOUNTS 2.5MM
- 37 1147 X1 GRAPHITE 2.5MM REAR POD LOWER PLATE
- 37 1190 COMPOSITE POD LINK (2)
- 37 1320 COMPOSITE BODY POST (2)
- 37 2651 PIVOT BALL UNIVERSAL 4.9 MM - HUDY SPRING STEEL (2)
- 37 3012 X1 ALU REAR BULKHEAD - MOTOR (RIGHT)
- 37 3022 X1 ALU REAR BULKHEAD - LEFT
- 37 3031 X1 GRAPHITE REAR BULKHEAD BRACE
- 37 3066 ALU PIVOT BALL
- 37 3073-0 ALU REAR BRACE MOUNT 13MM - ORANGE (2)
- 37 3092 COMPOSITE LOWER & UPPER PIVOT BRACE - LOW ROLL-CENTER
- 37 3546 X1 REAR POD UPPER PLATE - GRAPHITE 2.5MM
- 37 3585 SIDE SPRING C=0.9 - GOLD (2)

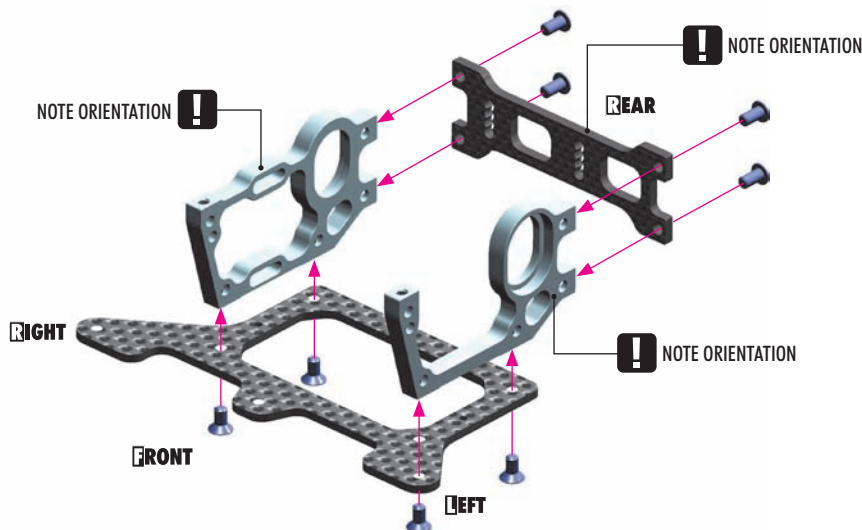
- 37 3590 COMPOSITE SPRING HOLDER & NUT (2+1)
- 37 3591 COMPOSITE SIDE SPRING HOLDER (2)
- 37 6361-0 ALU MOUNT 26.5MM - ORANGE (2)
- 29 6530-0 ALU NUT M3 - ORANGE (10)
- 90 1308 HEX SCREW SB M3x8 (10)
- 90 1310 HEX SCREW SB M3x10 (10)
- 90 2258 HEX SCREW SH M2.5x8 (10)
- 90 2306 HEX SCREW SH M3x6 (10)
- 90 2308 HEX SCREW SH M3x8 (10)
- 90 3306 HEX SCREW SFH M3x6 (10)
- 90 3310 HEX SCREW SFH M3x10 (10)
- 98 1210 PIN 2x10 (10)



902306  
SH M3x6



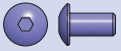
903306  
SFH M3x6



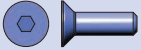
## 2. REAR SUSPENSION



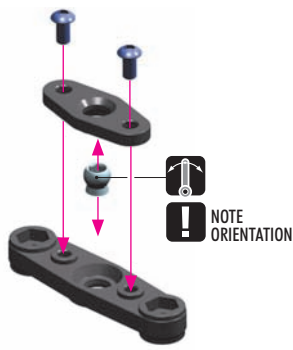
296530-0  
ALU N M3



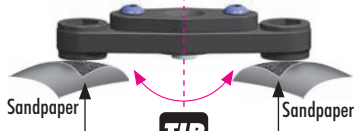
902306  
SH M3x6



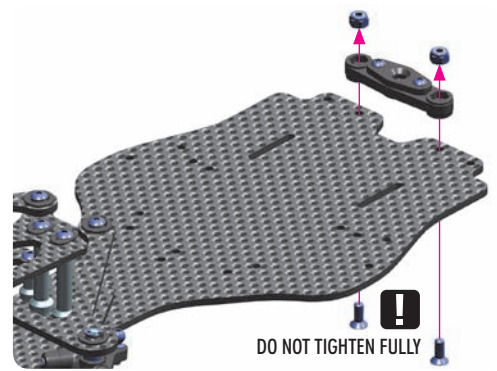
903310  
SFH M3x10



Ensure free, smooth movement without excessive freeplay.



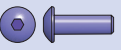
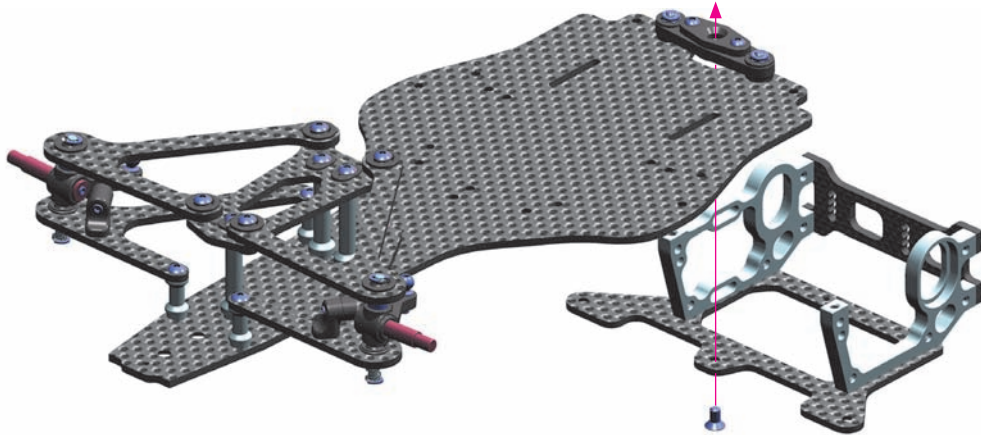
**TIP**  
Gently scuff the bottom of the composite lower pivot brace on sandpaper to make the surface slightly rough. This will help the lower pivot brace to grip the chassis surface better.



DO NOT TIGHTEN FULLY



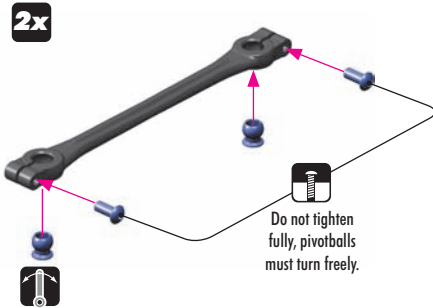
903306  
SFH M3x6



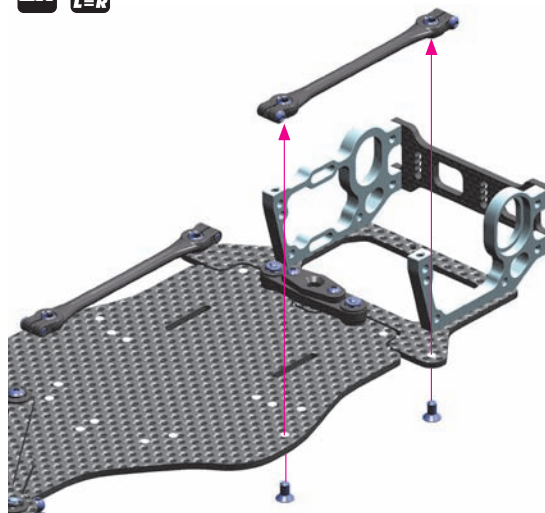
902258  
SH M2.5x8



903306  
SFH M3x6



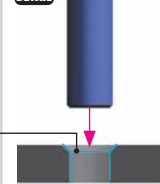
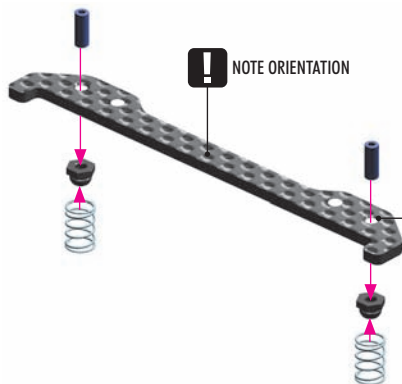
2x  
L=R



TIGHTEN FULLY



901308  
SB M3x8



NOTE ORIENTATION



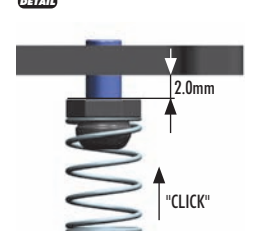
Make sure both side springs are tightened equally, to avoid unwanted tweak.

### SOFTER SPRINGS

Makes the car easier to drive on low-traction tracks but more difficult to drive on high-traction tracks.

### HARDER SPRINGS

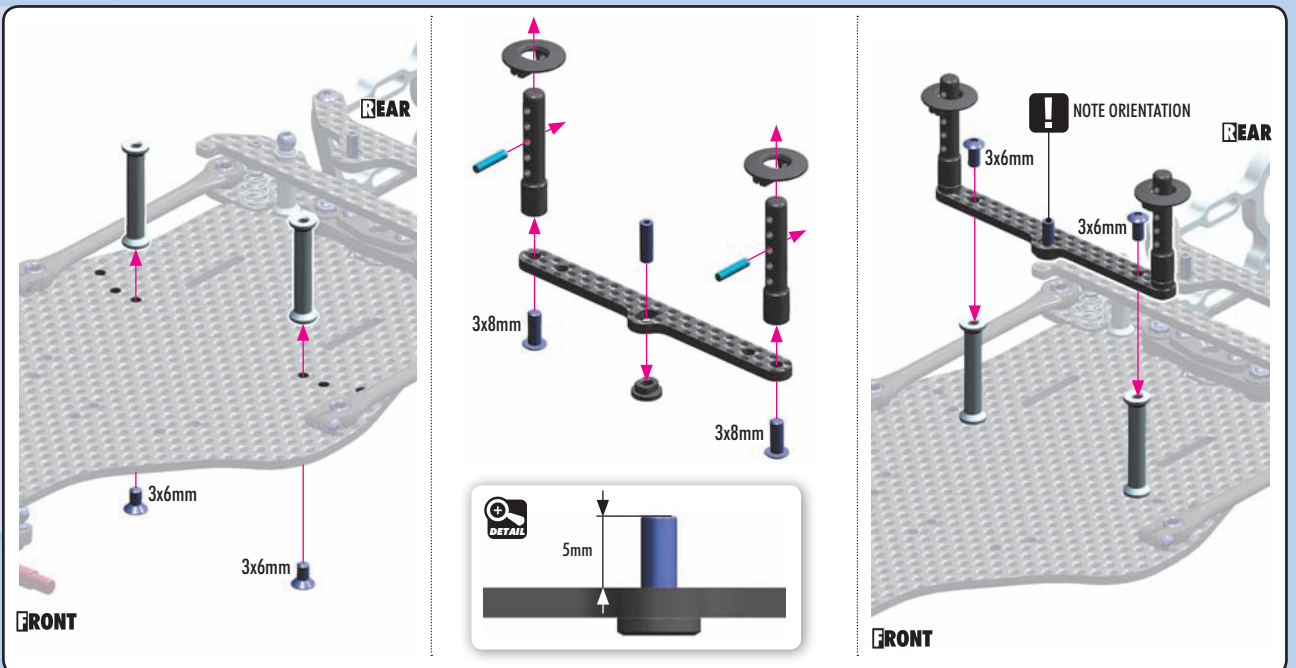
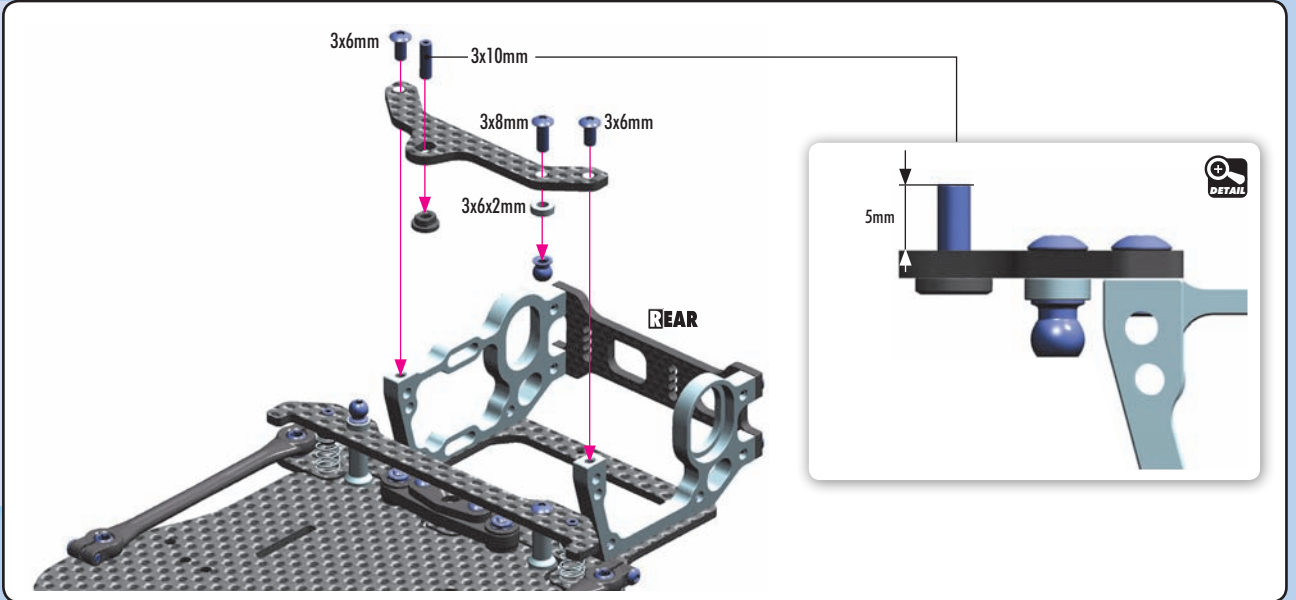
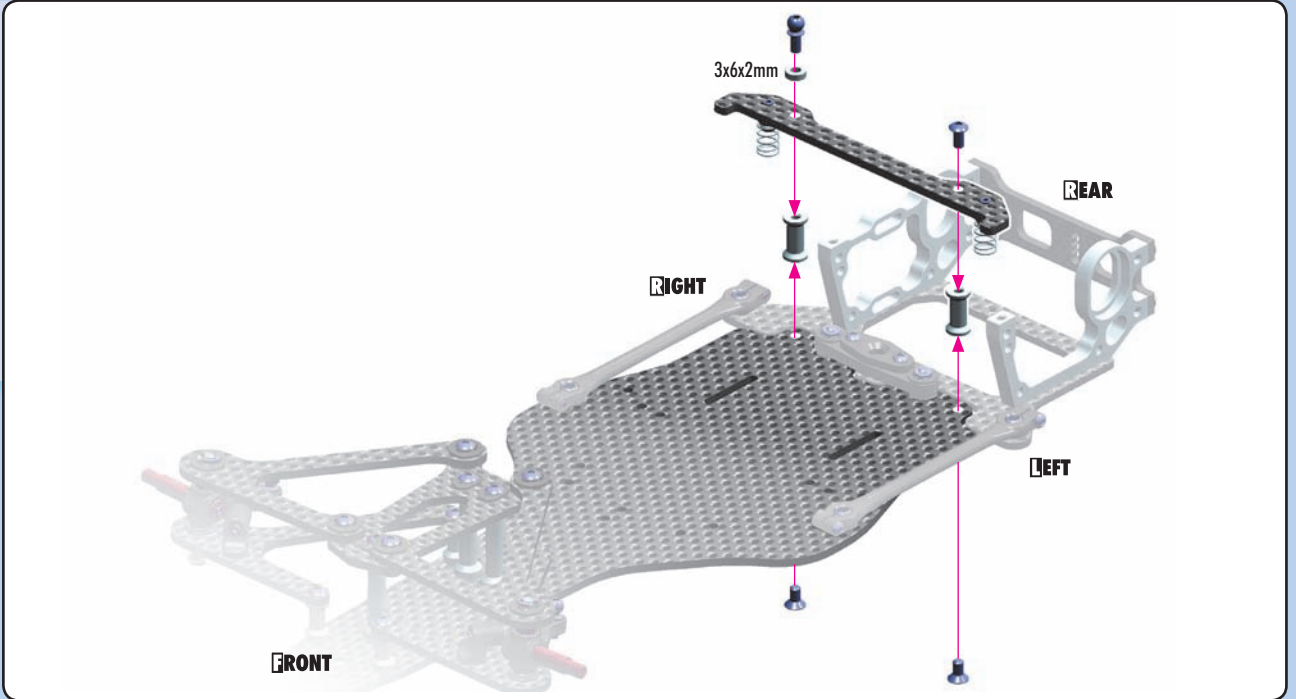
Improves steering response, but also increases traction rolling.



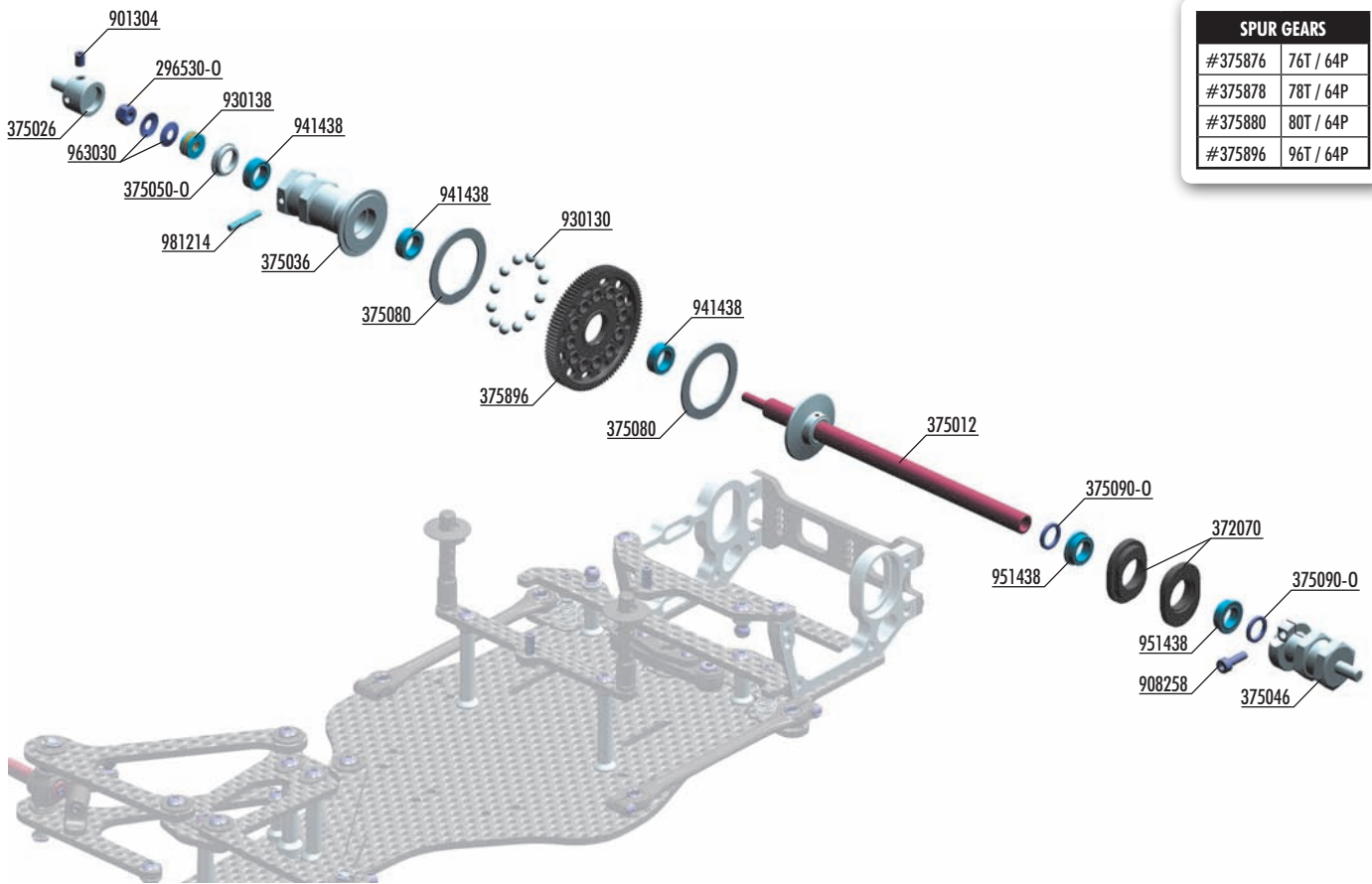
2.0mm

"CLICK"

## 2. REAR SUSPENSION



# 3. BALL DIFFERENTIAL



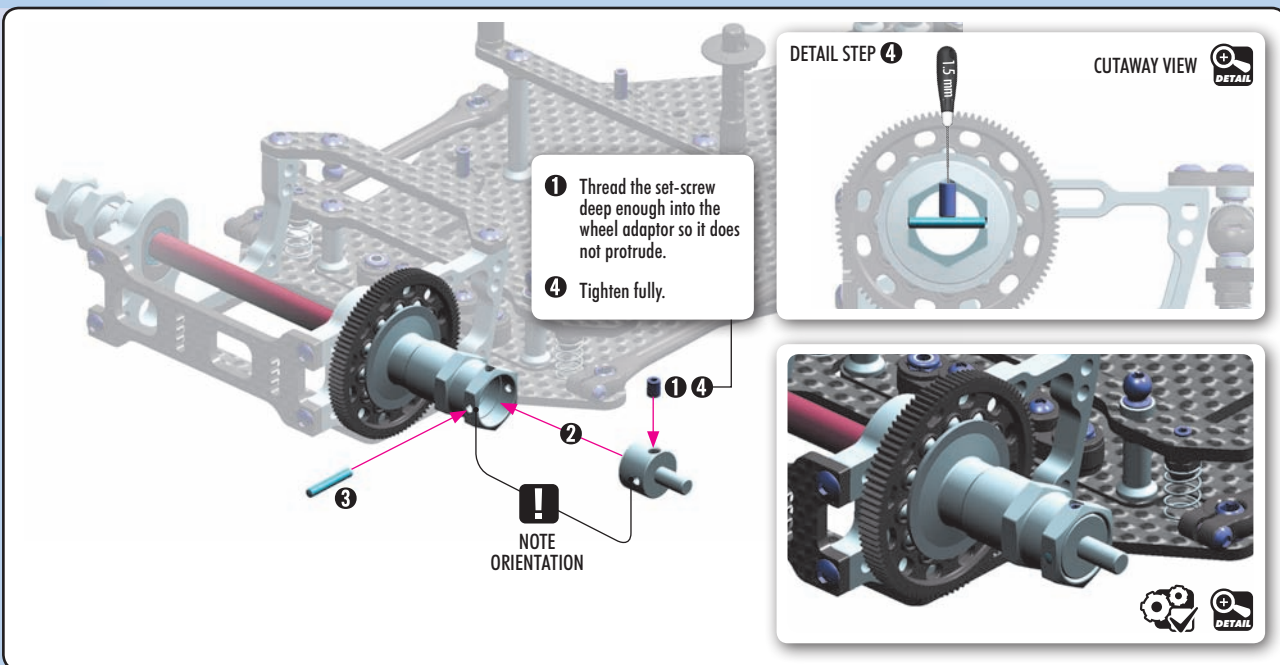
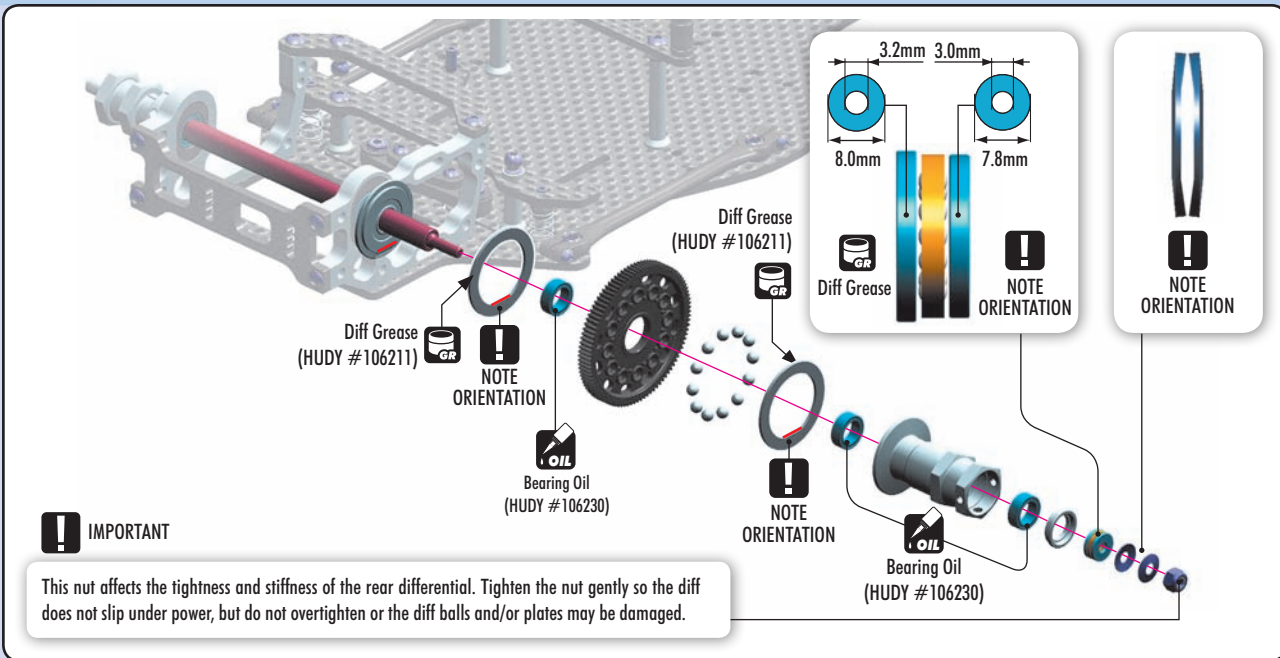
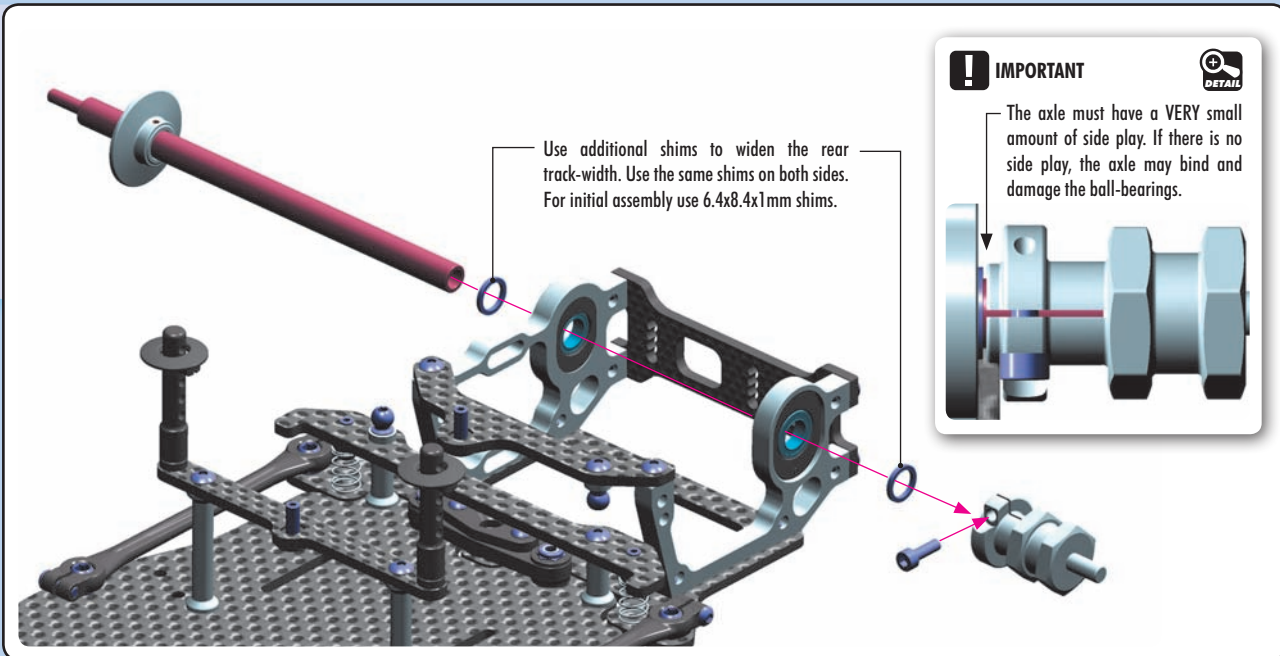
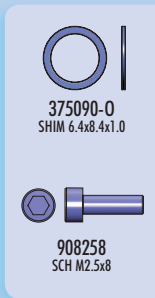
SPUR GEARS	
#375876	76T / 64P
#375878	78T / 64P
#375880	80T / 64P
#375896	96T / 64P

**BAG**  
**03**

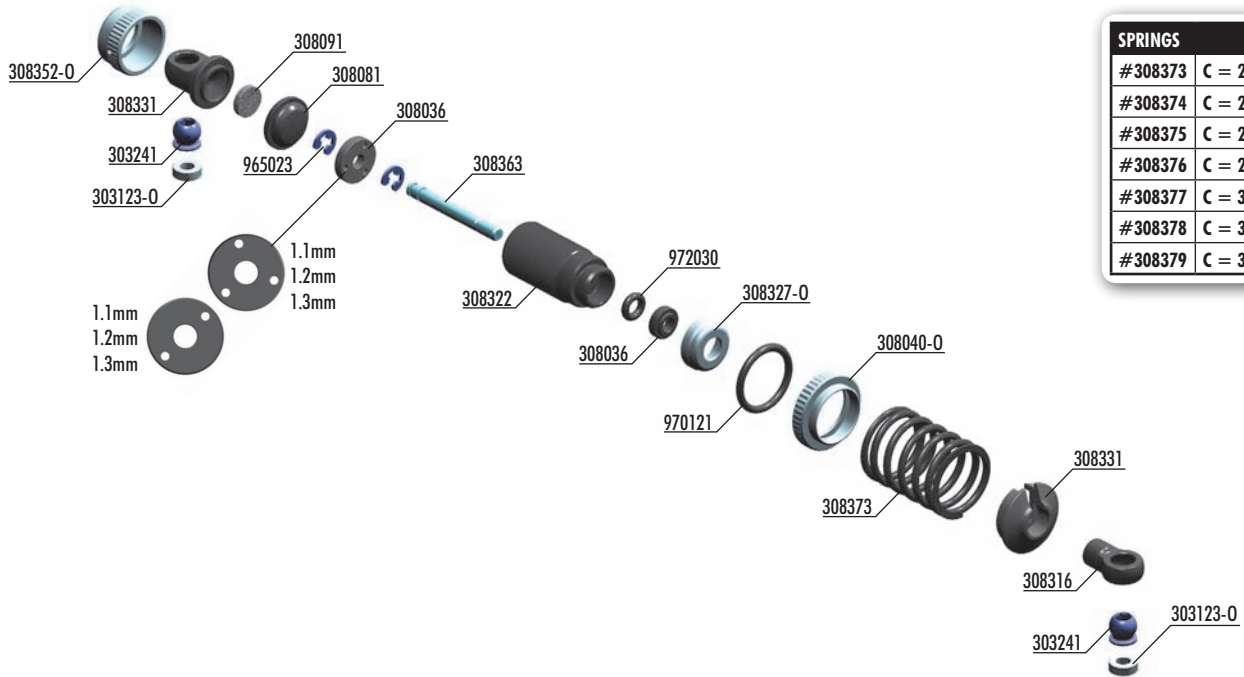
- |           |  |           |  |
|-----------|--|-----------|--|
| 37 2070   | COMPOSITE RIDE HEIGHT ADJUSTER SET - V2 (2)                | 29 6530-0 | ALU NUT M3 - ORANGE (10)                                 |
| 37 5012   | STEEL REAR AXLE SHAFT - HUDY SPRING STEEL™                 | 90 1304   | HEX SCREW SB M3x4 (10)                                   |
| 37 5026   | X1 ALU REAR DRIVE AXLE - RIGHT                             | 90 8258   | HEX SCREW SOCKET HEAD CAP M2.5x8 (10)                    |
| 37 5036   | X1 ALU REAR WHEEL HUB - RIGHT                              | 93 0130   | CARBIDE BALL 3.175MM (12)                                |
| 37 5046   | X1 ALU REAR WHEEL HUB - LEFT                               | 93 0138   | CARBIDE BALL-BEARING AXIAL F3-8 3x8x3.5 - V2             |
| 37 5050-0 | ALU DIFF HUB - ORANGE                                      | 94 1438   | HIGH-SPEED BALL-BEARING 1/4"x3/8"x1/8" RUBBER SEALED (2) |
| 37 5080   | D-LOCK DIFF PLATE (2)                                      | 95 1438   | BALL-BEARING 1/4" x 3/8" x 1/8" FLANGED (2)              |
| 37 5090-0 | SET OF ALU SHIMS 6.37x8.4MM (0.5MM, 1.0MM, 2.0MM) - ORANGE | 96 3030   | CONE WASHER ST 3x8x0.5 (10)                              |
| 37 5896   | COMPOSITE SPUR GEAR - 96T / 64P                            | 98 1214   | PIN 2x14 (10)  |



### 3. BALL DIFFERENTIAL



# 4. CENTER SHOCK



SPRINGS	
#308373	C = 2.2 (2)
#308374	C = 2.4 (2)
#308375	C = 2.6 (2)
#308376	C = 2.8 (2)
#308377	C = 3.0 (2)
#308378	C = 3.2 (2)
#308379	C = 3.4 (2)

**BAG**

**04**

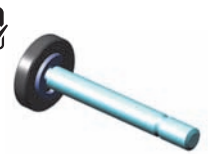
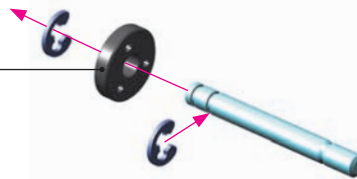
- 30 3123-0 ALU SHIM 3x6x2.0MM - ORANGE (10)
- 30 3241 PIVOT BALL UNIVERSAL 5.8 MM WITH HEX (4)
- 30 8036 COMPOSITE NON-ADJUSTABLE PISTONS - DELRIN - V3
- 30 8040-0 SHOCK ADJ. NUT ALU + O-RING - ORANGE (4)
- 30 8081 SHOCK ABSORBER MEMBRANE - LOW (4)
- 30 8091 SHOCK FOAM INSERT - LOW (4)
- 30 8306-0 XRAY ALU SHOCK ABSORBER-SET - ORANGE (2)
- 30 8316 SHOCK BALL JOINT - OPEN (4)
- 30 8322 ALU XRAY SHOCK BODY FOR #308306 (2)
- 30 8327-0 ALU CAP FOR XRAY SHOCK BODY #308322 - ORANGE (2)
- 30 8331 COMPOSITE FRAME SHOCK PARTS 4-STEP - SHORT
- 30 8352-0 ALU SHOCK CAP-NUT WITH VENT HOLE - ORANGE (2)
- 30 8363 HARDENED SHOCK SHAFT FOR ALU SHOCKS (2)
- 30 8373 XRAY SPRING-SET C=2.2 (2)
- 96 5023 E-CLIP 2.3 (10)
- 97 0121 O-RING 12.1 x 1.6 (10)
- 97 2030 SILICONE O-RING 3x2 (10)



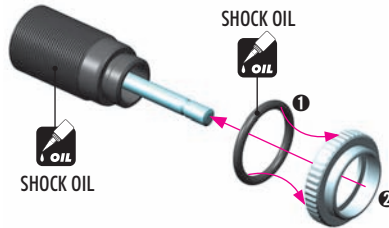
965023  
C 2.3

INITIAL SETTING

3 HOLE (1.2mm)



970121  
O 12.1x1.6



SHOCK OIL



CUTAWAY VIEW



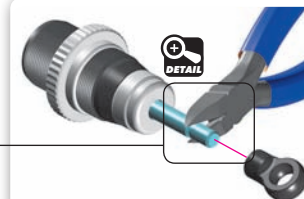
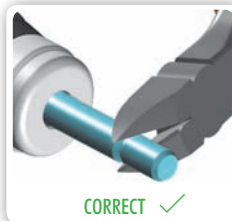
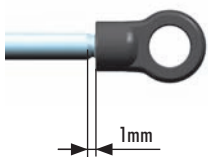
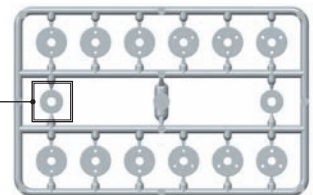
Be careful not to cross-thread the collar on the shock body.



972030  
O 3x2

NOTE ORIENTATION

SHOCK OIL



HINT: Pre-thread the ball joint using an M3 screw. WARNING! Be careful not to pre-thread too far, since the ball joint may split or the plastic threads may strip out.

# 4. CENTER SHOCK

**SHOCK OIL (600cSt INITIAL SETTING)**

- 1 Fully extend the piston rod so the piston is at the bottom of the shock body.
- 2 Hold the shock upright and slightly overfill the shock body with shock oil.
- 3 Let the oil settle and allow air bubbles to rise to the top. Slowly move the piston up and down until no more air bubbles appear. Add shock oil as necessary.
- 4 Pull the piston rod most of the way out of the shock body. Let the shock rest for 5 minutes to allow the air bubbles to escape.

**CENTER SHOCK OIL ADJUSTMENT**

**SOFTER OIL**  
Recommended for bumpy and low-traction tracks, generates more traction.

**HARDER OIL**  
Recommend for flat and higher traction tracks, improves steering response.

HUDY SHOCK OILS	
#106335	350cSt
#106340	400cSt
#106345	450cSt
#106350	500cSt
#106355	550cSt
#106360	600cSt
#106370	700cSt
#106380	800cSt

When installing the shock cap assembly on the shock body, some oil will leak out... this is normal.

Fully tighten the cap and clean off any excess oil.

After the shock is assembled, the shock rod will push itself out of the shock body fairly quickly.

Follow the next procedure to adjust the rebound.

**REBOUND ADJUSTMENT**

- 1 RELEASE 2-3 turns
- 2 TIGHTEN FULLY

**AFTER THE SHOCK IS ASSEMBLED YOU HAVE TO SET THE SHOCK REBOUND.**

- 1 Release the shock cap by 2-3 turns.
- 2 Push the shock shaft fully up. For the first time the extra oil will release through the hole in the alu cap - nut.
- 3 Tighten the shock cap. When tightening the shock cap, extra oil will again release through the hole in the alu cap - nut. When tightening, the shock shaft will push out from the shock body.

**REBOUND CHECK**

It is very important to push the shock shaft into the shock body slowly otherwise air can come into the shock body which would create bubbles.

100% rebound - repeat step 2 and 3 two - three times  
 75% rebound - repeat step 2 and 3 until the shock shaft will push out 75% of its length  
 50% rebound - repeat step 2 and 3 until the shock shaft will push out 50% of its length  
 25% rebound - repeat step 2 and 3 until the shock shaft will push out 25% of its length  
 0% rebound - repeat step 2 and 3 until the shock shaft will push out 0% of its length

If the shock shaft does not rebound enough, you will have to refill the shock with shock oil, and then repeat the bleeding and rebound adjustment procedure.

**DOWNSTOP ADJUSTMENT**

The length of the shock absorber affects the amount of rear downstop. To adjust, thread the ball joint on or off the shock shaft.

**303123-0 SHIM 3x6x2**

**NOTE ORIENTATION**

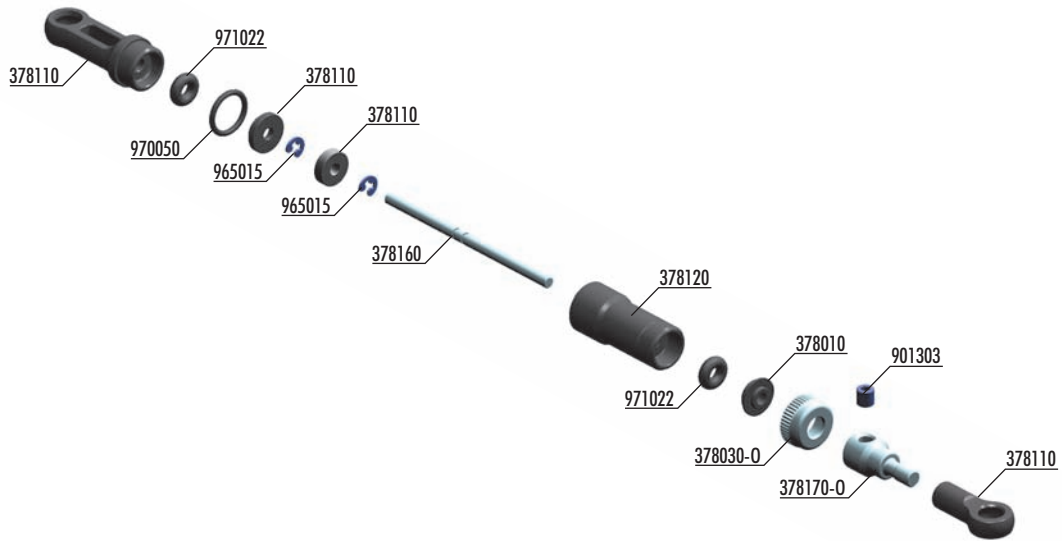
3x6x2mm

3x6x2mm

**REAR**

65mm

# 4. SIDE SHOCK



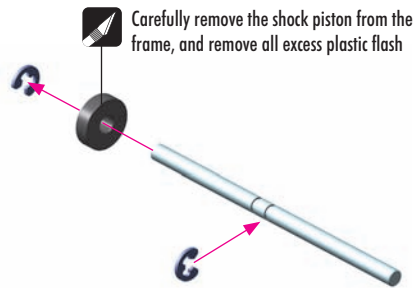
**BAG**

**04.1**

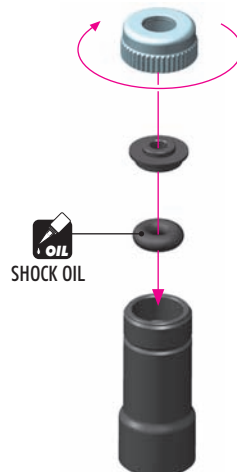
- 37 8010 COMPOSITE SHOCK PARTS - FRAME
- 37 8030-0 ALU SHOCK BODY CAP - LOWER - ORANGE
- 37 8100 SIDE SHOCK ABSORBER SET
- 37 8110 COMPOSITE SIDE SHOCK PARTS - FRAME
- 37 8120 ALU SIDE SHOCK BODY - HARDCOATED
- 37 8160 SIDE SHOCK SHAFT

- 37 8170-0 ALU SIDE SHOCK COLLAR - ORANGE
- 90 1303 HEX SCREW SB M3x3 (10)
- 96 5015 E-CLIP 1.5 (10)
- 97 0050 O-RING 5x1 (10)
- 97 1022 SILICONE O-RING 2x2 (10)

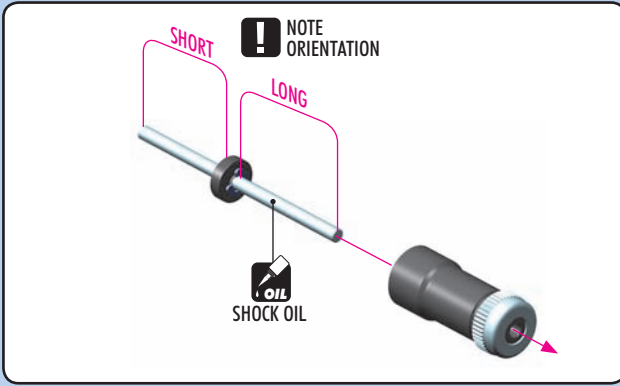
**965015**  
C1.5



**971022**  
O 2x2







## SIDE SHOCK OIL ADJUSTMENT

### SOFTER OIL

Improves traction, use for low-traction and bumpy tracks.

### HARDER OIL

Improves stability and steering response, use for high-traction and flat tracks.

### HUDDY SHOCK OILS

# 106335	350cSt
# 106340	400cSt
# 106345	450cSt
# 106350	500cSt
# 106355	550cSt
# 106360	600cSt
# 106370	700cSt
# 106380	800cSt
# 106390	900cSt
# 106410	1000cSt

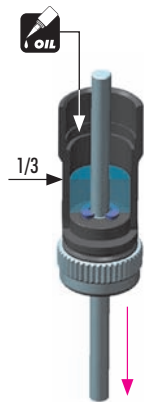


971022  
0 2x2



970050  
0 5x1

Oil 600cSt

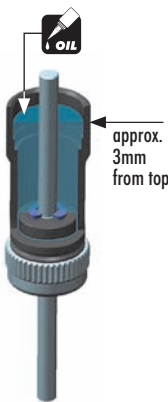


Extend the shock shaft completely. Fill the shock shaft body with the shock oil, but only 1/3 full.

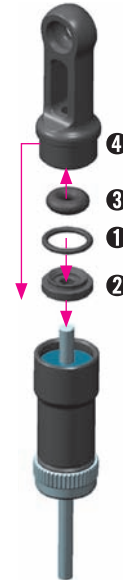


1 Slowly move the shock shaft up so the shock oil flows under the shock piston.  
2 Extend the shock shaft.

Oil 600cSt



Extend the shock shaft completely to release the air trapped beneath the shock piston. Fill the shock shaft body with shock oil, but not fully. The oil level should be approx. 3mm from the top of the shock body.



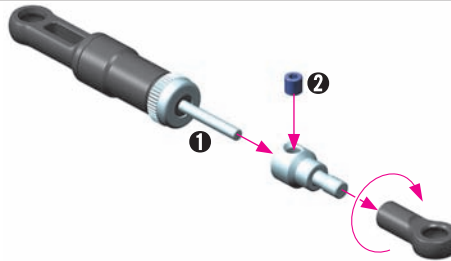
1 Install the 5x1 O-ring onto the shock shim.  
2 Place the shock shim (with O-ring) into the shock body.  
3 Insert the 2x2 O-ring into the shock cap.  
4 Install the shock cap.



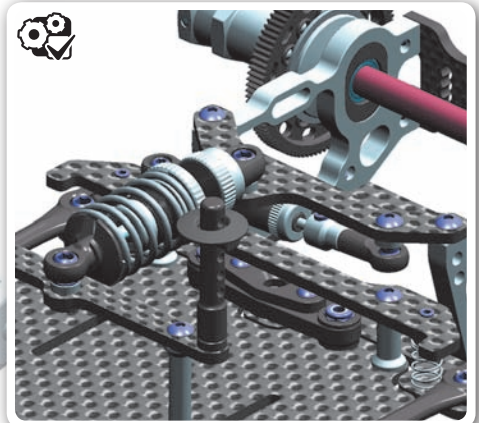
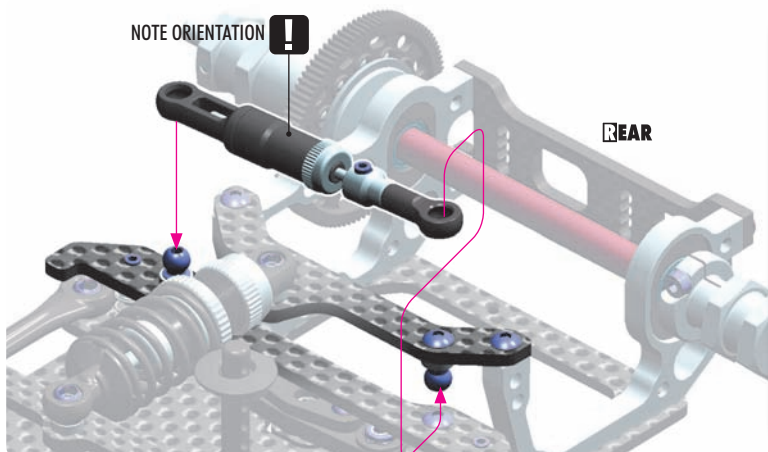
Fully thread the shock cap into the filled shock body. Excess oil will spill from the shock. Tighten completely.



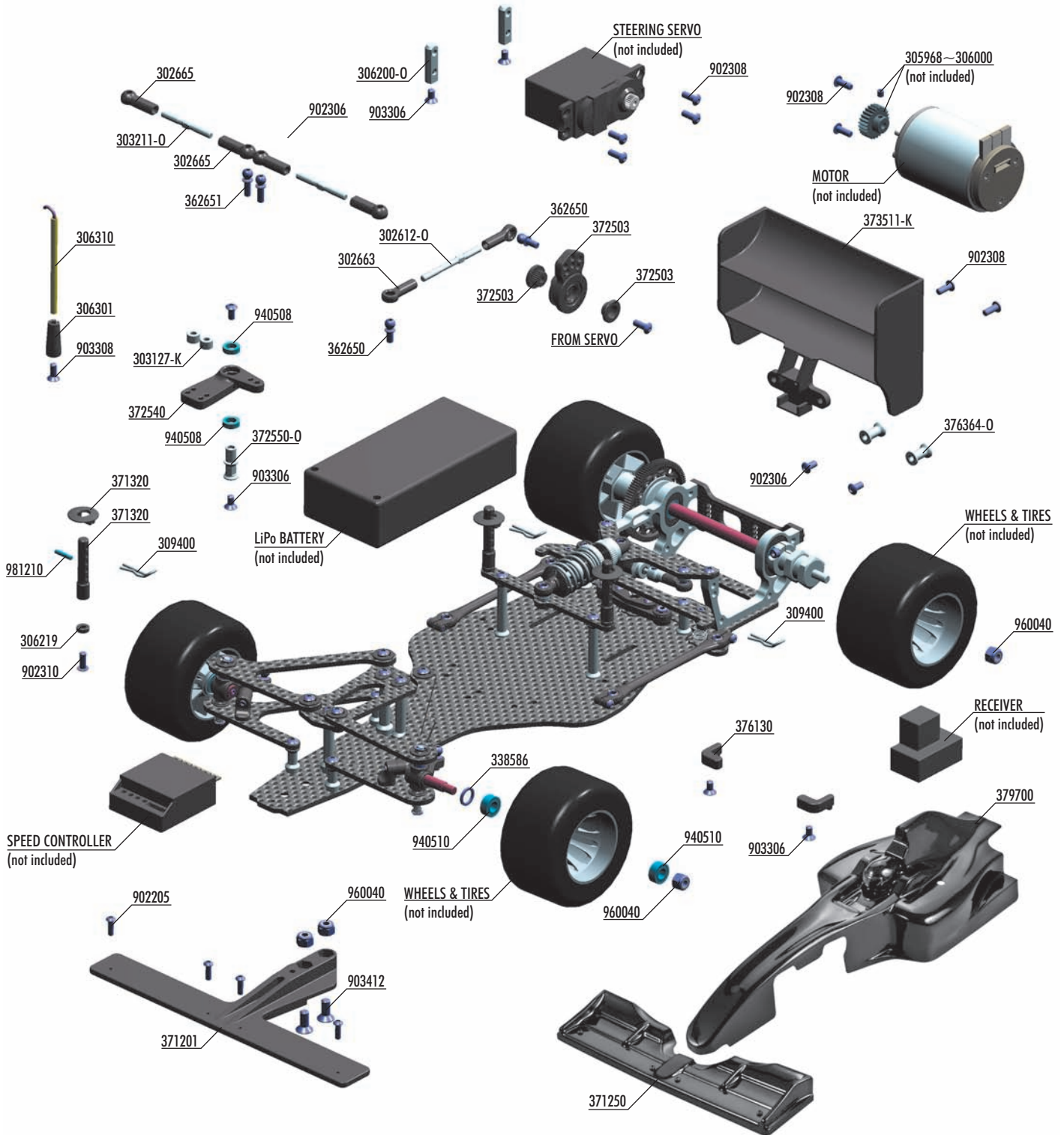
901303  
SB M3x3



NOTE ORIENTATION



# 5. FINAL ASSEMBLY



**BAG**

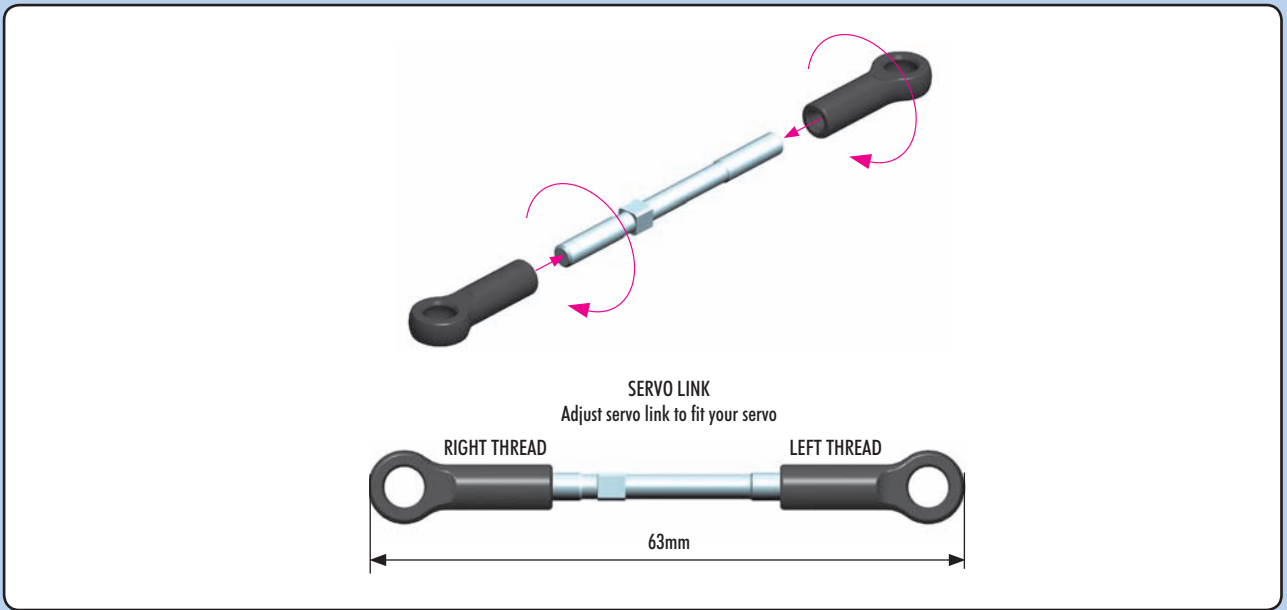
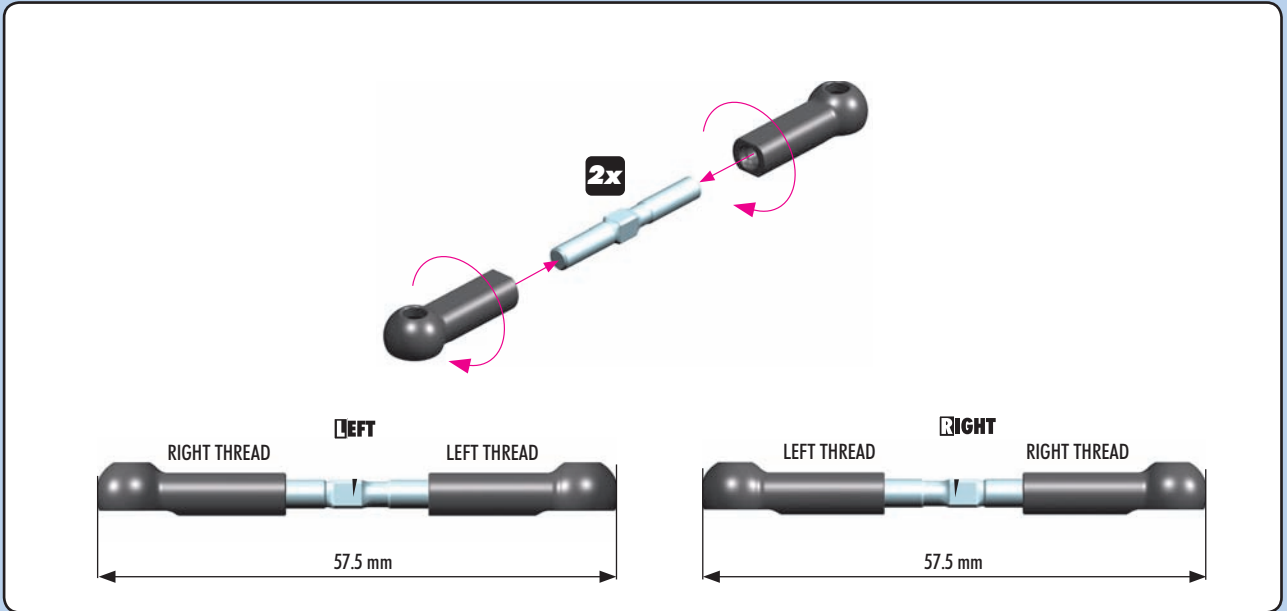
**05**

- 30 2612-0 ALU ADJ. TURNBUCKLE M3 L/R 39 MM - ORANGE - SWISS 7075 T6 (2)
- 30 2663 COMPOSITE BALL JOINT 4.9MM - OPEN - V2 (8)
- 30 2665 COMPOSITE BALL JOINT 4.9MM - CLOSED WITH HOLE (4)
- 30 3127-K ALU SHIM 3x6x4.0MM - BLACK (10)
- 30 3211-0 ALU ADJ. TURNBUCKLE L/R 30 MM - SWISS 7075 T6 (2)
- 305968~306000 PINION GEAR HARDCOATED 18~50T/64P (OPTION)
- 30 6200-0 ALU SERVO MOUNT - ORANGE (2)
- 30 6219 COMPOSITE SET OF SERVO SHIMS (4)
- 30 6301 ANTENNA MOUNT - THIN
- 30 6310 ANTENNA (2)
- 30 9400 BODY CLIP (8)
- 33 8586 SHIM 5x7x0.5 (10)
- 36 2650 BALL END 4.9MM WITH THREAD 6MM (2)
- 36 2651 BALL END 4.9MM WITH THREAD 8MM (2)
- 37 1201 X1 COMPOSITE FRONT BUMPER
- 37 1250 X1 LEXAN FRONT SPOILER (2)
- 37 1320 COMPOSITE BODY POST (2)
- 37 2503 COMPOSITE SERVO SAVER - X-STIFF - SET - V2

- 37 2540 X1 COMPOSITE STEERING ARM
- 37 2550-0 X1 ALU STEERING PIVOT SHAFT
- 37 3511-K X1 COMPOSITE REAR WING - BLACK
- 37 6130 COMPOSITE LiPo BATTERY BACKSTOP (2)
- 37 6364-0 ALU MOUNT 10.8MM - ORANGE (2)
- 37 9700 XRAY X1 BODY FOR 1/10 FORMULA

- 90 2205 HEX SCREW SH M2x5 (10)
- 90 2306 HEX SCREW SH M3x6 (10)
- 90 2308 HEX SCREW SH M3x8 (10)
- 90 2310 HEX SCREW SH M3x10 (10)
- 90 3306 HEX SCREW SFH M3x6 (10)
- 90 3308 HEX SCREW SFH M3x8 (10)
- 90 3412 HEX SCREW SFH M4x12 (10)
- 94 0508 HIGH-SPEED BALL-BEARING 5x8x2.5 RUBBER SEALED (2)
- 94 0510 HIGH-SPEED BALL-BEARING 5x10x4 RUBBER SEALED (2)
- 96 0040 NUT M4 (10)
- 98 1210 PIN 2x10 (10)

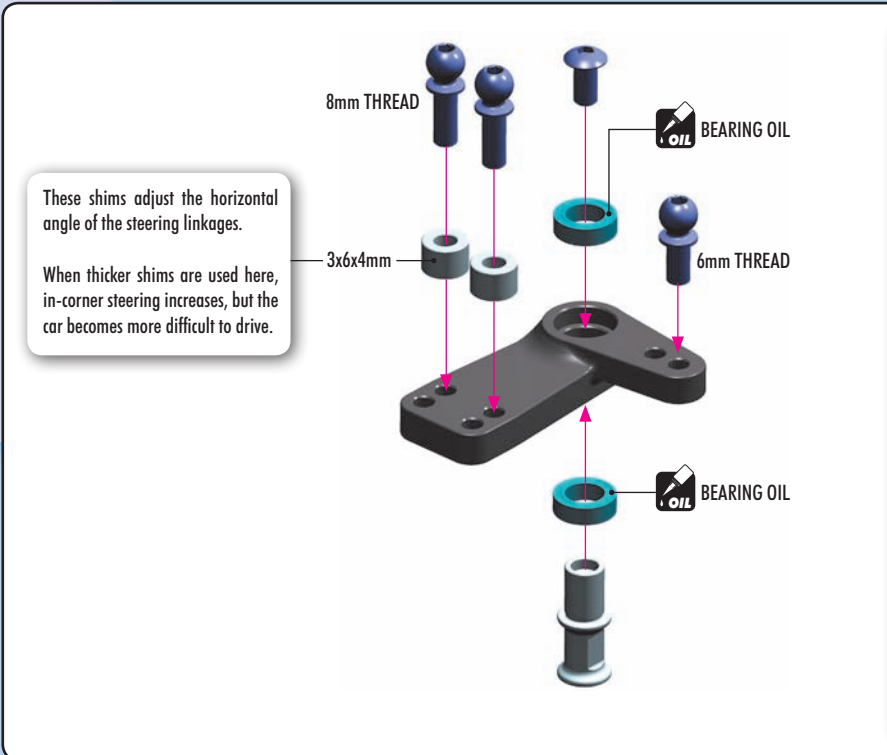
# 5. FINAL ASSEMBLY




  
**303127-K**
  
 SHIM 3x6x4

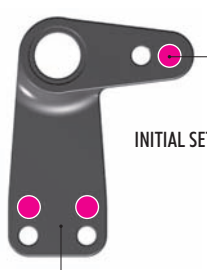

  
**902306**
  
 SH M3x6


  
**940508**
  
 BB 5x8x2.5



The steering arm has two position for servo linkage mounting.

**INNER position:** Makes the car more responsive.  
**OUTER position:** Makes the car easier to drive.



INITIAL SETTING

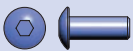
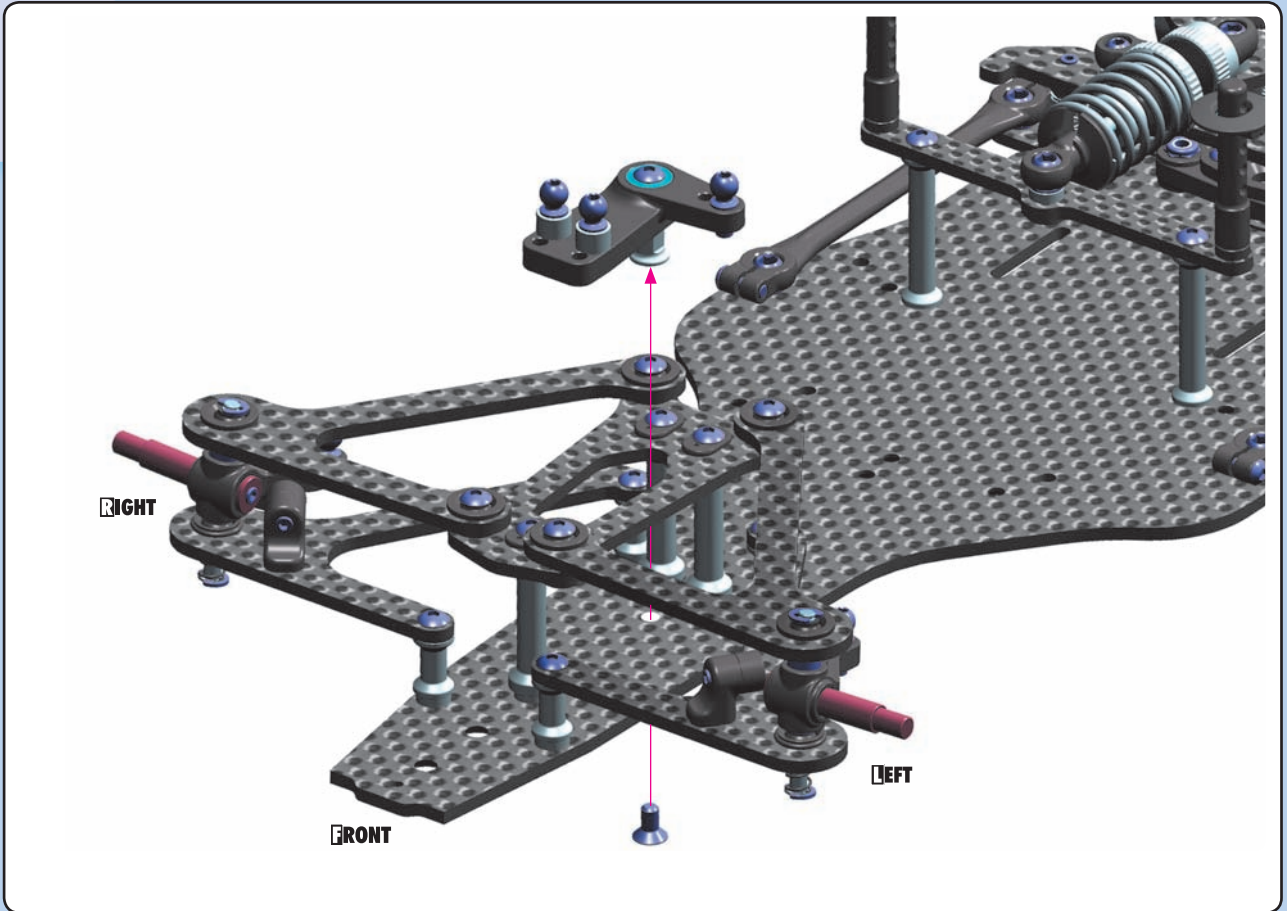
There are two Ackermann positions on the steering arm.

**INNER position:** Less Ackermann, makes the car more responsive, improves in-corner steering.  
**OUTER position:** More Ackermann, makes the car easier to drive, improves cornering speed.

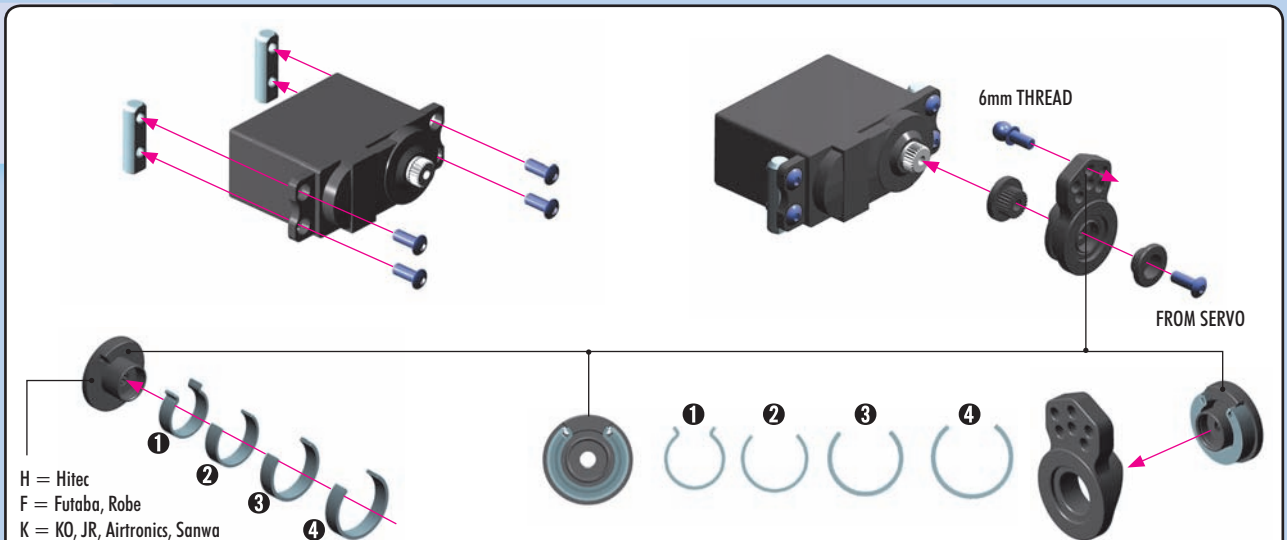
# 5. FINAL ASSEMBLY



903306  
SFH M3x6



902308  
SH M3x8



H = Hitec  
F = Futaba, Robe  
K = KO, JR, Airtronics, Sanwa

### ALUMINUM SERVO HORNS:

For more in-corner steering and better steering response, an aluminum servo horn may be used. In this situation, the steering servo saver is NOT used.

#### HUDY ALU SERVO HORNS



#293491	KO, JR, Sanwa, Airt. - OFFSET - 23T
#293492	Hitec - OFFSET - 24T
#293493	Futaba - OFFSET - 25T



#293501	KO, JR, Sanwa, Airtronics - 23T
#293502	Hitec - 24T
#293503	Futaba - 25T



INITIAL SETTING



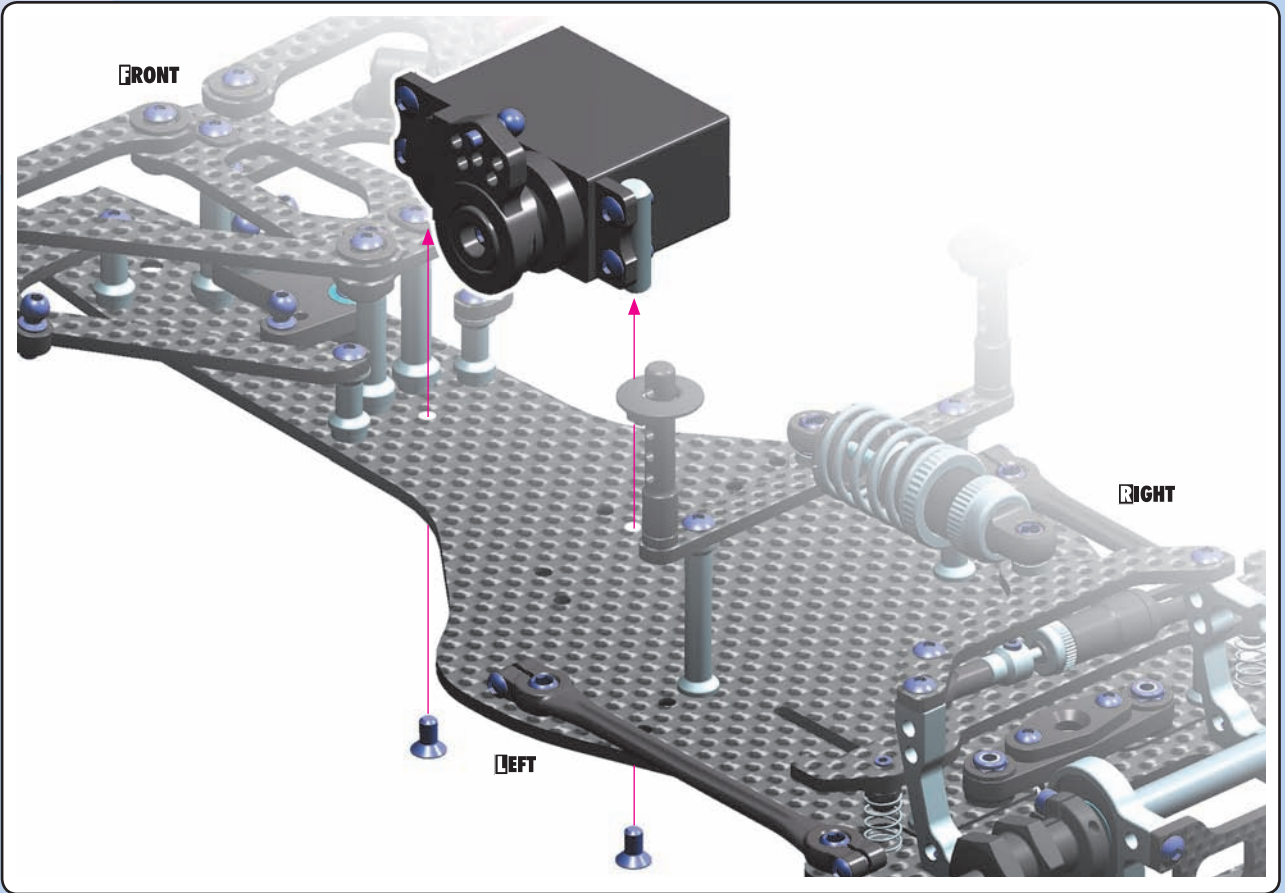
### IMPORTANT!

Using an aluminum servo horn increases the risk of servo breakage in serious crashes.

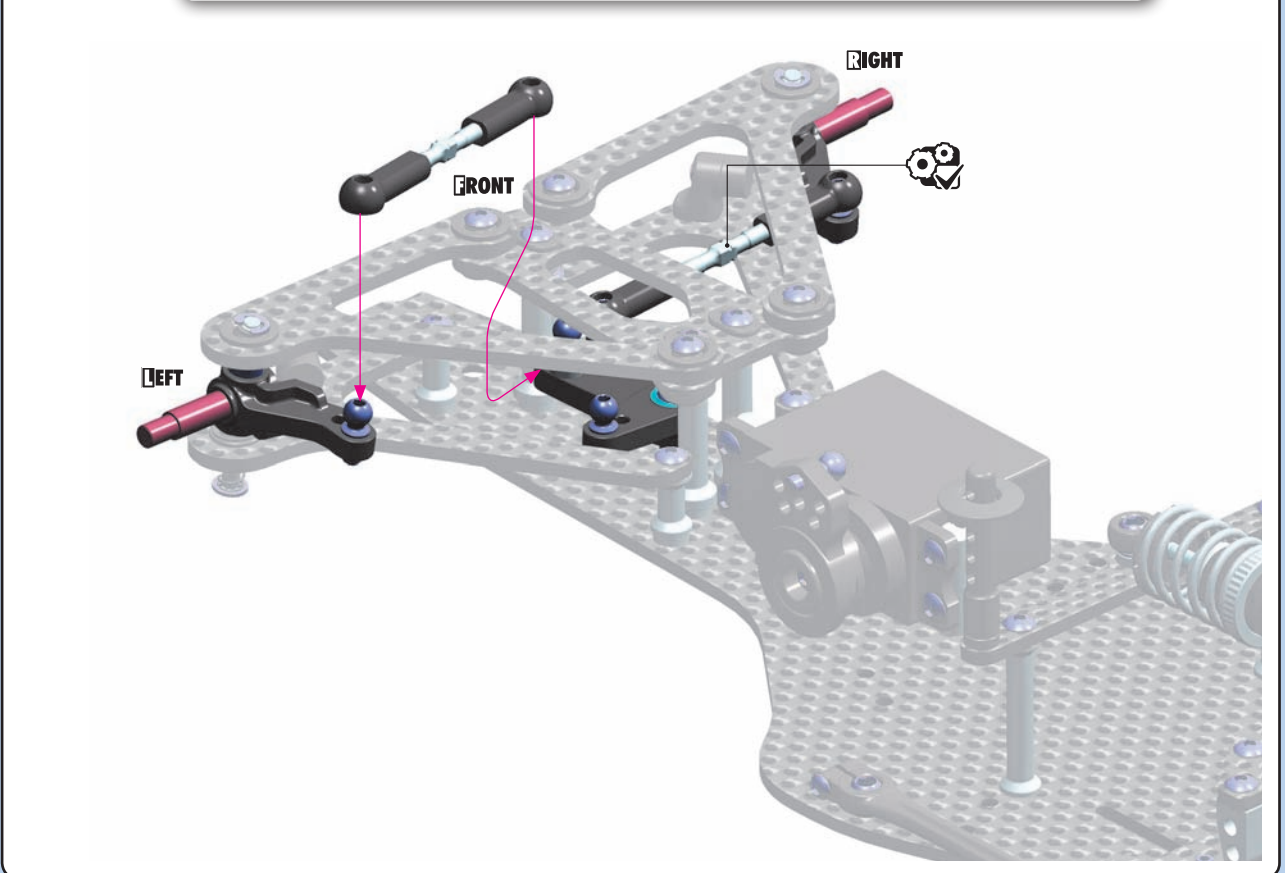
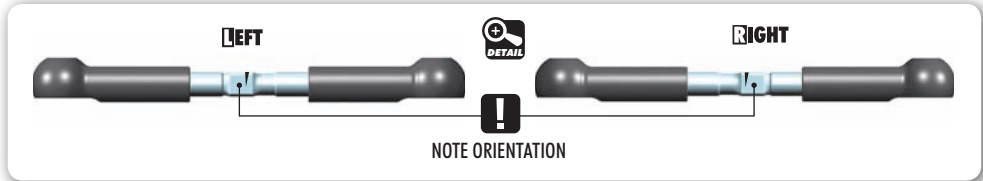
# 5. FINAL ASSEMBLY



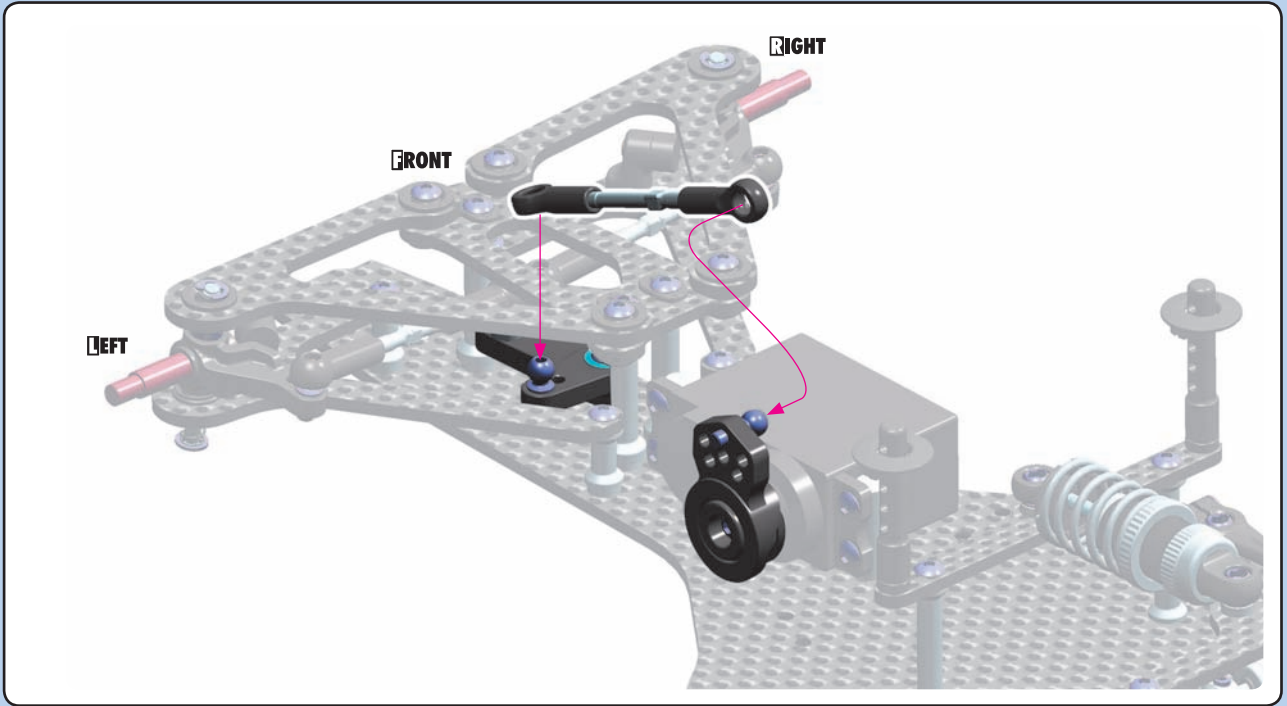
903306  
SFH M3x6



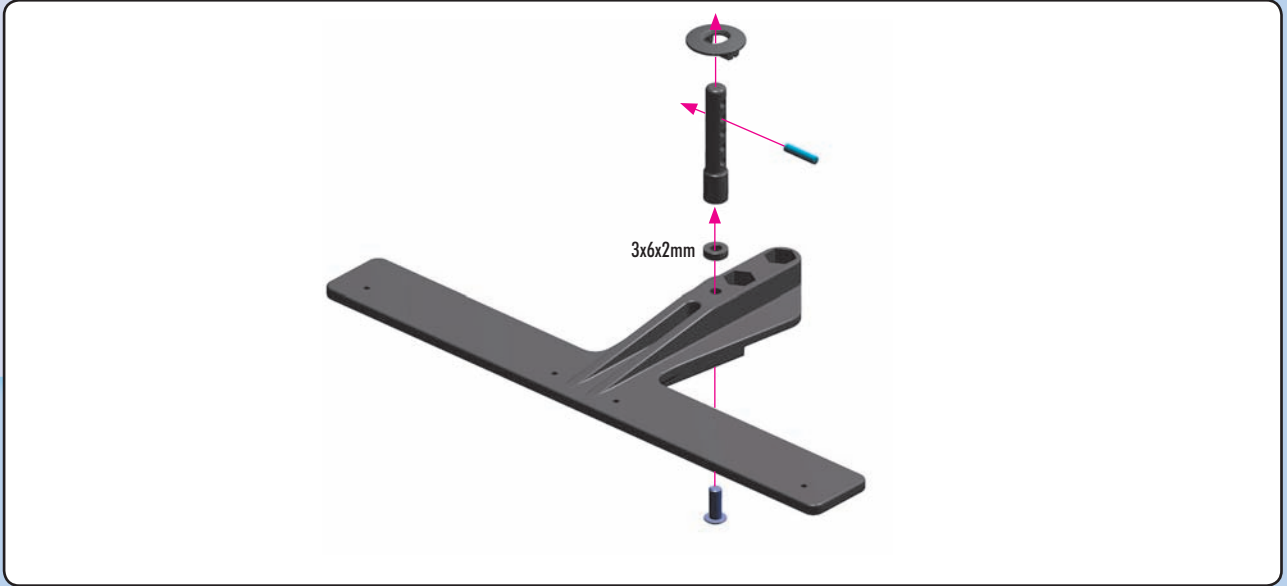
2x L-R



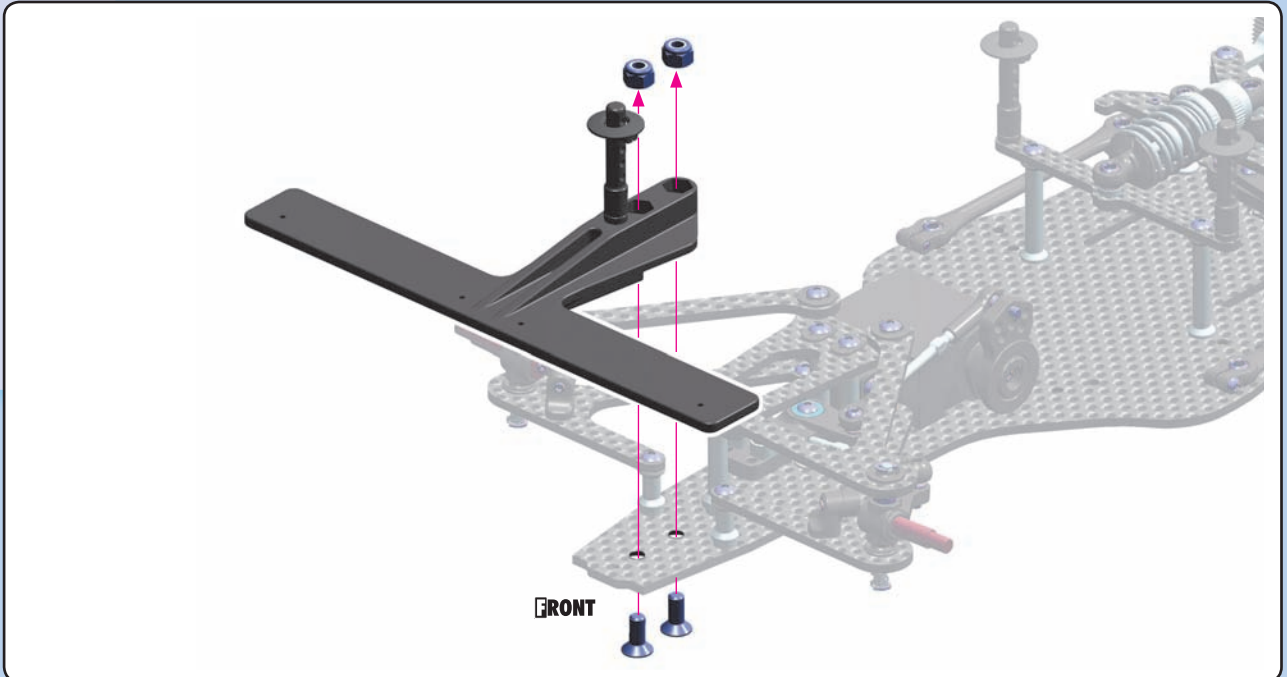
# 5. FINAL ASSEMBLY



- 10**  
306219  
SHIM 3x6x2
-   
902310  
SH M3x10
-   
981210  
P 2x10



-   
903412  
SFH M4x12
-   
960040  
N M4



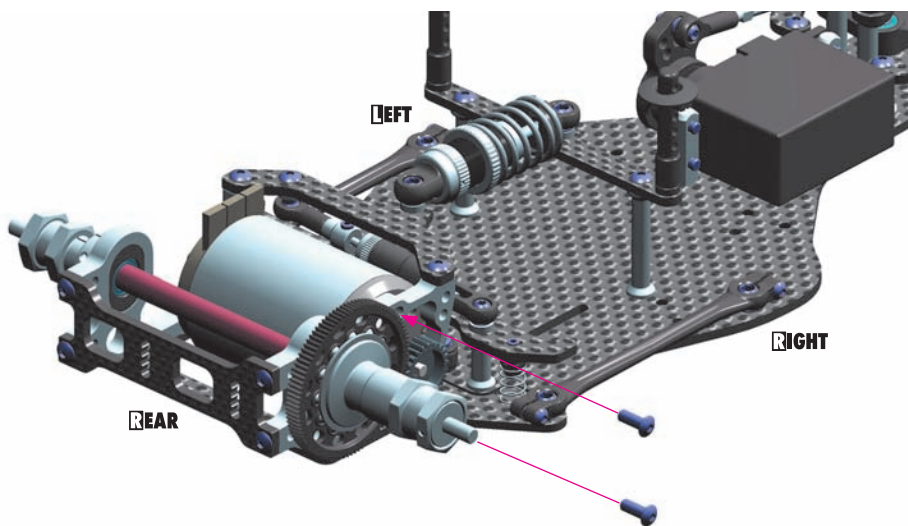
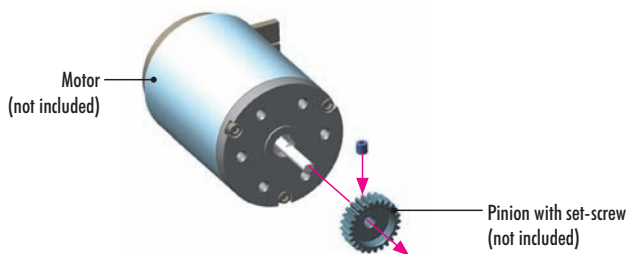
# 5. FINAL ASSEMBLY



902308  
SH M 3x8



901302  
SB M3x2.5



**DETAIL**

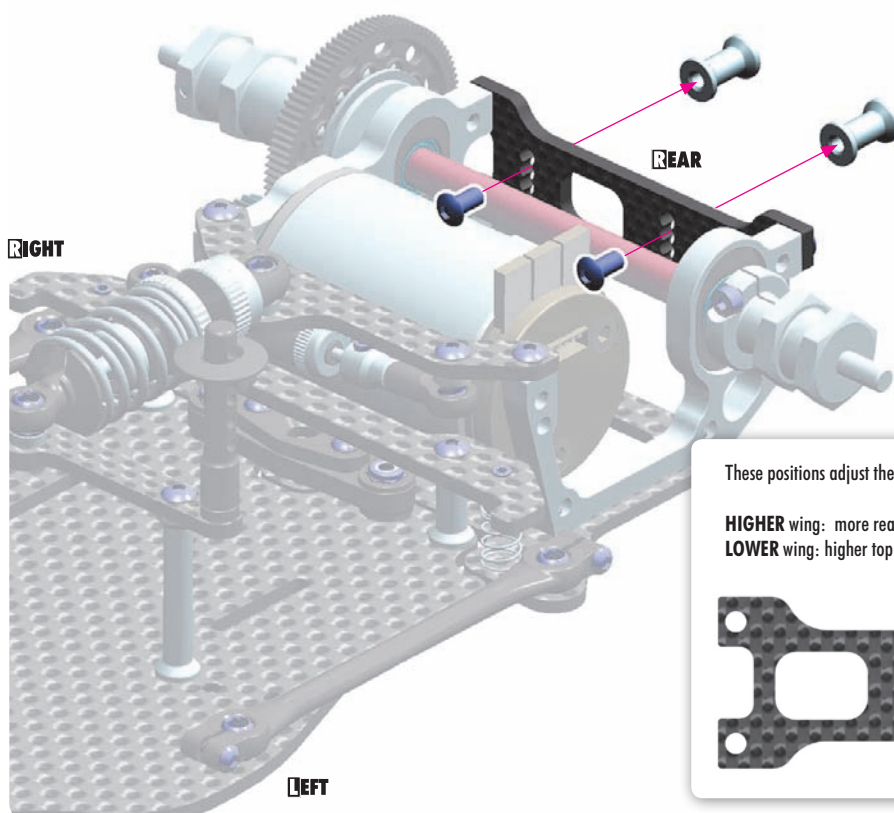
Adjust the gear mesh so there is appropriate space between the spur gear and pinion teeth. There should be a very small amount of freeplay.

## PINION GEARS ALU HARDCOATED

#305968	18T / 64P (option)
#305969	19T / 64P (option)
#305970	20T / 64P (option)
#305971	21T / 64P (option)
#305972	22T / 64P (option)
#305973	23T / 64P (option)
#305974	24T / 64P (option)
#305975	25T / 64P (option)
#305976	26T / 64P (option)
#305977	27T / 64P (option)
#305978	28T / 64P (option)
#305979	29T / 64P (option)
#305980	30T / 64P (option)
#305981	31T / 64P (option)
#305982	32T / 64P (option)
#305983	33T / 64P (option)
#305984	34T / 64P (option)
#305985	35T / 64P (option)
#305986	36T / 64P (option)
#305987	37T / 64P (option)
#305988	38T / 64P (option)
#305990	40T / 64P (option)
#305991	41T / 64P (option)
#305992	42T / 64P (option)
#305994	44T / 64P (option)
#305996	46T / 64P (option)
#305998	48T / 64P (option)
#306000	50T / 64P (option)



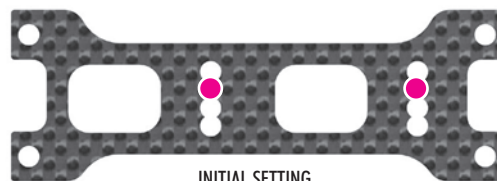
902306  
SH M3x6



These positions adjust the **HEIGHT** of the rear wing.



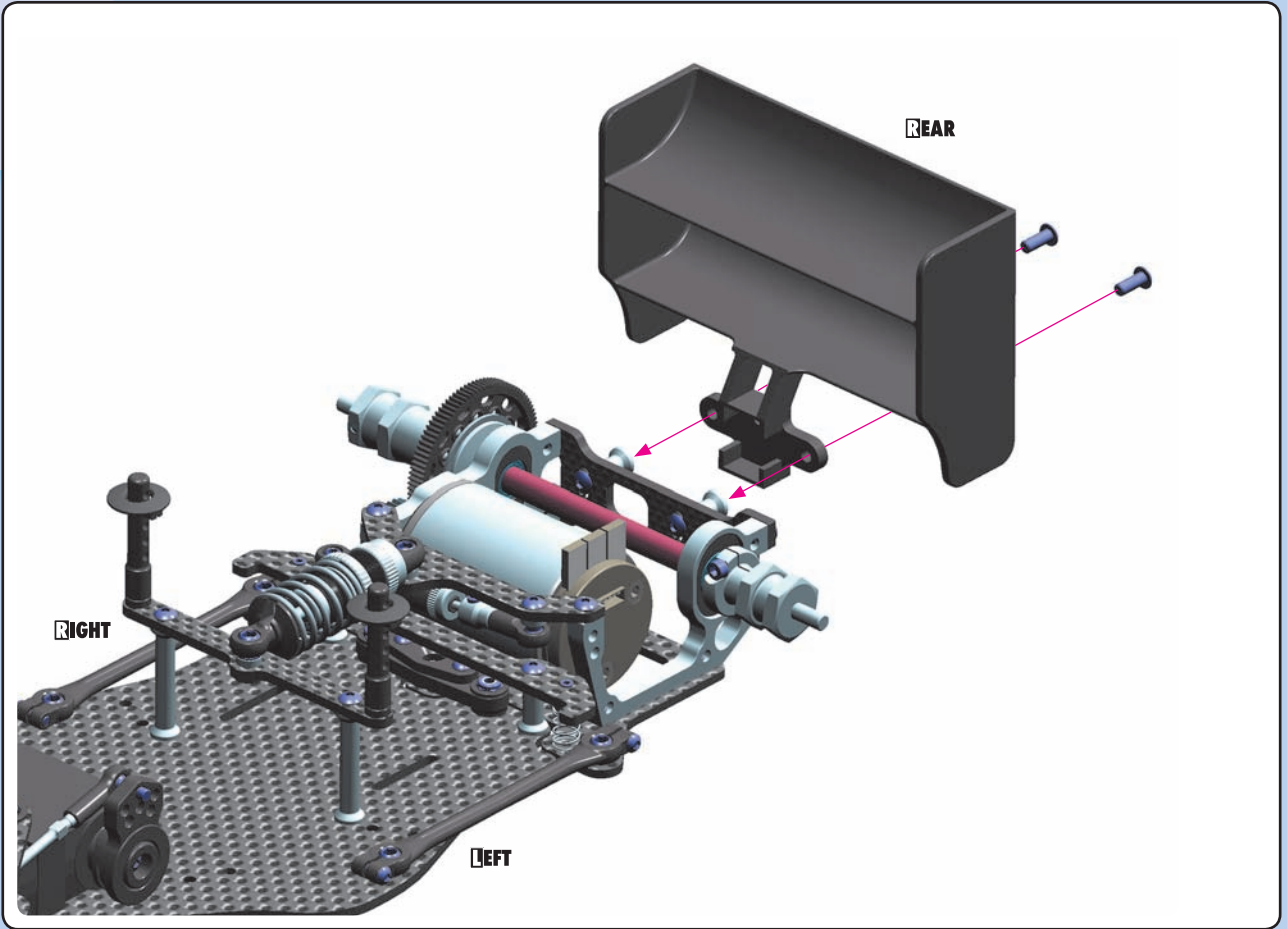
**HIGHER** wing: more rear traction, more stability  
**LOWER** wing: higher top speed improves, improved steering response



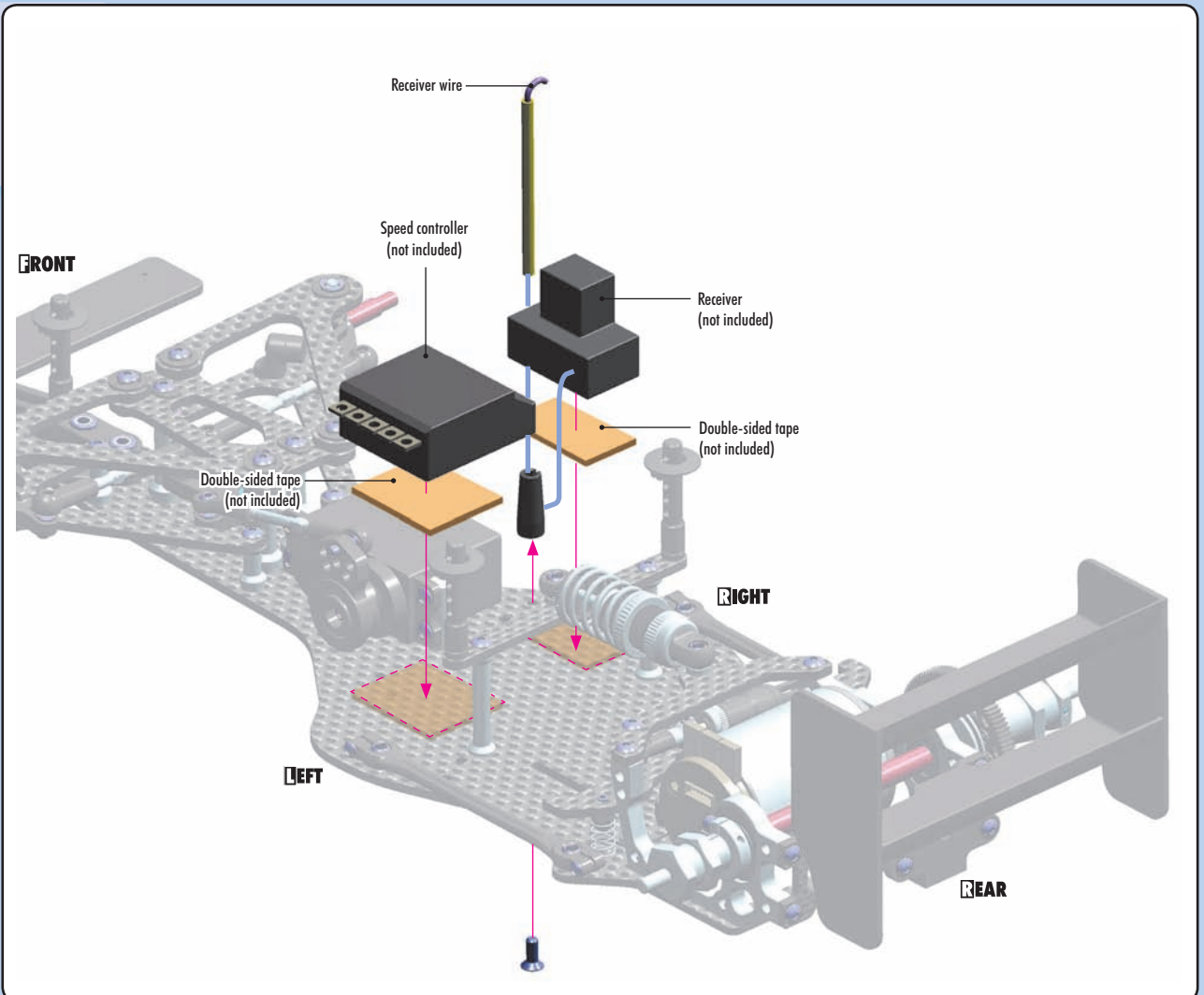
INITIAL SETTING

# 5. FINAL ASSEMBLY

902308  
SH M3x8



903308  
SFH M3x8



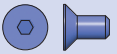
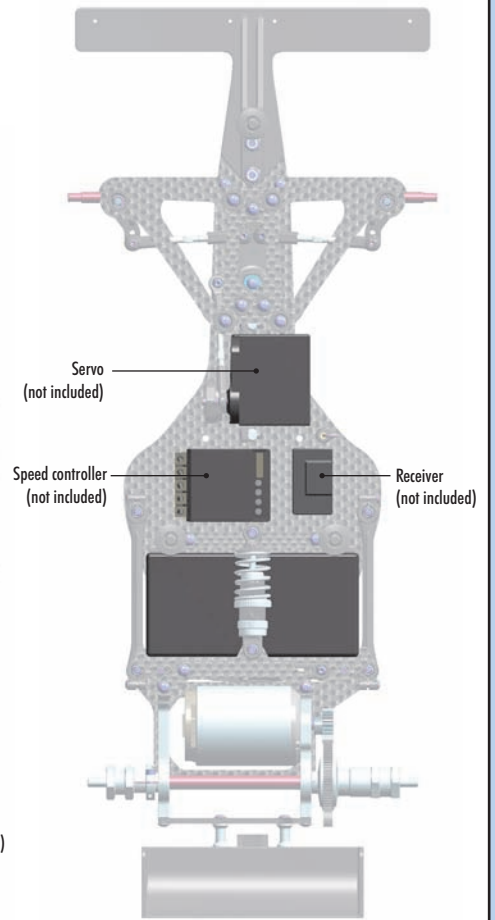
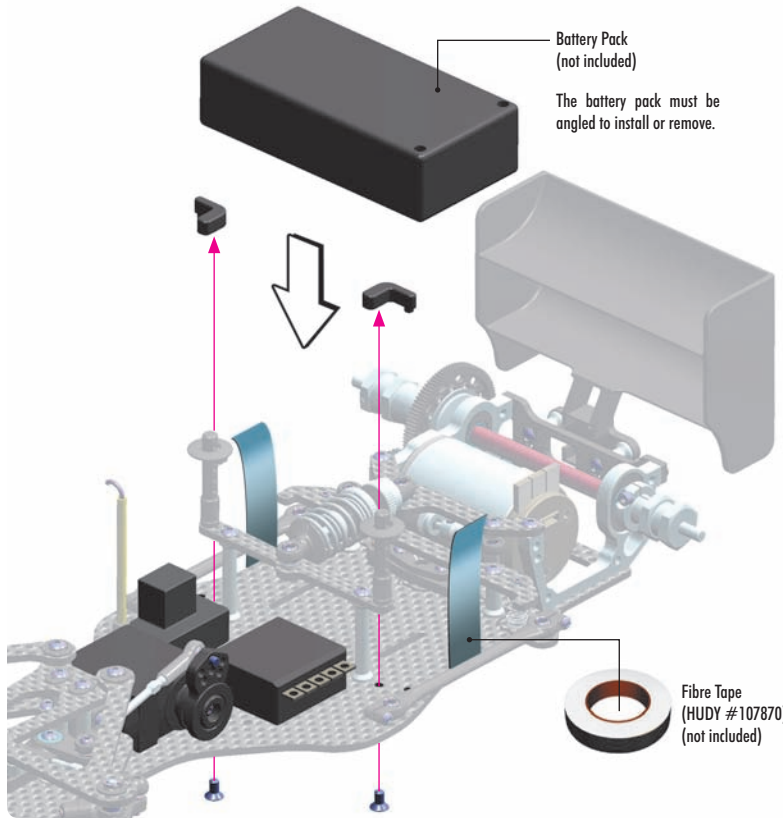




903306  
SFH M3x6

## LIPO BATTERY CONFIGURATION 1 CROSS-CHASSIS ALIGNMENT: (INITIAL SETTING)

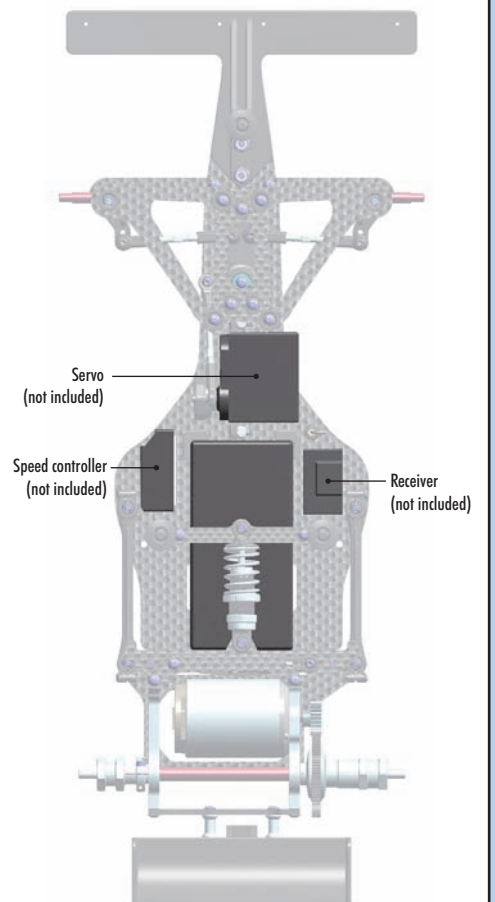
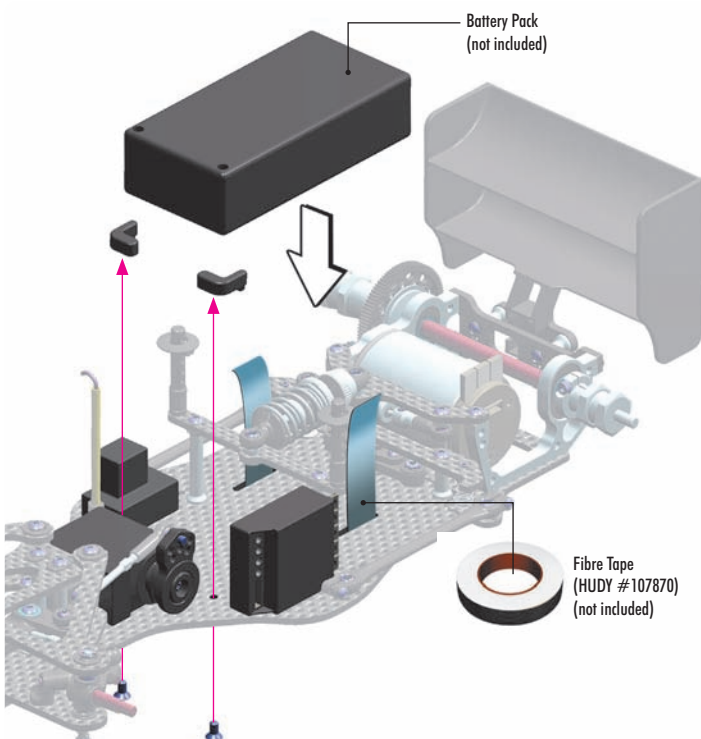
Cross-chassis alignment makes the car easier to drive, and decreases traction rolling. Recommended for high-traction carpet tracks.



903306  
SFH M3x6

## LIPO BATTERY CONFIGURATION 2 INLINE Battery Alignment:

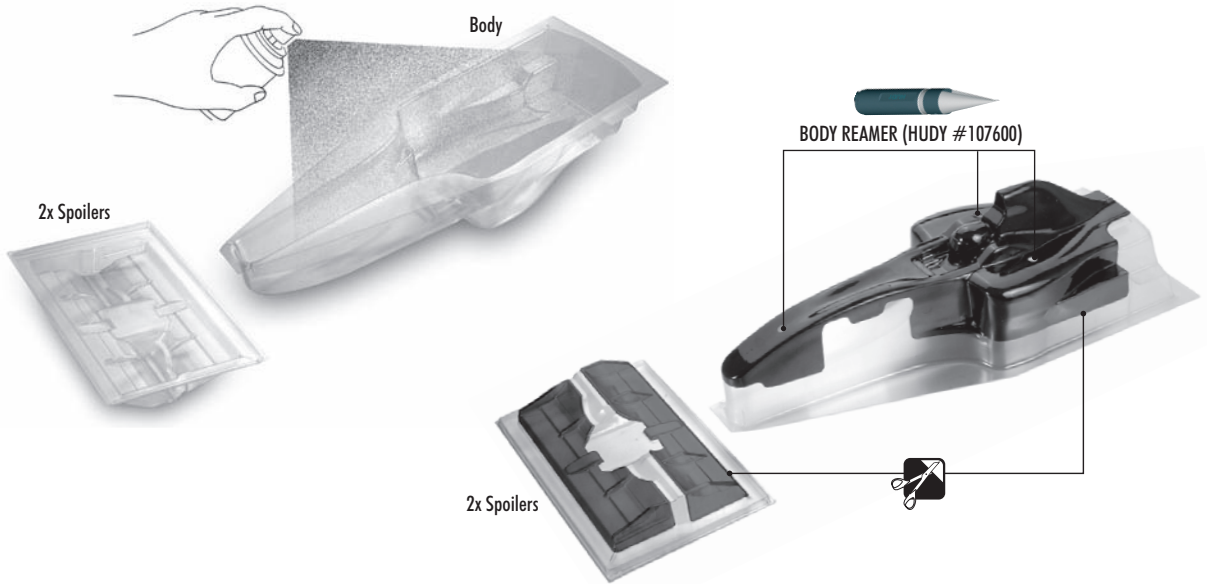
Inline battery alignment improves the roll of the car and gives improved steering. Recommended for asphalt and low-medium traction carpet tracks.



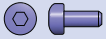
# 5. FINAL ASSEMBLY

- ❶ Before cutting and making holes on the body, put the unpainted body on the chassis to confirm the mounting position and location for holes and cutouts. Before cutting and making holes on the spoiler, put the unpainted spoiler on the front bumper to confirm the mounting position and location for holes and cutouts.
- ❷ Before painting, wash the inside of the body with mild detergent, and then rinse and dry thoroughly.
- ❸ Mask the helmet shield if you wish.

- ❹ Apply paint masks as appropriate.
- ❺ Paint the body using paints formulated for polycarbonate bodies.
- ❻ When the paint is dry, remove the masking.
- ❼ Carefully cut out the body using appropriate scissors or cutting tools.
- ❽ When you have finished cutting, peel off the external protective films.



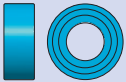
338586  
SHIM 5x7x0.5



902205  
SH M2x5



960040  
N M4

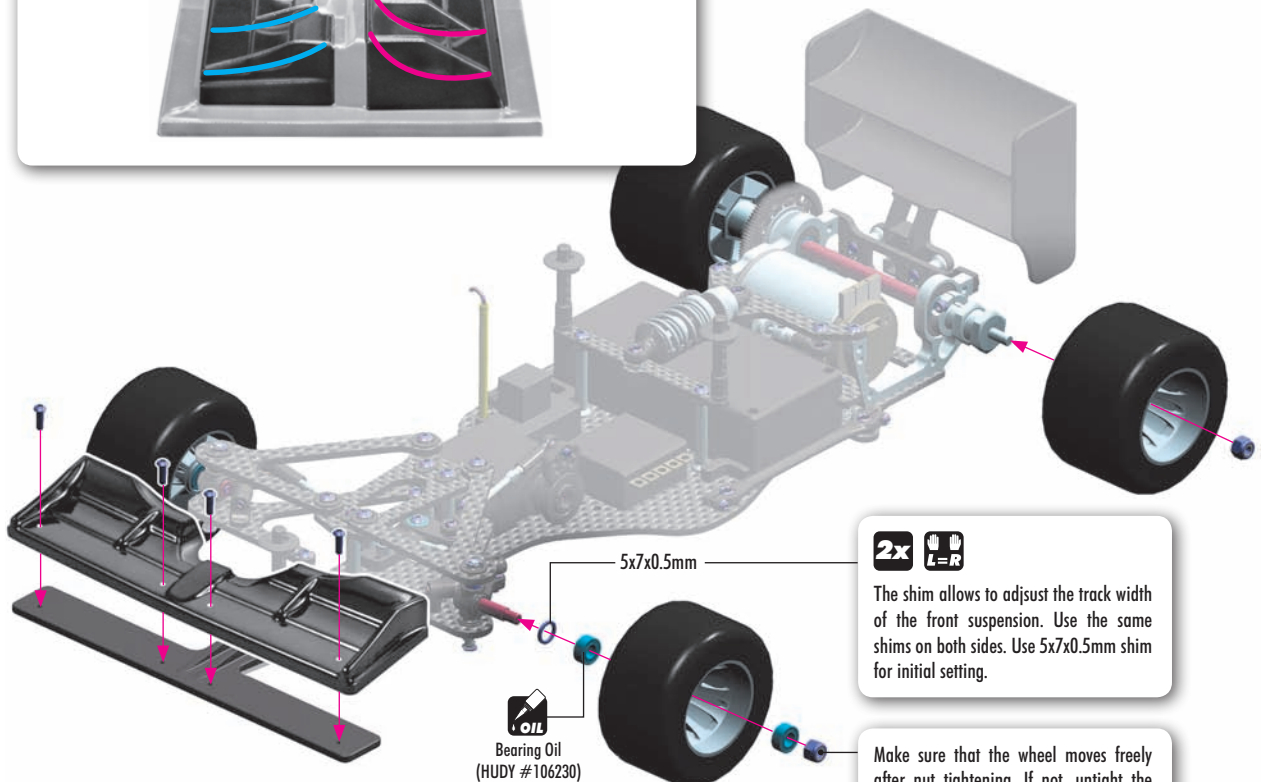


94 0510  
BB 5x10x4

## FRONT SPOILER

LOW DOWNFORCE:  
Use for less steering

HIGH DOWNFORCE:  
Use for more steering



2x  
L=R

The shim allows to adjust the track width of the front suspension. Use the same shims on both sides. Use 5x7x0.5mm shim for initial setting.

Make sure that the wheel moves freely after nut tightening. If not, untight the nut a little.

# SET-UP SHEET

# XRAY X1

RACE

TRACK

NAME

CITY / COUNTRY

CONTACT

DATE

QUALIFYING POSITION	BEST LAPTIME /sec	FINAL POSITION	RACE LENGTH /min
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

**TRACK**

TRACK SURFACE  CARPET  ASPHALT

TRACK LAYOUT  TECHNICAL  MIXED  FAST

TRACTION  LOW  MEDIUM  HIGH

**CENTER SHOCK ABSORBER**

SPRING  OIL /cst  REBOUND %

PISTON  2 HOLES  3 HOLES

HOLES DIAMETER /ø  1.1mm  1.2mm  1.3mm

**SIDE SHOCK**

OIL /cst

FRONT	TIRES	REAR
<input type="text"/>	TIRES <input type="text"/>	<input type="text"/>
<input type="text"/>	ADDITIVE <input type="text"/>	<input type="text"/>
<input type="text"/>	ADDITIVE TIMING <input type="text"/>	<input type="text"/>
FRONT LEFT <input type="text"/>	ADDITIVE TREATED AREA <input type="text"/>	REAR LEFT <input type="text"/>
FRONT RIGHT <input type="text"/>		REAR RIGHT <input type="text"/>

**DIFF SETTING**

LOOSE  MEDIUM  TIGHT

**GEARING**

PINION /T  SPUR GEAR /T  FINAL DRIVE RATIO

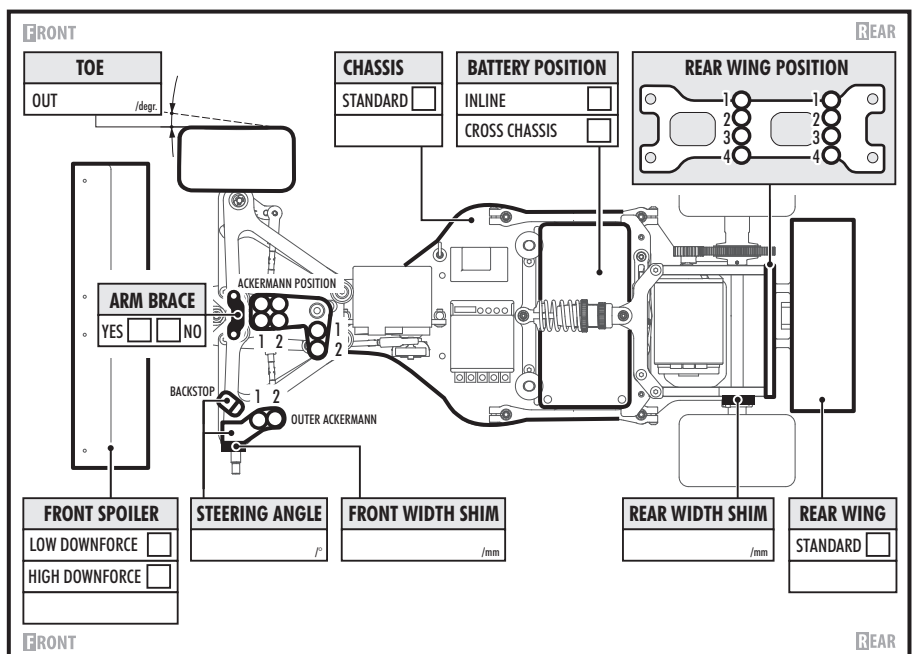
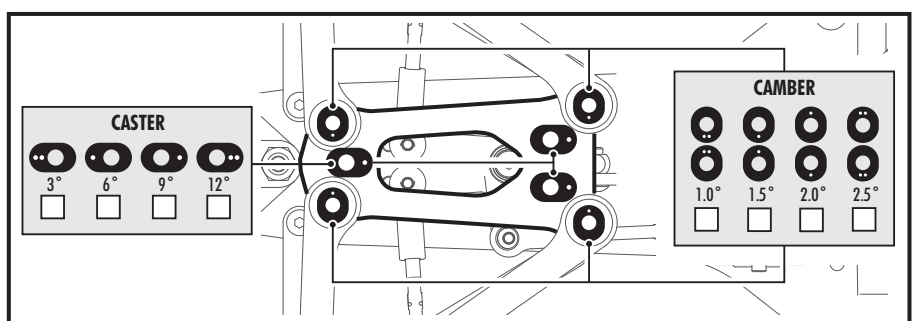
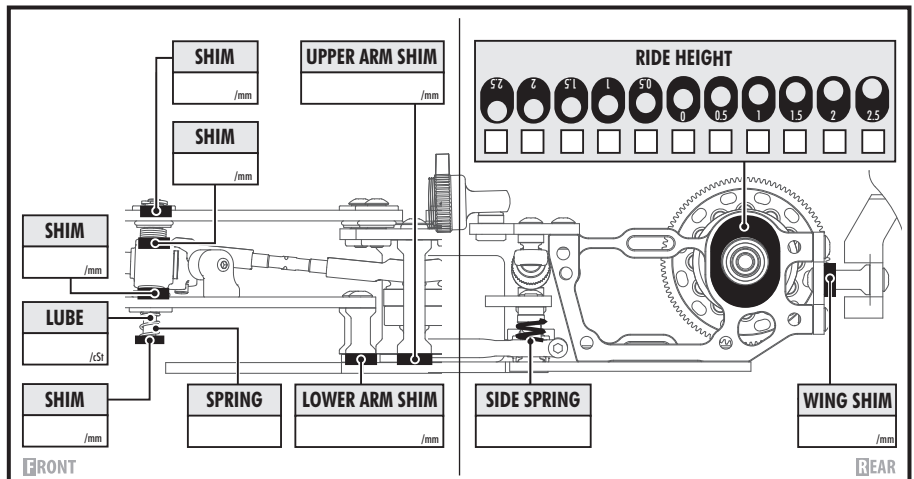
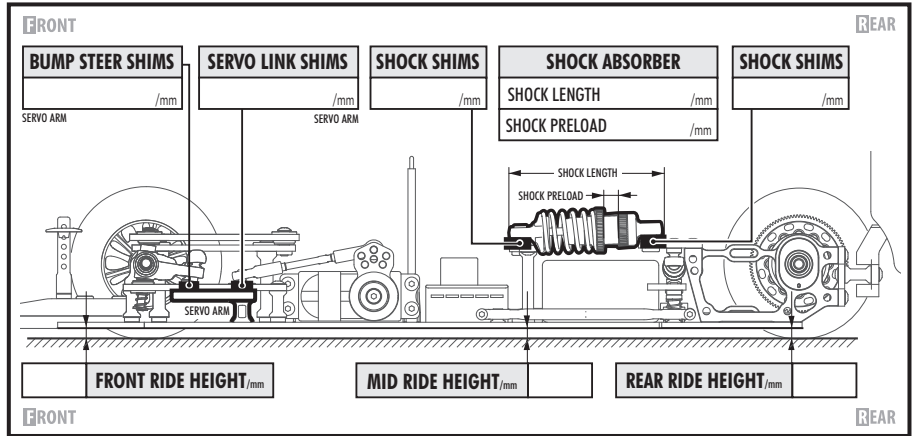
**ELECTRONICS**

MOTOR

SPEEDO

BATTERIES

**BODY**



**COMMENTS**

[www.teamxray.com](http://www.teamxray.com)

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