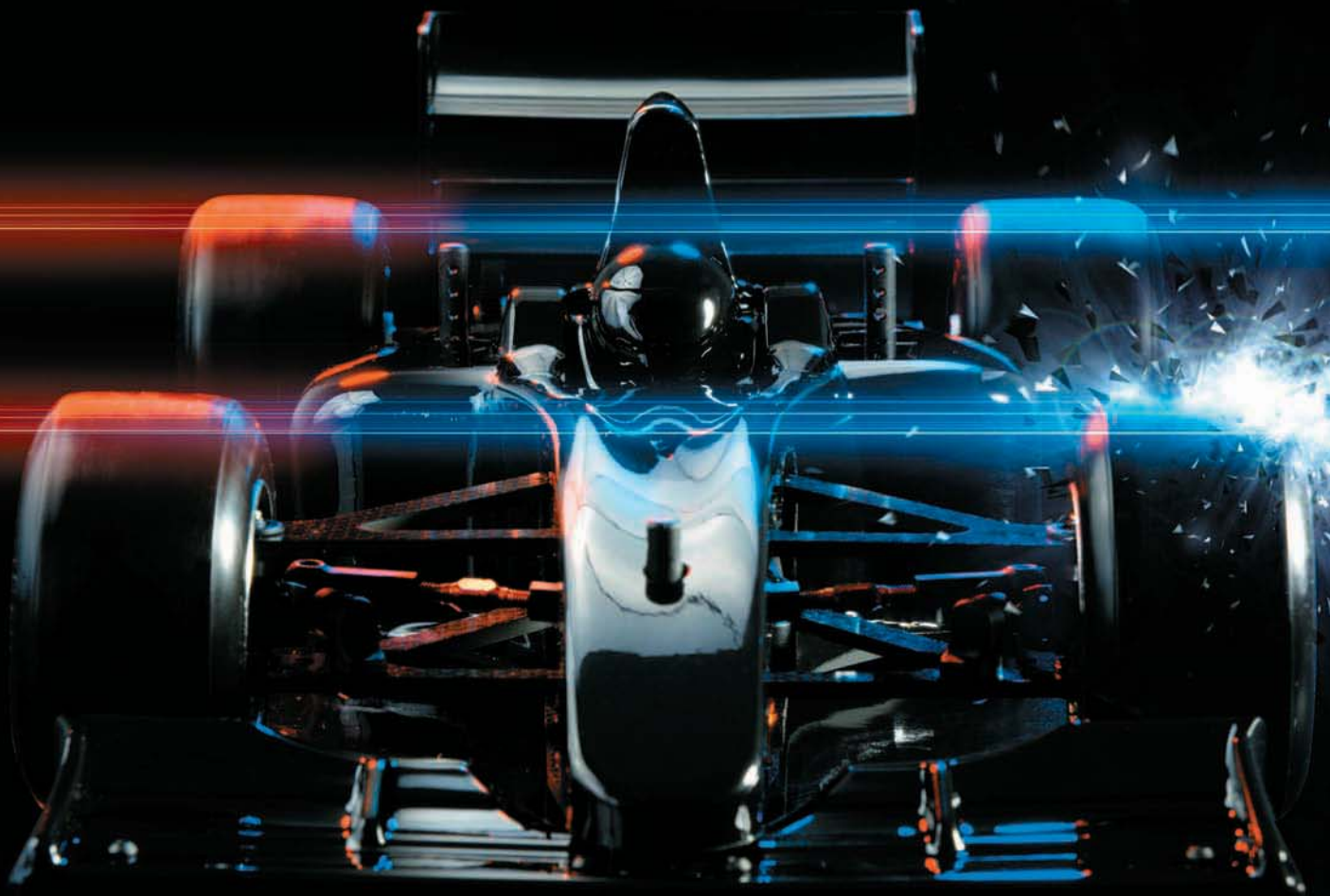


1/10 LUXURY ELECTRIC FORMULA

XRAY X1

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. Also, please visit our Web site at 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

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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Slovakia, EUROPE
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Fax: 421-32-7401109
E-mail: info@teamxray.com

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RC America, 2030 Century Center Blvd #15
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Fax: (214) 744-2401
E-mail: xray@rcamerica.com

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.

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.

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

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 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.

QUALITY CERTIFICATE

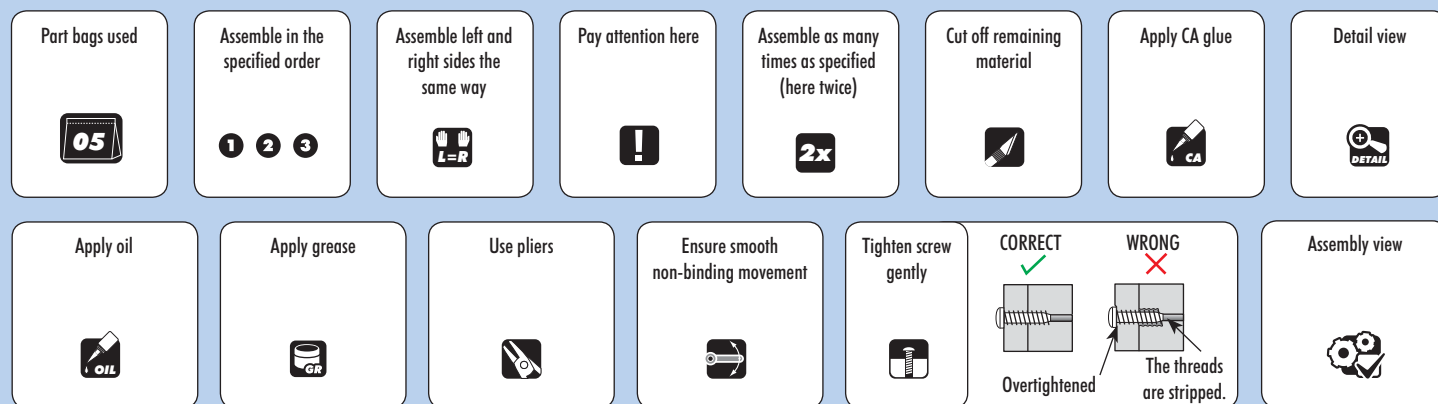
XRAY MODEL RACING CARS uses only the highest quality materials, the best compounds for molded parts and the most sophisticated manufacturing processes of TQM (Total Quality Management). We guarantee that all parts of a newly-purchased kit are manufactured with the highest regard to quality. However,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

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!

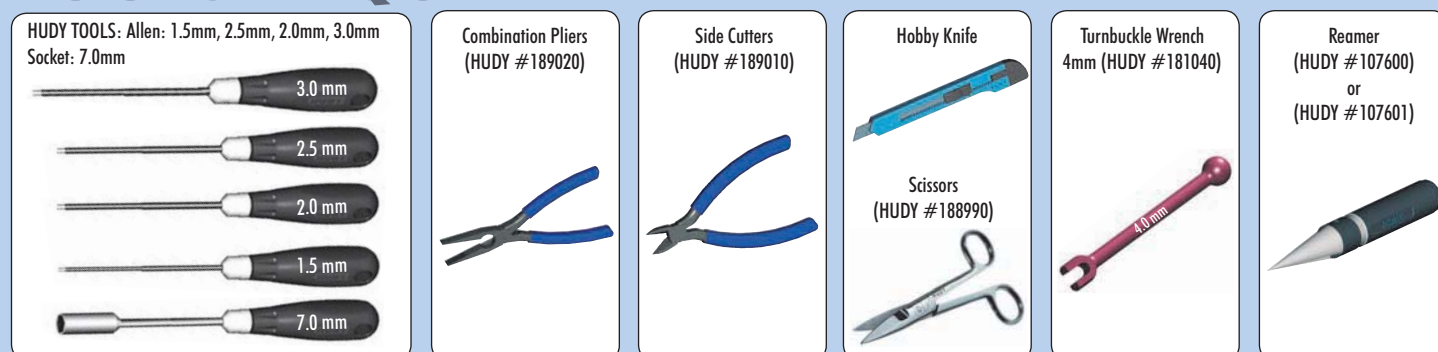
In line with our policy of continuous product development, the exact specifications of the kit may vary. In the unlikely event of any problems with your new kit, you should contact the model shop where you purchased it, quoting the part number.

We do reserve all rights to change any specification without prior notice. All rights reserved.

SYMBOLS USED



TOOLS REQUIRED



EQUIPMENT INCLUDED

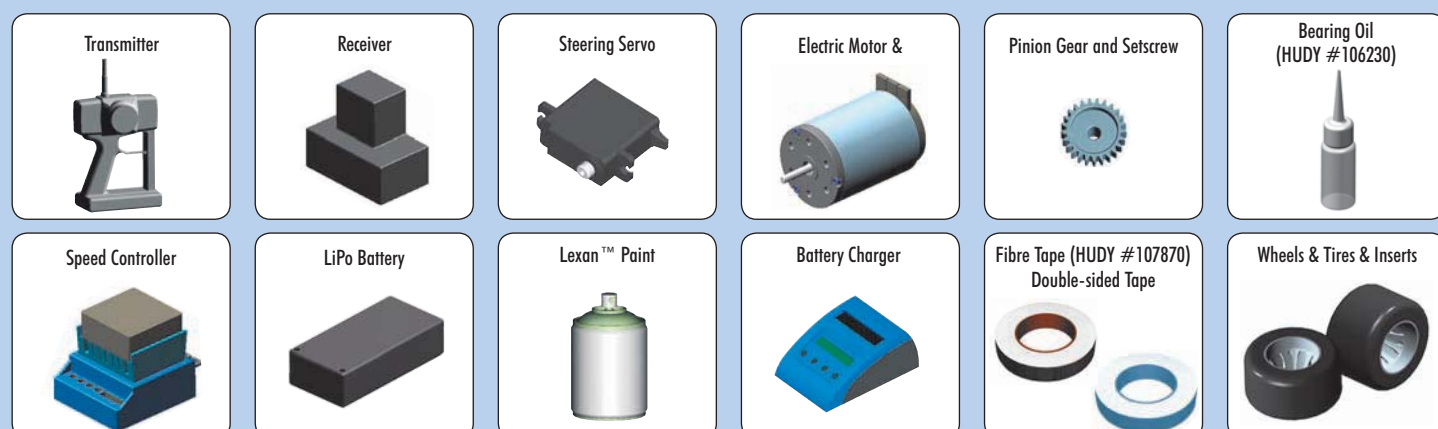


NOT INCLUDED

SAMPLE OF OPTIONAL PARTS	
#37XXXX	OPTION 1
#37XXXX	OPTION 2
#37XXXX	OPTION 3

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.

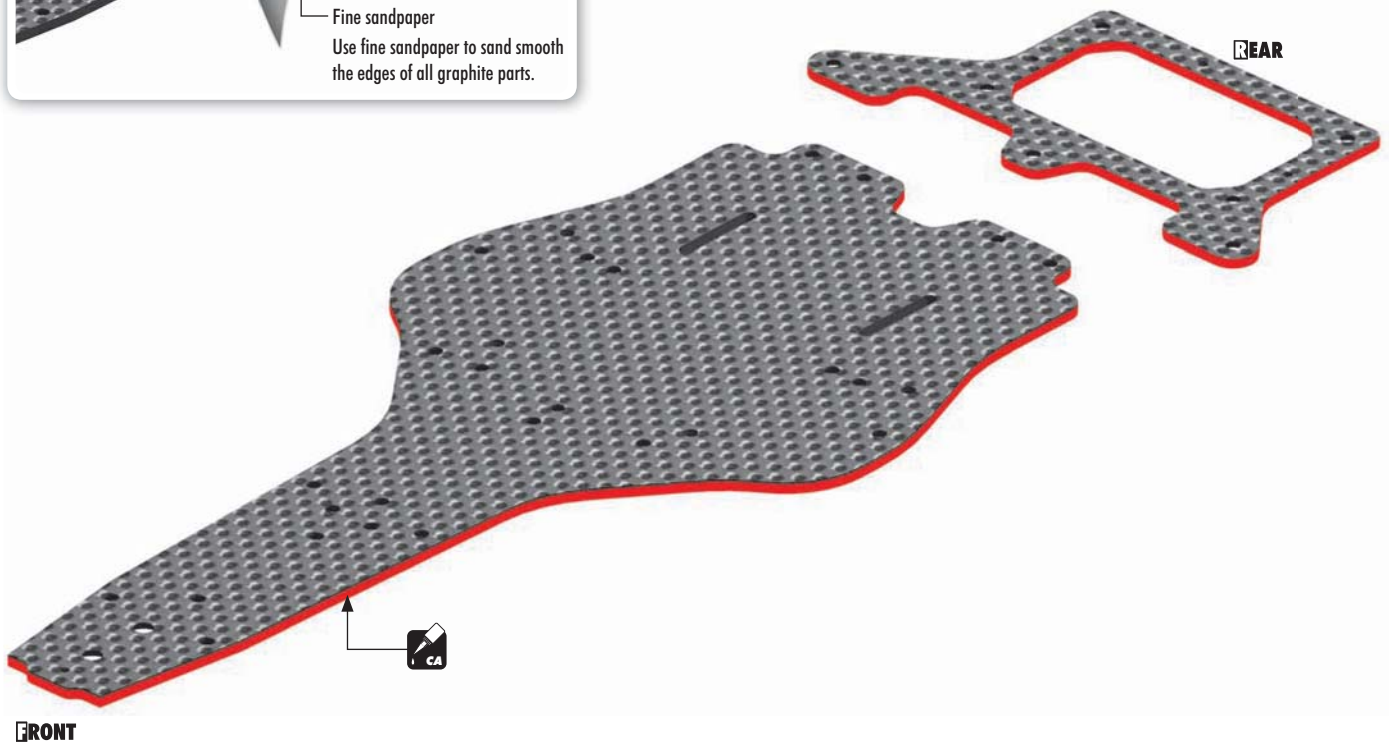
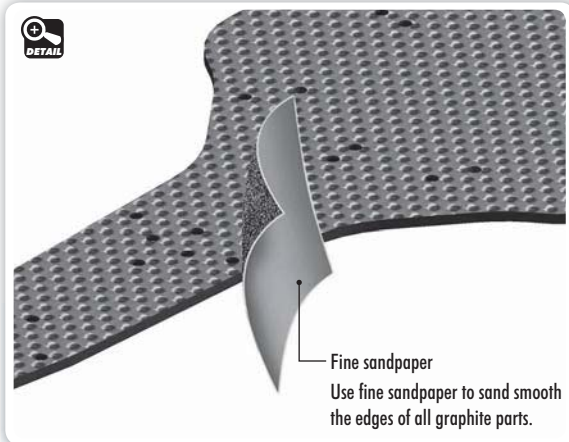
EQUIPMENT REQUIRED



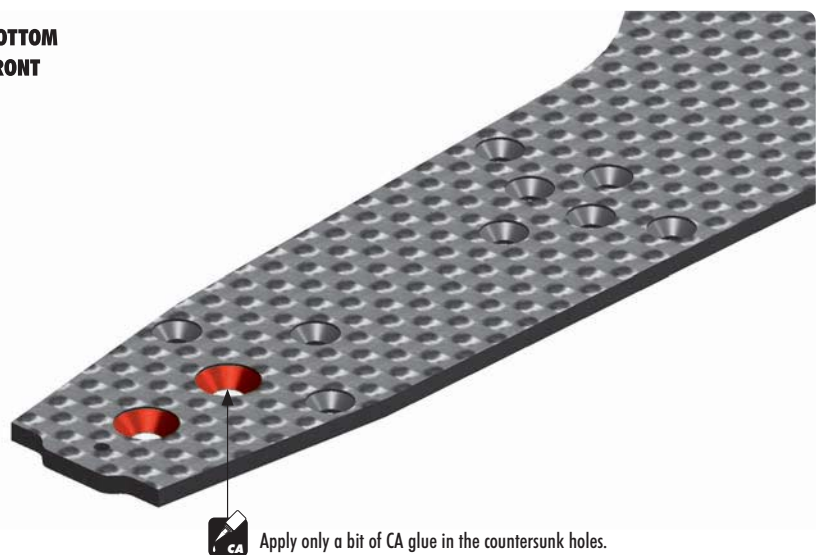
CHASSIS PREPARATION

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

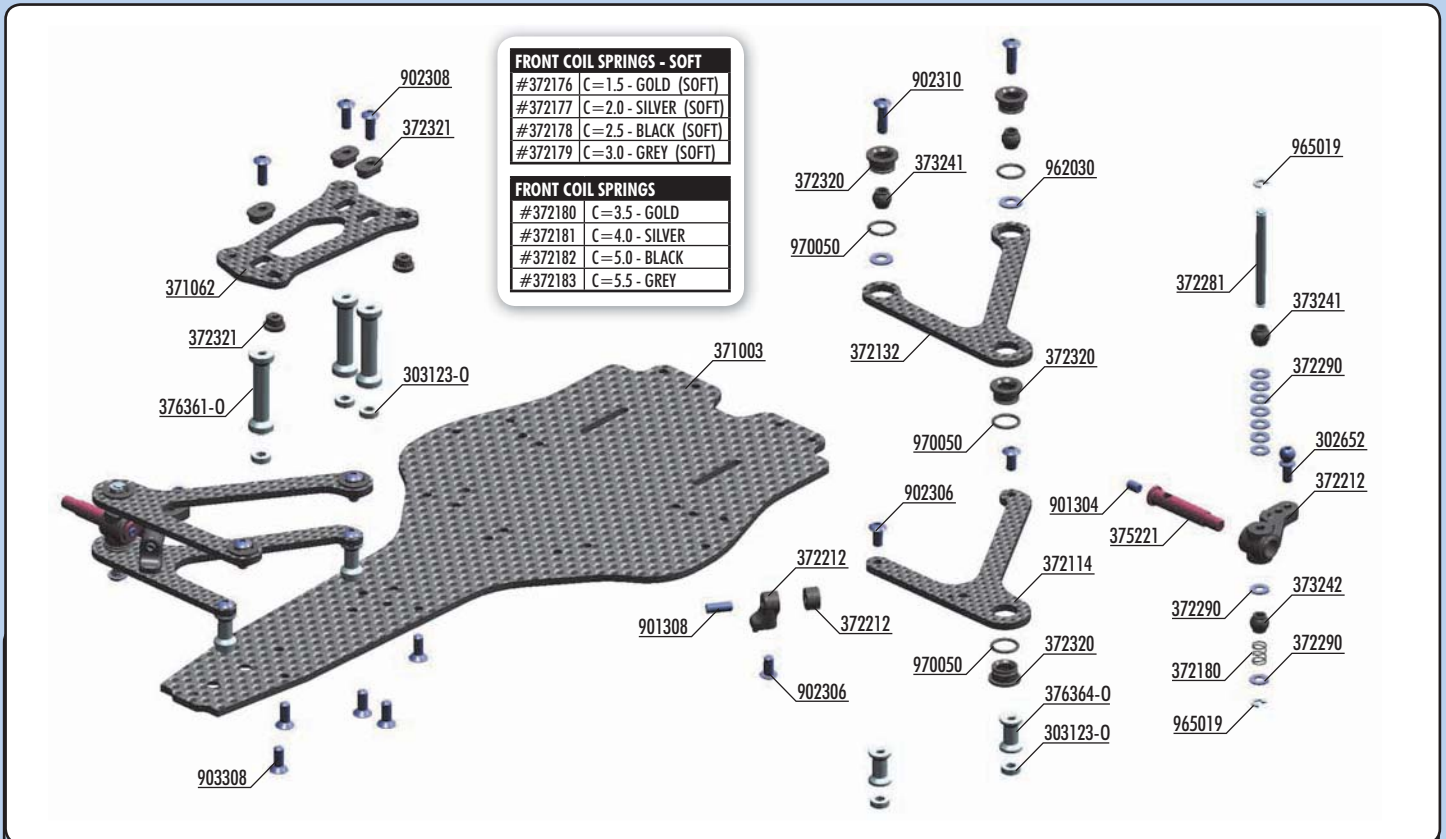
Do this for: chassis edges and countersunk holes.



DETAIL **BOTTOM FRONT**



1. FRONT SUSPENSION



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)

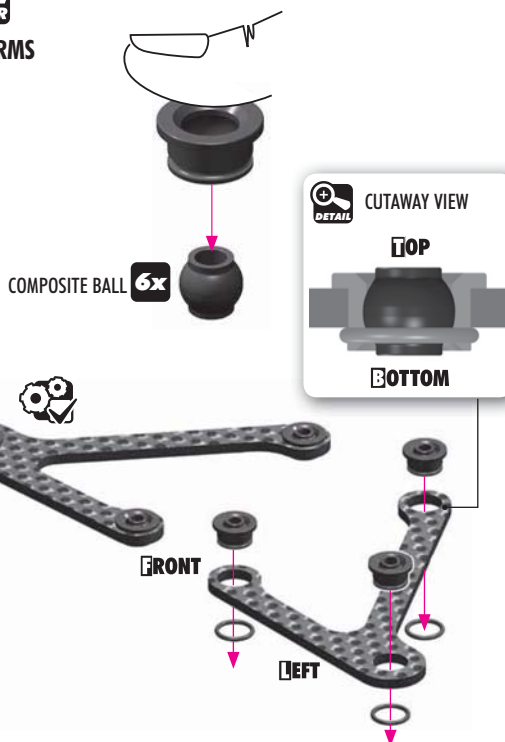
- 37 5221 X1 FRONT WHEEL AXLE - HUDY SPRING STEEL (2)
- 37 6361-0 ALU MOUNT 26.5MM - ORANGE (2)
- 37 6364-0 ALU MOUNT 10.8MM - ORANGE (2)
- 90 1304 HEX SCREW SB M3x4 (10)
- 90 1308 HEX SCREW SB M3x8 (10)
- 90 2306 HEX SCREW SH M3x6 (10)
- 90 2308 HEX SCREW SH M3x8 (10)
- 90 2310 HEX SCREW SH M3x10 (10)
- 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
O 5x1

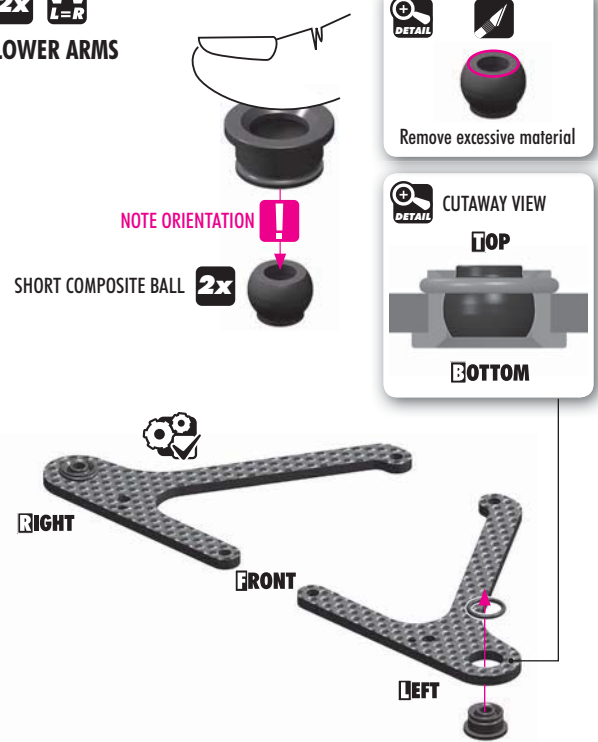
UPPER ARMS

6x L=R



LOWER ARMS

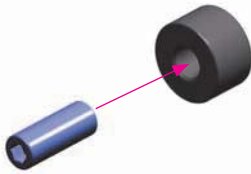
2x L=R



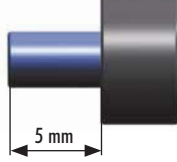
1. FRONT SUSPENSION

901308
SB M3x8

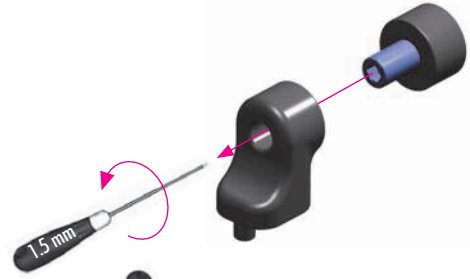
2x



DETAIL



2x

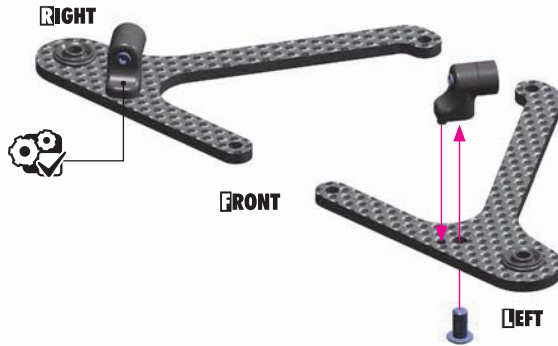


902306
SH M3x6

2x

L=R

LOWER ARMS



DETAIL



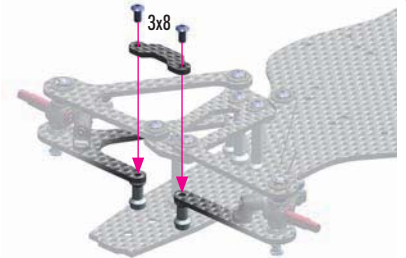
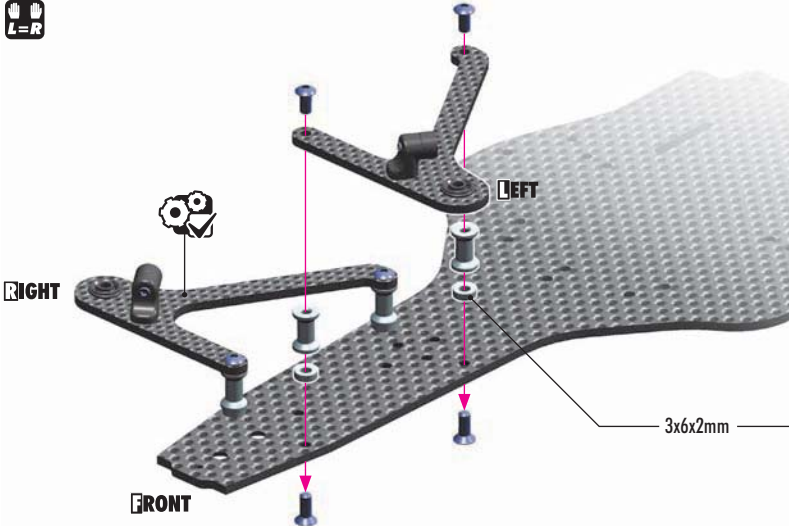
The adjustable backstops are used to limit the steering angle. Adjust the backstop with the set screw to achieve the maximum steering angle needed. Make sure to adjust the steering angle on BOTH sides to the same amount.

303123-0
SHIM 3x6x2

902306
SH M3x6

903308
SFH M3x8

L=R



OPTIONAL: #372087 X1 Graphite Front Arm Brace 2.5mm
The brace makes the car easier to drive. Recommended for high-traction conditions.

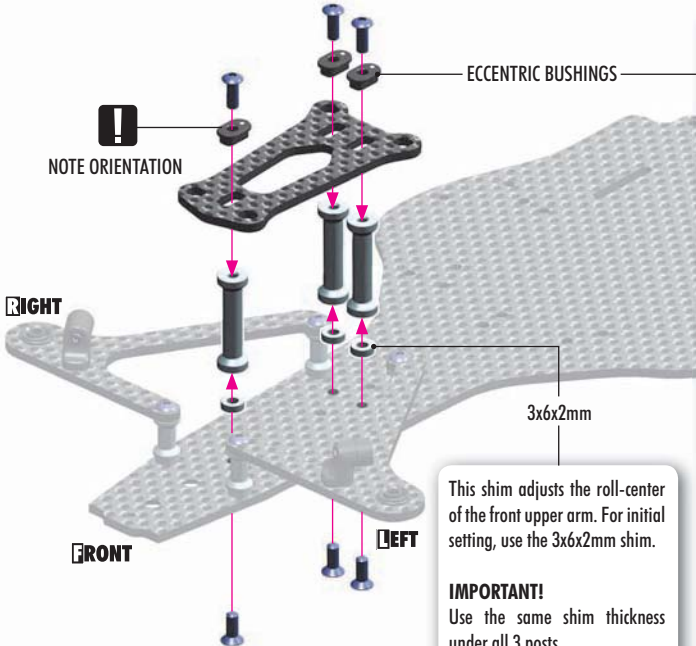
This shim adjusts the roll-center of the front bottom arm as well as the front ride height. The thickness of the shim depends on the tire diameter. For initial setting, use the 3x6x2mm shim. **IMPORTANT!** Use the same shim thickness under all 4 posts.

303123-0
SHIM 3x6x2

902308
SH M3x8

903308
SFH M3x8

L=R



IMPORTANT!

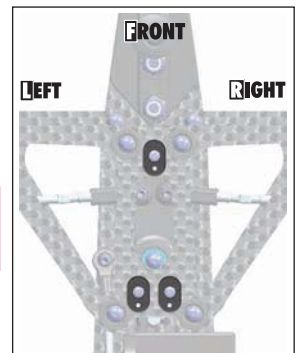
All three bushings **MUST** have same orientation. These bushings adjust the front **CASTER**:

3° CASTER

6° CASTER

INITIAL SETTING
9° CASTER

12° CASTER



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.

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



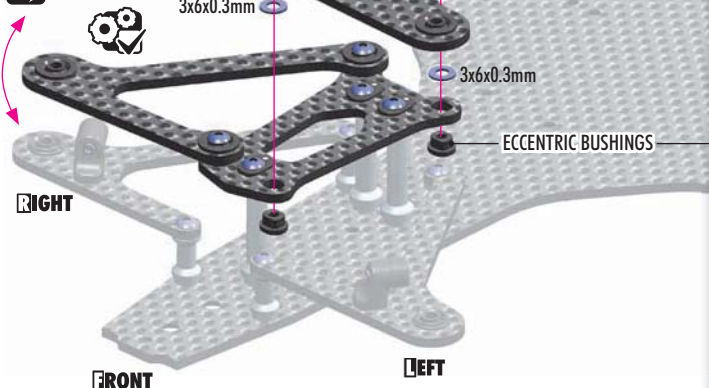
902310
SH M3x10



962030
S 3x6x0.3



FREE
MOVEMENT



! IMPORTANT!

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

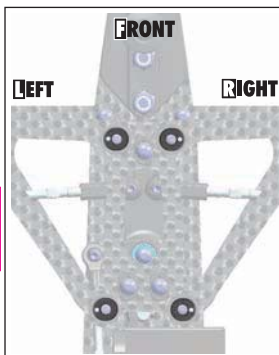
● ● = 1.0° CAMBER

● ● = 1.5° CAMBER

● ● = 2.0° CAMBER

● ● = 2.5° CAMBER

INITIAL SETTING



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.

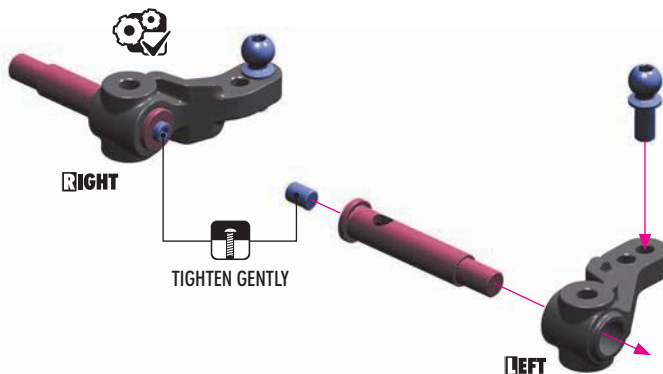
Use **LESS** camber angle for carpet and other high-traction tracks.

Use **MORE** camber on asphalt and low-traction tracks.



901304
SB M3x4

2x



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

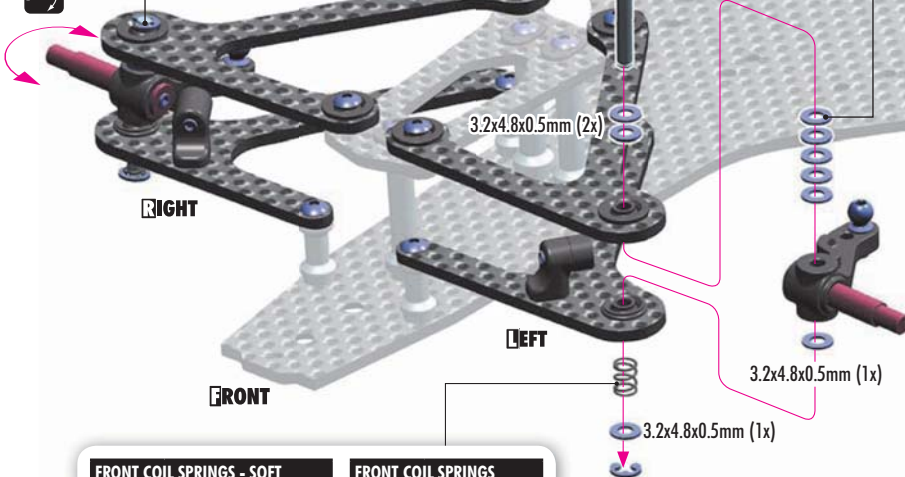


372290
SHIM 3.2x4.8x0.5

2x



FREE
MOVEMENT



DRIVERS USE HUDY
SILICONE OIL

LOW traction & bumpy track

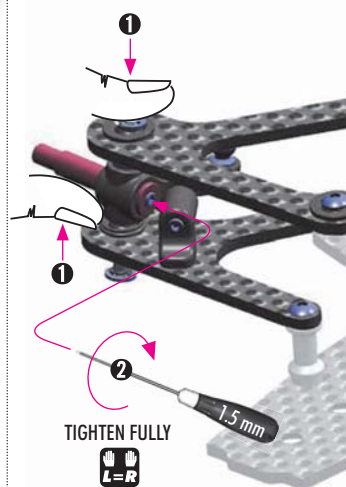
10K cSt (#106510 HUDY)

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.

2x

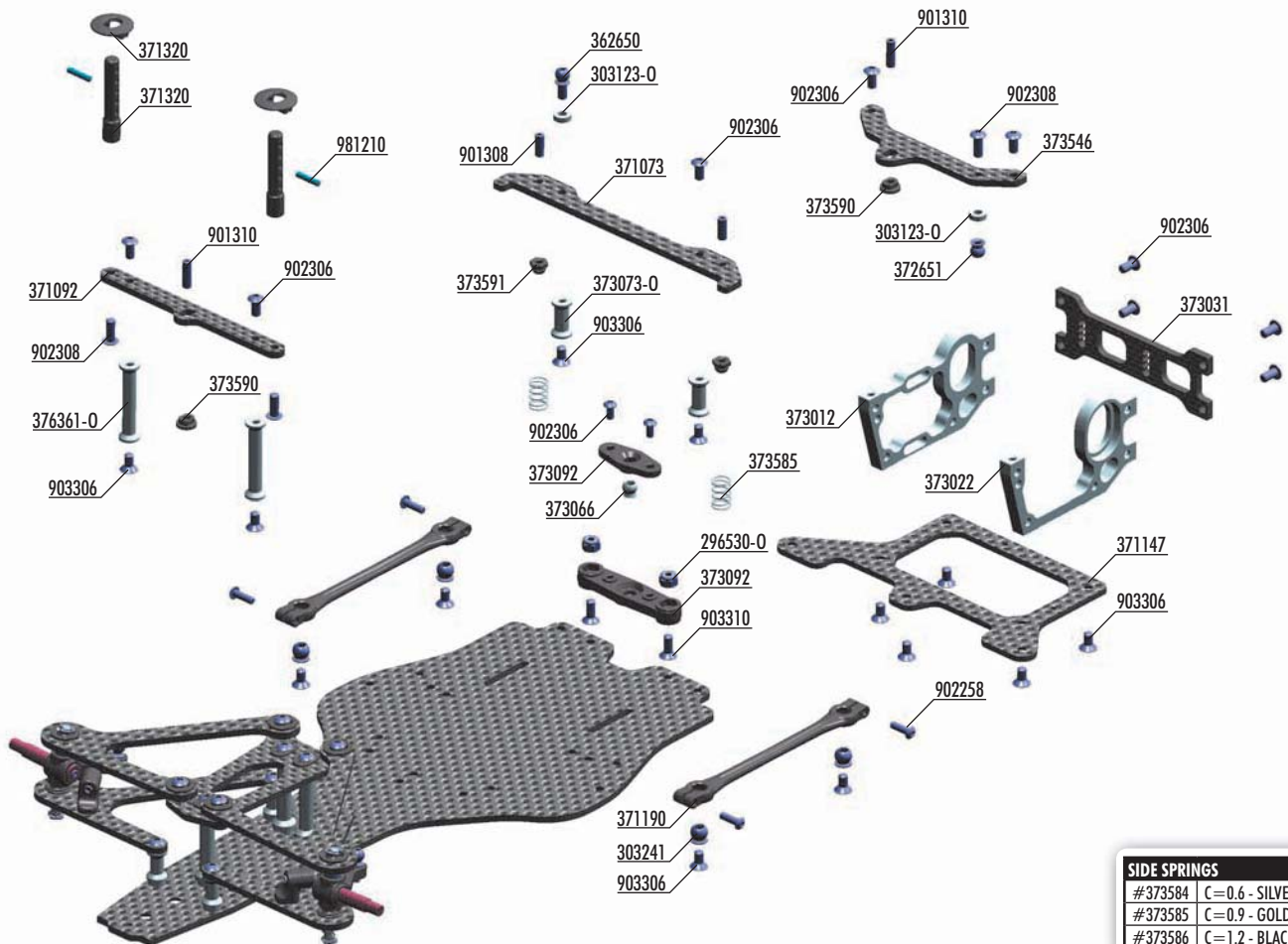


FRONT COIL SPRINGS - SOFT	
#372176	C=1.5 - GOLD (SOFT)
#372177	C=2.0 - SILVER (SOFT)
#372178	C=2.5 - BLACK (SOFT)
#372179	C=3.0 - GREY (SOFT)

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

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

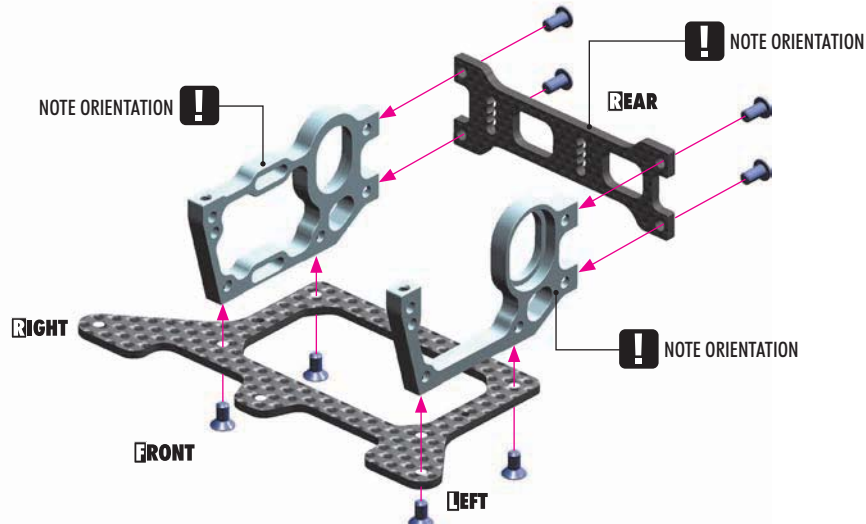


BAG

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)

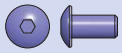
- 37 3590 COMPOSITE SPRING HOLDER & NUT (2+1)
- 37 3591 COMPOSITE SIDE SPRING HOLDER (2)
- 37 6361-0 ALU MOUNT 26.5MM - ORANGE (2)
- 29 6530-0 ALU NUT M3 - ORANGE (10)
- 90 1308 HEX SCREW SB M3x8 (10)
- 90 1310 HEX SCREW SB M3x10 (10)
- 90 2258 HEX SCREW SH M2.5x8 (10)
- 90 2306 HEX SCREW SH M3x6 (10)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



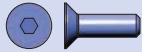
2. REAR SUSPENSION



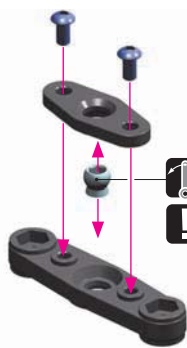
296530-0
ALU N M3



902306
SH M3x6



903310
SFH M3x10



Ensure free, smooth movement without excessive freeplay.



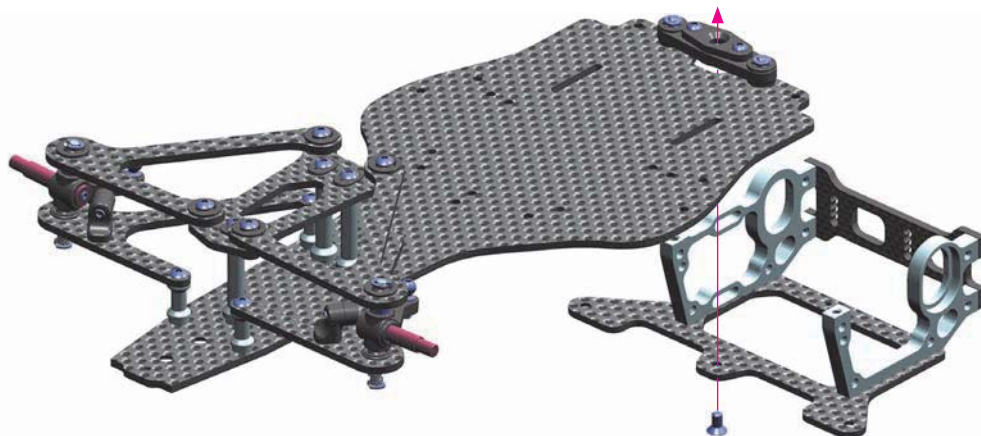
TIP
Gently scuff the bottom of the composite lower pivot brace on sandpaper to make the surface slightly rough. This will help the lower pivot brace to grip the chassis surface better.



DO NOT TIGHTEN FULLY



903306
SFH M3x6

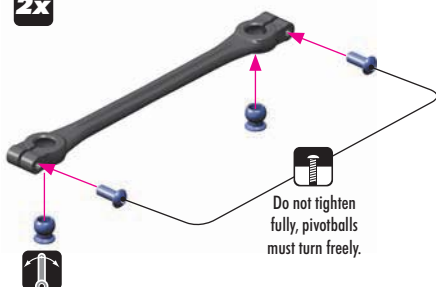


902258
SH M2.5x8



903306
SFH M3x6

2x

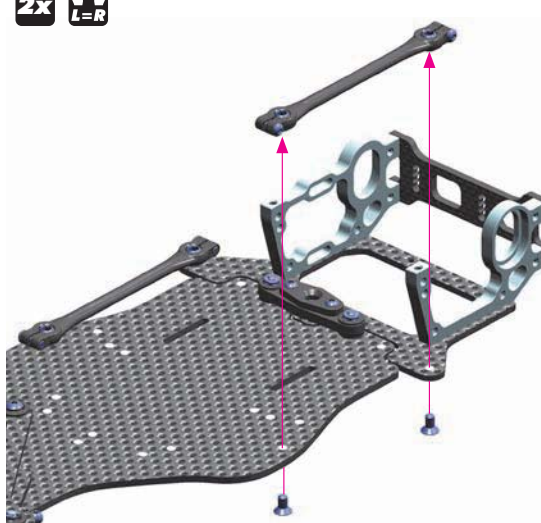


Do not tighten fully, pivotballs must turn freely.



2x

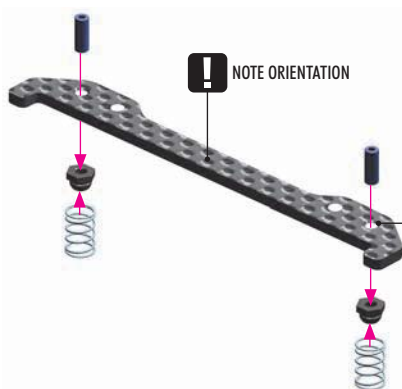
L=R



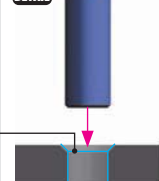
TIGHTEN FULLY



901308
SB M3x8



NOTE ORIENTATION



NOTE ORIENTATION



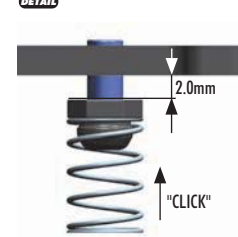
Make sure both side springs are tightened equally, to avoid unwanted tweak.

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.



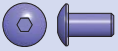
2.0mm

"CLICK"

2. REAR SUSPENSION



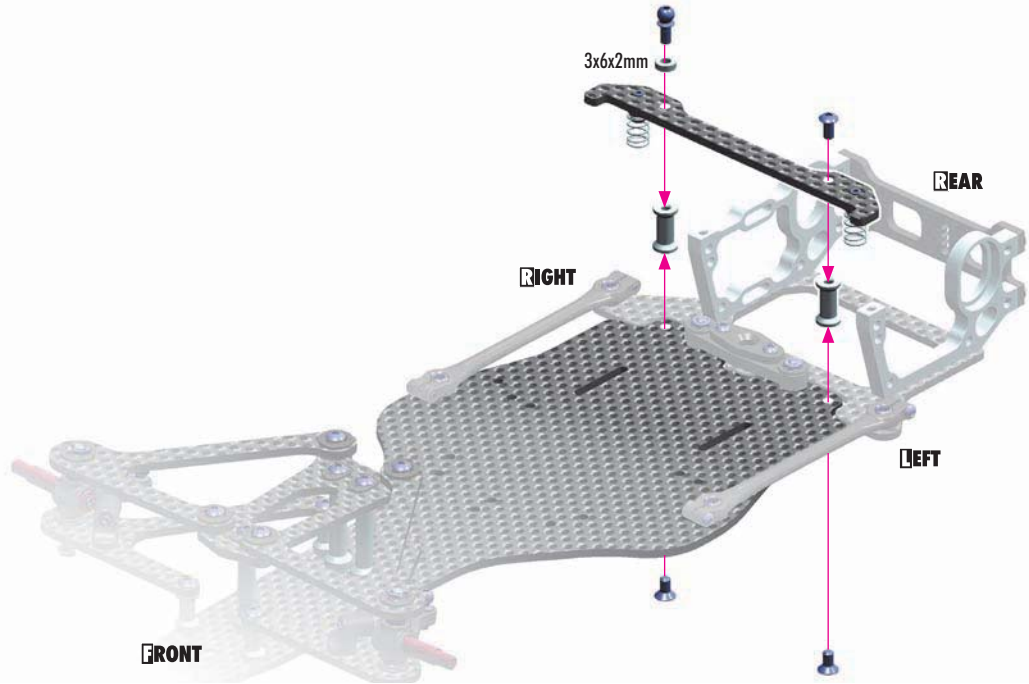
303123-0
SHIM 3x6x2



902306
SH M3x6



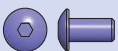
903306
SFH M3x6



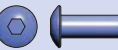
303123-0
SHIM 3x6x2



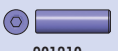
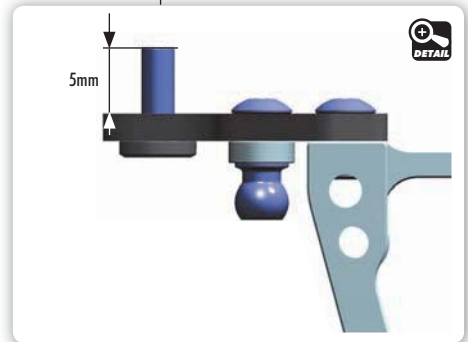
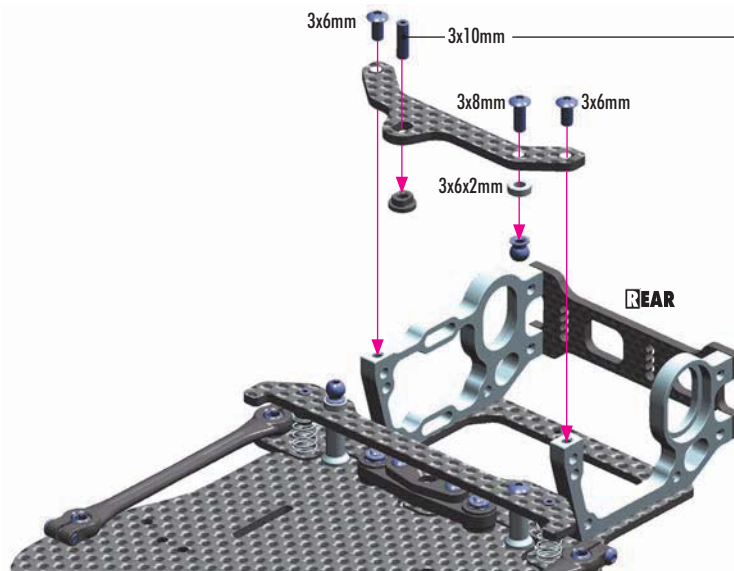
901310
SB M3x10



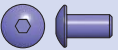
902306
SH M3x6



902308
SH M3x8



901310
SB M3x10



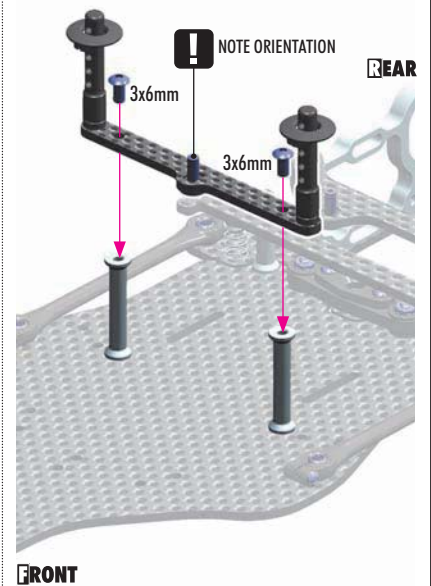
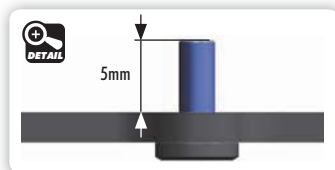
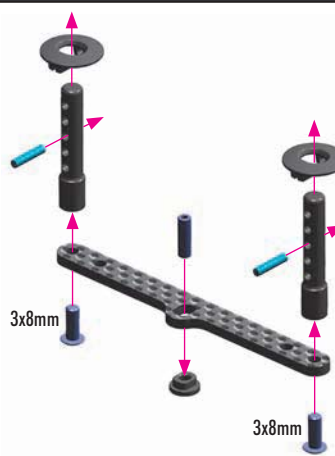
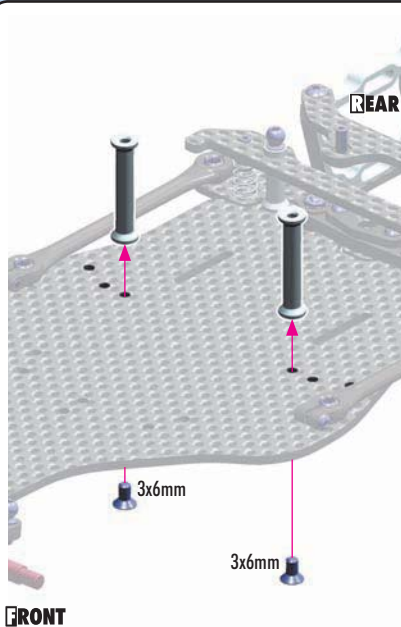
902306
SH M3x6



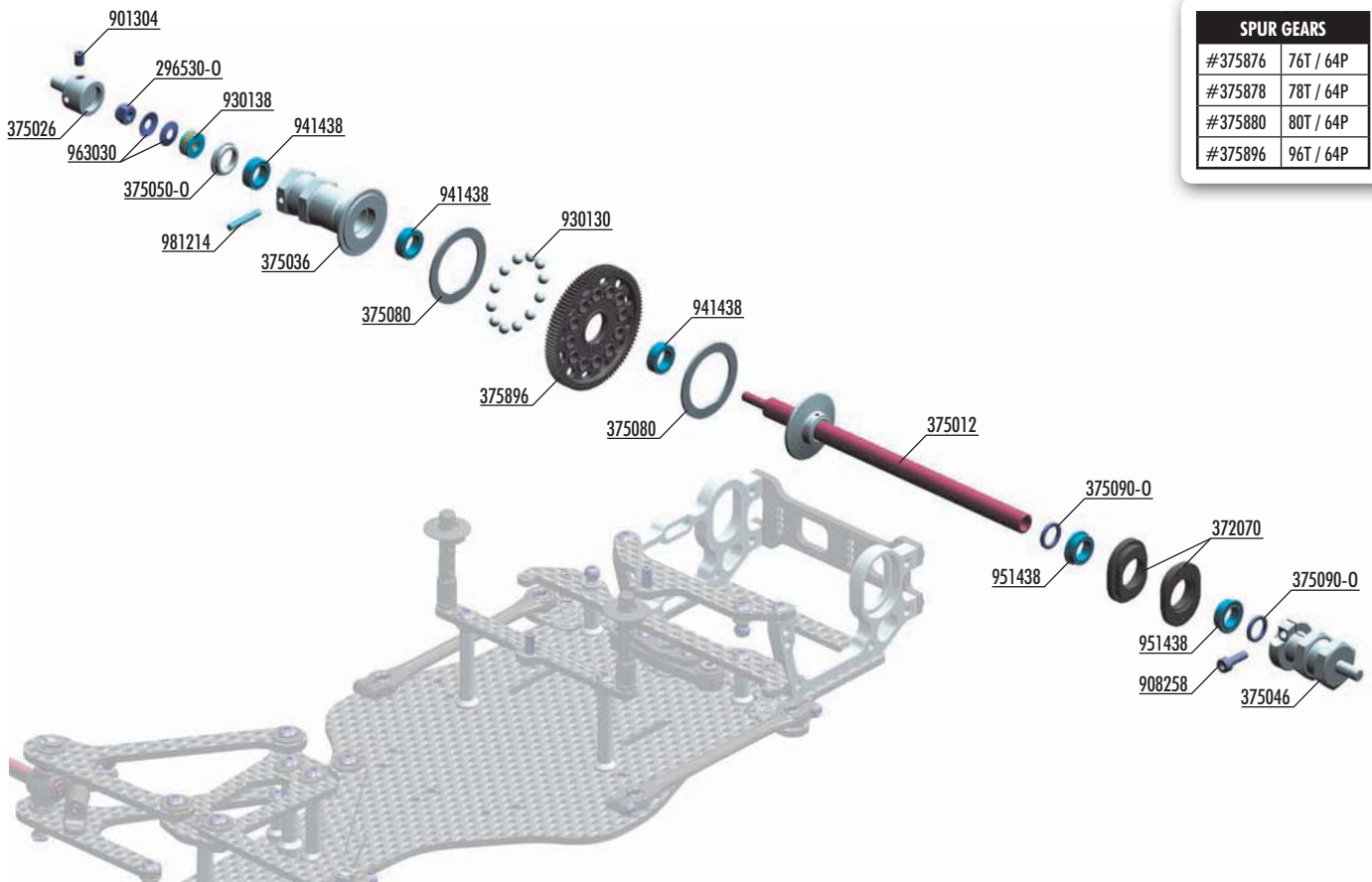
902308
SH M3x8



903306
SFH M3x6



3. BALL DIFFERENTIAL



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

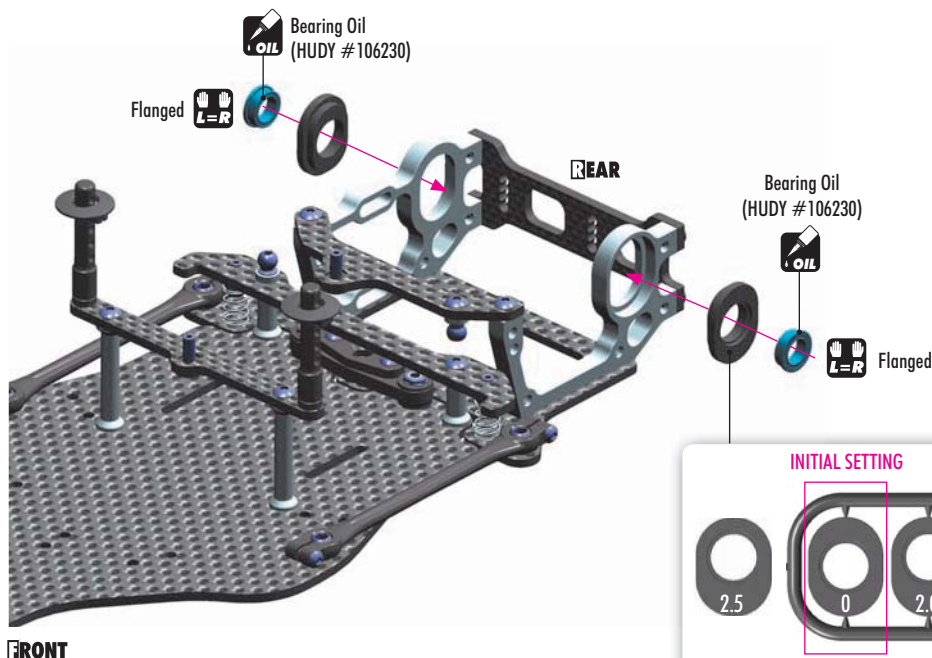
BAG

03

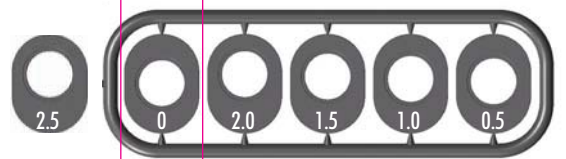
- | | | | |
|-----------|--|-----------|--|
| 37 2070 | COMPOSITE RIDE HEIGHT ADJUSTER SET - V2 (2) | 29 6530-0 | ALU NUT M3 - ORANGE (10) |
| 37 5012 | STEEL REAR AXLE SHAFT - HUDY SPRING STEEL™ | 90 1304 | HEX SCREW SB M3x4 (10) |
| 37 5026 | X1 ALU REAR DRIVE AXLE - RIGHT | 90 8258 | HEX SCREW SOCKET 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) |



951438
BB 1/4" x 3/8" x 1/8"



INITIAL SETTING



These eccentric bushings adjust the **RIDE HEIGHT** of the rear pod.
Make sure to use the **SAME** eccentric bushings on **BOTH** sides.

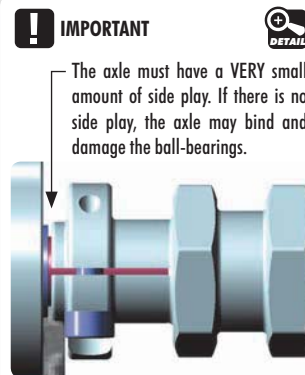
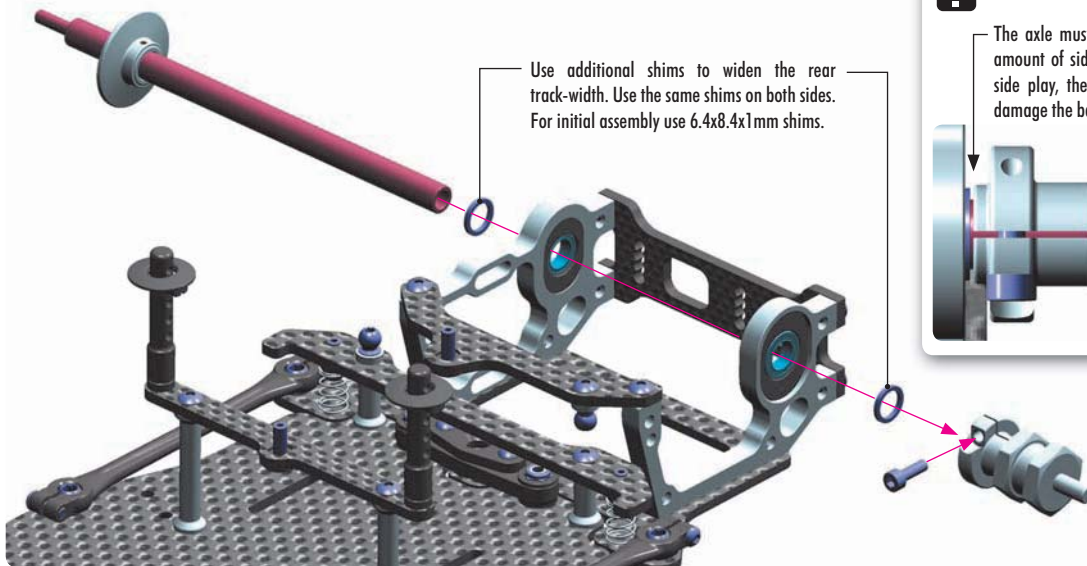
3. BALL DIFFERENTIAL



375090-0
SHIM 6.4x8.4x1.0



908258
SCH M2.5x8



930130
B 3.1



930138
BA 3x8



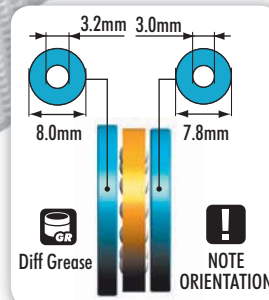
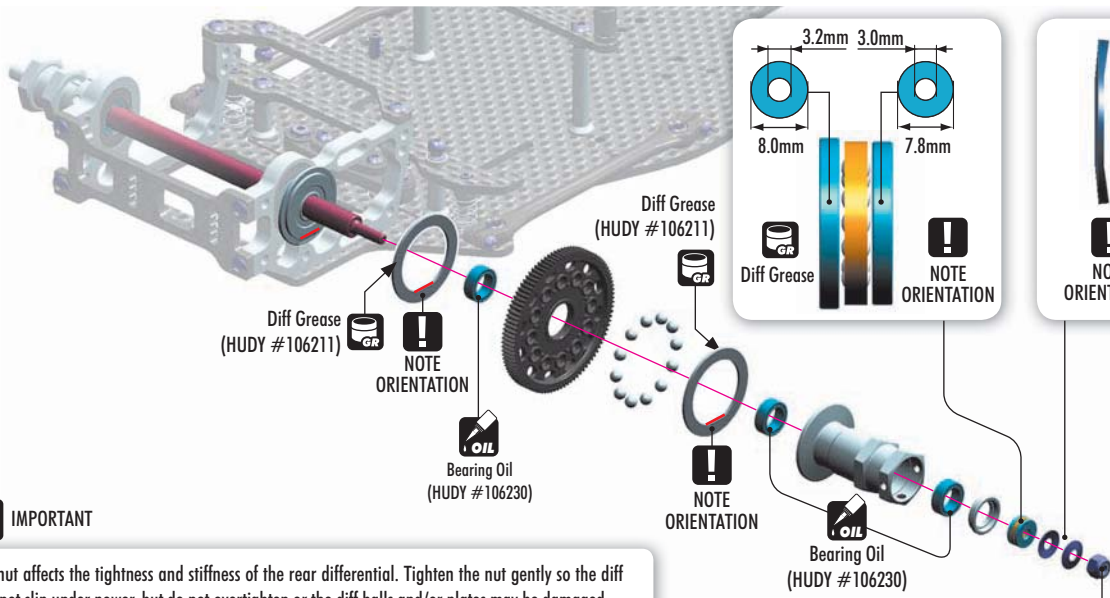
941438
BB 1/4"x3/8"x1/8"



296530-0
ALU N M3



963030
ST 3x8



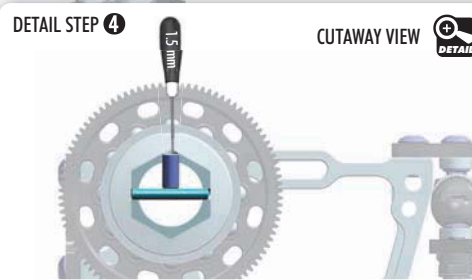
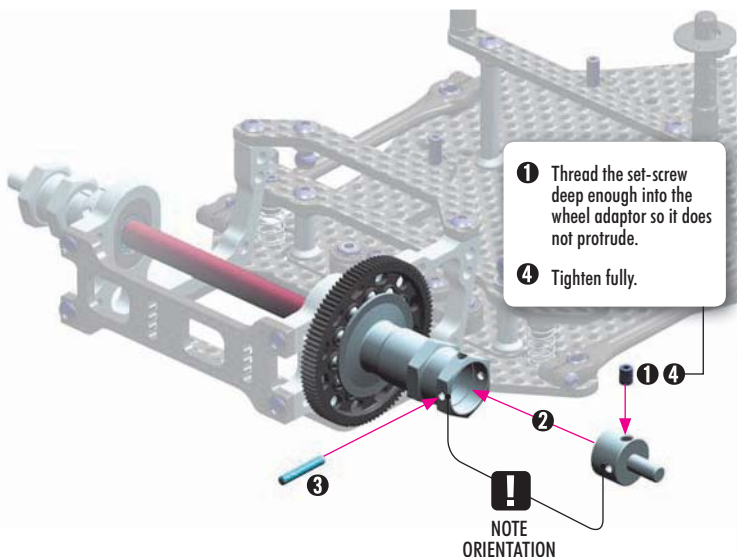
This nut affects the tightness and stiffness of the rear differential. Tighten the nut gently so the diff does not slip under power, but do not overtighten or the diff balls and/or plates may be damaged.



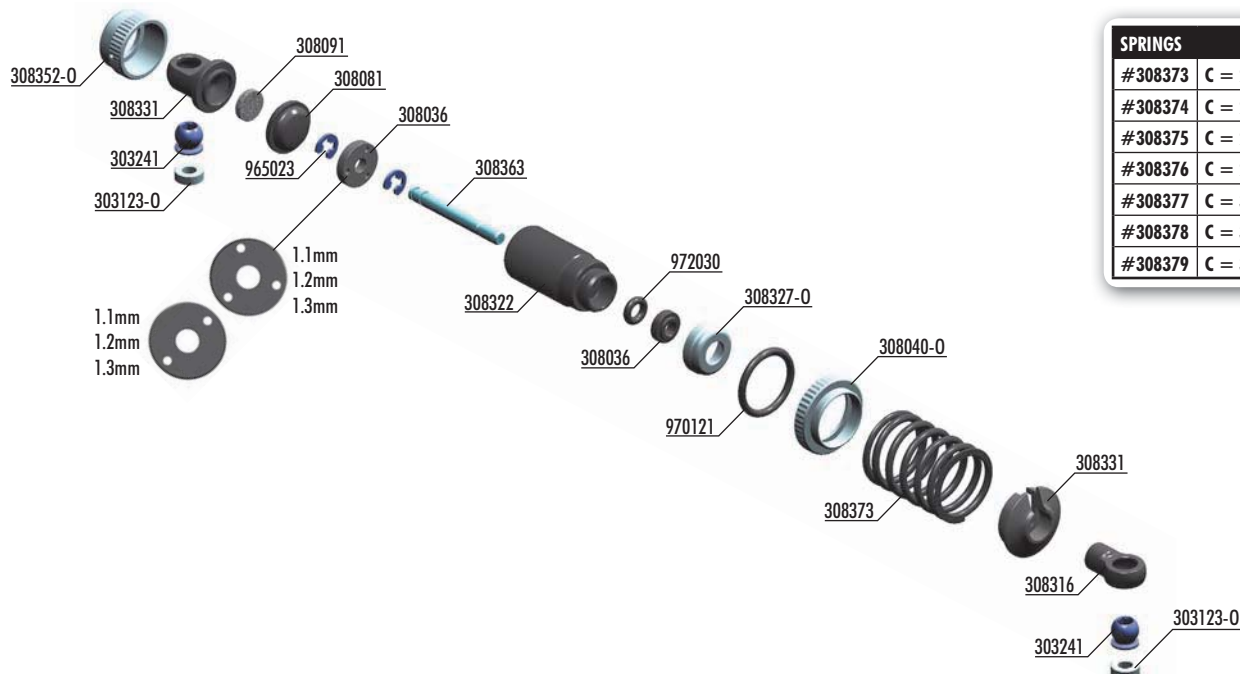
901304
SB M3x4



981214
P 2x14



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

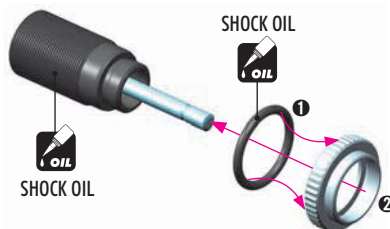
3 HOLE (1.2mm)



970121
O 12.1x1.6



SHOCK OIL



SHOCK OIL

SHOCK OIL



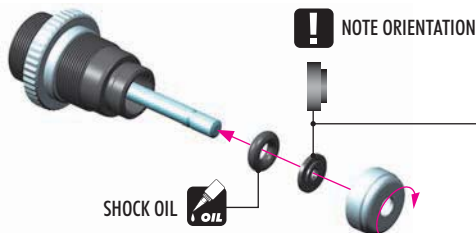
CUTAWAY VIEW



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

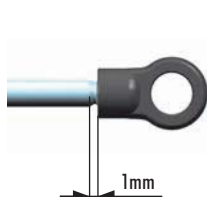
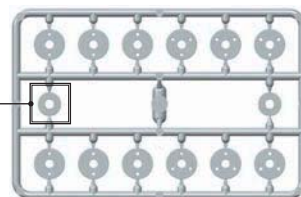


972030
O 3x2



SHOCK OIL

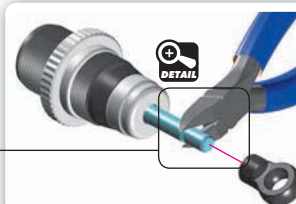
NOTE ORIENTATION



INCORRECT X



CORRECT ✓



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.

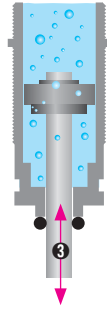
4. CENTER SHOCK



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.

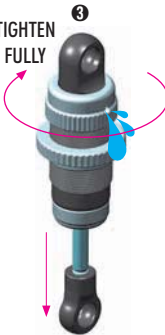
Follow the next procedure to adjust the rebound.

REBOUND ADJUSTMENT

RELEASE
2-3 turns



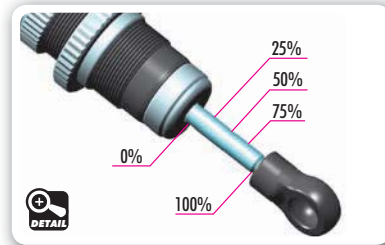
TIGHTEN
FULLY



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.

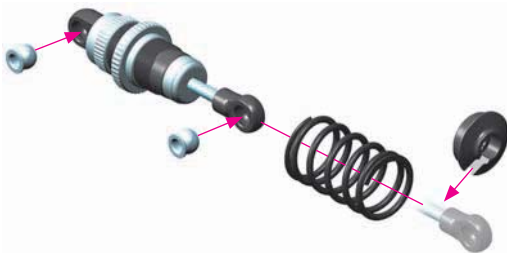
REBOUND CHECK



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.

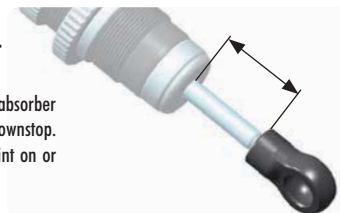
- 100% rebound - repeat step 2 and 3 two - three times
- 75% rebound - repeat step 2 and 3 until the shock shaft will push out 75% of its length
- 50% rebound - repeat step 2 and 3 until the shock shaft will push out 50% of its length
- 25% rebound - repeat step 2 and 3 until the shock shaft will push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



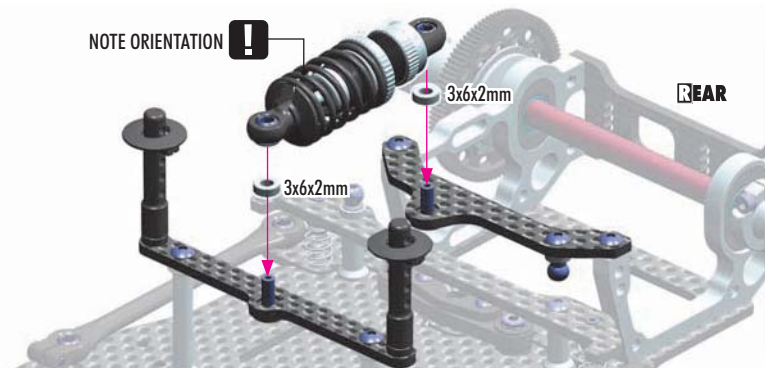
DOWNSTOP ADJUSTMENT

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

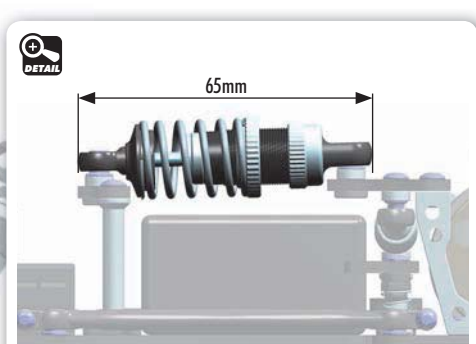


303123-0
SHIM 3x6x2

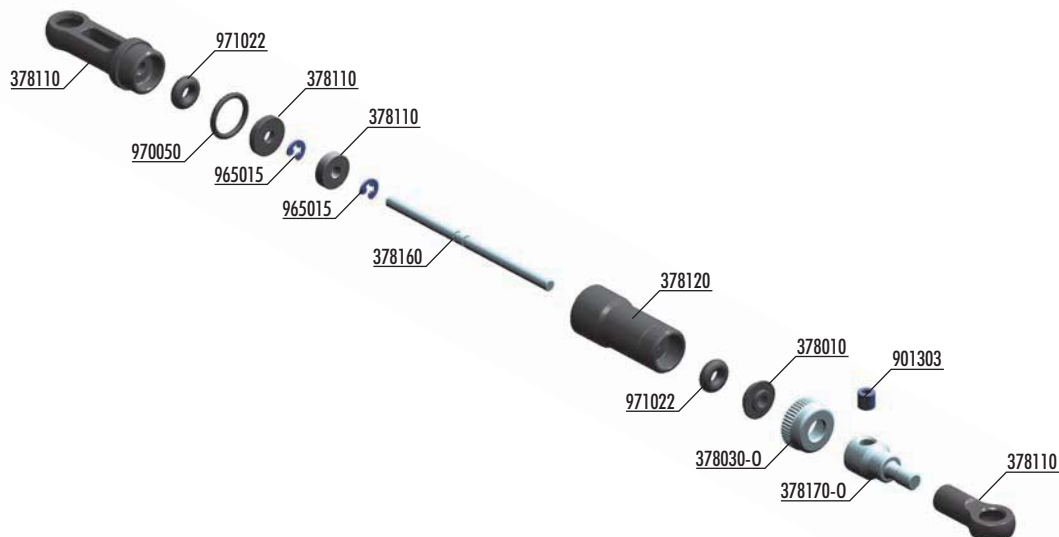
NOTE ORIENTATION



REAR



4. SIDE SHOCK



BAG

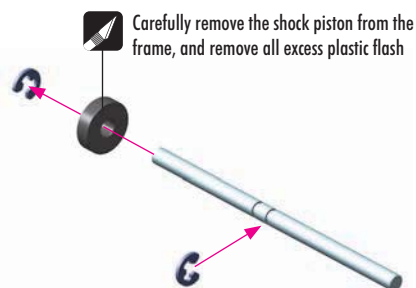
04.1

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

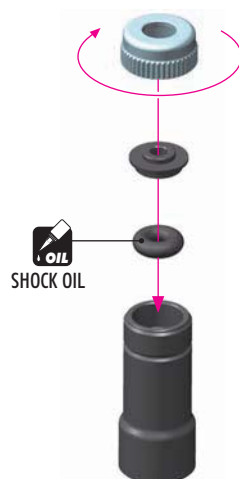
37 8170-0 ALU SIDE SHOCK COLLAR - ORANGE
90 1303 HEX SCREW SB M3x3 (10)
96 5015 E-CLIP 1.5 (10)
97 0050 O-RING 5x1 (10)
97 1022 SILICONE O-RING 2x2 (10)

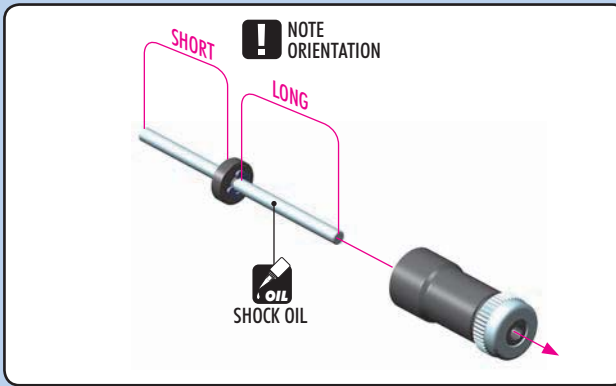


965015
C1.5



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.

HUDY 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.



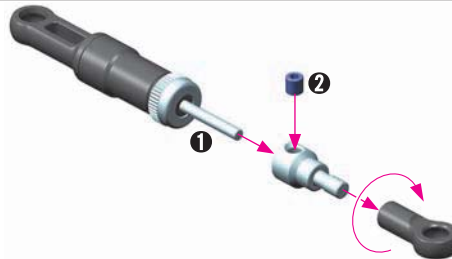
1 Install the 5x1 O-ring onto the shock shim.
2 Place the shock shim (with O-ring) into the shock body
3 Insert the 2x2 O-ring into the shock cap.
4 Install the shock cap.



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



901303
SB M3x3



NOTE ORIENTATION

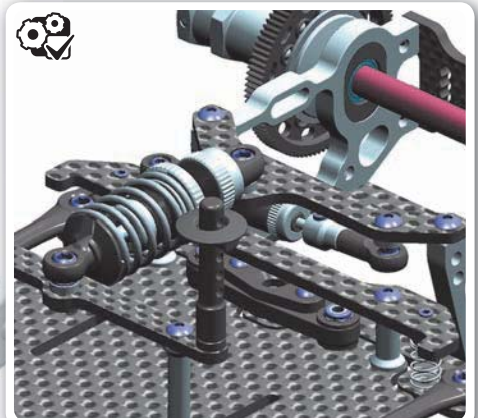
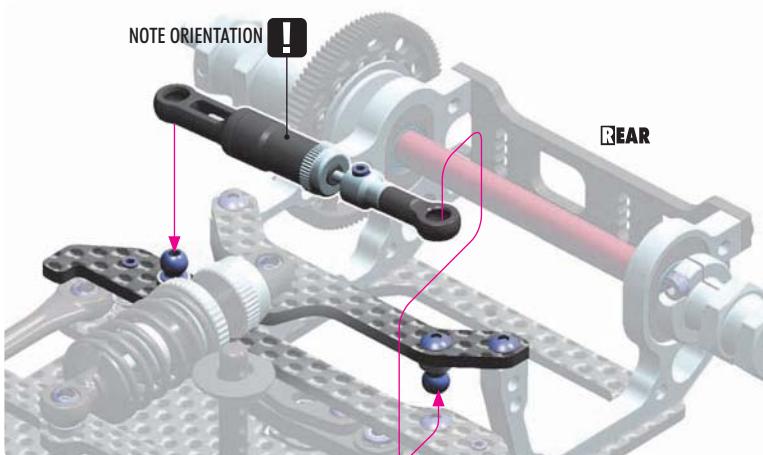
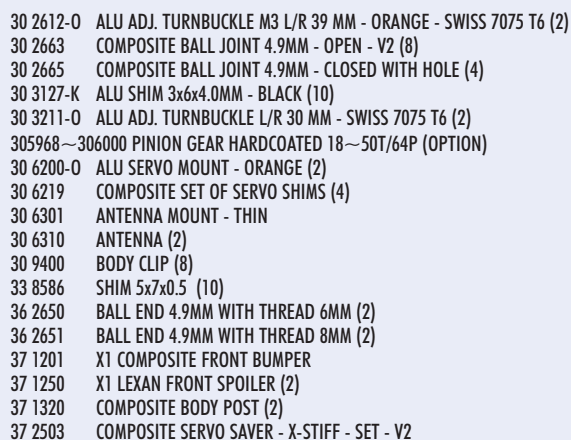


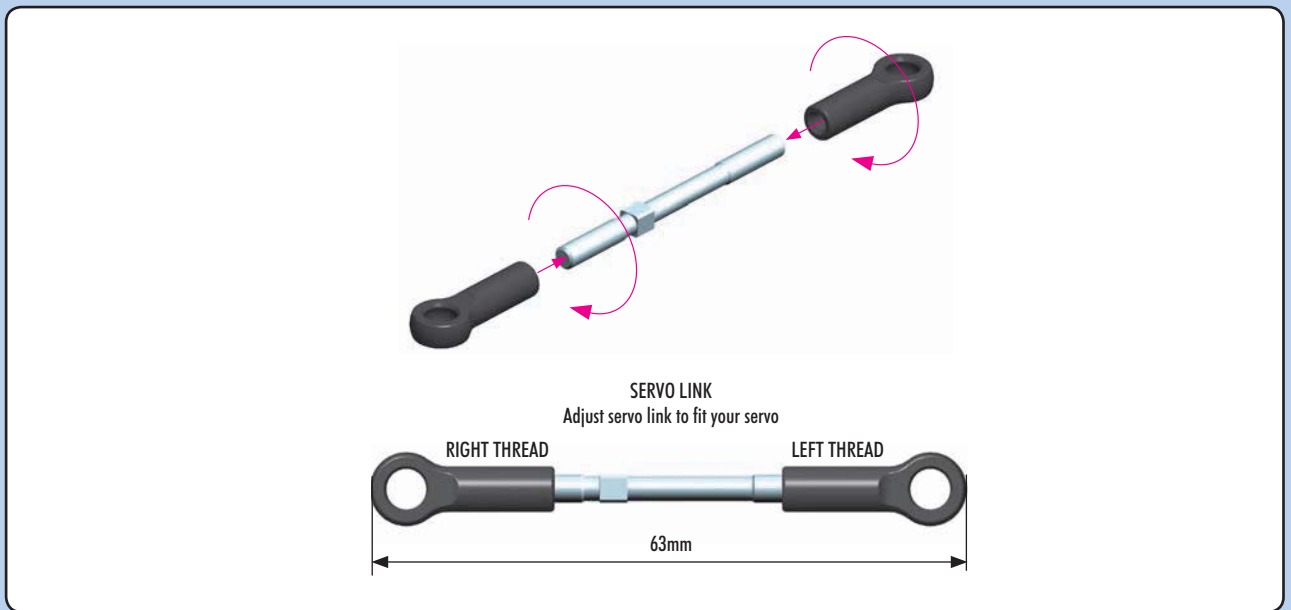
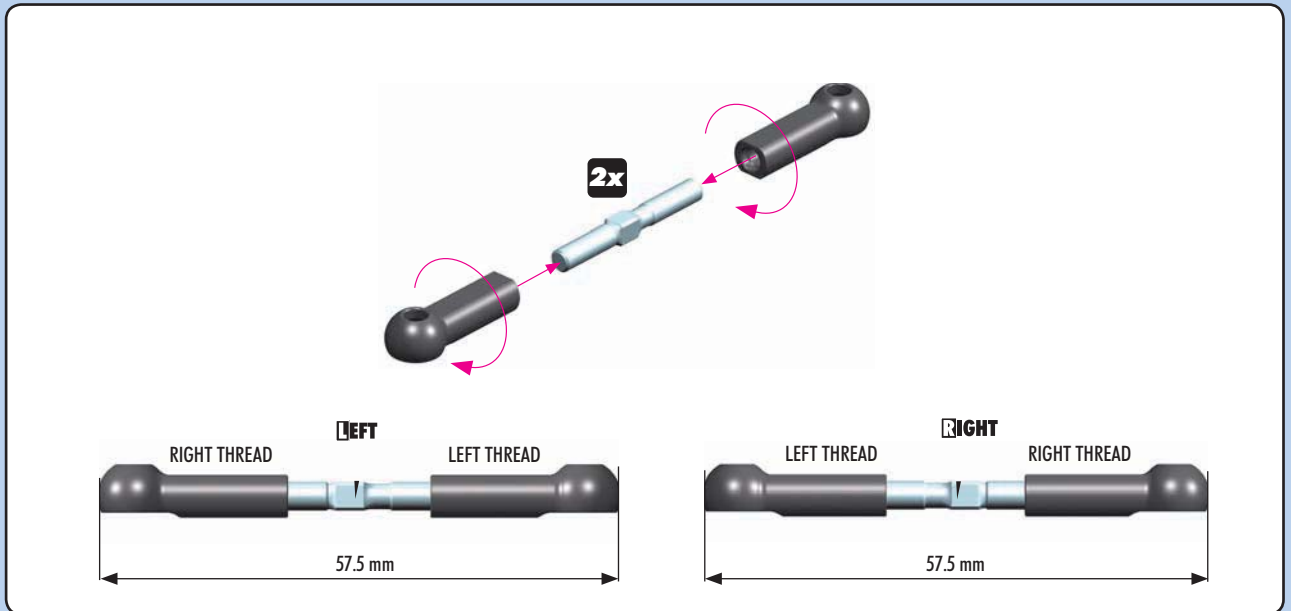
Diagram illustrating the assembly of a LEGO Technic Formula 1 car chassis, showing various components and their assembly points. The diagram includes the following labeled parts:

- STEERING SERVO (not included)**
- MOTOR (not included)**
- 305968~306000 (not included)**
- 306200-0**
- 902306**
- 903306**
- 302665**
- 303211-0**
- 362651**
- 306310**
- 306301**
- 903308**
- 303127-K**
- 940508**
- 372540**
- 372550-0**
- 903306**
- 371320**
- 371320**
- 309400**
- 981210**
- 306219**
- 902310**
- LiPo BATTERY (not included)**
- 306260-0**
- 302663**
- 302612-0**
- 362650**
- 372503**
- 372503**
- 372503**
- FROM SERVO**
- 373511-K**
- 902308**
- 376364-0**
- 902306**
- 309400**
- WHEELS & TIRES (not included)**
- 960040**
- RECEIVER (not included)**
- 379700**
- 903306**
- 940510**
- 960040**
- WHEELS & TIRES (not included)**
- 960040**
- 338586**
- 940510**
- 371250**
- 371201**
- 902205**
- 960040**
- 903412**
- SPEED CONTROLLER (not included)**



- 

5. FINAL ASSEMBLY



303127-K
SHIM 3x6x4



902306
SH M3x6



940508
BB 5x8x2.5

These shims adjust the horizontal angle of the steering linkages.

When thicker shims are used here, in-corner steering increases, but the car becomes more difficult to drive.



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.



There are two Ackermann positions on the steering arm.

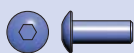
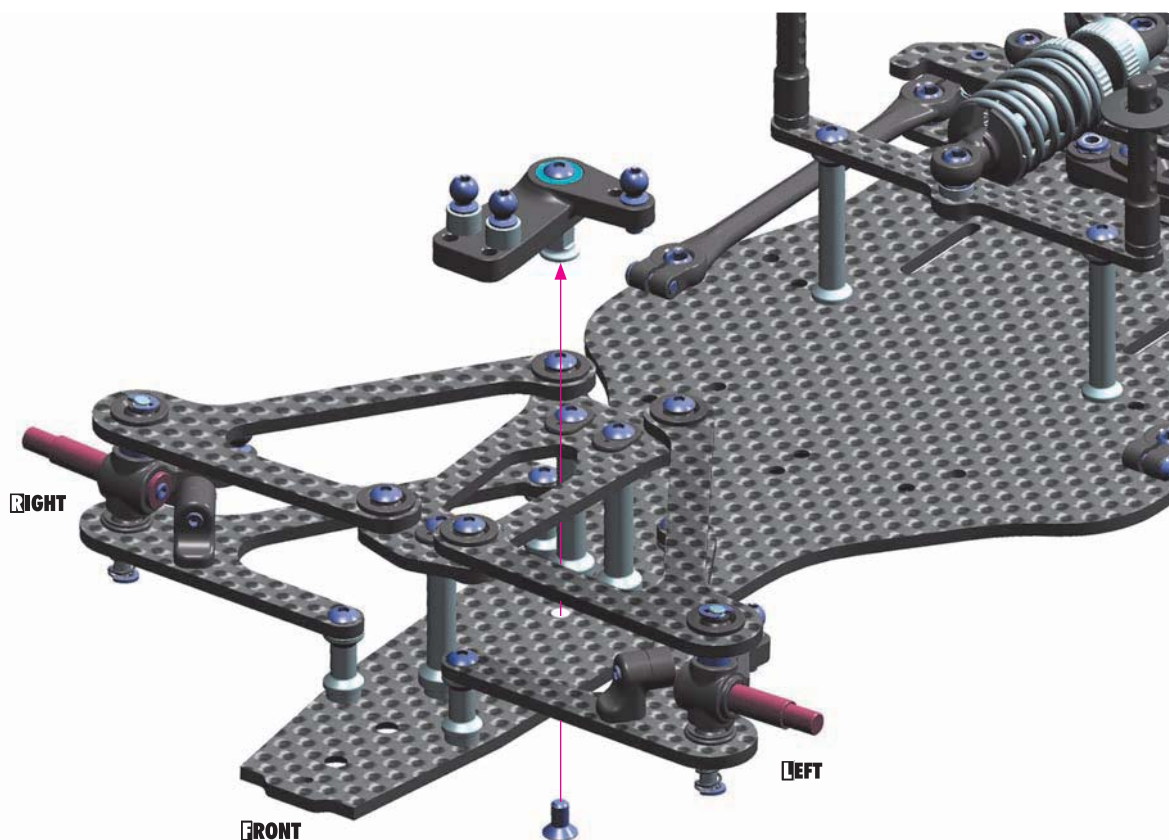
INNER position: Less Ackermann, makes the car more responsive, improves in-corner steering.

OUTER position: More Ackermann, makes the car easier to drive, improves cornering speed.

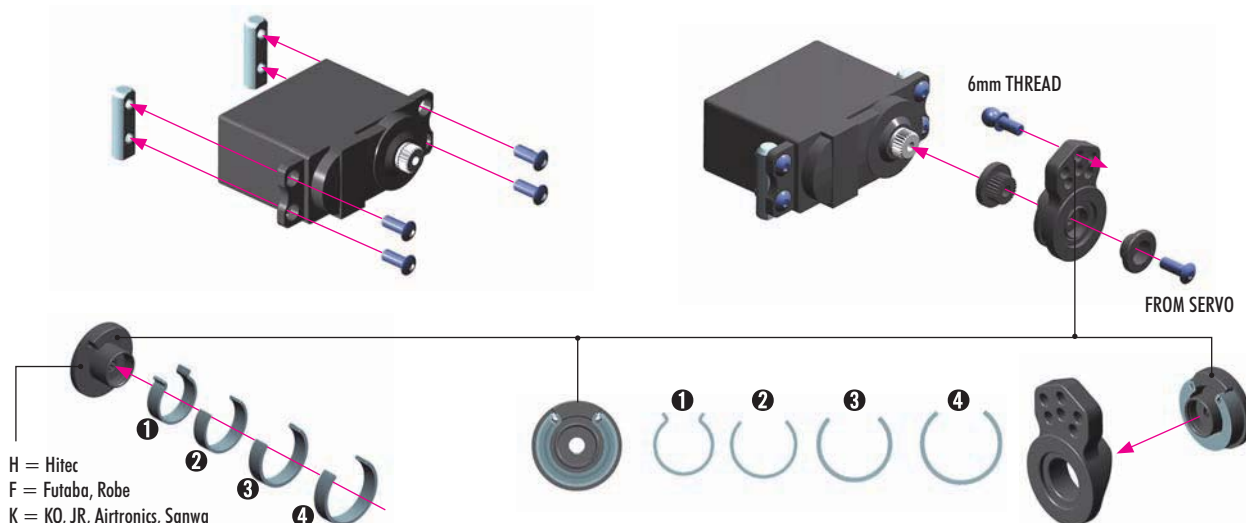
5. FINAL ASSEMBLY



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, Airtr. - OFFSET - 23T
#293492	Hitec - OFFSET - 24T
#293493	Futaba - OFFSET - 25T



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



INITIAL SETTING



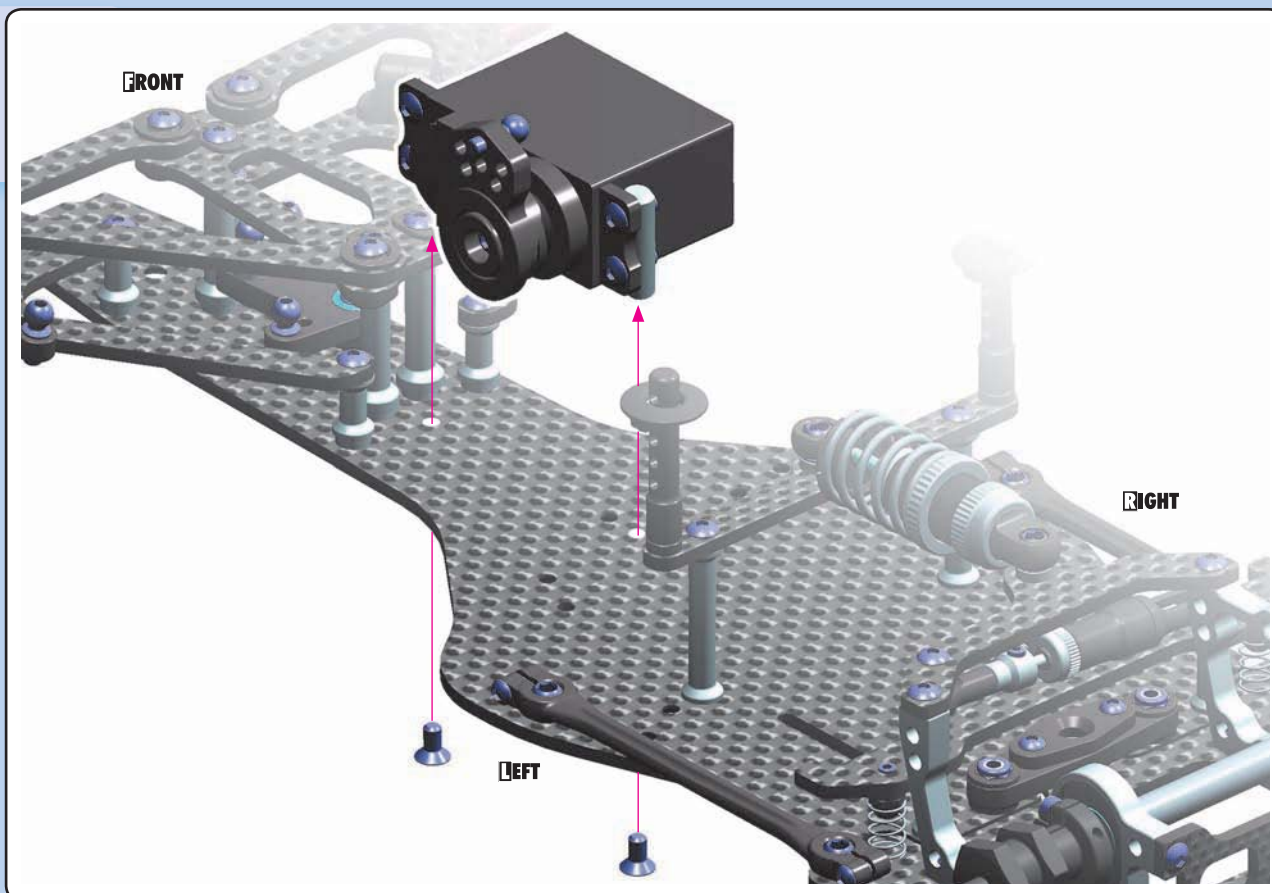
IMPORTANT!

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

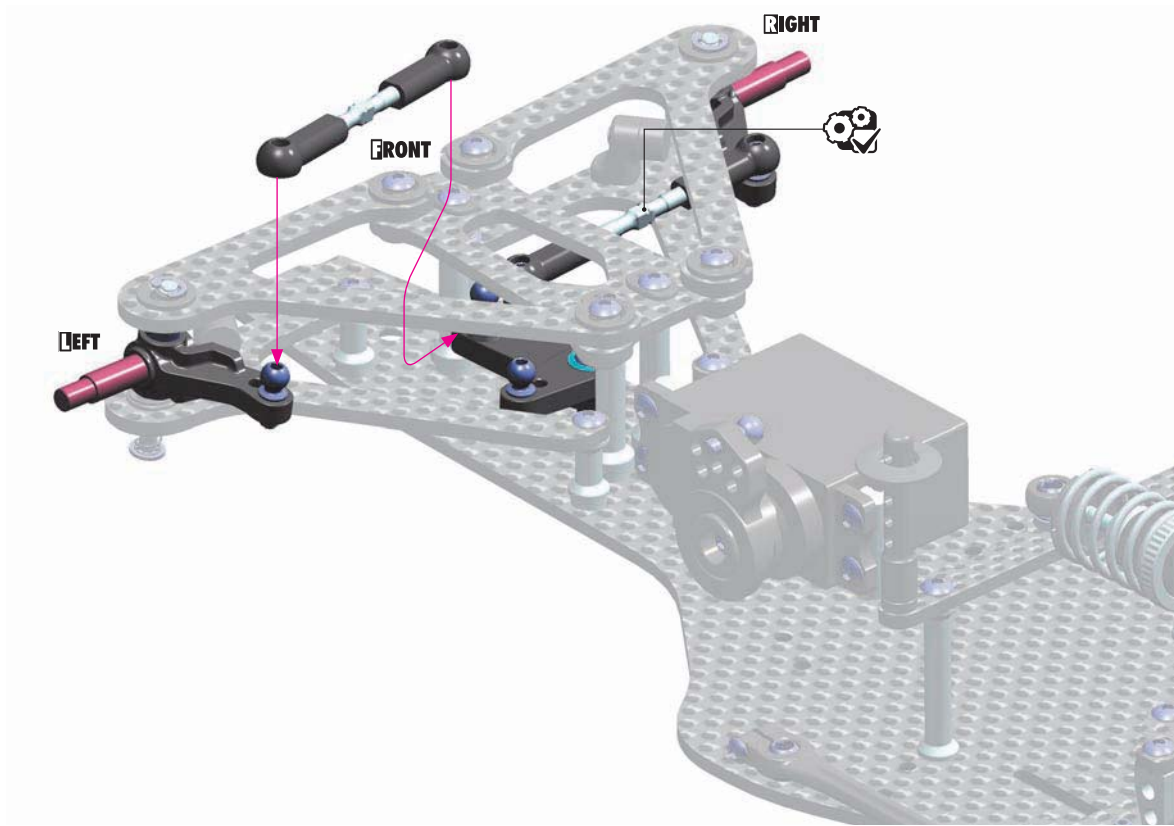
5. FINAL ASSEMBLY



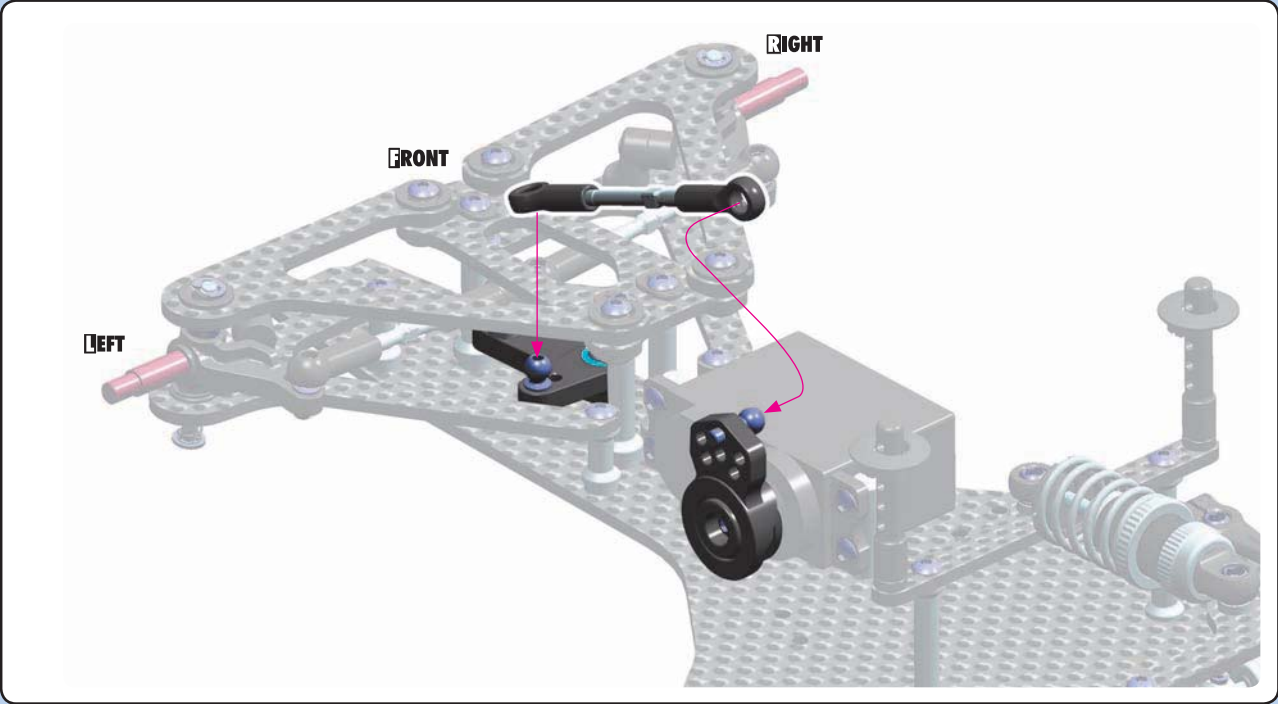
903306
SFH M3x6



2x L=R



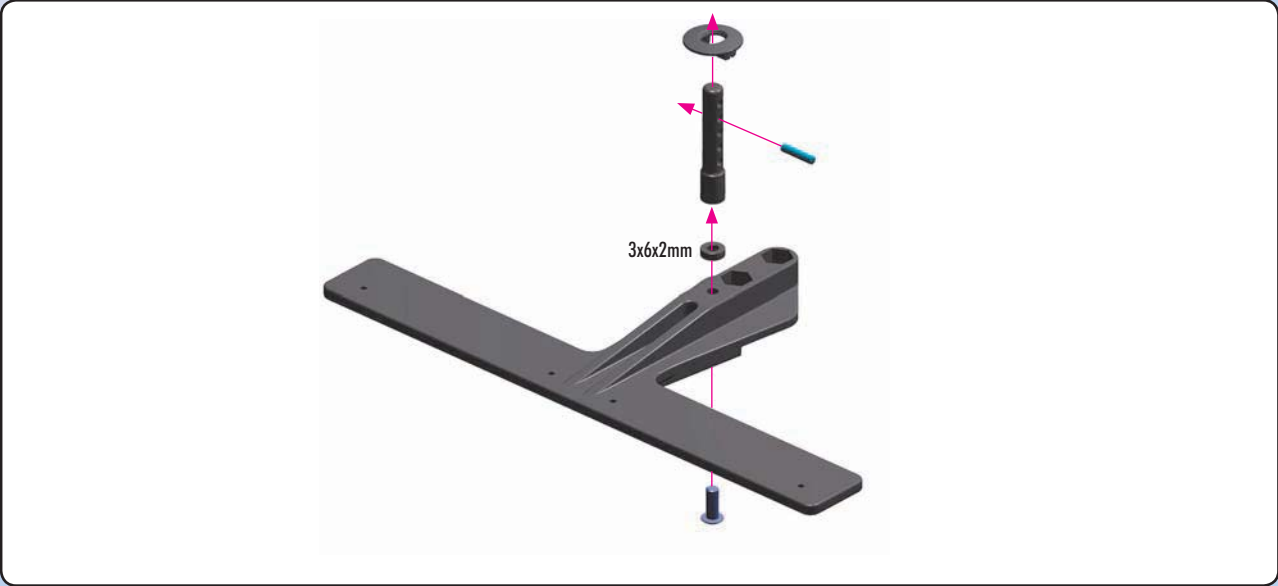
5. FINAL ASSEMBLY



10
306219
SHIM 3x6x2

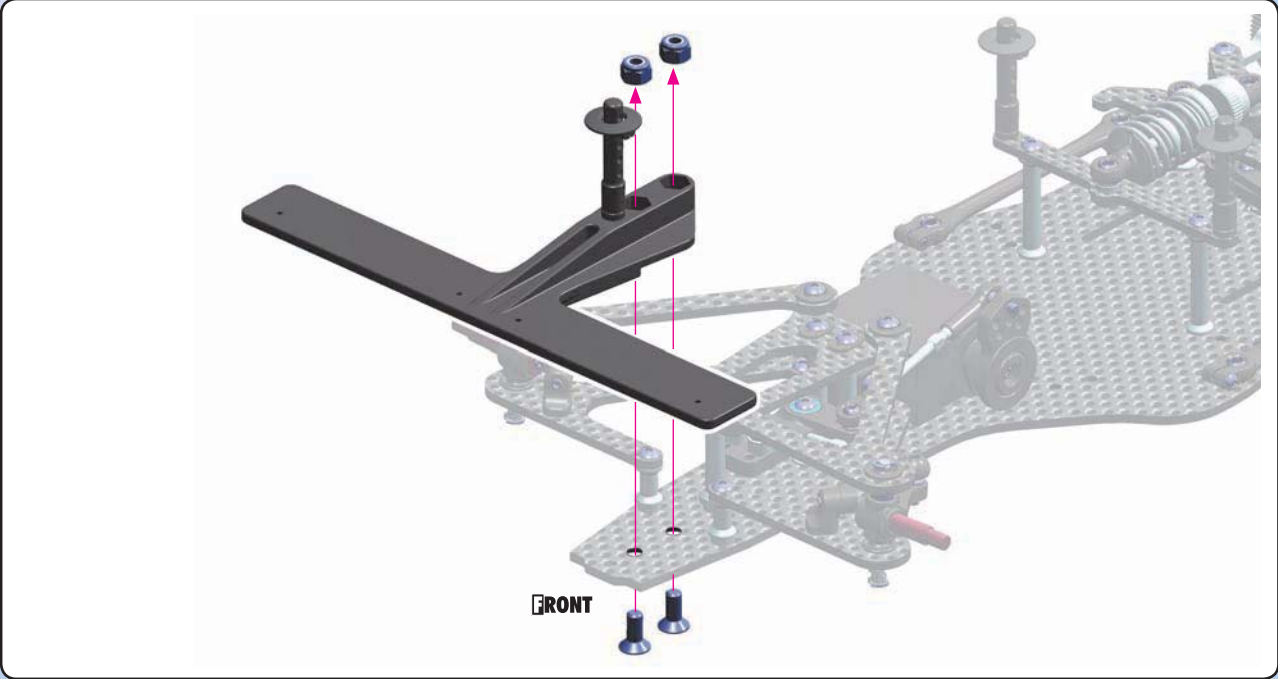

902310
SH M3x10


981210
P 2x10

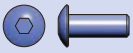



903412
SFH M4x12


960040
N M4



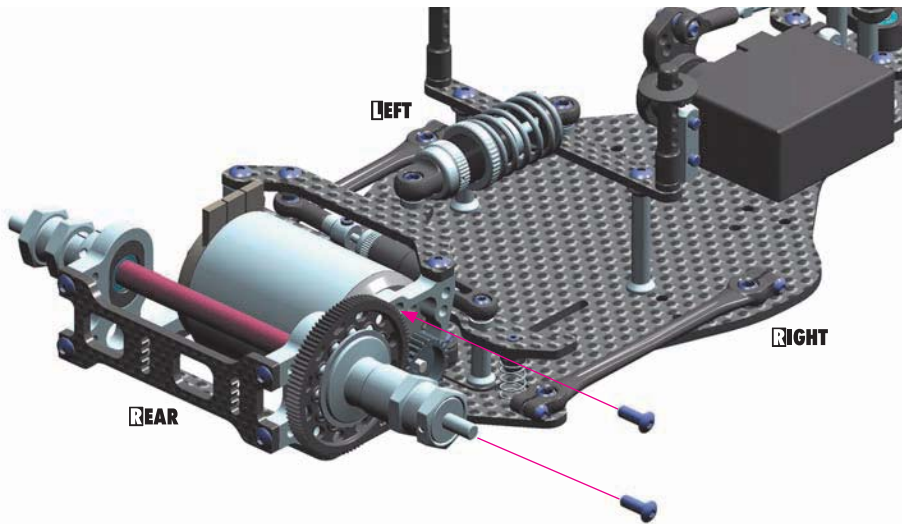
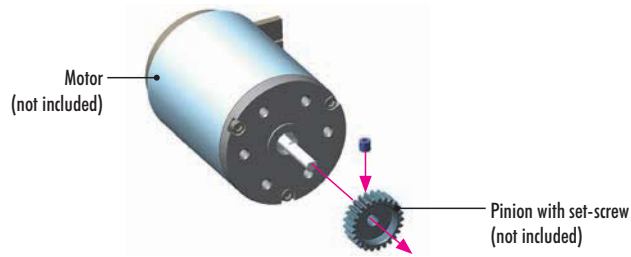
5. FINAL ASSEMBLY



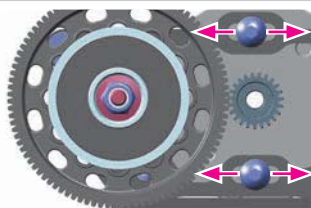
902308
SH M 3x8



901302
SB M3x2.5

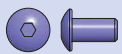


Adjust the gear mesh so there is appropriate space between the spur gear and pinion teeth. There should be a very small amount of freeplay.

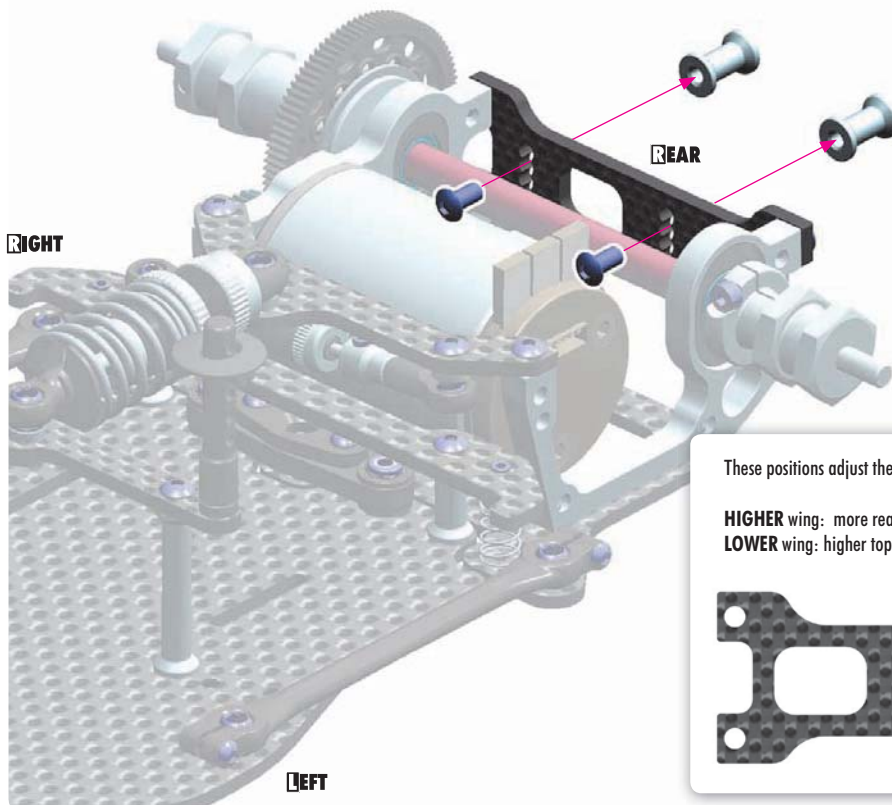


PINION GEARS ALU HARDCOATED

#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

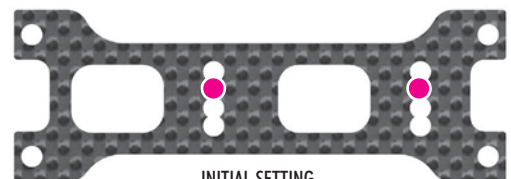


These positions adjust the **HEIGHT** of the rear wing.



HIGHER wing: more rear traction, more stability

LOWER wing: higher top speed improves, improved steering response

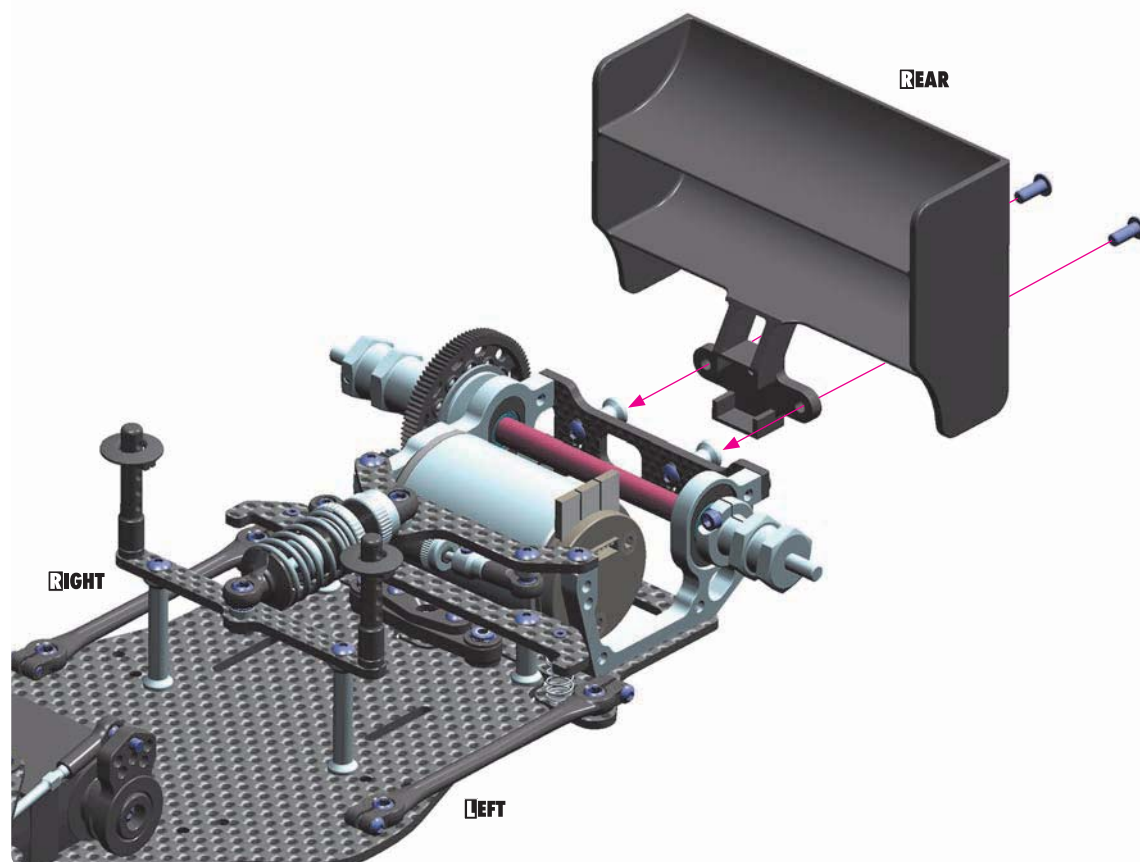


INITIAL SETTING

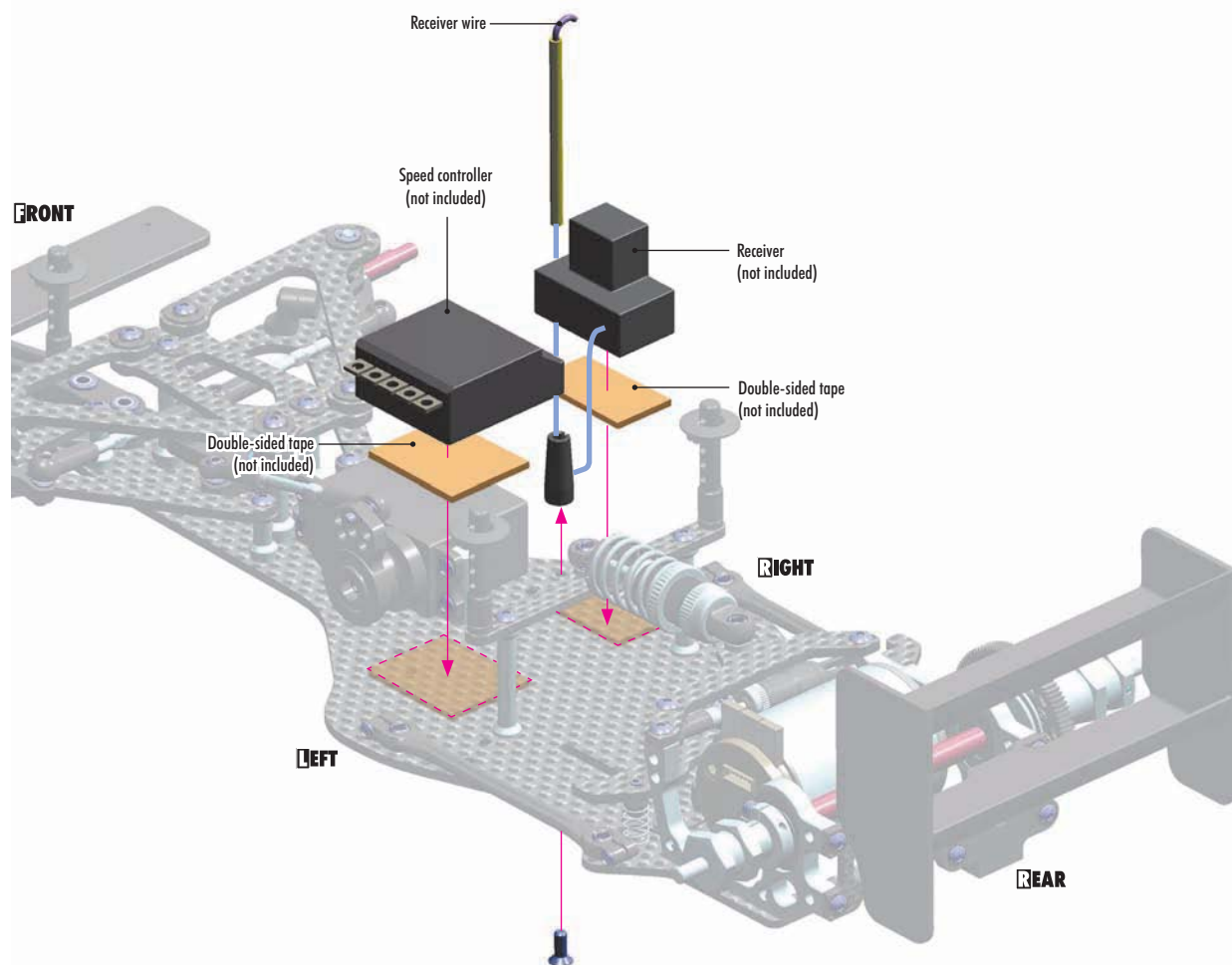
5. FINAL ASSEMBLY



902308
SH M3x8



903308
SFH M3x8



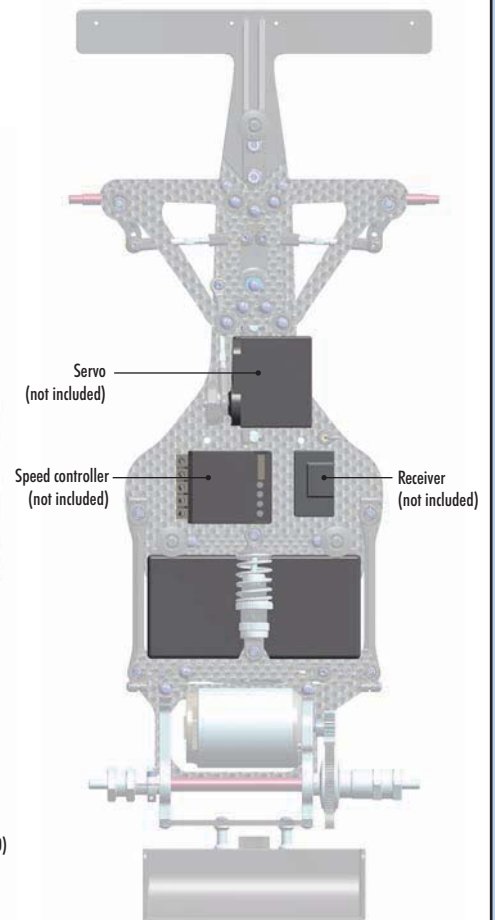
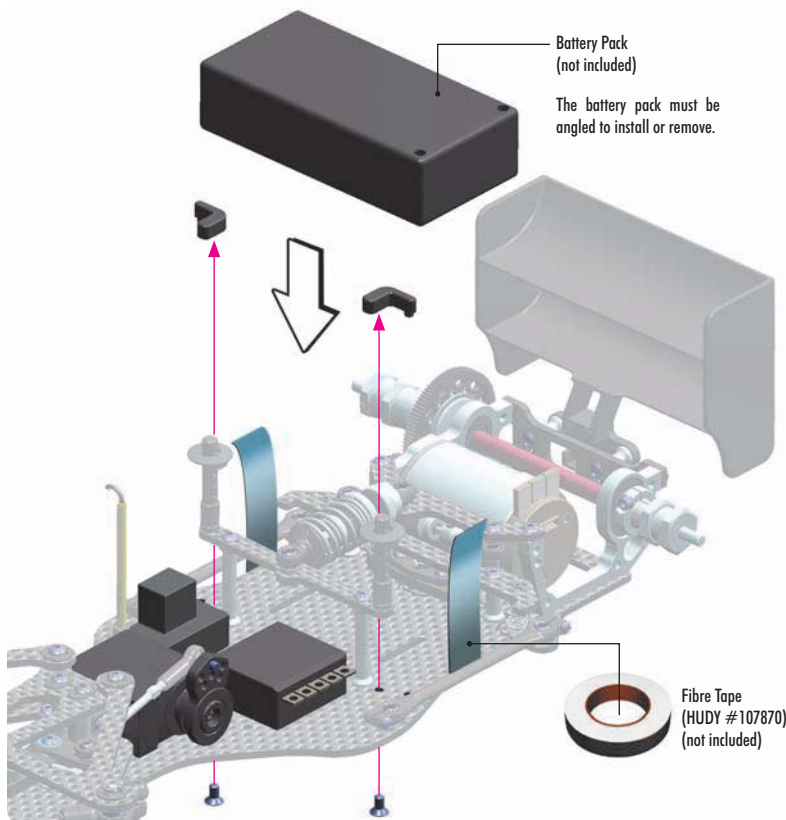


903306
SFH M3x6

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.

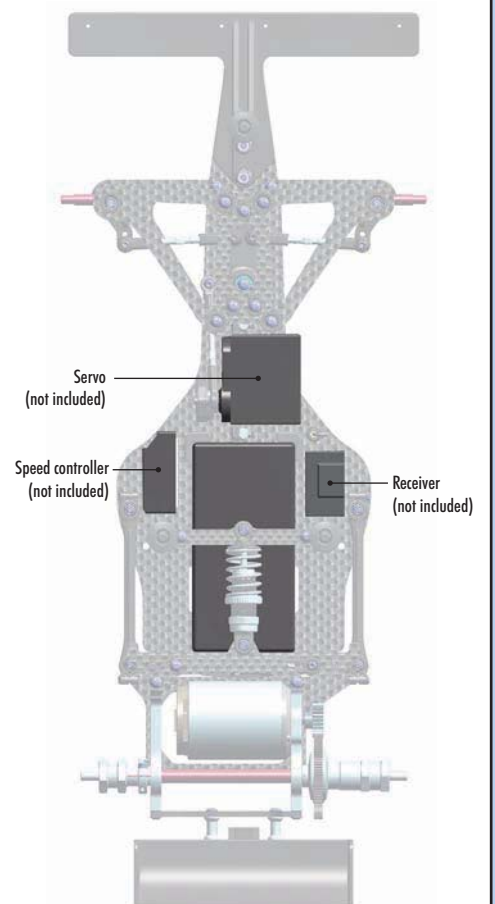
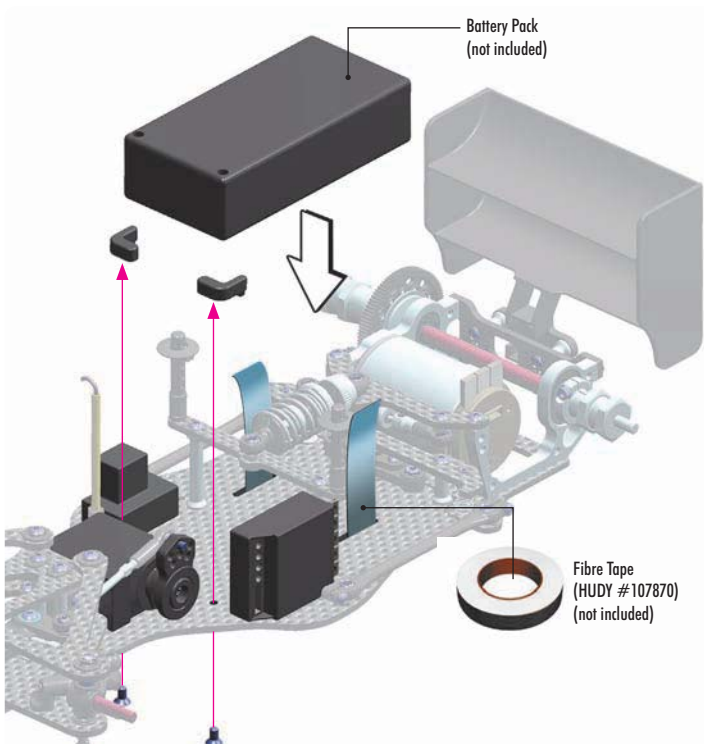


903306
SFH M3x6

LIPO BATTERY CONFIGURATION 2

INLINE Battery Alignment:

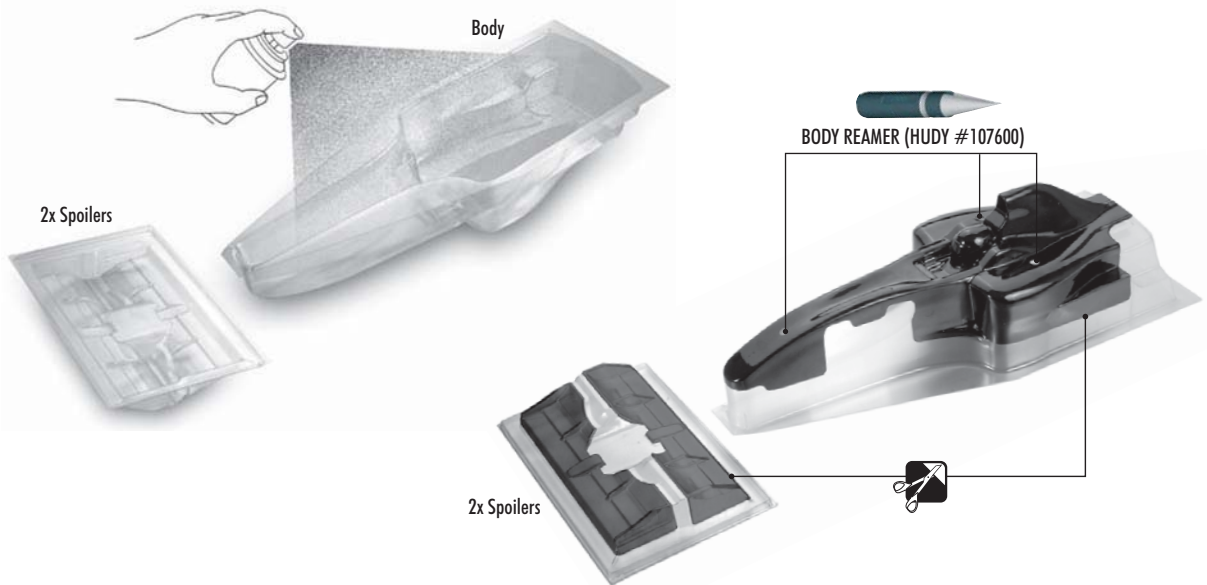
Inline battery alignment improves the roll of the car and gives improved steering. Recommended for asphalt and low-medium traction carpet tracks.



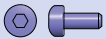
5. FINAL ASSEMBLY

- 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

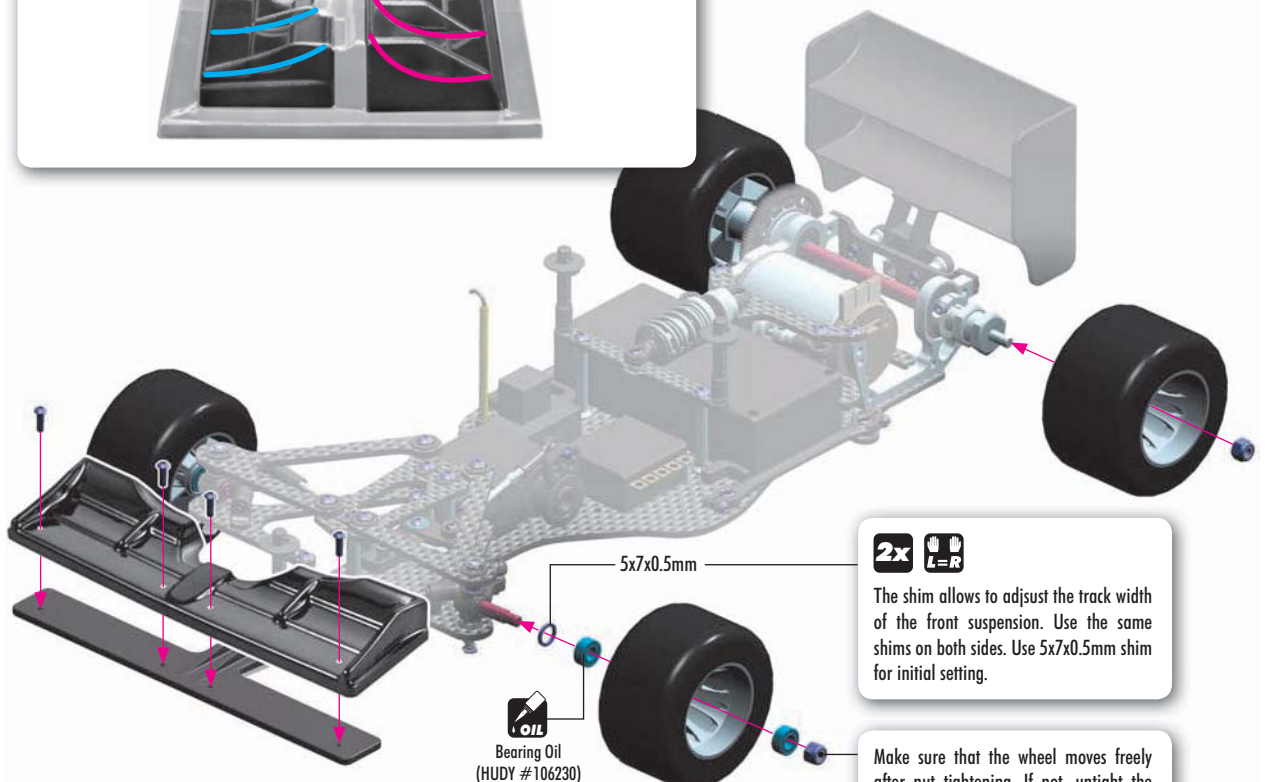


94 0510
BB 5x10x4

FRONT SPOILER

LOW DOWNFORCE:
Use for less steering

HIGH DOWNFORCE:
Use for more steering



XRAY X1

FRONT
REAR

BUMP STEER SHIMS

SERVO ARM /mm

SERVO LINK SHIMS

SERVO ARM /mm

SHOCK SHIMS

/mm

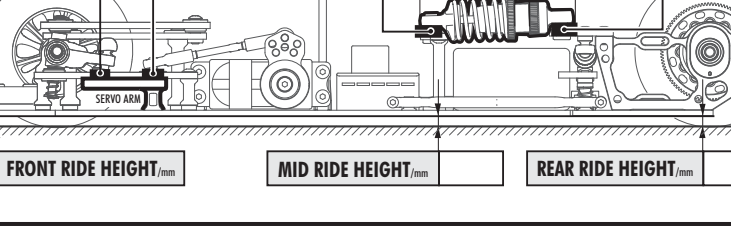
SHOCK ABSORBER

SHOCK LENGTH /mm

SHOCK PRELOAD /mm

SHOCK SHIMS

/mm



FRONT RIDE HEIGHT /mm

MID RIDE HEIGHT /mm

REAR RIDE HEIGHT /mm

FRONT
REAR

SHIM /mm

SHIM /mm

SHIM /mm

LUBE /cSt

SHIM /mm

UPPER ARM SHIM /mm

SPRING

LOWER ARM SHIM /mm

RIDE HEIGHT

5/2	2	5/1	1	5/0	0	0.5	1	1.5	2	2.5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

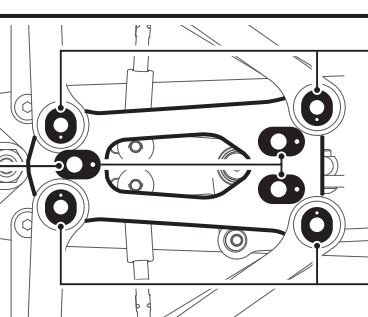
SIDE SPRING

WING SHIM /mm

FRONT
REAR

CASTER

3°	6°	9°	12°
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



CAMBER

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1.0°	1.5°	2.0°	2.5°

FRONT
REAR

TOE

OUT /deg.

CHASSIS

STANDARD ☐

BATTERY POSITION

INLINE ☐

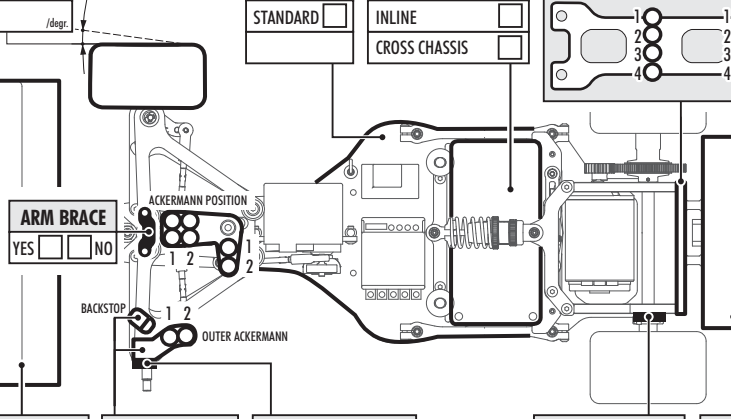
CROSS CHASSIS ☐

ARM BRACE

YES ☐ NO ☐

REAR WING POSITION

1	1
2	2
3	3
4	4



FRONT SPOILER

LOW DOWNFORCE ☐

HIGH DOWNFORCE ☐

STEERING ANGLE °

FRONT WIDTH SHIM /mm

REAR WIDTH SHIM /mm

REAR WING

STANDARD ☐

FRONT
REAR

COMMENTS

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