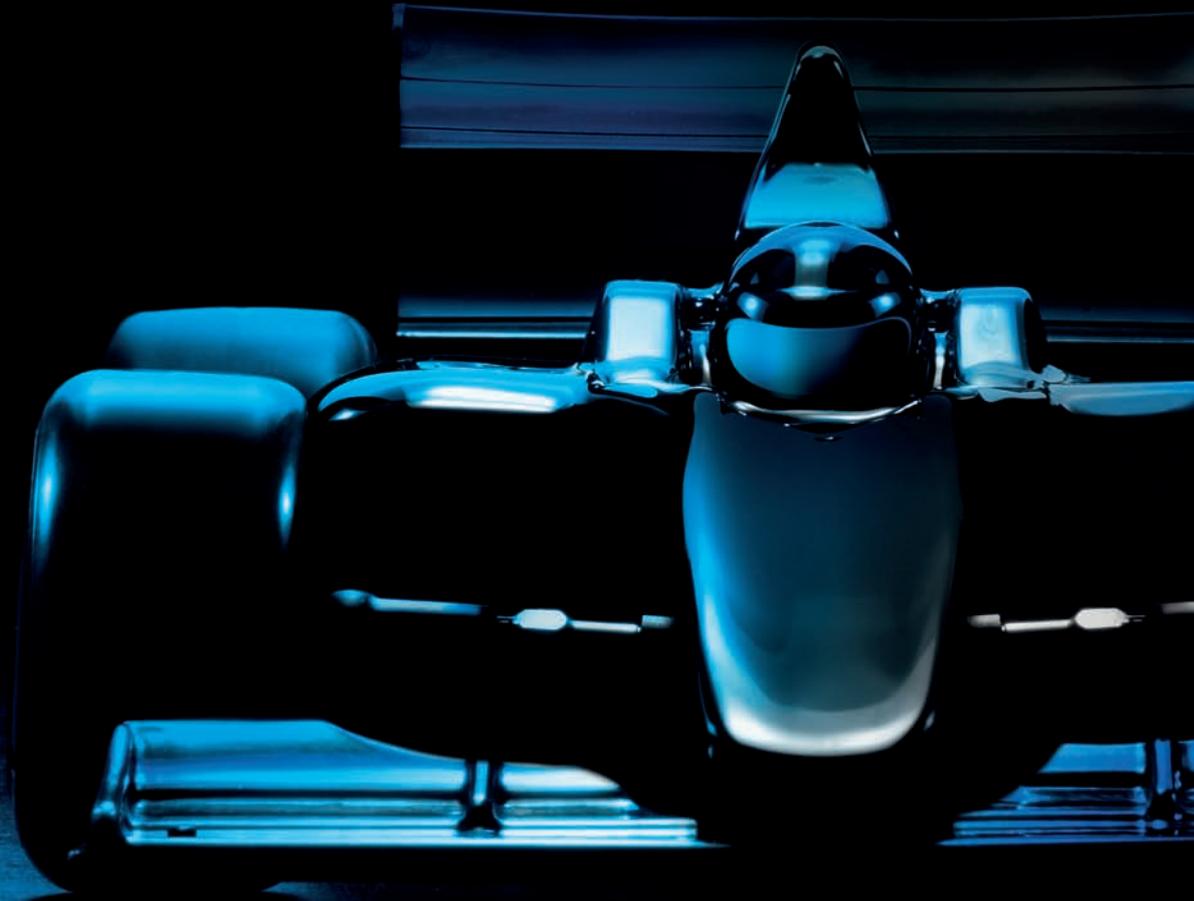


1/10 LUXURY ELECTRIC FORMULA

XTRAY X1



INSTRUCTION MANUAL
X1'21 EDITION

BEFORE YOU START

This is a high-competition, high-quality RC 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 XRAY, **YOU MUST** read through all of the operating instructions and instruction manual and fully understand them to get the maximum enjoyment and prevent unnecessary damage.

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

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 this is not what you wanted or expected, **do not continue any further**. Your hobby dealer can not accept your 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.

XRAY Europe

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91101 Trenčín
Slovakia, EUROPE
Phone: 421-32-7401100
Fax: 421-32-7401109
E-mail: info@teamxray.com

XRAY USA

RC America, 2030 Century Blvd #15
Irving, TX 75062
USA
Phone: (214) 744-2400
Fax: (214) 744-2401
E-mail: xray@rcamerica.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 warranty immediately.

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 - 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.

To prevent any serious personal injury and/or damage to property, please be responsible when operating all remote controlled models.

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 RC 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.

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.

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 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.

TOOLS REQUIRED



Combination Pliers
(HUDY #189020)



Side Cutters
(HUDY #189010)



Pocket Hobby Knife (HUDY #188981)



Special Tool for Turnbuckles, Nuts (HUDY #181090)



Turnbuckle Wrench 4mm (HUDY #181040)

Allen 1.5mm (#111545 - HUDY EXCLUSIVE Limited Edition)



Allen 2.0mm (#112045 - HUDY EXCLUSIVE Limited Edition)



Allen 2.5mm (#112545 - HUDY EXCLUSIVE Limited Edition)



Allen 3.0mm (#113045 - HUDY EXCLUSIVE Limited Edition)



Arm Reamer 4.0mm (#107644 - HUDY EXCLUSIVE Limited Edition)



Socket 5.5mm (#175535 - HUDY EXCLUSIVE Limited Edition)



Socket 7.0mm (#177035 - HUDY EXCLUSIVE Limited Edition)



Reamer (#107602 - HUDY EXCLUSIVE Limited Edition)



Scissors (HUDY #188990)



Professional Multi-Tool (HUDY #183011)

INCLUDED

* Kit includes smaller but sufficient amount of oil and grease to build the car.

600cSt (#106360)
HUDY Premium Silicone Oils



30.000cSt (#106530)
HUDY Premium Silicone Oils



(HUDY #106211)
Differential Grease



ALSO REQUIRED

Transmitter



Receiver



Speed Controller



Steering Servo



Electric Motor



Pinion Gear with Setscrew



LiPo Battery



Battery Charger



Bearing Oil
(HUDY #106230)



Wheels & Tires & Inserts
(HUDY #803070 & #803080)



Lexan™ Paint



Double-sided Tape
(HUDY #107875)



NOT INCLUDED



TIP

Jan Ratheisky
(Factory Driver)

The European Champion and XRAY factory team driver Jan Ratheisky shares his pro tips and tricks.



OPTION

SAMPLE OF OPTIONAL PARTS

#37XXX	TYPE1	OPTION 1
#37XXX	TYPE2	OPTION 2
#37XXX	TYPE3	INCLUDED

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 parts and must be purchased separately.

COLOR INDICATIONS

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

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

372127 **STYLE A** - indicates parts that are included in the bag marked for the section.

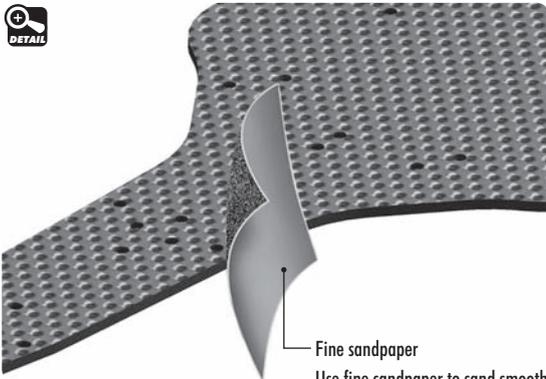
371026 **STYLE B** - indicates parts that are included in the box.

374901 **STYLE C** - indicates parts that are already assembled from previous steps.

GRAPHITE PARTS PROTECTION

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

Make it: this for chassis edges and countersunk holes.



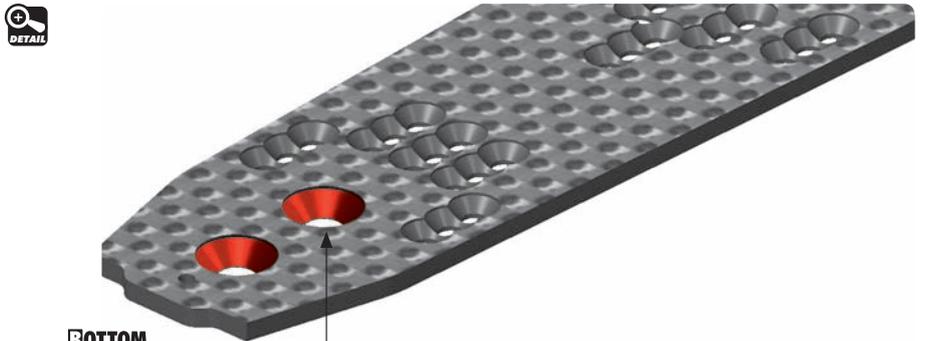
Fine sandpaper
Use fine sandpaper to sand smooth the edges of all graphite parts.



FRONT

REAR

CA
CA
IMPORTANT



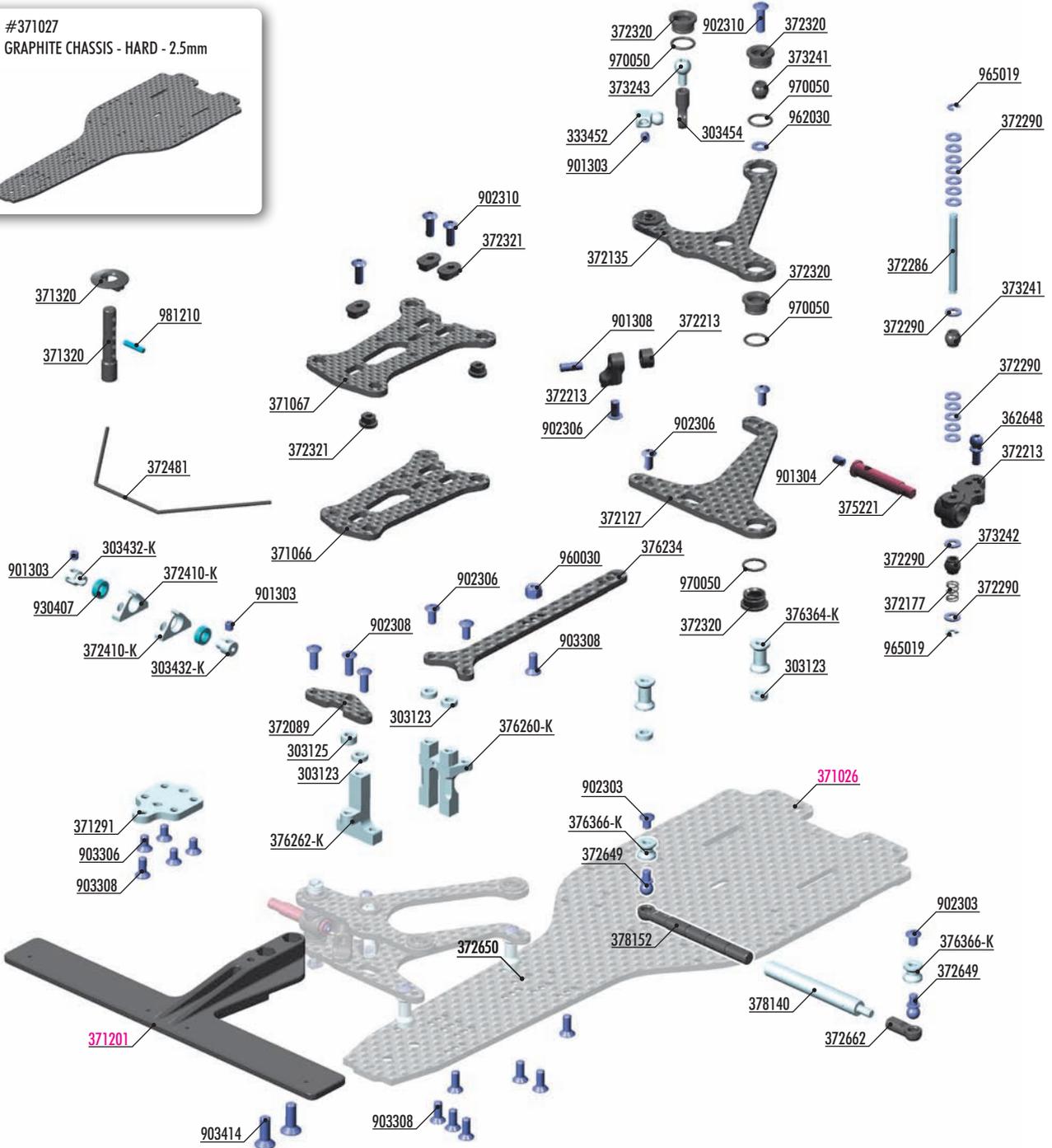
BOTTOM
FRONT

CA
Apply only a bit of CA glue in the countersunk holes.

1. FRONT SUSPENSION



#371027
GRAPHITE CHASSIS - HARD - 2.5mm



BAG

01

303123	ALU SHIM 3x6x2.0mm (10)	376260-K	ALU SERVO MOUNT - BLACK
303125	ALU SHIM 3x6x3.0mm (10)	376262-K	ALU FRONT STAND - BLACK
303432-K	ALU ANTI-ROLL BAR BUSHING - BLACK (2)	376364-K	ALU MOUNT 10.8mm - BLACK (2)
333452	ALU ANTI-ROLL BAR PIVOT BALL 4.9mm (2)	376366-K	ALU MOUNT 6.0MM - BLACK (2)
362648	BALL END 4.9mm WITH THREAD 4mm (2)	378140	SIDE LINKAGE TUBE (2)
371066	GRAPHITE ARM MOUNT PLATE - NARROW TRACK-WIDTH - 2.5mm	378152	COMPOSITE SIDE TUBE SHAFT (2)
371067	GRAPHITE ARM MOUNT PLATE - WIDE TRACK-WIDTH - 2.5mm	901303	HEX SCREW SB M3x3mm (10)
371291	X1 ALU BALL-BEARING ANTI-ROLL BAR HOLDER PLATE - BLACK	901304	HEX SCREW SB M3x4mm (10)
371320	COMPOSITE BODY POST (2)	901308	HEX SCREW SB M3x8mm (10)
372089	GRAPHITE FRONT ARM BRACE 2.5mm	902303	HEX SCREW SH M3x4 SMALL HEAD - STAINLESS (10)
372127	X1'21 GRAPHITE LOWER SUSPENSION ARM 2.5mm	902306	HEX SCREW SH M3x6mm (10)
372135	X1'21 GRAPHITE UPPER SUSPENSION ARM 2.5mm	902308	HEX SCREW SH M3x8mm (10)
372177	FRONT COIL SPRING 3.6x6x0.5mm; C=3.5 - GOLD (2)	902310	HEX SCREW SH M3x10mm (10)
372213	COMPOSITE STEERING BLOCK & BACKSTOPS	903306	HEX SCREW SFH M3x6mm (10)
372286	X1'21 KING PIN (2)	903308	HEX SCREW SFH M3x8mm (10)
372290	ALU SHIM 3.2x4.8x0.5 (4)	903414	HEX SCREW SFH M4x14mm (10)
372320	COMPOSITE ARM BUSHING (4)	930407	BALL-BEARING 4x7x2.5 STEEL SEALED - OIL (2)
372321	COMPOSITE CASTER & CAMBER BUSHING (2+2+2+2)	960030	NUT M3 (10)
372410-K	ALU BALL-BEARING ANTI-ROLL BAR HOLDER - BLACK	962030	WASHER S 3x6x0.3mm (10)
372481	ANTI-ROLL BAR - FRONT 1.1mm	965019	E-CLIP 1.9 (10)
372649	BALL END 4.2MM WITH 4MM THREAD (2)	970050	O-RING 5x1mm (10)
372662	COMPOSITE BALL-JOINT 4.2 MM (4)	981210	PIN 2x10 (10)
373241	COMPOSITE PIVOTBALL UNIVERSAL 6.0mm (2)	371026	X1'21 GRAPHITE CHASSIS 2.5mm
373242	COMPOSITE PIVOTBALL UNIVERSAL 6.0mm - SHORT (2)	371201	X1 COMPOSITE FRONT BUMPER
373243	BALL END 6.0mm WITH THREAD 4mm (2)		
375221	FRONT WHEEL AXLE - HUDY SPRING STEEL™ (2)		
376234	GRAPHITE TOP DECK 2.5mm		

1. FRONT SUSPENSION



902303
SH M3x4



970050
O 5x1

UPPER ARMS



6x

COMPOSITE BALL

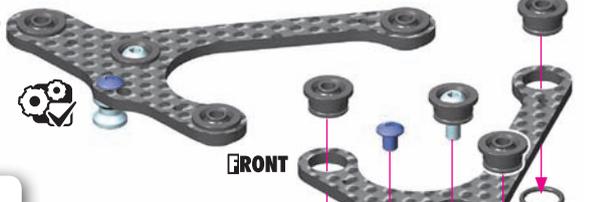


2x

6.0mm
BALL END



RIGHT



FRONT

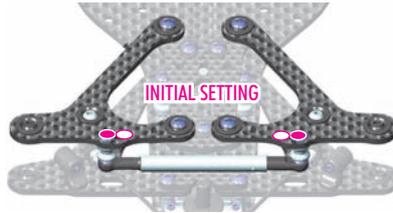
LEFT

CUTAWAY VIEW

TOP

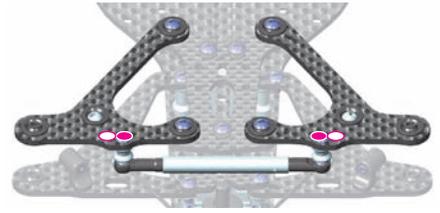
BOTTOM

6mm
ALU STAND



INITIAL SETTING

If you use **STANDARD TRACK-WIDTH**, use the outside holes on the upper arms.



If you use **WIDE TRACK-WIDTH**, use the inside holes on the upper arms.

NOTE:

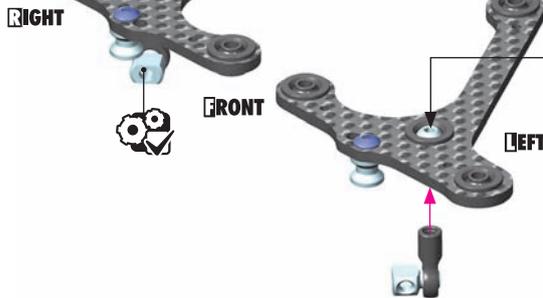
For more information about the **TRACK-WIDTH** alternatives see page 13.

UPPER ARMS



Professional Multi-Tool
(HUDY #183011)

TIP



RIGHT

FRONT

LEFT

DETAIL

INITIAL SETTING

2.0 mm

19.5mm

LOWER ARMS

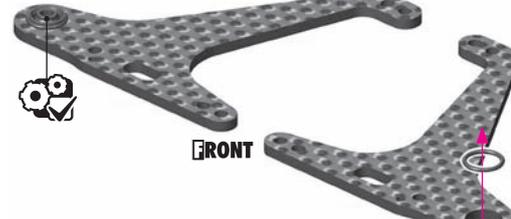


NOTE ORIENTATION

2x

SHORT COMPOSITE BALL

RIGHT



FRONT

LEFT

DETAIL

Remove excess material

DETAIL

CUTAWAY VIEW

TOP

BOTTOM

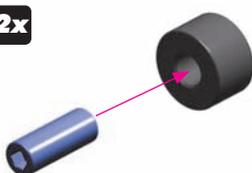
#37215
OPTION X1 GRAPHITE LOWER
SUSPENSION ARM 2.5mm

To improve steering in low-traction conditions with standard F1 front tires.

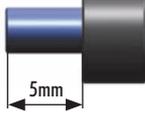


970050
O 5x1

2x

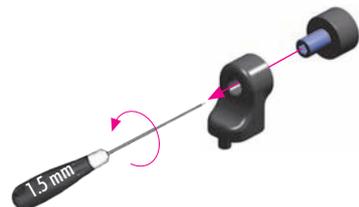


DETAIL



5mm

2x



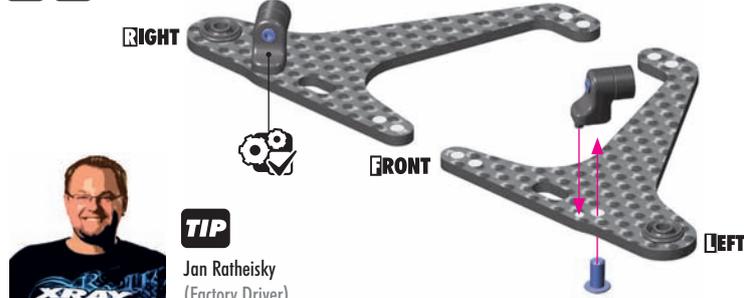
1.5mm

1. FRONT SUSPENSION



902306
SH M3x6

2x LOWER ARMS



TIP

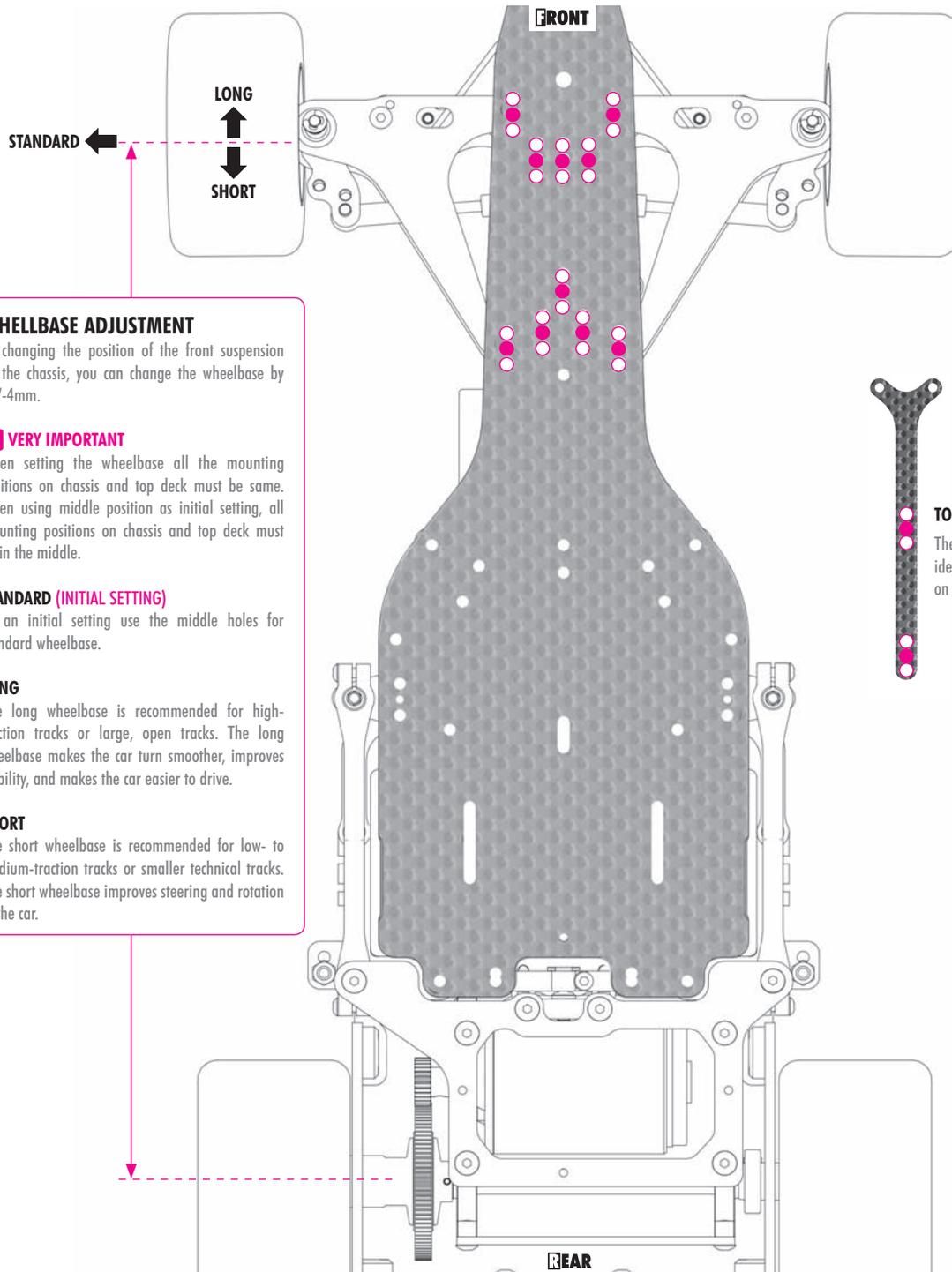
Jan Ratheisky
(Factory Driver)

I recommend using 27° of steering angle for most conditions. If you use more, the car stops too much; only on very small & technical tracks does it make sense to use more.

PRO TIP to check the angle: Take a look from the top of the car on full steering. The tire angle should be parallel to the upper wishbone.



The adjustable backstops are used to limit the steering angle. Adjust the backstop with the set-screw to achieve the maximum steering angle needed. Adjust the steering angle on both L & R sides to the same amount.



WHEELBASE ADJUSTMENT

By changing the position of the front suspension on the chassis, you can change the wheelbase by +/-4mm.

! VERY IMPORTANT

When setting the wheelbase all the mounting positions on chassis and top deck must be same. When using middle position as initial setting, all mounting positions on chassis and top deck must be in the middle.

STANDARD (INITIAL SETTING)

As an initial setting use the middle holes for standard wheelbase.

LONG

The long wheelbase is recommended for high-traction tracks or large, open tracks. The long wheelbase makes the car turn smoother, improves stability, and makes the car easier to drive.

SHORT

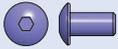
The short wheelbase is recommended for low- to medium-traction tracks or smaller technical tracks. The short wheelbase improves steering and rotation of the car.

TOP DECK

The top deck setting must be always identical with the wheelbase setting on the chassis.



303123
SHIM 3x6x2



902306
SH M3x6



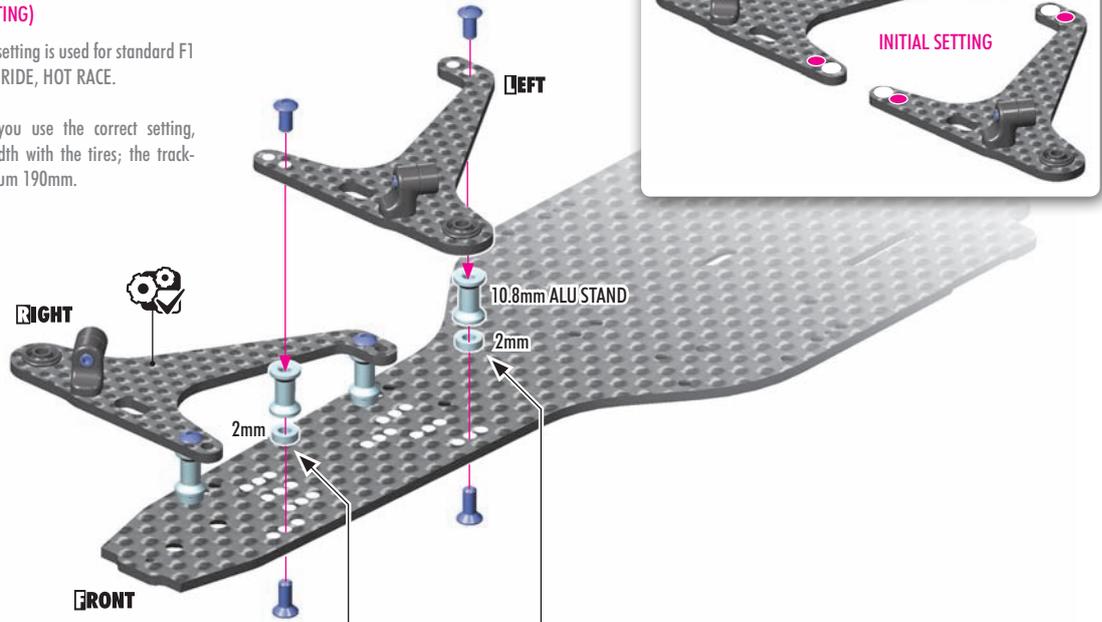
903308
SFH M3x8

2x ALTERNATIVE 1

STANDARD TRACK-WIDTH (INITIAL SETTING)

Standard track-width setting is used for standard F1 front tires such HUDY, RIDE, HOT RACE.

To make sure that you use the correct setting, measure the track-width with the tires; the track-width must be maximum 190mm.



! These shims adjust 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.



#371027
GRAPHITE CHASSIS - HARD - 2.5mm



The 2.5mm chassis made from harder graphite material was developed for very-high traction conditions, or when using tires that offer a lot of steering which makes the car more difficult to drive. This chassis makes the car more stable and easier to drive, and eliminates oversteering.



303123
SHIM 3x6x2



902306
SH M3x6



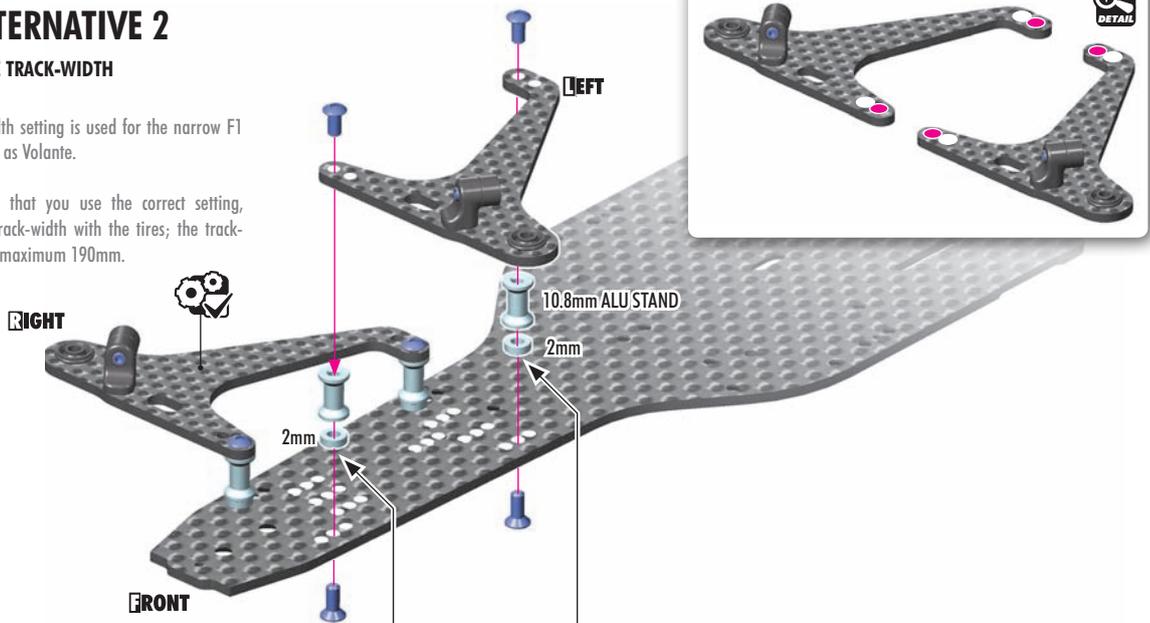
903308
SFH M3x8

2x ALTERNATIVE 2

WIDE TRACK-WIDTH

Wide track-width setting is used for the narrow F1 front tires such as Volante.

To make sure that you use the correct setting, measure the track-width with the tires; the track-width must be maximum 190mm.



! These shims adjust 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.

1. FRONT SUSPENSION



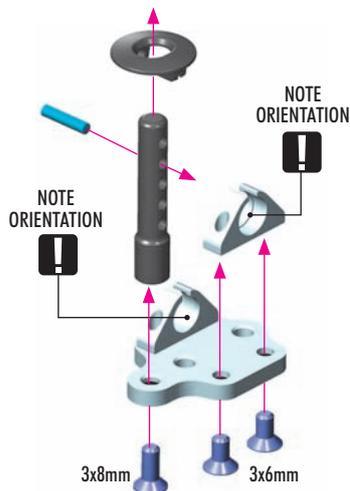
903306
SFH M3x6



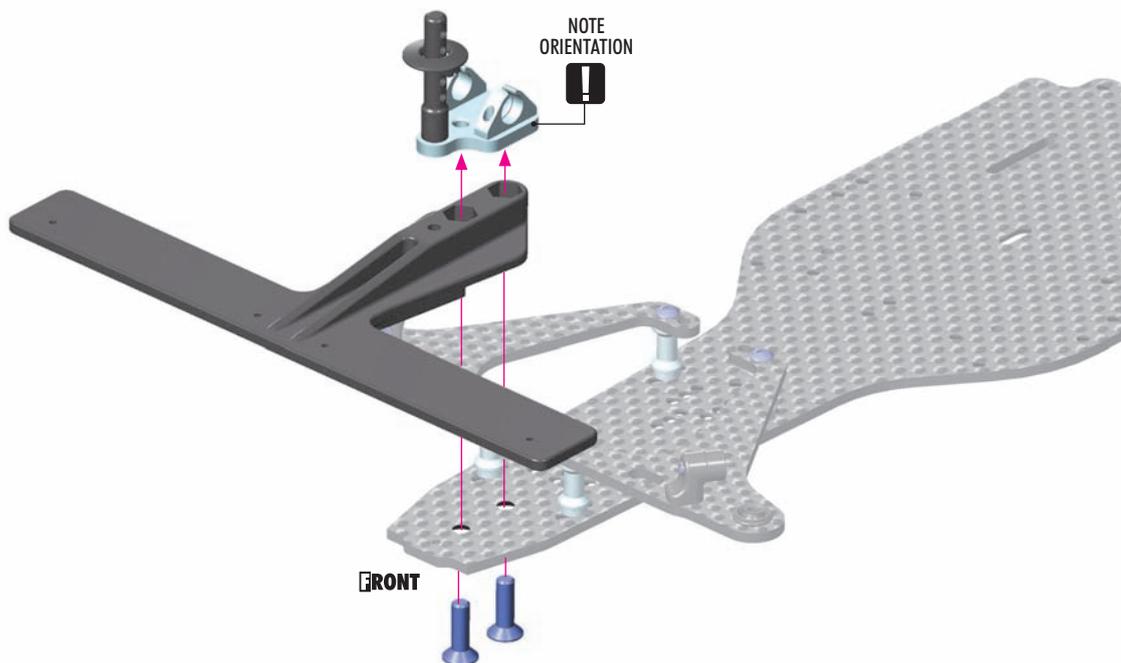
903308
SFH M3x8



981210
P 2x10



903414
SFH M4x14



902306
SH M3x6



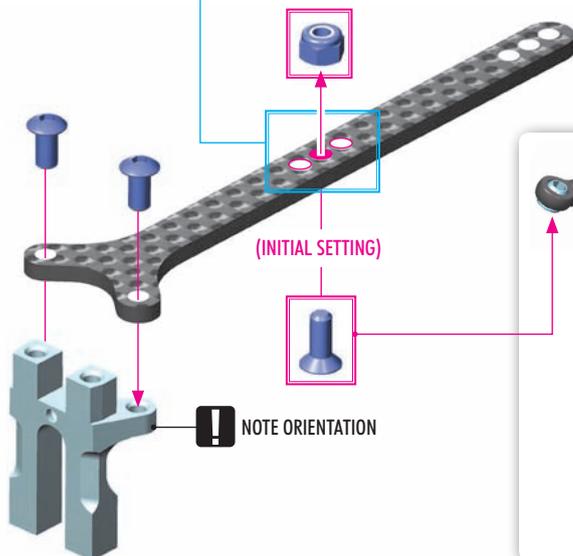
903308
SFH M3x8



960030
N M3

! The top deck mounting position must always be identical as the WHEELBASE mounting position on chassis.

For **INITIAL SETTING** use the middle position.



OPTION

ALU NUTS M3

#296530-B	ALU BLUE	OPTION	
#296530-K	ALU BLACK	OPTION	
#296530-O	ALU ORANGE	OPTION	
#960030	STEEL SILVER	INCLUDED	
#960031	ALU SILVER	OPTION	



! ALTERNATIVE 1 LONG SHOCK (FORWARD MOUNT POSITION)

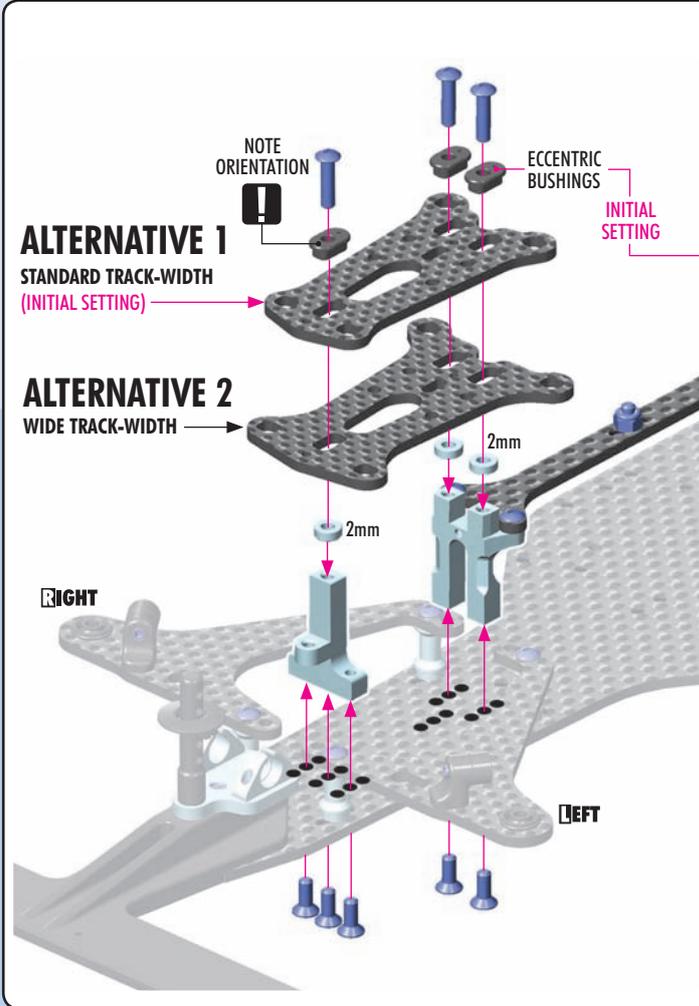
For the LONG shock alternative, mount the shock holder on the top deck.



ALTERNATIVE 2 SHORT SHOCK (REARWARD MOUNT POSITION)

For the SHORT shock alternative, without the adaptor, mount the shock holder on the graphite plate for mounts (page 20).

1. FRONT SUSPENSION



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

- = 3° CASTER
- = 6° CASTER
- = 9° CASTER
- = 12° CASTER

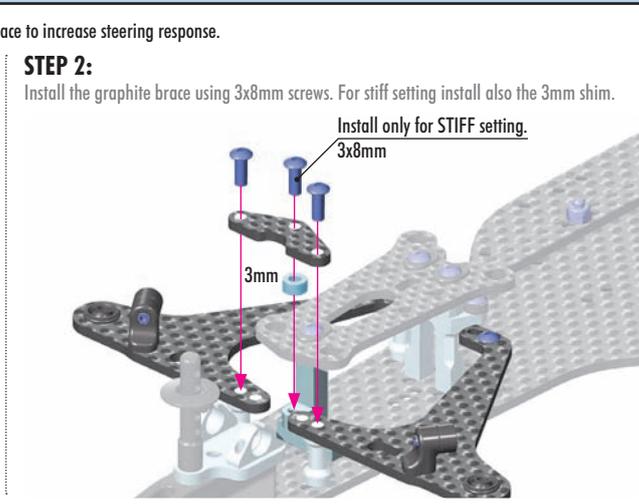
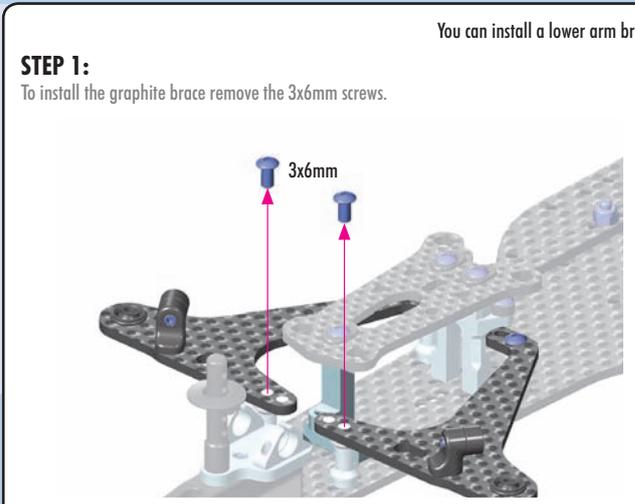
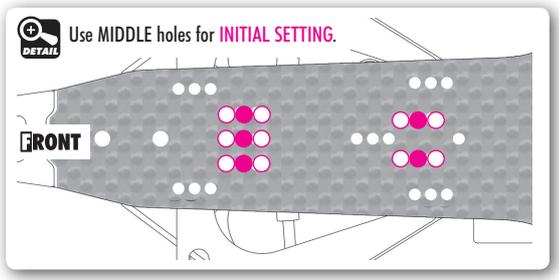
These eccentric bushings adjust the front **CASTER**.

MORE caster angle = better cornering speed, increased traction rolling. Use on large, 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.

ALU CASTER BUSHINGS

OPTION	CASTER	ALU	OPTION
#372327	6°, 9° (3)	ALU	OPTION
#372328	3°, 12° (3)	ALU	OPTION



SOFT - WITHOUT THE BRACE (INITIAL SETTING)

The car will have less initial steering. Recommended for high- and very-high-traction carpet tracks where the car needs to be easy to drive and less responsive.

MEDIUM - WITH BRACE

Improves in-corner steering but still keeps the car easy to drive. Recommended for medium-high traction carpet tracks and high-traction asphalt tracks.

- BRACE USED
- SHIM NOT USED

STIFF - WITH BRACE AND CONNECTED TO ALU FRONT STAND

Provides maximum steering response. Recommended for low-medium traction carpet tracks and for all different traction conditions on asphalt tracks.

- BRACE USED
- SHIM USED

1. FRONT SUSPENSION



902310
SH M3x10



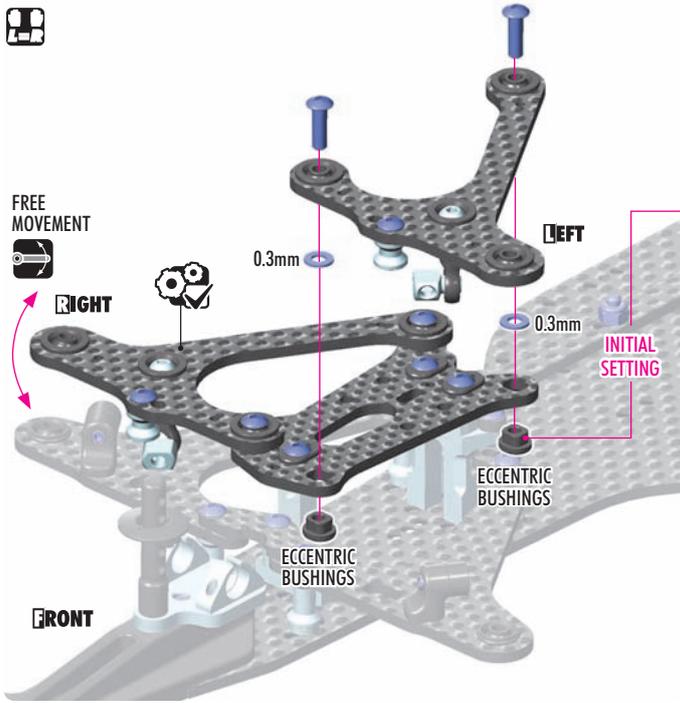
962030
S 3x6x0.3



FREE
MOVEMENT

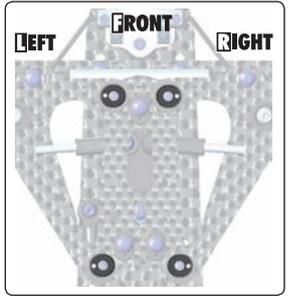
RIGHT

FRONT



! 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



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.

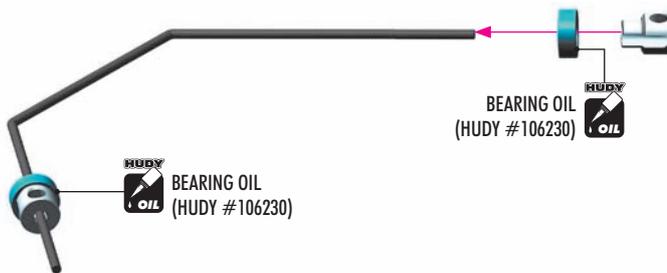


ALU CAMBER BUSHINGS

OPTION	#372325	CAMBER 1.5°, 2.0° (2)	ALU	OPTION
	#372326	CAMBER 1.0°, 2.5° (2)	ALU	OPTION



930407
BB 4x7x2.5



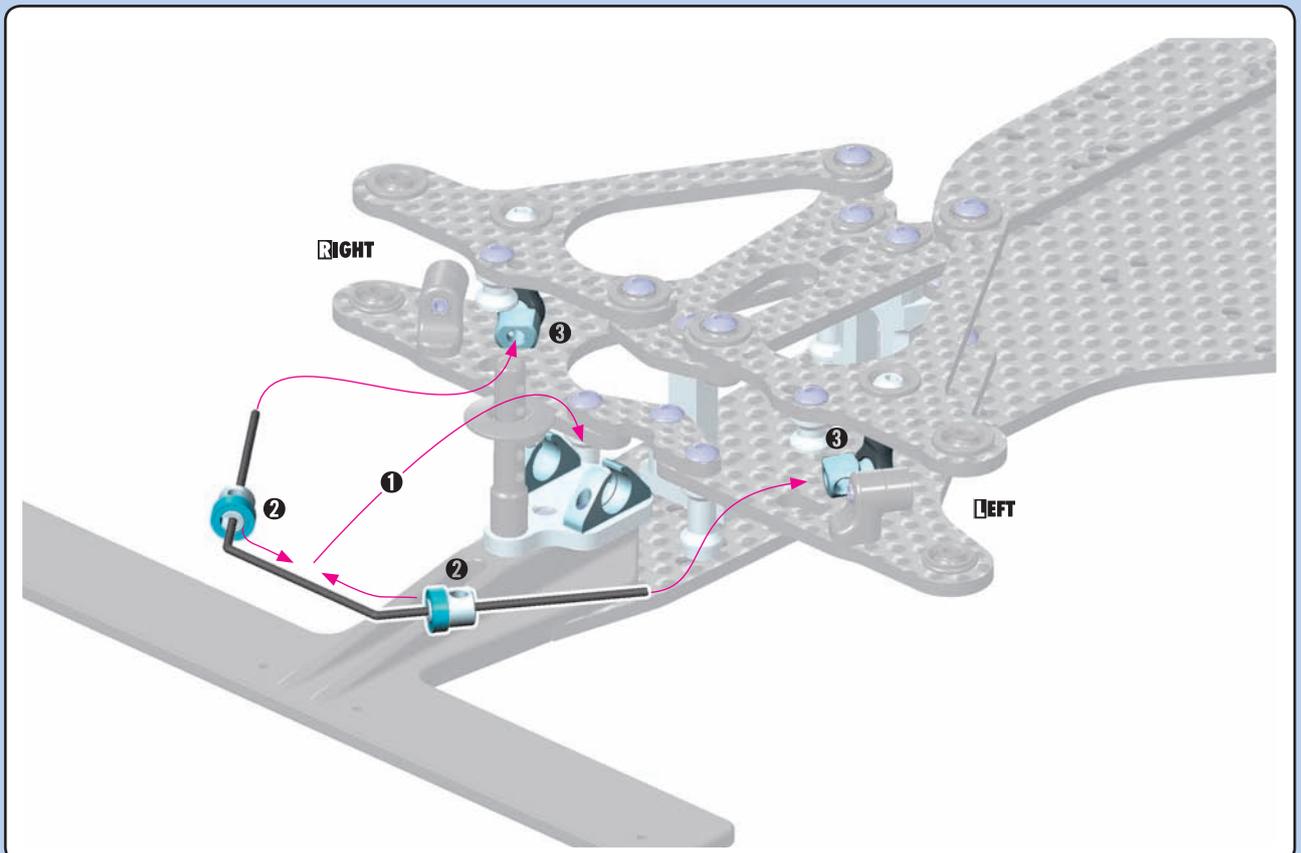
HUBY OIL
BEARING OIL
(HUBY #106230)

HUBY OIL
BEARING OIL
(HUBY #106230)



ANTI-ROLL BARS

OPTION	#372481	1.1mm	INCLUDED
	#372482 <th>1.2mm</th> <th>OPTION</th>	1.2mm	OPTION



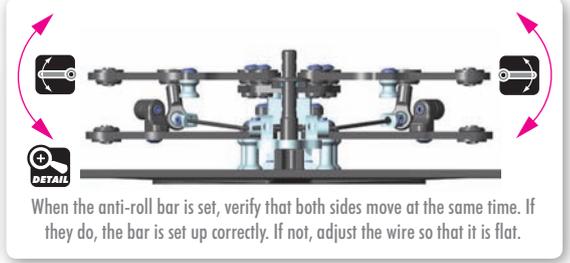
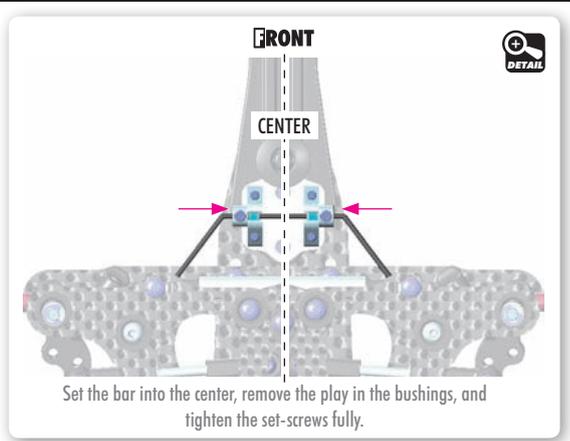
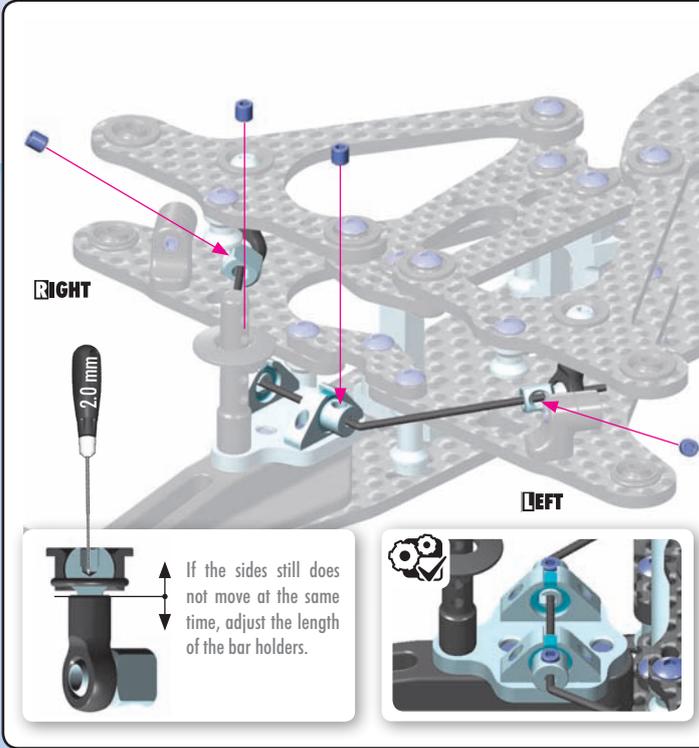
RIGHT

LEFT

1. FRONT SUSPENSION



901303
SB M3x3

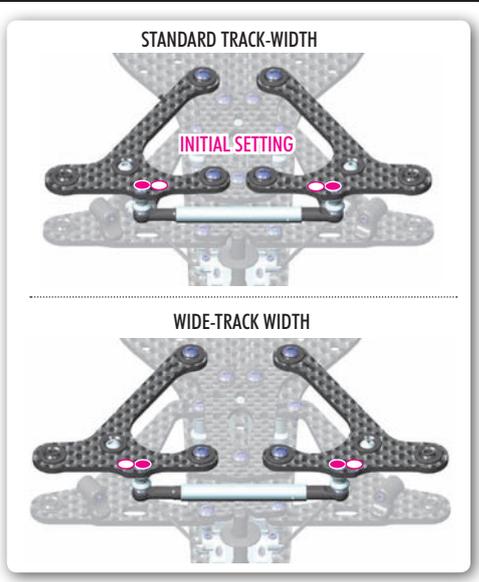
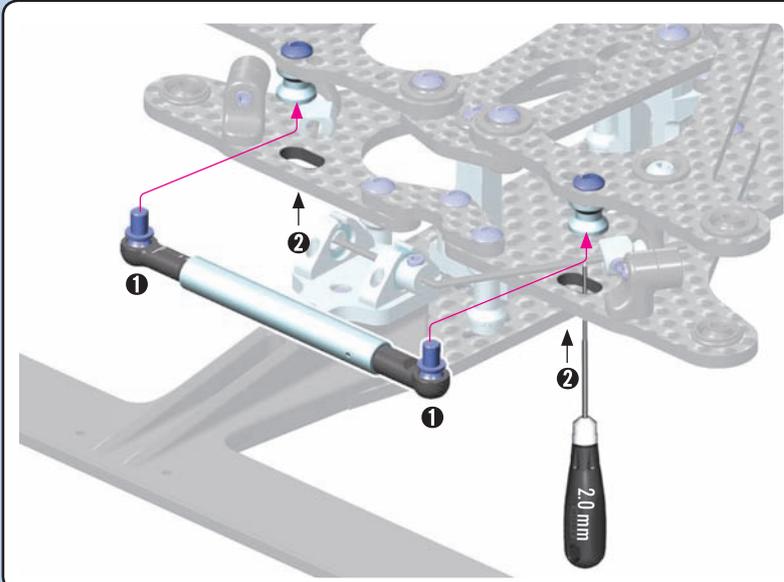


Add oil each slot of the **COMPOSITE** front tube.

NOTE:
We recommend using the same oil in the front tube as on the king pin axles. It is very important to re-oil the front tube at least once per race day. You may use different oil thickness depending on track conditions.

TIP	For HIGH grip	use SOFTER oils
	For LOW grip or ASPHALT	use HARDER oils

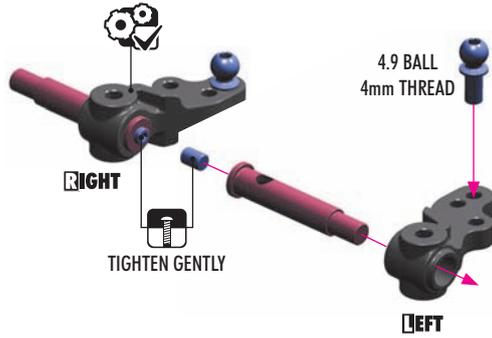
OPTION	HUDY SILICONE OILS		OPTION
#106410	1.000cSt	OPTION	OPTION
#106420	2.000cSt	OPTION	OPTION
#106430	3.000cSt	OPTION	OPTION
#106440	4.000cSt	OPTION	OPTION
#106450	5.000cSt	OPTION	OPTION
#106460	6.000cSt	OPTION	OPTION
#106470	7.000cSt	OPTION	OPTION
#106480	8.000cSt	OPTION	OPTION
#106510	10.000cSt	OPTION	OPTION
#106492	11.000cSt	OPTION	OPTION
#106512	12.000cSt	OPTION	OPTION
#106515	15.000cSt	OPTION	OPTION
#106520	20.000cSt	OPTION	OPTION
#106530	30.000cSt	INCLUDED	
#106540	40.000cSt	OPTION	
#106550	50.000cSt	OPTION	



1. FRONT SUSPENSION

901304
SB M3x4

2x
L=R



There are THREE Ackermann positions on the steering block:



- 1 - easiest to drive
- 2 - improved steering response
- 3 - improved overall steering

! POSITION 3.

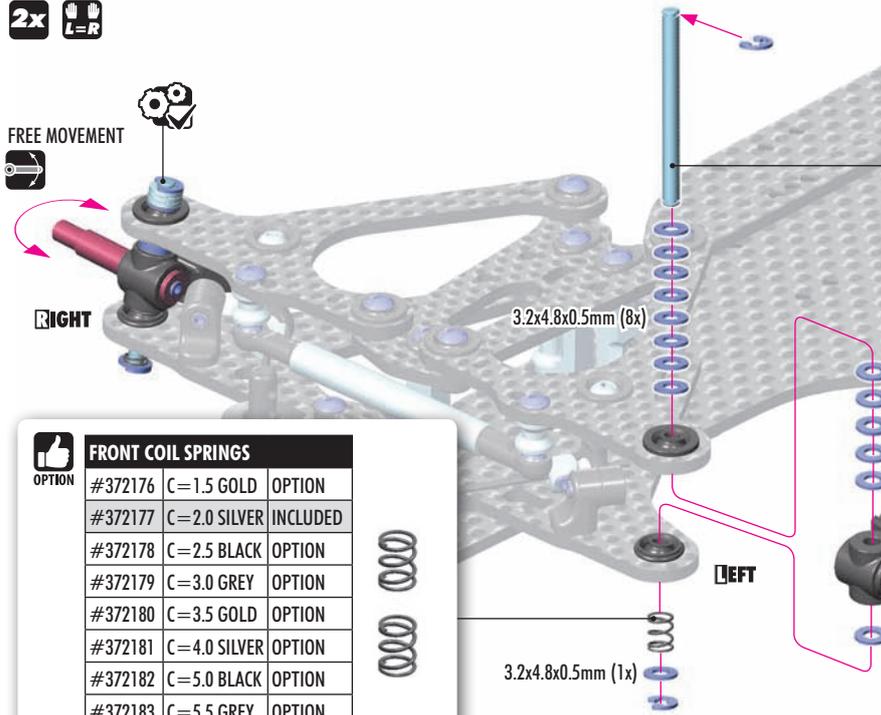
If using less bumpsteer shims on the steering plate and the steering linkage is touching the steering block, use 3x6x1mm composite shim (bag 5).



965019
C 1.9

372290
SHIM 3.2x4.8x0.5

2x
L=R



RECOMMENDED
HUDY SILICONE OIL

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

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

DAMPING
Using thicker oil on the king pin axles makes the car less responsive but easier to drive. Thicker oil increases stability but decreases cornering speed.

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

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

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

SOFTER SPRINGS

Makes the car easier to drive over bumps and increases steering as it makes the car roll more, especially in the middle of a corner.

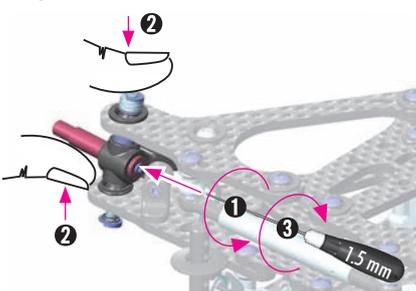
HARDER SPRINGS

Makes the car more responsive and increases initial steering. Recommended for high-traction and flat tracks.

2x
L=R

After assembling the steering block, do the following:

1. Loosen the set-screw slightly.
2. Use your thumb to press down on the top of the kingpin, while using your other fingers to pull up the steering block.
3. Tighten the set-screw.



TIP

JAN RATHEISKY (factory driver)

We use different ride heights at indoor and outdoor tracks:

- **INDOOR:** Ride height is as low as the rules allow, usually 4mm.
- **OUTDOOR:** Always run at least 5mm ride height.

Rear ride height should always be 0.1-0.2mm higher than the front.

I recommend changing droop using the upper shims on the kingpin, but note that this also changes the ride height by the same amount. Adding +0.5mm shim means 0.5mm less droop because the spring gets more preload which results in a higher ride height. In that case, you should add the same amount (0.5mm) under the lower wishbone.

DROOP SETTING

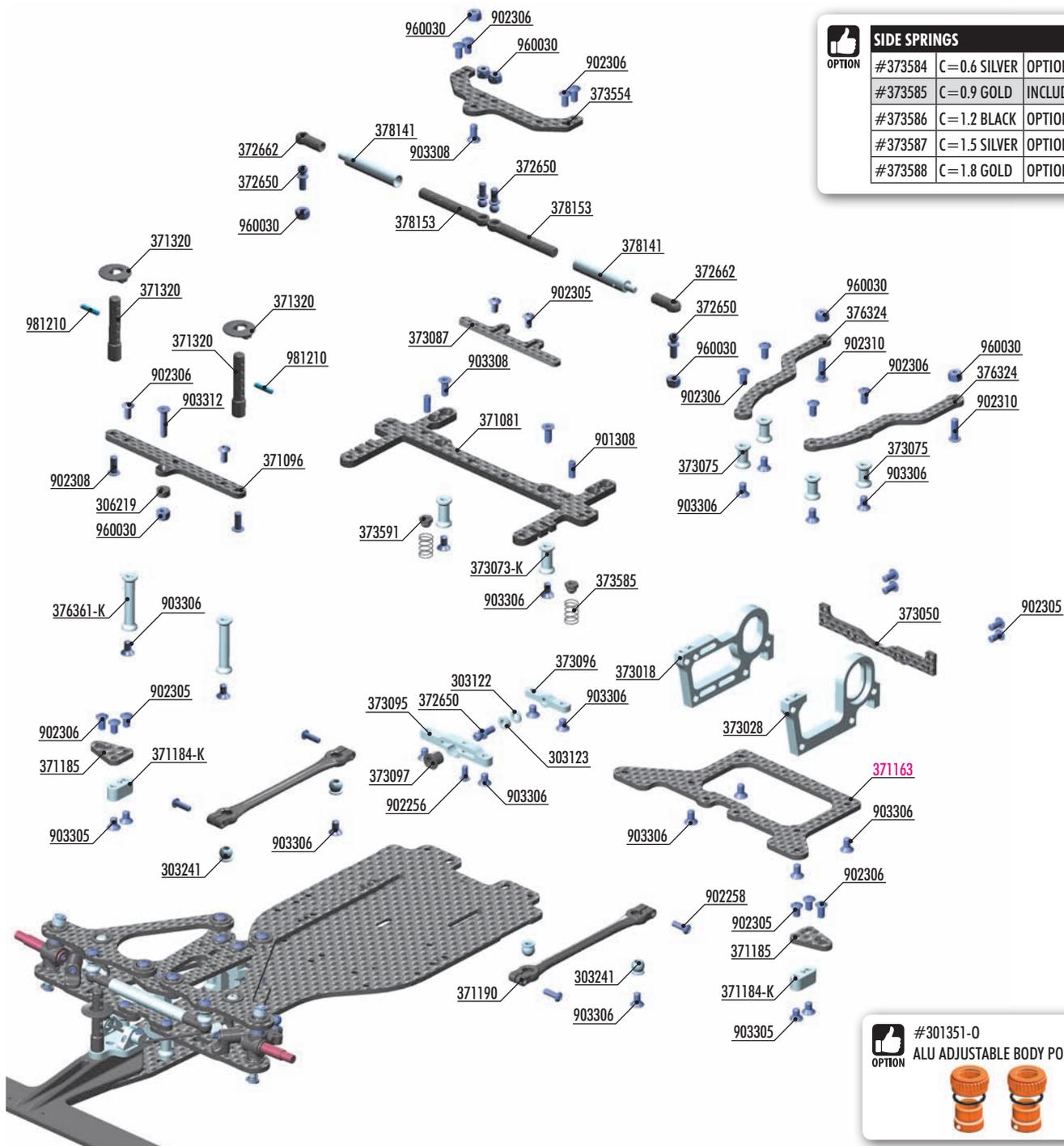
INDOOR:

I recommend using a small amount of droop for carpet tracks, somewhere between 0.5-1mm to get the most on-power steering in combination with solid reactive steering.

OUTDOOR:

You should use more droop for asphalt tracks. At least 1mm up to 2mm. The more droop, the more on-power rear traction you get because of weight transfer to the rear. It also helps to get a more smooth-to-drive car at corner entry.

2. REAR SUSPENSION



SIDE SPRINGS			
OPTION	#373584	C=0.6 SILVER	OPTION
	#373585	C=0.9 GOLD	INCLUDED
	#373586	C=1.2 BLACK	OPTION
	#373587	C=1.5 SILVER	OPTION
	#373588	C=1.8 GOLD	OPTION

OPTION #301351-0
ALU ADJUSTABLE BODY POST STOP (2)



BAG

02

- 303122 ALU SHIM 3x6x1.0MM (10)
- 303123 ALU SHIM 3x6x2.0MM (10)
- 303241 PIVOT BALL UNIVERSAL 5.8 WITH HEX (4)
- 306219 COMPOSITE SET OF SERVO SHIMS (4)
- 371081 X1'21 GRAPHITE REAR BRACE 3.5mm
- 371096 GRAPHITE PLATE FOR MOUNTS 2.5mm
- 371184-K ALU POD LINK GRAPHITE PLATE HOLDER - BLACK
- 371185 GRAPHITE POD LINK PLATE 2.5MM (2)
- 371190 COMPOSITE POD LINK (2)
- 371320 COMPOSITE BODY POST (2)
- 372650 BALL END 4.2MM WITH 6MM THREAD (2)
- 372662 COMPOSITE BALL-JOINT 4.2 mm (4)
- 373018 X1'21 ALU REAR BULKHEAD - MOTOR (RIGHT)
- 373028 X1'21 ALU REAR BULKHEAD - LEFT
- 373050 GRAPHITE REAR BULKHEAD BRACE 2.0mm
- 373073-K ALU REAR BRACE MOUNT 13mm - BLACK (2)
- 373075 ALU REAR BRACE MOUNT 10.5MM - BLACK (2)
- 373087 GRAPHITE BATTERY BACKSTOP 2.0mm
- 373095 ALU CHASSIS PIVOT HOLDER - SWISS 7075 T6
- 373096 ALU POD PLATE PIVOT HOLDER - SWISS 7075 T6
- 373097 COMPOSITE PIVOT BRACE BUSHING
- 373554 X1'21 GRAPHITE REAR POD UPPER PLATE 2.5mm

- 373585 SIDE SPRING C=0.9 - GOLD (2)
- 373591 COMPOSITE SIDE SPRING HOLDER (2)
- 376324 X1'21 SIDE BRACE - GRAPHITE 2.5MM - RIGHT & LEFT
- 376361-K ALU MOUNT 26.5mm - BLACK (2)
- 378141 SIDE LINKAGE TUBE (2)
- 378153 COMPOSITE LINKAGE SHAFT (2)

- 901308 HEX SCREW SB M3x8 (10)
- 902256 HEX SCREW SH M2.5x6 (10)
- 902258 HEX SCREW SH M2.5x8 (10)
- 902305 HEX SCREW SH M3x5 (10)
- 902306 HEX SCREW SH M3x6 (10)
- 902308 HEX SCREW SH M3x8 (10)
- 902310 HEX SCREW SH M3x10 (10)
- 903305 HEX SCREW SFH M3x5 (10)
- 903306 HEX SCREW SFH M3x6 (10)
- 903308 HEX SCREW SFH M3x8 (10)
- 903312 HEX SCREW SFH M3x12 (10)
- 960030 NUT M3 (10)
- 981210 PIN 2x10 (10)

371163 X1'21 GRAPHITE REAR POD LOWER PLATE 2.5mm

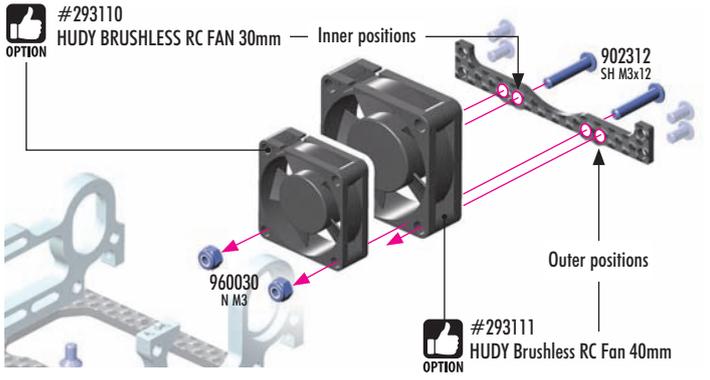
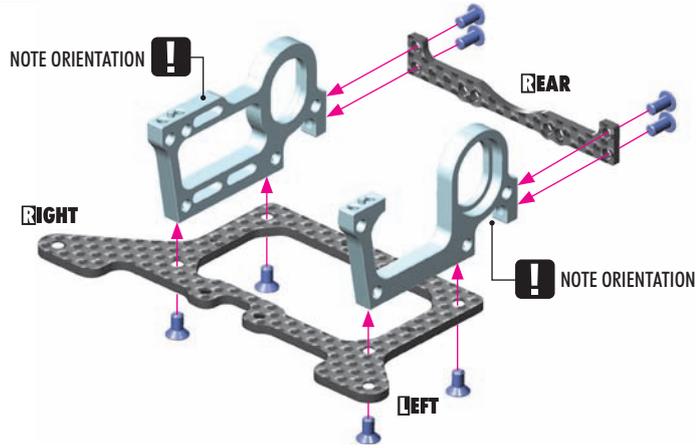
2. REAR SUSPENSION



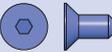
902305
SH M3x5



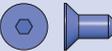
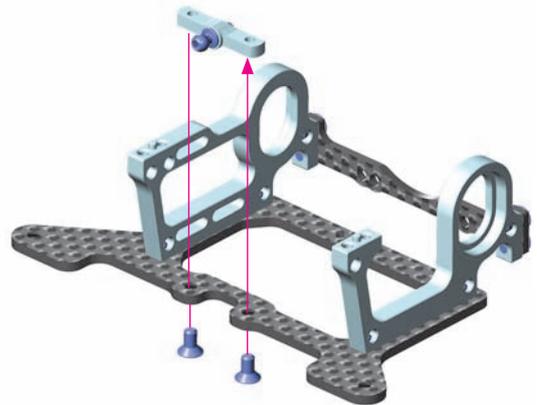
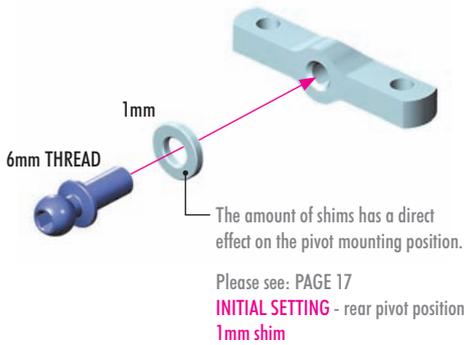
903306
SFH M3x6



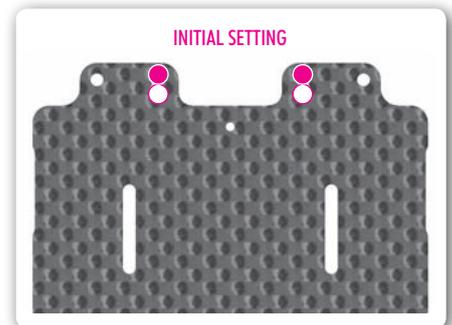
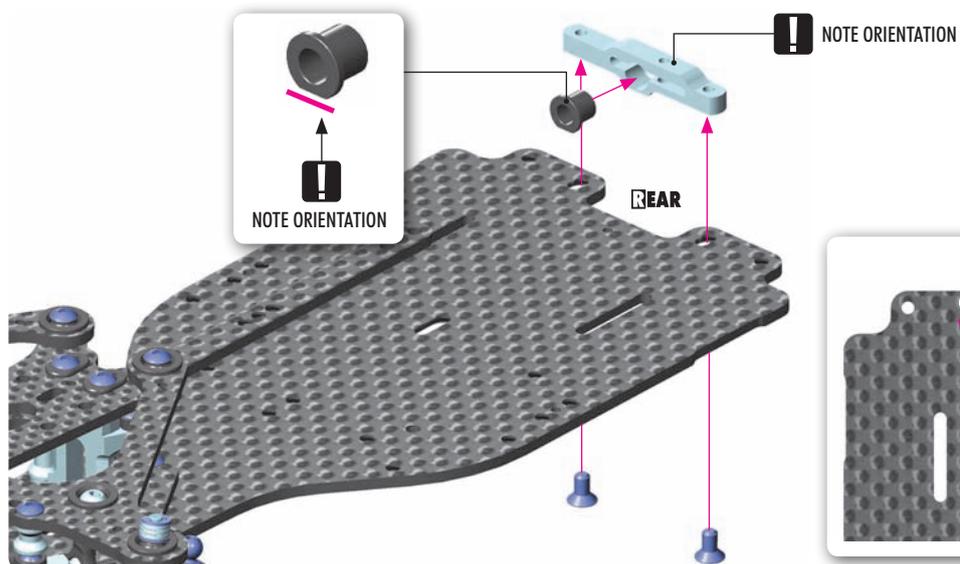
303122
SHIM 3x6x1



903306
SFH M3x6



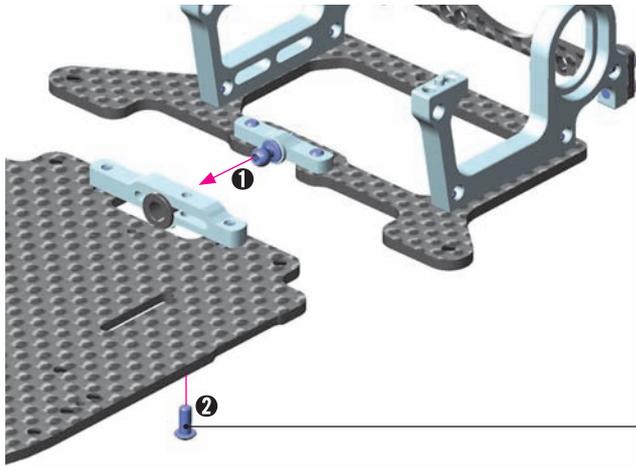
903306
SFH M3x6



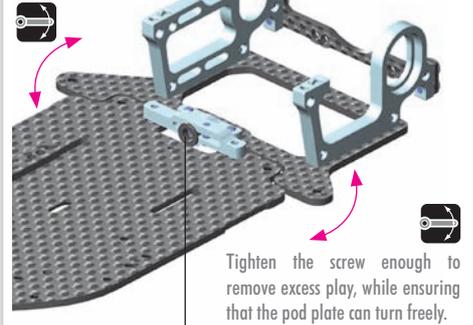
2. REAR SUSPENSION



902256
SH M2.5x6



Ensure free, smooth movement

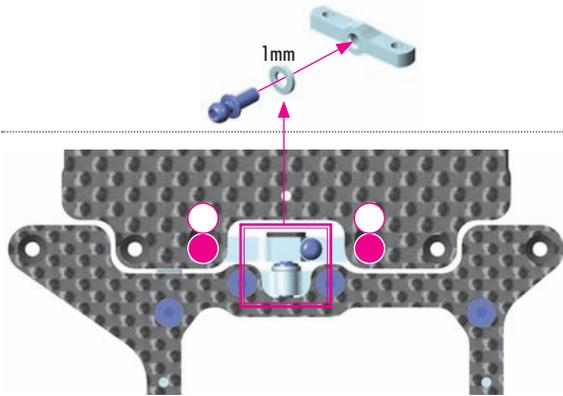


Tighten the screw enough to remove excess play, while ensuring that the pod plate can turn freely.

PIVOT MOUNTING ALTERNATIVE

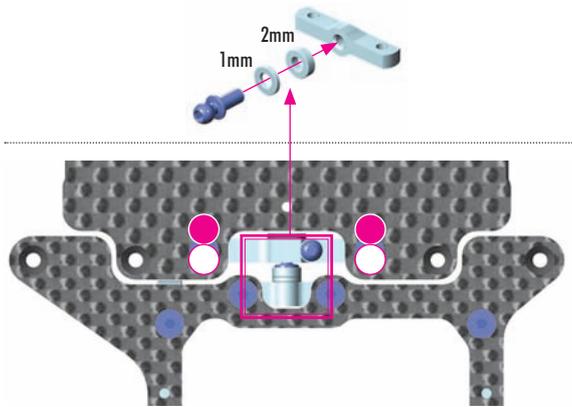
REARWARD: (INITIAL SETTING)

Pivot mounted in rearward chassis holes, and 1mm shim used under the pivot ball. The rearward pivot mounting position gives the most steering and most free rear end. Recommended for high-traction conditions such as US black carpet.



FORWARD:

Pivot mounted in forward chassis holes, with 3mm shims under the pivot ball. The forward pivot mounting position gives a good balance between front and rear traction.



303122
SHIM 3x6x1



303123
SHIM 3x6x2



303122
SHIM 3x6x1

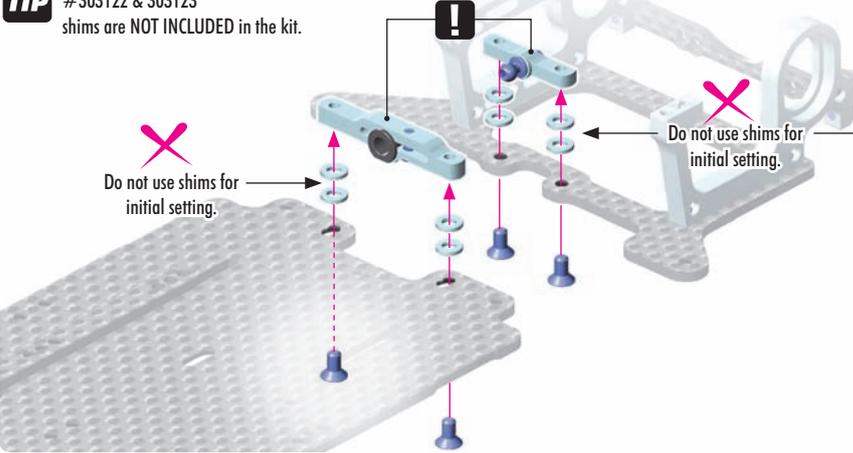


303123
SHIM 3x6x2



TIP #303122 & 303123 shims are NOT INCLUDED in the kit.

NOTE ORIENTATION



ROLL CENTER ADJUSTMENT

The roll center can be adjusted by adding or removing shims from beneath the aluminum pivot mounts.

LOWER ROLL CENTER (INITIAL SETTING - NO SHIMS) will give more traction and increased chassis roll.

HIGHER ROLL CENTER (adding shims) will increase steering by making the car rotate more on- and off-power



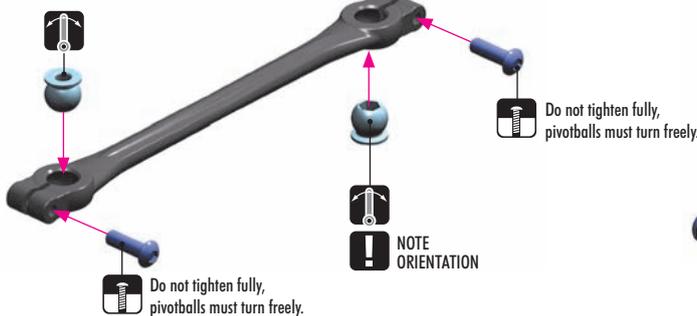
IMPORTANT! Always use same shim thickness on both sides of both aluminum holders



902258
SH M2.5x8

2x

NOTE ORIENTATION



Do not tighten fully, pivotballs must turn freely.

NOTE ORIENTATION

Do not tighten fully, pivotballs must turn freely.

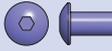
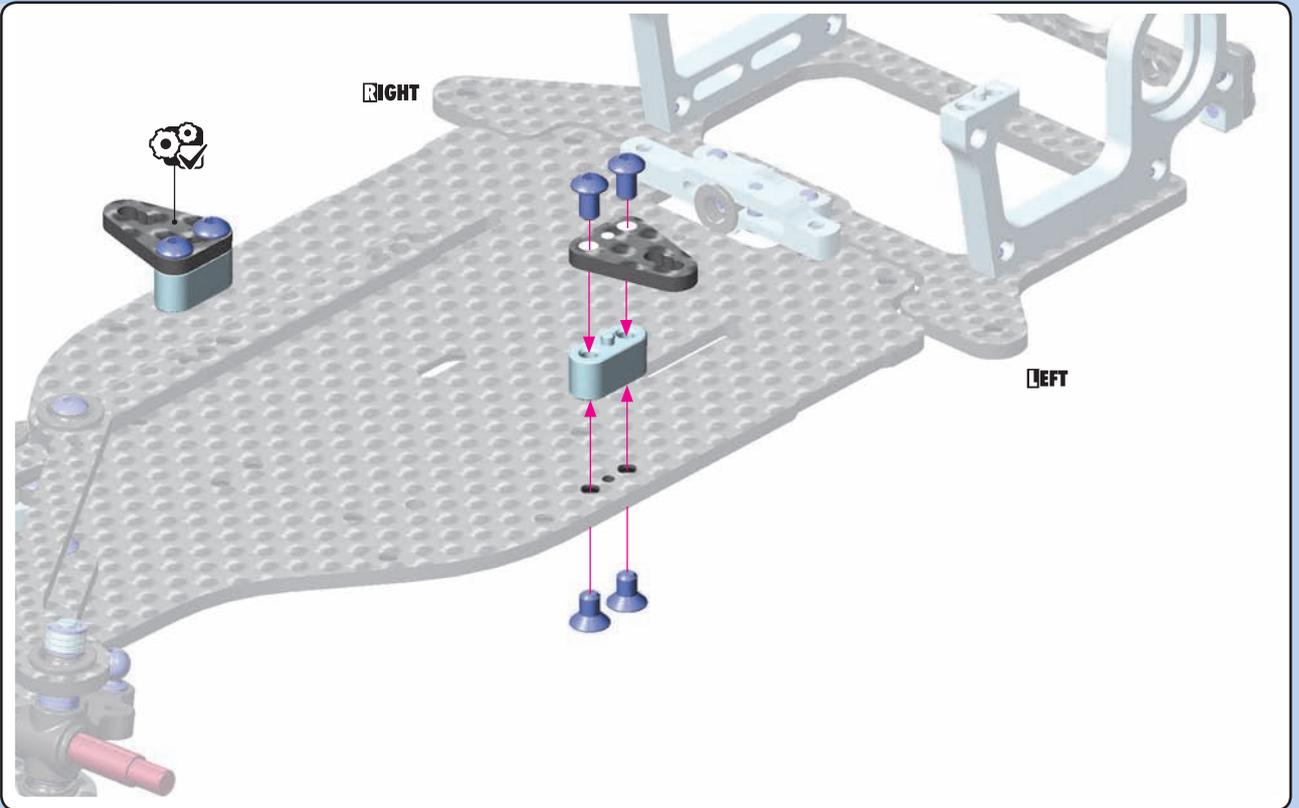
2. REAR SUSPENSION



902305
SH M3x5



903305
SFH M3x5

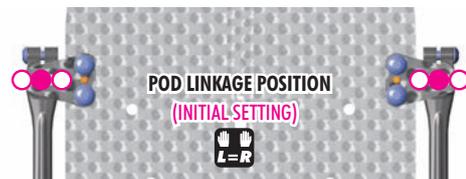
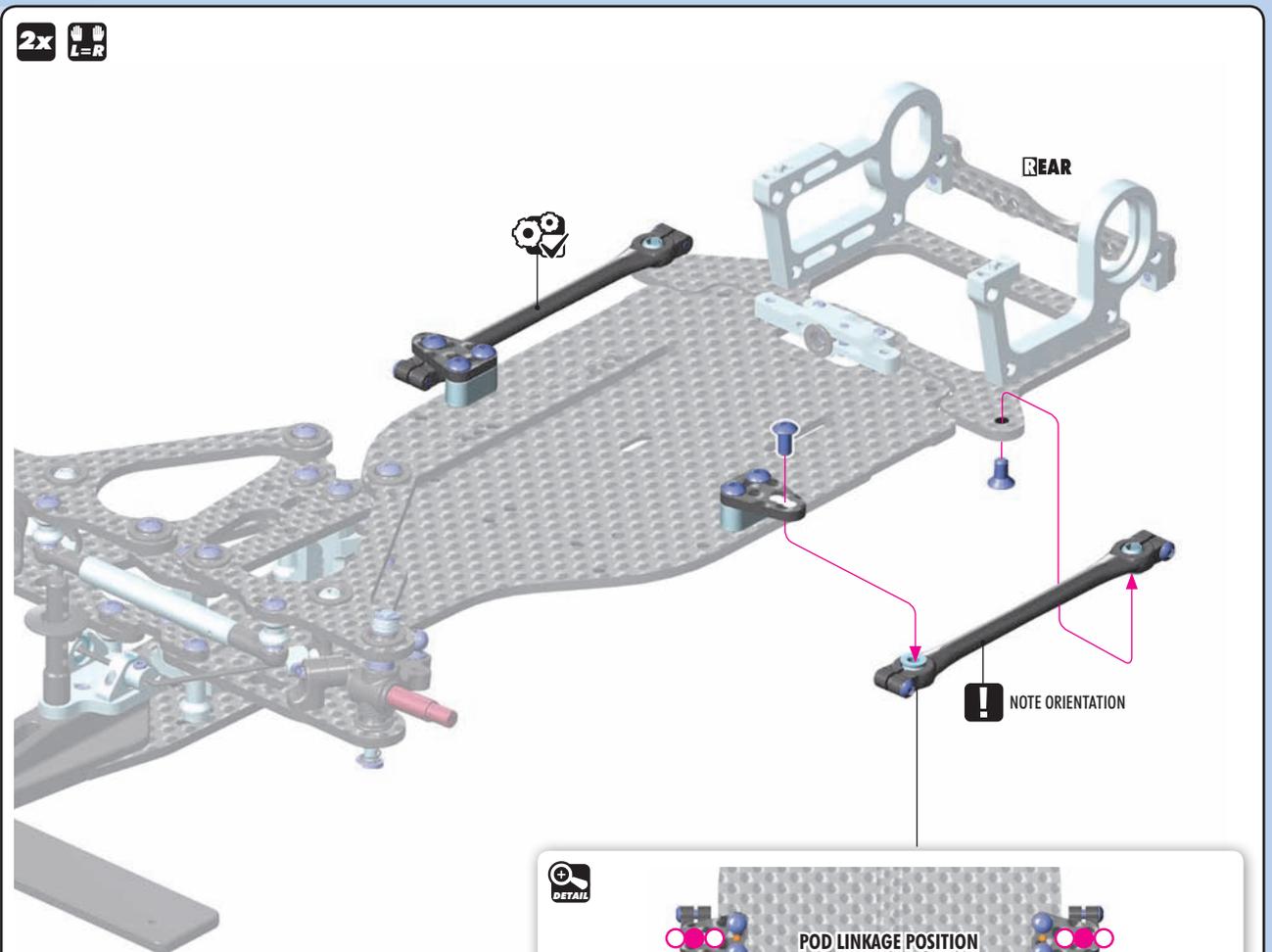


902306
SH M3x6



903306
SFH M3x6

2x
L=R



- **OUTER POSITION**
Angled link.
Reduces steering, increases stability.
- **CENTER POSITION (INITIAL SETTING)**
Straight link - easier to drive.
- **INNER POSITION**
Angled link.
Increases in-corner steering.

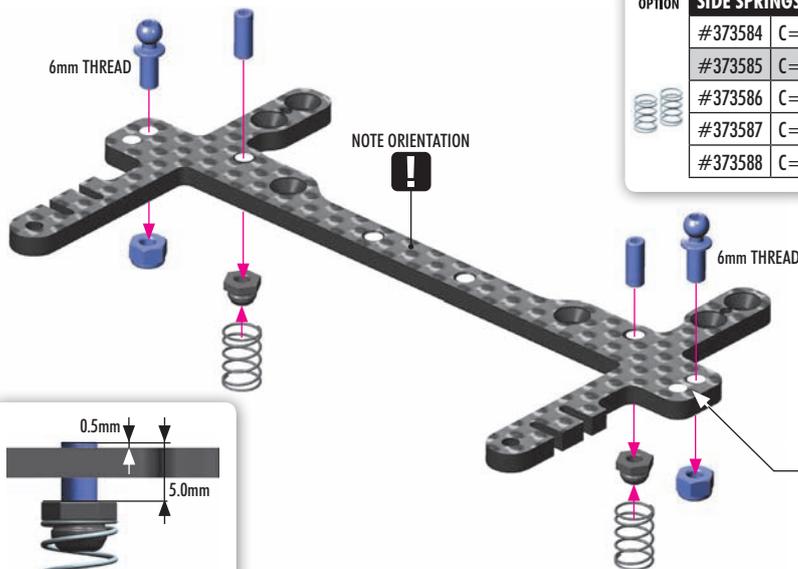
2. REAR SUSPENSION



901308
SB M3x8



960030
N M3



OPTION

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

SIDE SPRINGS

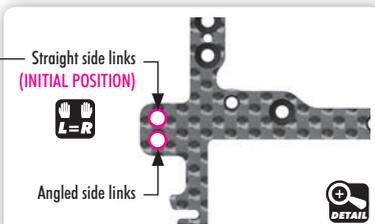
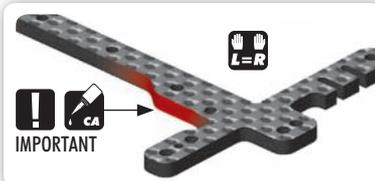
Part #	Color	Option
#373584	C=0.6 - SILVER	OPTION
#373585	C=0.9 - GOLD	INCLUDED
#373586	C=1.2 - BLACK	OPTION
#373587	C=1.5 - SILVER	OPTION
#373588	C=1.8 - GOLD	OPTION

SOFTER SPRINGS:

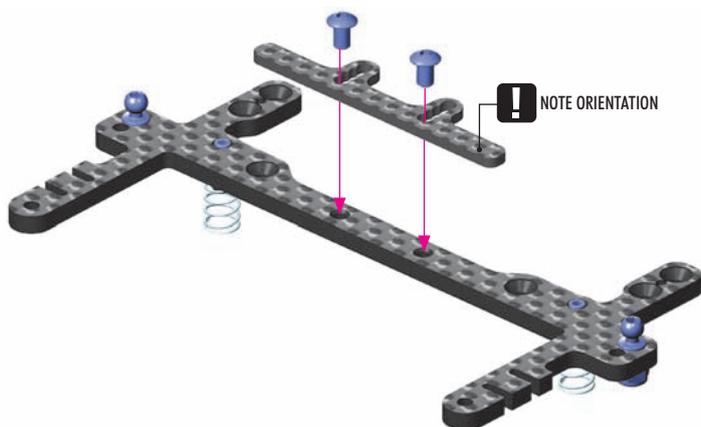
Makes the car easier to drive on low-traction tracks but more difficult to drive on high-traction tracks.

HARDER SPRINGS:

Improves steering response, but also increases traction rolling.



902305
SH M3x5



For battery backstop adjustment check page 40.

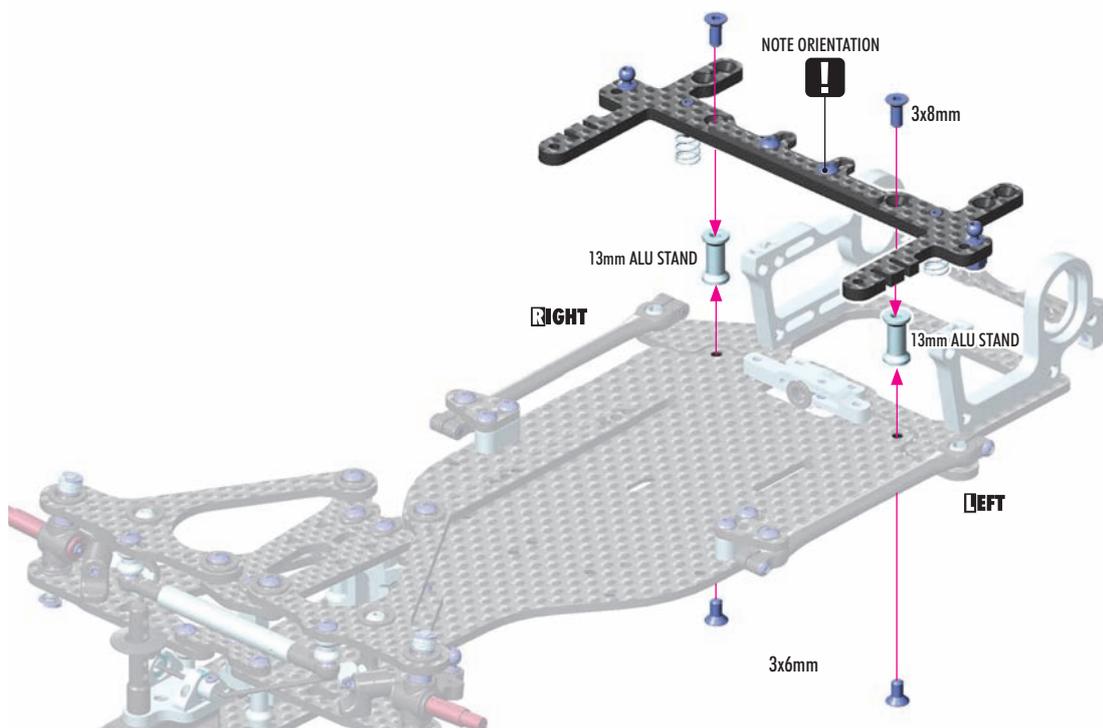
INITIAL SETTING



903306
SFH M3x6



903308
SFH M3x8



2. REAR SUSPENSION



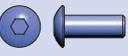
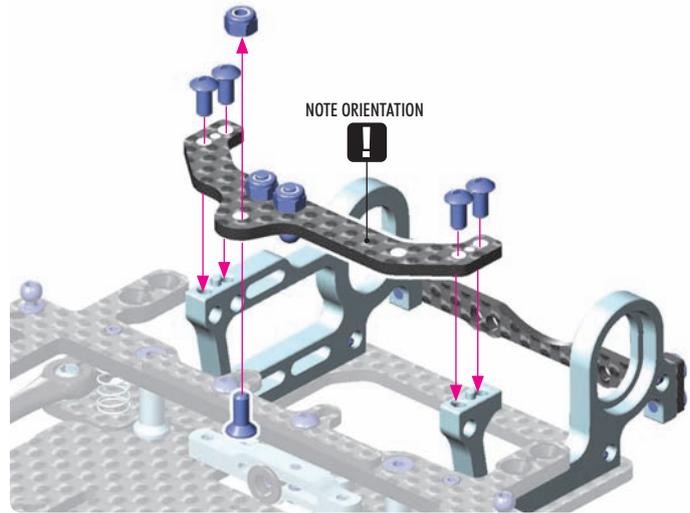
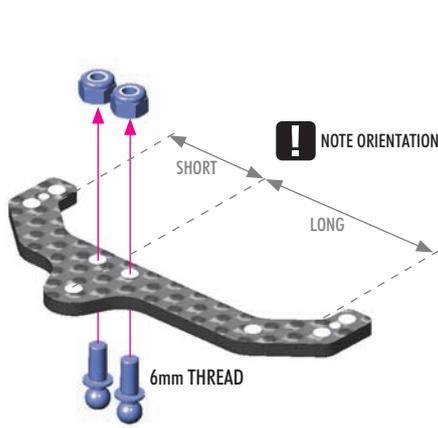
902306
SH M3x6



903308
SFH M3x8



960030
N M3



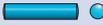
902308
SH M3x8



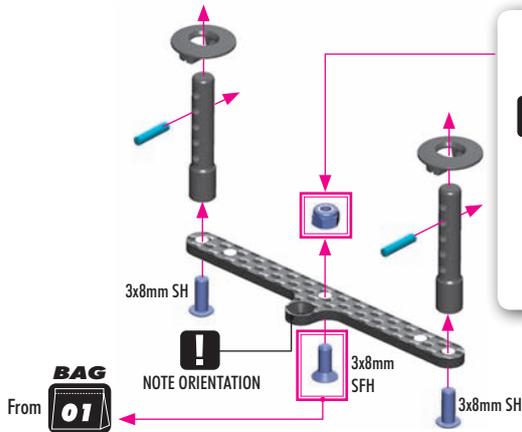
903308
SFH M3x8



960030
N M3



981210
P 2x10



ALTERNATIVE 2 SHORT SHOCK (REARWARD MOUNT POSITION)

For the SHORT shock alternative, without the adaptor, mount the shock holder on the graphite plate for body mounts. See page 31.

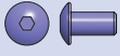


#301351-0 ALU ADJUSTABLE BODY POST STOP (2) OPTION

Very handy, easily externally-adjustable body post made from Swiss 7075 T6 aluminum. Allows for adjustment of body height by 3mm without needing to change the position on the body post.



306219
SHIM 3x6x3



902306
SH M3x6



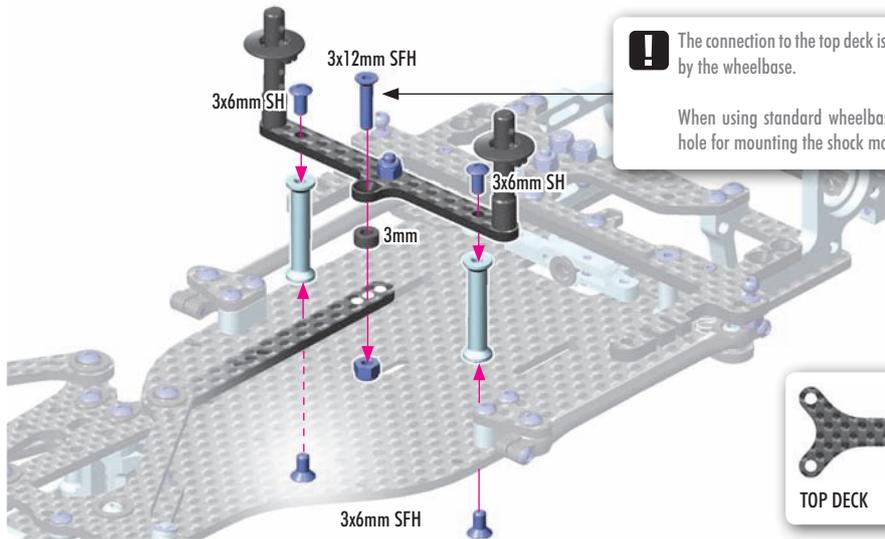
903306
SFH M3x6



903312
SFH M3x12



960030
N M3



The connection to the top deck is directly influenced by the wheelbase.

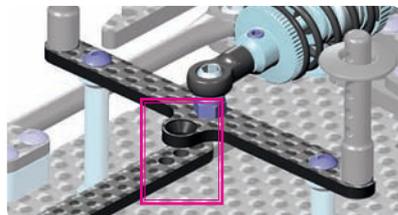
When using standard wheelbase, use the middle hole for mounting the shock mount.



SOFT IN-LINE FLEX™

The Soft In-Line Flex™ setting without the top deck allows both in-line & side flex for increased mid-corner steering.

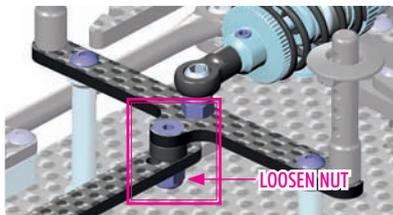
(Recommended for low-traction tracks.)



MEDIUM IN-LINE FLEX™

The Medium In-Line Flex™ setting with a loosened nut generates a medium amount of in-line flex for a slightly decreased steering response but improved mid-corner steering and a better on-off power feeling.

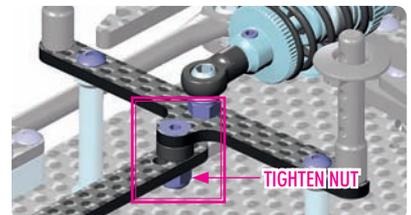
(Recommended for medium-traction tracks.)



STIFF IN-LINE FLEX™

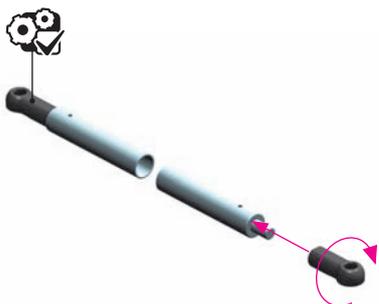
The Stiff In-Line Flex™ setting with a tightened nut eliminates the in-line flex of the chassis and increases steering response, making the car more precise and forgiving.

(Recommended for high-traction tracks.)

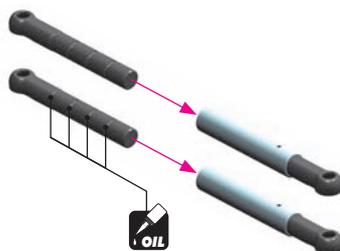


2. REAR SUSPENSION

2x



2x



Add oil in each slot of the COMPOSITE side tubes.

NOTE:

Add oil only in the slots, not on the whole tube.
After assembling the side tubes, check for smooth operation.
It is very important to re-oil the side tubes, at least once per race day.
You may use different oil thicknesses depending on track conditions.

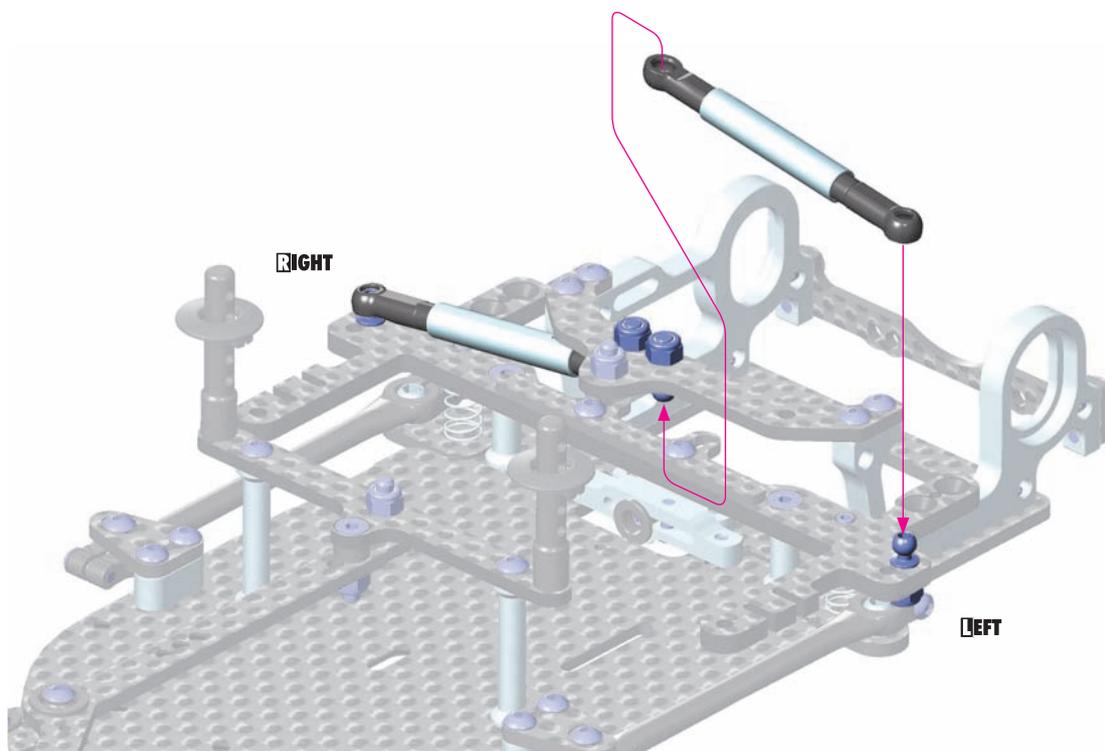
TIP

For HIGH grip	use SOFTER oils
For LOW grip or ASPHALT	use HARDER oils



HUDY OILS

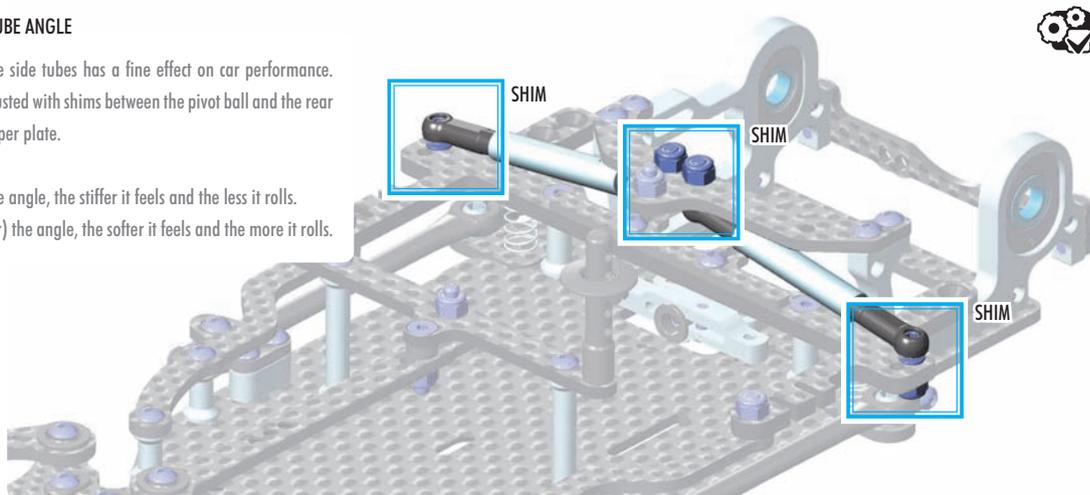
OPTION	#	Thickness	STATUS
	#106510	10.000cSt	OPTION
	#106492	11.000cSt	OPTION
	#106512	12.000cSt	OPTION
	#106515	15.000cSt	OPTION
	#106520	20.000cSt	OPTION
	#106530	30.000cSt	INCLUDED
	#106540	40.000cSt	OPTION
	#106550	50.000cSt	OPTION



TIP SIDE TUBE ANGLE

The angle of the side tubes has a fine effect on car performance.
The angle is adjusted with shims between the pivot ball and the rear brace and/or upper plate.

The **HIGHER** the angle, the stiffer it feels and the less it rolls.
The **LESS** (flatter) the angle, the softer it feels and the more it rolls.



2. REAR SUSPENSION

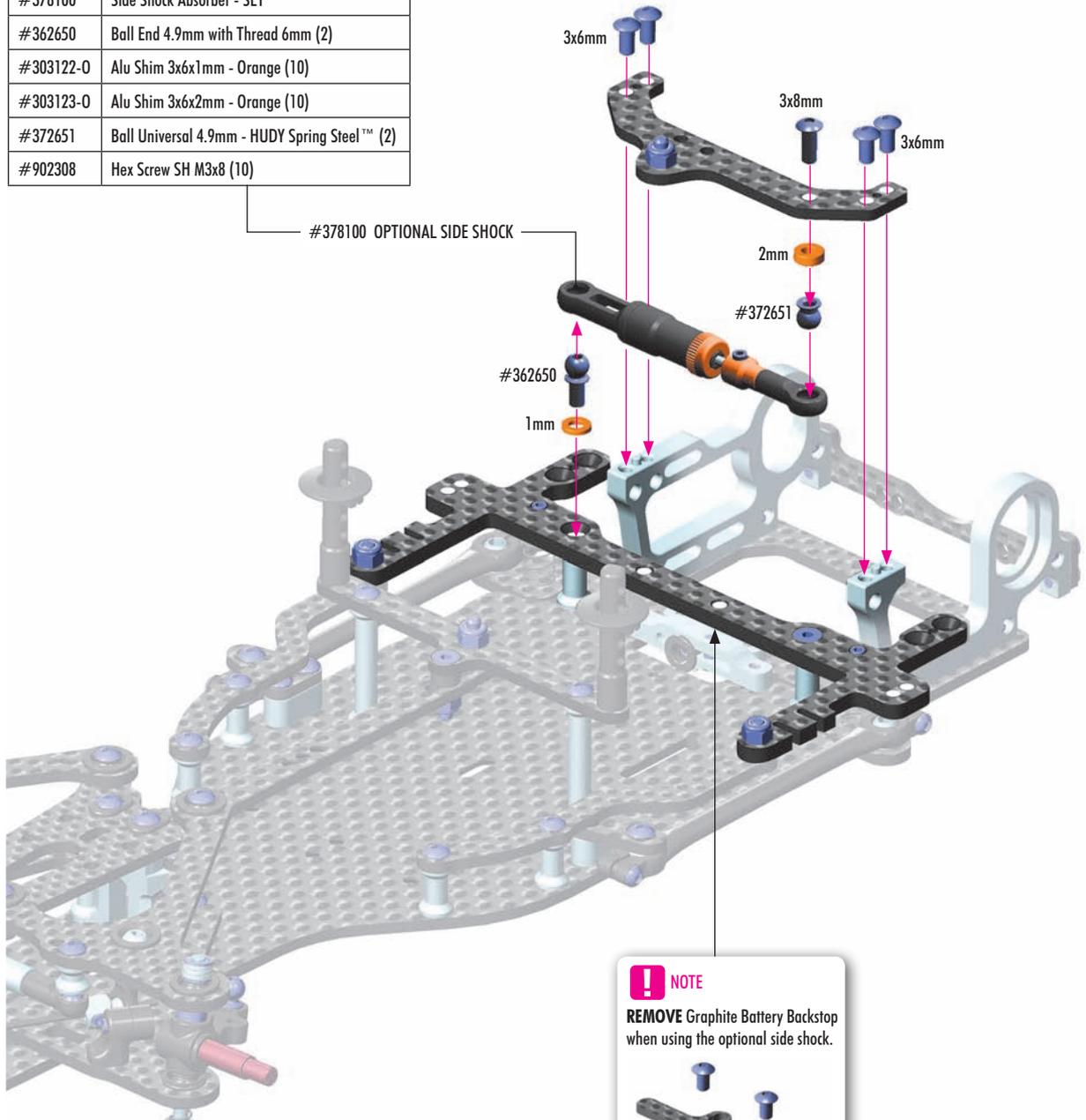
OPTIONAL SIDE SHOCK



#378100

Optional side shock can be used to improve traction in low- and medium-traction conditions.
The optional side shock REPLACES the 2 side tubes.

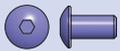
SIDE SHOCK - OPTIONAL PARTS (NOT INCLUDED)	
#378100	Side Shock Absorber - SET
#362650	Ball End 4.9mm with Thread 6mm (2)
#303122-0	Alu Shim 3x6x1mm - Orange (10)
#303123-0	Alu Shim 3x6x2mm - Orange (10)
#372651	Ball Universal 4.9mm - HUDY Spring Steel™ (2)
#902308	Hex Screw SH M3x8 (10)



NOTE
REMOVE Graphite Battery Backstop when using the optional side shock.



2. REAR SUSPENSION



902306
SH M3x6



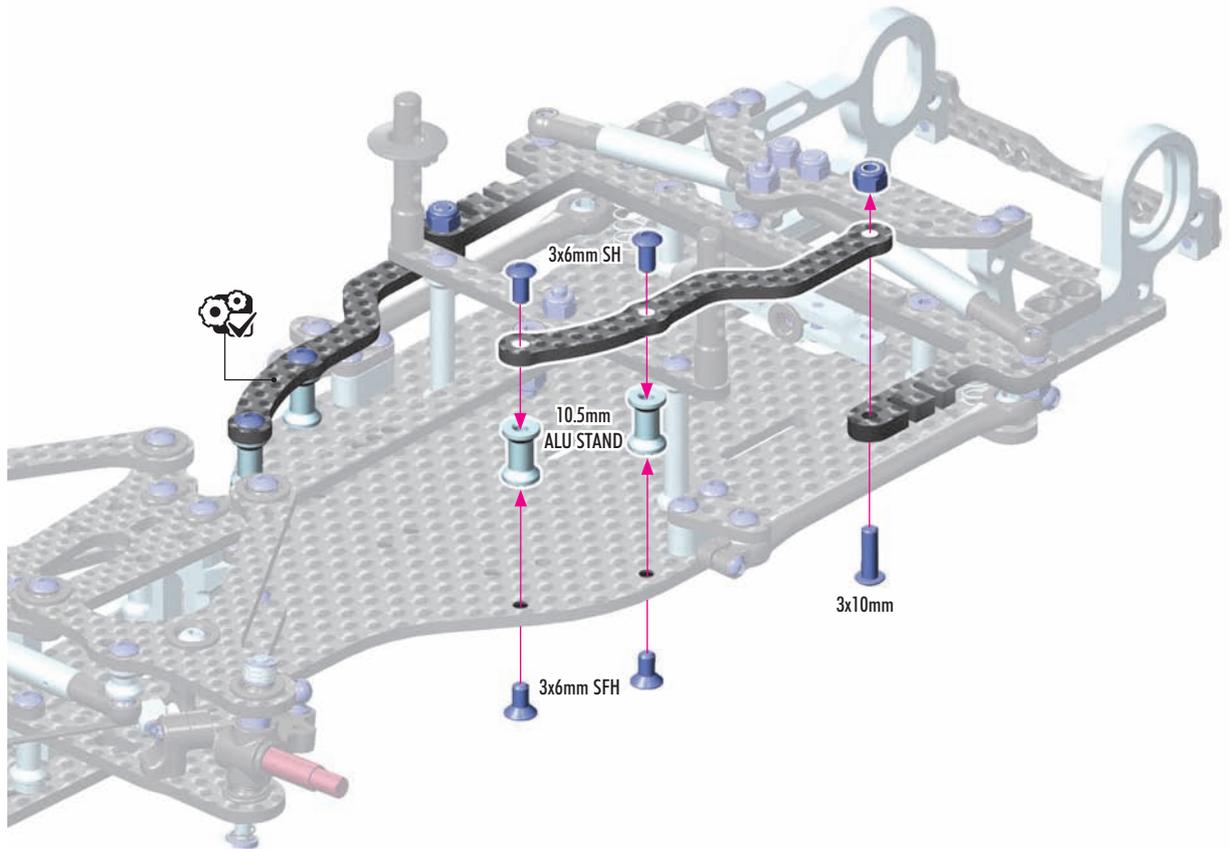
902310
SH M3x10



903306
SFH M3x6



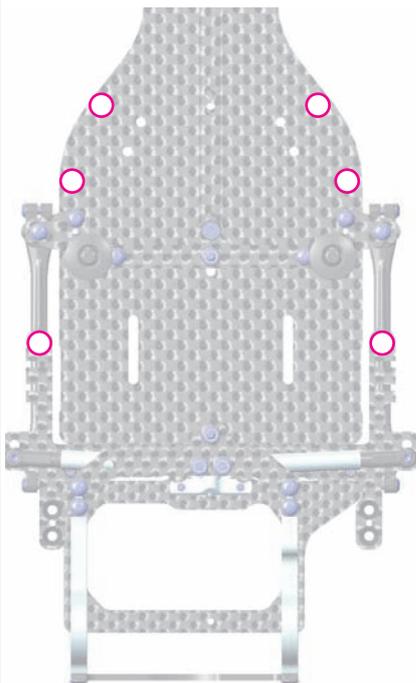
960030
N M3



CHASSIS FLEX ADJUSTMENT

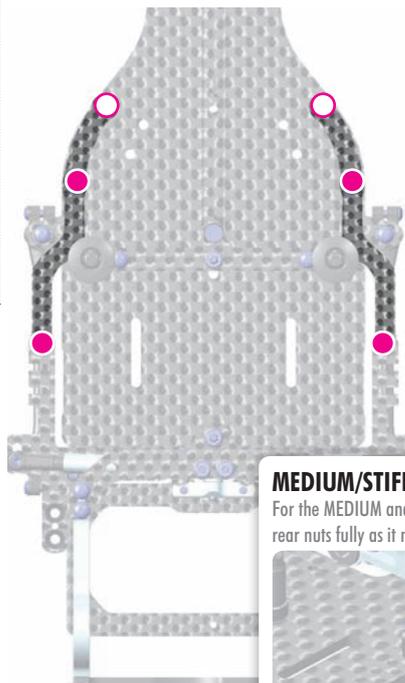
SOFT (NO BRACES)

Generates more mechanical grip. Recommended for low- to medium-traction carpet as well as asphalt.



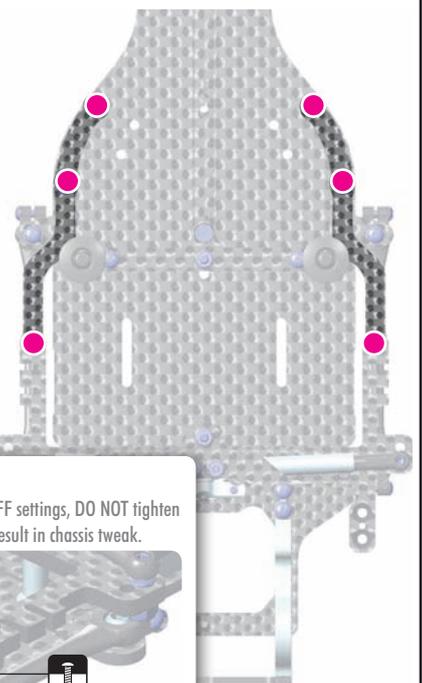
MEDIUM

Braces installed, attached at middle & rear only. This setting is a good compromise between mechanical grip and steering response. Ideal for most conditions.



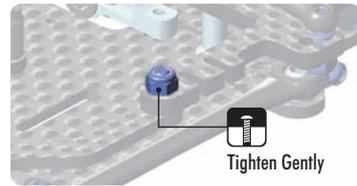
STIFF

Braces installed, attached at front, middle, and rear. This is the stiffest, most stable setting. Recommended for high-traction carpet (such as US black carpet). The car will have less roll but will also have less overall grip.



MEDIUM/STIFF

For the MEDIUM and STIFF settings, DO NOT tighten rear nuts fully as it may result in chassis tweak.

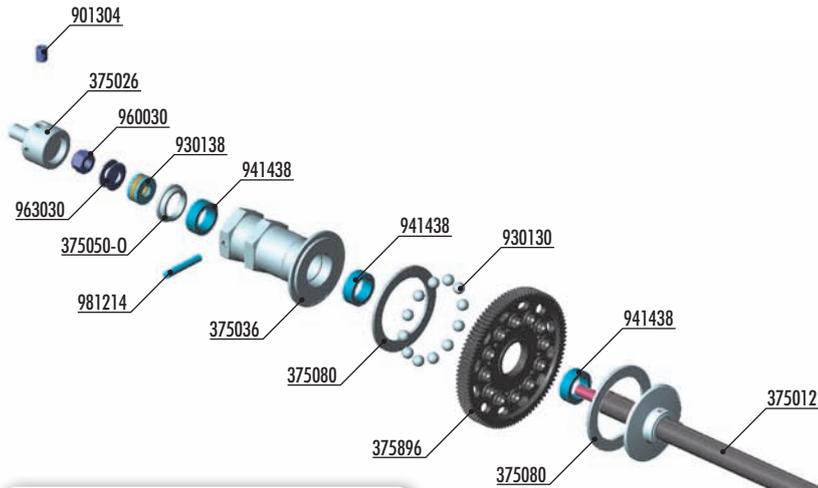


3. BALL DIFFERENTIAL



BALL DIFF - SPUR GEARS

#375872	72T / 64P	OPTION
#375875	75T / 64P	OPTION
#375876	76T / 64P	OPTION
#375878	78T / 64P	OPTION
#375880	80T / 64P	OPTION
#375884	84T / 64P	OPTION
#375888	88T / 64P	OPTION
#375892	92T / 64P	OPTION
#375896	96T / 64P	INCLUDED



#375010
OPTION GRAPHITE REAR AXLE SHAFT

9g lighter for great weight savings and improved acceleration, but more fragile.

#375014
OPTION GRAPHITE REAR GEAR DIFF AXLE SHAFT

#375001
OPTION XRAY SOLID AXLE 1/10 FORMULA - SET

#930238
OPTION CERAMIC AXIAL THRUSTBEARING F3-8 3x8x3.5mm

#930230
OPTION CERAMIC BALL 3.175mm (12)

#374901
OPTION XRAY GEAR DIFFERENTIAL 1/10 FORMULA - SET

Included in set #374901



GEAR DIFF - SPUR GEARS

#375776	76T / 64P	OPTION
#375780	80T / 64P	OPTION
#375784	84T / 64P	OPTION
#375788	88T / 64P	OPTION
#375792	92T / 64P	OPTION



- 372070 COMPOSITE RIDE HEIGHT ADJUSTER SET - V2 (2)
- 375012 STEEL REAR AXLE SHAFT - HUDY SPRING STEEL™
- 375026 X1 ALU REAR DRIVE AXLE - RIGHT
- 375036 X1 ALU REAR WHEEL HUB - RIGHT
- 375046 X1 ALU REAR WHEEL HUB - LEFT
- 375050-0 ALU DIFF HUB - ORANGE
- 375080 D-LOCK DIFF PLATE (2)
- 375090 SET OF ALU SHIMS 6.37x8.4mm (0.5mm, 1.0mm, 2.0mm)
- 375896 COMPOSITE SPUR GEAR - 96T / 64P
- 901304 HEX SCREW SB M3x4 (10)
- 908258 HEX SCREW SOCKET HEAD CAP M2.5x8 (10)

- 930130 CARBIDE BALL 3.175mm (12)
- 930138 CARBIDE BALL-BEARING AXIAL F3-8 3x8x3.5 - V2
- 941438 BALL-BEARING 1/4"x3/8"x1/8" RUBBER SEALED - OIL (2)
- 951438 BALL-BEARING 1/4" x 3/8" x 1/8" FLANGED - STEEL SEALED - OIL (2)
- 960030 NUT M3 (10)
- 963030 CONE WASHER ST 3x8x0.5 (10)
- 981214 PIN 2x14 (10)



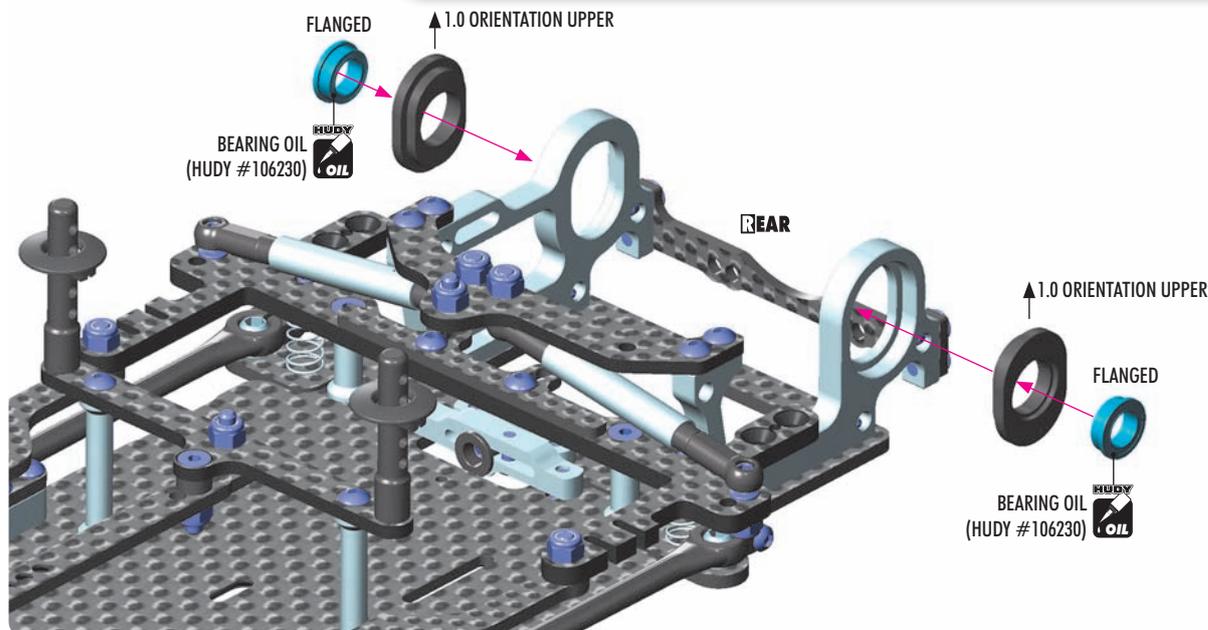
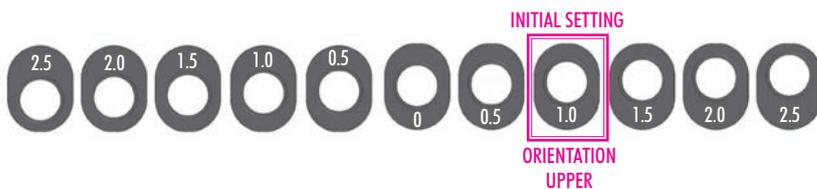
3. BALL DIFFERENTIAL



951438
BB 1/4"x3/8"x1/8"

REAR RIDE HEIGHT ECCENTRIC BUSHINGS

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



375090
6.4x8.4x0.5



375090
6.4x8.4x1.0



375090
6.4x8.4x2.0



908258
SCH M2.5x8

#375001
OPTION XRAY SOLID AXLE 1/10 FORMULA - SET

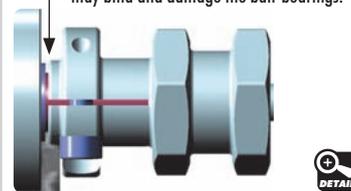


#374901
OPTION XRAY GEAR DIFFERENTIAL 1/10 FORMULA - SET



IMPORTANT

The axle must have a VERY small amount of side play. If there is no side play, the axle may bind and damage the ball-bearings.

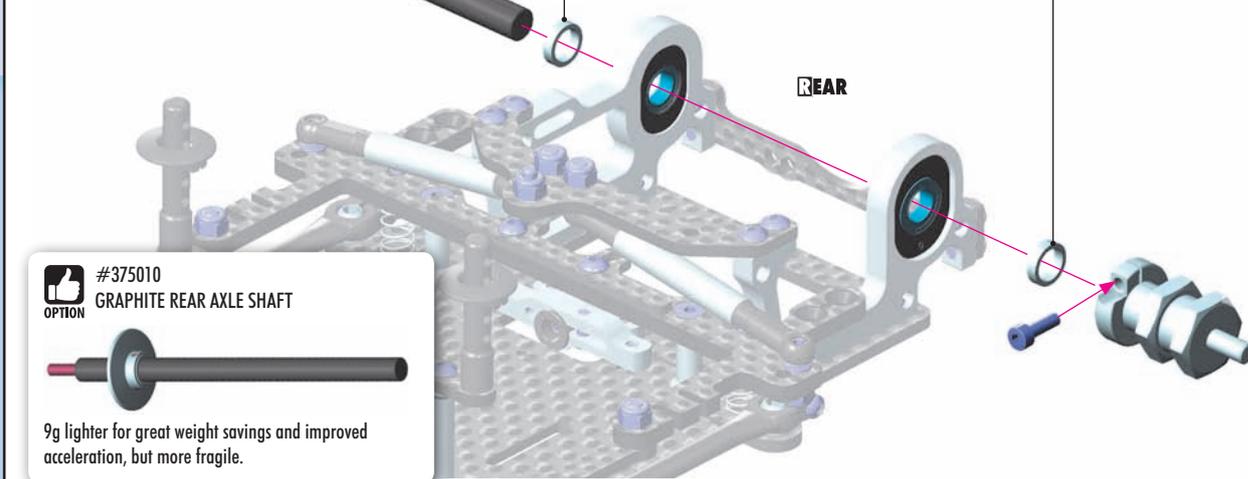


#375010
OPTION GRAPHITE REAR AXLE SHAFT



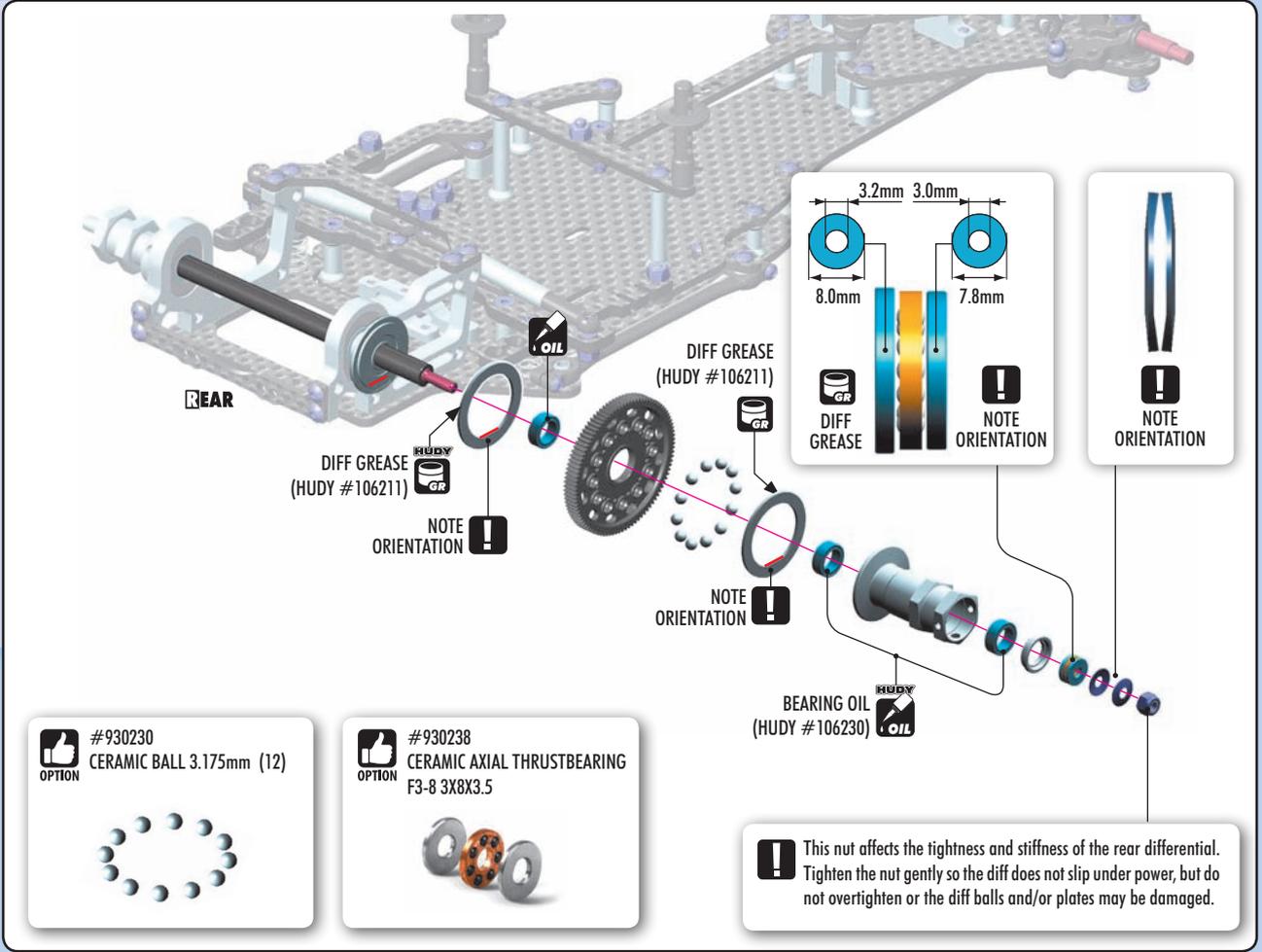
9g lighter for great weight savings and improved acceleration, but more fragile.

Use additional shims to widen the rear track-width.
Use the same shims on both sides. For initial assembly use 6.4x8.4x2mm shims.



3. BALL DIFFERENTIAL

-  930130
B 3.1
-  930138
BA 3x8
-  941438
BB 1/4"x3/8"x1/8"
-  960030
N M3
-  963030
ST 3x8



REAR

DIFF GREASE (HUDY #106211)

NOTE ORIENTATION !

DIFF GREASE (HUDY #106211)

NOTE ORIENTATION !

DIFF GREASE (HUDY #106211)

NOTE ORIENTATION !

BEARING OIL (HUDY #106230)

NOTE ORIENTATION !

NOTE ORIENTATION !

NOTE ORIENTATION !

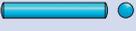
 #930230
OPTION CERAMIC BALL 3.175mm (12)

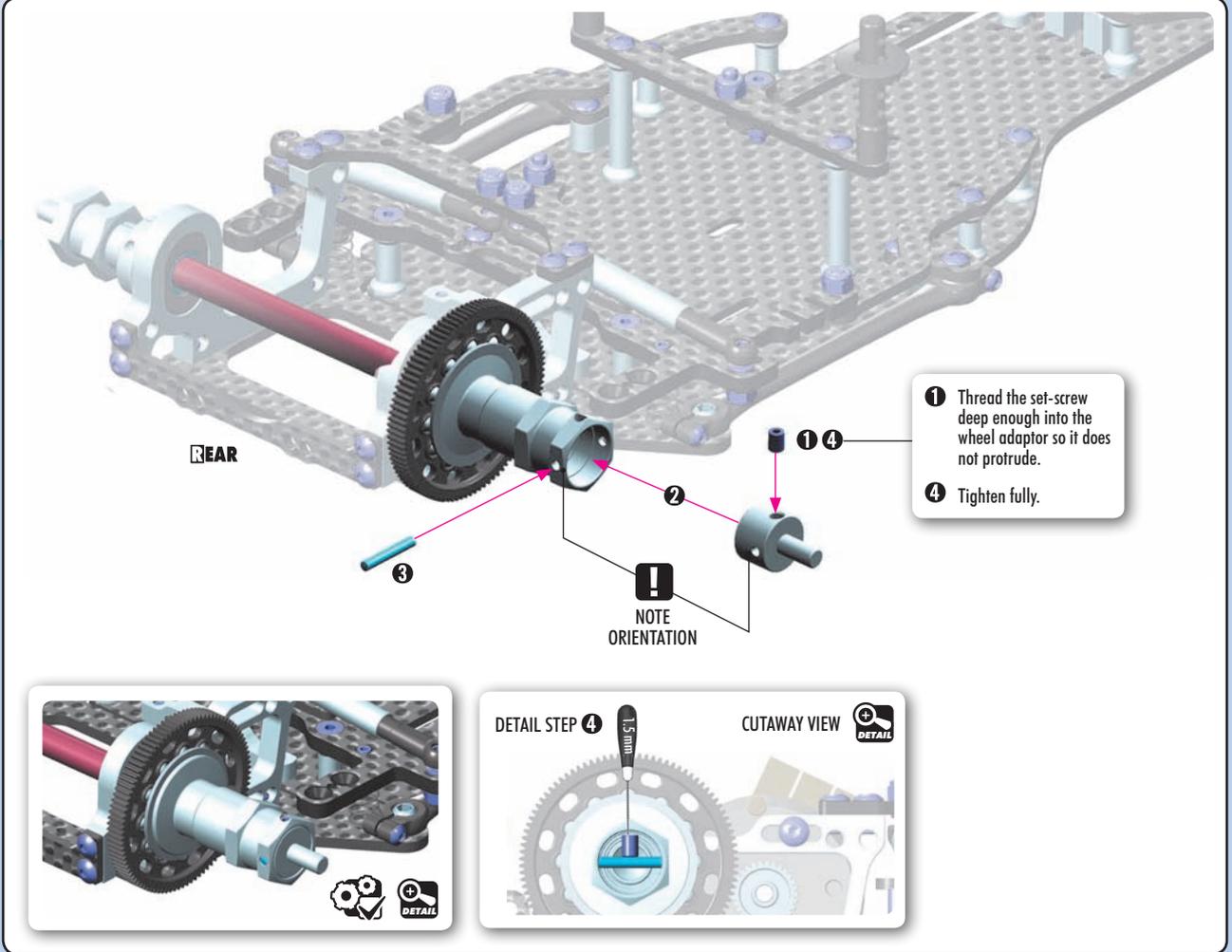


 #930238
OPTION CERAMIC AXIAL THRUSTBEARING F3-8 3X8X3.5



 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



REAR

NOTE ORIENTATION !

- 1 Thread the set-screw deep enough into the wheel adaptor so it does not protrude.
- 2
- 3
- 4 Tighten fully.

DETAIL STEP 4

CUTAWAY VIEW



4. CENTER SHOCK

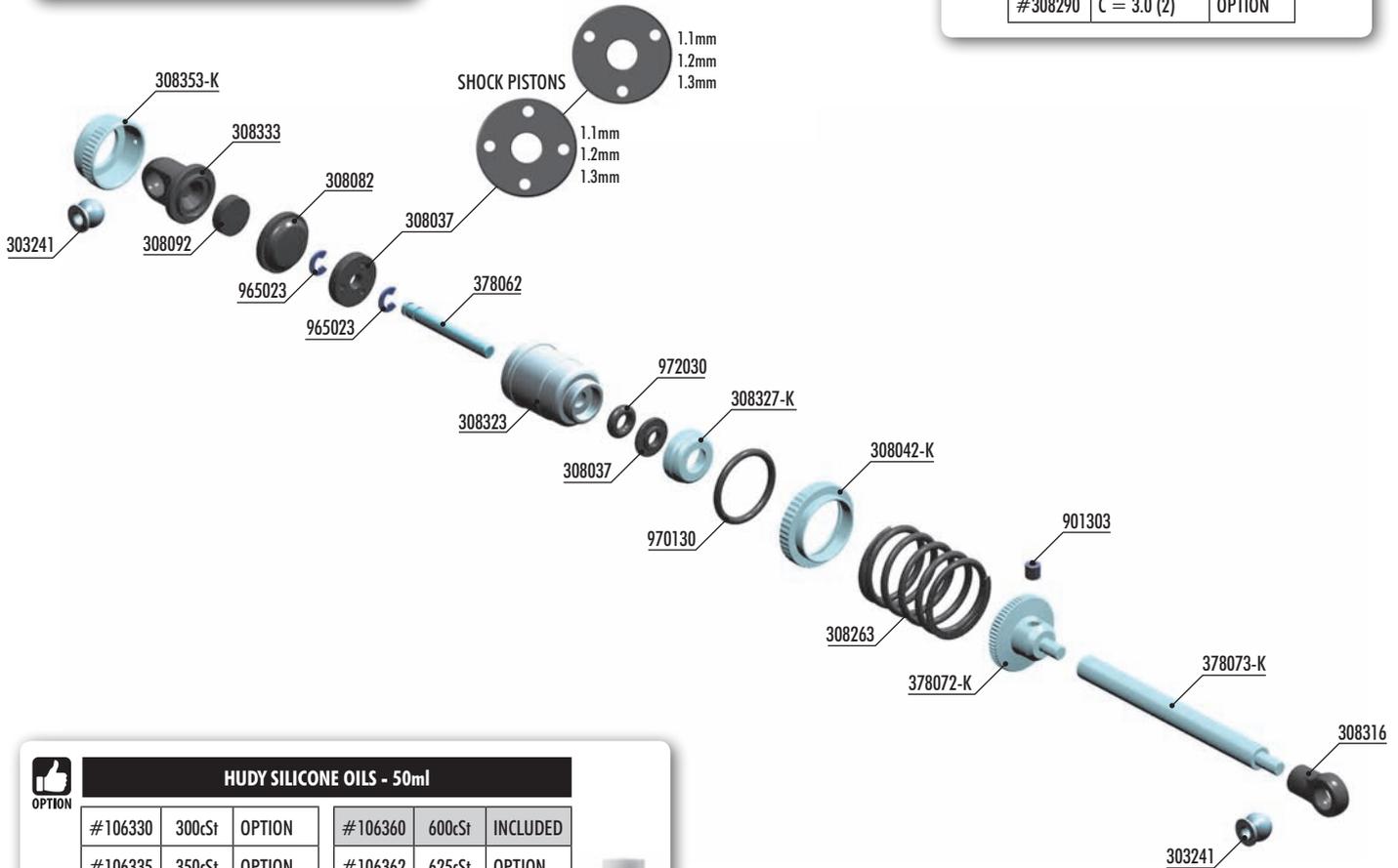


#104002
HUDY AIR VAC – VACUUM PUMP - ON-ROAD



XRAY SPRINGS

#	C =	
#308263	C = 2.3-2.6 (2)	INCLUDED
#308264	C = 2.5-2.8 (2)	OPTION
#308274	C = 2.3 (2)	OPTION
#308275	C = 2.5 (2)	OPTION
#308286	C = 2.6 (2)	OPTION
#308276	C = 2.7 (2)	OPTION
#308288	C = 2.8 (2)	OPTION
#308277	C = 2.9 (2)	OPTION
#308290	C = 3.0 (2)	OPTION



HUDY SILICONE OILS - 50ml

#	Viscosity		#	Viscosity	
#106330	300cSt	OPTION	#106360	600cSt	INCLUDED
#106335	350cSt	OPTION	#106362	625cSt	OPTION
#106337	375cSt	OPTION	#106365	650cSt	OPTION
#106340	400cSt	OPTION	#106367	675cSt	OPTION
#106342	425cSt	OPTION	#106370	700cSt	OPTION
#106345	450cSt	OPTION	#106375	750cSt	OPTION
#106347	475cSt	OPTION	#106380	800cSt	OPTION
#106350	500cSt	OPTION	#106390	900cSt	OPTION
#106352	525cSt	OPTION	#106410	1000cSt	OPTION
#106355	550cSt	OPTION	#106420	2000cSt	OPTION
#106357	575cSt	OPTION			



#308039
ALU PROGRESSIVE SHOCK SYSTEM - SET (2)

Progressive shock system for improved traction and steering characteristics. Shock insert has 3 triangle cuts and is used with piston WITHOUT holes. The hardness of the shock is influenced not by the holes in the piston, but rather by the insert.



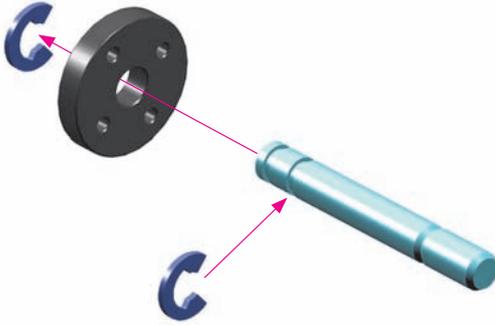
BAG

04

- | | | | |
|----------|--|----------|------------------------------------|
| 303241 | BALL UNIVERSAL 5.8mm HEX (4) | 378062 | X1 SHOCK SHAFT |
| 308037 | COMPOSITE PISTONS 4-HOLE 1.0-1.2mm, 3-HOLE 1.0-1.2mm | 378072-K | X1 ALU SHOCK SPRING COLLAR - BLACK |
| 308042-K | ALU SHOCK ADJUSTABLE NUT - BLACK (2) | 378073-K | X1 ALU SHOCK ADAPTER - BLACK |
| 308082 | SHOCK ABSORBER MEMBRANE (4) | | |
| 308092 | SHOCK FOAM INSERTS (4) | 901303 | HEX SCREW SB M3x3 (10) |
| 308316 | SHOCK BALL JOINT - OPEN (4) | 965023 | E-CLIP 2.3 (10) |
| 308323 | ALU XRAY SHOCK BODY (2) | 970130 | O-RING 13 x 1.5 (10) |
| 308327-K | ALU CAP FOR XRAY SHOCK BODY - BLACK | 972030 | SILICONE O-RING 3 x 2 (10) |
| 308333 | COMPOSITE SHOCK PARTS FOR ALU SHOCKS | | |
| 308353-K | ALU SHOCK CAP-NUT WITH VENT HOLE - BLACK (2) | | |
| 308263 | XRAY 4S SPRING-SET PROGRESSIVE C=2.3-2.6 (2) | | |

4. CENTER SHOCK


 965023
 C 2.3



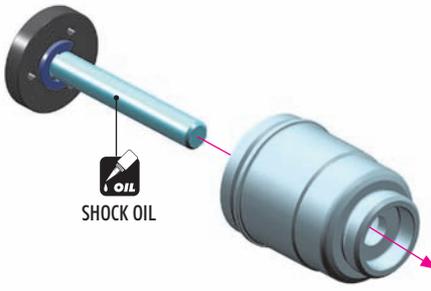
SHOCK PISTON ADJUSTMENT

3 HOLES

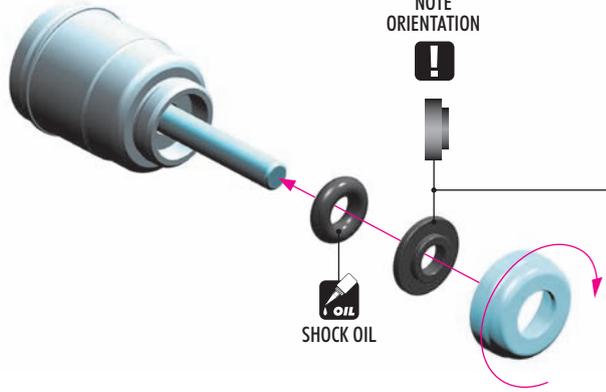
-  1.1mm
- 1.2mm
- 1.3mm

4 HOLES

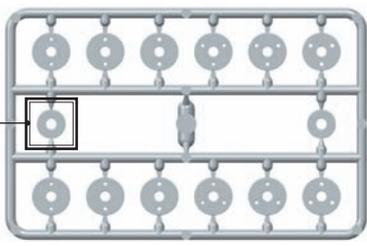
-  1.1mm **INITIAL SETTING**
- 1.2mm
- 1.3mm



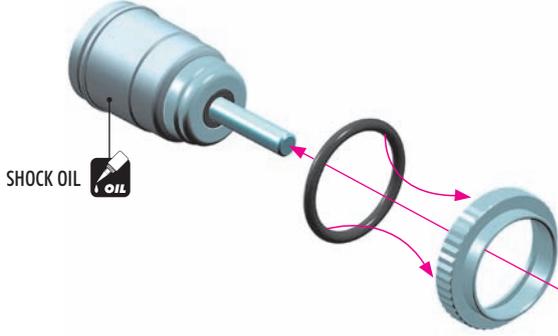

 972030
 0 3x2



DETAIL




 970130
 0 13x1.5



DETAIL

CUTAWAY VIEW



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

4. CENTER SHOCK

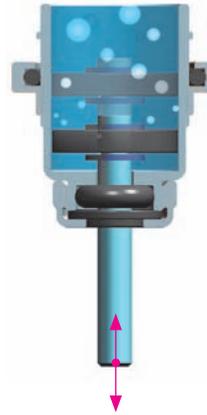
SHOCK FILLING

SOFTER OIL

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

HARDER OIL

Recommend for flat and high-traction tracks, improves steering response.



- 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 to allow oil into all cavities within the shock body.
- 4 Extend 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.
- 5 Add shock oil as necessary.

#104002
HUDY AIR VAC – VACUUM PUMP



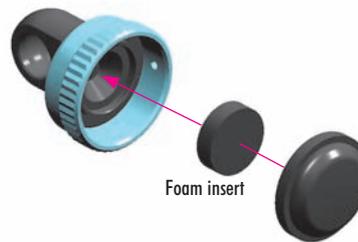
TIP

To make sure that all the air is removed from the shock oil, we recommend using the HUDY Air Vac.



HUDY SILICONE OILS - 50ml

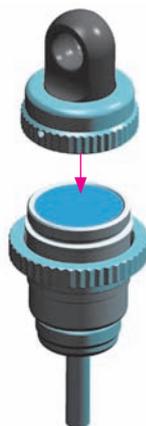
#106330	300cSt	OPTION
#106335	350cSt	OPTION
#106337	375cSt	OPTION
#106340	400cSt	OPTION
#106342	425cSt	OPTION
#106345	450cSt	OPTION
#106347	475cSt	OPTION
#106350	500cSt	OPTION
#106352	525cSt	OPTION
#106355	550cSt	OPTION
#106357	575cSt	OPTION
#106360	600cSt	INCLUDED
#106362	625cSt	OPTION
#106365	650cSt	OPTION
#106367	675cSt	OPTION
#106370	700cSt	OPTION
#106375	750cSt	OPTION
#106380	800cSt	OPTION
#106390	900cSt	OPTION
#106410	1000cSt	OPTION
#106420	2000cSt	OPTION



CUTAWAY VIEW



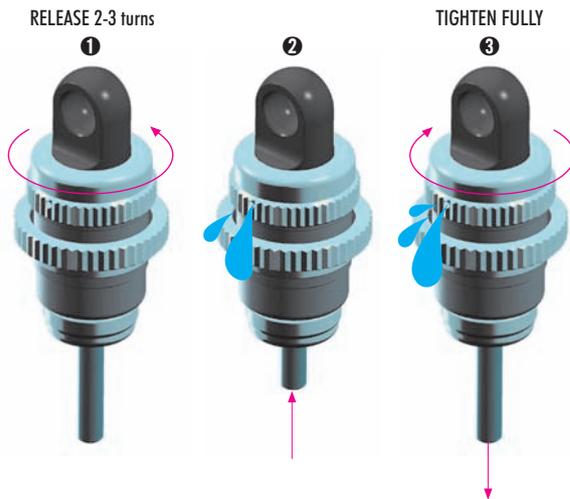
After you insert the membrane, ensure that it is fully seated inside the alu cap.



- 1 When installing the shock cap assembly on the shock body, some oil will leak out... this is normal.
- 2 Tighten the cap and clean off any excess oil.
- 3 After the shock is assembled, the shock rod will push itself out of the shock body fairly quickly.
- 4 Follow the next procedure to adjust the rebound.

4. CENTER SHOCK

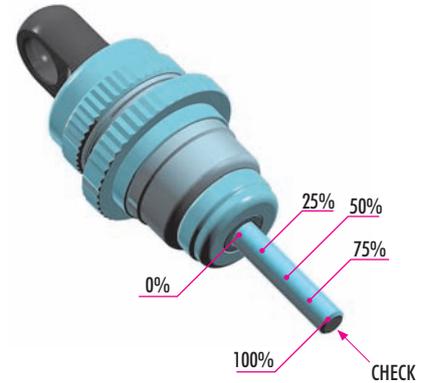
REBOUND ADJUSTMENT



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 cup. 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



REBOUND CHECK:

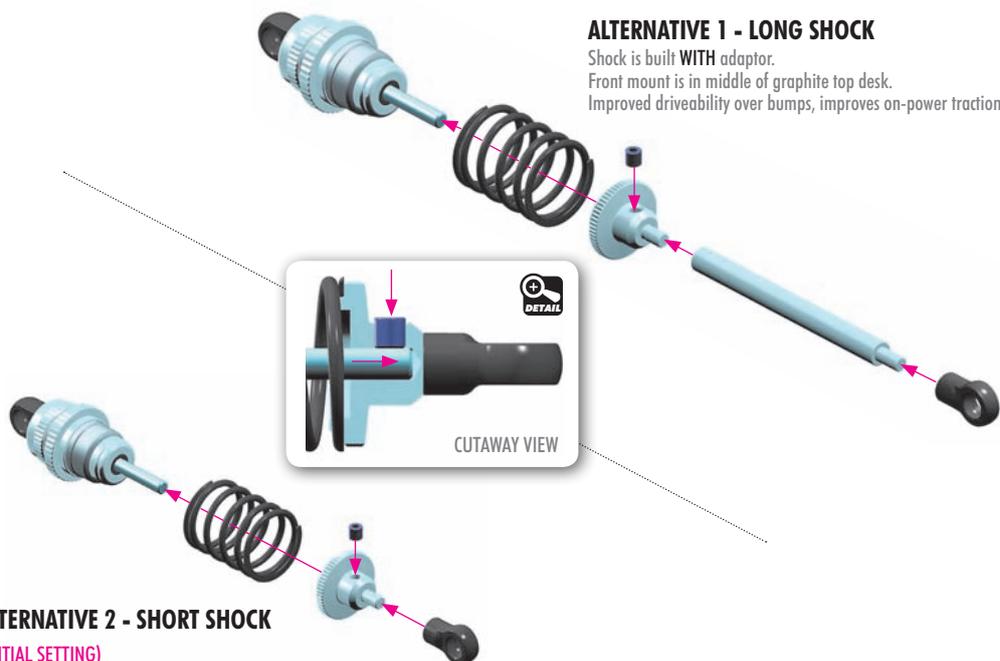
It is very important to push the shock shaft into the shock body slowly otherwise air can come into the shock body which would create bubbles.

- 100% rebound - do not do step 2 and 3
- 75% rebound - repeat steps 1 to 3 until the shock shaft will push out 75% of its length
- 50% rebound - repeat steps 1 to 3 until the shock shaft will push out 50% of its length
- 25% rebound - repeat steps 1 to 3 until the shock shaft will push out 25% of its length
- 0% rebound - repeat steps 1 to 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.

901303
SB M3x3

! An innovative new feature is to change the center shock length (and front mounting position). By using longer or shorter shock, the damping and steering can be changed.



ALTERNATIVE 1 - LONG SHOCK

Shock is built **WITH** adaptor.
Front mount is in middle of graphite top desk.
Improved driveability over bumps, improves on-power traction.

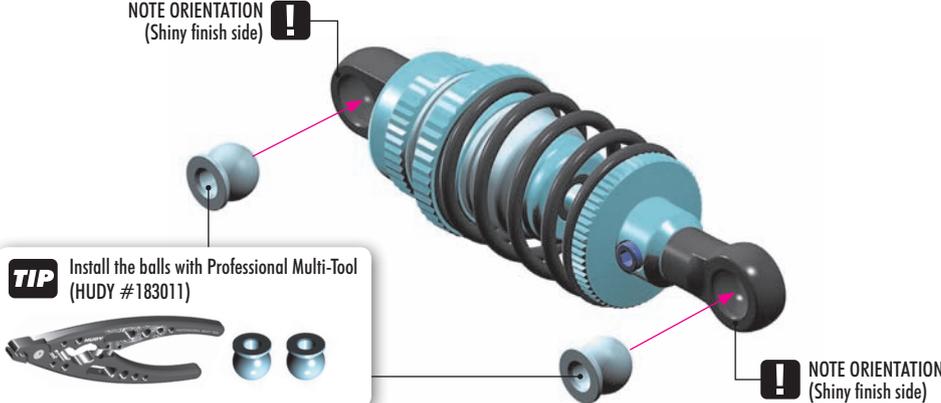
ALTERNATIVE 2 - SHORT SHOCK

(INITIAL SETTING)

Shock is built **WITHOUT** adaptor.
Front mount is on graphite plate for body posts.
Improved steering response, quicker direction changes.

4. CENTER SHOCK

NOTE ORIENTATION (Shiny finish side) 



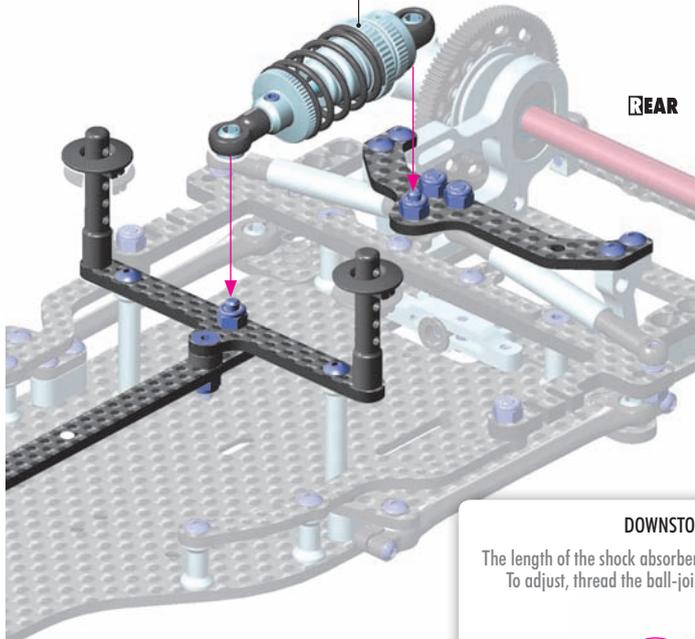
TIP Install the balls with Professional Multi-Tool (HUDY #183011)

NOTE ORIENTATION (Shiny finish side) 

ALTERNATIVE 1 - SHORT SHOCK

(INITIAL SETTING)

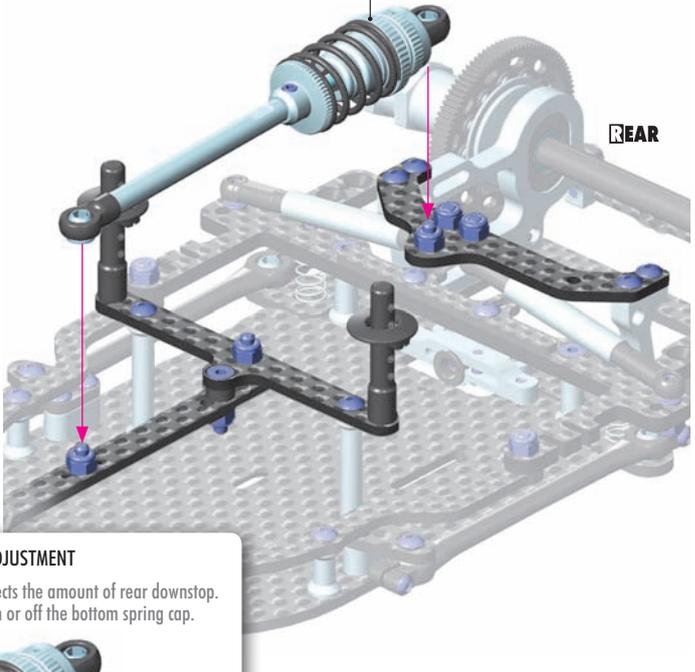
NOTE ORIENTATION 



REAR

ALTERNATIVE 2 - LONG SHOCK

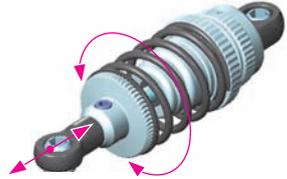
NOTE ORIENTATION 



REAR

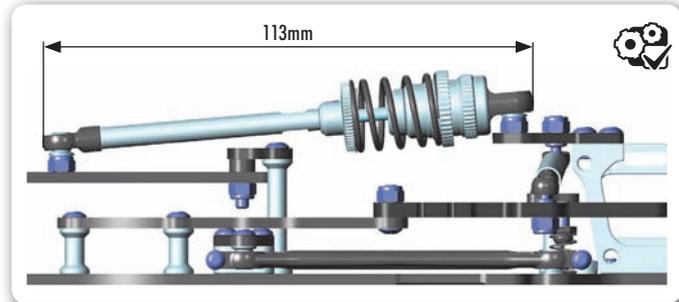
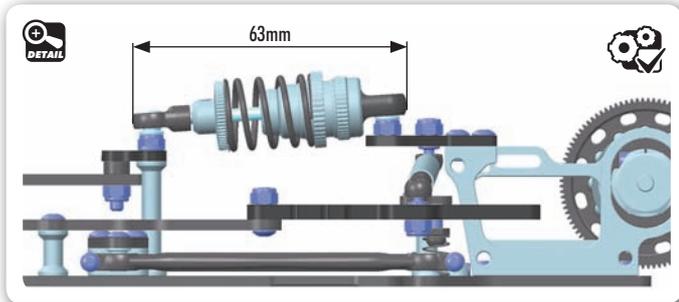
DOWNSTOP ADJUSTMENT

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

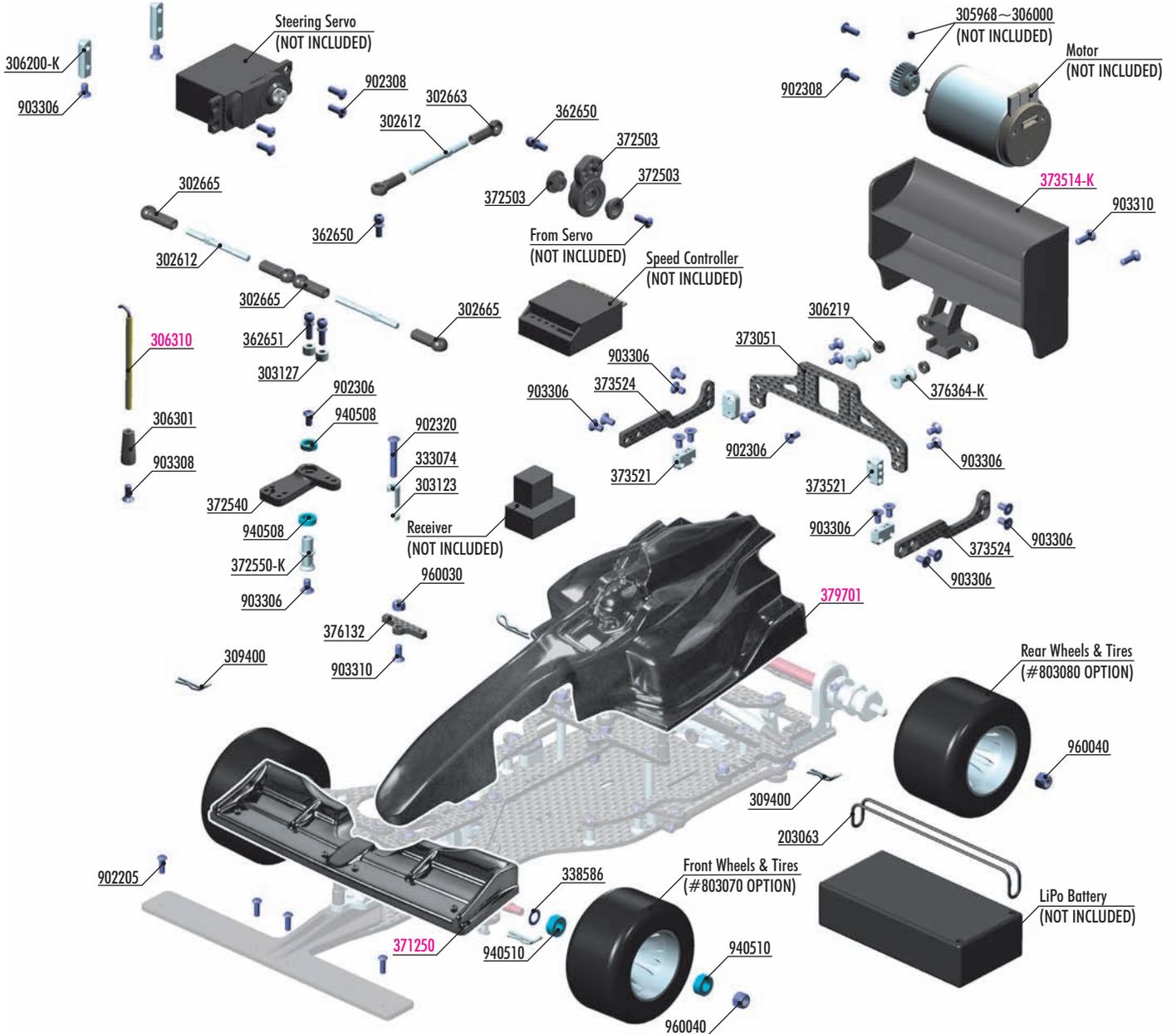



TIP Jan Ratheisky (Factory Driver)

Set the ride height for your track and measure it at the link connection of the side pod. Lift the car on the rear part of the center shock. When you unload the shock fully, you can measure the height at the same spot again. The difference to the ride height is the droop amount. The set-up of the rear downstop is very important to find a good balance between traction and rotation. On both indoor and outdoor tracks, I recommend starting with 1mm droop. Less droop gives you more rear traction. Recommended for low-traction conditions. More droop frees up the rear and makes it looser, but results in more steering. You should not use more than 2.5mm rear droop at maximum.



5. FINAL ASSEMBLY



- | | | | |
|----------------|---|-----------|--|
| #305968~306000 | PINION GEAR HARDCOATED 18~50T/64P | #373512-K | X1 COMPOSITE ADJUSTABLE REAR WING - BLACK |
| #372541 | ALU ADJUSTABLE SERVO SAVER SET | #373513-K | X1 COMPOSITE ADJUSTABLE REAR WING - BLACK - ETS APPROVED |
| #371202 | X1 COMPOSITE ADJUSTABLE FRONT AERO WING - ETS APPROVED | #373514 | X1 COMPOSITE REAR WING - LIGHTWEIGHT & WIDE - WHITE |
| #371203-K | X1 COMPOSITE ADJUSTABLE FRONT WING - BLACK - ETS APPROVED | #379702 | XRAY X1 1/10 FORMULA BODY - WORLD CHAMPION EDITION |
| #371203 | X1 COMPOSITE ADJUSTABLE FRONT WING - WHITE - ETS APPROVED | #803070 | HUDY 1/10 FORMULA RUBBER TIRE - FRONT (2) |
| #371290 | X1 ALU BODY POST PLATE | #803080 | HUDY 1/10 FORMULA RUBBER TIRE - REAR (2) |

BAG

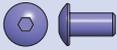
05

- | | | | |
|----------|--|----------|---|
| 302612 | ALU ADJ. TURNBUCKLE M3 L/R 39 mm - SWISS 7075 T6 (2) | 376364-K | ALU MOUNT 10.8mm - BLACK (2) |
| 302663 | COMPOSITE BALL JOINT 4.9mm - OPEN - V2 (8) | 203063 | O-RING FOR 1/8 ON-ROAD SET-UP WHEEL (4) |
| 302665 | COMPOSITE BALL JOINT 4.9mm - CLOSED WITH HOLE (4) | 338586 | SHIM 5x7x0.5 (10) |
| 303123 | ALU SHIM 3x6x2.0mm (10) | 902205 | HEX SCREW SH M2x5 (10) |
| 303127 | ALU SHIM 3x6x4.0mm (10) | 902306 | HEX SCREW SH M3x6 (10) |
| 306200-K | ALU SERVO MOUNT - BLACK (2) | 902308 | HEX SCREW SH M3x8 (10) |
| 306219 | COMPOSITE SET OF SERVO SHIMS (4) | 902320 | HEX SCREW SH M3x20 (10) |
| 306301 | ANTENNA MOUNT - THIN | 903306 | HEX SCREW SFH M3x6 (10) |
| 309400 | BODY CLIP (8) | 903308 | HEX SCREW SFH M3x8 (10) |
| 333074 | ALU MOUNT 3x6x10.5mm (2) | 903310 | HEX SCREW SFH M3x10 (10) |
| 362650 | BALL END 4.9mm WITH THREAD 6mm (2) | 940508 | BALL-BEARING 5x8x2.5 RUBBER SEALED - OIL (2) |
| 362651 | BALL END 4.9mm WITH THREAD 8mm (2) | 940510 | BALL-BEARING 5x10x4 RUBBER SEALED - OIL (2) |
| 372503 | COMPOSITE SERVO SAVER - X-STIFF - SET - V2 | 960030 | NUT M3 (10) |
| 372540 | COMPOSITE STEERING ARM | 960040 | NUT M4 (10) |
| 372550-K | ALU STEERING PIVOT SHAFT - BLACK | 306310 | ANTENNA (2) |
| 373051 | GRAPHITE REAR WING MOUNT 2.5mm | 371250 | X1 LEXAN FRONT SPOILER (2) |
| 373521 | ALU POST FOR INDEPENDENT WING GRAPHITE PLATES | 373514-K | X1 COMPOSITE REAR WING - LIGHTWEIGHT & WIDE - BLACK |
| 373524 | GRAPHITE REAR WING HOLDER PLATE 2.5MM (L+R) | 379701 | XRAY X1 1/10 FORMULA BODY |
| 376132 | GRAPHITE BATTERY BACKSTOP 3.0MM - MIDDLE | | |

5. FINAL ASSEMBLY



303127
SHIM 3x6x4



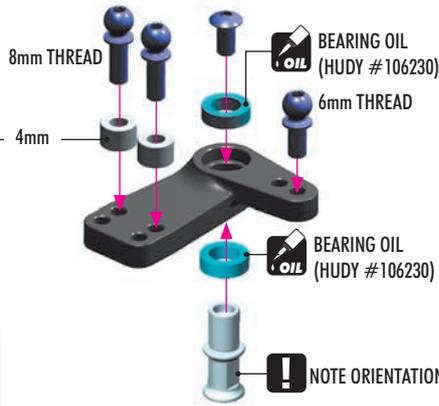
902306
SH M3x6



940508
BB 5x8x2.5

These shims adjust the bumpsteer.

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



#372541
OPTION ALU ADJUSTABLE SERVO SAVER SET



The steering arm has two positions for servo linkage mounting.

Always use this position ←
INITIAL SETTING



There are two Ackermann positions on the steering arm.

INNER position: More Ackermann, makes the car easier to drive, improves cornering speed (INITIAL SETTING).

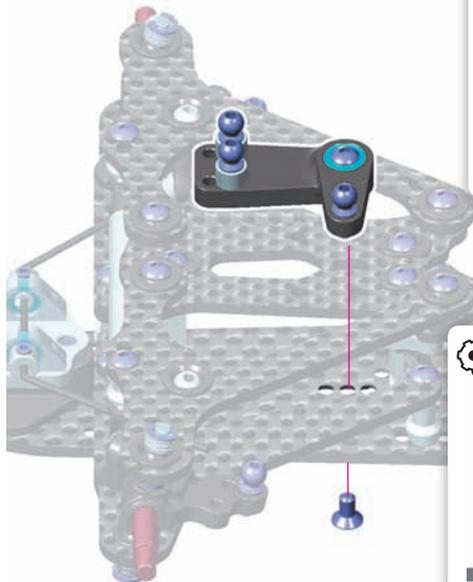
OUTER position: Less Ackermann, makes the car more responsive, improves in-corner steering.



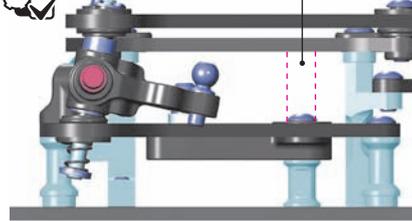
903306
SFH M3x6

STEERING PIVOT SHAFT MOUNTING ALTERNATIVE 1 Without the post (INITIAL SETTING).

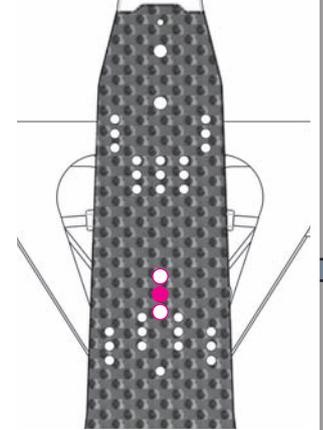
The steering pivot shaft mount is mounted only to the chassis. This allows the chassis to flex in the steering area which makes the steering smoother but at the same time reduces steering response. Recommended for large open tracks or tracks with high traction.



POST NOT USED



(INITIAL SETTING)



The position of the steering pivot shafts on the chassis depends on the wheelbase setting.

When using standard wheelbase, use the middle hole for mounting steering pivot shaft.



303123
SHIM 3x6x2



333074
SHIM 3x6x10.5

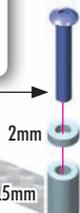


902320
SH M3x20



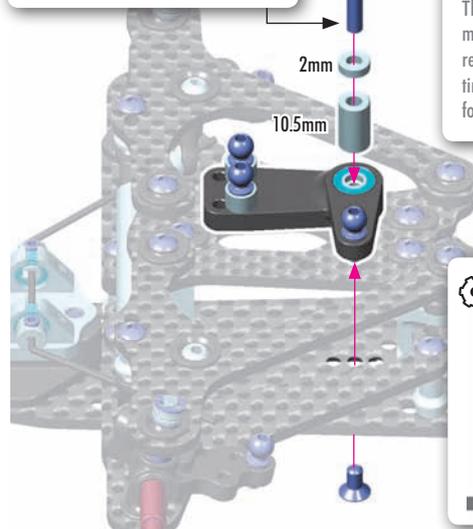
903306
SFH M3x6

This shim is directly connected to the roll center shims which are placed under upper mount plate. Therefore use the same amount of the shims on the post like is under upper mount plate.

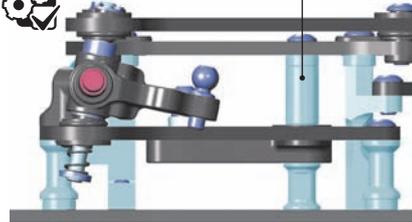


STEERING PIVOT SHAFT MOUNTING ALTERNATIVE 2 With the post connected to the arm mount plate.

The steering pivot shaft mount is mounted to the chassis and connected to the arm mount plate with a bushing. This eliminates the flex of the chassis in the steering area which makes the car more reactive and improves steering response but at the same time can result in oversteering or front tires overheating in some particular conditions. Recommended for technical tracks or tracks with low-medium traction.



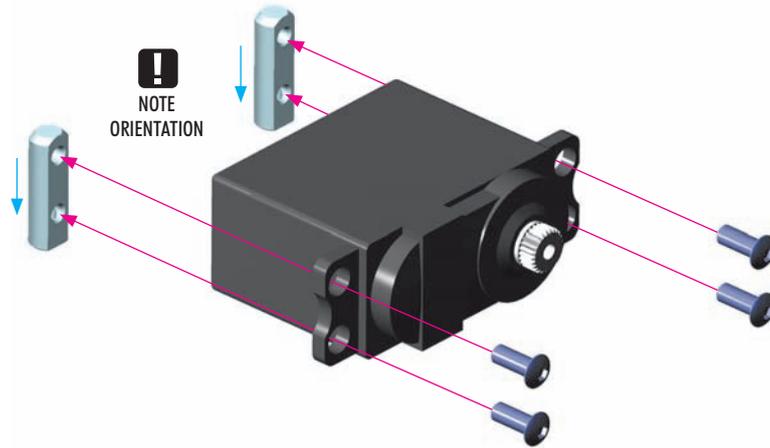
POST USED



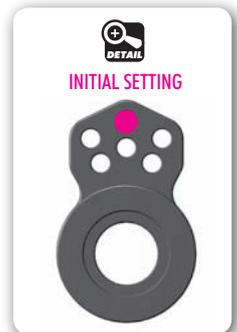
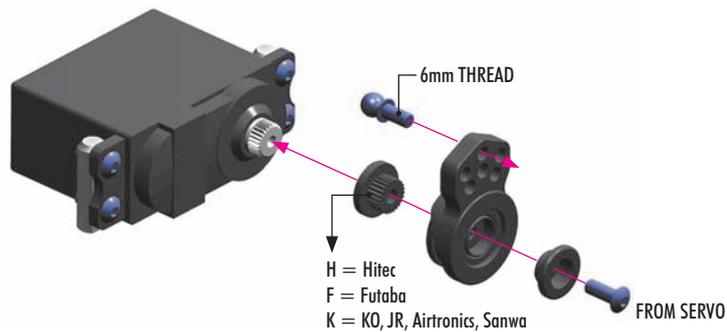
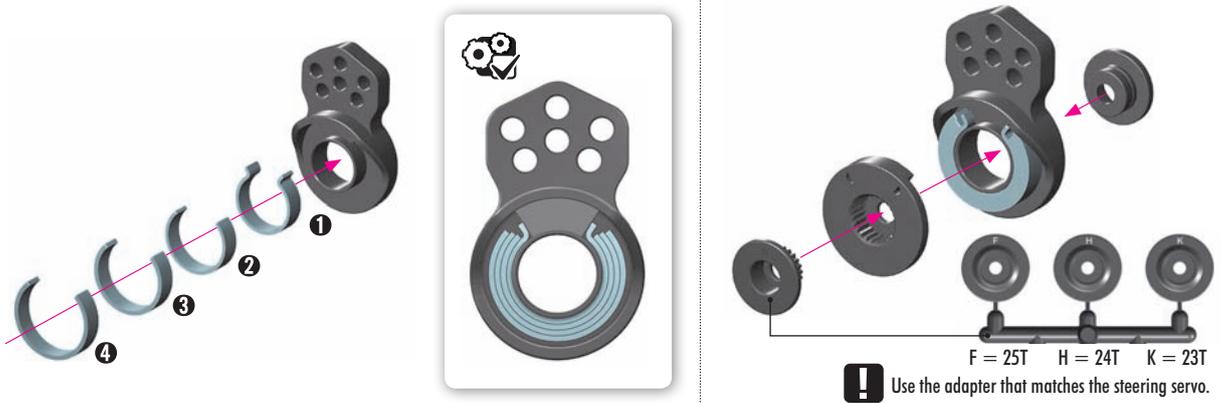
5. FINAL ASSEMBLY



902308
SH M3x8



SERVO SAVER



For more in-corner steering and better steering response, aluminum servo horns may be used.

OPTION HUDY	ALU SERVO HORNS - OFFSET
#293491	KO, Sanwa - 23T
#293492	Hitec - 24T
#293493	Futaba - 25T
OPTION HUDY	CLAMP ALU SERVO HORNS - OFFSET
#293401	KO, Sanwa - 23T
#293402	Hitec - 24T
#293403	Futaba - 25T



OPTION HUDY	HUDY ALU SERVO HORNS
#293497	KO, Sanwa - 23T
#293498	Hitec - 24T
#293499	Futaba - 25T
OPTION HUDY	HUDY CLAMP ALU SERVO HORNS
#293404	KO, Sanwa - 23T
#293405	Hitec - 24T
#293406	Futaba - 25T



OPTION HUDY	HUDY ALU SERVO HORNS
#293501	KO, Sanwa - 23T
#293502	Hitec - 24T
#293503	Futaba - 25T
OPTION HUDY	HUDY CLAMP ALU SERVO HORNS
#293407	KO, Sanwa - 23T
#293408	Hitec - 24T
#293409	Futaba - 25T

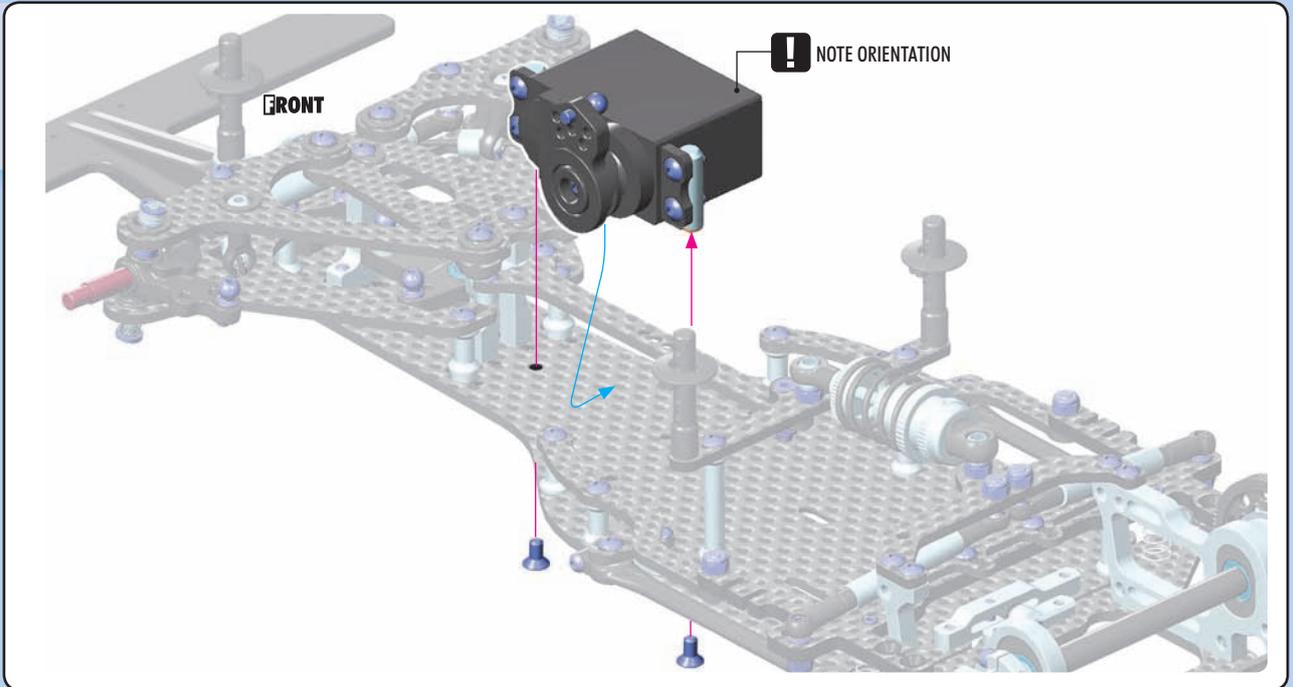


IMPORTANT! When an aluminum horn is used, the steering servo saver is not used. This increases the risk of breaking the servo in serious crashes.

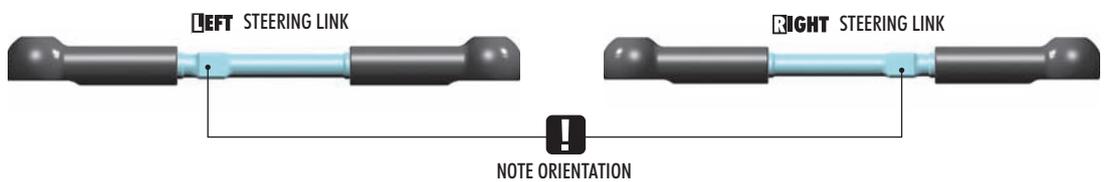
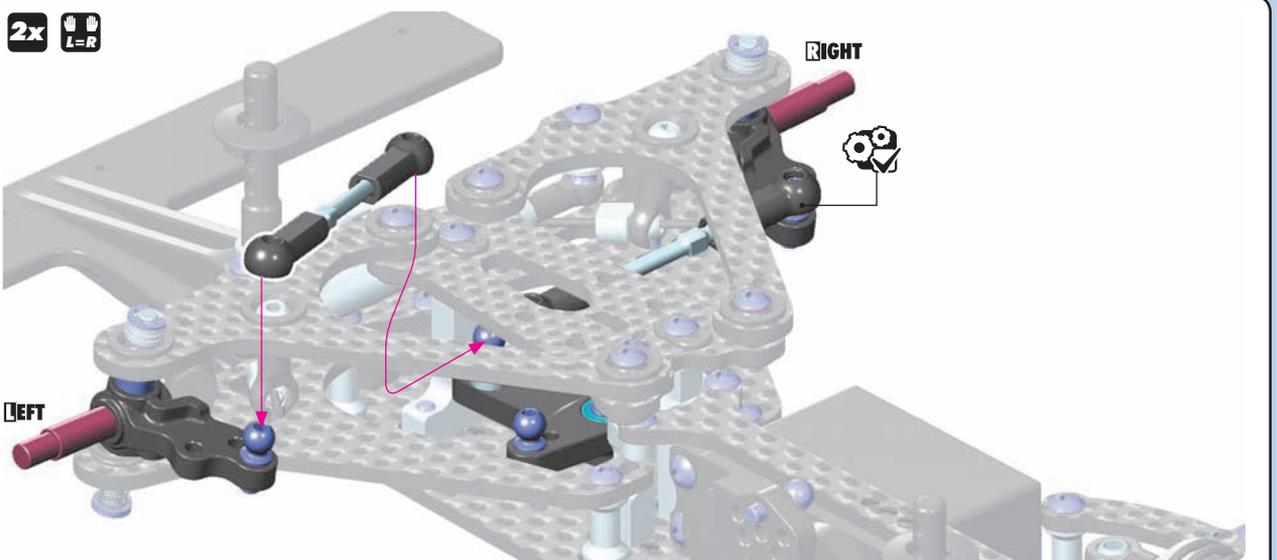
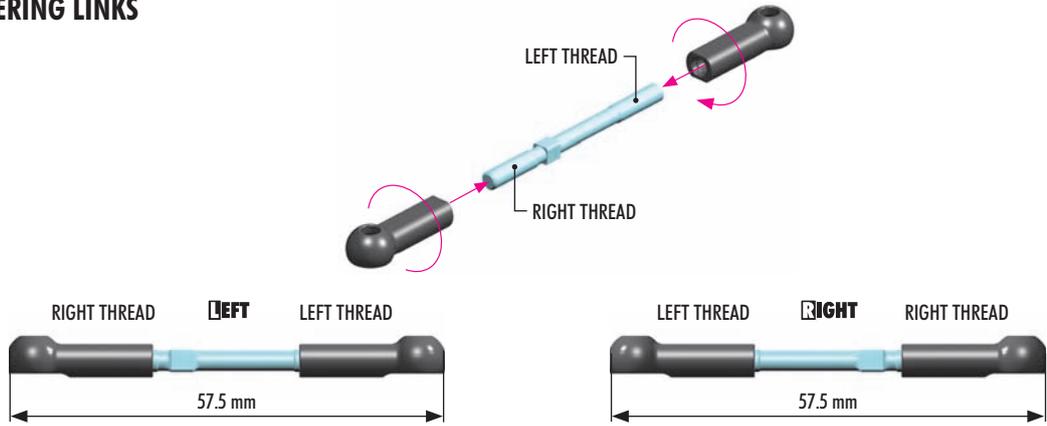
5. FINAL ASSEMBLY



903306
SFH M3x6

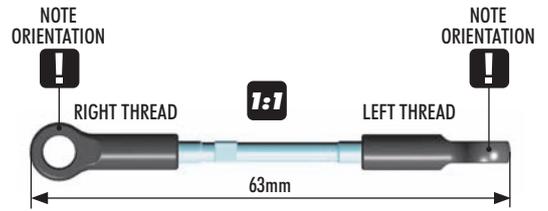
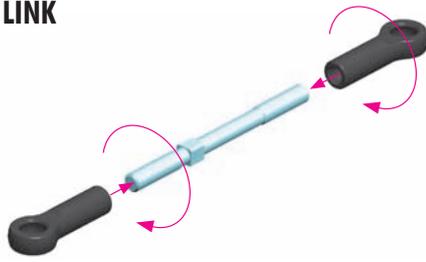


2x STEERING LINKS

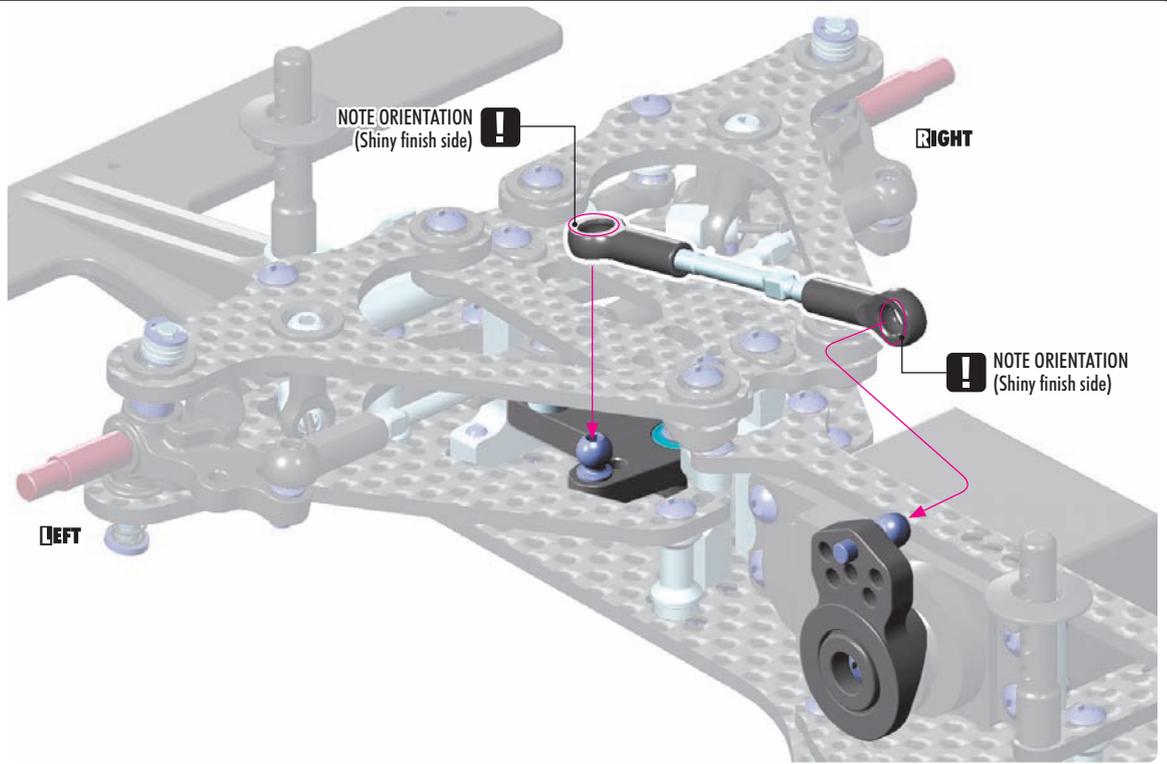


5. FINAL ASSEMBLY

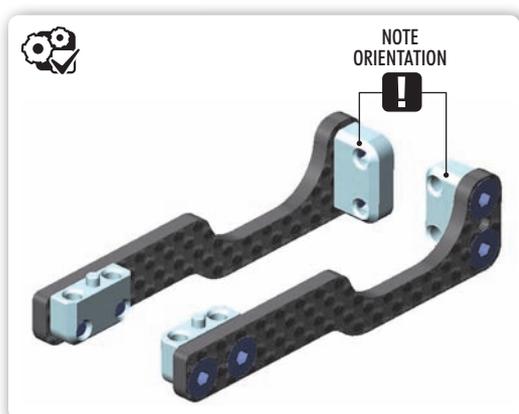
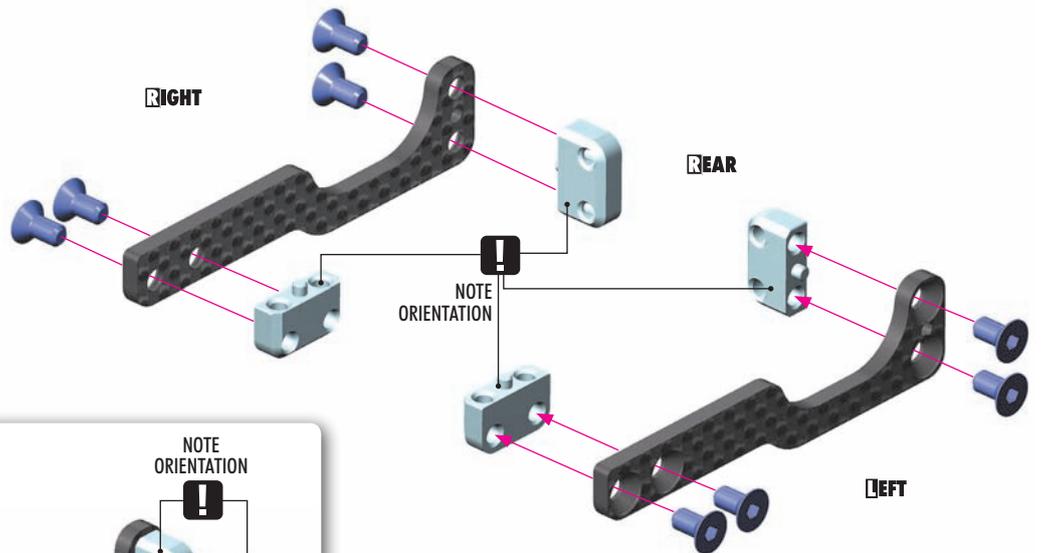
SERVO LINK



The length of the link depends on the wheelbase setting. The 63mm length is recommended for standard wheelbase setting.
(INITIAL SETTING)



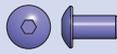
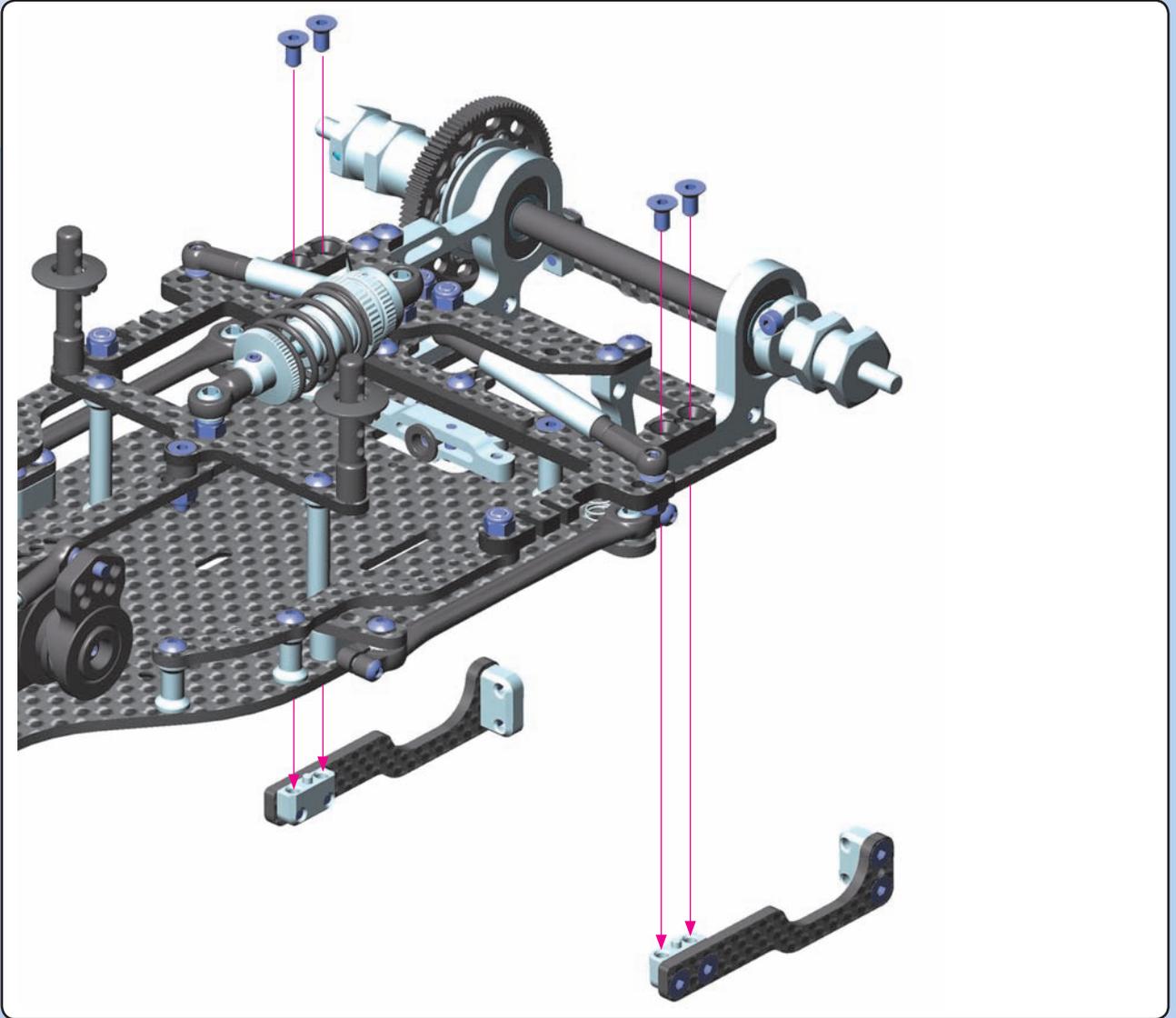
903306
SFH M3x6



5. FINAL ASSEMBLY



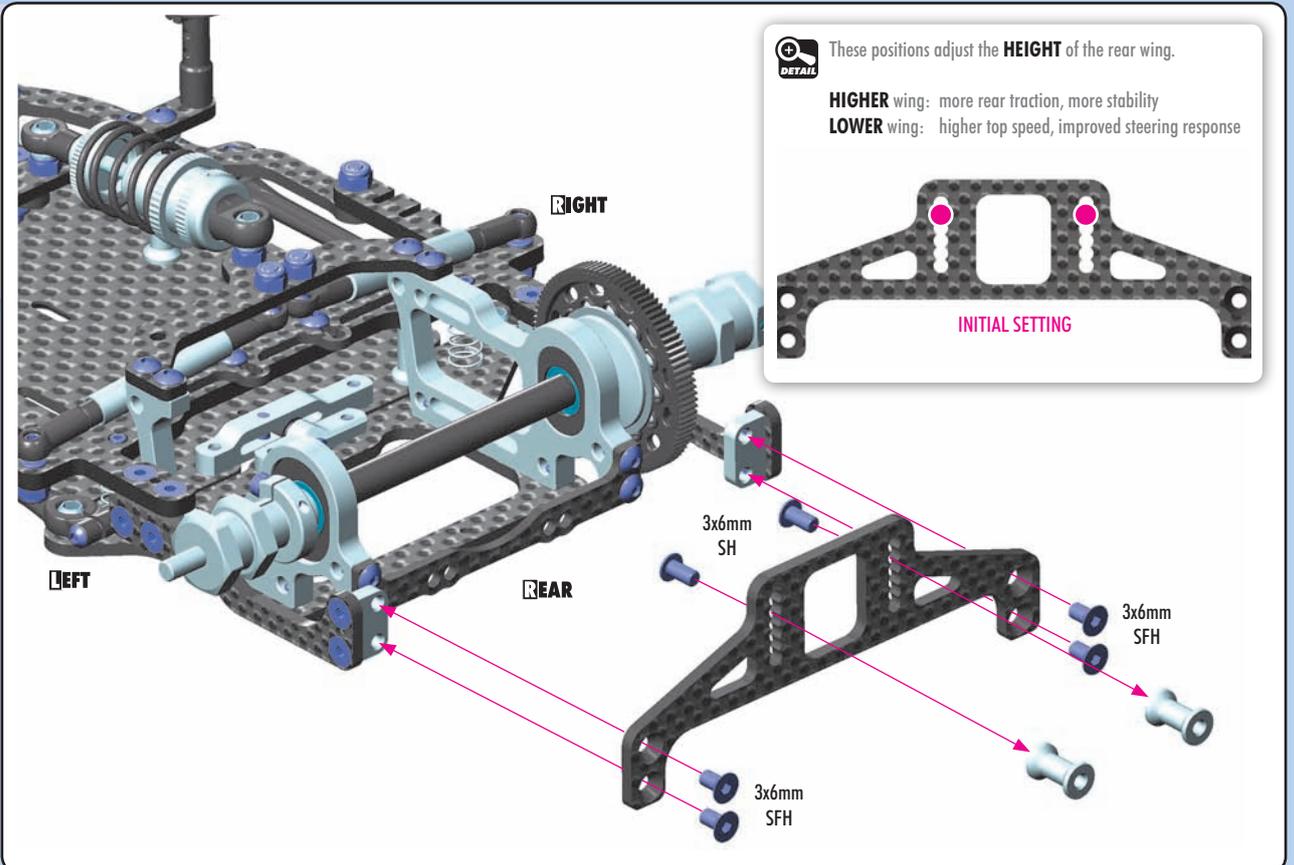
903306
SFH M3x6



902306
SH M3x6



903306
SFH M3x6



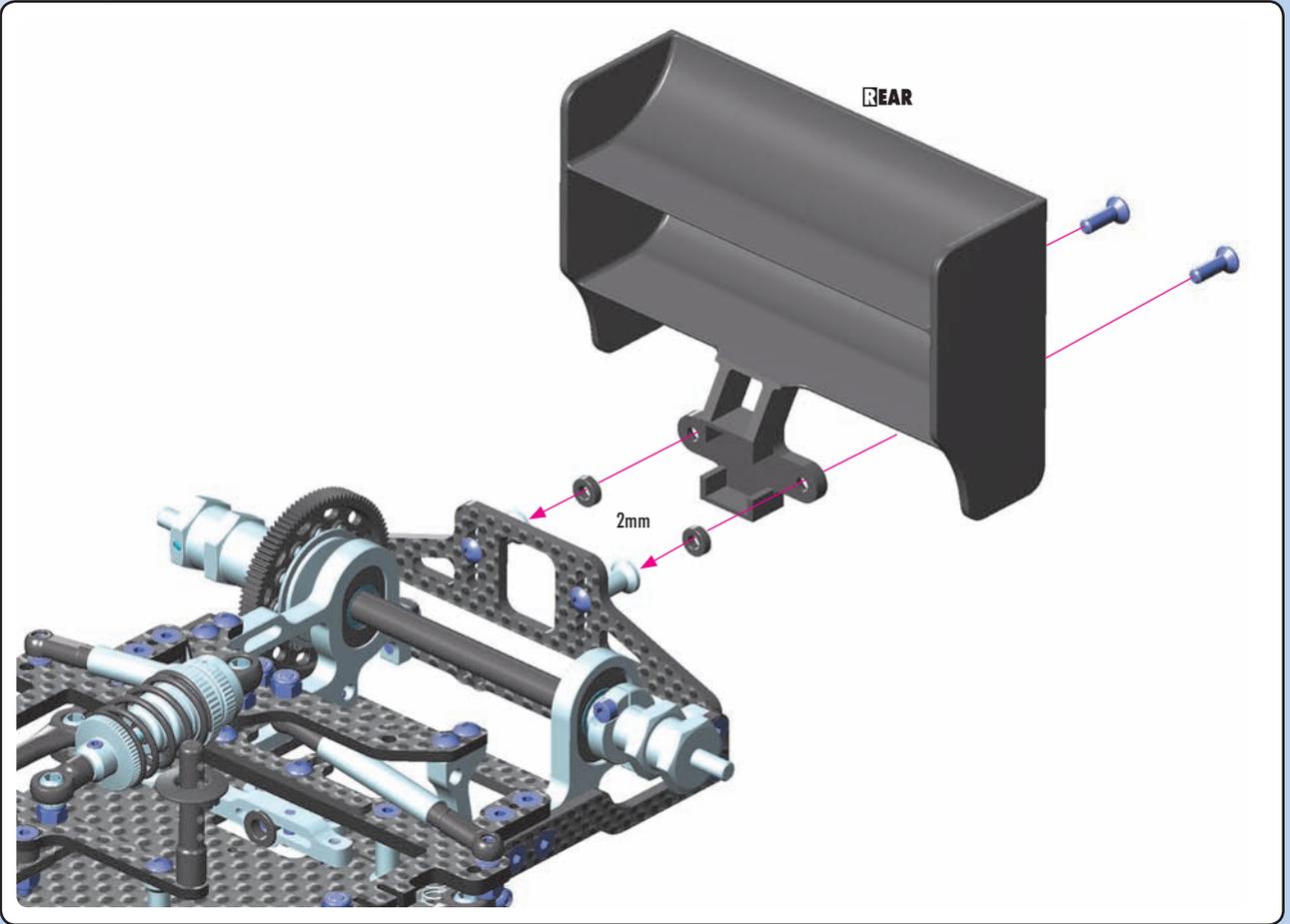
5. FINAL ASSEMBLY

10

306219
SHIM 3x6x2



903310
SFH M3x10



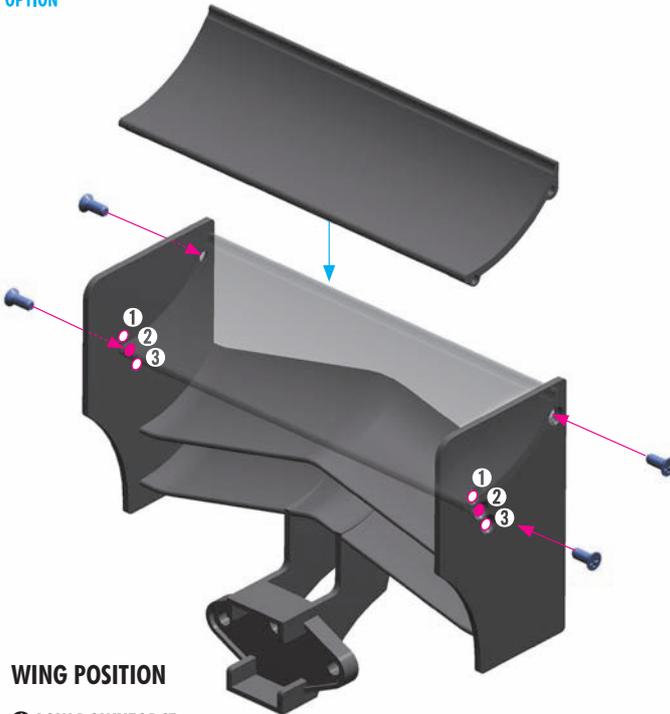
906206
SFP 2.2x6



OPTIONAL WING



#373512-K
COMPOSITE ADJUSTABLE REAR WING - BLACK



WING POSITION

1 LOW DOWNFORCE:

Generates more steering but makes the car less stable and more difficult to drive. Recommended for large tracks with long sweepers.

2 MIDDLE:

Compromise between high and low downforce (INITIAL SETTING).

3 HIGH DOWNFORCE:

Higher stability, easier to drive with less initial steering.



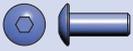
#373513-K
X1 COMPOSITE ADJUSTABLE REAR WING - BLACK - ETS APPROVED



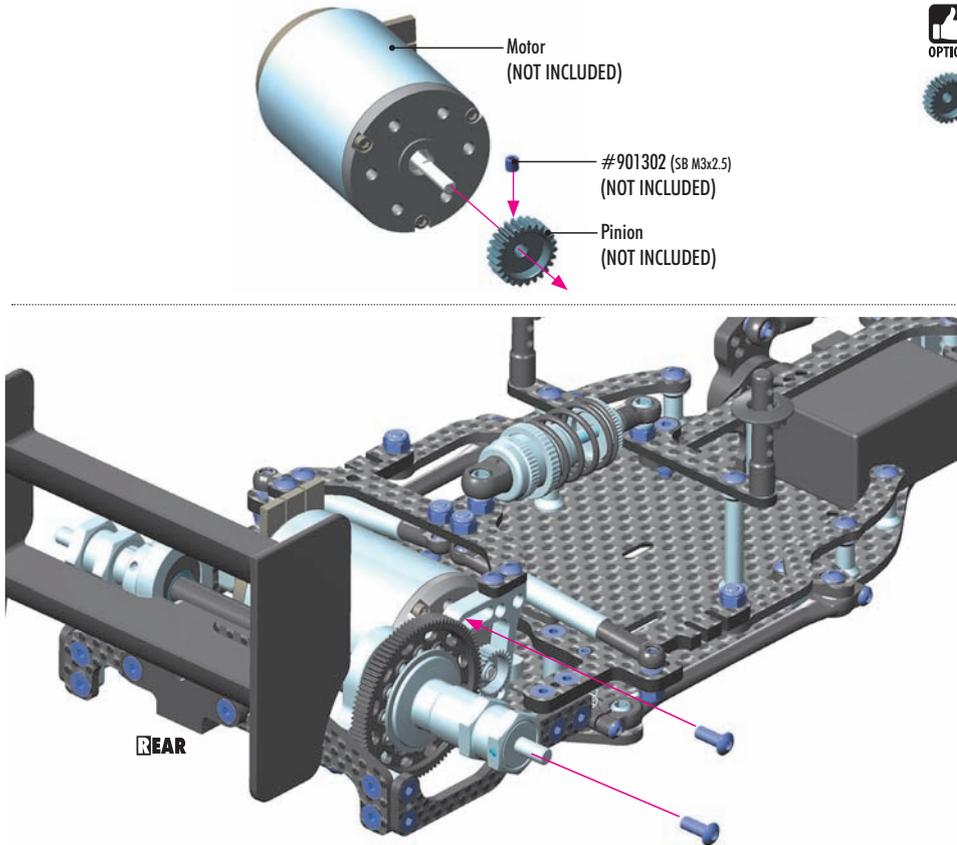
#373514
X1 COMPOSITE REAR WING - LIGHTWEIGHT & WIDE - WHITE



5. FINAL ASSEMBLY



902308
SH M3x8



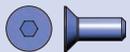
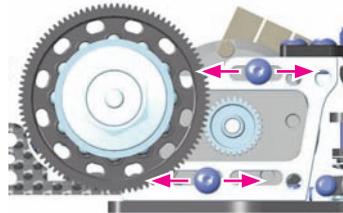
PINION GEARS ALU HARDCOATED

#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
#294128	28T / 64P	OPTION
#305979	29T / 64P	OPTION
#294130	30T / 64P	OPTION
#294131	31T / 64P	OPTION
#305982	32T / 64P	OPTION
#294133	33T / 64P	OPTION
#305984	34T / 64P	OPTION
#305985	35T / 64P	OPTION
#294136	36T / 64P	OPTION
#294137	37T / 64P	OPTION
#294138	38T / 64P	OPTION
#294140	40T / 64P	OPTION
#294141	41T / 64P	OPTION
#294142	42T / 64P	OPTION
#294144	44T / 64P	OPTION
#305996	46T / 64P	OPTION
#294147	47T / 64P	OPTION
#294148	48T / 64P	OPTION
#294150	50T / 64P	OPTION

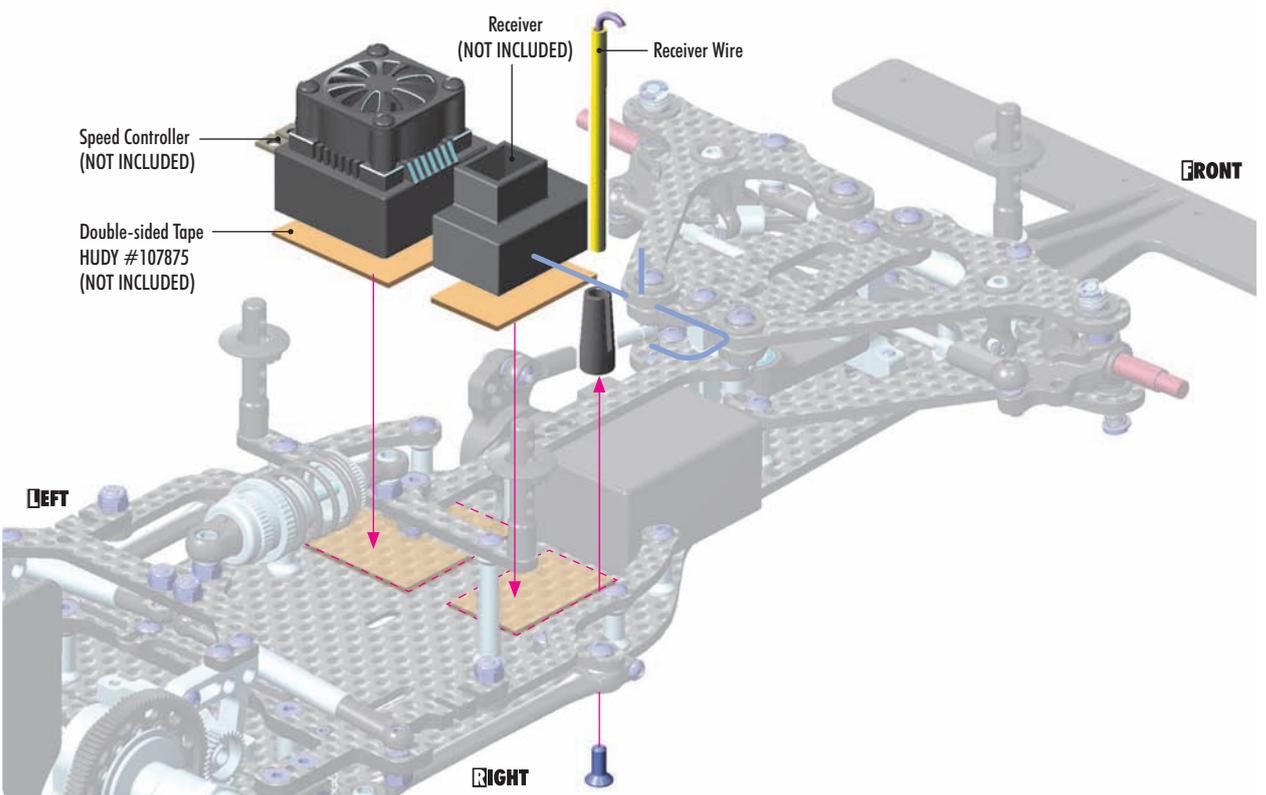
REAR



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.



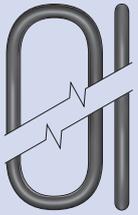
903308
SFH M3x8



LEFT

RIGHT

FRONT



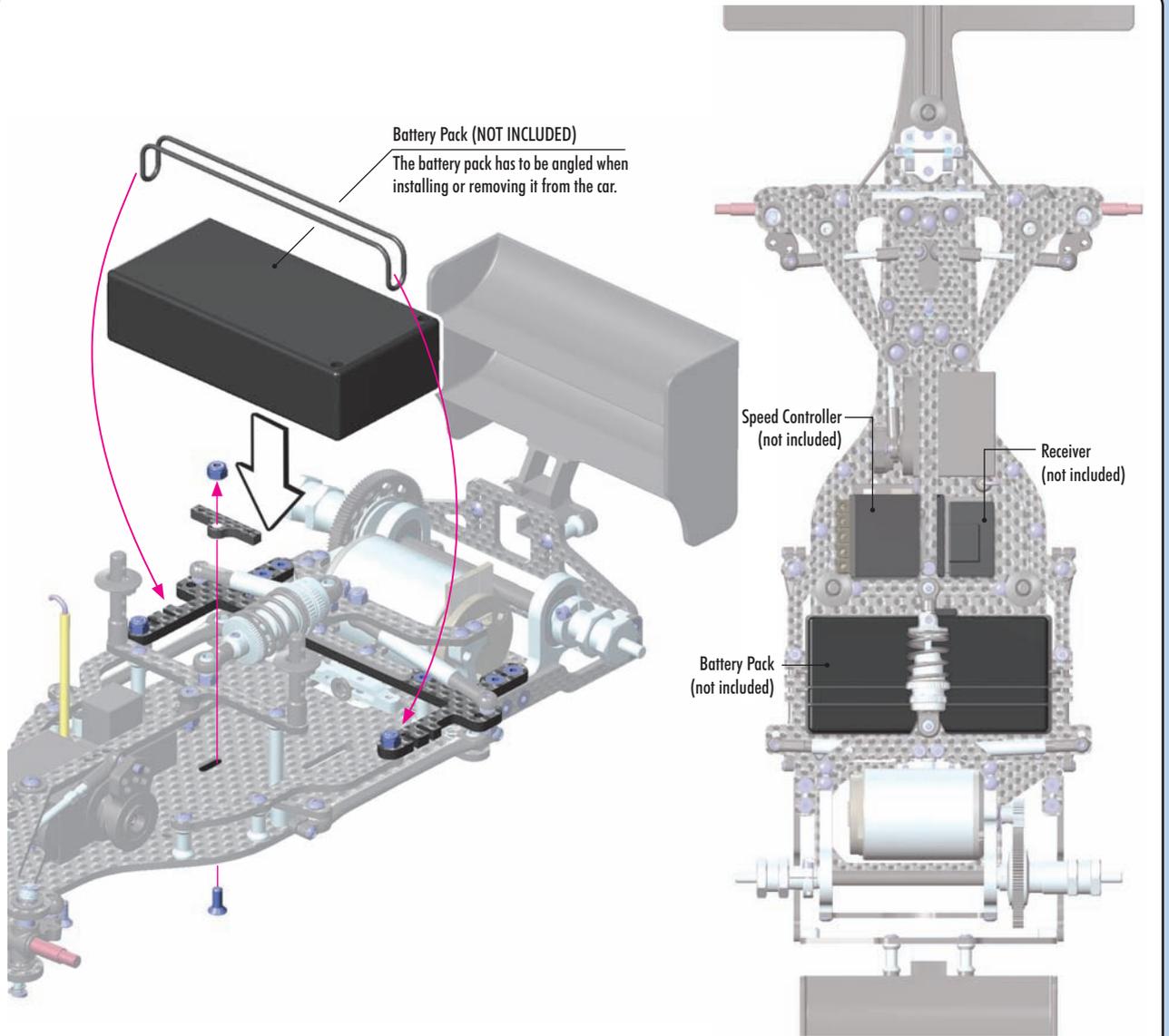
203063
Ø 63x1.8



903310
SFH M3x10

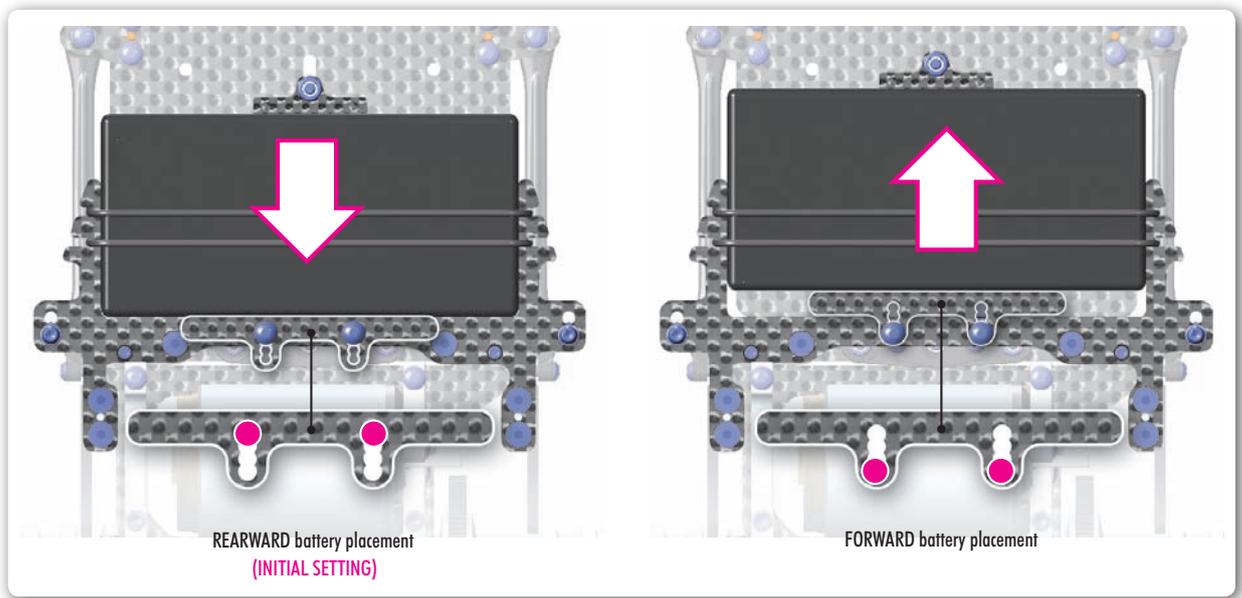


960030
N M3



BATTERY MOUNTING POSITIONS

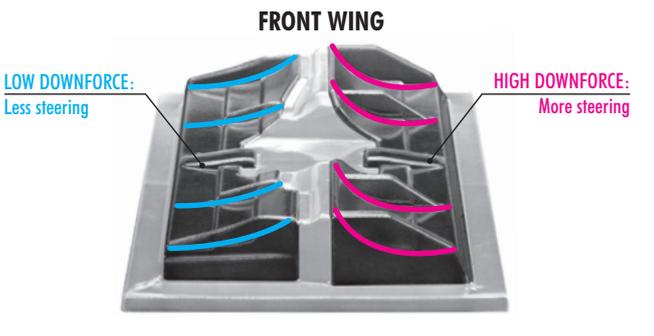
The X1 has 4 battery mounting positions. The more forward the battery is, the car will be easier to drive but it will be less responsive. The more rearward the battery is, the car will be more aggressive and have more steering.



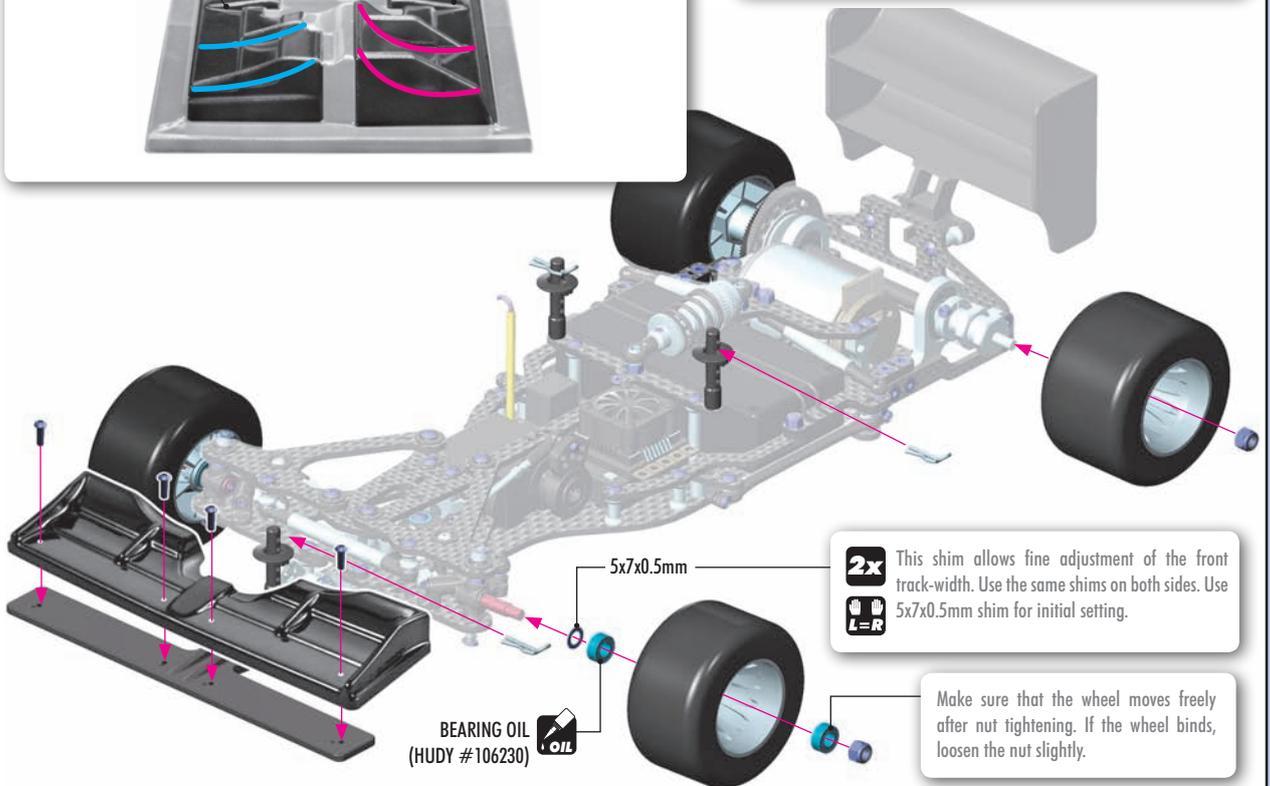
5. FINAL ASSEMBLY

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

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



OPTION	TRACK-WIDTH ADJUSTMENT SHIMS	
#338584	5x7x0.2mm	OPTION
#338585	5x7x0.3mm	OPTION
#338586	5x7x0.5mm	INCLUDED



OPTION	#803070	HUDY 1/10 FORMULA RUBBER TIRE - FRONT (2)
	#803080	HUDY 1/10 FORMULA RUBBER TIRE - REAR (2)

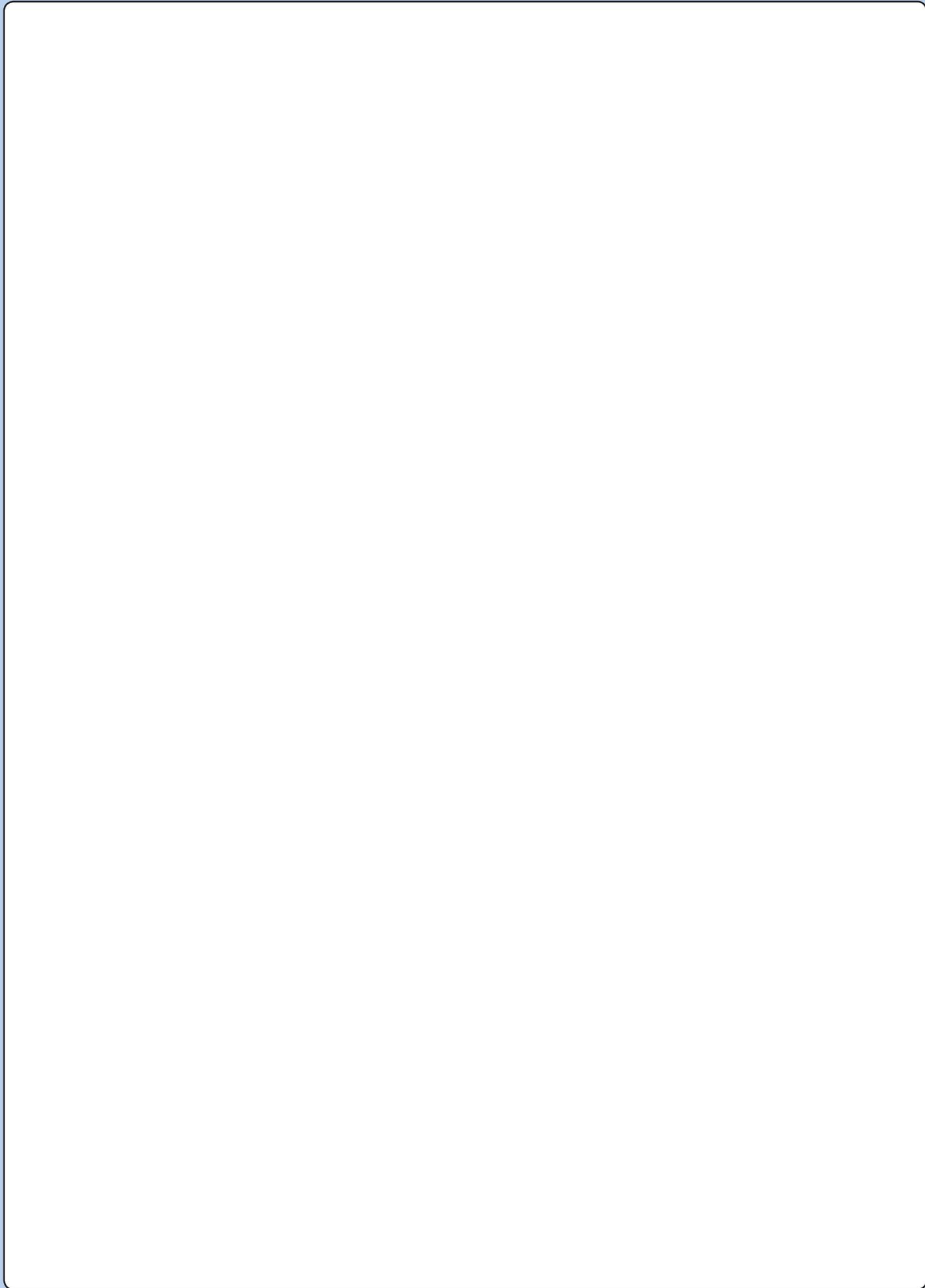


OPTION	ALU NUTS M4	
#296540-B	ALU BLUE	OPTION
#296540-O	ALU ORANGE	OPTION
#296540-K	ALU BLACK	OPTION
#296540	STEEL SILVER	INCLUDED



NOTE

A large, empty rectangular box with a black border, intended for a note or drawing.



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