

1 / 12 P A N C A R

XRAY X12



INSTRUCTION MANUAL
FOR X12'26 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.

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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 addictions 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.

X12'26

TOOLS REQUIRED



Ball Joint Wrench (HUDY #181110)



Pocket Hobby Knife (HUDY #188981)



Special Tool for Turnbuckles, Nuts (HUDY #181090)



Turnbuckle Wrench 4mm (HUDY #181040)



HUDY Tweezers Curved (HUDY #188971)



HUDY Tweezers Straight (HUDY #188970)

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



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



Allen 2.5mm (#112545 - 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)



NOT INCLUDED



Alexander Hagberg
(Factory Driver)

When a QR CODE is found in the instruction manual, scan the code to be directed to an online video that explains that feature or adjustment in more detail. Make sure to watch all of the instructional videos to get the most performance out of your car.

VIDEO TECH TIP



OPTION

SAMPLE OF OPTIONAL PARTS		
#37XXX	TYPE1	OPTION 1
#37XXX	TYPE2	OPTION 2
#37XXX	TYPE	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 part 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:

- 371200 **STYLE A** - indicates parts that are included in the bag marked for the section.
- 371100 **STYLE B** - indicates parts that are included in the box.
- 378100 **STYLE C** - indicates parts that are already assembled from previous steps.
- 374900 **STYLE D** - indicates parts that are optional.

INCLUDED

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

450cSt (#106345)
HUDY Premium Silicone Oils



450cSt



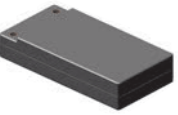
10.000cSt (#106510)
HUDY Premium Silicone Oils



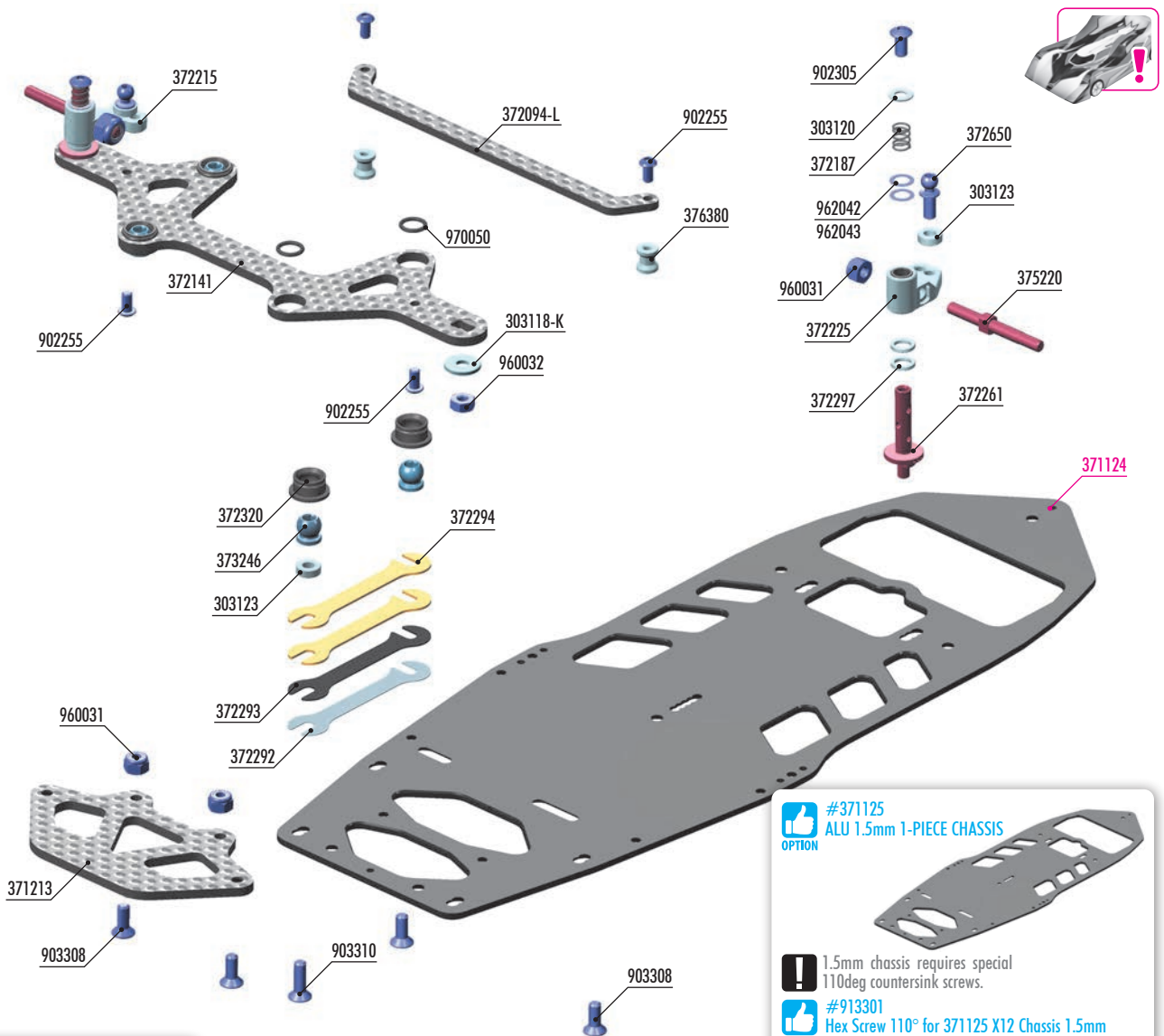
10.000cSt



ALSO REQUIRED

Transmitter 	Receiver 	Speed Controller 	Steering Servo 
Electric Motor & Pinion Gear with Setscrew 	LiPo Battery 	Battery Charger 	 Bearing Oil (HUDY #106230) 
Tires 	1/12 Bodysell 	Lexan™ Paint 	 Double-sided Tape (HUDY #107875) 

1. FRONT SUSPENSION



#372094
CARBON FRONT BRACE FOR NARROW
SUSPENSION ARM PLATE 2.2mm

FRONT COIL SPRINGS			
#372192	C=0.7	GOLD	OPTION
#372191	C=0.9	SILVER	OPTION
#372190	C=1.1	BLACK	OPTION
#372186	C=1.5-1.7	GOLD	OPTION
#372187	C=1.8-2.0	SILVER	INCLUDED
#372188	C=2.1-2.3	BLACK	OPTION

#375222
FRONT WHEEL AXLE 1mm LESS TRAIL

#372140
CARBON LOWER SUSP. ARM PLATE FOR 1-PIECE CHASSIS

#371125
ALU 1.5mm 1-PIECE CHASSIS

1.5mm chassis requires special
110deg countersink screws.

#913301
Hex Screw 110° for 371125 X12 Chassis 1.5mm
HUDY Spring Steel (11)

#371126
CARBON 1-PIECE CHASSIS

CAMBER - KINGPIN AXLES			
#372260	0.5°	4 DOTS	OPTION
#372261	1°	3 DOTS	INCLUDED
#372262	1.5°	1 DOT	OPTION

BAG

01

BUILD VIDEO



FRONT SUSPENSION

303118-K ALU SHIM 3x9x1.0mm - BLACK (10)
303120 SET OF ALU SHIM (0.5mm, 1.5mm, 2.5mm)
303123 ALU SHIM 3x6x2.0mm (10)
371213 CARBON BUMPER LOWER HOLDER FOR 1-PIECE CHASSIS
372094-L CARBON FRONT BRACE FOR NARROW SUSPENSION ARM PLATE 1.6mm
372141 CARBON LOWER SUSPENSION ARM PLATE +1mm FOR 1-PIECE CHASSIS
372187 FRONT COIL SPRING FOR 4mm PIN C=1.8-2.0 - SILVER (2)
372215 ALU STEERING BLOCK WITH TEFLON SLEEVE - RIGHT
372225 ALU STEERING BLOCK WITH TEFLON SLEEVE - LEFT
372261 KINGPIN 4mm WITH HOLES - 1.0° - 3 DOTS - NICKEL COATED (2)
372292 STEEL SHIM 0.2mm - SILVER (2)
372293 STEEL SHIM 0.4mm - BLACK (2)
372294 STEEL SHIM 0.6mm - GOLD (2)
372297 ALU SHIM 4x6x1.0mm (10)
372320 COMPOSITE ARM BUSHING (4)
372650 BALL END 4.2mm WITH 6mm THREAD (2)

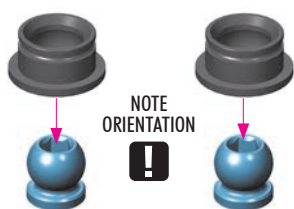
373246 ALU BALL END 6.0mm WITH HEX - SWISS 7075 T6 (2)
375220 FRONT WHEEL AXLE (2)
376380 ALU MOUNT 6.0mm WITH 2.5mm THREAD - BLACK (2)
902255 HEX SCREW SH M2.5x5 (10)
902305 HEX SCREW SH M3x5 (10)
903308 HEX SCREW SFH M3x8 (10)
903310 HEX SCREW SFH M3x10 (10)
960031 ALU NUT M3 (10)
960032 NUT M3 (10)
962042 WASHER S 4x6x0.1 (10)
962043 WASHER S 4x6x0.2 (10)
970050 O-RING 5x1 (10)

371124 ALU 1-PIECE CHASSIS 2.0mm - SWISS 7075 T6

Numbers in parentheses () refer to quantities when purchased separately.

1. FRONT SUSPENSION

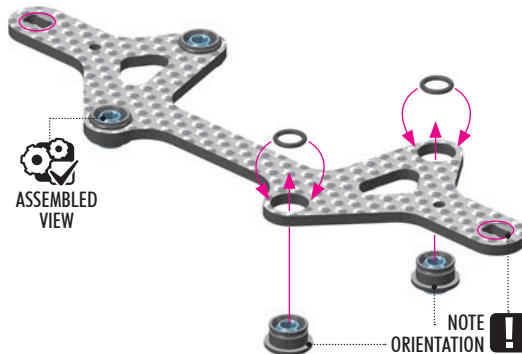
4x 970050
0 5x1



TIP Install with HUDY Multi Tool.

2x L=R

CUTAWAY VIEW



2x 303123
SHIM 3x6x2

2x 903308
SFH M3x8

2x 903310
SFH M3x10

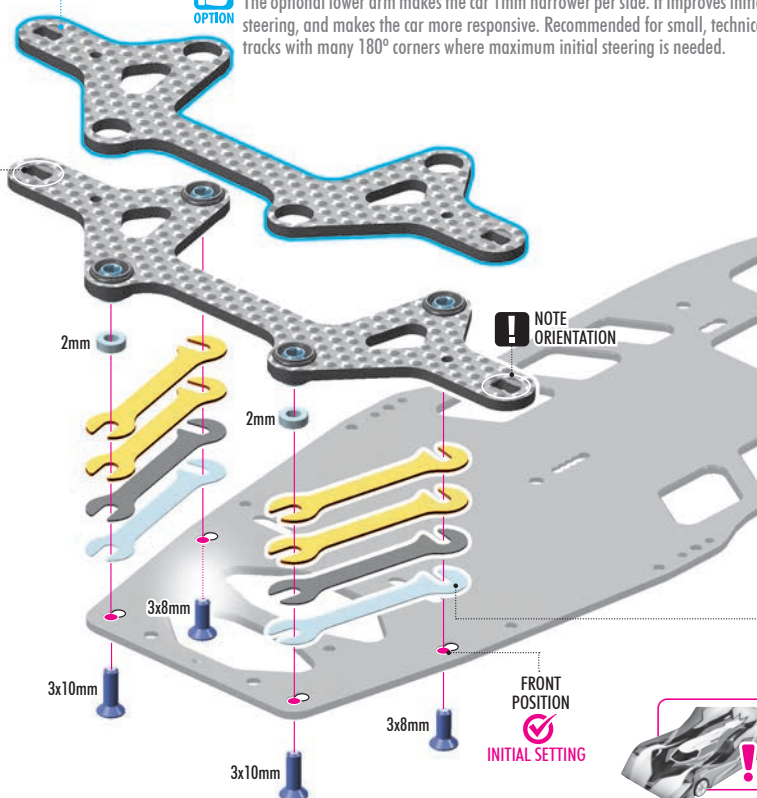
(INCLUDED) #372141 CARBON LOWER SUSPENSION ARM PLATE + 1mm

The front lower suspension arm is now 1mm wider per side, which widens the front track width. This change improves handling in all conditions, since initial steering is smoother, with maintained corner speed through the corner.

OPTION

#372140 CARBON LOWER SUSPENSION ARM PLATE

The optional lower arm makes the car 1mm narrower per side. It improves initial steering, and makes the car more responsive. Recommended for small, technical tracks with many 180° corners where maximum initial steering is needed.



OPTION #371125 ALU 1.5mm
1-PIECE CHASSIS

Thinner, optional aluminium chassis lowers CG and generates more flex. Recommended mainly for racing in the modified category, to generate more overall grip, and to increase mid-corner steering.

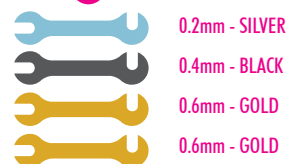
1.5mm chassis requires special 110° countersink screws.

OPTION #913301
Hex Screw 110° for 371125 X12 Chassis 1.5mm
HUDY Spring Steel (11)

OPTION #371126 CARBON
1-PIECE CHASSIS

The optional carbon chassis is recommended for low- to medium traction outdoor asphalt tracks, and for very low traction carpet tracks.

INITIAL SETTING



RIDE HEIGHT AND CASTER ADJUSTMENT

The number of washers and shims used affects the ride height and caster of the car, so determine the proper amount of shimming based on the tire diameter and desired caster.

CASTER ADJUSTMENT SETTING

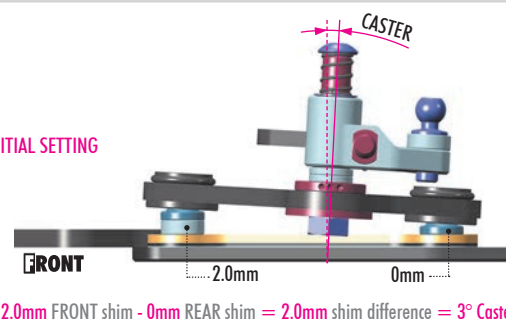
Caster is adjusted by the shims placed under front ball.

Please see the table on right to understand how to set the caster.

- **MORE CASTER** increases front traction, especially on-power. More likely to traction roll.
- **LESS CASTER** reduces front traction, especially on-power. Less likely to traction roll.

SHIM DIFFERENCE	CASTER
1mm	1.5°
2mm	3°
3mm	4.5°
4mm	6°
5mm	7.5°

INITIAL SETTING



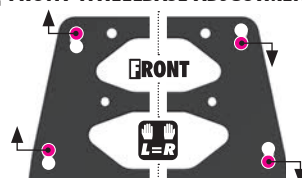
FRONT POSITION ALTERNATIVE LONG WHEELBASE

INITIAL SETTING

LONG wheelbase is recommended for larger tracks with long sweepers. Makes the car more stable and easier to drive.



FRONT WHEELBASE ADJUSTMENT



REAR POSITION ALTERNATIVE SHORT WHEELBASE

SHORT wheelbase allows the car to rotate better in corners to maintain cornering speed. Recommended for tight, technical tracks or tracks with several 180° hairpin corners.



VIDEO TECH TIP

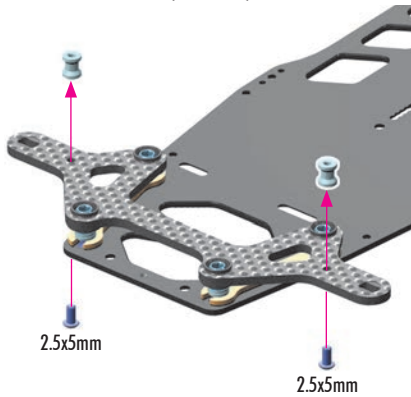


CASTER ADJUSTMENT

1. FRONT SUSPENSION



SOFT (NO BRACE)



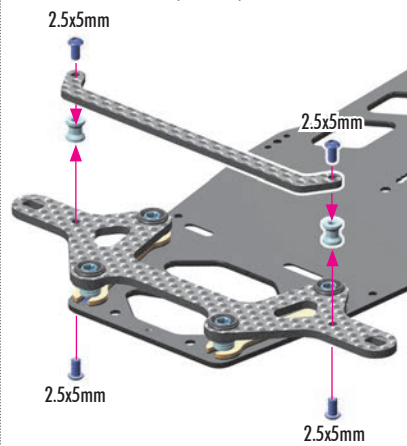
SOFT

Makes the car initially less responsive, but will provide more mechanical traction. Recommended for low-traction carpet conditions, and asphalt tracks.



FRONT SUSPENSION FLEX SETTING

MEDIUM (1 BRACE)

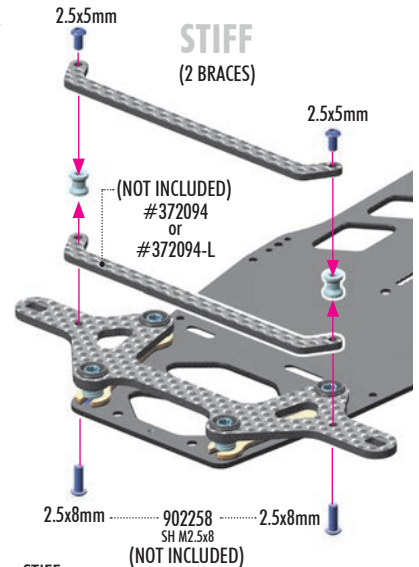


MEDIUM

INITIAL SETTING

Brace mounted to the carbon arm with posts provides a balance between initial response and mechanical traction. Recommended for most track conditions.

STIFF (2 BRACES)



STIFF

Both braces mounted to the carbon arm give maximum responsiveness but decrease mechanical traction. Recommended for high-traction track conditions. (such as US black carpet).

TIP

The kit front suspension brace is now 1.6mm, instead of the previous 2.2mm, for an improved handling & overall feel of the car.



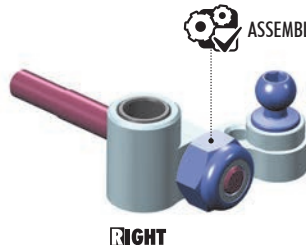
#372094
OPTION CARBON FRONT BRACE FOR NARROW
SUSPENSION ARM PLATE 2.2mm



Optional 2.2mm front suspension brace stiffens the front lower arm, which makes the car more initially responsive, reduces chassis roll, and helps to increase cornering speed for spec classes on high-grip surfaces.



ASSEMBLED VIEW



RIGHT

6mm THREAD

2mm

M3

LEFT

BUMPSTEER SETTING

The thickness of shims changes the steering linkage angle. Thicker shims give decreased in-corner steering, but car becomes easier to drive.

Use 2mm bump steer as

INITIAL SETTING.



NOTE
ORIENTATION

LEFT

FRONT
REAR

RIGHT

OUTSIDE POSITION

INITIAL SETTING

The outer hole provides less Ackermann effect, making the car more aggressive. Front traction is increased.

STEERING BLOCKS



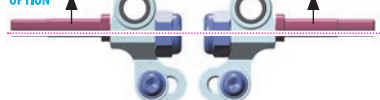
INSIDE POSITION

The inner hole provides more Ackermann effect, making the car less aggressive and easier to drive. Front traction is decreased.



#375222 FRONT WHEEL AXLE 1mm LESS TRAIL

OPTION



Less front axle trail frees up the car and reduces front traction, improving cornering speed for all classes. It is particularly useful for spec classes on high traction black carpet.



1. FRONT SUSPENSION



2x 303118-K
SHIM 3x9x1



2x 960032
N M3

2x

NOTE ORIENTATION
The **DOTS** must be oriented towards **OUTSIDE**.

NOTE ORIENTATION
The **DOTS** must be oriented towards **OUTSIDE**.

1mm
BLACK Nut M3

CAMBER
1.0°

FRONT VIEW

3 DOTS INCLUDED

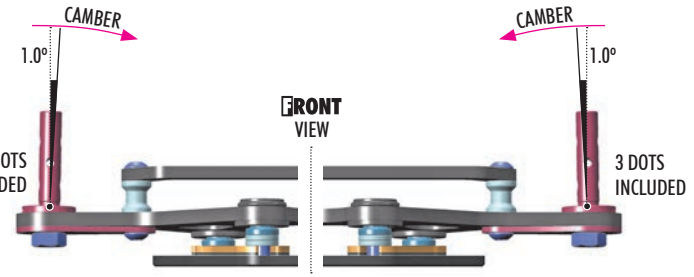
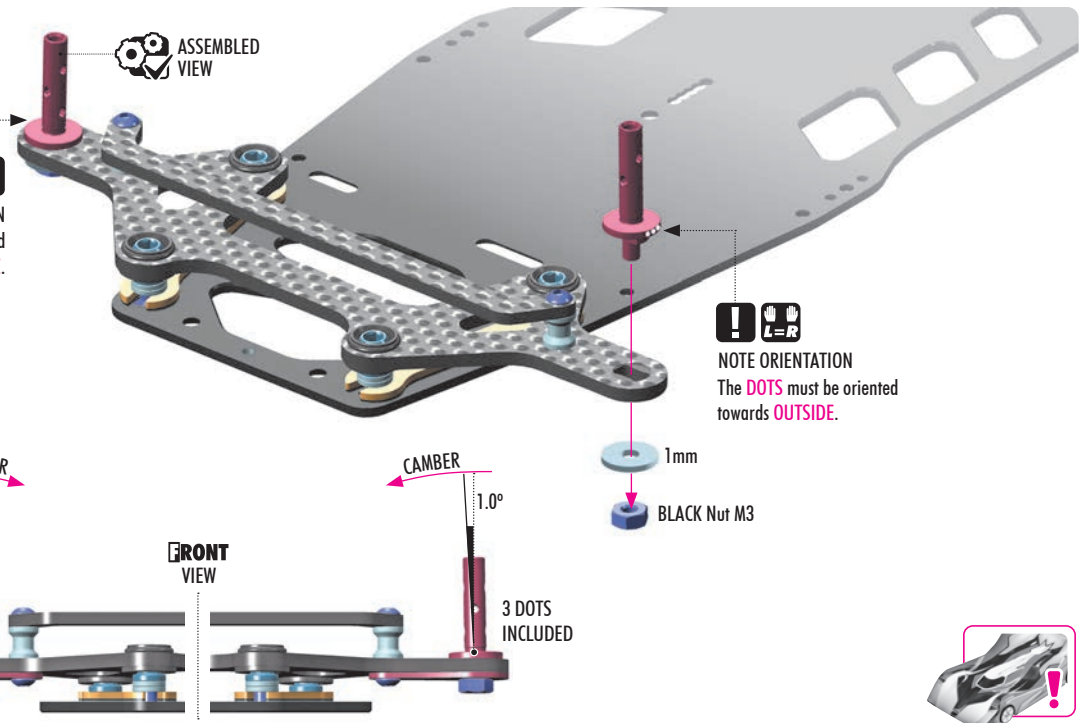
3 DOTS INCLUDED

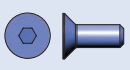
CAMBER ADJUSTMENT
Optional kingpins are available to adjust camber if needed.

INCREASING THE CAMBER ANGLE
Will increase the car steering, however, will make the car more difficult to drive.

DECREASING THE CAMBER ANGLE
Will decrease the steering which will make the car easier to drive and also helps to prevent traction rolling.

CAMBER - KINGPIN AXLES					
OPTION	#372260	0.5°	4 DOTS	OPTION	
	#372261	1°	3 DOTS	INCLUDED	
	#372262	1.5°	1 DOT	OPTION	





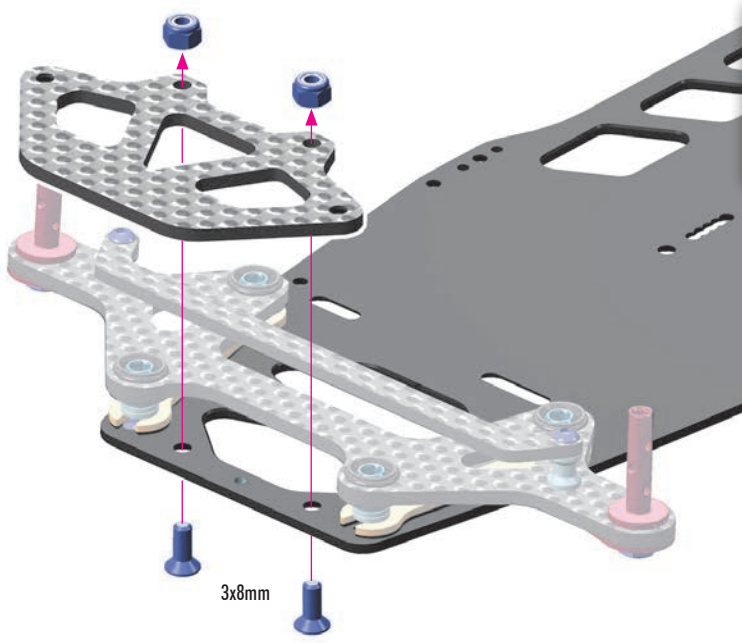
2x 903308
SFH M3x8



2x 960031
ALU N M3

3x8mm

ALU NUTS M3			
OPTION	#296530-B	BLUE	OPTION
	#296530-K	BLACK	OPTION
	#296530-O	ORANGE	OPTION
	#960031	SILVER	INCLUDED



8

XRAY

1. FRONT SUSPENSION

2x 303120
SHIM 3x6x0.5

4x 372297
SHIM 4x6x1

2x 902305
SH M3x5

2x 962042
S 4x6x0.1

2x 962043
S 4x6x0.2



TIP

Alexander Hagberg
(Factory driver)

RIDE HEIGHT AND DROOP ADJUSTMENT SHIMS:

The ride height is adjusted with the supplied long shims that can be fitted under the arms (silver/black/gold). I recommend using as low of a ride height as you possibly can, unless you race on a bumpy or rough surface, then the car can benefit from having a slightly higher ride height, to increase stability, and improve the handling over bumps.

The front axle height can be adjusted with shims under the steering block. You can't change the roll center on the front end of the X12, simply because there is no upper arm. Adding shims under the steering block (raising the steering block) will raise the front axle height, and at the same time, decrease bump steer. Removing shims will lower the steering block, and increase bump steer. For more information about Ackermann & Bumpsteer, see PAGE 27 (servo mounting).

I recommend using the kit shimming for the front steering block - this will be a good basic setting for most conditions.



FRONT DROOP ADJUSTMENT

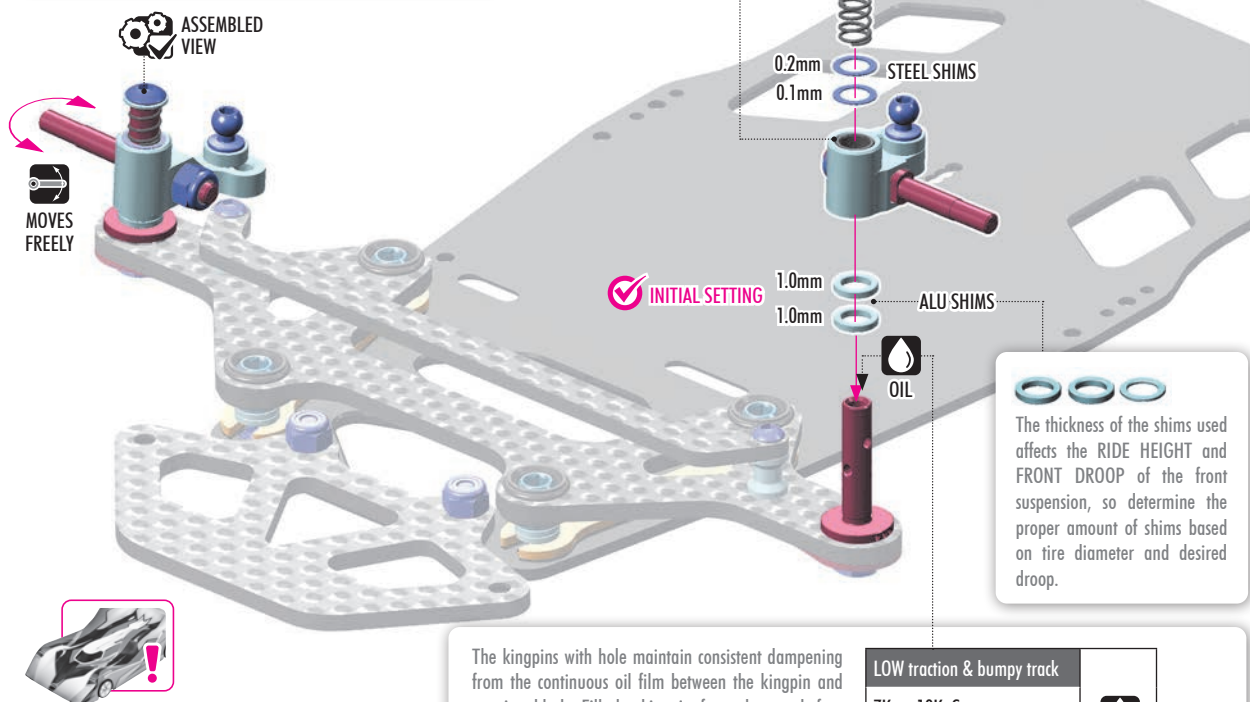
Front droop is adjusted by the preload of the front spring. More shims between the steering block and the spring will increase preload - and decrease droop. Removing shims will have the opposite effect.

INITIAL SETTING

- Above steering block (0.3mm)
- Below steering block (2.0mm)

MORE DROOP will make the car initially less responsive, but it will give the car more front traction, especially in the middle of the corner. The car will be less precise and more difficult to drive, because of increased roll. More droop is best suited for low- to medium-traction carpet, or asphalt tracks.

LESS DROOP will decrease roll but the car will change direction faster. Less droop is best suited for high-traction surfaces such as US black carpet, especially when traction rolling is an issue and particularly when a rear solid axle is used.



The kingpins with hole maintain consistent dampening from the continuous oil film between the kingpin and steering block. Fill the kingpin from the top before installing the steering block and retaining screw.

Recommended to check and re-fill the kingpin fluid once per race day, or every 5 runs, whichever comes first.

LOW traction & bumpy track	
7K ~ 10K cSt	OIL
HIGH traction & smooth track	
15K ~ 30K cSt	

use HUDY Silicone Oil
10K cSt
(INCLUDED)



FRONT COIL SPRINGS

OPTION	#	C	COLOR	OPTION
	372192	0.7	GOLD	OPTION
	372191	0.9	SILVER	OPTION
	372190	1.1	BLACK	OPTION
	372186	1.5-1.7	GOLD	OPTION
	372187	1.8-2.0	SILVER	INCLUDED
	372188	2.1-2.3	BLACK	OPTION

SOFTER SPRINGS

Make the car easier to drive over bumps and increase steering as they make the car roll more, especially in the middle of a corner.

HARDER SPRINGS

Make the car more responsive and increase initial steering. Recommended for high-traction and flat tracks.



FRONT DAMPING SETTING

The Front Damping Setting is adjusted using different viscosity of oils.

THINNER OIL

Makes the car more responsive but also more difficult to drive. Thinner oil increases cornering speed. Recommended for low-traction tracks.

THICKER OIL

Makes the car less responsive but easier to drive. Thicker oil also increases stability, but decreases cornering speed. Recommended for high-traction tracks.



VIDEO TECH TIP



FRONT KINGPIN OIL

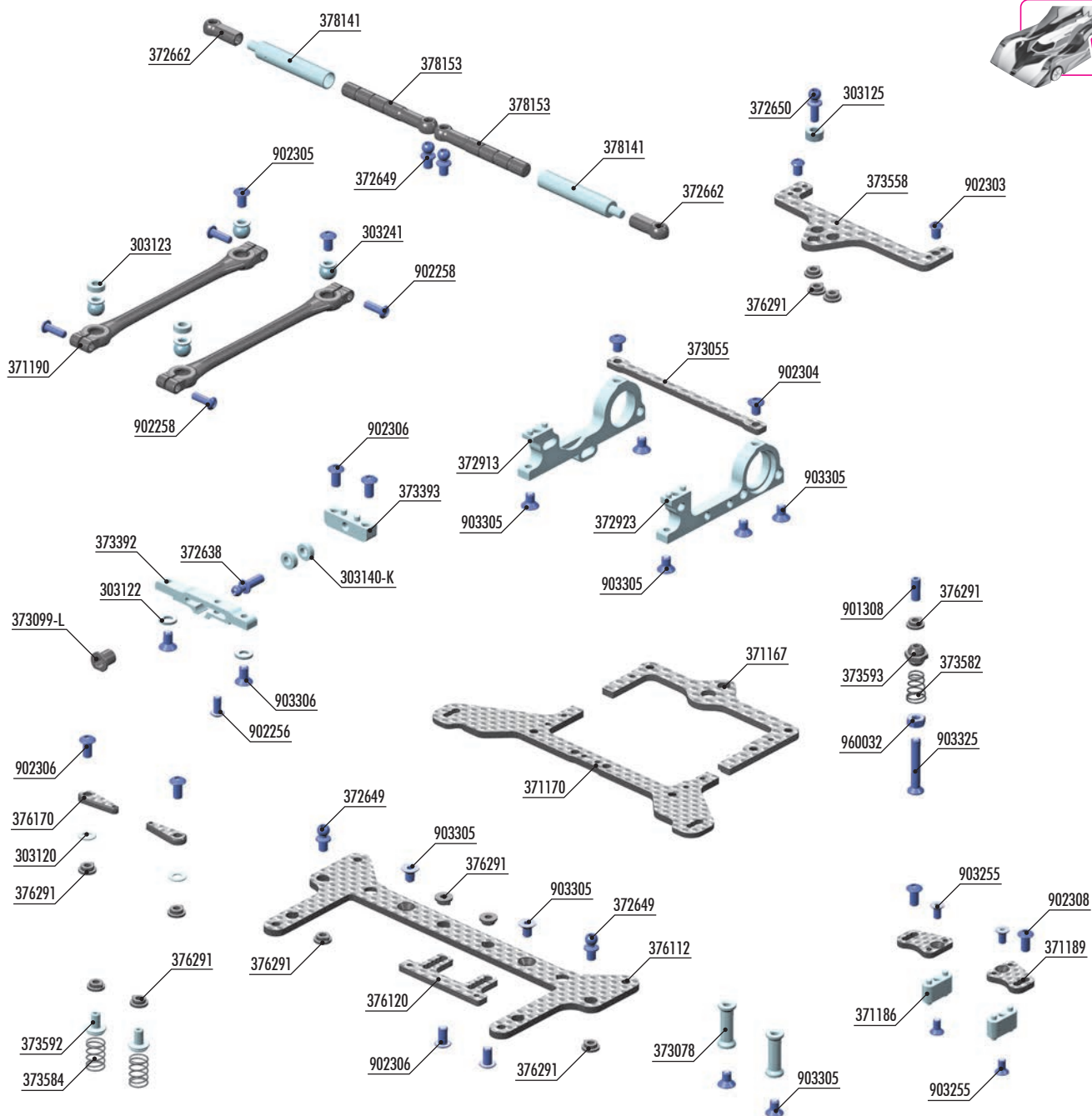


VIDEO TECH TIP



FRONT DROOP & RIDE HEIGHT

2. REAR SUSPENSION



BAG

02

BUILD VIDEO



REAR SUSPENSION

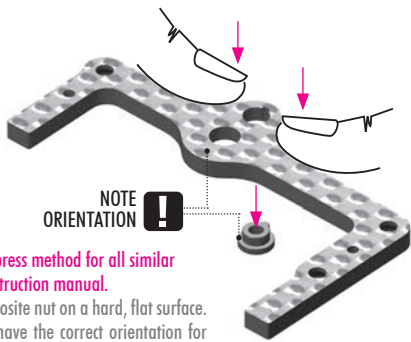
- 303120 SET OF ALU SHIM (0.5mm, 1.5mm, 2.5mm)
- 303122 ALU SHIM 3x6x1.0mm (10)
- 303123 ALU SHIM 3x6x2.0mm (10)
- 303125 ALU SHIM 3x6x3.0mm (10)
- 303140-K ALU SHIM 3x5x2.0mm - BLACK (10)
- 303241 BALL UNIVERSAL 5.8mm HEX (4)
- 371167 CARBON REAR POD LOWER PLATE FOR 1-PIECE CHASSIS - REAR
- 371170 CARBON REAR POD LOWER PLATE FOR 1-PIECE CHASSIS - FRONT
- 371186 ALU HOLDER WITH 2 PINS FOR SIDE LINK CARBON PLATE - BLACK
- 371189 CARBON PLATE FOR 2 PINS FOR SIDE LINK (L+R)
- 371190 COMPOSITE POD LINK (2)
- 372638 HARD STEEL BALL END 3.7mm WITH 8mm THREAD - NICKEL COATED (2)
- 372649 BALL END 4.2mm WITH 4mm THREAD (2)
- 372650 BALL END 4.2mm WITH 6mm THREAD (2)
- 372662 COMPOSITE BALL JOINT 4.2mm (4)
- 372913 ALU REAR BULKHEAD FOR 1-PIECE CHASSIS - MOTOR - RIGHT
- 372923 ALU REAR BULKHEAD FOR 1-PIECE CHASSIS - LEFT
- 373055 CARBON REAR BULKHEAD BRACE FOR 1-PIECE CHASSIS
- 373078 ALU REAR BRACE MOUNT 15.5mm - BLACK (2)
- 373099-L COMPOSITE PIVOT BRACE BUSHING FOR 3.7mm BALL END
- 373392 ALU CHASSIS PIVOT HOLDER FOR 1-PIECE CHASSIS - SWISS 7075 T6
- 373393 ALU POD PLATE PIVOT HOLDER FOR 1-PIECE CHASSIS - SWISS 7075 T6
- 373558 CARBON REAR POD UPPER PLATE FOR 1-PIECE CHASSIS
- 373582 TAPERED SPRING C=1.5-1.6 - SILVER (2)

- 373584 SIDE SPRING C=0.6 - SILVER (2)
- 373592 STEEL SIDE SPRING RETAINER (2)
- 373593 COMPOSITE TAPERED/STRAIGHT SPRING HOLDER (2)
- 376112 CARBON REAR BRACE FOR 1-PIECE CHASSIS
- 376120 CARBON BATTERY BACKSTOP WITH 5 POSITIONS
- 376170 CARBON BATTERY CLAMP 2.2mm (2)
- 376291 COMPOSITE M3 SNAP LOCK BUSHING (8)
- 378141 ALU SIDE TUBE (2)
- 378153 COMPOSITE SIDE TUBE SHAFT (2)
- 901308 HEX SCREW SB M3x8 (10)
- 902256 HEX SCREW SH M2.5x6 (10)
- 902258 HEX SCREW SH M2.5x8 (10)
- 902303 HEX SCREW SH M3x4 SMALL HEAD - STAINLESS (10)
- 902304 HEX SCREW SH M3x4 - STAINLESS (10)
- 902305 HEX SCREW SH M3x5 (10)
- 902306 HEX SCREW SH M3x6 (10)
- 902308 HEX SCREW SH M3x8 (10)
- 903255 HEX SCREW SFH M2.5x5 (10)
- 903305 HEX SCREW SFH M3x5 (10)
- 903306 HEX SCREW SFH M3x6 (10)
- 903325 HEX SCREW SFH M3x25 (10)
- 960032 NUT M3 (10)

Numbers in parentheses () refer to quantities when purchased separately.

2. REAR SUSPENSION

NOTE

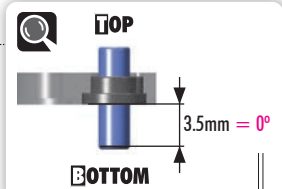
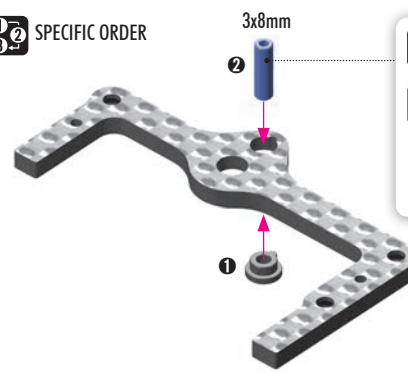


NOTE ORIENTATION

Use the same press method for all similar parts in the instruction manual.
Place the composite nut on a hard, flat surface. Make sure to have the correct orientation for both parts. Press the carbon fiber part straight down onto the nut until seated.

1x 901308
SB M3x8

SPECIFIC ORDER



POD ANGLE SETTING

The rear pod angle is adjusted using the set screw at the rear of the chassis. A 3.5mm gap between the chassis plate and rear pod means the rear pod is sitting flat. Increasing this gap increases the pod angle, creating a pro-squat effect. Pro-squat decreases on-power steering and increases rear traction.

Reducing the gap below 3.5mm introduces an anti-squat effect, increasing on-power steering while decreasing rear traction.



POD Anti-squat

Anti-squat increases on-power steering and decreases rear traction.



POD Straight

INITIAL SETTING



POD Pro-squat

Pro-squat decreases on-power steering and increases rear traction.

VIDEO TECH TIP



POD ANGLE
ADJUSTMENT

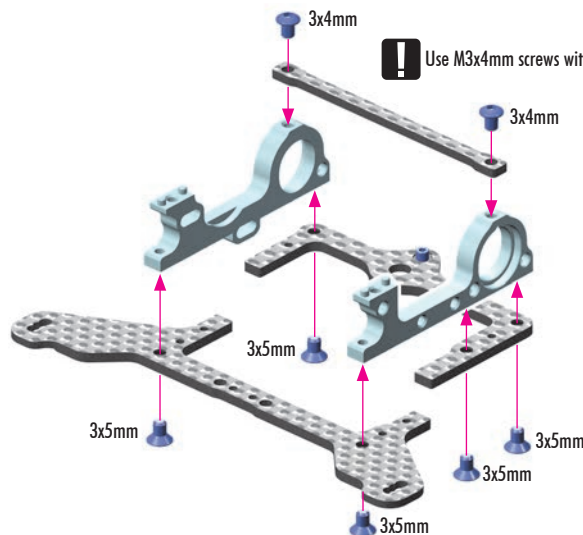
2x 902304
SH M3x4

5x 903305
SFH M3x5

VIDEO TECH TIP

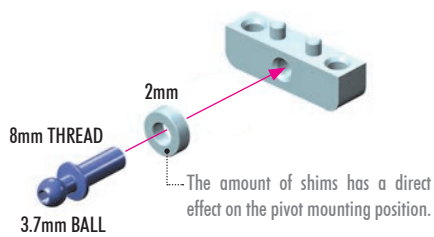


REAR POD & PIVOT
BUILD



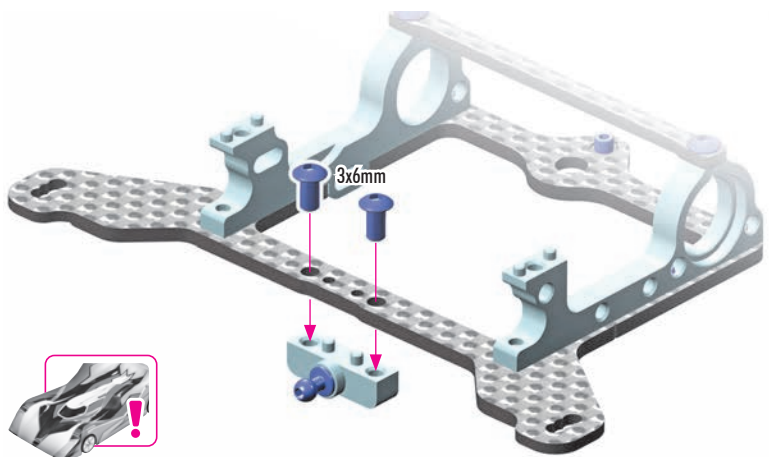
1x 303140-K
SHIM 3x5x2

2x 902306
SH M3x6



Please see: PAGE 13

INITIAL SETTING
MIDDLE pivot mounting (2mm shim)

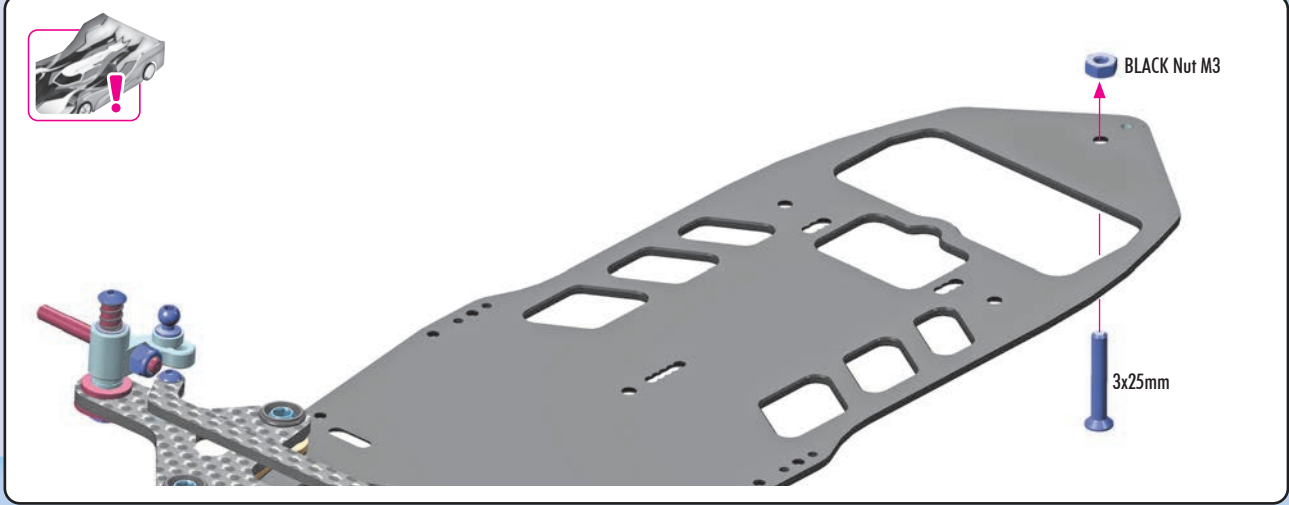


2. REAR SUSPENSION



1x 903325
SFH M3x25

1x 960032
N M3





2x 303122
SHIM 3x6x1

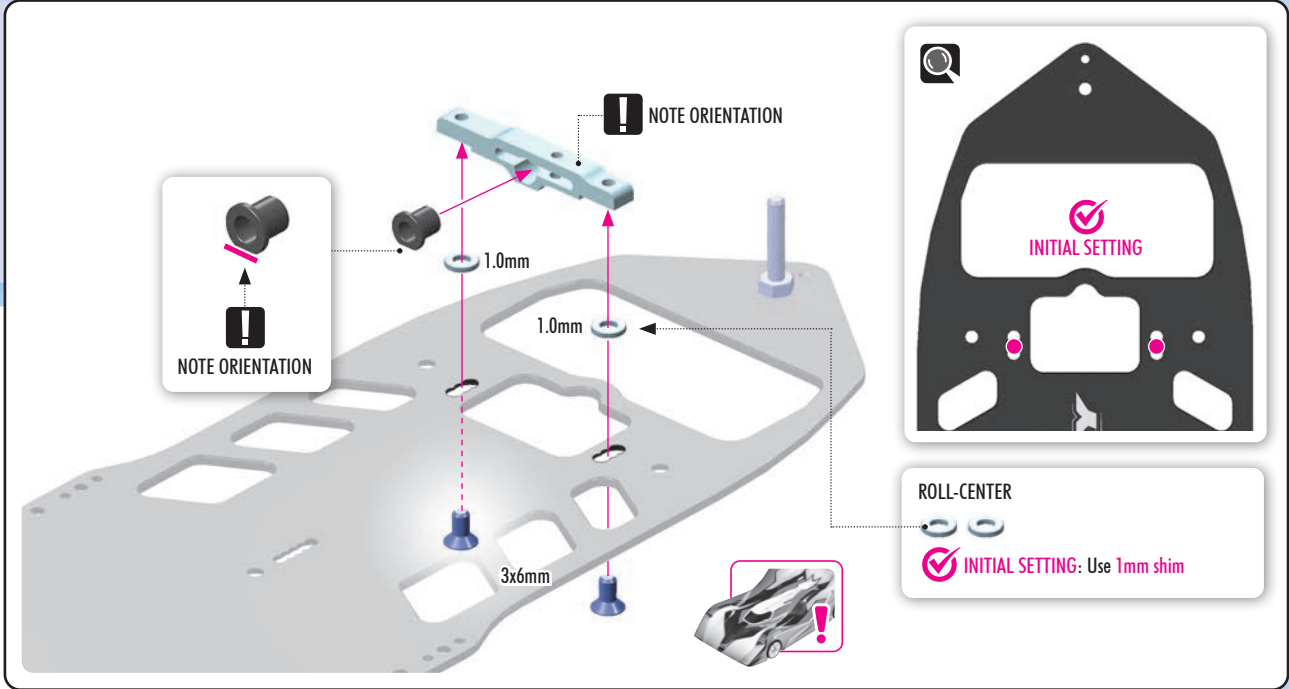
2x 903306
SFH M3x6

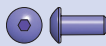


VIDEO TECH TIP



REAR POD & PIVOT
BUILD





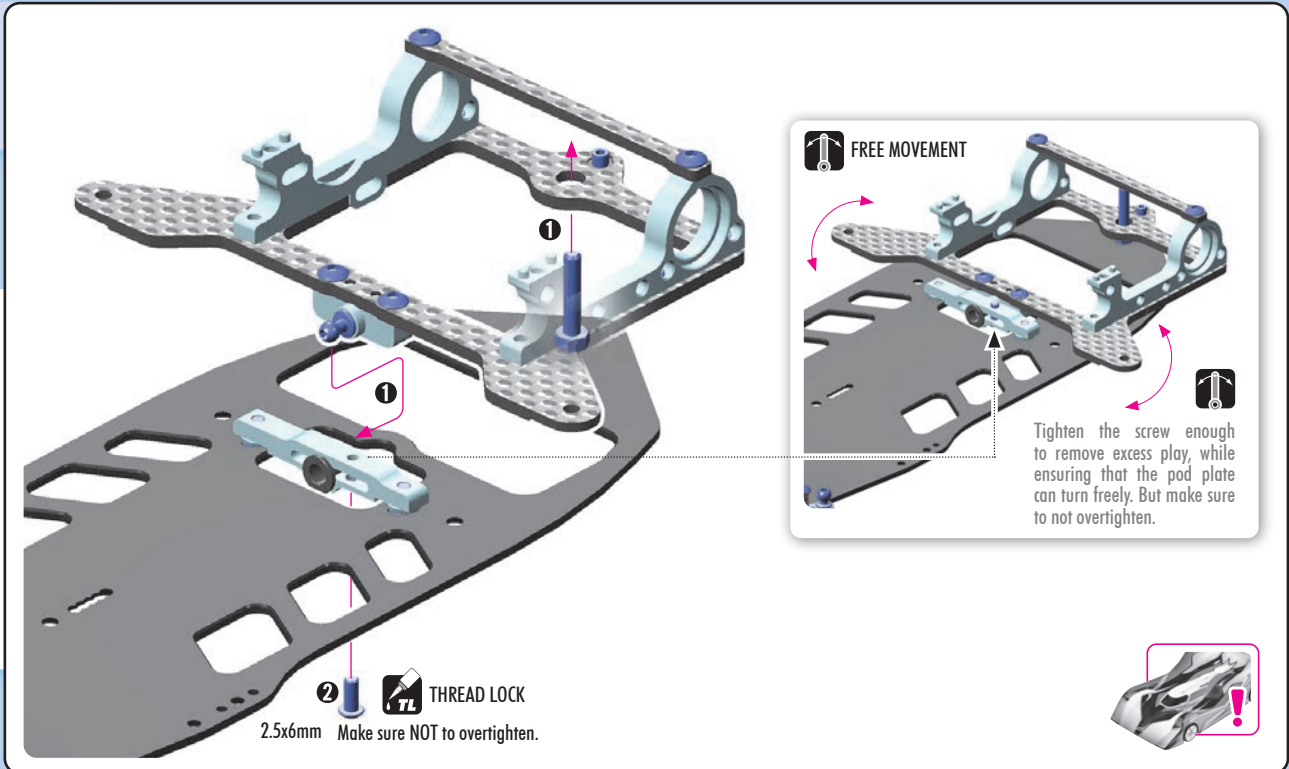
1x 902256
SH M2.5x6



VIDEO TECH TIP



REAR POD & PIVOT
BUILD



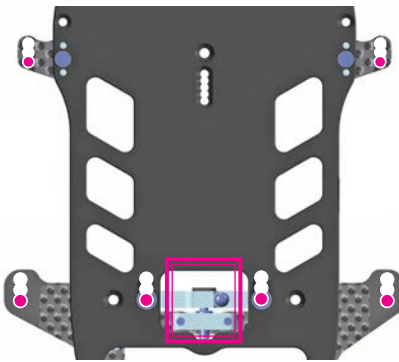
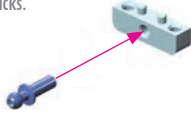
2. REAR SUSPENSION



PIVOT MOUNTING ALTERNATIVE

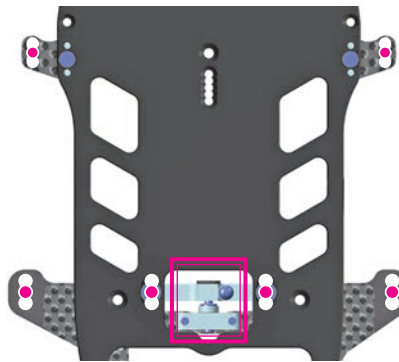
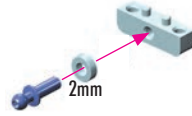
REARWARD:

Pivot mounted in rear chassis holes with no ball stud shims. Improved rotation from shorter rear pod geometry. Provides most initial steering and rotation; best suited for high traction carpet tracks.



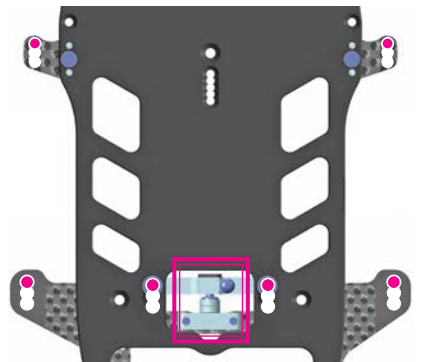
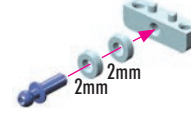
MIDDLE: INITIAL SETTING

Pivot mounted in middle chassis holes with a 2mm ball stud shim. Balanced front and rear traction; well suited for most conditions.



FORWARD:

Pivot mounted in forward chassis holes with 4mm ball stud shims. Creates the most forgiving handling that allows more aggressive driving without fear of losing rear traction.



The three side link mounting positions on the new pod front plate maintain proper side link alignment when using each of the 3 different center pivot mounting positions. Keeping the side links in-line with the center pivot provides more neutral and dynamic handling for all conditions, improving drivability & corner speed.

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

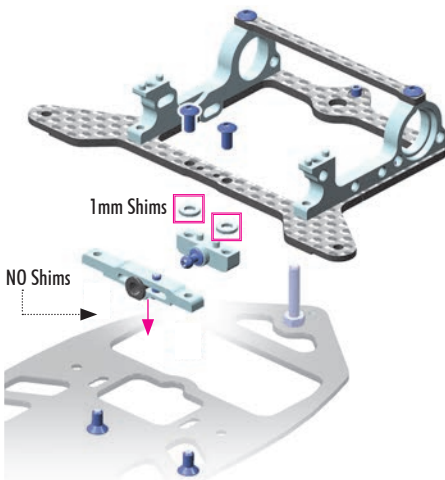


ROLL CENTER ADJUSTMENT

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

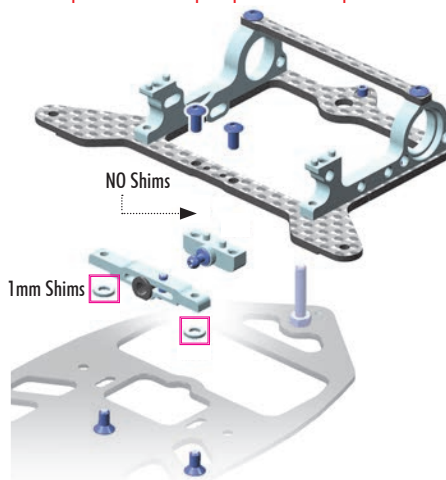


IMPORTANT
When changing the shims under the chassis pivot holder, the opposite adjustment of the same thickness must be made above the rear pivot holder to keep the pod in the same position.



LOWER ROLL CENTER

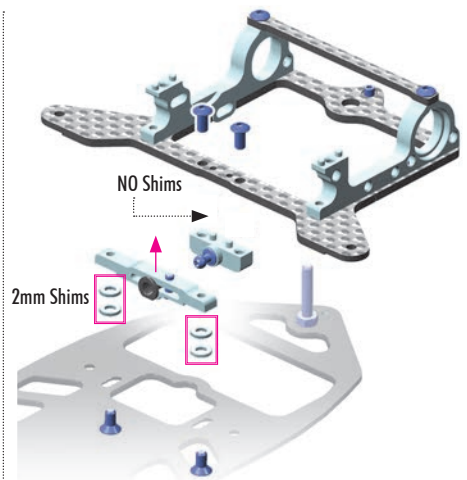
No shim under alu chassis pivot holder. Creates more traction and increases chassis roll. **NOTE:** The pivot holder will extend below chassis plate in this position.



STANDARD ROLL CENTER

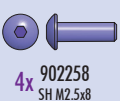


INITIAL SETTING
The standard roll center is the best starting point for most conditions as it gives the most neutral handling. The chassis pivot holder sits in line with the lower chassis plate.



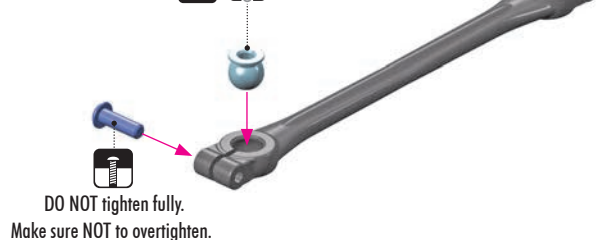
HIGHER ROLL CENTER

Adding shims below the chassis pivot holder increases rotation both on- and off-power.

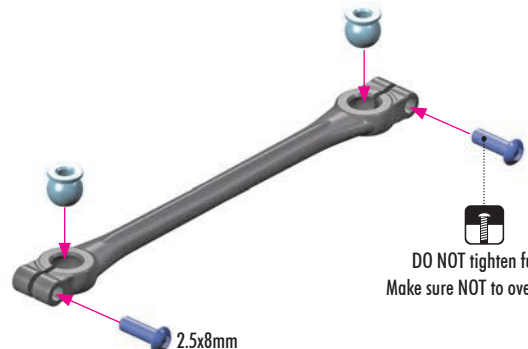


2x 

MOVE FREELY



DO NOT tighten fully. Make sure NOT to overtighten.

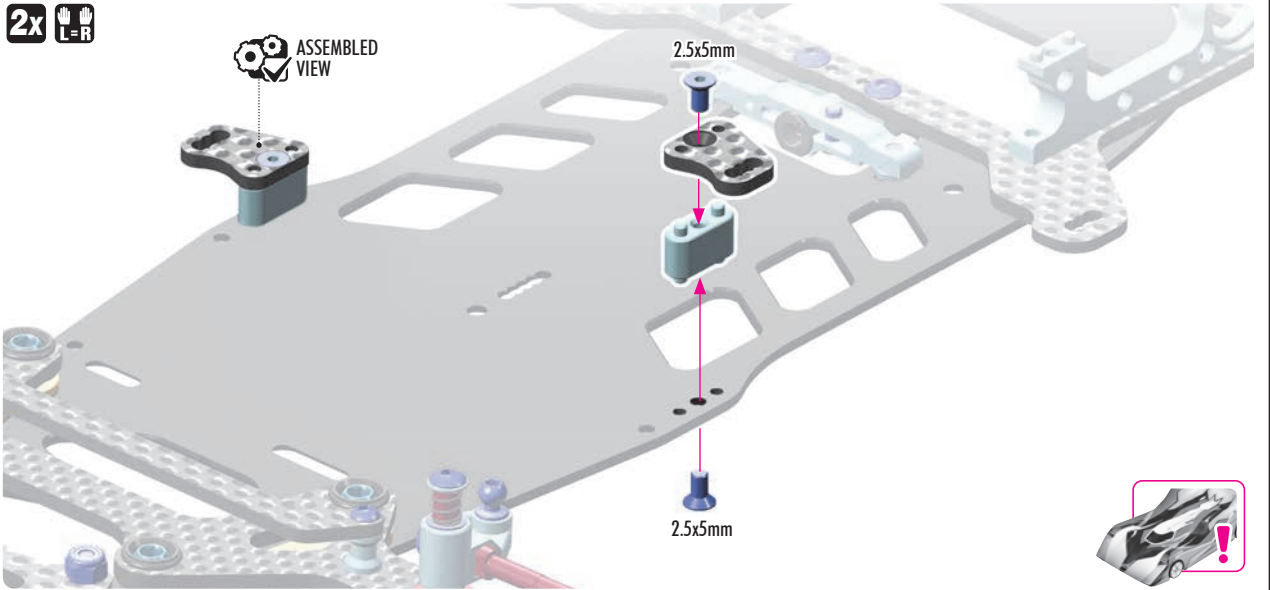


DO NOT tighten fully. Make sure NOT to overtighten.

2. REAR SUSPENSION



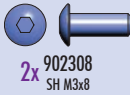
2x L-R



2x 303123 SHIM 3x6x2



2x 902305 SH M3x5



2x 902308 SH M3x8

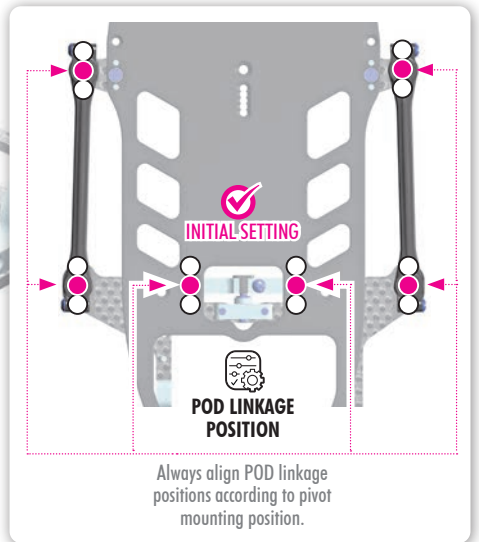
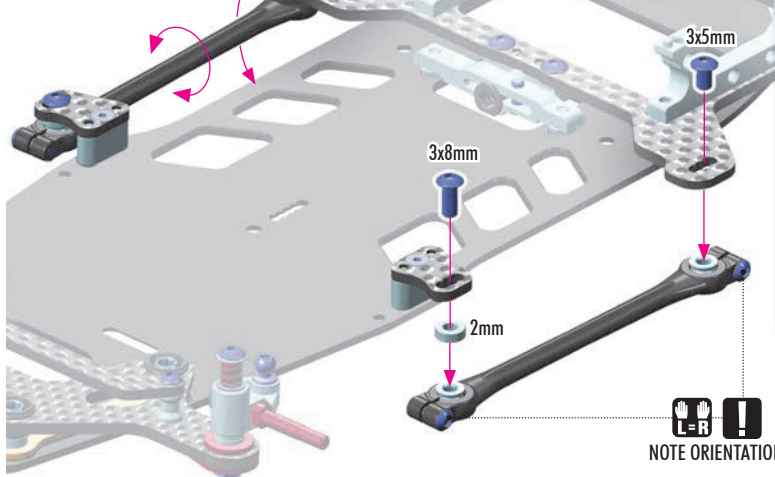


ASSEMBLED VIEW

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



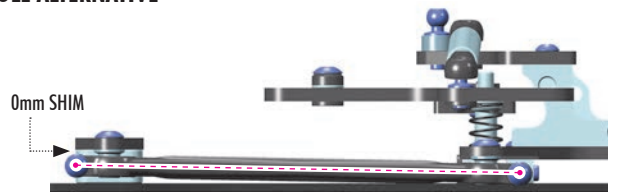
Ensure free, smooth movement.



POD LINKAGE ANGLE ALTERNATIVE

LESS SHIMS

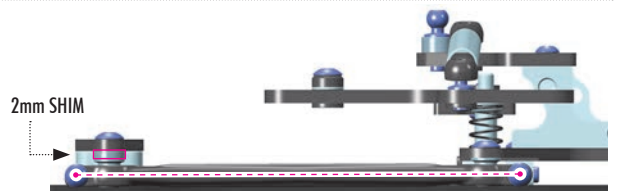
Raising the side links' **FRONT** pivot point (reducing shims) will further increase in-corner steering, but may be more difficult to drive since the rear inner wheel will lift up more during cornering. 0.5-2.0mm shims may be added for fine tuning.



STRAIGHT 2.0mm SHIMS

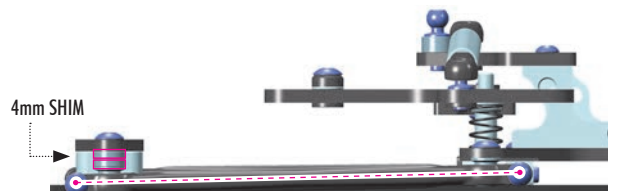


Straight link alignment makes the car easier to drive.



MORE SHIMS

Raising the side links' **REAR** pivot point (adding shims) reduces in-corner steering. This orientation is typically **NOT** used or recommended.



2. REAR SUSPENSION



REAR RIDE HEIGHT & DROOP SETTING

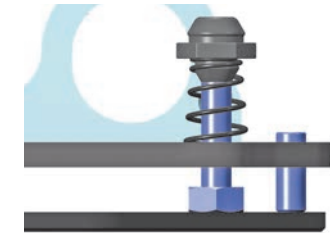
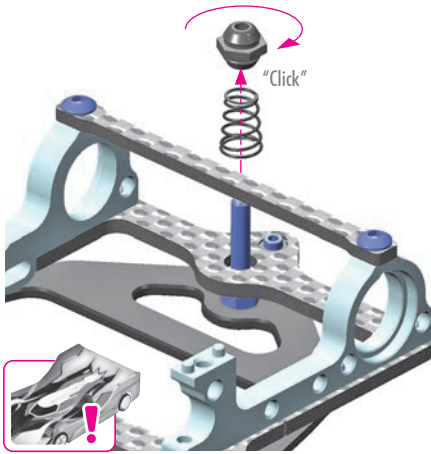
The rear ride height and rear droop settings are directly related to each other, making it important to use the correct rear axle eccentric holder when adjusting the rear bump spring preload to set the pod droop value.

STIFFER rear bump spring - will be more reactive and will improve on-power steering.

SOFTER rear bump spring - will be less reactive and will reduce on-power steering.

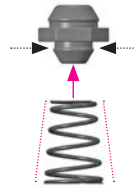
CONICAL-PROGRESSIVE rear bump spring - provides more aggressive handling than a straight-linear rear bump spring. Using a conical-progressive bump spring is usually the faster and most responsive setup.

STRAIGHT-LINEAR rear bump spring - provides more neutral handling to make the car easier to drive.



• **TIGHTENING** the rear bump spring increases ride height and reduces droop.

• **LOOSENING** the rear bump spring decreases ride height and increases droop.



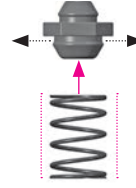
When using a **CONICAL-PROGRESSIVE SPRING**, press the spring onto the smaller diameter end of the spring retainer.



OPTION

TAPERED (CONICAL-PROGRESSIVE)

#373582	C=1.5-1.6	SILVER	INCLUDED
#373583	C=1.7-1.8	GOLD	OPTION



When using a **STRAIGHT-LINEAR SPRING**, press the spring onto the larger diameter end of the spring retainer.



OPTION

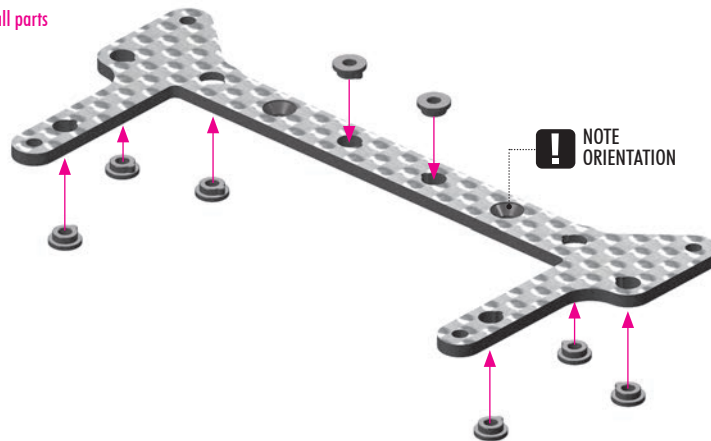
SIDE SPRINGS (STRAIGHT-LINEAR)

#373589	C=0.5	BLACK	OPTION
#373584	C=0.6	SILVER	OPTION
#373585	C=0.9	GOLD	OPTION
#373586	C=1.2	BLACK	OPTION
#373587	C=1.5	SILVER	OPTION
#373588	C=1.8	GOLD	OPTION



Use the same pressing method for all parts in the instruction manual.

Follow PAGE 11 / Step 1



2x

L=R



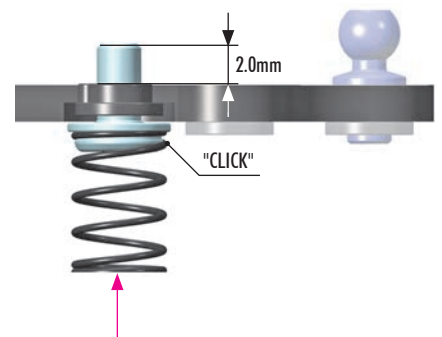
OPTION

SIDE SPRINGS

#373589	C=0.5	BLACK	OPTION
#373584	C=0.6	SILVER	INCLUDED
#373585	C=0.9	GOLD	OPTION
#373586	C=1.2	BLACK	OPTION
#373587	C=1.5	SILVER	OPTION
#373588	C=1.8	GOLD	OPTION



4.2mm BALL
4mm THREAD



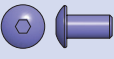
NOTE ORIENTATION
Leading edge of hole is beveled.

BOTTOM VIEW

2. REAR SUSPENSION

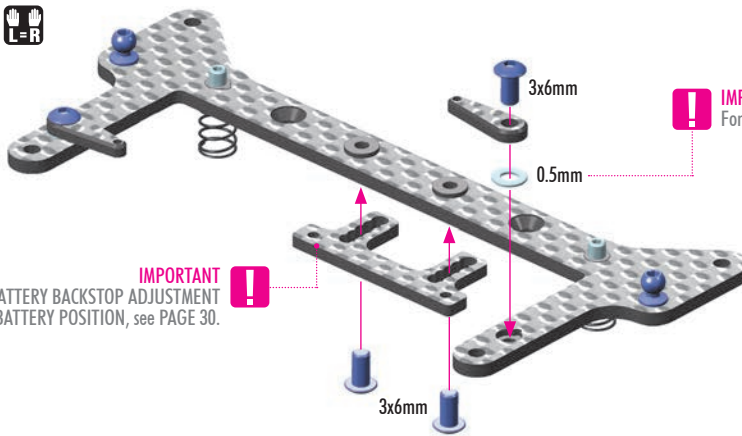


2x 303120
SHIM 3x6x0.5



2x 902306
SH M3x6

2x 



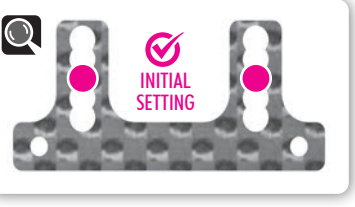
IMPORTANT
For BATTERY BACKSTOP position see PAGE 30.

IMPORTANT
For BATTERY BACKSTOP ADJUSTMENT and BATTERY POSITION, see PAGE 30.

3x6mm

0.5mm

3x6mm



INITIAL SETTING



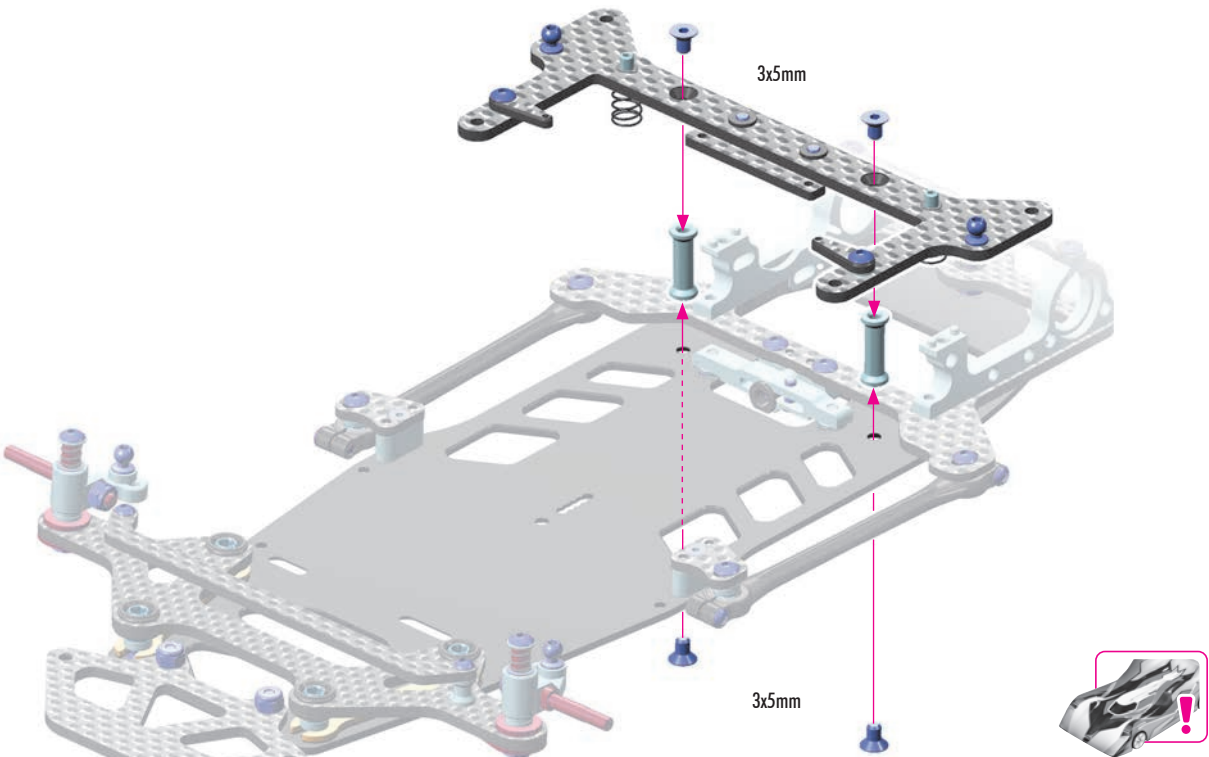
4x 903305
SFH M3x5



VIDEO TECH TIP



BATTERY MOUNTING SYSTEM



3x5mm

3x5mm

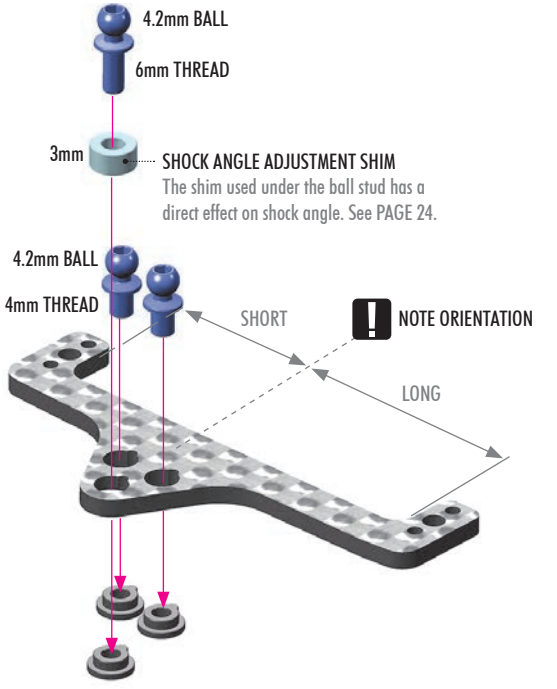
3x5mm



1x 303125
SHIM 3x6x3



2x 902303
SH M3x4



4.2mm BALL

6mm THREAD

3mm

SHOCK ANGLE ADJUSTMENT SHIM
The shim used under the ball stud has a direct effect on shock angle. See PAGE 24.

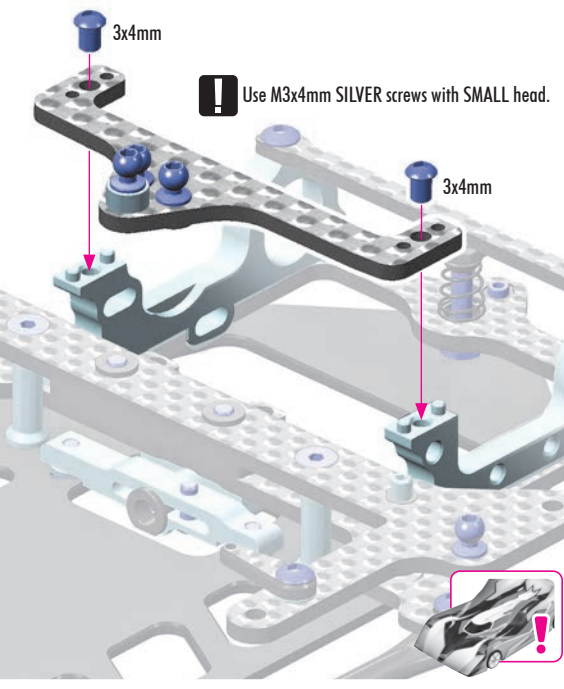
4.2mm BALL

4mm THREAD

SHORT

LONG

NOTE ORIENTATION



3x4mm

3x4mm

Use M3x4mm SILVER screws with SMALL head.

2. REAR SUSPENSION

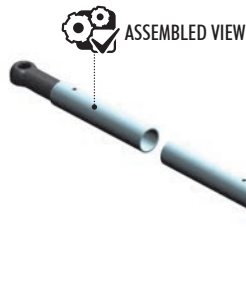


VIDEO TECH TIP



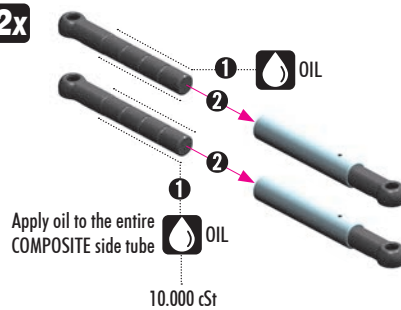
SIDE TUBES

2x



ASSEMBLED VIEW

2x



Apply oil to the entire COMPOSITE side tube

10.000 cSt



Apply oil to the entire composite side tube before installing in the aluminum tube. After assembly, check for smooth operation. It is very important to check and re-oil the tubes at least once per race day. Oil thickness can be adjusted depending on the track conditions.



For HIGH traction

use HARDER oils

For LOW traction or ASPHALT

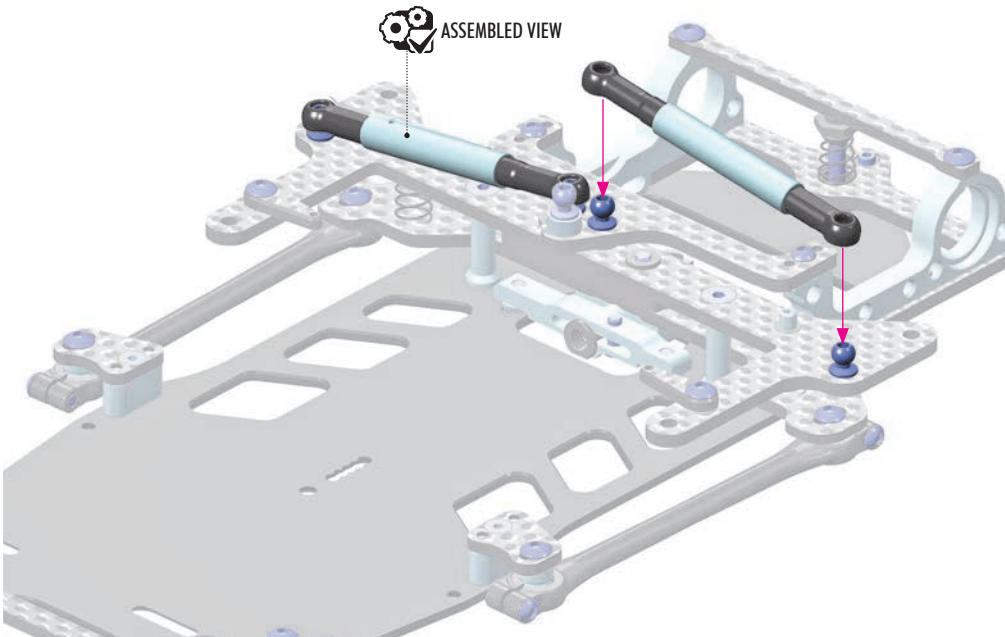
use SOFTER oils



HUDY OILS 50ml

OPTION	
#106450	5.000cSt
#106460	6.000cSt
#106470	7.000cSt
#106480	8.000cSt
#106490	9.000cSt
#106510	10.000cSt
#106492	11.000cSt
#106512	12.000cSt
#106515	15.000cSt
#106517	17.000cSt
#106520	20.000cSt
#106530	30.000cSt

INCLUDED



ASSEMBLED VIEW



SIDE TUBE ANGLE

Shims of different thickness installed under ball studs are used for different side tube angle adjustment.

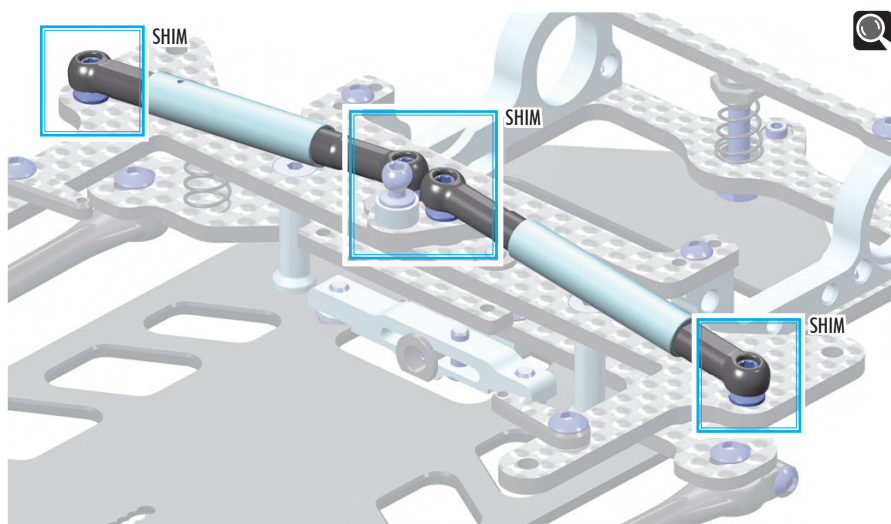
The angle of the side tubes has a minor effect on the car's performance.

HIGHER ANGLE:

Stiffer feeling, less roll.
More progressive damping action.

LOWER ANGLE (FLATTER):

Softer feeling, more roll.
More linear damping action.



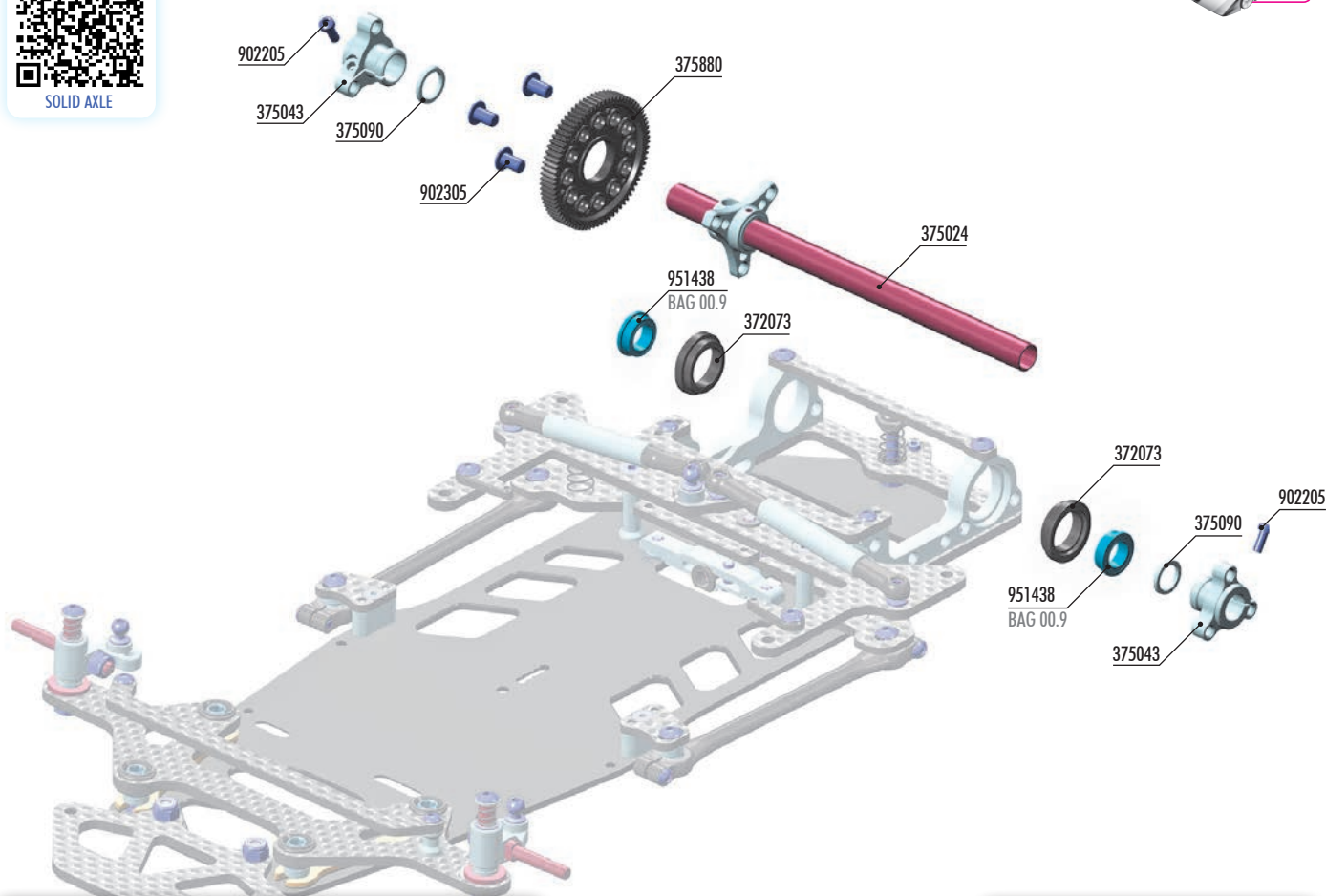
3. SOLID AXLE



BUILD VIDEO



SOLID AXLE



#375009
X12 BALL DIFFERENTIAL - SET



VIDEO TECH TIP



BALL DIFFERENTIAL



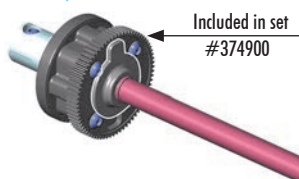
#930238
CERAMIC BALL-BEARING AXIAL F3-8 3x8x3.5



#930230
XRAY CERAMIC BALL 3.175MM (12)



#374900
XRAY GEAR DIFFERENTIAL
1/12 PAN CAR - SET



Included in set
#374900



GEAR DIFF - SPUR GEARS

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



SPUR GEARS 64P - SMALL

#375860	60T	OPTION
#375862	62T	OPTION
#375864	64T	OPTION
#375876	66T	OPTION
#375868	68T	OPTION



*Must be used with:
#375022 X12 REAR SOLID AXLE STEEL SHAFT
FOR 1-PIECE CHASSIS - SMALL SPUR GEAR



SPUR GEARS 64P

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



BAG

03

372073 COMPOSITE ECCENTRIC RIDE HEIGHT ADJUSTER SET (2)
375024 REAR SOLID AXLE SHAFT FOR 1-PIECE CHASSIS - LW - HUDY SPRING STEEL™
375043 ALU REAR ONE-PIECE WHEEL HUB - M2 SCREW - NARROW
375090 SET OF ALU SHIMS (0.5mm, 1.0mm, 2.0mm)
375880 COMPOSITE SPUR GEAR - 80T / 64P

902205 HEX SCREW SH M2x5 (10)
902305 HEX SCREW SH M3x5 (10)
951438 BALL-BEARING 1/4" x 3/8" x 1/8" FLANGED - STEEL SEALED - OIL (2)

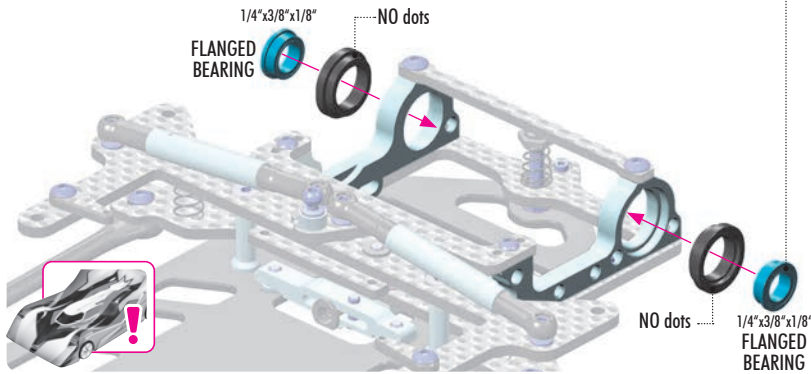
Numbers in parentheses () refer to quantities when purchased separately.

XRAY

3. SOLID AXLE



2x L=R



Bearing Oil
(HUDY #106230)
OPTION

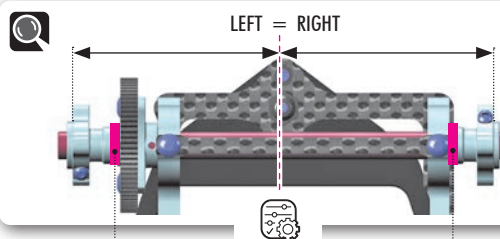
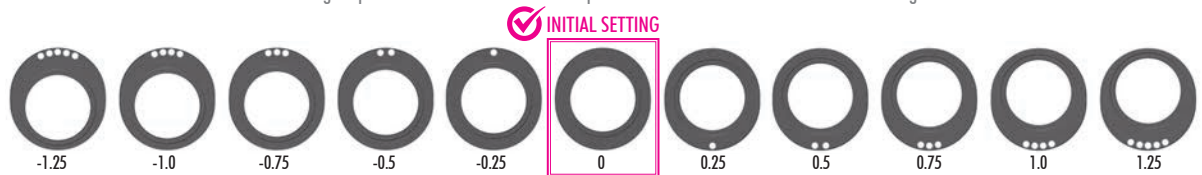
All ball-bearings are factory pre-oiled. Regularly service, clean and lubricate all ball-bearings with HUDY Bearing Oil (#106230).

Replace the bearings as soon as they get a "gritty" feeling to prevent inefficiency and rear axle bearing blowouts.

Make sure to use only original XRAY ball-bearings which all have specific tolerances, axial and radial play and are all individually selected. Using any 3rd party ball-bearings may result into failures and break of the car.

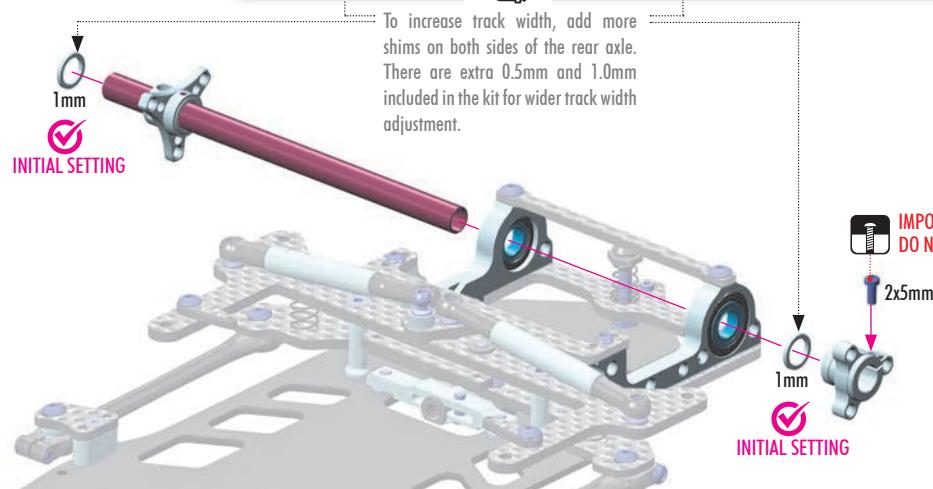


These eccentric bushings adjust the **RIDE HEIGHT** of the rear pod. Make sure to use the **SAME** eccentric bushings on **BOTH** sides.



To set track-width, use the hole in the POD lower plate as the centre point; this hole should always be centred between the two rear wheels once overall track-width is set. To set the track-width more easily, set the car on a ruler or use a digital vernier caliper.

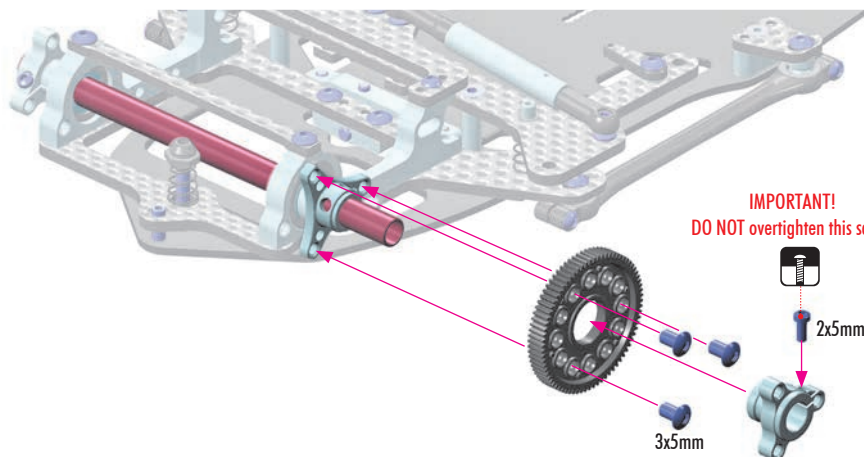
Rear track-width is directly affected by wheel offsets, which can vary depending on tire brand.



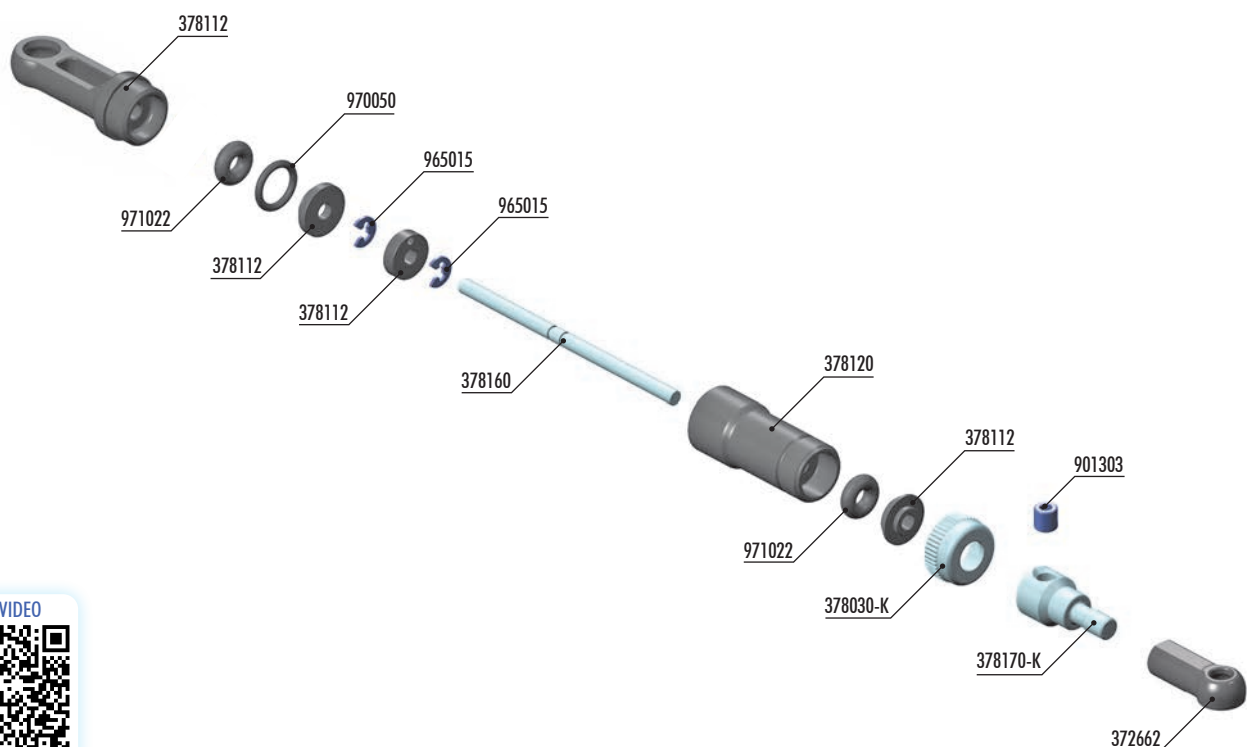
BUILD VIDEO



SOLID AXLE



4. SHOCK ABSORBER



BUILD VIDEO



CENTER SHOCK



HUDY SILICONE OILS - 50ml								
#106310	100cSt	OPTION	#106342	425cSt	OPTION	#106365	650cSt	OPTION
#106315	150cSt	OPTION	#106345	450cSt	INCLUDED	#106367	675cSt	OPTION
#106320	200cSt	OPTION	#106347	475cSt	OPTION	#106370	700cSt	OPTION
#106325	250cSt	OPTION	#106350	500cSt	OPTION	#106375	750cSt	OPTION
#106330	300cSt	OPTION	#106355	550cSt	OPTION	#106380	800cSt	OPTION
#106335	350cSt	OPTION	#106357	575cSt	OPTION	#106390	900cSt	OPTION
#106337	375cSt	OPTION	#106360	600cSt	OPTION	#106410	1000cSt	OPTION
#106340	400cSt	OPTION	#106362	625cSt	OPTION	#106420	2000cSt	OPTION



#104002
HUDY AIR VAC
VACUUM PUMP



BAG

04

- 372662 COMPOSITE BALL JOINT 4.2mm (4)
- 378030-K ALU SHOCK BODY CAP - LOWER - BLACK
- 378102 X12 CENTER DAMPENER SET
- 378112 COMPOSITE PARTS FOR CENTER DAMPENER FOR 1-PIECE CHASSIS
- 378120 ALU SHOCK BODY - V2
- 378160 STEEL SHOCK SHAFT
- 378170-K ALU SHOCK BALL JOINT SCREW - BLACK

- 901303 HEX SCREW SB M3x3 (10)
- 965015 E-CLIP 1.5 (10)
- 970050 O-RING 5x1 (10)
- 971022 SILICONE O-RING 2x2 (10)

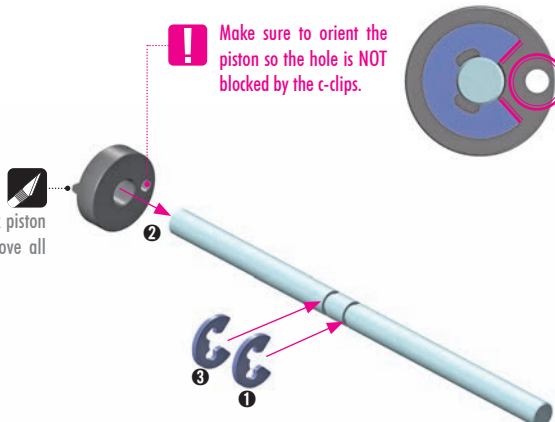
Numbers in parentheses () refer to quantities when purchased separately.



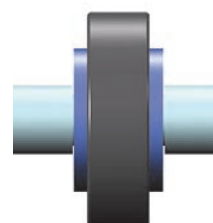
2x 965015
C1.5

SPECIFIC ORDER

Carefully remove the shock piston from the frame, and remove all excess plastic flash.



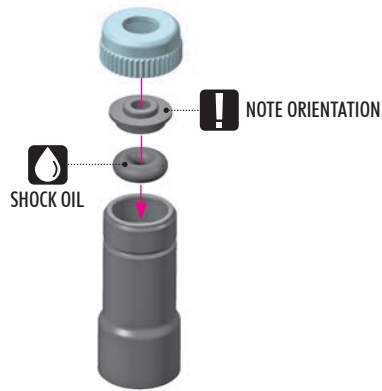
ASSEMBLED VIEW



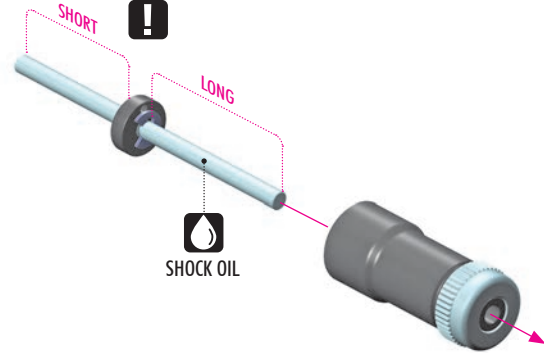
4. SHOCK ABSORBER



1x 971022
0 2x2



NOTE
ORIENTATION
!

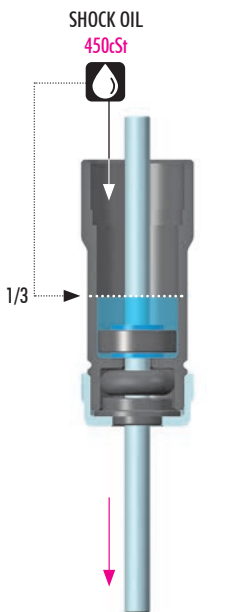


1x 970050
0 5x1

1x 971022
0 2x2

DEFAULT SHOCK SETTING FOR SHOCK ABSORBER

Follow the steps below to set the shock.



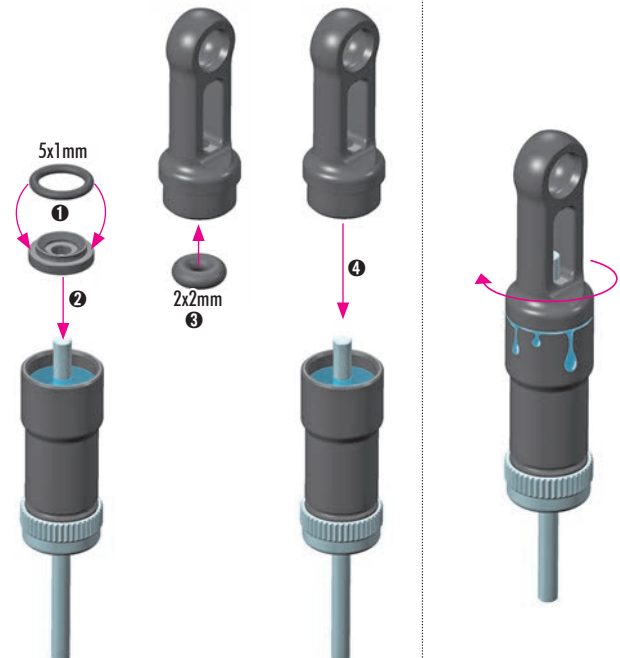
Extend the shock shaft completely. Fill the shock body with the shock oil but only 1/3.



- 1 Slowly move the shock shaft up so the shock oil will flow under the shock piston.
- 2 Extend the shock shaft.



Extend the shock shaft completely to release the air trapped beneath the shock piston. Fill the shock shaft body with the shock oil but NOT fully approx. 3mm from the top of the shock body.

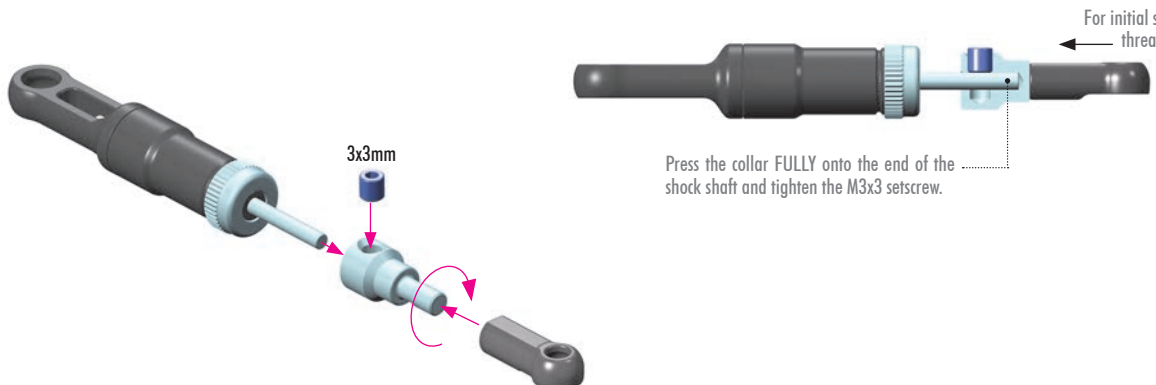


- 1 Install the 5x1 o-ring onto shock shim.
- 2 Place the shock shim with the o-ring into the shock body.
- 3 Install the 2x2 o-ring into the shock cap.
- 4 Install the shock cap.

Screw fully the shock cap in the filled shock body. Excess oil will spill from the shock. Tighten completely.



1x 901303
SB M3x3



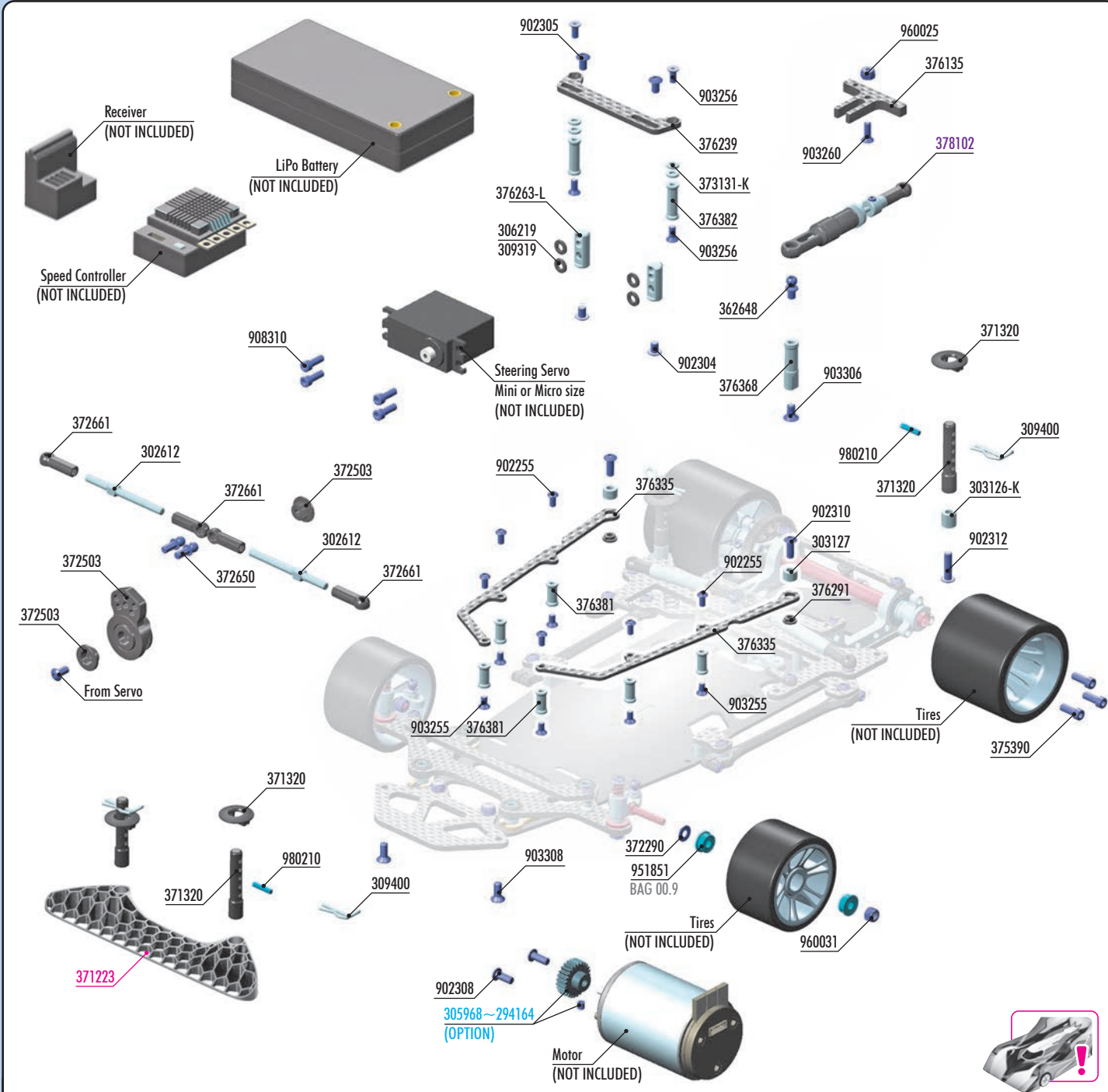
Press the collar FULLY onto the end of the shock shaft and tighten the M3x3 setscrew.

BUILD VIDEO



CENTER SHOCK

5. FINAL ASSEMBLY



BAG

05

BUILD VIDEO



FINAL ASSEMBLY

305968~294164 PINION GEAR HARDCOATED 18~64T/64P (OPTION)

302612	ALU ADJ. TURNBUCKLE M3 L/R 39mm - SWISS 7075 T6 (2)
303126-K	ALU SHIM 3x6x5.0mm - BLACK (10)
303127	ALU SHIM 3x6x4.0mm (10)
306219	COMPOSITE SET OF SERVO SHIMS (4)
309319	COMPOSITE SET OF SHIMS (4)
309400	BODY CLIP FOR 5mm BODY POST (8)
362648	BALL END 4.9mm WITH 4mm THREAD (2)
371320	COMPOSITE BODY POST (2)
372290	ALU SHIM 3.2x4.8x0.5 (4)
372503	COMPOSITE SERVO SAVER - STIFF - SET
372650	BALL END 4.2mm WITH 6mm THREAD (2)
372661	COMPOSITE STEERING BALL-JOINT 4.2mm OPEN (4)
373131-K	ALU SHIM 2.5x5x1.0mm - BLACK (10)
375390	ALU HEX SCREW M3x8 FOR REAR WHEELS (6)
376135	CARBON MIDDLE BATTERY BACKSTOP
376239	CARBON SERVO HOLDER FOR 1-PIECE CHASSIS
376263-L	ALU SERVO MOUNT - BLACK (2)
376291	COMPOSITE M3 SNAP LOCK BUSHING (8)
376335	CARBON SIDE BRACE FOR 1-PIECE CHASSIS 1.6mm (2)
376368	ALU MOUNT 20mm - BLACK
376381	ALU MOUNT 10.0mm WITH M2.5 THREAD - BLACK (2)

376382

ALU MOUNT 15.5mm WITH M2.5 THREAD - BLACK (2)

902255

HEX SCREW SH M2.5x5 (10)

902304

HEX SCREW SH M3x4 (10)

902305

HEX SCREW SH M3x5 (10)

902308

HEX SCREW SH M3x8 (10)

902310

HEX SCREW SH M3x10 (10)

902312

HEX SCREW SH M3x12 (10)

903255

HEX SCREW SFH M2.5x5 (10)

903256

HEX SCREW SFH M2.5x6 (10)

903260

HEX SCREW SFH M2.5x10 (10)

903306

HEX SCREW SFH M3x6 (10)

903308

HEX SCREW SFH M3x8 (10)

908310

HEX SCREW SOCKET HEAD CAP M3x10 (10)

951851

BALL-BEARING 1/8" x 5/16" x 9/64" FLANGED - STEEL SEALED - OIL (2)

960025

NUT M2.5 (10)

960031

ALU NUT M3 (10)

980210

PIN 2x10 (10)

378102

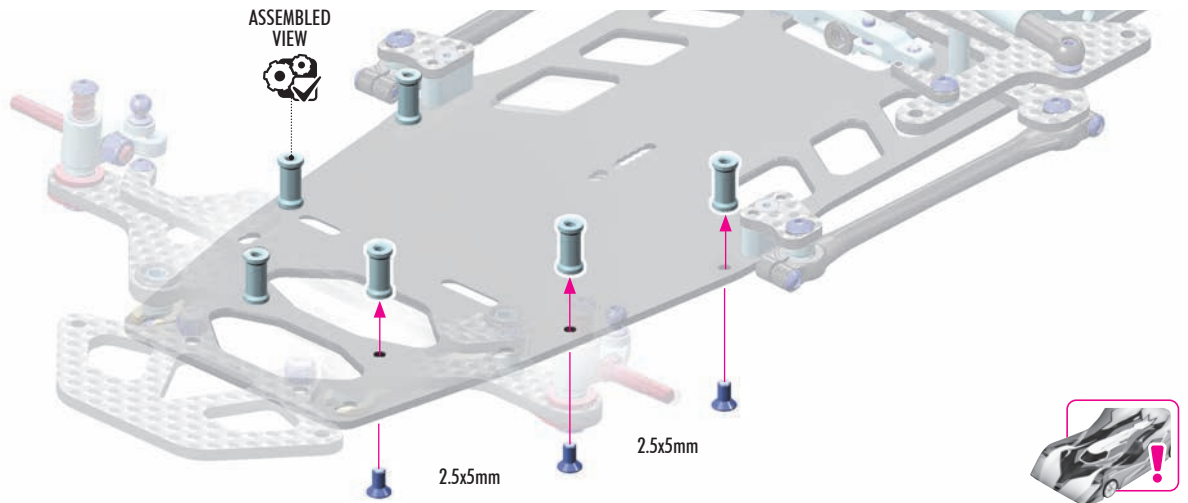
X12 CENTER DAMPENER SET

371223

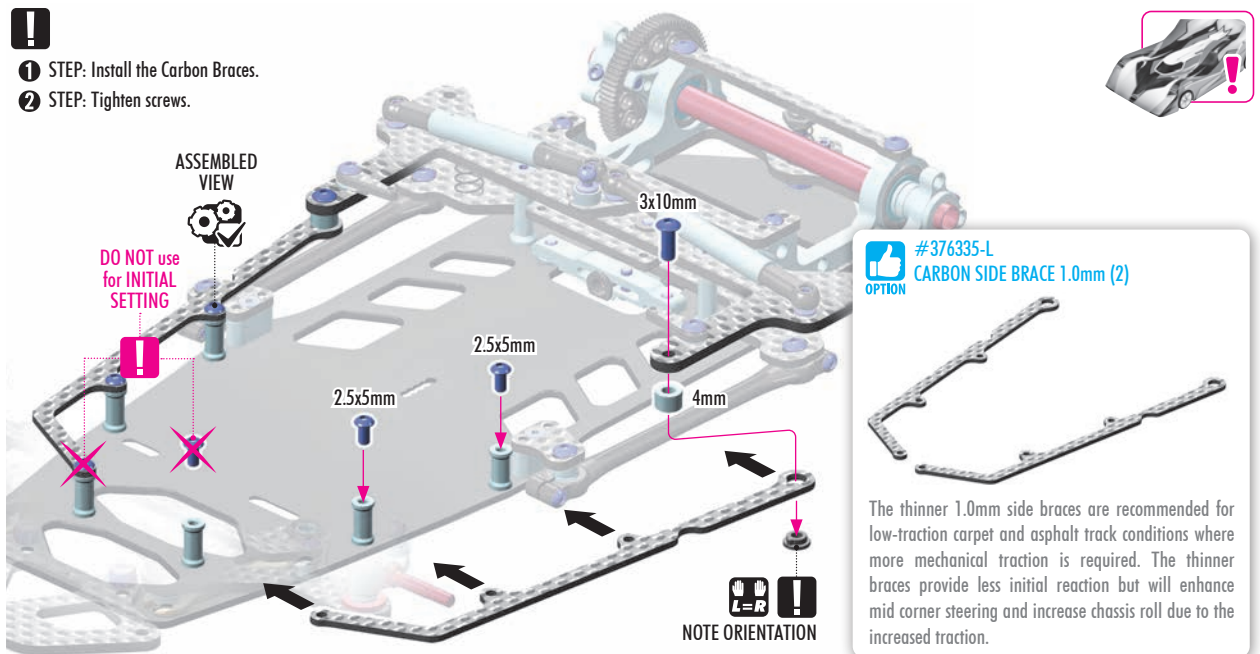
X12 RUBBER BUMPER 3D

Numbers in parentheses () refer to quantities when purchased separately.

5. FINAL ASSEMBLY



- STEP: Install the Carbon Braces.
- STEP: Tighten screws.



#376335-L
CARBON SIDE BRACE 1.0mm (2)
OPTION

The thinner 1.0mm side braces are recommended for low-traction carpet and asphalt track conditions where more mechanical traction is required. The thinner braces provide less initial reaction but will enhance mid corner steering and increase chassis roll due to the increased traction.



CHASSIS FLEX ADJUSTMENT

SOFT

Generates more mechanical traction. Recommended for low- to medium-traction carpet as well as asphalt. **(NO BRACES)**

MEDIUM

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

MEDIUM STIFF

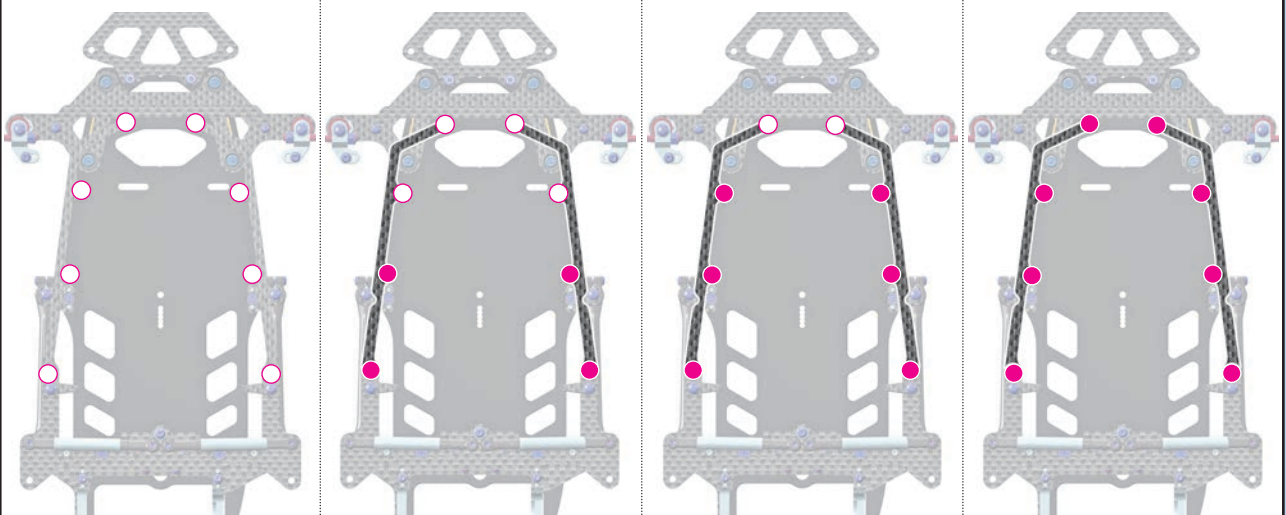


INITIAL SETTING

Braces installed, attached at middle-front, middle, and rear. A good compromise between mechanical traction, and steering response. A good option for higher traction conditions.

STIFF

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



VIDEO TECH TIP

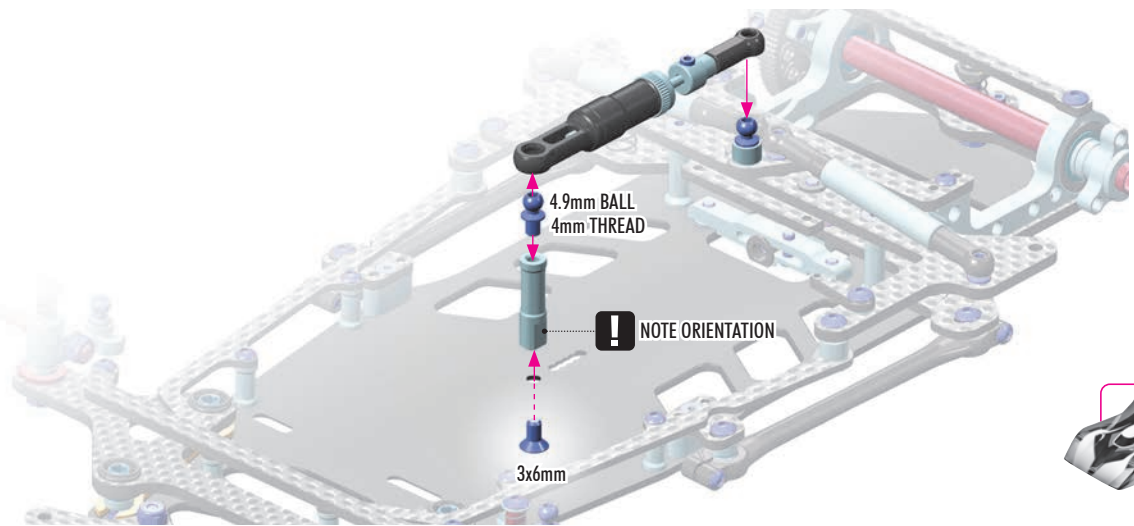


CARBON SIDE BRACES

5. FINAL ASSEMBLY



1x 903306
SFH M3x6

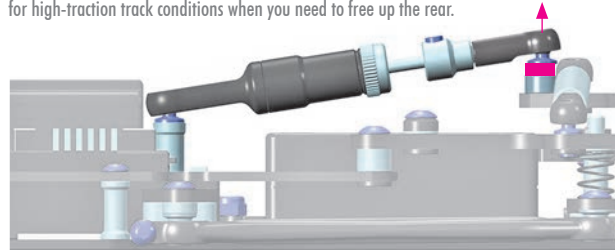


SHOCK ANGLE & POSITION

MORE SHOCK ANGLE

More shim in rear.

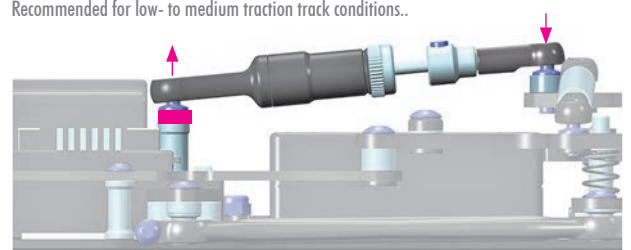
Makes the damping more progressive and increases on-power steering. Recommended for high-traction track conditions when you need to free up the rear.



LESS SHOCK ANGLE

More shim in front, less shim in rear.

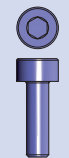
Makes the damping more linear. Increases stability, decreases on-power steering. Recommended for low- to medium traction track conditions..



306219 SHIM 3x6x1
306219 SHIM 3x6x2



306219 SHIM 3x6x3



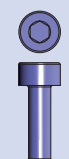
4x 908310
SCH M3x10



309319 SHIM 3x5x1
309319 SHIM 3x5x2

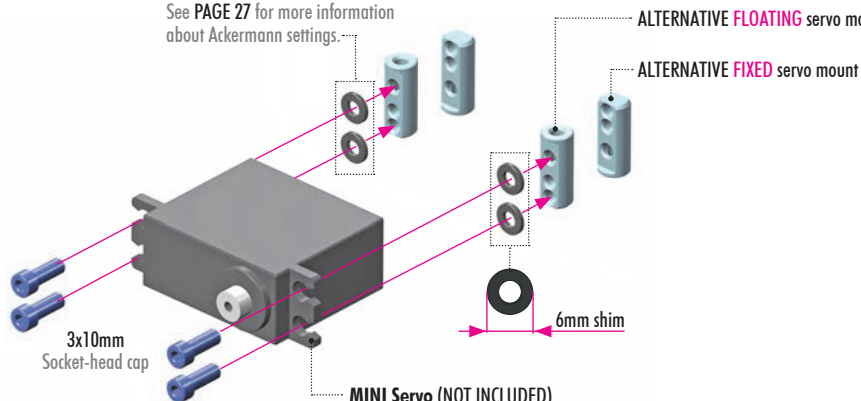


309319 SHIM 3x5x3



4x 908310
SCH M3x10

See PAGE 27 for more information about Ackermann settings.



MINI Servo (NOT INCLUDED)

(Examples: KO Propo, Futaba, Savox, Power HD)

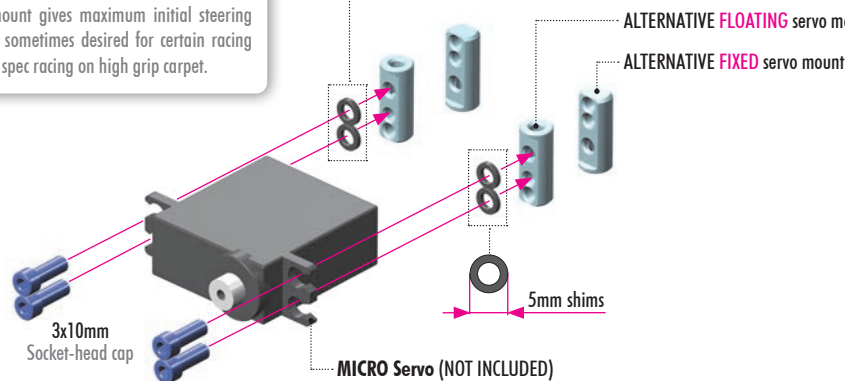
ALTERNATIVE FLOATING servo mount

The floating servo mount option is the best all-around choice for a forgiving and neutral handling. The servo is also less likely to move or shift in a hard crash.

ALTERNATIVE FIXED servo mount

The fixed servo mount gives maximum initial steering response, which is sometimes desired for certain racing conditions, such as spec racing on high grip carpet.

See PAGE 27 for more information about Ackermann settings.



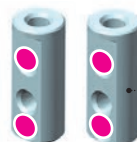
MICRO Servo (NOT INCLUDED)

(Example: Sanwa)

ALTERNATIVE FLOATING servo mount ☒ INITIAL SETTING

ALTERNATIVE FIXED servo mount

MINI SERVO POSITIONS



NOTE ORIENTATION

VIDEO TECH TIP

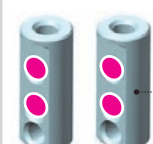


STEERING SYSTEM

ALTERNATIVE FLOATING servo mount ☒ INITIAL SETTING

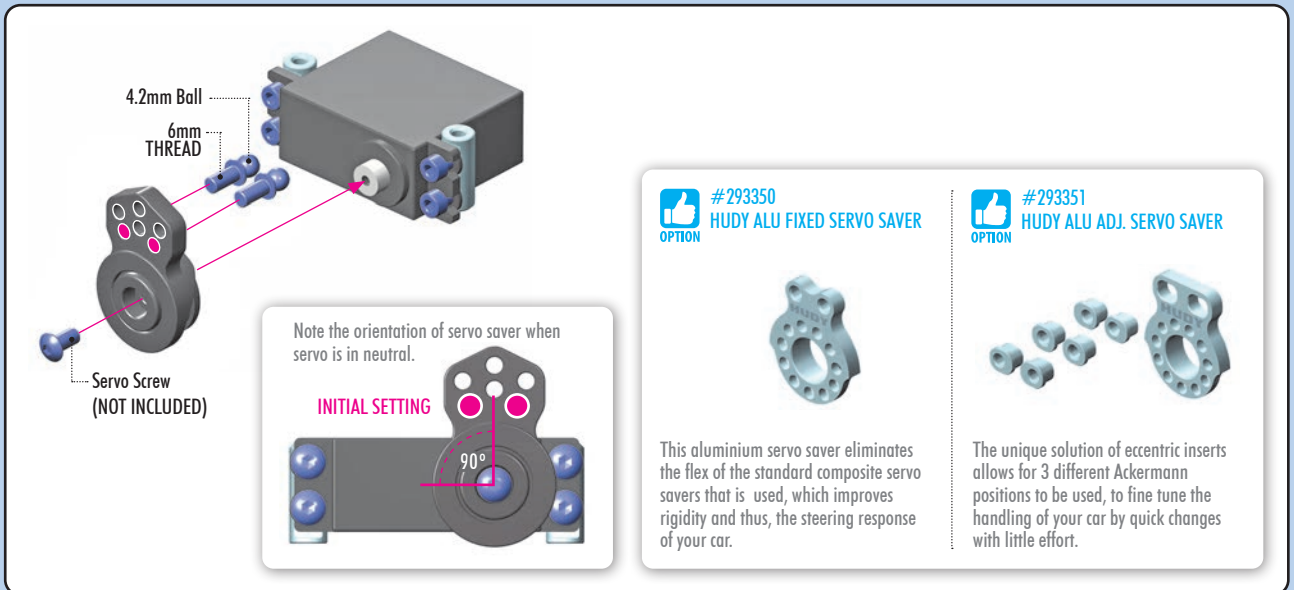
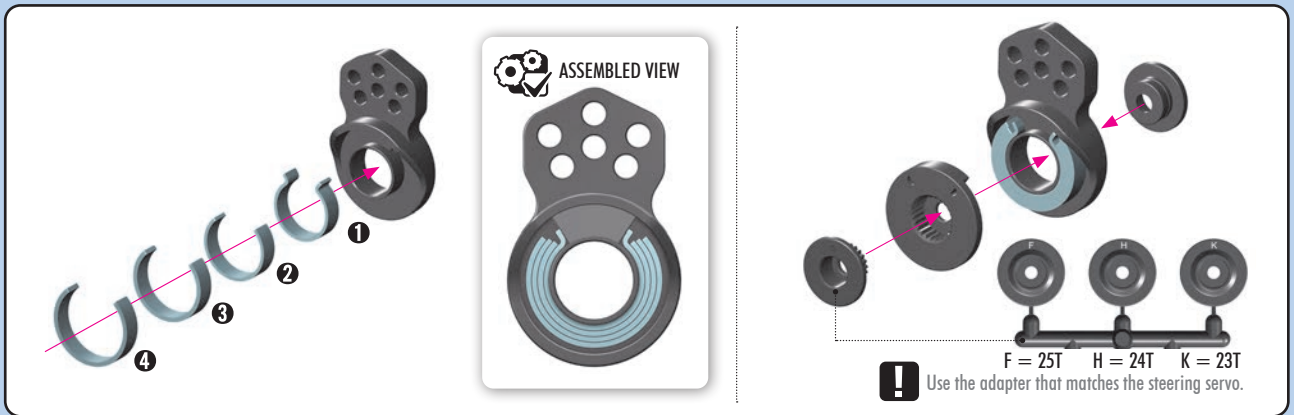
ALTERNATIVE FIXED servo mount

MICRO SERVO POSITIONS



NOTE ORIENTATION

5. FINAL ASSEMBLY



ALTERNATIVE FLOATING servo mount

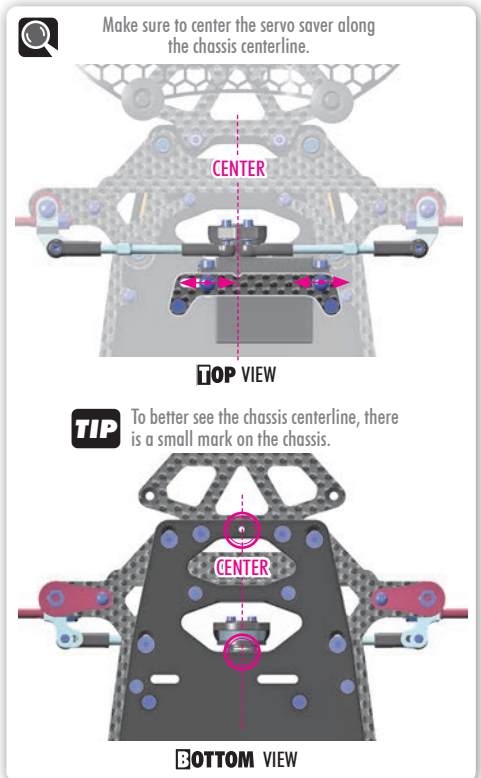
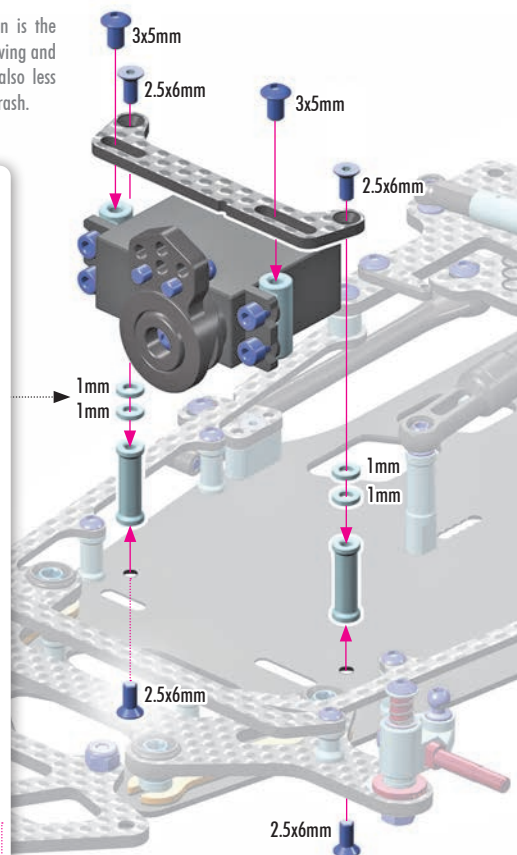
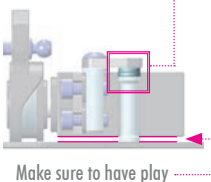
✓ INITIAL SETTING

The floating servo mount option is the best all-around choice for a forgiving and neutral handling. The servo is also less likely to move or shift in a hard crash.

Shimming of the servo when using the floating servo mount may be necessary to achieve the correct height and geometry. Use the reference chart below and apply it to your specific servo type.

Important! Make sure that the servo saver does not protrude below the lower chassis line when the car is ready to race.

SERVO TYPE = SHIMS	
Savox	2mm
Futaba	2mm
Ko-propo	1.5mm
SRT M11	1mm
SRT MiN6	0mm
Sanwa	0mm



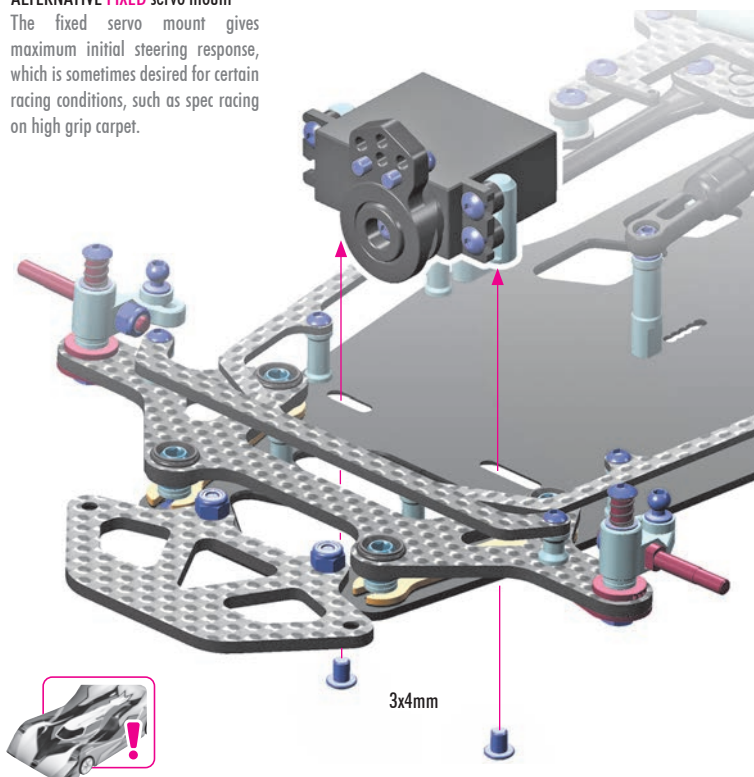
5. FINAL ASSEMBLY



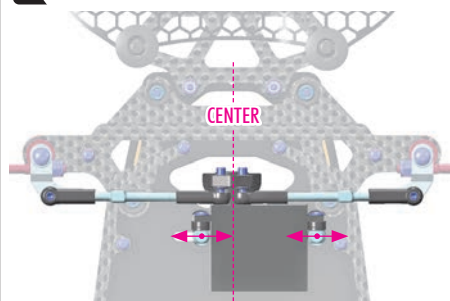
2x 902304
SH M3x4

ALTERNATIVE **FIXED** servo mount

The fixed servo mount gives maximum initial steering response, which is sometimes desired for certain racing conditions, such as spec racing on high grip carpet.

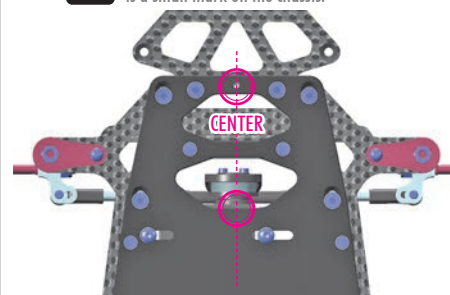


Make sure to center the servo saver along the chassis centerline.

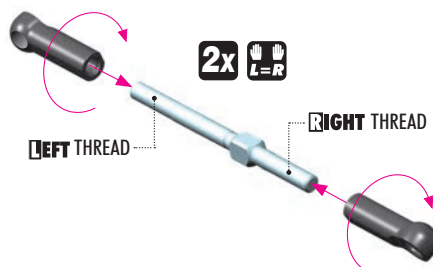


TOP VIEW

TIP To better see the chassis centerline, there is a small mark on the chassis.

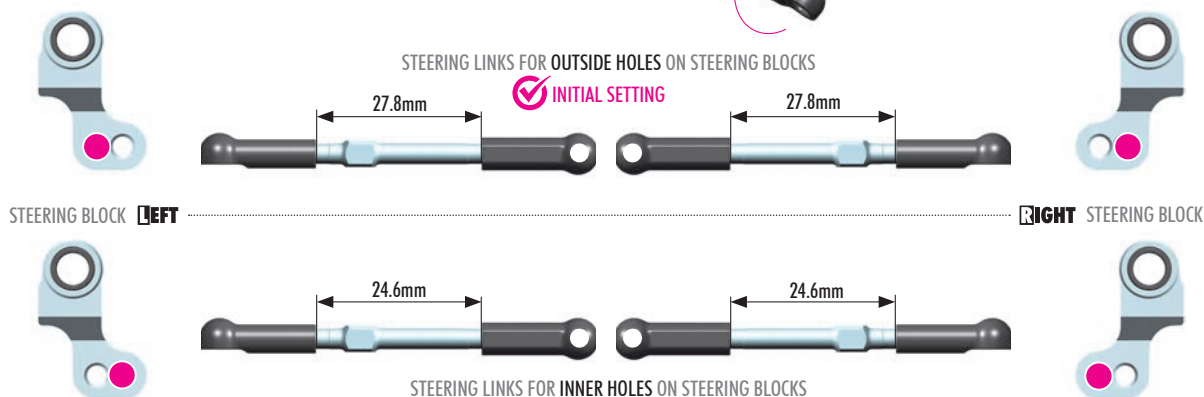


BOTTOM VIEW

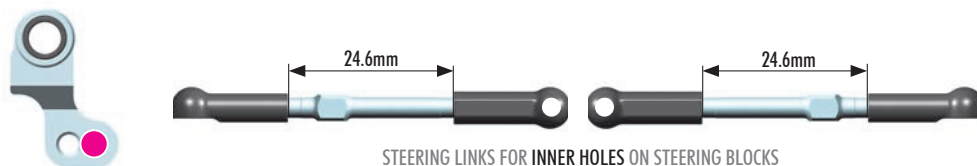


STEERING LINKS FOR OUTSIDE HOLES ON STEERING BLOCKS

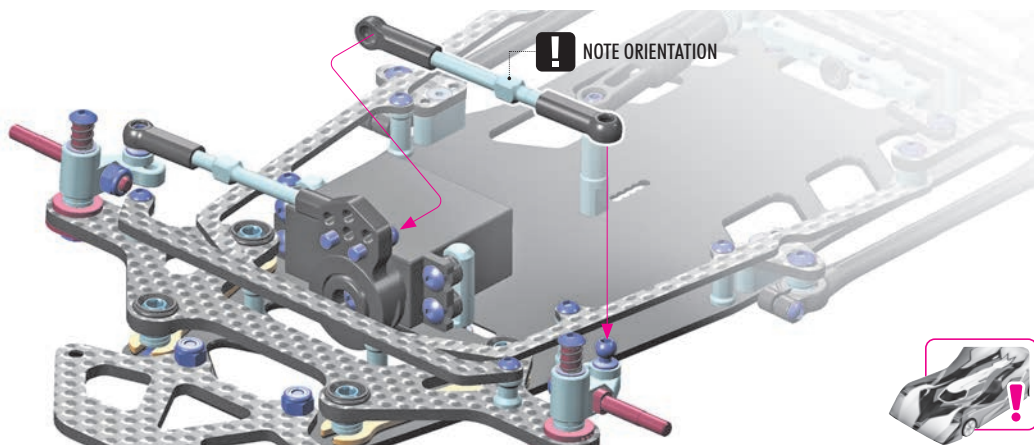
✓ INITIAL SETTING



STEERING LINKS FOR INNER HOLES ON STEERING BLOCKS



! NOTE ORIENTATION





VIDEO TECH TIP



STEERING SYSTEM

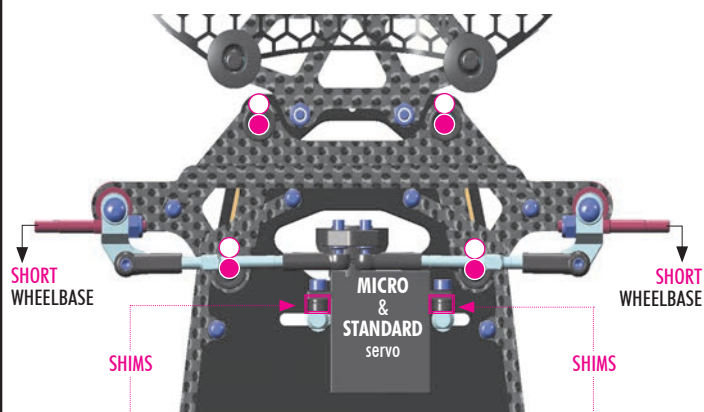


ACKERMANN SETTING

Ackermann is directly affected by wheelbase length and linkage position on the steering blocks. The configurations below are based on the use of a standard servo.

ALTERNATIVE for MICRO AND STANDARD SERVO

Wheelbase: SHORT
Servo mounting: AHEAD of posts
Servo saver: ball studs BEHIND

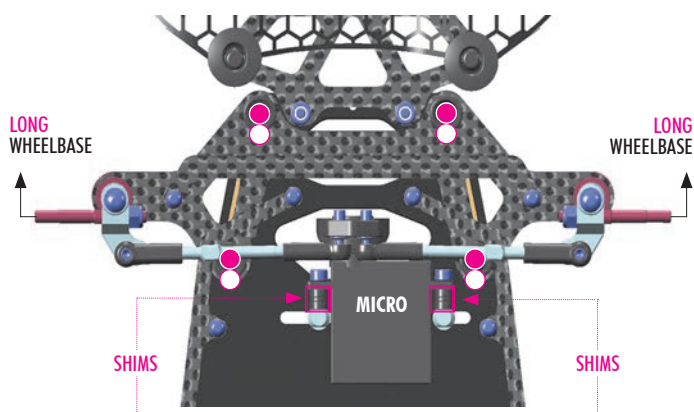


Use shims between servo and posts.

MICRO servos: SANWA SXR - 3mm / SAVOX SW - 1mm
STANDARD servos: NO shims

ALTERNATIVE for MICRO SERVO

Wheelbase: LONG
Servo mounting: AHEAD of posts
Servo saver: ball studs BEHIND

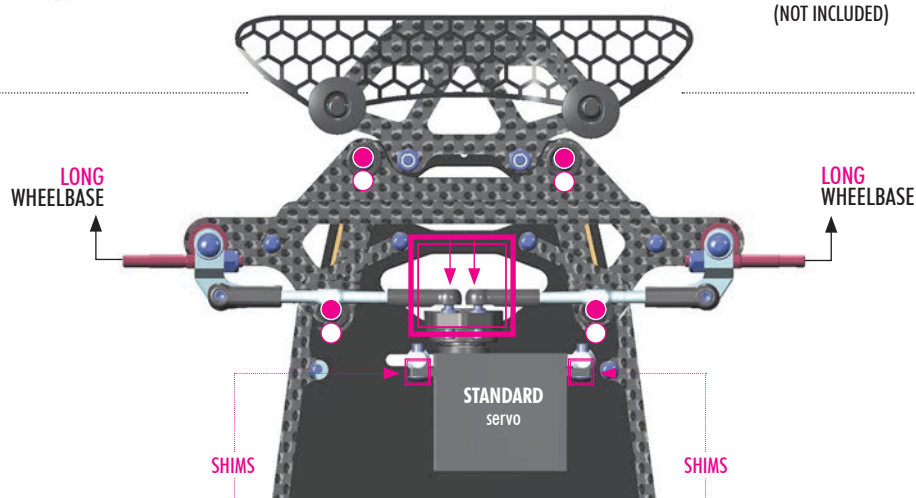
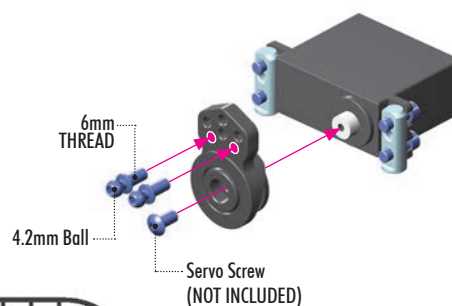
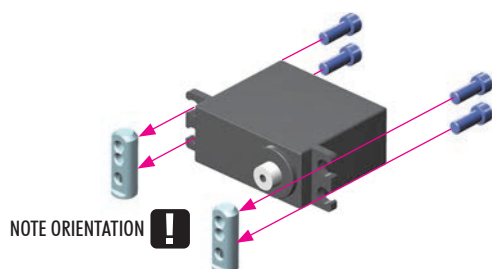


Use shims between servo and posts.

MICRO servos: SANWA SXR - 5mm / SAVOX SW - 4mm

ALTERNATIVE for STANDARD SERVO

Wheelbase: LONG
Servo mounting: BEHIND posts
Servo saver: ball studs IN FRONT



Mount the 6mm ball studs on the forward side of the servo saver.

STANDARD servos: KO Propo - No shim
Futaba - 2mm shim
Savox SH - 2mm shim

5. FINAL ASSEMBLY



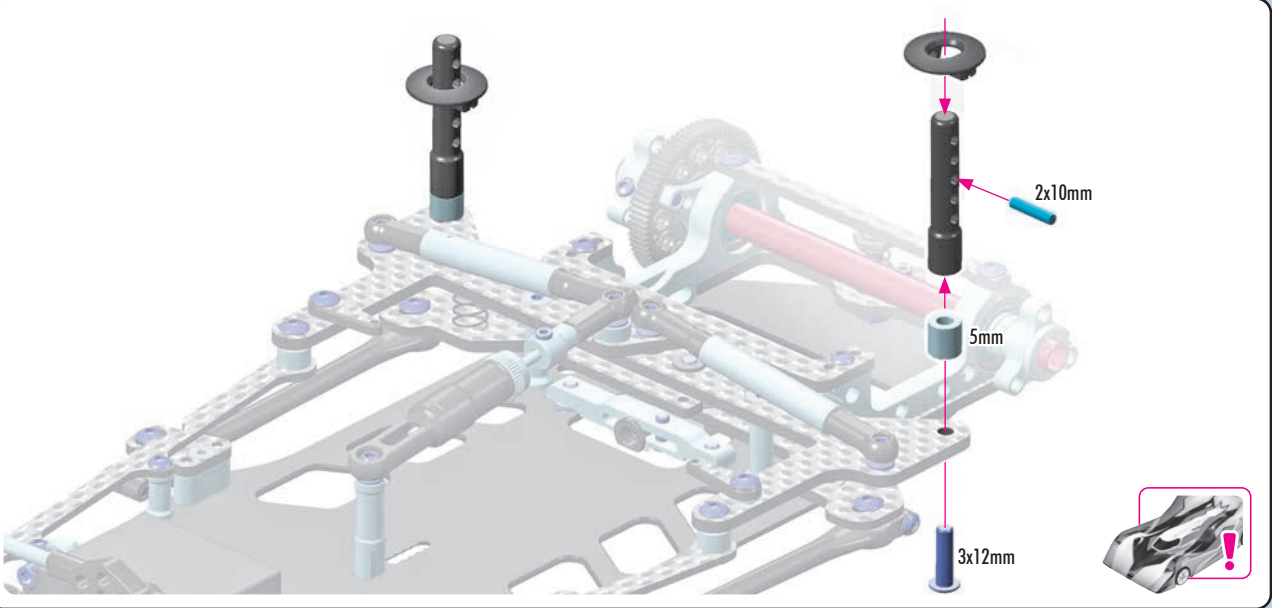
2x 303126-K
SHIM 3x6x5

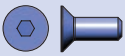


2x 902312
SH M3x12

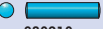


2x 980210
P 2x10

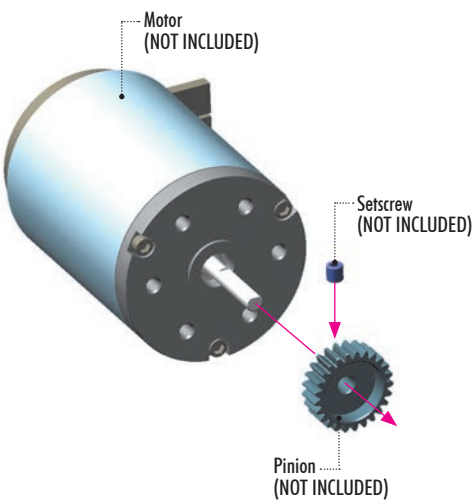
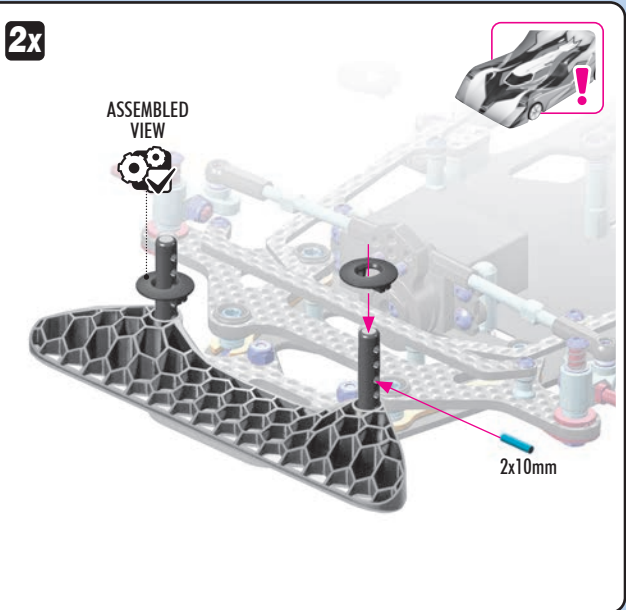
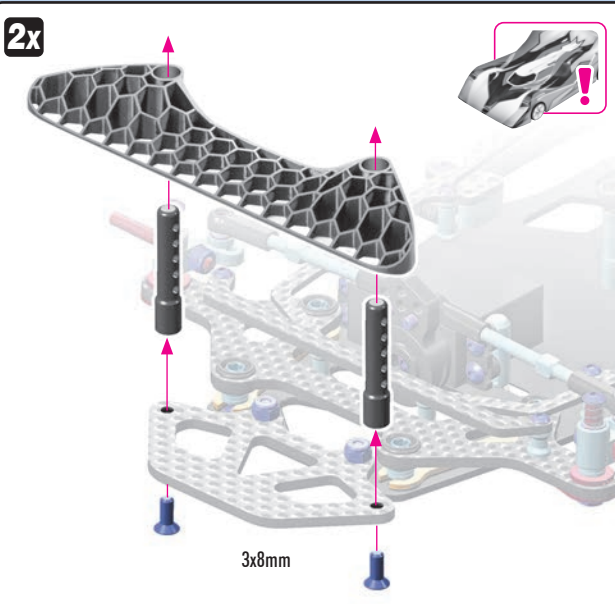




2x 903308
SFH M3x8



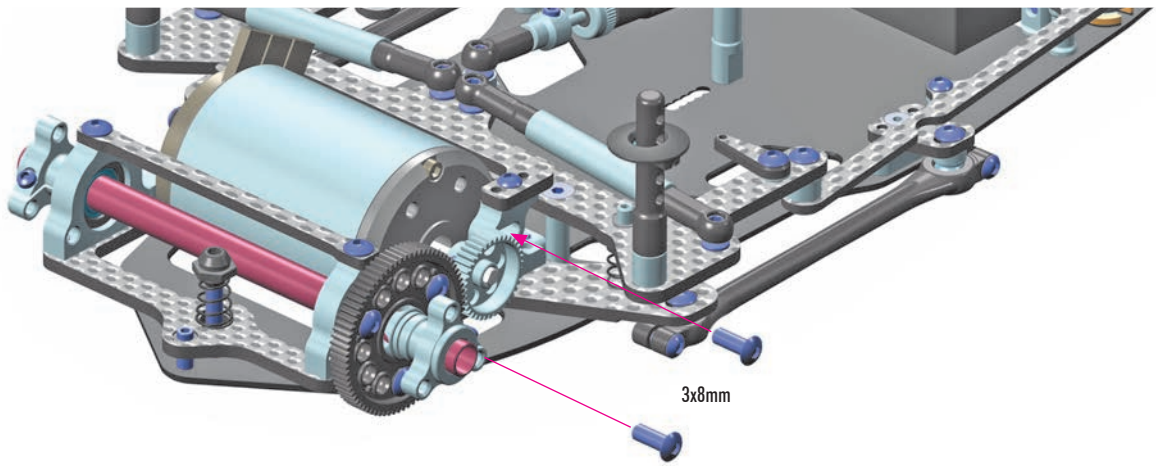
2x 980210
P 2x10



ALU PINION GEARS 64P

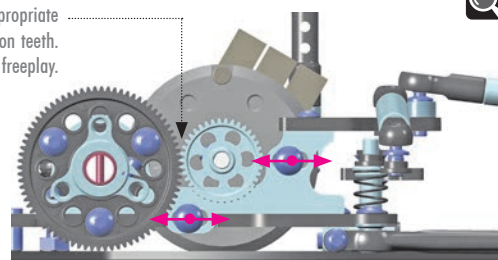
#305968	18T	OPTION	#294137	37T	OPTION	#294156	56T	OPTION
#305969	19T	OPTION	#294138	38T	OPTION	#294157	57T	OPTION
#305970	20T	OPTION	#294139	39T	OPTION	#294158	58T	OPTION
#305971	21T	OPTION	#294140	40T	OPTION	#294159	59T	OPTION
#305972	22T	OPTION	#294141	41T	OPTION	#294160	60T	OPTION
#294123	23T	OPTION	#294142	42T	OPTION	#294162	62T	OPTION
#294124	24T	OPTION	#294143	43T	OPTION	#294164	64T	OPTION
#294125	25T	OPTION	#294144	44T	OPTION			
#294126	26T	OPTION	#294145	45T	OPTION			
#294127	27T	OPTION	#294146	46T	OPTION			
#294128	28T	OPTION	#294147	47T	OPTION			
#294129	29T	OPTION	#294148	48T	OPTION			
#294130	30T	OPTION	#294149	49T	OPTION			
#294131	31T	OPTION	#294150	50T	OPTION			
#294132	32T	OPTION	#294151	51T	OPTION			
#294133	33T	OPTION	#294152	52T	OPTION			
#294134	34T	OPTION	#294153	53T	OPTION			
#294135	35T	OPTION	#294154	54T	OPTION			
#294136	36T	OPTION	#294155	55T	OPTION			

5. FINAL ASSEMBLY



GEAR MESH

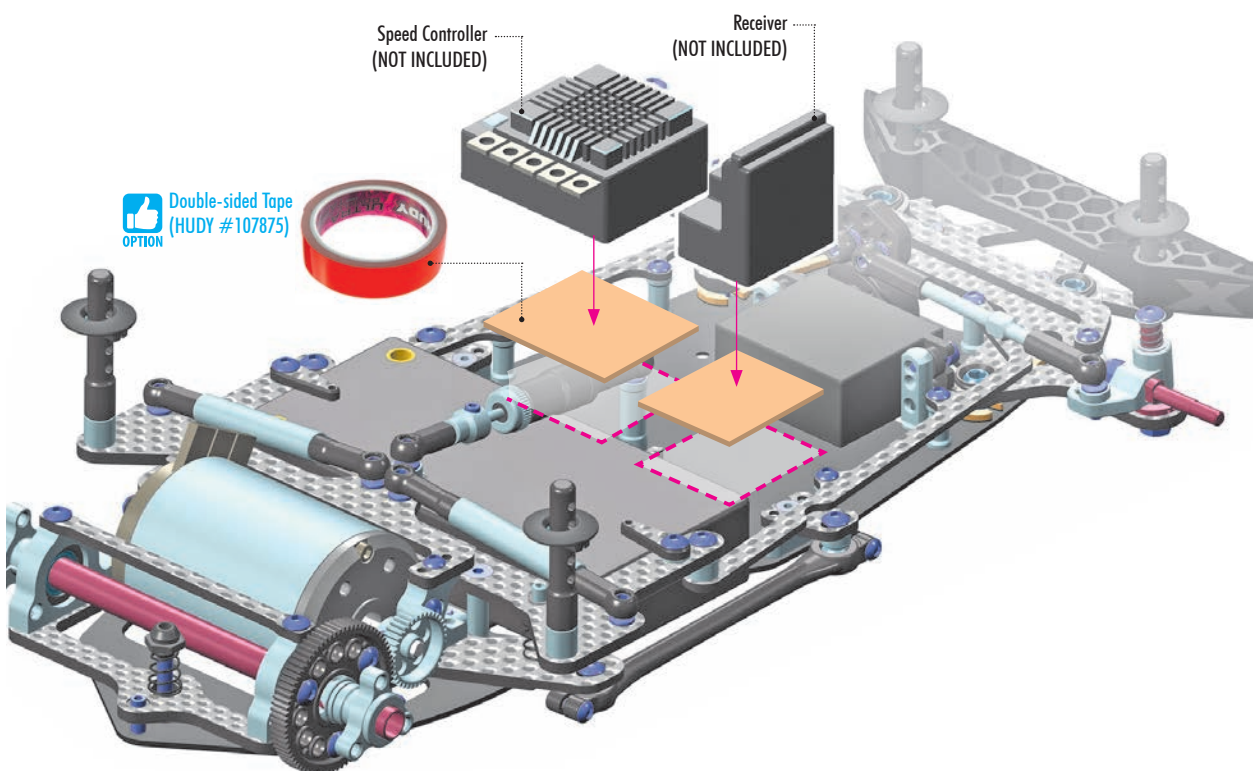
Adjust the gear mesh so there is appropriate space between the spur gear and pinion teeth. There should be a very small amount of freeplay.



VIDEO TECH TIP



ELECTRONICS
INSTALLATION



5. FINAL ASSEMBLY



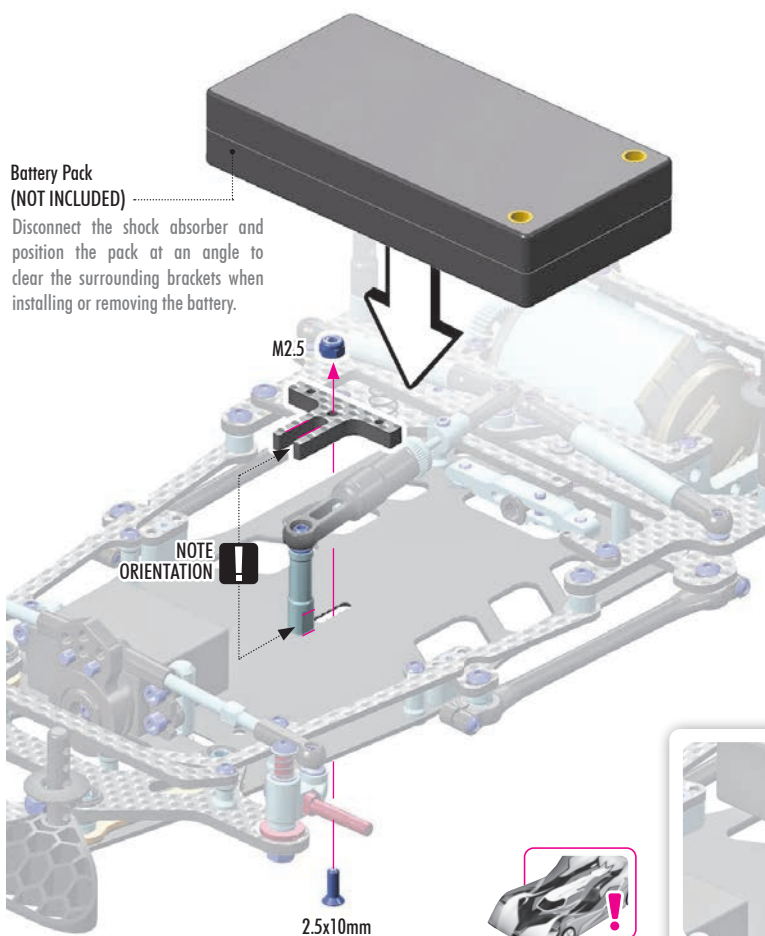
1x 903260
SFH M2.5x10



1x 960025
ALU N M2.5

Battery Pack (NOT INCLUDED)

Disconnect the shock absorber and position the pack at an angle to clear the surrounding brackets when installing or removing the battery.

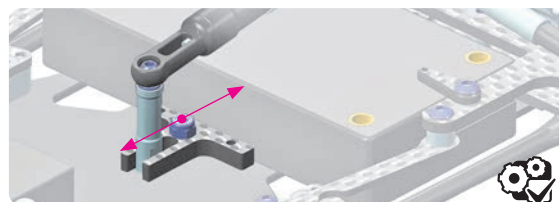
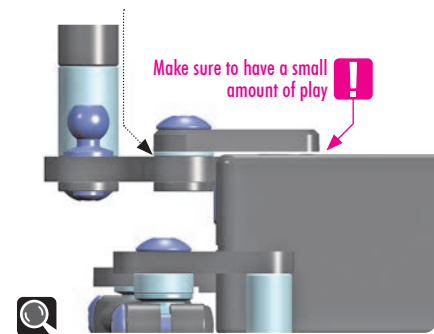


BATTERY BACKSTOP

The adjustable battery backstop system secures the battery in the car in a tweak-free, non-fixed manner to help improve traction and makes it more stable and easier to drive.

It is very important that battery has a very small amount of play in all directions so it does NOT tweak the car, but the play cannot be too much otherwise the battery may fall out in crashes.

Adjust the shim thickness to match battery pack height. If there is no play between the backstop and pack, use a thicker shim. If it is too loose, use a thinner shim to reduce the gap.



BATTERY MOUNTING POSITIONS

There are 5 battery positions. The further forward the battery is positioned in the car, the easier it will be to drive but less responsive. The further rearward the battery is located, the more aggressive it will feel with more steering.

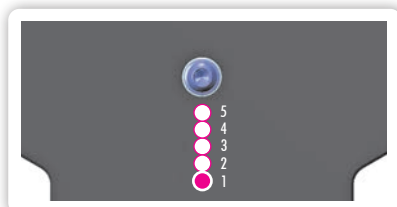


VIDEO TECH TIP

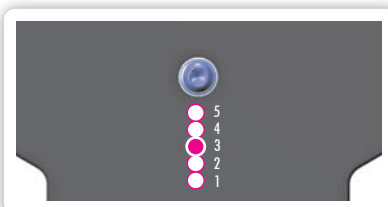


BATTERY MOUNTING SYSTEM

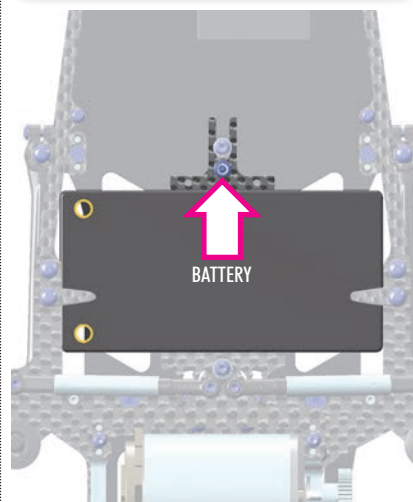
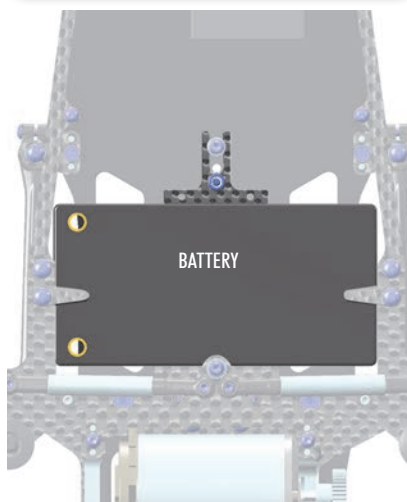
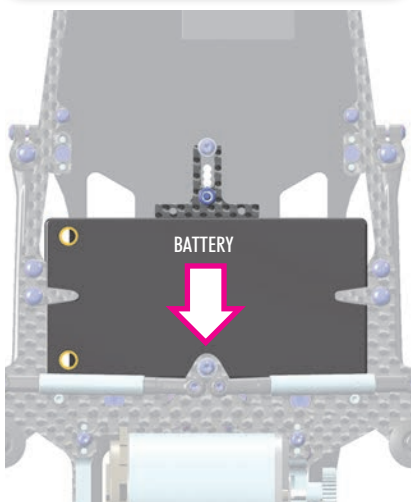
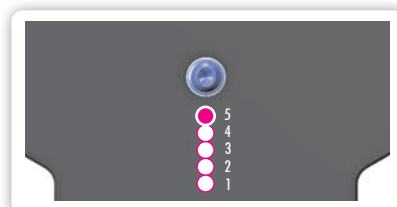
Position ①
Battery maximum REARWARD.
Most aggressive setting.



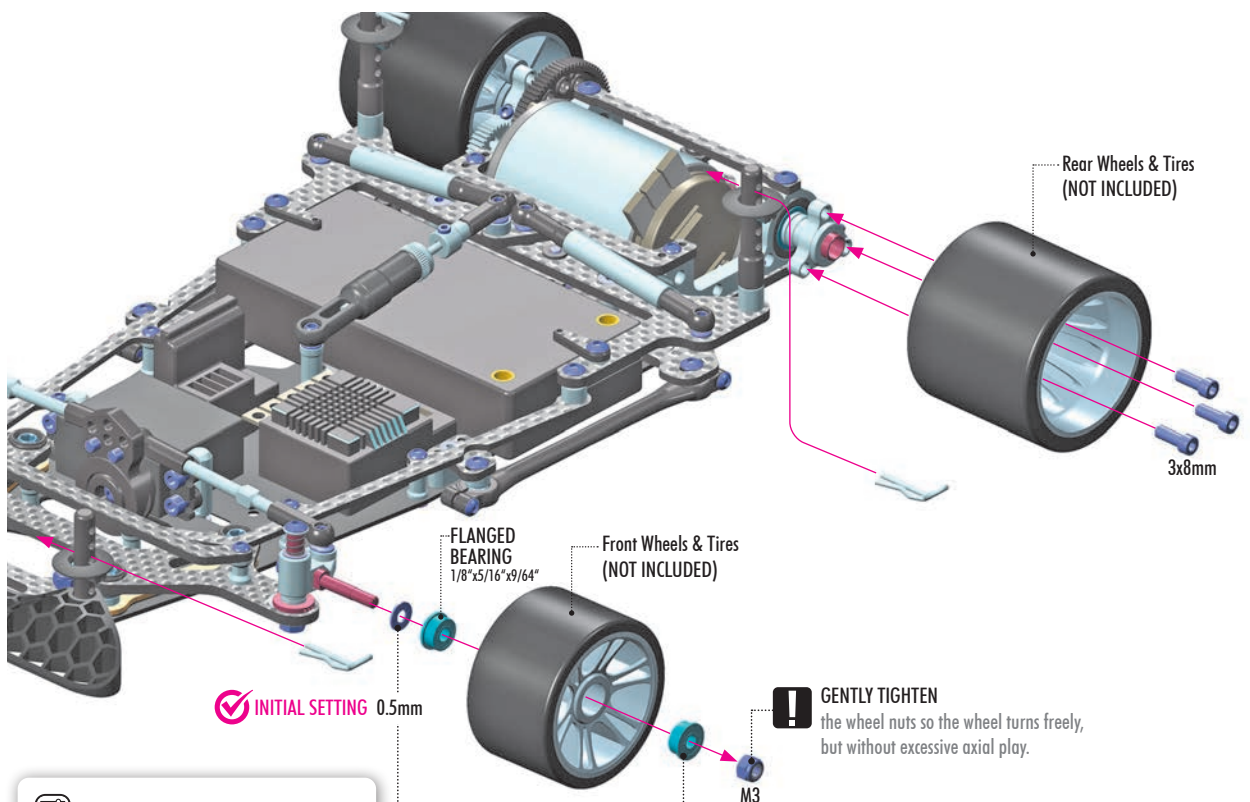
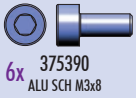
INITIAL SETTING
Position ③
Battery in MIDDLE
Best for initial setting.



Position ⑤
Battery maximum FORWARD
Easiest to drive.



5. FINAL ASSEMBLY



FRONT TRACK-WIDTH

The shim behind the wheel bearing affects the front track-width.

WIDER TRACK-WIDTH

Easier to drive, less steering, less responsive.

NARROWER TRACK-WIDTH

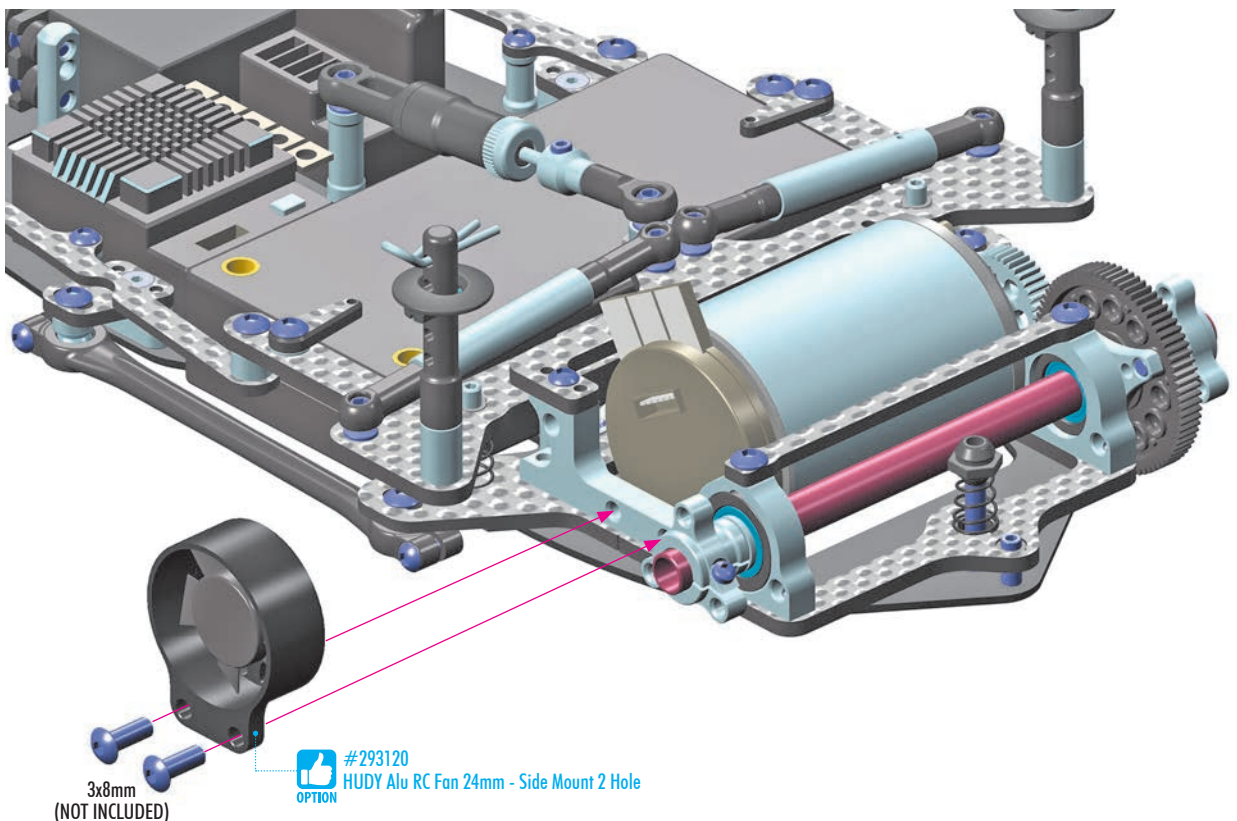
More steering, more responsive, but more difficult to drive.



OPTION

ALU NUTS M3

#	COLOR	OPTION
#296530-B	BLUE	OPTION
#296530-K	BLACK	OPTION
#296530-O	ORANGE	OPTION
#960031	SILVER	INCLUDED



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