

XRAY X11 LINK

1/12 PAN CAR



TWELVE
LINK
INSTRUCTION
MANUAL



BEFORE YOU START

The XII is a high-quality, 1/12-pan 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 car 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 XII, **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. Read carefully and fully understand the instructions before beginning assembly. Make sure you review this entire manual and examine all details carefully. If for some reason you decide the XII is not what you wanted or expected, do not continue any further. Your hobby dealer cannot accept your XII 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.

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

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Fax: (214) 744-2401
E-mail: xray@rcamerica.com

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

In line with our policy of continuous product development, the exact specifications of the kit may vary. In the unlikely event of any problems with your new kit, you should contact the model shop where you purchased it, quoting the part number. We do reserve all rights to change any specification without prior notice. All rights reserved.

SYMBOLS USED

Part bags used 	Assemble in the specified order 	Assemble left and right sides the same way 	Pay attention here 	Assemble as many times as specified (here twice) 	Apply CA glue 	Apply oil 	Apply grease 	Ensure smooth non-binding movement 	Follow Set-up Book 
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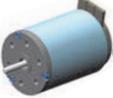
EQUIPMENT INCLUDED TOOLS REQUIRED

XRAY Premium Silicone Oil 350cSt (#359235) 	Diff. Grease (HUDY #106211) 	Allen Wrench 1.5mm (HUDY #111540) 	Allen Wrench 2.0mm (HUDY #112040) 	Allen Wrench 2.5mm (HUDY #112540) 	Socket Driver 5.5mm (HUDY #170055) 
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TOOLS REQUIRED

Pliers (HUDY #189020) 	Scissors (HUDY #188990) 	Side Cutters (HUDY #189010) 	Hobby Knife 	File 	Turnbuckle 3mm (HUDY #181030) 	Turnbuckle 4mm (HUDY #181040) 	Reamer (HUDY #107600) 
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EQUIPMENT REQUIRED

Transmitter 	Receiver 	Steering Servo 	Speed Controller 	Electric Motor 	Pinion Gear and Setscrew 	Bodyshell 
LiPo Battery or 4-cell Battery Pack 	Battery Charger 	Front & Rear Tires 	Tire Truer (HUDY #102003) 	Bearing Oil (HUDY #106230) 	Fibre Tape (HUDY #107870) 	Lexan Paint 

GRAPHITE PARTS PREPARATION

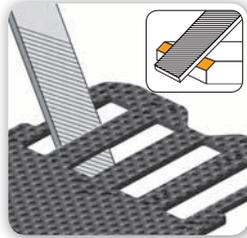
PREPARE ALL GRAPHITE PARTS

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



Fine sandpaper

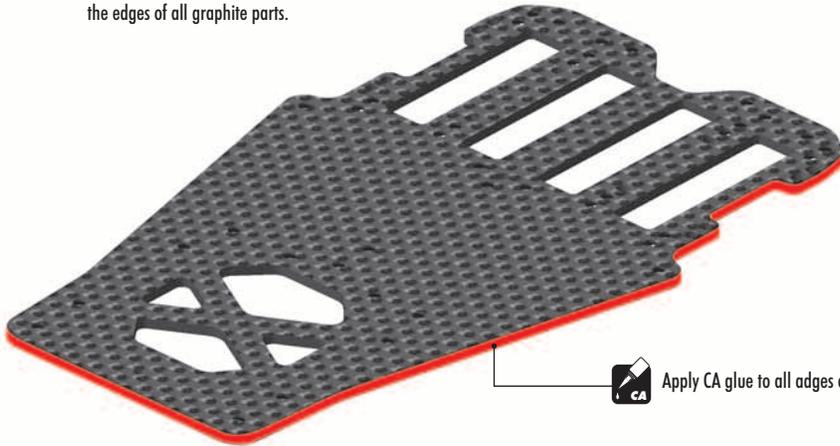
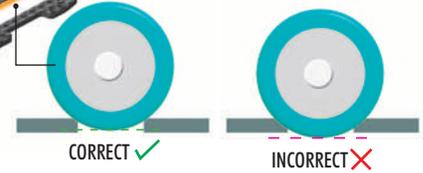
Use fine sandpaper to sand smooth the edges of all graphite parts.



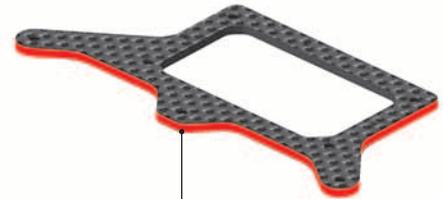
Lightly file edges of battery slots to remove sharp edges.



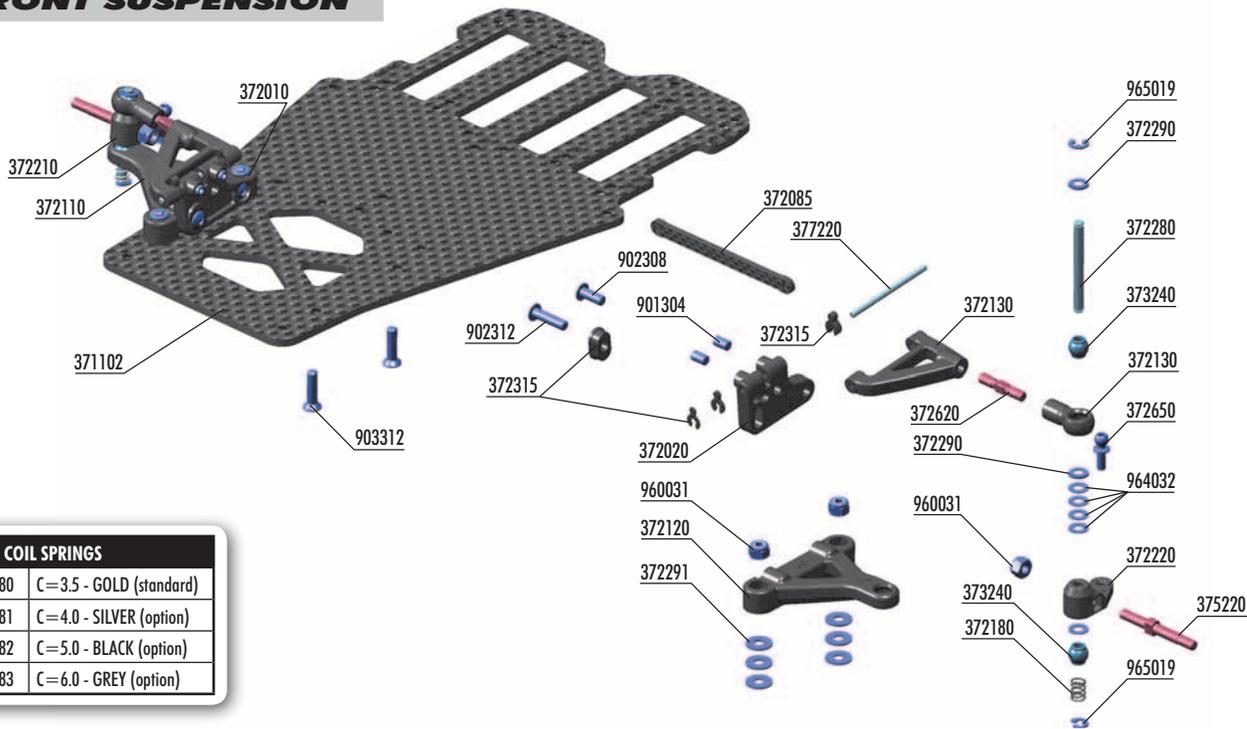
Do not file battery slots too much, or batteries may protrude below the chassis bottom.



Apply CA glue to all edges of the graphite parts.



1. FRONT SUSPENSION



FRONT COIL SPRINGS

#372180	C=3.5 - GOLD (standard)
#372181	C=4.0 - SILVER (option)
#372182	C=5.0 - BLACK (option)
#372183	C=6.0 - GREY (option)

BAG

01

371102 XII LINK CHASSIS - 2.5MM GRAPHITE
 372010 COMPOSITE FRONT UPPER ARM MOUNT - RIGHT
 372020 COMPOSITE FRONT UPPER ARM MOUNT - LEFT
 372085 FRONT BRACE - GRAPHITE 2.0MM
 372110 COMPOSITE SUSPENSION ARM - FRONT LOWER - RIGHT
 372120 COMPOSITE SUSPENSION ARM - FRONT LOWER - LEFT
 372130 COMPOSITE FRONT UPPER SUSPENSION ARM & BALL JOINT
 372180 FRONT COIL SPRING 3.6x6x0.5MM; C=3.5 - GOLD (2)
 372210 COMPOSITE STEERING BLOCK - RIGHT

372220 COMPOSITE STEERING BLOCK - LEFT
 372280 KING PIN (2)
 372290 ALU SHIM 3.2x4.8x0.5 (4)
 372291 ALU SHIM 3.1x8x0.5 (4)
 372315 COMPOSITE ECCENTRIC BUSHINGS + CASTER CLIPS (2)
 372620 ADJ. TURNBUCKLE M3x17 MM - HUDY SPRING STEEL™ (2)
 372650 BALL-END 4.2MM - THREADED - HUDY SPRING STEEL™ (2)
 373240 PIVOTBALL UNIVERSAL 6.0 MM - HUDY SPRING STEEL (2)
 375220 FRONT WHEEL AXLE - HUDY SPRING STEEL (2)

377220 FRONT UPPER PIVOT PIN 2x31MM (2)
 901304 HEX SCREW SB M3x4 (10)
 902308 HEX SCREW SH M3x8 (10)
 902312 HEX SCREW SH M3x12 (10)
 903312 HEX SCREW SFH M3x12 (10)
 906031 ALU NUT M3 (10)
 964032 WASHER S 3.2 x 4.8 x 0.2 (10)
 965019 E-CLIP 1.9 (10)

1. **2x** **L=R**

3x12 **4**
3x8 **2**
Marked "L"
LEFT
5

REACTIVE CASTER SETTING	
	= 2.5°
	= 5° INITIAL SETTING
	= 7.5°

Use same bushings in left and right sides.

ASSEMBLED VIEW
RIGHT **L=R**

CASTER

902308 SH M3x8 902312 SH M3x12

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

NOTE ORIENTATION

5.2mm 5.2mm

NOTE ORIENTATION

ASSEMBLED VIEW
L=R

CAMBER

901304 SB M3x4

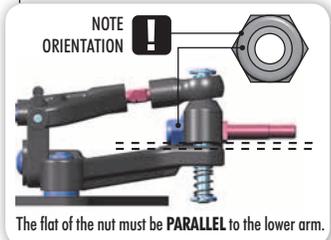
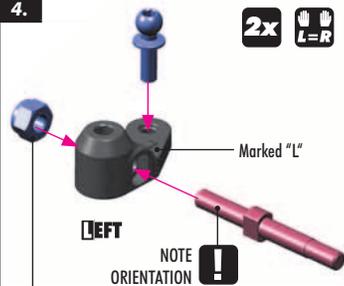
3. **2x** **L=R**

Lightly tighten setscrews

ASSEMBLED VIEW
RIGHT **L=R**

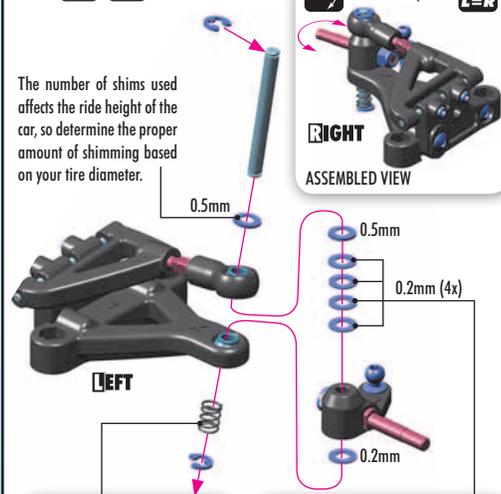
901304 SB M3x4

4. **2x** **L=R**



5. **2x** **L=R**

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

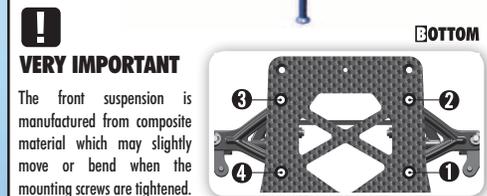
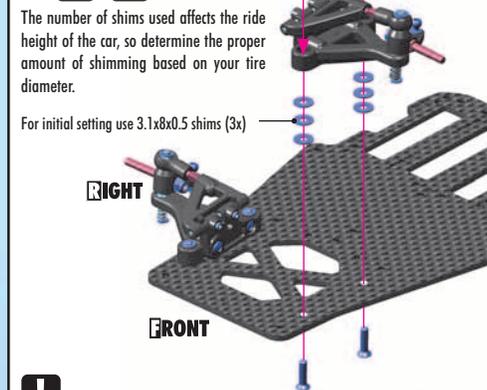


FRONT COIL SPRINGS	
#372180	C=3.5 - GOLD
#372181	C=4.0 - SILVER
#372182	C=5.0 - BLACK
#372183	C=6.0 - GREY

FRONT RIDE HEIGHT ADJUSTMENT	
INITIAL SETTING	
<input type="radio"/>	above upper arm (0.5mm)
<input type="radio"/>	above steering block (1.3mm)
<input type="radio"/>	beneath steering block (0.2mm)



6. **2x** **L=R**



VERY IMPORTANT
The front suspension is manufactured from composite material which may slightly move or bend when the mounting screws are tightened. As such it is extremely important to follow these steps to ensure tweak-free mounting.

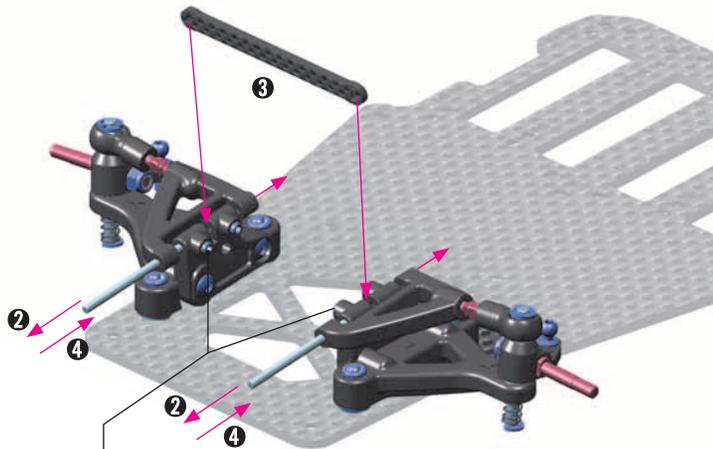
1. Mount the assembled left and right suspension to chassis by installing the bottom mounting screws in the order shown. Tighten the mounting screws VERY GENTLY, and do not overtighten the screws.
2. Fully tighten the screws in exactly the same order as you installed them.



7.

FRONT BRACES

#372080	ALU ACTIVE BRACE (option)
#372085	GRAPHITE BRACE (standard)



1 Loosen all M3x4 setscrews so you can easily remove the pins.

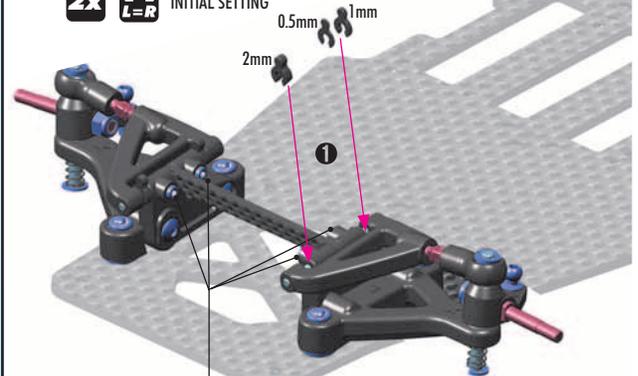


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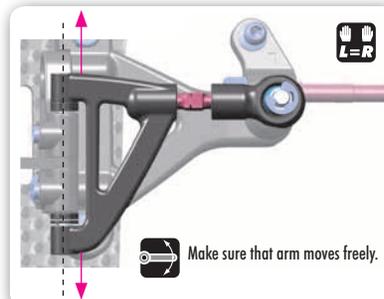
2x



INITIAL SETTING



2 After inserting clips, carefully tighten all M3x4 setscrews so the pins will not move. Do not overtighten or you may strip the plastic.



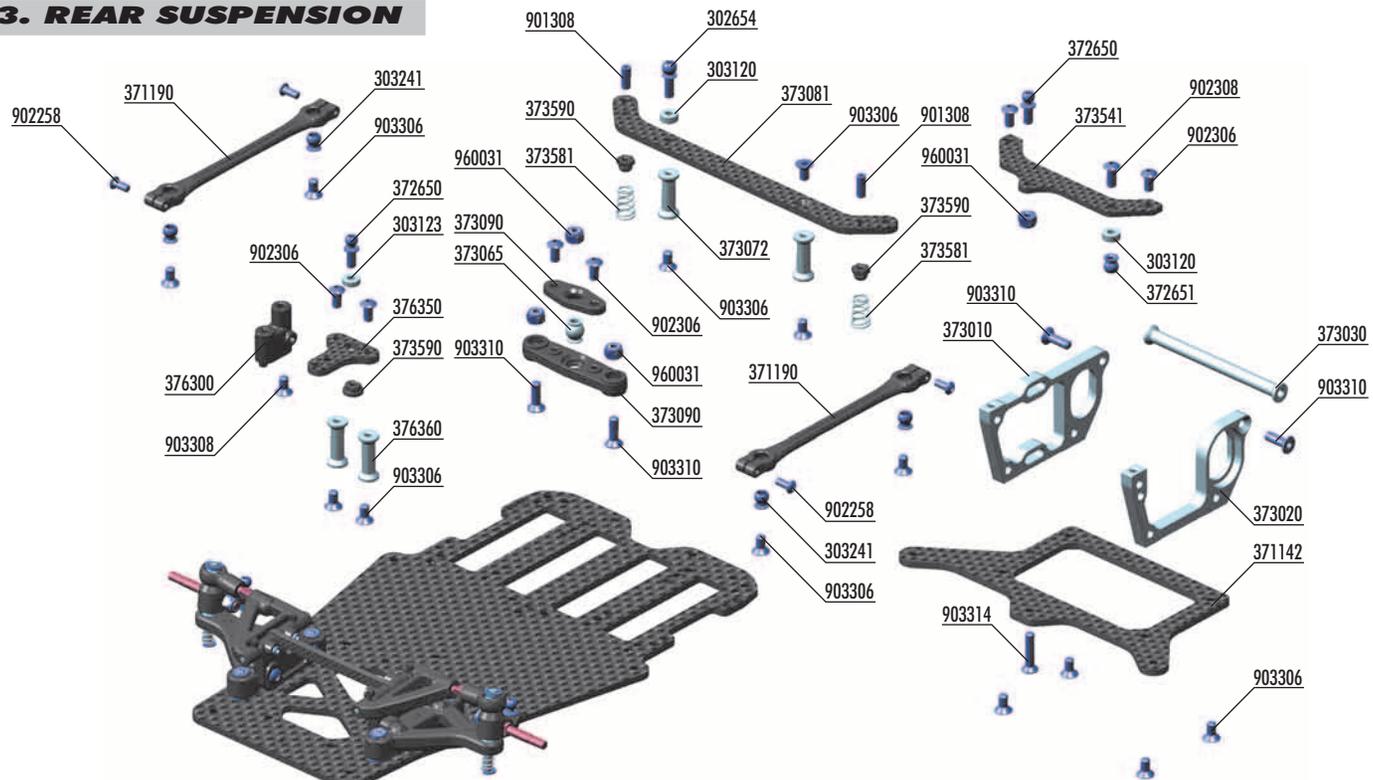
Make sure that arm moves freely.



If the arm does not have enough play, remove the clips and thin the clips slightly with sandpaper. The arms must have free movement and not bind.



3. REAR SUSPENSION

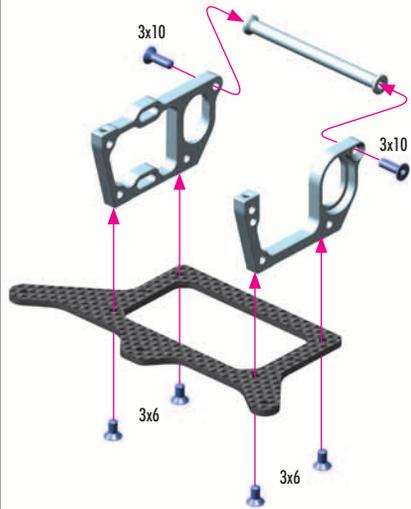


BAG

03

302654	BALL END 4.9MM WITH THREAD 8MM (2)	373010	ALU REAR BULKHEAD - MOTOR (RIGHT)	373581	TAPERED SPRING - SILVER (2)	902306	HEX SCREW SH M3x6 (10)
303120	SET OF ALU SHIM (0.5MM, 1.5MM, 2.5MM)	373020	ALU REAR BULKHEAD - LEFT	373590	COMPOSITE SPRING HOLDER (2)	902308	HEX SCREW SH M3x8 (10)
303123	ALU SHIM 3x6x2.0MM (10)	373030	ALU REAR BULKHEAD BRACE	376300	COMPOSITE ANTENNA MOUNT	903306	HEX SCREW SFH M3x6 (10)
371142	LINK GRAPHITE 2.5MM REAR POD LOWER PLATE	373065	PIVOTBALL - HUDY SPRING STEEL (2)	376350	GR. PLATE FOR ANTENNA HOLDER	903308	HEX SCREW SFH M3x8 (10)
371190	COMPOSITE POD LINK (2)	373072	ALU REAR BRACE MOUNT 16MM (2)	376360	ALU ANTENNA HOLDER MOUNT (2)	903310	HEX SCREW SFH M3x10 (10)
303241	BALL UNIVERSAL 5.8 MM HEX (4)	373081	LINK REAR BRACE - GRAPHITE 2.5MM			903314	HEX SCREW SFH M3x14 (10)
372650	BALL-END 4.2MM THREADED HUDY SPRING STEEL™ (2)	373090	COMPOSITE LOWER & UPPER PIVOT BRACE	901308	HEX SCREW SB M3x8 (10)	960031	ALU NUT M3 (10)
372651	BALL UNIVERSAL 4.9 MM - HUDY SPRING STEEL (2)	373541	LINK REAR POD UPPER PLATE - GRAPHITE	902258	HEX SCREW SH M2.5x8 (10)		

1.



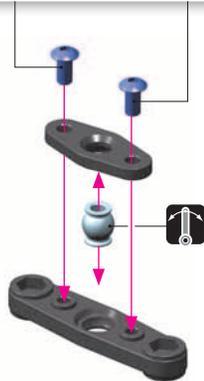
903306
SFH M3x6



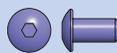
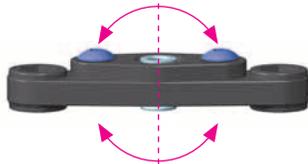
903310
SFH M3x10

2.

Lightly tighten the screws so there is no free play, but do not overtighten otherwise the ball will not move freely.

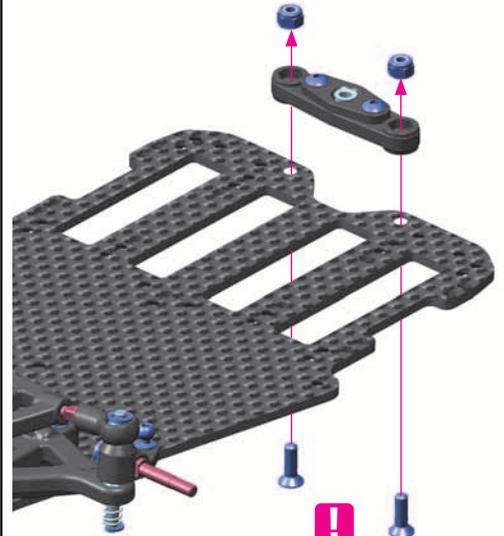


Ensure free, smooth movement without excessive freeplay.



902306
SH M3x6

3.



!
DO NOT TIGHTEN FULLY

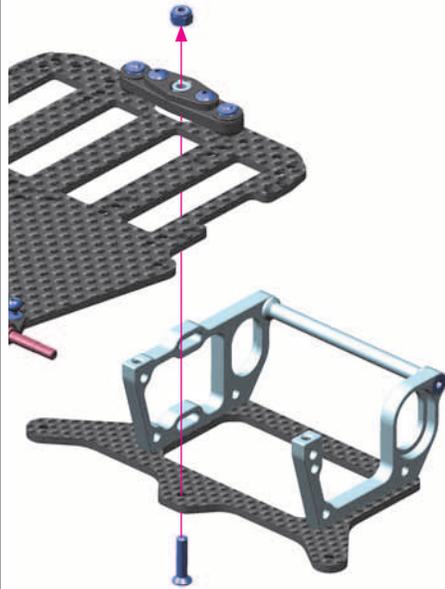


960031
ALU N M3



903310
SFH M3x10

4.



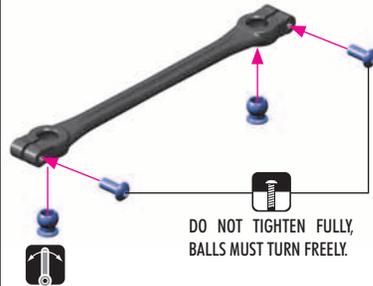
960031
ALU M3



903314
SFH M3x14

5.

2x



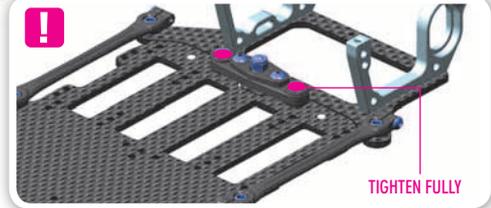
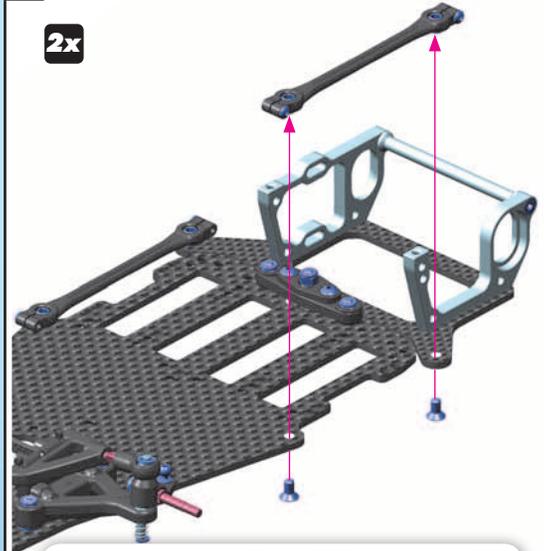
ASSEMBLED VIEW



902258
SH M2.5x8

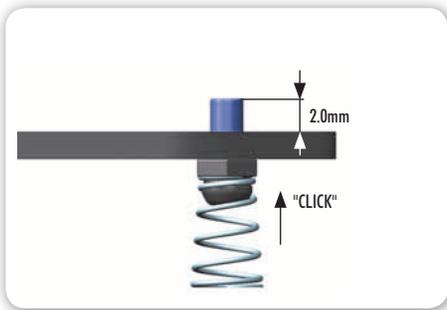
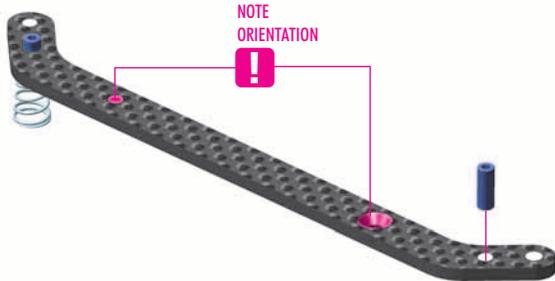
6.

2x



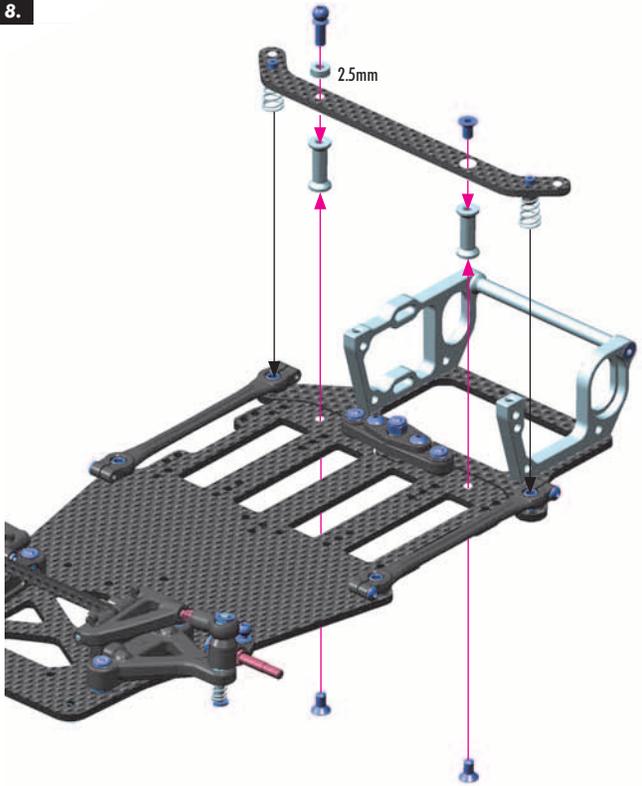
903306
SFH M3x6

7.



901308
SB M3x8

8.

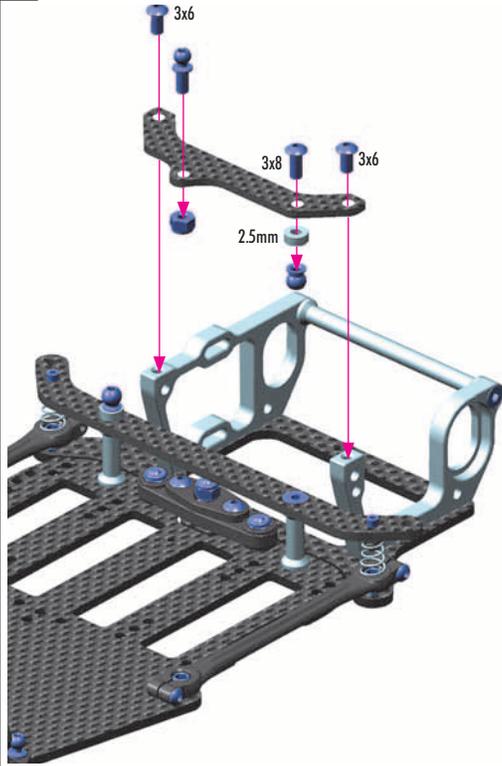


903306
SFH M3x6



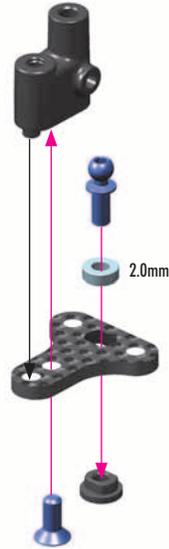
303120
SHIM 3x6x2.5

9.



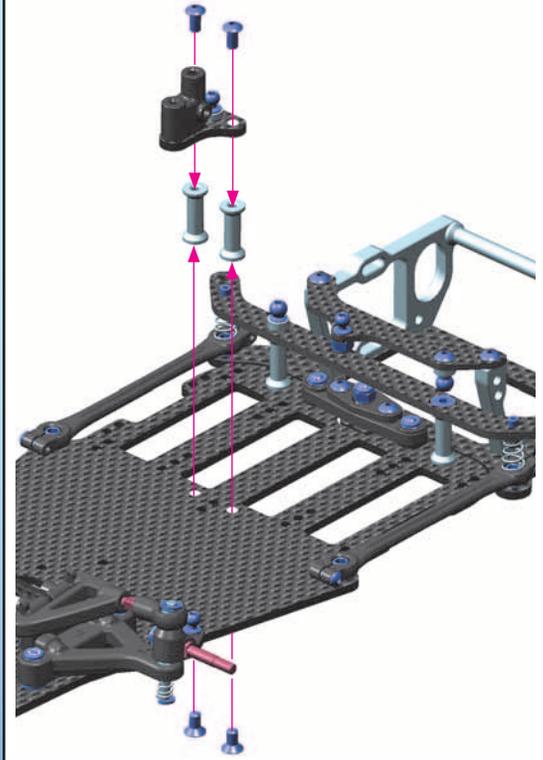
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|-------------------|-------------------|------------------------|--------------------|
| | | | |
| 902306
SH M3x6 | 902308
SH M3x8 | 303120
SHIM 3x6x2.5 | 960031
ALU N M3 |

10.



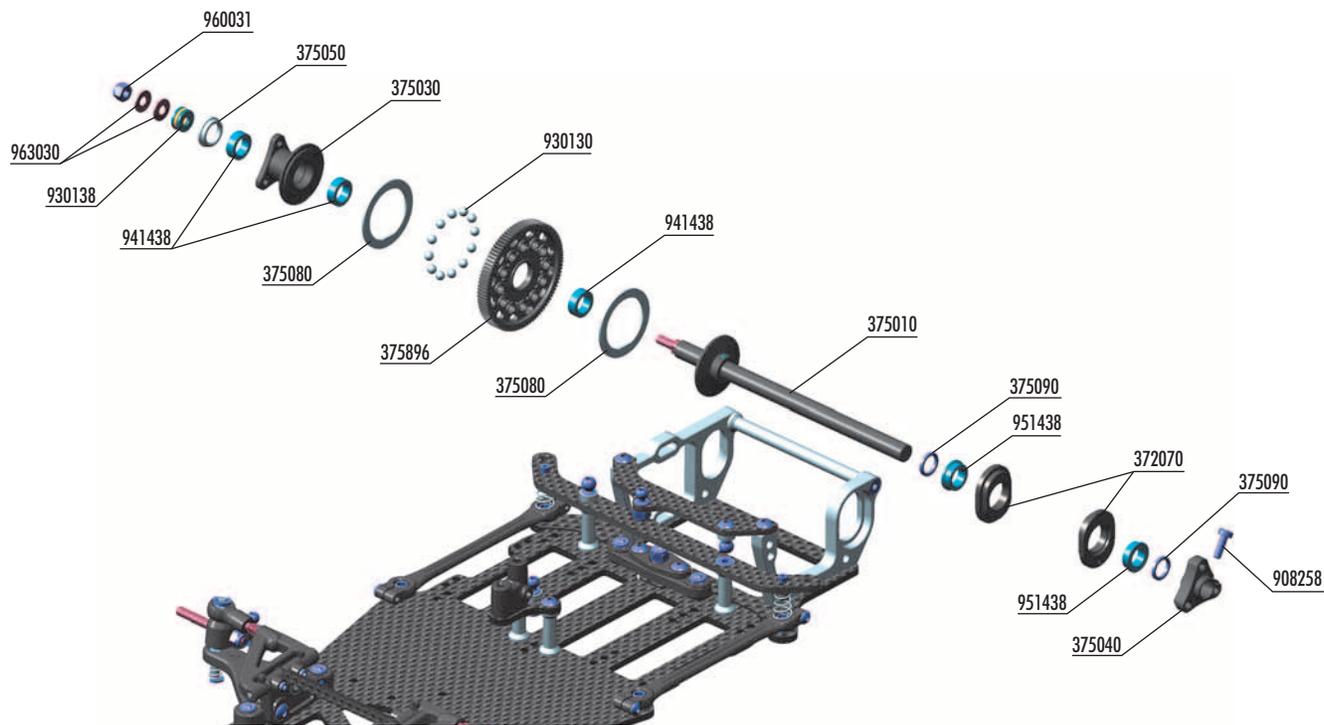
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|--------------------|----------------------|--------------------|
| | | |
| 903308
SFH M3x8 | 303123
SHIM 3x6x2 | 960031
ALU N M3 |

11.



- | | |
|-------------------|-------------------|
| | |
| 902306
SH M3x6 | 902306
SH M3x6 |

4. BALL DIFFERENTIAL



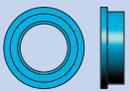
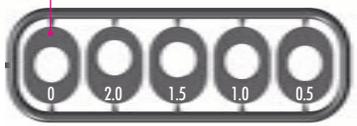
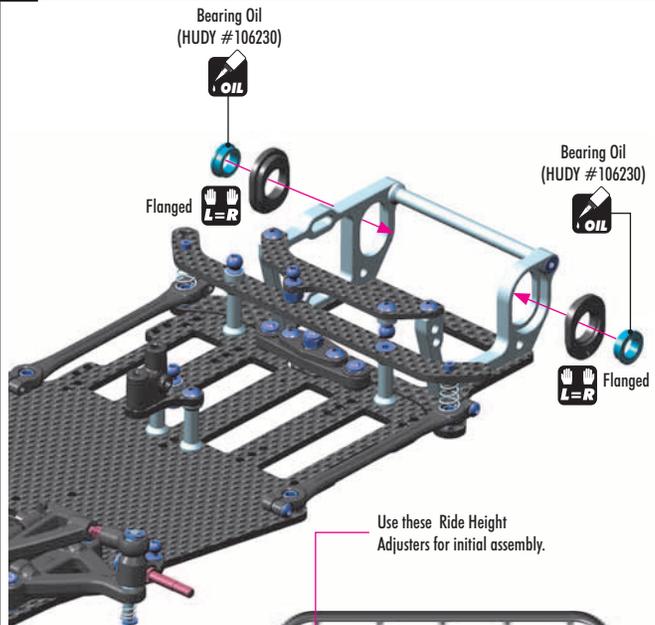
BAG

04

372070 COMPOSITE RIDE HEIGHT ADJUSTER SET (2)
 375010 REAR AXLE SHAFT - GRAPHITE
 375030 ALU REAR WHEEL HUB - RIGHT
 375040 ALU REAR WHEEL HUB - LEFT
 375050 ALU DIFF HUB
 375080 D-LOCK DIFF PLATE (2)
 375090 SET OF ALU SHIMS (0.5MM, 1.0MM, 2.0MM)
 375896 COMPOSITE SPUR GEAR - 96T / 64P

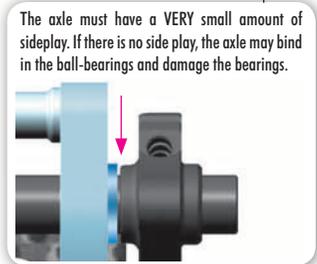
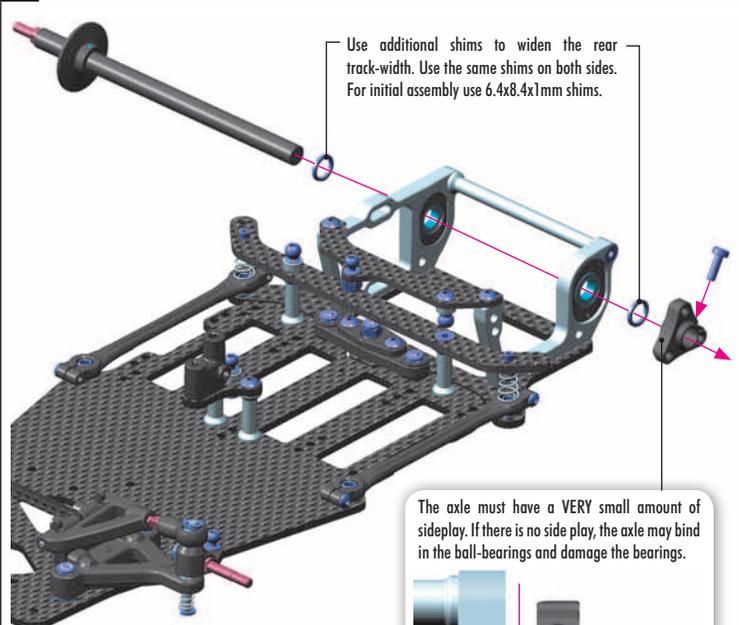
908258 HEX SCREW SOCKET HEAD CAP M2.5x8 (10)
 930130 CARBIDE BALL 3.175MM (12)
 930138 CARBIDE BALL-BEARING AXIAL F3-8 3x8x3.5
 941438 HIGH-SPEED BALL-BEARING 1/4"x3/8"x1/8" RUBBER SEALED (2)
 951438 BALL-BEARING 1/4" x 3/8" x 1/8" FLANGED (2)
 960031 ALU NUT M3 (10)
 963030 CONE WASHER ST 3x8x0.5 (10)

1.

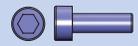


951438
BB 1/4"x3/8"x1/8"

2.



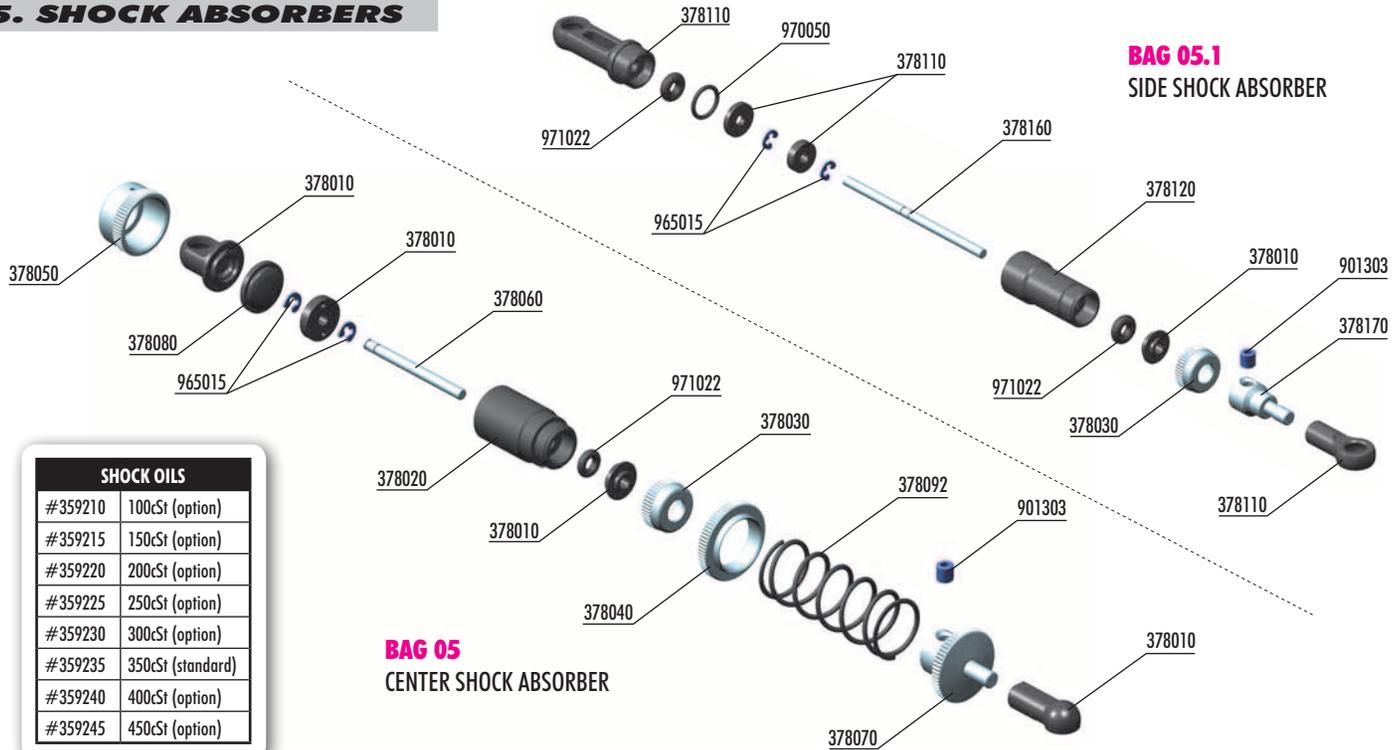
375090
6.4x8.4x1.0



908258
SCH M2.5x8

5. SHOCK ABSORBERS

BAG 05.1 SIDE SHOCK ABSORBER



BAG 05 CENTER SHOCK ABSORBER

SHOCK OILS

#359210	100cSt (option)
#359215	150cSt (option)
#359220	200cSt (option)
#359225	250cSt (option)
#359230	300cSt (option)
#359235	350cSt (standard)
#359240	400cSt (option)
#359245	450cSt (option)

BAG

05

05.1

378000 SHOCK ABSORBER SET
 378010 COMPOSITE SHOCK PARTS - FRAME
 378020 ALU THREADED SHOCK BODY - HARDCOATED
 378030 ALU SHOCK BODY CAP - LOWER
 378040 ALU SHOCK ADJUSTABLE NUT
 378050 ALU SHOCK BODY CAP - UPPER
 378060 SHOCK SHAFT

378070 ALU SHOCK SPRING COLLAR
 378080 SHOCK RUBBER MEMBRANE (2)
 378092 SHOCK SPRING - SILVER
 378100 SIDE SHOCK ABSORBER SET
 378110 COMPOSITE SIDE SHOCK PARTS - FRAME
 378120 ALU SIDE SHOCK BODY - HARDCOATED
 378160 SIDE SHOCK SHAFT

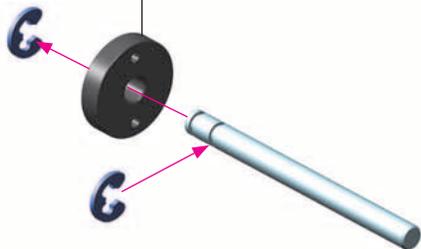
378170 ALU SIDE SHOCK COLLAR
 901303 HEX SCREW SB M3x3 (10)
 965015 E-CLIP 1.5 (10)
 970050 O-RING 5x1 (10)
 971022 SILICONE O-RING 2x2 (10)

1.

BAG 05

CENTER SHOCK ABSORBER

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



965015
C 1.5

2.

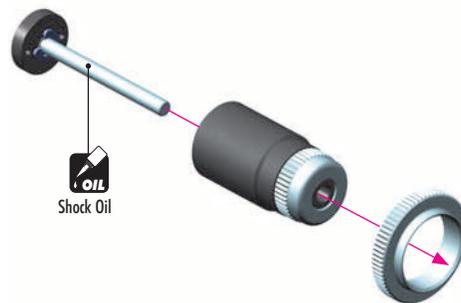


 Shock Oil



971022
0 2x2

3.



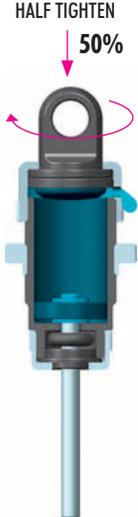
 Shock Oil

ASSEMBLED VIEW

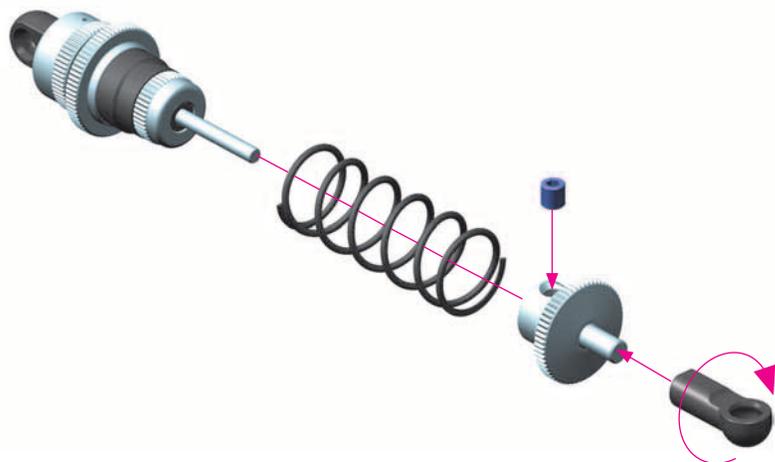


4. DEFAULT SHOCK SETTING FOR CENTER SHOCK ABSORBER

Follow the steps below to set the shock.

 <p>Oil 350cSt</p> <p>1</p>	 <p>3~5x UP & DOWN</p> <p>2</p>	 <p>3</p>	 <p>4</p>	 <p>HALF TIGHTEN 50%</p> <p>5</p>	 <p>6</p>	 <p>TIGHTEN FULLY 100%</p> <p>7</p>
<p>Extend the shock shaft completely. Fill the shock body with the shock oil.</p>	<p>Move the shock shaft up and down a few times to release the air bubbles trapped beneath the piston.</p>	<p>Orient the filled shock vertically for several minutes with the shock shaft fully extended. The remaining air bubbles will release.</p>	<p>Install the shock membrane into the groove in the upper shock cap.</p>	<p>Gently place the shock cap assembly onto the filled shock body. Excess oil will spill from the shock. Screw the shock cap onto the body by only a few turns, approx. 50%. Excess oil will flow through the hole in the shock cap.</p>	<p>Gently push the shock shaft completely into the shock body. Excess oil will flow through the hole in the shock cap.</p>	<p>Keep the shock shaft pushed in the shock body and tighten the shock cap completely. Tighten the cap fully but do not overtighten or the rubber membrane may be damaged. Make sure that there is no oil leakage after the cap is tightened.</p>

5.



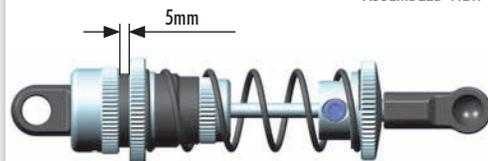
INITIAL SETTING



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

For initial setting, thread fully.

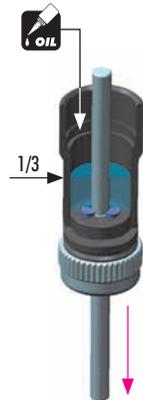
ASSEMBLED VIEW



901303
SB M3x3

4.

Oil 350cSt



Extend the shock shaft completely. Fill the shock shaft 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.

Oil 350cSt



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.

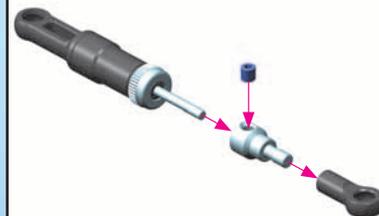


1) Install the 5x1 o-ring onto shock shim.
2) Place the shock shim with the o-ring into the shock body.
3) Install the 2x2 o-ring into the shock cap.
4) Install the shock cap.



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

5.



971022
0 2x2

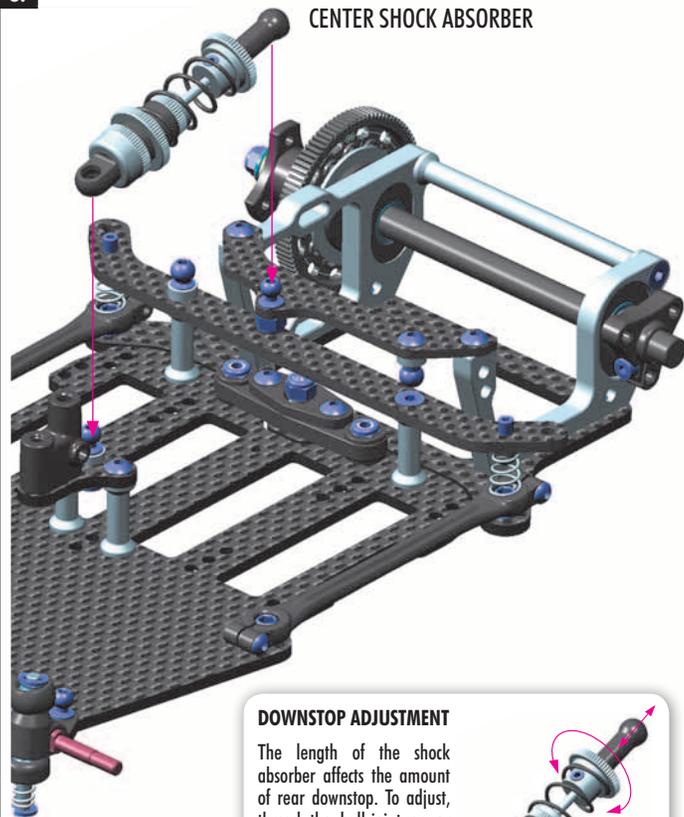
970050
0 5x1



901303
SB M3x3

6.

CENTER SHOCK ABSORBER



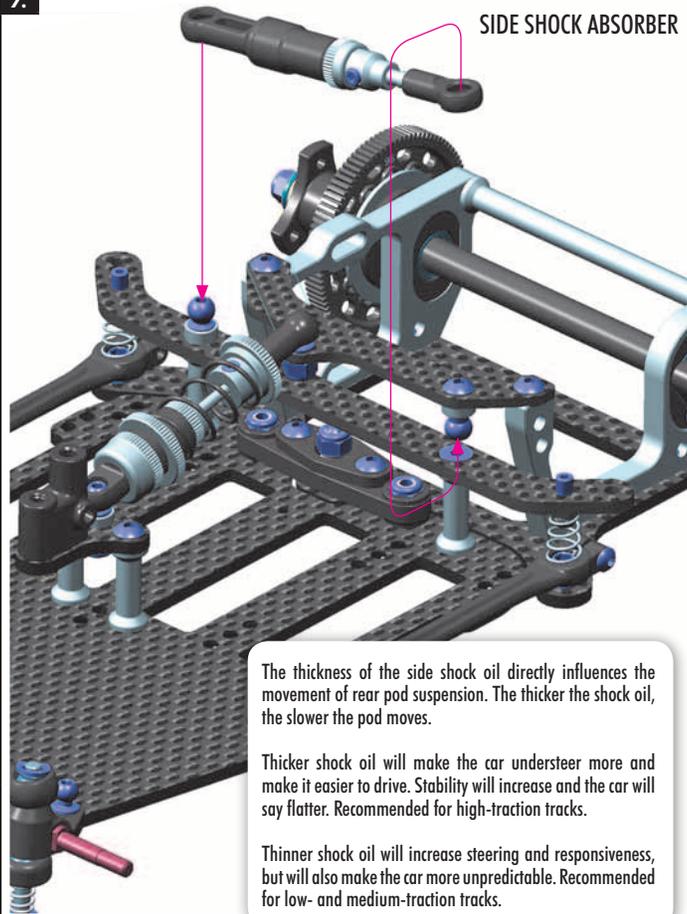
DOWNSTOP ADJUSTMENT

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



7.

SIDE SHOCK ABSORBER

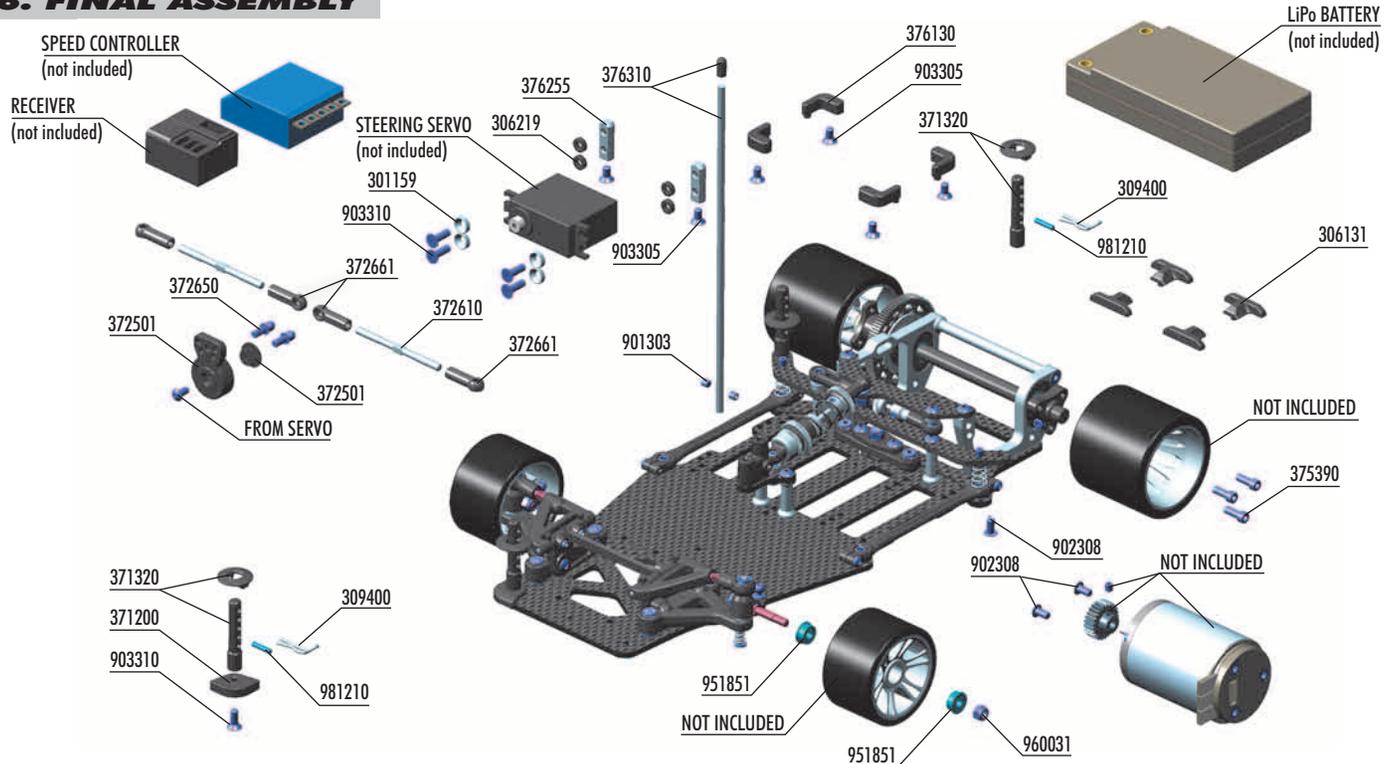


The thickness of the side shock oil directly influences the movement of rear pod suspension. The thicker the shock oil, the slower the pod moves.

Thicker shock oil will make the car understeer more and make it easier to drive. Stability will increase and the car will say flatter. Recommended for high-traction tracks.

Thinner shock oil will increase steering and responsiveness, but will also make the car more unpredictable. Recommended for low- and medium-traction tracks.

6. FINAL ASSEMBLY



BAG

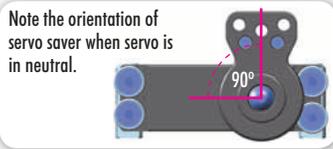
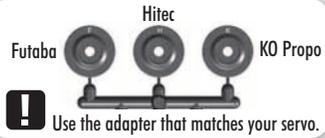
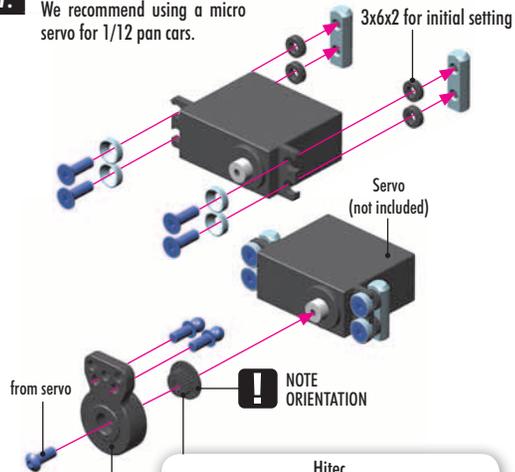


301159 ALU COUNTERSUNK SHIM (4)
 305968 306000 PINION GEAR HARD COATED 18~50T/64P
 306131 SET OF BATTERY BACKSTOPS - V2
 306219 COMPOSITE SET OF SERVO SHIMS (4)
 309400 BODY CLIP FOR 5MM BODY POST (8)
 371200 COMPOSITE CHASSIS PROTECTOR (2)
 371320 COMPOSITE BODY POST (2)
 372501 COMPOSITE SERVO SAVER - REARWARD MOUNTING - SET

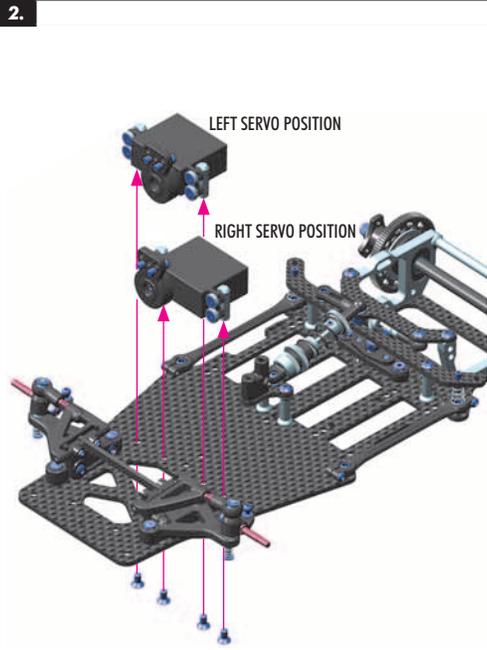
372610 ALU ADJ. TURNBUCKLE M3x42 MM - SWISS 7075 T6 (2)
 372650 BALL-END 4.2MM - THREADED - HUDY SPRING STEEL™ (2)
 372661 COMPOSITE STEERING BALL-JOINT 4.2 MM OPEN (4)
 375390 ALU HEX SCREW M3x8 FOR REAR WHEELS (6)
 376255 X10 ALU SERVO MOUNT (2)
 376130 COMPOSITE LiPo BATTERY BACKSTOP (2)
 376310 FIBERGLASS SOLID ANTENNA ROD + CAP

901303 HEX SCREW SB M3x3 (10)
 902308 HEX SCREW SH M3x8 (10)
 903305 HEX SCREW SFH M3x5 (10)
 903308 HEX SCREW SFH M3x8 (10)
 903310 HEX SCREW SFH M3x10 (10)
 960031 ALU NUT M3 (10)
 981210 PIN 2x10 (10)
 981851 BALL-BEARING 1/8" x 5/16" x 9/64" FLANGED (2)

1. We recommend using a micro servo for 1/12 pan cars.



903310
SFH M3x10

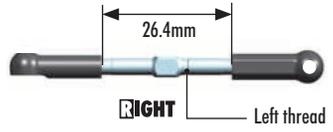
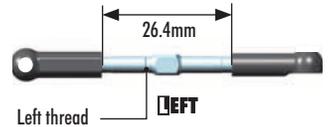
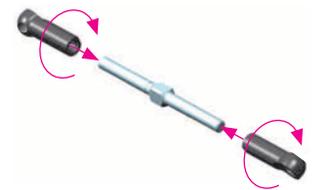


The position of the servo depends on the size of the servo.



903305
SFH M3x5

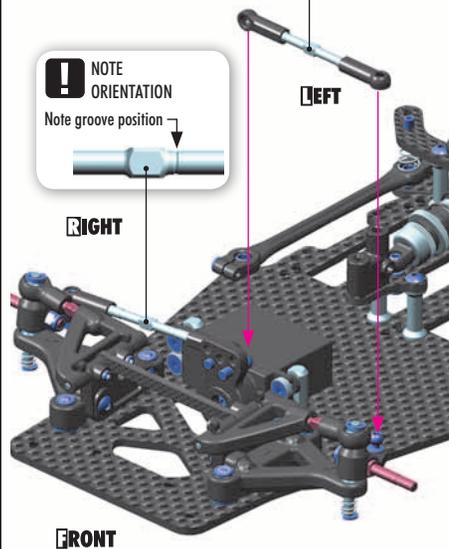
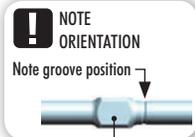
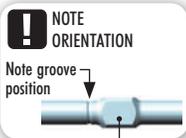
3. **2x** L=R



TOE

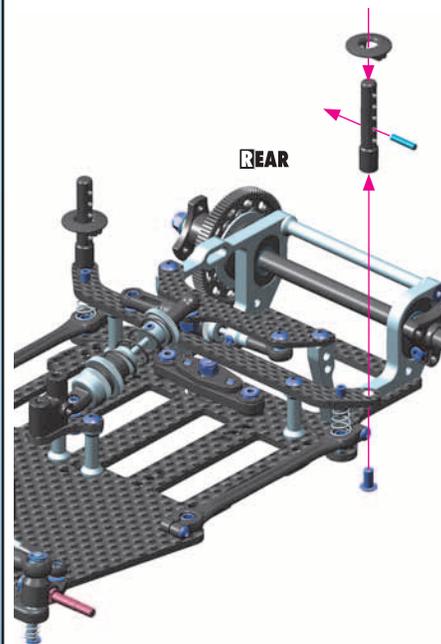
4.

2x L=R



5.

2x L=R



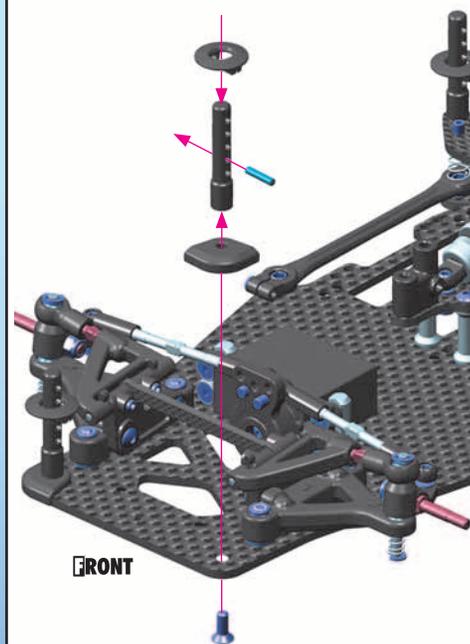
902308
SH M 3x8



981210
P 2x10

6.

2x L=R

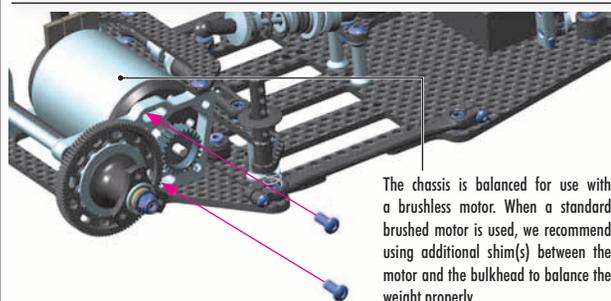
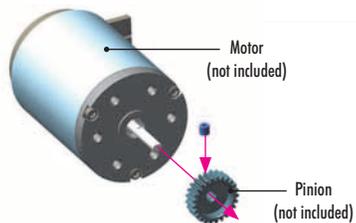


903310
SFH M 3x10

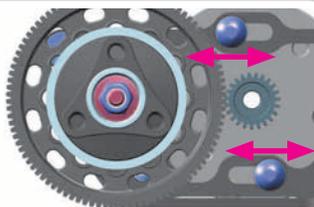


981210
P 2x10

7.



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



902308
SH M 3x8

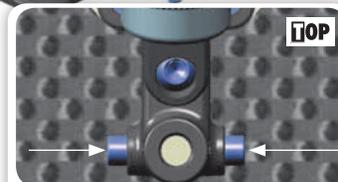
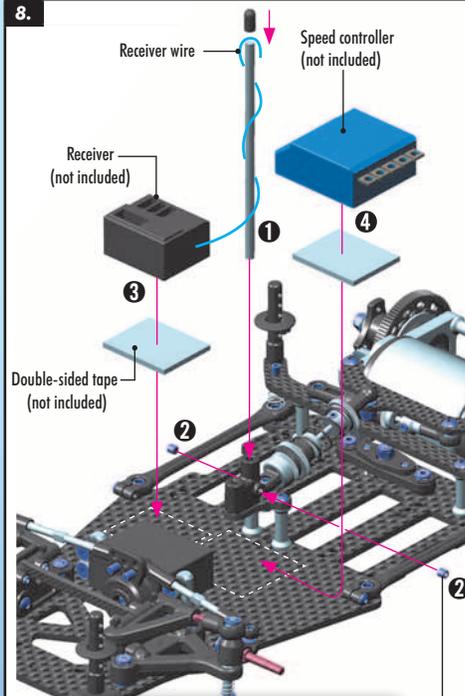


901303
SB M3x3

PINION GEARS ALU HARDCOATED

#305968	18T / 64P (option)
#305969	19T / 64P (option)
#305970	20T / 64P (option)
#305971	21T / 64P (option)
#305972	22T / 64P (option)
#305973	23T / 64P (option)
#305974	24T / 64P (option)
#305975	25T / 64P (option)
#305976	26T / 64P (option)
#305977	27T / 64P (option)
#305978	28T / 64P (option)
#305979	29T / 64P (option)
#305980	30T / 64P (option)
#305981	31T / 64P (option)
#305982	32T / 64P (option)
#305983	33T / 64P (option)
#305984	34T / 64P (option)
#305985	35T / 64P (option)
#305986	36T / 64P (option)
#305987	37T / 64P (option)
#305988	38T / 64P (option)

8.

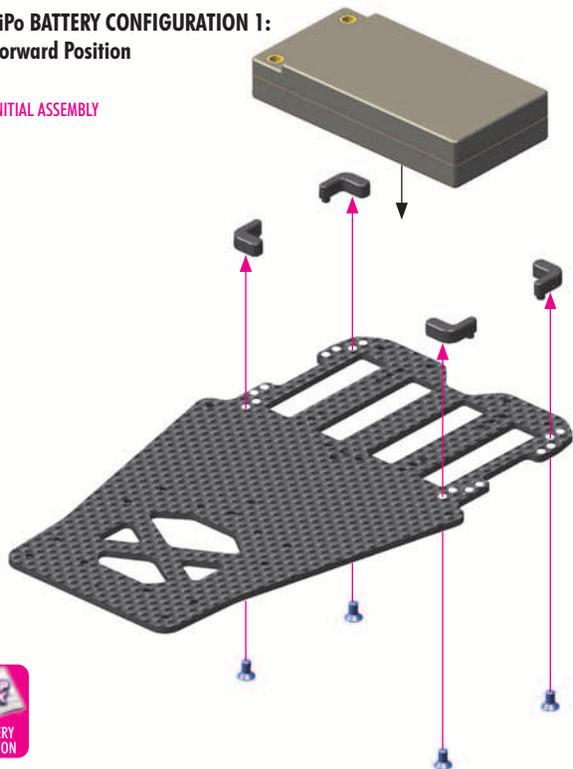


After inserting the antenna rod, fully tighten both setscrews. Do not overtighten or you may strip the plastic.

9a.

LiPo BATTERY CONFIGURATION 1: Forward Position

INITIAL ASSEMBLY



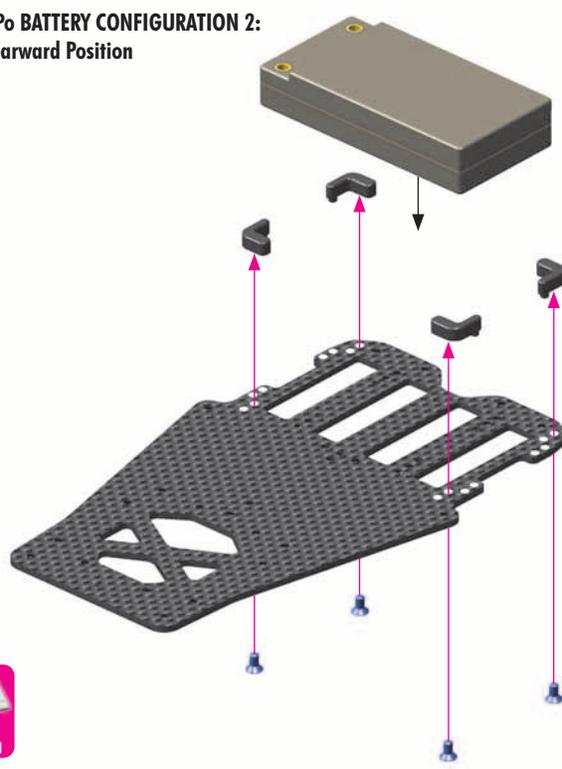
BATTERY
POSITION



903305
SFH M3x5

9b.

LiPo BATTERY CONFIGURATION 2: Rearward Position



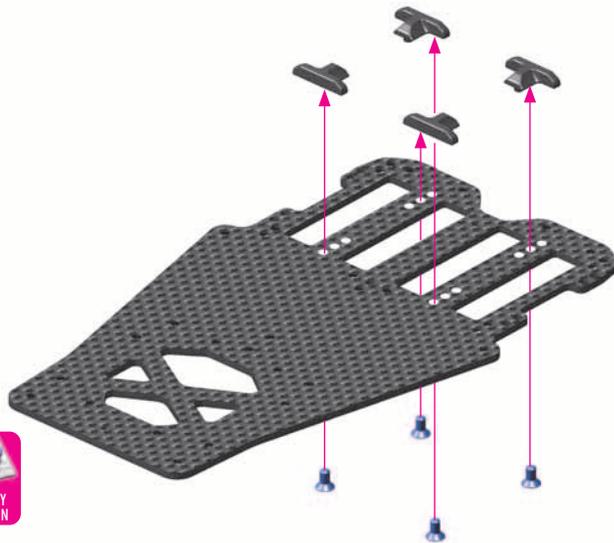
BATTERY
POSITION



903305
SFH M3x5

10a.

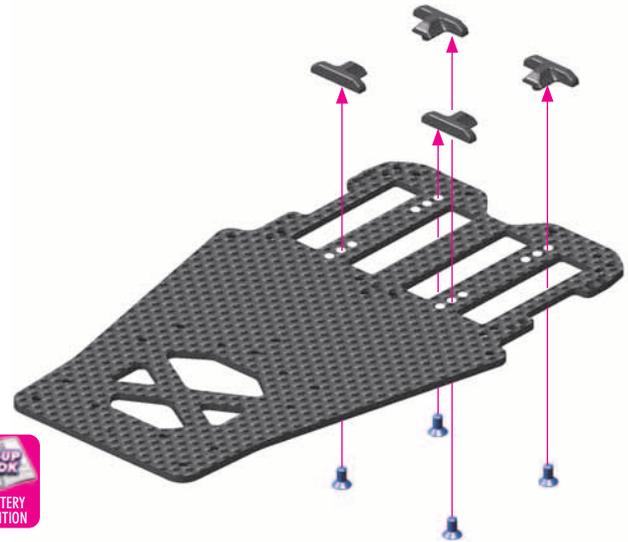
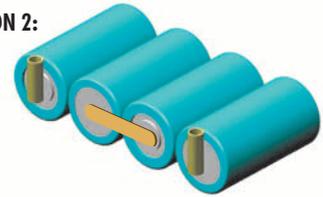
NiMH BATTERY CONFIGURATION 1:
Forward Position



903305
SFH M3x5

10b.

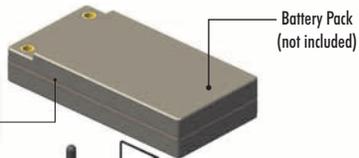
NiMH BATTERY CONFIGURATION 2:
Rearward Position



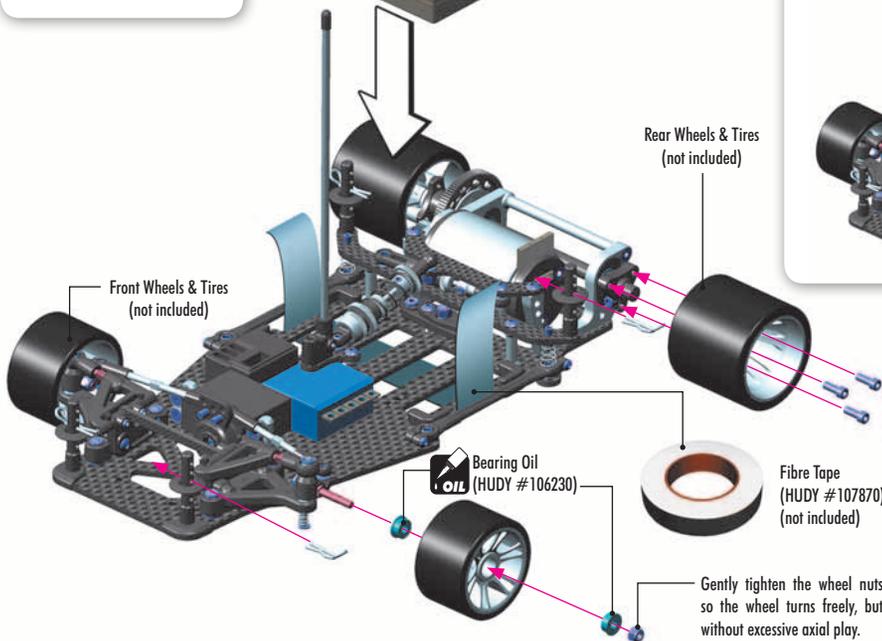
903305
SFH M3x5

11.

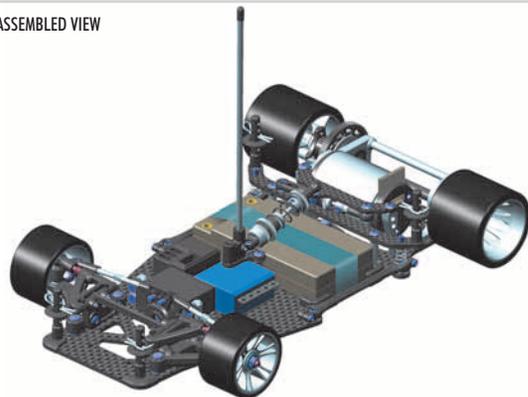
When inserting or removing the batteries from the car, remove the center shock from one of its holders.



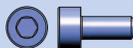
Battery Pack
(not included)



ASSEMBLED VIEW



This kit includes a comprehensive Set-up Book which features the T-bar version of the XII. However, the majority of all set-up adjustments and theory are the same; we strongly recommend that you read and understand the Set-up Book completely.



375390
ALU SCH M3x8



951851
BB 1/8"x5/16"x9/64"



960031
ALU N M3



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