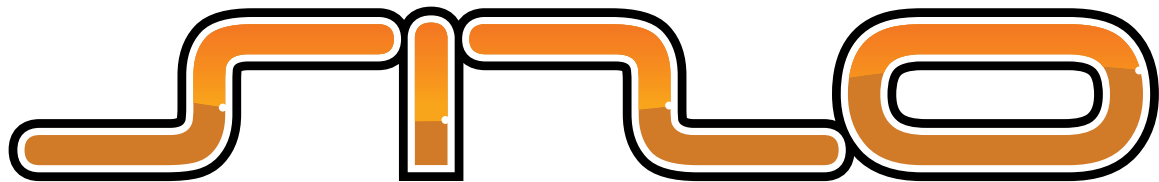




# INSTRUCTION MANUAL

& REFERENCE GUIDE



## INTRODUCTION

Serpent enters the competitive electric 1/12th scale pan car market with the S120, which like all our previous cars, has been designed to win straight from the box. Featuring a number of truly innovative features such as a single piece aluminium rear pod, floating horizontal damper, quick and easy tweak adjustment and top quality materials throughout, the S120 should see you in the winners circle in no time. In fact everything associated with this car is of the highest quality, from the packaging and supplied manuals, right through to the product and race support.

## INSTRUCTIONS

Serpent's long tradition of excellence extends to their instruction manuals, and this instruction manual is no exception. The easy-to-follow layout is richly illustrated with 3D-rendered full-color images to make your building experience quick and easy. Following the instructions will result in a well-built, high-performance racecar that will soon be able to unleash its full potential at the racetrack.

## SETUP

In certain assembly steps you need to make basic adjustments, which will give you a good initial setup for your Serpent S120. Fine-tuning the initial setup is an essential part of building a high-performance racecar like your S120.

## EXPLODED VIEWS AND PARTS LIST

The exploded views and parts lists for the Serpent S120 are presented in the Reference Guide section in the back of this manual. The exploded views show all the parts of a particular assembly step along with the Serpent part number. The parts lists indicate the part number and name of each part for easy reference when ordering.

## SAFETY

Included with your Serpent S120 kit is a document entitled "Read This First" that covers safety precautions for the assembly and use of this product. We strongly recommend that you thoroughly read and understand that document, and follow all the precautions.

# SERPENT.COM

The printed instruction manual included with your Serpent S120 kit is very complete, though due to continuous product development, more up-to-date information may be provided at our Serpent.com website.

All information about the Serpent S120 is accessible from the Serpent S120 product page found on Serpent.com and can be accessed by simply typing **serpent.com/410001** into your web browsers address bar.

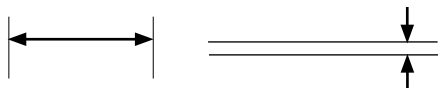
From the Serpent S120 product page you will find the very latest information about your Serpent S120: reports by team drivers and other experts, tips and tricks, setups, image gallery and downloadable files including the latest version of the instruction manual will be made available as downloadable PDF files.

## CONTENTS

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# USING THE MANUAL

①



Step number; the order in which you should assemble the indicated parts

Length after assembly / Gap between two items



Assembly path of one item into another



Group of items (within lines) should be assembled first



Direction the item should be moved



Glue one item to another



Press/Insert one item into another

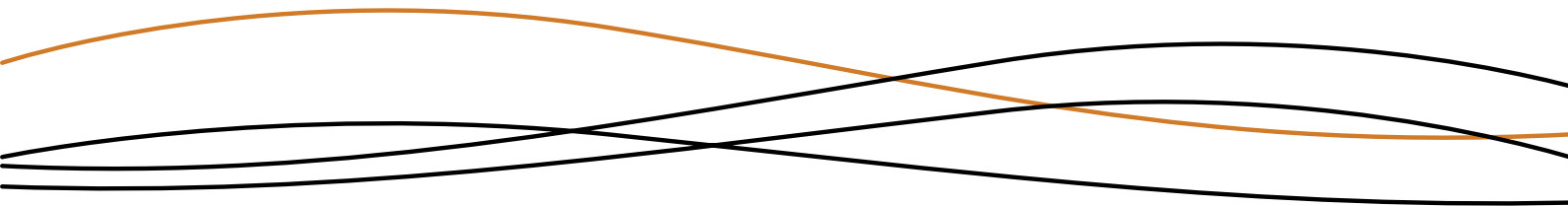


Connect one item to another



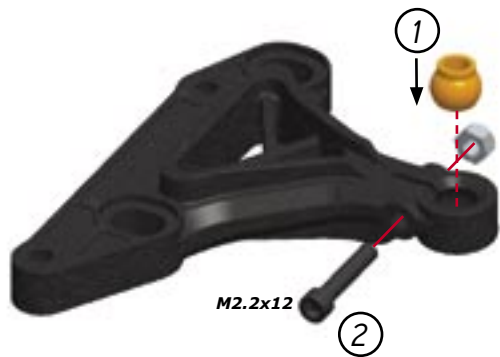
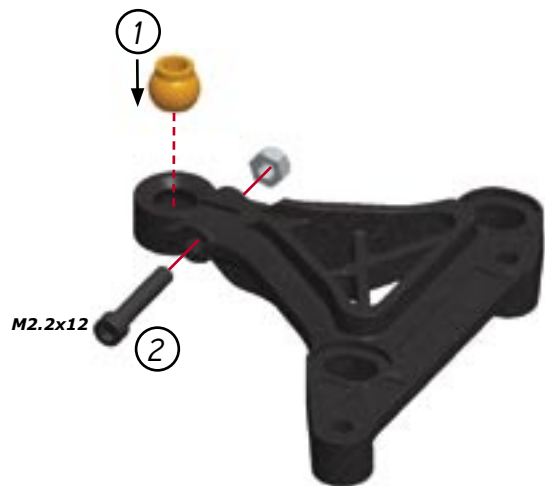
Apply transmission grease (Grey), threadlock\* (Blue), CA glue\* (Red) or differential grease (Orange). (\*Items not included.)

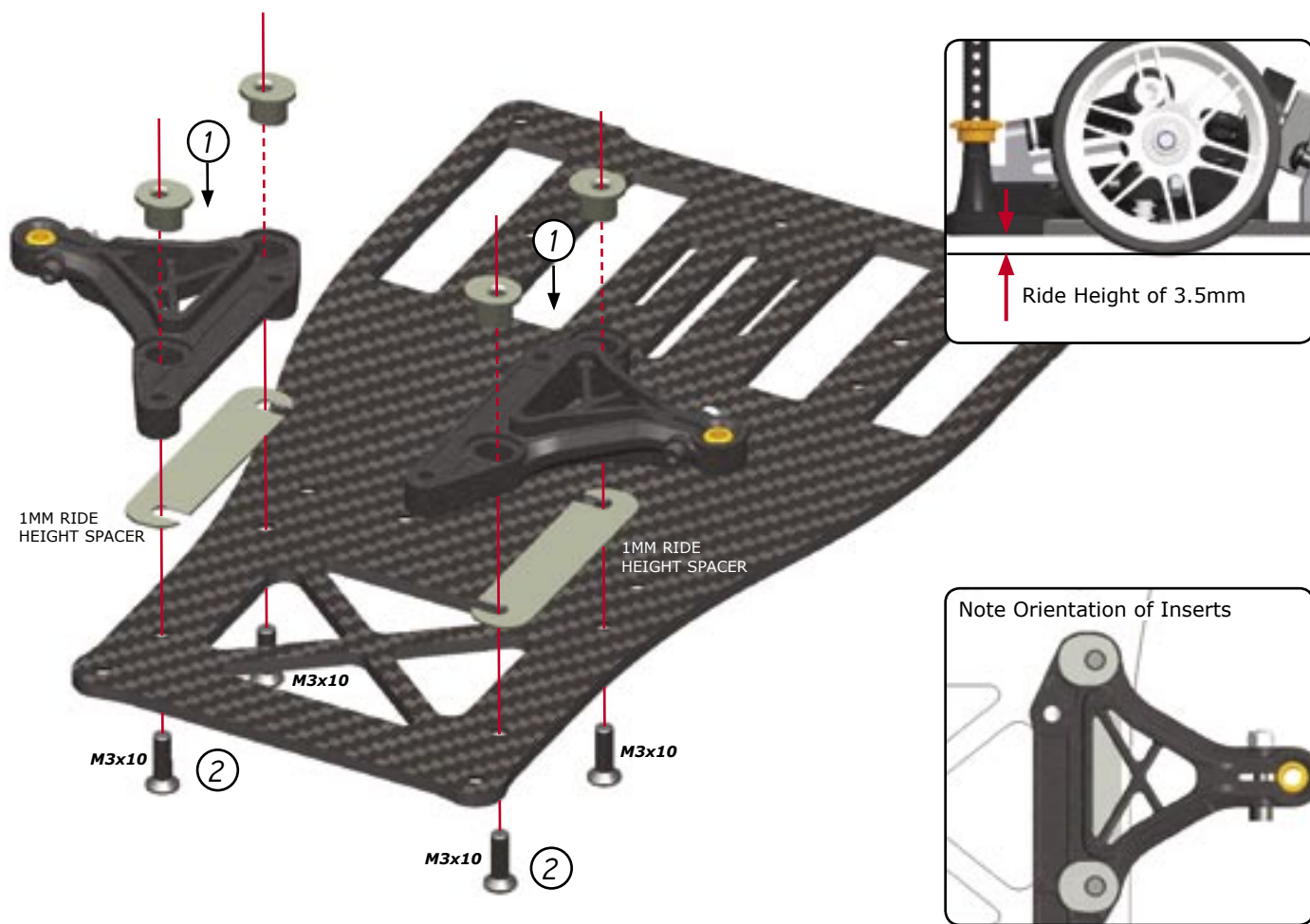
# ASSEMBLY INSTRUCTIONS



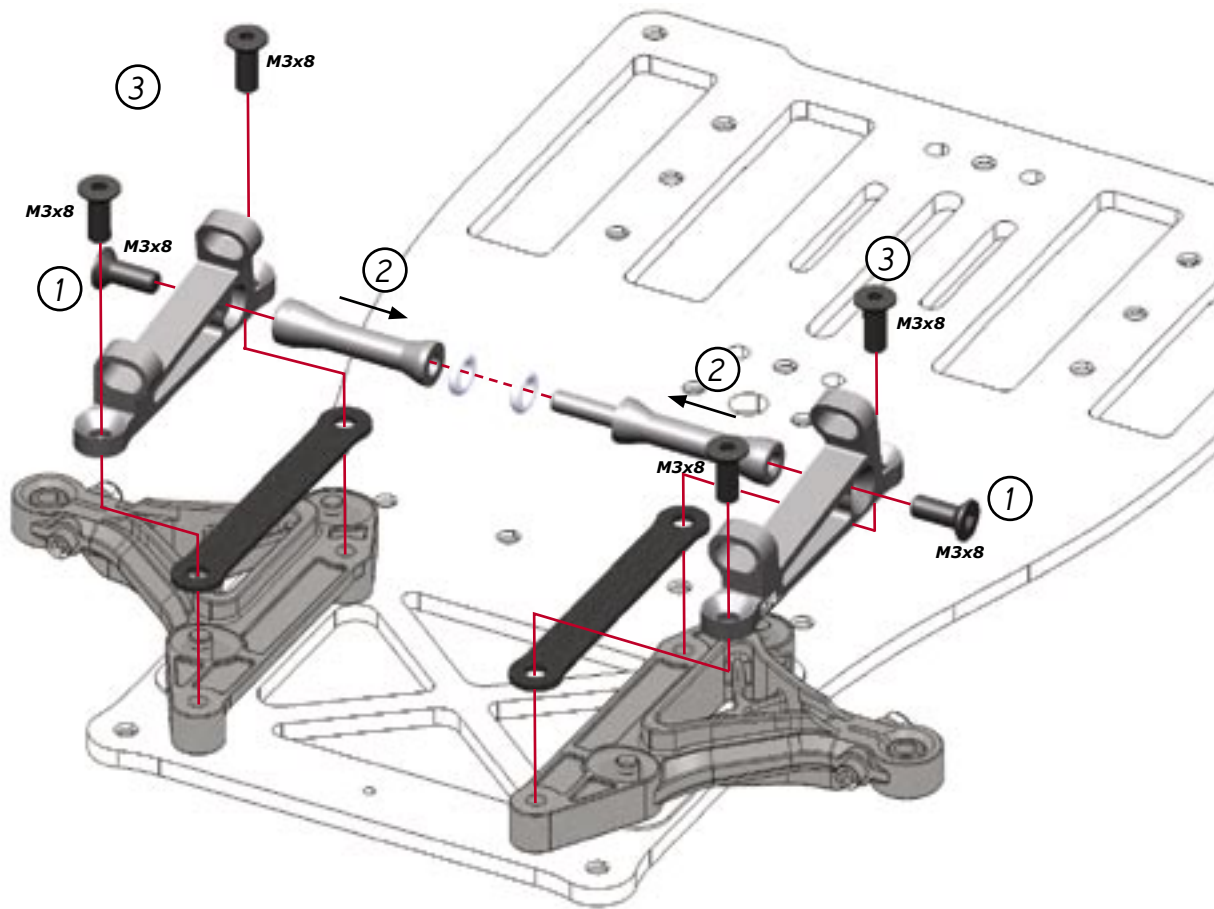
To prevent the risk of the carbon fibre splitting in the event of a crash you should apply CA Glue around the chassis' edge and battery slots as shown in red below.

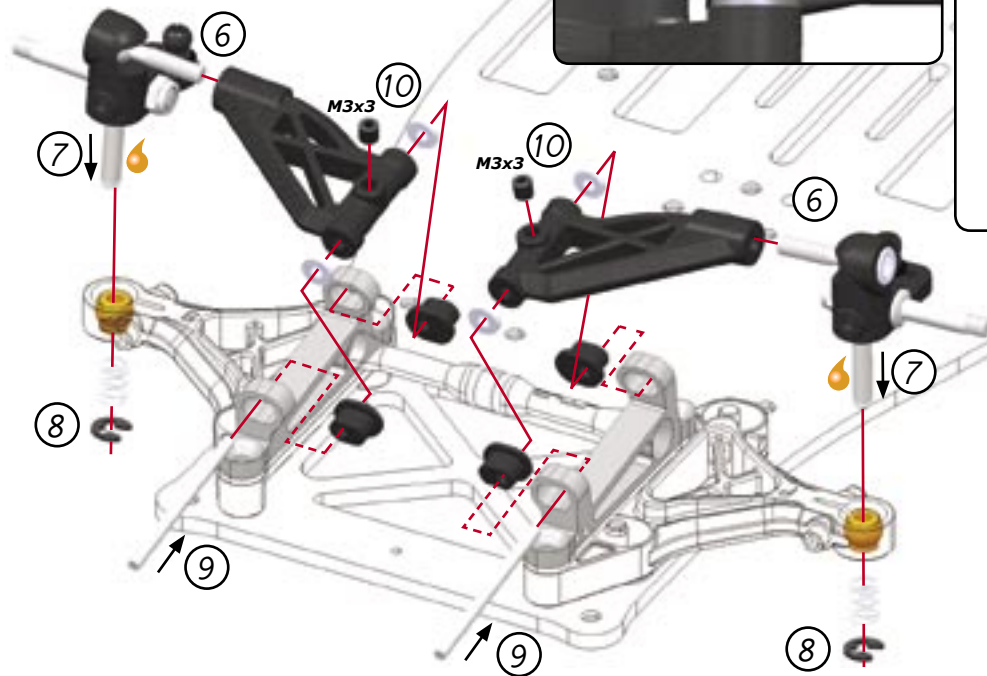




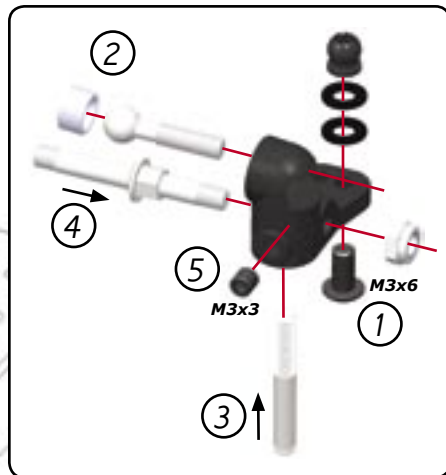


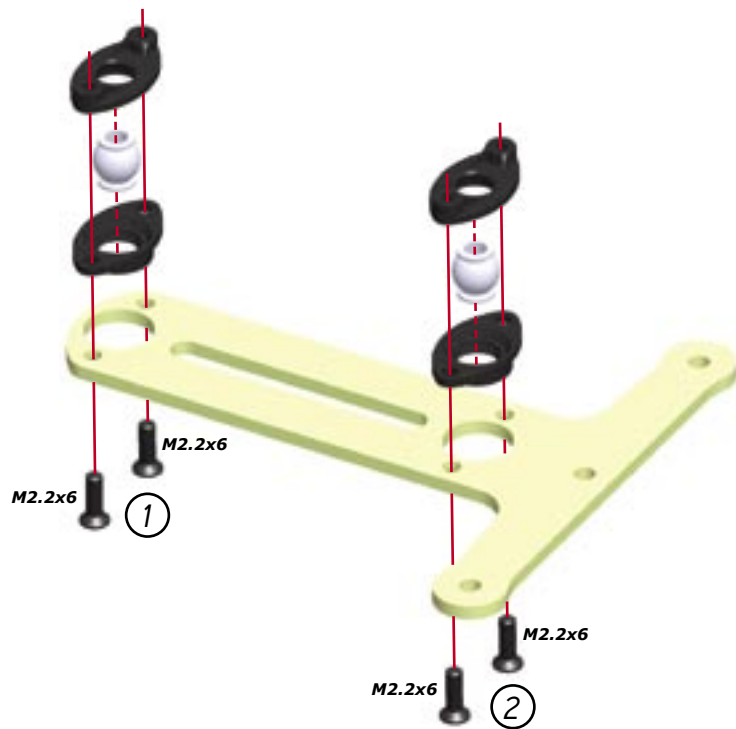
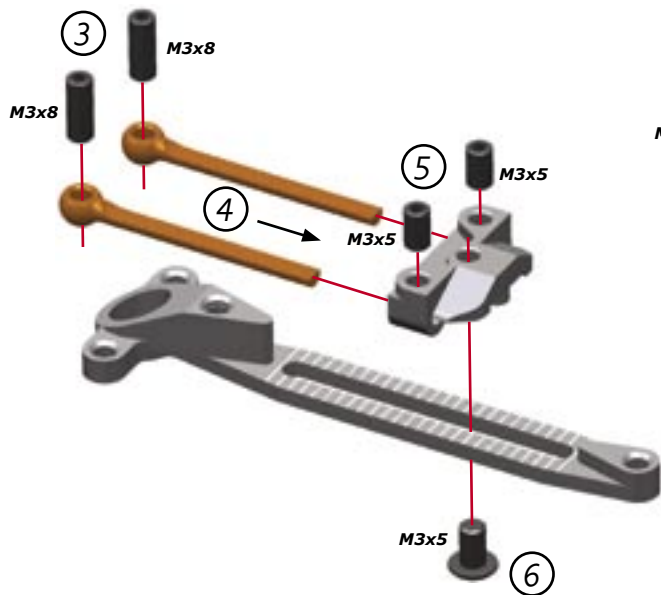
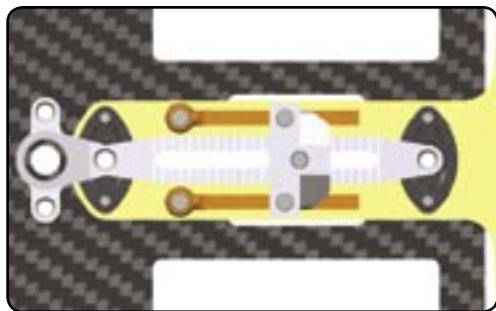


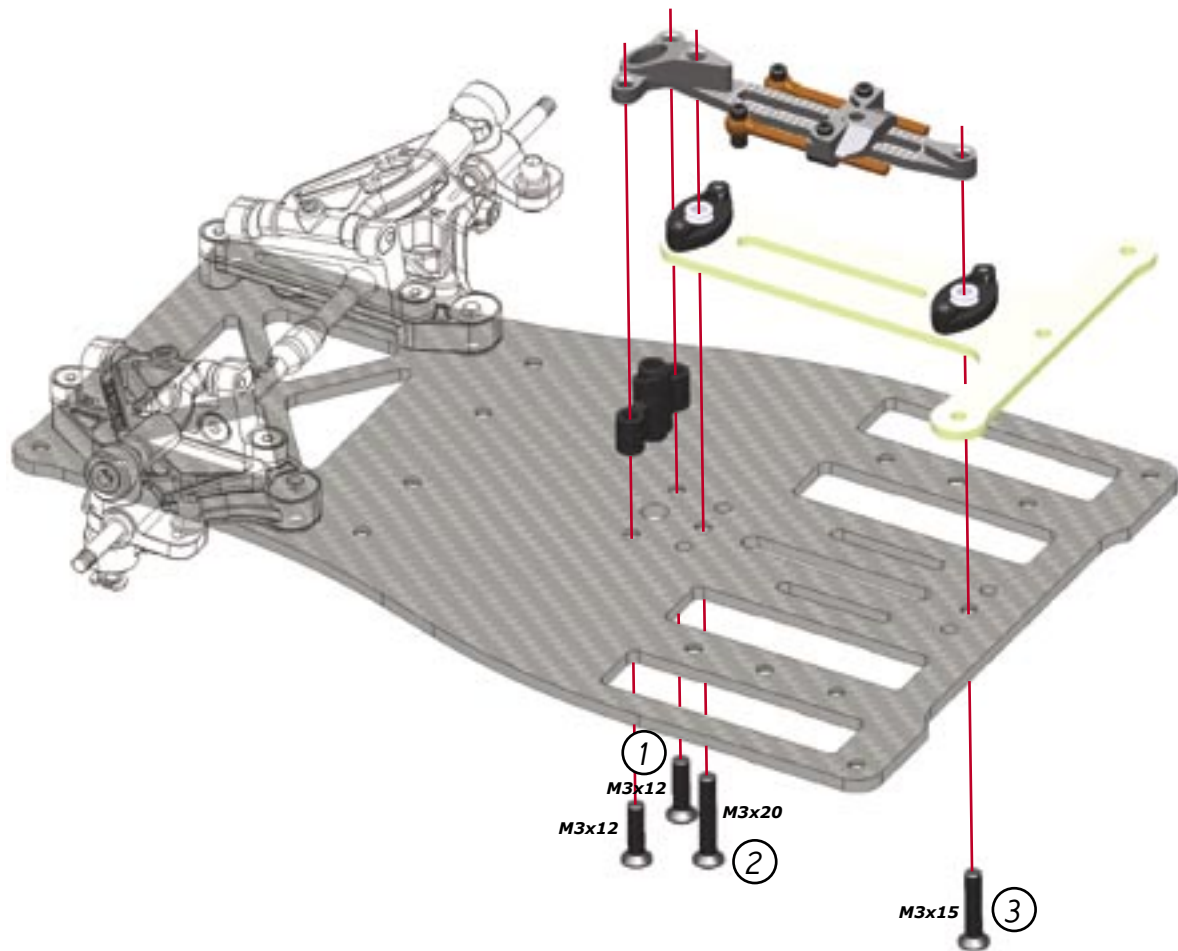


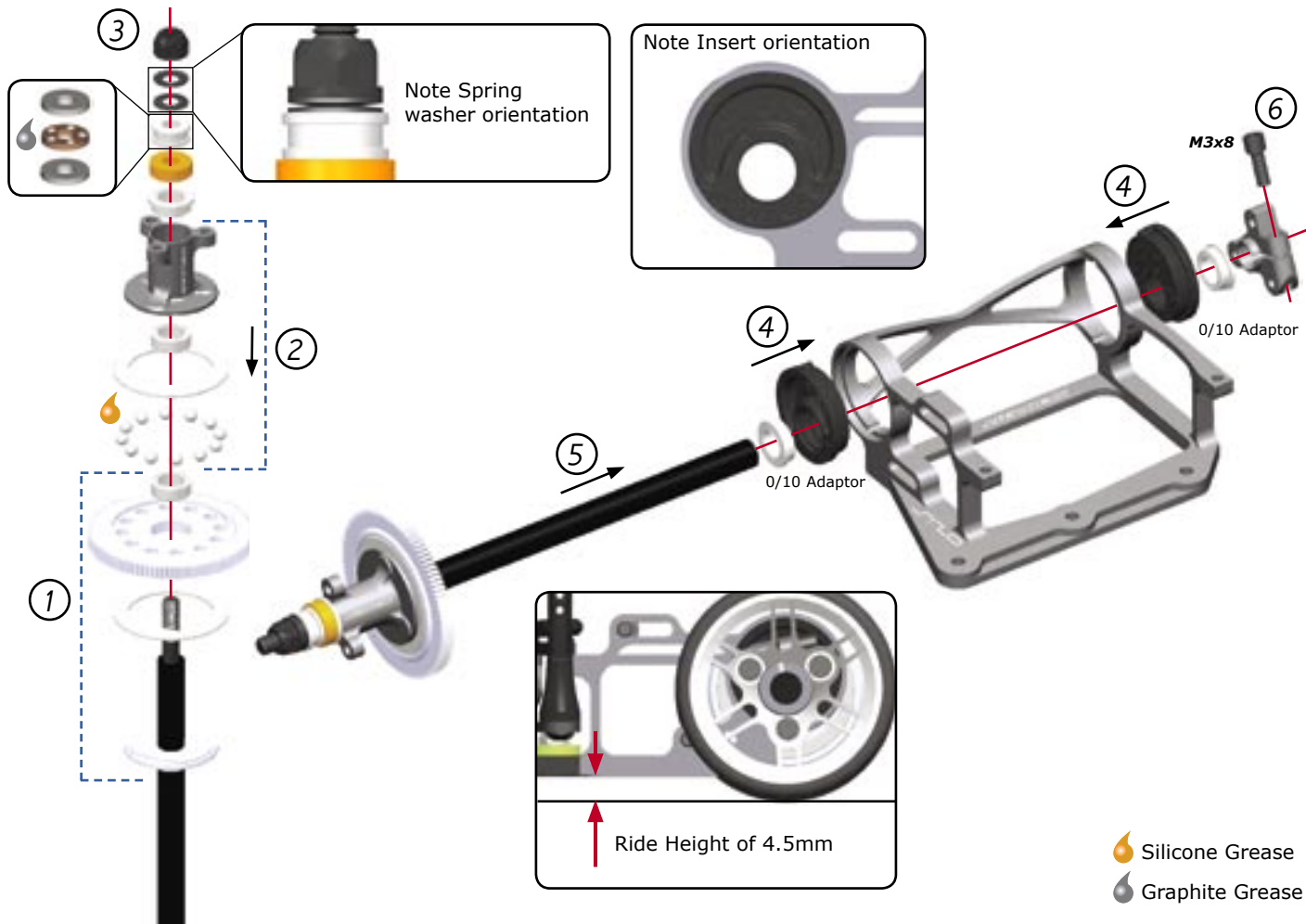


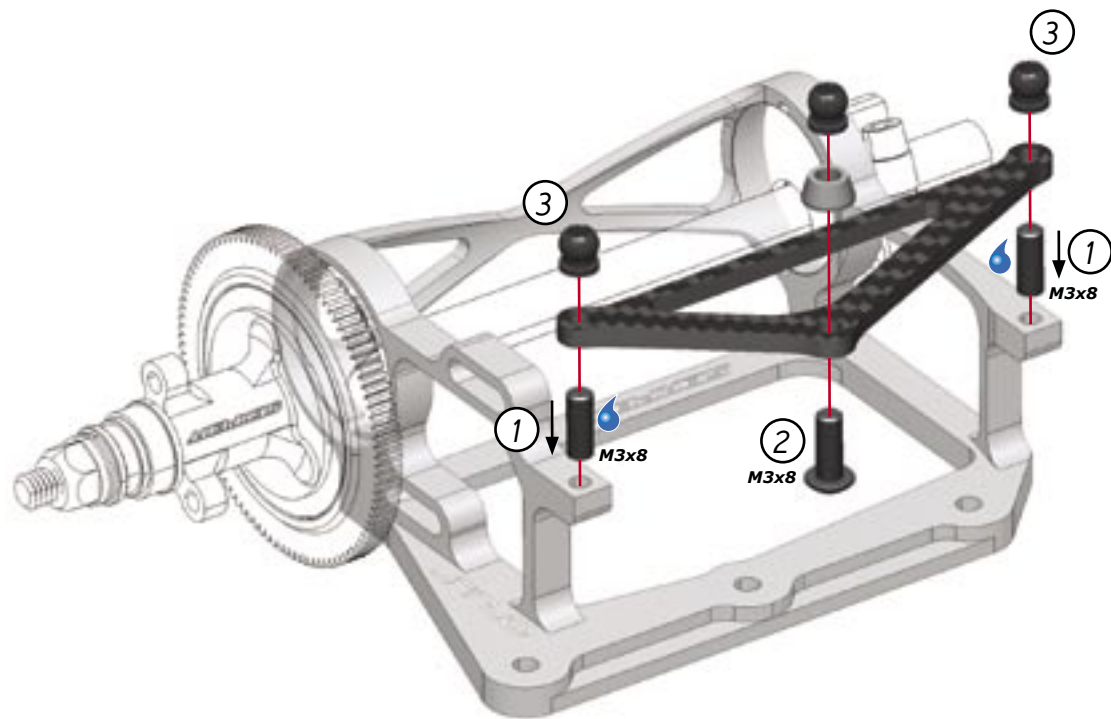
Note Orientation of Insert

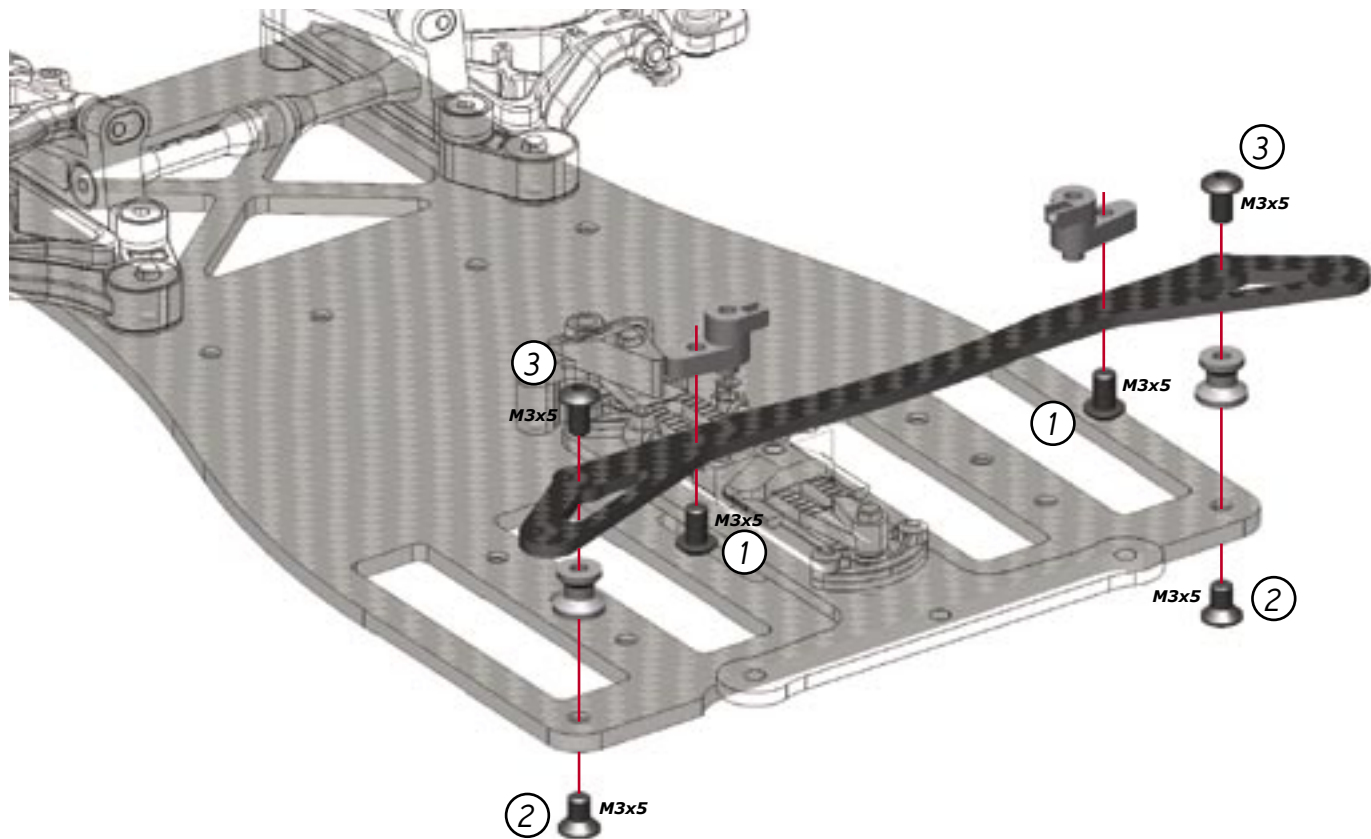




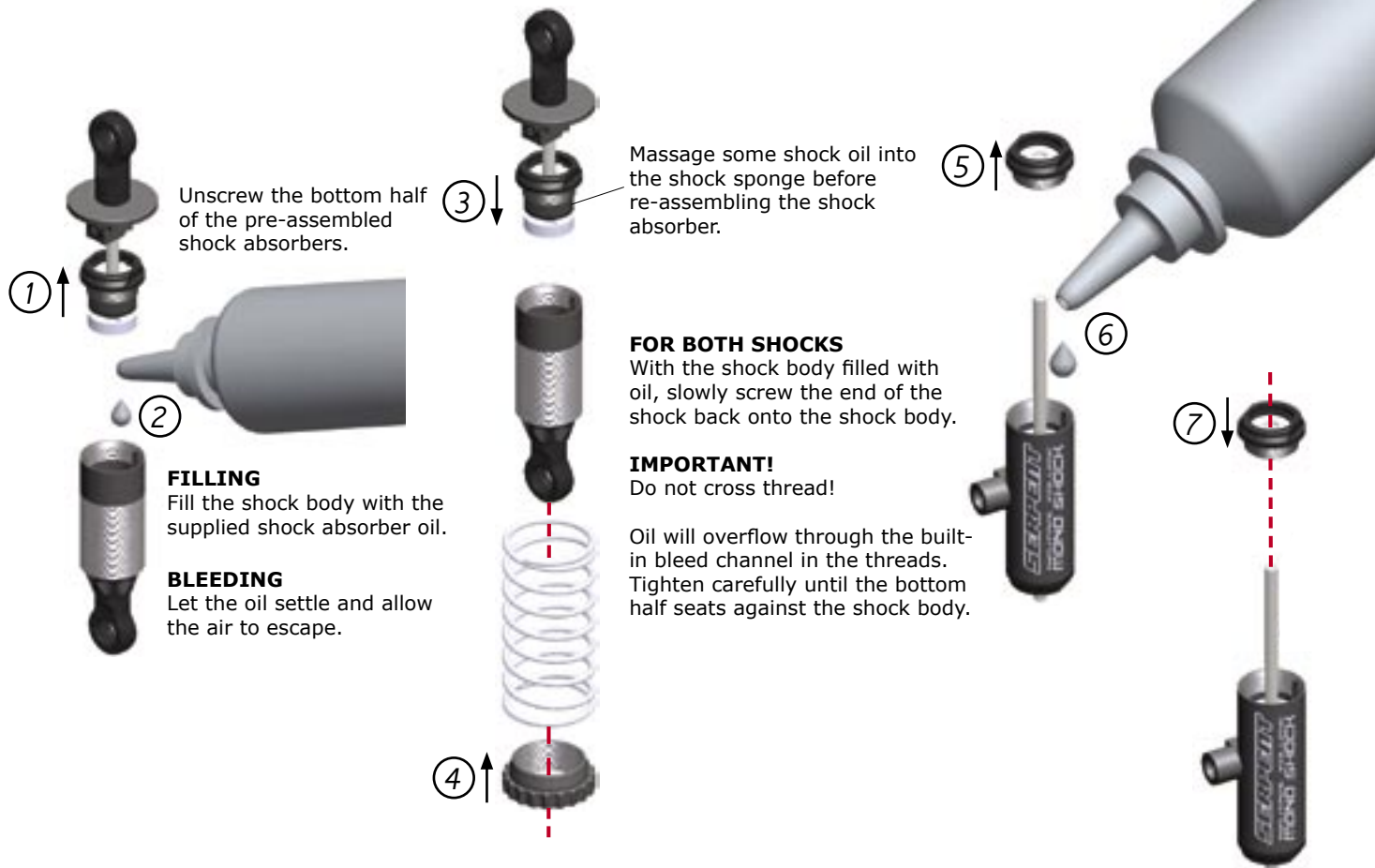




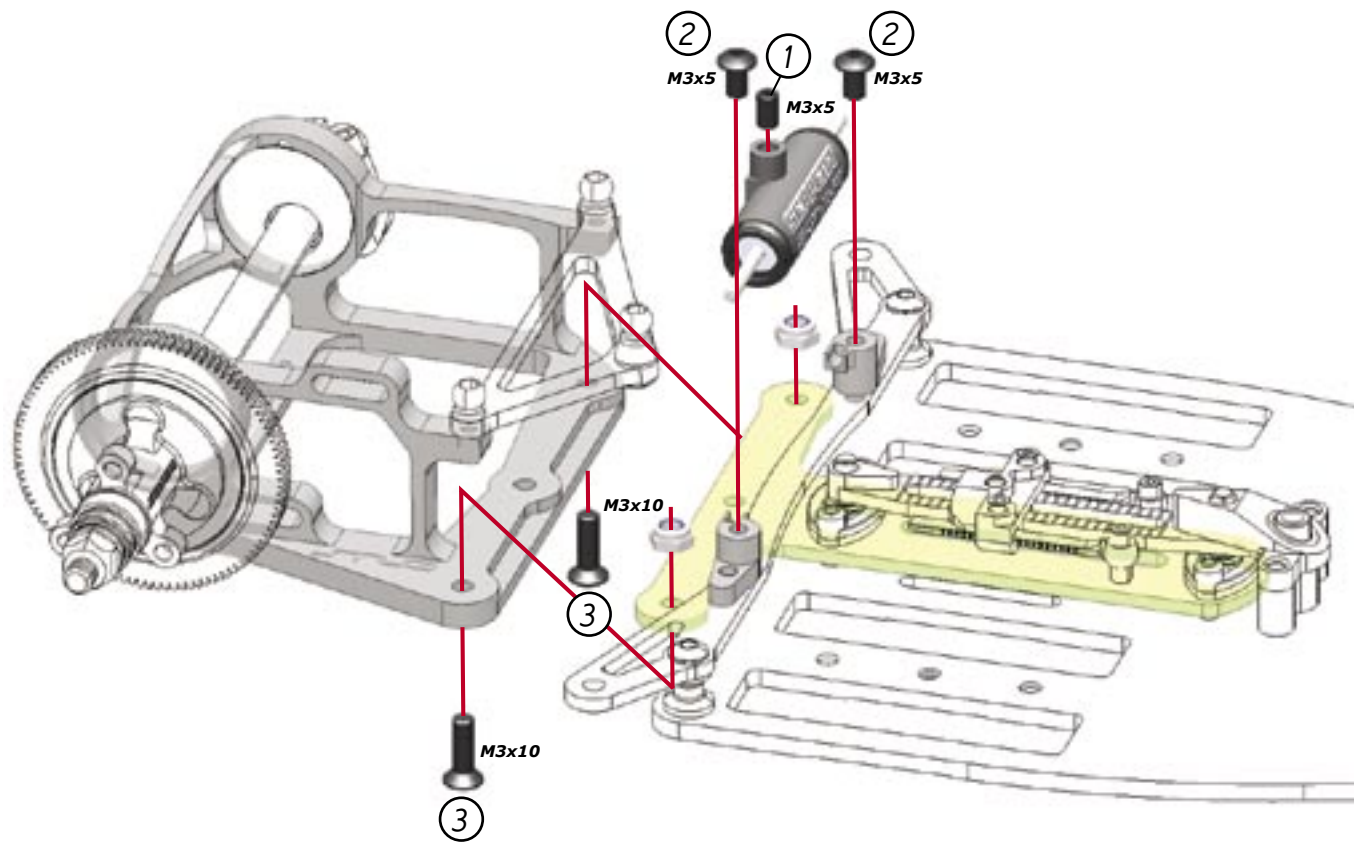


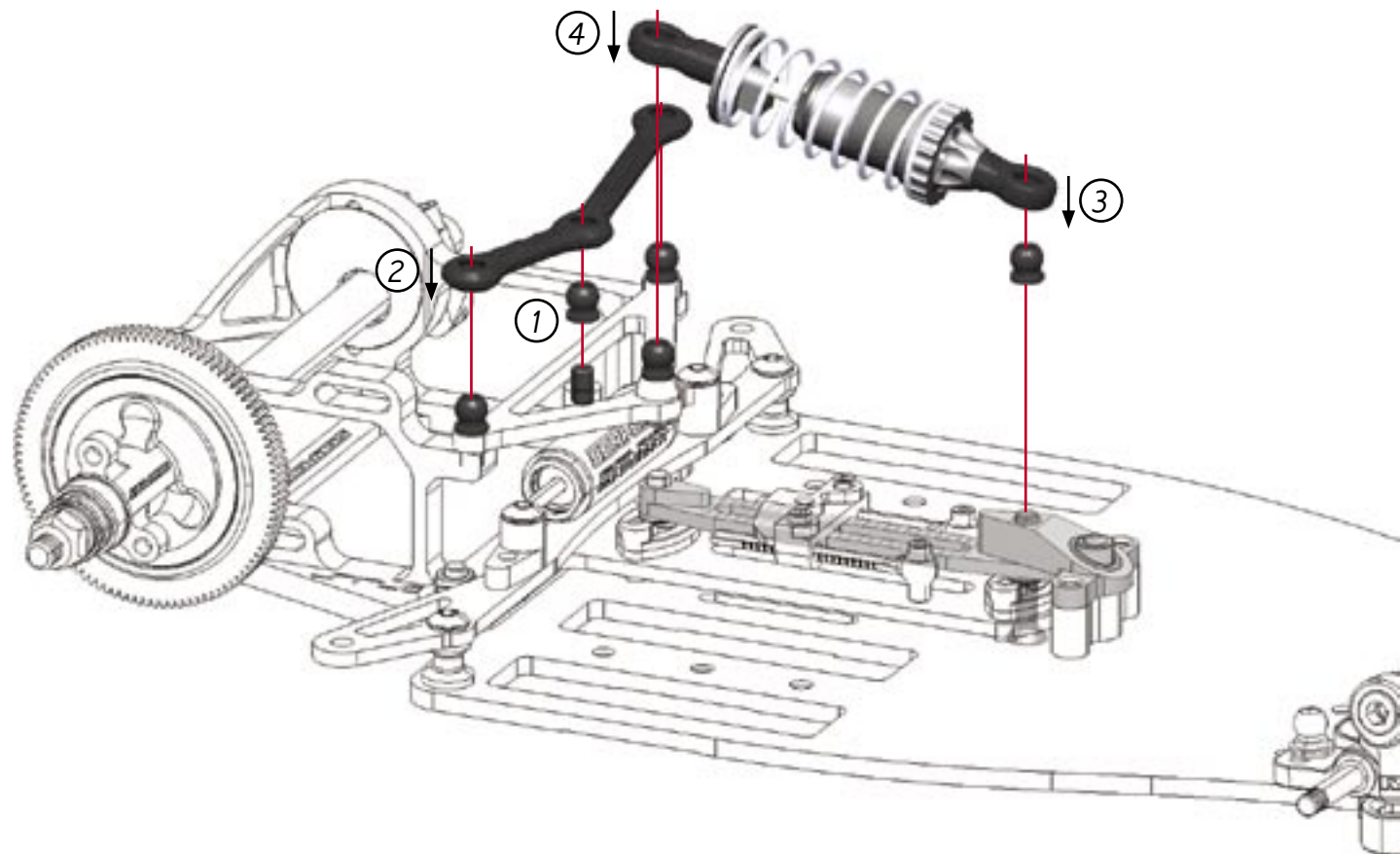


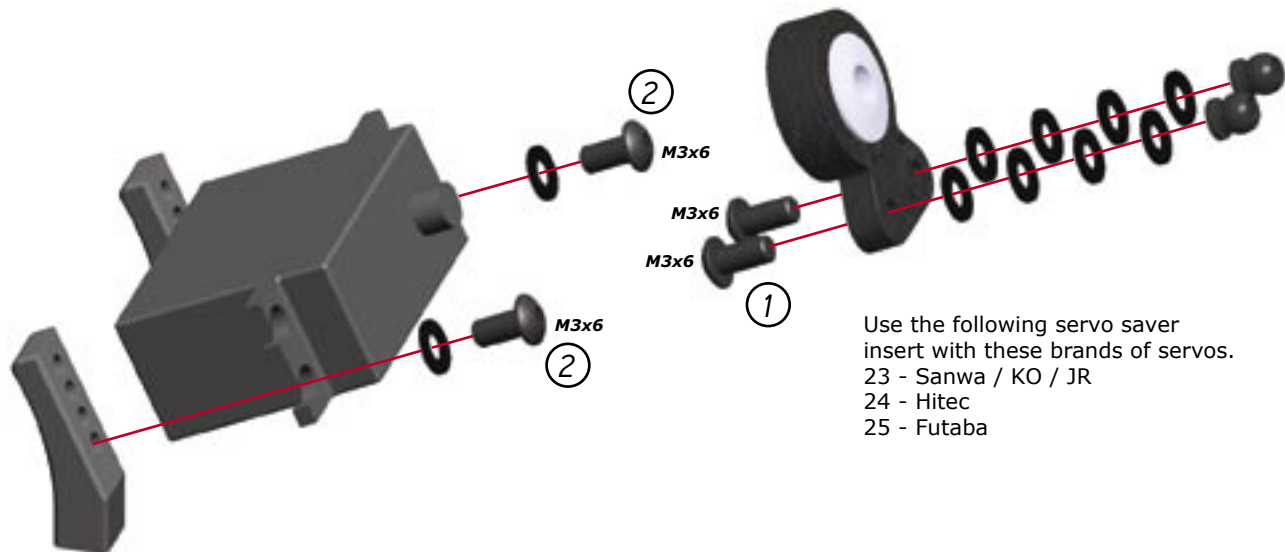




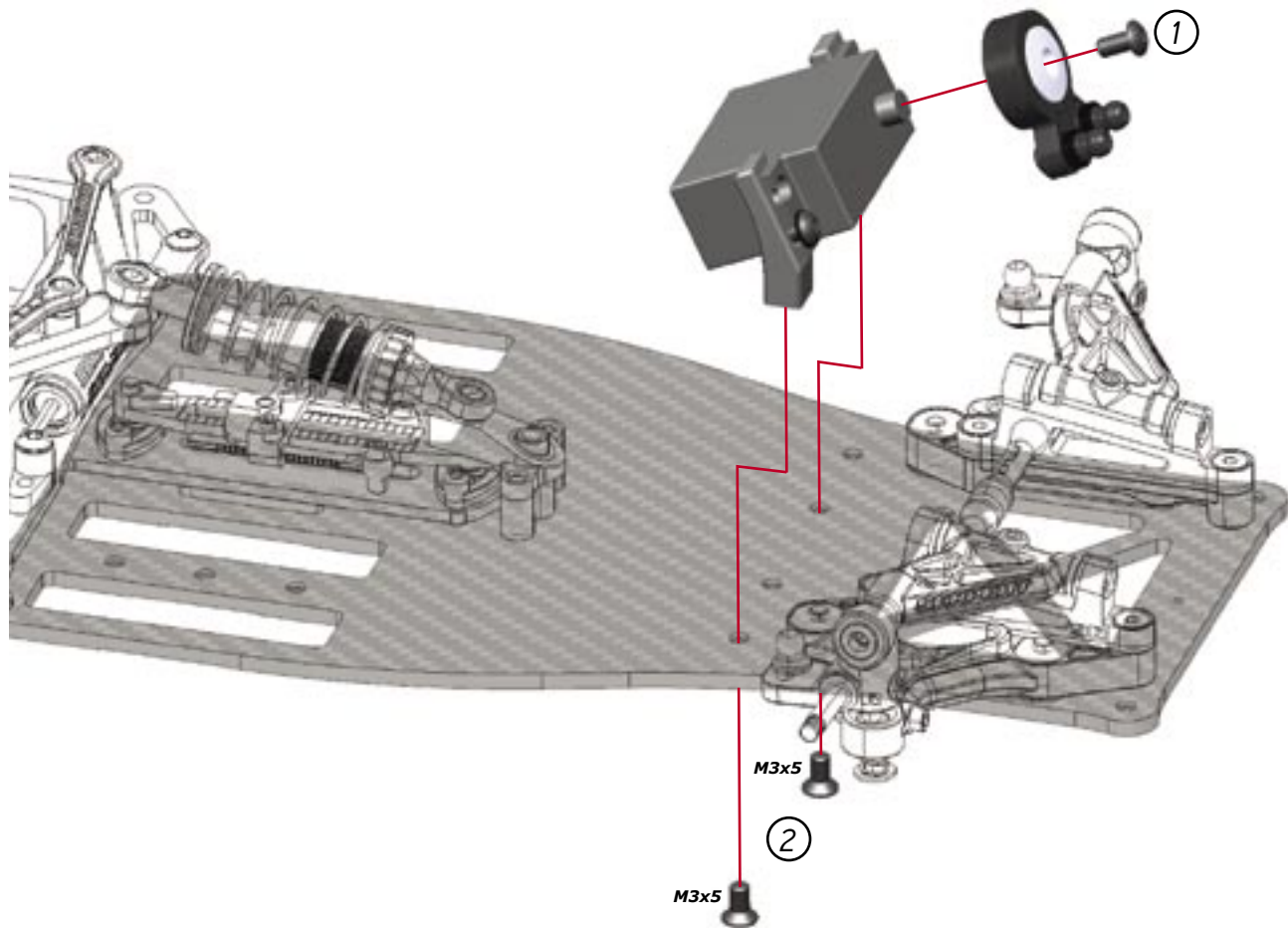


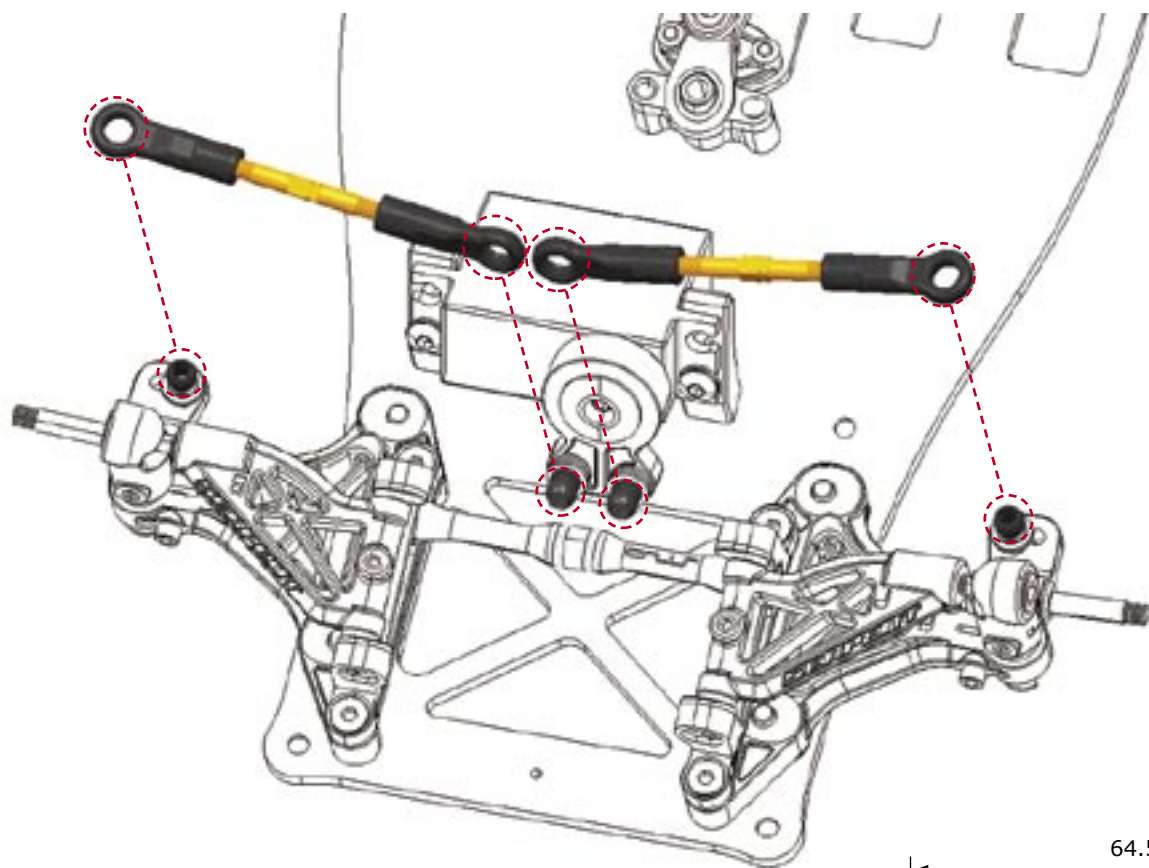


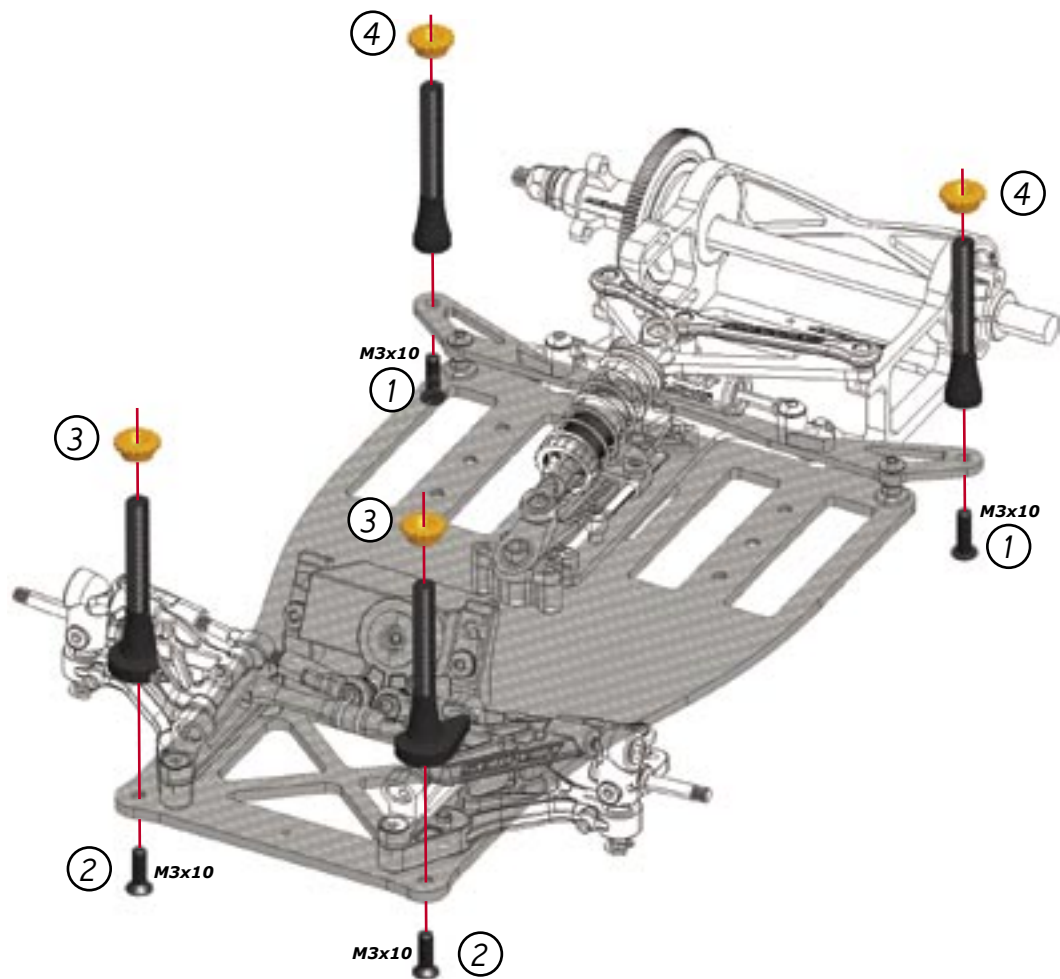




Use the following servo saver  
insert with these brands of servos.  
23 - Sanwa / KO / JR  
24 - Hitec  
25 - Futaba







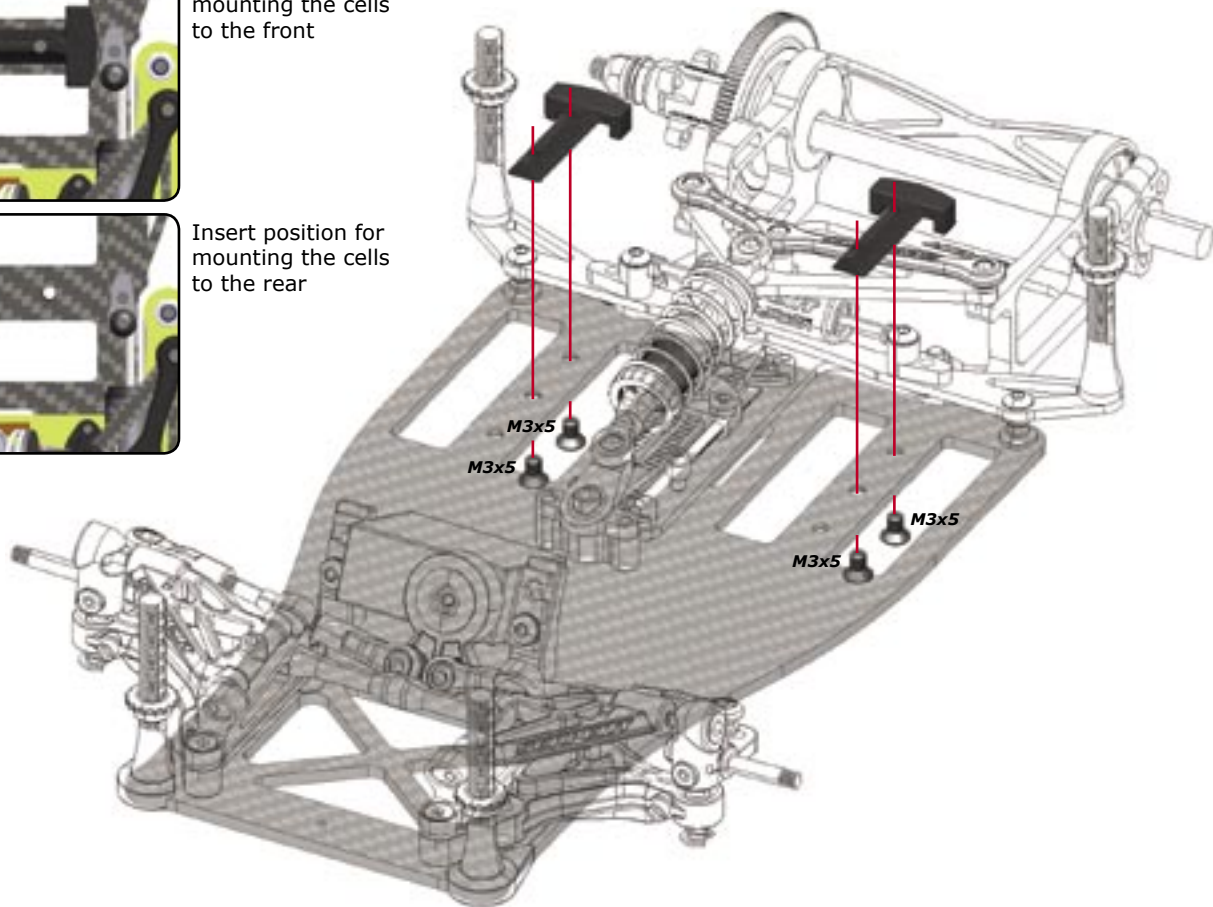


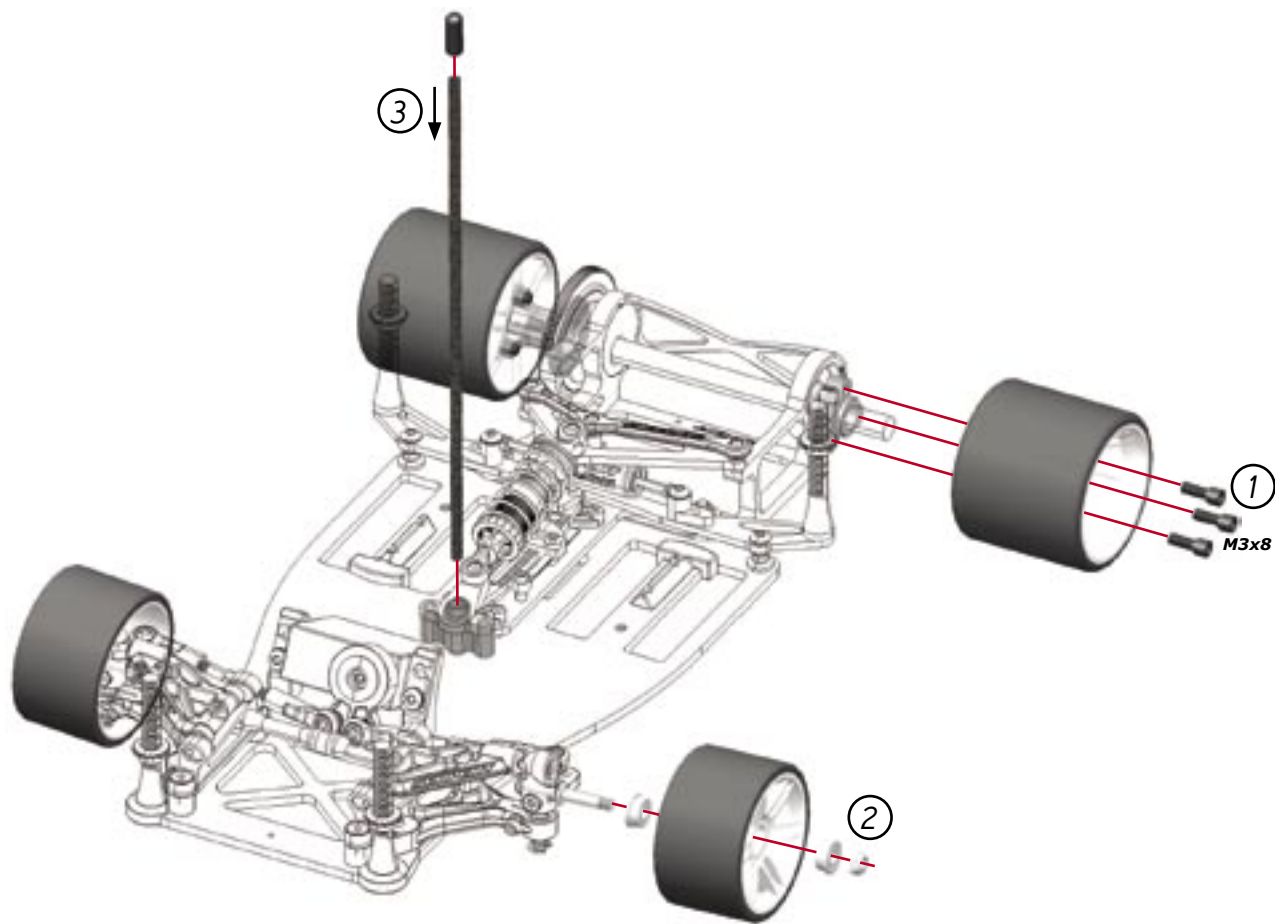


Insert position for  
mounting the cells  
to the front



Insert position for  
mounting the cells  
to the rear

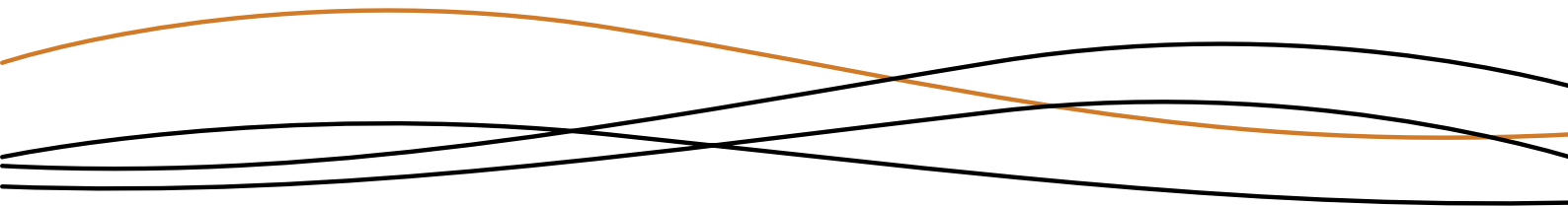




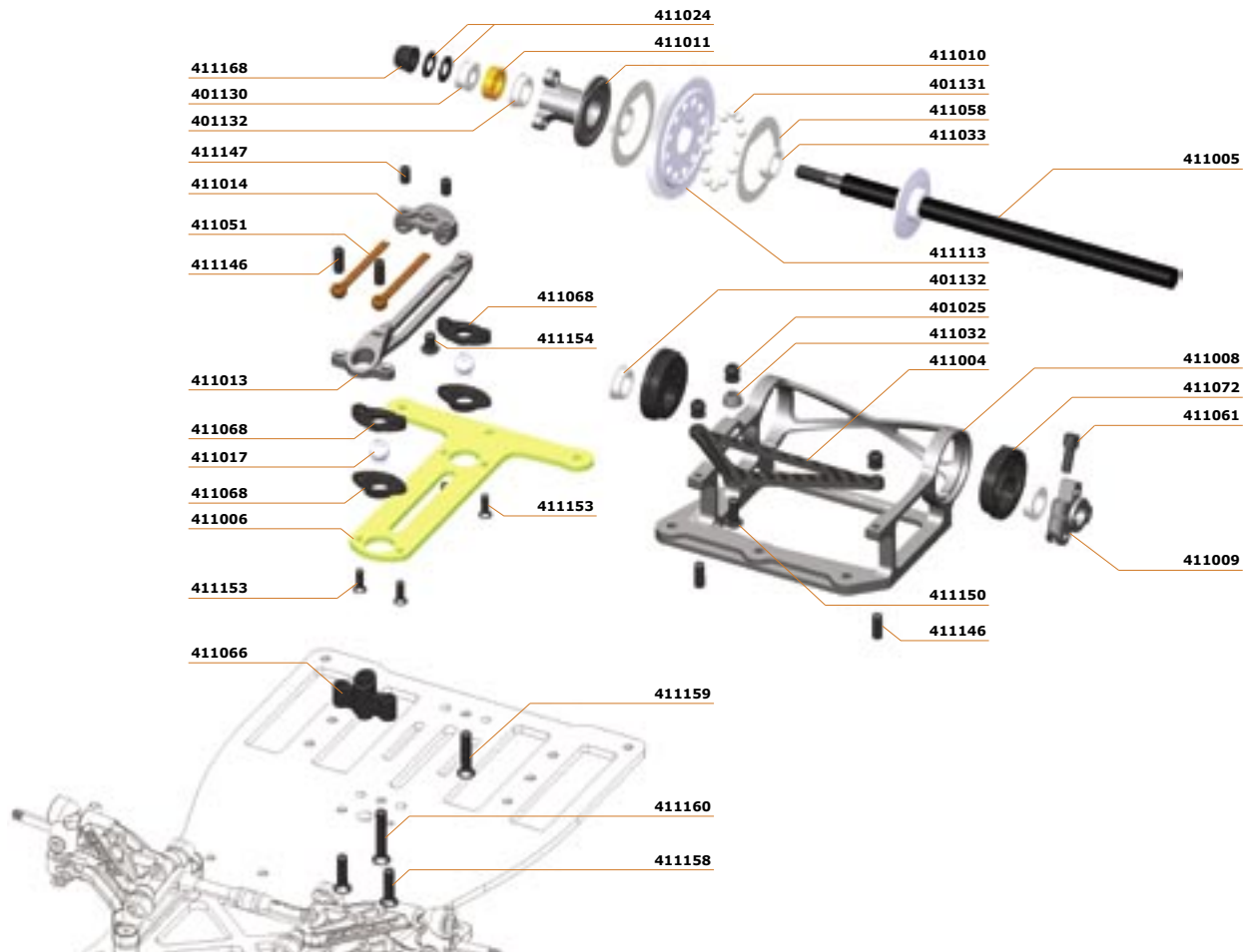




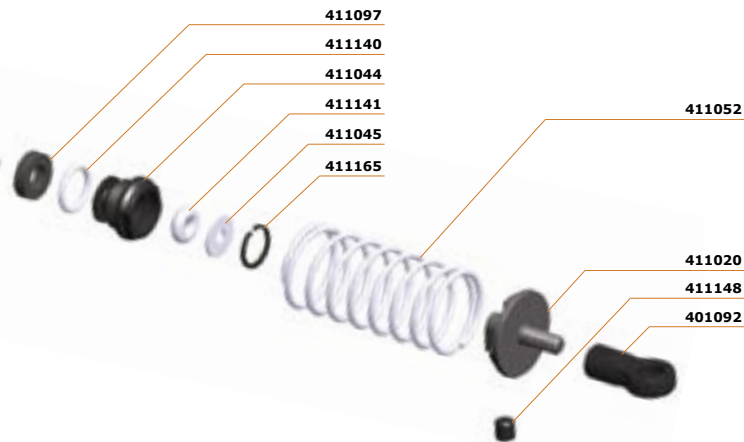
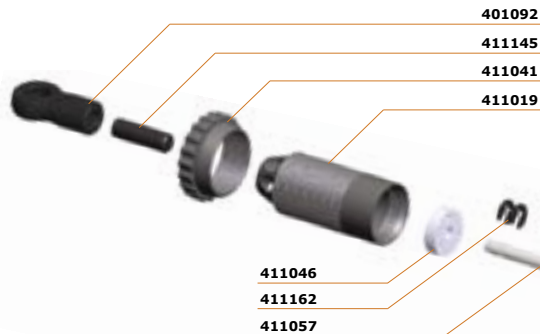
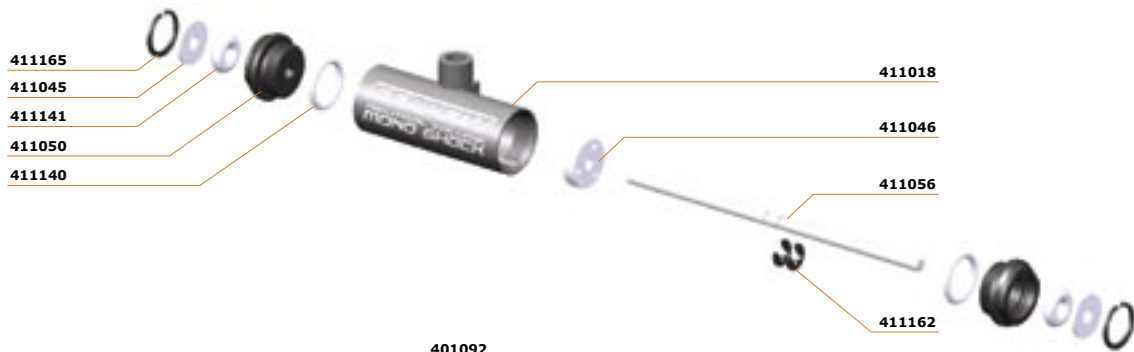
# REFERENCE GUIDE







# SHOCK ASSEMBLY





**MANUALS/DECALS**

- 411130 Manual S120  
411131 Decal-sheets S120 (2)

**FRONT SUSPENSION**

- 401091 Ball joint 4-5  
401025 Pivot ball-uni-4-5mm  
411026 Upper Arm Mount 9L  
411027 Cross Brace Tube left  
411028 Upper Arm Mount 9R  
411029 Cross Brace Tube right  
411030 Insert for Lower A-Arm  
411031 Distance Shim for Cross Brace  
411032 Socket for Pivot Ball  
411033 Distance Plate for Lower Arm 0.5mm  
411034 Distance Plate for Lower Arm 1.0mm  
411035 Distance Plate for Lower Arm 2.0mm  
411042 Pivot Ball for Front Suspension  
411048 Adjust Nut for Front Suspension  
411049 Distance Shim for Upper Arms  
411053 Front Spring 0.50mm  
411059 Hinge Pin  
411060 Kingpin  
411063 Pivot Ball for Upper Suspension Arm  
411064 Stub Axle  
411071 Wheel Nut M4  
411081 Upper Arm Adapter  
411082 Upper Suspension Arm left  
411083 Upper Suspension Arm right  
411084 Distance Plate for Upper Arms  
411085 Lower Suspension Arm left  
411086 Lower Suspension Arm right  
411087 Offset Steering Block left  
411088 Offset Steering Block right  
411089 Rear Rim  
411090 Front Rim  
411091 Servo Saver  
411093 Servo Saver insert 25T  
411095 Servo Saver insert 23T  
411096 Servo Saver insert 24T  
411100 Insert for Lower A-Arm for inch-Screws  
411122 Front nylon set  
411142 O-ring 2.3 x 1.5mm (10)

**CENTRAL ASSEMBLY**

- 401025 Pivot ball-uni-4-5mm  
401124 Shim 3.0x6.0x0.5mm (10)

- 411001 Lower Chassis Plate 2.6mm Kit-Version  
411003 Chassis Brace 2.0mm  
411007 Antenna  
411013 Adjuster Plate  
411014 Adjuster Slider  
411015 Shock Mount L+R  
411017 Pivot Ball for T-Bar  
411021 Servo Mount L+R  
411023 Steering Rod  
411051 Slider Beam  
411066 Antenna Mount  
411067 Battery Insert  
411068 T Bar Ball Joint Up+Lw (2+2)  
411099 Shim for T-Bar soft 1.75

**REAR ASSEMBLY**

- 411004 Power Pod Plate 2.4mm  
411005 Axle rear carbon/diff bell  
411006 T-Bar hard 2.0mm  
411008 Power Pod  
411009 Left side Clamp Hub  
411012 Standoff for Chassis Brace  
411061 M3x8mm Socket Screw "special-head"  
411072 Bearing Adapter set (9x2)

**DIFFERENTIAL**

- 401131 Diff Balls, 3.0mm  
411010 Diff Hub  
411011 Trust Bearing Adapter  
411024 Shim 3.0x6.0x0.5mm  
411025 Diff Side left  
411126 Differential-set  
411058 Differential Washer  
411168 Diff lock nut M4 (10)

**SHOCK ABSORBERS**

- 401092 Balljoint 4-5 short  
411018 Monoshock Body  
411019 Shock Body  
411020 Shock Spring Holder  
411028 Revision set (o-ring, washers, clips)  
411041 Shock Spring Adjust Nut  
411044 Shock Cap  
411045 Shock Seal Washer  
411046 Shock Piston 3-hole  
411047 Shock Piston 2-hole

- 411050 Monoshock Cap  
411052 Shock Spring soft, 7Tx4.0x1.0mm  
411056 Monoshock Shock shaft  
411057 Shock shaft  
411065 Shock Rocker  
411097 Foam Insert for Shock  
411101 Shock Spring hard, 5Tx5.6x1.0mm  
411120 Shock-absorber-set  
411121 Mono-shock-absorber-set  
411140 O-ring 6.0 x 1.0mm (10)  
411141 O-ring 2.0 x 2.0mm (10)

**BODYMOUNT**

- 411040 Body Adjust Nut  
411070 Body Mount  
411092 Body Mount front

**BEARINGS**

- 401130 Axial Ball Bearing 4.2x9x4  
401132 Ball Bearing flanged 1/4x3/8x1/8 (2)  
401133 Ball Bearing 1/4x3/8x1/8 (2)  
401134 Ball Bearing 1/8x5/16x9/64 (2)  
401135 Ball Bearing, flanged 1/8x5/16x9/64 (2)  
411124 Bearing-set standard

**FASTENERS**

- 411123 Screw-set  
411143 Lock-nut M3 low (10)  
411144 Lock-nut M2.2 (10)  
411145 Set screw M3x10mm (10)  
411146 Set screw M3x8mm (10)  
411147 Set screw M3x5mm (10)  
411148 Set screw M3x3mm (10)  
411149 Screw BH Allen M3x10mm (10)  
411150 Screw BH Allen M3x8mm (10)  
411151 Screw BH Allen M3x6mm (10)  
411152 Screw BH Allen M3x5mm (10)  
411153 Screw CSH Allen M2.2x6mm (10)  
411154 Screw CSH Allen M3x5mm (10)  
411155 Screw CSH Allen M3x6mm (10)  
411156 Screw CSH Allen M3x8mm (10)  
411157 Screw CSH Allen M3x10mm (10)  
411158 Screw CSH Allen M3x12mm (10)  
411159 Screw CSH Allen M3x15mm (10)  
411160 Screw CSH Allen M3x20mm (10)  
411161 Roll Pin 1.5x10mm (10)

411162 C-clip 2mm (10)  
 411163 C-clip 3mm (30)  
 411164 Screw socket head M2.2x12mm (10)  
 411165 Snapping 7mm (10)  
 411166 Shim 3.0x6.0x0.5mm (10)  
 411167 Screw socket head M3x8mm (10)

#### OPTIONALS

411002 Lower Chassis Plate 2.6mm Hybrid-Version  
 411036 Upper Arm Mount 6 L+R  
 411037 Upper Arm Mount 3 L+R  
 411073 Bearing Adapter 0.5mm  
 411074 Bearing Adapter 1.0mm  
 411075 Bearing Adapter 1.5mm  
 411076 Bearing Adapter 2.0mm  
 411077 Bearing Adapter 2.5mm  
 411078 Bearing Adapter 3.0mm  
 411079 Bearing Adapter 3.5mm  
 411080 Bearing Adapter 4.0mm  
 411098 T-Bar soft 1.75mm  
 411102 Monoshock Shock shaft, Titanium-nitride  
 411103 Shock shaft, Titanium-nitride  
 411104 Differential Washer, Titanium-nitride  
 411105 Hinge Pin Titanium  
 411106 Kingpin Titanium  
 411107 Diff Balls, 3.0mm Ceramic  
 411108 Ball Bearing flanged 1/4x3/8x1/8 cera (2)  
 411109 Ball Bearing 1/4x3/8x1/8 cera (2)  
 411110 Ball Bearing 1/8x5/16x9/64 cera (2)  
 411111 Ball Bearing flanged 1/8x5/16x9/64 cera (2)  
 411112 Spur Gear, 98Tx64dp  
 411113 Spur Gear, 96Tx64dp  
 411114 Spur Gear, 94Tx64dp  
 411115 Spur Gear, 92Tx64dp  
 411116 Spur Gear, 90Tx64dp  
 411117 Spur Gear, 88Tx64dp  
 411118 Spur Gear, 86Tx64dp  
 411125 Bearing-set ceramic

#### TOOLS

1460 Camber gauge  
 1466 Tool ride-height-droop alu  
 1467 Set-up blocks triangle alu (2)  
 1468 Car-stand alu Serpent orange  
 150001 Tool bag Serpent  
 150001 Tool bag Serpent  
 150101 Allen wrench 1.5 x 120mm  
 150102 Allen wrench 2.0 x 120mm

150103 Allen wrench 2.5 x 120mm  
 150104 Allen wrench 3.0 x 120mm  
 150105 Ball driver hex wrench 2.0 x 120mm  
 150106 Ball driver hex wrench 2.5 x 120mm  
 150107 Phillips screw driver 3.5 x 120mm  
 150108 Phillips screw driver 4.0 x 120mm  
 150109 Phillips screw driver 5.8 x 120mm  
 150110 Nut driver 4.5 x 100mm  
 150111 Nut driver 5.0 x 100mm  
 150112 Nut driver 7.0 x 100mm  
 150113 Flat head screw driver 3.0 x 150mm  
 150114 Flat head screw driver 4.0 x 150mm  
 150115 Flat head screw driver 5.0 x 100mm  
 150116 Flat head screw driver 5.8 x 100mm  
 150119 Exhaust spring / caster clip remover  
 150120 Wrench-glow plug / clutch nut - 10mm long  
 150121 Reamer for lexan body with protector

#### OILS / LUBRICANTS

1670 Silicone oil 20w (100cst) 25ml  
 1671 Silicone oil 30w (350cst) 25ml  
 1672 Silicone oil 40w (1.000cst) 25ml  
 1673 Silicone oil 50w (2.000cst) 25ml  
 1674 Silicone oil 25w (180cst) 25ml  
 1675 Silicone oil 35w (600cst) 25ml  
 1676 Silicone oil 45w (1.400cst) 25ml  
 1679 Oil silicone shocks (30-35-40-45)  
 1680 One way lube 25ml  
 1682 Bearing oil 25ml  
 1683 Premium lube 25ml  
 1684 Oil-set 3 types (1680-82-83)  
 1690 Cleaning putty 200 gram

#### MERCHANDISING

1865 Lanyard serpent grey-silver  
 1868 Pit-towel serpent orange 50x70cm  
 1869 Pit-towel serpent orange 140x60cm  
 1872 Rucksack serpent (35x45cm) black  
 1873 Rucksack serpent (48x61cm) black  
 1884 Decalsheet chrome 1/10  
 1980 Kit-bag serpent large black-orange  
 1982 Pit-bag Serpent medium (3 drawers)  
 1983 Pit-bag Serpent large (4 drawers)  
 1998 Cap serpent black-orange  
 190100 T-shirt serpent black (s)  
 190101 T-shirt serpent black (m)  
 190102 T-shirt serpent black (l)  
 190103 T-shirt serpent black (xl)

190104 T-shirt serpent black (xxl)  
 190110 Sweater serpent black (s)  
 190111 Sweater serpent black (m)  
 190112 Sweater serpent black (l)  
 190113 Sweater serpent black (xl)  
 190114 Sweater serpent black (xxl)

#### BATTERY TAPE

401401 Strapping tape (white) 50m x 19mm  
 401402 Strapping tape (blue) 50m x 17mm  
 401403 Strapping tape (black) 50m x 17mm  
 401404 Strapping tape (purple) 50m x 17mm  
 401405 Strapping tape (pink) 50m x 17mm

#### SPUR GEARS 64P

401306 Perfect spur gear 64P 100T  
 401307 Perfect spur gear 64P 101T  
 401308 Perfect spur gear 64P 102T  
 401309 Perfect spur gear 64P 103T  
 401310 Perfect spur gear 64P 104T  
 401311 Perfect spur gear 64P 105T  
 401312 Perfect spur gear 64P 106T  
 401313 Perfect spur gear 64P 107T  
 401314 Perfect spur gear 64P 108T  
 401315 Perfect spur gear 64P 109T  
 401316 Perfect spur gear 64P 110T  
 401317 Perfect spur gear 64P 111T  
 401318 Perfect spur gear 64P 112T  
 401319 Perfect spur gear 64P 113T  
 401320 Perfect spur gear 64P 114T  
 401321 Perfect spur gear 64P 115T  
 401322 Perfect spur gear 64P 116T  
 401323 Perfect spur gear 64P 117T  
 401324 Perfect spur gear 64P 118T  
 401325 Perfect spur gear 64P 119T  
 401326 Perfect spur gear 64P 120T  
 401327 Perfect spur gear 64P 121T  
 401328 Perfect spur gear 64P 122T  
 401329 Perfect spur gear 64P 123T  
 401330 Perfect spur gear 64P 124T  
 401331 Perfect spur gear 64P 125T  
 401332 Perfect spur gear 64P 126T  
 401333 Perfect spur gear 64P 127T  
 401334 Perfect spur gear 64P 128T  
 401335 Perfect spur gear 64P 129T  
 401336 Perfect spur gear 64P 130T



**PINION GEARS 64P**

401226	Perfect pinion gear 64P 18T
401227	Perfect pinion gear 64P 19T
401228	Perfect pinion gear 64P 20T
401229	Perfect pinion gear 64P 21T
401230	Perfect pinion gear 64P 22T
401231	Perfect pinion gear 64P 23T
401232	Perfect pinion gear 64P 24T
401233	Perfect pinion gear 64P 25T
401234	Perfect pinion gear 64P 26T
401235	Perfect pinion gear 64P 27T
401236	Perfect pinion gear 64P 28T
401237	Perfect pinion gear 64P 29T
401238	Perfect pinion gear 64P 30T
401239	Perfect pinion gear 64P 31T
401240	Perfect pinion gear 64P 32T
401241	Perfect pinion gear 64P 33T
401242	Perfect pinion gear 64P 34T
401243	Perfect pinion gear 64P 35T
401244	Perfect pinion gear 64P 36T
401245	Perfect pinion gear 64P 37T
401246	Perfect pinion gear 64P 38T
401247	Perfect pinion gear 64P 39T
401248	Perfect pinion gear 64P 40T
401249	Perfect pinion gear 64P 41T
401250	Perfect pinion gear 64P 42T
401251	Perfect pinion gear 64P 43T
401252	Perfect pinion gear 64P 44T
401253	Perfect pinion gear 64P 45T
401254	Perfect pinion gear 64P 46T
401255	Perfect pinion gear 64P 47T
401256	Perfect pinion gear 64P 48T
401257	Perfect pinion gear 64P 49T
401258	Perfect pinion gear 64P 50T
401259	Perfect pinion gear 64P 51T
401260	Perfect pinion gear 64P 52T



SRLO

**SERPENT**

Serpent Model Racing Cars BV  
Spaarneweg 12E, 2142 EN, Cruquius  
The Netherlands, Europe