

# 'ARRMA'

## RADEN



## '20X10



## VORTEX



## MOJAVE



## GRANITE



## FLURY



Downloaded from:

[ArrmaForum.com](http://ArrmaForum.com)

# MAINTENANCE & TUNING MANUAL





	Page
<b>CHASSIS OVERVIEW</b>	<b>3</b>
<b>RECOMMENDED TOOLS</b>	<b>4</b>
<b>BASIC TROUBLE SHOOTING</b>	<b>4</b>
Trouble Shooting Matrix	<b>4</b>
<b>MAINTENANCE</b>	<b>5</b>
Maintenance Schedule	<b>5</b>
Chassis Maintenance	<b>6</b>
Wheel and Tyre Maintenance	<b>6</b>
Slipper Clutch Adjustment	<b>7</b>
Spur/Pinion Mesh	<b>7</b>
Slipper Pad Replacement	<b>8</b>
Driveshaft Maintenance	<b>9</b>
Rear Axle Maintenance	<b>9</b>
Wheel Bearing Replacement	<b>10</b>
<b>FACTORY SETTINGS</b>	<b>11</b>
<b>CHASSIS TUNING</b>	<b>13</b>
Ride Height	<b>13</b>
Camber-Link Length	<b>13</b>
Steering Arm Length	<b>13</b>
Camber-Link Position	<b>13</b>
Shock Position	<b>13</b>
Shock Removal	<b>14</b>
Springs	<b>14</b>
Shock Oil	<b>14</b>
<b>DRIVETRAIN TUNING</b>	<b>15</b>
Gear Chart	<b>15</b>
Spur/Pinion Removal	<b>15</b>
Motor Removal	<b>16</b>
Differential Tuning	<b>16</b>
Differential Removal	<b>17</b>
<b>RADIO-GEAR MAINTENANCE</b>	<b>19</b>
Receiver Access	<b>19</b>
<b>STEERING MAINTENANCE</b>	<b>19</b>
Steering Access	<b>19</b>
Servo Removal	<b>20</b>



## Warnings - PLEASE READ

It is the parents' or guardians' responsibility to ensure minors receive appropriate guidance when maintaining or tuning this model. At points this guide may recommend using tools that are sharp and adhesives. Any such tools, adhesives or other chemicals are for adult use only. Do NOT allow minors to use age restricted products such as solvents or adhesives.

Always ensure that nuts and bolts are properly fastened and that components are free of damage or wear before use. Failure to properly maintain your model may lead to loss of performance, injury to yourself or others and/or damage to property or your model.

Upgraded parts may put extra strain on standard parts. Always ensure that the tyres, wheels and transmission can handle any increase in power/speed. Further advice for safely running your model can be found in the warranty document in your welcome pack at [ARRMA-RC.com/GO](http://ARRMA-RC.com/GO)



## Support Info

At ARRMA we want you to love running your kit and make owning a high performance RC car as simple as possible. If you have any questions about running, maintaining, tuning or repairing your ARRMA product, there are three options for you to get help and advice.

Visit [ARRMA-RC.com](http://ARRMA-RC.com) for support, parts and upgrades for your kit. 'GO FOR IT' is the worldwide owner's forum for ARRMA. Here you will find other ARRMA owners, get help and advice on how to get the best from your ARRMA product. If you can't find what you're looking for, you can email us at [support@ARRMA-RC.com](mailto:support@ARRMA-RC.com) 24hrs a day and we will do our best to help you with your query.



**ARRMA-RC.COM**



**GOFORIT-RC.COM**

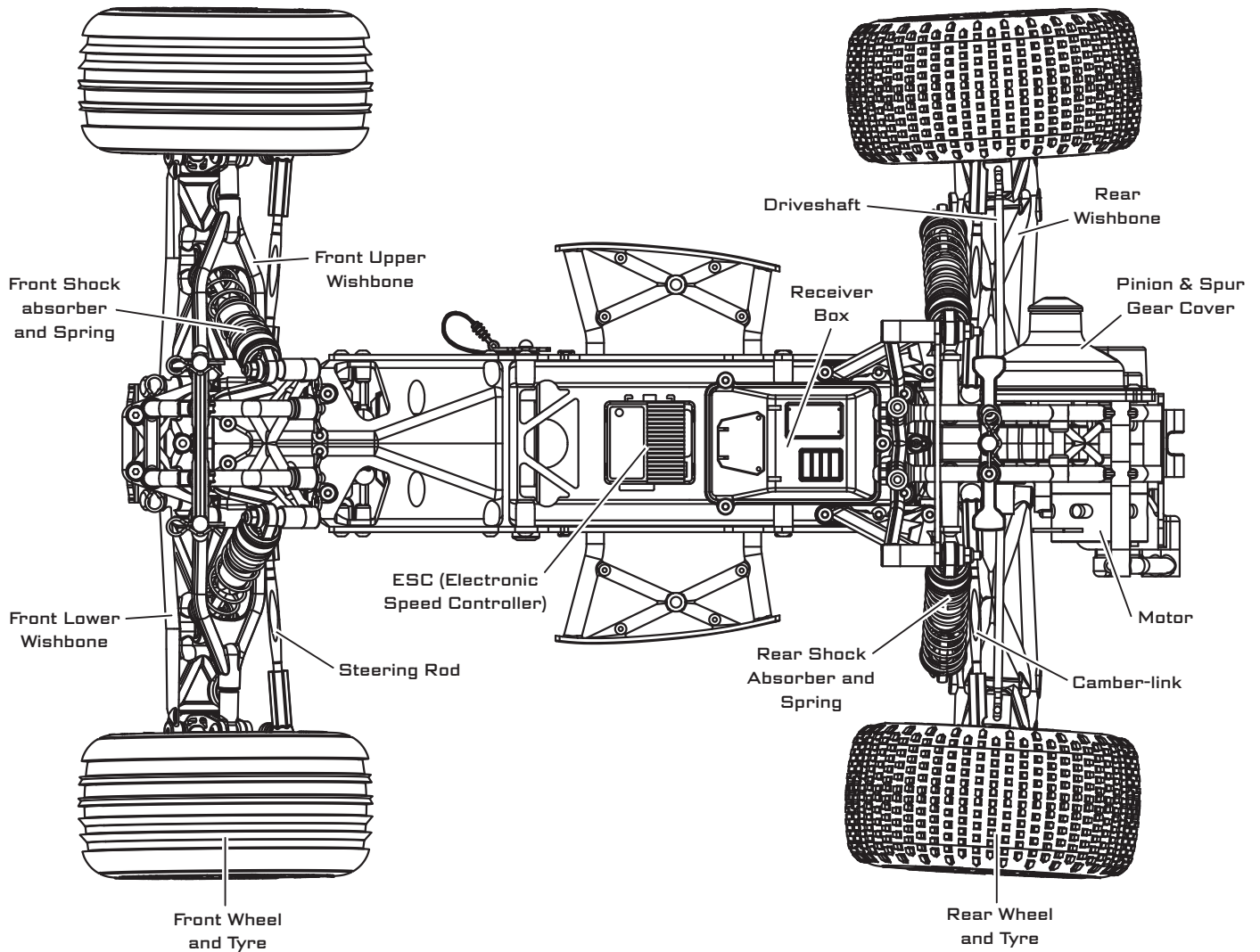


**SUPPORT@ARRMA-RC.COM**

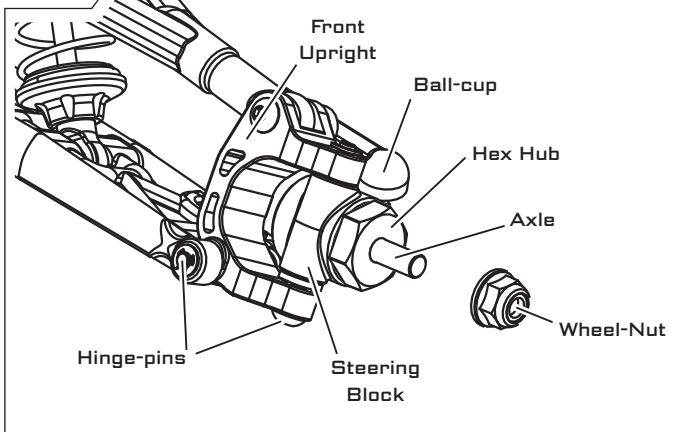


# Chassis Overview

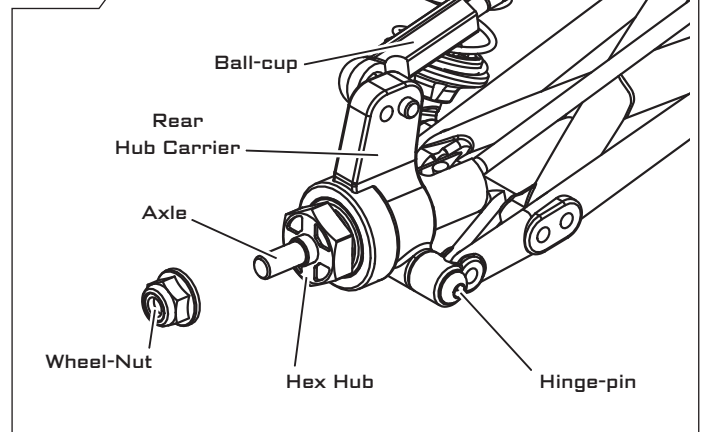
N.B. Vortex chassis shown as an example - information applies to all variants.



## Front



## Rear



GO FOR IT! is the ARRMA worldwide user community. Here you will be able to connect with other ARRMA owners around the world and get access to:

- Tips and tricks of how to get the best from your kit.
- Sneak peaks of upcoming kits and upgrades!
- Readers' rides where you can show off pictures and videos of your kit and driving skills!
- Information about upcoming competitions and events!



## Recommended Tools

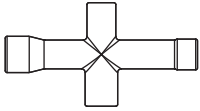
### SUPPLIED

Allen Keys

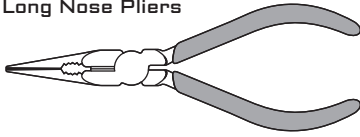


1.3 (0.050"), 1.5, 2 and 2.5mm

Cross wrench



Long Nose Pliers



### NOT SUPPLIED

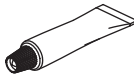
Hex Drivers

1.3mm (0.050")

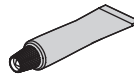
1.5mm

2mm

2.5mm



Grease



Thread-lock



Cloth



Brush



Oil Spray

Nut Drivers

5.5mm

7mm

Turnbuckle Wrench



4mm



### HAZARDOUS/FLAMMABLE:

Adult supervision required, use only in a well ventilated area and away from sources of ignition.



Tyre Glue



Automotive Brake Cleaner or Nitro Car Cleaner



## Basic Trouble Shooting - need help? Visit the support area and forums at [ARRMA-RC.COM](http://ARRMA-RC.COM)

### Trouble Shooting Matrix

Problem	Possible Cause	Solution
VEHICLE DOES NOT MOVE	Batteries are incorrectly installed in ARRMA ATX transmitter	Check transmitter batteries and refit - see model/transmitter manual
	Weak, damaged or no drive battery in model	Install fresh, charged battery
	Frayed or broken motor or ESC wires	Check condition, reconnect and insulate. Visit the GO FOR IT! forum for advice
	ESC has shut down due to overheating	Stop driving and allow ESC or motor to cool down
	MEGA electric motor is damaged	Replace with new unit - visit <a href="http://ARRMA-RC.com">ARRMA-RC.com</a> for advice and upgrades!
	MEGA waterproof ESC is damaged	Replace with new unit - visit <a href="http://ARRMA-RC.com">ARRMA-RC.com</a> for advice and upgrades!
	Possible damage to transmission/drive-line	Check components and replace - visit <a href="http://ARRMA-RC.com">ARRMA-RC.com</a> for advice
VEHICLE DOES NOT REVERSE	ESC low voltage cutoff has activated to protect batteries	Remove drive battery, leave to cool down if necessary, and re-charge
	ESC reverse mode switched off	Adjust reverse on MEGA waterproof ESC
VEHICLE DRIVES WITHOUT INPUT	MEGA Waterproof ESC is damaged	Replace with new unit - visit <a href="http://ARRMA-RC.com">ARRMA-RC.com</a> for advice and upgrades!
	ARRMA ATX transmitter throttle trim incorrectly set	Throttle trim needs to be set to zero/neutral - see model/transmitter manual
SHORT RUNTIME	Neutral throttle position of MEGA ESC incorrect.	Set throttle trim to zero and switch MEGA ESC off and then on again, a chime to indicate the new neutral position has been set
	Battery damaged or not fully charged	Check condition, replace or recharge
SLUGGISH PERFORMANCE	MEGA Electric motor dirty or damaged	Clean, check condition and/or replace - visit <a href="http://ARRMA-RC.com">ARRMA-RC.com</a> for more information
	Incorrect ESC battery mode - voltage cutoff too high for the battery you are using	Adjust the battery mode of the MEGA waterproof ESC
SLUGGISH PERFORMANCE	Battery damaged or not fully charged	Check condition, replace or recharge
	ARRMA ATX transmitter throttle trim incorrectly set	Throttle trim needs to be set to zero/neutral - see model/transmitter manual
	Neutral throttle position of MEGA ESC incorrect.	Set throttle trim to zero and switch MEGA ESC off and then on again, a chime to indicate the new neutral position has been set



## Trouble Shooting Matrix (cont.)


Problem	Possible Cause	Solution
SLUGGISH PERFORMANCE (CONTINUED)	Slipper clutch adjustment too loose	Check slipper is set to factory setting or your preferred setting - see page 7 or model manual
	Initial acceleration mode or reverse speed on MEGA waterproof ESC set too low	Modify MEGA waterproof ESC settings
	MEGA electric motor dirty or damaged	Clean, check condition and/or replace - visit <a href="http://ARRMA-RC.com">ARRMA-RC.com</a> for more information
	Drivetrain dirty or damaged	Clean, check condition and/or replace - visit <a href="http://ARRMA-RC.com">ARRMA-RC.com</a> for more information
FRONT WHEELS LIFT WHEN ACCELERATING	Slipper clutch adjustment too tight	Check slipper is set to factory setting - see page 7 or model manual
NO CONTROL OF VEHICLE OR SHORT RANGE	ARRMA ATX transmitter batteries are weak or fitted incorrectly	Check transmitter batteries and refit - see model/transmitter manual
	Servo and ESC signal wires to ARX receiver loose or connected incorrectly	Reinstall signal wires to receiver
	ARRMA transmitter and receiver are not 'bound' correctly	Transmitter and receiver need to be bound - see model/transmitter manual
STEERING/THROTTLE OPERATION INTERMITTENT	ESC has shut down due to overheating	Stop driving and allow ESC or motor to cool down
	ARRMA transmitter and receiver are not bound fully or are suffering interference	Check for sources of interference and re-bind transmitter/receiver - see transmitter manual
VEHICLE WANDERS LEFT/RIGHT WITHOUT STEERING INPUT	ARRMA ATX Steering trim setting out	Adjust steering trim - see model/transmitter manual
	Damaged steering components	Check components and replace - visit <a href="http://ARRMA-RC.com">ARRMA-RC.com</a> for advice
	Drivetrain dirty or damaged	Clean, check condition and/or replace - visit <a href="http://ARRMA-RC.com">ARRMA-RC.com</a> for more information
STEERING OR THROTTLE FUNCTION REVERSED	Relevant channel of ARRMA ATX transmitter is reversed	Reverse relevant channel on ARRMA ATX transmitter - see model/transmitter manual
	Check that the wires from the ESC to the motor are connected correctly	Reconnect in the correct orientation (orange to red and blue to black) ensuring fit is tight; if not pinch female connector with pliers
LIMITED STEERING ANGLE	ARRMA ATX transmitter steering dual-rate set incorrectly	Adjust ARRMA ATX transmitter dual-rate - see transmitter manual
	Damaged steering components	Check components and replace - visit <a href="http://ARRMA-RC.com">ARRMA-RC.com</a> for advice
	MEGA waterproof ESC is damaged	Replace with new unit - visit <a href="http://ARRMA-RC.com">ARRMA-RC.com</a> for advice and upgrades!



## Maintenance

### Maintenance Schedule

This chart is just a guide. Running in dusty, sandy or wet conditions will mean certain maintenance tasks will need to be performed more frequently. Check for wear or damage after every run. Do not wait until the recommended time for maintenance if parts appear badly worn or need renewing.

 MAINTENANCE TASK	PAGE	RUNS	X1	X10	X20	X50
Chassis Maintenance	6					
Wheel and Tyre Maintenance	6					
Slipper clutch Adjustment	7					
Spur/Pinion Mesh Adjustment	7					
Slipper Pad Replacement	8					
Driveshaft Maintenance	9					
Rear Axle Maintenance	9					
Wheel Bearing Replacement	10					
Shock Oil Replacement	14					
Differential Oil Replacement	16					

## Chassis Maintenance

ONLINE VIDEOS WHEN  
YOU SEE THIS ICON >>



### Tools Required



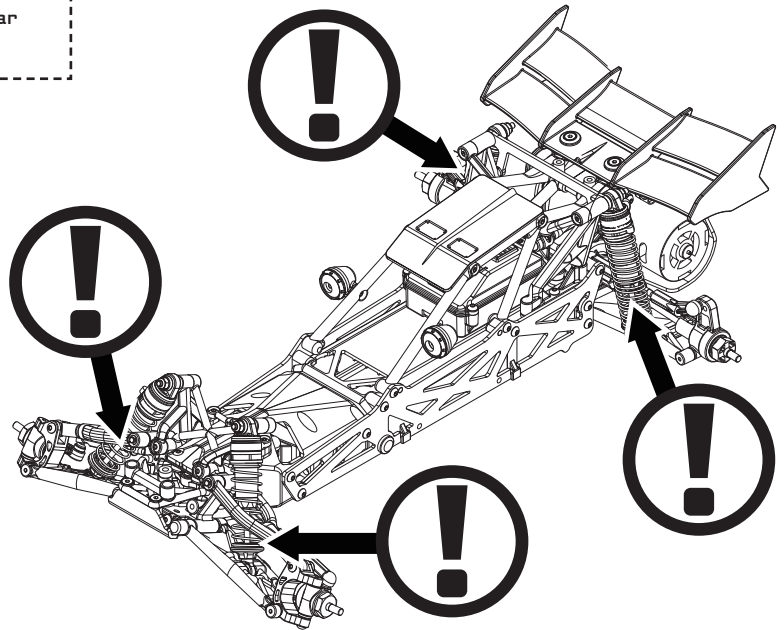
### AFTER RUNNING:

- Clean the car, paying special attention to the areas on the right
- Ensure that drivetrain, suspension and steering are clean, free and lubricated
- Check that all the screws are tight
- Check tyre/wheel condition

### DO NOT RUN THE CAR IF ANY PARTS ARE DAMAGED

Please contact your local distributor to order replacement parts.

N.B. Raider chassis shown as an example - information applies to all variants.

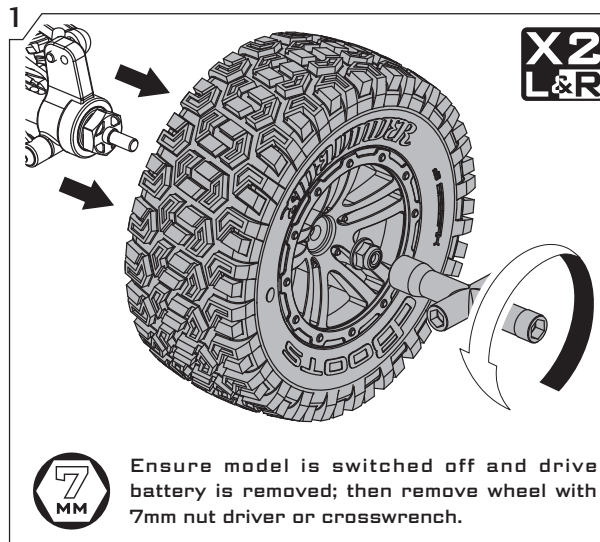
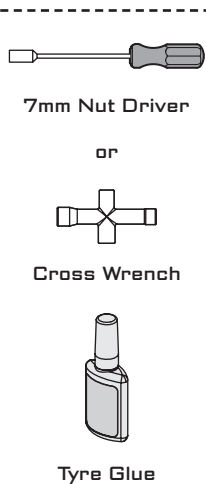


## Wheel and Tyre Maintenance

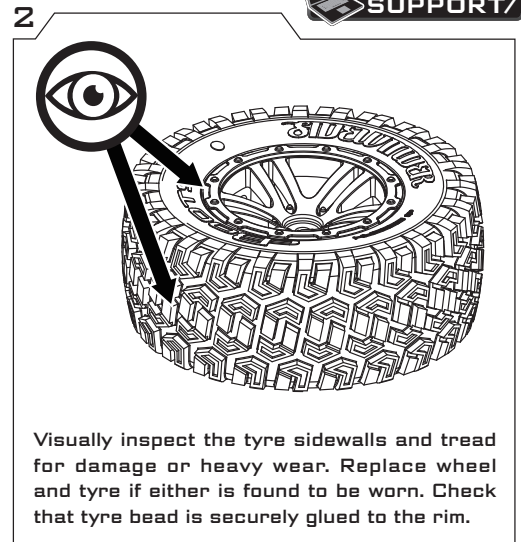
N.B. Fury shown as an example - information applies to all variants.



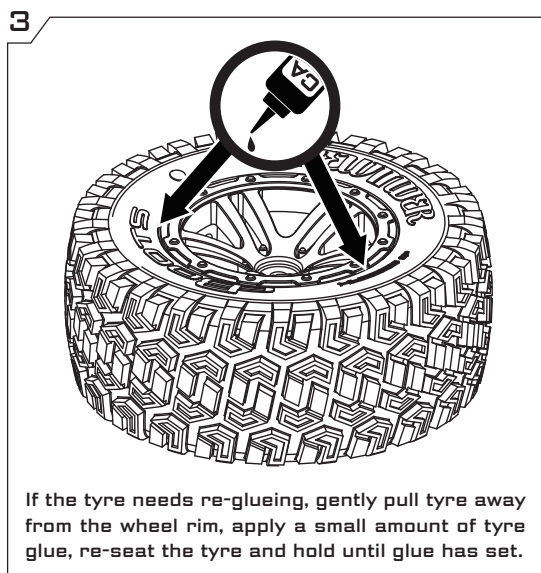
### Tools Required



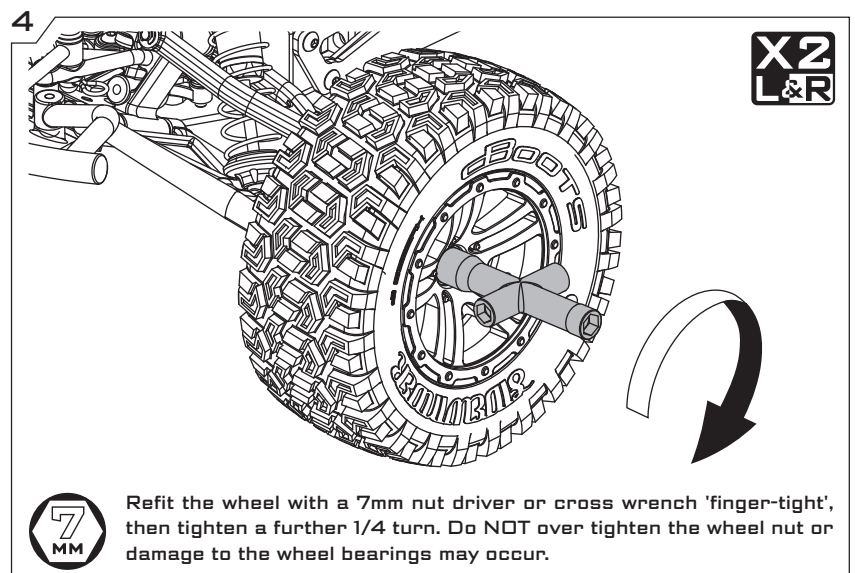
Ensure model is switched off and drive battery is removed; then remove wheel with 7mm nut driver or crosswrench.



Visually inspect the tyre sidewalls and tread for damage or heavy wear. Replace wheel and tyre if either is found to be worn. Check that tyre bead is securely glued to the rim.



If the tyre needs re-gluing, gently pull tyre away from the wheel rim, apply a small amount of tyre glue, re-seat the tyre and hold until glue has set.



Refit the wheel with a 7mm nut driver or cross wrench 'finger-tight', then tighten a further 1/4 turn. Do NOT over tighten the wheel nut or damage to the wheel bearings may occur.

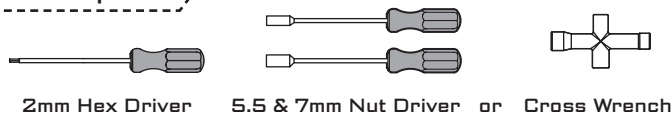


## Slipper Clutch Adjustment



The function of the slipper clutch is to protect the gearbox, differential and motor from shocks and also to allow you to tune how the torque from the motor 'comes-in' when you accelerate to suit different surface conditions. To adjust the slipper clutch do the following:

### Tools Required



**1**

**7 MM**  
Ensure model is switched off and drive battery is removed then remove rear-right wheel with 7mm nut driver or crosswrench.

**2 MM**  
Remove spur gear cover with 2mm hex driver.

**2**

**5.5 MM**  
Hold spur gear with fingers. Use a 5.5mm nut driver or crosswrench to loosen or tighten slipper nut a 1/4 of a turn at a time. Refit spur gear cover and rear-right wheel.

Surface Type	Slipper Clutch	Characteristics
Slippery	Loosen	Smoother power delivery, easier to control.
High Grip	Tighten	Quicker throttle response. If the car wheelies too much, loosen the Slipper Clutch

Factory Setting
1. Fully tighten locknut clockwise.
2. Loosen 5 full turns.

### AFTER RUNNING:

If slipper clutch is too loose, tighten 1/4 turn.



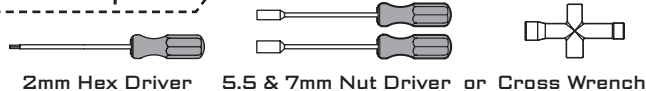
**WARNING:** A loose slipper will damage the friction pads. If the slipper is too tight it may damage the transmission.

## Spur/Pinion Mesh Adjustment



Gear mesh should not need to be adjusted regularly, however it is worth checking every 10 runs or so that the gears are still correctly meshed to prevent damage to the spur gear.

### Tools Required



**1**

**7 MM**  
Ensure model is switched off and drive battery is removed then remove rear-right wheel with 7mm nut driver or cross-wrench. Remove spur gear cover with 2mm hex driver.

**2 MM**

**2**

Check the gears run smoothly and that there are no tight spots and the gears mesh as shown above.

**3**

**2 MM**  
To set the gear mesh, undo the two motor screws with a 2mm hex driver then place a strip of printer paper between the gears, press on the pinion and re-tighten the motor screws. Remove paper, refit the spur gear cover and rear wheel.

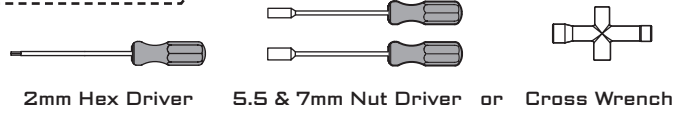
If the spur and/or pinion gear need to be replaced please see page 15 for removal and replacement.

# Slipper Pad Replacement



Every 20 runs or so it may be necessary to replace your slipper clutch 'pads'. This depends on how the slipper is setup and your driving style. If you find that it is hard to get the setting you want from your slipper clutch then it is likely that the pads need to be replaced.

## Tools Required



**1**

**7 MM**  
**2 MM**

Ensure model is switched off and drive battery is removed then remove rear-right wheel with 7mm nut driver or cross-wrench.  
Remove spur gear cover with 2mm hex driver.

**2**

**5.5 MM**

Hold the spur gear with your fingers. Use a 5.5mm nut driver or cross-wrench to remove the slipper clutch adjustment nut.

**3**

**Slipper Pads**  
**PN:**  
**310018**

Remove the slipper clutch adjustment mechanism, slipper plates and spur gear. Remove old slipper pads from spur gear and discard.

**4**

Affix the new slipper pads to the spur gear.

**5**

**5.5 MM**

Refit the slipper clutch & adjustment mechanism. Tighten the adjustment nut fully.

**6**

**5.5 MM** **2 MM** **7 MM**

Loosen the adjustment nut 5 turns. Refit spur gear cover and rear wheel.

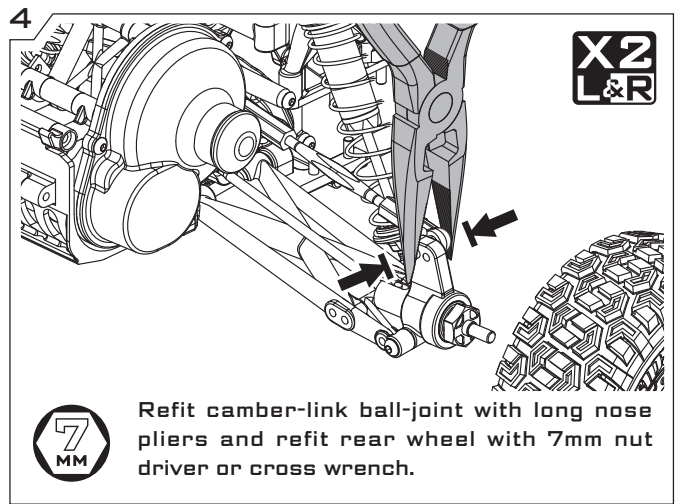
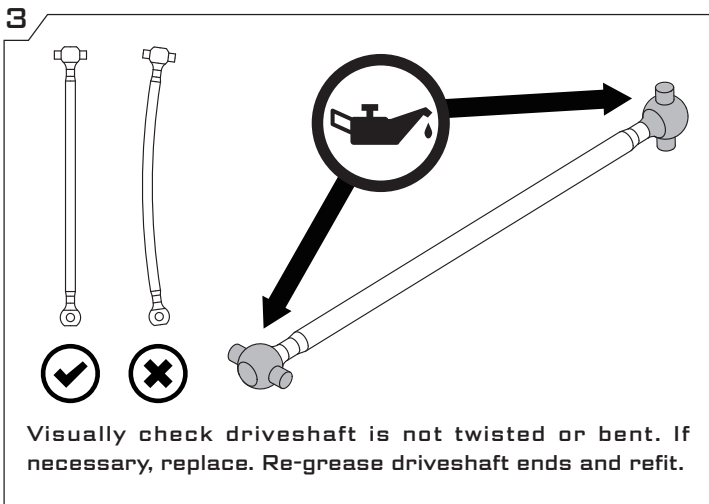
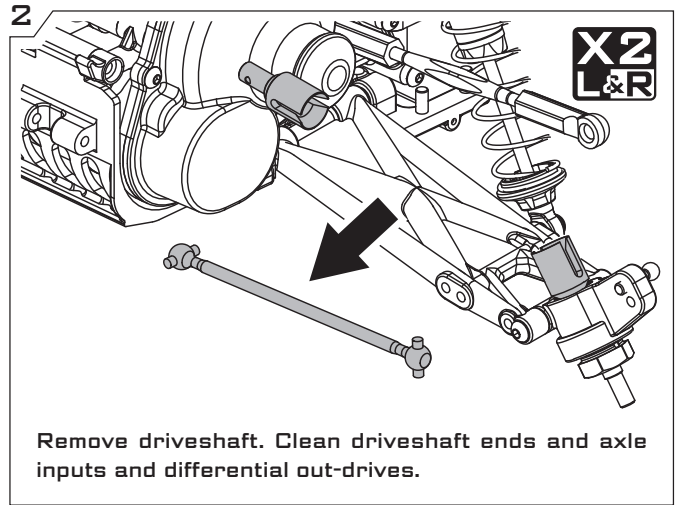
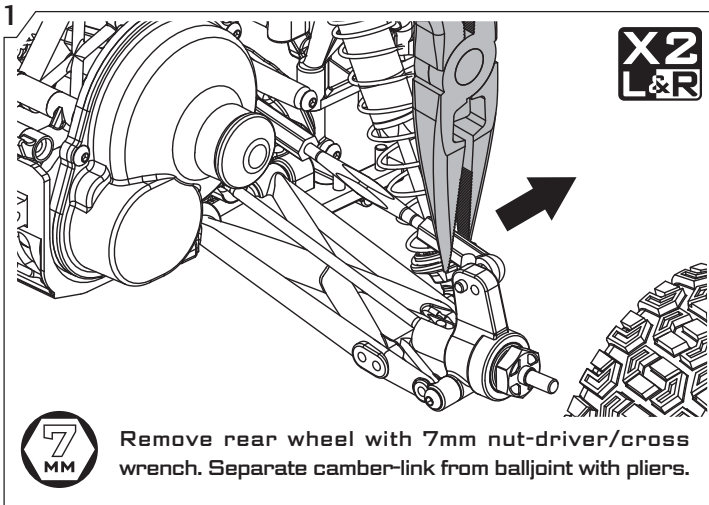


## Driveshaft Maintenance



Every 20 runs or so it may be necessary to clean and re-grease the driveshafts as well as check for wear and/or damage. Running in dusty, sandy or wet conditions will mean that this will need to be performed more frequently.

### Tools Required

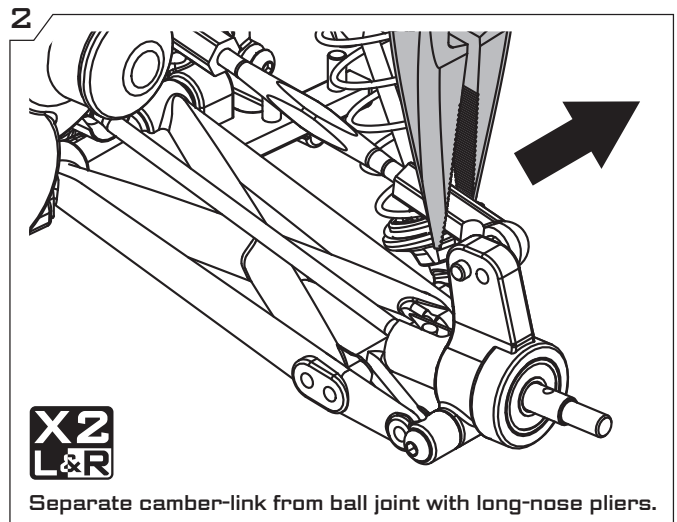
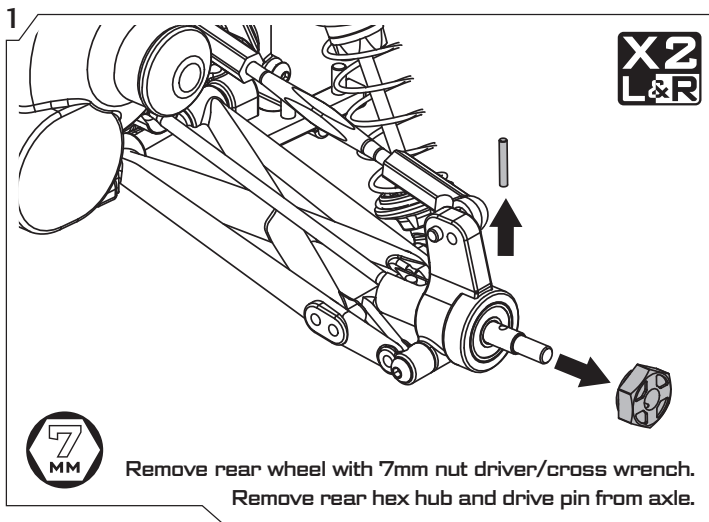
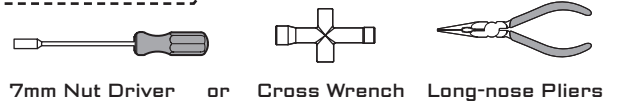


## Rear Axle Maintenance



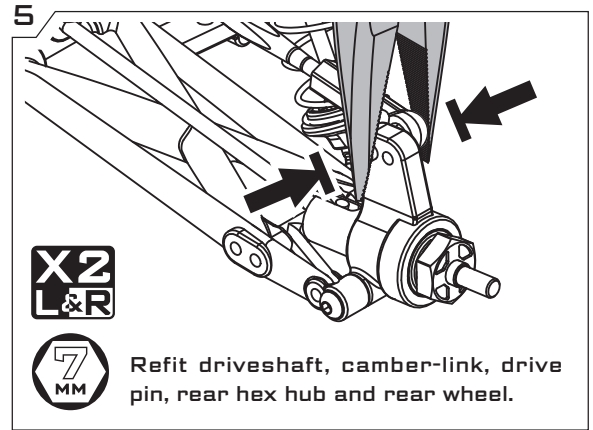
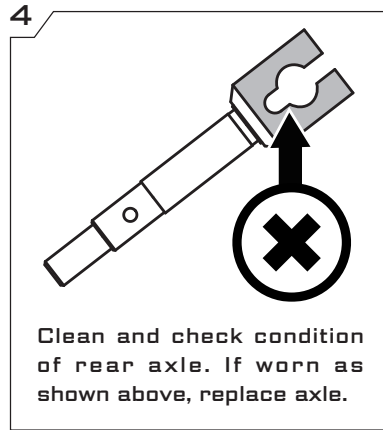
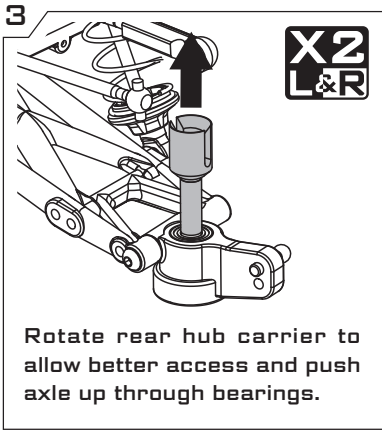
Every 20 runs or so it may be necessary to inspect the rear axle for wear. Running the model in dusty, sandy or wet conditions will mean that this will need to be performed more frequently.

### Tools Required



## Rear Axle Maintenance (cont.)

N.B. Fury shown as an example - information applies to all variants.

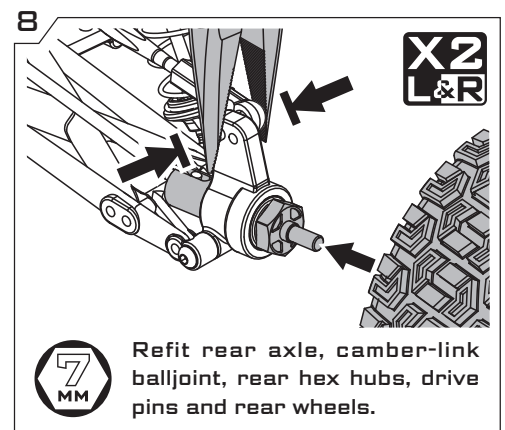
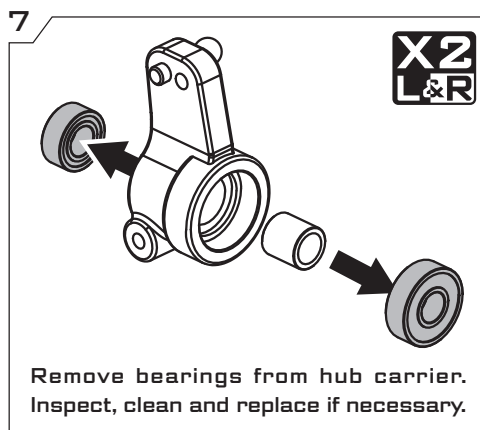
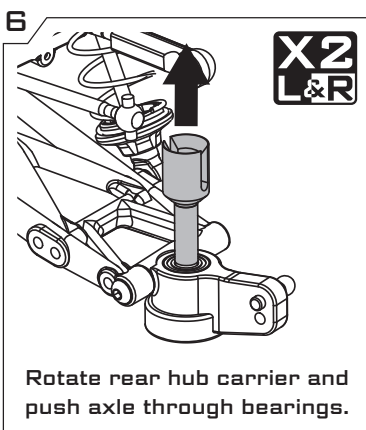
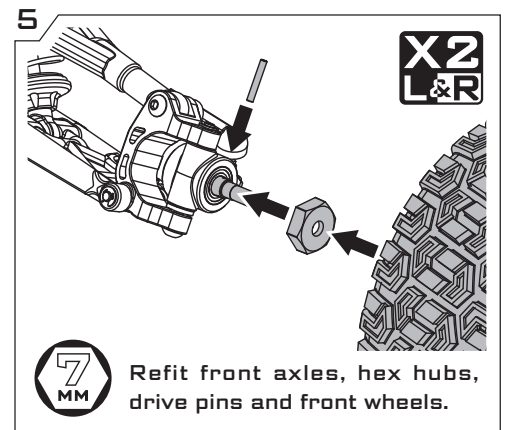
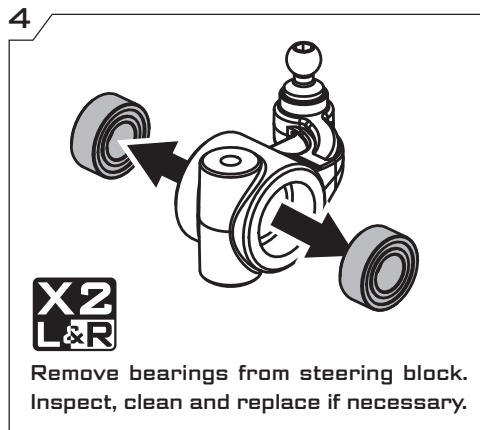
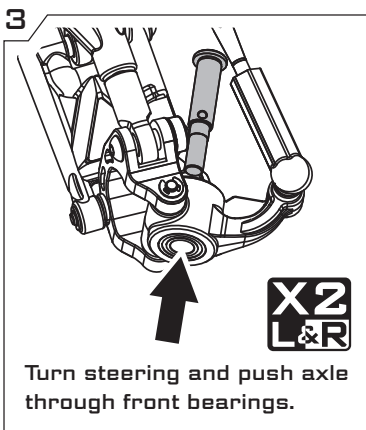
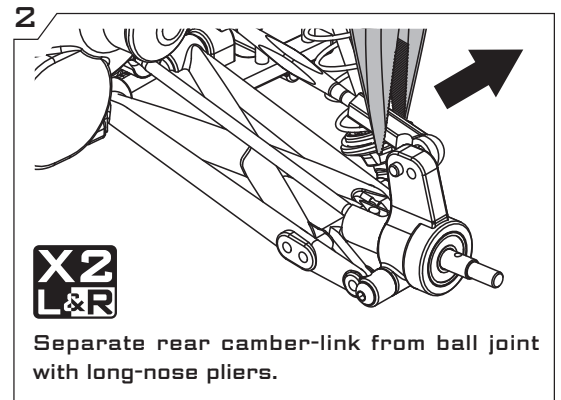
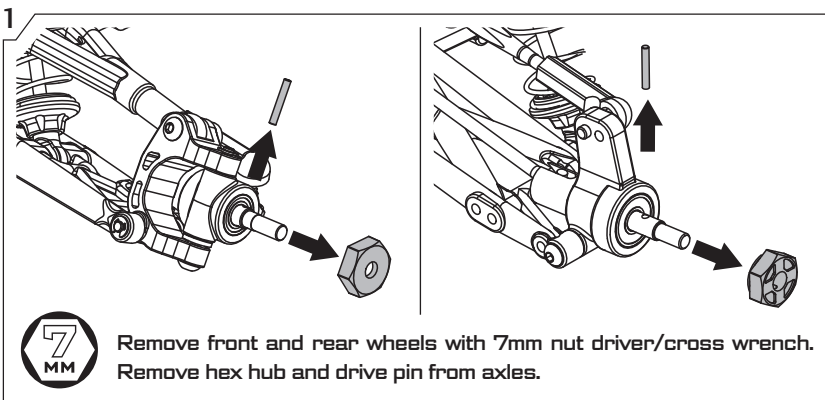


## Wheel Bearing Replacement



Every 50 runs or so it may be necessary to inspect the wheel bearings for wear. Running the model in dusty, sandy or wet conditions will mean that this will need to be performed more frequently.

### Tools Required



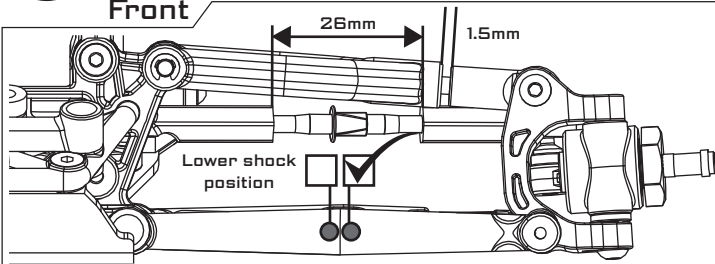




# RAIDER

## Factory Settings

Front



Ride Height  
**21.5** mm

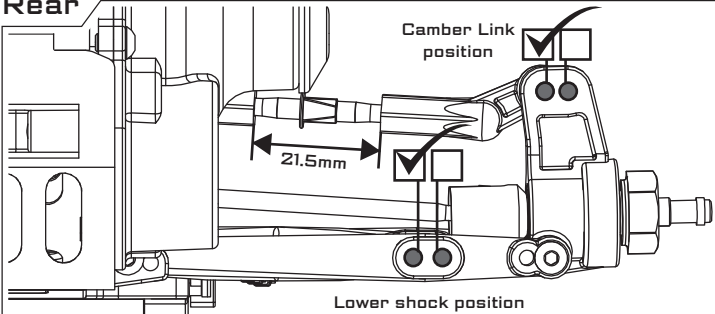
Camber  
**-1.5** °

Toe Angle  
**0 (Zero)** °

### Shocks

	FRONT	REAR
Piston Kit	2 x 1.3mm	2 x 1.3mm
Oil wt.	350 cst	350 cst
Spring Kit	Chrome	Chrome

Rear



Ride Height  
**22** mm

Camber  
**-1.5** °

### Differential

Oil wt.	70000 cst
---------	-----------

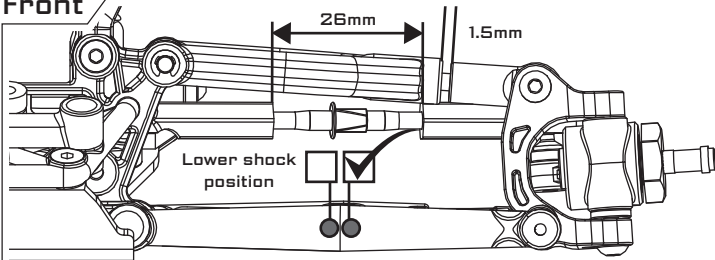
### Motor/Gears

Motor Kit	15 Turn	Spur Gear Kit	81 tooth
ESC Kit	MEGA	Pinion Gear Kit	22 tooth

# ADX10

## Factory Settings

Front



Ride Height  
**21.5** mm

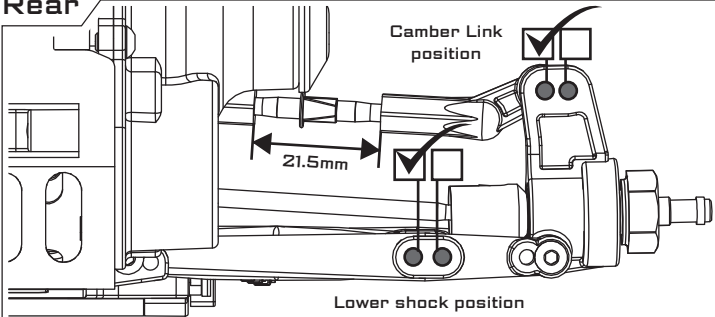
Camber  
**-1.5** °

Toe Angle  
**0 (Zero)** °

### Shocks

	FRONT	REAR
Piston Kit	2 x 1.3mm	2 x 1.3mm
Oil wt.	350 cst	350 cst
Spring Kit	Chrome	Chrome

Rear



Ride Height  
**22** mm

Camber  
**-1.5** °

### Differential

Oil wt.	70000 cst
---------	-----------

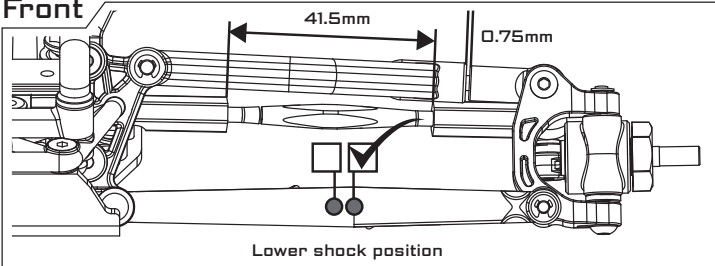
### Motor/Gears

Motor Kit	15 Turn	Spur Gear Kit	81 tooth
ESC Kit	MEGA	Pinion Gear Kit	22 tooth

# FURY

## Factory Settings

Front



Ride Height  
**21.5** mm

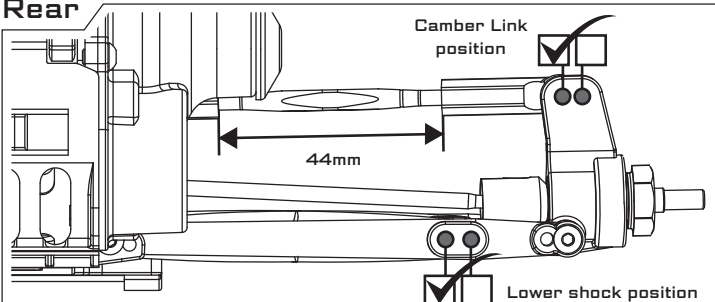
Camber  
**-1.5** °

Toe Angle  
**0 (Zero)** °

### Shocks

	FRONT	REAR
Piston Kit	2 x 1.3mm	2 x 1.3mm
Oil wt.	350 cst	350 cst
Spring Kit	Chrome	Chrome

Rear



Ride Height  
**22** mm

Camber  
**-1.5** °

### Differential

Oil wt.	70000 cst
---------	-----------

### Motor/Gears

Motor Kit	15 Turn	Spur Gear Kit	87 tooth
ESC Kit	MEGA	Pinion Gear Kit	18 tooth

# MOJAVE Factory Settings

**Front**

41.5mm  
0.75mm

Lower shock position

Ride Height	21.5	mm
Camber	-1.5	°
Toe Angle	0 (Zero)	°

**Shocks**

	FRONT	REAR
Piston Kit	2 x 1.3mm	2 x 1.3mm
Oil wt.	350 cst	350 cst
Spring Kit	Chrome	Chrome

**Rear**

44mm  
Camber Link position

Lower shock position

Ride Height	22	mm
Camber	-1.5	°

**Differential**

Oil wt.	70000 cst
---------	-----------

**Motor/Gears**

Motor Kit	15 Turn	Spur Gear Kit	87 tooth
ESC Kit	MEGA	Pinion Gear Kit	18 tooth

# VORTEX Factory Settings

**Front**

41.5mm  
0.75mm

Lower shock position

Ride Height	21.5	mm
Camber	-1.5	°
Toe Angle	0 (Zero)	°

**Shocks**

	FRONT	REAR
Piston Kit	2 x 1.3mm	2 x 1.3mm
Oil wt.	350 cst	350 cst
Spring Kit	Chrome	Chrome

**Rear**

44mm  
Camber Link position

Lower shock position

Ride Height	22	mm
Camber	-1.5	°

**Differential**

Oil wt.	70000 cst
---------	-----------

**Motor/Gears**

Motor Kit	15 Turn	Spur Gear Kit	87 tooth
ESC Kit	MEGA	Pinion Gear Kit	18 tooth

# GRANITE Factory Settings

**Front**

41.5mm  
0.75mm

Lower shock position

Ride Height	21.5	mm
Camber	-1.5	°
Toe Angle	0 (Zero)	°

**Shocks**

	FRONT	REAR
Piston Kit	2 x 1.3mm	2 x 1.3mm
Oil wt.	350 cst	350 cst
Spring Kit	Chrome	Chrome

**Rear**

44mm  
Camber Link position

Lower shock position

Ride Height	22	mm
Camber	-1.5	°

**Differential**

Oil wt.	70000 cst
---------	-----------

**Motor/Gears**

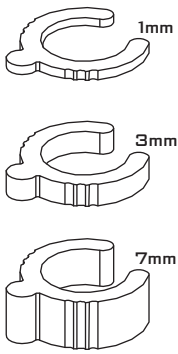
Motor Kit	15 Turn	Spur Gear Kit	87 tooth
ESC Kit	MEGA	Pinion Gear Kit	18 tooth





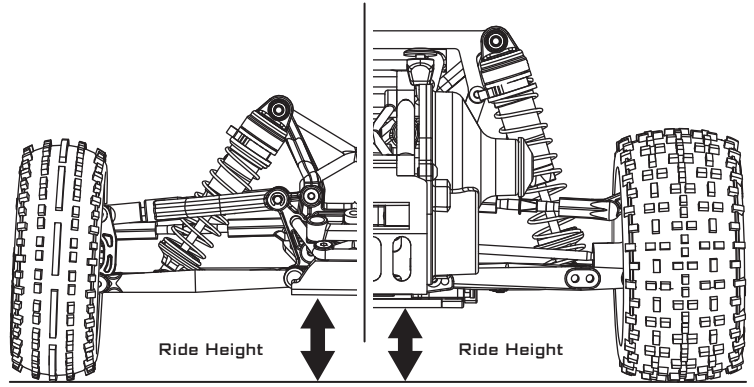
N.B. Raider shown as an example - information applies to all variants.

## Ride Height

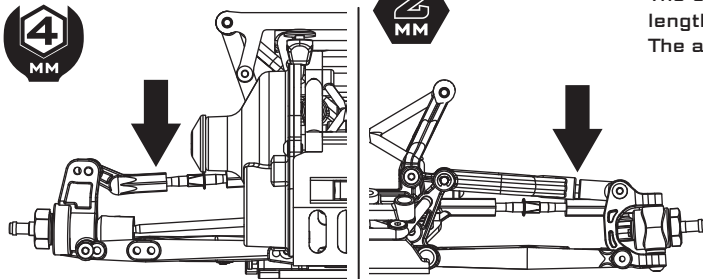


The ride height is set using preload spacers between the top of the shock and the top of the suspension springs. These plastic clips are included in the kit in 1mm, 3mm and 7mm versions.

Raising the ride height not only gives you greater ground clearance when running on more uneven surfaces but it can also affect the chassis balance of the car. Experiment by raising the height of the front and rear at the same time or independently and see how it affects the handling of your car.



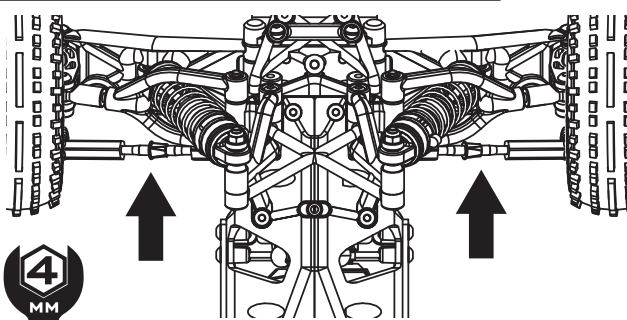
## Camber Link Length



The camber links are the arms that link the top of hubs to the chassis. The length can be adjusted to alter the camber of the front and rear wheels. The adjustments and their effects are listed below:

	LENGTH	CHARACTERISTIC
Front	Shorter	More negative camber, more stability, smoother steering, slower response.
	Longer	Less negative camber, more direct steering, quicker response.
Rear	Shorter	More negative camber, less forward traction, smoother cornering, use for high grip surfaces.
	Longer	Less negative camber, more forward traction, less smooth cornering, good for low grip surfaces.

## Steering Arm Length (Toe-In/Out)

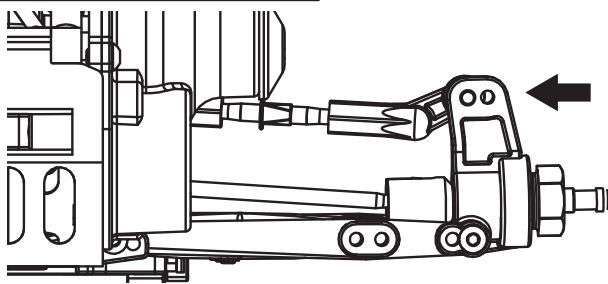


The steering arm links are the connection between the front hubs and the steering mechanism in the chassis. The length of these can adjust the front toe-in/-out.

Adjusting the toe can create either toe-in, which is where the wheels point inwards towards a centreline in front of the vehicle, or toe-out where the wheels point towards a centreline behind the vehicle. The effect of these adjustments is below:

LENGTH	CHARACTERISTIC
Standard	Zero toe, standard setting, neutral handling.
Shorter	Toe-Out, increasing cornering ability, less stability on straights.
Longer	Toe-In, more stability on straights.

## Camber Link Position

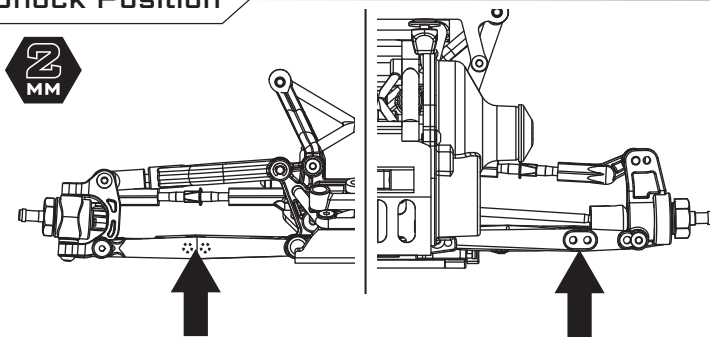


The camber links are the arms that link the top of hubs to the chassis. The length can be adjusted to alter the camber of the front and rear wheels.

The adjustments and their effects are listed below:

POSITION	CHARACTERISTIC
Inner	Standard position, Less chassis roll, lower overall grip, quicker to respond to inputs.
Outer	(Adjust camber link turbuckle to return camber to correct angle) More chassis roll, more overall grip, slower to respond to inputs.

## Shock Position



The shock mounting position is where the bottom of the shock mounts to the lower wishbone of the suspension.

Adjusting the angle of the shock can change the way the suspension reacts to bumps and also cornering forces.

The effect of these adjustments is below:

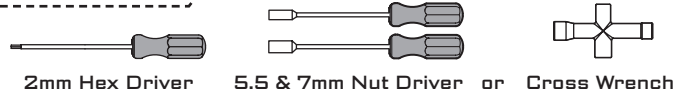
ANGLE	CHARACTERISTIC
Inner position	Softer damping, better over bumps, slower response, more overall grip.
Outer position	Stiffer damping, better on smooth surfaces, faster response, slightly less grip.

## Shock Removal

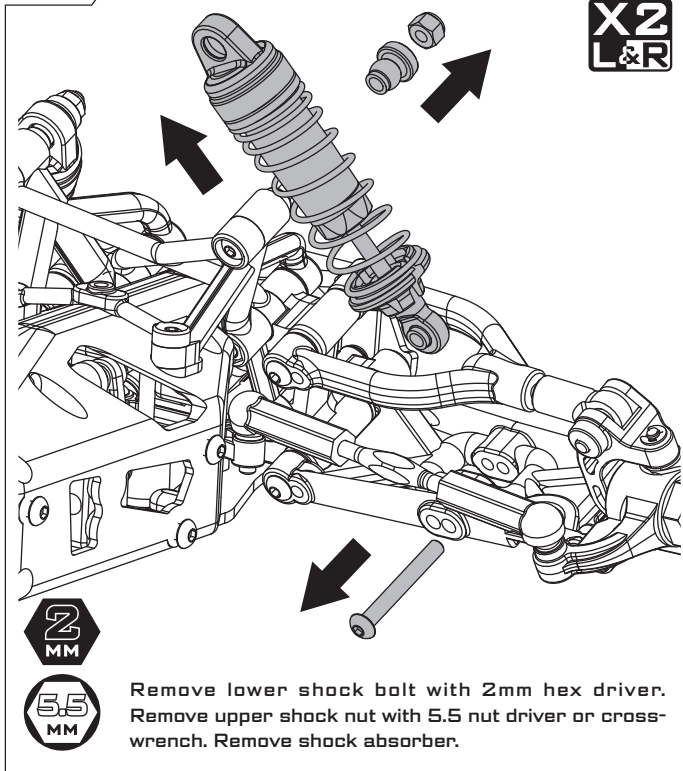


Every 50 runs or so it may be necessary to change the shock oil because over time it will become thinner meaning kit handling could be affected. You can also use this as an opportunity to upgrade the springs or shock oil.

### Tools Required



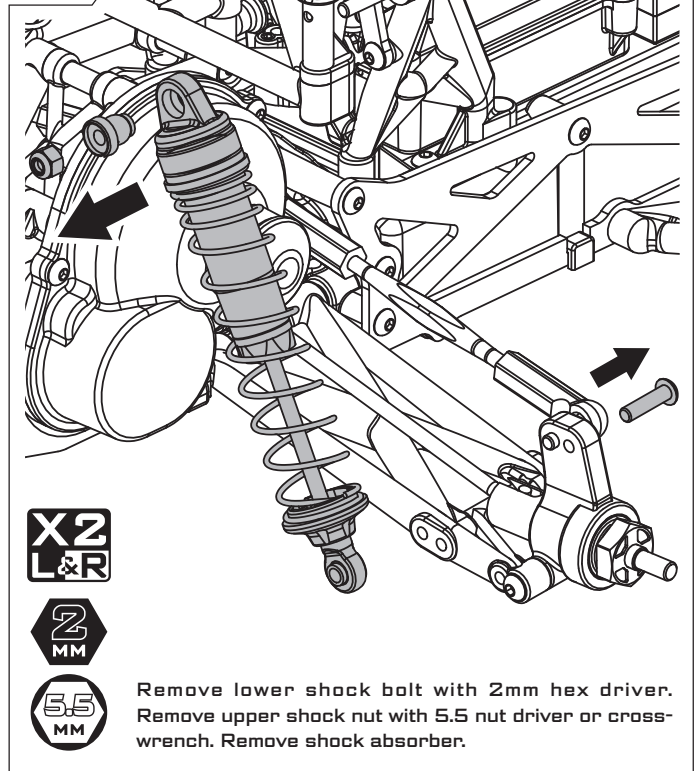
### Front



**X2  
L&R**

Remove lower shock bolt with 2mm hex driver. Remove upper shock nut with 5.5 nut driver or cross-wrench. Remove shock absorber.

### Rear



**X2  
L&R**

Remove lower shock bolt with 2mm hex driver. Remove upper shock nut with 5.5 nut driver or cross-wrench. Remove shock absorber.

## Springs

Your kit's standard springs are quite soft to give the best compromise between handling and performance.

Swapping the springs for either softer or stiffer springs can alter the handling characteristic of the car significantly. To change the springs remove the lower spring support and slide the spring over the shock body.

To find out what spring options there are for your kit please visit [ARRMA-RC.com](http://ARRMA-RC.com) or speak to your local distributor.

STRENGTH	CHARACTERISTIC
Softer	More traction
	More chassis roll
	More chance of 'bottoming out'
	Better on bumpy surfaces
Stiffer	Less traction
	Car quicker to react
	Less chassis roll
	Less chance of 'bottoming out'
	Better on smooth surfaces

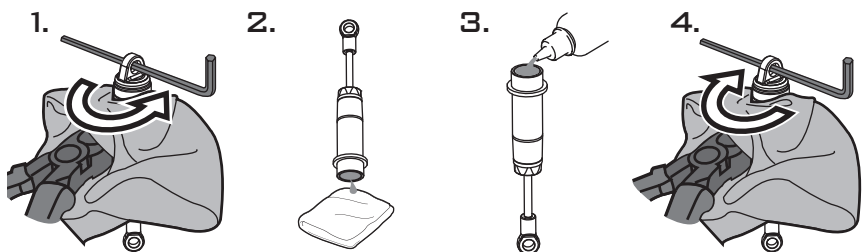
## Shock Oil

The standard shock oil in your kit's shocks is intended to provide forgiving, fun handling and allow the shocks to soak-up any punishment you choose to give them.

Changing the oil within the shock absorber can significantly change the handling and performance of the car.

WEIGHT	CHARACTERISTIC
Thinner	Softer damping
(lower CST)	More traction
	Quicker chassis weight transfer
	Car reacts more quickly
	More chassis roll
	More chance of 'bottoming out'
Heavier	Stiffer damping
(higher CST)	Slower chassis weight transfer
	Car slower to react
	Less chassis roll
	Less chance of 'bottoming out'

## HOW TO CHANGE YOUR SHOCK OIL



1. Hold the shock body carefully in a pair of pliers, place an allen key through the shock cap and turn anti-clockwise to loosen.

2. Remove the cap and turn the shock upside down over a cloth and push the piston to remove the shock oil. Leave to drain.

3. Stand the shock upright and extend the shaft fully. Fill the shock body to the top with the new oil and leave for a few minutes to settle.

4. Carefully screw the cap back onto the shock body and tighten clockwise until the seals compress. Clean up any excess oil.



# Drivetrain Tuning

## Gear Chart

Your ARRMA kit has one gear ratio and this can be altered by changing the pinion or spur gear in the transmission. The standard gearing of your kit is designed to give the best compromise between speed and acceleration. Increasing the top speed will reduce acceleration and vice versa. Too low or high a gear will put strain on the motor/ESC, and potentially damage them.



PINION GEAR		15T	16T	17T	18T	19T	20T	21T	22T	23T	24T	25T	26T	27T	28T	29T	30T
SPUR GEAR	81T (TOOTH)	X	X	X	4.5	4.26	4.05	3.86	<b>3.68*1</b>	3.52	3.38	3.24	3.12	3	2.89	2.79	2.7
	87T	5.8	5.44	5.12	<b>4.83*2</b>	4.58	4.35	4.14	3.95	3.78	3.63	X	X	X	X	X	X

STANDARD GEAR RATIOS \*1 = Raider/ADX-10 \*2 = Fury/Mojave/Granite/Vortex

The numbers shown in chart is the number of times the spur gear is larger than the pinion, or the 'gear ratio'. Essentially this is number of rotations the motor/pinion gear has to rotate the larger spur gear once. The lower the 'gear ratio' the greater the potential top speed, the higher the 'gear ratio' the greater the potential acceleration.

Upgraded motors/ESCs and non-standard wheels may require different gear ratios. Try to find the best balance between speed/acceleration and handling/performance. For help selecting the correct gear ratio for your upgrades visit the GO FOR IT forums at GOFORIT-RC.com.

## Spur/Pinion Gear Removal and Replacement



### Tools Required



1.5 & 2mm Hex Drivers

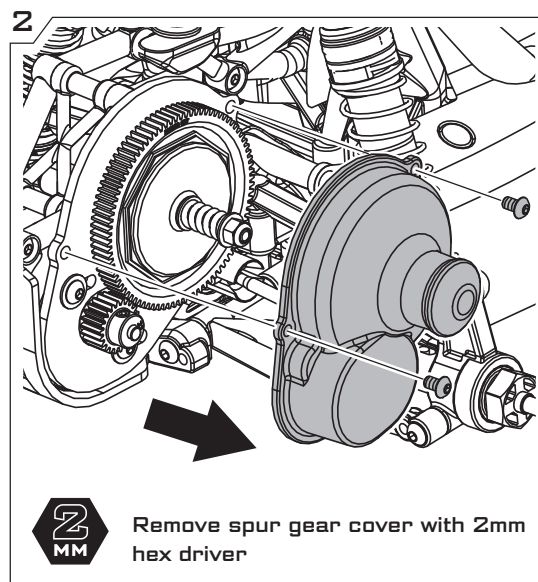
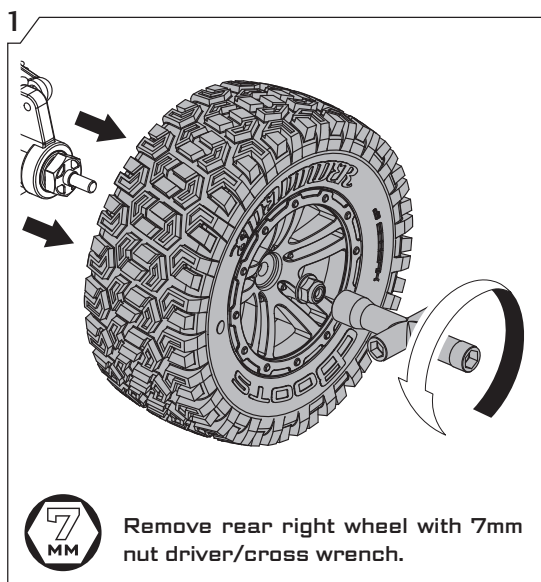


5.5 & 7mm Nut Driver

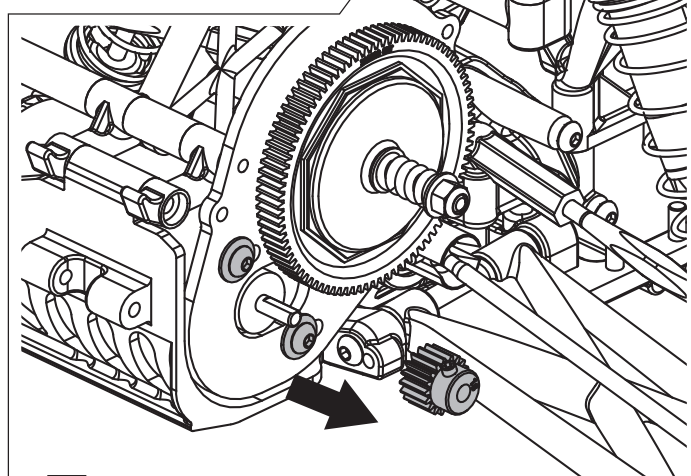
or



Cross Wrench



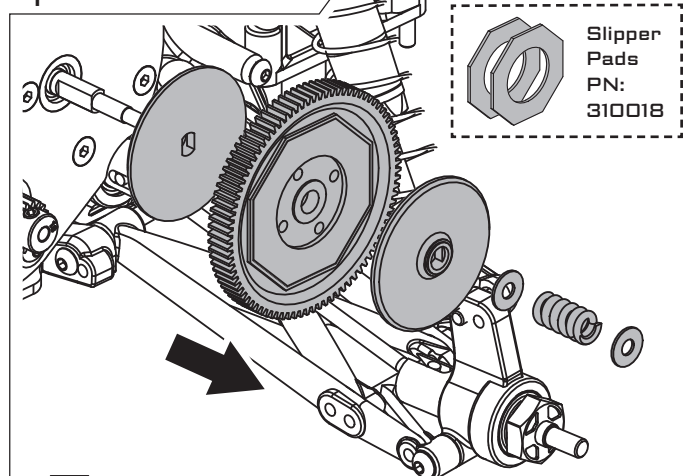
### Pinion Gear Removal



Loosen motor bolts with 2mm hex driver and loosen pinion gear grub screw with 1.5mm hex driver. Remove pinion. Fit new pinion and set gear mesh (page 7). Refit spur gear cover and wheel.



### Spur Gear Removal



Loosen motor bolts with 2mm hex driver. Undo slipper nut with 5.5mm nut driver or cross-wrench. Remove slipper clutch mechanism and spur gear. Fit new spur gear, set gear mesh and adjust slipper (page 7). Refit spur cover and wheel.



Once you replaced the pinion or spur gear ensure you have set the gear mesh correctly - see page 7 for details.



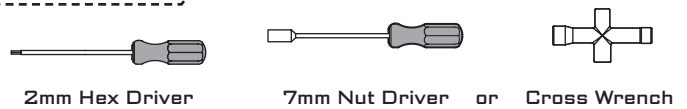
## Motor Removal



Removing the motor is useful for cleaning the motor and also if choosing to upgrade to either a different specification brushed motor or the awesome power of an ARRMA GIGA brushless system!

To see what motor upgrades are available for your car please visit [ARRMA-RC.com](http://ARRMA-RC.com) or your local ARRMA distributor.

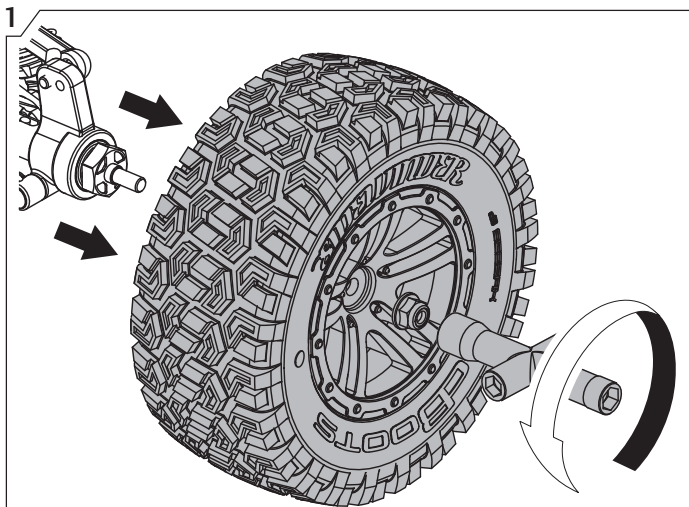
### Tools Required



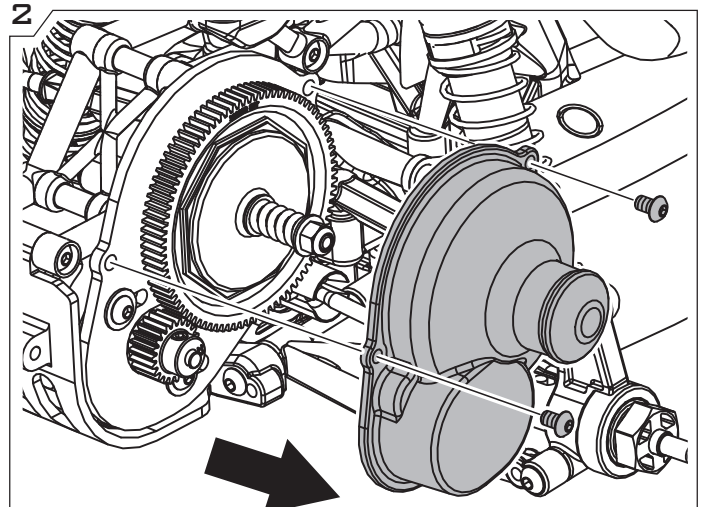
2mm Hex Driver

7mm Nut Driver

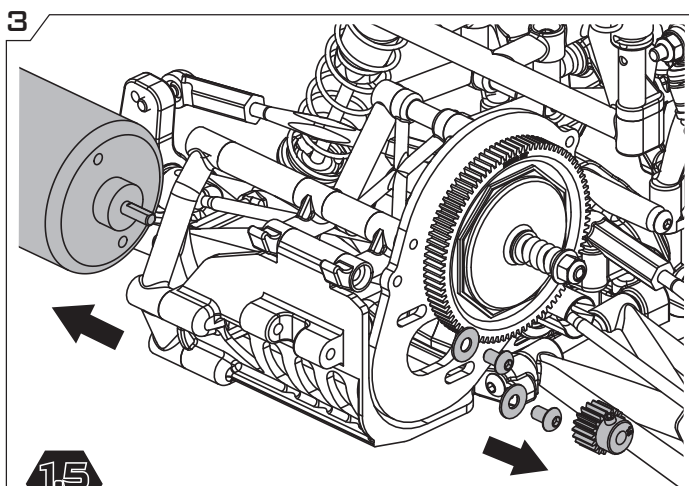
or Cross Wrench



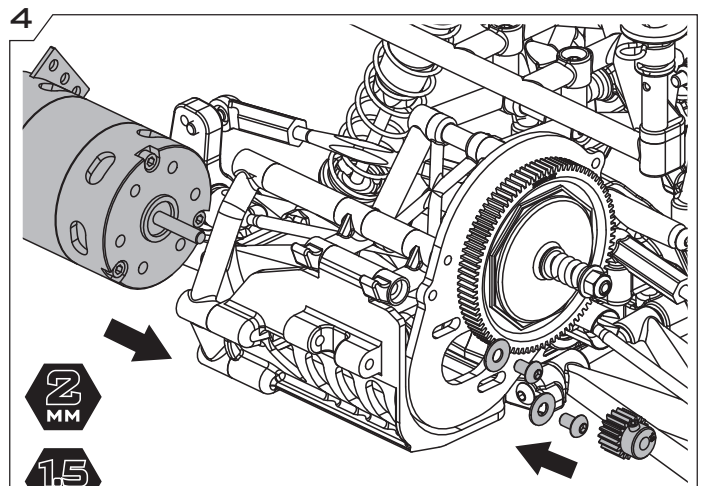
Remove rear right wheel with 7mm nut driver/cross wrench.



Remove spur gear cover with 2mm hex driver and disconnect motor wires.



Remove motor bolts with 2mm hex driver. Loosen pinion gear grub screw with 1.5mm hex driver and remove. Remove motor and clean if necessary.



Fit new electric motor (if required), fit pinion gear to motor then set gear mesh (page 7). Replace spur gear cover and rear wheel.

## Differential Tuning

When turning a corner the inside wheel travels a shorter distance than the outside wheel. A differential allows the wheels to turn at different speeds and take a corner more quickly.

Without a differential, on a high grip surface, the inside wheel will lose traction and cause you to spin-out. This effect is less noticeable on loose surfaces, however a well setup differential will make the car easier to drive and give more predictable handling at speed.

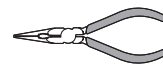
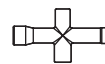
The differential is filled with silicone oil and the thickness of this alters the operation of the differential unit. As standard, your differential is designed to provide safe, fun handling - for advice on which oil to use please visit the forums at [GOFORIT-RC.com](http://GOFORIT-RC.com)

OIL WEIGHT	CHARACTERISTIC
Thinner (Lower CST)	Looser differential action
	Less stable under braking (into corners)
	Faster steering into corner
	More steering in corner
	Greater chance of oversteer
	More chance of wheelspin
Thicker (Higher CST)	Less forward drive out of corner (in low grip conditions)
	Generally better for low traction surfaces
	Tighter differential action
	More stable braking (into corner)
	Slower steering into corner
	Less steering in corner
	Greater chance of understeer
	Less chance of wheelspin
	More forward drive out of corner
	Generally better for high traction surfaces

# Differential Removal and Replacement

ARRMA-RC.COM  
SUPPORT

## Tools Required



1.3mm Hex Driver

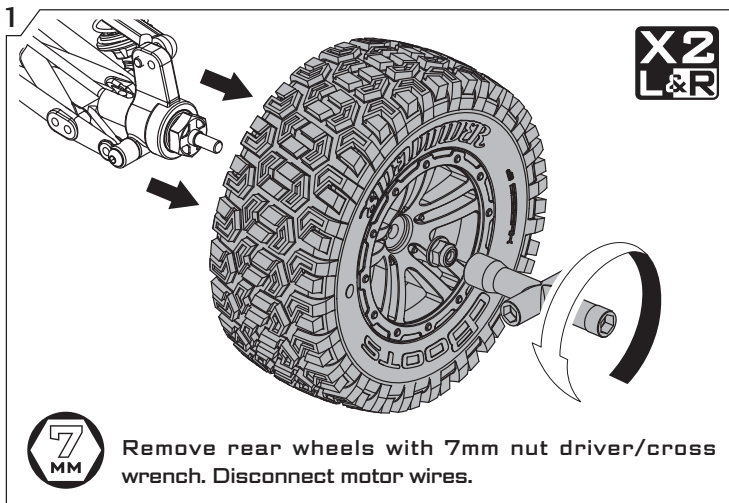
2mm Hex Driver

2.5mm Hex Driver

7mm Nut Driver

or Cross Wrench

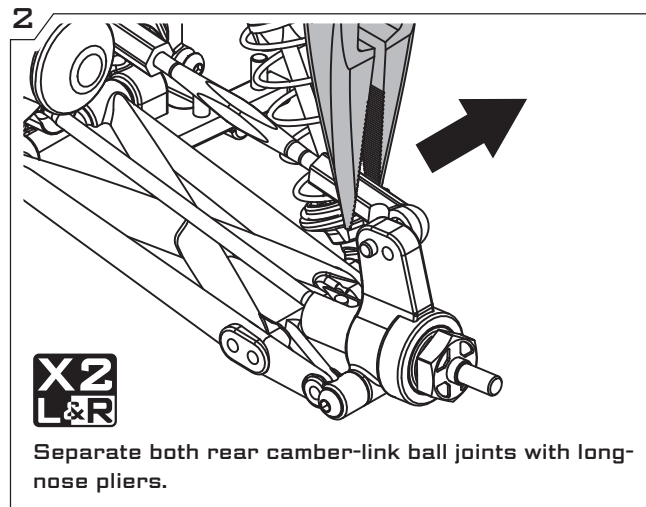
Long-nose Pliers



X2  
L&R

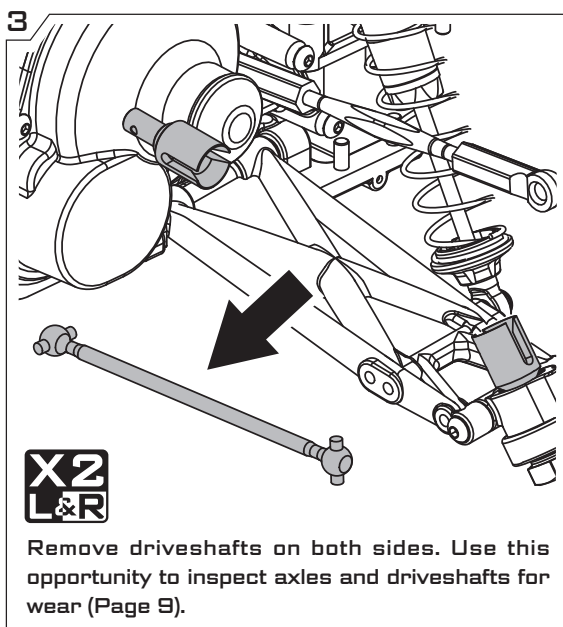
7  
MM

Remove rear wheels with 7mm nut driver/cross wrench. Disconnect motor wires.



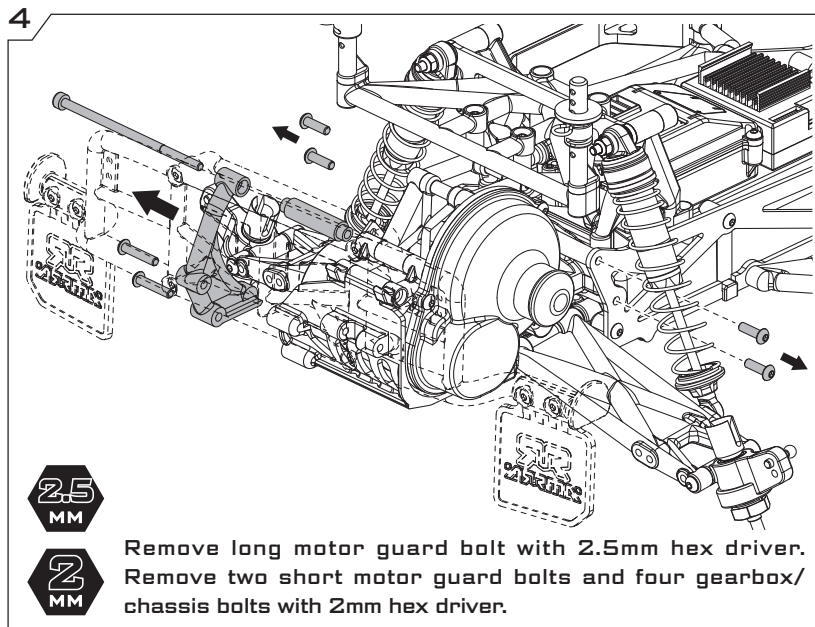
X2  
L&R

Separate both rear camber-link ball joints with long-nose pliers.



X2  
L&R

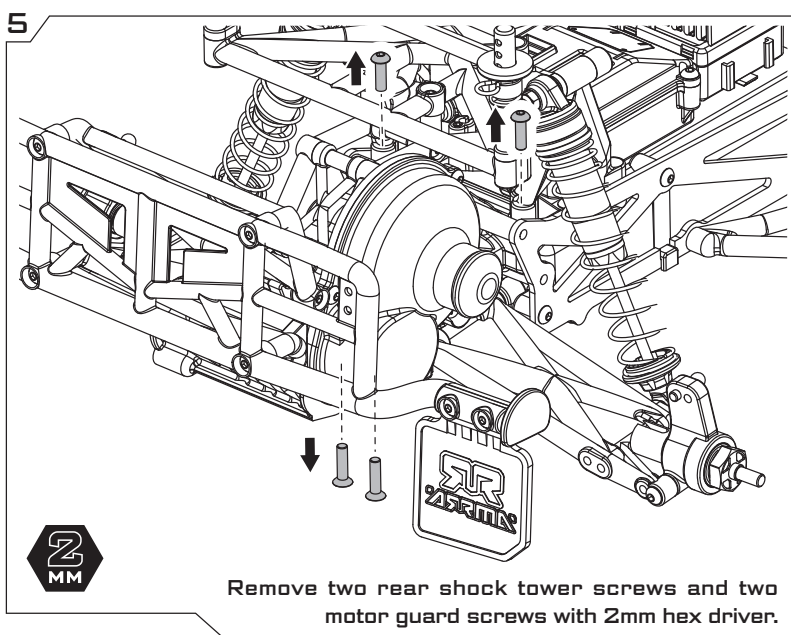
Remove driveshafts on both sides. Use this opportunity to inspect axles and driveshafts for wear (Page 9).



2.5  
MM

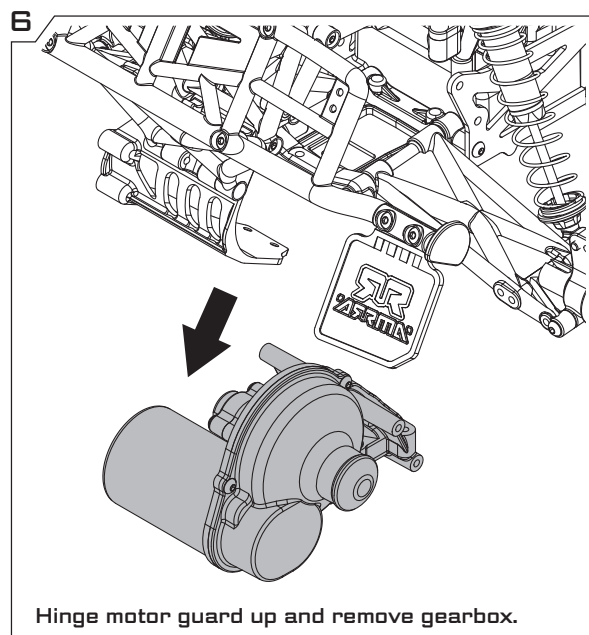
2  
MM

Remove long motor guard bolt with 2.5mm hex driver. Remove two short motor guard bolts and four gearbox/chassis bolts with 2mm hex driver.



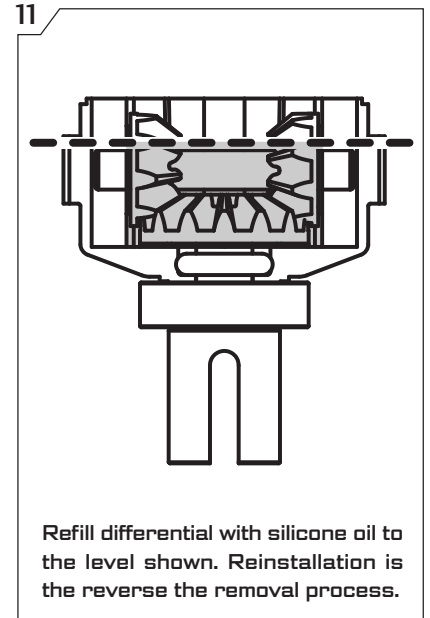
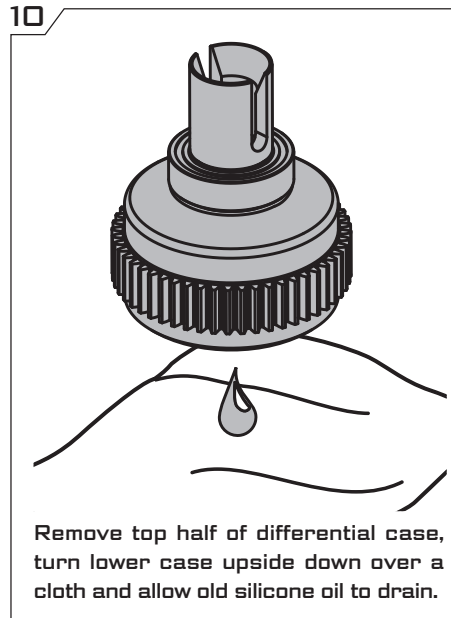
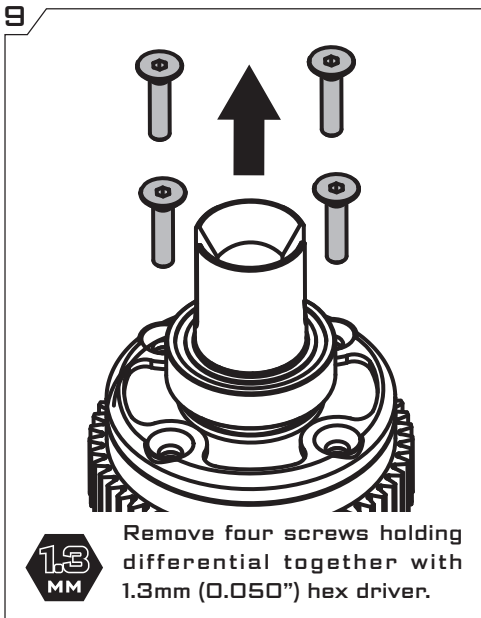
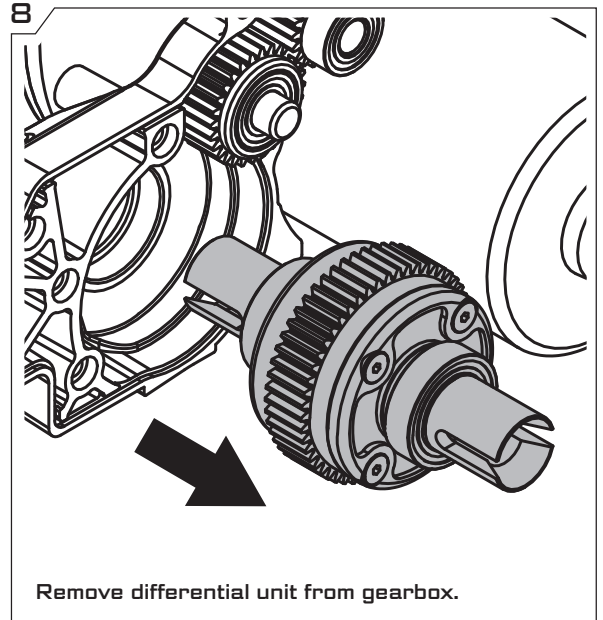
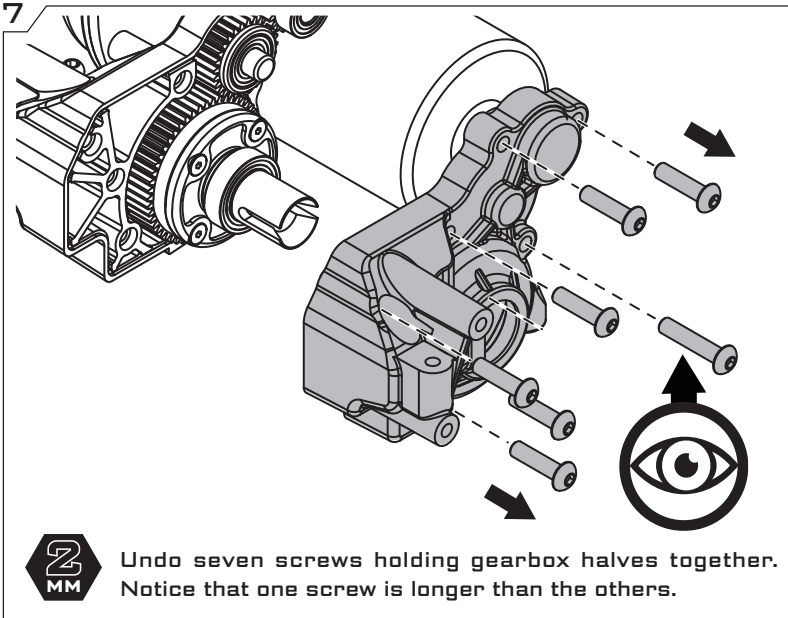
2  
MM

Remove two rear shock tower screws and two motor guard screws with 2mm hex driver.

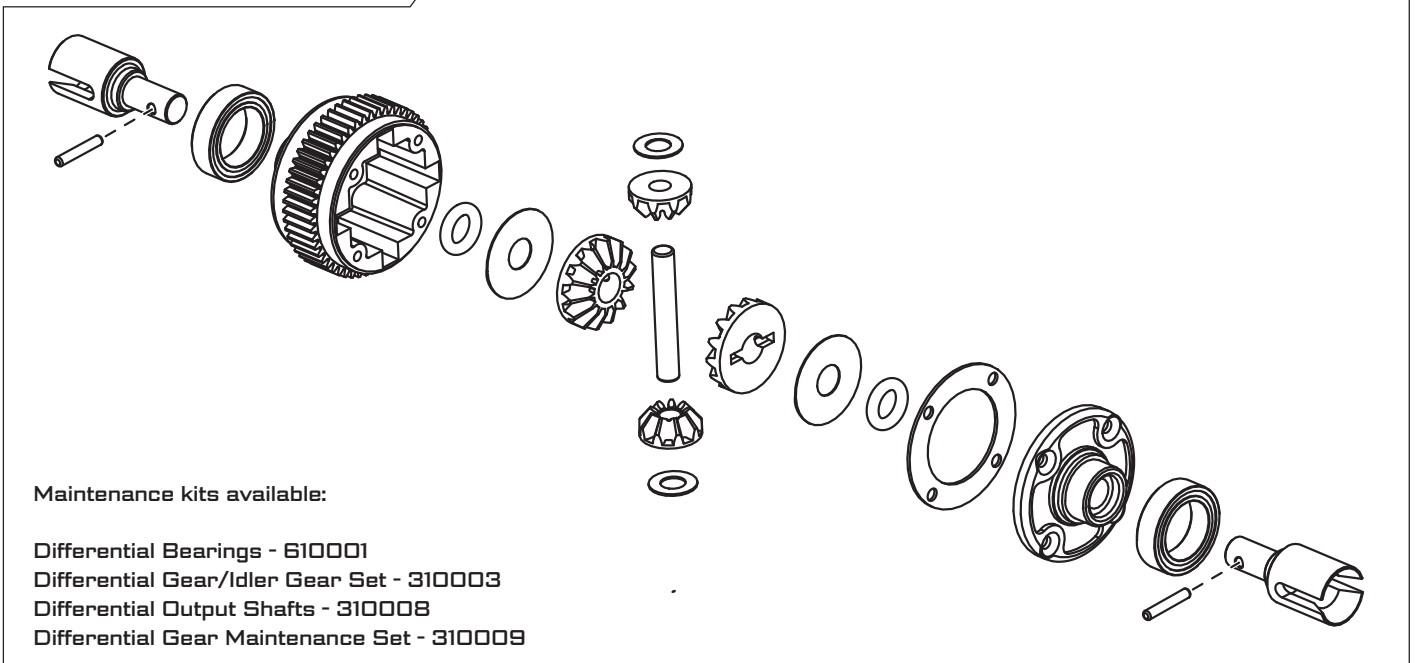


Hinge motor guard up and remove gearbox.

## Differential Removal and Replacement (cont.)



## Differential Exploded View







# Radio-gear Maintenance

## Receiver Access

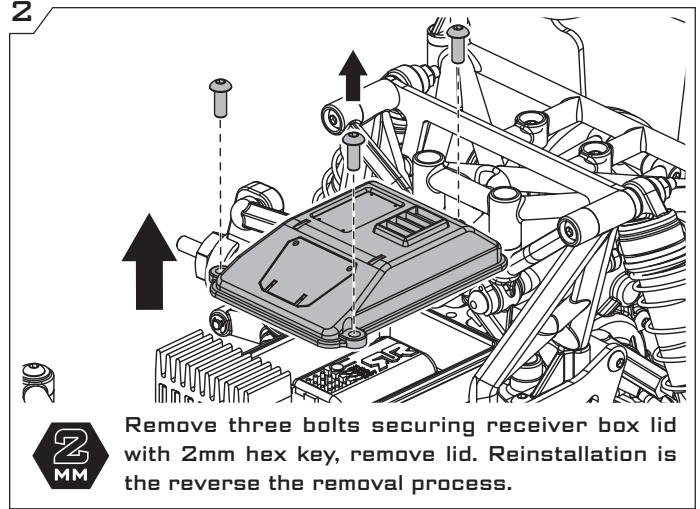
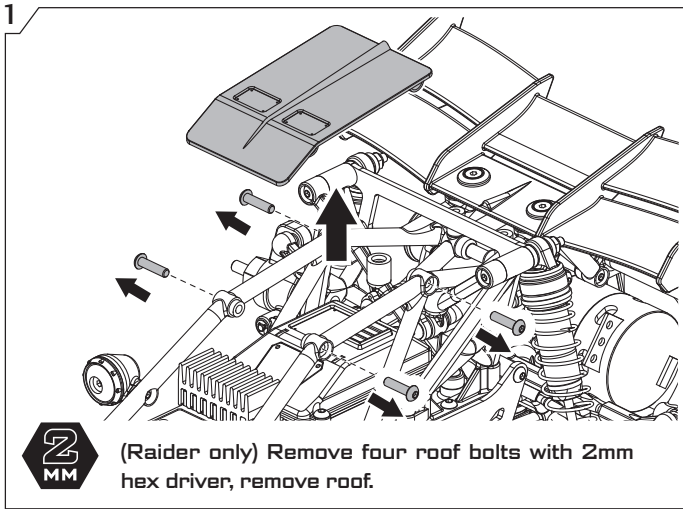


### Tools Required



2mm Hex Driver

If you want to replace or upgrade the steering servo, ESC (electronic speed controller) or re-bind the transmitter, you will need to access the receiver.



# Steering Maintenance

## Steering Access



If you find your car's steering feels loose it may mean you have to adjust the servo saver. To do this you will have to get access to the steering mechanism.

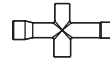
### Tools Required



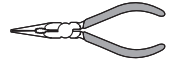
2mm Hex Driver



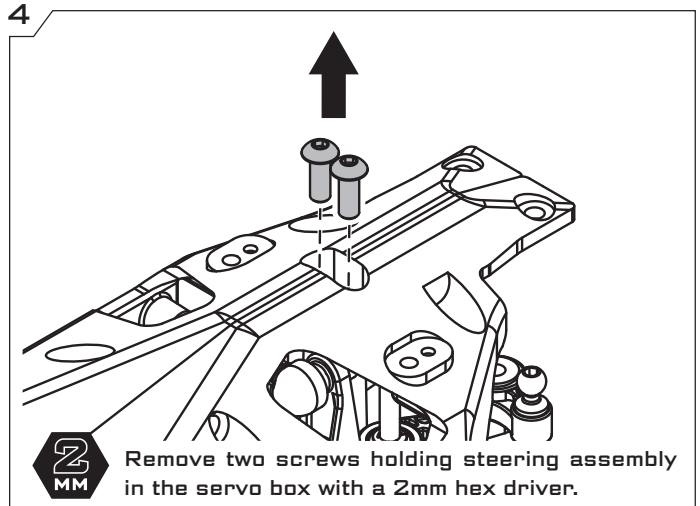
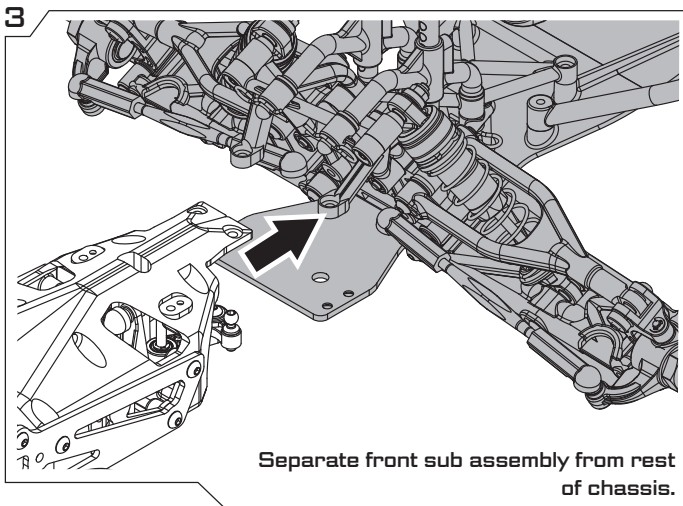
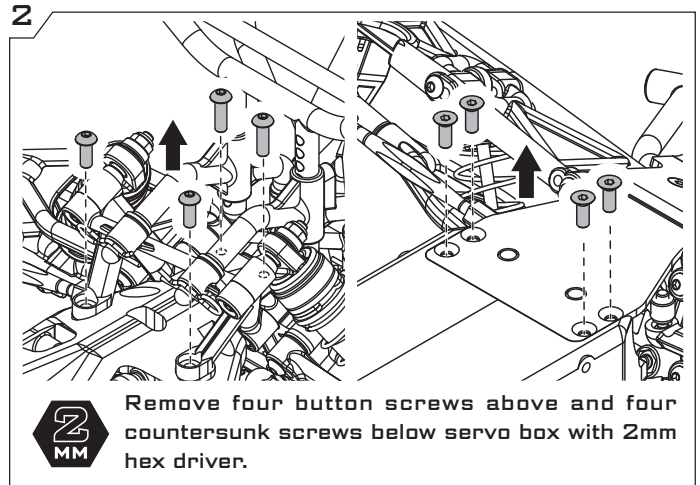
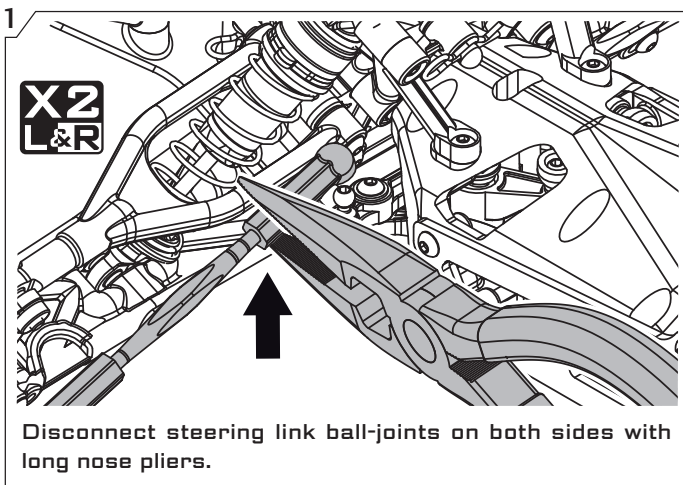
7mm Nut Driver or



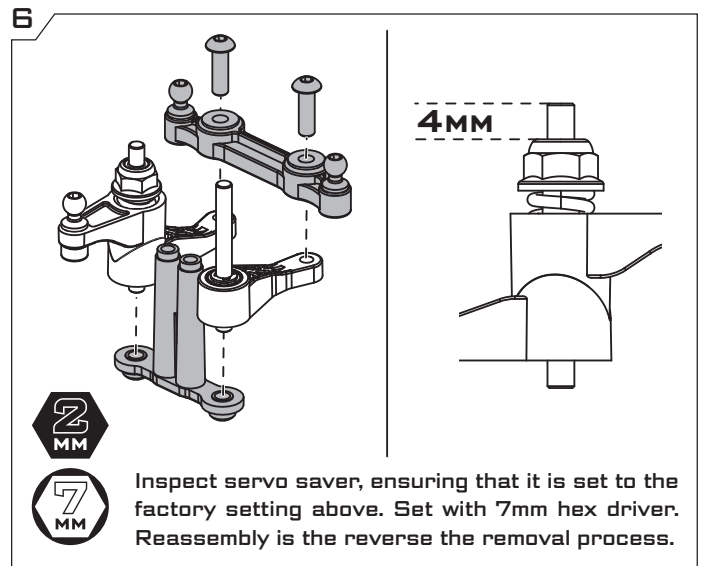
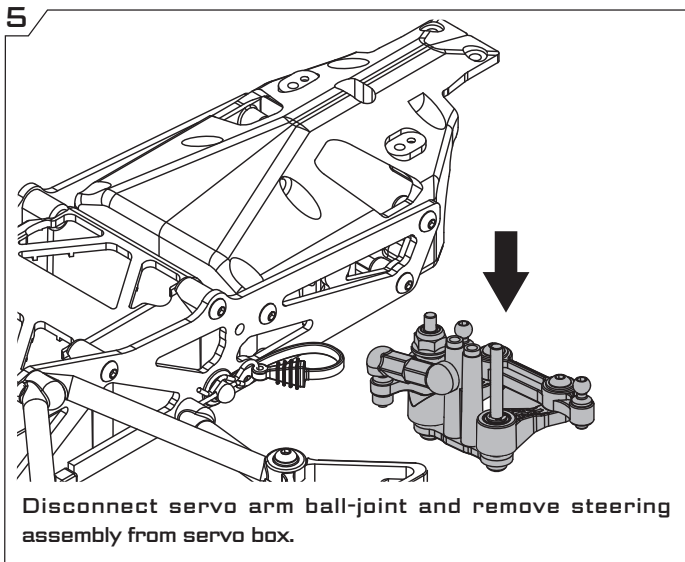
Cross Wrench



Long-nose Pliers



## Steering Access (cont.)

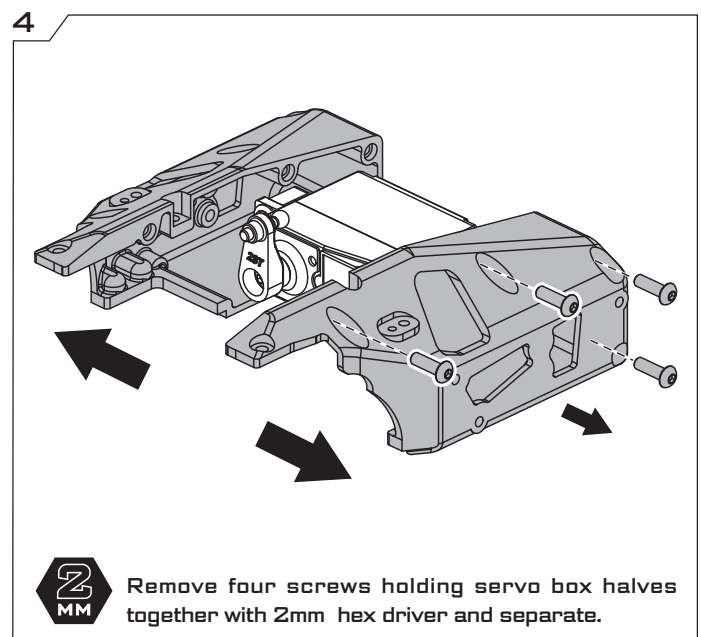
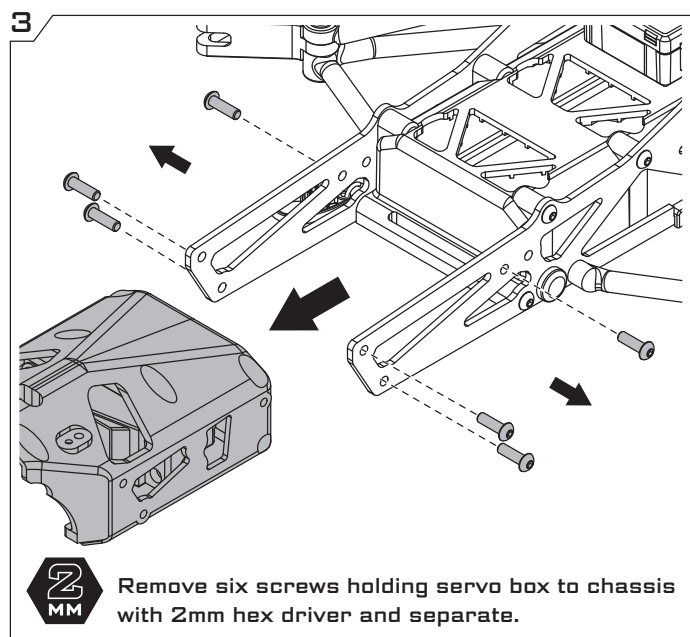
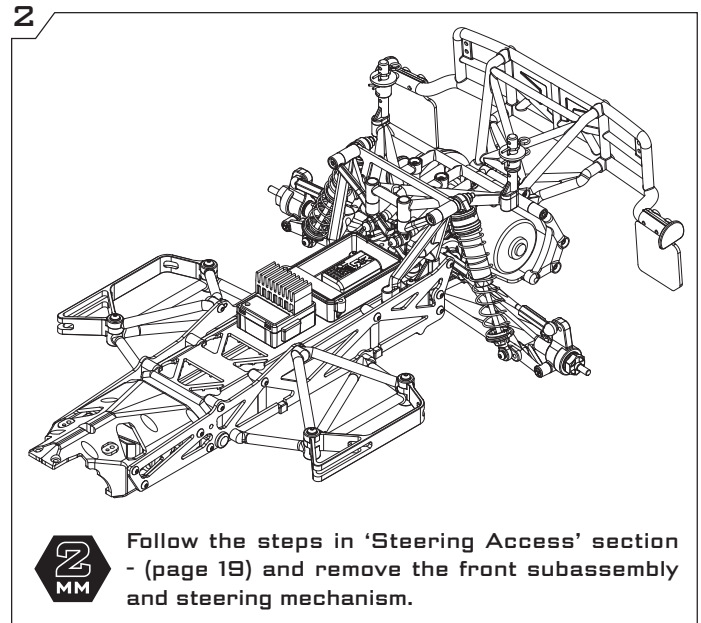
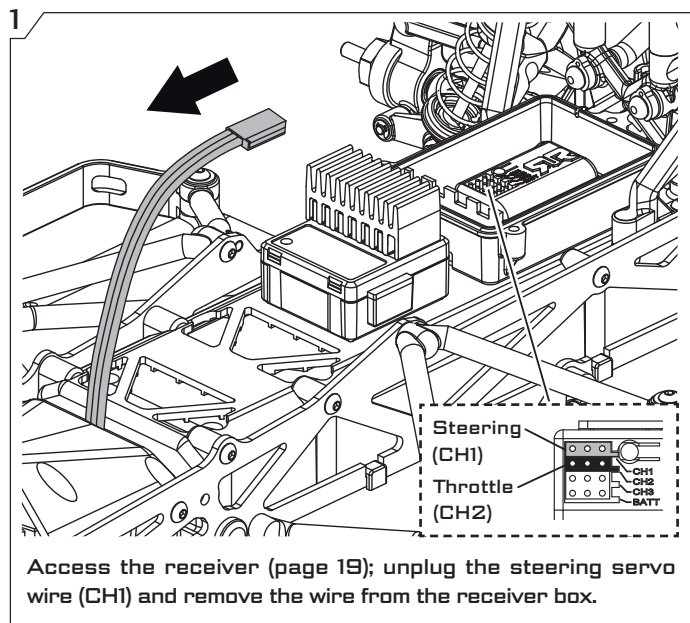


## Servo Removal

### Tools Required

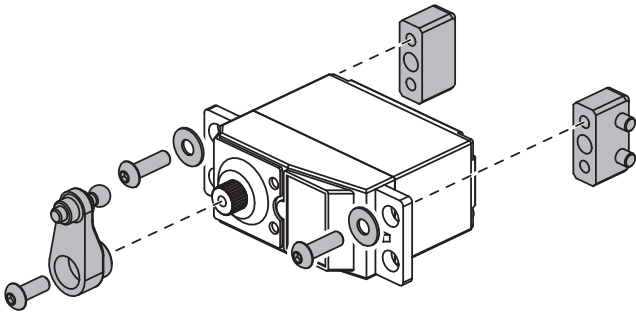


Upgrading your servo will give quicker and more powerful steering.



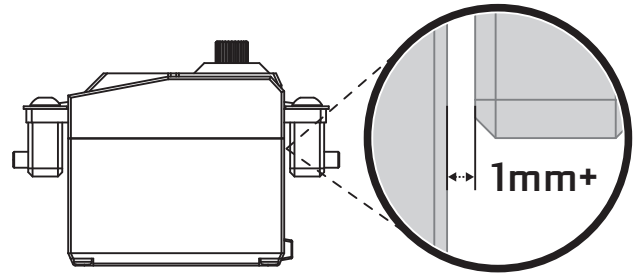
## Servo Removal (cont.)

5



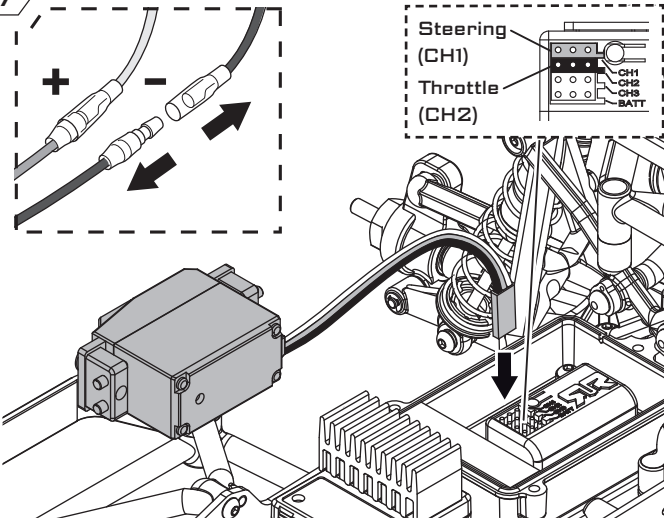
Remove two servo mount screws and one servo arm screw with 2mm hex driver. If necessary, replace servo with a standard or uprated item.

6



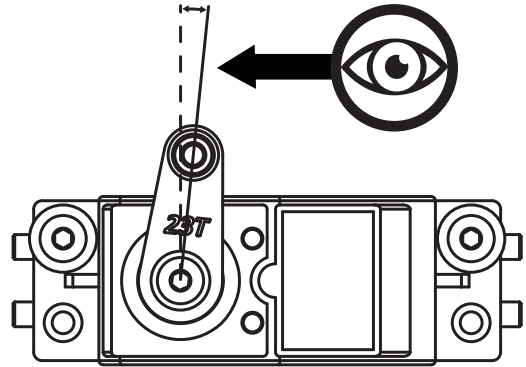
Refit the two servo mounts with a 2mm hex driver. Ensure the gap between the side of the servo and the mount is equal or greater than 1mm.

7



Disconnect motor wires and temporarily reconnect servo signal wire to receiver. Fit battery to model, the switch transmitter and ESC on.

8



Ensure that steering trim is set to zero on transmitter and then refit the servo arm as shown above. Reassembly is the reverse of the removal process.



## Notes





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