

**TC8**  
**FACTORY TEAM**  
**GRAPHITE-SPEC**

1:10 Scale 4WD Electric On Road  
Competition Touring Car



**TEAM ASSOCIATED**



1:10 Scale 4WD Electric On Road Competition Touring Car Kit Manual

#30141 TC8 Graphite-Spec Touring Car Team Kit



**TEAM ASSOCIATED**

## Introduction

Thank you for purchasing this Team Associated product. This assembly manual contains instructions and tips for building and maintaining your new vehicle. Please take a moment to read through the manual and familiarize yourself with the steps. We are continually changing and improving our designs; therefore, actual parts may appear slightly different than the illustrations. New parts will be noted on supplementary sheets located in the appropriate parts bags.

Check each bag for these sheets before you start to build.

Check [www.rc10.com](http://www.rc10.com) for the latest versions of our instruction manuals.

## TC8 Steel-Spec Kit Features

- Mid-Motor Configuration with Symmetrical Belts: Ensures consistent power delivery and balanced performance.
- Split Top Deck Design: Optimizes chassis flex characteristics for enhanced handling.
- Centralized Ultra-Short Shock Design: Enhances cornering speed and promotes ideal weight distribution.
- Long-Arm Pivot Ball Suspension Geometry: Provides superior grip and predictable handling across diverse track conditions.
- Adjustable KPI Steering Blocks: Enables precise tuning of steering feel for driver preference.
- Floating One-Piece Servo and Bell Crank Mount: Maximizes responsiveness and optimizes chassis flex.
- TC8 Steel Chassis: Lowers the center of gravity (CG) and optimizes chassis flex for high-grip surfaces.
- TC8A Carbon Fiber Chassis: Fine-tunes chassis flex for optimal performance on low-grip surfaces.
- Pillow Ball Lower Arm Design: Facilitates easy track width adjustments.
- DCV Drive Shafts Front and Rear: Maximizes cornering efficiency.
- Flexible TPU Front Bumper: Enhances durability and impact resistance.
- Horizontal Rear Body Mount: Improves aerodynamic efficiency when using lightweight polycarbonate bodies.
- High-Volume Rear Differential: Delivers consistent performance and extended run times.
- Wide Range of Differential Height Adjustment: Optimizes DCV bone bind for varying grip levels.
- Floating Fan and Receiver Mount: Maintains consistent chassis flex characteristics.

## Additional

Your new TC8 Kit comes unassembled and requires the following items for completion (refer to [AssociatedElectrics.com](http://AssociatedElectrics.com) for suggestions):

- |  |   |
|--|---|
| • R/C two channel surface frequency radio system | • Battery charger<br>(a peak detection charger, or LiPo compatible charger) |
| • AA-size batteries for transmitter              | • 2 cell LiPo battery pack  |
| • Electronic Speed Control ("ESC")               | • Polycarbonate specific spray paint  |
| • Steering servo                                 | • Cyanoacrylate glue ("CA") (#1697)   |
| • R/C electric motor                             | • Thread locking compound (#1596)   |
|  | • Tires and Inserts, Fronts and Rears                                       |
|  | • Pinion gear, size determined by type/turn or kV of motor                  |

## Other Helpful Items

- |  |                                  |                                 |                             |                |
|--|----------------------------------|---------------------------------|-----------------------------|----------------|
| • Silicone Shock Fluid (Refer to <a href="http://AssociatedElectrics.com">AssociatedElectrics.com</a> for complete listings) | • FT Body Scissors (#1737)       | • FT Body Reamer (#1499)        | • Shock Pliers (#1681)      | • Wire Cutters |
| • FT Hex/Nut Wrenches (#1519)  | • Needle Nose Pliers             | • Calipers or a Precision Ruler | • FT Ballcup Wrench (#1579) | • Hobby Knife  |
| • FT Universal Tire Balancer (#1498)   | • Green Slime shock lube (#1105) |                                 | • Soldering Iron            |                |
| • FT Dual Turnbuckle Wrench (#1114)  |                                  |                                 |                             |                |

Associated Electrics, Inc.  
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Lake Forest, CA 92630










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Tel: 949.544.7500  
Fax: 949.544.7501









## Hardware - 1:1 Scale View







### Button Head (bhcs)

	2x4mm (31510)
	3x6mm (31531)
	3x8mm (31532)
	3x10mm (25211)
	3x12mm (89202)
	3x14mm (25187)
	3x16mm (89203)

### Flat Head (fhcs)

	2.5x8mm (31472)
	3x5mm (31540)
	3x6mm (31541)
	3x8mm (25201)
	3x10mm (25202)
	3x12mm (25203)

### Ball Bearings

	3x6x2mm (91558)
	3x7x3mm (91475)
	5x8x2.5mm (31400)
	FT 5x8x2.5mm (8680)
	FT 5x10x3mm (31734)
	FT 10x15x4 (91563)






### Cap Head (shcs)

	1.6x5mm (91611)
	2x10mm (41098)










### LP Socket Head (lp shcs)

	3x6mm (41089)
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
### Set Screws

	3x2.5mm (31500)
	3x3mm (25225)
	3x8mm (4670)
	3x10mm (4671)
	3x14mm (25222)










### Nuts (lock/plain)

	M3 Nut (91477)
	M3 Alum. Locknut, Blue (31550)
	M3 Locknut, Black (25215)
	M3 Locknut w/Flange (25612)
	FT 3mm Locknuts, Blue(25392)
	M4 Locknuts:
	Serrated Steel LP (91150)
	Serrated Steel (Silver) (91826)
	Serrated Aluminum (Black) (91738)

### Shims and Washers

	5.5x0.5mm (31381)
	5.5x1.0mm (31382)
	5.5x2.0mm (31383)
	3x8mm Washer (89218)
	Bulkhead Washer 1mm (31385)
	Bulkhead Washer 2mm (31386)
	2.55x6x.15mm (RD92292-1)
	Pinion Gear Shim
	5x6.5x1mm (RD92319)
	5.1x8x0.1mm (RD9957-10)
	5.1x8x0.2mm (RD9957-20)
	HD Oneway Outdrive Shim
	10.15x12.5x0.1mm (RD111429)
	Drivetrain Shim
	10.15x12.5x0.25mm (RD31170-1)

### Ballstuds

	HD, short neck 4mm (32041)
	Ti HD, short neck 4mm (32095)
	HD, short neck 6mm (32042)
	Ti HD, short neck 6mm (32096)
	HD, short neck 8mm (32040)
	Ti HD, short neck 8mm (32097)
	HD, short neck 10mm (32044)
	Ti HD, short neck 10mm (32098)
	Ti HD, short neck 12mm (32099)

### Notes:

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## Notes



This symbol indicates a special note or instruction in the manual.

x2

This symbol indicates the number of the same part that is required.

2

This symbol indicates the order within a step to assemble parts.



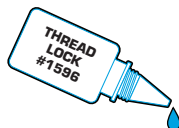
This symbol indicates there are optional FT parts available



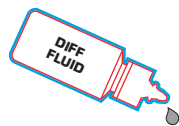
This symbol indicates a Racers Tip.



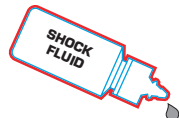
There is a 1:1 hardware foldout page in the front of the manual. To check the size of a part, line up your hardware with the correct drawing until you find the exact size. Each part in the foldout has a number assigned to it for ordering replacement parts.



This symbol indicates where Thread Lock Adhesive should be applied. \*not included



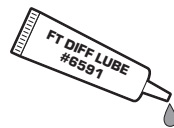
This symbol indicates where Diff Fluid should be applied.



This symbol indicates where Shock Fluid should be applied.



This symbol indicates where FT Silicone Grease should be applied. \*not included



This symbol indicates where FT Diff Lube should be applied. \*not included



This symbol indicates where Black Grease should be applied.



This symbol indicates where Green Slime can be applied. \*not included

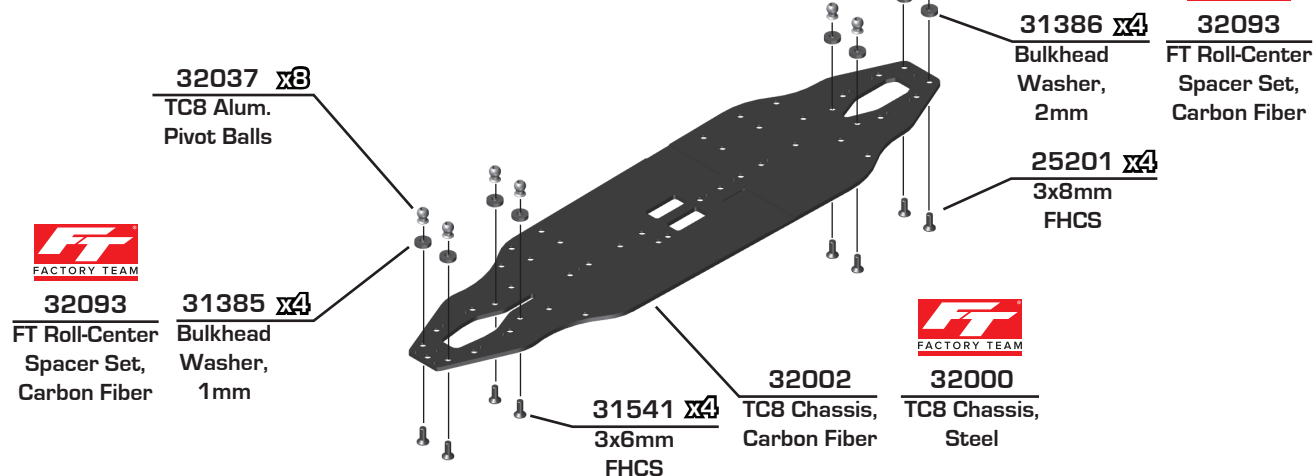


## Bag 1 - Step 1

Front



Rear



## Bag 1 - Step 2

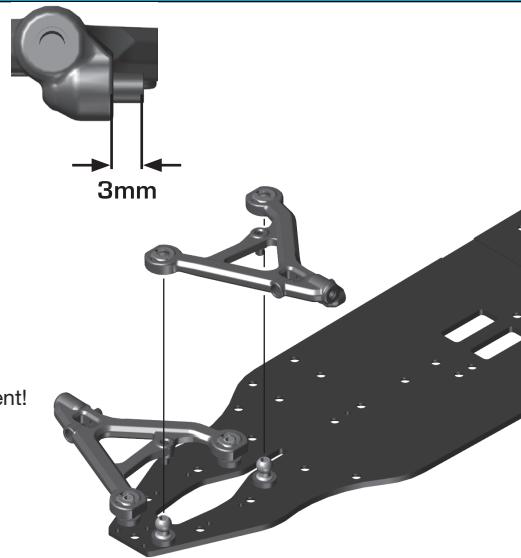
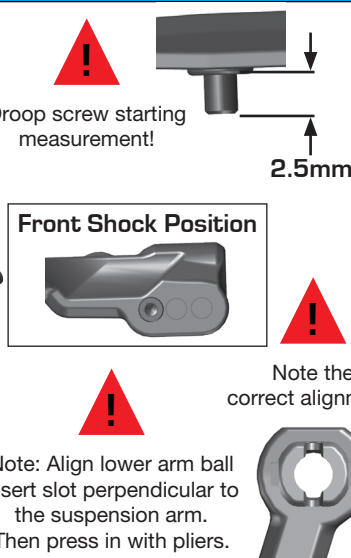
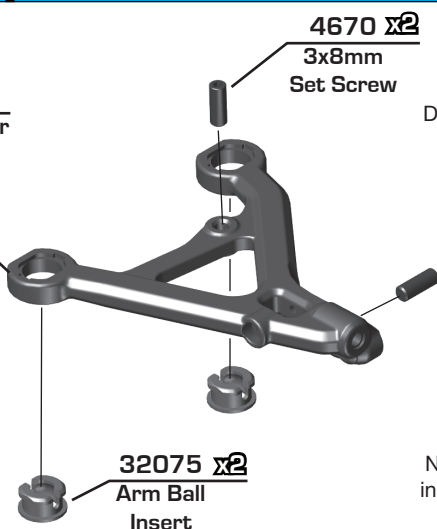


**32060**  
FT Carbon Lower  
Suspension  
Arms

**32059**  
TC8 Lower  
Suspension  
Arms

Front

Build left and right!



## Bag 1 - Step 3

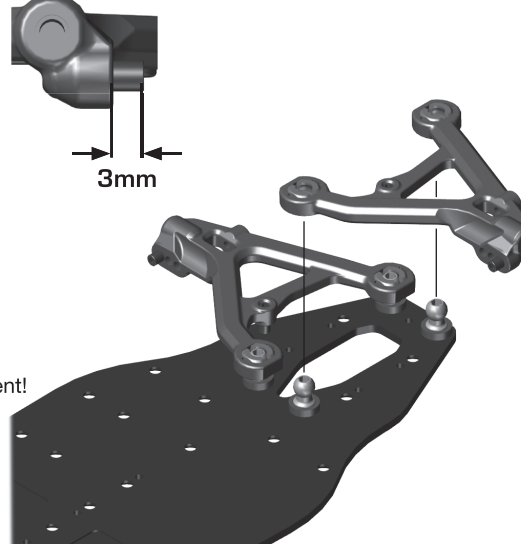
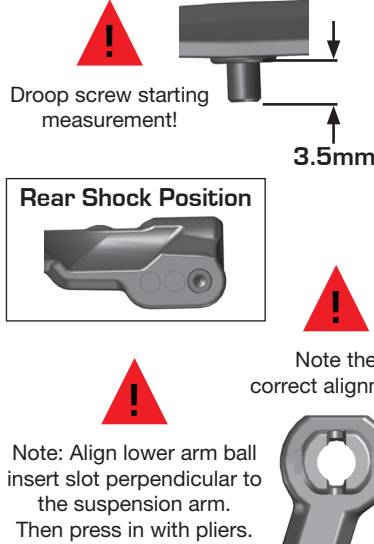
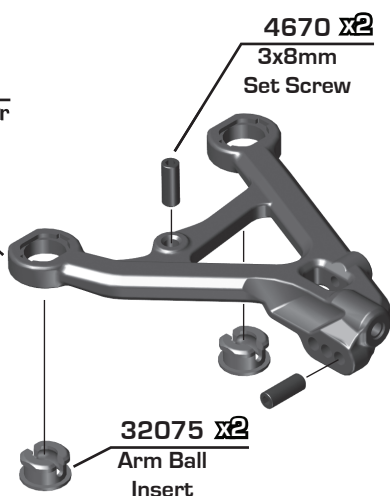


**32060**  
FT Carbon Lower  
Suspension  
Arms

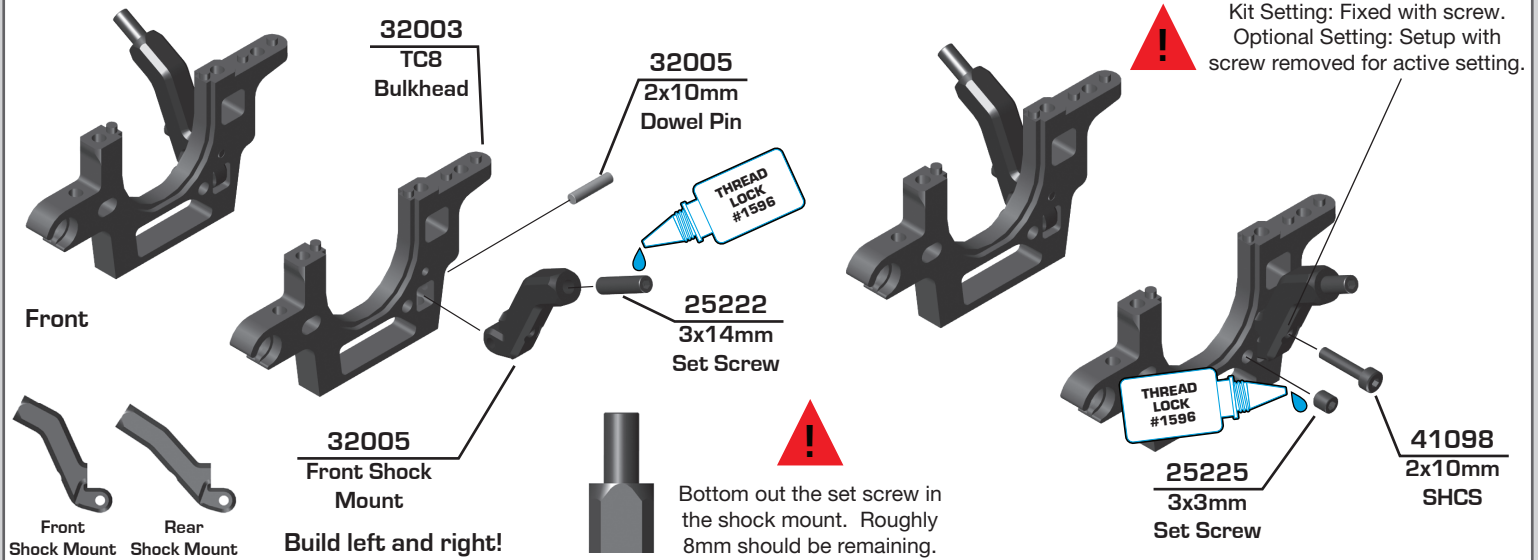
**32059**  
TC8 Lower  
Suspension  
Arms

Rear

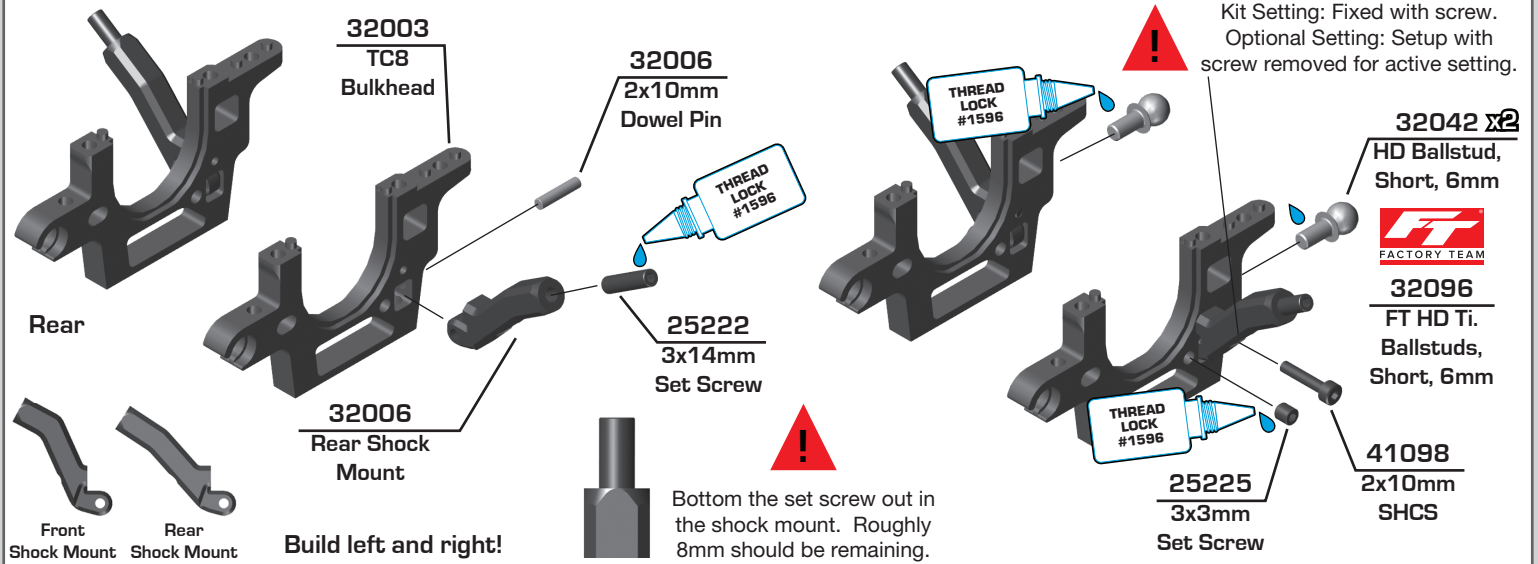
Build left and right!



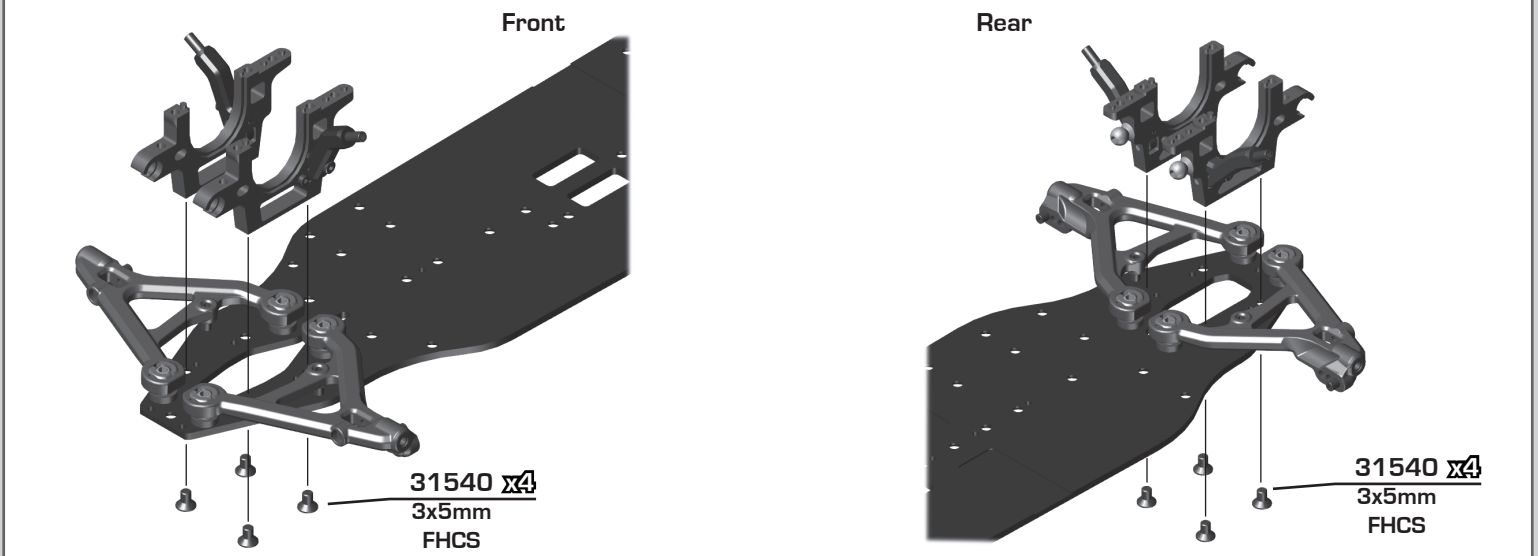
## :: Bag 1 - Step 4



## :: Bag 1 - Step 5



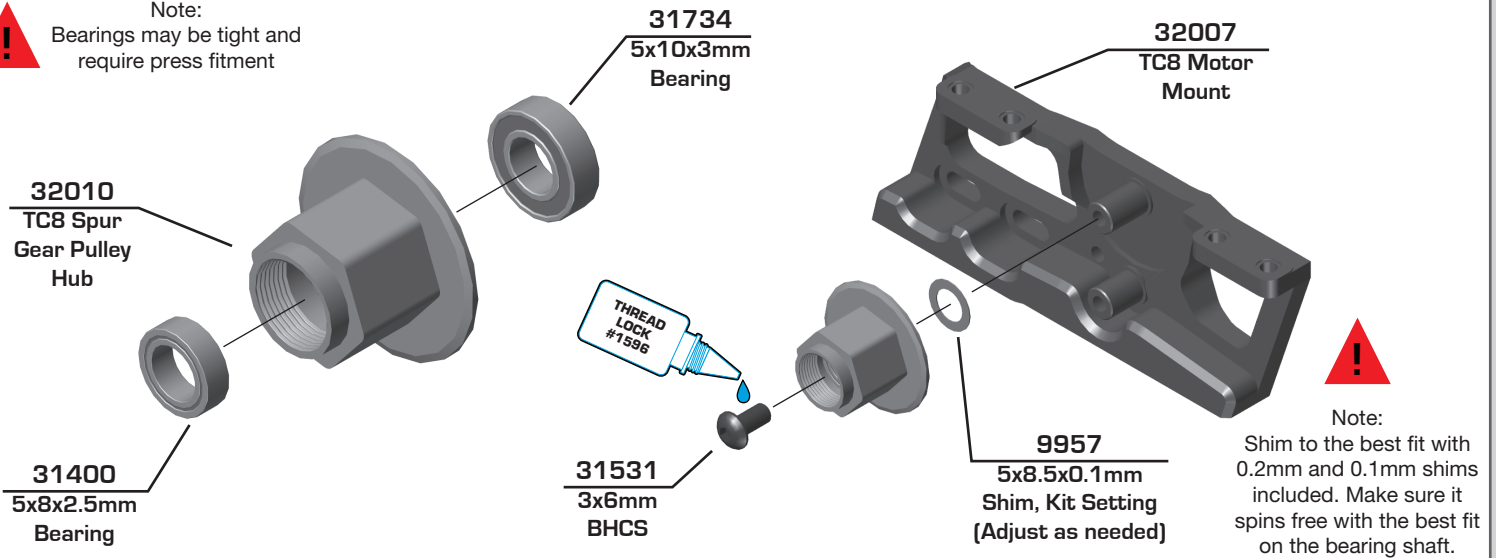
## :: Bag 1 - Step 6



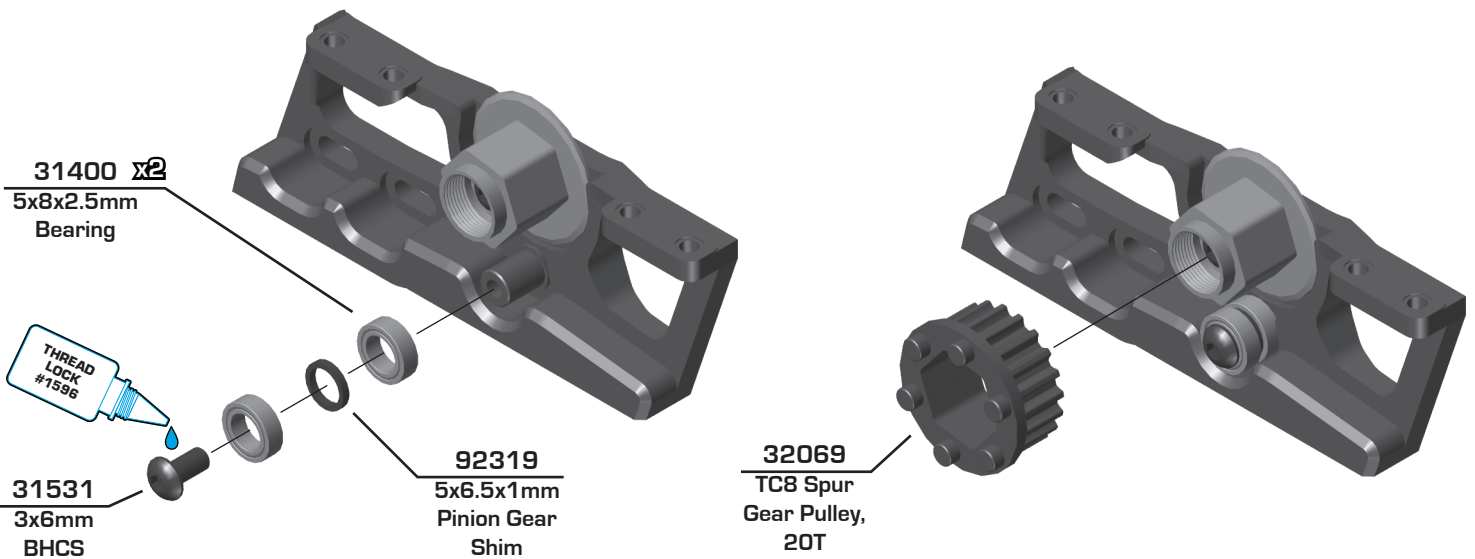
## Bag 2 - Step 1



Note:  
Bearings may be tight and  
require press fitment



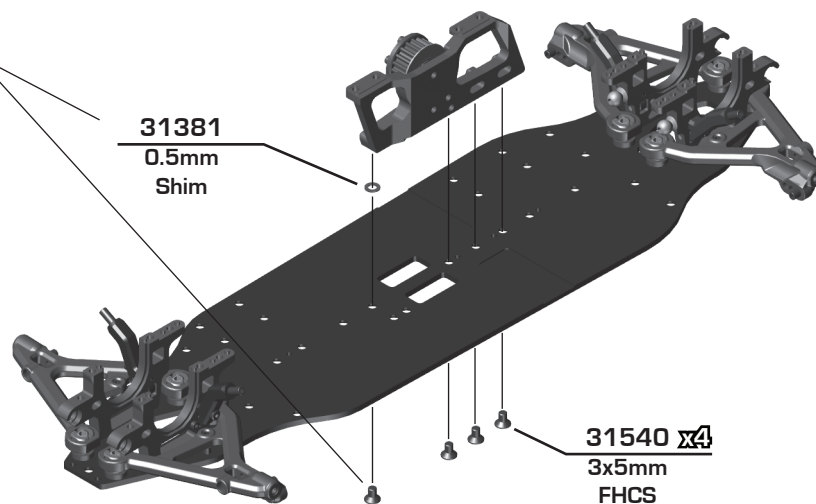
## Bag 2 - Step 2



## Bag 2 - Step 3

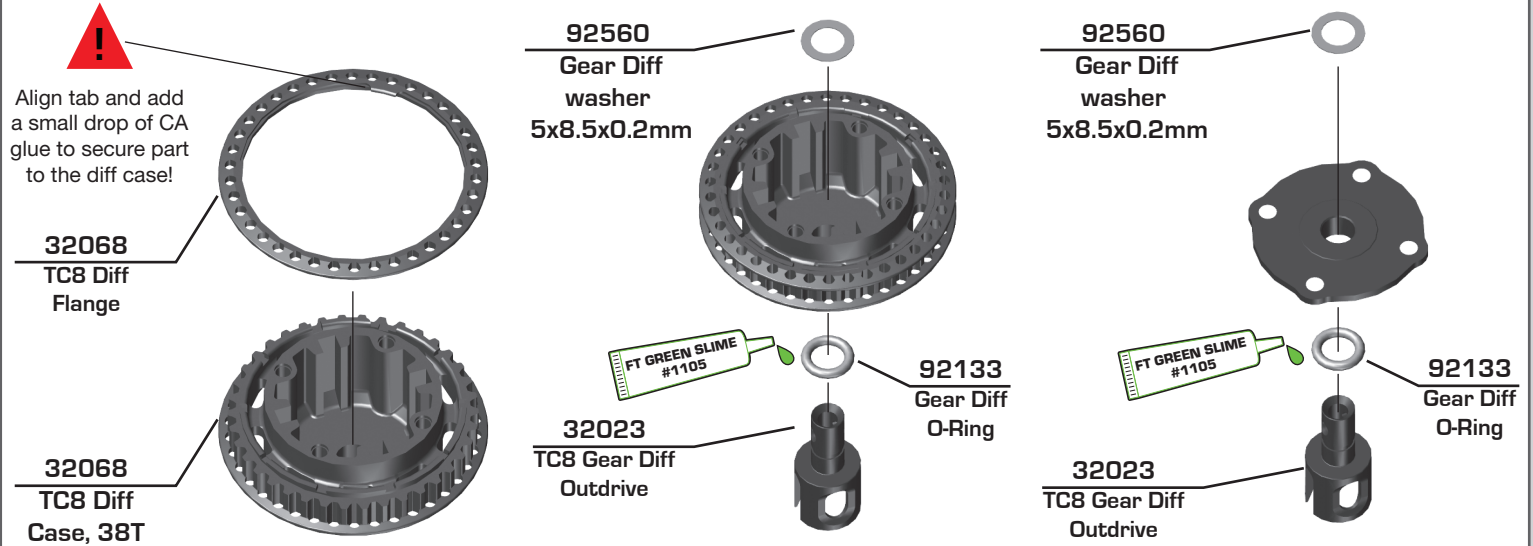


Kit Setting:  
No screw or shim.  
Optional Setting: Screw and shim for  
increased chassis stiffness

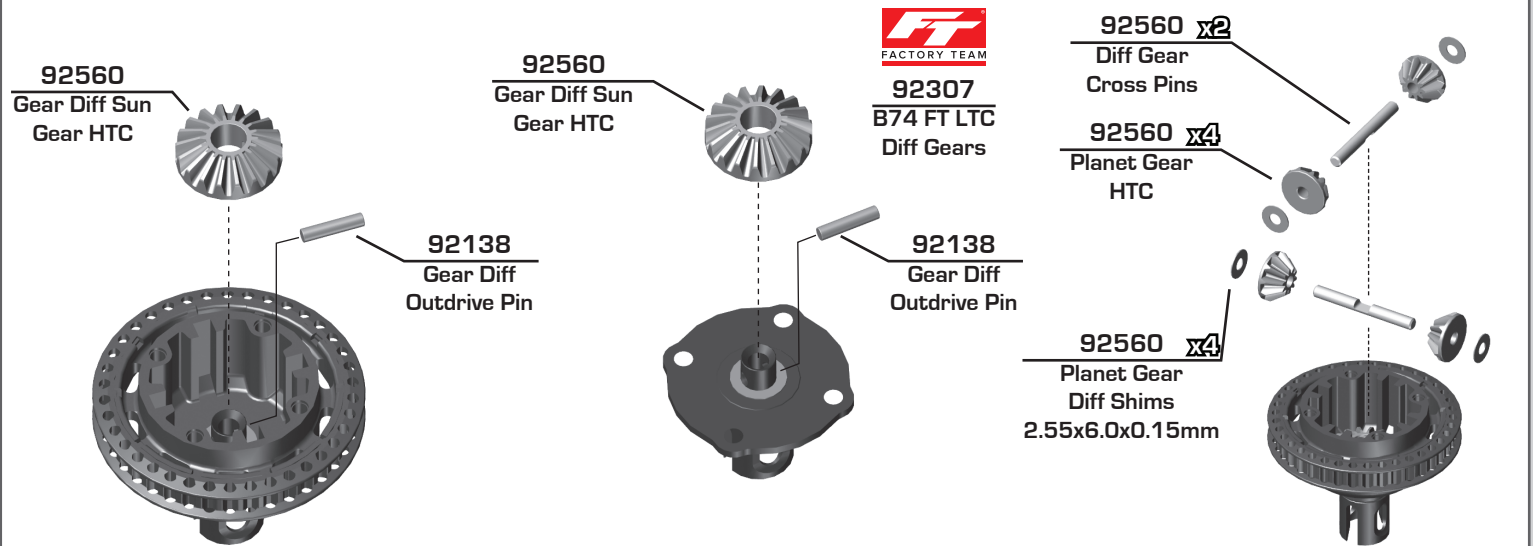




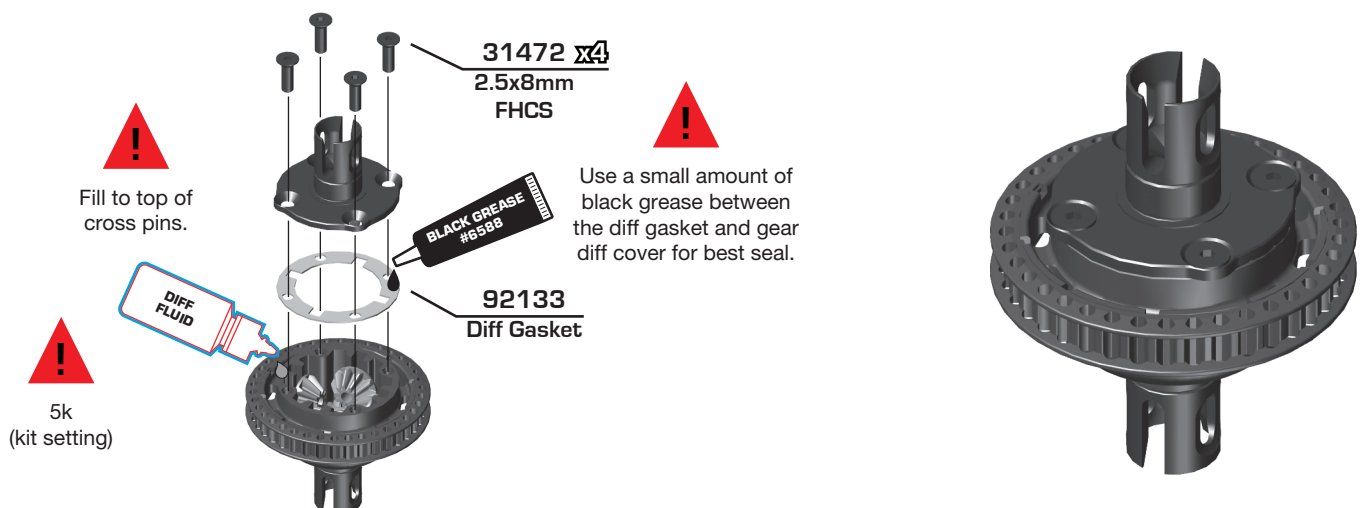
## Bag 2 - Step 4



## Bag 2 - Step 5



## Bag 2 - Step 6



### Bag 2 - Step 7

**32063 x2**  
Diff Height Insert, High

**91563 x2**  
10x15x4mm Bearing

**92139 x2**  
Diff Bearing Shim (adjust as needed)

**32063 x2**  
Diff Bearing Cam

Note:  
Shim to the best fit with 0.25mm and 0.1mm shims included. Make sure it spins free with amount of top deck / bulkhead flex with your setup.

Note:  
Always use same cam position on both sides!

Recommended starting position

Note:  
Rotate diff cam for belt tension adjustment.

	Diff Height Insert	Diff Bearing Cam
High		
Low		

### Bag 2 - Step 8

Align tab and add a small drop of CA glue to secure part to the diff case!

**32069**  
TC8 Spool, Flange

**32069**  
TC8 Spool, 38T

**32024 x2**  
TC8 Spool Outdrives

**25201 x2**  
3x8mm FHCS

### Bag 2 - Step 9

**32063 x2**  
Diff Height Insert, High

**91563 x2**  
10x15x4mm Bearing

**92139 x2**  
Diff Bearing Shim (adjust as needed)

**32063 x2**  
Diff Bearing Cam

Note:  
Shim to the best fit with 0.25mm and 0.1mm shims included. Make sure it spins free with amount of top deck / bulkhead flex with your setup.

Note:  
Always use same cam position on both sides!

Recommended starting position

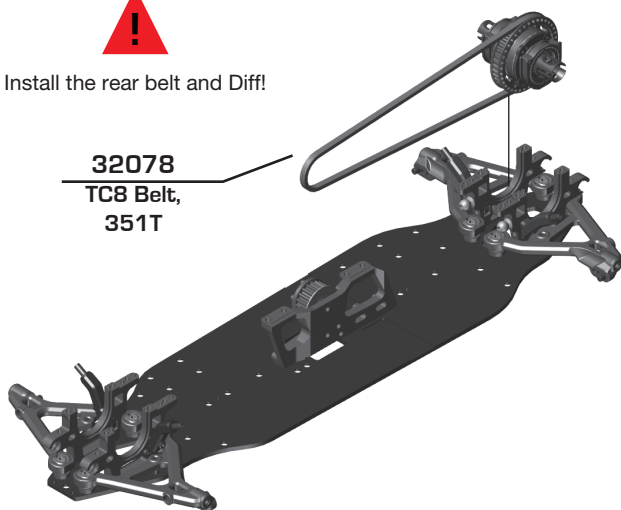
Note:  
Rotate diff cam for belt tension adjustment.

	Diff Height Insert	Diff Bearing Cam
High		
Low		

## Bag 2 - Step 10



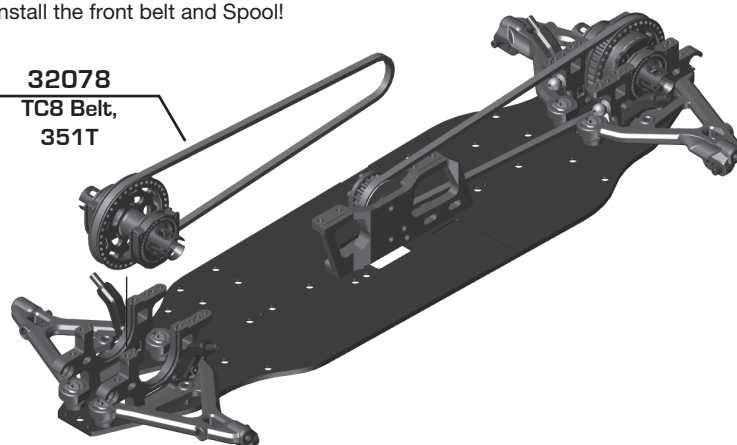
Install the rear belt and Diff!



**32078**  
TC8 Belt,  
351T

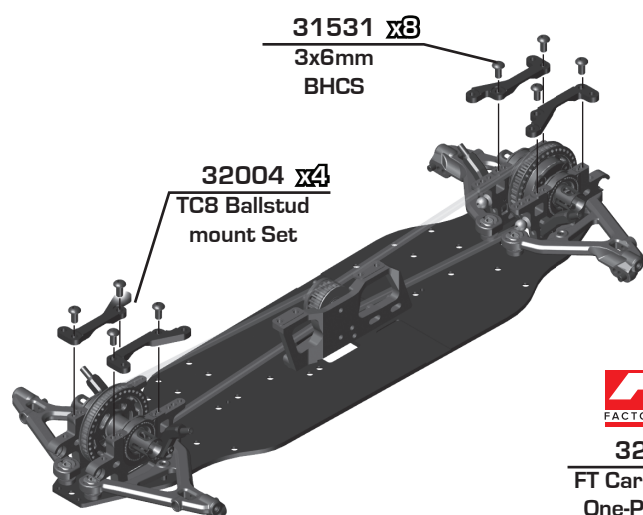


Install the front belt and Spool!



**32078**  
TC8 Belt,  
351T

## Bag 2 - Step 11



**31531 x8**  
3x6mm  
BHCS

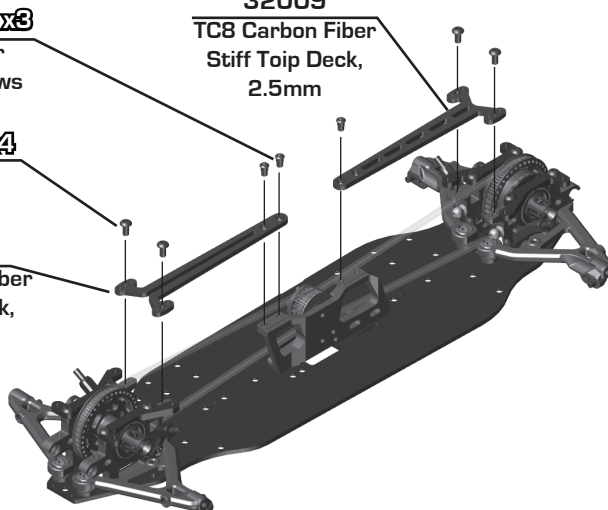
**32004 x4**  
TC8 Ballstud  
mount Set

**32031 x3**  
TC8 Motor  
Mount Screws

**31531 x4**  
3x6mm  
BHCS

**32008**  
TC8 Carbon Fiber  
Flex Top Deck,  
2.5mm

**32009**  
TC8 Carbon Fiber  
Stiff Top Deck,  
2.5mm



**32085**  
FT Carbon Fiber  
One-Piece Top  
Deck, 2.5mm



**32086**  
FT G10  
Top Deck,  
2mm

## Bag 3 - Step 1

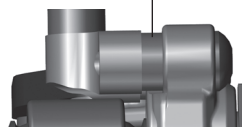
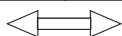


More KPI shims /  
Shorter upper arm

Less KPI shims /  
Longer upper arm

More direct  
steering feel

Less direct  
steering feel



**31382**  
Ballstud  
Washer,  
1mm

**32042**  
HD Ballstud,  
Short, 6mm



**32096**  
FT HD Ti  
Ballstuds  
Short, 6mm

**32018**  
TC8 Steering  
Block Ballstud  
Mounts



**32094**  
FT Carbon Fiber  
Steering Block  
Mount Shims

**31382 x3**  
Ballstud  
Washer,  
1mm

**32064**  
Steering  
Block, +1



**32065**  
FT Carbon  
Steering  
Block Set

**25211 x2**  
3x10mm  
BHCS

Axle Height

+2



+1  
Kit  
Setup



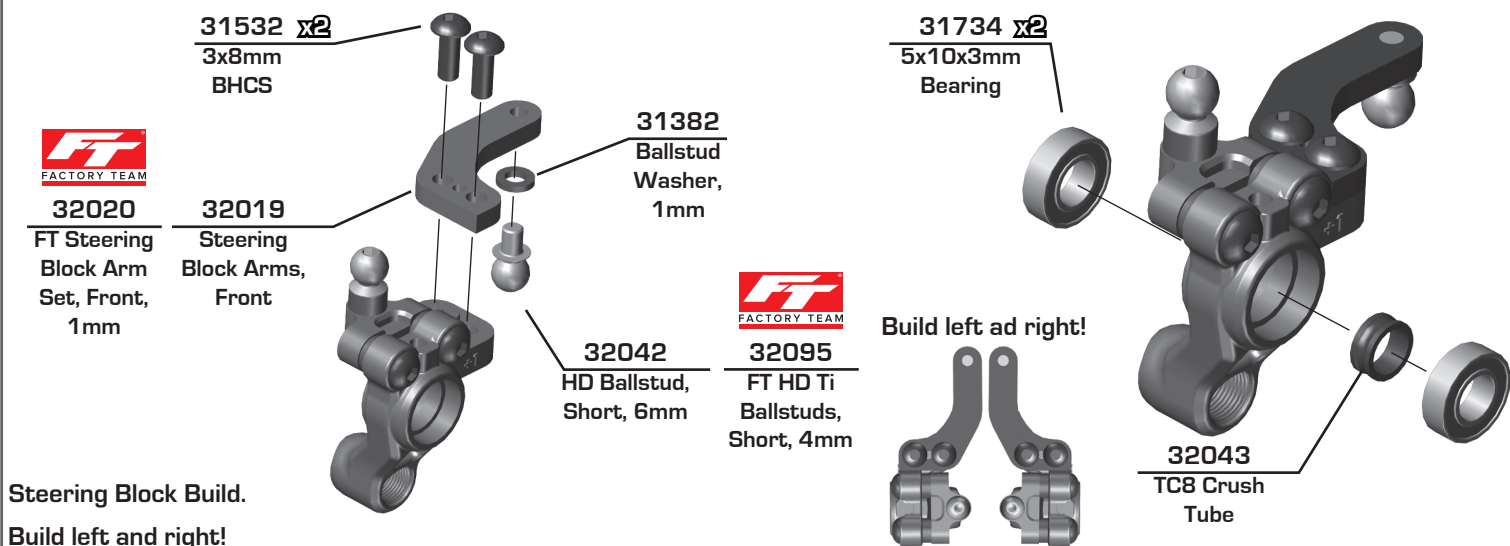
0



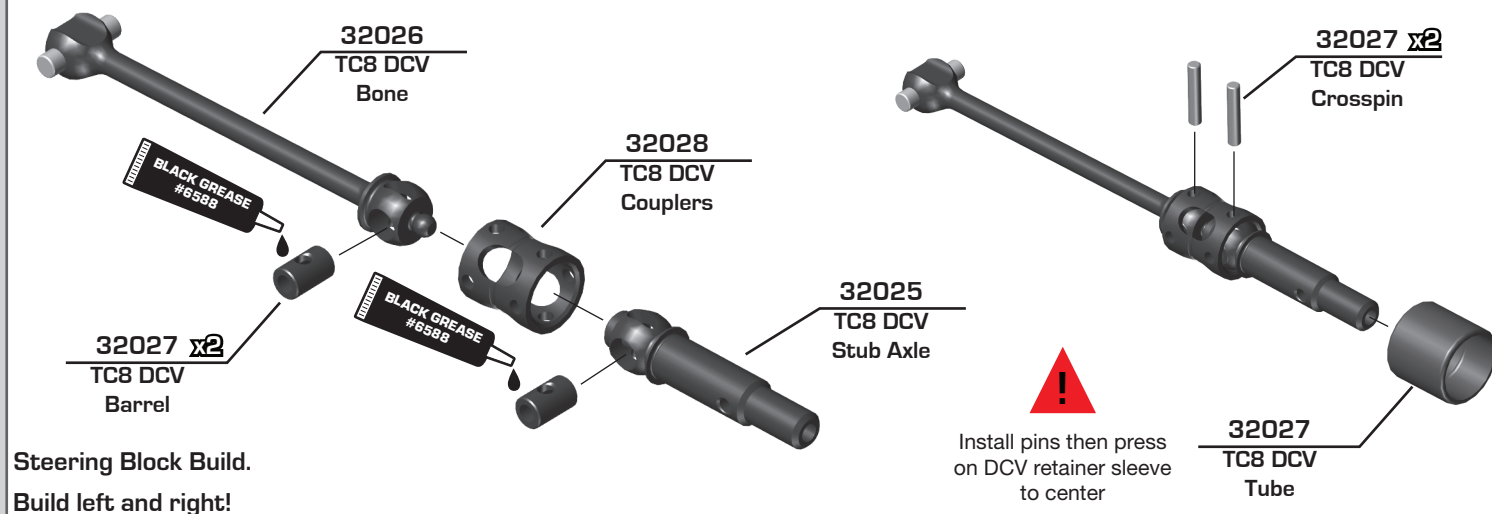
Steering Block Build.  
Build left and right!



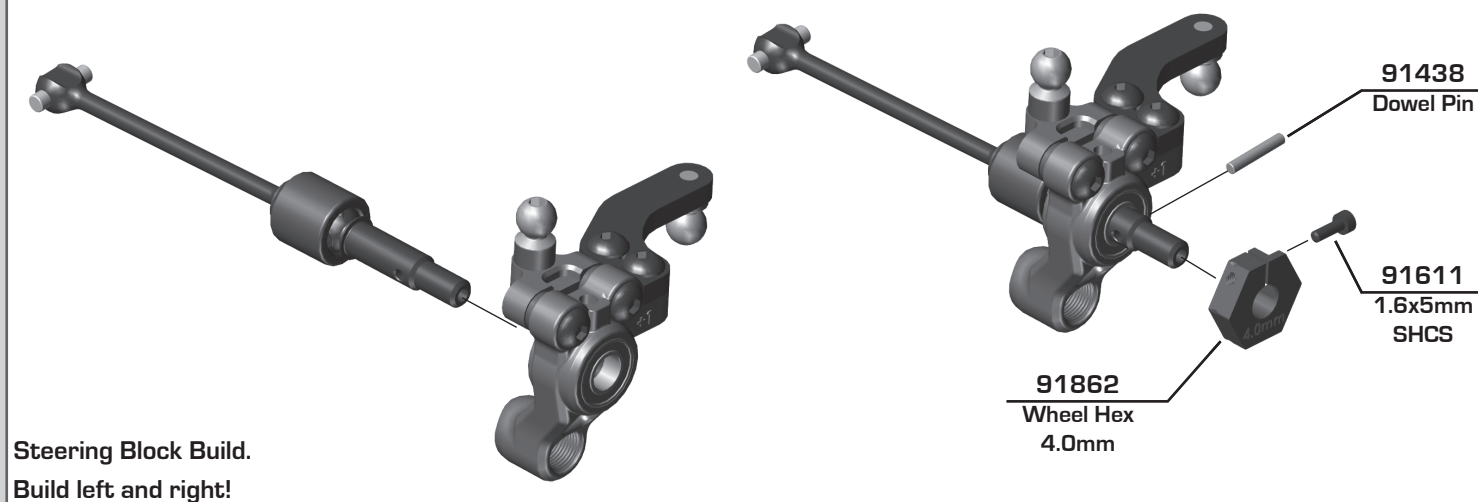
### Bag 3 - Step 2



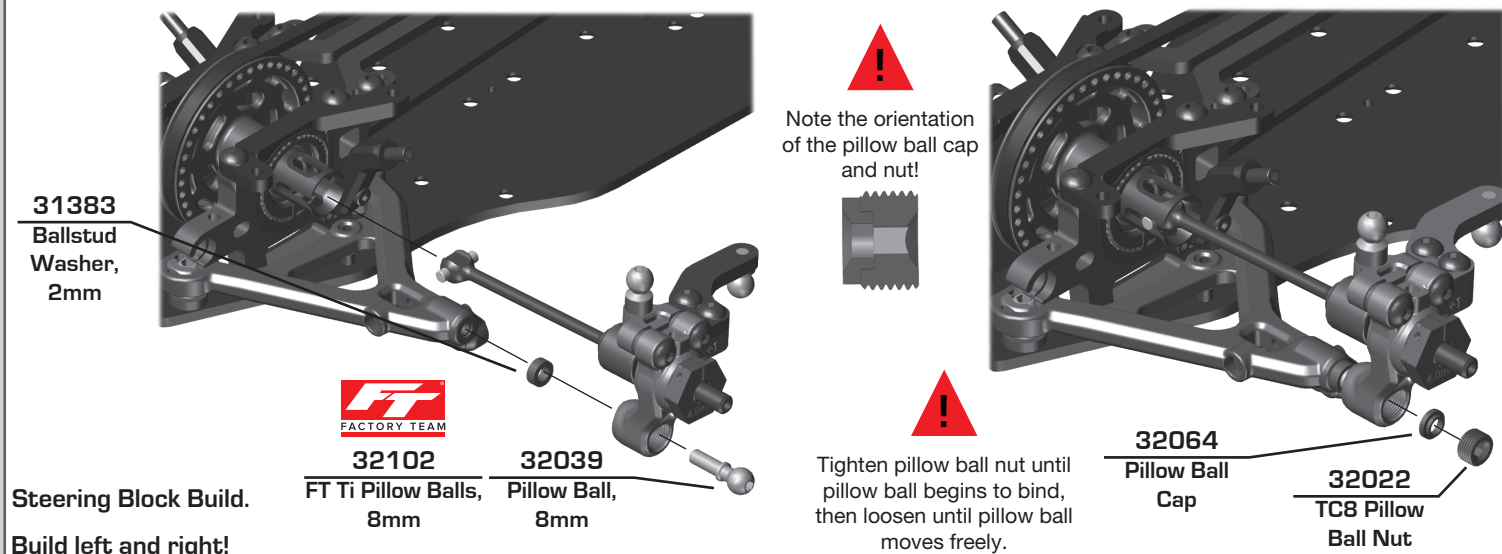
### Bag 3 - Step 3



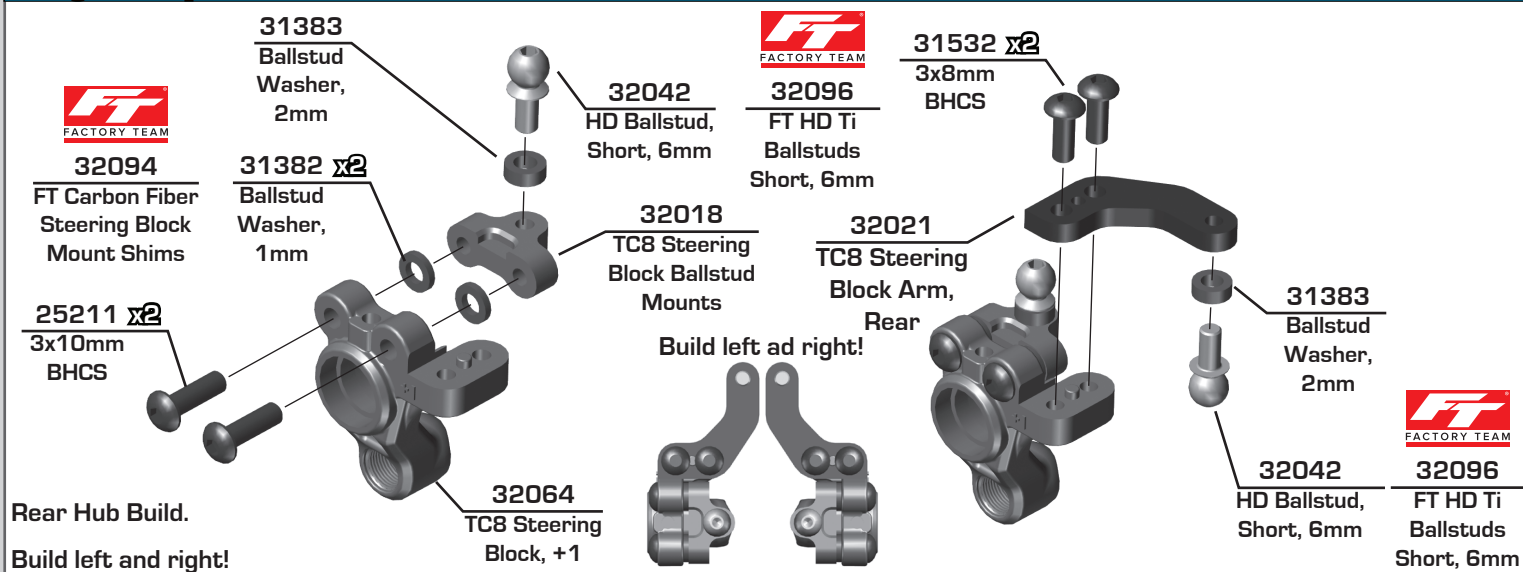
### Bag 3 - Step 4



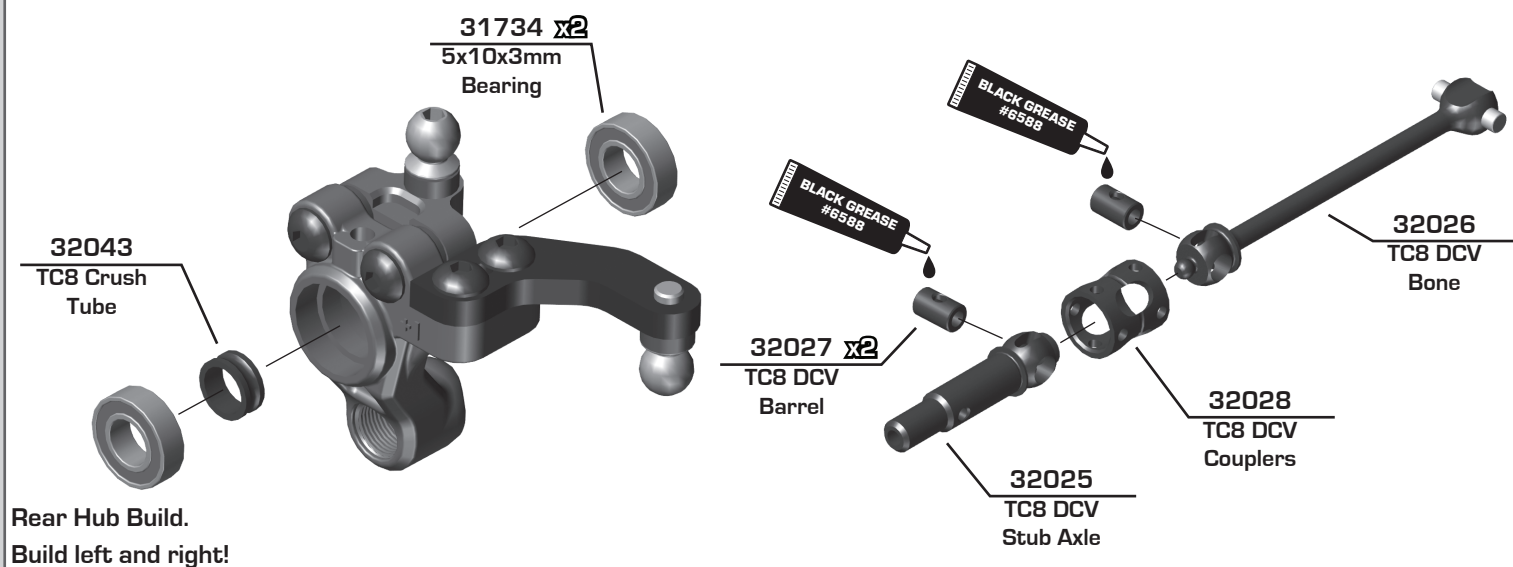
### Bag 3 - Step 5



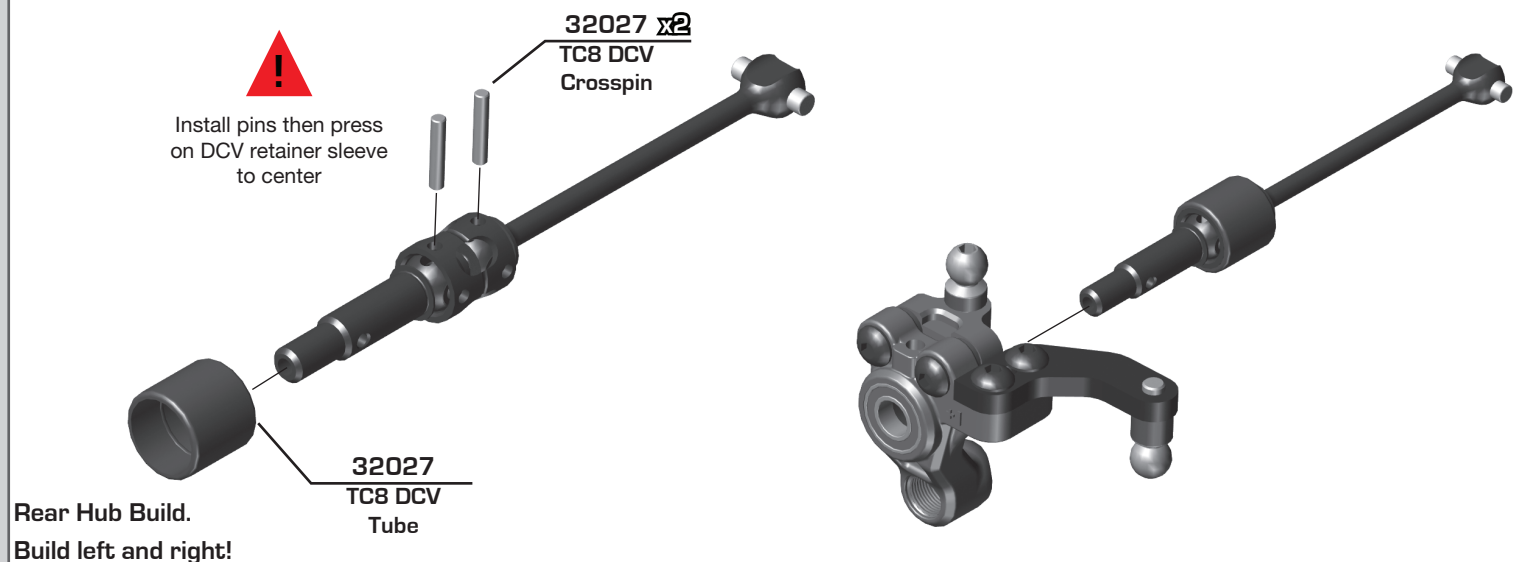
### Bag 3 - Step 6



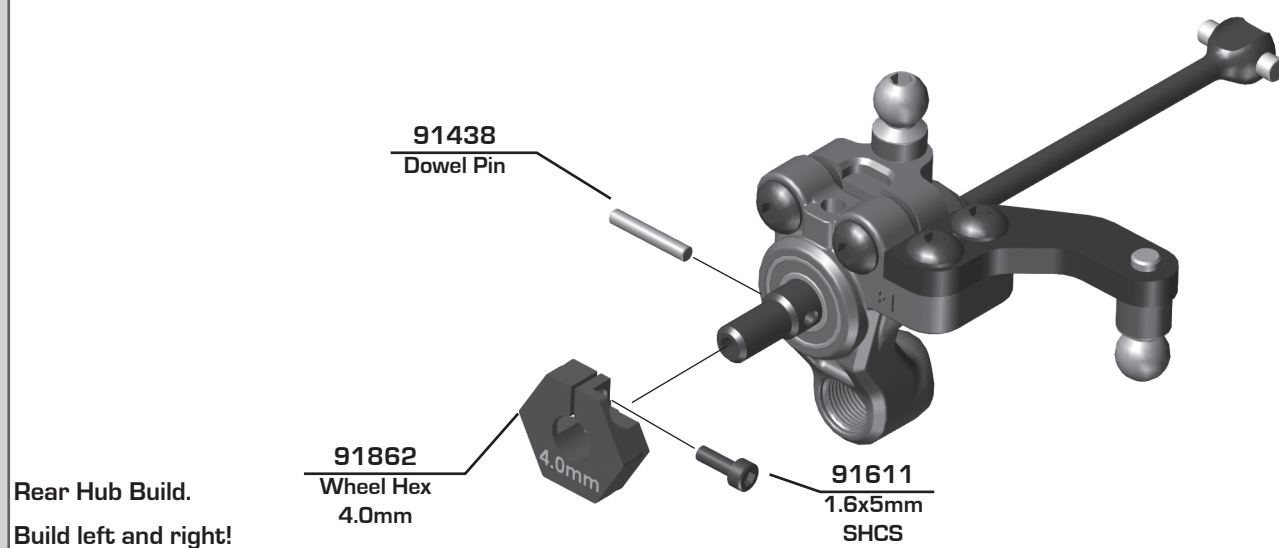
### Bag 3 - Step 7



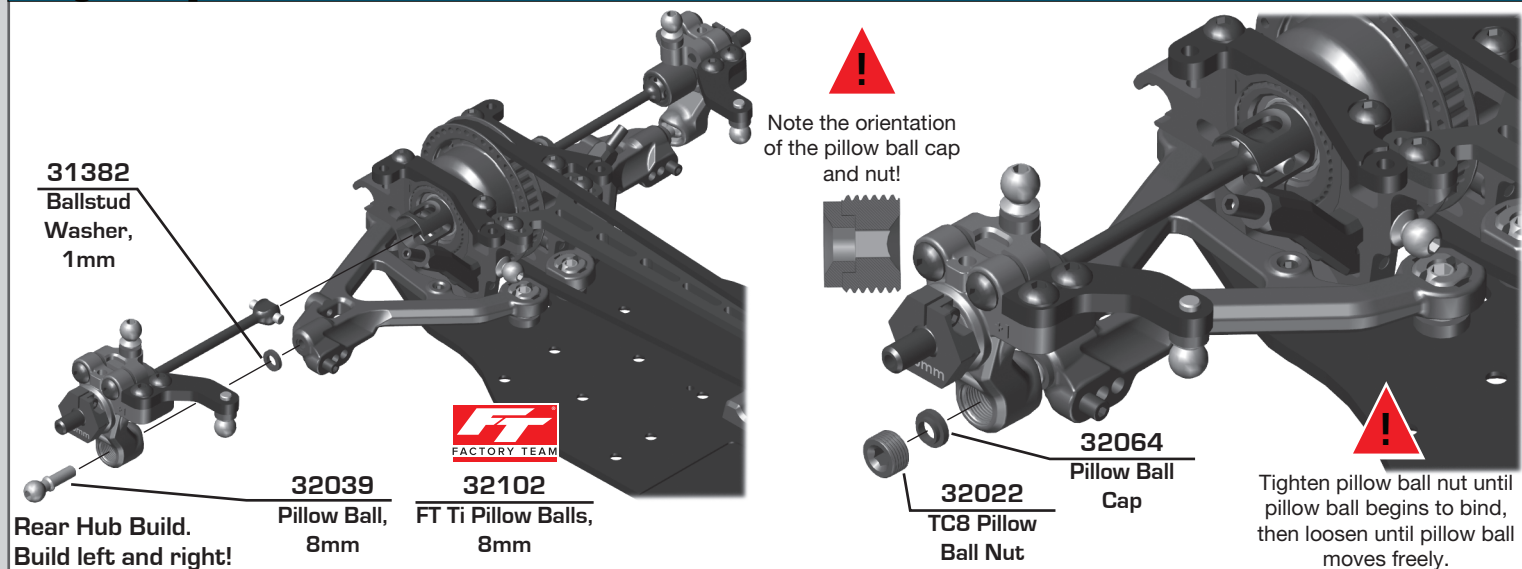
### :: Bag 3 - Step 8



### :: Bag 3 - Step 9



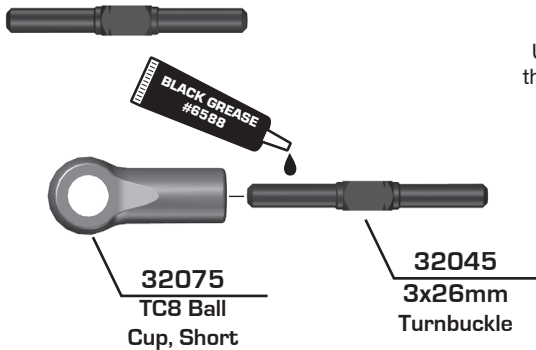
### :: Bag 3 - Step 10





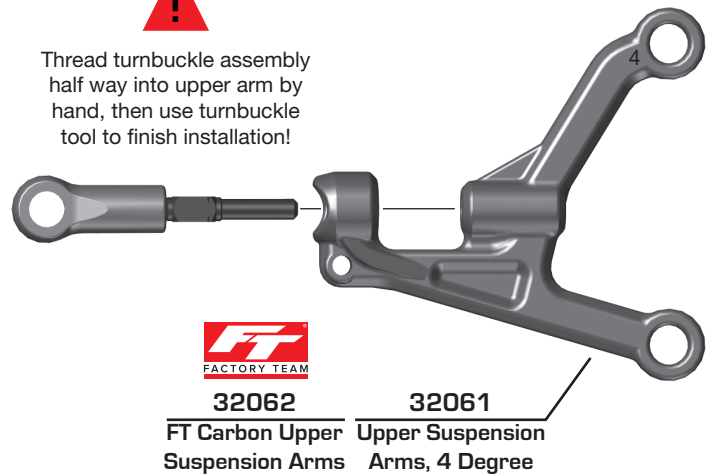
## Bag 4 - Step 1

**!**  
Orient the notch to the left throughout the car. It indicates which end has the left hand threads!



**!**  
Use black grease on the threads of the turnbuckles for easier ball cup and upper arm installation!

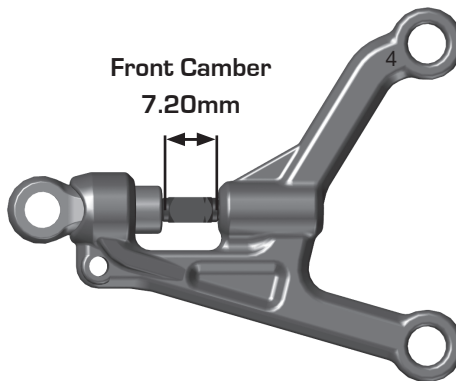
**!**  
Thread turnbuckle assembly half way into upper arm by hand, then use turnbuckle tool to finish installation!



Build left and right!

## Bag 4 - Step 2

**!**  
Measurements given are approximate. Camber should be set with a setup station at ride height.

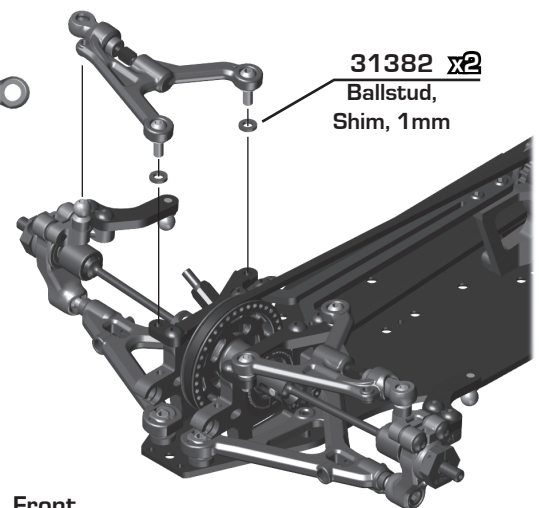
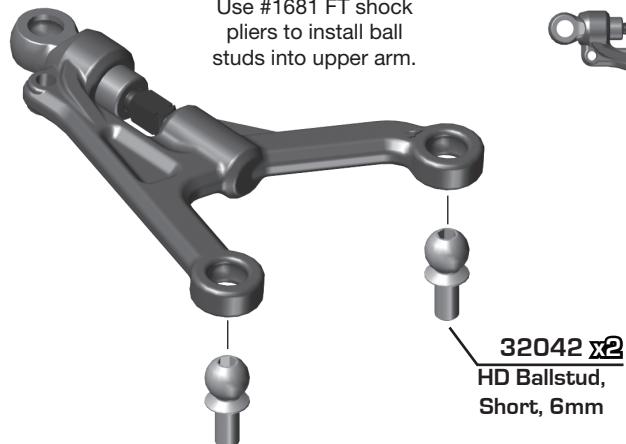
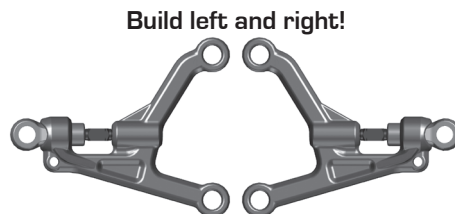


	Caster Adjustment
0 Degrees	
2 Degrees	
4 Degrees (Kit Setup)	


Build left and right!

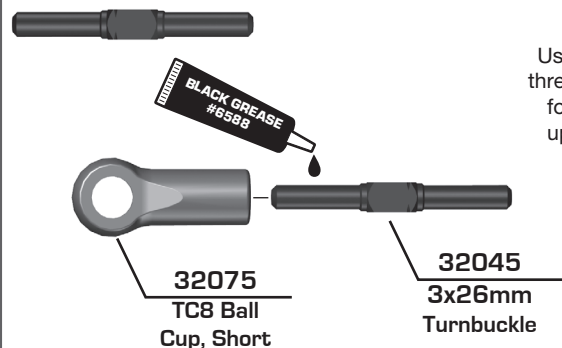
## Bag 4 - Step 3


**!**  
Use #1681 FT shock pliers to install ball studs into upper arm.




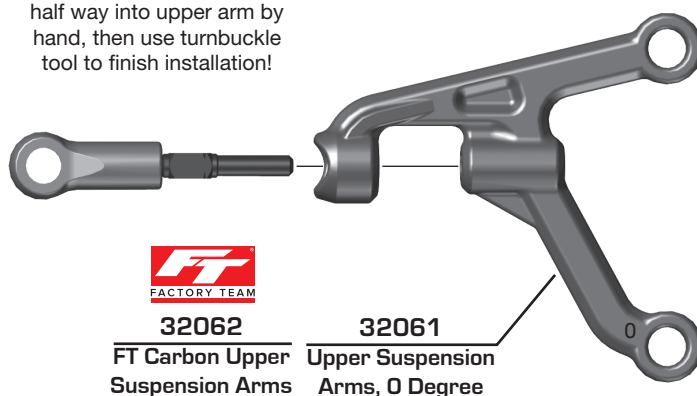
## :: Bag 4 - Step 4

  
Orient the notch to the left throughout the car. It indicates which end has the left hand threads!




  
Use black grease on the threads of the turnbuckles for easier ball cup and upper arm installation!

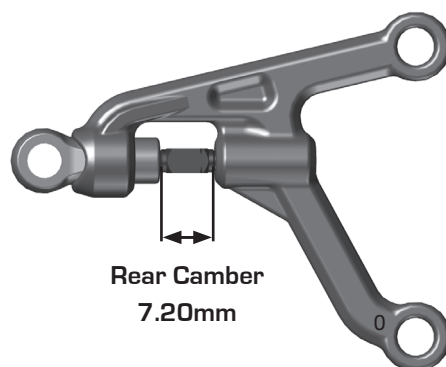
  
Thread turnbuckle assembly half way into upper arm by hand, then use turnbuckle tool to finish installation!






Build left and right!

## :: Bag 4 - Step 5

  
Measurements given are approximate. Camber should be set with a setup station at ride height.

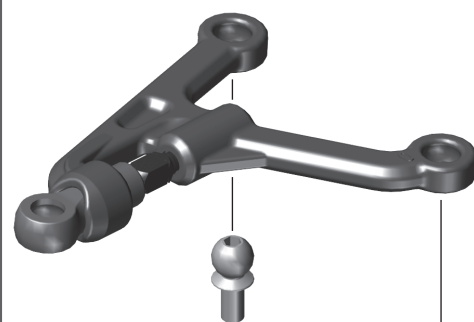



Caster Adjustment	
0 Degrees (Kit Setup)	
2 Degrees	
4 Degrees	

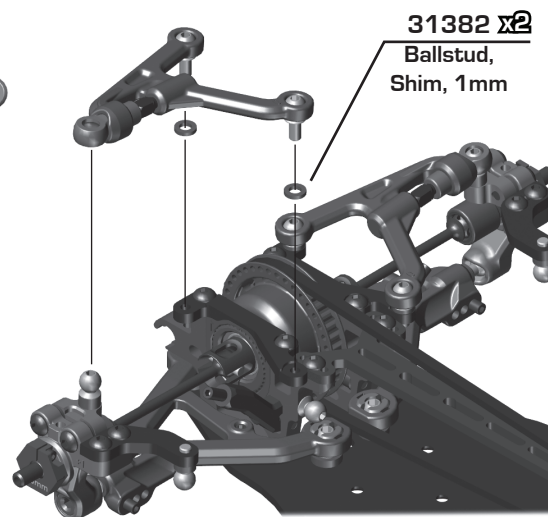
Build left and right!

## :: Bag 4 - Step 6

Build left and right!

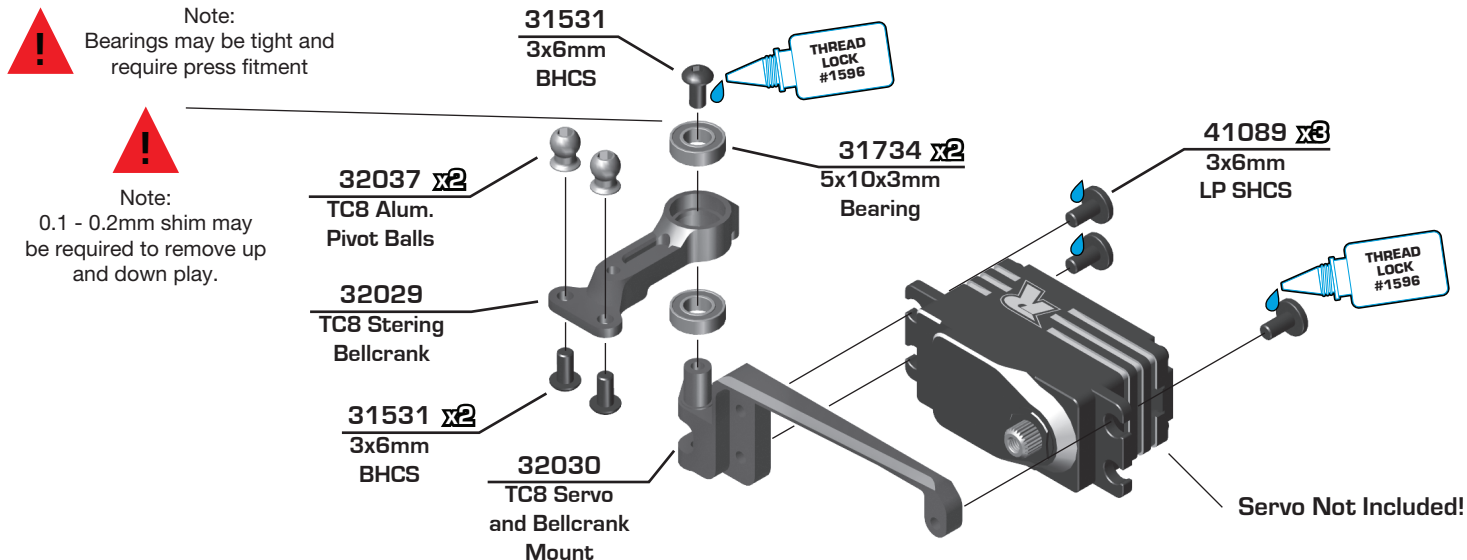


  
Use #1681 FT shock pliers to install ball studs into upper arm.

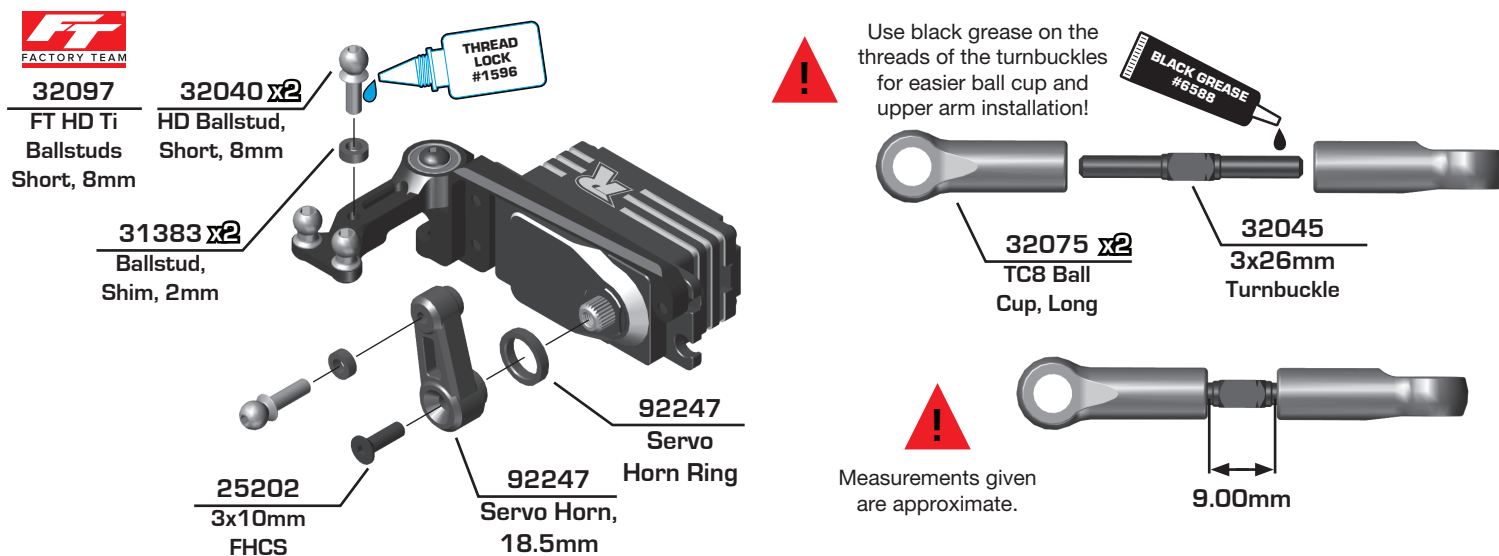


Rear

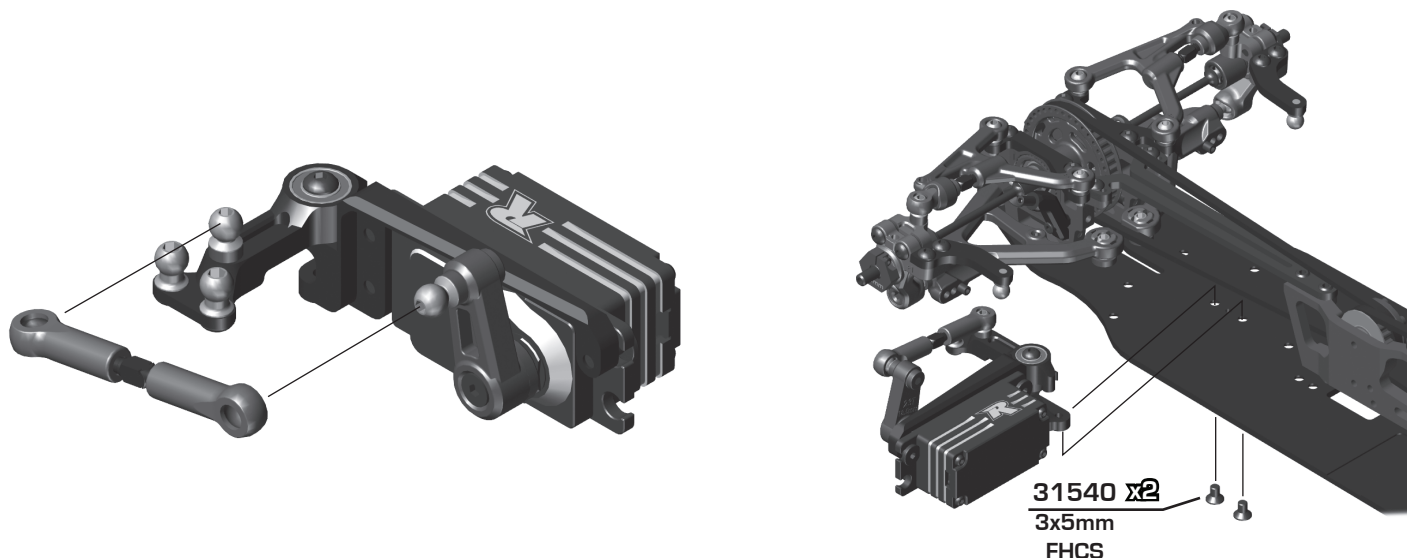
## Bag 4 - Step 7



## Bag 4 - Step 8



## Bag 4 - Step 9





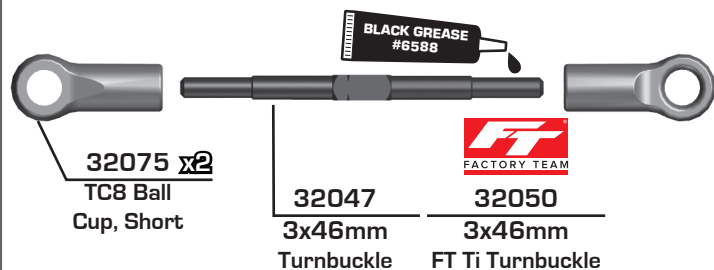
### :: Bag 4 - Step 10



Use black grease on the threads of the turnbuckles for easier ball cup and upper arm installation!

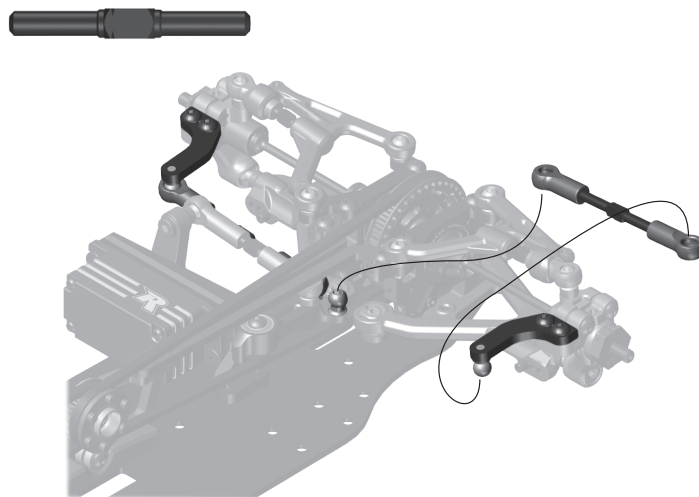


Orient the notch to the left throughout the car. It indicates which end has the left hand threads!



Build left and right!

Measurements given are approximate. Toe should be set with a setup station at ride height.



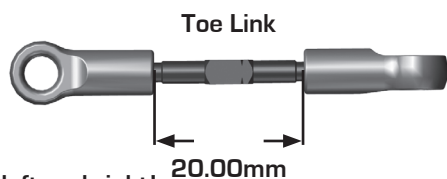
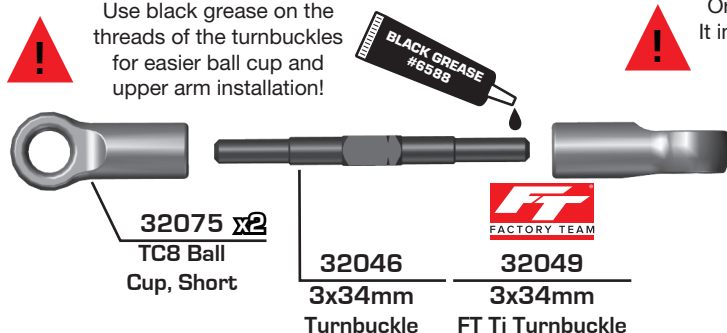
### :: Bag 4 - Step 11



Use black grease on the threads of the turnbuckles for easier ball cup and upper arm installation!

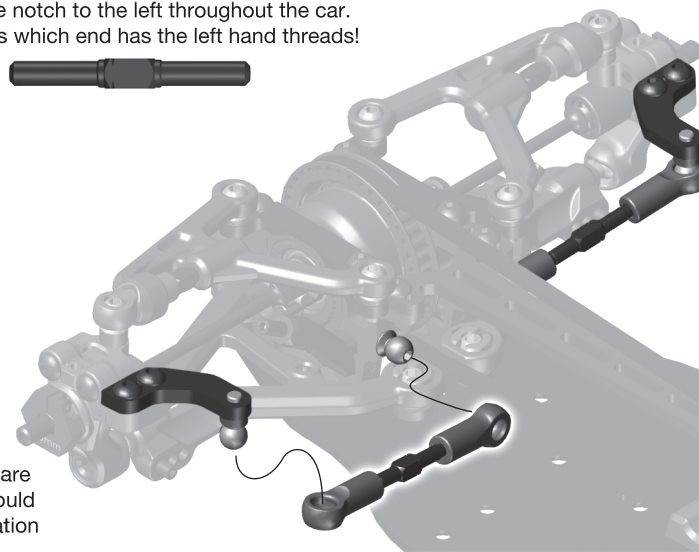


Orient the notch to the left throughout the car. It indicates which end has the left hand threads!

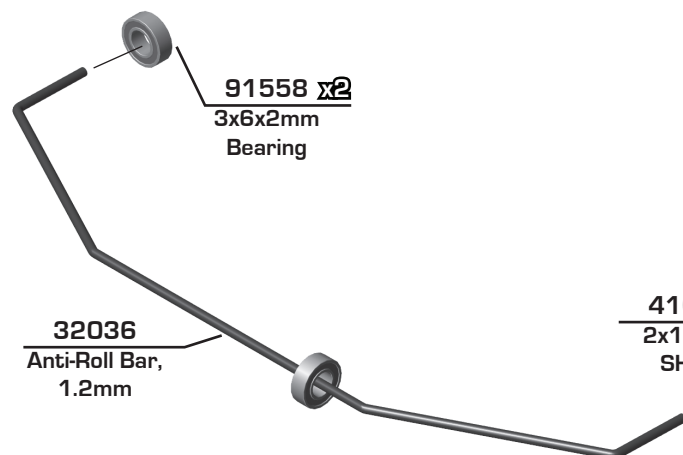


Build left and right!

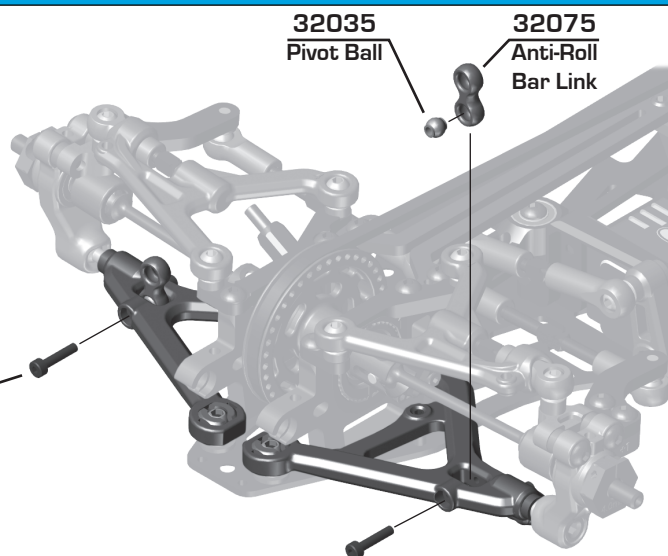
Measurements given are approximate. Toe should be set with a setup station at ride height.



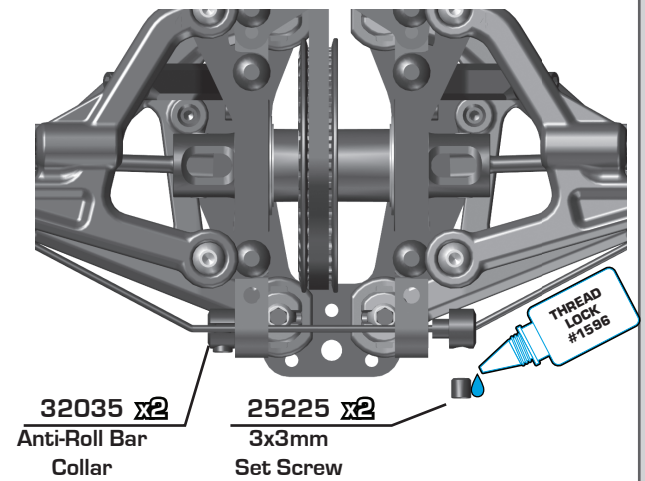
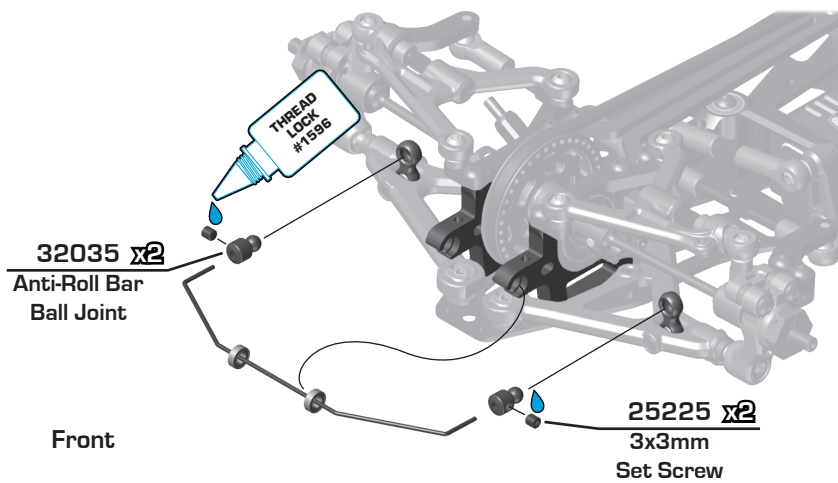
### :: Bag 5 - Step 1



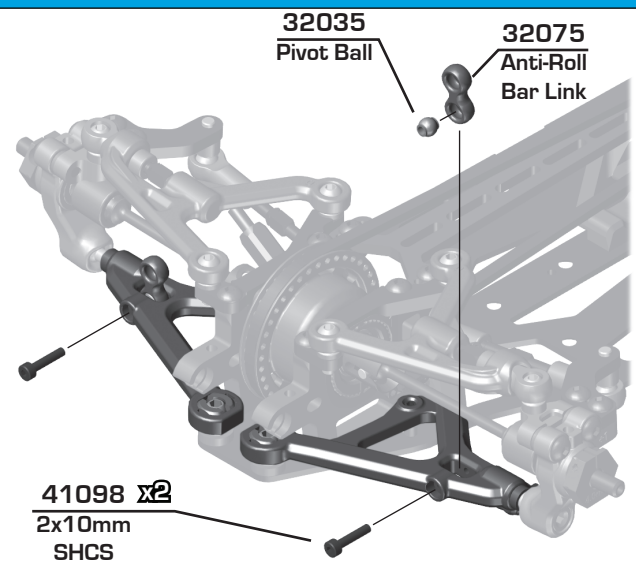
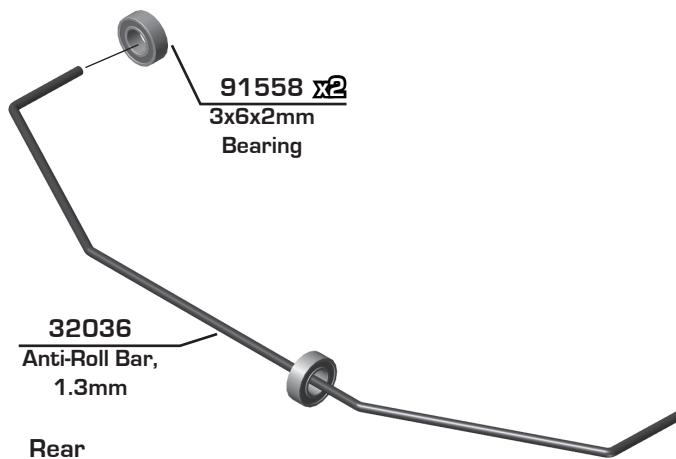
Front



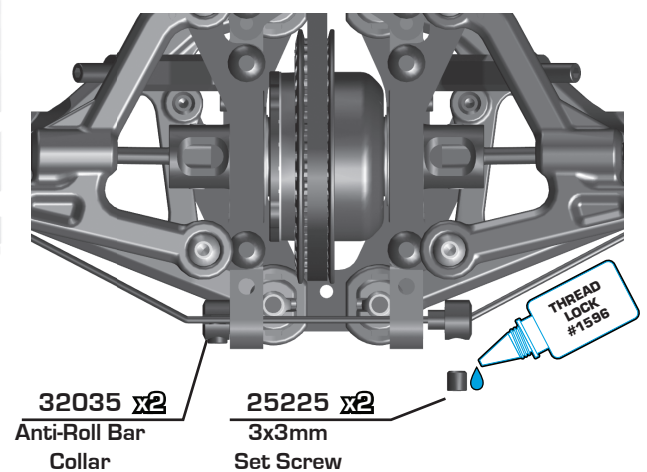
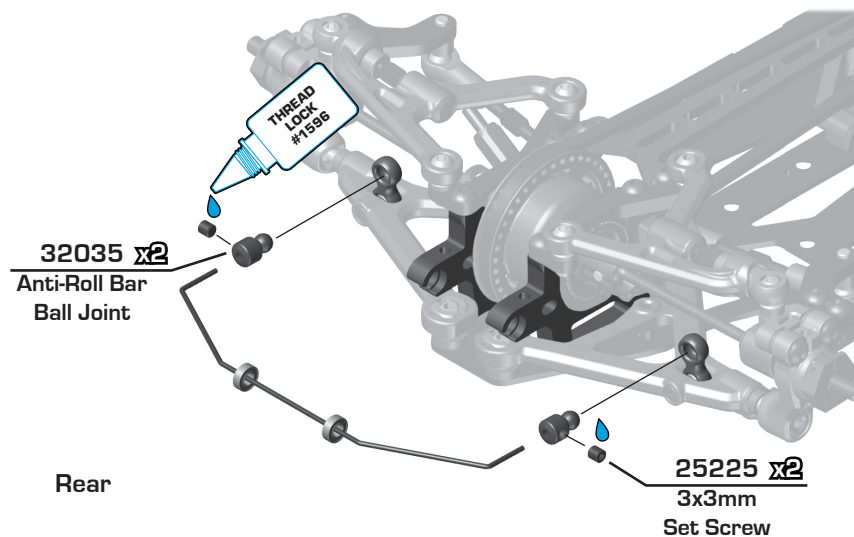
### Bag 5 - Step 2



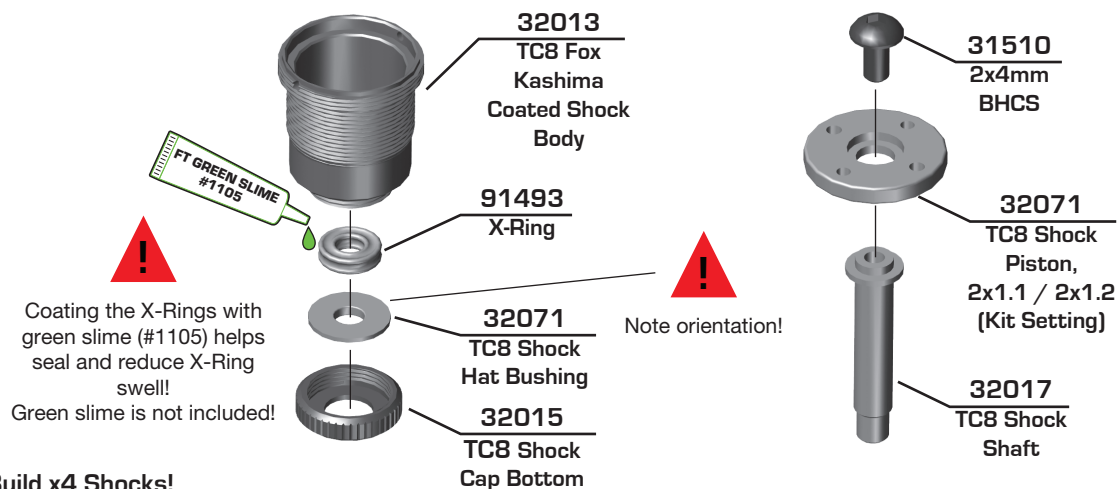
### Bag 5 - Step 3



### Bag 5 - Step 4

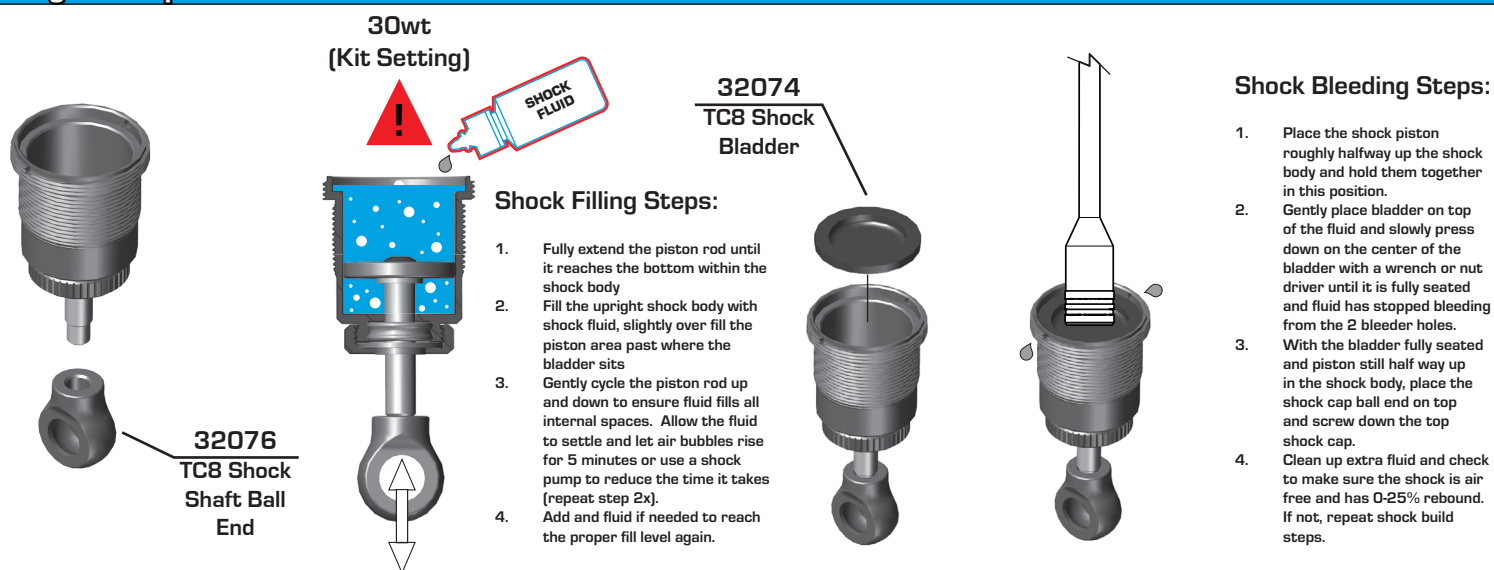


## Bag 6 - Step 1

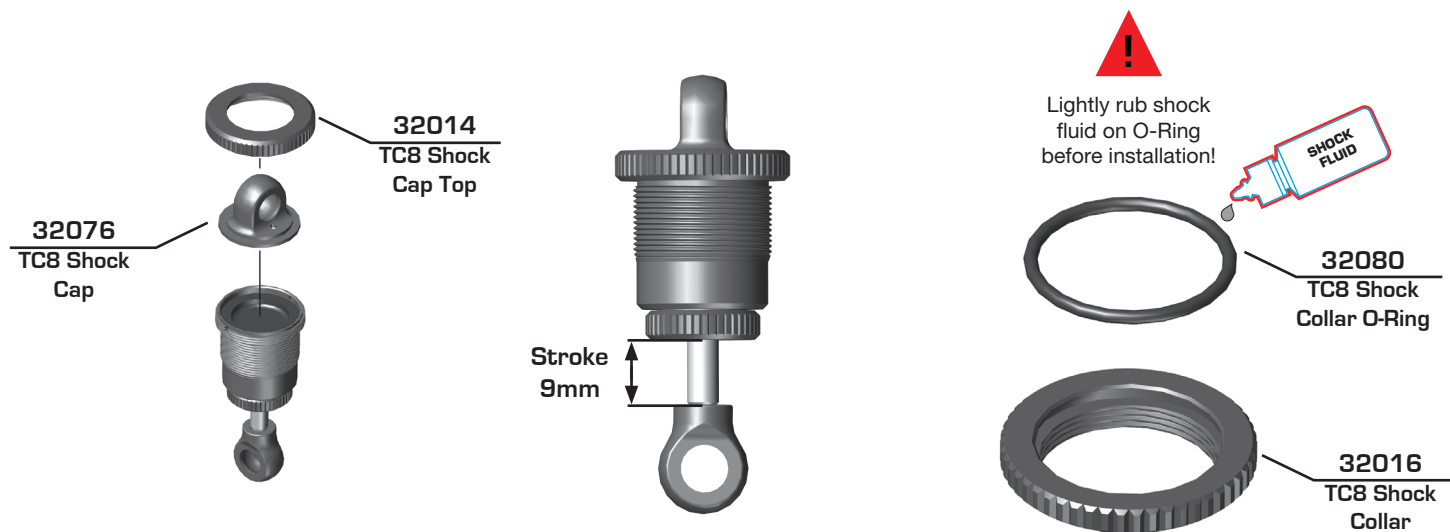


Build x4 Shocks!

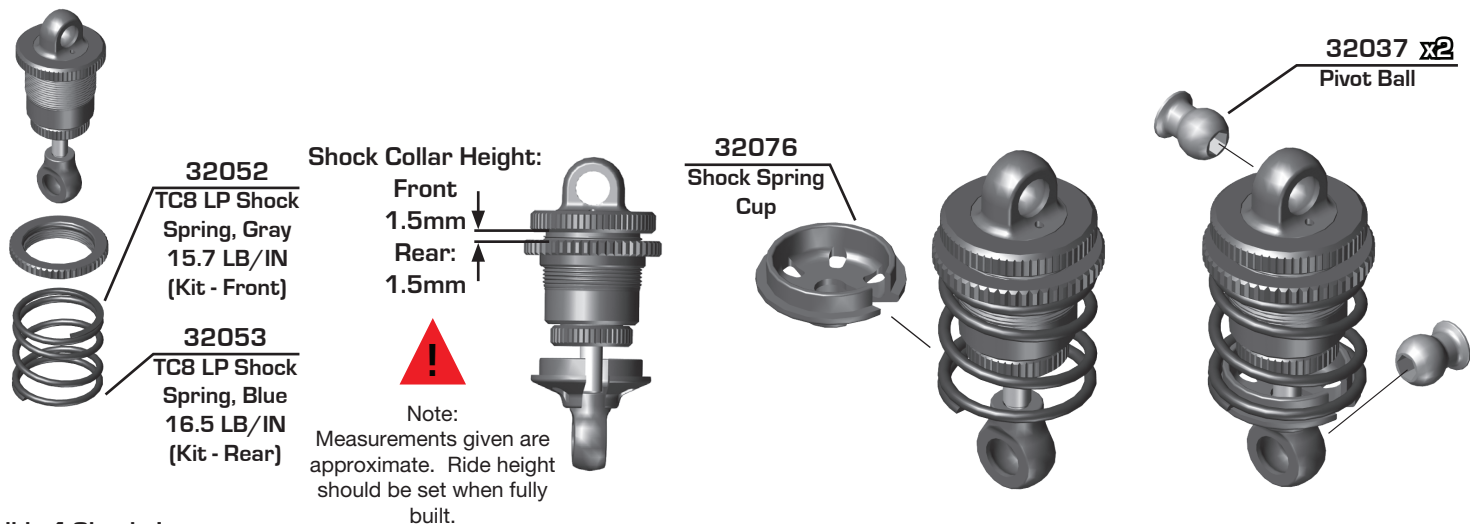
## Bag 6 - Step 2



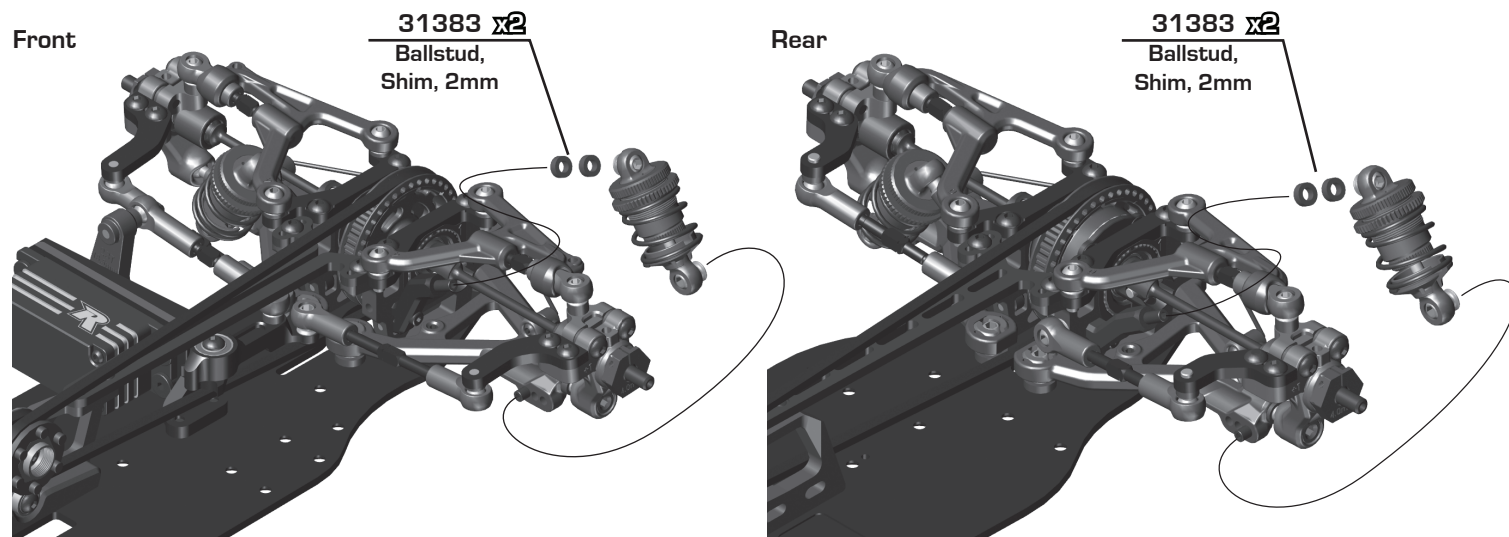
## Bag 6 - Step 3



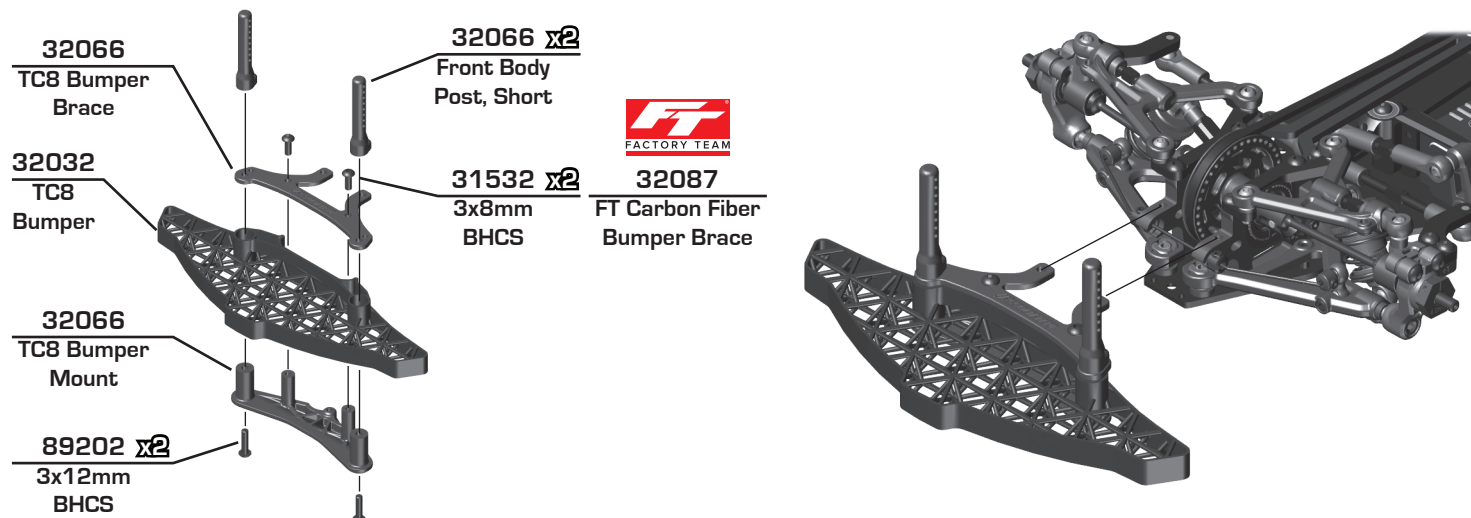
## :: Bag 6 - Step 4



## :: Bag 6 - Step 5



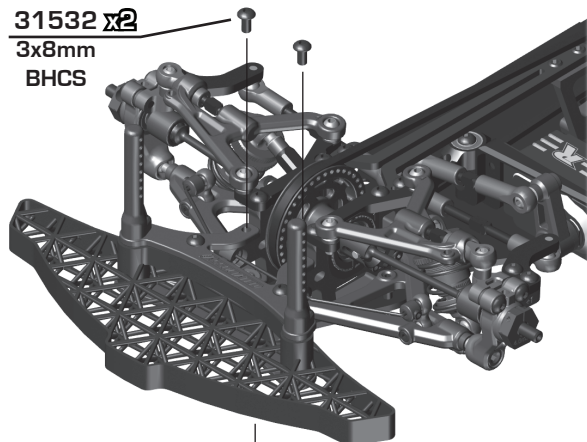
## :: Bag 7 - Step 1





### Bag 7 - Step 2

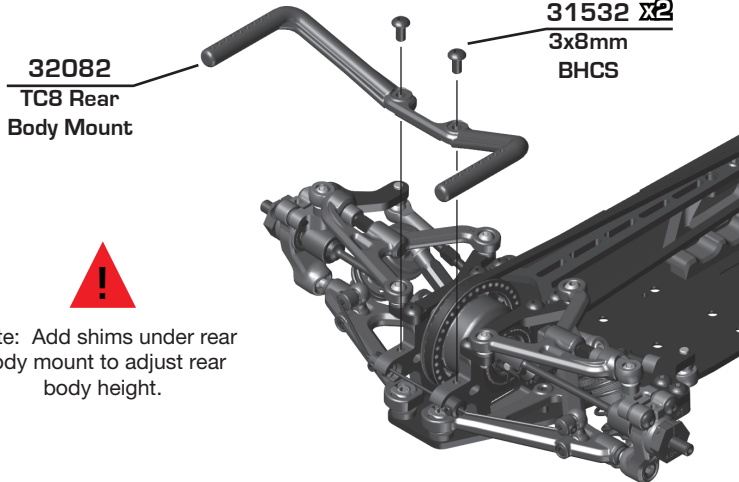
31532 x2  
3x8mm  
BHCS



25201  
3x8mm  
FHCS



32082  
TC8 Rear  
Body Mount



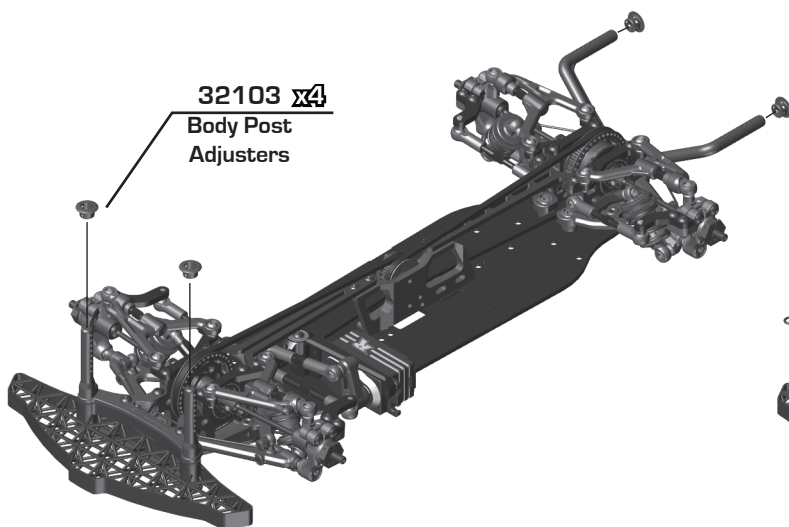
31532 x2  
3x8mm  
BHCS



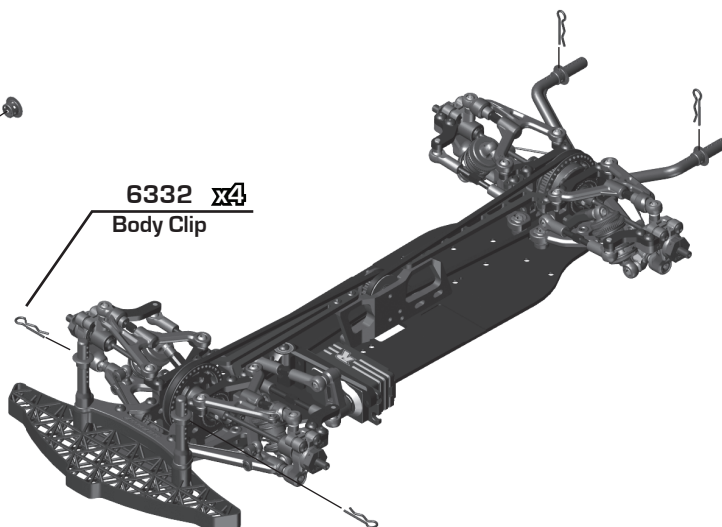
Note: Add shims under rear  
body mount to adjust rear  
body height.

### Bag 7 - Step 3

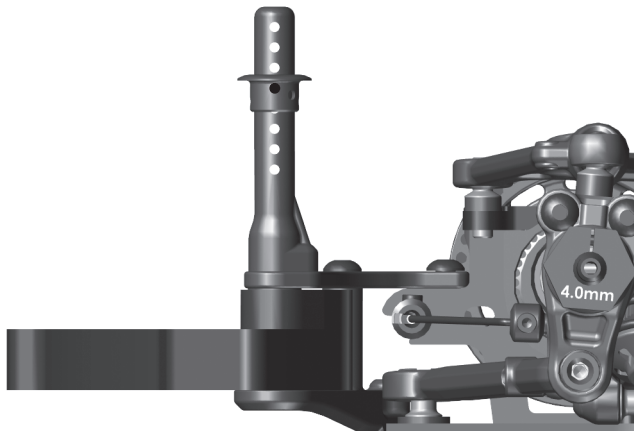
32103 x4  
Body Post  
Adjusters



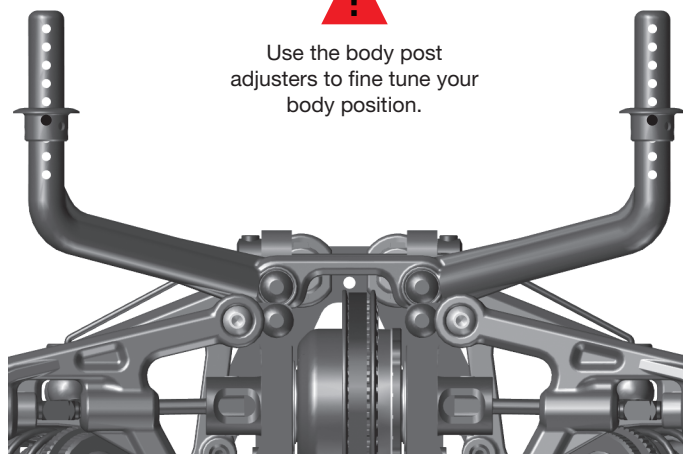
6332 x4  
Body Clip



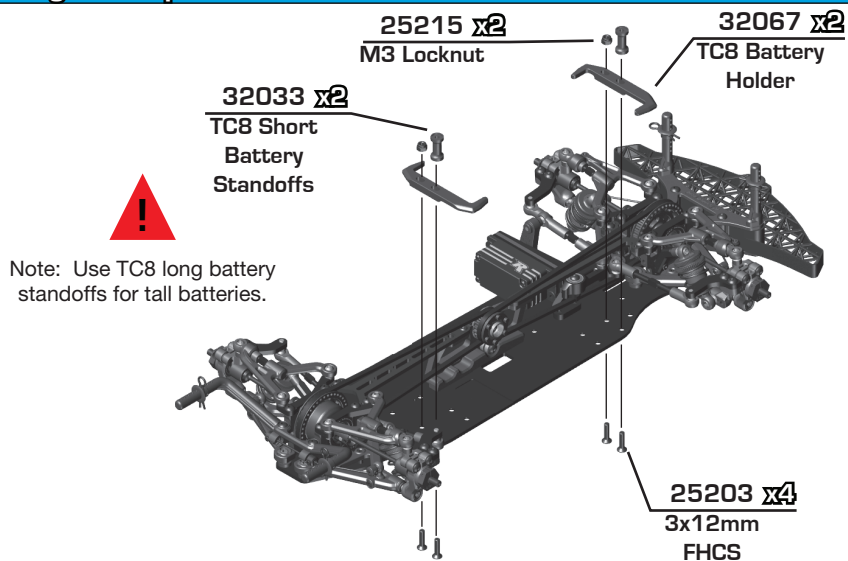
### Bag 7 - Step 4



Use the body post  
adjusters to fine tune your  
body position.



## Bag 8 - Step 1



**32101**  
FT Carbon Fiber  
Battery Holder  
set



**32090**  
FT Steel Front  
and Rear Battery  
Weight Set, 42g



**32091**  
FT Steel Front  
and Rear Battery  
Weight Set, 60g

Note:  
Optional FT chassis weights  
are shown on page 25.

## Bag 8 - Step 2

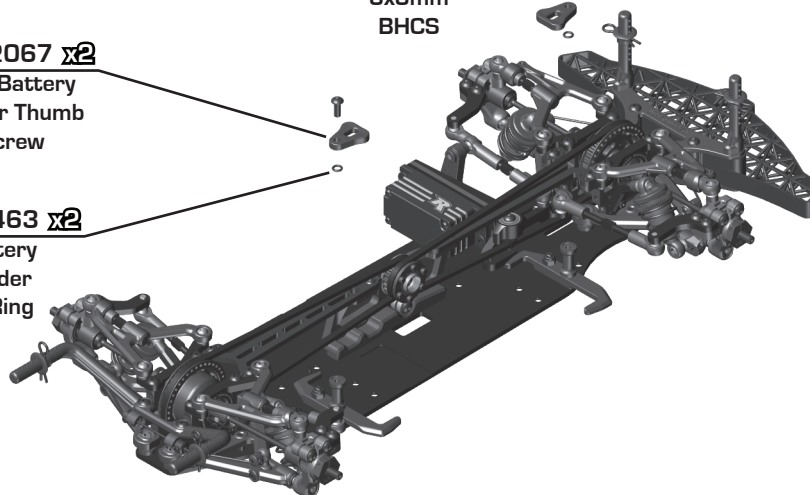


**32101**  
FT Carbon Fiber  
Battery Holder  
set

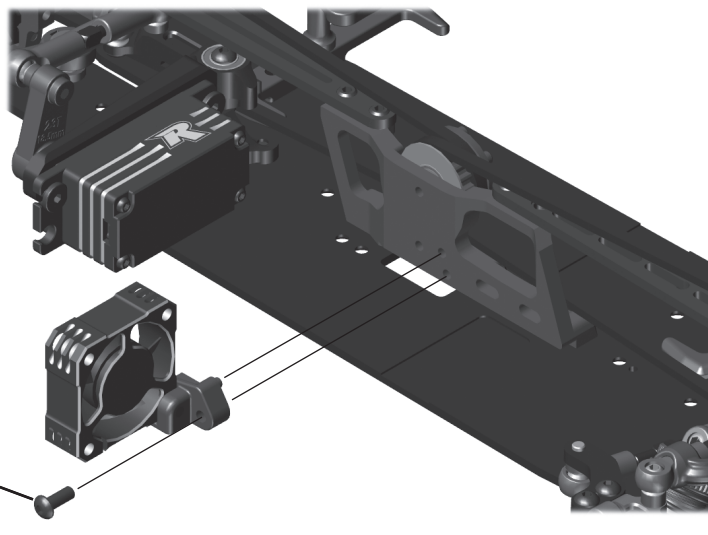
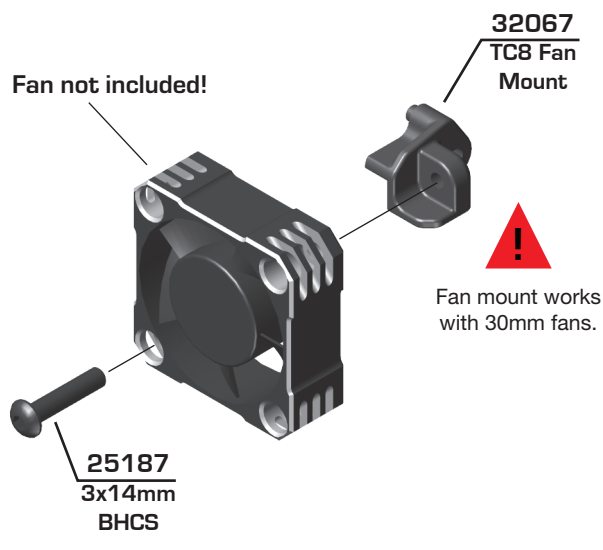
**32067 x2**  
TC8 Battery  
Holder Thumb  
Screw

**92463 x2**  
Battery  
Holder  
O-Ring

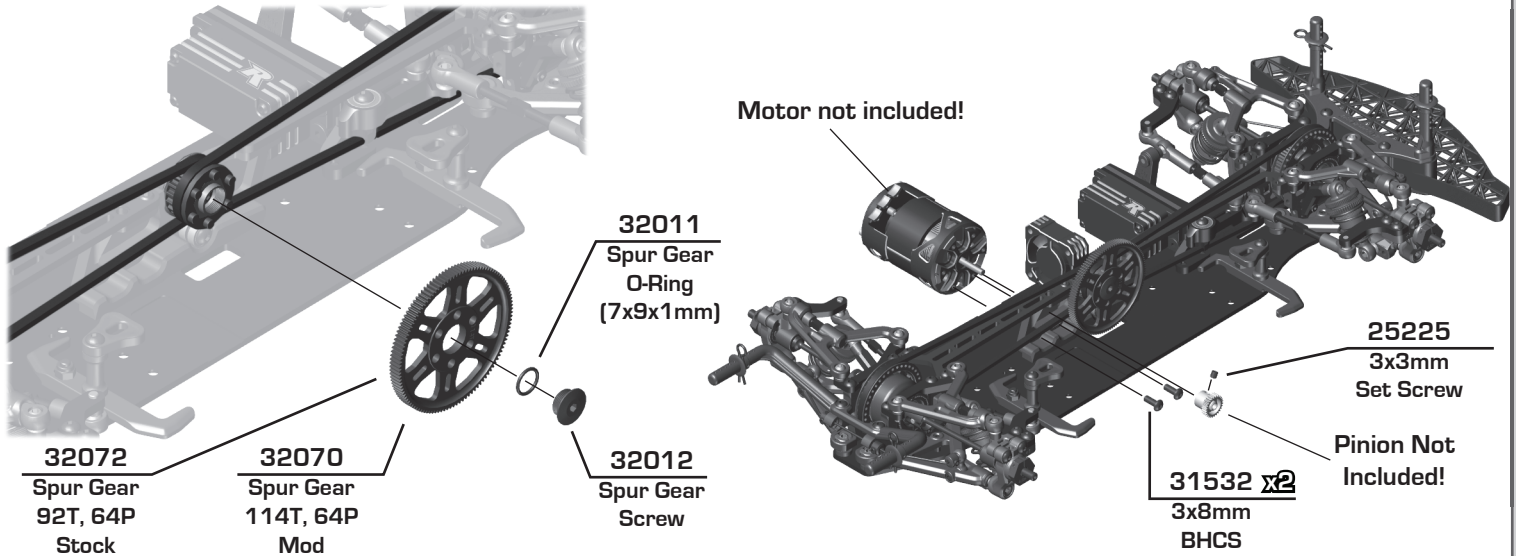
**31532 x2**  
3x8mm  
BHCS



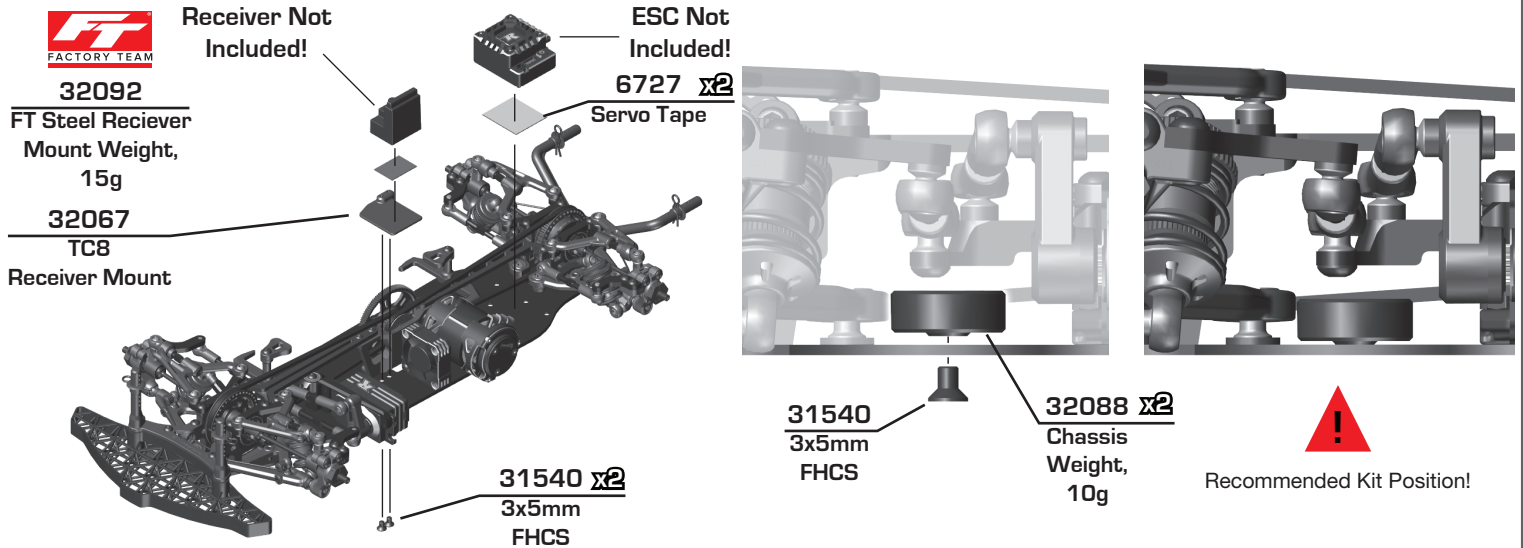
## Bag 8 - Step 3



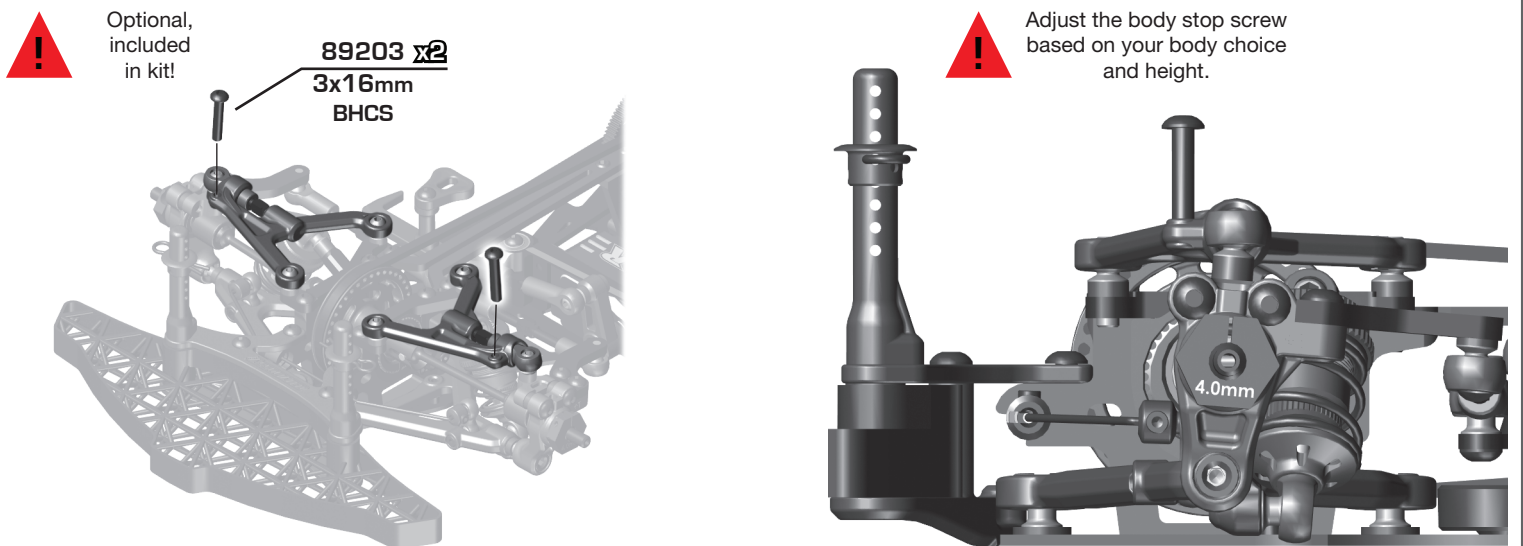
### Bag 8 - Step 4



### Bag 8 - Step 5

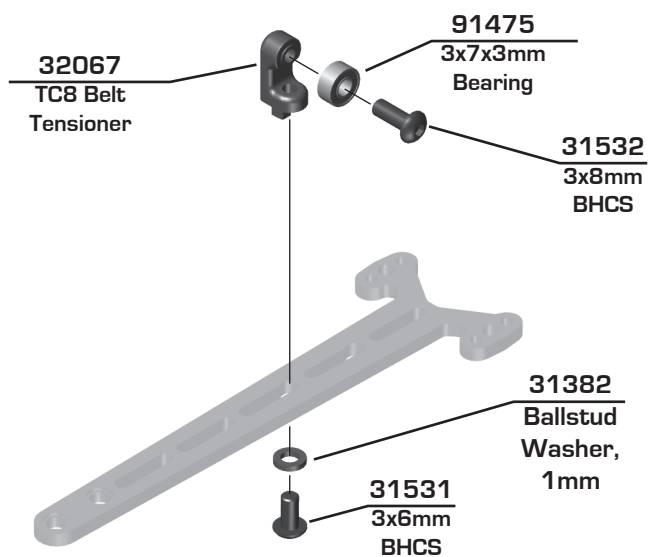


### Bag 8 - Step 6

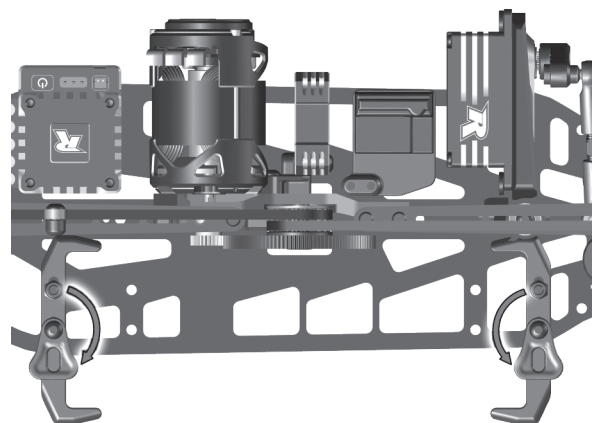


## :: Bag 8 - Step 7

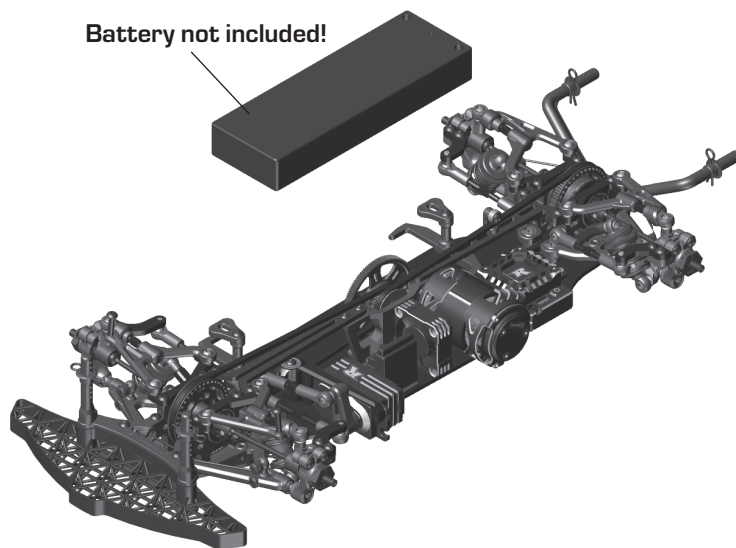
  
Optional belt tensioner  
installation steps.  
Included in kit!  
(Recommended for Mod)



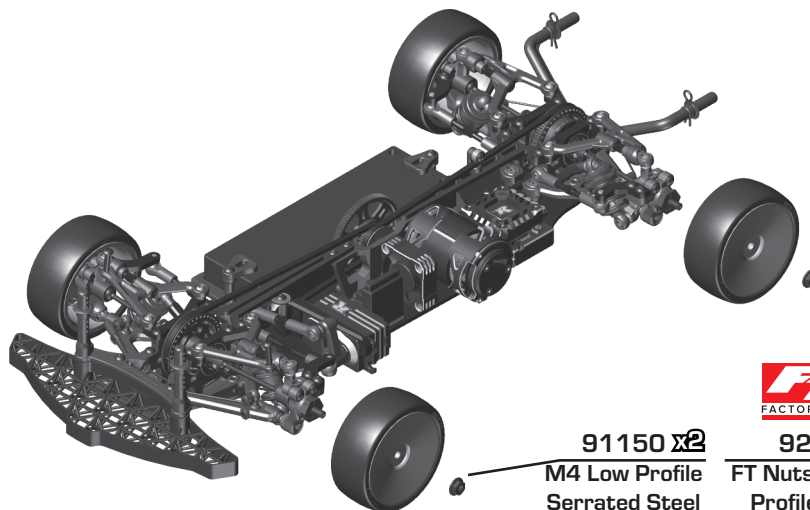
## :: Bag 8 - Step 8



Battery not included!



## :: Bag 8 - Step 9



91150 x2  
M4 Low Profile  
Serrated Steel  
Wheel Nuts

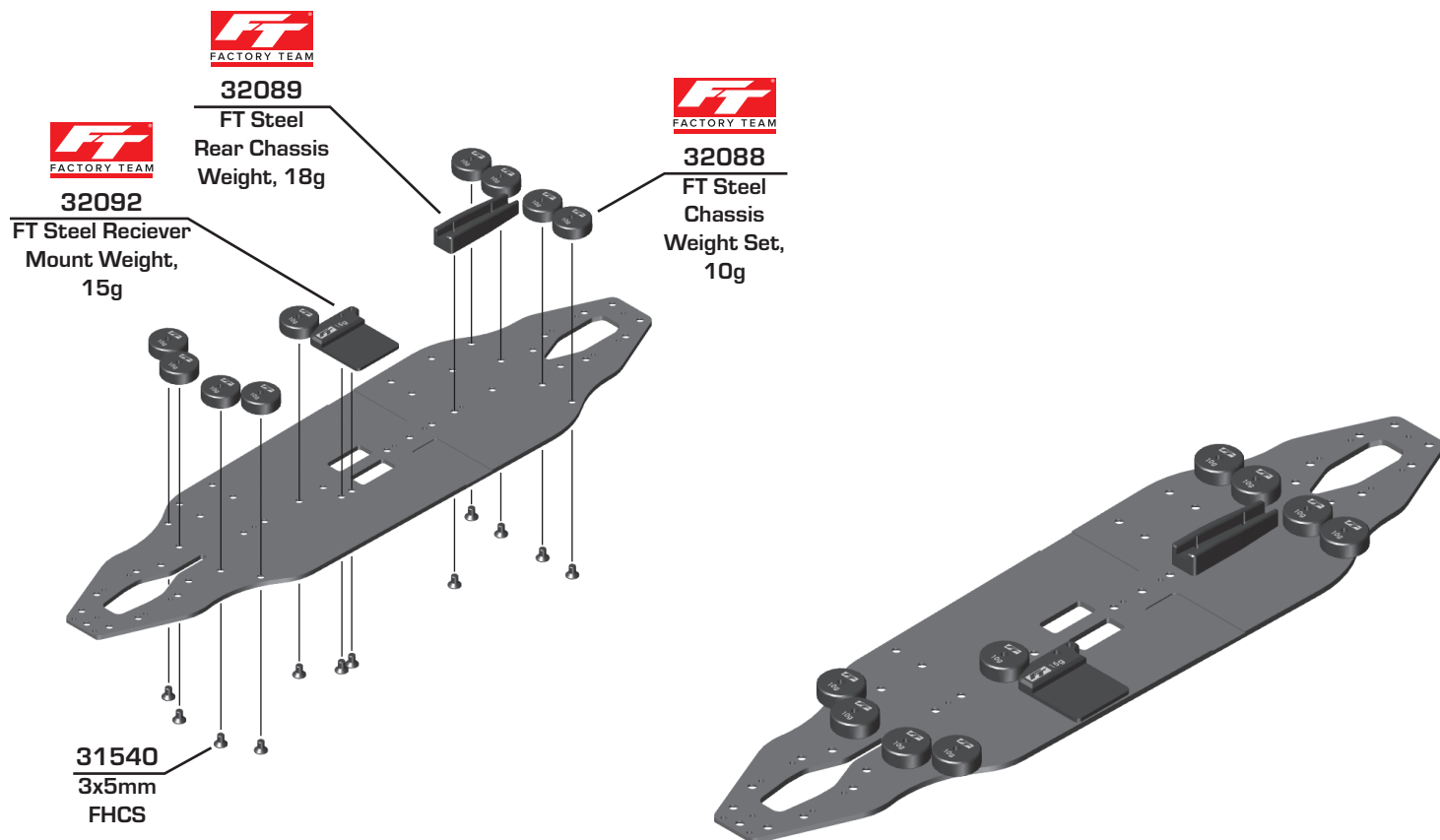


92254  
FT Nuts, M4 Low  
Profile Wheel  
Nuts, black

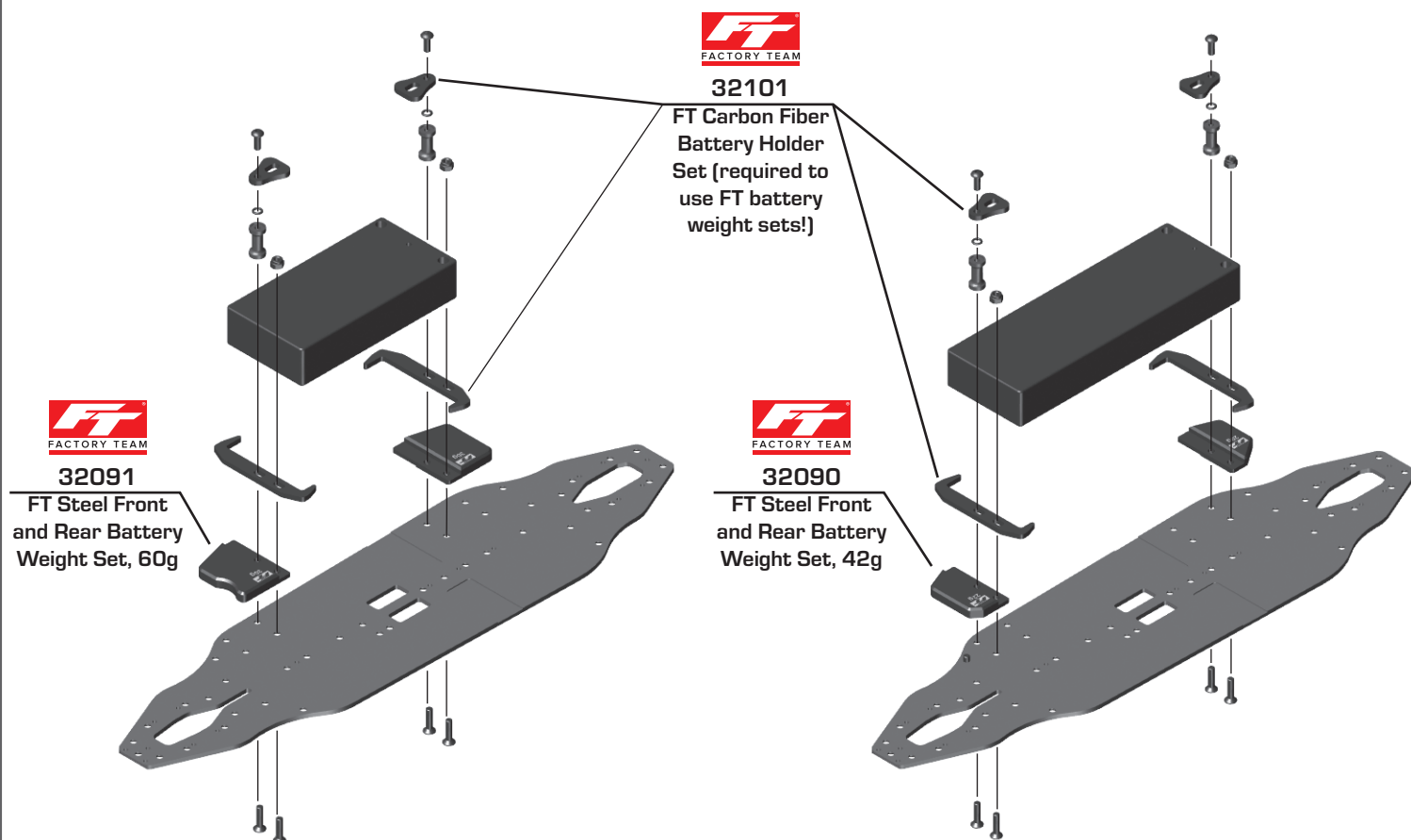
Build and Install x4 Wheels/Tires!



## Optional FT Chassis Weights



## Optional FT Chassis Weights



## ⚙️ Tuning Tips

### Painting:

Your Kit requires a clear polycarbonate body. You will need to prep the body before you can paint it. Wash the INSIDE thoroughly with warm water and liquid detergent (do not use any detergents with scents or added hand lotion ingredients!). Dry the body using a clean, soft, lint-free cloth. Use the supplied window masks to cover the windows from the INSIDE of the body (RC bodies get painted on the inside). Using high quality masking tape, apply tape to the inside of the body to create a design. Spray (use either rattle can or airbrush) the paint on the inside of the body (preferably dark colors first, lighter colors last). NOTE: ONLY use paint that is recommended for (polycarbonate) plastics. If you do not, you can destroy the body! After the paint has completely dried (usually after 24 hours), cut the body along the trim lines.

### Tips for Beginners:

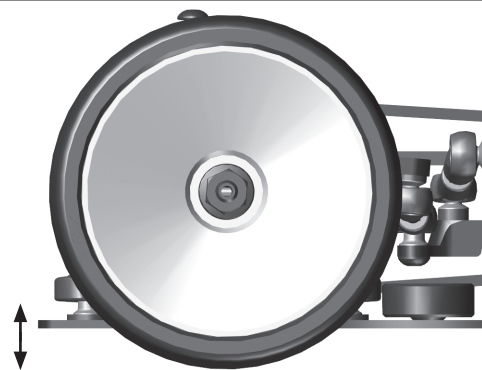
Before making any changes to the standard setup, make sure you can get around the track without crashing. Changes to your vehicle will not be beneficial if you can't stay on the track. Your goal is consistent laps. Once you can get around the track consistently, start tuning your vehicle. Make only ONE adjustment at a time, testing it before making another change. If the result of your adjustment is a faster lap, mark the change on the included setup sheet (make additional copies of the sheet before writing on it). If your adjustment results in a slower lap, revert back to the previous setup and try another change. When you are satisfied with your vehicle, fill in the setup sheet thoroughly and file it away. Use this as a guide for future track days or conditions. Periodically check all moving suspension parts. Suspension components must be kept clean and move freely without binding to prevent poor and/or inconsistent handling.

### Ride Height:

Ride height refers to the distance of the chassis to the ground, use the spring collars on the shocks to adjust this setting. A good starting point is 5.0mm for high grip surfaces like carpet or high-traction asphalt. For asphalt or lower grip carpet, try 5.5mm to start. To measure this, put your car on a flat surface. Measure the distance between the bottom of the chassis and a flat surface. Before you measure, make sure you have everything installed (including the battery) then push the car down and let it come back up a couple of times to let the suspension settle.

#### Notes:

If the track is smooth and high grip, aim for a lower ride height (4.6mm to 5.2mm).  
If the track is bumpy or low grip, go for a higher ride height (5.4mm to 6.0mm).

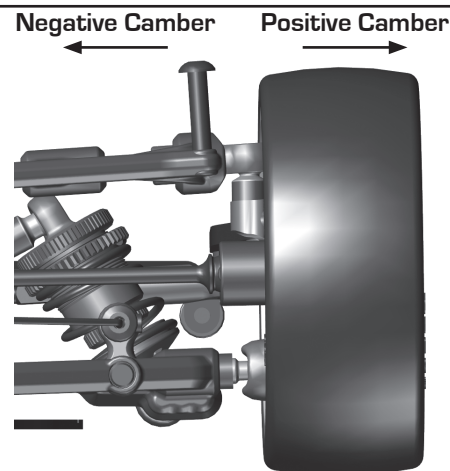


### Camber:

Camber refers to the angle of the tire when looking from the front or back of the car. Fine-tune your car's camber by adjusting the upper arm turnbuckle. To get more negative camber (for more grip), turn the turnbuckles to shorten them. To reduce negative camber (for less grip), turn the turnbuckles to lengthen them. Increasing both front and rear negative camber improves traction by maximizing tire contact during cornering, but it can also make the car less forgiving leading to a sudden loss of grip when the limits are exceeded. Reducing camber provides a more progressive slide, giving you better control when the car begins to lose traction, though in most cases it results in less overall grip. This should be checked on a setup station.

#### Notes:

Typically camber ranges from  $-0.5^\circ$  to  $-2.5^\circ$  depending on the grip level. We recommend starting with  $-2^\circ$  rear camber and  $-1.5^\circ$  front camber. It's generally recommended to set the rear camber to a more negative value than the front. To increase traction at either end of the car, simply increase the negative camber setting on the corresponding end.

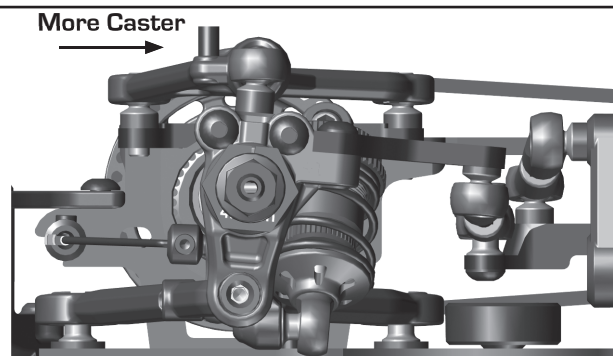


### Caster:

Caster refers to the angle of the hub relative to vertical from the side of the car. Adjusting caster involves the replacement of the upper arms for the TC8. The kit supplies three upper arm options, enabling caster adjustments of  $0^\circ$ ,  $2^\circ$ , or  $4^\circ$ . Increasing front caster provides a smoother, more stable initial steering feel while enhancing mid-corner and on-power grip. Conversely, reducing front caster delivers a sharper, more aggressive initial turn-in, but may diminish steering response through the rest of the corner. The recommended kit front setting is  $4^\circ$ .

#### Note:

Front caster is set at  $4^\circ$  for consistent handling on all tracks.



## ⚙️ Tuning Tips

### Wheelbase:

Wheelbase refers to the distance between the front and rear axles. Similar to caster, the wheelbase is adjusted using the upper arm options on the rear of the TC8. The “0” arm provides the longest wheelbase option, while the “4” arm is the shortest. Increasing the wheelbase (reducing rear ‘caster’) enhances stability in long, sweeping corners.

Conversely, decreasing the wheelbase improves rotation in tight turns, but can make the car more difficult to drive. The kit setting is 0°.

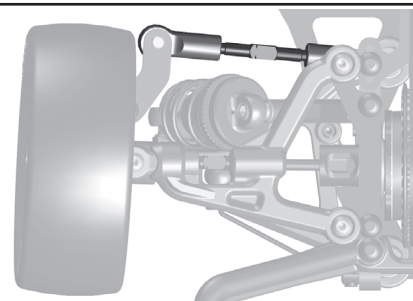
Note: Rear caster varies: 0° for large tracks with long wheelbases, and 4° for small tracks with short wheelbases.

### Rear Toe:

Rear toe refers to the angle of the rear tires in relation to the centerline of the car when viewed from above. The length of the rear turnbuckles controls rear static toe-in. More toe-in provides greater stability, rear grip, and improved forward traction. Less toe-in increases the vehicle's rotation, but can reduce forward traction. This should be checked on a setup station.

#### Notes:

In low-traction scenarios, a toe-in setting between 3° and 4° is advised. For high-traction conditions, a setting between 2° and 3° is recommended.

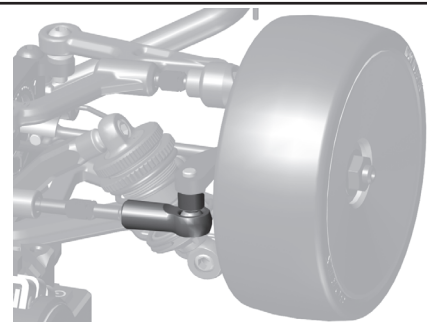


### Rear Bump Toe:

Rear bump toe refers to the toe-in angle that varies with vehicle roll or squat. This creates a progressive toe-in effect through corners, improving entry steering while enhancing mid-corner stability and exit traction. Roll center or rear wheelbase adjustments influence how much bump toe is possible. To maximize rear grip in low-traction environments, increase rear bump toe by reducing shim thickness. For high-traction conditions, less rear bump toe provides better handling.

#### Note:

In low-traction scenarios, rear bump toe shims between 0mm and 2mm is advised. For high-traction conditions, a setting between 3mm and 5mm is recommended.

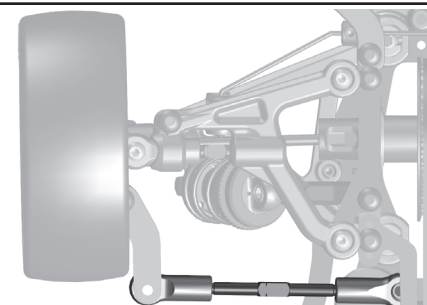


### Front Toe:

Front toe refers to the angle of the front tires in relation to the centerline of the car when viewed from above. This is adjusted by changing the length of the steering turnbuckles. Toe-in enhances low-speed stability while diminishing steering response, and at high speeds, increases steering sensitivity while reducing overall stability. Toe-out improves low-speed responsiveness and high-speed stability, but reduces high-speed steering input.

#### Note:

0° to 1° toe-out setting is recommended for balanced performance. Front toe-in is rarely used.

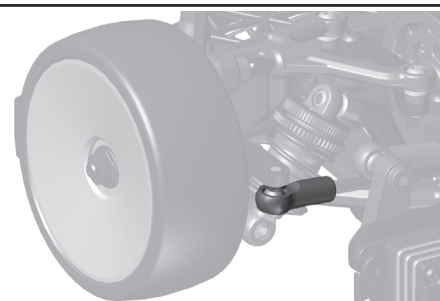


### Front Bump Toe:

The front bump toe setting, which dictates the toe-out angle change during vehicle roll or squat, influences cornering dynamics. It produces a progressive toe-out effect. Increasing shimming to reduce bump toe-out provides a sharper, more aggressive high-speed steering response, especially noticeable during mid-corner exit. Conversely, reducing shims increases bump toe-out and reduces the aggressive steering feeling.

#### Note:

For low-grip conditions, add shims to enhance steering aggressiveness. On high-grip surfaces, remove shims to reduce mid-exit over-rotation and traction rolling. The typical range is between 0-2mm.



### Ackermann:

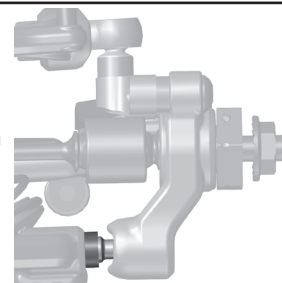
The front steering arm options allow for Ackermann adjustments, influencing steering feel. The kit plate minimizes Ackermann, promoting smooth, predictable steering and enhanced drivability. Optional steering plates increase Ackermann, resulting in sharper, more aggressive steering and increased mid-corner rotation, best suited for demanding, technical tracks requiring maximum steering response.



## ⚙️ Tuning Tips

### Track Width:

Track width refers to the width of the car. Widening the rear track results in a less reactive handling, but improves rotational capability; narrowing the rear track has an opposite effect. Widening the front track decreases steering aggression and overall grip, narrowing front track increases both. A wider track configuration is preferred for high-traction surfaces, while a narrower configuration is better suited for low-traction conditions. For adjustments, pillow ball shims are preferred, though optional wheel hexes can be used. Be mindful that each approach produces unique handling outcomes.



**Note:**  
Pillow ball settings are typically 1-2mm. Rear is often 1mm narrower per side, but equal front/rear width improves corner speed in high-grip conditions.

### Shock Springs:

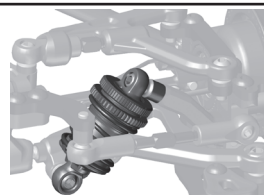
Shock springs control suspension stiffness, directly impacting handling. Stiffer springs enhance responsiveness, forward traction, and high-speed stability, ideal for smooth tracks. They offer quicker directional changes and sharper steering. Softer springs slow directional changes but increase low-grip traction, though they may compromise high-speed stability. They excel on bumpy tracks. In high-traction, softer springs prevent traction rolling by absorbing lateral forces, preventing abrupt weight transfer. Balancing spring stiffness with track conditions is crucial for optimal performance. Progressive springs allow for an increased spring rate change with vehicle roll, which may improve responsiveness, however, they can make the vehicle more challenging to control.



**Note:**  
The gray (front) and blue (rear) springs in the kit are versatile for general use. Spring changes provide major adjustments, shock angle changes offer finer tuning.

### Shock Angle:

Shock angles offer fine-tuning of suspension stiffness, similar to spring adjustments. A more angled shock (reduced shims) creates a softer, less responsive setup, suitable for high traction. A more upright shock (increased shims) results in a stiffer, more responsive setup, ideal for low traction.



### Shock Fluid:

Shock fluid viscosity is tuned to improve bump handling and weight transfer. Increase viscosity for enhanced bump absorption on rough tracks. Lower viscosity optimizes weight transfer and grip in low-traction conditions. Higher viscosity promotes smoother, predictable handling in high-traction. In high-temperature conditions, increased viscosity aids in tire temperature management.

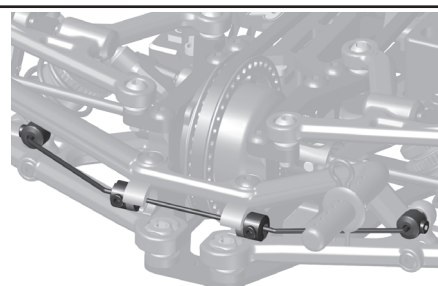
**Note:**  
The recommended range is between 27.5wt and 35wt with the kit 4 hole pistons.



### Anti-Roll Bar:

Anti-roll bars adjust roll stiffness and weight transfer, influencing handling. A stiffer rear bar reduces entry traction but can improve on-power traction. A stiffer front bar enhances entry steering and smooths mid-corner handling. Balance bar stiffness for optimal cornering based on track conditions and driving style. For faster transitions, stiffen anti-roll bars all the way around, sacrificing grip. For more grip, soften bars all the way around, slowing transition speed.

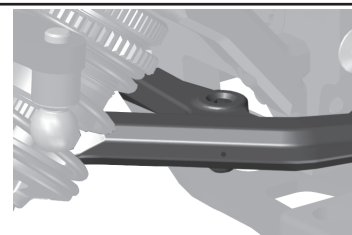
**Note:**  
Equal front and rear anti-roll bar stiffness is common. Alternatively, a one-step stiffer front bar is frequently used if the front end is too aggressive.



### Droop:

Droop is the distance between the bottom of the chassis and the axle center. The bottom of the hub directly below the pillow ball serves as the measurement reference for the TC8. Adjustment is performed using the illustrated set screw. Increasing rear droop (loosening the screw, increasing the travel) typically improves stability, whereas increasing front droop leads to a more aggressive handling characteristic.

**Note:**  
This section needs more work, including starting points





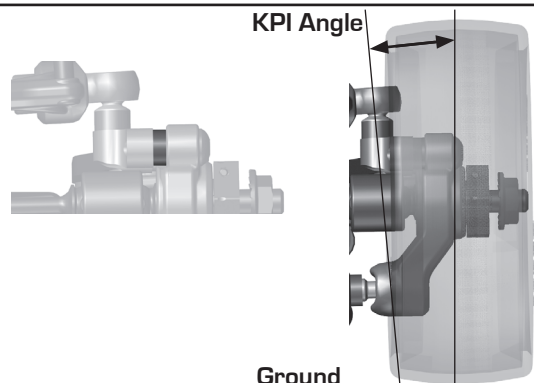
## ⚙️ Tuning Tips

### KPI:

Kingpin inclination (KPI) is adjusted by adding or removing shims between the steering block ball stud mount and the steering block, altering the angle between the tire plane and the steering block's rotational axis. On the front, increased KPI provides a more precise steering feel, while zero shims (zero KPI) yields the least direct response. On the rear, due to static tire behavior, KPI adjustment primarily functions as an upper arm length tuning method.

#### Note:

Adding shims increases KPI, resulting in a more direct steering feel and a shorter upper arm length. Removing shims has the opposite effect.

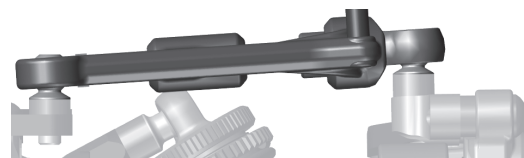


### Upper Arm Length:

Adjusting upper arm length alters responsiveness. Lengthening arms stabilizes the car on low-traction surfaces by smoothing grip transitions, making it easier to drive, but may sacrifice corner speed. Shortening arms increases responsiveness and corner speed but makes the car less stable in low traction. This can be adjusted with the 2 upper arm position or by changing the shims on the steering block ballstud mount. Keep in mind adjusting the steering block ballstud mount also adjust the KPI.

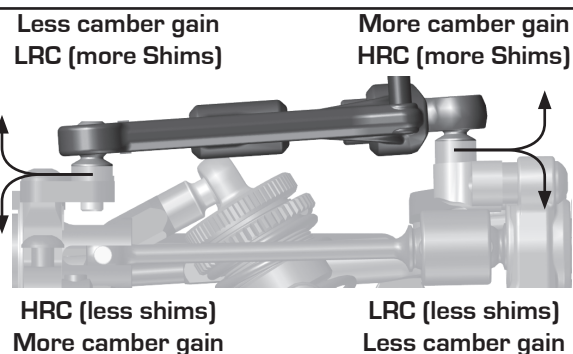
#### Note:

The short arm mount position is used in most situations. Fine tuning is done with the steering block ballstud mount.



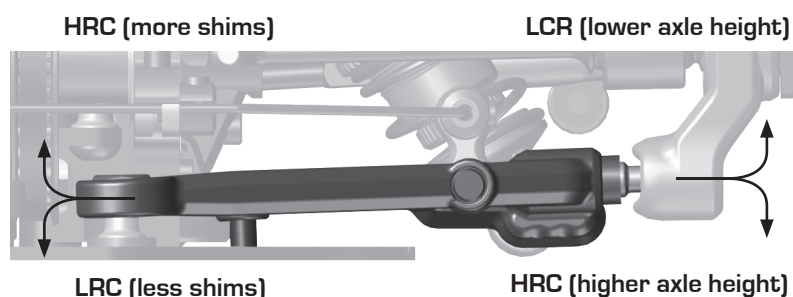
### Upper Arm Angle and Roll Center:

Upper arm shim adjustments influence both camber gain and roll center, significantly affecting handling. Adding camber gain increases camber during roll, enhancing grip on low-traction surfaces. Removing camber gain or "flattening" the arm reduces grip, beneficial for maximizing corner speed and preventing traction rolling on high-traction surfaces. A high roll center (HRC) increases initial grip and vehicle reactivity, potentially improving corner speed, but too high a setting can cause abrupt grip loss and inconsistent handling. Conversely, a low roll center (LRC) reduces reactivity and increases chassis roll, generally improving driveability and making grip loss more manageable.



### Lower Arm Roll Center Shims and Axle Height:

Lower arm roll center adjustments have a more pronounced effect than upper arm adjustments. As with the upper, a high roll center (HRC) increases initial grip and reactivity, potentially enhancing corner speed, but excessive HRC can lead to sudden grip loss and inconsistency. Conversely, a low roll center (LRC) reduces reactivity and increases chassis roll, improving driveability and recovery. Axle height adjustments provide the most significant roll center change and are typically infrequent, requiring setup optimization for each height.



### Gear Differential:

Thicker gear differential oil smooths off-power and corner entry, reducing over-rotation and off-power slides, but increases on-power steering, potentially causing oversteer. Thinner oil enhances corner entry aggression and off-power steering, while reducing on-power steering. Gear sets (HTC/LTC) also impact torque delivery. HTC gears, typically preferred, enhance on-power grip at all speeds. LTC gears offer more free rotation and sharper slow-speed cornering, but sacrifice on-power response.

#### Note:

High-traction conditions: 7k-15k gear differential oil. Low-traction: 3k-7k. LTC gears simulate lower viscosity, requiring potentially thicker oil than HTC gears.



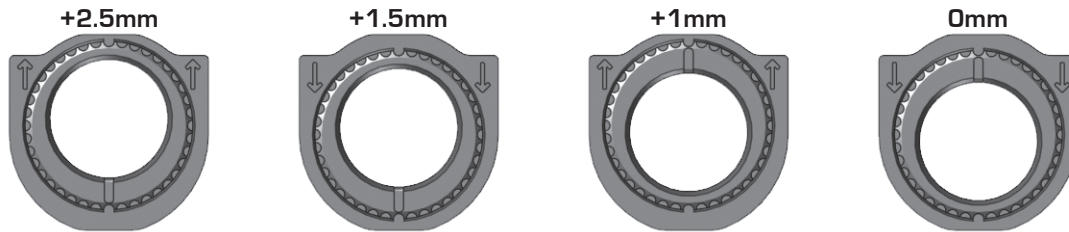
## ⚙️ Tuning Tips

### Differential and Spool Height:

This adjustment profoundly influences drivetrain bind, affecting the vehicle's handling characteristics across the board, with particular emphasis on on-power and hard braking scenarios. Increasing this height typically improves grip at the corresponding end of the car, while decreasing it reduces grip. These adjustments are substantial and highly noticeable. We generally aim for the highest possible setting to maximize grip, unless drivability becomes challenging or, in high-traction conditions, we lower it to drastically calm the car, albeit at the expense of overall grip. Equal front and rear differential height is common. However, lowering the front differential can reduce front-end aggression and traction rolling on high-grip tracks.

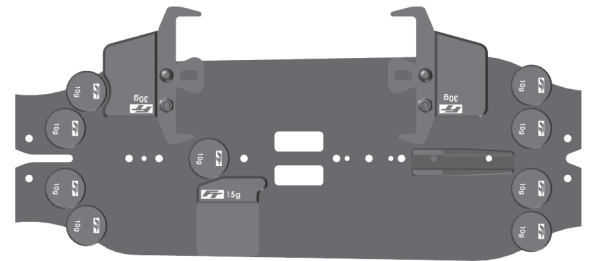
#### Note:

Increased height enhances grip at that end; decreased height reduces grip.



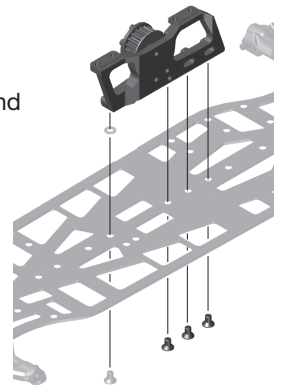
### Weight Distribution:

The chassis incorporates multiple weight placement positions at both the front and rear. Consult the setup sheet for recommended FT weight configurations. A 50:50 weight distribution, easily obtained with additional FT weights and the central positioning of electronics, yields the most neutral vehicle balance. Shifting weight rearward typically increases steering aggressiveness, whereas shifting weight forward promotes smoother handling and reduces steering input.



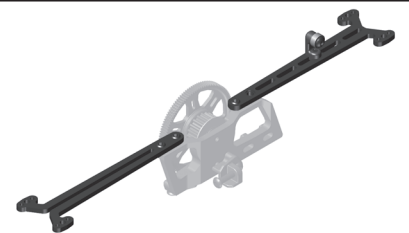
### Chassis Material and Flex Options:

High-grip conditions favor a stiff chassis setup; low-grip conditions may require a flexible setup. The steel chassis provides maximum stiffness, optimal for medium to high grip, offering the lowest center of gravity and quickest response. The carbon fiber chassis is best suited for low to medium grip, generating increased traction but slower reactivity. Chassis stiffness can be further adjusted using the front motor mount screws and shim: more screws increase stiffness, with a minimum of two required at the back of the motor mount.



### Top Deck Material and Flex Options:

Chassis flex can be further modified utilizing top deck and motor mount screw adjustments, increasing the effects of chassis plate tuning. Stiffer top decks are preferred for high-traction conditions, whereas flexible top decks enhance grip in low-traction environments. Top deck configuration allows for localized flex tuning at each end of the car. A softer rear top deck generally maximizes rear grip, and the same principle applies to the front. A common practice is to employ a stiff rear and flexible front top deck setup for optimal handling balance and corner speed.



### Belt Tension:

Belt tension, adjusted via the diff and spool bearing cams, impacts drivetrain performance. Tighter belts, common in modified classes, prevent skipping and enhance longevity. Looser belts improve efficiency in stock classes. Aim for the loosest tension without skipping. Power delivery can be tuned by varying front or rear belt tension. A rear top deck belt tensioner can be added to increase durability, primarily for modified motors.



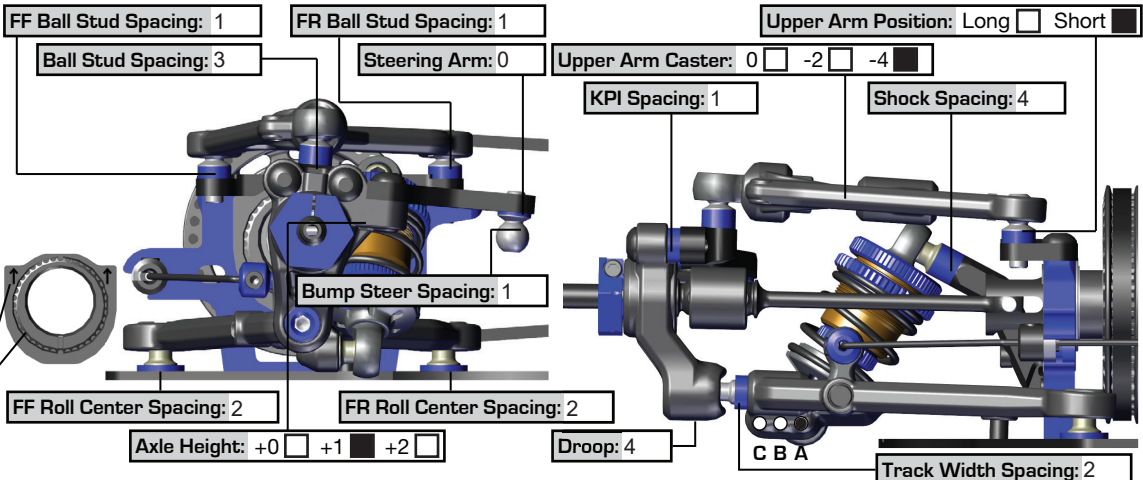
**Notes**

## Front Suspension:

RESET

Ride Height: 5.2mm  
Camber: -2 deg  
Toe: 1 deg out  
Anti-Roll Bar: 1.1mm  
Wheel Hex: 4mm  
Steering Block Type: Kit  
Lower Arm Type: Kit  
Upper Arm Type: Kit  
Diff Height Insert: High ☒ Low ☐  
Diff Bearing Cam: High ☒ Low ☐  
Notes:

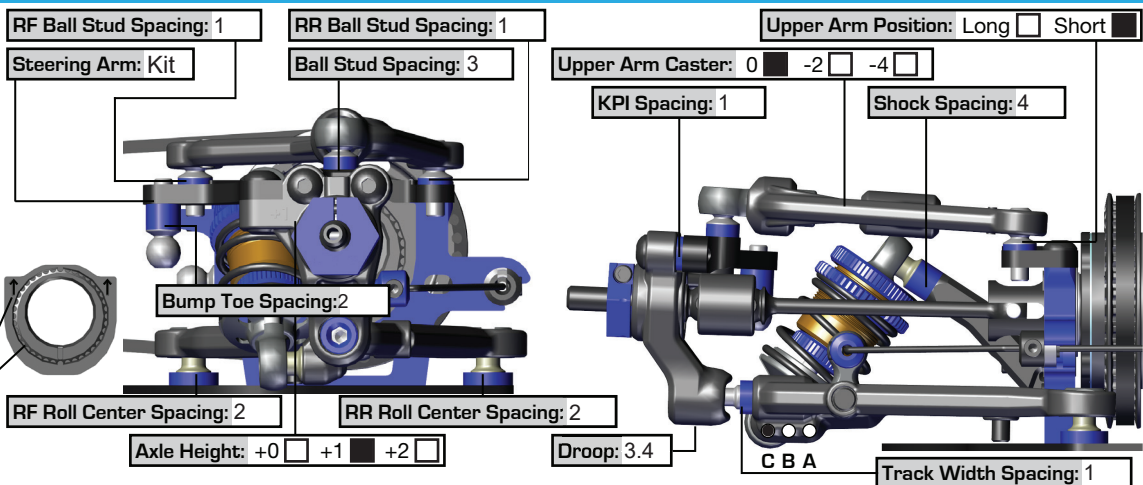
FF Ball Stud Spacing: 1  
FR Ball Stud Spacing: 1  
Upper Arm Position: Long ☐ Short ☒  
Ball Stud Spacing: 3  
Steering Arm: 0  
Upper Arm Caster: 0 ☐ -2 ☐ -4 ☒  
KPI Spacing: 1  
Shock Spacing: 4  
Bump Steer Spacing: 1  
FF Roll Center Spacing: 2  
FR Roll Center Spacing: 2  
Axle Height: +0 ☐ +1 ☒ +2 ☐  
Droop: 4  
C B A  
Track Width Spacing: 2



## Rear Suspension:

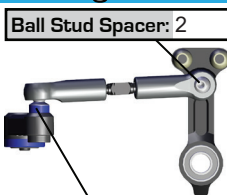
Ride Height: 5.2mm  
Camber: -2 deg  
Toe: -3 deg  
Anti-Roll Bar: 1.1mm  
Wheel Hex: 4mm  
Steering Block Type: Kit  
Lower Arm Type: Kit  
Upper Arm Type: Kit  
Diff Height Insert: High ☒ Low ☐  
Diff Bearing Cam: High ☒ Low ☐  
Notes:

RF Ball Stud Spacing: 1  
RR Ball Stud Spacing: 1  
Upper Arm Position: Long ☐ Short ☒  
Steering Arm: Kit  
Ball Stud Spacing: 3  
Upper Arm Caster: 0 ☐ -2 ☐ -4 ☒  
KPI Spacing: 1  
Shock Spacing: 4  
Bump Toe Spacing: 2  
RF Roll Center Spacing: 2  
RR Roll Center Spacing: 2  
Axle Height: +0 ☐ +1 ☒ +2 ☐  
Droop: 3.4  
C B A  
Track Width Spacing: 1



## Steering and Electronics:

Ball Stud Spacer: 2  
Servo Horn Type  
Servo Horn: ☒  
Servo Saver: ☐  
Servo Horn Height: 18.5  
Servo:   
Ball Stud Spacer: 2  
Steering Lock (In): 25 deg  
Motor / Turn:   
Radio:   
Spur:   
Timing:   
Pinion:   
Battery:   
ESC:   
Note:

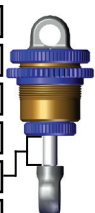


## Drivetrain:

	Front	Rear
Type:	Spool: <input checked="" type="checkbox"/> Diff: <input type="checkbox"/>	Diff: <input checked="" type="checkbox"/>
Fluid:		5k
Gear Material:		Plastic
Gear Type:		HTC
Notes:		
Tires:		Body:
Additive:		Wing:
Body Position:	Fwd: <input type="checkbox"/> Mid: <input type="checkbox"/> Back: <input type="checkbox"/>	
Note:		

## Shocks:

	Front	Rear
Piston:	Kit 1.1 x2 / 1.2 x2	Kit 1.1 x2 / 1.2 x2
Fluid:	30 wt	30 wt
Spring:	Gray	Blue
Stroke:	9mm	9mm
Limiters:	Int: <input type="checkbox"/> Ext: <input type="checkbox"/>	Int: <input type="checkbox"/> Ext: <input type="checkbox"/>
PSD Sleeve:		
Shock Mount:	Fixed: <input checked="" type="checkbox"/> Active: <input type="checkbox"/>	Fixed: <input checked="" type="checkbox"/> Active: <input type="checkbox"/>
Notes:		

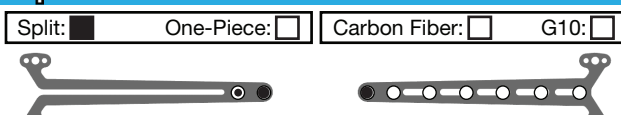


## Track Info:

Size:                      Surface:                      Traction:                       
Temp:                      Notes:                     

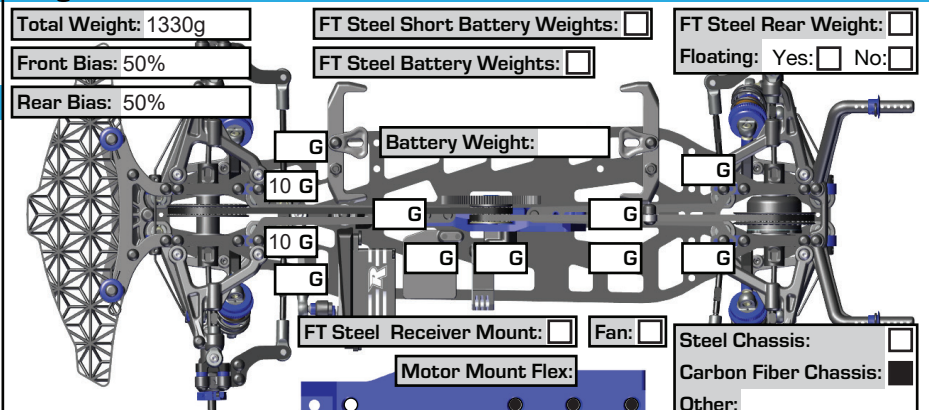
## Top Deck Flex:

Split: ☒ One-Piece: ☐ Carbon Fiber: ☐ G10: ☐  
Front Top Deck Type:                      Rear Top Deck Type:                       
Notes:



## Weight Bias and Chassis Flex:

Total Weight: 1330g  
Front Bias: 50%  
Rear Bias: 50%  
FT Steel Short Battery Weights: ☐ FT Steel Battery Weights: ☐ FT Steel Rear Weight: ☐  
Floating: Yes: ☐ No: ☒  
Battery Weight:                       
FT Steel Receiver Mount: ☐ Fan: ☐ Steel Chassis: ☐  
Motor Mount Flex:                      Carbon Fiber Chassis: ☒  
Other:                     

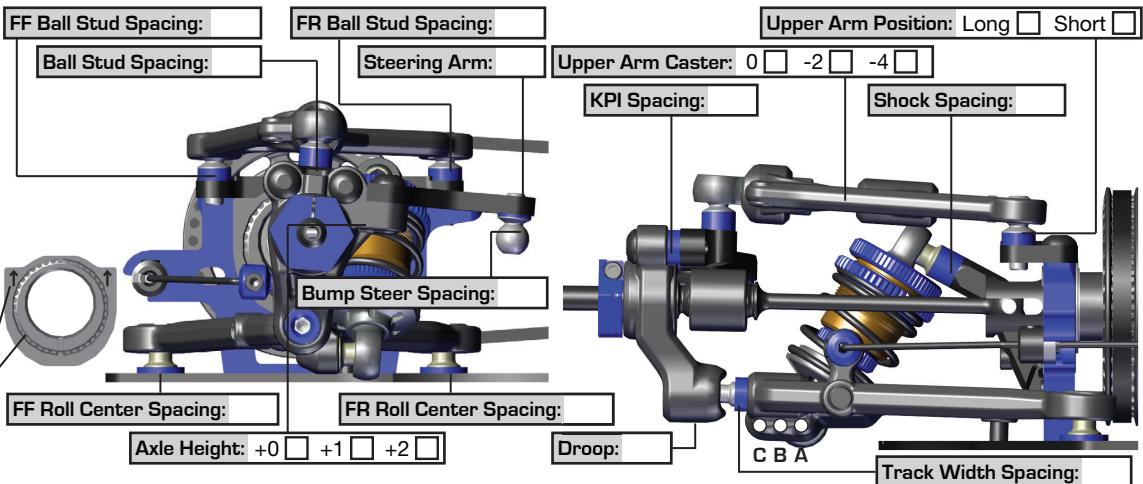




### Front Suspension:

Ride Height: \_\_\_\_\_  
Camber: \_\_\_\_\_  
Toe: \_\_\_\_\_  
Anti-Roll Bar: \_\_\_\_\_  
Wheel Hex: \_\_\_\_\_  
Steering Block Type: \_\_\_\_\_  
Lower Arm Type: \_\_\_\_\_  
Upper Arm Type: \_\_\_\_\_  
Diff Height Insert: High ☐ Low ☐  
Diff Bearing Cam: High ☐ Low ☐  
Notes: \_\_\_\_\_  
\_\_\_\_\_

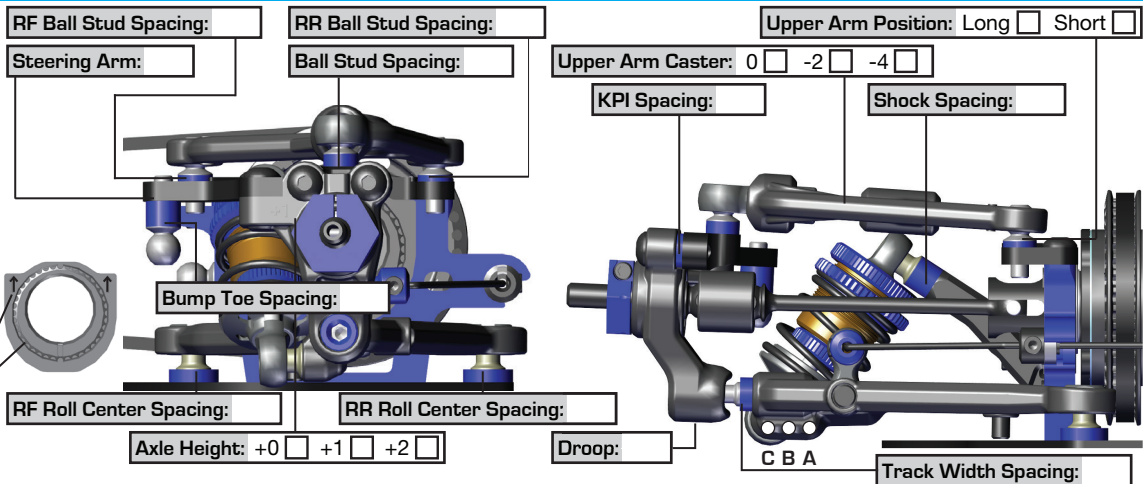
FF Ball Stud Spacing: \_\_\_\_\_ FR Ball Stud Spacing: \_\_\_\_\_  
Ball Stud Spacing: \_\_\_\_\_ Steering Arm: \_\_\_\_\_  
Upper Arm Position: Long ☐ Short ☐  
Upper Arm Caster: 0 ☐ -2 ☐ -4 ☐  
KPI Spacing: \_\_\_\_\_ Shock Spacing: \_\_\_\_\_  
Bump Steer Spacing: \_\_\_\_\_  
FF Roll Center Spacing: \_\_\_\_\_ FR Roll Center Spacing: \_\_\_\_\_  
Axle Height: +0 ☐ +1 ☐ +2 ☐  
Droop: \_\_\_\_\_  
C B A  
Track Width Spacing: \_\_\_\_\_



### Rear Suspension:

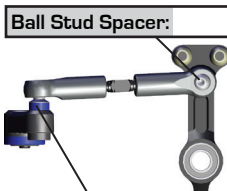
Ride Height: \_\_\_\_\_  
Camber: \_\_\_\_\_  
Toe: \_\_\_\_\_  
Anti-Roll Bar: \_\_\_\_\_  
Wheel Hex: \_\_\_\_\_  
Steering Block Type: \_\_\_\_\_  
Lower Arm Type: \_\_\_\_\_  
Upper Arm Type: \_\_\_\_\_  
Diff Height Insert: High ☐ Low ☐  
Diff Bearing Cam: High ☐ Low ☐  
Notes: \_\_\_\_\_  
\_\_\_\_\_

RF Ball Stud Spacing: \_\_\_\_\_ RR Ball Stud Spacing: \_\_\_\_\_  
Steering Arm: \_\_\_\_\_ Ball Stud Spacing: \_\_\_\_\_  
Upper Arm Position: Long ☐ Short ☐  
Upper Arm Caster: 0 ☐ -2 ☐ -4 ☐  
KPI Spacing: \_\_\_\_\_ Shock Spacing: \_\_\_\_\_  
Bump Toe Spacing: \_\_\_\_\_  
RF Roll Center Spacing: \_\_\_\_\_ RR Roll Center Spacing: \_\_\_\_\_  
Axle Height: +0 ☐ +1 ☐ +2 ☐  
Droop: \_\_\_\_\_  
C B A  
Track Width Spacing: \_\_\_\_\_



### Steering and Electronics:

Ball Stud Spacer: \_\_\_\_\_  
Servo Horn Type  
Servo Horn: ☐  
Servo Saver: ☐  
Servo Horn Height: \_\_\_\_\_  
Servo: \_\_\_\_\_  
Steering Lock In: \_\_\_\_\_  
Radio: \_\_\_\_\_  
Timing: \_\_\_\_\_  
Battery: \_\_\_\_\_  
Note: \_\_\_\_\_  
Motor / Turn: \_\_\_\_\_  
Spur: \_\_\_\_\_  
Pinion: \_\_\_\_\_  
ESC: \_\_\_\_\_

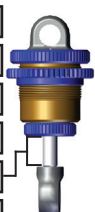


### Drivetrain:

	Front	Rear
Type: Spool: <input type="checkbox"/> Diff: <input type="checkbox"/>		
Fluid: _____		
Gear Material: _____		
Gear Type: _____		
Notes: _____		
Tires: _____	Body: _____	
Additive: _____	Wing: _____	
Body Position: Fwd: <input type="checkbox"/> Mid: <input type="checkbox"/> Back: <input type="checkbox"/>		
Note: _____		

### Shocks:

	Front	Rear
Piston: _____		
Fluid: _____		
Spring: _____		
Stroke: _____		
Limiters: Int: _____ Ext: _____ Int: _____ Ext: _____		
PSD Sleeve: _____		
Shock Mount: Fixed: <input type="checkbox"/> Active: <input type="checkbox"/> Fixed: <input type="checkbox"/> Active: <input type="checkbox"/>		
Notes: _____		

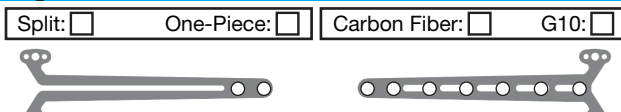


### Track Info:

Size: \_\_\_\_\_ Surface: \_\_\_\_\_ Traction: \_\_\_\_\_  
Temp: \_\_\_\_\_ Notes: \_\_\_\_\_

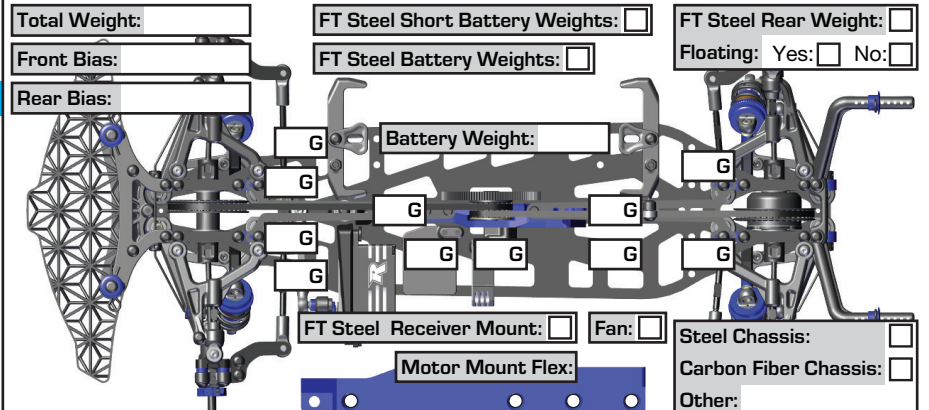
### Top Deck Flex:

Split: ☐ One-Piece: ☐ Carbon Fiber: ☐ G10: ☐  
Front Top Deck Type: \_\_\_\_\_ Rear Top Deck Type: \_\_\_\_\_  
Notes: \_\_\_\_\_  
\_\_\_\_\_



### Weight Bias and Chassis Flex:

Total Weight: \_\_\_\_\_ FT Steel Short Battery Weights: ☐ FT Steel Rear Weight: ☐  
Front Bias: \_\_\_\_\_ FT Steel Battery Weights: ☐ Floating: Yes: ☐ No: ☐  
Rear Bias: \_\_\_\_\_  
Battery Weight: \_\_\_\_\_  
FT Steel Receiver Mount: ☐ Fan: ☐ Steel Chassis: ☐  
Motor Mount Flex: \_\_\_\_\_ Carbon Fiber Chassis: ☐  
Other: \_\_\_\_\_





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