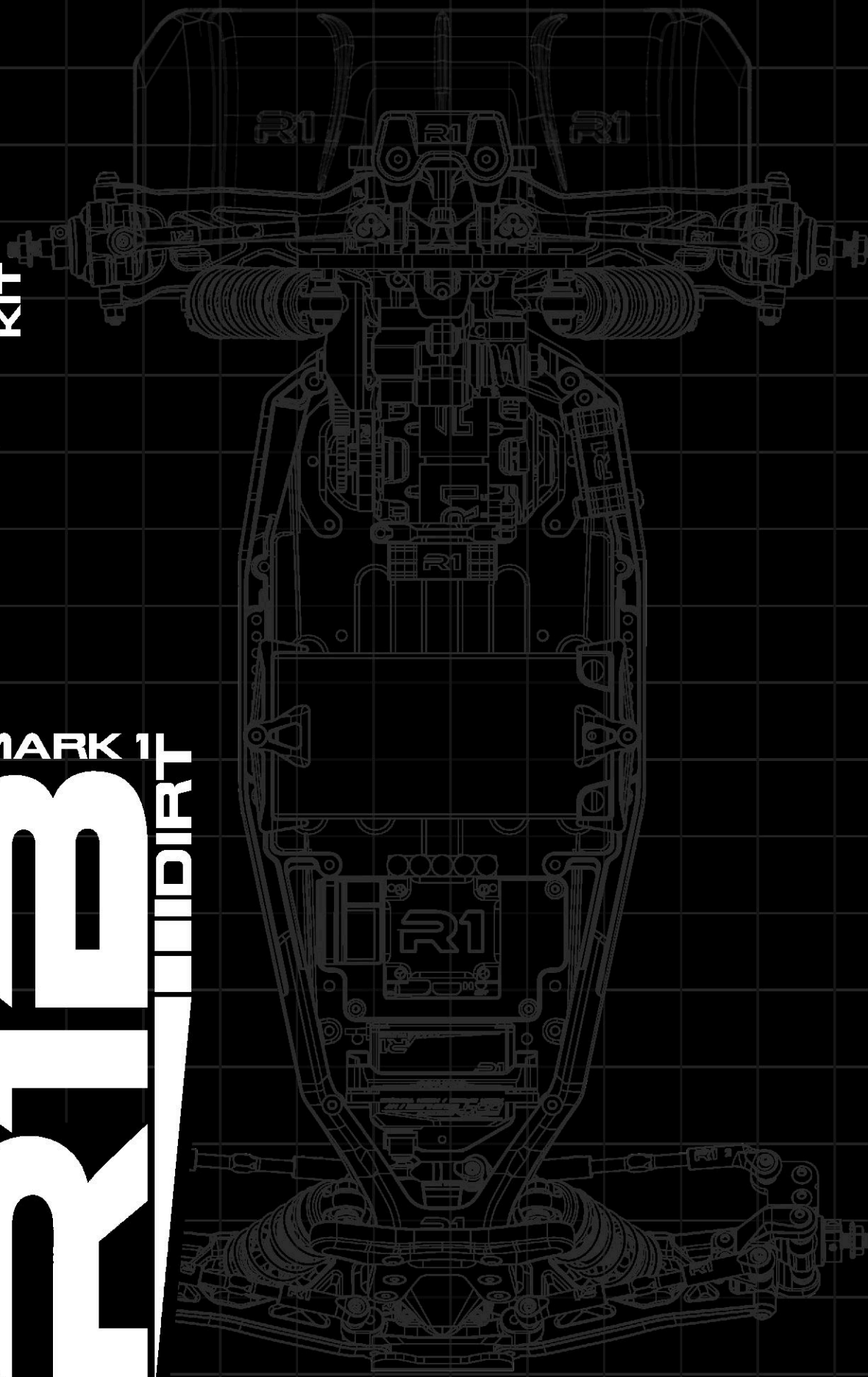


# R1B

MARK 1  
DIRT

1:10 SCALE 2WD ELECTRIC  
OFF ROAD RACE BUGGY  
KIT



1:10 SCALE 2WD RACE BUGGY KIT MANUAL  
R1WORKS

## KIT FEATURES

- Main chassis: 7075 T6 aluminum, black hard anodized, optimized for strength
- Rear chassis brace: 7075 T6 aluminum, wrap-around design
- CVA shafts, barrels and drive cups: hardened steel with titanium nitride (TiN) coating
- Suspension geometry: optimized front and rear, adjustable for a wide range of track conditions
- Battery mounting:
  - Transverse option with 10 mounting positions
  - Inline option with 6 mounting positions
- Rear hubs: standard and HRC versions included
- Plastics: premium composite material used throughout
- Motor mount: lightweight, lowered motor design, 7075 T6 aluminum
- ESC / electronics tray: carbon fiber construction
- Shock tower covers included
- Servo mount: one-piece monoblock, 7075 T6 aluminum
- Aluminum 25T clamping servo horn included (23T option available)
- Waterfall chassis brace: optional part included
- Shocks: 13mm big bore, TiN-coated shafts
- Wings: 7" rear wing and front wing included
- Turnbuckles: 3.5mm
- Shock towers: 4mm carbon fiber, front and rear
- Slipper plates: lightweight, vented design
- Hub camber link mounts: aluminum, front and rear
- Gearbox: 3-gear layout for acceleration and efficiency, suitable for spec racing
- Front lower arm mount: 7075 T6 aluminum, 2.5°, with steel hinge pin brace
- Fan mounting options: integrated, side and center positions

## REQUIRED TO COMPLETE

- 1:10 scale electric motor
- Electronic speed control
- 2S LiPo battery
- Battery charger
- 2-channel RC car surface transmitter system
- Steering servo
- Polycarbonate paint
- 1:10 scale tires and wheels
- CA glue
- Pinion gear

## REQUIRED TOOLS

- 1.5mm Hex Driver [R1WURKS Tool Set #90004]
- 2.0mm Hex Driver [R1WURKS Tool Set #90004]
- 2.5mm Hex Driver [R1WURKS Tool Set #90004]
- 5.5mm Hex Socket Driver [R1WURKS Premium Metric Nut Driver, 5.5mm #900046]
- 7.0mm Hex Socket Driver [R1WURKS Premium Metric Nut Driver, 7.0mm #900045]
- Hobby Knife
- Caliper or metric ruler
- Needle Nose pliers
- Shock pliers (not required but recommended)

## BUILD LEGEND



Important note regarding this step.



Low strength threadlocking compound recommended.



Silicone Oil. For your convenience, we have suggested viscosities listed.



Ball Diff grease.



Black grease.



Check your build to the finished picture.

\* R1Wurks is constantly developing and improving its products.

Please note that the specifications of this kit or part designs may change from what is represented in this instruction manual\*

### Safety Disclaimer

Your safety and enjoyment are important to us. Please read the following information carefully before use.

This product contains small parts and plastic bags that may present a choking hazard, suffocation risk, or injury if handled improperly.

Exercise caution during unpacking, assembly, and storage.

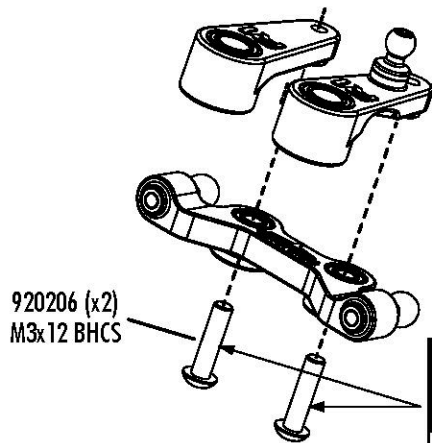
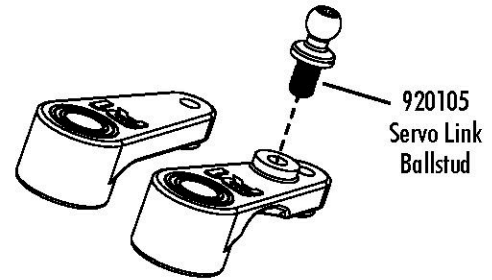
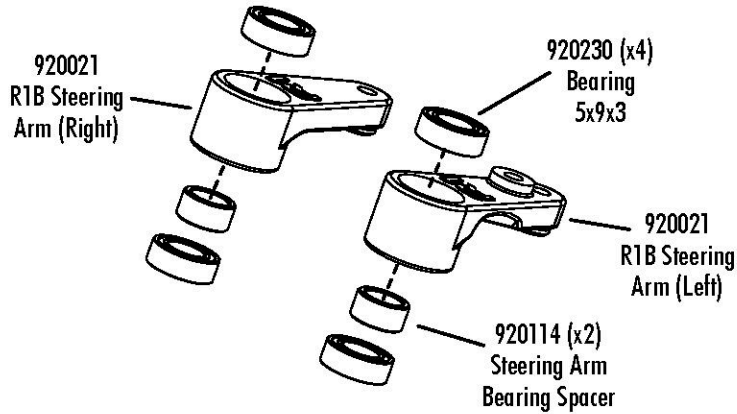
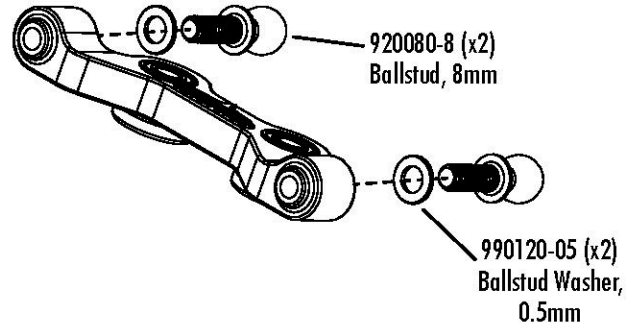
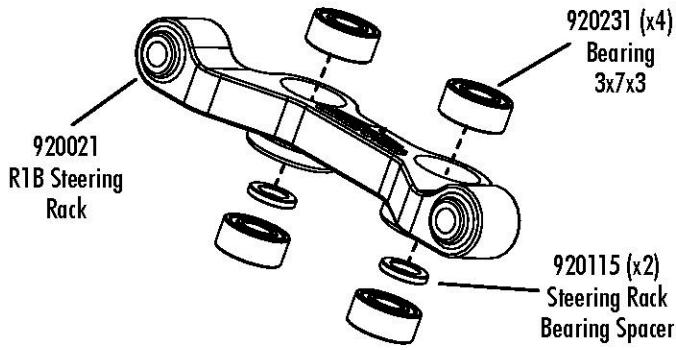
Not suitable for children under 14 years of age. This is a precision product designed for older hobbyists and collectors.

For ages 14–17, use only under the direct supervision of a responsible adult to ensure safe handling and assembly.

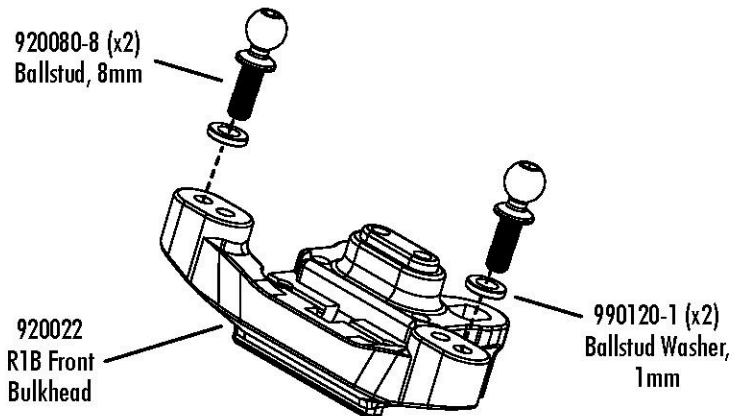
Keep the model, tools, packaging materials, and any additional equipment out of reach of children under 3 years old.

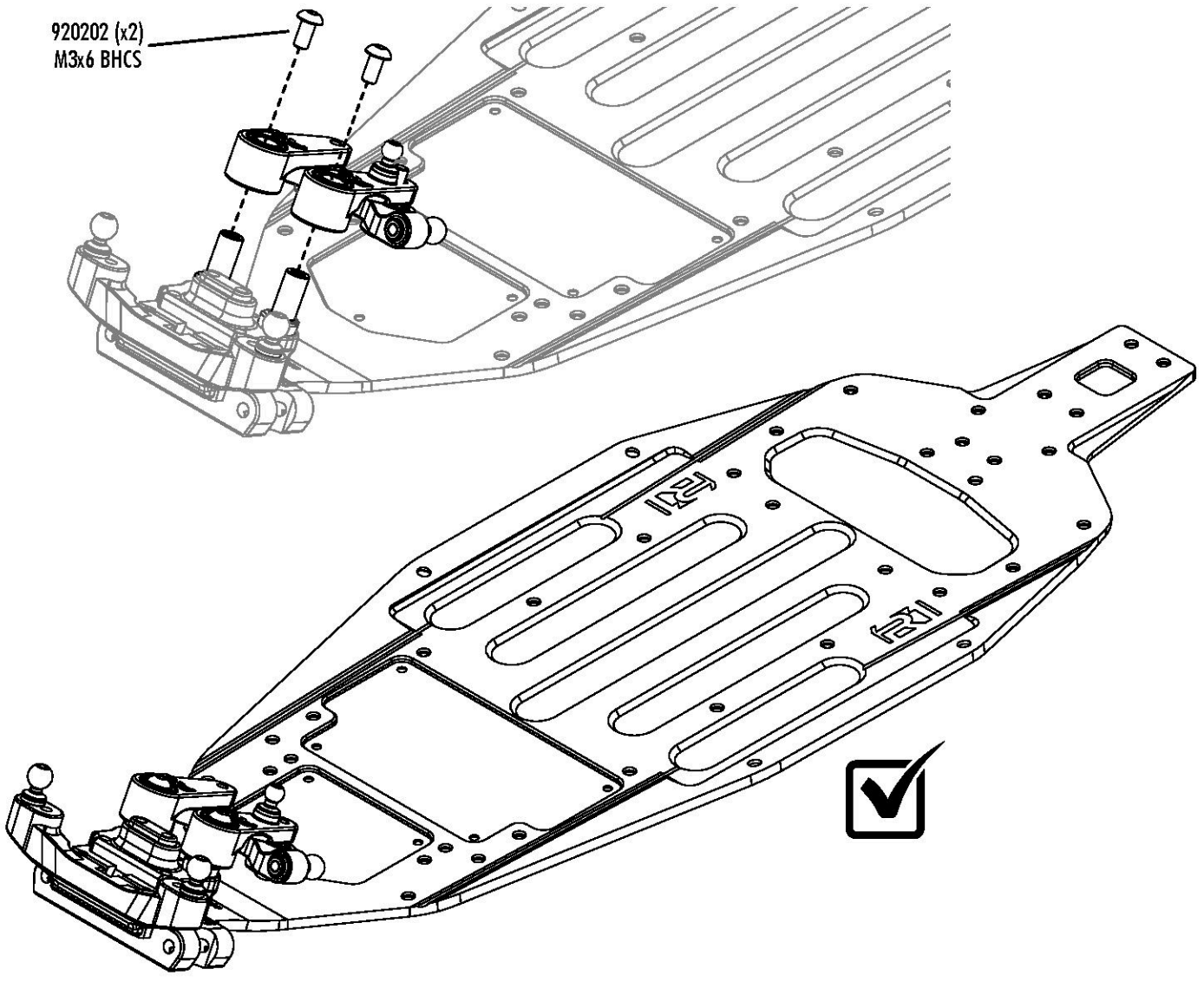
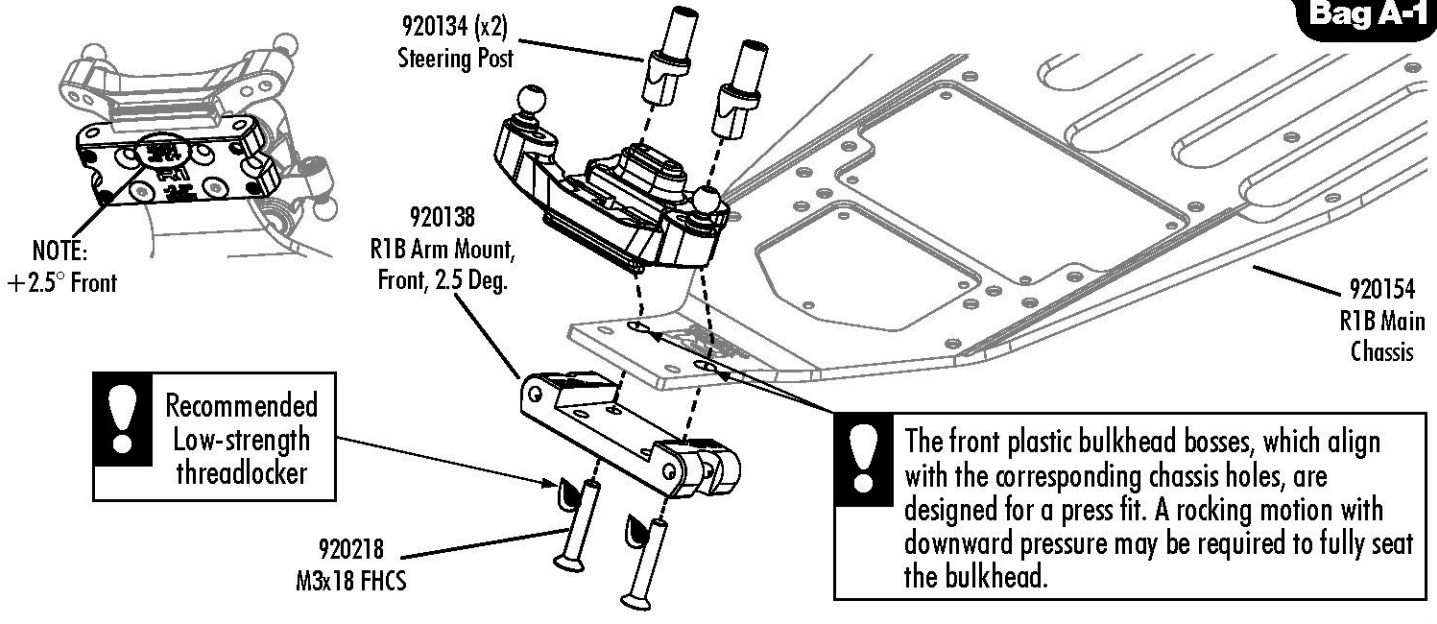
Always store all components safely after use. Do not leave small parts or plastic packaging unattended in areas accessible to children or pets.

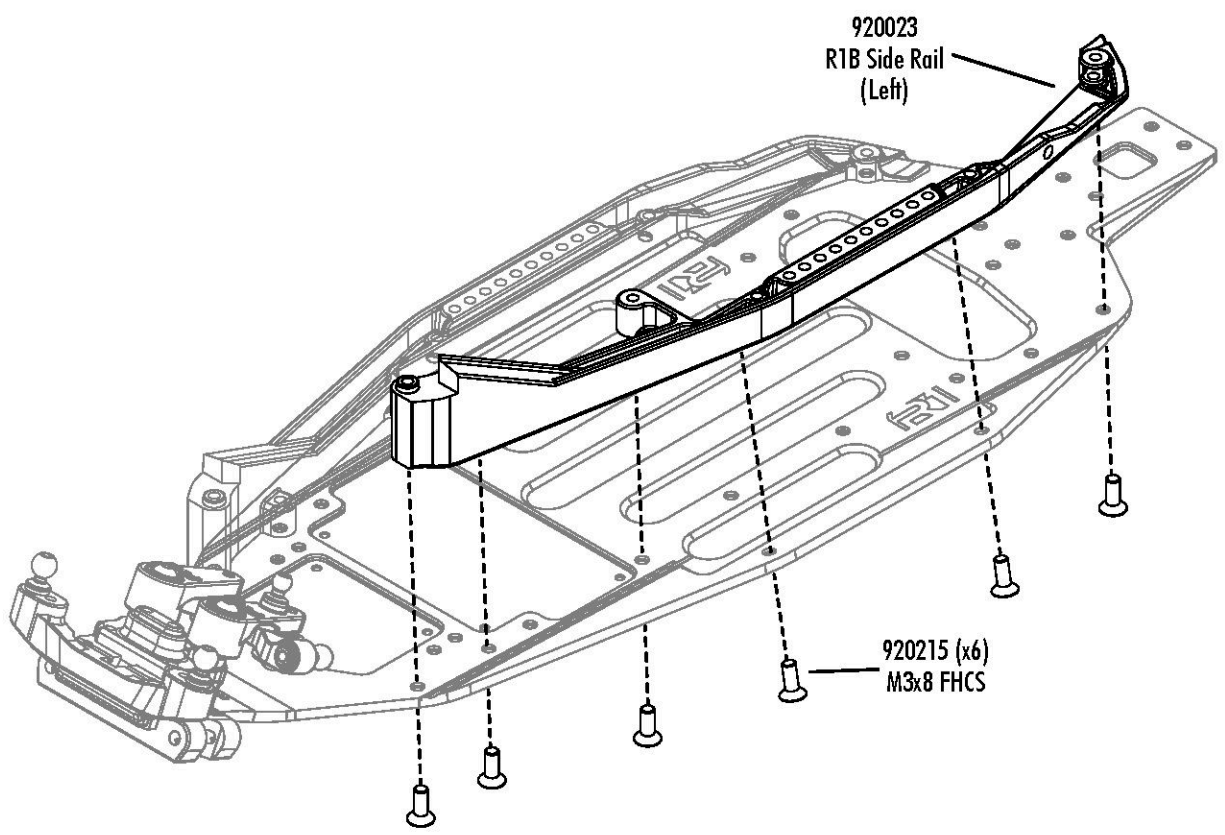
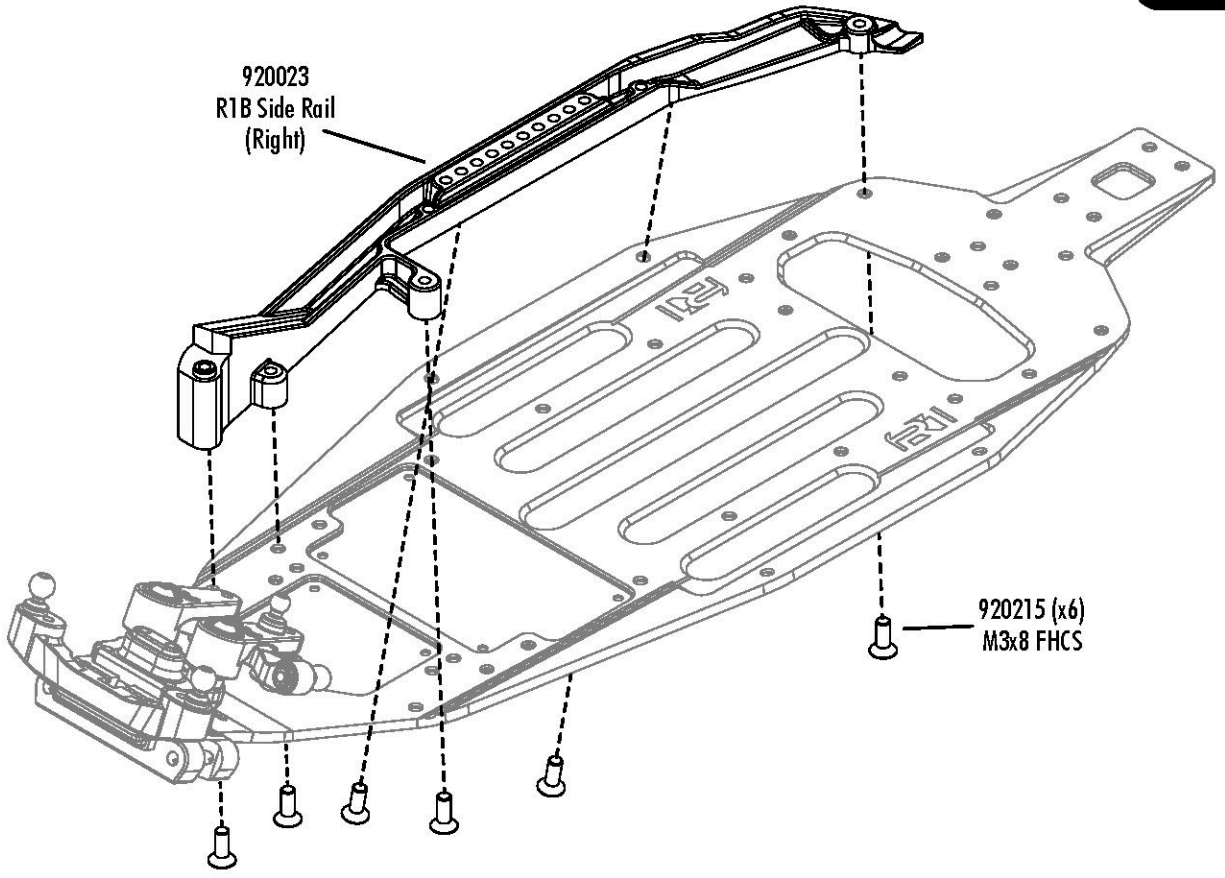
Dispose of packaging materials responsibly to help protect both children and the environment.

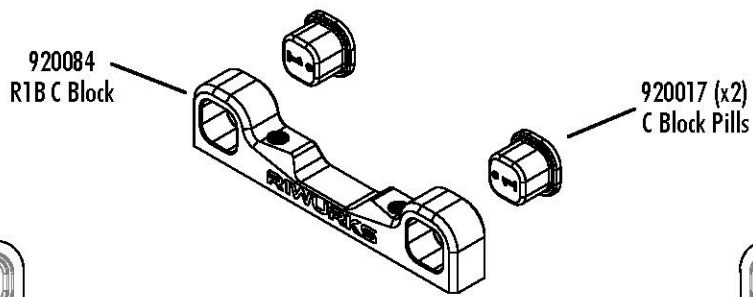
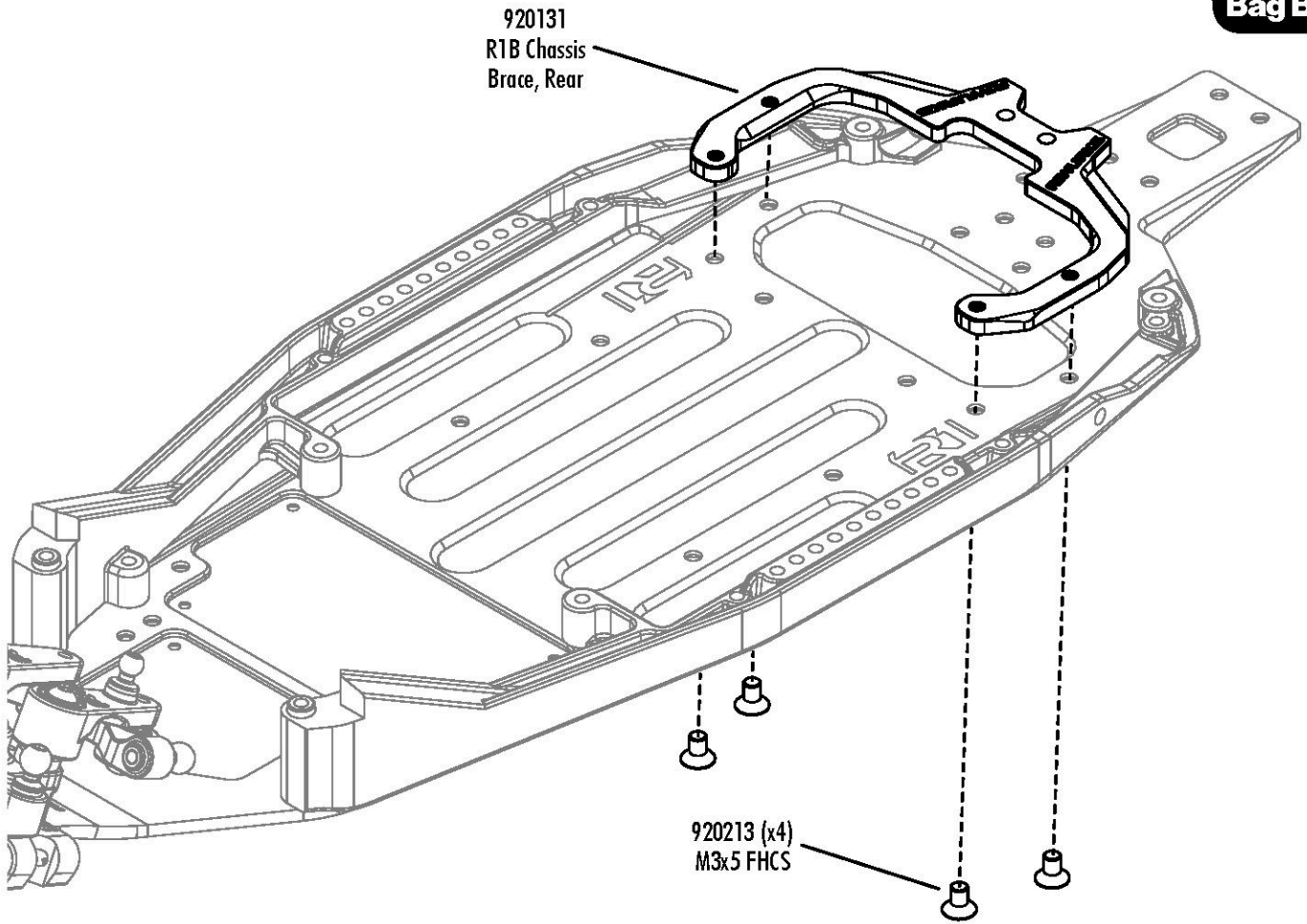


**!** Do not overtighten. Loosen screws as needed to ensure smooth, bind-free operation.

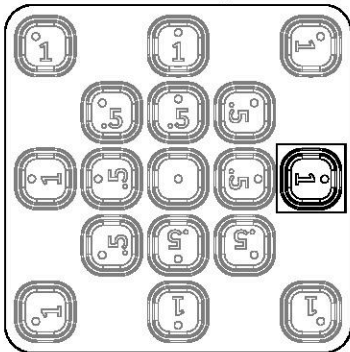




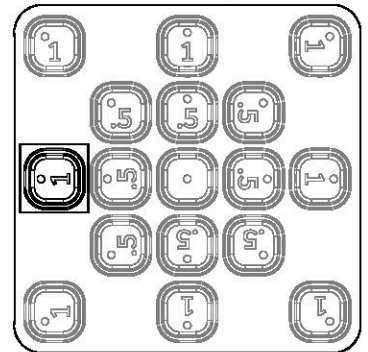


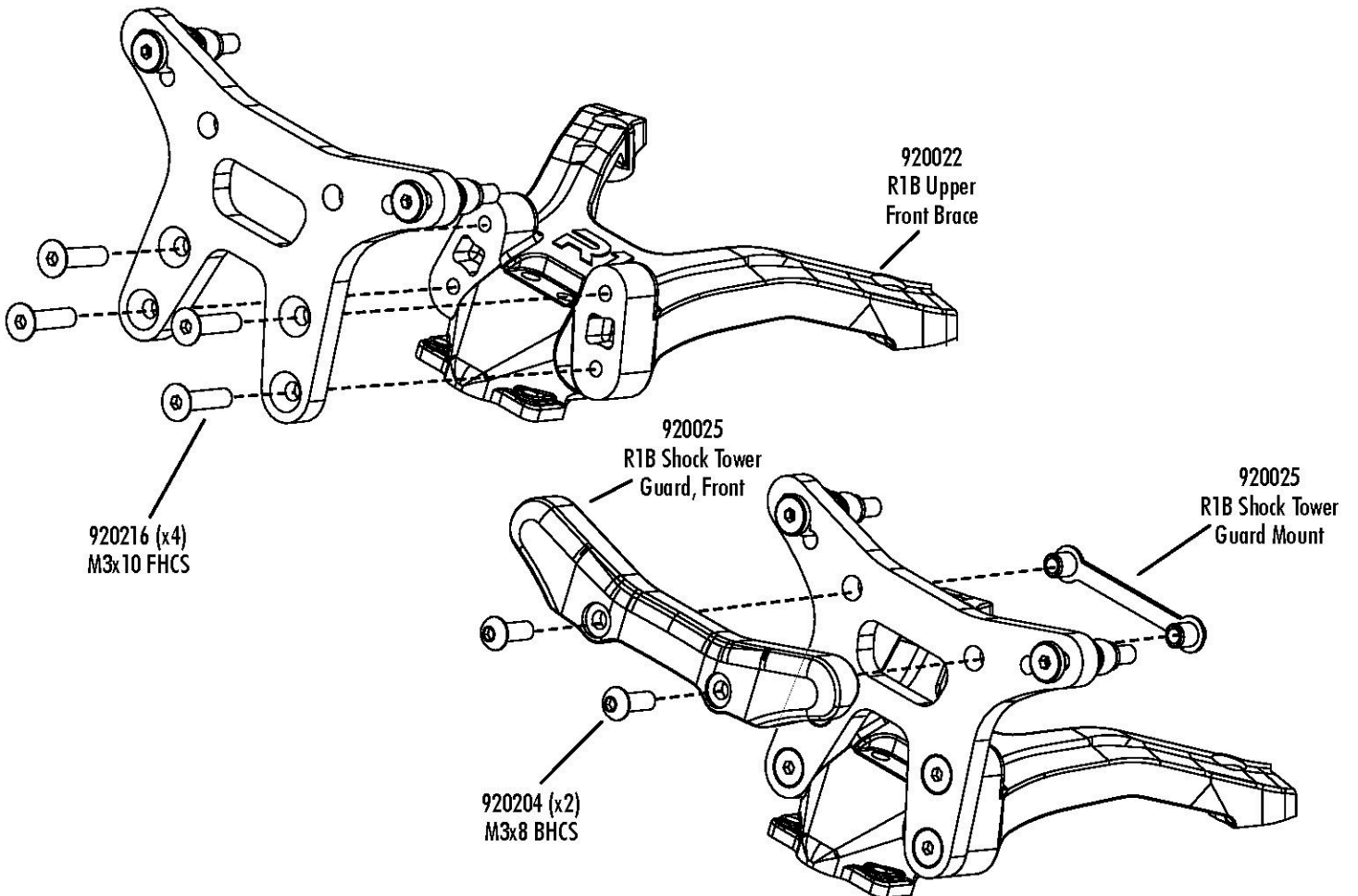
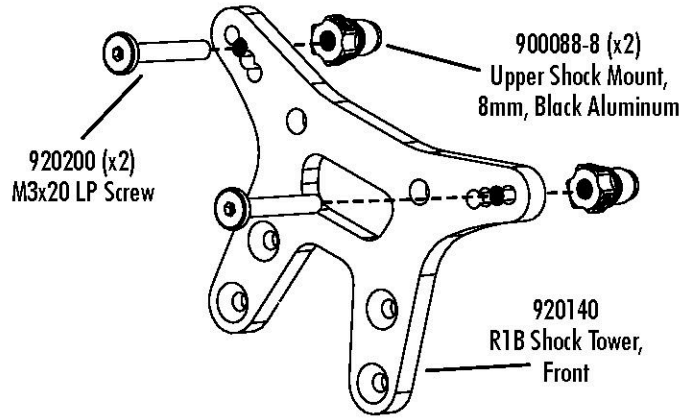
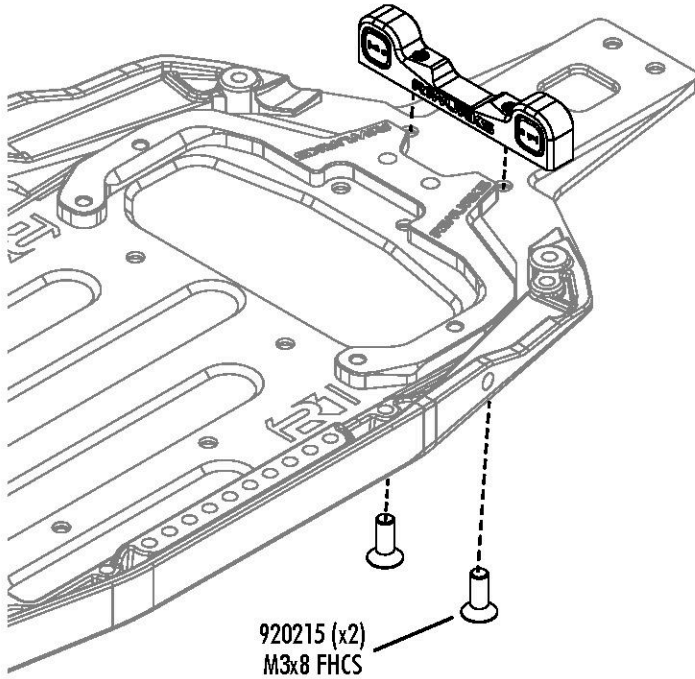


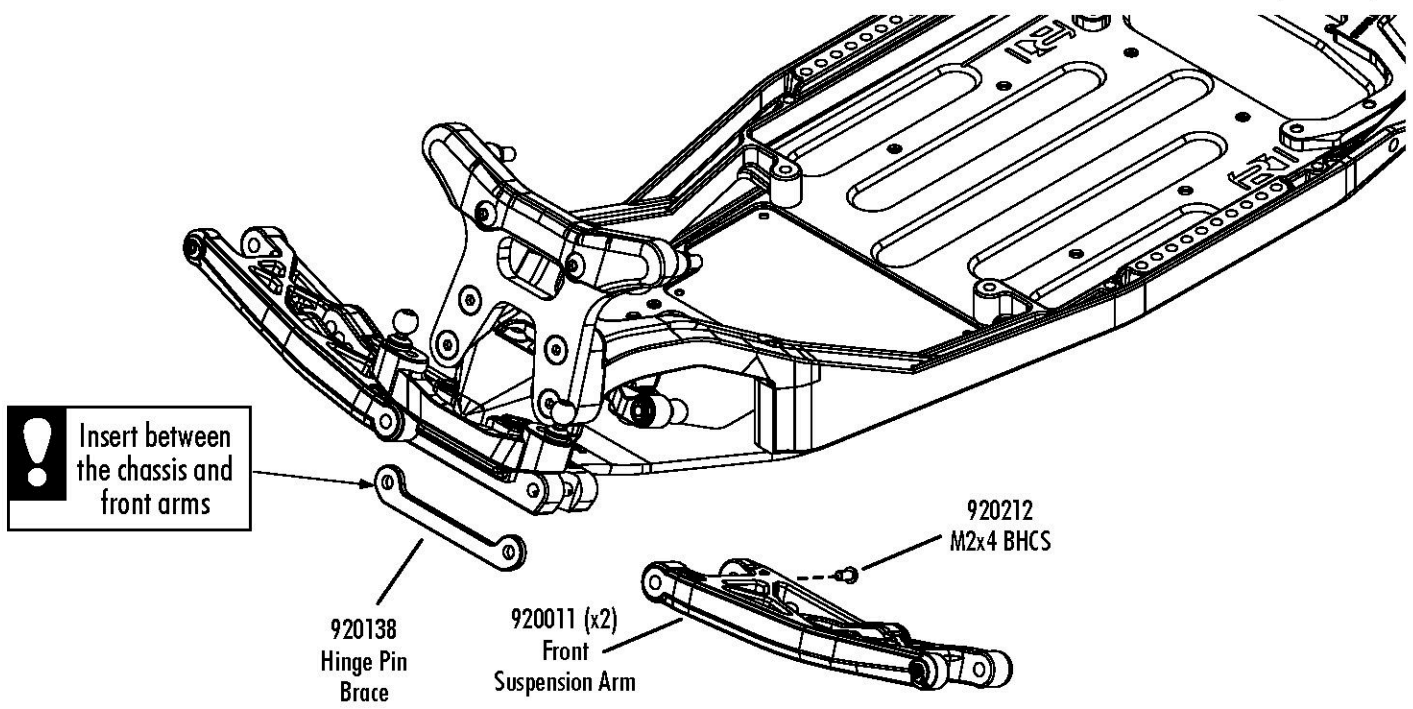
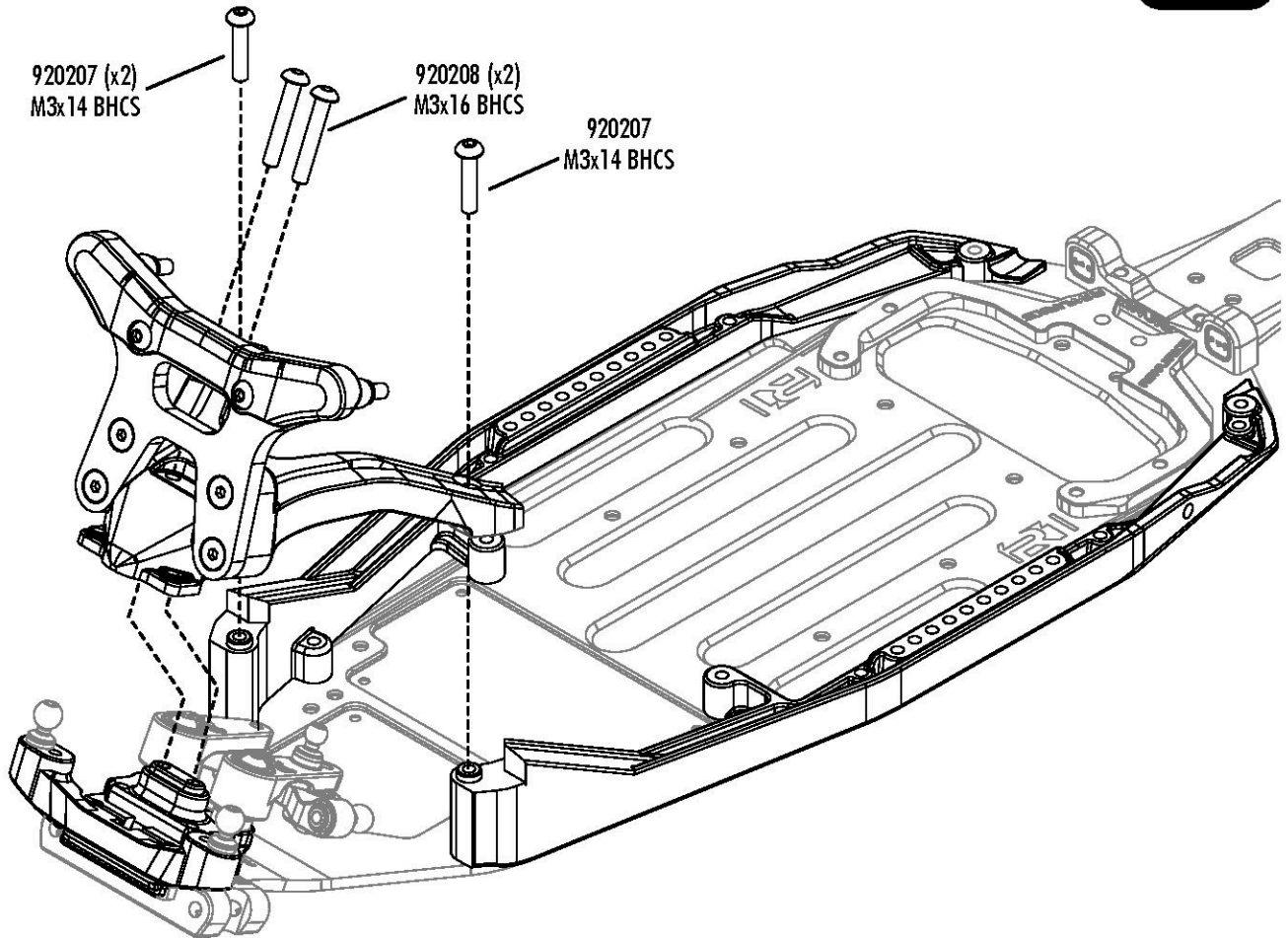
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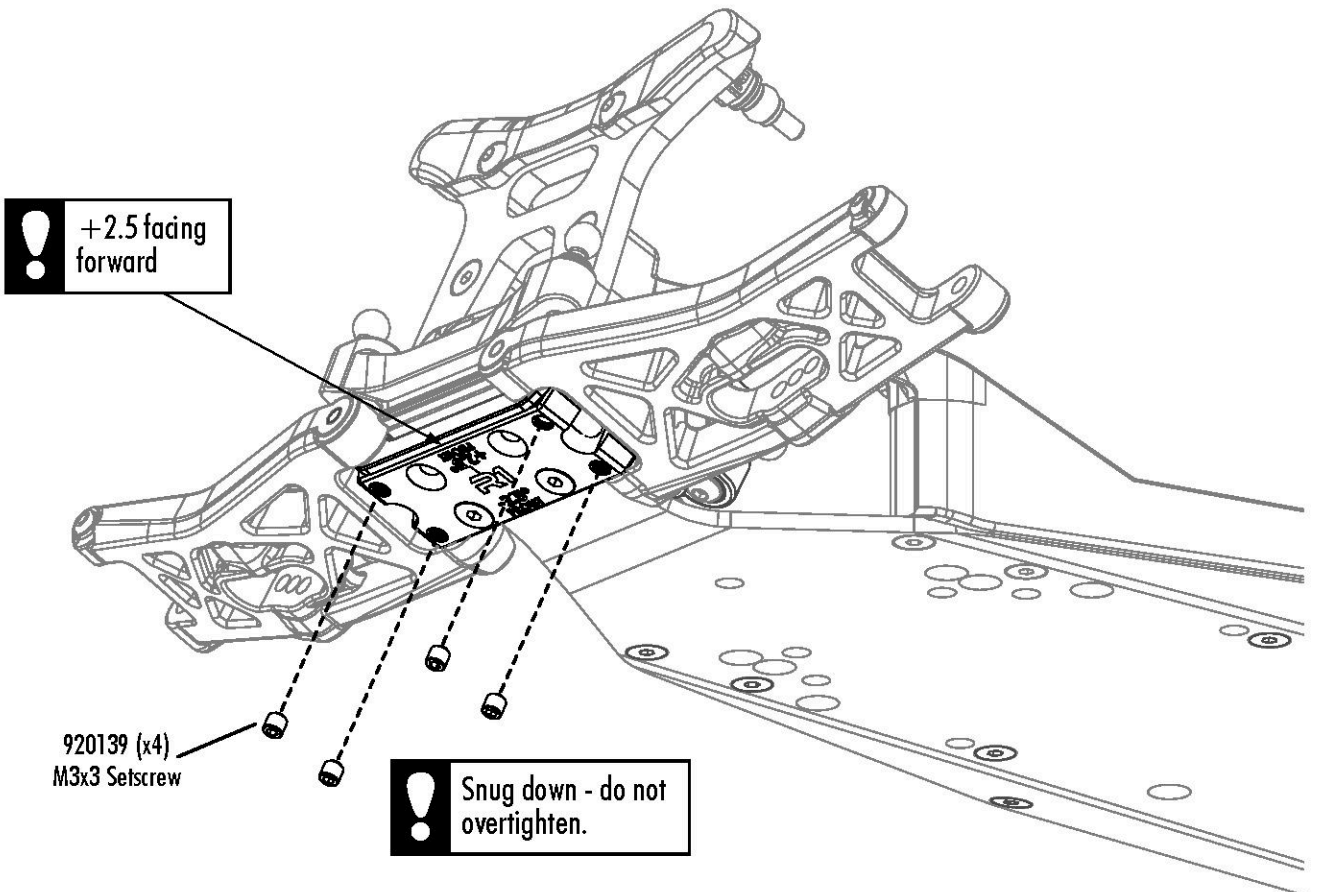
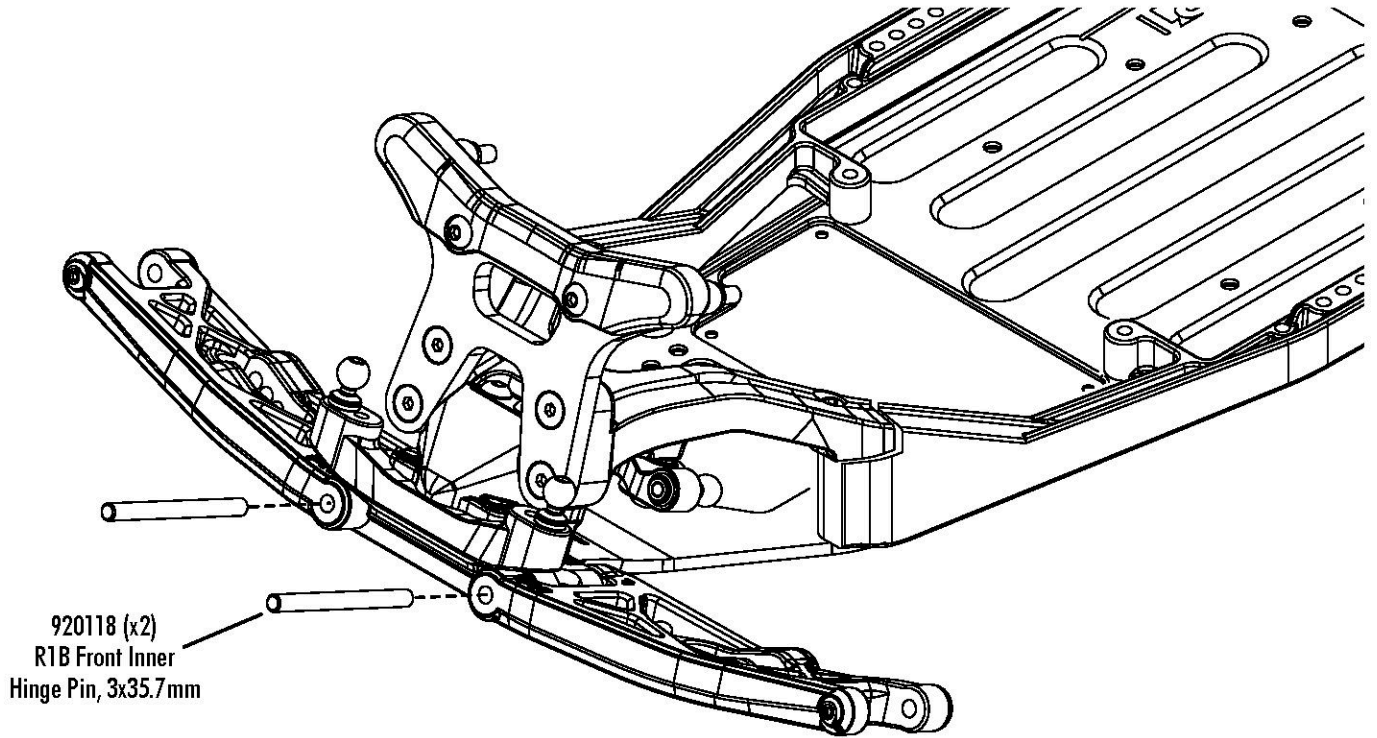


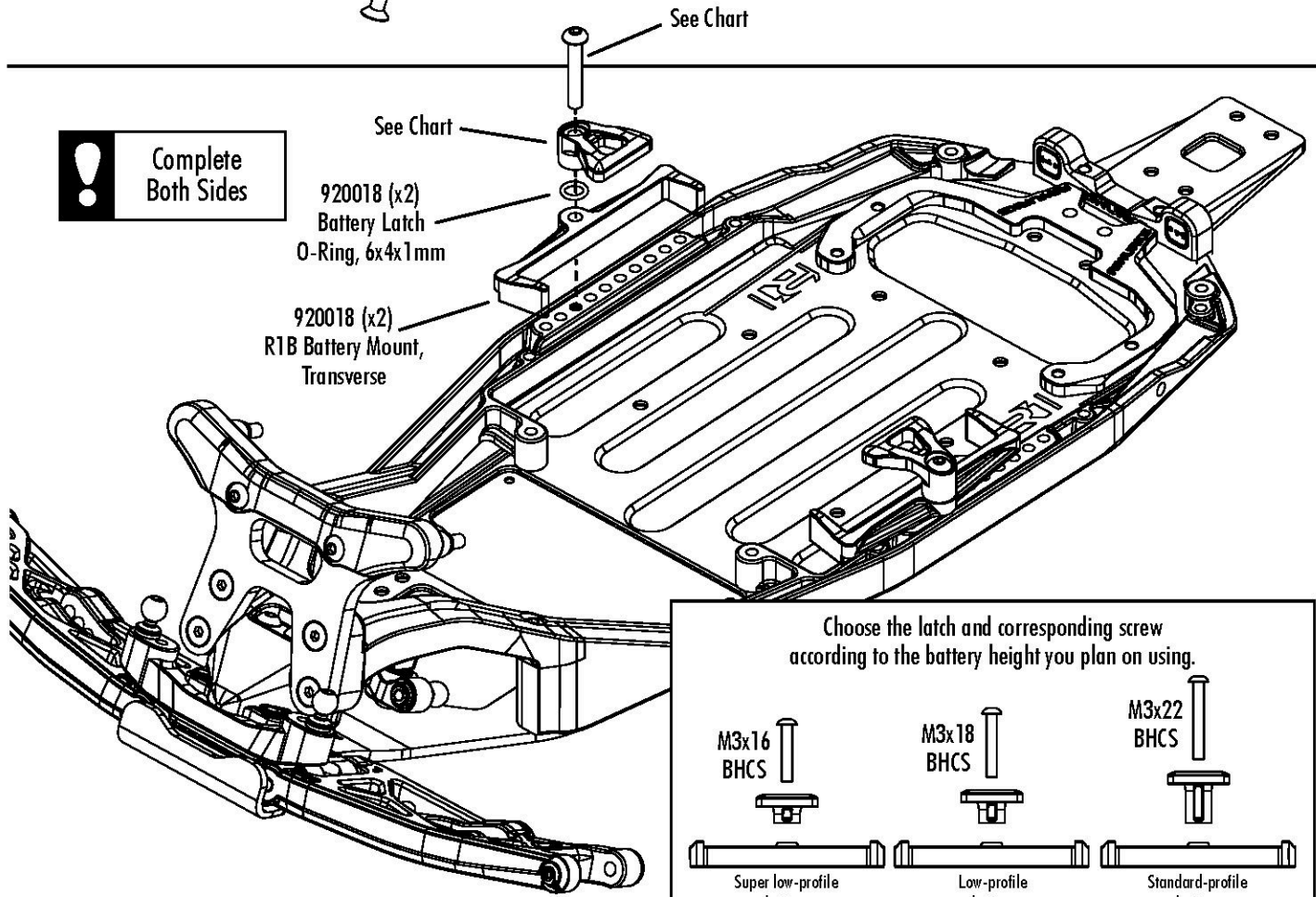
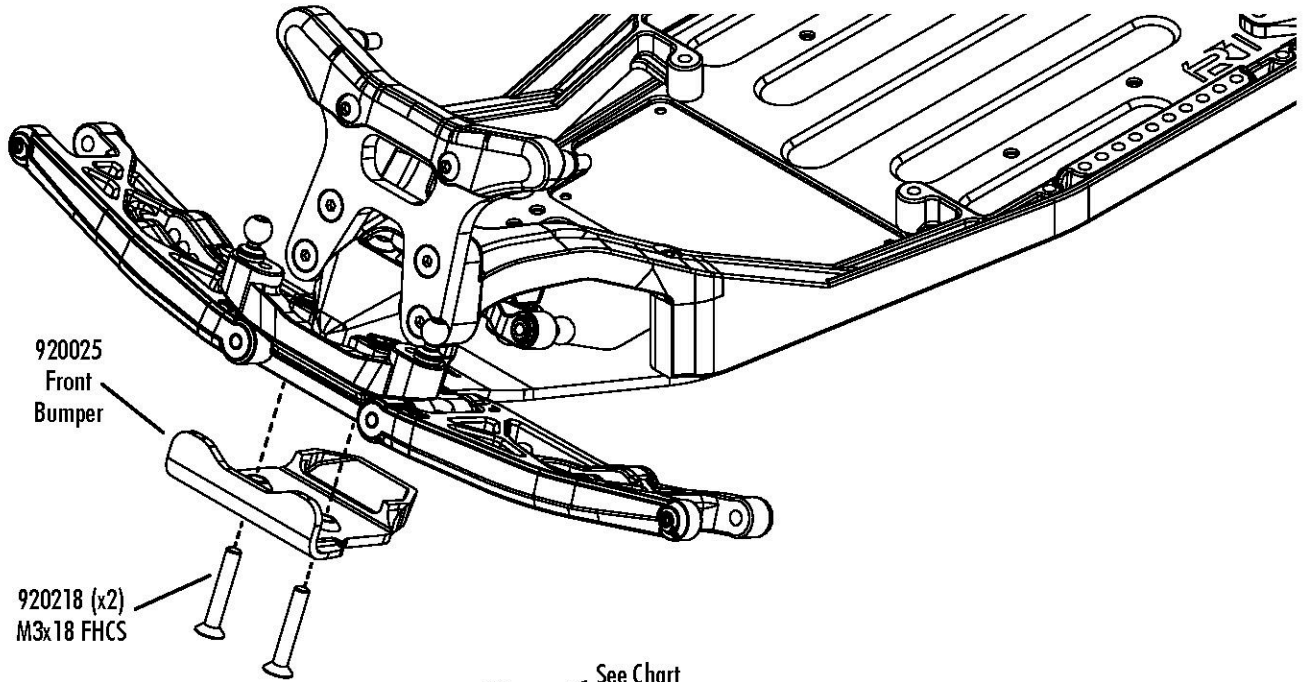
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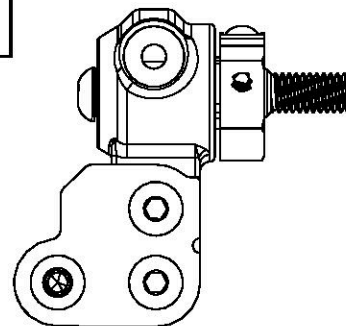
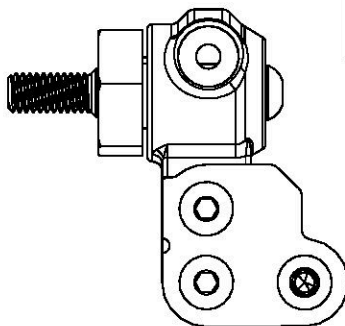
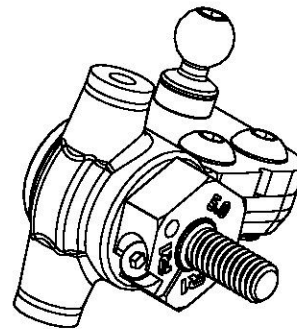
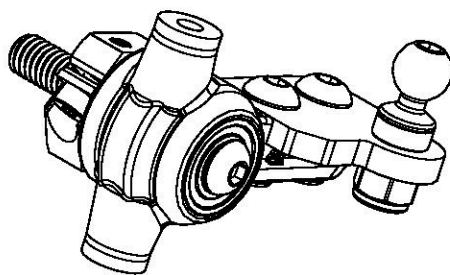
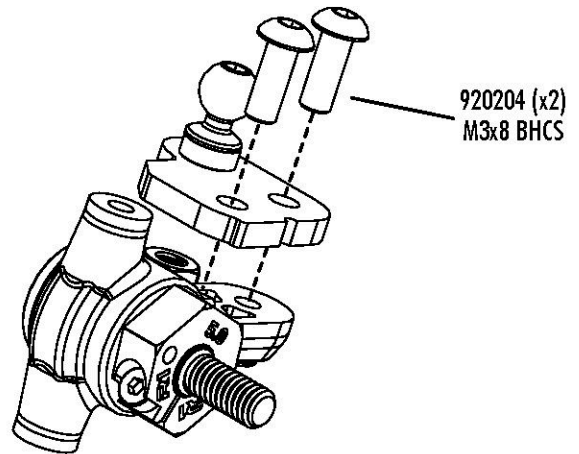
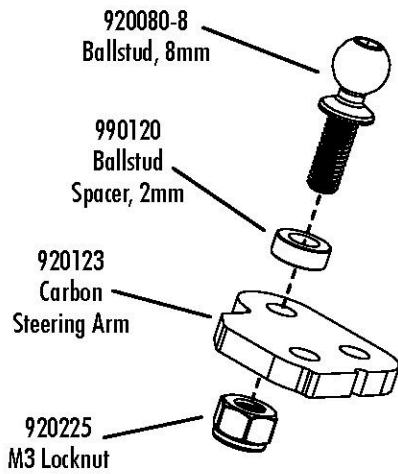
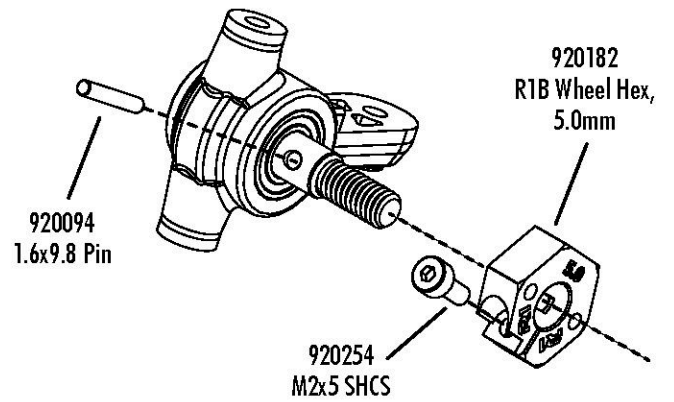
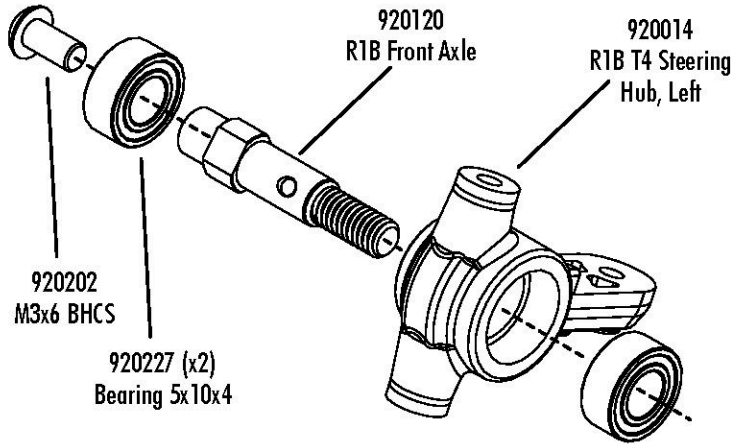




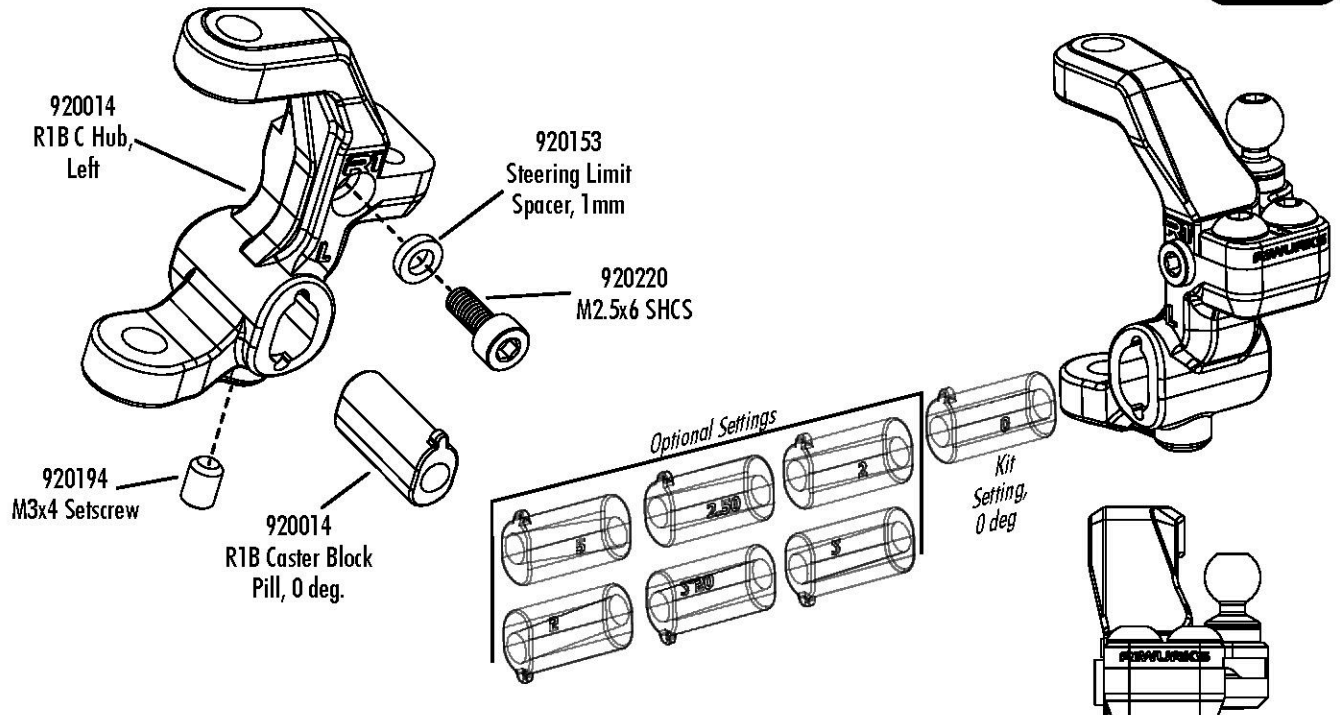
Choose the latch and corresponding screw according to the battery height you plan on using.

M3x16 BHCS	M3x18 BHCS	M3x22 BHCS
Super low-profile battery	Low-profile battery	Standard-profile battery

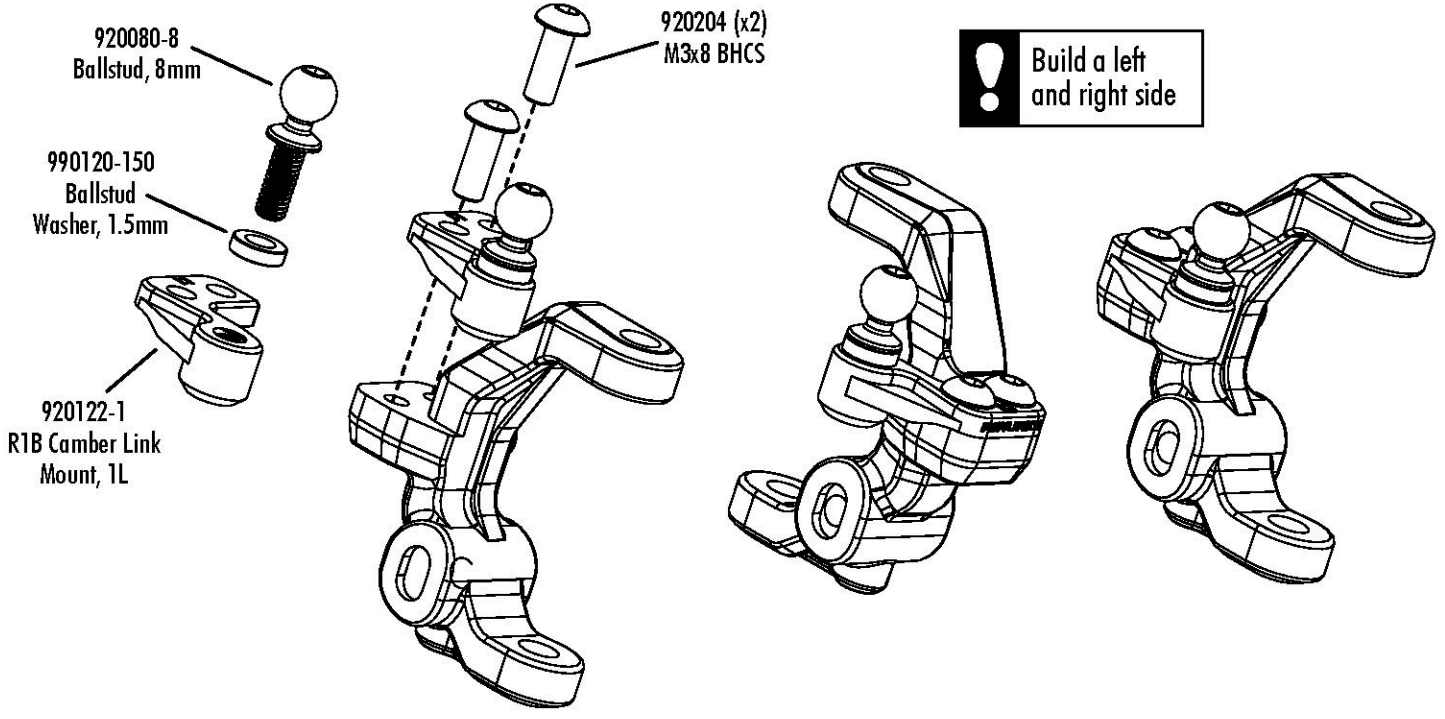
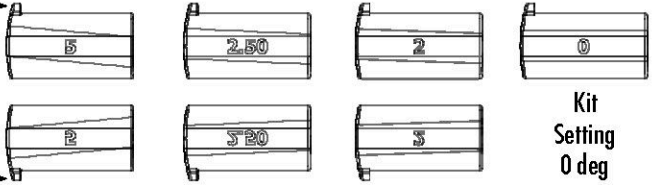
Spacers can be added to adjust the battery latch height for batteries that are not standard in height.

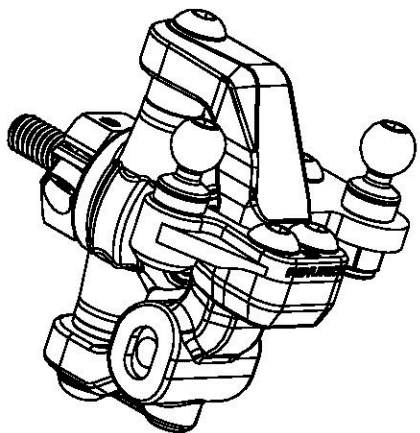
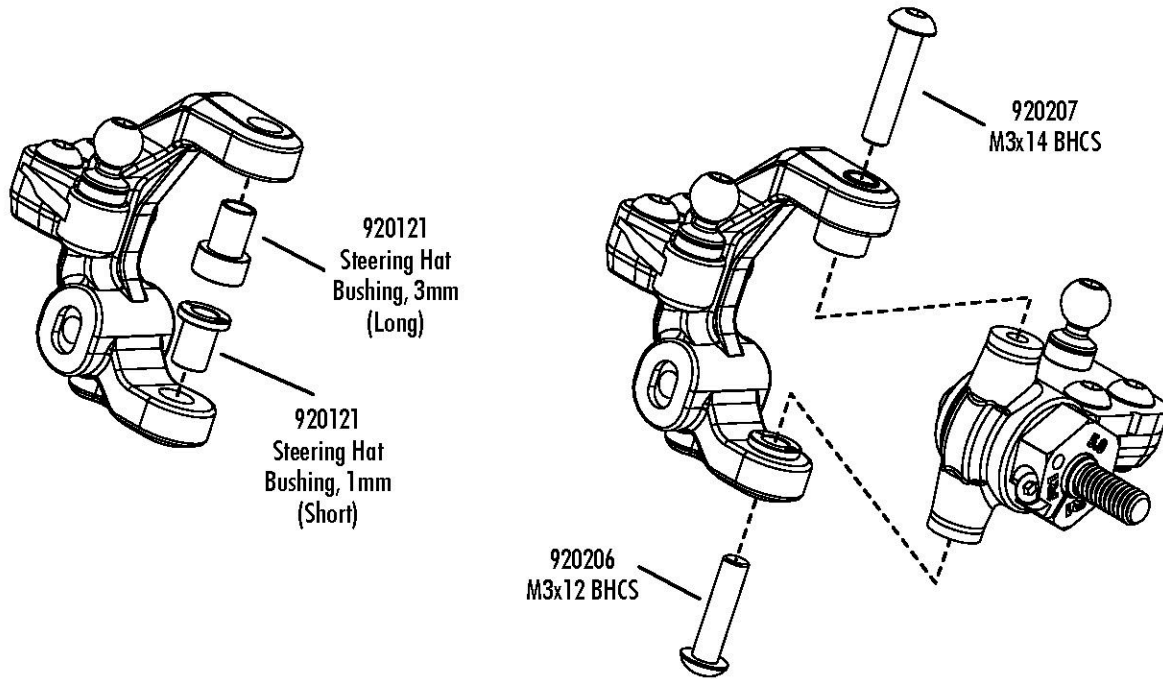


**!** Build a left  
and right side

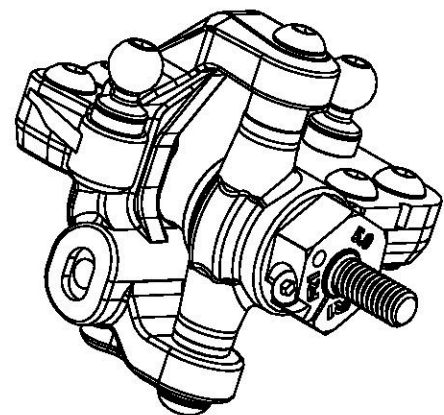


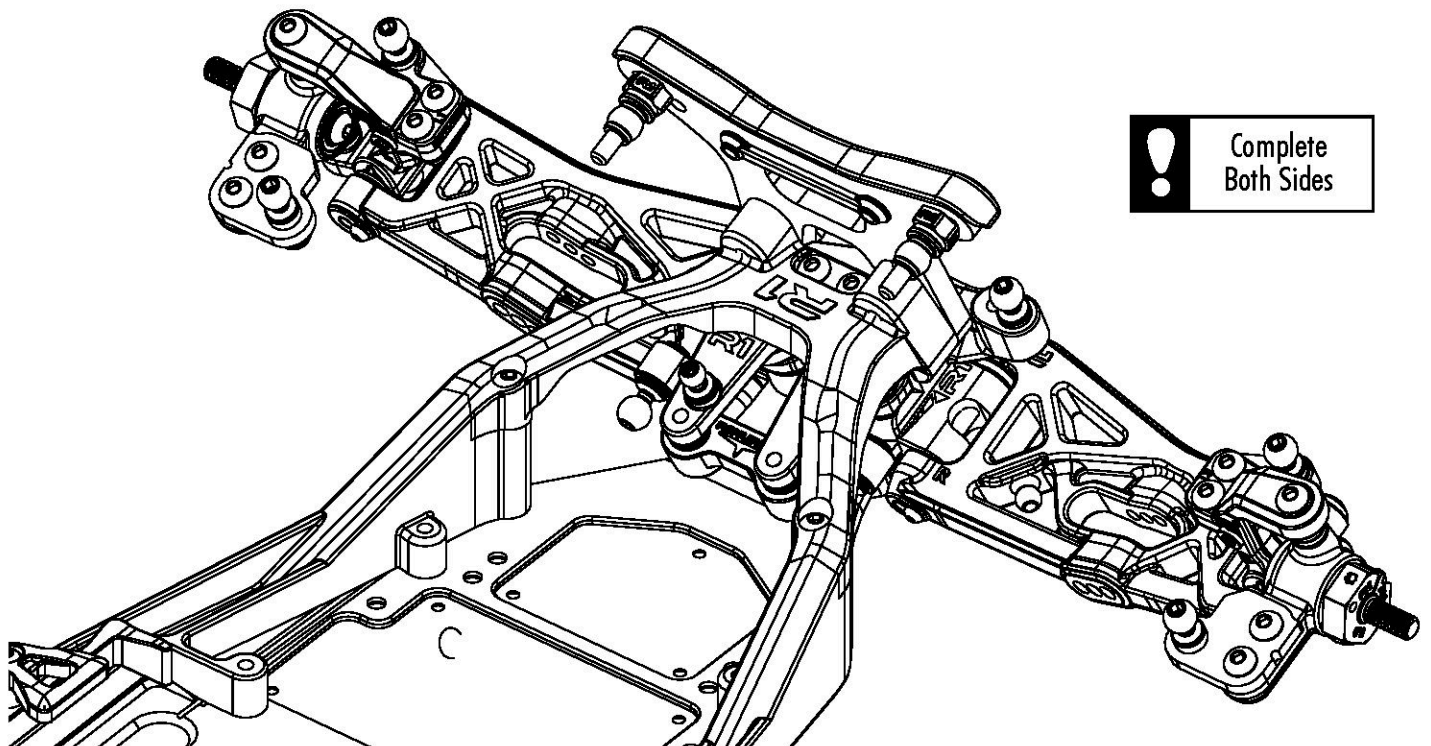
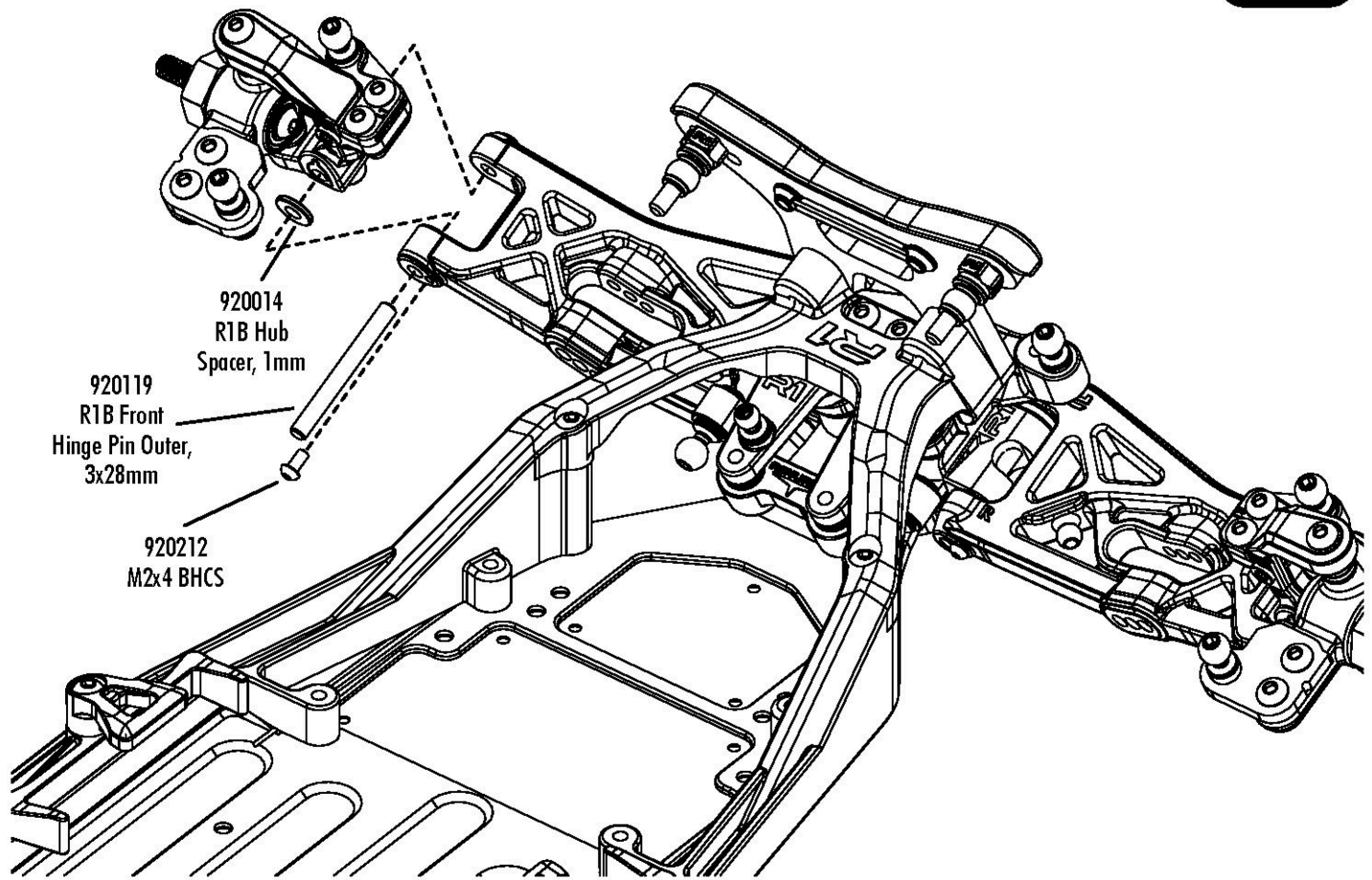
**!** Tab up adds caster  
 Tab down removes caster

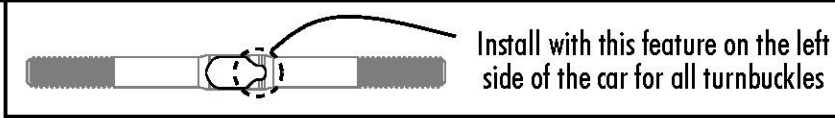




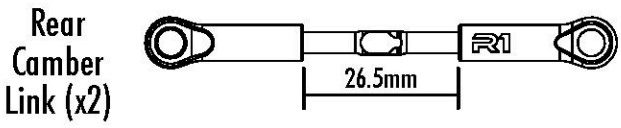
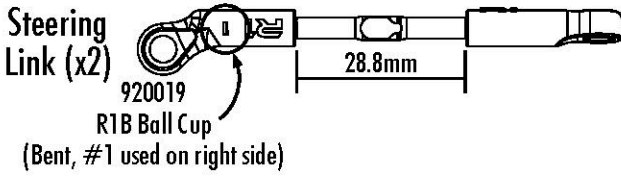
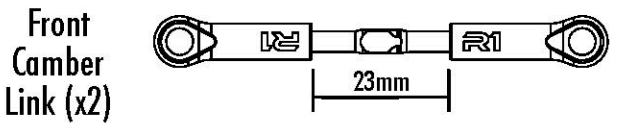
! Build a left and right side



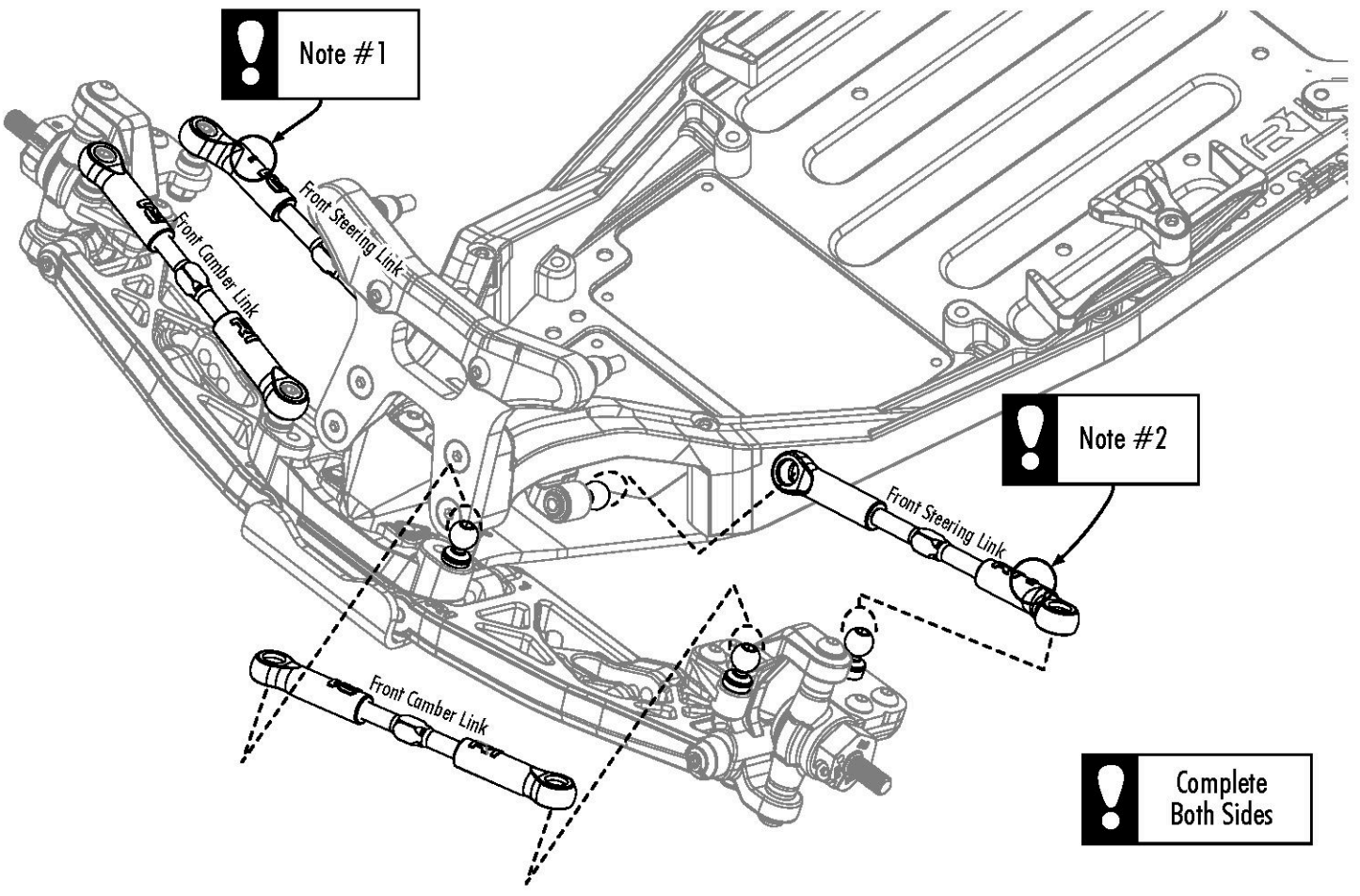
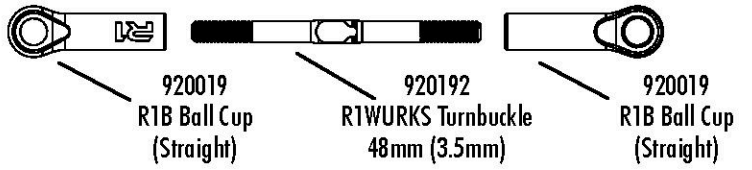
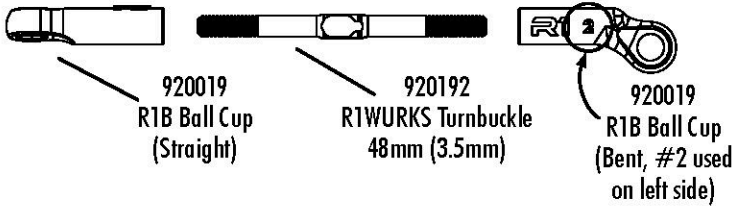
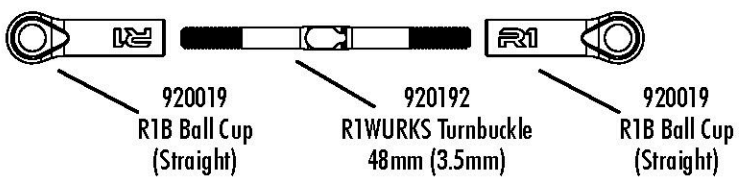


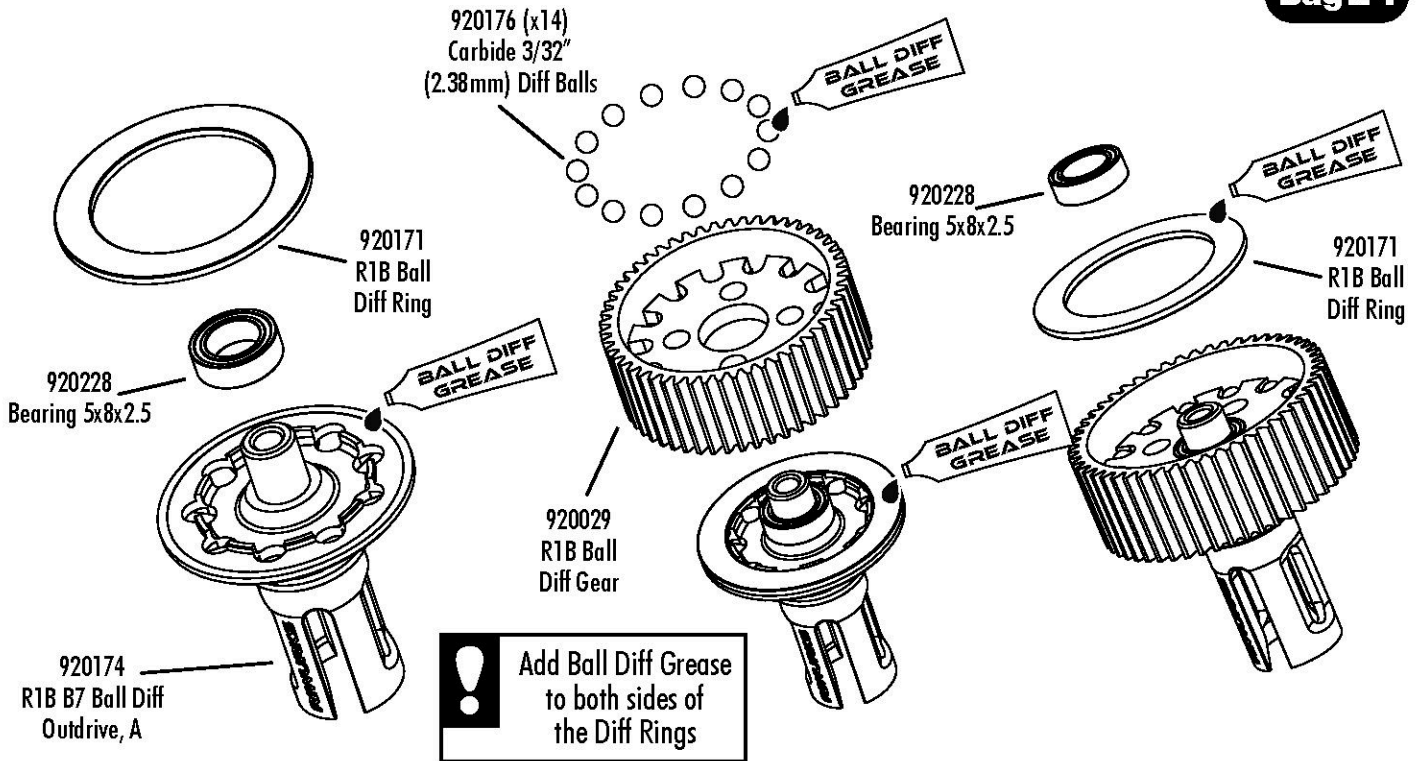


**Right**



**Left**





**! Pack the thrust bearing with black grease.**



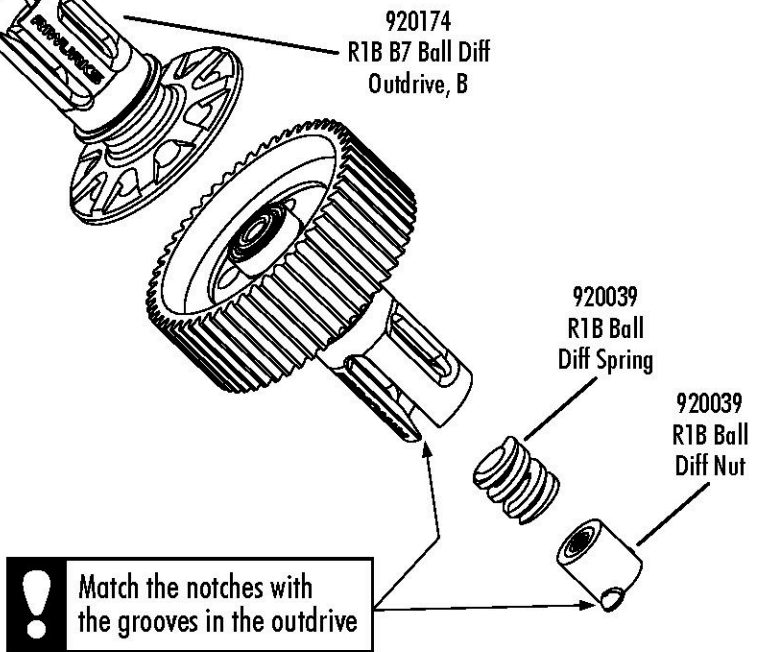
**! Initial Settings**  
Tighten the screw until the spring is fully compressed (do not force the screw once it stops turning), then back the screw off 1/8 turn.

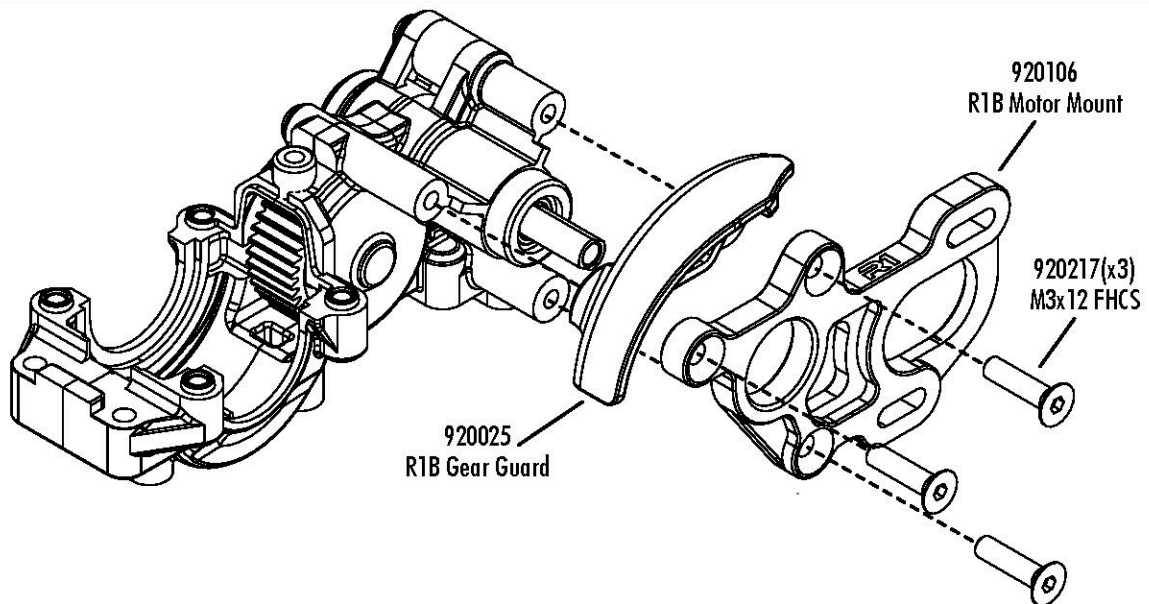
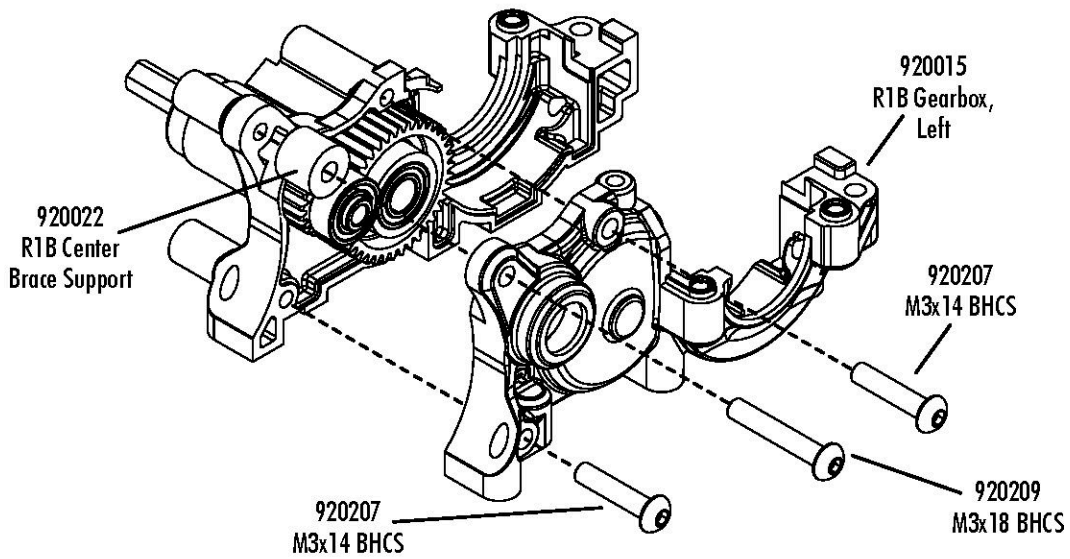
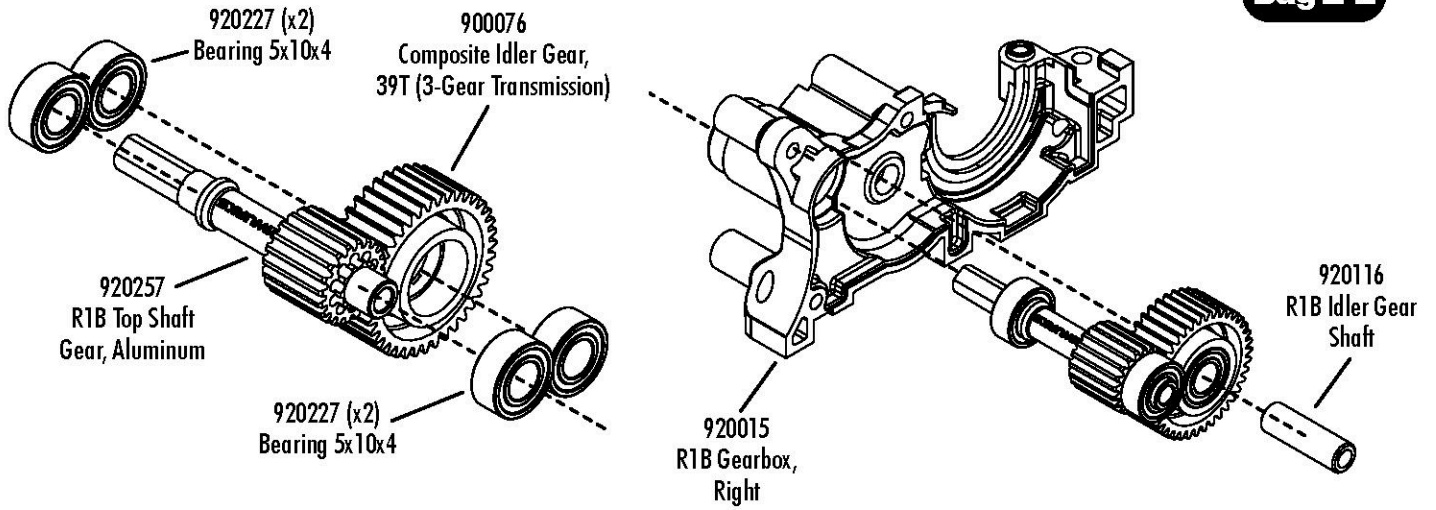
**! Recommended Ball Diff Break-In Procedure (After Car is Fully Ready to Run)**

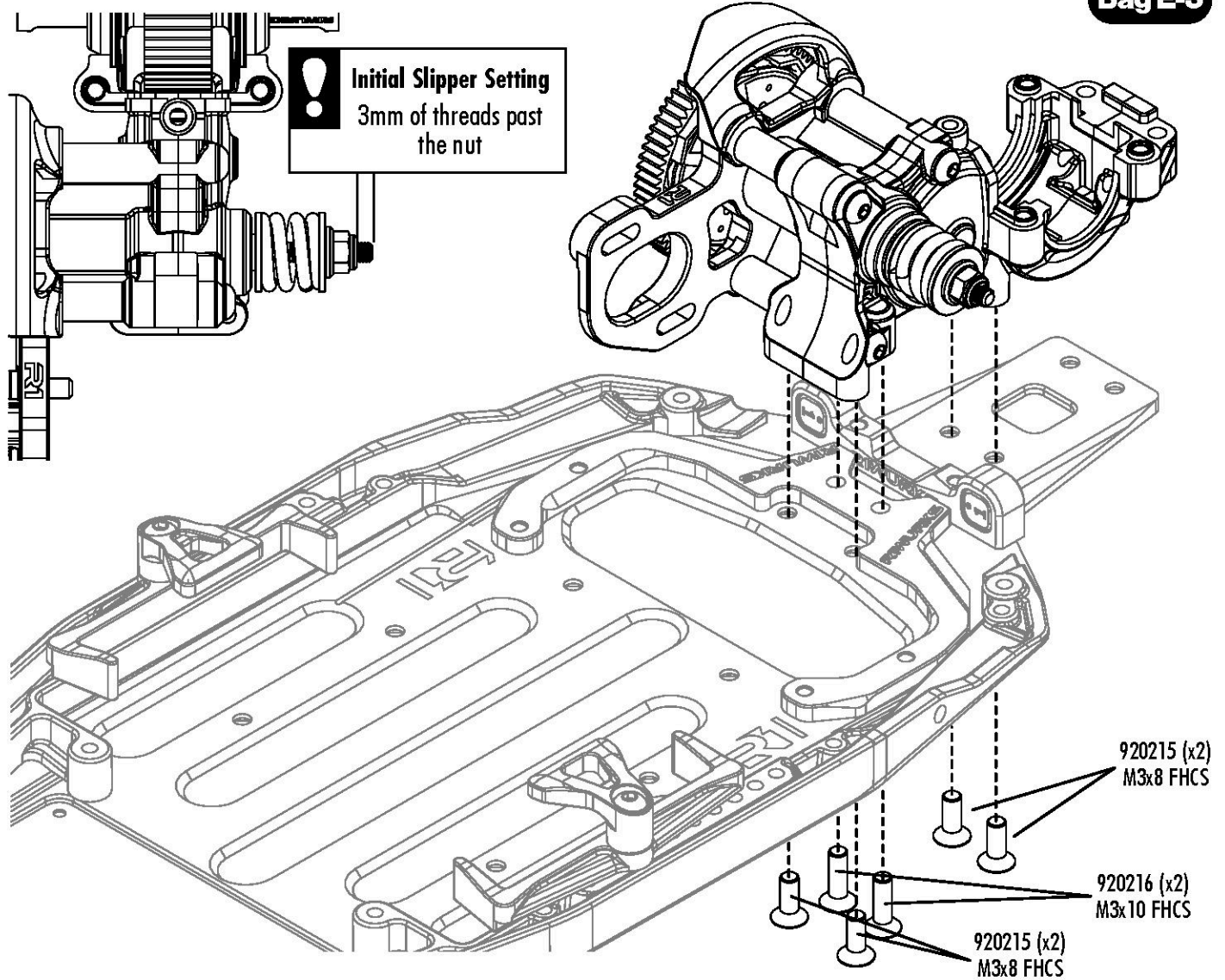
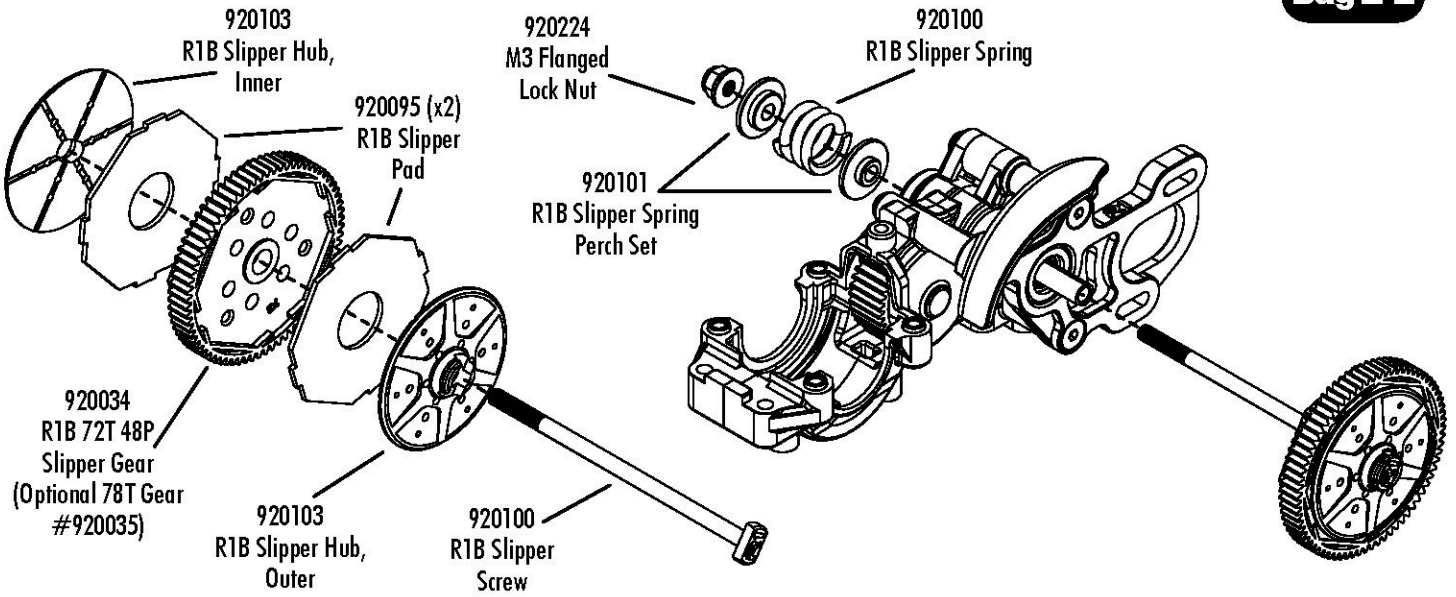
1. Hold one tire, allowing the opposite tire to rotate freely, and apply a small amount of throttle (tire should not balloon) for approximately 20 seconds.
2. Switch sides and hold the opposite tire, repeating the same process.
3. Repeat this cycle six times, modulating the throttle each time. Do not exceed 1/4 throttle.
4. After break-in, re-adjust the diff as follows:
  1. Back out the diff screw one full turn.
  2. Re-tighten until the spring is fully compressed. Do not force the screw once it stops turning.
  3. Back the screw off 1/8 turn.

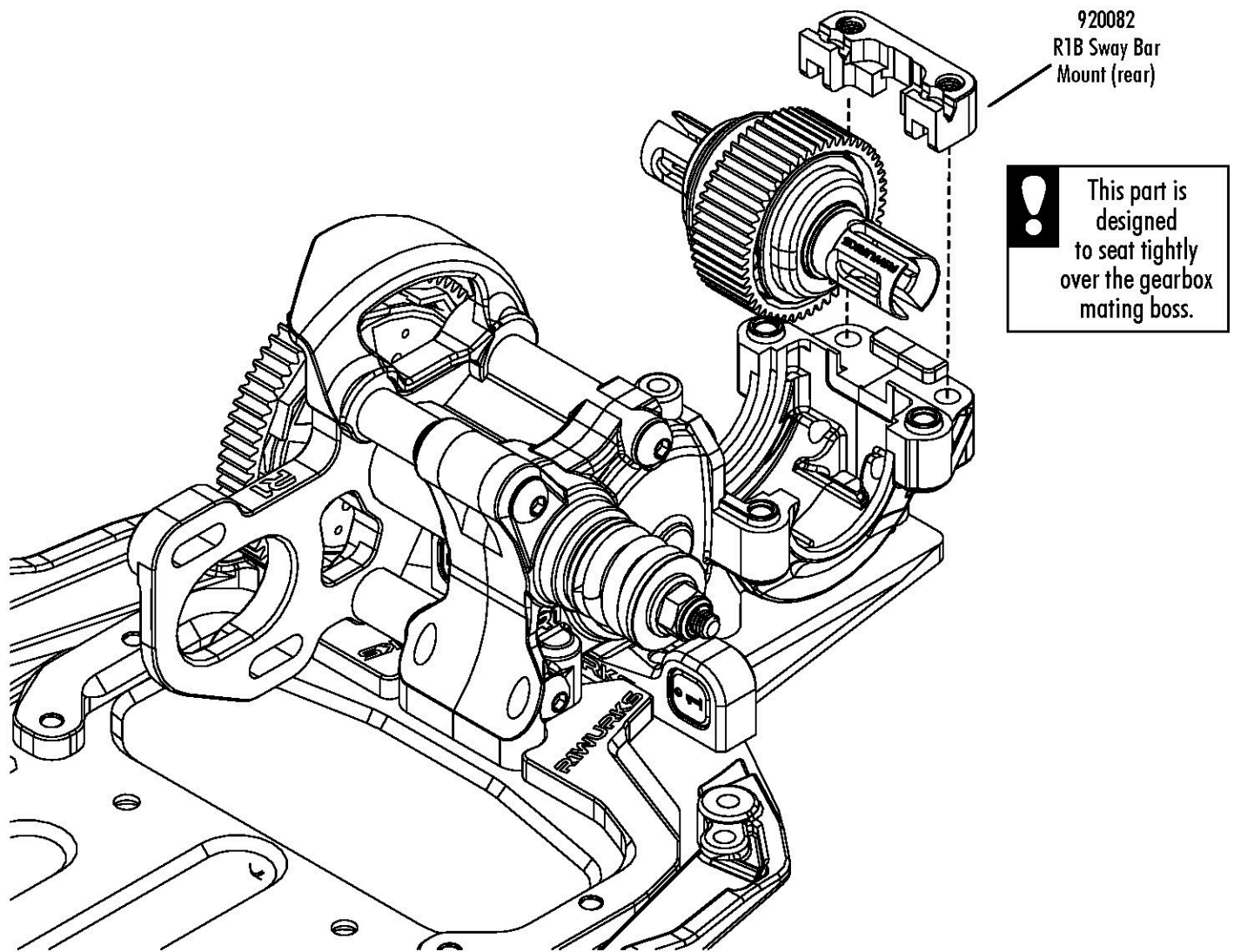
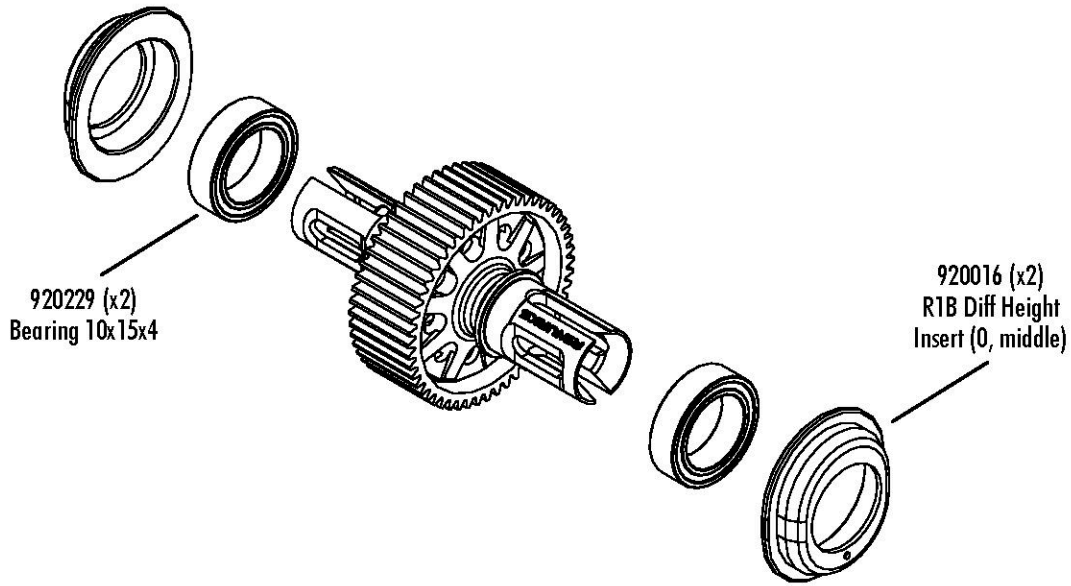
The diff is now ready for use.

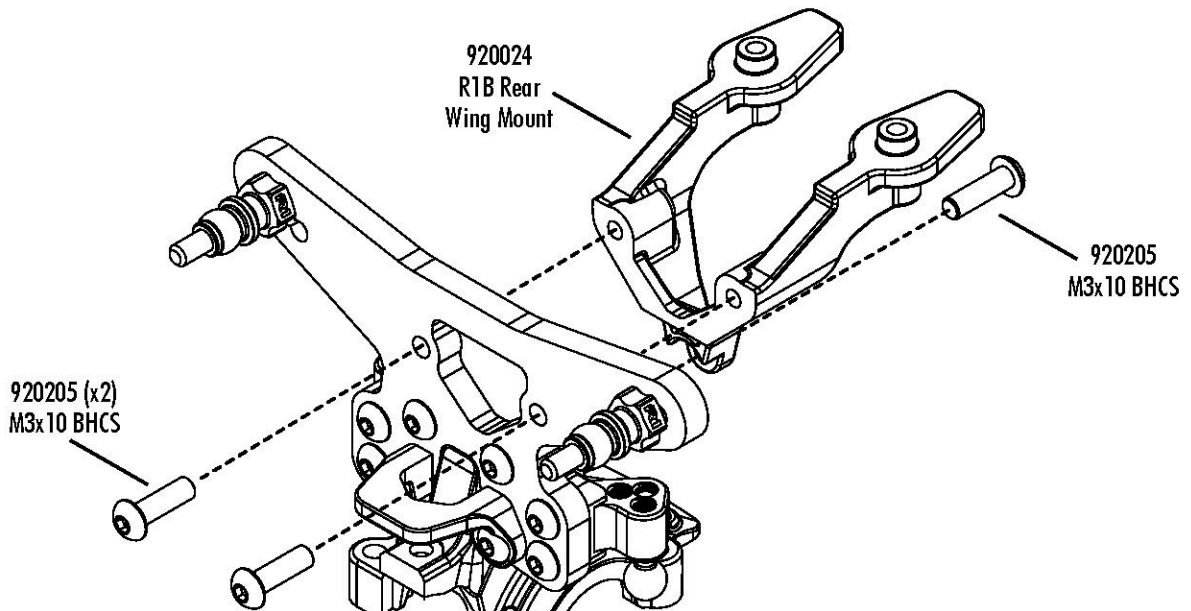
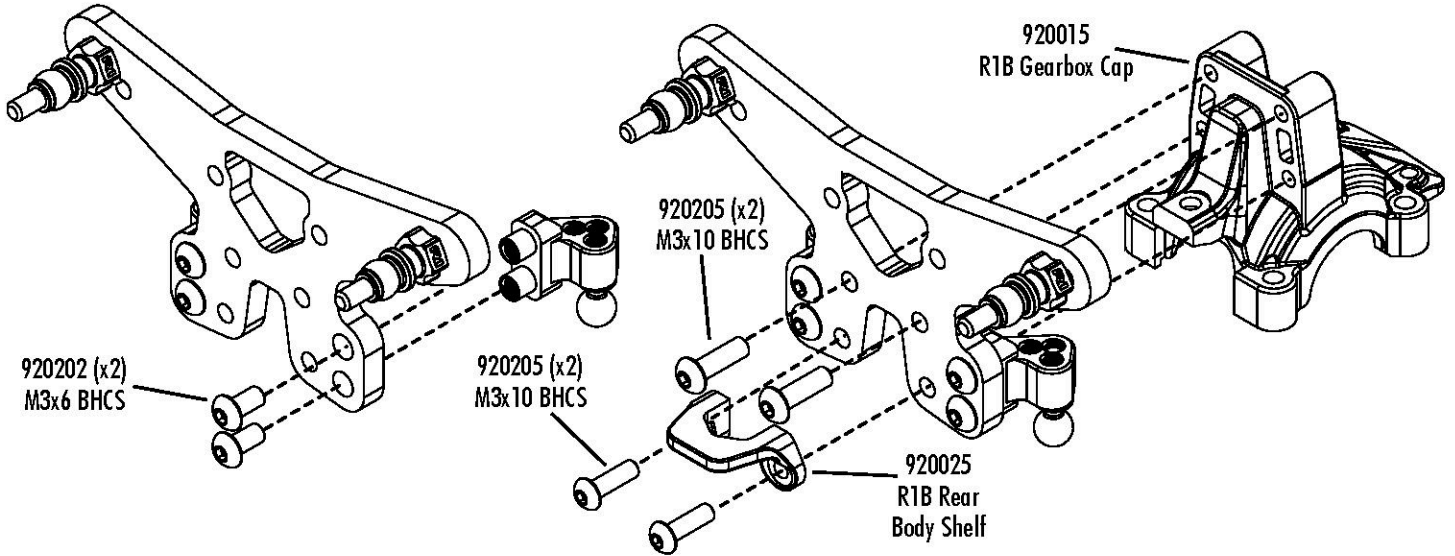
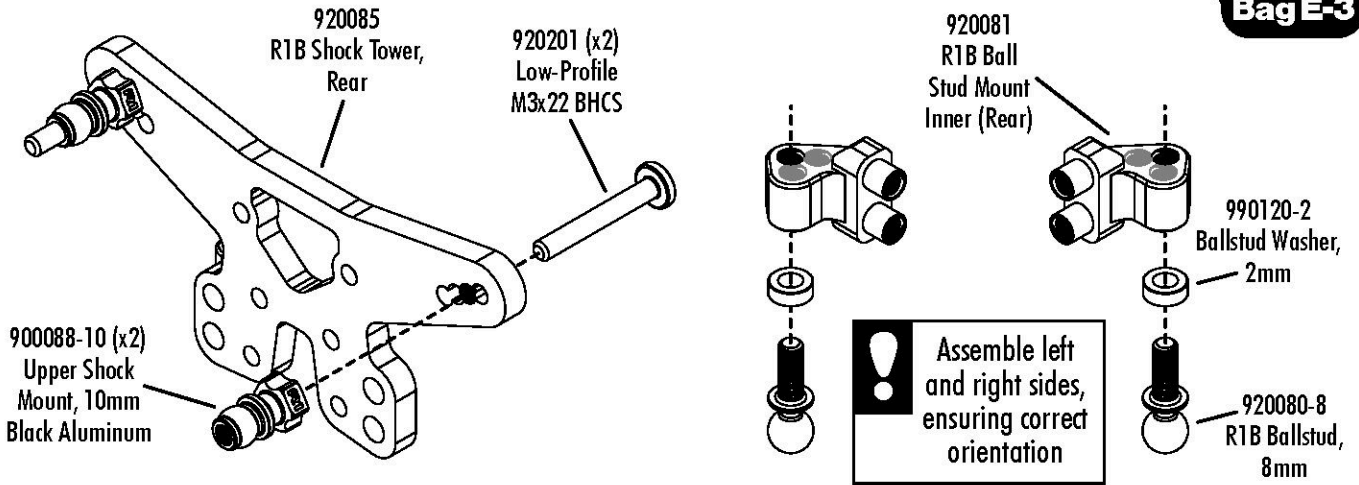
\* Recheck and adjust as necessary after running. \*

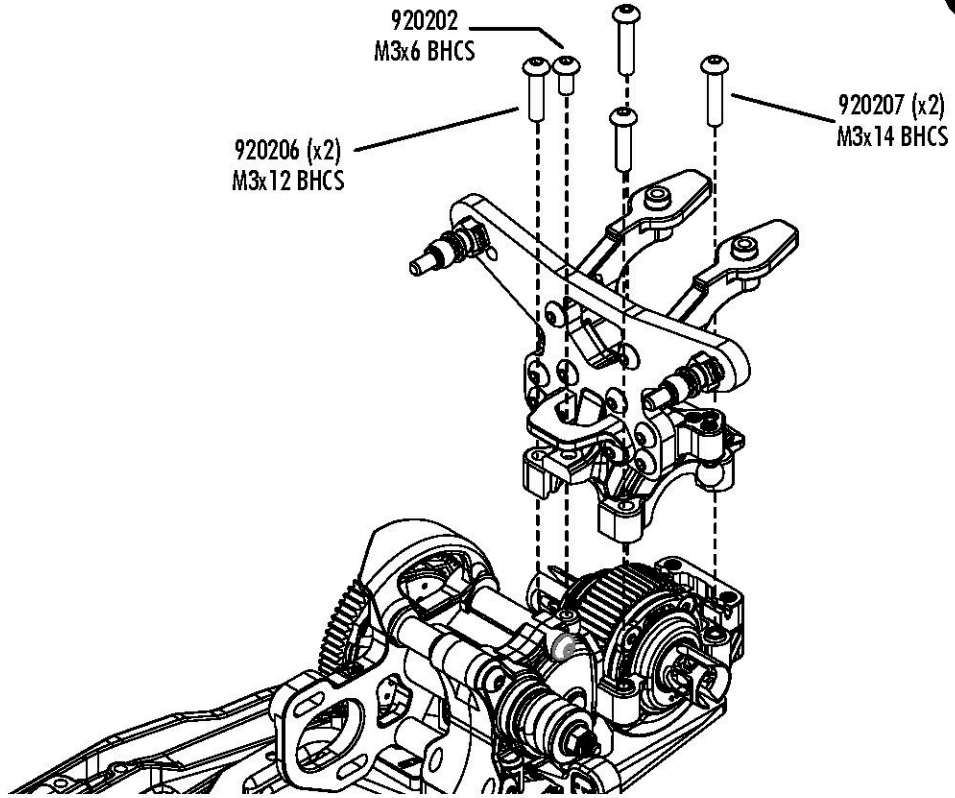




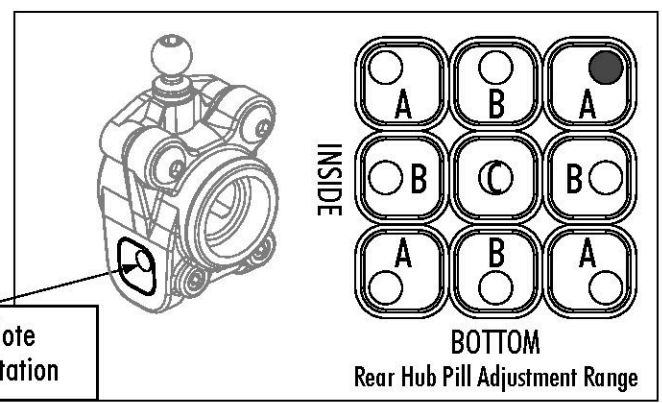
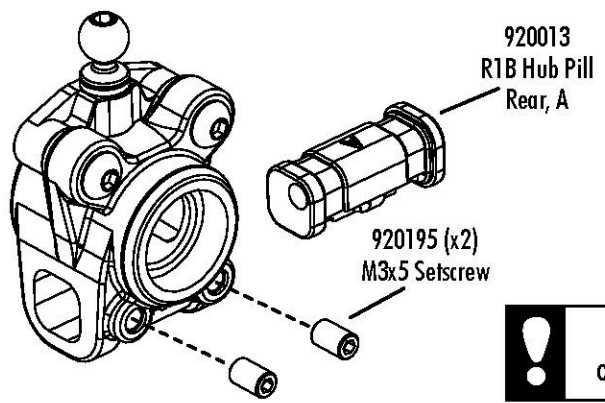
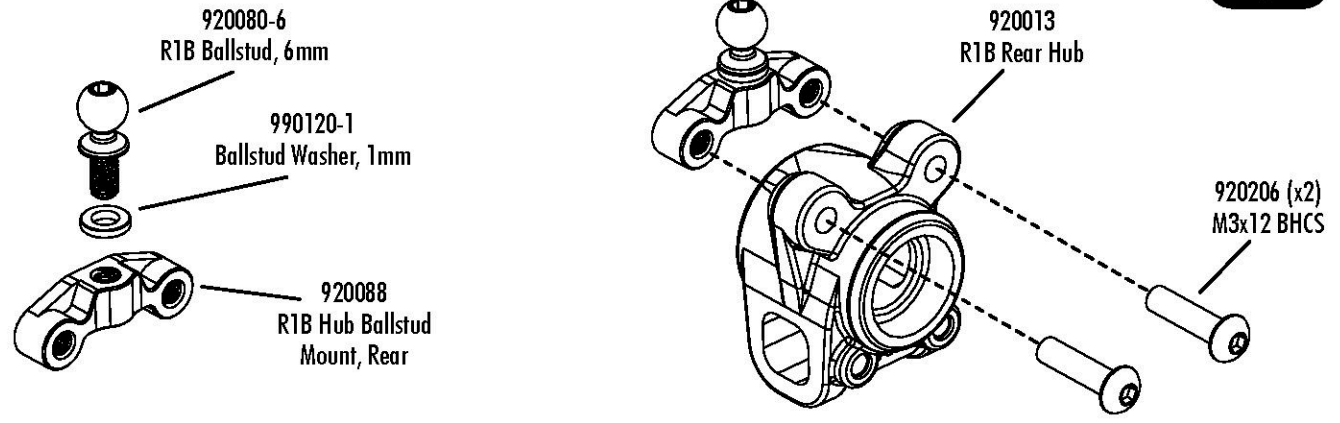







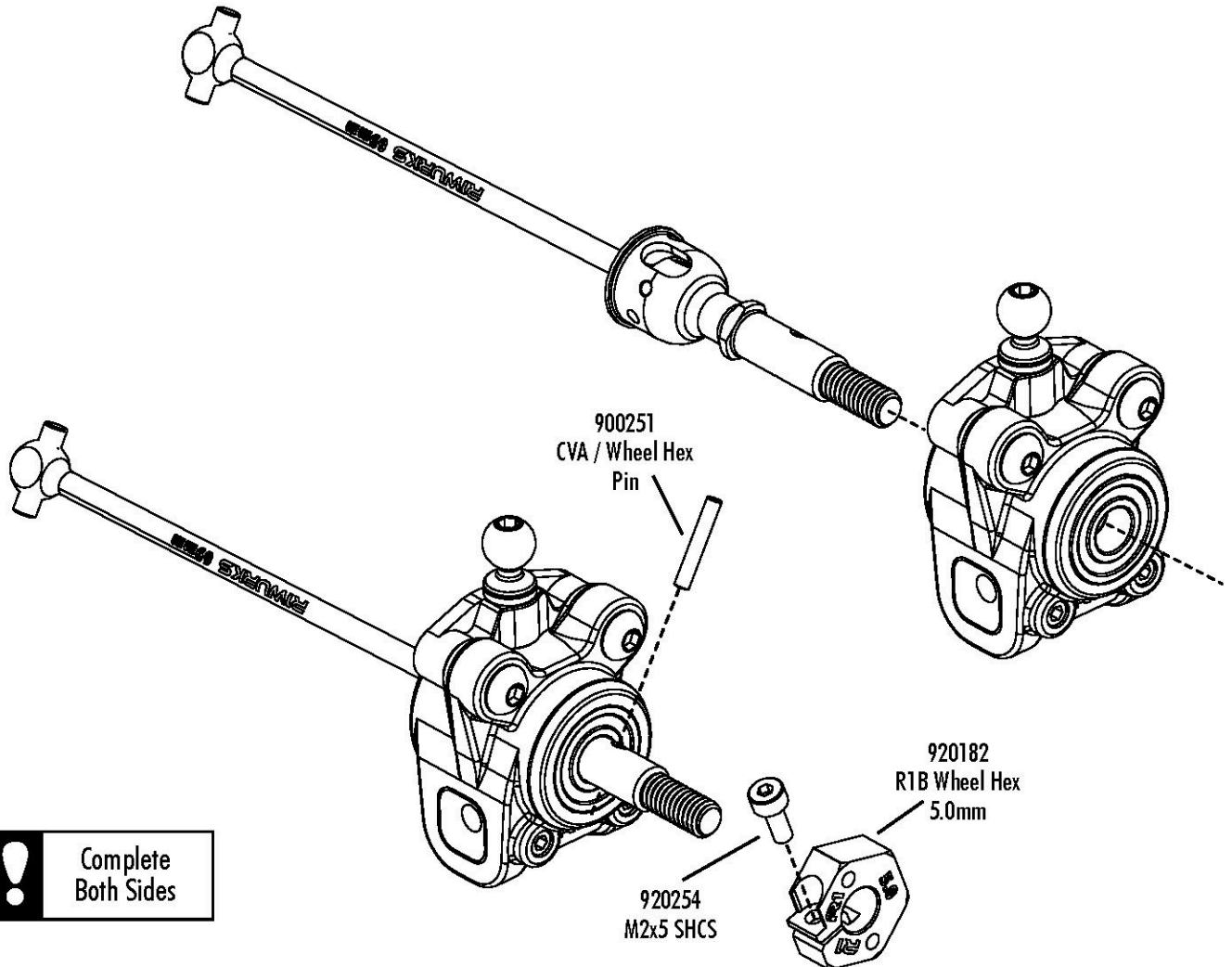
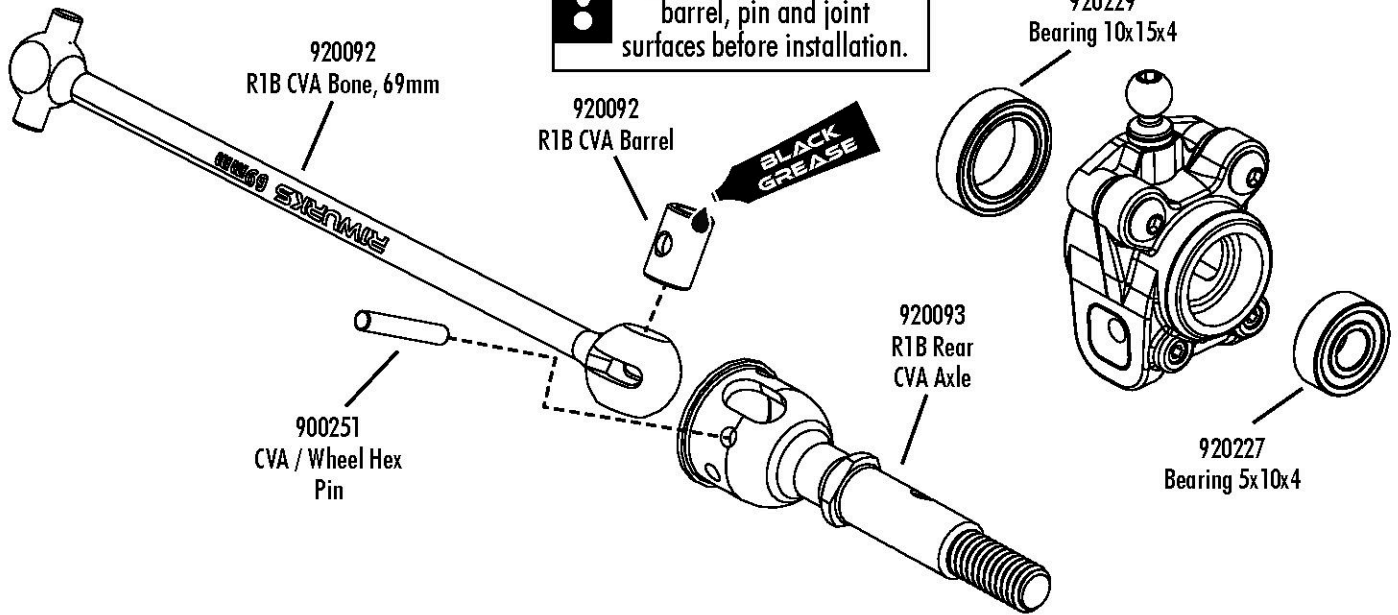


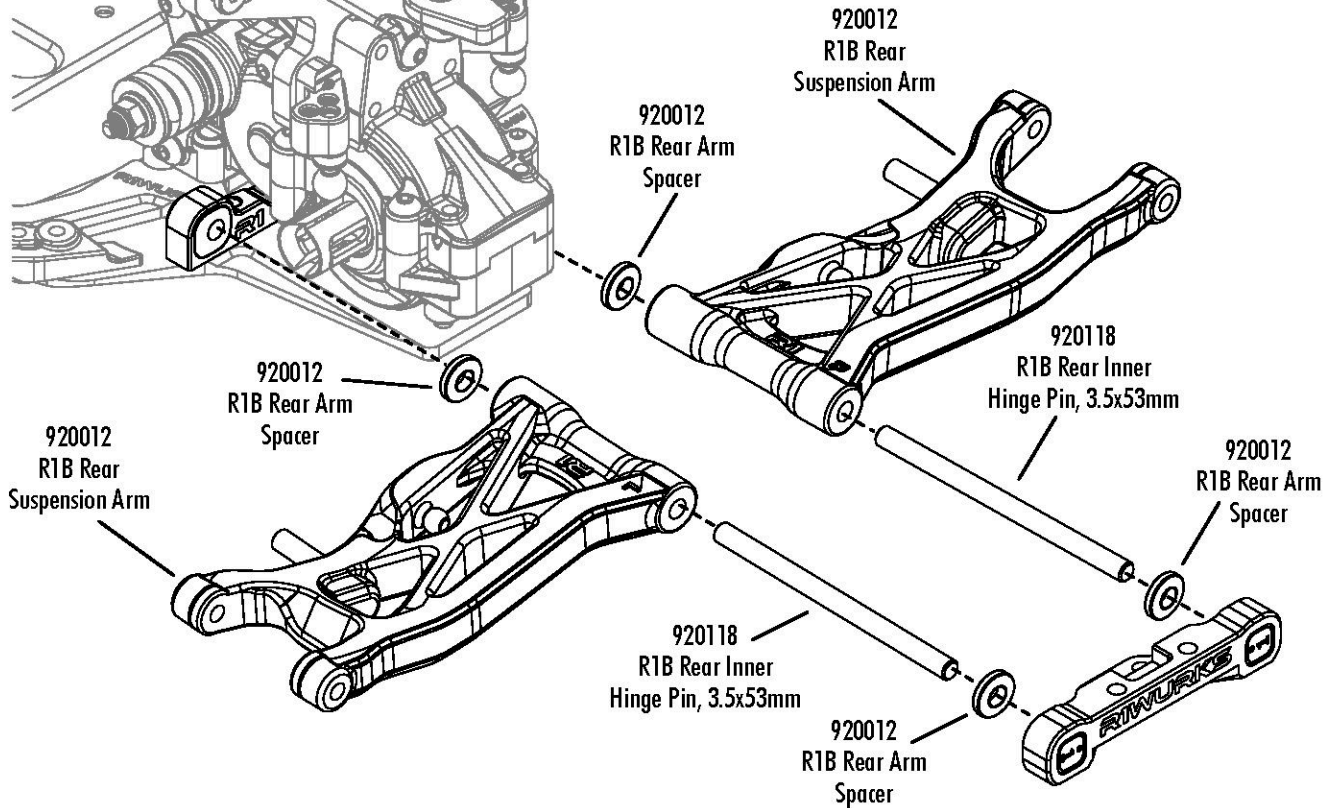
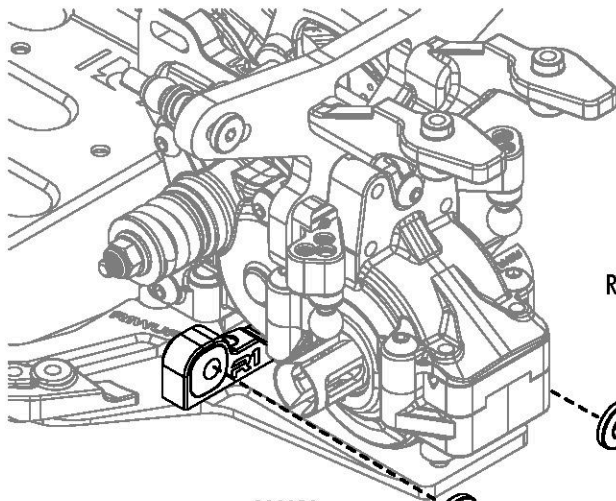
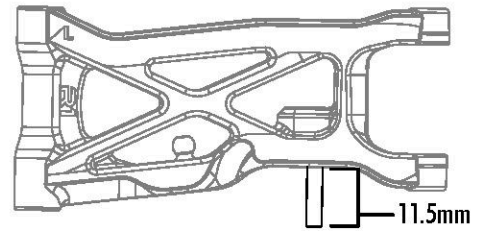
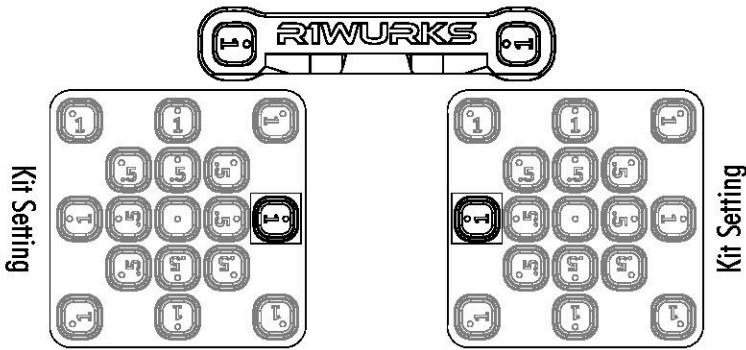
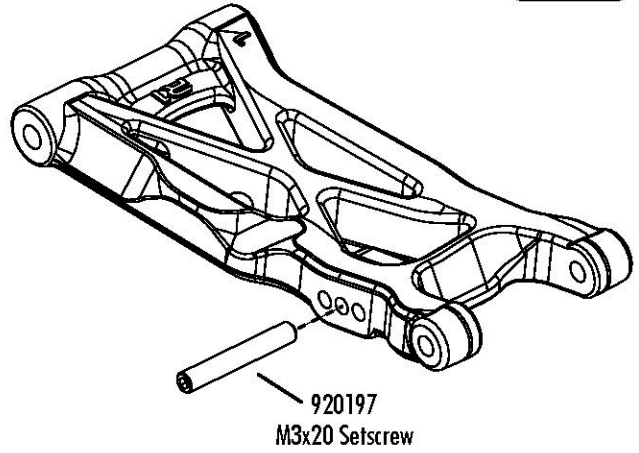
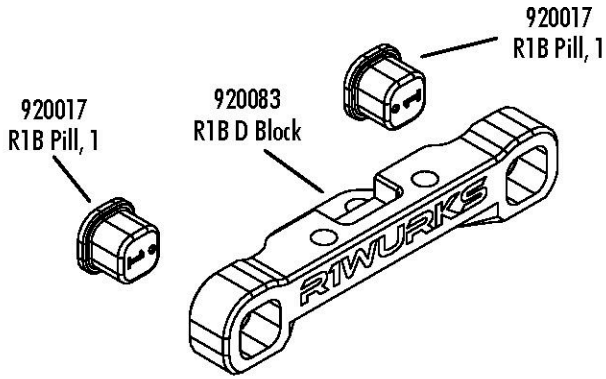
**Bag F-1**

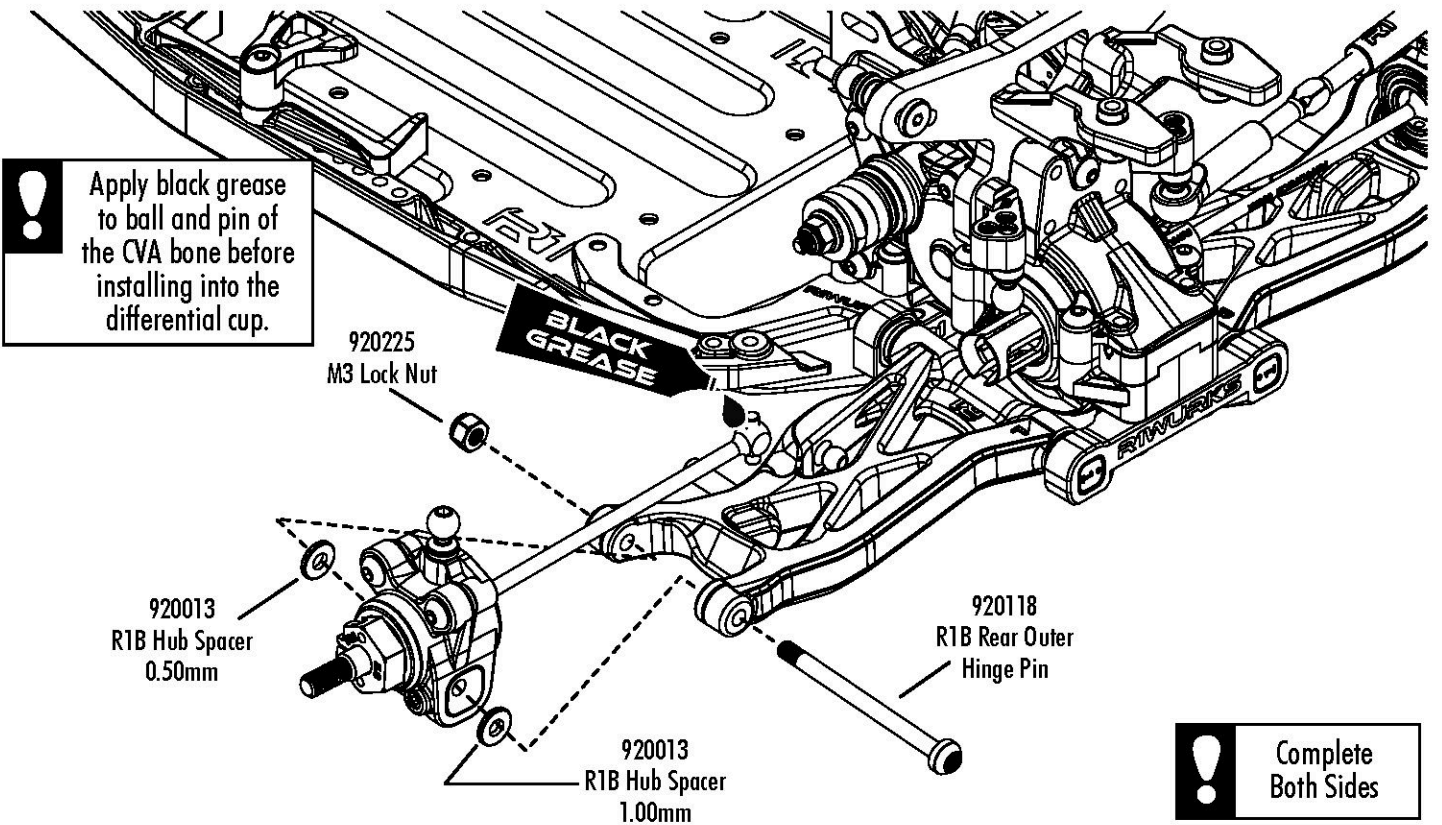
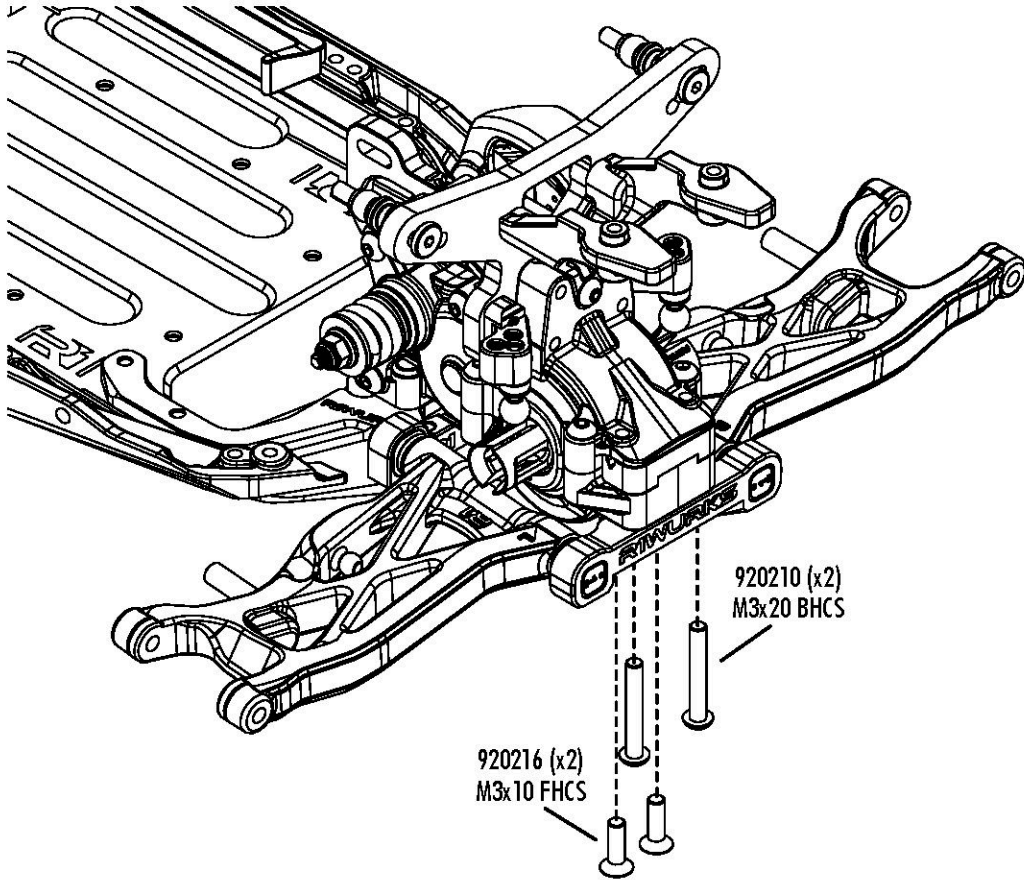


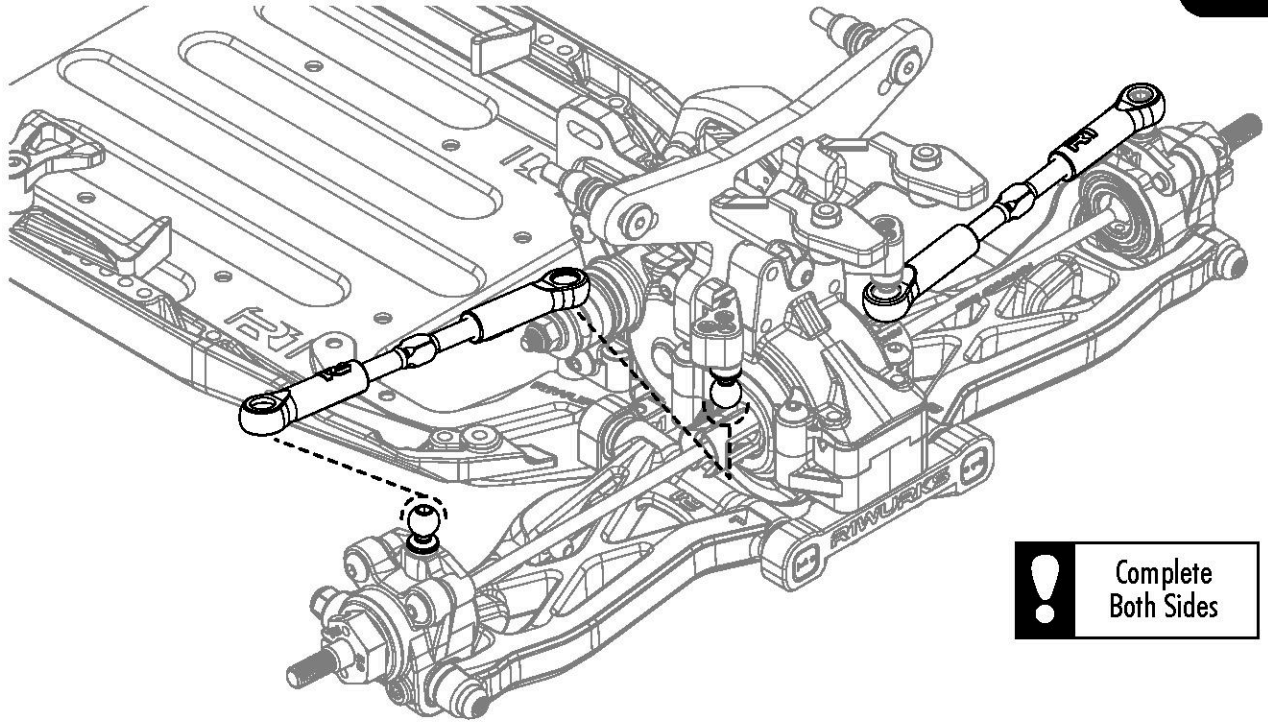
**!** Note orientation

 Apply black grease to the barrel, pin and joint surfaces before installation.





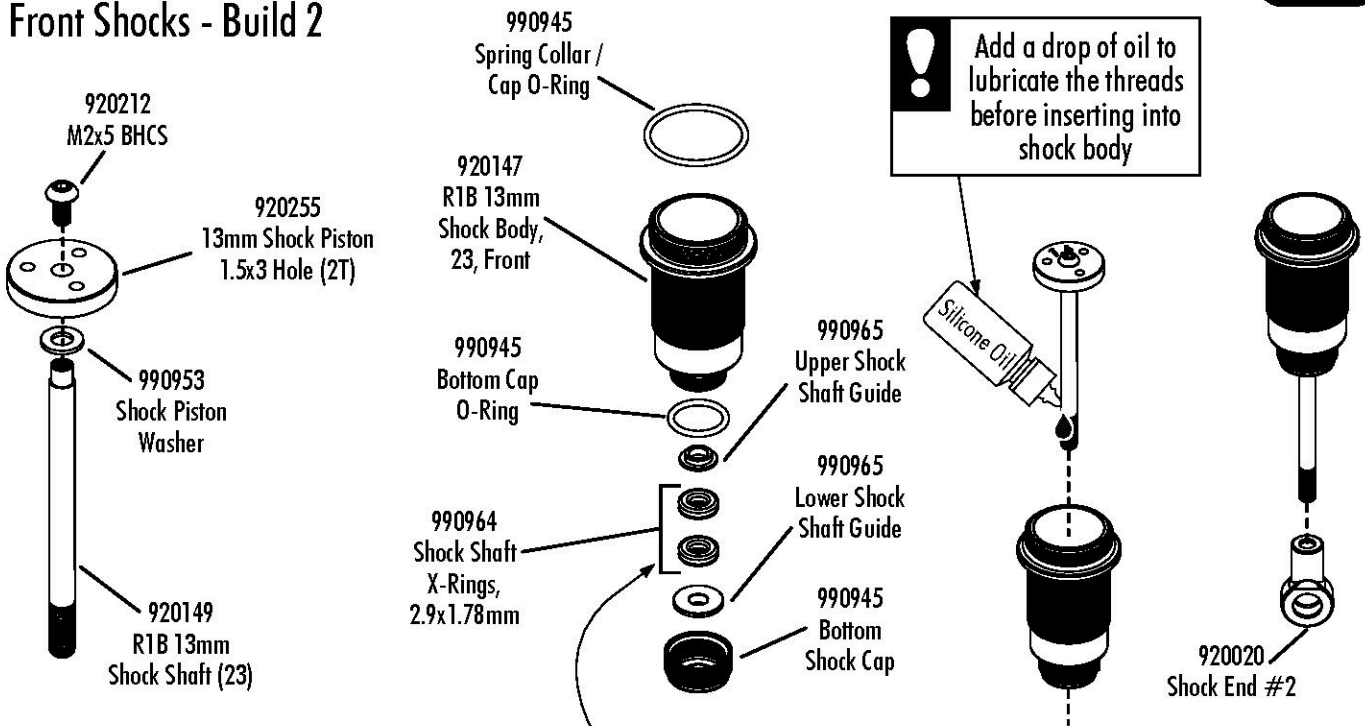




**!** Complete Both Sides

**Bag G-1**

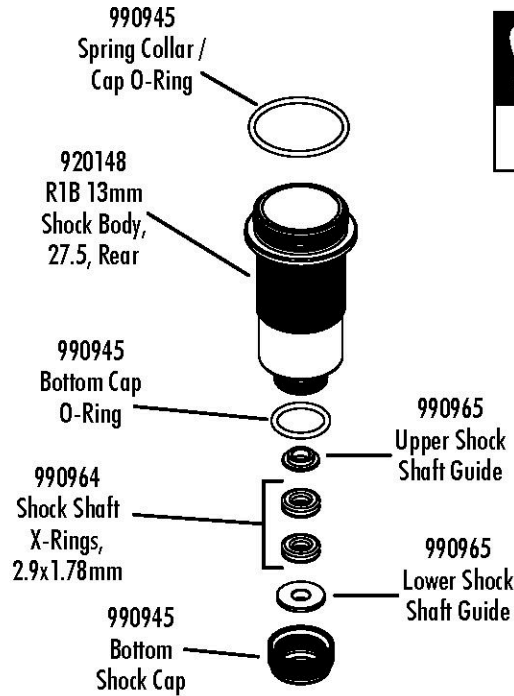
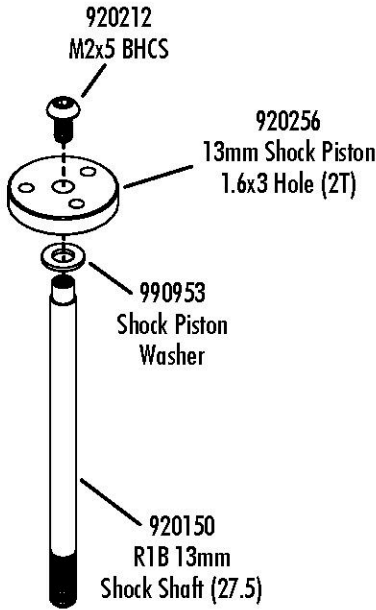
## Front Shocks - Build 2



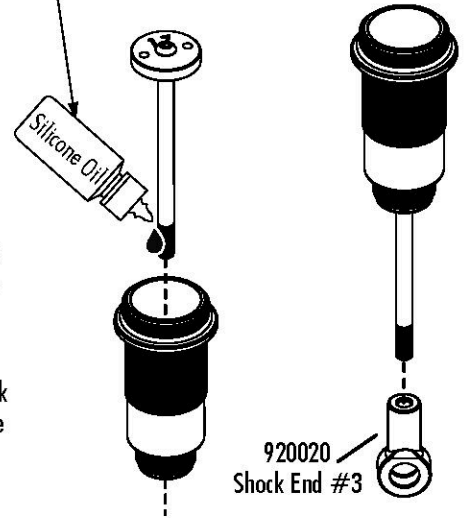
**!** The piston is designed to fit tightly over the shock shaft, requiring slight force to press the piston onto the shaft.

**!** Tip: Use R1WURKS Fluorosilicone Grease to coat all X- and O-Ring. Sold Separately, #900210

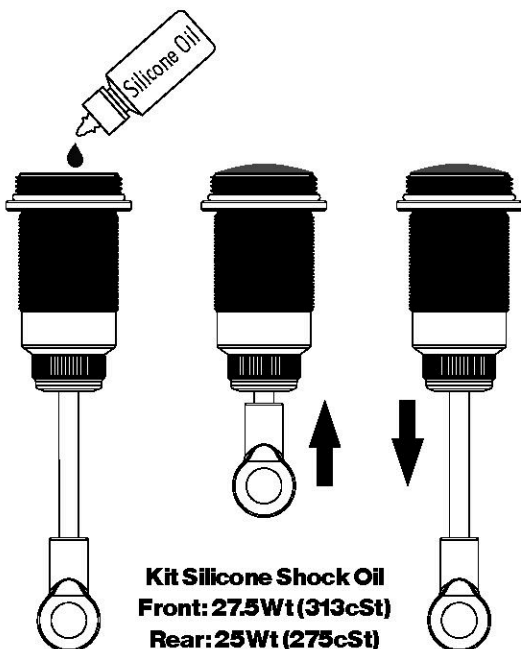
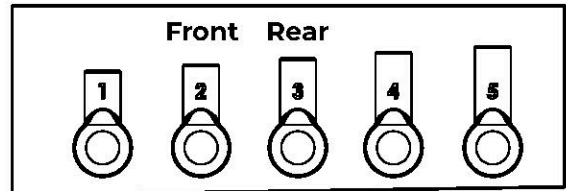
## Rear Shocks - Build 2



**!** Add a drop of oil to lubricate the threads before inserting into shock body



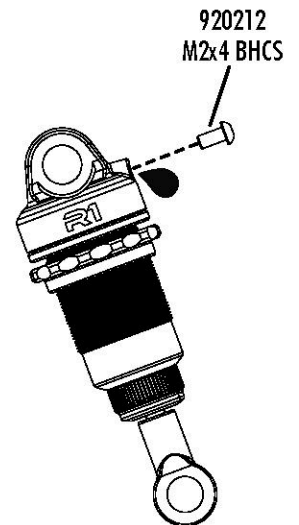
**!** The piston is designed to fit tightly over the shock shaft, requiring slight force to press the piston onto the shaft.



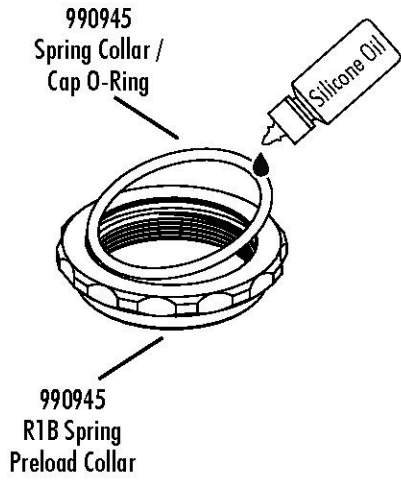
**!** Fill shock to the top with fluid. **SLOWLY** plunge the shock shaft up and down a couple of times to release any air bubbles from under the piston, then set aside.

When all the bubbles have risen to the top, install the shock cap.

With the cap in place, slowly plunge the shaft upwards. As the shaft compresses, oil will bleed from the cap. Once the shaft is fully compressed, wipe away any excess oil and install the bleeder screw.

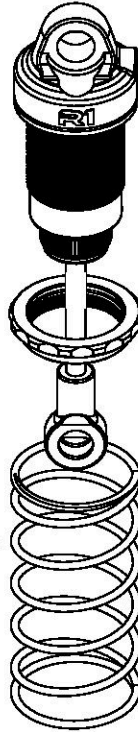


**!** Lightly lubricate o-ring



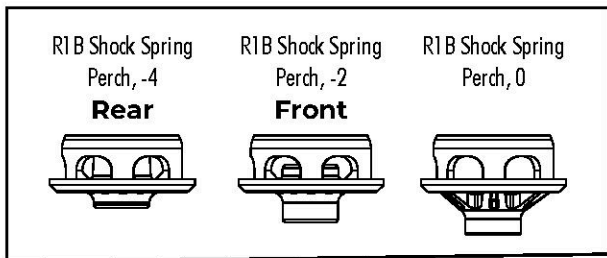
**!** Make 4

920156  
13mm Front Spring,  
Gray, 3.4lb/in  
(L42mm)

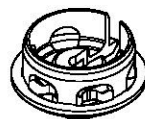


**!** Build 2 Front,  
2 Rear

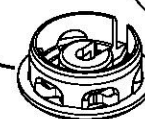
920163  
13mm Rear Spring,  
White, 1.90lb/in  
(L58mm)

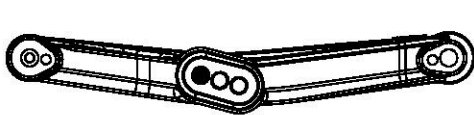
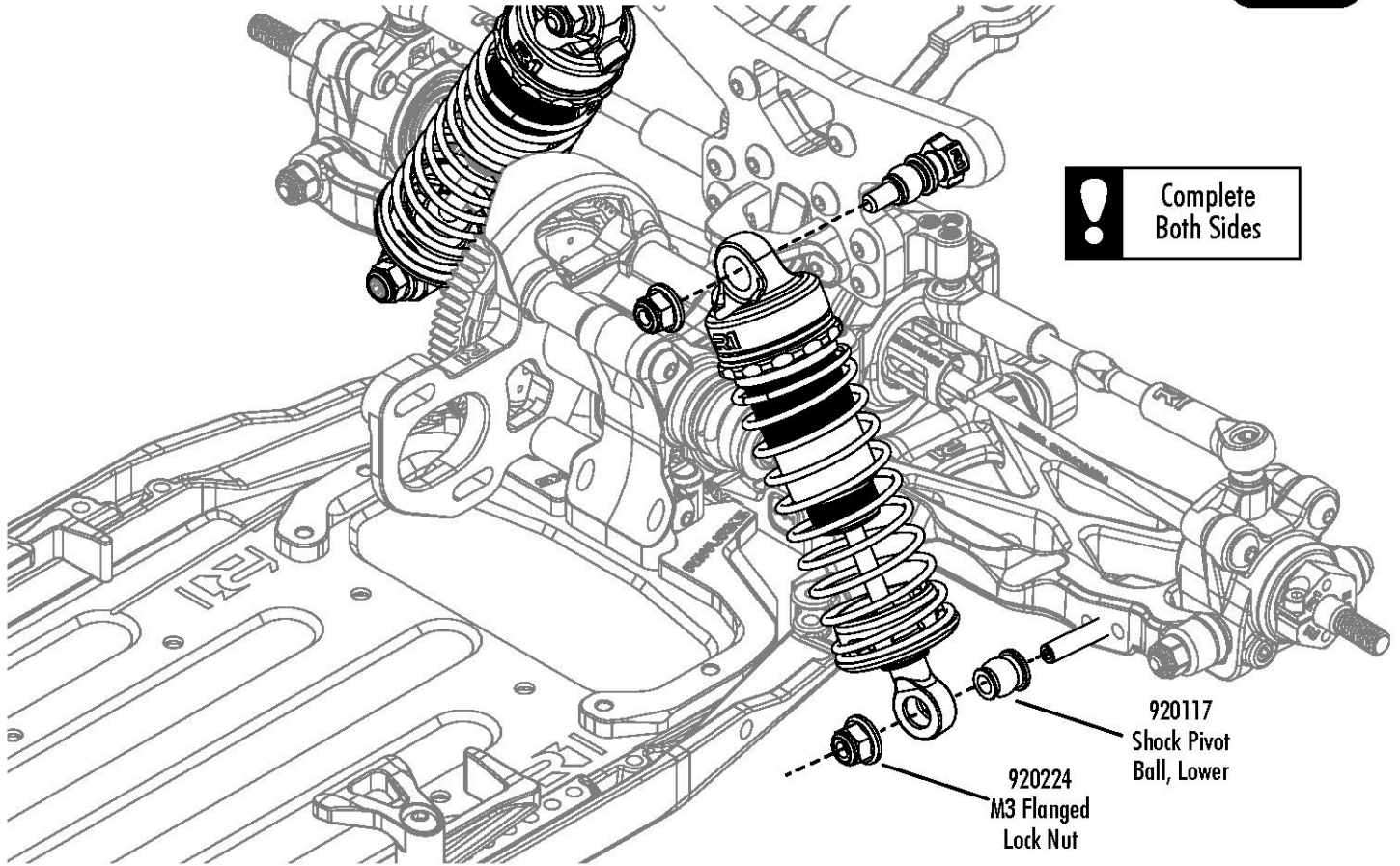


920026  
R1B Shock  
Spring Perch, -2

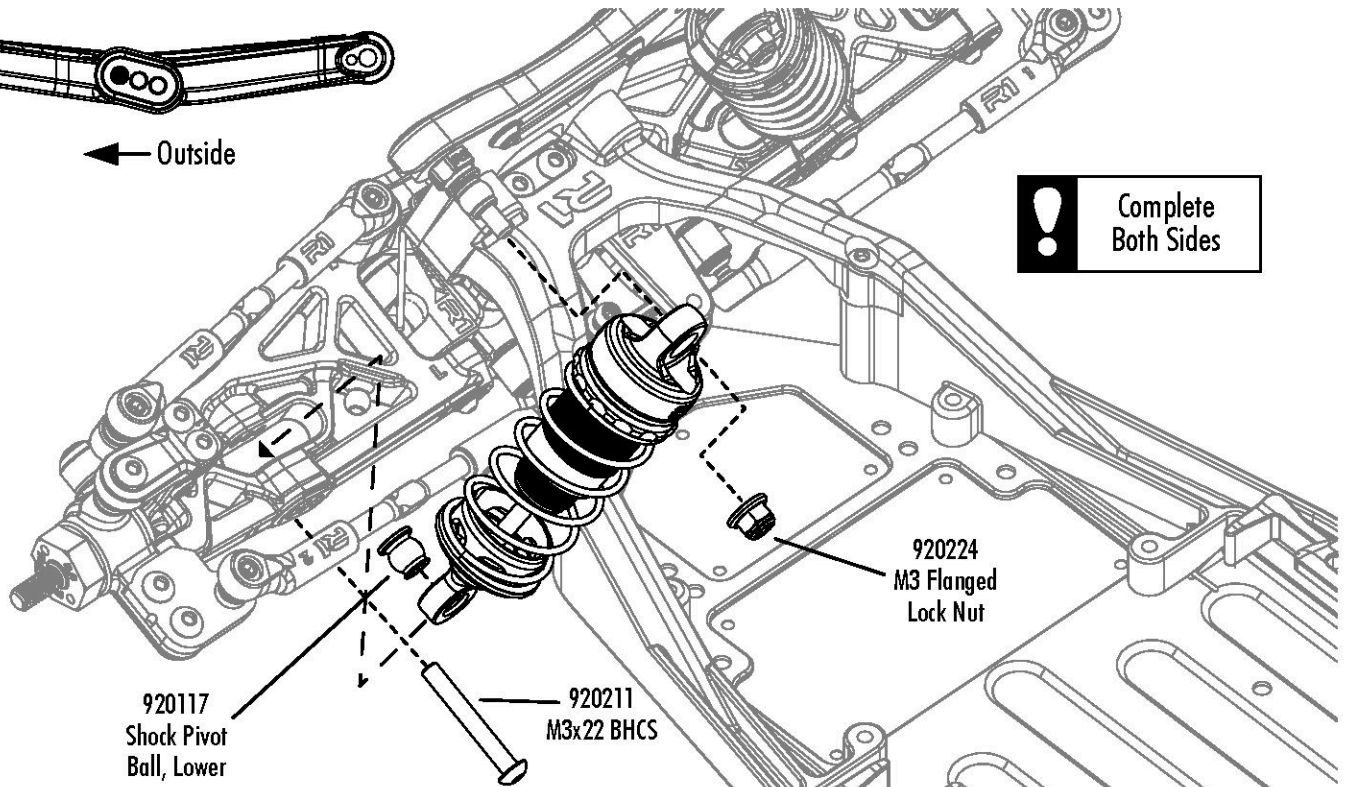


920026  
R1B Shock  
Spring Perch, -4



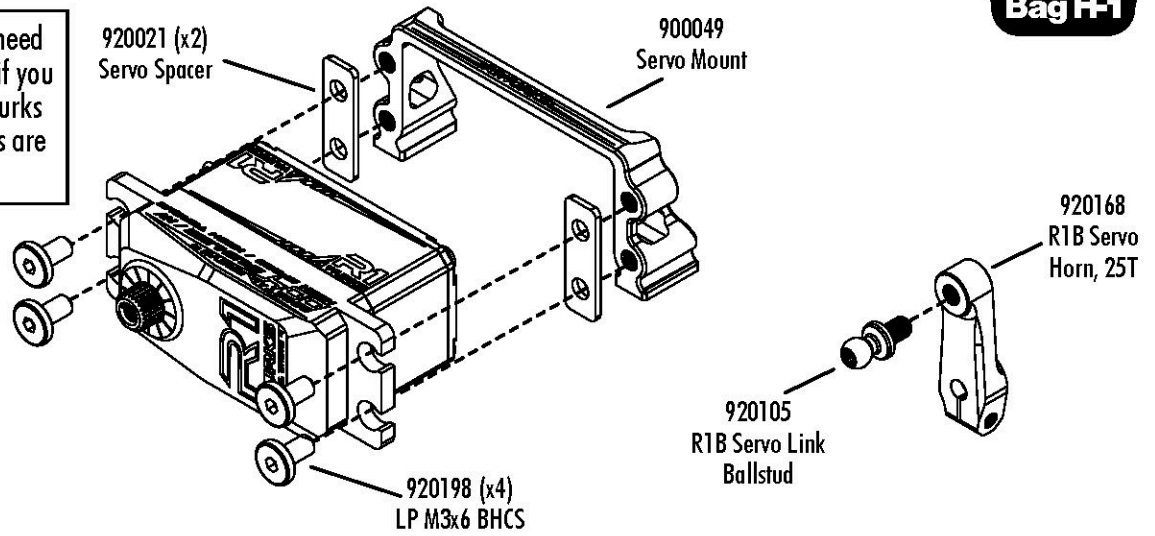


← Outside

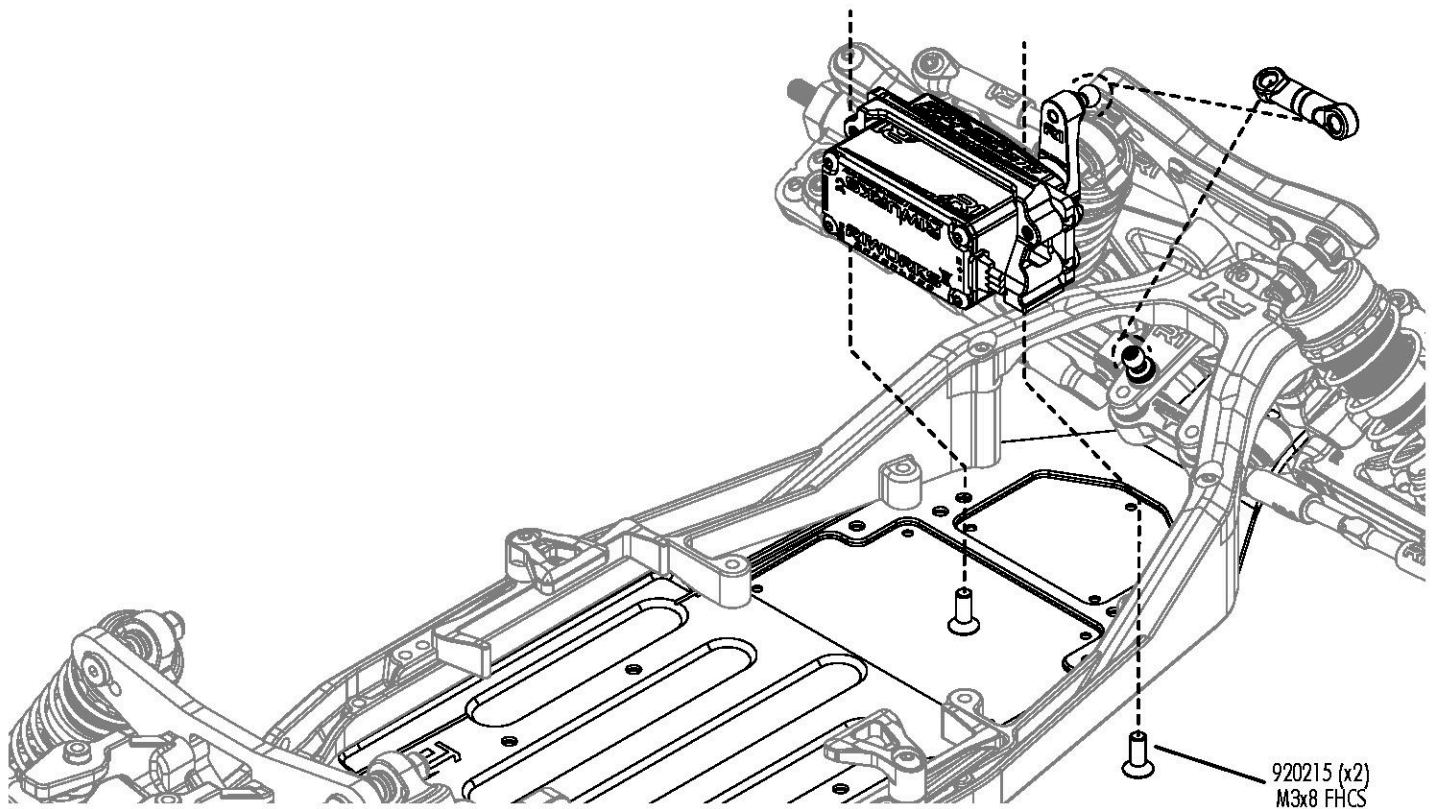
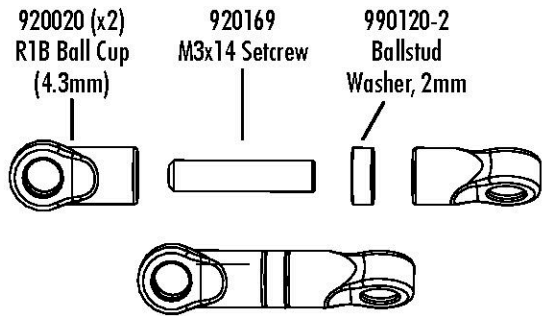
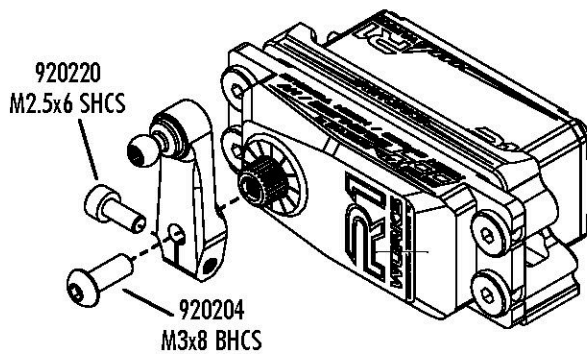


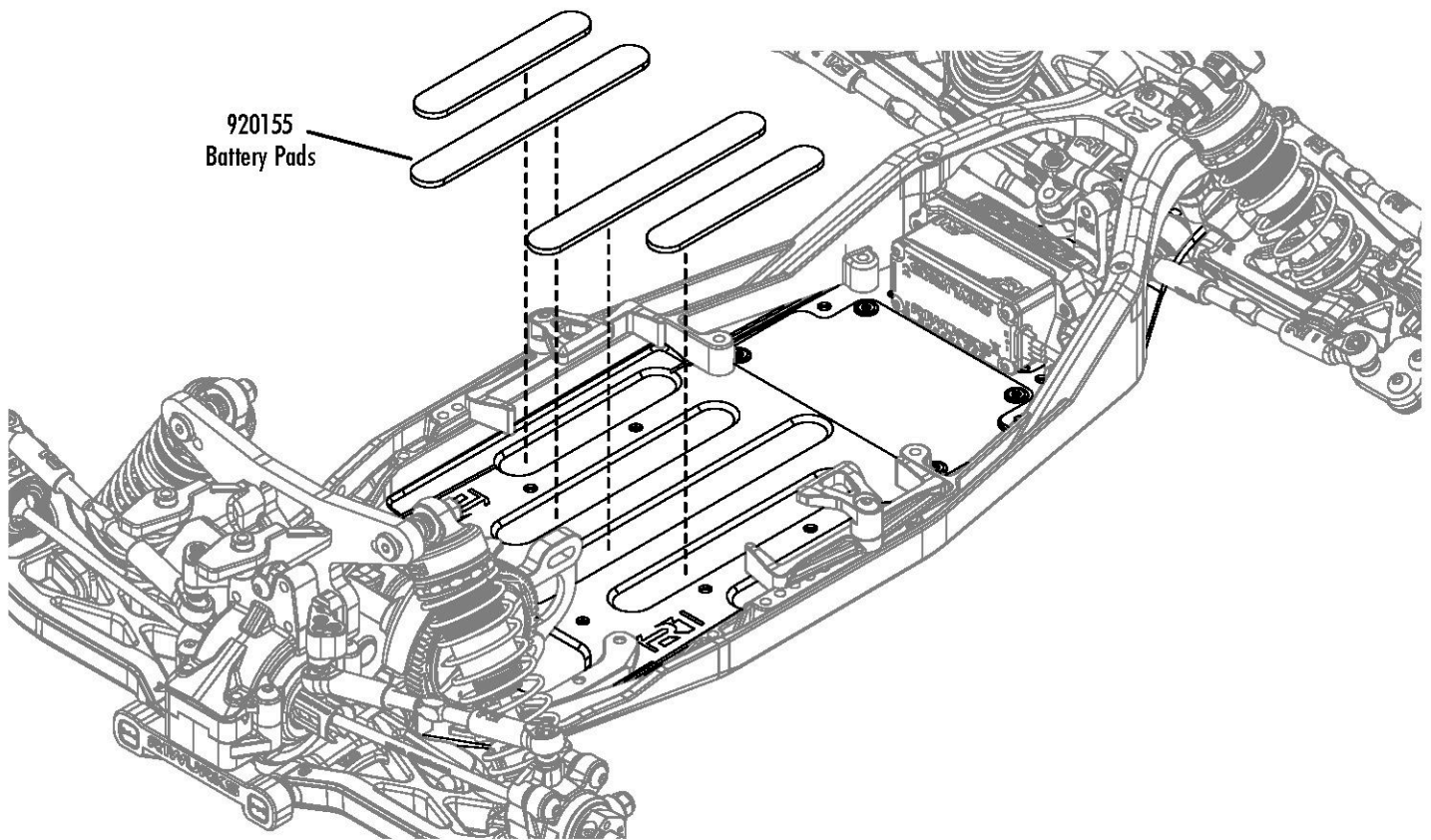
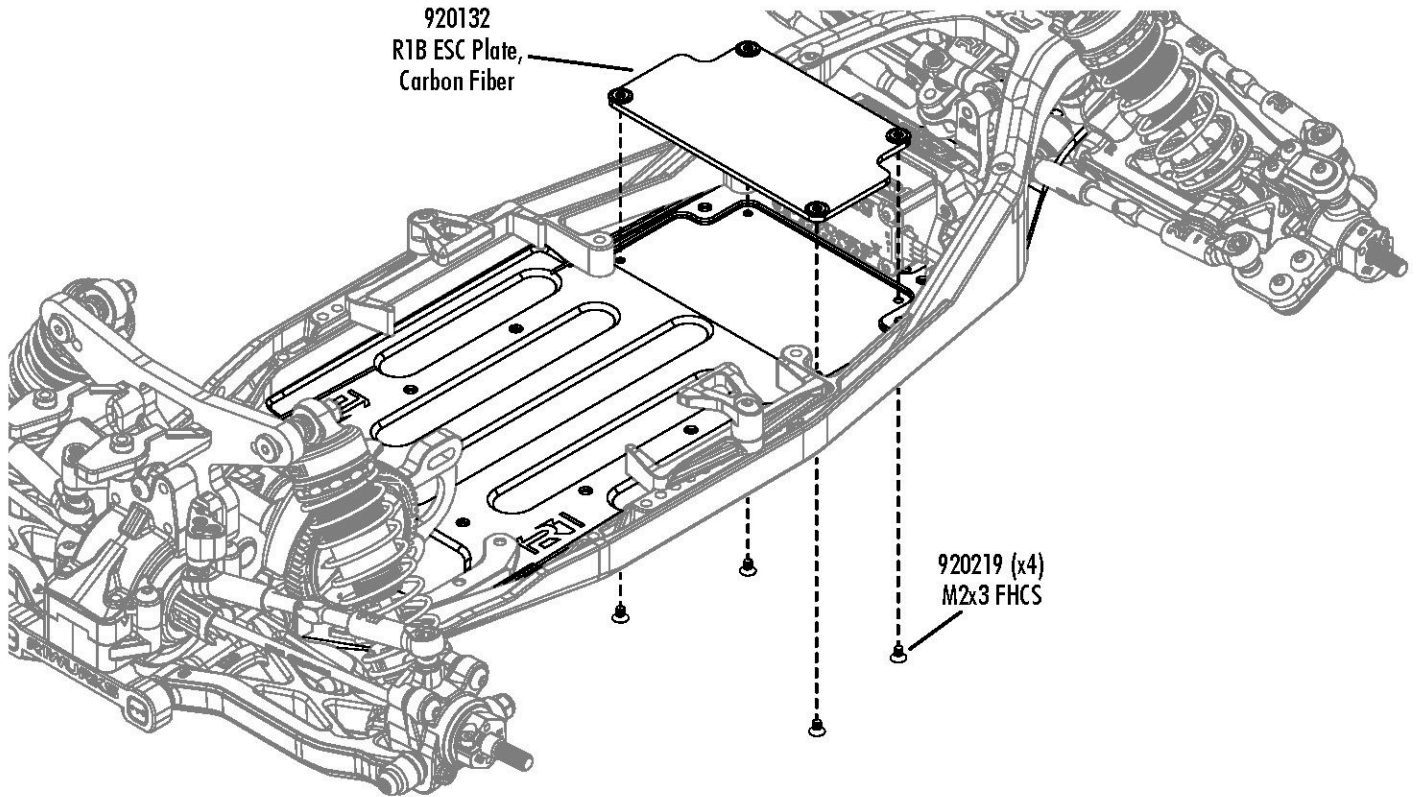


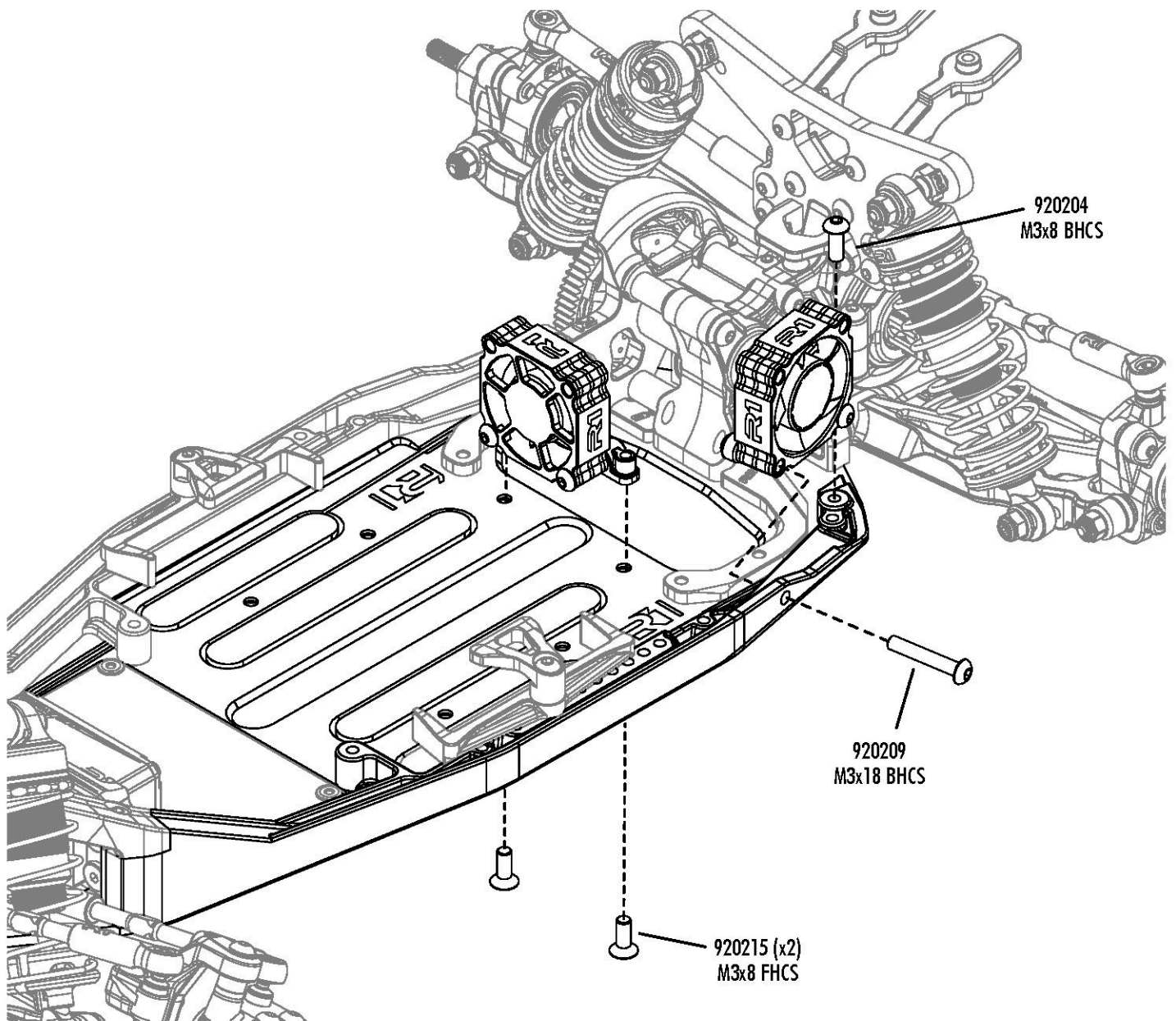
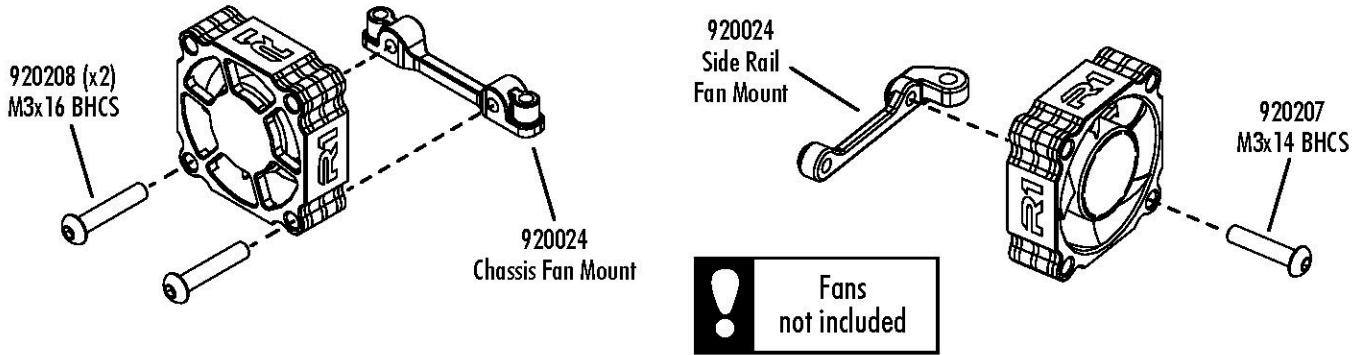
Some servos may need spacers. However, if you are using the R1Wurks DD4 Servo, spacers are not necessary.



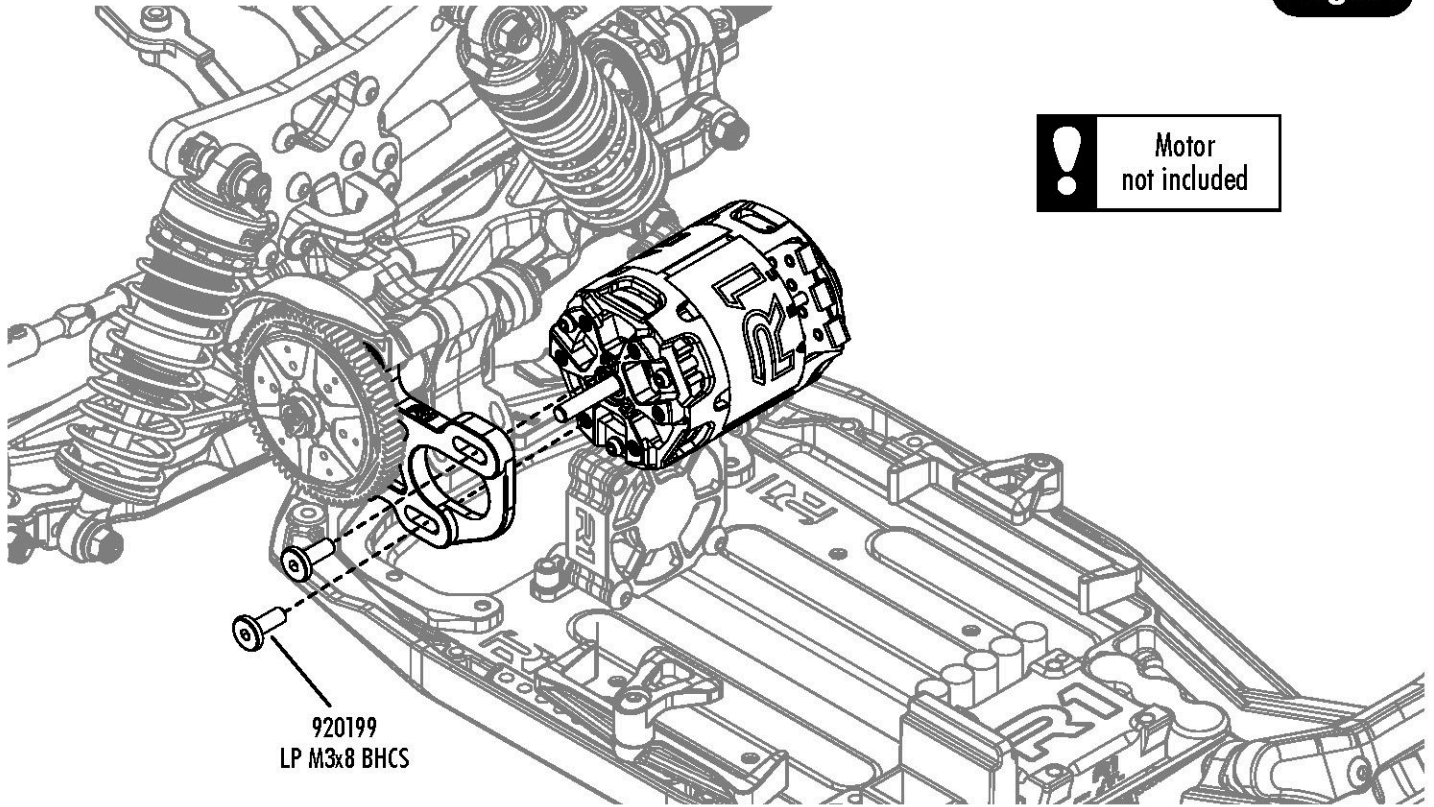
Servo not included



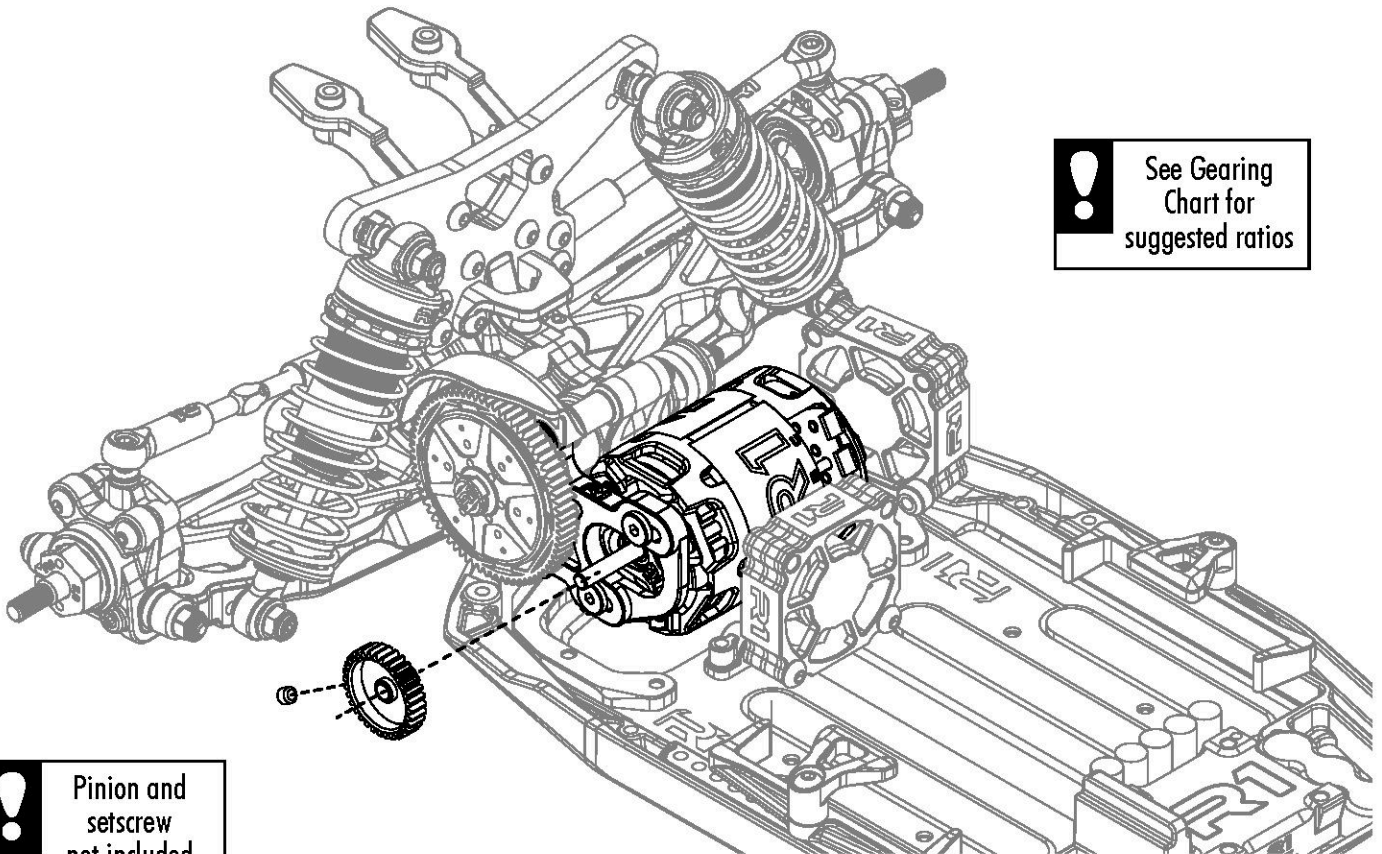


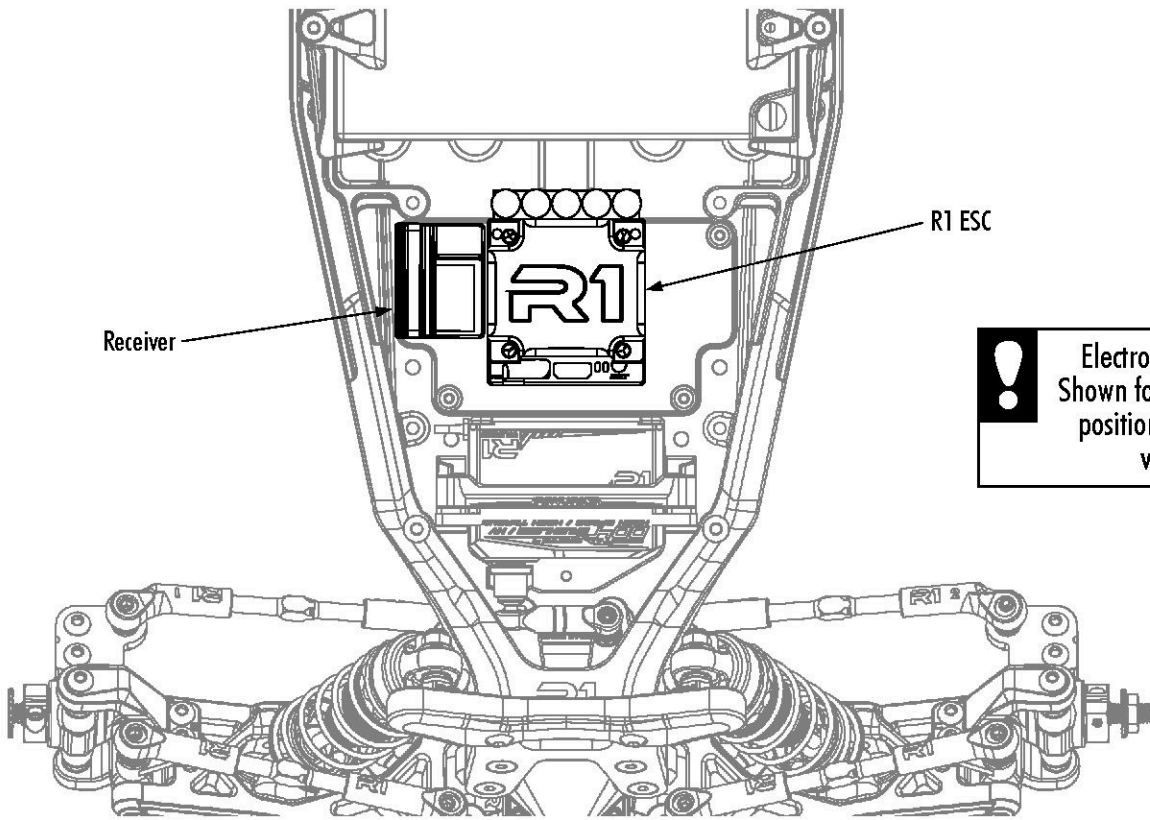


**!** Motor  
not included



**!** See Gearing  
Chart for  
suggested ratios



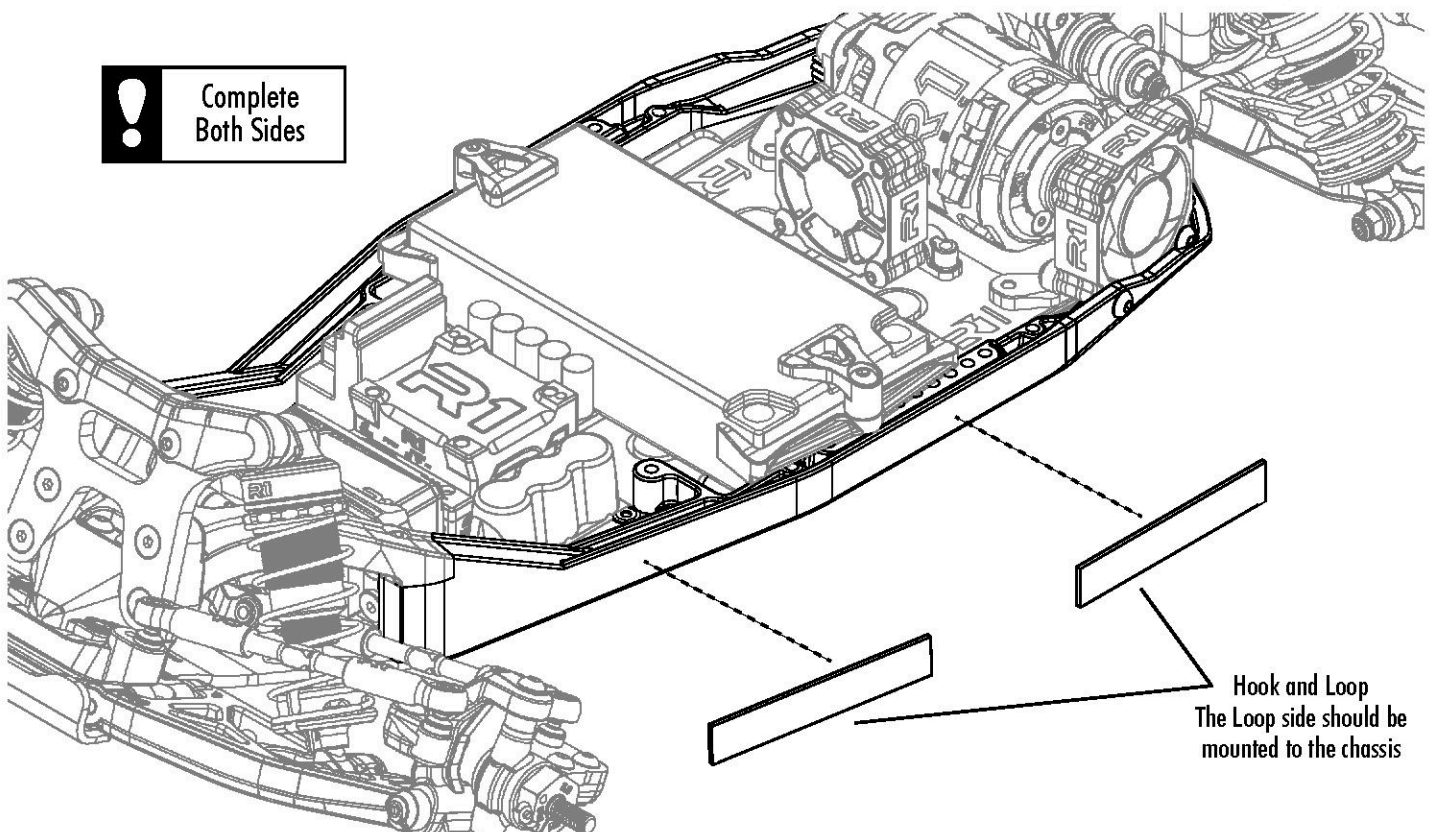


Receiver

R1 ESC

! Electronics not included. Shown for sample mounting position. Your setup may vary slightly.

Bag I

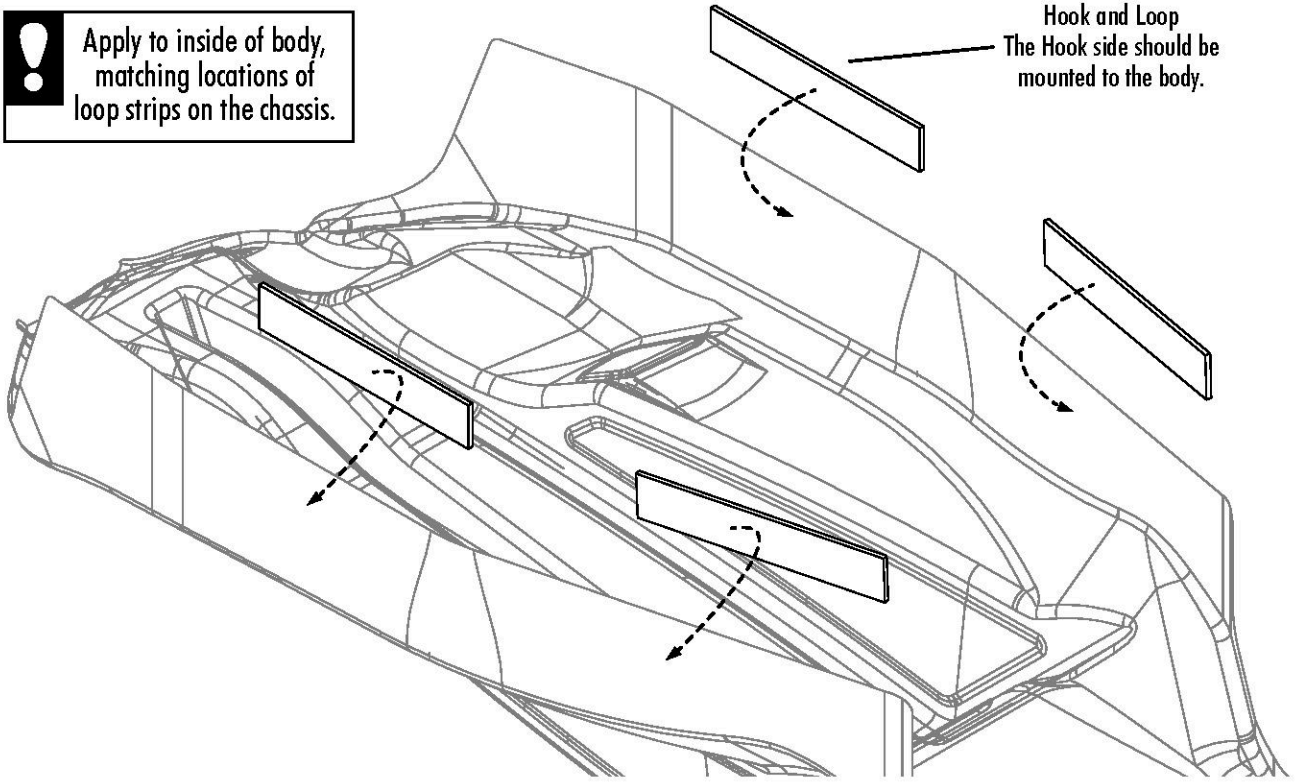


! Complete Both Sides

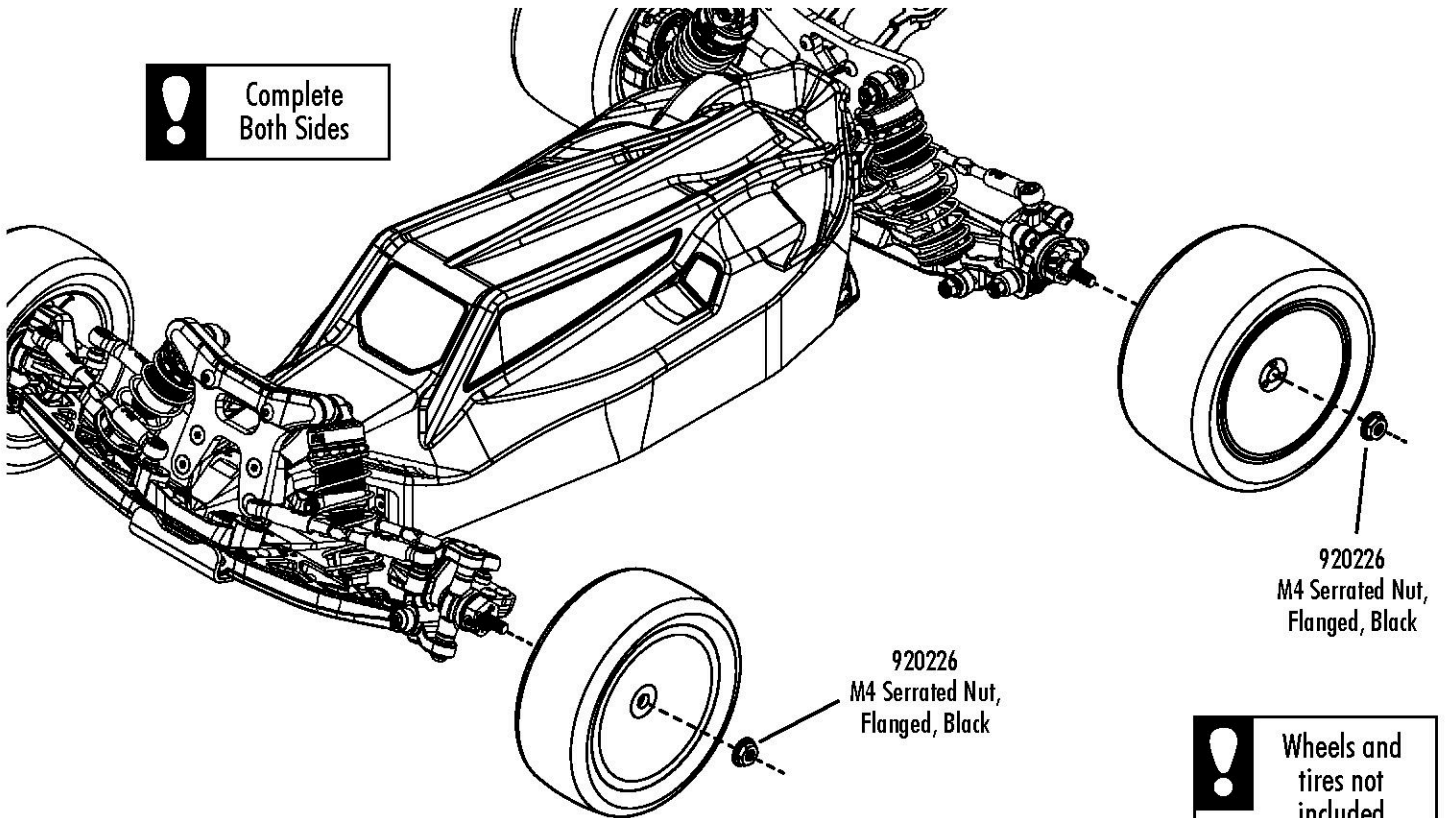
Hook and Loop  
The Loop side should be mounted to the chassis

**!** Apply to inside of body, matching locations of loop strips on the chassis.

Hook and Loop  
The Hook side should be mounted to the body.



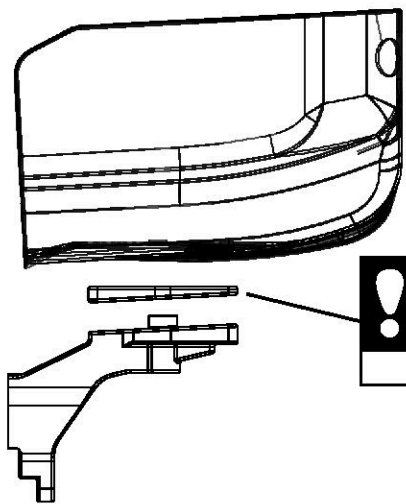
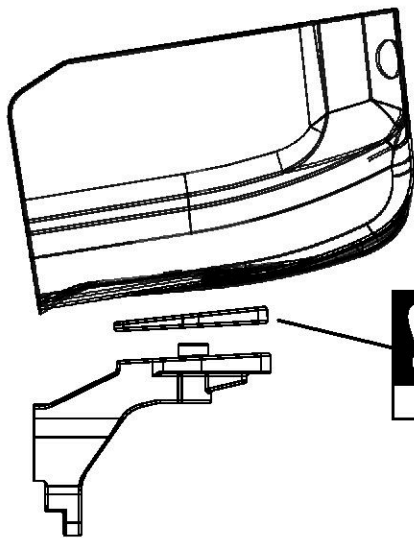
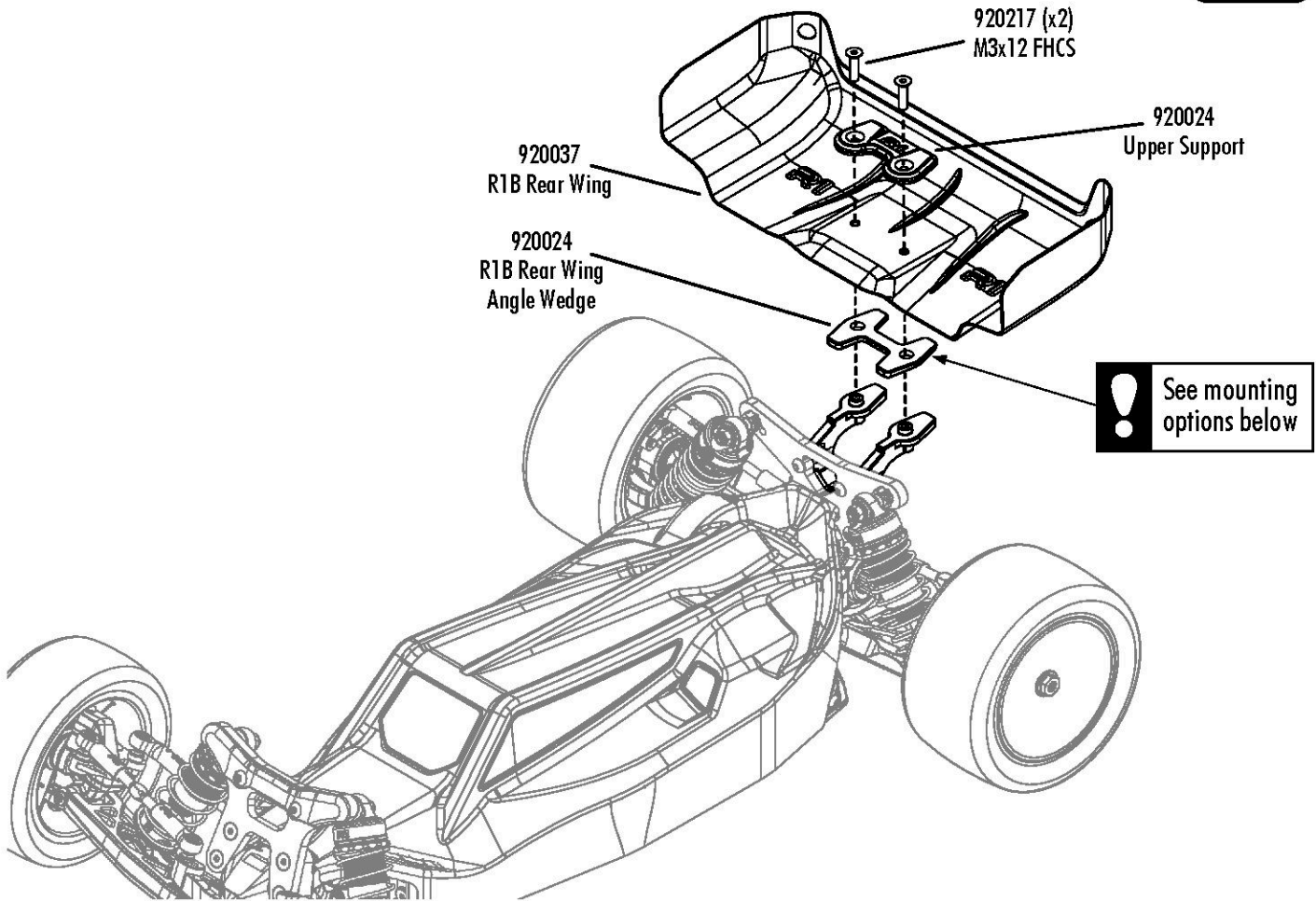
**!** Complete Both Sides



920226  
M4 Serrated Nut,  
Flanged, Black

920226  
M4 Serrated Nut,  
Flanged, Black

**!** Wheels and  
tires not  
included



## Motor Gearing

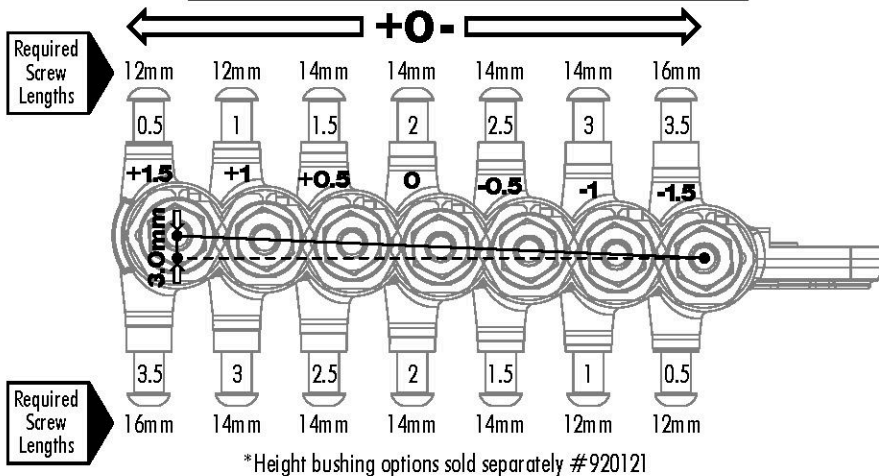
Proper gearing is essential to maximize your motor's performance. Use this gear chart as a starting point for selecting your setup. Keep in mind that both gearing and timing play a key role in finding your motor's optimal performance.

Motor	Pinion	Spur	FDR (Final Drive Ratio)
R1Wurks V21/HD/V30 21.5T	33	72	5.67:1
R1Wurks V21/HD/V30 17.5T	29	72	6.46:1
R1Wurks V21/HD/V30 13.5T	27	72	6.93:1
10.5T	24	78	8.45:1
9.5T	23	78	8.82:1
8.5T	22	78	9.22:1
7.5T	21	78	9.66:1
6.5T	20	78	10.14:1

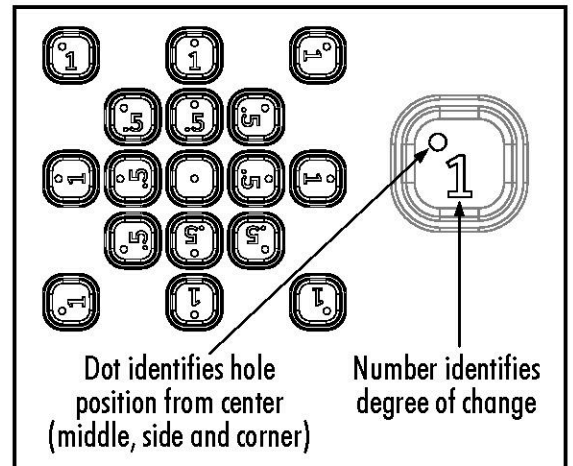
### Test & Tune Gradually

- Begin with the recommended gearing listed in the chart.
- Run the car for about 5 minutes, then check the motor temperature immediately using an infrared thermometer.
  - Aim the thermometer at the motor windings or stator.
  - Always measure from the same spot each time for consistent readings.
- Adjust the pinion gear by one tooth at a time.
- Adjust motor timing gradually.
- Repeat this process until you achieve maximum speed without overheating.
- Ideal motor temp range after a 5 minute run: ~185-195°F.

## Steering Hub Height Settings



## Suspension Pill Setting Range



## Pin Height / Roll Center Settings

		= +0.70mm
		= +0.35mm
		= 0mm
		= -0.35mm
		= -0.70mm

Arm pivot height is adjustable across five positions when the C and D block pills are aligned identically. A "plus" setting raises the roll center, while a "minus" setting lowers it.

## Pin Width / Pivot Distance Settings

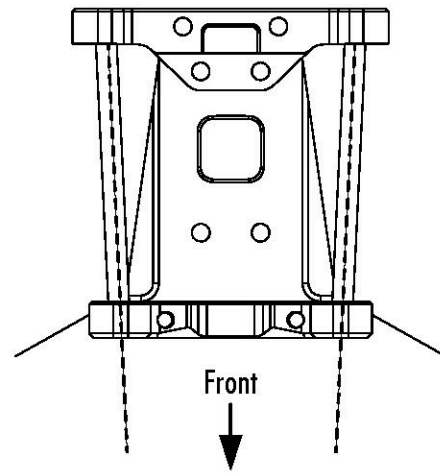
		= +1.40mm
		= +0.70mm
		= 0mm
		= -0.70mm
		= -1.40mm

Arm pivot locations can be adjusted to five positions, provided the C and D block pills are aligned in the same orientation. A "plus" setting increases the distance for a wider pivot, while a "minus" setting reduces the distance for a narrower pivot.

When making adjustments outside the standard range, please note that additional changes may be required to ensure proper CVA axle positioning in the drive cup, depending on droop settings.

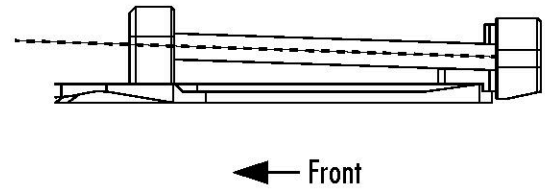
**Toe Angle Settings**

		3.00°
		4.00°
		5.00°
		2.00°
		3.00°
		4.00°
		1.00°
		2.00°
		3.00°

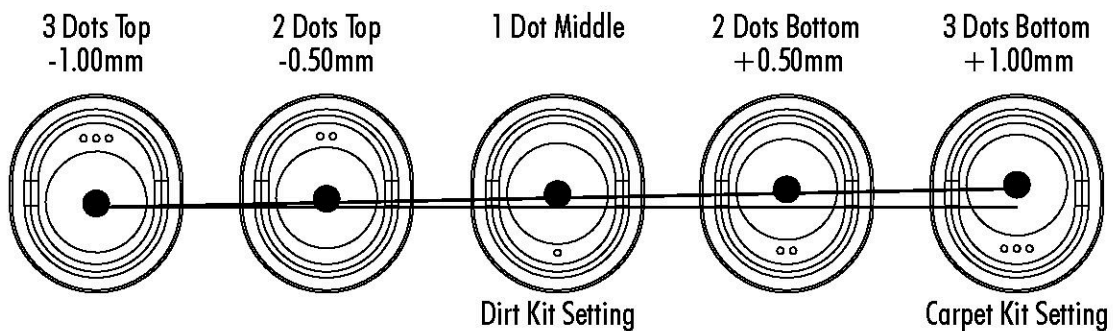


**Anti-Squat Angle Settings**

		2.00°
		1.00°
		0.00°
		3.00°
		2.00°
		1.00°
		4.00°
		3.00°
		2.00°

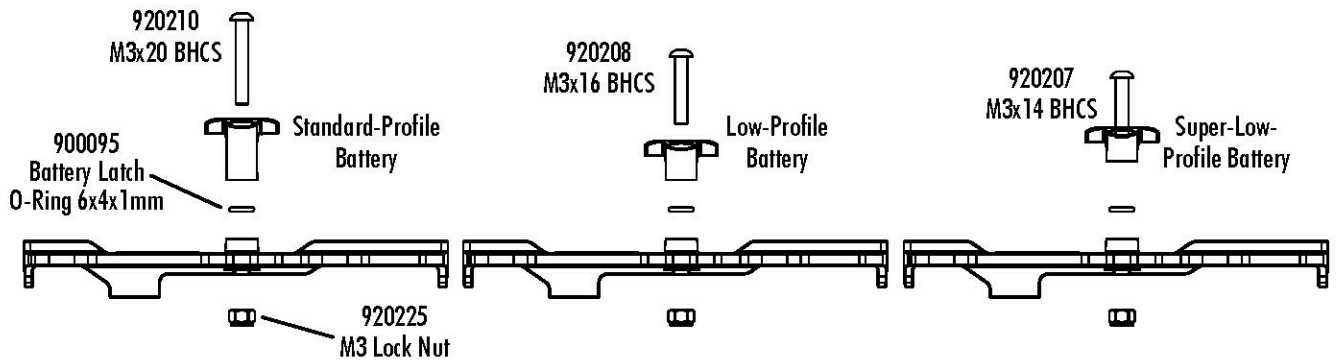


**Diff Height Settings**

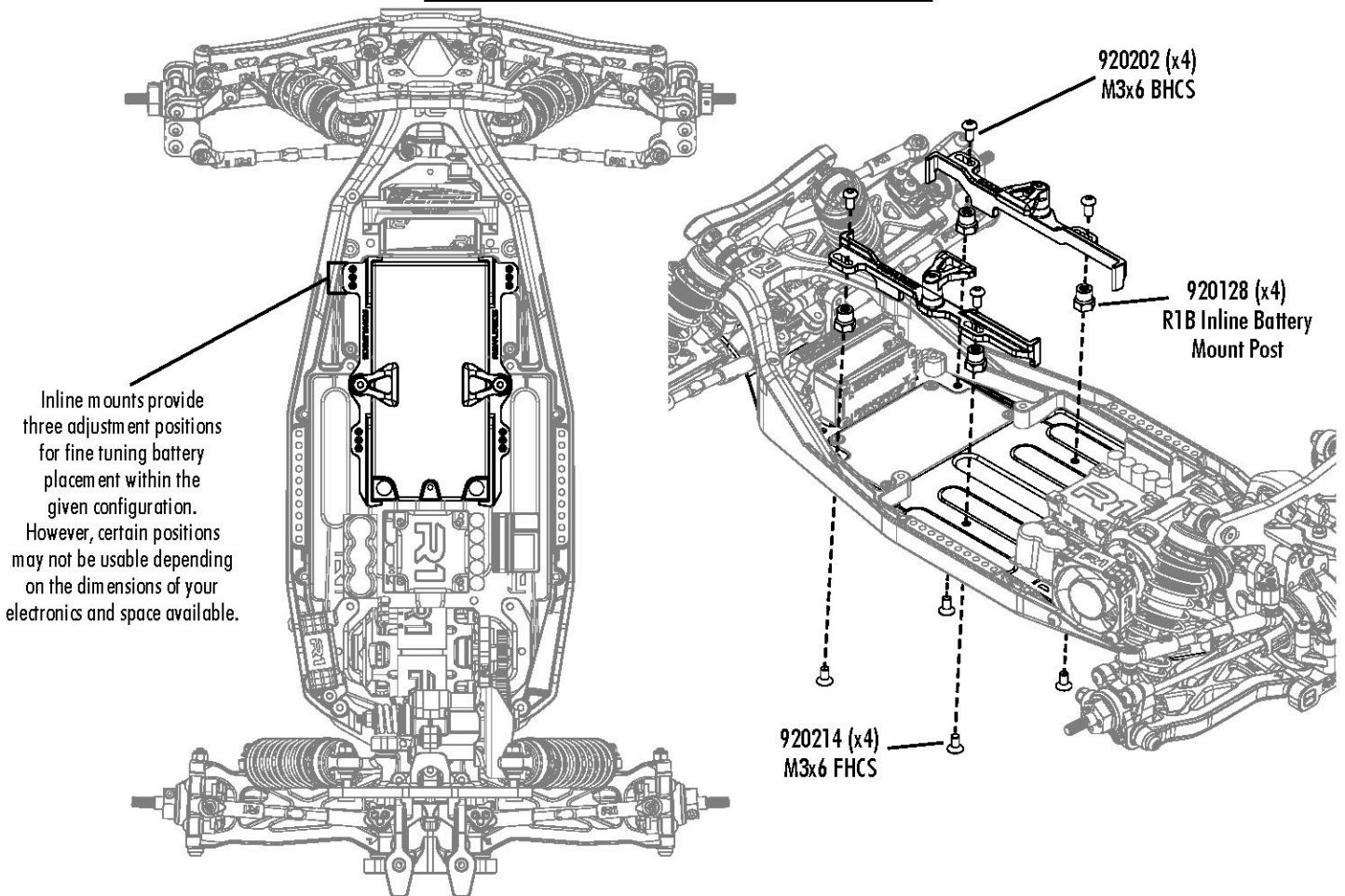


### Optional Inline Battery Configuration

Choose the latch and corresponding screw according to the battery height you plan on using.

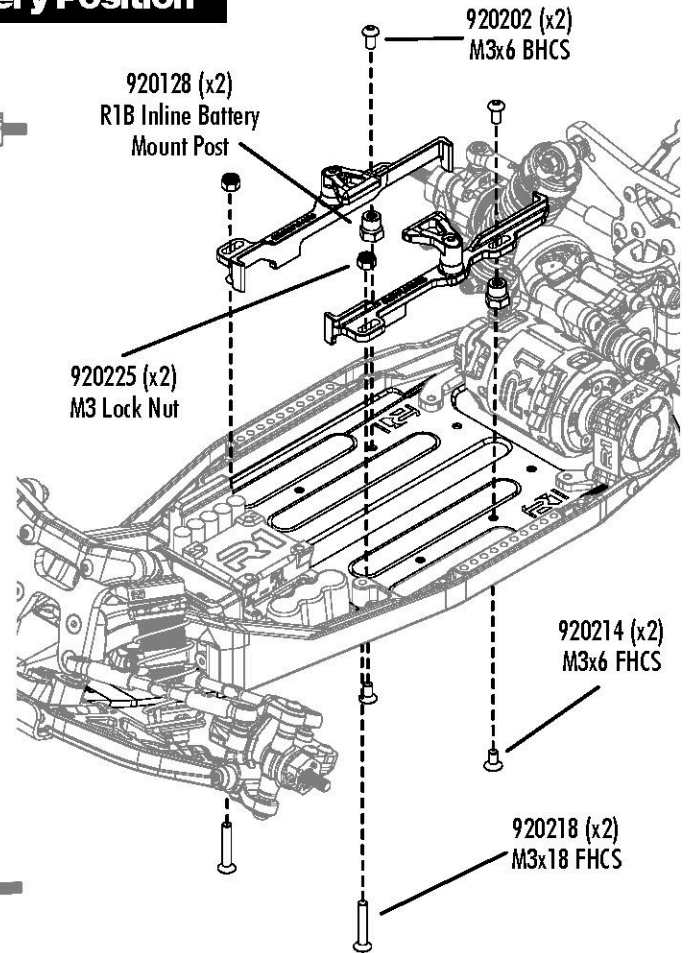
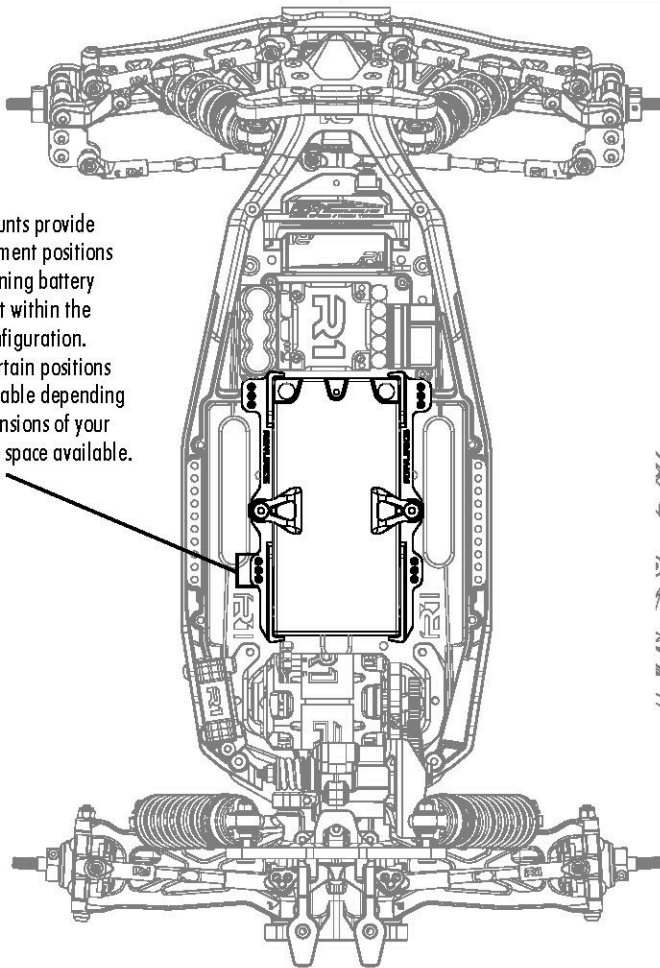


### Inline Front Battery Position



### Inline Rear Battery Position

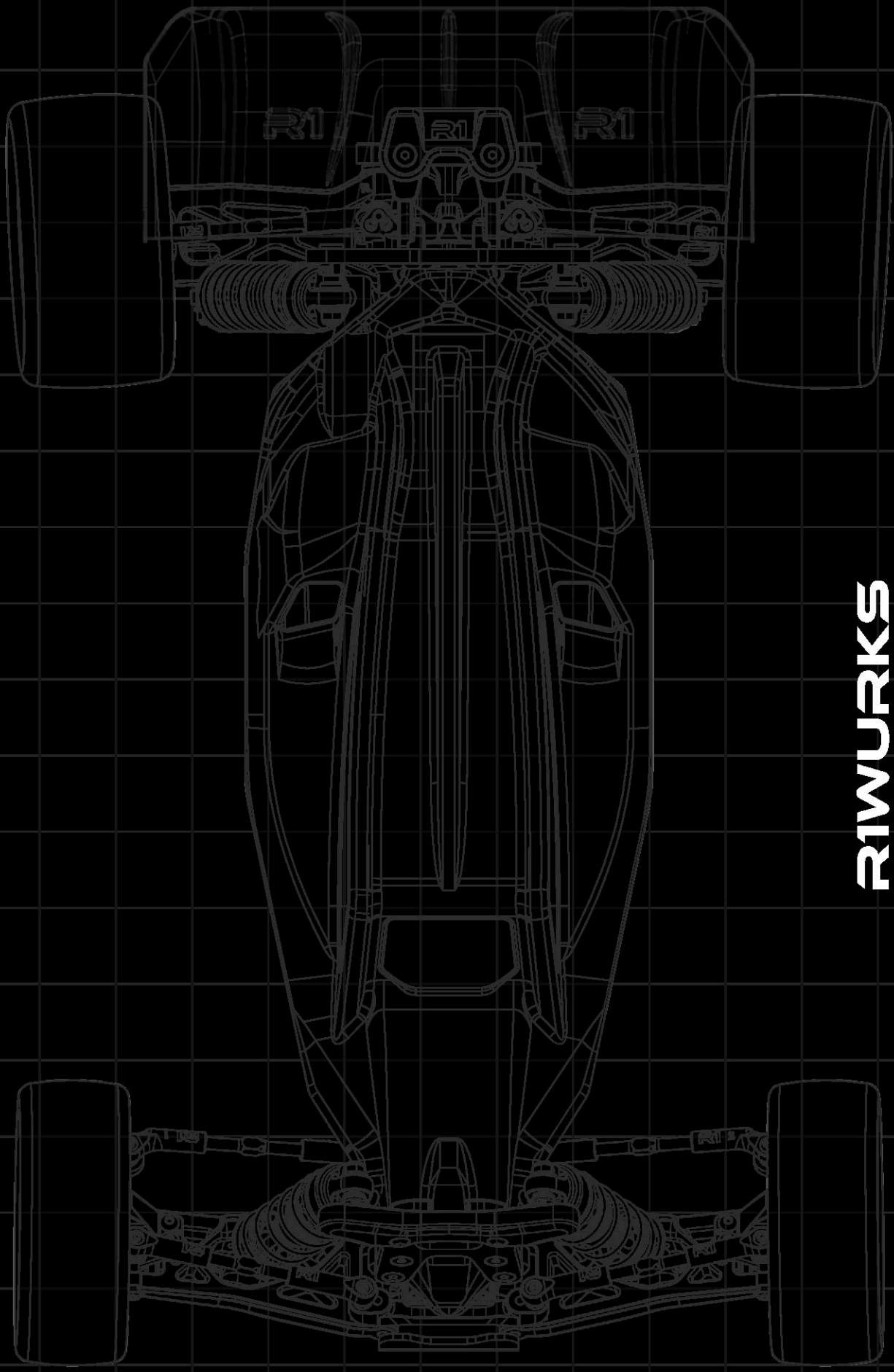
Inline mounts provide three adjustment positions for fine tuning battery placement within the given configuration. However, certain positions may not be usable depending on the dimensions of your electronics and space available.



### Kick-Up / Caster Settings

Chassis Kick-Up (DEG)	Suspension Block +/- DEG		Caster Pill (PLUS)	Total Kick-Up
22.5	PLUS	2.5	0	25
	PLUS	2.5	2	27
	PLUS	2.5	2.5	27.5
	PLUS	2.5	5	30
	MINUS	2.5	0	20
	MINUS	2.5	2	22
	MINUS	2.5	2.5	22.5
	MINUS	2.5	5	25
	0	0		22.5
	0	2		24.5
	0	2.5		25
	0	5		27.5

Chassis Kick-Up (DEG)	Suspension Block +/- DEG		Caster Pill (PLUS)	Total Kick-Up
22.5	PLUS	2.5	0	25
	PLUS	2.5	2	23
	PLUS	2.5	2.5	22.5
	PLUS	2.5	5	20
	MINUS	2.5	0	20
	MINUS	2.5	2	18
	MINUS	2.5	2.5	17.5
	MINUS	2.5	5	15
	0	0		22.5
	0	2		20.5
	0	2.5		20
	0	5		17.5



# R1WURKS

P.O. BOX 7593  
LAGUNA NIGUEL, CA 92607  
949.4647455