



# BUILDING INSTRUCTIONS

### Introduction





Thank you for purchasing the Tekno RC ET48 2.0 1/8th 4WD competition electric truggy kit. We are always working on new projects, so please check our website regularly at www.teknorc.com or visit us on Facebook at www.facebook.com/teknorc for all the latest news, parts, and kits.

Take your time! When you work your way through these building instructions, keep an eye out for the following important indicators below:

• **RED TEXT** - This indicates important areas of the build process that should be observed.



#### **Thread Lock icons**

Thread lock is always used when a screw is inserted into any metal part. (Included with kit)



#### **Grease icons**

Grease is usually used on areas with movement and for sealing. (Included with kit)

YOUTUBE - We also have many useful build videos on Youtube, so be sure to check these out!
 https://www.youtube.com/c/teknorc

#### Additional equipment and parts needed:

- Paint for body
- 1/8th scale ESC and motor system
- High torque steering servo (at least 300 oz/in)
- 4s (4 cell, 14.8v) LiPo battery (at least 5000mAh)
- 1/8th scale truggy tires, wheels & CA glue (or premounts)
- MOD1 Pinion 15 tooth 25 tooth (TKR4175 TKR4185)

#### **Tools needed:**

- Hex drivers 1.5mm, 2.0mm, 2.5mm
- Nut drivers 5.0mm (TKR1107, 5.5mm (TKR1108), 7.0mm (TKR1109)
- Hobby knife
- Needle-nose pliers
- Shock tool (TKR1115) OR adjustable (Crescent) wrench (for shock assembly)
- 17mm Wheel Wrench (TKR1116)
- 4mm turnbuckle wrench (TKR1103) 5.5/7.0 two sided wrench (TKR1119)

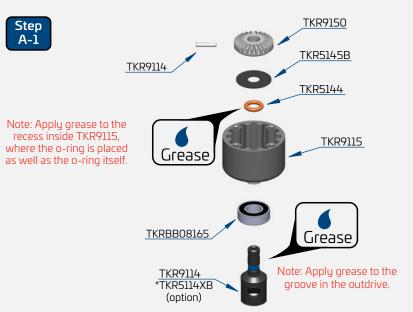
**Disclaimer:** Tekno RC is not responsible or liable for any property or personal damage, loss, or injury incurred as a result of using this product. This kit is meant for use by persons 14 years of age or older and in the strict confines of a legally permitted RC track or facility.

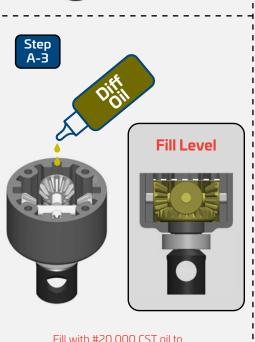
**Warnings:** Always double-check that your radio gear is working properly before operating vehicle. Never operate the vehicle indoors (unless the RC track is an indoor facility). Use caution while operating vehicle so as not to collide with people who may be turn marshalling or who might otherwise not be aware that a fast moving RC vehicle is in the vicinity.

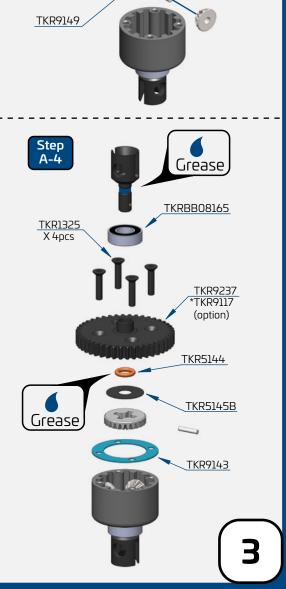
**Warranty:** We warrant that the parts included in this kit are free from defects. If you find a defective part in your kit, please contact us at **info@teknorc.com** and we will help to resolve the issue. If you modify any part prior to contacting us, the warranty claim will be void. We do not warranty parts that may be broken during operation of the vehicle or otherwise. Refer to the end of this instruction manual for a listing of spare/replacement and option parts.

All spare parts and other info are available on our website (www.teknorc.com) and through our network of domestic and international dealers and distributors.

#### Bag A **Center Differential** TKRBB08165 (overview) TKR9143 TKR5114XB (option) TKR9150 TKR9115 TKR9150 TKR5145B TKR5145B TKR9114 TKR9149 TKR9114 TKR5144 TKRBB08165 TKR9237 TKR9117 TKR1325 x4 (option)







TKR9150

Step A-2



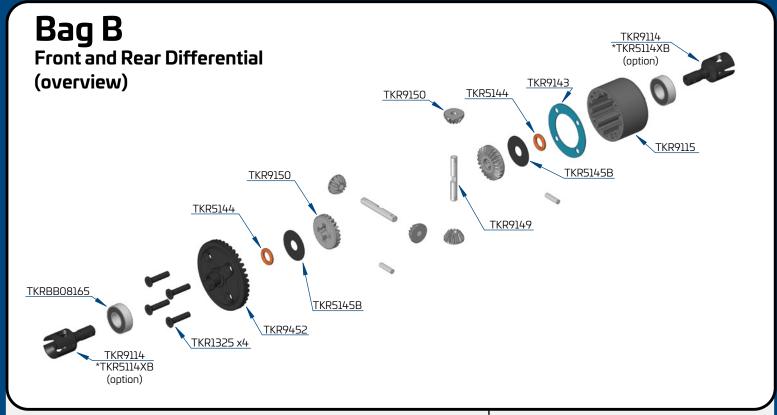
х2

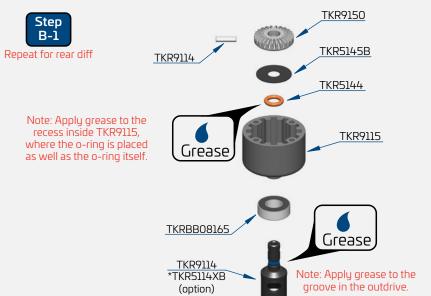
M3x14mm Flat Head Screw

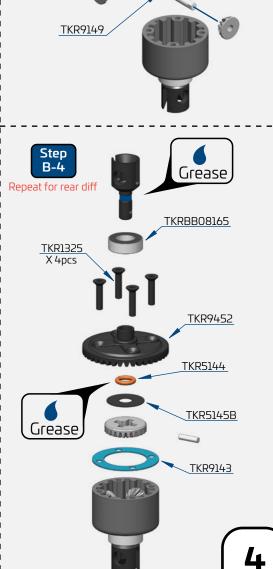
TKR1325

TKR5114XB (option)





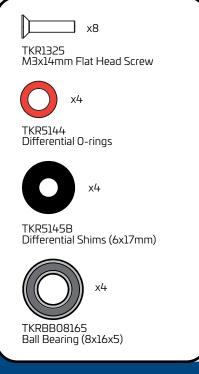




TKR9150

Step B-2

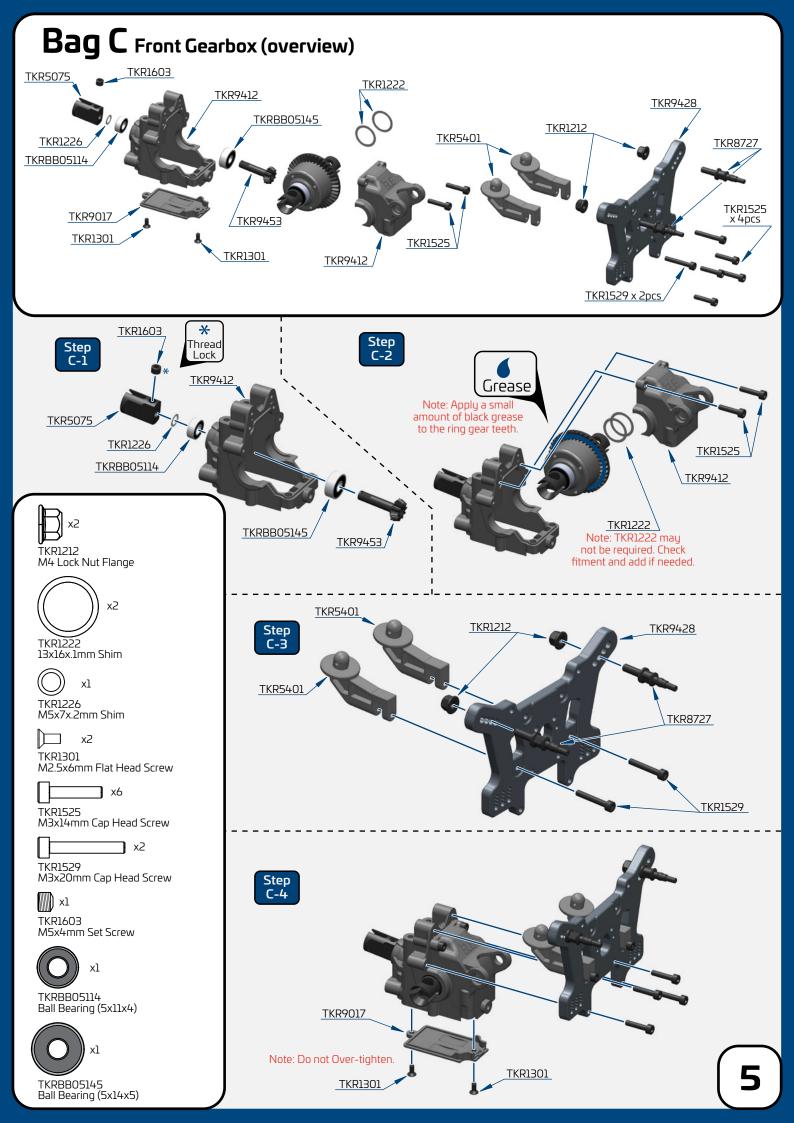
Repeat for rear diff

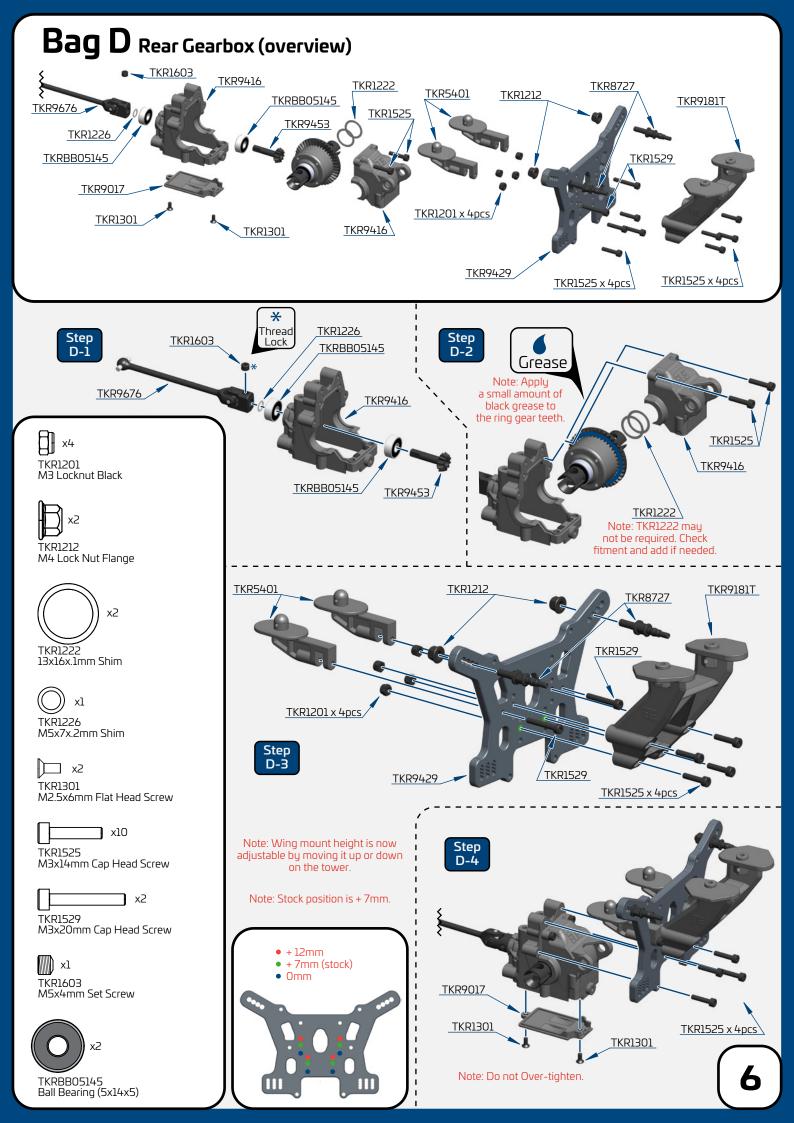


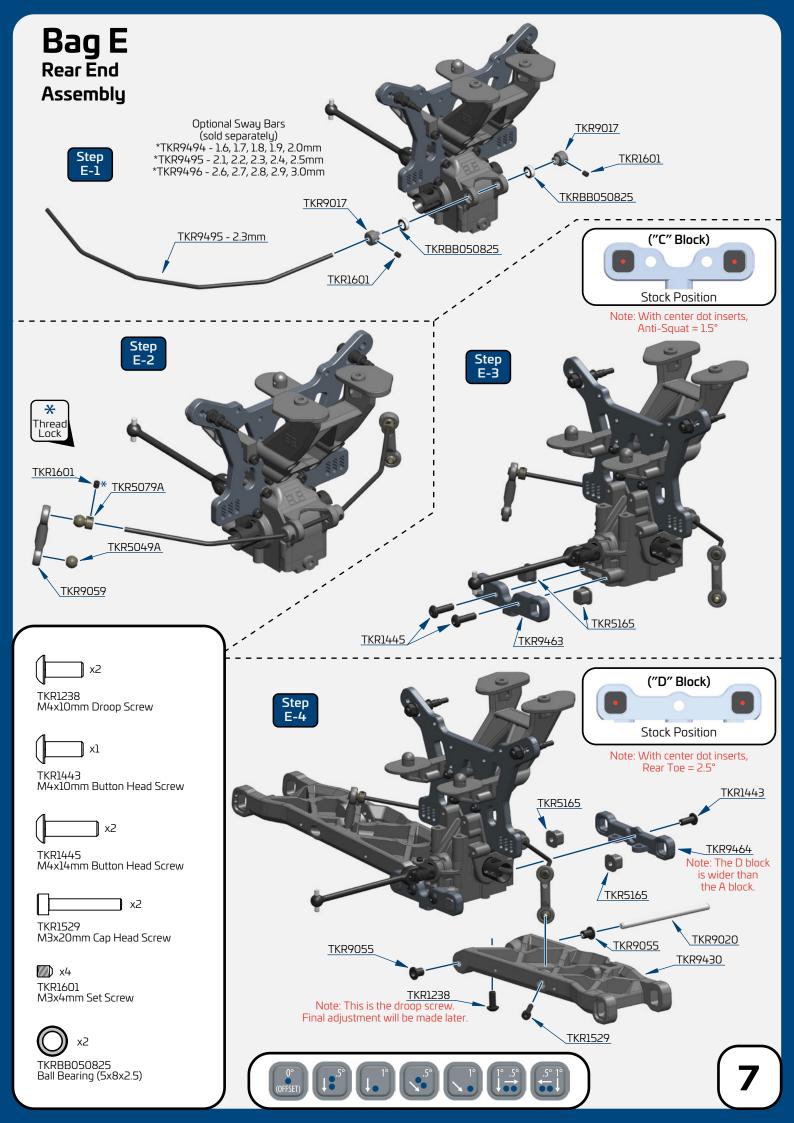


to 1mm below full

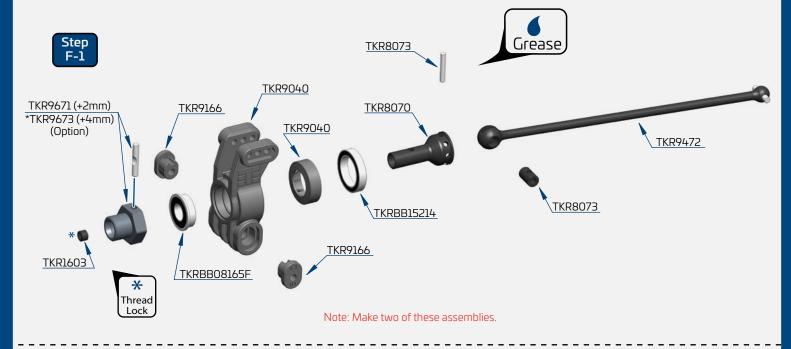
DO NOT OVER FILL

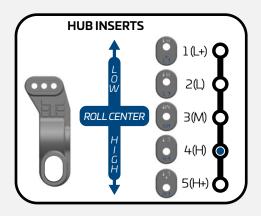


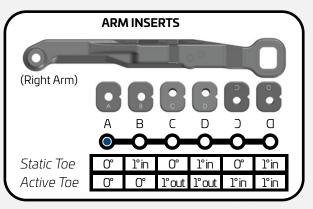




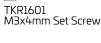
# **Bag F**Rear Hub/Camber Link









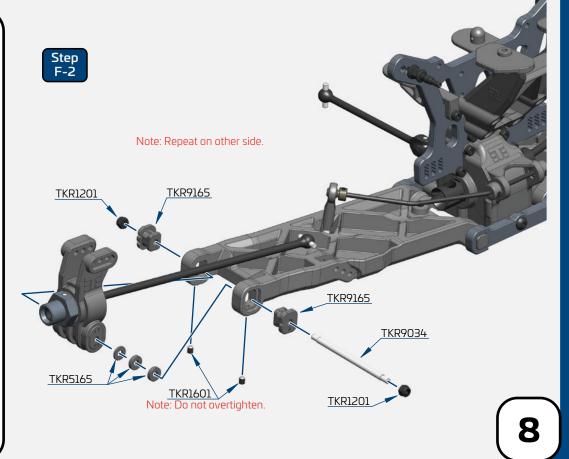


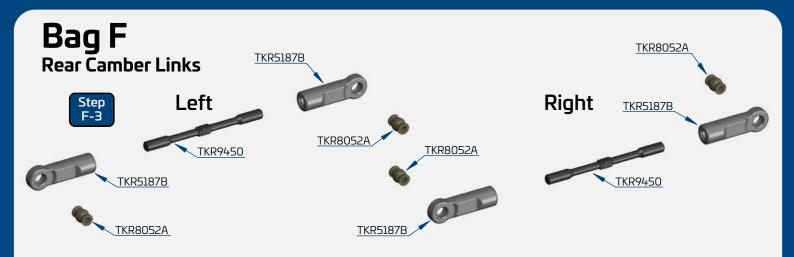
x2
TKR1603
M5x4mm Set Screw



TKRBB08165F Flanged Ball Bearing (8x16x5)

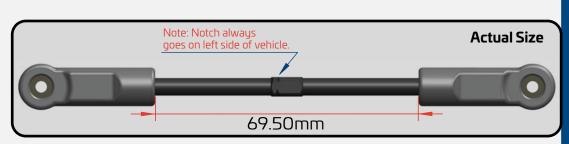


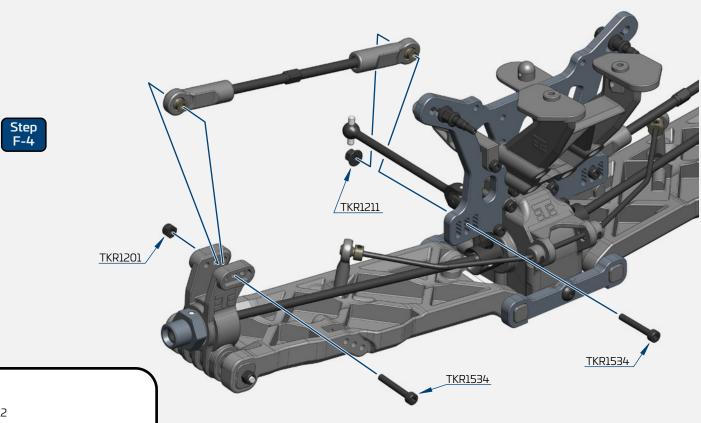




Build Tip: Use some grease or Chapstick on the threads to help prevent "pop-off" when adjustments are being made.

Build Note: Hold the turnbuckle stationary with pliers and push the rod end hard onto the turnbuckle while turning at the same time. Keep in mind that one end of the turnbuckle has normal threads and the other has reverse threads. Start the rod end straight and it will thread on straight.

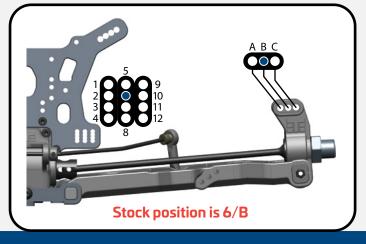


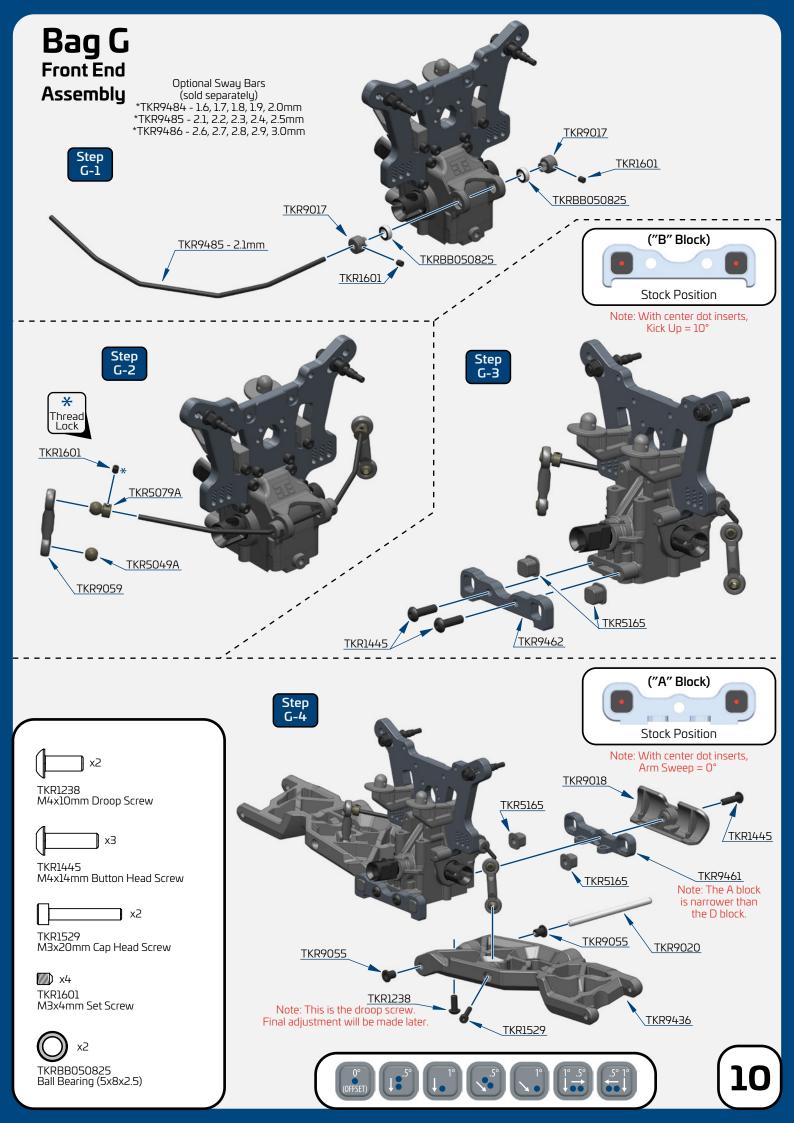












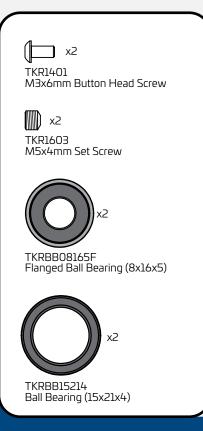
#### Bag H Step H-1 **DO NOT SKIP** Front CVA / Spindle & THIS STEP! Note: These are steering stop screws. They provide **Carrier Assembly** a mechanical limit to the steering throw and make the car easier to drive by greatly improving the TKR1401 consistency of the steering. Step Grease TKR8073 TKR9472 TKR9673 (+4mm) TKR9041 TKR9671 (+2mm) (Option) TKR807 TKR8073 TKRBB15214 \* TKR9041 TKR1603 TKRBB08165F Thread Lock

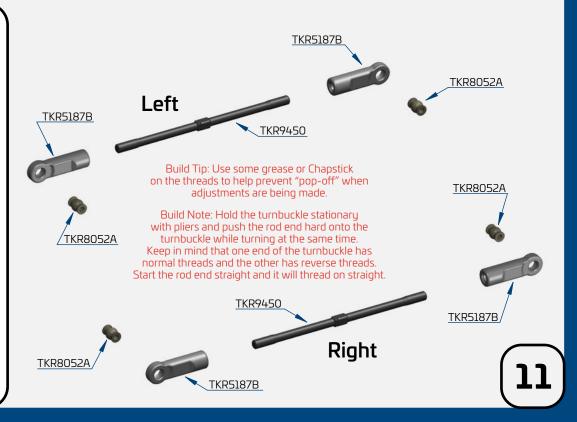
Note: Make left and right side assemblies.

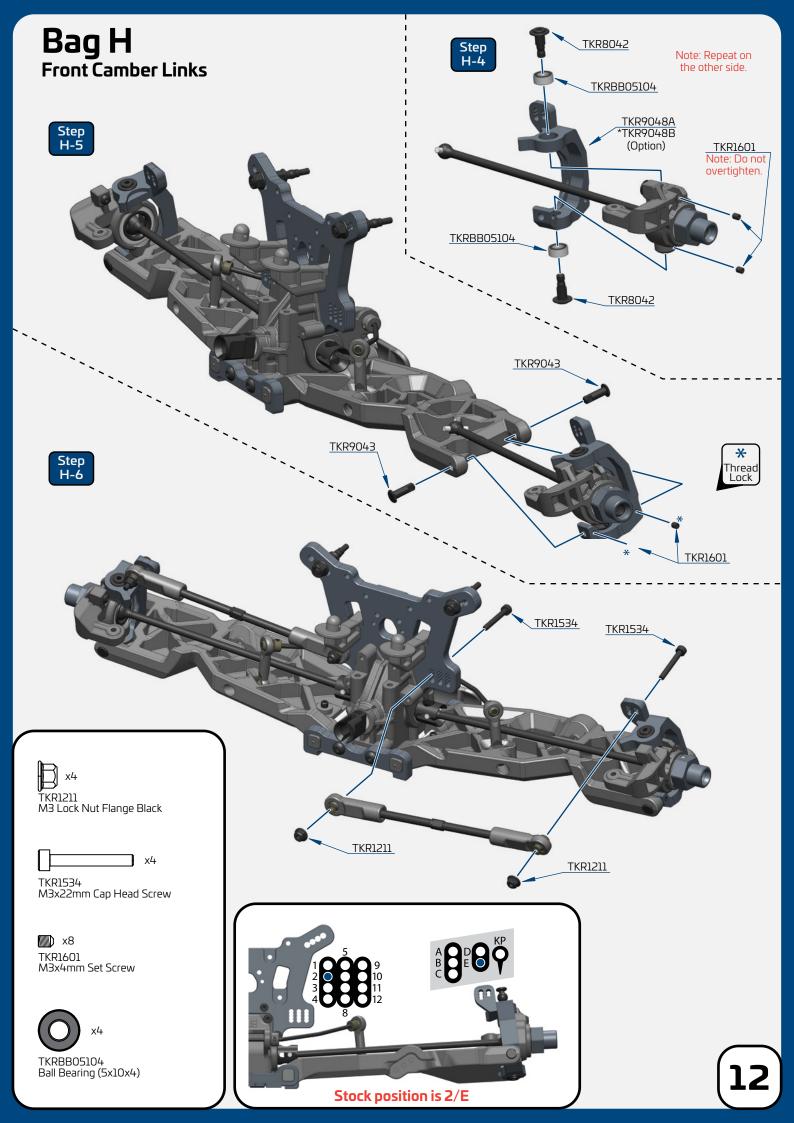




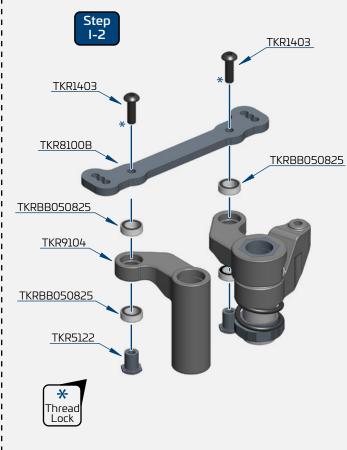
### Front Camber Links



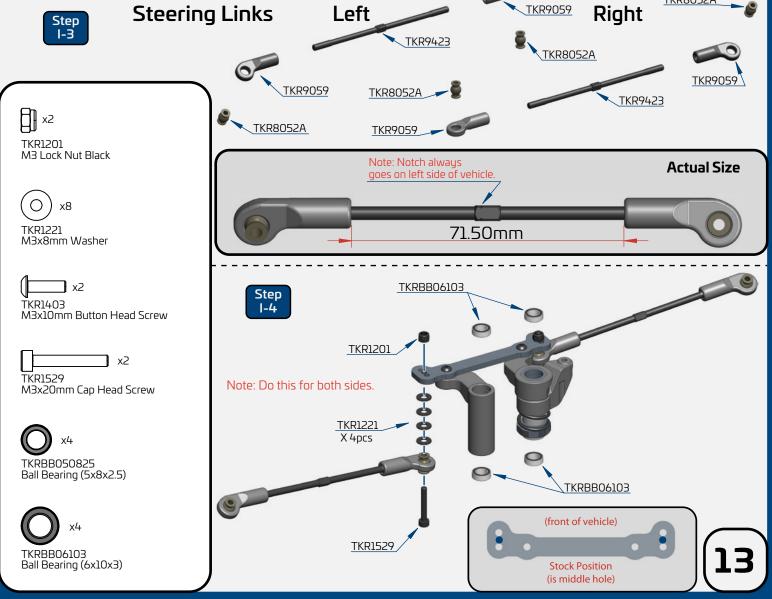


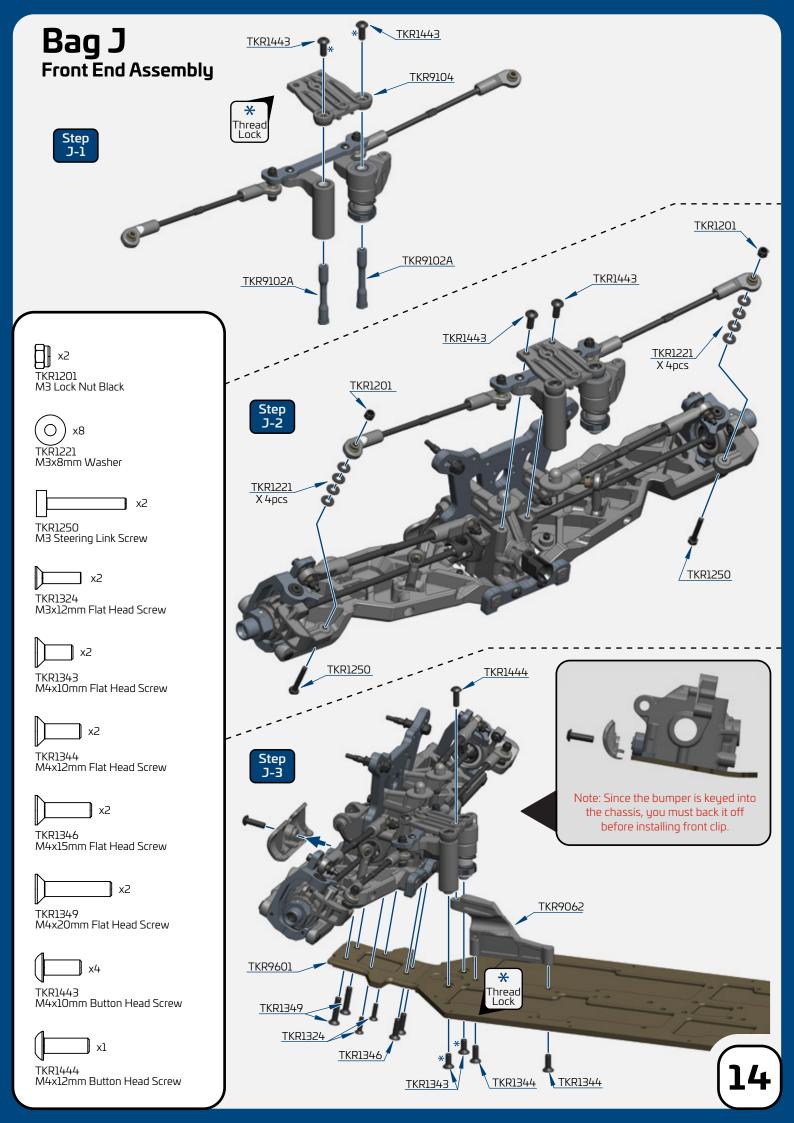


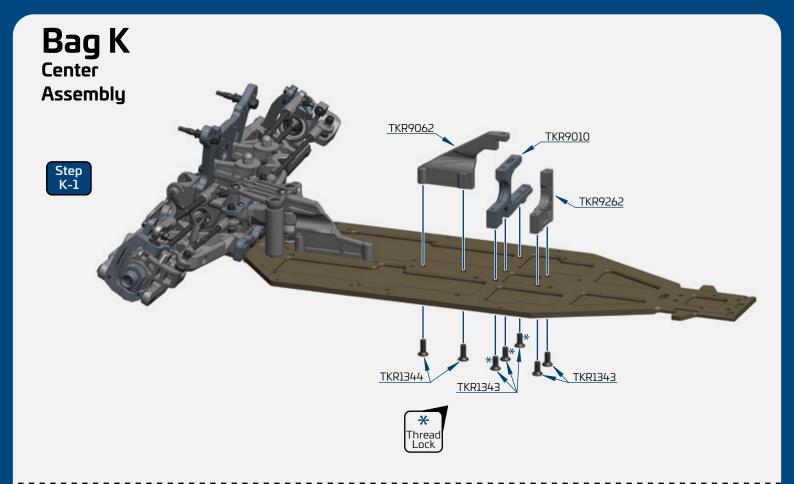


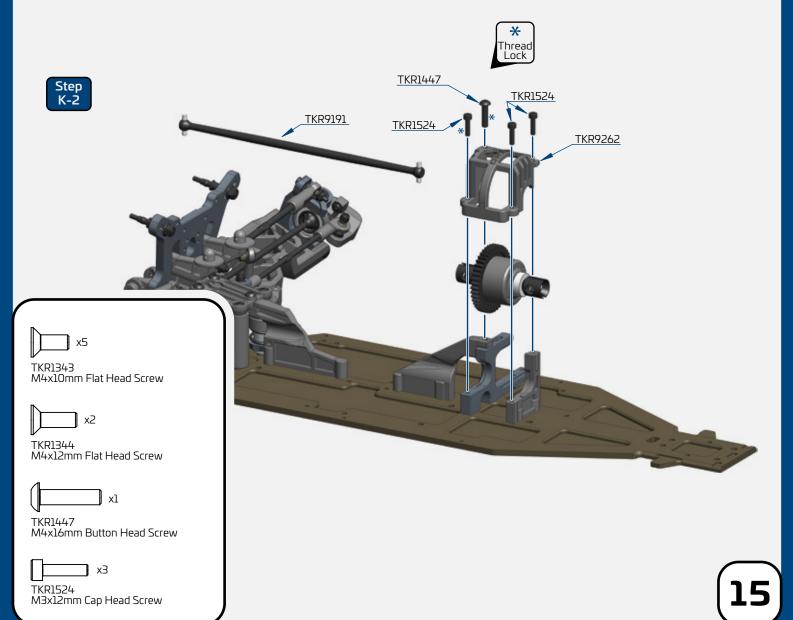


TKR8052A



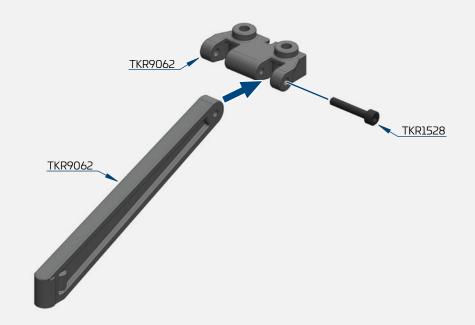




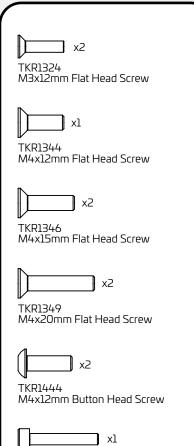


## Bag K Rear Assembly

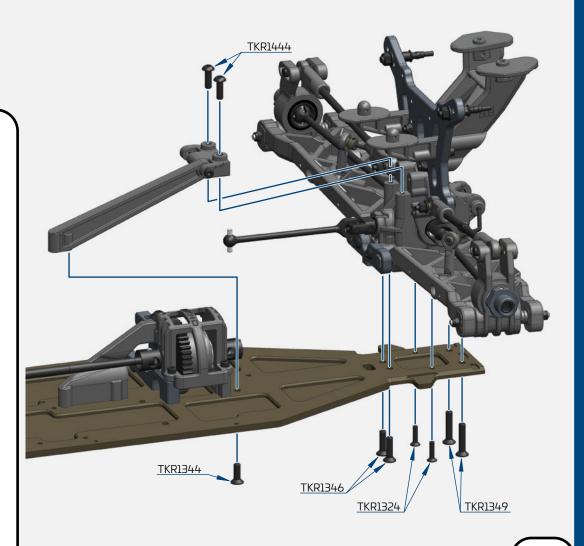








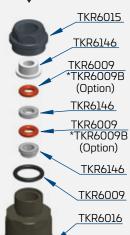
TKR1528 M3x18mm Cap Head Screw



### Bag L Front Shock Assembly











TKR6017 \*TKR6017T (Option)

Note: Use greer slime or oil on shock shaft threads AND O-rings to prevent tearing and leaking.



TKR6144

Note: Shock boots must be installed **BEFORE** attaching rod end.



Shock length (droop) is 121mm

TKR6013

TKR5049A



Refer to filling instructions on page 19 during this step.



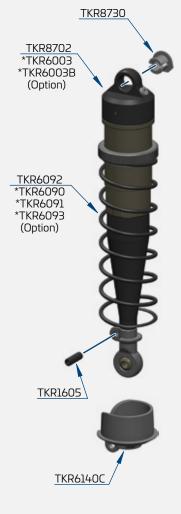
Note: The kit supplied oil is a great starting point when the ambient temperature is ~75° F.

If it is cooler you may need to use thinner oil. Llkewise, if it is warmer you may need to use thicker oil.











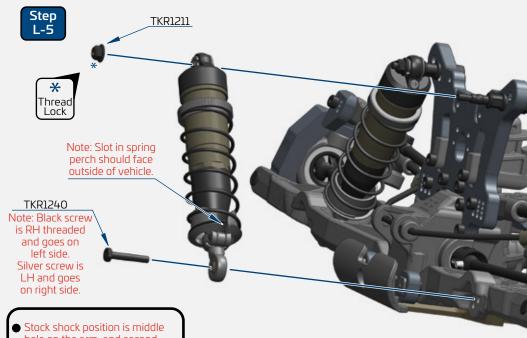


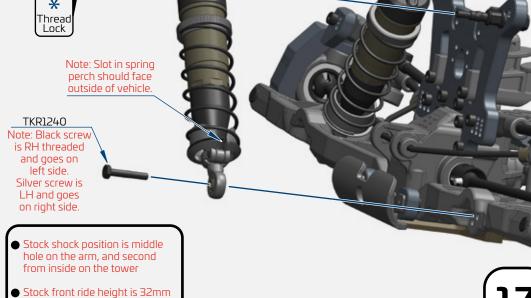


M3x18mm Shock Mnt Screw

\_\_\_\_ x2 TKR1248 M2x4mm Emulsion Screw

\_\_\_\_\_x2 TKR1605 M3x10mm Set Screw





### Bag M Rear Shock Assembly





TKR6146

TKR6015

TKR6009 \*TKR6009B (Option)

TKR6146

TKR6009 \*TKR6009B (Option)

TKR6146

TKR6009

TKR6060

TKR1200 TKR6180

\*TKR6160 \*TKR6163 (Option)

TKR6061 \*TKR6061T (Option)



Note: Use greer slime or oil on shock shaft threads AND O-rings to prevent tearing and leaking.





TKR5049A TKR6013

Refer to filling instructions on page 19 during this step.



Note: The kit supplied oil is a great starting point when the ambient temperature is ~75° F.

If it is cooler you may need to use thinner oil. Llkewise, if it is warmer you may need to use thicker oil.

Use #600 CST oil REAR

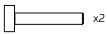








M3 Lock Nut Flange Black



TKR1240 M3x18mm Shock Mnt Screw



\_\_\_\_\_x2

TKR1605 M3x10mm Set Screw



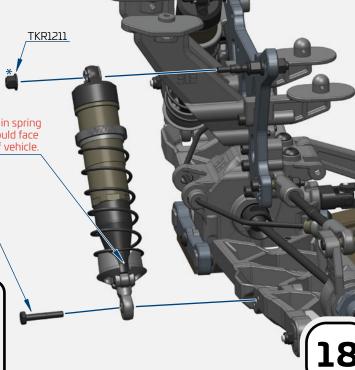


Note: Slot in spring perch should face outside of vehicle.

#### TKR1240

Note: Black screw is RH threaded and goes on right side. Silver screw is LH threaded and goes on left side.

- Stock shock position is middle hole on the arm, and second from the inside on the tower
- Stock rear ride height is 36mm
- Shock length (droop) is 134mm.

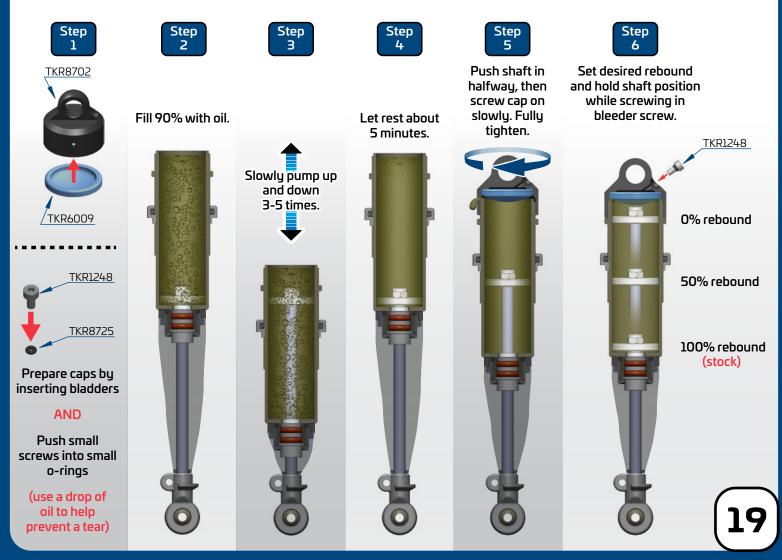


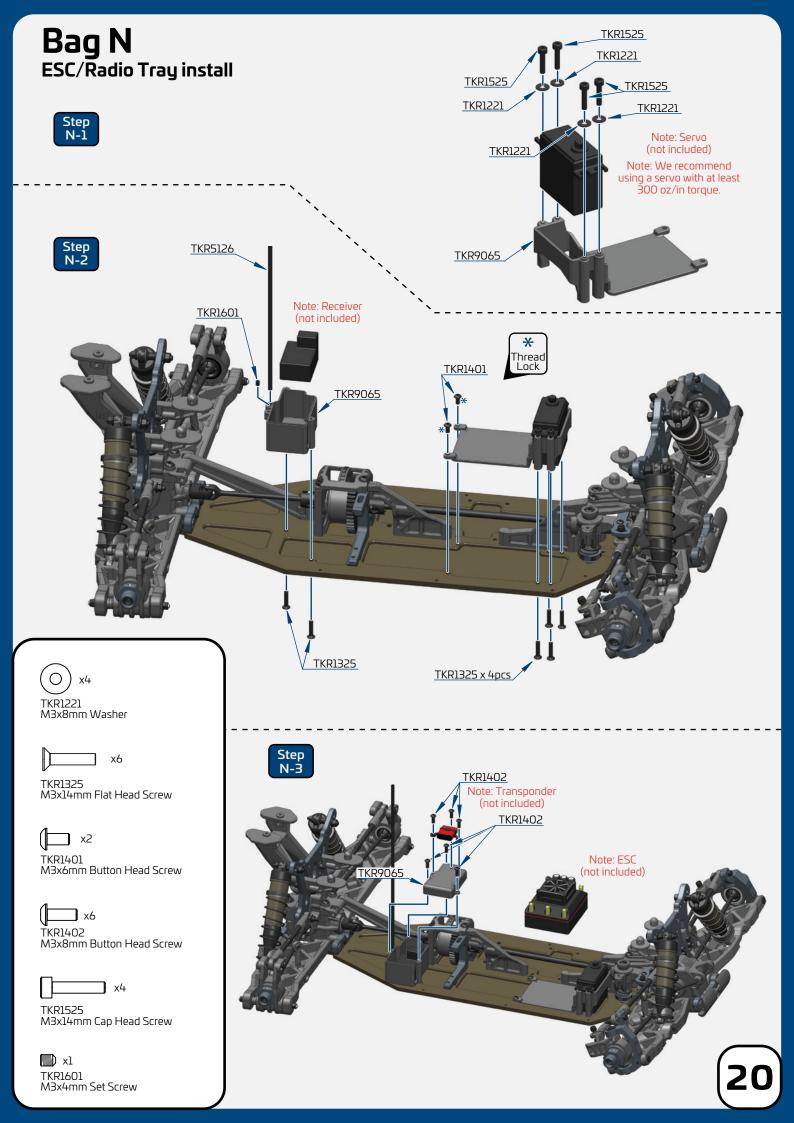
# Shock Filling Instructions

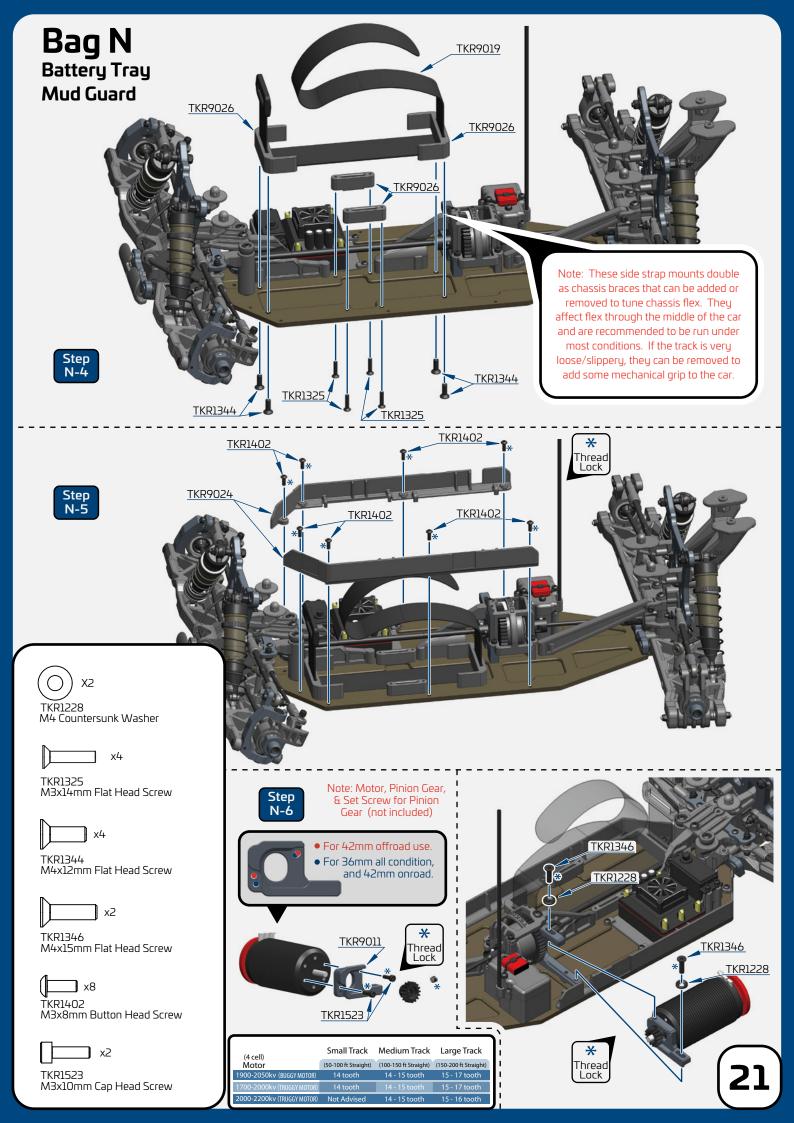
### For both front and rear shocks

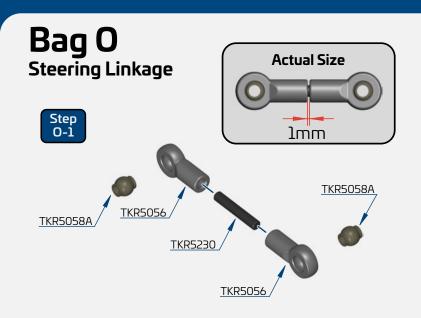
We've found it's easiest to complete steps 1-4 on each shock before moving on to step 5. By the time you've finished step 4 on the last shock, the first one will be ready for step 5.

- **Step 1.** Prepare caps by inserting bladders. Also at this time, install the small TKR8725 o-rings onto the TKR1248 screws. **Do not** install the TKR1248 rebound screw into the shock cap during this step.
- Step 2. Extend the shock shaft all the way down. Fill the shock with oil until the body is approximately 90% full.
- **Step 3.** Slowly pump the shock shaft up and down 3-5 times to release air bubbles from underneath the piston.
- **Step 4.** Let the shock rest vertically with the shock shaft fully extended for five minutes or until all the air bubbles have released. After the air has escaped, top off the shock with oil (about 1-2mm below the top). If you overfill the shock, it won't hurt performance, it will just spill out and make a little bit of a mess.
- **Step 5A.** Push the shock shaft into the shock body about halfway (about 1" or 25mm of the shaft exposed) to set a **base** rebound. Pushing the shaft in further will decrease the base rebound and pulling the shaft out more will increase it. Be careful to not position the shaft too far out or too far in because it will hydrolock or suck the bladder into the body during use. **Final** rebound will be set in Step 6.
- **Step 5B.** Place the cap on the shock and slowly screw down about half way. Oil will start to ooze out of the bleeder hole on the side of the shock cap. Hold the cap and continue to fully secure it by **slowly** turning the shock body. The shock will continue to bleed oil. Wipe excess oil from the shock once the cap is fully tightened down.
- **Step 6.** Set your final rebound by holding the shock shaft in the desired position and installing the small rebound screw assembly. Fully extending the shock shaft and installing the screw will produce the maximum amount of rebound. Fully pushing the shaft into the shock body and installing the screw will produce the minimum amount of rebound. You can now tune your rebound quickly by repeating this step.

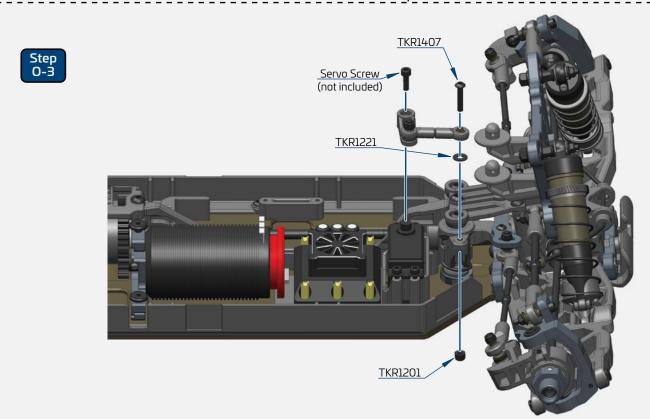


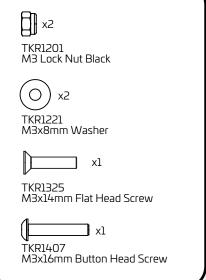


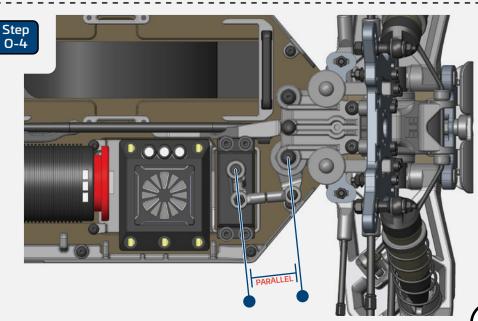






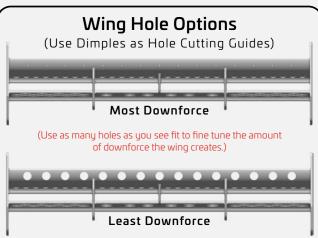


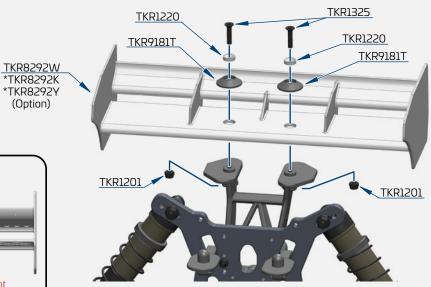




### Bag P Final Assembly











TKR1201 M3 Lock Nut Black



X2

TKR1220 M3 Countersunk Washer



х2

M3x8mm Washer



x2

TKR1325 M3x14mm Flat Head Screw



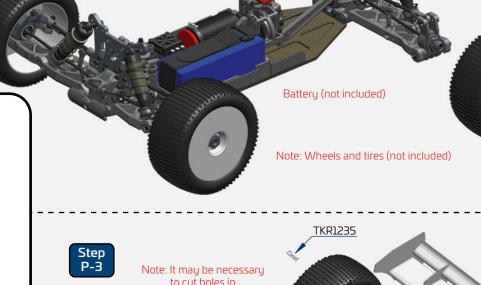
M3x6mm Button Head Screw

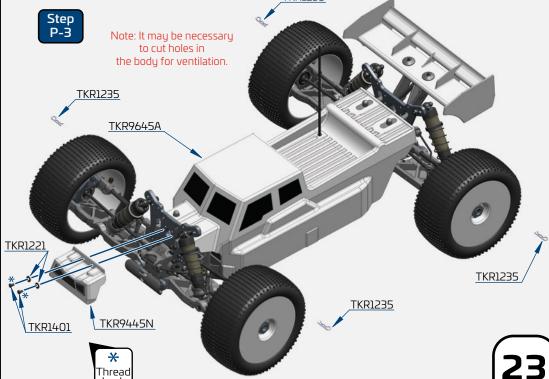


TKR1235 Body Clip



TKR5116 Wheel Nut





TKR5116 / \*TKR5116B \*TKR5116C \*TKR5116BR

(option)

### TKR9600 - ET48 2.0 1/8th 4WD Competition Electric Truggy Kit

#### Shocks List TKR6009 – Shock O-Ring and Bladder Set (for 2 shocks) TKR5049A – Pivot Balls (6.8mm, no flng, sway bar, shck ends, almnm, 4pcs) TKR6013 – Shock Adjustment Nuts (aluminum, gun metal ano, 2pcs) TKR5058A - Pivot Balls (5.8mm, no flange, brake/steering link, aluminum, 4pcs) TKR6015 – Shock Cartridge Caps (aluminum, gun metal ano, 2pcs) TKR5079A – Stabilizer Balls (6.8mm, sway bars, aluminum, 4pcs) TKR6016 – Shock Body (rear, aluminum, hard ano, 2pcs) TKR5101X - Servo Saver Spring (HD, EB48, SCT410, NB48) TKR6017 – Shock Shafts (rear, steel, 2pcs) TKR5103 – Servo Saver Post (aluminum, gun metal ano) TKR6060 - Shock Body (rear, x-long, aluminum, hard ano, 2pcs) TKR6061 - Shock Shafts (rear, x-long, steel, 2pcs) TKR5116 – Wheel Nuts (17mm, serrated, gun metal ano, M12x1.0, 4pcs) TKR5122 - Steering Rack Bushings (aluminum, gun metal ano, 2pcs) TKR6082 - Shock Spring Set (1.6 x 9.5T, 95mm, yellow, 4.48 lb/in) TKR5126 - Antenna tube (universal, w/ caps, 5pcs) TKR6092 - Shock Spring Set (1.6 x 8.0T, 80mm, yellow, 5.60 lb/in) TKR6140C - Locking Shock Rod End and Spring Perch Set (revised, EB/NB/ET/NT/SCT) TKR5165 - V2 Hinge Pin Inserts, Wheelbase Shims (EB/NB/ET/NT/SCT) TKR5187B - Rod Ends (hard, 6.8mm, EB/NB/ET/NT48, 8pcs) TKR6144 – Shock Boots (long length, EB/NB, 2pcs) TKR5230 – Steering Linkage (M3x18mm threaded rod, 10pcs) TKR6145 - Shock Boots (XL length, rear ET/NT, 2pcs) TKR5231 – Servo Saver Nut and Spring TKR6146 – Shock Cartridge Set (CNC, Delrin, EB/NB/ET/NT/SCT) TKR8042 – Kingpin Shoulder Screws (EB/NB48.4, 4pcs) TKR6180 - Shock Piston (CNC, flat/flat, 4x1.2 + 4x1.3) TKR8052A - Pivot Balls (6.8mm, camber, str links, almnm, centered, 4pcs) TKR8702 – Shock Caps (7075, emulsion/vented/standard, black ano, 2pcs) TKR8725 – Emulsion O-ring Set (4x cap seals, 8x emulsion o-rings, for 16mm shocks) TKR8727 - Shock Standoffs (2pcs, requires TKR8730) TKR8730 - Shock Cap Bushings (4pcs, requires TKR8727) TKR8070 - Stub Axles (hardened steel, 2pcs) TKR8073 - CV Rebuild Kit (front/rear, for 2 axles) TKR8100B - Ackerman Plate (7075, EB/NB48 2.0) TKR8292W - Lightweight Wing (ROAR/IFMAR legal, white) Hardware List TKR9010 - Split Center Diff Mount (7075, gun metal ano, EB/ET48 2.0) TKR1200 – M2.5 Locknuts (zinc finish, 10pcs) TKR9011 - Motor Mount Insert (7075, gun metal ano, EB/ET48 2.0) TKR1201 – M3 Locknuts (black, 10pcs) TKR9017 - Sway Bar and Bulkhead Acc (2.0) TKR1211 – M3 Locknuts (flanged, black, 10pcs) TKR9018 - Front Bumper (2.0, 2pcs) TKR1212 - M4 Locknuts (flanged, black, serrated, 10pcs) TKR9019 - Battery Straps (1x center, 1x side, EB/ET48 2.0) TKR1220 – M3 Countersunk Washers (aluminum, natural, 10pcs) TKR9020 - Hinge Pins (inner, front/rear) TKR1221 – M3x8mm Washer (black, 10pcs) TKR9024 - Mud Guard Set (L/R, EB/ET48 2.0) TKR1222 – 13x16x.1mm Diff Shims (10pcs) TKR9026 - Battery Strap Mounts (EB/ET48 2.0) TKR1226 - 5x7x.2mm shims (10pcs) TKR9034 - Hinge Pins (outer, rear, 2.0, 2pcs) TKR1228 - M4 Countersunk Washer (black, 10pcs) TKR9040 - Rear Hubs and Bearing Spacers (L/R, 2.0) TKR1235 – Body Clips (10pcs) TKR9041 - Spindles and Bearing Spacers (L/R, 2.0) TKR9043 - Spindle Carrier Hinge Pins (steel, 2.0, 4pcs) TKR1238 - Droop Adjustment Screws (M4x10mm, 8pcs) TKR1240 - Lower Shock Mount Screws (2 CW thread, 2 CCW thread, EB/NB/SCT) TKR9048A - Spindle Carriers (revised, L/R, aluminum, 15 degree, 2.0) TKR1248 – M2x4mm Cap Head Screws (black, 10pcs) TKR1250 – Steering Link Screws (black, steel, 2pcs) TKR1301 - M2.5x6mm Flat Head Screws (black, 10pcs) TKR1324 - M3x12mm Flat Head Screws (black, 10pcs) TKR1325 - M3x14mm Flat Head Screws (black, 10pcs) TKR1343 - M4x10mm Flat Head Screws (black, 10pcs) TKR9055 - Hinge Pin Bushings (8pcs) TKR9059 - Rod End Set (brake/steering/sway bar linkage, 2.0) TKR9062 - Chassis Brace Set (front/rear/center, EB/ET48 2.0) TKR9065 - Servo Mount, ESC tray, RX Box (EB/ET48 2.0) TKR9102A - Steering Posts (aluminum, gun metal ano) TKR1344 - M4x12mm Flat Head Screws (black, 10pcs) TKR1346 - M4x15mm Flat Head Screws (black, 10pcs) TKR9104 - Bell Cranks and Top Plate (2.0) TKR9165 - Rear Arm Hinge Pin Inserts (2.0) TKR1349 - M4x20mm Flat Head Screws (black, 10pcs) TKR9166 - Rear Hub Roll Center Inserts (2.0) TKR1401 - M3x6mm Button Head Screws (black, 10pcs) TKR9181T - Tall Wing Mount and Body Mounts (2.0) TKR1402 - M3x8mm Button Head Screws (black, 10pcs) TKR9191 - Tapered Driveshaft (center, front, 7075, black ano, EB/ET48 2.0) TKR1403 – M3x10mm Button Head Screws (black, 10pcs) TKR9262 - Split Center Diff Mount (composite, requires TKR9010, EB/ET48 2.0) TKR1407 - M3x16mm Button Head Screws (black, 10pcs) TKR9412 - Gearbox (front, ET/NT 2.0) TKR1443 - M4x10mm Button Head Screws (black, 10pcs) TKR9416 - Gearbox (rear, ET/NT 2.0) TKR1444 - M4x12mm Button Head Screws (black, 10pcs) TKR9423 - Turnbuckle (M4 thread, 100mm length, 4mm adjustment, 2pcs) TKR1445 - M4x14mm Button Head Screws (black, 10pcs) TKR9428 - Shock Tower (front, 7075 CNC, GM ano, ET/NT48 2.0) TKR1523 - M3x10mm Cap Head Screws (black, 10pcs) TKR9429 - Shock Tower (rear, 7075 CNC, GM ano, ET/NT48 2.0) TKR9430 - Suspension Arms (rear, 2pcs, ET/NT48 2.0) TKR1524 - M3x12mm Cap Head Screws (black, 10pcs) TKR1525 - M3x14mm Cap Head Screws (black, 10pcs) TKR1528 - M3x18mm Cap Head Screws (black, 10pcs) TKR9436 - Suspension Arms (front, 2pcs, ET/NT48 2.0) TKR9445N - Headlights / Nose Cone (ET/NT48 2.0) TKR1529 - M3x20mm Cap Head Screws (black, 10pcs) TKR9450 - Turnbuckle (M5 thread, 108mm length, 5mm adjustment, 2pcs) TKR1534 – M3x22mm Cap Head Screws (black, 10pcs) TKR1601 - M3x4mm Set Screws (black, 10pcs) TKR9461 - Hinge Pin Brace (CNC, 7075, ET/NT48 2.0, A Block) TKR9462 - Hinge Pin Brace (CNC, 7075, ET/NT48 2.0, B Block) TKR9463 - Hinge Pin Brace (CNC, 7075, ET/NT48 2.0, C Block) TKR9464 - Hinge Pin Brace (CNC, 7075, ET/NT48 2.0, D Block) TKR1603 - M5x4mm Set Screws (black, 10pcs) TKR1605 - M3x10mm Set Screws (black, 10pcs) TKR9472 - Driveshafts (F/R, hardened steel, ET/NT48 2.0, 2pcs) TKR9485 - Sway Bar Set (FRONT, 2.1, 2.2, 2.3, 2.4, 2.5, ET/NT48 2.0) TKR9495 - Sway Bar Set (REAR, 2.1, 2.2, 2.3, 2.4, 2.5, ET/NT48 2.0) TKR9601 - Chassis (7075, hard anodized, ET48 2.0) TKR1103 – Turnbuckle Wrench (4mm, 5mm, bardened steel) TKR1107 – XT Nut Driver (5.0mm , adjustable length, 4mm shank) TKR1108 – XT Nut Driver (5.5mm , adjustable length, 4mm shank) TKR1115 – Pivot Ball and Shock Multi-tool (aluminum) TKR9645A - Body (ET48 2.0, w/ window mask) TKR1116 – 17mm Wheel Wrench, Shock Cap Tool TKR9646 - Decal Sheet (ET48 2.0) TKR1119 – 5.5mm / 7.0mm Wrench (hardened steel) TKR9671 - Wheel Hubs (+2mm offset, 17mm, gun metal ano, w/pins, 2pcs) TKR5071C – Wheel Hubs (17mm, gun metal ano, 2mm offset) TKR9673 - Wheel Hubs (+4mm offset, 17mm, gun metal ano, w/pins, 2pcs) TKR5114XB - Differential Outdrives (front/rear, revised, lightened) TKR9676 - Universal Driveshaft (center, rear, ET48 2.0) TKR5253B – Aluminum Servo Horn (25t spline, M3 clamp, double hole arm) TKR6003 – Shock Caps (aluminum, gun metal ano, 2pcs, EB48) Bearings List TKR6003B – Shock Caps (aluminum, non-vented top, 2pcs) TKRBB050825 – Ball Bearing (5x8x2.5mm, 4pcs) TKRBB05104 – Ball Bearing (5x10x4, 4pcs) TKR6009B – Shock O-Ring Set (16pcs) TKR6017T – Shock Shafts w/ TiNi coating (rear, steel, 2pcs) TKRBB05114 – Ball Bearing (5x11x4, 4pcs) TKR6061T - Shock Shafts w/ TiNi coating (rear, x-long, steel, 2pcs) TKR6080 - Shock Spring Set (1.6 x 10.5T, 95mm, pink, 3.96 lb/in) TKR6081 - Shock Spring Set (1.6 x 10.0T, 95mm, pink, 3.96 lb/in) TKR6083 - Shock Spring Set (1.6 x 9.0T, 95mm, orange, 4.80 lb/in) TKR6090 - Shock Spring Set (1.6 x 9.0T, 80mm, pink, 4.80 lb/in) TKRBB05145 - Ball Bearing (5x14x5, shielded, 4pcs) TKRBB06103 – Ball Bearing (6x10x3, 4pcs) TKRBB08165 - Ball Bearing (8x16x5, 4pcs) TKRBB08165F – Ball Bearing (8X16x5mm, flanged, shielded, 4pcs) TKR6090 - Shock Spring Set (1.6 x 9.0T, 80mm, pink, 4.80 lb/in) TKR6091 - Shock Spring Set (1.6 x 8.5T, 80mm, green, 5.17 lb/in) TKR6093 - Shock Spring Set (1.6 x 7.5T, 80mm, orange, 6.11 lb/in) TKR6160 - Shock Piston Blanks (CNC, flat/flat, 16 dimples) TKR6163 - Shock Piston Blanks (CNC, flat/flat, 16 dimples) TKR8292Y - Lightweight Wing (ROAR/IFMAR legal, yellow) TKR8292K - Lightweight Wing (ROAR/IFMAR legal, black) TKR9077 - Brass Weight (15g, NB/NT48 2.0) TKR9078 - Brass Weight (30g, NB/NT48 2.0) TKR9048B - Spindle Carriers (revised, LV, aluminum, 18 degree, 2.0) TKRBB15214 - Ball Bearing (15x21x4, shielded, 4pcs) Differential List TKR5144 - Differential O-Rings (6pcs) TKR5145B – Differential Shims (revised, 6x17mm, 6pcs) TKR9114 - Differential Outdrives (F/R NB/NT48 2.0, F/C/R EB/ET48 2.0, 2pcs) TKR9115 - Differential Case (F/R NB/NT48 2.0, F/C/R EB/ET48 2.0) TKR9143 - Differential Seals (2.0, 3pcs) TKR9149 - Differential Cross Pins (2.0, 6pcs) TKR9117 - Spur Gear (44t, hardened steel, EB/ET48 2.0) TKR9150 - Differential Gear Set (internal gears only, 2.0) TKR9452 - Differential Ring Gear (40t, F/R, CNC, ET/NT48 2.0, use with TKR9453) TKR9453 - Diff Pinion (9t, F/R, CNC, ET/NT48 2.0, use with TKR9452) TKR9237 - Spur Gear (44T, composite, EB/ET48 2.0) TKR9451 - Turnbuckle (M5 thread, 95mm length, 5mm adjustment, 2pcs) TKR9484 - Sway Bar Set (FRONT, 1.6, 1.7, 1.8, 1.9, 2.0, ET/NT48 2.0) TKR9486 - Sway Bar Set (FRONT, 2.6, 2.7, 2.8, 2.9, 3.0, ET/NT48 2.0)

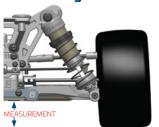
TKR9494 - Sway Bar Set (REAR, 1.6, 1.7, 1.8, 1.9, 2.0, ET/NT48 2.0) TKR9496 - Sway Bar Set (REAR, 2.6, 2.7, 2.8, 2.9, 3.0, ET/NT48 2.0)

## **Setup Information**

The purpose of making adjustments is to make the car go faster around the track, or to make it more controllable, or both if possible. A vehicle that's easier to drive should produce lower, more consistent lap times. It will also inspire more confidence in the driver, which is always good when nerves start getting the best of you.

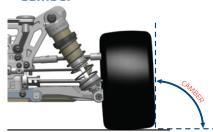
Before you start thinking about changing your car's setup, consider these two things: First, is the vehicle in perfect working order? Be sure that all of the suspension components operate freely without excessive play, and that it isn't tweaked. Binding and worn out parts will result in poor performance and inconsistent handling. Second, always consider tires before making other adjustments. Time spent trying to get the vehicle to work with the wrong tires mounted will be wasted time. Without the right tires, even a great setup won't be a winning setup.

#### **Ride Height**



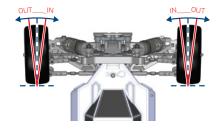
Ride height is the distance from the bottom of the chassis to the running surface. Ride height should only be checked and adjusted when your vehicle is ready to run (i.e. with fuel tank full/body on). Ride height is the first adjustment to be made and should be set with a ride height measurement tool. Measurements should be taken from the flat parts of the chassis, front and rear. Be sure to measure the front ride height at a point before the kick up in the chassis starts. To measure ride height, first make sure the suspension is completely free, then simultaneously compress the front and rear all the way down and let the vehicle settle. Take your measurement from that position. Use the shock spring adjustment collars to raise or lower the ride height to your desired setting. 32mm front and 36mm rear is a good starting point.

#### Camber



Static camber affects the car's side to side traction. More negative camber front and rear quickens rotation in corners. Less negative camber will make the vehicle easier to drive but you may give up some responsiveness (i.e. steering). To set your static camber have your vehicle at ride height (see above) and adjust the camber links until desired angle is achieved. Please note that a large adjustment of front camber will affect front toe and you may have to readjust the toe and then re-check front camber again. A good starting measurement for camber is 2-3 degrees in the front and 2-3 degrees in the rear.

#### Front Toe



Front toe is used to describe the angle in which the front wheels point when looking down at them from the top of a vehicle. You will always use some amount of toe out. Toe-out will affect how your vehicle enters and exits corners. More toe out will result in more off-power steering and less on-power steering and less toe out will have the opposite results. To set your front toe, have your vehicle at ride height (see above) and adjust the steering links until desired angle is achieved. Please note that a large adjustment of front toe will affect front camber and you may have to readjust the camber and then re-check front toe again. A good starting point is approximately 0.5-1 degree of toe out per side.

#### Ackermann Effect



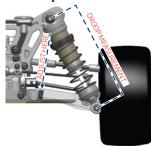
Think of Ackermann as active toe when the steering moves from left to right. More ackermann effect makes more toe out at full turn and produces more steering off-power. Less ackermann effect makes less toe out at full turn and produces more steering on-power. A good starting point is the forward hole on the plate.

#### **Bumpsteer**



Think of bump steer as active toe when the suspension compresses or rebounds. To adjust bump steer you have to change the angle of the steering link. This is accomplished by adding or removing washers under the ball stud on the steering spindles. Anytime you change camber link locations, front arm pills, front arm spacers, or Ackermann you will need to check and possibly adjust your bumpsteer. It's best to start with zero bumpsteer or slight bump out.

#### Droop



Droop is the measured amount of down travel in the suspension. It is measured from the shock mounting points while the vehicle is up on a stand allowing the arms to hang freely and is adjusted by turning the droop screw located in the suspension arms front/rear. This screw limits the suspension travel by providing a stopping point against the chassis. Left and right sides should always be equal, however the front and rear of the vehicle can have different values. Droop affects all aspects of chassis performance, including braking, acceleration, jumping, traction, and bump handling. A good starting droop measurement is 121mm front, and 134mm rear.

## Setup Information

#### **Differentials**



(continued) Front: Changing front diff oil affects overall steering response. Thinner can increase off-power steering but the vehicle may be twitchy and harder to drive. Thicker can increase on power steering and stability. We recommend 20k in the front diff

> Center: Changing center diff oil affects the front-to-rear drive balance. Thicker will reduce off-power steering and on-power rear traction but increases on-power steering and acceleration if traction is available. Thinner will increase off-power steering and on-power rear traction but reduce on-power steering and acceleration. We recommend 20k in the center diff.

Rear: Thinner rear diff oil increases off-power steering and reduces traction into a corner. It also reduces on-power steering and increases traction out of a corner. Going too thin will make your vehicle inconsistent, however. Thicker rear oil will have opposite effects, and once again, going too thick will make the vehicle inconsistent. We recommend 10k in the rear diff.

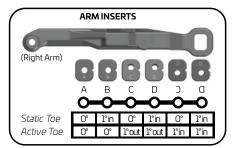
#### eelbase Adiustments



Changes to wheelbase can affect the overall handling of your vehicle, since it adjusts the distribution of weight on the wheels as well as the angle of the driveshafts. Shortening the wheelbase at the rear will give you more steering into a turn and off power, less steering out of a turn and on power. Lengthening the wheelbase at the rear will yield the opposite results. In general a longer wheelbase is better on open and/or bumpy

#### **Active Toe**

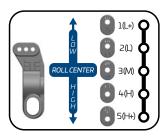
Active rear toe is essentially bump steer for the rear suspension. It affects the vehicle anytime it is accelerating,



cornering, braking, jumping, or going through bumps. There are two types of active toe, in or out depending on which direction the active toe inserts are installed. When using active toe in (C or D arm inserts upside down), the rear tires will "toe in" more during suspension compression and "toe out" during suspension droop. The opposite happens when using active toe out (C or D arm inserts right side up). When using the active toe in setting, the vehicle will be more locked in during acceleration at the rear end and possibly have a push during corner exit. It will have more rear grip through the corner, but possibly not as fast through the corner. It will be looser in the rear under braking and possibly have more steering, but will hold it's line off of jumps better, although may have too much rear traction during the landing. It will accelerate through bumps better, but could catch ruts more easily. When using the active toe out setting, the vehicle will be looser during acceleration and have more steering, but will have less rear grip

through the corner. It will have more overall speed, but will have less steering under braking, and will be less precise during jump takeoff, although it will be more forgiving during jump landing. It will be very smooth and forgiving through the bumps but will lack some grip. If you are using the inserts that also add 1 degree of static toe in (D arm inserts), You may want to remove 1 degree of toe in from the hinge pin blocks, to achieve the same overall amount of static toe in. When doing this, you will remove some angle from the rear driveshafts. This will create similar results as the *active toe out* inserts (better in bumps, quicker cornering, etc.), but to a lesser degree.

#### **Hub Inserts**



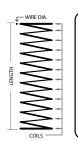
By changing the rear hub inserts you can alter the rear roll center of the vehicle. These hub inserts will also affect axle height, uptravel, and downtravel (droop) values. It is important to note that with any hub insert change you will have to check and possibly change other settings on the car. When running a higher roll center (higher number inserts) you will need to limit your uptravel with o-rings on the shock shaft, outside of the shock body and possibly increase the amount of droop you're running. When running a lower roll center (lower number inserts) you will need to remove o-rings from the shock shaft to increase up travel, and may need to decrease the amount of droop you're running. When changing the inserts the rear camber link location on the tower will also need to be adjusted to maintain your current link to arm angle. When going to a lower roll center (lower number insert) you will need to move the camber link down on the tower. When going to a higher roll center (higher number insert) you will need to move the link up on the tower. A lower number insert will provide more roll and typically give more off power

rear traction and less on power rear traction. The car will change directions more slowly, roll deeper into turns, and can be more forgiving off power or under braking but more aggressive under acceleration. A higher number insert will provide less roll and typically give less off power rear traction and more on power rear traction. The car will change directions more quickly and can be more aggressive off power or under braking but more forgiving under acceleration.

#### Springs

Softer springs will increase traction through the turns by allowing more roll, slow down the responsiveness of the vehicle, and can be better in the

tracks and a shorter wheelbase is better on tighter technical tracks.



| PART#/COLOR SIDE WIRE DIA. COILS LENGTH RATE |       |     |      |      |      |  |  |  |
|--|-------|-----|------|------|------|--|--|--|
| TKR6080                                      | Rear  | 1.6 | 10.5 | 90mm | 3.96 |  |  |  |
| TKR6081                                      | Rear  | 1.6 | 10.0 | 90mm | 4.20 |  |  |  |
| TKR6082                                      | Rear  | 1.6 | 9.5  | 90mm | 4.48 |  |  |  |
| TKR6083                                      | Rear  | 1.6 | 9.0  | 90mm | 4.80 |  |  |  |
| TKR6090                                      | Front | 1.6 | 9.0  | 80mm | 4.80 |  |  |  |
| TKR6091                                      | Front | 1.6 | 8.5  | 80mm | 5.17 |  |  |  |
| TKR6092                                      | Front | 1.6 | 8.0  | 80mm | 5.60 |  |  |  |
| TKR6093                                      | Front | 1.6 | 7.5  | 80mm | 6.11 |  |  |  |

bumps. Stiffer springs will increase corner speed if traction is available and will also tend to jump and land better. Once you find a set of springs you like you will typically only change them for tracks with dramatically different conditions.



Pistons with smaller holes work well for smoother tracks with large iumps and

pistons with larger holes work well for rougher tracks with less jumps. Smaller hole pistons will typically use thinner oil than larger hole pistons. Shock oil is also affected by the ambient temperature so a change in viscosity might be necessaru with a change of 5°C or ~10°F.



Sway bars are used to adjust a vehicle's lateral grip by resisting chassis roll. A thicker bar decreases roll more than a thinner bar will. More roll means more grip and less roll means less grip. The front sway bar affects mainly off-power steering at corner entry. The rear sway bar affects mainly on-power steering and stability in mid-corner and at corner exit.

### Maintenance:

Performing regular maintenance will greatly improve your on track consistency and also extend the life of your vehicle. Going through critical areas of the vehicle regularly will also allow you to find possible issues before they become a problem that may cost you a race. Follow the guidelines below for maximum performance.

#### Bearing Maintenance:

Bearings should always be smooth and free in order to preform their function. We recommend inspecting and cleaning each bearing on a regular basis. It will be necessary to break down parts of the vehicle in order to inspect them properly. The procedures below should be done every couple of weeks or prior to an important race.

- 1. Inspect the outer seals for any visible damage and check the rolling resistance of each bearing.
- 2. If any bearing does not spin freely, then take the following steps to clean them.
- 3. Spray the bearing with motor spray and spin it again to remove any debris trapped inside. Repeat if necessary. If the bearing does not start to spin freely after cleaning, then they may need to be replaced.
- 4. Allow the clean bearing to dry or blow into the bearing with compressed air to speed up the drying process.
- 5. Oil each bearing with a proper bearing lubricant. One or two drops is enough.

#### Shock Maintenance:

When comparing the left and right shocks of the front end, they should feel identical. Same goes for the rears. The procedures below should be done every race day to make sure they are leak free and operating correctly.

- 1. After removing the shocks from the vehicle, remove the springs and inspect each shock for visible leaks (build up of debris at the bottom of the shock shaft or visible oil).
- 2. If the shock binds when pushing the shaft through its stroke, then the shaft may be bent and will need to be replaced.
- 3. If the shocks from left to right do not feel consistent when compared to each other, or have built up too much air inside (feel empty when pushing the shaft through its stroke), then you will need to rebuild them following the steps outlined on page 19 of this manual.

### Hinge Point & Drive Line Maintenance:

Checking the hinge points while the shocks are removed from the vehicle is the best time to inspect these parts. The other items to inspect are the camber links, steering links and drive shafts. Follow the steps below every couple of weeks in order to keep the vehicle preforming at the maximum level.

- 1. With the shocks off the vehicle, check the movement of the arms, hubs, and spindle carriers. They should move freely. If there is a bind, then the inner or outer hinge pin may be bent and would need to be replaced. The arms should not have any play when twisted or moved in any direction against the hinge points. If there is excessive slop present, then the arms or hubs may be worn and will need to be replaced.
- 2. Remove the camber links, steering links and servo link from the vehicle. Check the movement of the spindles to see if they turn freely. If they don't, then check the kingpin shoulder screws to see if they are tightened down too far. Also, check for slop. If there is excessive slop present, then the spindle carriers may need to be replaced.
- 3. Check the steering rack to make sure it moves freely. If it binds, then the screws holding the Ackermann or the steering posts could be too tight. If they still bind, then check the bearings and follow the steps above to clean them.
- 4. After re-installing the camber links, steering links and servo link, check the movement of the rod ends on the ball studs. If they have excessive slop or are binding, then they may need to be replaced.
- 5. Check the drive shafts by rotating them. Look for any wobbles. If they are bent, replace them immediately.
- 6. With the drive shafts removed, check for slop in the CV area. If it is present, then reposition the CV pin to another fresh hole, re-lubricate and install back into the vehicle.

#### **Differential Maintenance:**

Properly maintained differentials are essential for a smooth operating vehicle. Check all three diffs regularly to make sure they are filled and operating as designed.

- 1. Remove each diff and verify the differential action is happening and is smooth. If there is any notchy feel to them, follow the steps below to rebuild them.
- 2. Open the diff and pour out the oil. Remove the gears and pins to release the outdrives, then remove the seals. Inspect everything to make sure there are no damaged parts. If the seals are old or show any signs of degradation, replace them immediately. Re-lubricate the seals and outdrives, then rebuild the diff following the steps on page 3 and 4.





STATIC TOE

ACTIVE TOE



Event: Date: **Box Stock** Name: Traction: Low O MEDIUM O HIGH O Track: INDOOR O OUTDOOR O Size: SMALL O MEDIUM O LARGE O Type: LOOSE / LOAMY O HARD PACKED O BLUE GROOVE O CLAY O ASTRO O Surface: SMOOTH O BUMPY O RUTTED O Condition: DUSTY O DRY O WET O MUDDY O Bumpsteer/Ackerman/Servo Saver/Steering Stop: FRONT OF VEHICLE **WASHERS:** FULL WASHERS: **TURNS** 0 WASHERS: 4 SCRFW: 4 **FULLY** (plate can be flipped) TIGHT **Front End:** Differential Oil: Suspension: 20k 20k 10k RIDE HEIGHT: 32 CAMBER: -3° **Drivetrain:** CASTER BLOCK: 15° SWEEP: 0° KICK UP: 10° TOE: 1° out PINION / SPUR: (teeth) Equipment: SWAY BAR: 2.1mm DROOP: 121mm ESC: Shocks: BATTERY: OIL: 700 CST BRAND: Kit MOTOR: SERVO: 300oz min PISTON: 4x1.2 + 4x1.3 SPRING: TKR6092 **Chassis Braces:** REBOUND: 50% BUILD: bladder CENTER DIFF: REAR: B" Block: 'A" Block: BATTERY INNER: BATTERY OUTER: (Arm Sweep) (Kick-Up) (0° with center dot inserts) (10° with center dot inserts) Tires / Wheels: BRAND / TREAD: **Rear End:** Suspension: COMPOUND: RIDE HEIGHT: 36 CAMBER: -3° INSERT: ANTI-SQUAT: 1.5° TOE: 2.5 WHEEL: ARC SWAY BAR: 2.3mm DROOP: 134mm NOTES: Body / Wing: **OFFSET** Shocks: BODY MAKE: stock OIL: 600 CST **BRAND: Kit** WING MAKE: stock PISTON: 4x1.2 + 4x1.3 SPRING: TKR6082 WING MOUNT POSITION: STANDARD: +7mm: + 12mm: 🔾 REBOUND: 50% BUILD: bladder Notes: D" Block: (Rear Toe) (2.5° with center dot inserts) (Anti-Squat) (1.5° with center dot inserts) Rear Hub / Wheelbase: Arm Inserts: (Roll Center) (Shims) 1(L+) **(** (Right Arm) (Thick - 2mm) 2(L) (Thin - 1mm) 3(M)

|5mm|

0mm

**FRONT** 

### **Radio Information**

### Please read thoroughly

The Tekno RC ET48 2.0 is built out of the box with a neutral setup but is highly tunable to your individual driving needs. Before you start changing your setup on the car itself, it's best to ensure you're getting the best setup out of your radio. It's easy to forget that a lot of simple tuning can be done right from your controller. To help with this, we recommend that you are well informed about setting up your Steering End Points (EPA), Dual Rate (D/R), Exponential Curves, and Servo Speed.

Start by setting your steering EPA such that the vehicle can reach 'full lock' while on the ground. Be careful not to go too far with this setting as it may damage your servo. Drive the vehicle around the track. If you are turning into pipes or losing traction out of a corner, you probably have too much overall steering throw. The simplest way to reduce this is with Dual Rate. Reducing Dual Rate will turn down both the left and right side EPA proportionately without having to adjust the EPA settings independently. D/R is usually pre-assigned to one of the trim buttons on most mid-to-high level radios.

The next setting is 'Expo' or 'Curve'. Expo does not change your EPA or D/R, it simply turns the wheels less around center and ramps up to the end points as you reach full lock on the steering wheel. We would suggest starting at -10%. If you're vehicle still feels "twitchy" around center, dial in more negative expo to continue smoothing everything out. If it starts to feel too numb around center, dial some out.

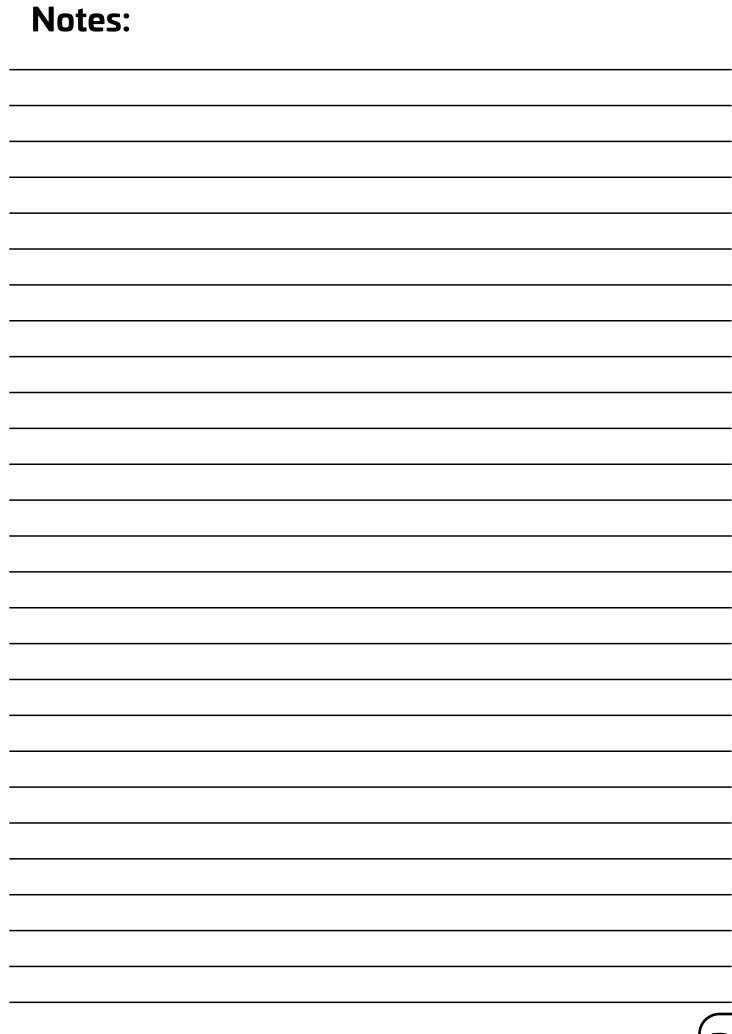
Another valuable and often overlooked radio adjustment is "Servo Speed". Servo Speed allows you to slow the steering servo down from the transmitter resulting in reduced twitchiness. We like to set this at around -10 to start. If you find that it's too lazy, increase the servo speed slightly and run a few more laps. Repeat as necessary until the steering response feels natural without delay.

After setting the servo speed you might find that you need to go back and adjust the expo setting. This is normal, it might take a few adjustments of each to achieve the proper steering "feel" to suit your driving style and track conditions.

The last setting to look at would be your brake end point or brake dual rate. Having brakes set correctly, can gain you tenths on the track and improve your consistency. Start by calibrating your ESC with your throttle/brake end points at 100%. Once on the track, try turning the brake end point/dual rate down to 80%. Under maximum braking you'll want your tires to be as close as possible to locking up without them actually doing it. Keep adjusting the setting up or down until you find the spot that works best. Keep in mind that this setting will change from track to track and even throughout the day as conditions will vary. (Be aware this setting will also affect your maximum reverse speed if you are using reverse.)

With these five settings, you should be able to make your vehicle more consistent and easier to drive, lap after lap, assuming the rest of the vehicle setup is close for your particular track. Of course there are many other factors and setup options to tune on your vehicle, but sometimes all you need is a small radio adjustment to keep you headed in the right direction.

| Notes: |  |  |  |
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