



NT48 22

**BUILDING
INSTRUCTIONS**

Introduction



NT48 2.2

Thank you for purchasing the Tekno RC NT48 2.2 1/8th 4WD competition nitro 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
- .21 nitro engine, tuned pipe, manifold and glow plug
- High torque steering & brake servos (at least 300 oz/in)
- RX battery, switch and harness
- 1/8th scale truggy tires, wheels & CA glue (or premounts)
- Fuel bottle, fuel, 1/8th buggy starter box and glow ignitor

Tools needed:

- Hex drivers 1.5mm, 2.0mm, 2.5mm
- Nut drivers 5.0mm, 5.5mm, 7.0mm
- Hobby knife
- Needle-nose pliers
- Shock tool (TKR1115) OR adjustable (Crescent) wrench (for shock assembly)
- 17mm Wheel Wrench (TKR1116/TKR1116B)
- 4mm turnbuckle wrench (TKR1103) - 5.5/7.0 two sided wrench (TKR1119)

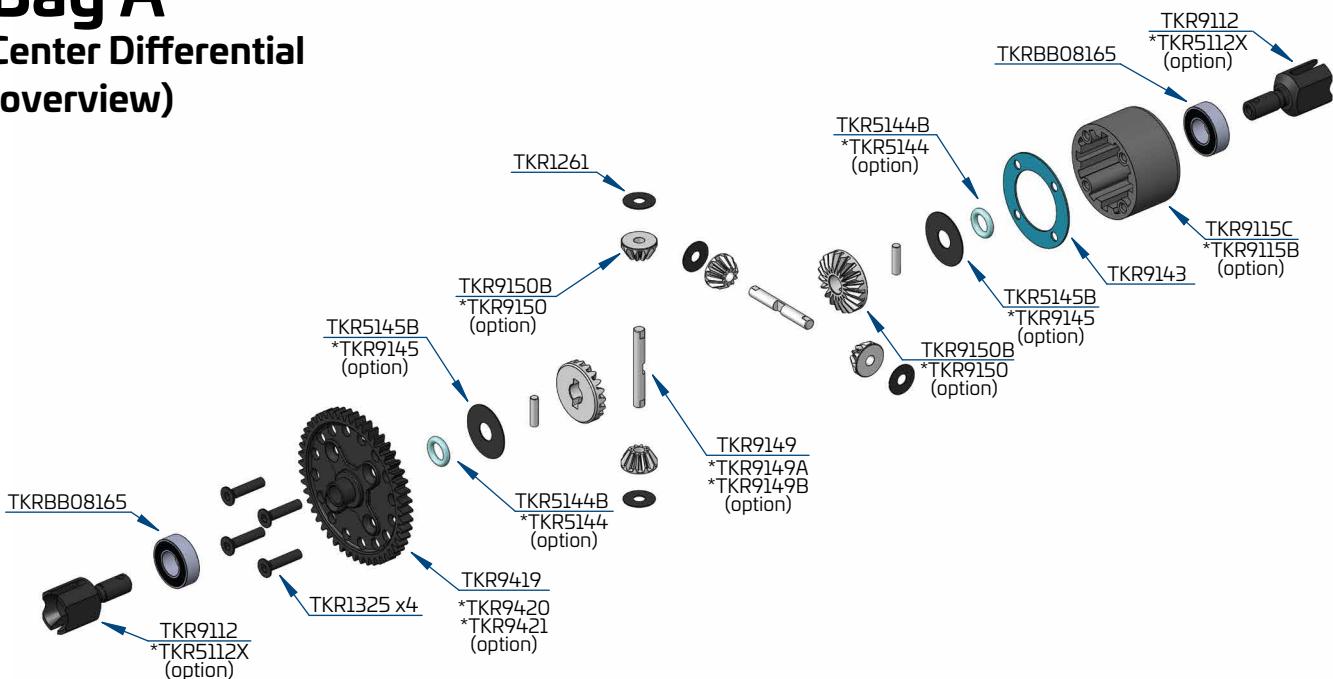
Disclaimer: Tekno RC is not responsible or liable for any property or personal damage, loss, or injury incurred as a result of using this product. This kit is meant for use by persons 14 years of age or older and in the strict confines of a legally permitted RC track or facility.

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.

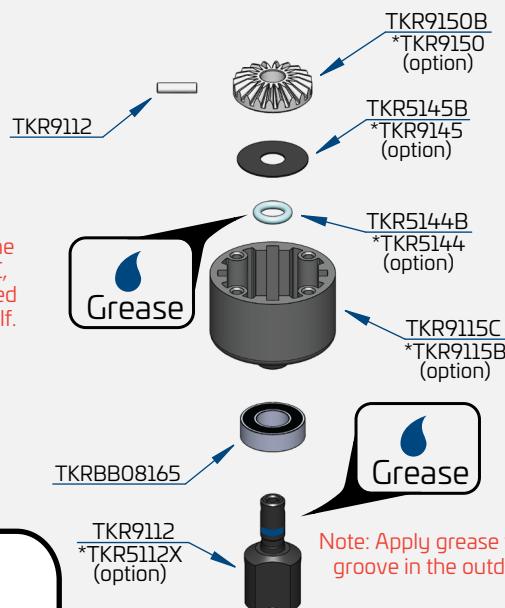
Warranty: We warrant that the parts included in this kit are free from defects. If you find a defective part in your kit, please contact us at info@teknorc.com and we will help to resolve the issue. If you modify any part prior to contacting us, the warranty claim will be void. We do not warranty parts 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

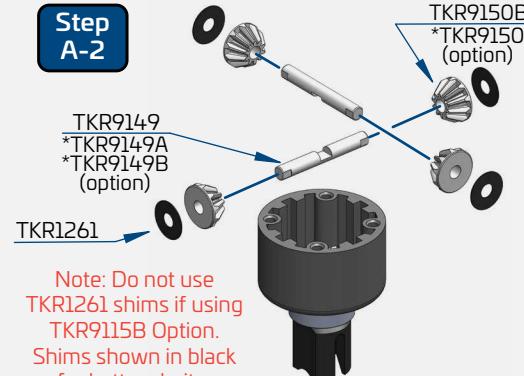
Center Differential (overview)



Step A-1

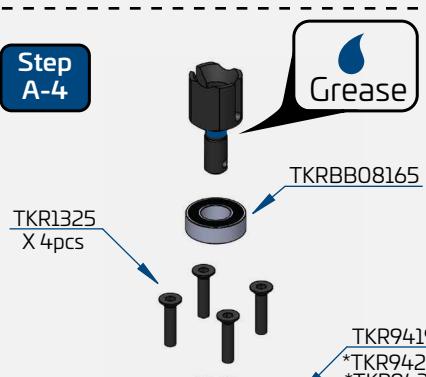


Note: Apply grease to the recess inside TKR9115C, where the o-ring is placed as well as the o-ring itself.



Note: Do not use
TKR1261 shims if using
TKR9115B Option.
Shims shown in black
for better clarity.

Step A-4



Note: Apply grease to the groove in the outdrive

The image displays a list of required parts for a build, each accompanied by a small icon:

- TKR1325 M3x14mm Flat Head Screw (x4)
- TKR5144B Differential O-rings (x2)
- TKR1261 Differential Shims (3.5x9.0x0.2mm) (x2)
- TKR5145B Differential Shims (6x17mm) (x2)
- TKRB08165 Ball Bearing (8x16x5) (x2)

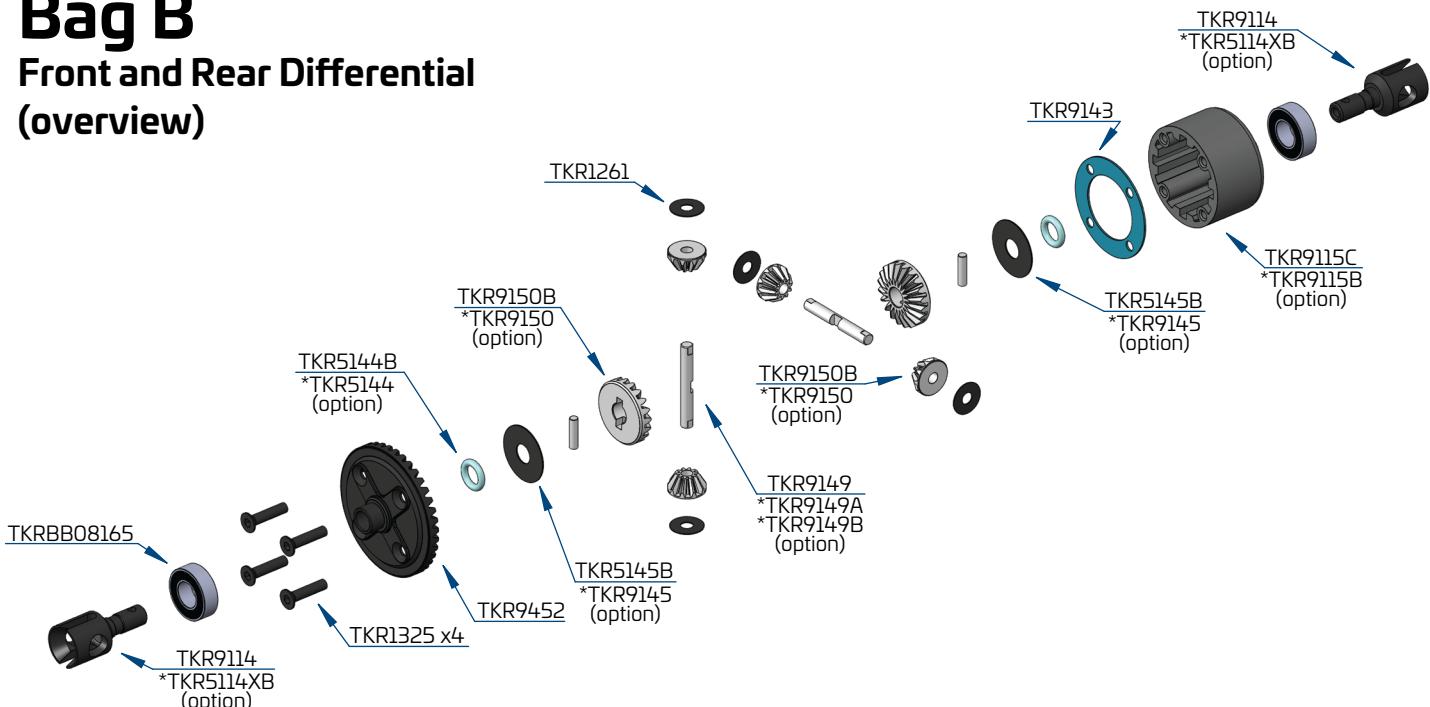
**Step
A-3**



**Fill with #10,000 CST oil to
1mm below full
DO NOT OVER FILL**

Bag B

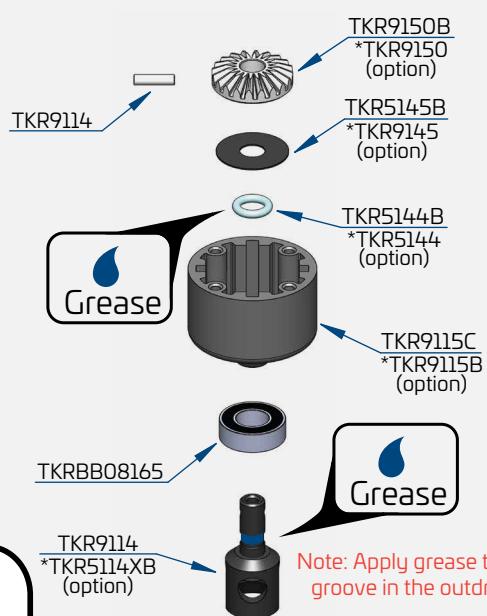
Front and Rear Differential (overview)



Step B-1

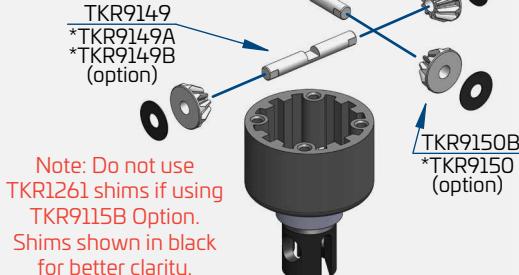
Repeat for rear diff

Note: Apply grease to the recess inside TKR9115C, where the o-ring is placed as well as the o-ring itself.



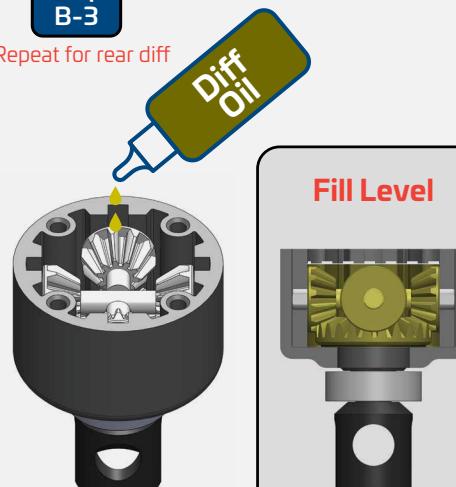
Step B-2

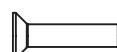
Repeat for rear diff



Step B-3

Repeat for rear diff



 x8

TKR1325
M3x14mm Flat Head Screw

 x4

TKR5144B
Differential O-rings

 x8

TKR1261
Differential Shims (3.5x9.0x0.2mm)

 x4

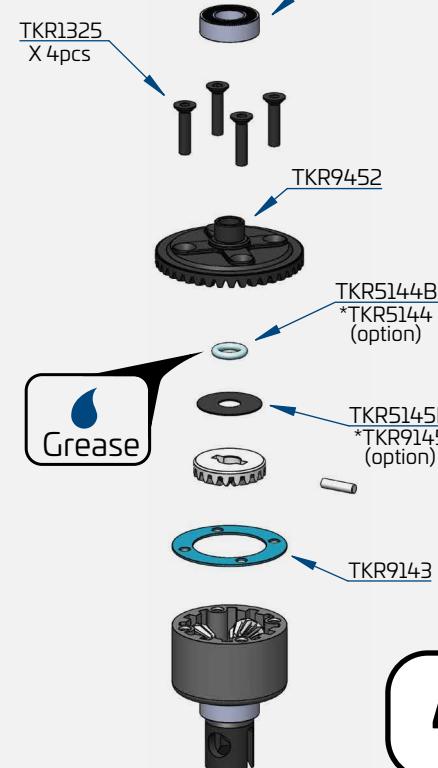
TKR5145B
Differential Shims (6x17mm)

 x4

TKRBB08165
Ball Bearing (8x16x5)

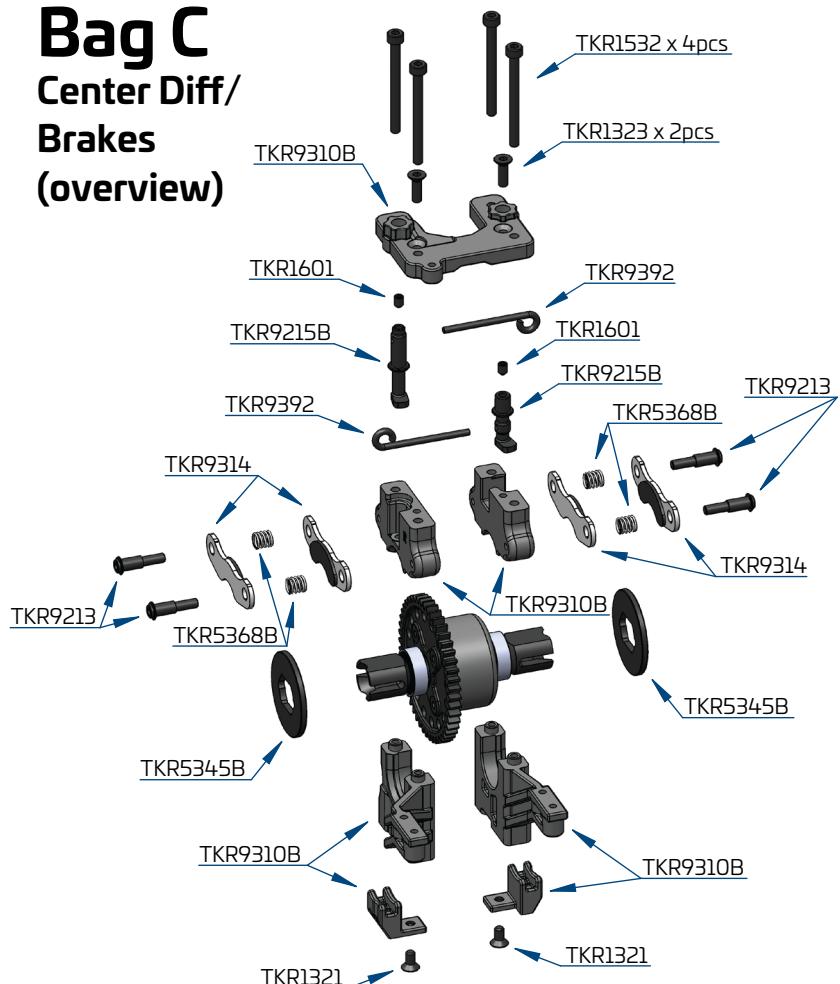
Step B-4

Repeat for rear diff

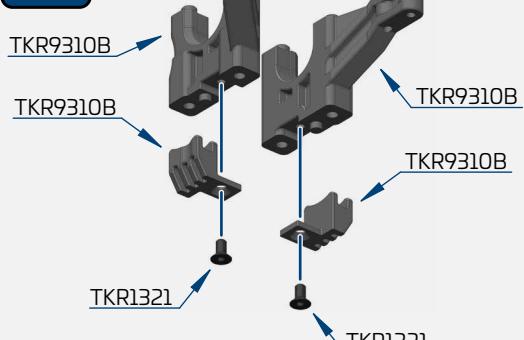


Bag C

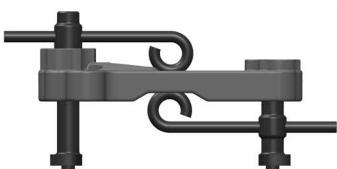
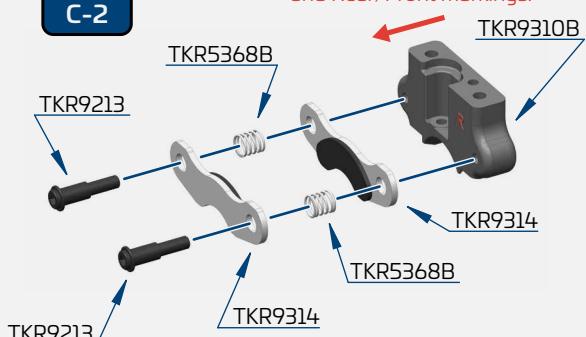
Center Diff/ Brakes (overview)



Step C-1

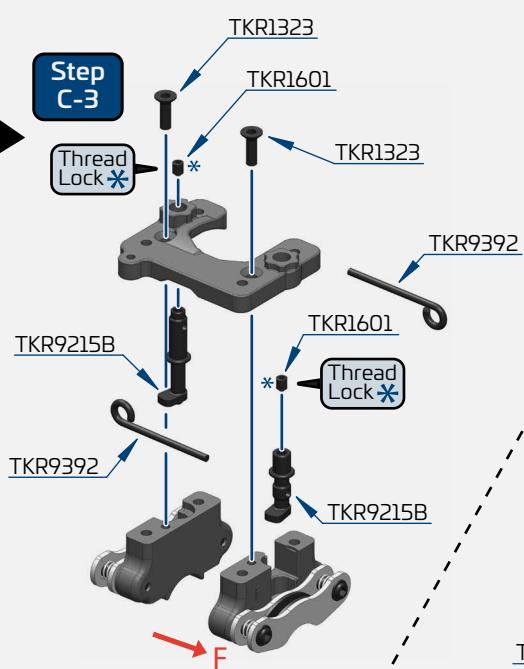


Step C-2

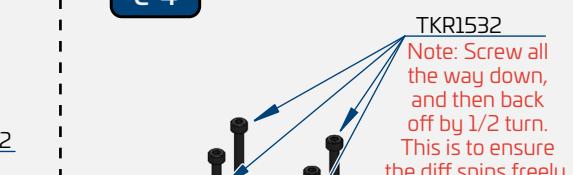


Note: Align levers as shown here.

Step C-3



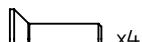
Step C-4



TKR1321
M3x6mm Flat Head Screw



TKR1323
M3x10mm Flat Head Screw



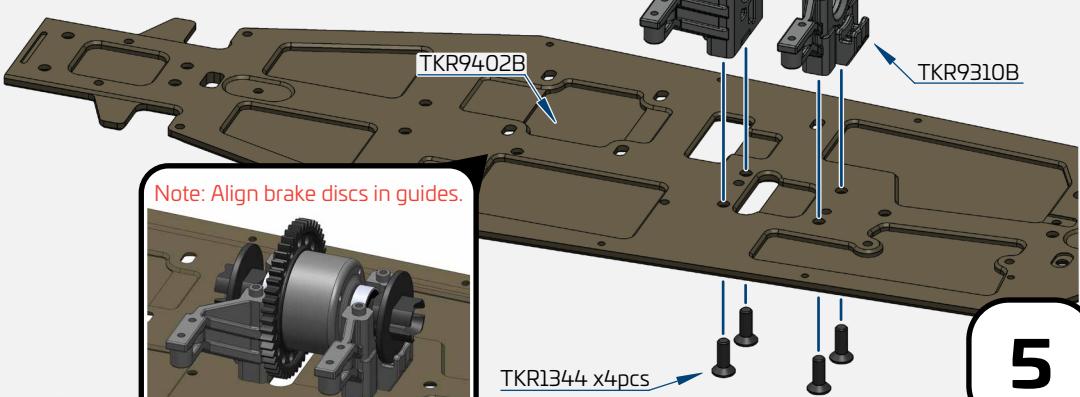
TKR1344
M4x12mm Flat Head Screw



TKR1532
M3x35mm Cap Head Screw

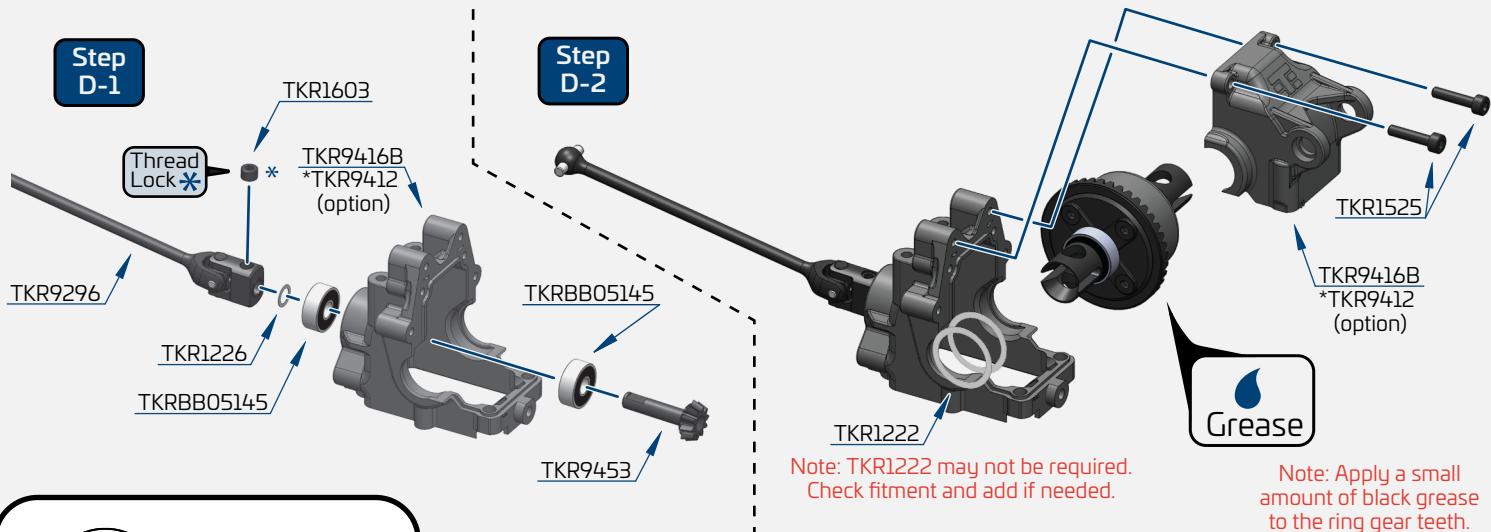
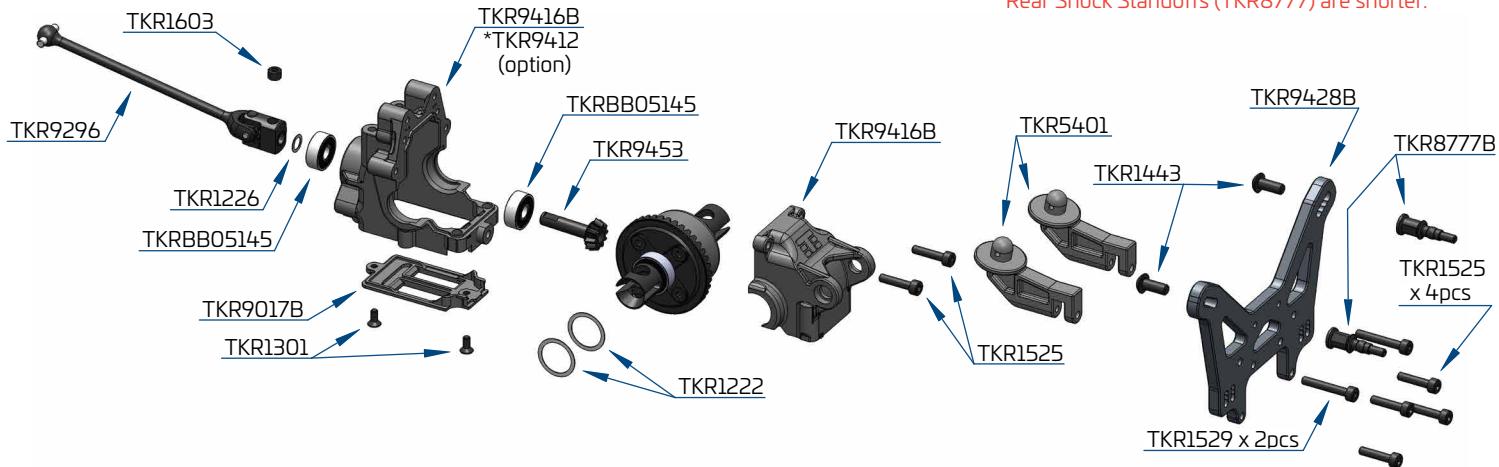


TKR1601
M3x4mm Set Screw

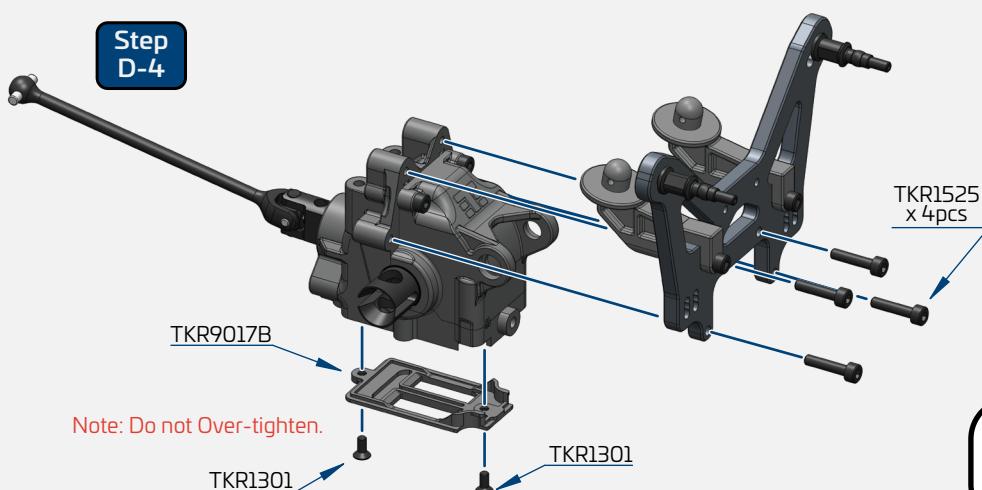


Bag D Front Gearbox (overview)

Note: Front Shock Standoffs (TKR8777B) are longer
Rear Shock Standoffs (TKR8777) are shorter.

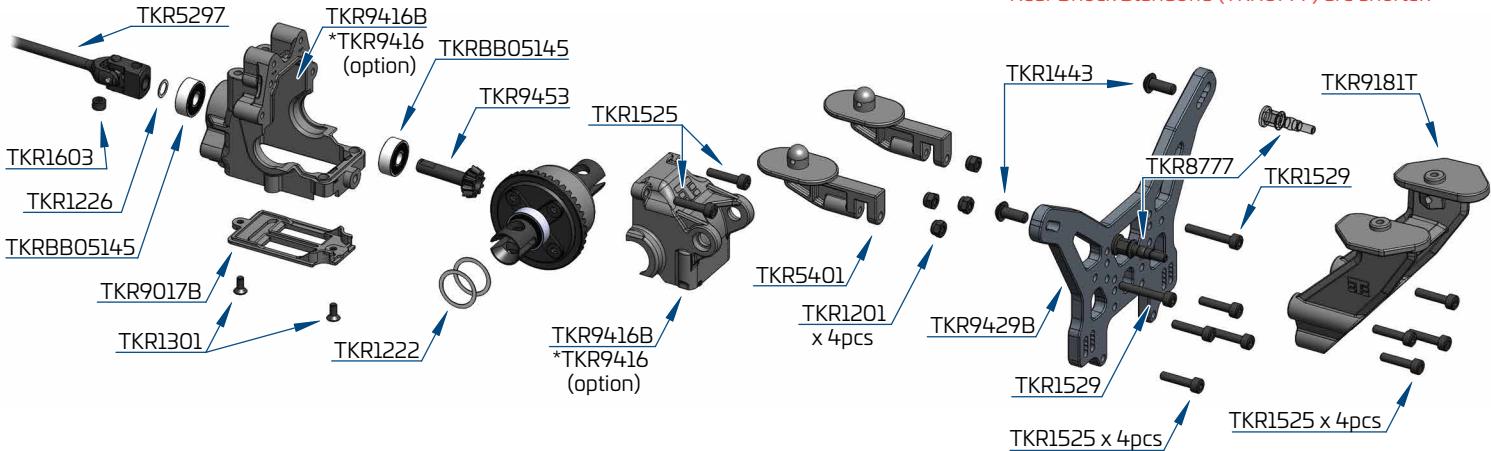


	x2
TKR1222	13x16x.1mm Shim
	x1
TKR1226	M5x7x.2mm Shim
	x2
TKR1301	M2.5x6mm Flat Head Screw
	x2
TKR1443	M4x10mm Button Head Screw
	x6
TKR1525	M3x14mm Cap Head Screw
	x2
TKR1529	M3x20mm Cap Head Screw
	x1
TKR1603	M5x4mm Set Screw
	x2
TKRBB05145	Ball Bearing (5x14x5)

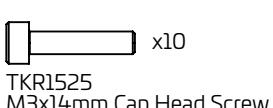
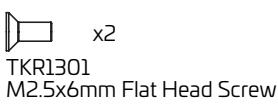
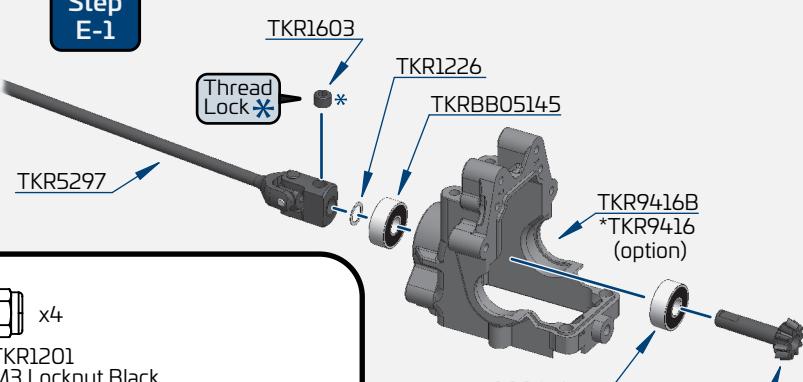


Bag E Rear Gearbox (overview)

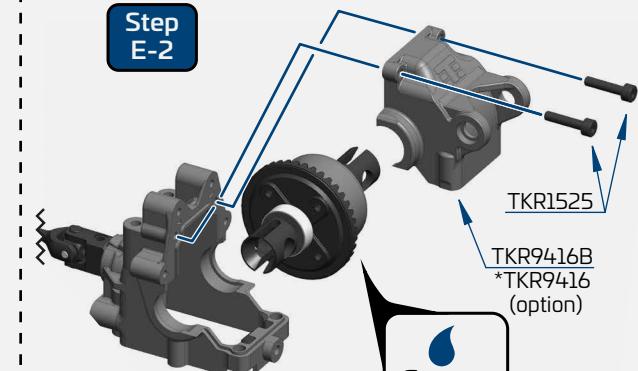
Note: Front Shock Standoffs (TKR8777B) are longer
Rear Shock Standoffs (TKR8777) are shorter.



Step
E-1



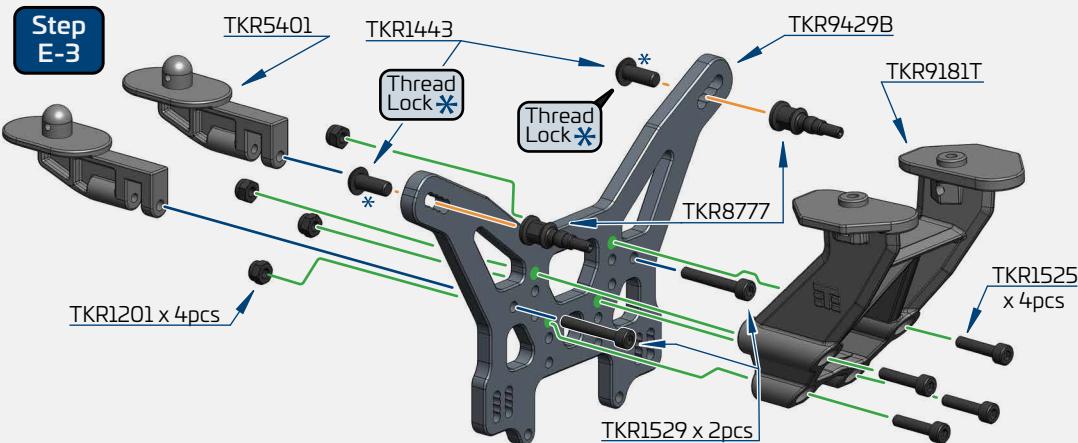
Step
E-2



Note: Use TKR1222 (included) to fine tune ring/pinion gear mesh if needed.

Note: Apply a small amount of black grease to the ring gear teeth.

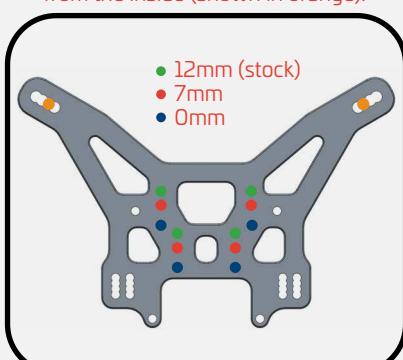
Step
E-3



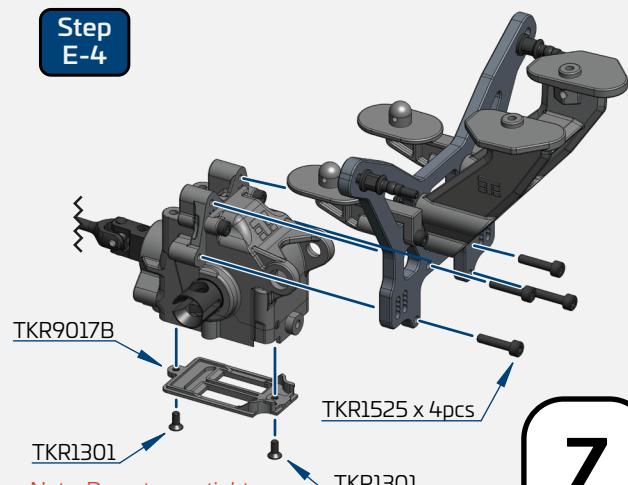
Note: Wing mount height is now
adjustable by moving it up or down
on the tower.

Note: Stock position is +12mm.

Note: Stock shock position is 2nd from the inside (shown in orange).



Step
E-4

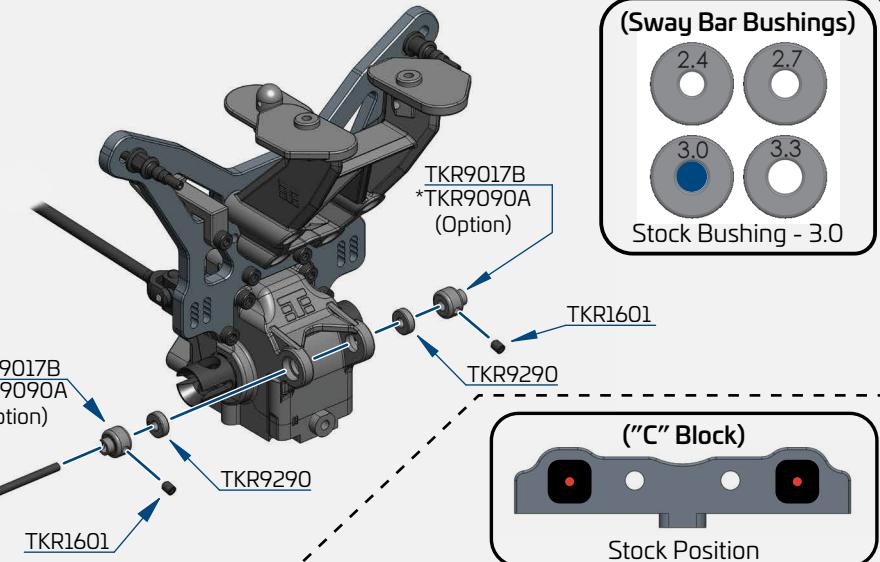


Bag F

Rear End Assembly

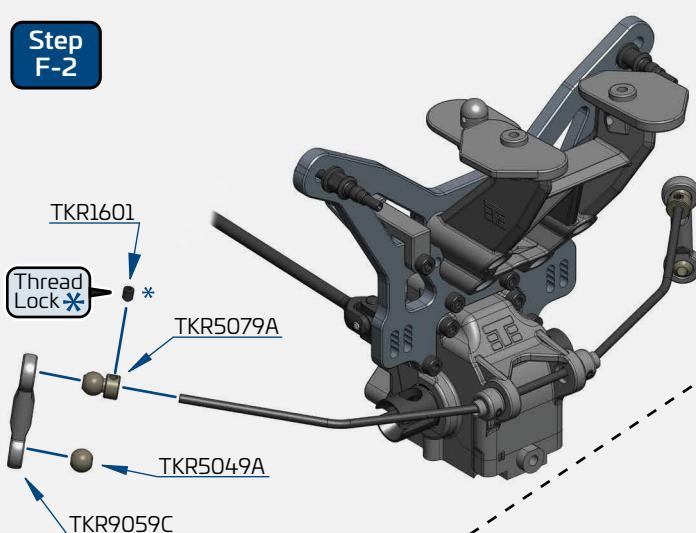
Step F-1

Optional Sway Bars (sold separately)
 *TKR9494 - 1.6, 1.7, 1.8, 1.9, 2.0mm
 *TKR9495 - 2.1, 2.2, 2.3, 2.4, 2.5mm
 *TKR9496 - 2.6, 2.7, 2.8, 2.9, 3.0mm

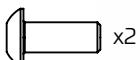
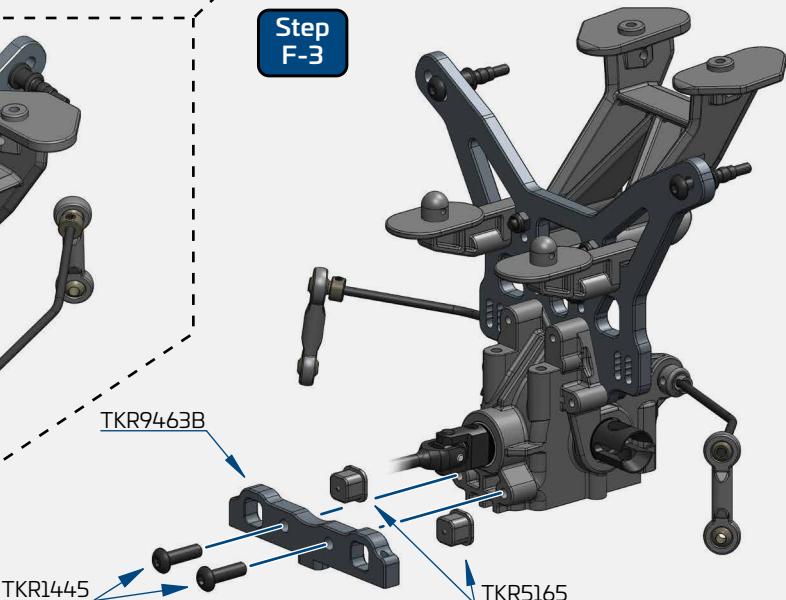


Note: Swaybar bushings allow you to accurately set the amount of deadband your swaybars have. In general, more deadband (larger diameter bushings) work better on rough tracks and less deadband (smaller diameter bushings) work better on smooth tracks. Typically you'll want the bushing diameter to be ~0.3mm - 0.6mm larger than the swaybar's diameter.

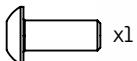
Step F-2



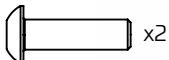
Step F-3



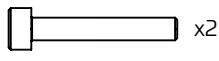
TKR1238
M4x10mm Droop Screw



TKR1443
M4x10mm Button Head Screw



TKR1445
M4x14mm Button Head Screw

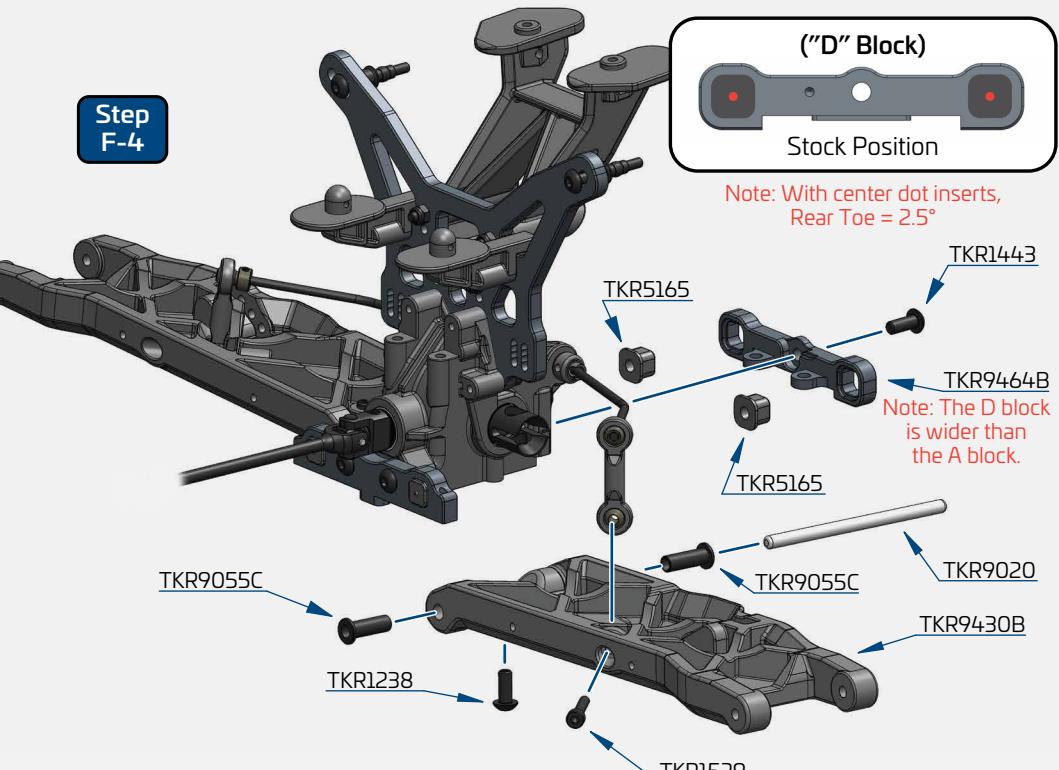


TKR1529
M3x20mm Cap Head Screw



TKR1601
M3x4mm Set Screw

Step F-4



Bag G

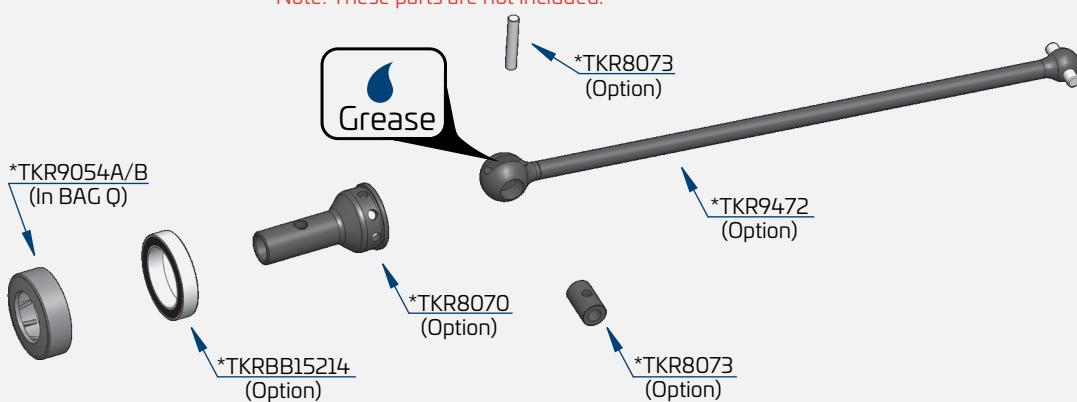
Rear Hub/Camber Link

Step G-1

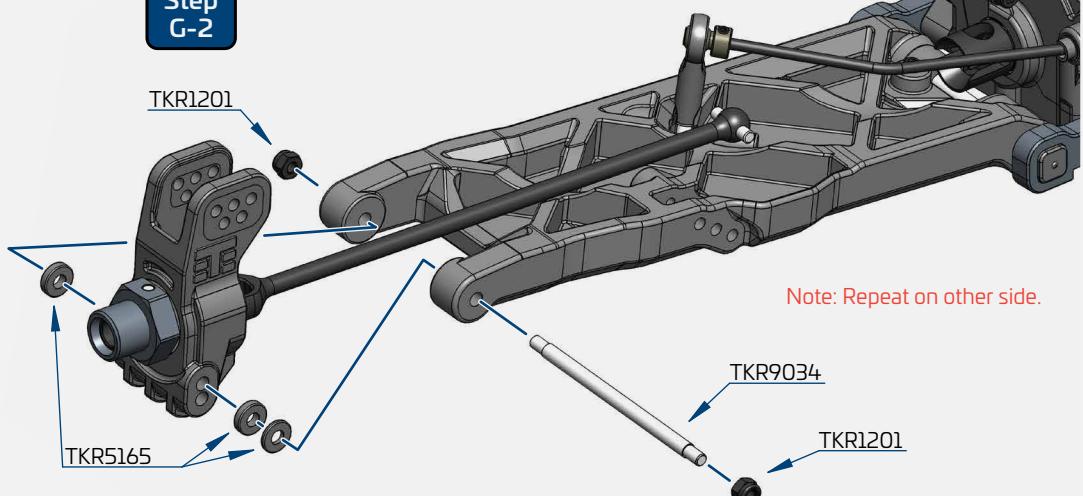


Optional CVD Setup

Note: These parts are not included.



Step G-2



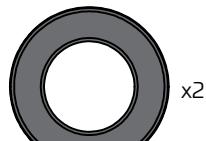
TKR1201
M3 Locknut Black



TKR1603
M5x4mm Set Screw

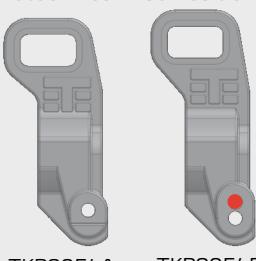


TKRBB08165F
Flanged Ball Bearing (8x16x5)

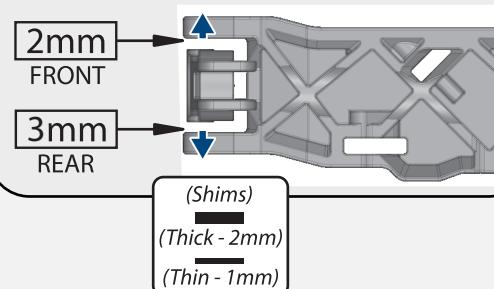


TKRBB12215
Ball Bearing (12x21x5)

Stock Rear Hub Position



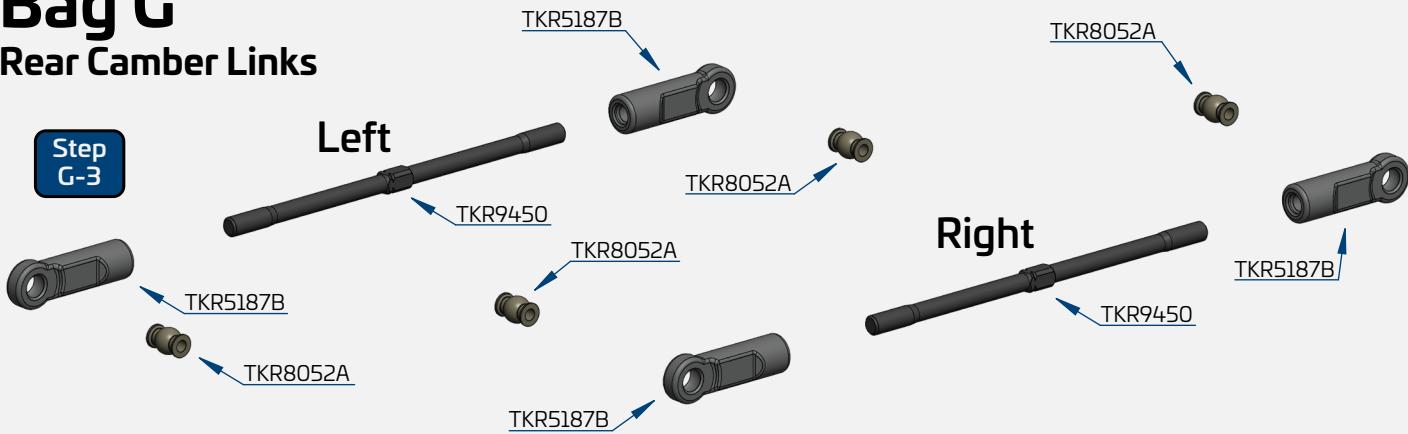
Stock Wheelbase Position



Bag G

Rear Camber Links

**Step
G-3**



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.

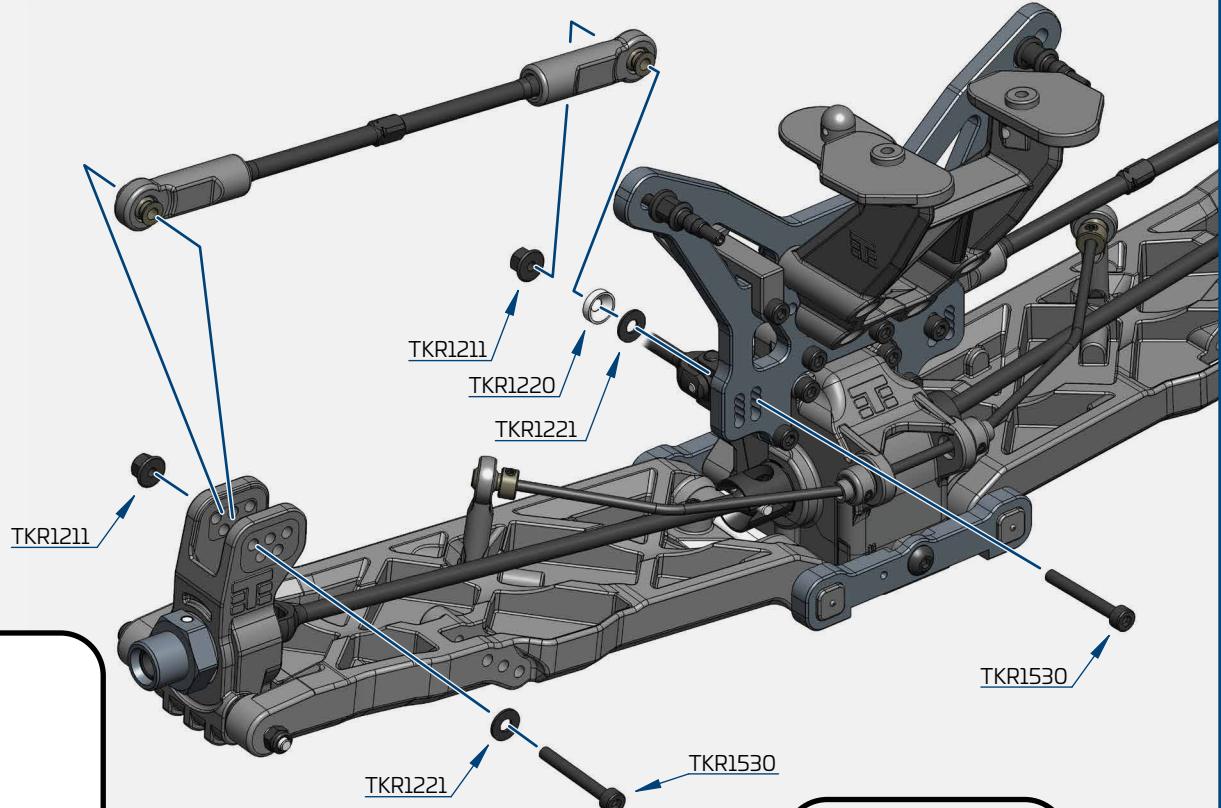
Build Tip: Use some grease or Chapstick to make assembly and future adjustments easier.

Note: Notch always goes on left side of vehicle.

Actual Size



**Step
G-4**



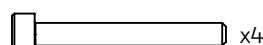
x4
TKR1211
M3 Lock Nut Flange Black



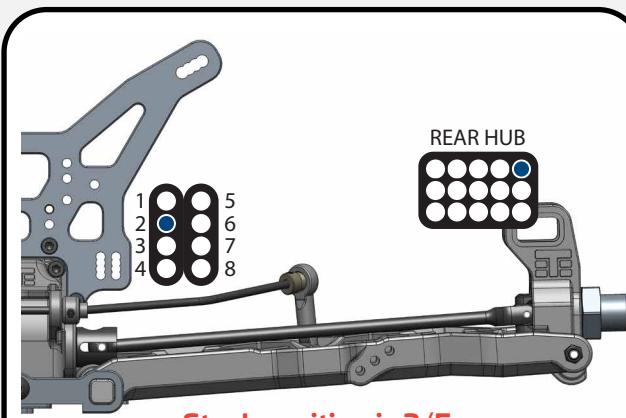
x2
TKR1220
M3 Countersunk Washer



x4
TKR1221
M3x8mm Washer



x4
TKR1530
M3x25mm Cap Head Screw



HUB INSERTS



Bag H

Front End Assembly

Step H-1

Optional Sway Bars
(sold separately)

- *TKR9484 - 1.6, 1.7, 1.8, 1.9, 2.0mm
- *TKR9485 - 2.1, 2.2, 2.3, 2.4, 2.5mm
- *TKR9486 - 2.6, 2.7, 2.8, 2.9, 3.0mm

TKR9017B
*TKR9090A
(Option)

TKR1601

TKR9290

TKR9485 - 2.3mm

TKR9017B
*TKR9090A
(Option)

TKR9290

TKR1601

Note: Swaybar bushings allow you to accurately set the amount of deadband your swaybars have. In general, more deadband (larger diameter bushings) work better on rough tracks and less deadband (smaller diameter bushings) work better on smooth tracks. Typically you'll want the bushing diameter to be ~0.3mm - 0.6mm larger than the swaybar's diameter.

Stock Bushing - 2.7

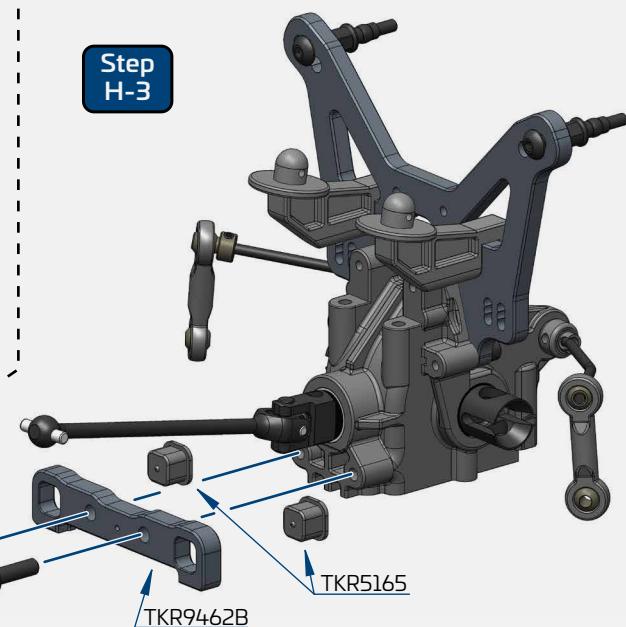
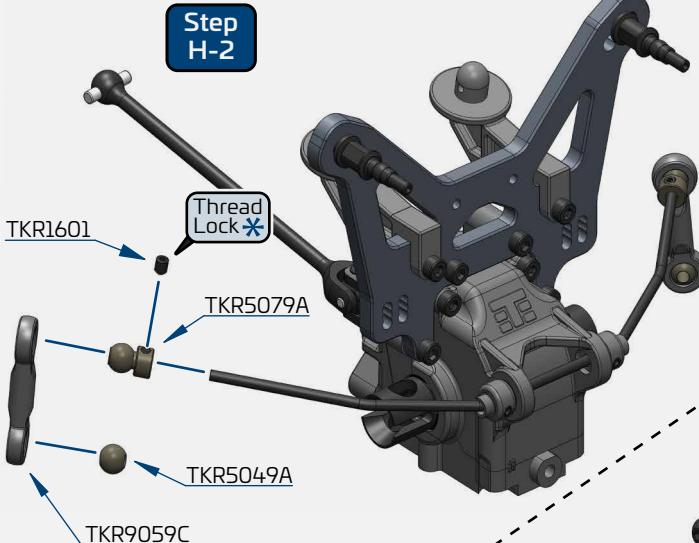
2.4 2.7
3.0 3.3

Stock Position

("B" Block)

Step H-2

Step H-3

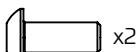


Step H-4

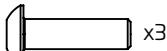
Note: With center dot inserts,
Arm Sweep = 0°

("A" Block)

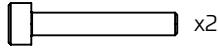
Stock Position



TKR1238
M4x10mm Droop Screw



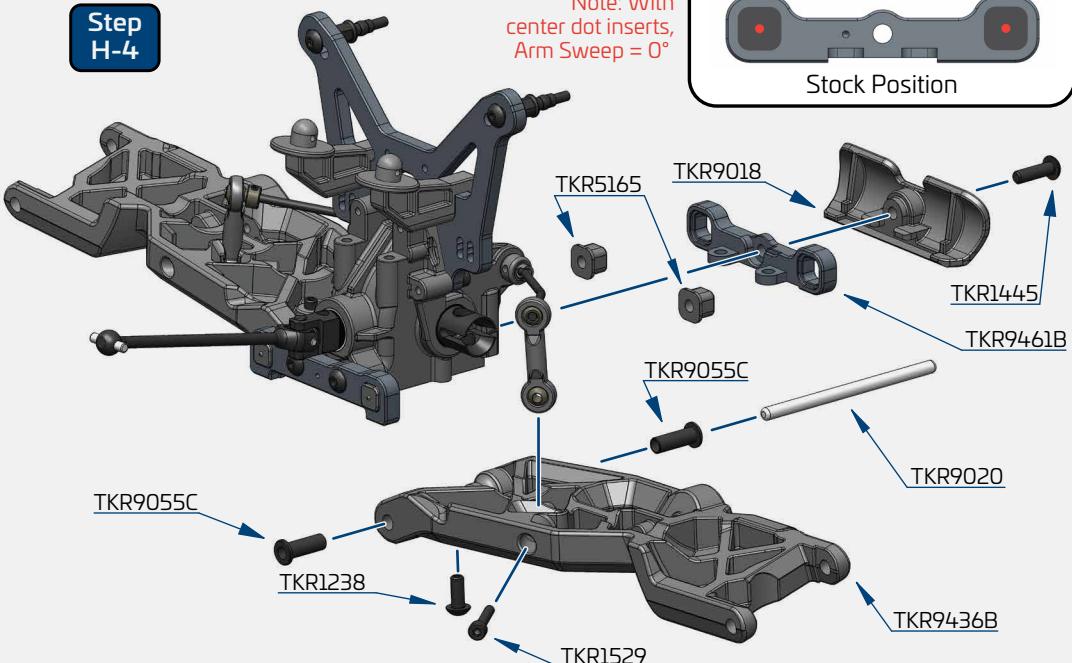
TKR1445
M4x14mm Button Head Screw



TKR1529
M3x20mm Cap Head Screw



TKR1601
M3x4mm Set Screw



0°
(OFFSET)

.5°

1°

.5°

1°

.5°

1°

Bag I

Front Spindle & Carrier Assembly

Step
I-1

Note: Make left and right side assemblies.



Step
I-2

x4
TKR1404 M3x12mm Button Head Screw

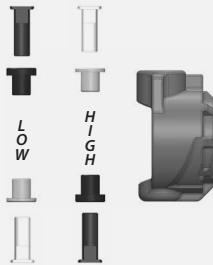
x8
TKR1420 M3x5mm Button Head Screw

x2
TKR1603 M5x4mm Set Screw

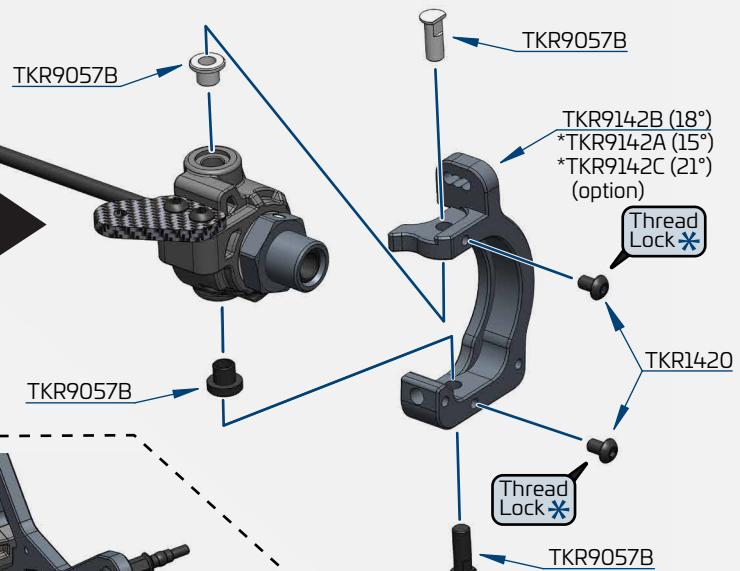
x2
TKRBB08165F Flanged Ball Bearing (8x16x5)

x2
TKRBB12215 Ball Bearing (12x21x5)

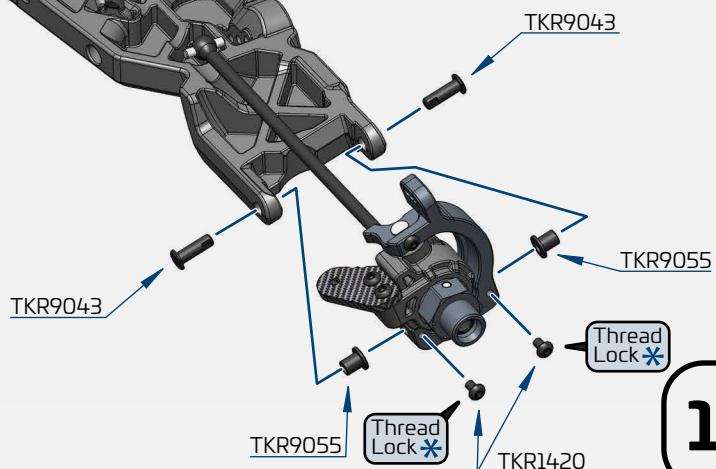
Axle Height



Stock Position is HIGH.
Note: Must use same color sleeve/pins together.



Step
I-3

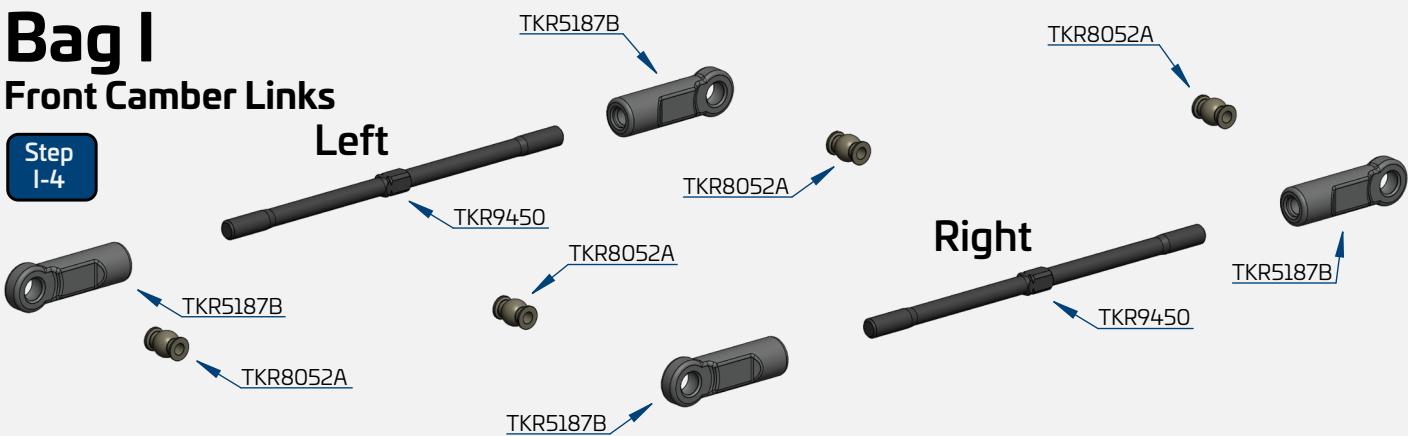


Bag I

Front Camber Links

Step
I-4

Left

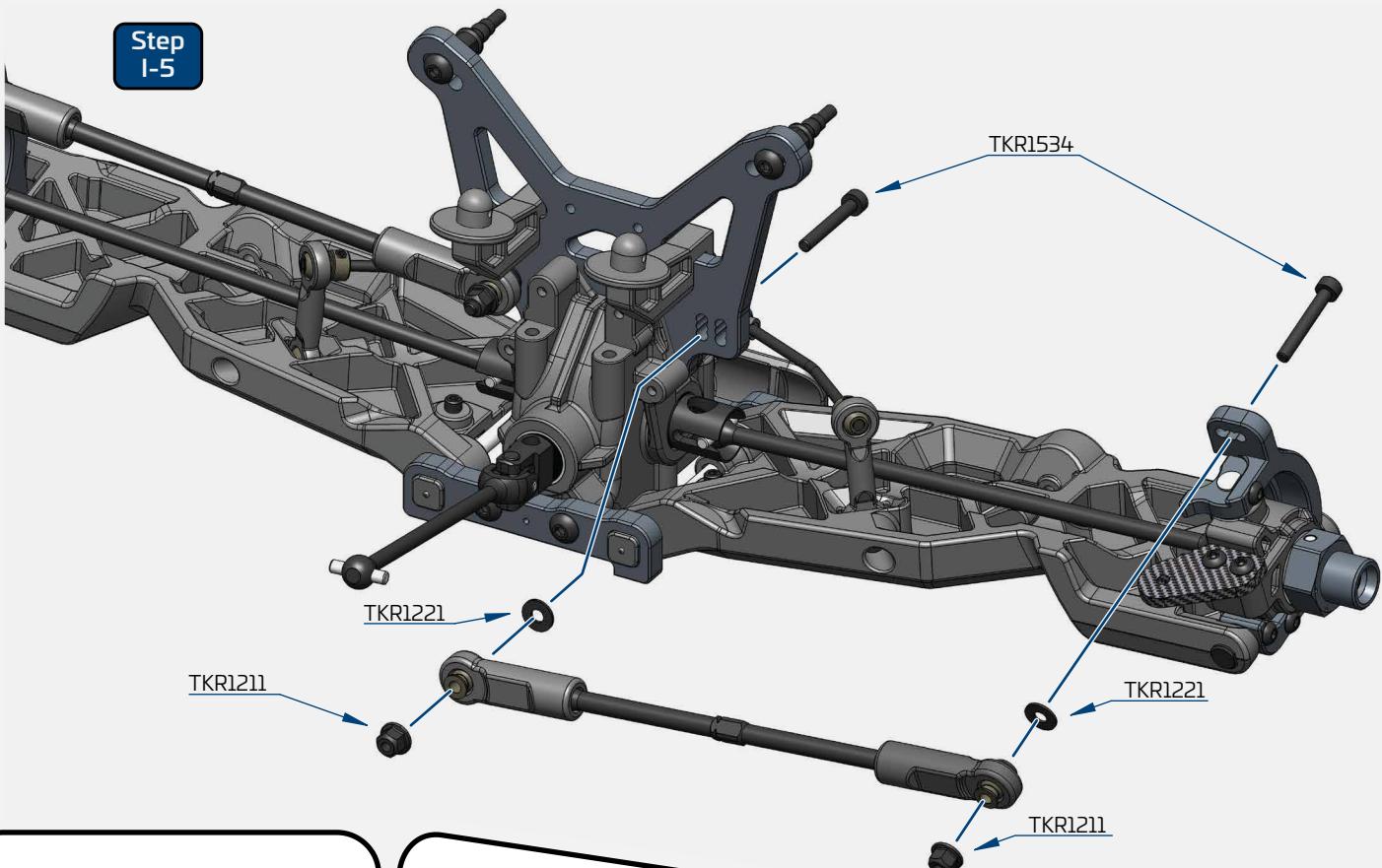


Build Note: Hold the turnbuckle stationary with pliers and push the rod end hard onto the turnbuckle while turning at the same time. Keep in mind that one end of the turnbuckle has normal threads and the other has reverse threads. Start the rod end straight and it will thread on straight.

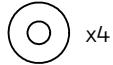


Build Tip: Use some grease or Chapstick to make assembly and future adjustments easier.

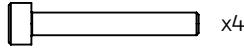
Step
I-5



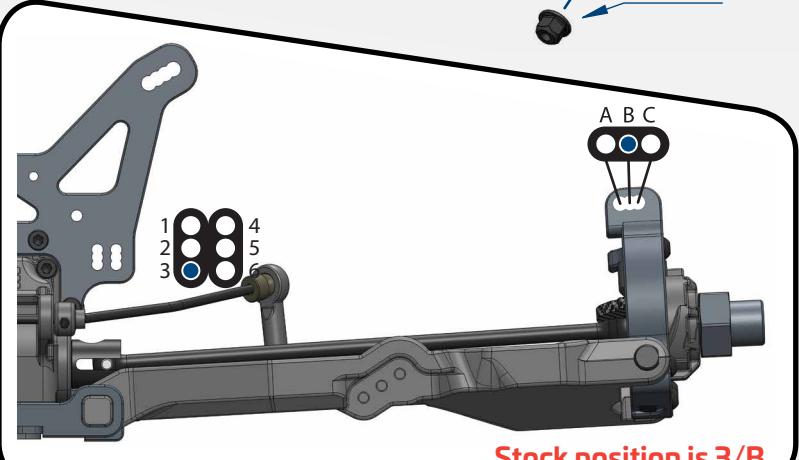
x4
TKR1211
M3 Lock Nut Flange Black



x4
TKR1221
M3x8mm Washer



x4
TKR1534
M3x22mm Cap Head Screw



Stock position is 3/B

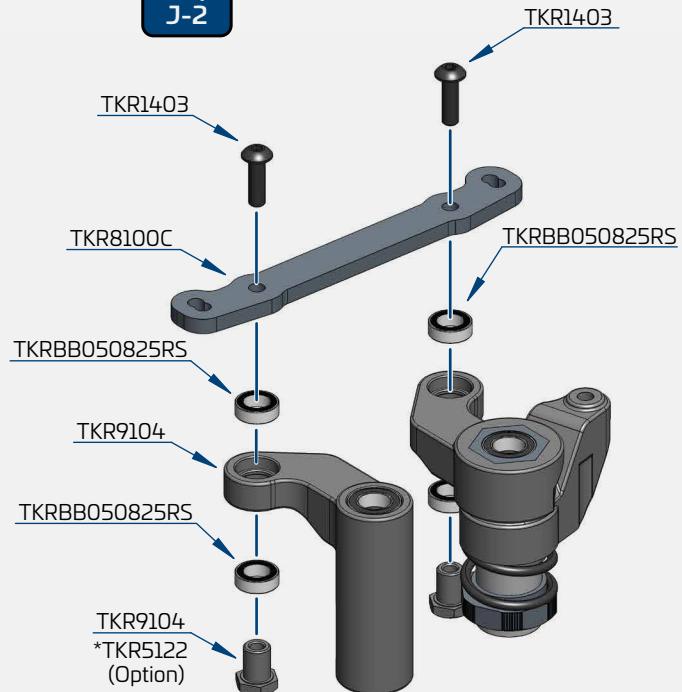
Bag J

Steering Assembly

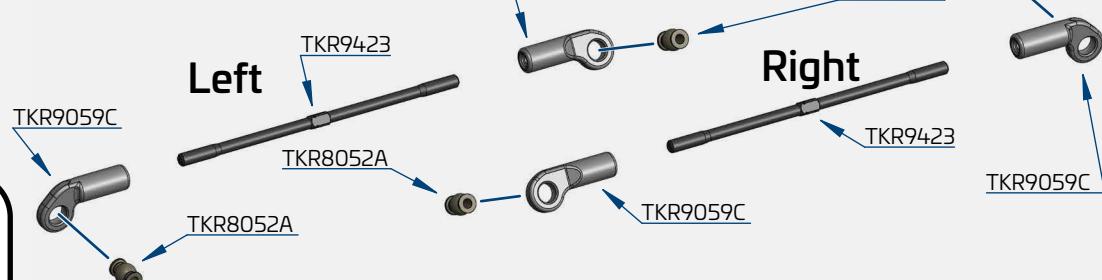
Step J-1



Step J-2



Step J-3



x2
TKR1211 M3 Lock Nut Flange Black

x8
TKR1221 M3x8mm Washer

x2
TKR1403 M3x10mm Button Head Screw

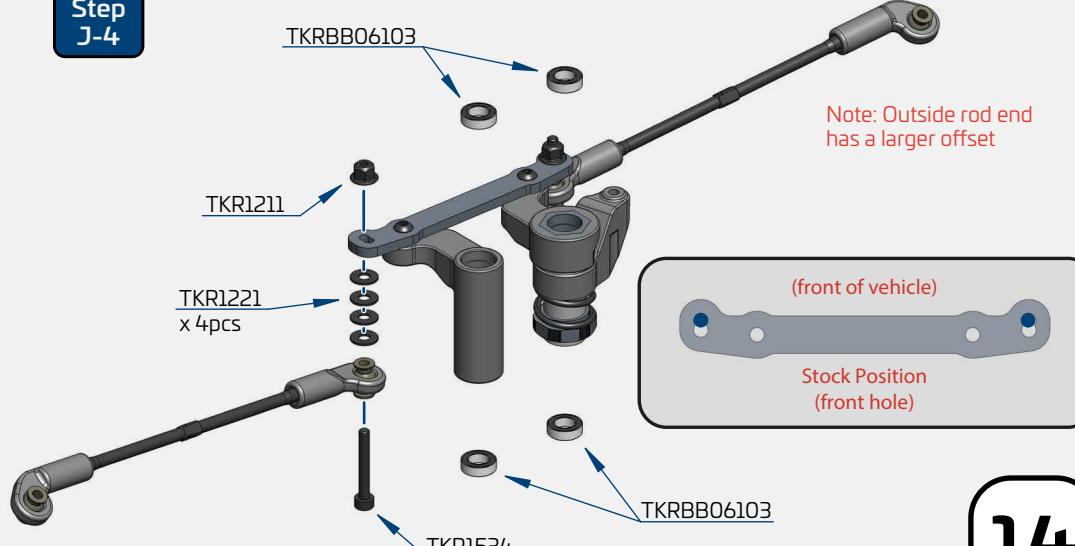
x2
TKR1534 M3x22mm Cap Head Screw

x4
TKRBB050825RS Ball Bearing (5x8x2.5)

x4
TKRBB06103 Ball Bearing (6x10x3)



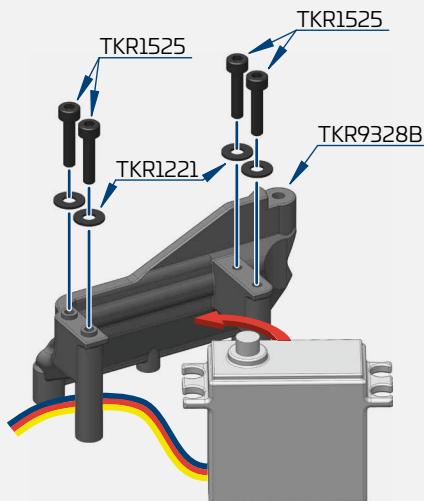
Step J-4



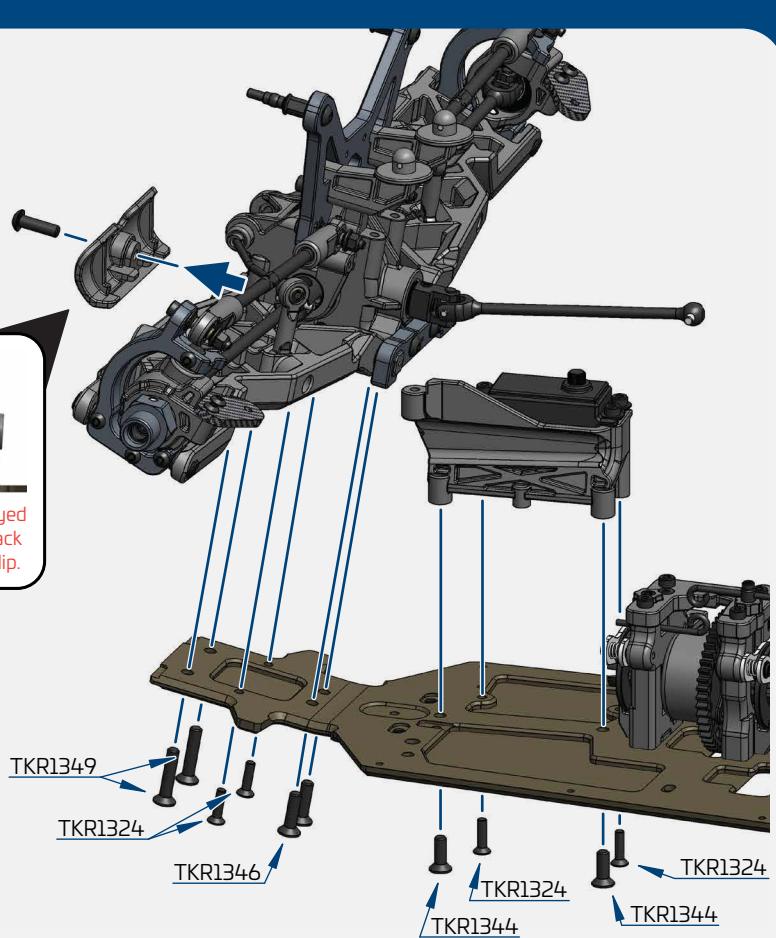
Bag K

Front End Assembly

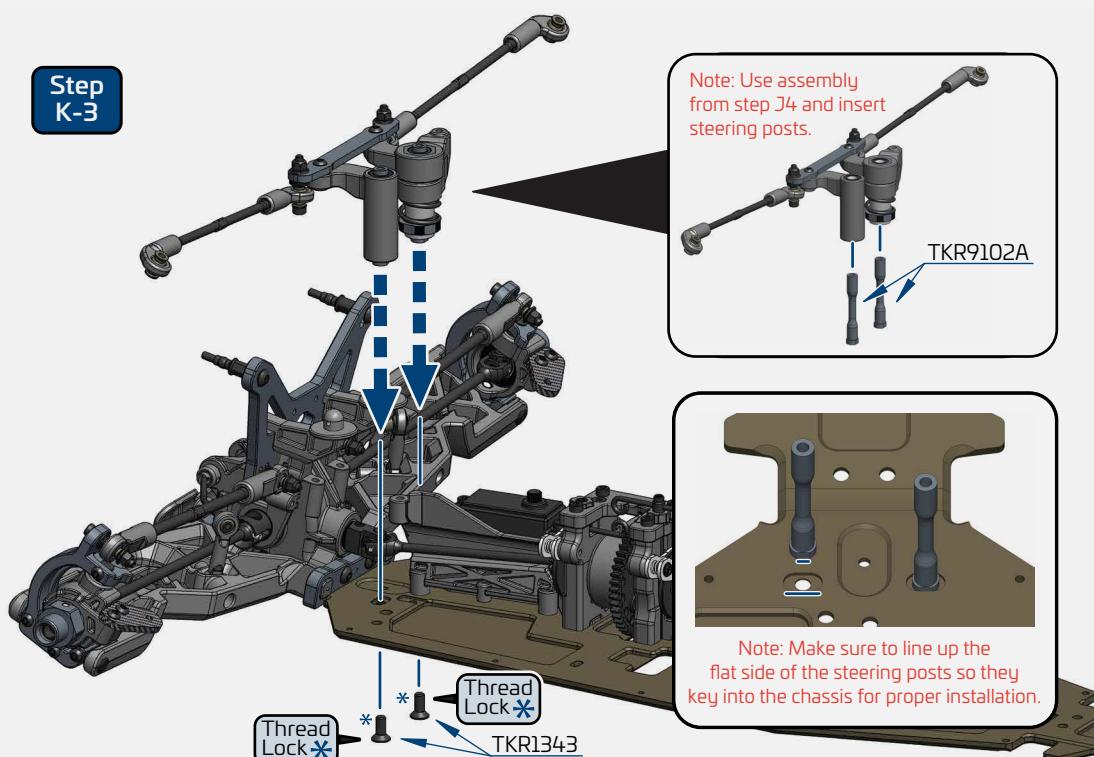
Step K-1



Step K-2

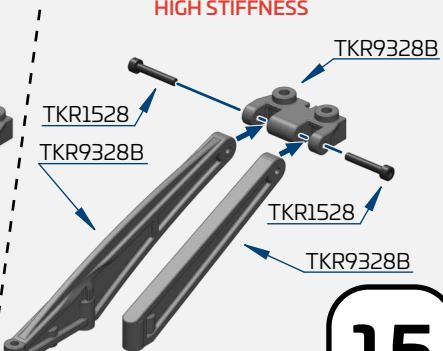
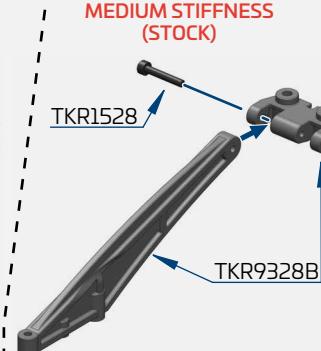
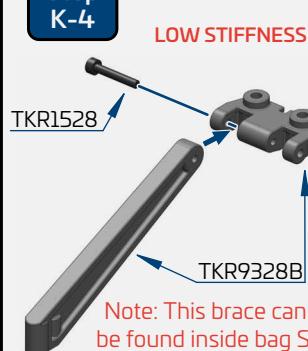


Step K-3



Step K-4

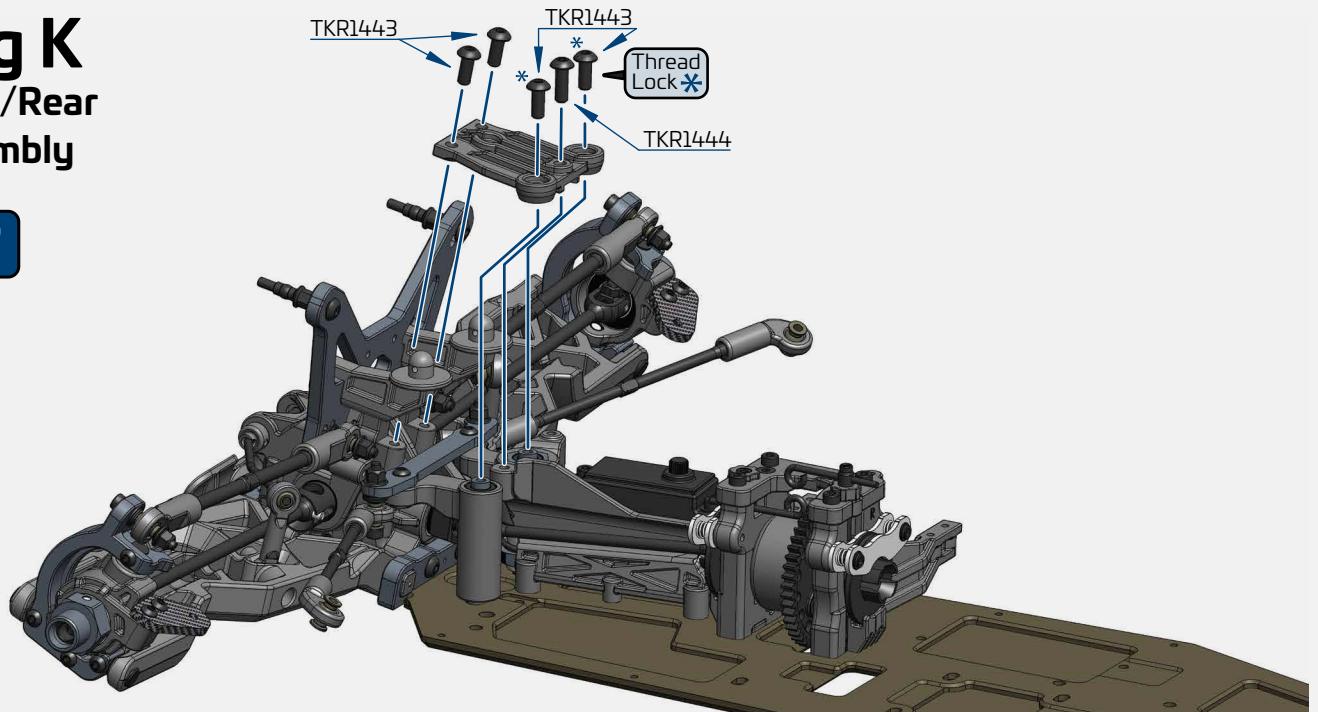
x2	TKR1349 M4x20mm Flat Head Screw
x4	TKR1525 M3x14mm Cap Head Screw
x1	TKR1528 M3x18mm Cap Head Screw



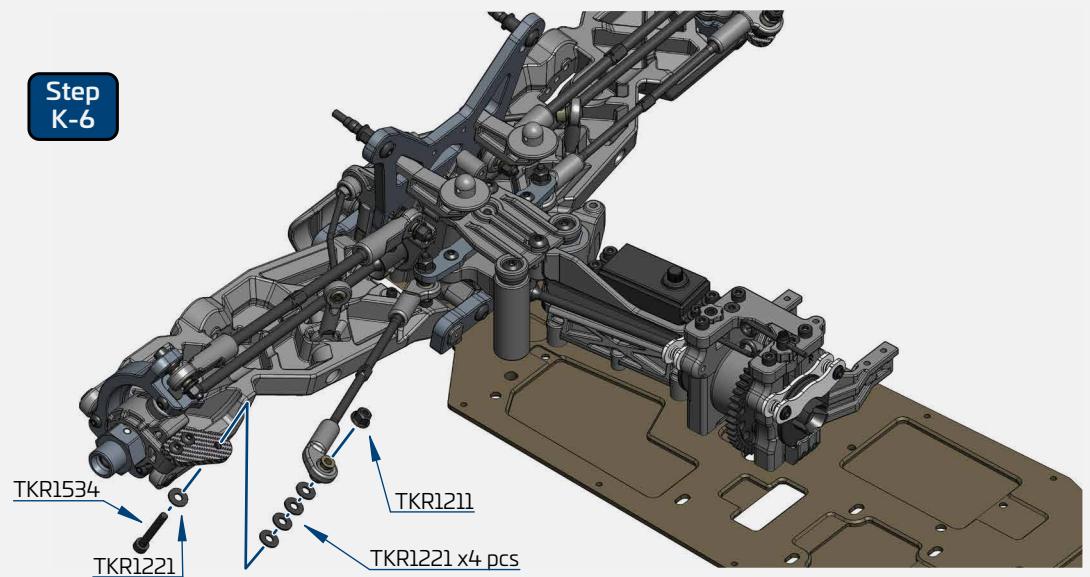
Bag K

Front/Rear Assembly

Step
K-5



Step
K-6



x2
TKR1211
M3 Lock Nut Flange Black

x10
TKR1221
M3x8mm Washer

x4
TKR1324
M3x12mm Flat Head Screw

x2
TKR1344
M4x12mm Flat Head Screw

x2
TKR1346
M4x15mm Flat Head Screw

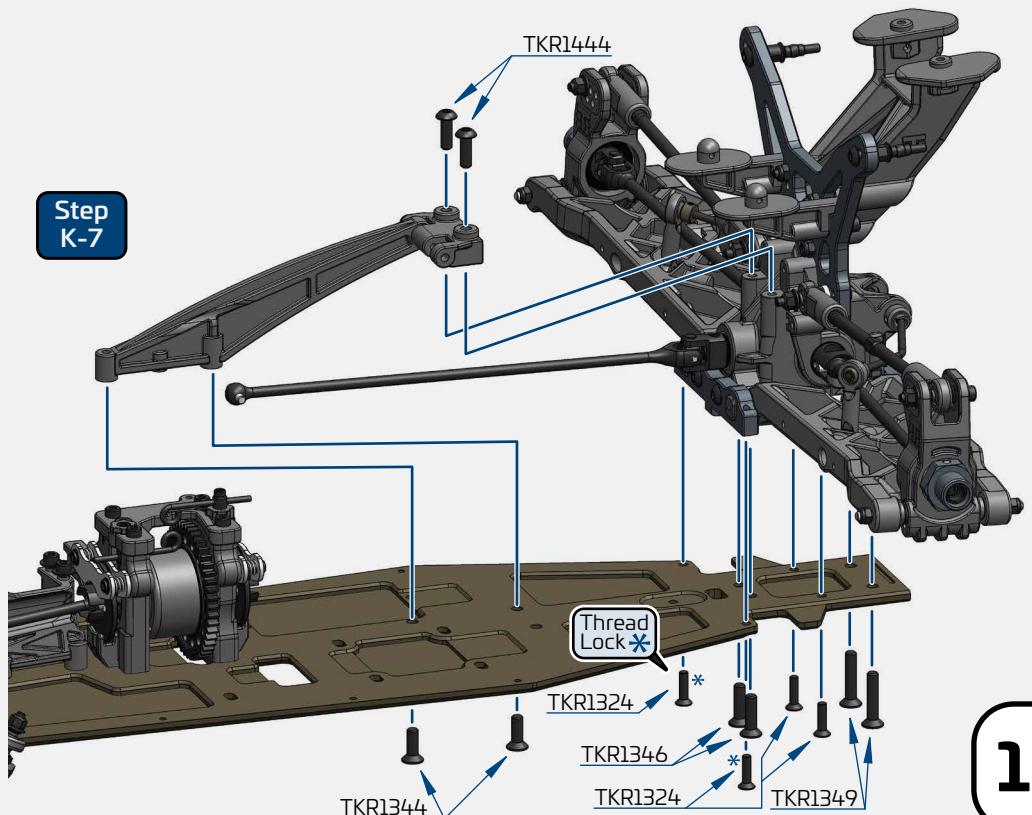
x2
TKR1349
M4x20mm Flat Head Screw

x4
TKR1443
M4x10mm Button Head Screw

x3va
TKR1444
M4x12mm Button Head Screw

TKR1534
M3x22mm Cap Head Screw

Step
K-7



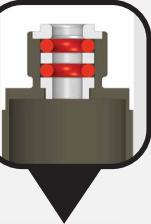
Bag L

Front Shock Assembly

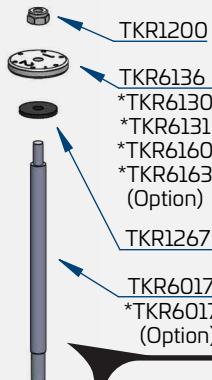
Step L-1

Note: Short end guide used in front shocks.

TKR6015
TKR6195
TKR6009
*TKR6009B (Option)
TKR6195
TKR6009
*TKR6009B (Option)
TKR6195
TKR6009
TKR6016



Step L-2



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



Step L-3

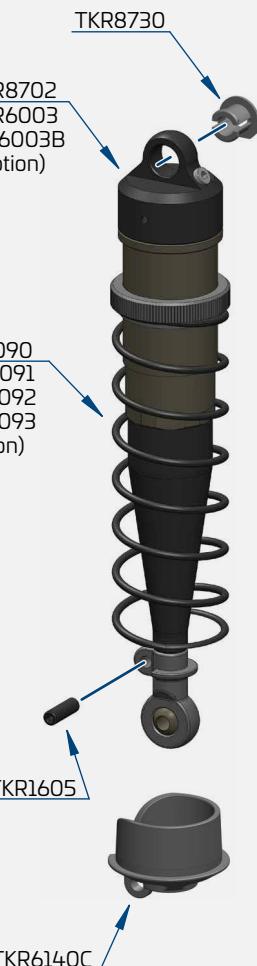
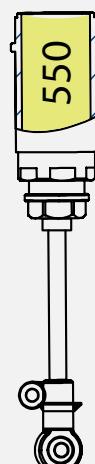
Refer to filling instructions on page 19 during this step.



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. Likewise, if it is warmer you may need to use thicker oil.

Use #550 CST oil FRONT



x2
TKR1200
M2.5 Lock Nut Zinc

x2
TKR1211
M3 Lock Nut Flange Black

x2
TKR1240
M3x18mm Shock Mnt Screw

x2
TKR1248
M2x4mm Emulsion Screw

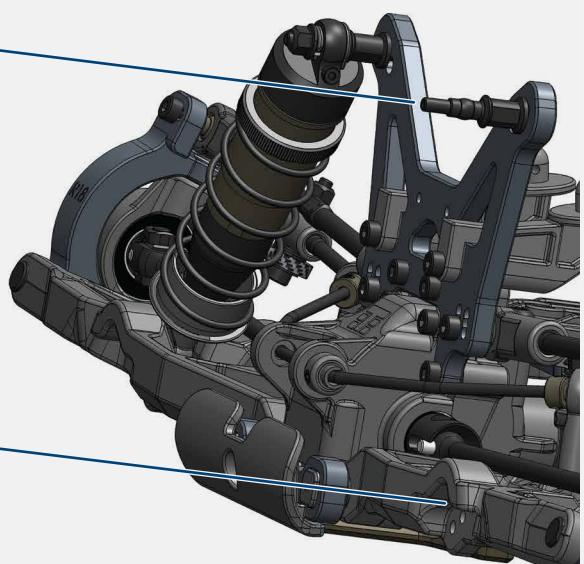
x2
TKR1264
M2.6x6.0x0.5mm Washer

x2
TKR1605
M3x10mm Set Screw

Step L-5



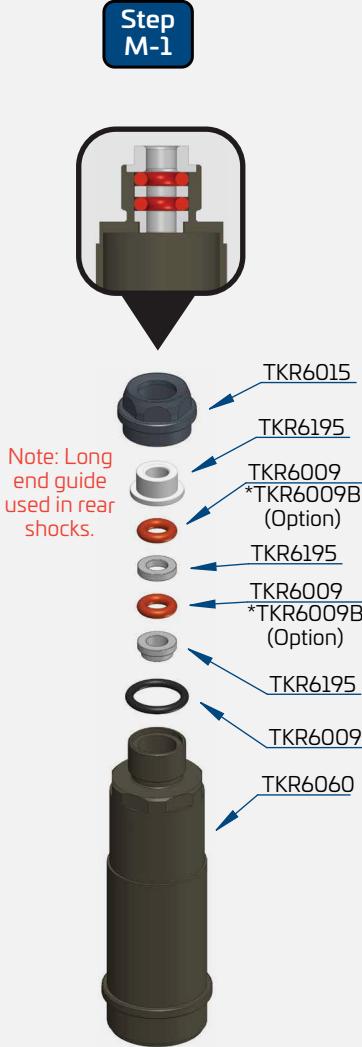
Note: Slot in spring perch should face outside of vehicle.



- Stock shock position is outside hole on the arm, and second from outside on the tower
- Stock front ride height is 34mm
- Shock length (droop) is 121mm
- If using a Droop Gauge, +/-0mm

Bag M

Rear Shock Assembly



x2
TKR1200
M2.5 Lock Nut Zinc

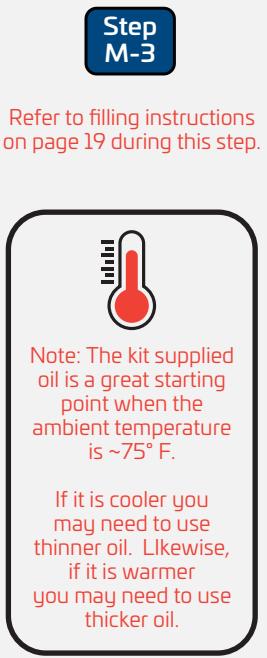
x2
TKR1211
M3 Lock Nut Flange Black

x2
TKR1240
M3x18mm Shock Mnt Screw

x2
TKR1248
M2x4mm Emulsion Screw

x2
TKR1264
M2.6x6.0x0.5mm Washer

x2
TKR1605
M3x10mm Set Screw

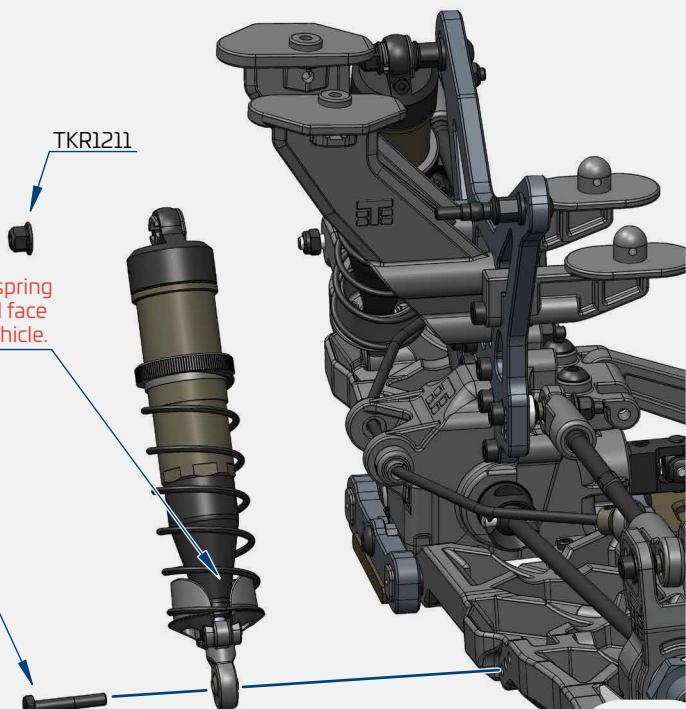


Step M-5

TKR1240
Note: Black screw is RH threaded and goes on right side. Silver screw is LH threaded and goes on left side.

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

- Stock shock position is inside hole on the arm, and second from the outside on the tower
- Stock rear ride height is 38mm
- Shock length (droop) is 134mm
- If using a Droop Gauge, -8mm



Shock Filling Instructions (Emulsion)

For both front and rear shocks

We've found it's easiest to complete steps 1 & 2 on each shock before moving on to step 3.

By the time you've finished step 2 on the last shock, the first one will be ready for step 3.

Step 1. Insert the four larger o-rings into the emulsion caps and set aside. Install the small o-rings onto the small emulsion screws by placing the o-rings on a pit mat or towel and pressing the screws into the o-rings (add 1 small drop of oil onto the seal to help make the screw slide in easier).

Step 2. Fill shock with oil all the way to the top and pump the shock shaft up and down 3-5 times.

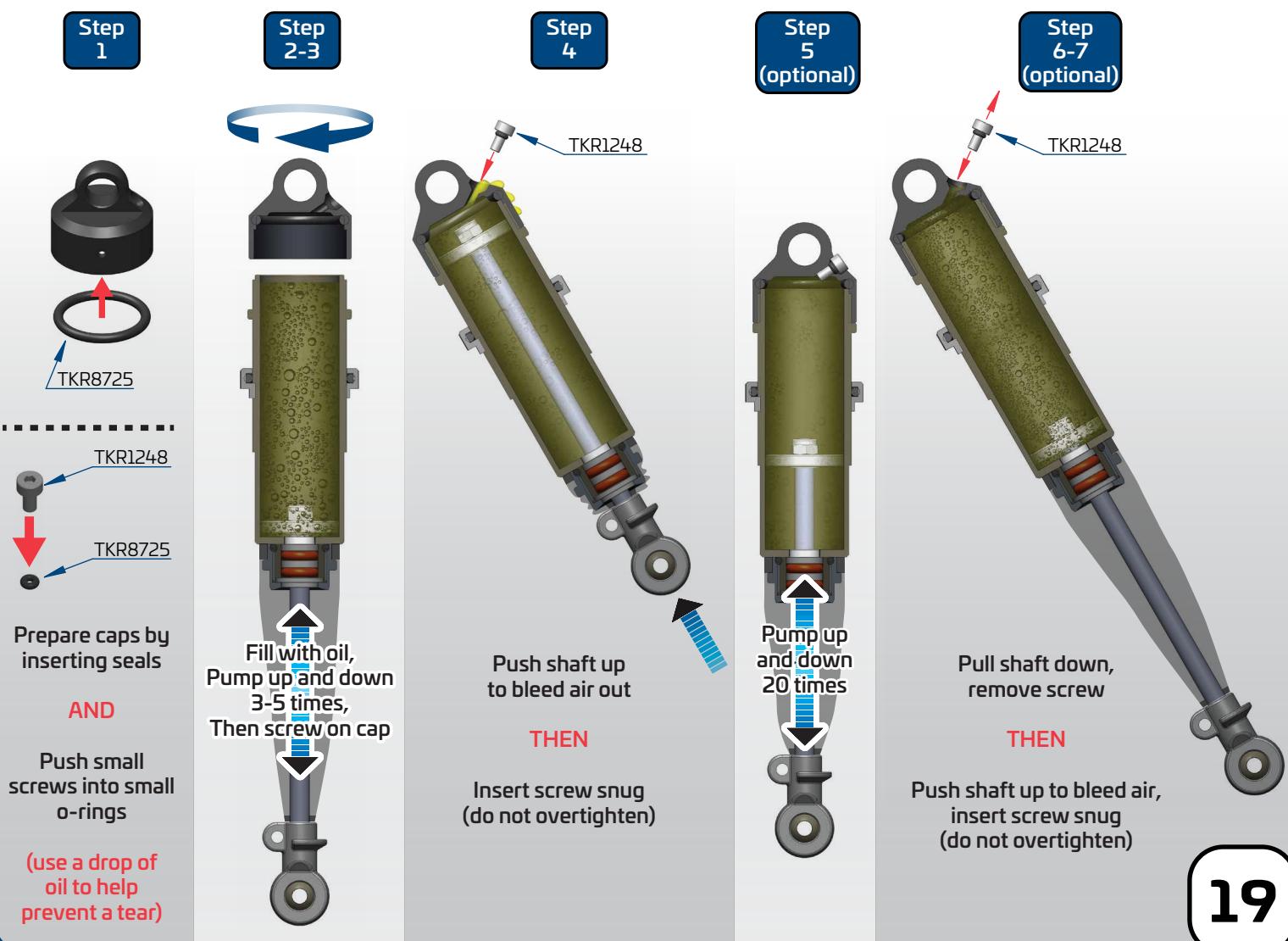
Step 3. Screw on the cap all the way tight (shock tool TKR1115 is helpful for holding the shock body). Be careful to not cross-thread the caps. Start by turning in the opposite direction before tightening.

Step 4. With the shock at about a 45° angle, push and hold the shock shaft to the top of the stroke and insert the prepared emulsion screw/seal. Oil should leak out during this process. If it does not, add more oil. Tighten the screw until snug (do not over-tighten). Wipe off excess oil before moving on to step 5.

Step 5. Pump the shock shaft up and down about 20 times vigorously. This emulsifies the oil.

Step 6. With the shock shaft fully extended, remove the emulsion screw from the cap to do the final bleed.

Step 7. With the shock at about a 45° angle, push and hold the shock shaft to the top and insert the prepared emulsion screw/seal again. Oil will leak out during this process. Finish by tightening the screw until snug (do not over-tighten).



Shock Filling Instructions (Bladder)

For both front and rear shocks

Note: Bladder build is optional and requires (2x) TKR6009.

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.

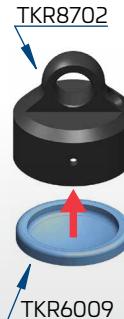
Step 4. Let the shock rest vertically with the shock shaft fully extended for five minutes or until all the air bubbles have released. After the air has escaped, top off the shock with oil (about 1-2mm below the top). If you overfill the shock, it won't hurt performance, it will just spill out and make 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. Use TKR1115 and TKR1116 to fully tighten your shocks. Hand tight may result in leaky shocks.

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.

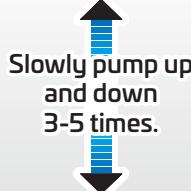
Step 1



Step 2

Fill 90% with oil.

Step 3



Step 4

Let rest about 5 minutes.

Step 5

Push shaft in halfway, then screw cap on slowly. Fully tighten.

Step 6

Set desired rebound and hold shaft position while screwing in bleeder screw.

TKR1248

0% rebound (stock)

50% rebound

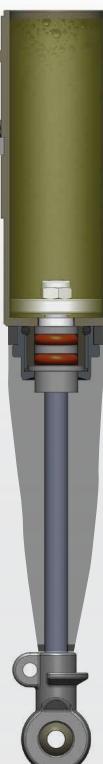
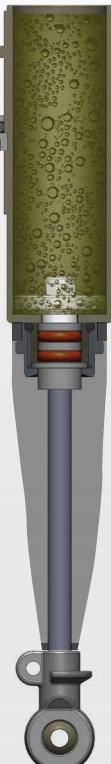
100% rebound

Prepare caps by inserting bladders

AND

Push small screws into small o-rings

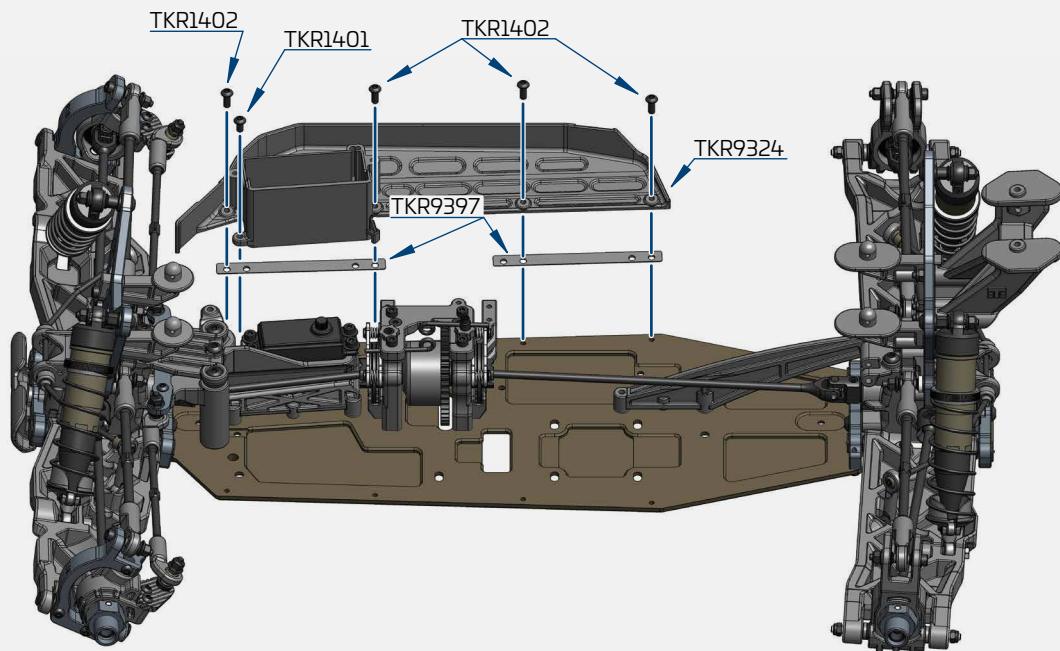
(use a drop of oil to help prevent a tear)



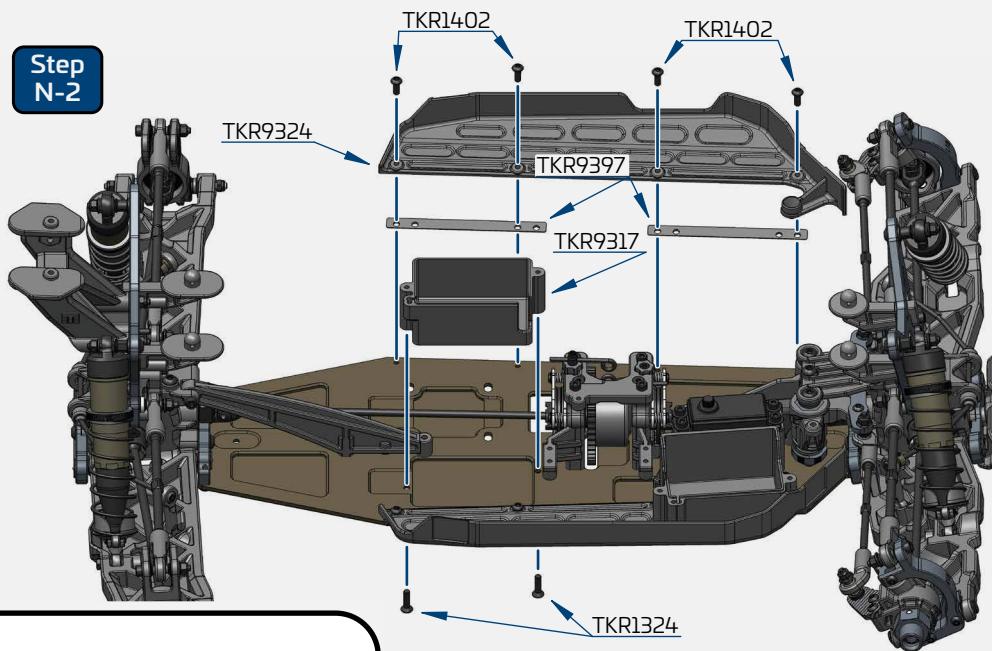
Bag N

Mud Guard Radio Tray install

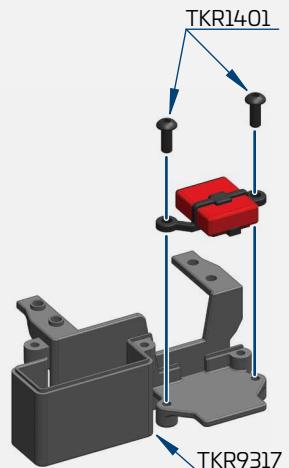
Step
N-1



Step
N-2



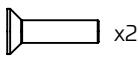
Step
N-3



Note: Transponder
(not included)



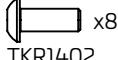
x4
TKR1221
M3x8mm Washer



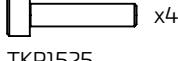
x2
TKR1324
M3x12mm Flat Head Screw



x3
TKR1401
M3x6mm Button Head Screw

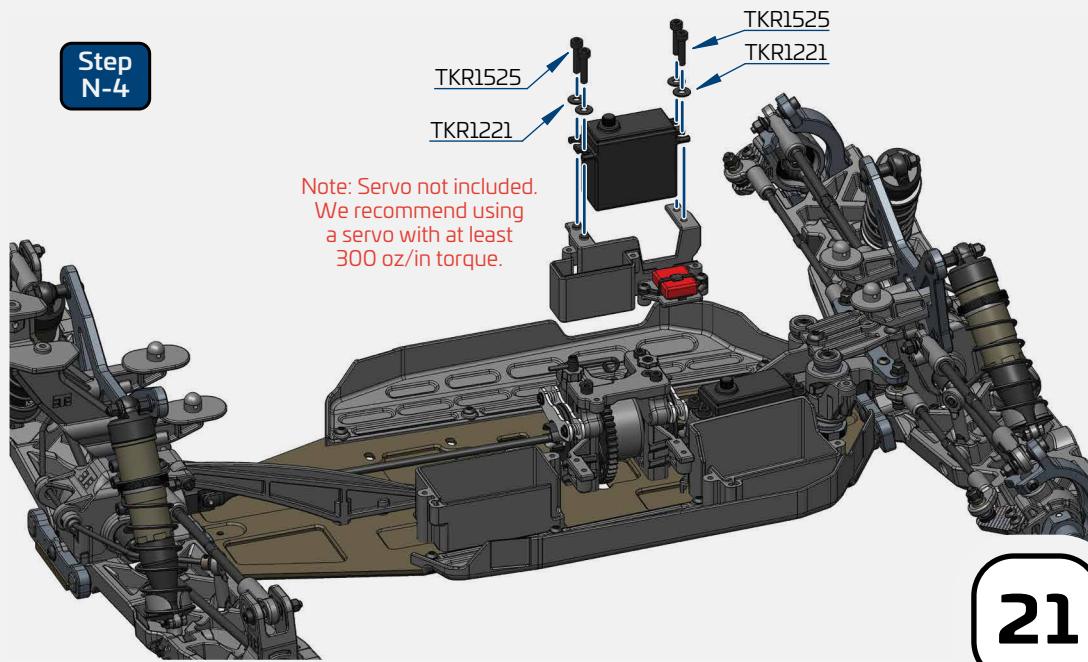


x8
TKR1402
M3x8mm Button Head Screw



x4
TKR1525
M3x14mm Cap Head Screw

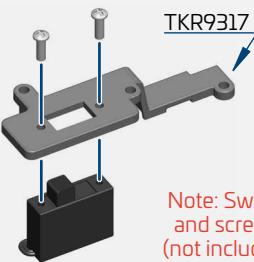
Step
N-4



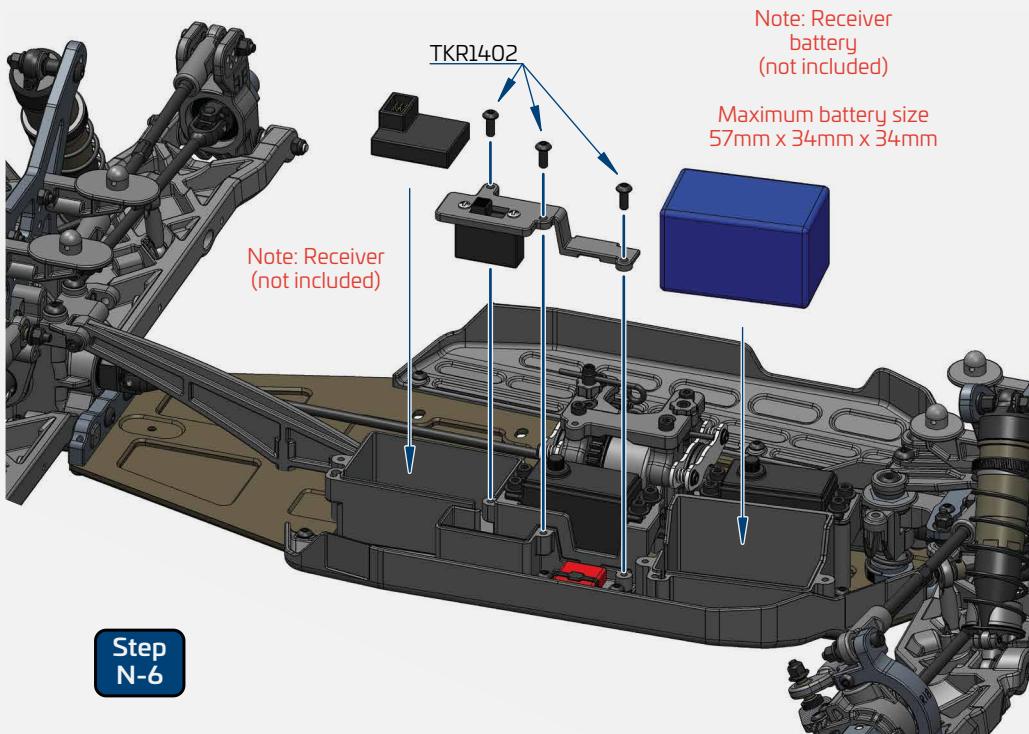
Note: Servo not included.
We recommend using
a servo with at least
300 oz/in torque.

Bag N Mud Guard/Radio Tray install

Step
N-5

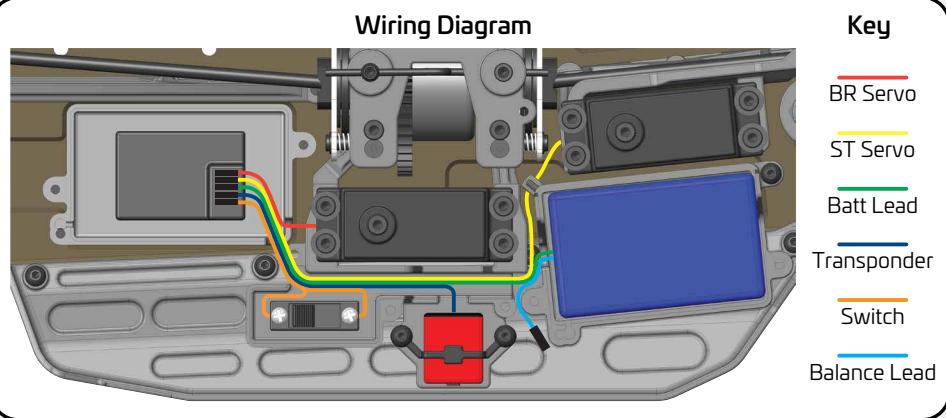
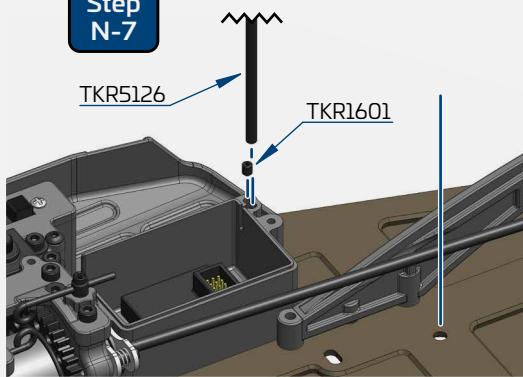


Note: Switch
and screws
(not included)

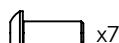
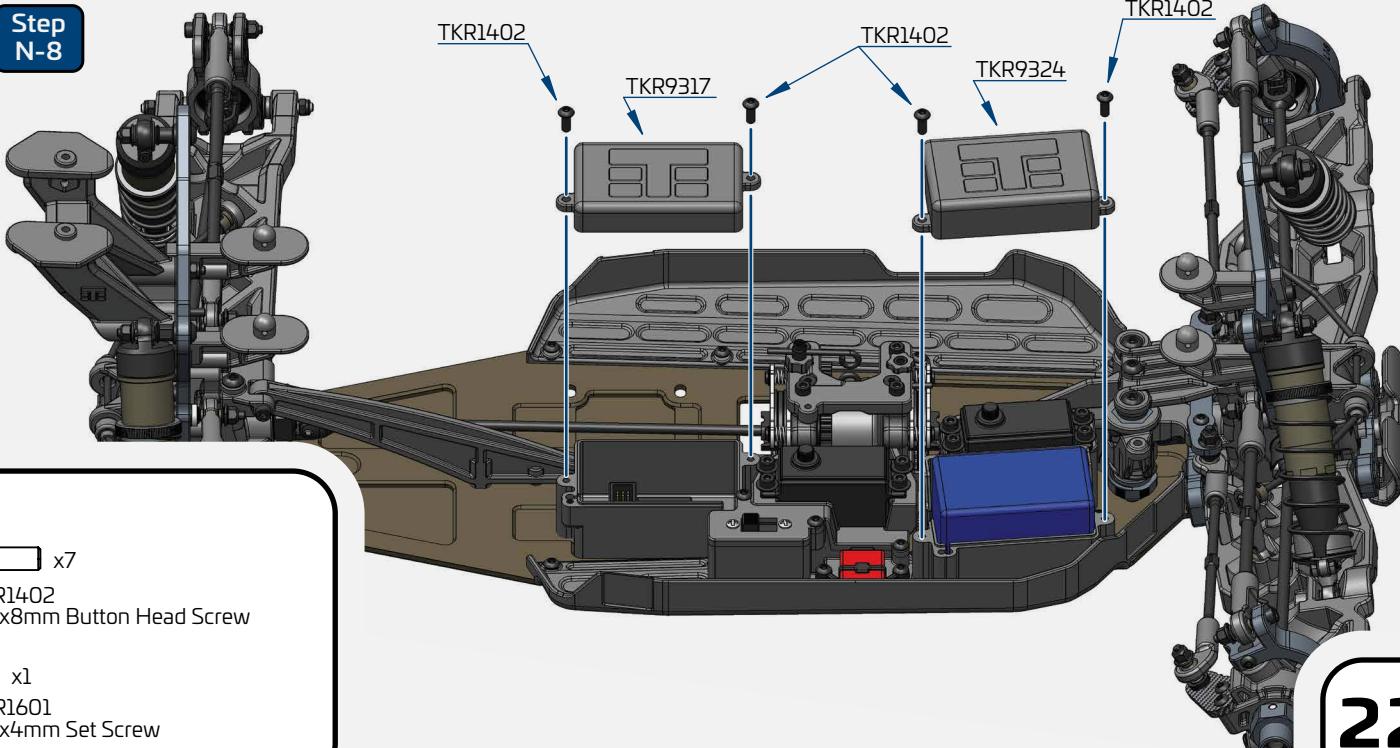


Step
N-6

Step
N-7



Step
N-8



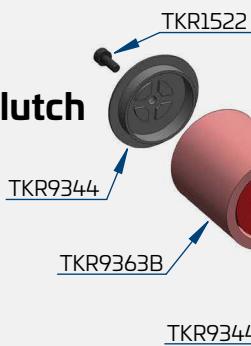
x7
TKR1402
M3x8mm Button Head Screw



x1
TKR1601
M3x4mm Set Screw

Bag O

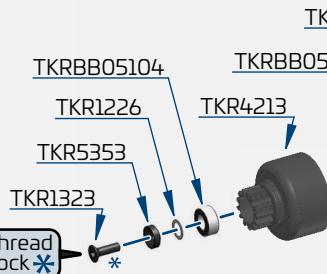
Air Filter/Clutch



Note: Secure air filter hose with zip ties (included).

Step 0-2

Note: Do not use any other collet other than the one supplied in this kit. Replace immediately if worn.



x4
TKR1226
5x7x0.2mm shim

x5
TKR1228
M4 Countersunk Washer

x2
TKR1323
M3x10mm Flat Head Screw

x1
TKR1341
M4x6mm Flat Head Screw

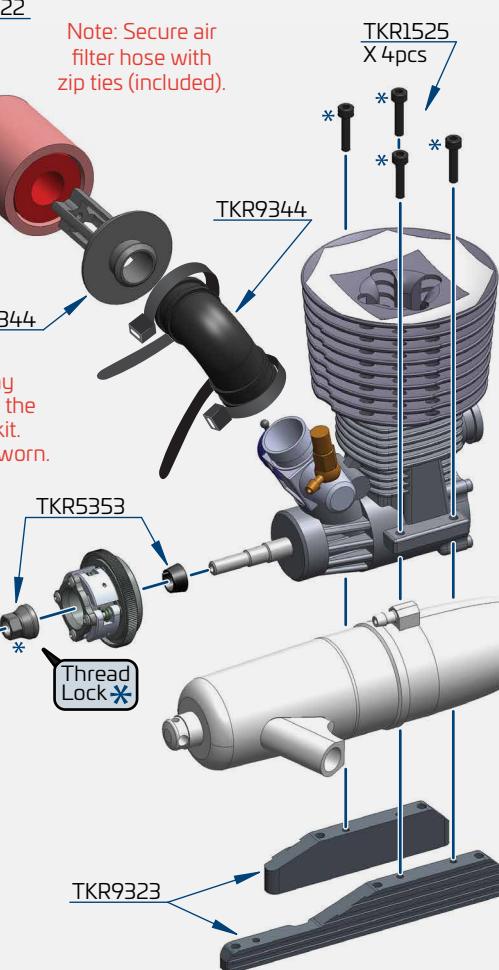
x5
TKR1343
M4x10mm Flat Head Screw

x1
TKR1522
M3x8mm Cap Head Screw

x1
TKR1603
M5x4mm Set Screw

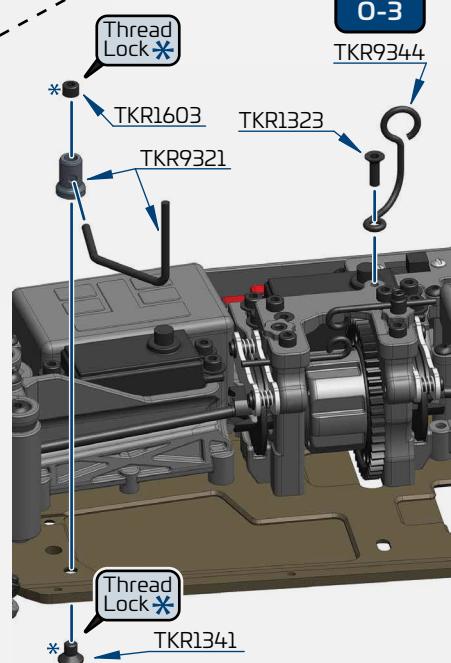
x1
TKRBB05104
Ball Bearing (5x10x4)

x1
TKRBB05134
Ball Bearing (5x13x4)



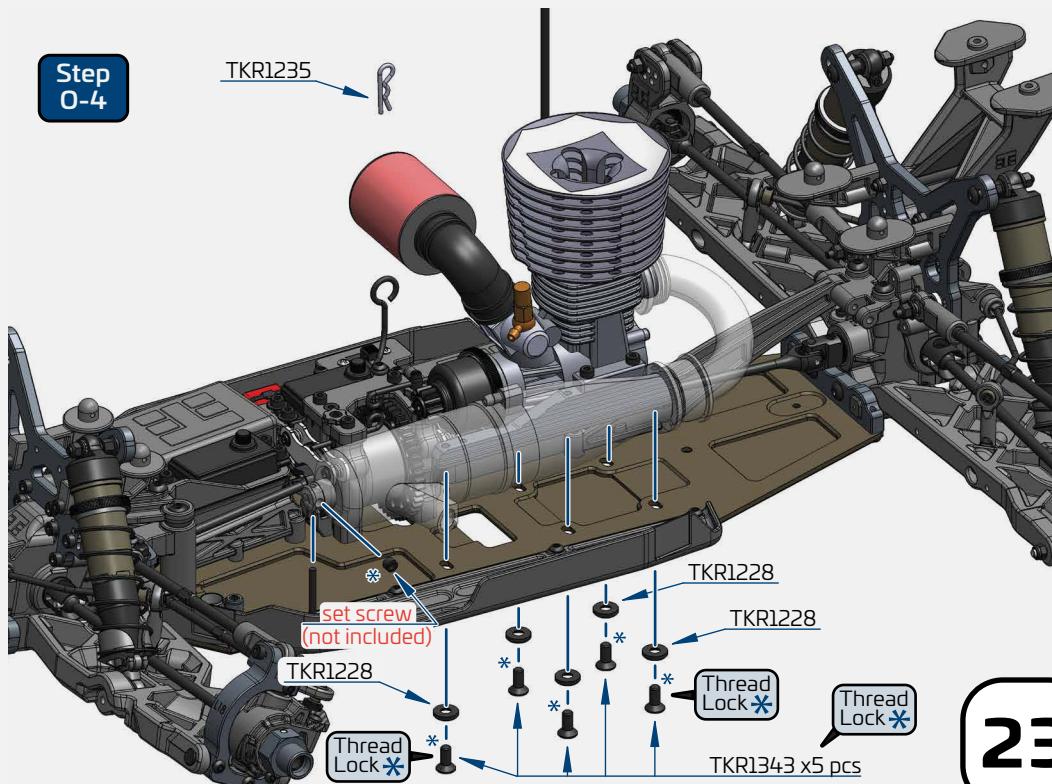
Note: Engine, Pipe & Manifold (not included).

Step 0-3



Note: Your kit contains (2x) 1.0mm yellow springs (2x) 1.1mm red springs. Put the matching springs on opposite ends of the clutch. For additional tuning options, please use TKR5353.

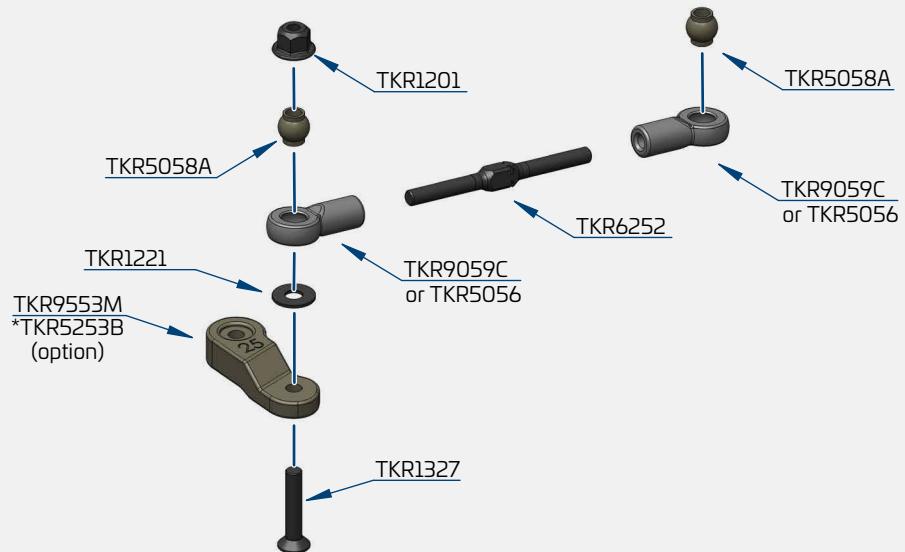
Step 0-4



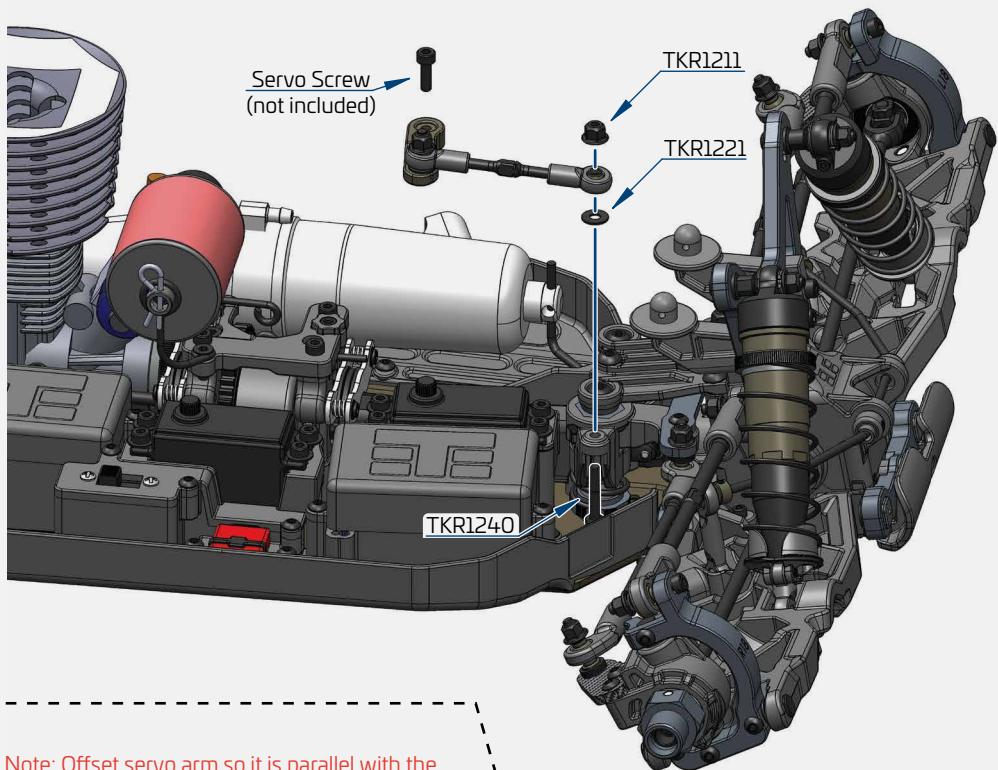
Bag P

Steering Linkage

**Step
P-1**



**Step
P-2**



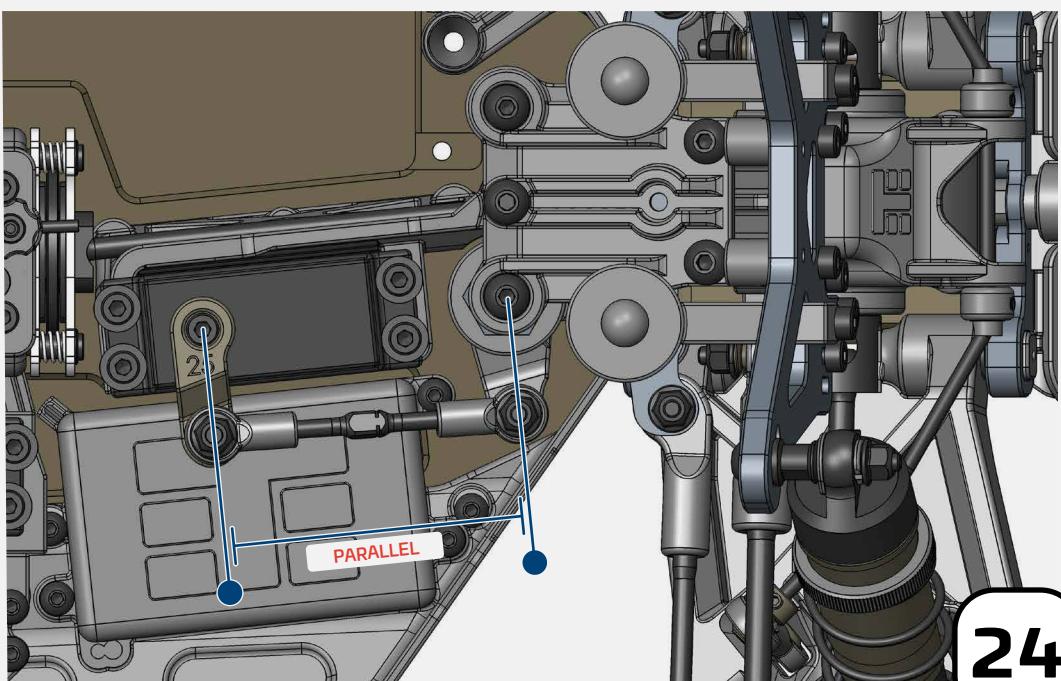
**Step
P-3**

x2
TKR1211
M3 Lock Nut Flange Black

x2
TKR1221
M3x8mm Washer

x1
TKR1240
M3x18mm Shock Mnt Screw

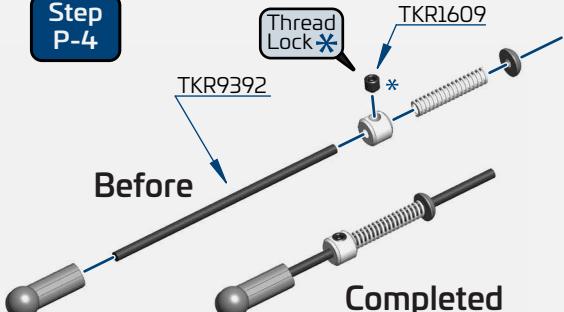
x1
TKR1327
M3x16mm Flat Head Screw



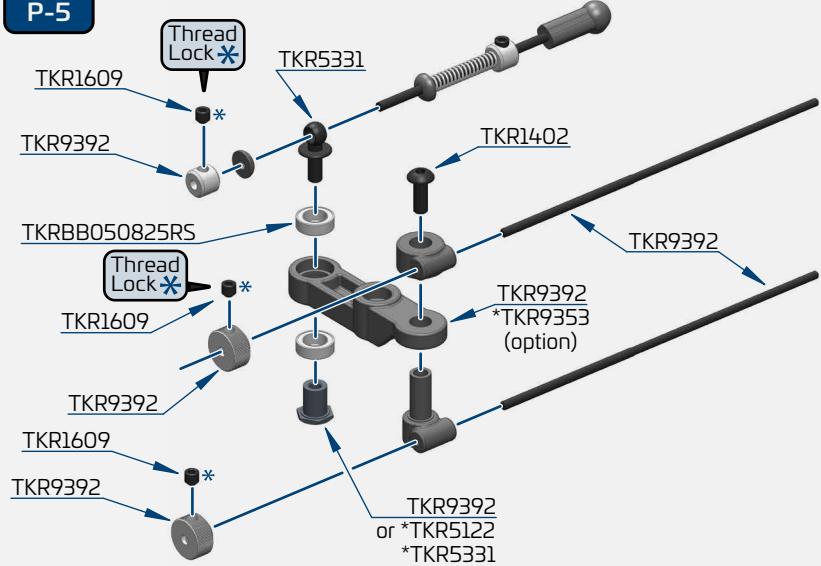
Bag P

Brake Linkage

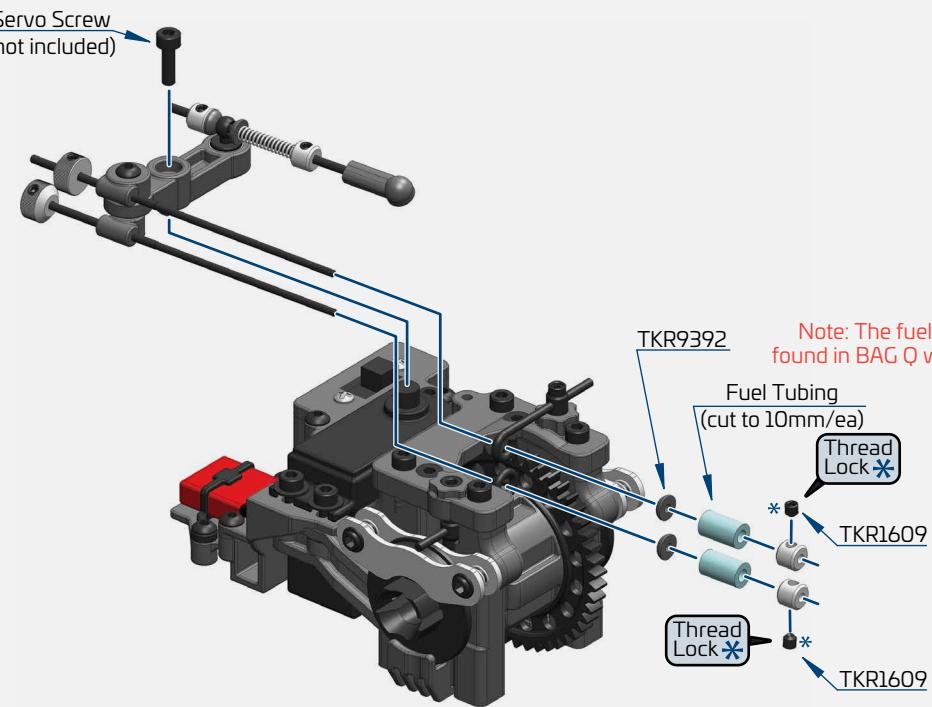
**Step
P-4**



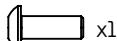
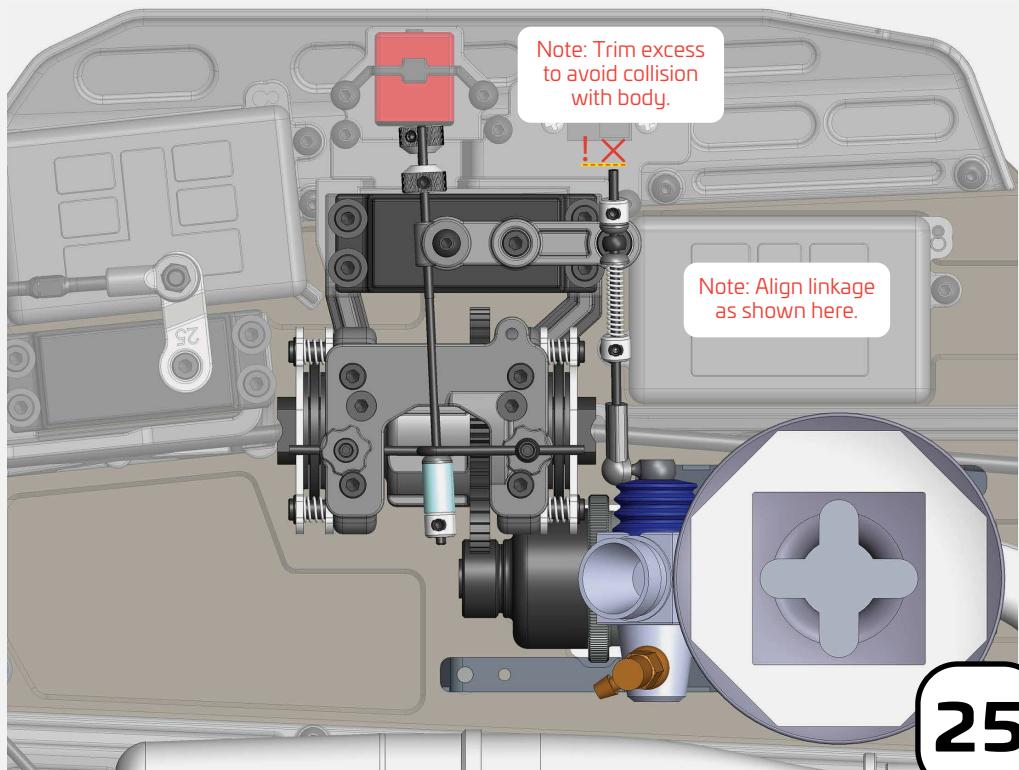
**Step
P-5**



**Step
P-6**



**Step
P-7**



x1
TKR1402
M3x8mm Button Head Screw



x6
TKR1609
M3x3mm Set Screw

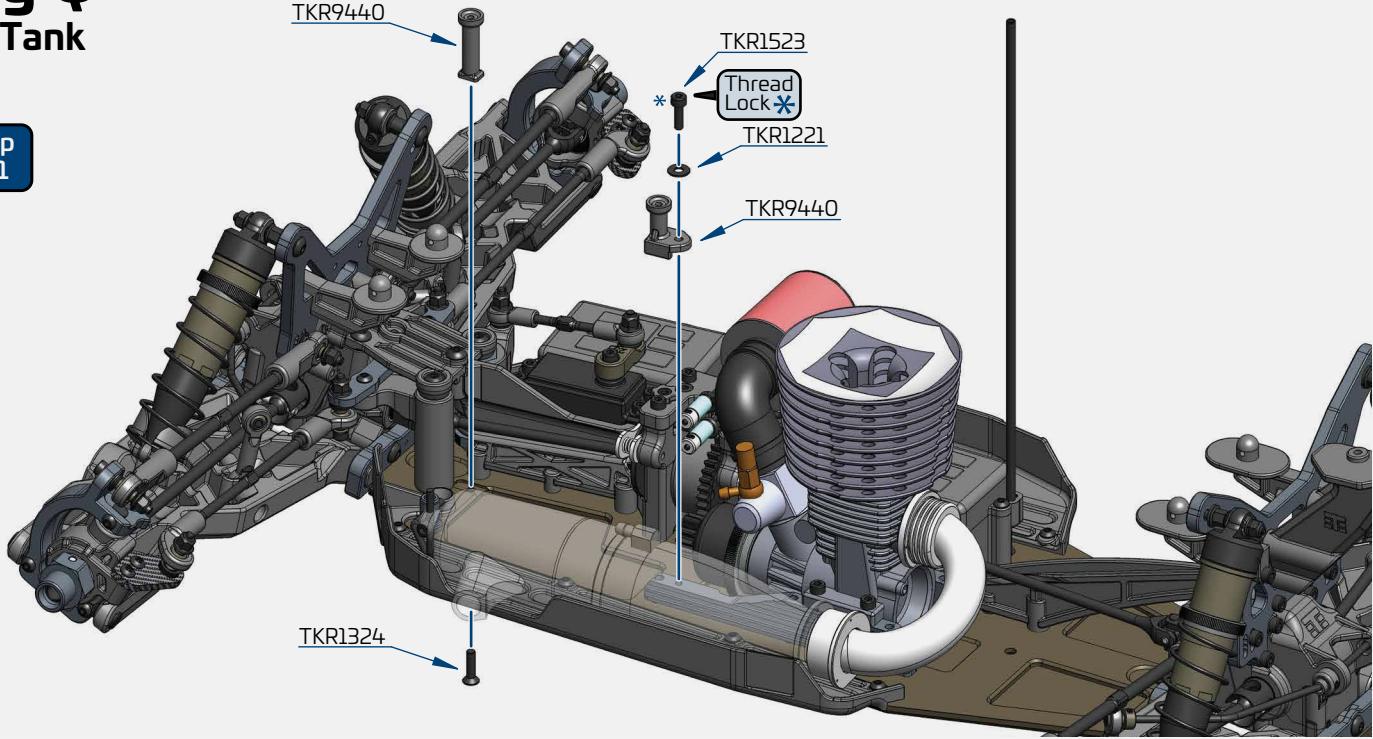


x2
TKRBB050825RS
Ball Bearing (5x8x2.5)

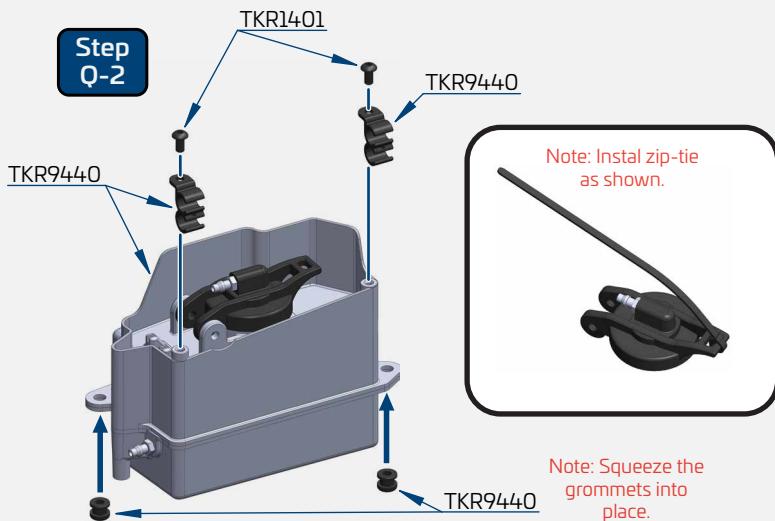
Bag Q

Fuel Tank

Step Q-1



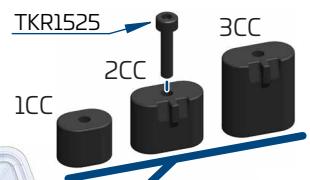
Step Q-2



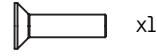
Volume Compensator

Note: Use the 2CC insert for rear legal tank volume, when using stock fuel line/length.

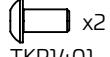
Always tech your tank prior to any sanctioned event to be sure.



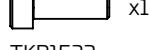
TKR1221
M3x8mm Washer



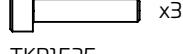
TKR1324
M3x12mm Flat Head Screw



TKR1401
M3x6mm Button Head Screw

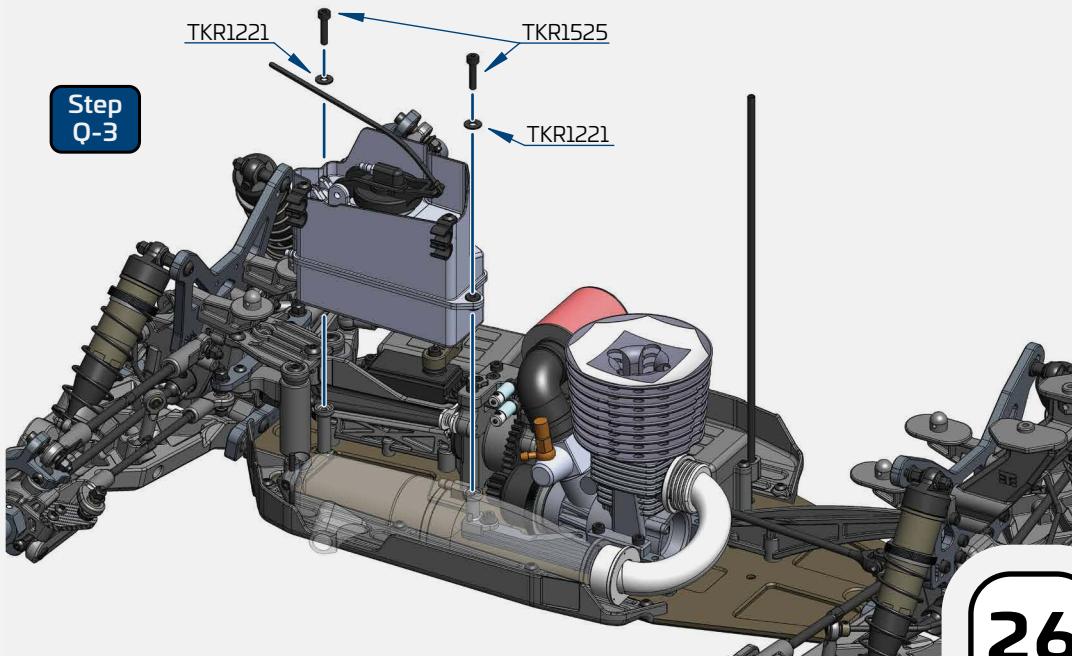


TKR1523
M3x10mm Cap Head Screw



TKR1525
M3x14mm Cap Head Screw

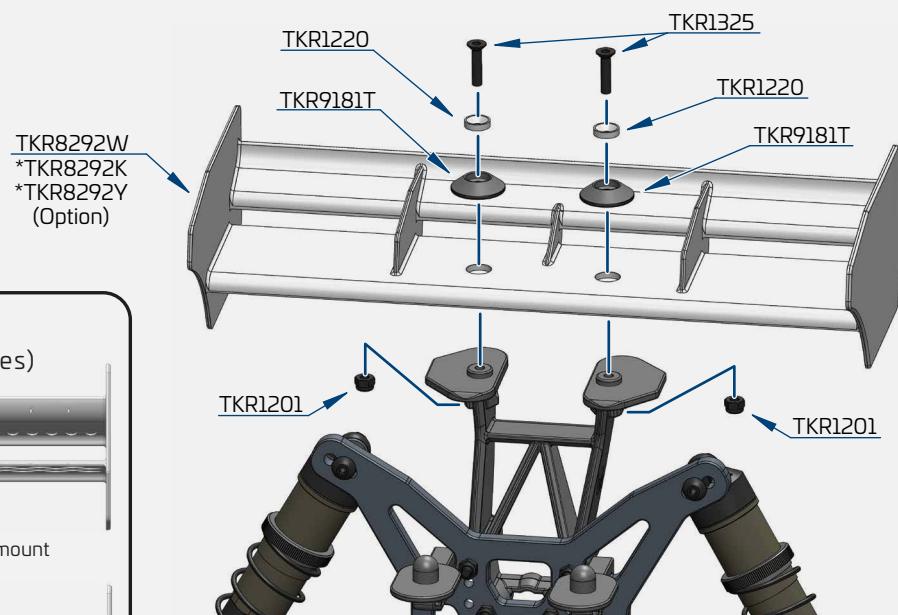
Step Q-3



Bag R

Final Assembly

**Step
R-1**



Wing Hole Options

(Use Dimples as Hole Cutting Guides)

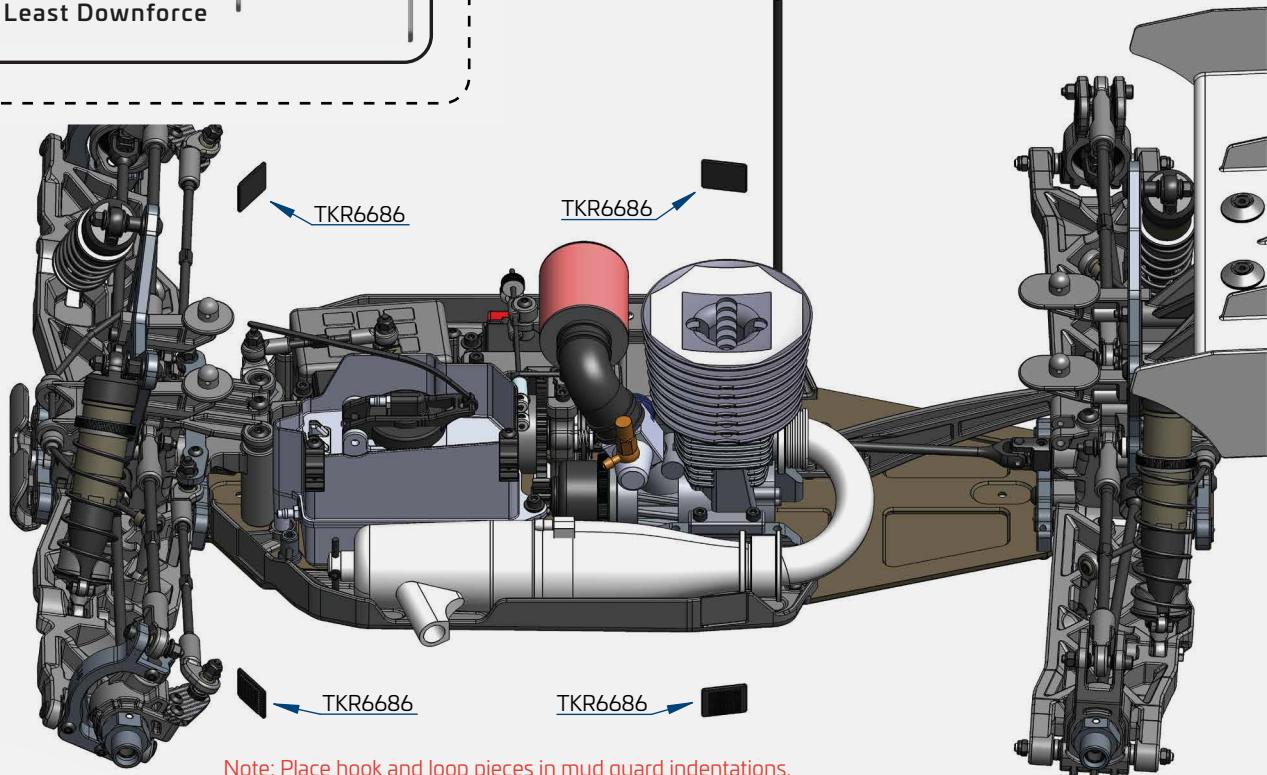
Most Downforce

(Use as many holes as you see fit to fine tune the amount of downforce the wing creates.)

Least Downforce

**Step
R-2**

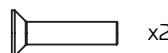
(Optional)



x2
TKR1201
M3 Lock Nut Black



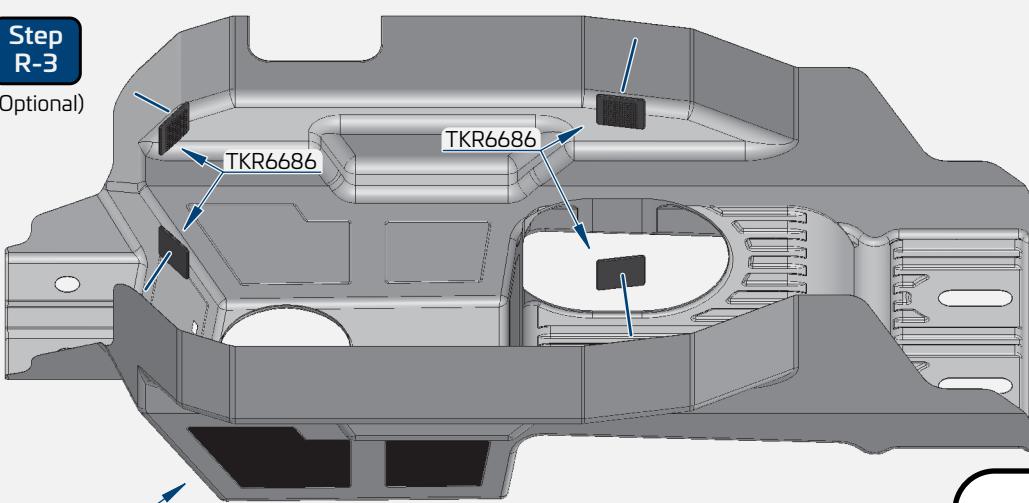
x2
TKR1220
M4 Countersunk Washer



x2
TKR1325
M3x14mm Flat Head Screw

**Step
R-3**

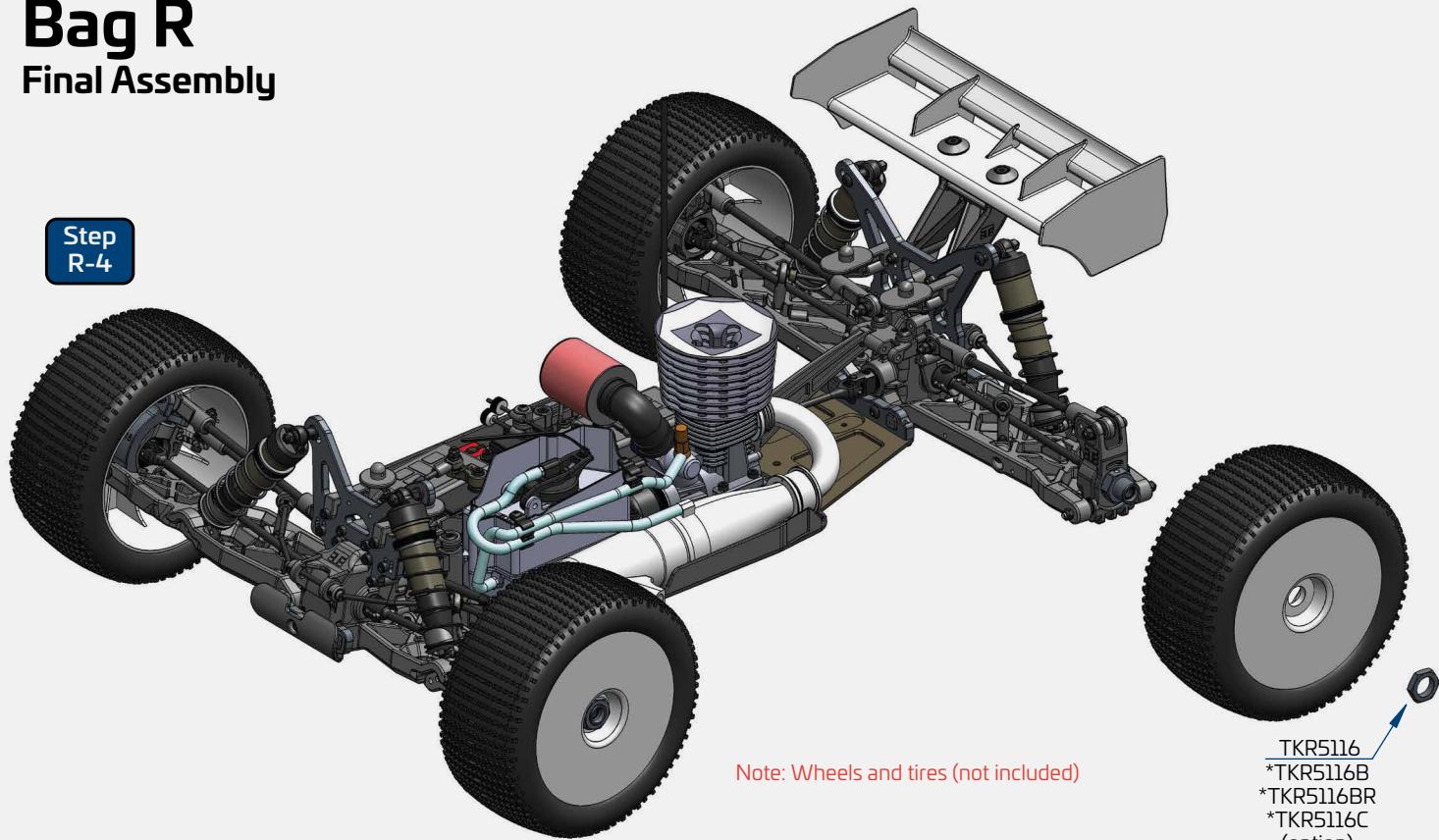
(Optional)



Bag R

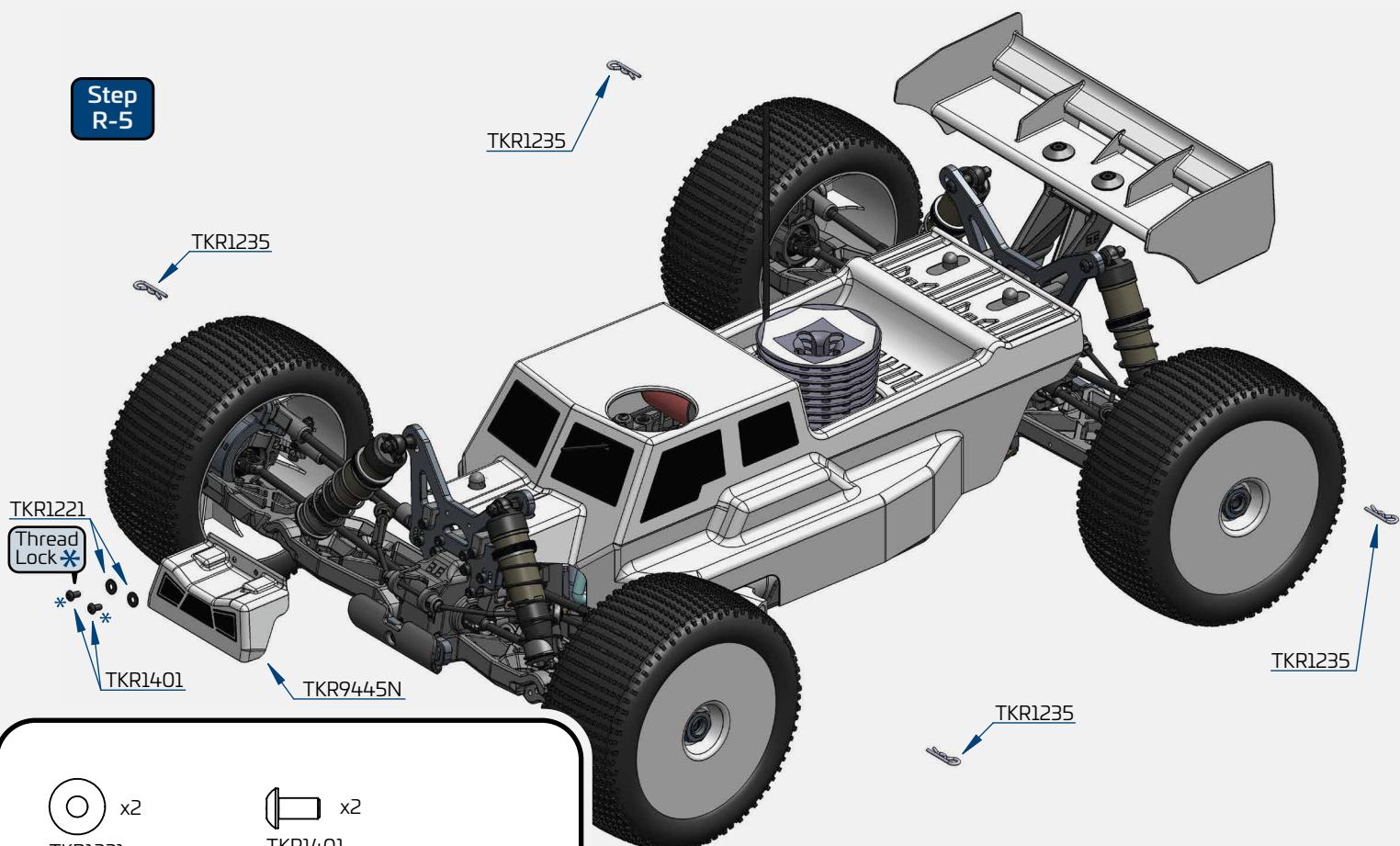
Final Assembly

Step
R-4



TKR5116
*TKR5116B
*TKR5116BR
*TKR5116C
(option)

Step
R-5



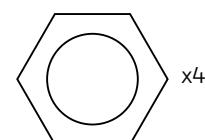
TKR1221
M3x8mm Washer



TKR1401
M3x6mm Button Head Screw



TKR1235
Body Clip



TKR5116
Wheel Nut

TKR9401 - NT48 2.2 4WD Nitro 1/8th Scale Competition Truggy Kit

Parts List

TKR4213 - Clutch Bell (13t)
 TCR5049A - Pivot Balls (6.8mm, no flng, sway bar, shck ends, almn, 4pcs)
 TCR5058A - Pivot Balls (5.8mm, no flange, brake/steering link, aluminum, 4pcs)
 TCR5109A - Stabilizer Balls (6.8mm, sway bars, aluminum, 4pcs)
 TCR510IX - Servo Saver Spring (HD, EB48, SCT410, NB48)
 TCR5103 - Servo Saver Post (aluminum, gun metal anodized)
 TCR5116 - Wheel Nuts (17mm, serrated, gun metal anodized, M12x1.0, 4pcs)
 TCR5126 - Antenna tube (universal, w/ caps, 5pcs)
 TCR5165 - V2 Hinge Pin Inserts, Wheelbase Shims (EB/NB/ET/NT/SCT)
 TCR5187B - Rod Ends (hard, 6.8mm, EB/NB/ET/NT48, 8pcs)
 TCR5231 - Servo Saver Nut and Spring
 TCR5297 - Universal Driveshaft (center, rear)
 TCR5331 - Throttle Pivot Ball Assembly (CNC, NB48, NT48)
 TCR5345B - Brake Disc (steel, NB/NT, revised, 1pc)
 TCR5350 - Flywheel (4-shoe)
 TCR5351 - Clutch Shoes (7075, 4pcs, NB48, NT48)
 TCR5353 - Clutch Springs and Hardware Set (NB48, NT48)
 TCR5368B - Brake Post Spring (revised, extra stiffy, 4pcs)
 TCR5401 - Body Mount Set (ET/NT)
 TCR6252 - Turnbuckle (M3 thread, 40mm length, 2pcs)
 TCR8052A - Pivot Balls (6.8mm, camber, str links, almn, centered, 4pcs)
 TCR8100C - Ackerman Plate (7075, EB/NB48 2.2)
 TCR8292W - Lightweight Wing (ROAR/IFMAR legal, white)
 TCR9017B - Sway Bar and Bulkhead Acc (for -2/-4mm bulkheads)
 TCR9018 - Front Bumper (2.0, 2pcs)
 TCR9020 - Hinge Pins (inner, front/rear)
 TCR9034 - Hinge Pins (outer, rear, 2.0, 2pcs)
 TCR9043 - Spindle Carrier Hinge Pins (steel, 2.0, 4pcs)
 TCR9047F - Spindle Arms (EB/NB/ET/NT48, req TCR9041X/9141B, Type F)
 TCR9054B - Rear Hubs and Bearing Spacers (-2mm, adj. roll center, L/R, EB/NB48 2.1)
 TCR9055 - Hinge Pin Bushings (8pcs)
 TCR9055C - Hinge Pin Bushings (long, 8pcs)
 TCR9057B - Spindle Pin/Sleeve Set (revised, short/long, EB/NB48 2.1)
 TCR9059C - Rod End Set (camber/sway bar, offset steering links, 2x)
 TCR9102A - Steering Posts (aluminum, gun metal anodized)
 TCR9104 - Bell Cranks and Top Plate (2.0)
 TCR9141B - Adjustable Ackerman Spindles (-2mm, EB/NB 2.1, requires TCR9057B)
 TCR9142B - Spindle Carriers (L/R, aluminum, 18 degree, EB/NB48 2.1)
 TCR9181T - Tall Wing Mount and Body Mounts (2.0)
 TCR9213 - Brake Posts (steel, 4pcs)
 TCR9215B - Brake Cam Set (revised, F/R, steel)
 TCR9290 - Sway Bar Dead Band Bushing Set (2.4, 2.7, 3.0, 3.3mm, all 2x vehicles)
 TCR9296 - Universal Driveshaft (center, front, 87.5mm, NB/NT 2.0)
 TCR9310B - Split Center Diff Mount (NB48 2.1)
 TCR9314 - Metallic Brake Pads (2pcs, NB/NT48 2.0)
 TCR9317 - Radio Box and Throttle Servo Mount (NB/NT48 2.0)
 TCR9321 - Exhaust Wire Mount Set (CNC, NB/NT48 2.0)
 TCR9323 - Engine Mounts (CNC, 7075, NB/NT48 2.0)
 TCR9324 - Mud Guard and Battery Box Set (L/R, NB/NT48 2.0)
 TCR9328B - Chassis Brace Set (revised, NB/NT48 2.0)
 TCR9344 - Air Filter Set (hose, filter, housing, NB48 2.1)
 TCR9363B - Air Filter Foams (red oil, inner, outer, 3pcs each, NB/NT48 2.0)
 TCR9392 - Throttle, Brake Linkage (NB/NT48 2.0)
 TCR9397 - Mudguard Adapters (L/R, NT48 2.0)
 TCR9402B - Chassis (7075, hard anodized, NT48 2.2)
 TCR9416B - Gearbox (-2mm, F/R, EB/NB/ET/NT48 2.0)
 TCR9423 - Turnbuckle (M4 thread, 100mm length, 4mm adjustment, 2pcs)
 TCR9428B - Shock Tower (front, lightened, 7075 CNC, GM anodized, ET/NT48 2.0)
 TCR9429B - Shock Tower (rear, lightened, 7075 CNC, GM anodized, ET/NT48 2.0)
 TCR9430B - Suspension Arms (rear, 2pcs, ET/NT48 2.2)
 TCR9436B - Suspension Arms (front, 2pcs, ET/NT48 2.2)
 TCR9440 - Fuel Tank and Accessories (NT48 2.0, ROAR legal)
 TCR9445A - Body (NT48 2.0, w/ window mask)
 TCR9445N - Headlights / Nose Cone (ET/NT48 2.0)
 TCR9447 - Decal Sheet (NT48 2.2)
 TCR9450 - Turnbuckle (M5 thread, 108mm length, 5mm adjustment, 2pcs)
 TCR9461B - Hinge Pin Brace (CNC, 7075, -1mm, ET/NT48 2.2, A Block)
 TCR9462B - Hinge Pin Brace (CNC, 7075, -1mm, ET/NT48 2.2, B Block)
 TCR9463B - Hinge Pin Brace (CNC, 7075, -1mm, ET/NT48 2.2, C Block)
 TCR9464B - Hinge Pin Brace (CNC, 7075, -1mm, ET/NT48 2.2, D Block)
 TCR9485 - Sway Bar Set (FRONT, 2.1, 2.2, 2.3, 2.4, 2.5, ET/NT48 2.0)
 TCR9487 - Universal Driveshaft Set (f/r, 144mm, ET/NT 2.0, 2 pcs)
 TCR9495 - Sway Bar Set (REAR, 2.1, 2.2, 2.3, 2.4, 2.5, ET/NT48 2.0)
 TCR9553M - Metal Servo Horn (25T spline)
 TCR9671 - Wheel Hubs (+2mm offset, 17mm, gun metal anodized, w/pins, 2pcs)
 TCR9673 - Wheel Hubs (+4mm offset, 17mm, gun metal anodized, w/pins, 2pcs)
 TCR9687 - Universal Driveshaft Set (rear only, 140mm, ET/NT 2.0, 2 pcs)

Shocks List

TCR6009 - Shock O-Ring and Bladder Set (for 2 shocks)
 TCR6013 - Shock Adjustment Nuts (aluminum, gun metal anodized, 2pcs)
 TCR6015 - Shock Cartridge Caps (aluminum, gun metal anodized, 2pcs)
 TCR6016 - Shock Body (rear, aluminum, hard anodized, 2pcs)
 TCR6017 - Shock Shafts (rear, steel, 2pcs)
 TCR6060 - Shock Body (x-long, aluminum, hard anodized, 2pcs)
 TCR6061 - Shock Shafts (x-long, rear, steel, 2pcs)
 TCR6090 - Shock Spring Set (1.6 x 9.0T, 80mm, pink, 4.80 lb/in)
 TCR6136 - Shock Piston Set (flat/taper, all 16mm shocks, 6x1.2, 4pcs)
 TCR6137 - Shock Piston Set (flat/taper, all 16mm shocks, 6x1.3, 4pcs)
 TCR6140C - Locking Shock Rod End and Spring Perch Set (revised, EB/NB/ET/NT/SCT)
 TCR6144 - Shock Boots (long length, EB/NB, 2pcs)
 TCR6145 - Shock Boots (XL length, rear ET/NT, 2pcs)
 TCR6195 - Shock Shaft Guide Set (precision molded, POM, for 16mm shocks)
 TCR8702 - Shock Caps (7075, emulsion/vented/standard, black anodized, 2pcs)
 TCR8725 - Emulsion O-ring Set (4x cap seals, 8x emulsion o-rings, for 16mm shocks)
 TCR8730 - Shock Cap Bushings (4pcs, requires TCR8727)
 TCR8777 - Shock Standoffs (revised, +0mm, all 2x, requires TCR1443, 2pcs.)
 TCR8777B - Shock Standoffs (revised, +2mm, all 2x, requires TCR1443, 2pcs.)

Bearings List

TCRBB050825RS - Ball Bearing (5x8x2.5mm, rubber shielded, 4pcs)
 TCRBB05104 - Ball Bearing (5x10x4, 4pcs)
 TCRBB05134 - Ball Bearing (5x13x4, 4pcs)
 TCRBB05145 - Ball Bearing (5x14x5, shielded, 4pcs)
 TCRBB06103 - Ball Bearing (6x10x3, 4pcs)
 TCRBB08165 - Ball Bearing (8x16x5, 4pcs)
 TCRBB08165F - Ball Bearing (8X16x5mm, flanged, shielded, 4pcs)
 TCRBB12215 - Ball Bearing (12x21x5, shielded, 4pcs)

Differential List

TCR1261 - 3.5x9x0.2mm Shims (12pcs)
 TCR5144B - Differential O-Rings (6pcs)
 TCR5145B - Differential Shims (revised, 6x17mm, 6pcs)
 TCR9112 - Differential Outdrives (center, NB/NT48 2.0, 2pcs)
 TCR9114 - Differential Outdrives (F/R NB/NT48 2.0, F/C/R EB/ET48 2.0, 2pcs)
 TCR9115C - Differential Case (F/C/R EB/NB/ET/NT48 2.x, req TCR1261)
 TCR9143 - Differential Seals (2.0, 3pcs)
 TCR9149 - Differential Cross Pins (2.0, 6pcs)
 TCR9150B - Differential Gear Set (internal gears only, all 2x, 20/10T)
 TCR9149 - Spur Gear (4x8, steel, CNC, lightened, NB48 2.1)
 TCR9452 - Differential Ring Gear (40t, F/R, CNC, ET/NT48 2.0, use with TCR9453)
 TCR9453 - Diff Pinion (9t, F/R, CNC, ET/NT48 2.0, use with TCR9452)

Hardware List

TCR1200 - M2.5 Locknuts (zinc finish, 10pcs)
 TCR1201 - M3 Locknuts (black, 10pcs)
 TCR1211 - M3 Locknrits (flanged, black, 10pcs)
 TCR1220 - M3 Countersunk Washers (aluminum, natural, 10pcs)
 TCR1221 - M3x8mm Washer (black, 10pcs)
 TCR1222 - 13x16x1mm Diff Shims (10pcs)
 TCR1226 - 5x7x2mm shims (10pcs)
 TCR1228 - M4 Countersunk Washer (black, 10pcs)
 TCR1235 - Body Clips (10pcs)
 TCR1238 - Droop Adjustment Screws (M4x10mm, 8pcs)
 TCR1240 - Lower Shock Mount Screws (2 CW thread, 2 CCW thread, EB/NB/SCT)
 TCR1248 - M2x4mm Cap Head Screws (black, 10pcs)
 TCR1267 - M2.6x10.0x1.0mm Washer (black, 4pcs)
 TCR1301 - M2.5x6mm Flat Head Screws (black, 10pcs)
 TCR1321 - M3x6mm Flat Head Screws (black, 10pcs)
 TCR1323 - M3x10mm Flat Head Screws (black, 10pcs)
 TCR1324 - M3x12mm Flat Head Screws (black, 10pcs)
 TCR1325 - M3x14mm Flat Head Screws (black, 10pcs)
 TCR1327 - M3x16mm Flat Head Screws (black, 10pcs)
 TCR1342 - M4x8mm Flat Head Screws (black, 10pcs)
 TCR1343 - M4x10mm Flat Head Screws (black, 10pcs)
 TCR1344 - M4x12mm Flat Head Screws (black, 10pcs)
 TCR1346 - M4x15mm Flat Head Screws (black, 10pcs)
 TCR1349 - M4x20mm Flat Head Screws (black, 10pcs)
 TCR1401 - M3x6mm Button Head Screws (black, 10pcs)
 TCR1402 - M3x8mm Button Head Screws (black, 10pcs)
 TCR1403 - M3x10mm Button Head Screws (black, 10pcs)
 TCR1404 - M3x12mm Button Head Screws (black, 10pcs)
 TCR1420 - M3x5mm Button Head Screws (black, 10pcs)
 TCR1443 - M4x10mm Button Head Screws (black, 10pcs)
 TCR1444 - M4x12mm Button Head Screws (black, 10pcs)
 TCR1445 - M4x14mm Button Head Screws (black, 10pcs)
 TCR1522 - M3x8mm Cap Head Screws (black, 10pcs)
 TCR1523 - M3x10mm Cap Head Screws (black, 10pcs)
 TCR1525 - M3x14mm Cap Head Screws (black, 10pcs)
 TCR1528 - M3x18mm Cap Head Screws (black, 10pcs)
 TCR1529 - M3x20mm Cap Head Screws (black, 10pcs)
 TCR1530 - M3x25mm Cap Head Screws (black, 10pcs)
 TCR1532 - M3x35mm Cap Head Screws (black, 10pcs)
 TCR1534 - M3x22mm Cap Head Screws (black, 10pcs)
 TCR1601 - M3x4mm Set Screws (black, 10pcs)
 TCR1603 - M5x4mm Set Screws (black, 10pcs)
 TCR1605 - M3x10mm Set Screws (black, 10pcs)
 TCR1609 - M3x3mm Set Screws (black, 10pcs)

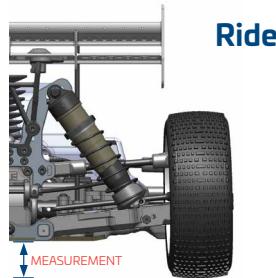
Option Parts

TCR1103 - Turnbuckle Wrench (4mm, 5mm, hardened steel)
 TCR1111 - XT Tuning Screwdriver (adjustable length, 4mm shank)
 TCR1115 - Pivot Ball and Shock Multi-tool (aluminum)
 TCR1116/B - 17mm Wheel Wrench, Shock Cap Tool
 TCR1119 - 5.5mm - 7.0mm Wrench (hardened steel)
 TCR5071C/D/E - Wheel Hubs (17mm, almn, lgthnd, w/pins, +2/3/4mm, 2pcs)
 TCR5114XB - Differential Outdrives (front/rear, revised, lightened)
 TCR5122 - Steering Rack Bushings (aluminum, gun metal anodized, 2pcs)
 TCR5144 - Differential O-Rings (6pcs)
 TCR5253B - Aluminum Servo Horn (25t spline, M3 clamp, double hole arm)
 TCR6003 - Shock Caps (aluminum, gun metal anodized, 2pcs, EB48)
 TCR6003B - Shock Caps (aluminum, non-vented top, 2pcs)
 TCR6009B - Shock O-Ring Set (16pcs)
 TCR6017T - Shock Shafts w/ TiNi coating (rear, steel, 2pcs)
 TCR6061T - Shock Shafts w/ TiNi coating (rear, x-long, steel, 2pcs)
 TCR6130 - Shock Piston Blanks (flat/taper, 15.8mm, precision molded, 16 dimples)
 TCR6131 - Shock Piston Blanks (flat/flat, 15.8mm, precision molded, 16 dimples)
 TCR6146 - Shock Cartridge Set (CNC, Delrin, EB/NB/ET/NT/SCT)
 TCR6146B - Shock Cartridge Set (CNC, Delrin, revised, all 16mm shocks)
 TCR6160 - Shock Piston Blanks (CNC, flat/tapered, 16 dimples)
 TCR6163 - Shock Piston Blanks (CNC, flat/flat, 16 dimples)
 TCR8070 - Stub Axles (hardened steel, 2pcs)
 TCR8073 - CV Rebuild Kit (front/rear, for 2 axles)
 TCR8292Y - Lightweight Wing (ROAR/IFMAR legal, yellow)
 TCR8292K - Lightweight Wing (ROAR/IFMAR legal, black)
 TCR9047A - H - Spindle Arms (EB/NB/ET/NT48 2.0, requires TCR9041X, Type A -> H)
 TCR9054A - Rear Hubs and Bearing Spacers (adjustable roll center, L/R, EB/NB48 2.1)
 TCR9090A - Aluminum Sway Bar Collars (EB/NB/ET/NT48 2.0, 4pcs)
 TCR9117 - Spur Gear (44t, hardened steel, EB/ET48 2.0)
 TCR9141 - Adjustable Ackerman Spindles (EB/NB 2.1, requires TCR9047, TCR9142)
 TCR9142A - Spindle Carriers (L/R, aluminum, 15 degree, EB/NB48 2.1)
 TCR9142C - Spindle Carriers (L/R, aluminum, 21 degree, EB/NB48 2.1)
 TCR9145 - Differential Shims (keyed, 6x18mm, 6pcs)
 TCR9149A - Differential Cross Pins (Aluminum, 6pcs)
 TCR9149B - Differential Cross Pins (2.x, for 2-gear diff, 3pcs)
 TCR9150 - Differential Gear Set (internal gears only, 2.0)
 TCR9416 - Gearbox (rear, ET/NT48 2.0)
 TCR9433 - Rear Arm Mud Guards (lexan, ET/NT48 2.0)
 TCR9461 - Hinge Pin Brace (CNC, 7075, ET/NT48 2.0, A Block)
 TCR9462 - Hinge Pin Brace (CNC, 7075, ET/NT48 2.0, B Block)
 TCR9472 - Driveshafts (F/R, hardened steel, ET/NT48 2.0, 2pcs)
 TCR9484 - Sway Bar Set (FRONT, 1.6, 1.7, 1.8, 1.9, 2.0, ET/NT48 2.0)
 TCR9486 - Sway Bar Set (FRONT, 2.6, 2.7, 2.8, 2.9, 3.0, ET/NT48 2.0)
 TCR9494 - Sway Bar Set (REAR, 1.6, 1.7, 1.8, 1.9, 2.0, ET/NT48 2.0)
 TCR9496 - Sway Bar Set (REAR, 2.6, 2.7, 2.8, 2.9, 3.0, ET/NT48 2.0)
 TCRBB15214 - Ball Bearing (15x21x4, shielded, 4pcs)

Setup Information

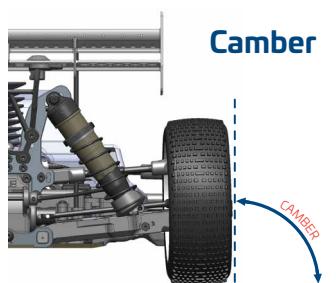
The purpose of making adjustments is to make the car go faster around the track, or to make it more controllable, or both if possible. A car that's easier to drive should produce lower, more consistent lap times. It will also inspire more confidence in the driver, which is always good when nerves start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

Before you start thinking about changing your car's setup, consider these two things: First, is the car in perfect working order? Be sure that all of the suspension components operate freely without excessive play, and that the car 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.



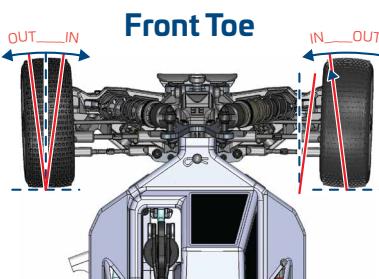
Ride Height

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. 23mm front and 25mm rear is a good starting point.



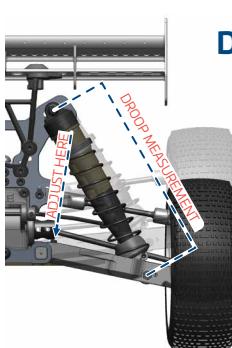
Camber

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 1-2 degrees in the front and 1.5-2.5 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.



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 115.5mm front, and 125mm rear.

If using a 'block' style droop gauge, the rear axle center is typically level with or below the bottom of the chassis and the front axle center is typically level with or above the bottom of the chassis. We suggest +4mm front droop and -4mm rear droop as a good all-around starting point.



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. Less Ackermann effect makes less toe out at full turn. More Ackermann will be smoother and have less overall steering. Less Ackermann will feel more direct and have more overall steering. A good starting point is forward on the bellcrank plate, and the "F" plate on the spindle.

More ackermann is better on high speed flowing tracks and less ackermann is better on slower, tighter tracks.

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.

Setup Information (continued)

Differentials



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 7k 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 5k in the center diff.

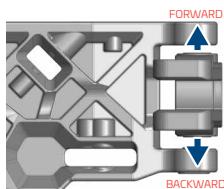
Rear: Thinner rear diff oil increases off-power steering and reduces traction into a corner. It also reduces on-power steering and increases traction out of a corner. Going too thin will make your vehicle inconsistent, however. Thicker rear oil will have opposite effects, and once again, going too thick will make the vehicle inconsistent. We recommend 5k in the rear diff.

Diff Cases: Using TKR9115C with TKR1261 will have less resistance to initial rotation versus TKR9115B, but will provide more consistent diff action (less diff fade) over the course of a long nitro main (+20 minutes)

Diff Gears: TKR9150B is a coarser pitch gear and has more resistance to continuous rotation. This means that it will resist "diffing out" or "diff unloading". Being coarser, the power delivery is not quite as smooth as the finer pitch gears. The coarser pitch will allow for a lighter weight oil to be used which will maintain low speed diff action without excessive differential action at high speeds and high loads. TKR9150 is a finer pitch gear and has less resistance to continuous rotation. Being finer, the power delivery is smoother than the coarser pitch gears. The finer pitch will allow for a heavier weight oil to be used which will allow a thick but smooth low speed diff action without excessive differential action at high speeds and high loads. We recommend TKR9150B for most conditions.

O-rings: A tighter fitting oring (TKR5144B) will have more resistance to both initial and continuous rotation, as if the oil is thicker. This is beneficial on higher grip tracks or tracks that are very rough and/or broken up. Looser fitting orings (TKR5144) are not used often and have less resistance to both initial and continuous rotation, as if the oil is thinner. This is beneficial on lower grip tracks.

Diff Shims: Different gear shims are another way to affect diffraction. TKR9145 has all of the same characteristics of a tighter oring (TKR5144B). TKR5145B has all the same characteristics of a looser oring (TKR5144).



Wheelbase Adjustments

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

Rear Hubs

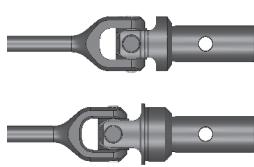


By changing the rear hubs you can alter the axle height and roll centers of the vehicle. Lower axle heights (higher pin positions) will provide more roll and give more rear traction. The car will change directions more slowly, roll deeper into turns, and can be more forgiving on power or under braking. Lower axle heights are more common on US style tracks. Higher axle heights (lower pin positions) will provide less roll and typically give less on-power rear traction. The car will change directions more quickly and can be more aggressive on power or under braking but be more stable under acceleration. Higher axle heights are more typical on European style tracks. When changing the axle height, the rear camber link location on the hub will also need to be adjusted to maintain the pin to link distance. Whichever way you move the pin you will need to move the camber link the same direction to maintain the same pin to link distance. Different axle heights also affect uptravel and downtravel (droop) values. When running higher/lower axle heights, you may need to limit your uptravel with o-rings on the shock shaft, outside of the shock body and increase the amount of droop you're running at the arm. When running lower axle heights you may need to remove o-rings from the shock shaft to increase up travel, and decrease the amount of droop you're running at the arm.



Front Axle Height The front axle height can be adjusted from 0 to +1 using TKR9141 and -1 to -2 using TKR9141B by changing the kingpin sleeves and pins. A lower axle height will have more steering and is typically used on looser, low grip tracks. A higher front axle will have less steering and is typically used on high grip tracks.

A higher front axle can also be used on very bumpy tracks to prevent the car from flipping over in turns. Take note that you must use the same color sleeve/pins together.



Rear Axle Options

TKR9287 has a longer stub axle and shorter driveshaft (bottom driveshaft/stub axle in image). It has more forward drive and more on-power rear grip. It has less off-power rear grip and decreased stability under braking. TKR9287 is recommended for most tracks. TKR9087 has a shorter stub axle and a longer driveshaft. It has less forward drive and less on-power grip. It has more off-power rear grip and increased stability under braking. TKR9087 is only recommended for slower, bumpier tracks.

C Block Screws



The C block now has the option to be screwed down to the chassis. This affects the torsional flex of the car as well as rear traction, both on and off power. With the screws in, there will be less torsional flex and more rear grip on power. With the screws out there will be more torsional flex and more rear grip off power. In almost all cases, running with the screws in provides better consistency and faster lap times.

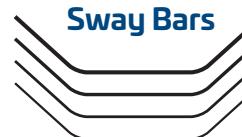
Setup Information (continued)

Pistons



Pistons with smaller holes work well for smoother tracks with large jumps 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 necessary with a change of 5°C or ~10°F.

Sway Bars

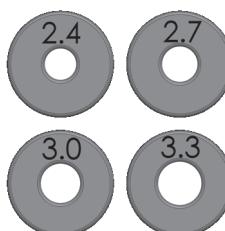


Sway bars are used to adjust a vehicle's lateral grip by resisting chassis roll. A thicker bar decreases roll more than a thinner bar will. More roll means more grip and less roll means less grip. The front sway bar affects mainly off-power steering at corner entry. The rear sway bar affects mainly on-power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

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 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.

Swau Bar Deadband Bushings



Sway bar deadband bushings allow you to accurately set the amount of deadband your sway bars have. In general, more deadband (larger diameter bushings) work better on rough tracks and less deadband (smaller diameter bushings) work better on smooth tracks. Typically you'll want the bushing diameter to be ~0.3mm - 0.6mm larger than the swaybar's diameter.

Radio Adjustments and Information

All Tekno RC vehicles are built out of the box with a neutral setup but are 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 your 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. Set your brake dual rate to 80% and then set your end-point so that the brakes are just strong enough to not allow you to push your car forward on the bench during full braking. Once on the track, this might be too strong or too weak of a setting depending on the available traction. Start turning the brake dual rate up or down a few percentage points at a time until you achieve your desired "feel". Under maximum braking you'll want your tires to be as close as possible to locking up without them actually doing it. Keep in mind that this setting will change from track to track and even throughout the day as track conditions can vary. Don't forget that you can also use servo speed for your throttle and brake in the same way you did for the steering.

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.

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:

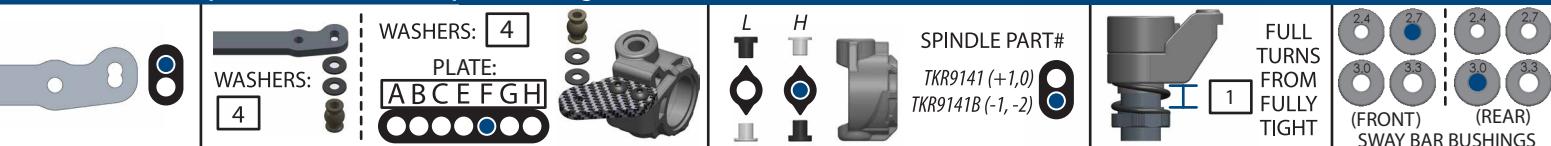
Properly maintained differentials are essential for a smooth operating vehicle. Check all three diffs regularly to make sure they are filled and operating as designed.

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.

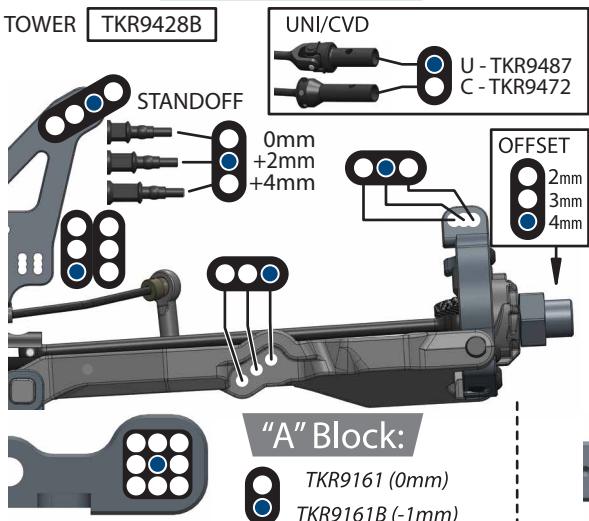
Name: Box Stock Date: _____ Event: _____ Ambient Temp: _____
 Track: INDOOR OUTDOOR Size: SMALL MEDIUM LARGE Traction: LOW MEDIUM HIGH
 Surface: SMOOTH BUMPY RUTTED Type: LOOSE / LOAMY HARD PACKED BLUE GROOVE CLAY ASTRO

Ackerman/Bumpsteer/Arm Plate/Spindle Height/Servo Saver

Condition: DUSTY DRY WET MUDDY



Front End:

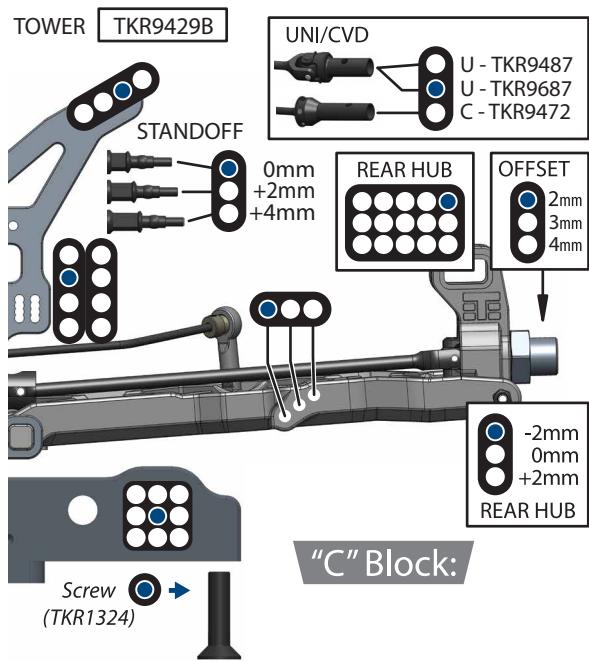


Suspension:

RIDE HEIGHT: 34	CAMBER: -2°
CASTER BLOCK: 18°	SWEEP: 0°
KICK UP: 10°	TOE: 2° out
SWAY BAR: 2.3mm	SHOCK LENGTH:
UP TRAVEL LIMITERS: 0mm	DROOP: 0mm
OIL: 550 CST	BRAND: Kit
PISTON: TKR6136	SPRING: TKR6090
REBOUND: 0%	BUILD: emul



Rear End:



Suspension:

RIDE HEIGHT: 38	CAMBER: -2°
ANTI-SQUAT: 3°	TOE: 2.5°
SWAY BAR: 2.5mm	SHOCK LENGTH:
UP TRAVEL LIMITERS: 0mm	DROOP: -8mm
OIL: 650 CST	BRAND: Kit
PISTON: TKR6137	SPRING: TKR6090
REBOUND: 0%	BUILD: emul

Chassis Braces:

MIDDLE: REAR:

Tires / Wheels:

BRAND / TREAD:

COMPOUND:

INSERT:

WHEEL:

NOTES:

Body / Wing:

BODY MAKE: Stock

WING MAKE: Stock

WING MOUNT POSITION:

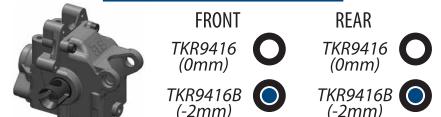
0mm: +7mm: +12mm:

NOTES:

Differentials:

OPTION	FRONT	CENTER	REAR
Diff Oil	10k	10k	5k
(TKR5144B)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
(TKR5144)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
(TKR5145B)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
(TKR9145)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Standard (TKR9114-TKR9112)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lightened (TKR9114XB-TKR9112x)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
(TKR9150)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
(TKR9150B)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
(TKR9115C)	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
(TKR9115B)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
(TKR9149)	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
(TKR9149A)	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Bulkheads:



Drivetrain:

CLUTCH / SPUR: 13 / 48 (teeth)

CLUTCH SHOES / SPRINGS: Aluminum / 2x Red, 2x Gold

BRAKE BIAS %: 60 (front) 40 (rear)

Engine/Electronics

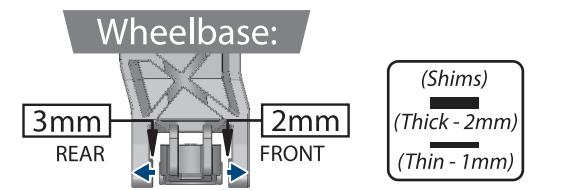
ENGINE / PIPE: /

FUEL / PLUG: /

STEERING THROTTLE / BRAKE

SERVOS: 300oz min / 300oz min

Notes:



General Warranty Information

Parts covered by our general warranty have a 50% MSRP replacement cost if bent, broken, or even worn out. See below for items covered by this warranty. Once the part(s) along with the completed warranty form is received and warranty eligibility is verified, we will send you a coupon code via e-mail that brings your price for the exact same replacement part to 50% of MSRP from our website (shipping not included).

Items covered by warranty:

Only individual vehicle parts are covered. For example, kits, engines, engine parts, tools, apparel, banners, and canopies are not covered by the general warranty. Also, discontinued parts, parts that are no longer in production or are not for sale on this website are not covered by the general warranty.

Conditions:

- Shipping to Tekno RC or to you will not be included in the coupon. You will be responsible for shipping the part, along with the completed warranty form to the address listed below. You will also be responsible for the shipping cost of the replacement part.
- You MUST send the part(s) to the address listed below. Pictures of the part are not sufficient.
- A completed warranty form MUST be included with all parts sent.
- The discount cannot exceed 50% from MSRP. If you already receive a discount (Team/Military), you will receive a coupon that reduces your cost of the part to 50% of MSRP.
- Coupons are valid for 14 days from the date of creation. If you do not purchase a replacement within this time, the coupon offer and warranty are void.
- This offer is ONLY valid at www.teknorc.com.
- Please be sure all customs fees have been paid. Tekno RC will refuse receipt of a package with customs fees due.
- Terms and conditions may change at any time without notice. Warranty policy may change at any time without notice. All warranties are subject to review and may be refused or revoked at our sole discretion at any time without notice. If any conditions or instructions above are not met, the warranty will not be processed, and no notice is required from us that your warranty may not be processed.



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PO Box 67259
Melissia, Athens 15102
Greece

Full Name:

Address:

City:

State:

Zip:

Country:

Email:

Phone:

Part #(s) in question:

Signature:

Date:



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NT48 2.2