



# EVADER<sup>BX</sup> PRO™

READY-TO-RUN



**Length:** 15.5" [394mm]  
**Width:** 9-7/8" [251mm]  
**Height:** 6.5" [165mm]  
**Weight:** 44 oz. [1247g] without battery  
**Wheelbase:** 11.6" [295mm]  
**Radio:** Futaba® 2PL Computer Radio  
**Motor:** 15 Turn Team Orion® Havok

## Technical Support Information

For technical assistance, contact:  
DuraTrax Product Support  
3002 N. Apollo Drive, Suite 1  
Champaign, IL 61822  
(217) 398-8970, Ext. 5  
carsupport@duratrax.com

## ASSEMBLY AND OPERATION MANUAL

### **Warranty**

- **DuraTrax®** will warranty this kit for 90 days after the purchase date from defects in materials or workmanship. DuraTrax will either repair or replace, at no charge, the incorrectly made part. Exception: Specific parts covered under the Graphite Parts and Stress Tech™ Guarantee, see page 3.
- Make sure you **save the receipt or invoice** you were given when you bought your model! It is your proof of purchase and we must see it before we can honor the warranty.
- To return your Evader BX Pro for repairs covered under warranty you should send your buggy to:

Hobby Services  
3002 N. Apollo Drive Suite 1  
Champaign, Illinois 61822  
Attn: Service Department  
Phone: (217) 398-0007 9:00 am-5:00 pm Central Time M-F  
E-mail: [hobbyservices@hobbico.com](mailto:hobbyservices@hobbico.com)

**If the buyer is not prepared to accept the liability associated with the use of this product, the buyer is advised to return this kit immediately in new and unused condition to the place of purchase.**

**READ THROUGH THIS MANUAL BEFORE STARTING. IT CONTAINS IMPORTANT INSTRUCTIONS AND WARNINGS CONCERNING THE ASSEMBLY AND USE OF THIS MODEL.**

## TABLE OF CONTENTS

INTRODUCTION .....	2
IMPORTANT SAFETY PRECAUTIONS .....	2
HELPFUL HINTS .....	2
GRAPHITE & STRESS TECH PARTS GUARANTEE.....	3
REPAIR SERVICE .....	3
SPECIFICATION & DESCRIPTION CHANGES .....	3
ADDITIONAL ITEMS REQUIRED .....	3
Tools Needed for Completion.....	3
Tools Included for Maintenance & Cleaning .....	3
FINISHING .....	4
INTELLISPEED SET UP .....	5
Features & Specifications.....	5
Speed Control Cautions.....	6
Speed Control Set Up.....	6
Acceleration / Traction Control.....	6
Reverse Delay & Reverse Lockout Setting .....	6
Thermal Cutoff Protection .....	7
ESC Troubleshooting.....	7
BALL DIFFERENTIAL BREAK-IN .....	8
MAINTENANCE TIPS .....	8
Before Each Run.....	8
After Each Run.....	8
After Every Ten Runs.....	8
ASSEMBLY GUIDE .....	9
Front Knuckle Arm, Hub Carrier, Axle .....	9
Steering Bellcrank Assembly .....	9
Servo, Servo Plate, Upper Plate .....	10
Rear Shock Tower, Bulkhead, & Suspension Arm ...	10
Front Shock Tower, Bulkhead, & Suspension Arm ..	11
Ball Differential.....	11
Slipper Clutch.....	12
Rear Hub, Rear Axles .....	12
Gearbox .....	13
Shocks .....	14
TUNING GUIDE .....	15
Caster.....	15
Camber.....	15
Front / Rear Toe-In and Toe-Out.....	15
Rear Anti-Squat.....	15
Wheel Base.....	15
Battery Placement.....	Back Cover
Ride Height .....	Back Cover
Camber Link Placement .....	Back Cover
Slipper Adjustment .....	Back Cover
Front Shock Adjustment .....	Back Cover
Rear Shock Adjustment .....	Back Cover
Shock Oils & Shock Springs.....	Back Cover
Shock Pistons .....	Back Cover
Adjustable Steering Rate .....	Back Cover
Steering Adjustment (Ackerman) .....	Back Cover

## INTRODUCTION

Thank you for purchasing the DuraTrax Evader BX Pro. This manual contains the instructions you need to build, operate and maintain your new electric R/C vehicle. Read over this manual thoroughly before building or operating the Evader BX Pro.

## SAFETY PRECAUTIONS

When the safety precautions are followed, the Evader BX Pro will provide years of enjoyment. Use care and good sense at all times when operating this radio controlled buggy. Failure to use this vehicle in a safe, sensible manner can result in injury or damage to property. You and you alone must insure that the instructions are carefully followed and all safety precautions are obeyed.

- Do not operate the Evader BX Pro near people. Spectators should be behind the driver or at a safe distance away from the vehicle.
- Make sure to read the instructions with the battery and charger before charging.
- Do not leave the charger unattended during charging. If the battery or charger become hot at any time, disconnect the battery from the charger immediately! Failure to do so may cause permanent damage to the charger and battery and may cause bodily harm.
- Do not cover the air intake holes on the charger during charging. This may cause the charger to overheat.
- Do not allow the electronic speed control (ESC) or radio equipment to come into contact with moisture. Water can cause the electronics to short out and can cause permanent damage.
- Always turn on the transmitter before turning on the electronic speed control.
- Before turning on your radio, check to make sure that no one else is running on the same frequency as your Evader BX Pro.

## HELPFUL HINTS

- Avoid working over a deep pile carpet. If you drop a small part or screw, it will be difficult to find.
- Place a mat or towel over your work surface. This will prevent parts from rolling off and will protect the work surface.

- Avoid running the buggy in cold weather. The plastic and metal parts can become brittle at low temperatures. In addition, grease and oil become thick, causing premature wear and poor performance.
- Test fit all parts before attaching them permanently.

## GRAPHITE AND STRESS-TECH™ PARTS GUARANTEE

We have engineered the Evader BX Pro to take the rough and tumble abuse that makes R/C fun. We are so confident of the quality and durability of the Graphite and Stress-Tech parts that we will replace any Graphite or Stress-Tech part you break during the first 12 months you own the vehicle. Just send in the part to us and we will send you a FREE replacement. Please see the Evader BX Pro parts list for the items covered under the Graphite and Stress-Tech guarantee.

To receive your free replacement part, please send the following to the Hobby Services address listed on the cover of this manual.

- 1. The broken part must be included.
- 2. The part number and description of the broken part.
- 3. Dated copy of your invoice or purchase receipt.
- 4. Your name, phone number and shipping address.

## REPAIR SERVICE

**Repair service is available anytime.**

After the 90 day warranty, you can still have your Evader BX Pro repaired for a small charge by the experts at DuraTrax's authorized repair facility, Hobby Services, at the address listed on the front page of this manual.

To speed up the repair process, please follow the instructions listed below.

- 1. Under most circumstances return the ENTIRE system: vehicle and radio. The exception would be sending in a Stress-Tech or Graphite part. See the instructions under Graphite and Stress-Tech Parts Guarantee above.
- 2. Make sure the transmitter is turned off and all of the batteries are removed.

- 3. Send written instructions which include: a list of all items returned, a THOROUGH explanation of the problem, the service needed and your phone number during the day. If you expect the repair to be covered under warranty, be sure to include a proof of date of purchase (your store receipt or purchase invoice).
- 4. Also be sure to include your full return address.

## SPECIFICATION & DESCRIPTION CHANGES

All pictures, descriptions and specifications found in this instruction manual are subject to change without notice. DuraTrax maintains no responsibility for inadvertent errors in this manual.

## ADDITIONAL ITEMS REQUIRED



**To operate the Evader BX Pro, the following items are required:**

- DuraTrax 6 cell battery pack (DTXC2081)
- DuraTrax 6-7 cell charger (DTXP4100)

## Tools Needed for Completion

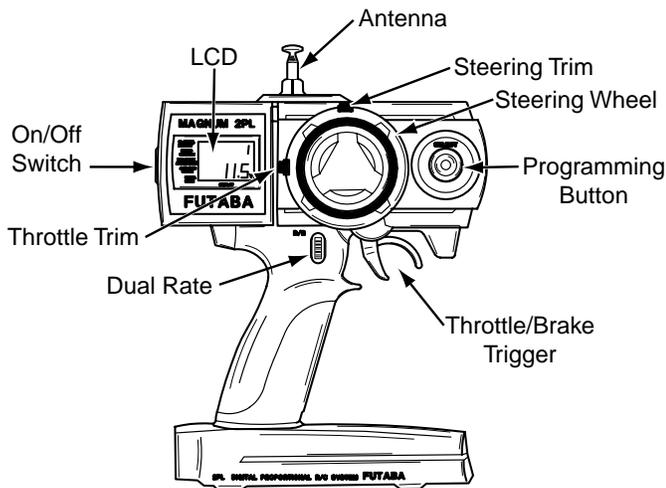
- Hobby knife (HCAR0105)
- #11 Blades (HCAR0211)
- #2 Phillips head screwdriver (DTXR0124)
- Needle nose pliers (DTXR0300)

## Tools Included for Maintenance & Cleaning

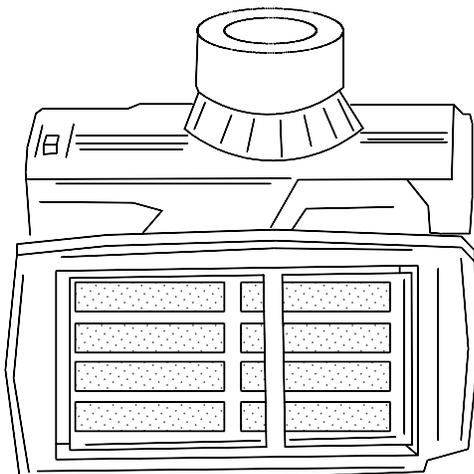
- 3/32", 1.5mm & 2.5mm hex Wrenches
- Turnbuckle wrench
- Nut driver (4-way)

## FINISHING

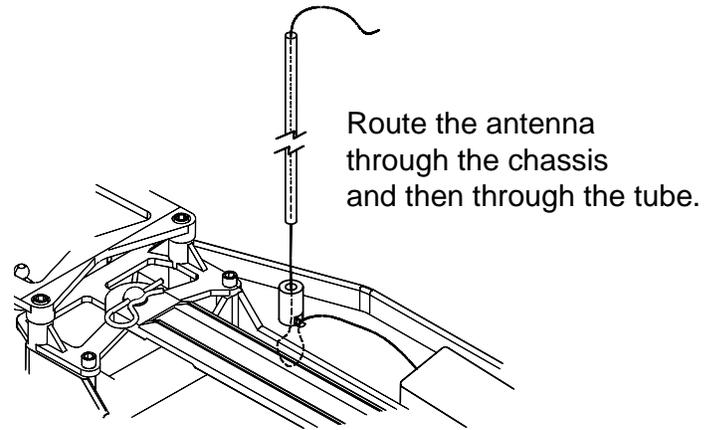
- ❑ 1. Remove the Evader BX Pro and radio system from the box.
- ❑ 2. Charge the 6- or 7-cell battery (not included) on the charger (not included). **See Safety Precautions before charging and charge the battery according to the instructions that came with your charger.**
- ❑ 3. Please refer to the included 2PL instruction manual for detailed information on setting up and changing settings on the radio.



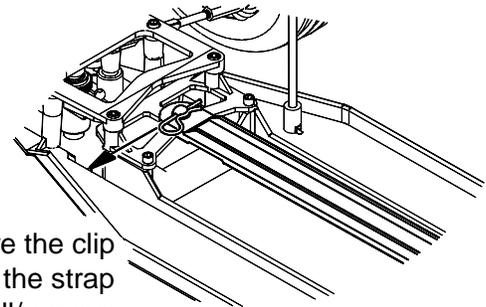
- ❑ 4. Install the transmitter antenna by screwing it into the hole on the top of the transmitter. Give a light tug on the antenna to be sure it is seated properly.



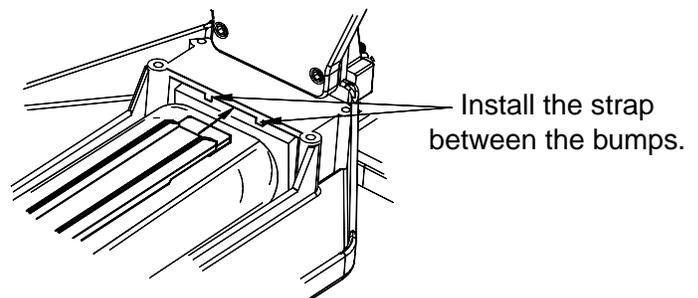
- ❑ 5. Slide open the battery door on the bottom of the transmitter. Install eight (8) "AA" batteries into the transmitter in the configuration molded into the plastic on the battery holder. Re-install the battery door.



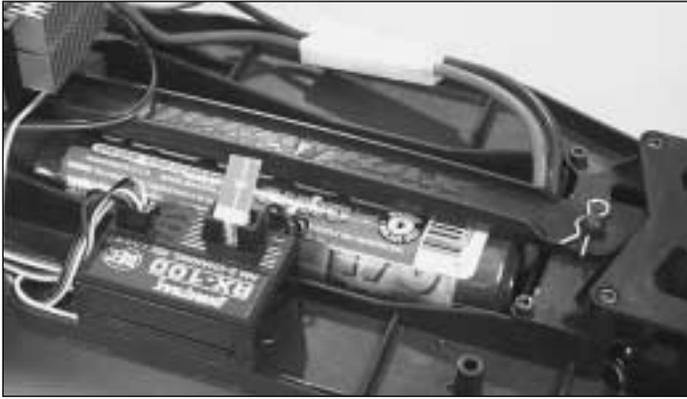
- ❑ 6. Straighten the receiver antenna. Route the receiver antenna through the holes in the chassis as shown above. Locate the antenna tube and thread the receiver antenna through the antenna tube. The antenna will be longer than the antenna tube. **DO NOT CUT OR COIL THE ANTENNA WIRE.** Press fit the antenna tube into the hole in the chassis. **Tip: Run the antenna wire through your fingers to straighten out the kinks before running through the antenna tube. Also, applying a small amount of soap and water to the antenna wire will help lubricate the wire for threading into the antenna tube.** Use a piece of tape to hold the excess antenna wire to the antenna tube.



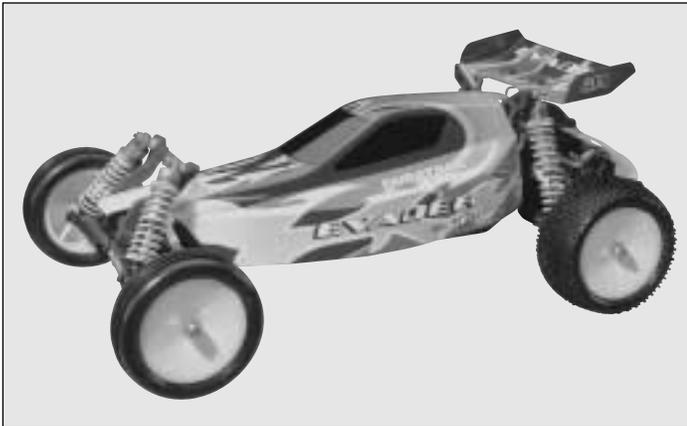
Remove the clip and lift the strap to install/remove the battery pack



- ❑ 7. Remove the body pin from the battery strap post and remove the battery strap from the Evader BX Pro.



8. Install the charged 6 or 7 cell battery into the battery slot (remove foam if using a 7-cell). Re-install the battery strap onto the Evader BX Pro. **Note that there is a channel in the chassis for the battery strap to rest in.** Re-install the body clip into the battery strap post.

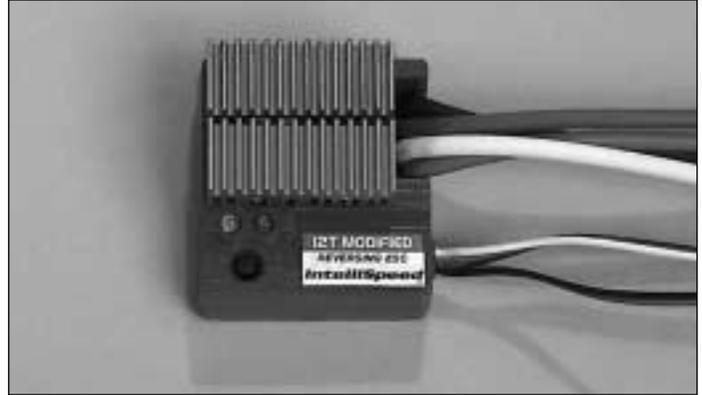


9. Decal the body as desired and install on the chassis, using two body clips to secure in place.



**Before running your new Evader BX Pro, please read the following instructions for important information on ESC setup, ball differential break-in and adjustment, and maintenance.**

## INTELLISPEED™ SET UP



The following instructions will help you get trouble-free operation from your electronic speed control (ESC). These simple steps will allow your ESC to achieve maximum performance and minimize the chance of problems due to incorrect installation. Consult the specifications listed below for limitations for this ESC. You should always ask your hobby dealer or call our service department before using the ESC for an application other than what is listed in these instructions. **PLEASE FOLLOW ALL INSTRUCTIONS CAREFULLY!**

### Features & Specifications

- The IntelliSpeed 12T Modified ESC is designed to be used with any 12-27 turn motor – great for intermediate or competition racing applications.
- Customize the model's traction control with three different built-in acceleration speed settings.
- Anti-Lock Brake System (ABS) enables greater control while cornering.
- A built-in reverse delay function aids in protecting model gear-trains when shifting from forward to reverse.
- Reverse lockout meets racing purposes.
- Motor, battery, and radio connectors are pre-installed.
- High frequency operation provides very smooth control, maximizes battery run time, and reduces operating temperatures.
- High temperature control automatically shuts down the ESC to prevent damage from occurring during excessive current situations.

Input Power:	7.2 to 8.4 volts DC (6-7 cells)
Operating Frequency:	1.0 kHz
BEC:	5.0 volts / 1.0 amp
On-Resistance:	0.0035 ohms
Max. Constant Current:	232 amps
Max. Peak Current:	800 amps
Motor Turns Limit:	no fewer than 12 turns
Acceleration Time Delays:	0.0, 0.1, and 0.2 seconds
Case Size (with heat sink):	1.48 x 1.34 x 0.57" (42 x 38 x 16mm)
Weight (with heat sink):	2.44 oz (69g)

## Speed Control Cautions

- Do not run the car near water! Never allow water, moisture, or any foreign material inside the case of the ESC.
- Never use more than 7 cells (8.4 volts total) in the battery pack.
- Do not attempt to connect the battery pack to the ESC in reverse, as permanent damage to the ESC could result.
- Never cut or splice the ESC input wires. Do not connect a battery to the receiver's (Rx) "battery" slot. The Rx receives power through the ESC itself which plugs into the Rx's throttle channel slot.
- Three 0.1µF, 50V monolithic capacitors should be properly installed on any motor that does not have capacitors built-in to reduce interference from electronic noise.
- Always disconnect the battery pack from the ESC when not in use.
- Be careful not to touch the heat sink during use as it can become very hot.

## Speed Control Set Up

1. Connect the battery pack to the ESC. Turn on the Tx, and then the ESC.
2. NEUTRAL POINT: Leave the throttle trigger in the neutral position. Press and hold the ESC's pushbutton until the green LED begins to flash, then release the button.
3. FULL THROTTLE: Move the throttle trigger to full throttle and hold until the red LED illuminates (motor will not operate in set up mode).
4. FULL REVERSE: Move the throttle trigger to full brake/reverse and hold until both the red and green LEDs illuminate.
5. ABS BRAKES: Return the throttle trigger to neutral. The green LED will flash briefly, followed by both the red and green LEDs oscillating after about 3 seconds.
  - A. To **activate** ABS brakes: Move the throttle trigger to either full throttle or full reverse (while the LEDs are oscillating), then return to neutral. The red LED will flash to confirm ABS brakes are active.
  - B. To **de-activate** ABS brakes: Do NOT move the throttle trigger (leave in neutral position) when the LEDs oscillate in this step.
6. The ESC is now set for operation, confirmed by the green LED remaining on.
7. If the motor operates in reverse when applying forward throttle, the throttle reversing switch on the Tx must be moved to the opposite position.

## Acceleration / Traction Control

*The acceleration, or traction control function provides 3 optional time delays which control how quickly full forward speed is delivered to the motor after full deflection is given to the throttle trigger. This allows the ESC to be customized to personal preferences or certain track and model conditions.*

To set the acceleration / traction control:

1. With the Tx throttle in the neutral position, press and hold the ESC's pushbutton for 3 seconds. The green LED will flash, followed by a flashing red LED.
2. Release the pushbutton, and choose from one of three acceleration time delays as follows:
  - A. After one second the red LED will blink ONCE. Press and release the pushbutton at this time to set a delay of **0.0 seconds**. This is often the desirable delay for normal race tracks.
  - B. After two seconds the red LED will blink TWICE. Press and release the pushbutton at this time to set a delay of **0.1 seconds**.
  - C. After three seconds the red LED will blink THREE times. Press and release the pushbutton at this time to set a time delay of **0.2 seconds**. This is often the desirable delay for slick tracks.

## Reverse Delay & Reverse Lockout Setting

*A time delay can be set for changing the direction of motor travel from forward to reverse. This delay helps to prevent damage to gear assemblies that can result from slamming the motor from high speed forward movement directly to reverse. The reverse direction control for this ESC can also be completely disabled or "locked-out." Many races require ESCs be used which do not have reverse function.*

Follow these steps to set reverse delay or reverse lockout:

1. With the Tx throttle in the neutral position, press and hold the ESC's pushbutton for 5 seconds. The green and red LEDs will flash.
2. Release the pushbutton, and choose from one of two reverse time delays or reverse lockout as follows:
  - A. After one second the green and red LED will blink ONCE. Press and release the pushbutton at this time to set a delay of **0.3 seconds**. This is often the desirable delay for normal race tracks.

B. After two seconds, the green and red LED will blink TWICE. Press and release the pushbutton at this time to set a delay of **0.8 seconds**.

C. After three seconds the green and red LED will blink THREE times. Press and release the pushbutton at this time to **completely lockout or shut off reverse**.

### **Thermal Cutoff Protection**

This ESC has built-in circuitry to sense an excessive heating condition caused by current overload. If the operating temperature exceeds 100° Celsius (212° F), the unit will automatically shut down, as indicated by flashing red and green LEDs. This is to protect all on-board components and prevent permanent damage from occurring. The ESC can again be used once the internal temperature returns to an acceptable level, as indicated by a change in the setup LEDs.

### **ESC Troubleshooting Guide**

#### **ESC DOES NOT WORK**

##### **Problem: Motor and/or steering servo are dead.**

- 1) Recharge dead batteries.
- 2) Check for faulty power connections.
- 3) Check for a damaged connection between ESC and Rx.
- 4) Reverse polarity at battery. Allow ESC to rest at least 1 minute to reset the circuit protection system.
- 5) Internal damage. Unit may require service. See "Service Procedures."

##### **Problem: No reverse.**

- 1) Tx adjusted incorrectly. Repeat Step 5 above.
- 2) Reverse transistors might be damaged, and unit may require service. See "Service Procedures."

##### **Problem: Case is melted.**

Internal damage and unit requires service. See "Service Procedures."

##### **Problem: ESC runs with switch off.**

Drive transistor may be blown and unit may require service. See "Service Procedures."

#### **ESC WORKS BUT OTHER PROBLEMS EXIST**

##### **Problem: Rx glitches or stutters during acceleration.**

- 1) The three required motor capacitors are not installed or have broken. Re-check all capacitors.
- 2) The Rx signal is intermittent due to a large voltage drop during acceleration. Use an external battery and a **non-BEC** Rx designed to be used with ESCs. Pay special attention to remove the red lead from the Rx to ESC harness prior to powering up the ESC or Rx.
- 3) Rx mounted too close to ESC causing interference. Relocate Rx away from ESC.
- 4) Check for faulty power connections.
- 5) Use of an AM radio system might be resulting in erratic signals. Use of an FM radio system might be necessary.

##### **Problem: Model runs slowly or has no acceleration.**

- 1) The ESC is not set up properly. Repeat Step 5 above.
- 2) Check for faulty battery and/or motor connections.
- 3) Tx is improperly adjusted. Repeat Step 3 above.

##### **Problem: Steering servo works but motor is dead.**

- 1) Motor brushes are hanging up, worn out, or motor is bad. Clean or replace brushes and check motor.
- 2) Check for faulty motor connections.

##### **Problem: Overheated motor or hot power plugs.**

- 1) Motor is geared too high. Change to a lower gear setup.
- 2) Binding in the vehicle's drivetrain. Check to make sure nothing is interfering with the model's drivetrain.
- 3) The motor is shorted electrically. Check the motor for shorts and replace if necessary.
- 4) Check for faulty motor connections.

##### **Problem: Motor runs backwards while forward LEDs are on.**

- 1) Motor is wired backwards. Re-check Step 5 above.
- 2) A "reverse rotation" motor is being used. Replace motor with a forward rotation motor.

##### **Problem: Motor runs backwards when forward command is given, even though LEDs match the motor direction.**

Adjust the Tx throttle reversing function to the opposite position.

##### **Problem: Model runs properly, then motor goes dead.**

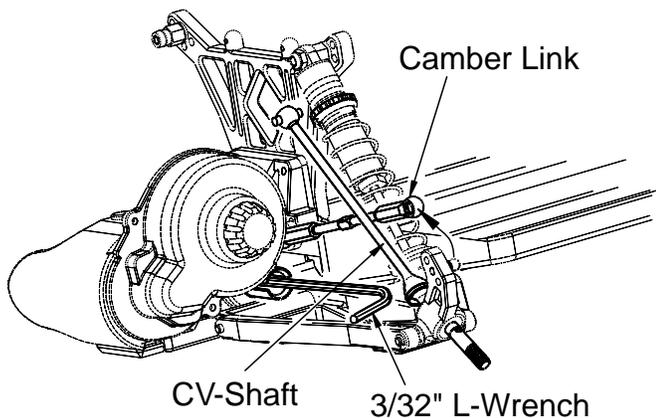
The built-in thermal protection may be automatically shutting down power to the ESC due to overheating conditions. Check for binding drivetrain, bad motor or incorrect gear ratio for track conditions. Adjust gear mesh, replace motor or change gear ratio. The ESC should reset in a few minutes and operation can again be attempted.

## BALL DIFFERENTIAL BREAK-IN

The ball differential has been adjusted at the factory for proper "break-in". Do not tighten the differential before the buggy has been properly broken-in or you can damage the differential.

After running the buggy for 2 or 3 battery packs, the ball differential will require readjustment. This is the "normal" break-in period for the ball differential. You will hear a "squealing" sound when accelerating from a stop and the buggy will accelerate slower. This indicates that the differential is properly broken-in and now requires adjustment. Do not run the buggy again until the differential is properly readjusted as follows.

Adjusting the differential is quick and easy. Access the adjusting screw by disconnecting the rear camber link (using pliers) at the right rear wheel. Rotate the wheel and CV shaft out of the way.



While holding the left rear tire, tighten the adjusting screw by inserting the included 3/32" L-wrench into the cap screw on the right side of the ball differential. The screw should be tightened until it is "just snug." **Caution: Do not over tighten the adjusting screw or you will damage the differential.** Next, loosen the screw 1/8 of a turn.

Reinstall the CV shaft back into the differential and reattach the camber link. The ball differential may need occasional adjustment to maintain performance.

## MAINTENANCE TIPS

### BEFORE EACH RUN

- 1. Check to make sure that all screws are tight and there are not any screws missing.
- 2. Check to make sure that the transmitter batteries are not low.
- 3. Check to make sure that all of the moving parts of the Evader move freely and do not bind.
- 4. Check for broken or damaged parts. Replace any broken or damaged parts before running the Evader BX Pro. Running of the Evader BX Pro with broken or damaged parts could result in damage to other parts.
- 5. Check to make sure that the receiver and speed control are still properly secured to the chassis.
- 6. Check to make sure that all wires are properly connected.

### AFTER EACH RUN

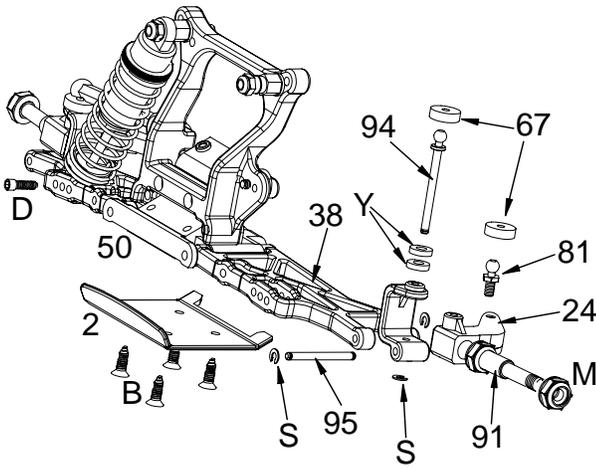
- 1. Clean any large globs of dirt or debris from the chassis and moving parts.
- 2. Disconnect and remove the battery from the Evader.
- 3. Check for any broken or damaged parts. This way parts may be replaced before the next run.

### AFTER EVERY 10 RUNS

- 1. Check the servo saver for proper operation. During normal maintenance, check the operation of the servo saver by grasping the servo arm and linkage and turning one of the front tires left and right. If the wheels turn without moving the linkages and servo arm, then the unit is operating properly. If the linkage and servo arm move, loosen the knurled adjustment nut on the left side servo saver shaft. If the servo saver becomes clogged with dirt, it may not work properly which could cause servo or linkage damage. The servo saver needs to be disassembled, cleaned and readjusted. To safely adjust the servo saver, loosen the knurled aluminum collar on the left side steering post completely. Then reinstall 1½ turns onto the post. Retest the servo saver as described above. Adjust the servo saver tighter or looser if needed.
- 2. Check to make sure that the bearings are free of dirt and debris and roll smoothly.
- 3. Check the shocks for oil leakage. If the shocks have leaked any shock fluid out, you should properly refill the shocks for best performance. Inspect the shock shafts for deep scratches.
- 4. Check the motor brushes for wear. If the motor brushes are severely worn or discolored they should be replaced.
- 5. Check for buildup and wear on the bearings of the motor. If the bearings are dirty, use DuraTrax Power Shot™ to clean them, then relubricate the bearings.
- 6. Check for proper gear mesh between the spur and pinion gear.

## ASSEMBLY GUIDE

The following information has been provided to help maintain and tune the Evader BX Pro.

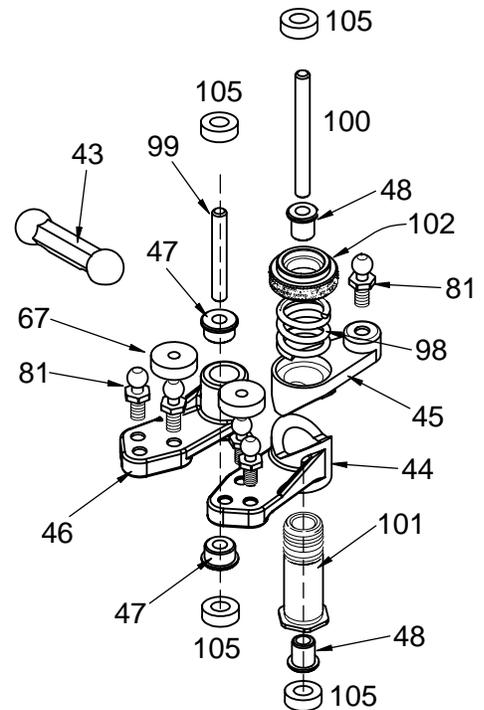


### Front Knuckle Arm, Hub Carrier, Axle

1. Attach the front hub carriers (28) to the front suspension arms (38) using the (95) front outer hinge pins.
2. Install the front axles (91) into the knuckle arms (24L or 25R).
3. Install two spacers onto each kingpin.
4. Insert the knuckle arms (24L or 25R) into the front hub carriers (28) and then secure them in place with the kingpins (94). **Note: The spacers go on the top of the hub carriers (28).**
5. Secure the kingpins (94) in place using 2.5mm e-clips (S).
6. Install 3mm set screws into the axles (91) to secure them to the kingpins (94).

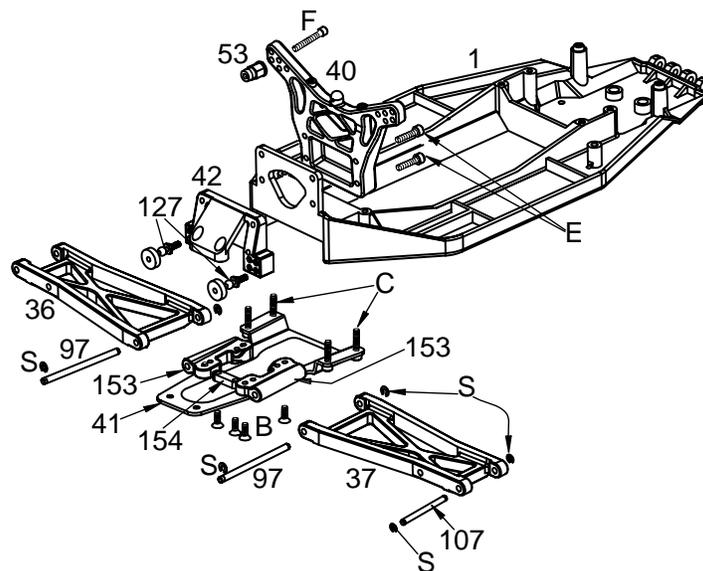
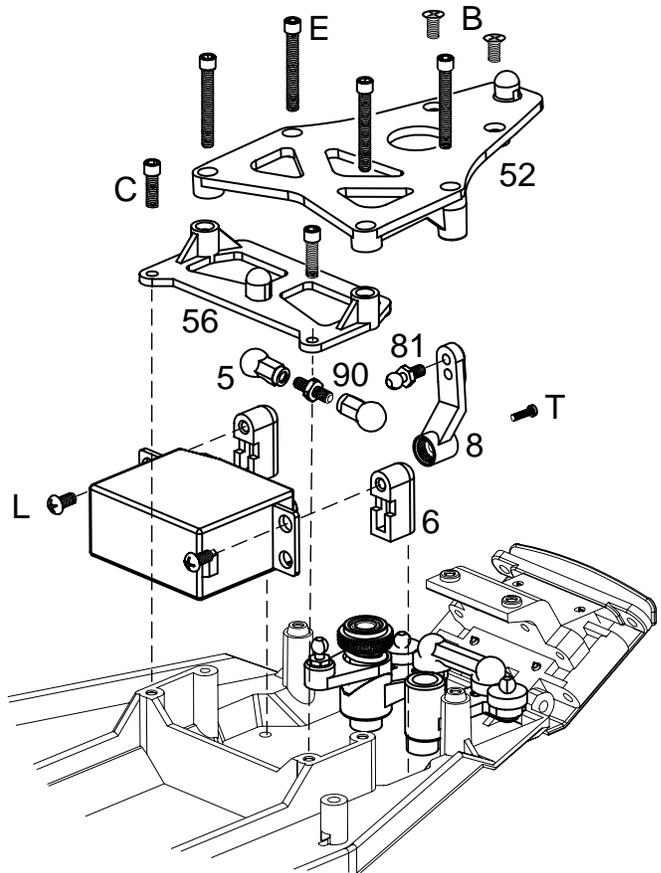
### Steering Bellcrank Assembly

1. Insert two of the brass bushings (105) into the chassis. **Note: The brass bushings may need to be slightly tapped into place. The bushings must be fully seated in the chassis.**
2. Insert the short aluminum bellcrank post (99) into the right brass bushing in the chassis.
3. Install ball studs (81) into the right bellcrank (46) in the holes shown.
4. Insert a plastic bushing (47) into each end of the right steering bellcrank. Again, make sure the bushings are fully seated.
5. Slide the assembled right bellcrank onto the short aluminum bellcrank post (99).
6. Install ball studs (81) into the lower left bellcrank (44) in the holes shown.
7. Insert the threaded aluminum servo saver hub (101) into the bottom of the lower left steering bellcrank (44). **Note: The aluminum servo saver hub is designed to key into the bottom of the lower left steering bellcrank. Make sure that the hex in the hub fully seats in the bellcrank.**
8. Install a ball stud (81) into the upper left steering bellcrank (45).
9. Slide the upper left steering bellcrank (45) onto the servo saver hub (101). The upper and lower left steering bellcranks are designed to key together.
10. Place the servo saver spring (98) on top of the two left steering bellcranks.
11. Secure the left bellcrank assembly together with the aluminum servo saver spring adjuster (102). **Note: The servo saver spring adjuster is machined on one side for the servo saver spring to fit into. Make sure this side goes down against the servo saver spring. The servo saver spring will need to be properly adjusted once the entire steering bellcrank assembly has been installed on to the Evader BX Pro.**
12. Insert a plastic bushing (48) into each end of the left steering bellcrank assembly. Again, make sure the bushings are fully seated.
13. Install the long aluminum bellcrank post (100) into the left brass bushing in the chassis.
14. Slide the assembled left bellcrank assembly onto the bellcrank post.
15. Attach the left and right bellcranks together with the one piece molded link (43).



## Servo, Servo Plate, Upper Plate

1. Attach the servo mounting lugs (6) to the front of the servo mounts on the servo using two 3x8 self tapping screws (L).
2. Install a ball stud (81) into the steering servo horn (8).
3. Install the steering servo horn onto the servo. **Note: Make sure the transmitter, steering servo and servo horn are properly centered before securing the servo horn to the servo.**
4. Secure the servo to the chassis with two 4-40x5/16" (B) flat head screws.
5. Attach the servo brace (56) to the chassis by installing two 4-40x3/8" (C) socket head screws into the two rear holes.
6. Connect the servo to the steering bellcrank assembly using the adjustable steering servo link (5 & 90).
7. Install two brass bushings (105) into the underside of the upper plate (52). **Note: The brass bushings may need to be slightly tapped into place. The bushings must be fully seated into the upper plate.**
8. Install the upper plate (52) onto the servo plate (56) and steering bellcrank assembly. Make sure the steering bellcrank posts insert into the bushings in the upper plate. Secure the upper plate with four 4-40x3/4" (E) socket head screws and two 4-40x5/16" (B) flat head screws (bulkhead).

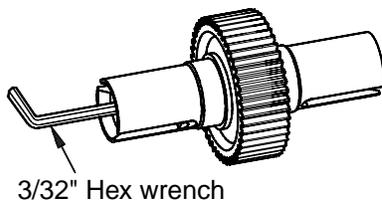
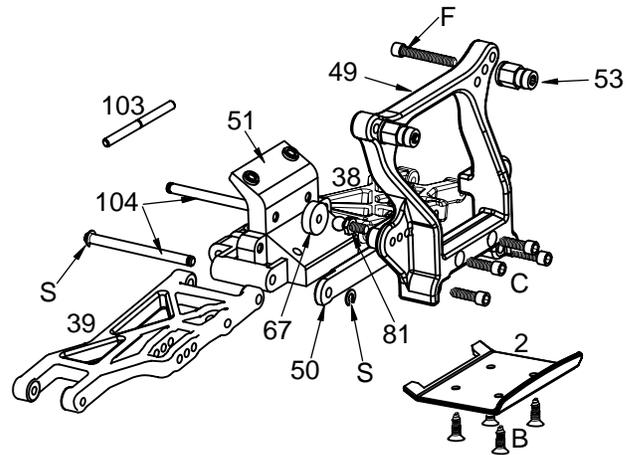


## Rear Shock Tower, Rear Transmission Plate, Rear Bulkhead, Rear Suspension Arm.

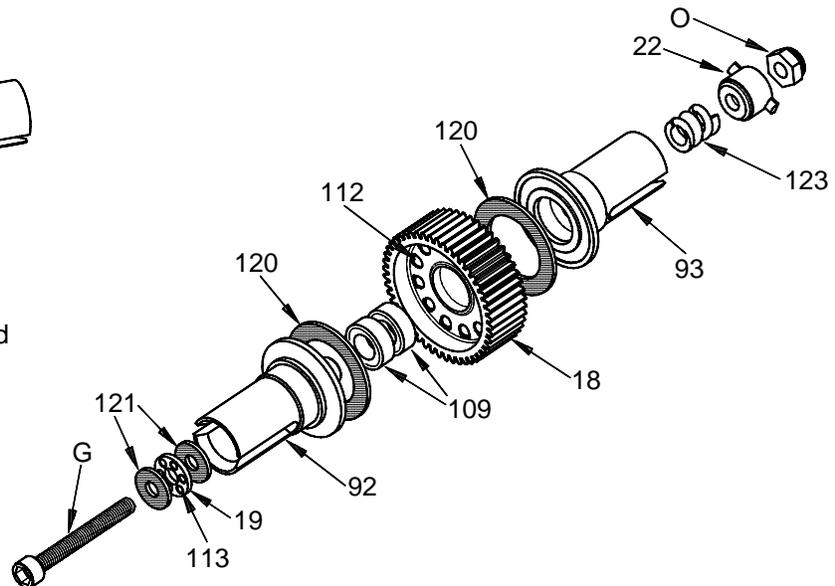
1. Attach the rear chassis plate (41) to the chassis using four 4-40x3/8" (C) socket head screws.
2. Attach the rear suspension arms (36 or 37) to the rear chassis plate (41) using the inner rear hinge pins (97).
3. Secure the inner rear hinge pins (97) in place using four 2.5mm e-clips (S).
4. Install the rear shock tower (40) and rear bulkhead (42) onto the chassis using four 4-40x1/2" (D) screws. **Note: Make sure the screws pass through the shock tower, chassis and into the rear bulkhead.**
5. Install two ball studs (81) into the appropriate holes in the rear bulkhead. **Note: The stock setting is the lower inner holes. Make sure that the ball studs are in the same hole location on both sides.**

## Bulkhead, Bulkhead Brace, Front Suspension Arm, Front Shock Tower, Front Bumper

1. Attach the front bulkhead to the chassis using the (103) hinge pin.
2. Secure the hinge pin in place using a 2mm set screw.
3. Attach and secure the front suspension arms (38) to the front bulkhead (51) using the (104) front inner hinge pins.
4. Secure the rear of the front inner hinge pin with a 2.5mm (S) e-clip.
5. Install the front bulkhead brace (50) onto the two front inner hinge pins.
6. Secure the front bulkhead brace using 2.5mm (S) e-clips.
7. Attach the front shock tower (49) to the front bulkhead using four 4-40x3/8" (C) socket head screws.
8. Secure the front body mount to the shock tower using two 4-40x3/8" (C) socket head screws.
9. Attach the front bumper (2) to the front bulkhead using four 4-40x5/16" (B) flat head machine screws.
10. Attach the top of the front bulkhead to the upper plate (52) with two 4-40x5/16" (B) flat head machine screws.

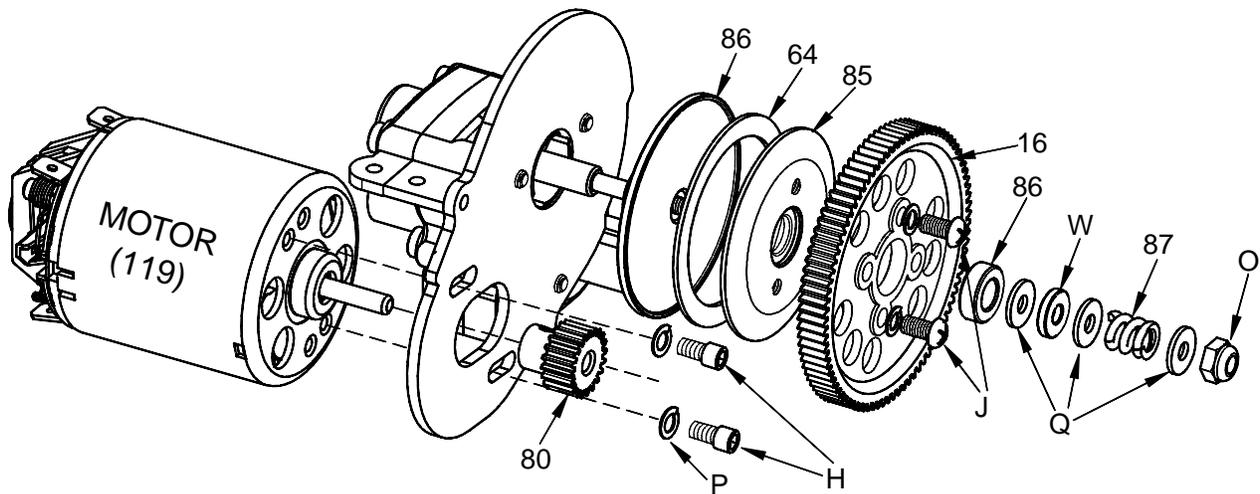


The diff can be properly adjusted by tightening the diff bolt until snug and then back off 1/8 turn.



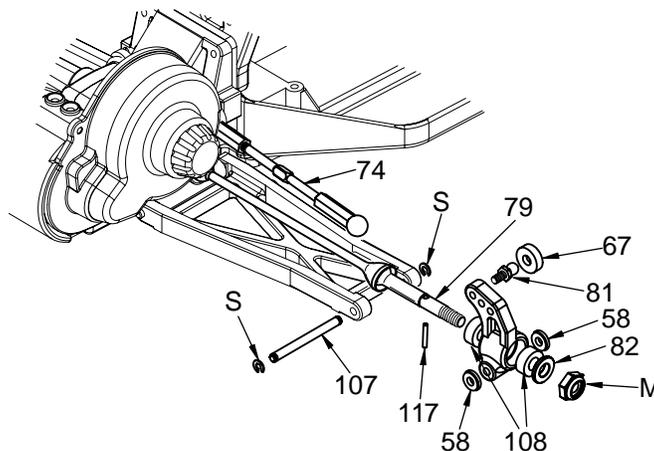
## Ball Differential

1. Place one of the differential thrust washers (121) onto the 3x25mm cap screw (G).
2. Lubricate the differential thrust washer using silicone grease. Then install the plastic thrust ball holder (19) and 1/16" thrust balls (113).
3. Lubricate the other differential thrust washer (121) and install it on top of the 1/16" thrust balls (113) and holder (19).
4. Insert the screw and thrust ball assembly into the left outdrive (92).
5. Apply a small amount of silicone grease to one of the differential rings (120) and place it onto the left outdrive. The grease should hold the differential ring in place.
6. Install a 5x9mm bearing onto the left outdrive.
7. Install the 3/32" differential balls (112) into the differential gear (18).
8. Install a 5x9mm bearing into the center of the differential gear and install the gear onto the left outdrive.
9. Install the other differential ring (120) onto the right differential outdrive (93).
10. Insert the differential spring (123), lock nut holder (22) and the 3mm lock nut (M) into the end of the right differential outdrive (93).
11. Join the left and right differential outdrives together and tighten the 3x25mm cap screw (G) until the differential gear cannot be turned while both differential outdrives are being held. The differential will require fine tuning once it has been installed into the car.



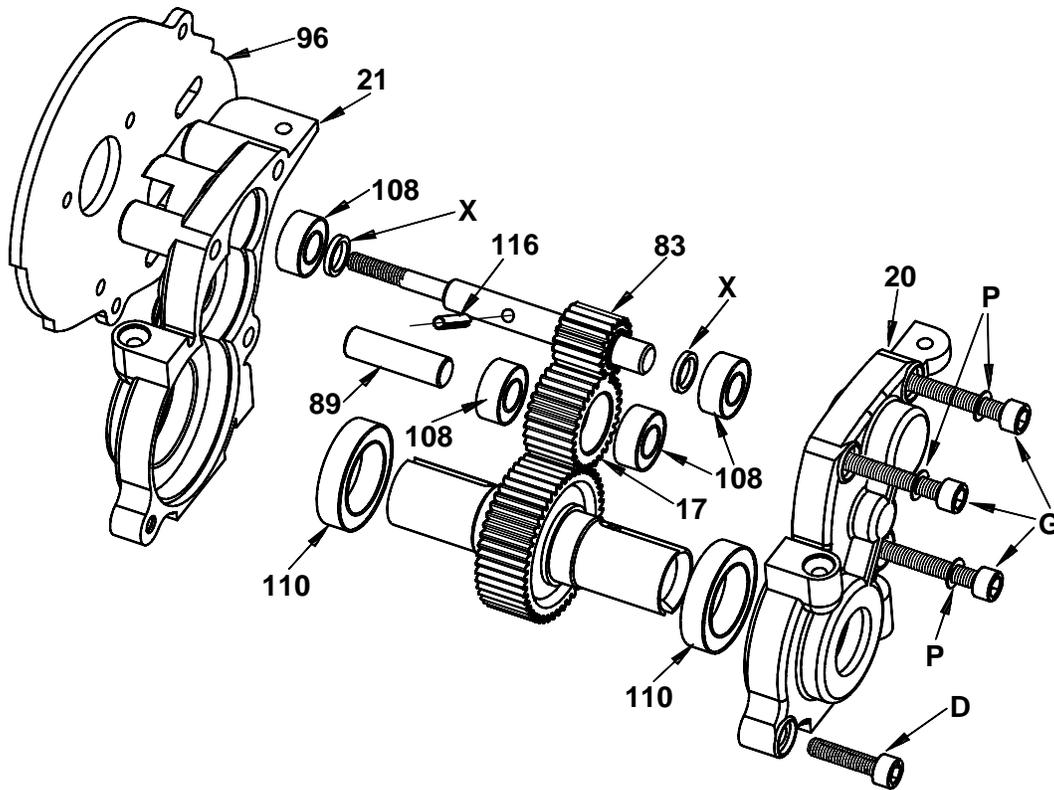
### Slipper Clutch

1. Install the inner slipper plate (86) onto the top shaft (83). Make sure the notch in the inner slipper plate keys onto the 2x10 spring pin in the top shaft.
2. Place the slipper pad (64) and outer slipper plate (85) onto the top shaft (83). Make sure the slipper pad (64) is properly centered between the two plates (85 & 86).
3. Install a slipper bushing (86) into the spur gear (16).
4. Slide the spur gear (16) onto the top shaft (83) and secure it to the outer slipper plate (85) using (2) 3x6mm screws (J) and (2) 3mm lock washers (P).
5. Slide a 3mm flat washer (V), 3mm brass washer (W), and then another 3mm washer (V) onto the top shaft.
6. Install the slipper spring (87), 3mm washer (V), and then the 3mm lock nut (O). Refer to page 16 for adjusting the slipper.



### Rear Hub, Rear Axles

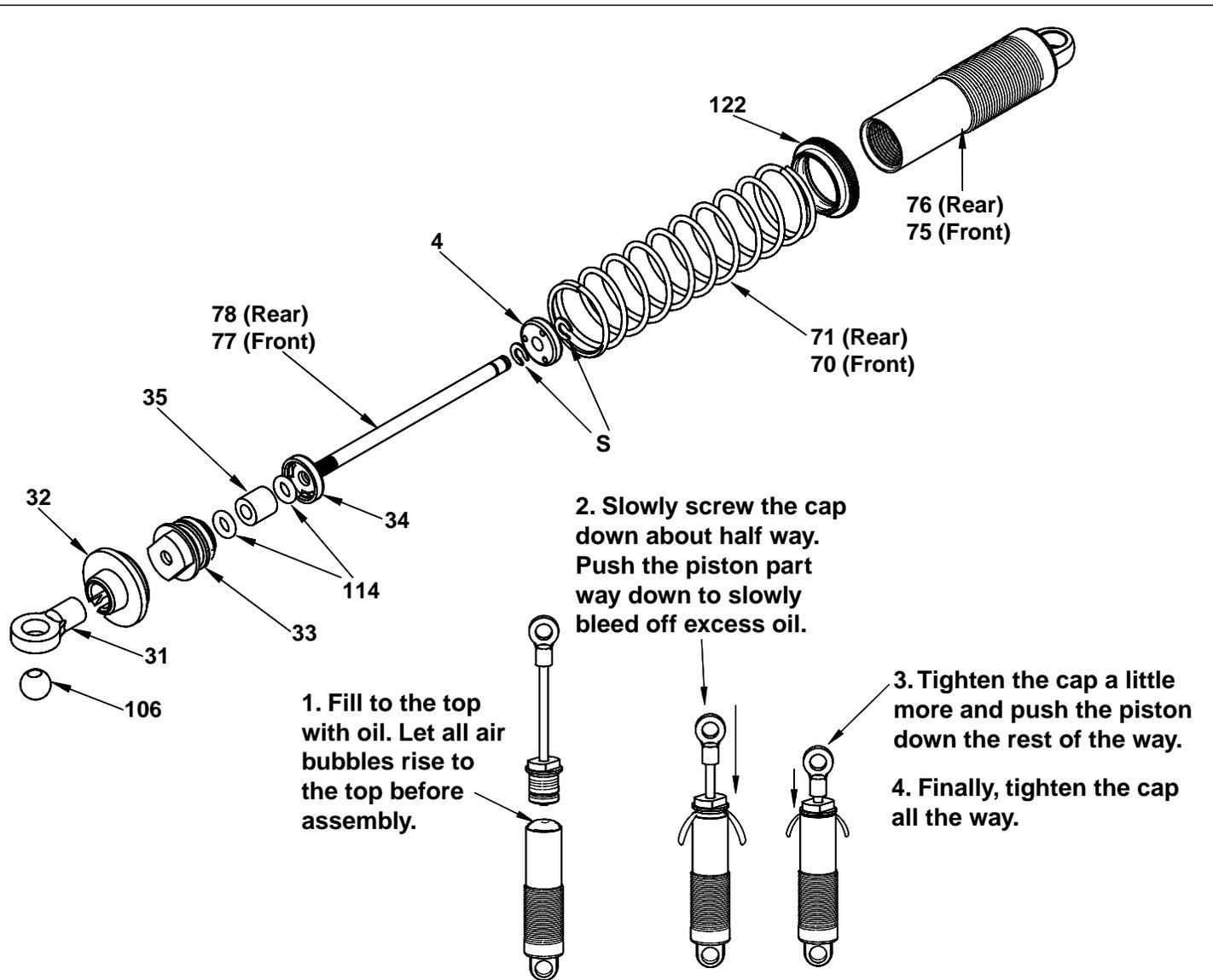
1. Install the bearing spacer (88) and two 5x10mm bearings (108) in both of the rear hubs (26L or 27R).
2. Install a ball stud (81) into the center hole of the rear hubs.
3. Place a 3mm plastic spacer (58) on each side of the rear hubs. Secure the rear hubs (26L or 27R) to the rear suspension arms (36L or 37R) with the 3mm outer rear hinge pins (107).
4. Secure the outer rear hinge pins (107) with 2.5mm e-clips (S).
5. Install the rear axles (79) through the bearings in the hubs.
6. Slide a rear axle washer (82) onto the axle and then install a 2.5x12mm spring pin (117) into the rear axle.



### Gearbox

**Note: When installing the bearings, make sure they are fully seated. If the bearings are not fully seated the gearbox halves may not properly fit together or may cause binding.**

1. Install a 5mm washer (X) onto each end of the top shaft (83)
2. Install a 5x10mm bearing (108) into the upper hole of the left gearbox half (21).
3. Install the top shaft (83) into the 5x10mm bearing that was just installed into the left gearbox half.
4. Install the 2x10mm spring pin (116) into the top shaft
5. Attach the roll pin cover (7) to the left gearbox half.
6. Install a 5x10mm bearing (108) into each side of the idler gear (17).
7. Install the idler gear shaft (89) into the idler gear bearings.
8. Install the idler gear into the left gearbox half (21).
9. Install a 12x18mm bearing (110) into the lower hole in the left gear box half (21).
10. Install the ball differential into the 12x18mm bearing that was just installed into the left gear box half (21).
11. Insert a 12x18mm (110) and 5x10mm bearing (108) into the right gearbox half.
12. Install the two gearbox halves together. Make sure the two gearbox halves seat together properly.
13. Secure the two halves together with the 4-40x1/2" socket head screw (D).
14. Install the aluminum motor plate (96) on the side of the gearbox and attach it with the (3) 3x25mm socket head screws (G).



**With a properly filled shock, the piston can be pushed in completely and will then rebound about 3/8". Exercise the shock a few times and listen for air bubbles. If you hear any squishing, rebuild the shock.**

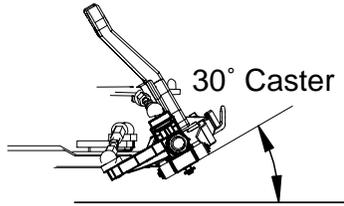
## Shocks

1. Install a 2.5mm e-clip (S) onto the lower groove on the shock shaft (77 or 78). Install the e-clip into the groove closest to the center of the shaft.
2. Place the shock piston (4) on top of the 2.5mm e-clip.
3. Secure the shock piston (4) in place with a 2.5mm e-clip (S) in the groove towards the end of the shaft.
4. Install a shock o-ring (114), then the plastic spacer (35), and then another shock o-ring (114) into the shock seal holder (33). Secure all of the parts in the shock seal holder using the shock seal cap (34).
5. Install the shock shaft assembly into the shock seal assembly.
6. Fill the shock with fluid. Then install the shock seal assembly into the shock.
7. While tightening the shock seal assembly down, work the shock shaft and piston up and down to help remove any air and excess oil that may be trapped in the shock.
8. Thread the shock shaft end (31) onto the end of the shock shaft (77 or 78). **Note:** To hold the shock shaft, use needle nose pliers with a piece of cloth (to protect the shaft).
9. Install the shock ball (106) in the shock end (31).
10. Install the shock spring (70 or 71) onto the shock body (75 or 76).
11. Secure the shock spring in place with the shock retainer (32).

# TUNING GUIDE

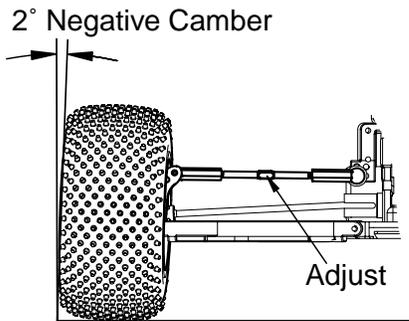
When tuning the Evader BX Pro make sure that you have equal length shocks on both sides (left and right), camber rods and steering rods. Also, make sure to have the shock pre-load adjusters at the same setting from left to right. They do not have to be the same front to rear.

## CASTER



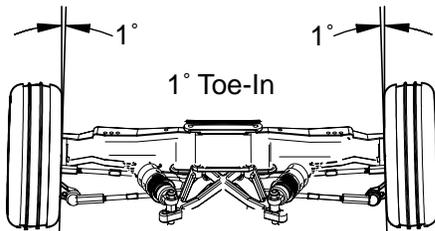
Caster refers to the angle which the kingpin is at in relation to the surface when viewed from the side. 0 degrees of caster means that the kingpin is straight up and down. The Evader comes stock with 30 degrees of caster and is not adjustable.

## CAMBER



Camber refers to the angle at which the tire and wheel ride in relation to the ground when viewed from the front or rear. Negative camber is when the tire and wheel lean inward and positive camber is when the tire and wheel lean outward. Typically you want 0 to 2 degrees of negative camber. Never put in positive camber. Make sure that both sides have equal amounts of camber by keeping the camber turnbuckles equal in length.

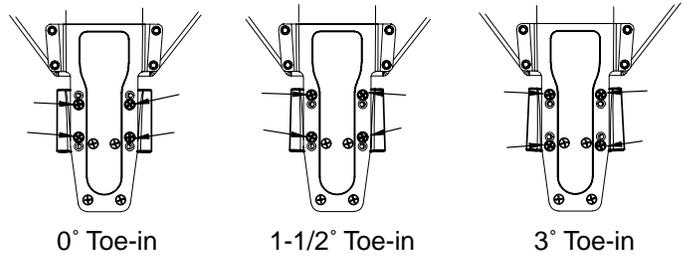
## FRONT/REAR TOE-IN AND TOE-OUT



Front wheels pointed towards each other.

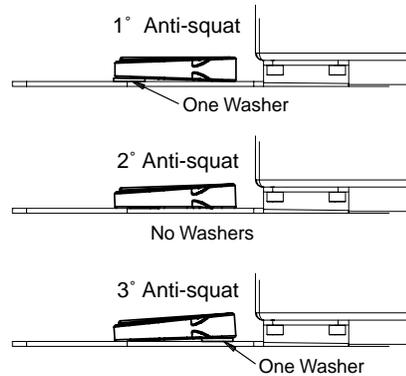
Toe-in and toe-out refer to the angle which the tire is at when viewed from above. Toe-in increases stability under

acceleration. However, toe-in also decreases steering when entering a corner. Toe-out will increase steering into corners, but will decrease the overall stability during acceleration. The front typically is set-up with 0 to -2 degrees of toe-in.



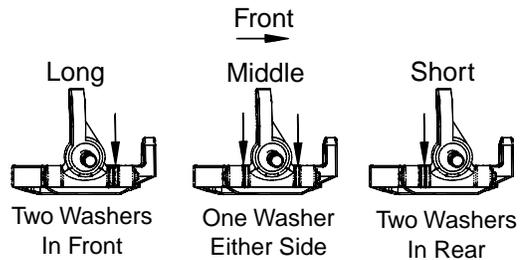
Rear toe-in affects the traction of both the front and rear of the buggy. Rear toe-in increases the amount of traction in the rear, but decreases steering. Decreasing rear toe-in will increase steering, but will give less rear traction. Notice that placing the rear suspension arm mount screws in different locations on the aluminum rear plate changes the rear toe-in.

## REAR ANTI-SQUAT



Increasing rear anti-squat will increase traction and give you more on-power stability. However, the buggy will have less grip when decelerating into a corner. This could cause the buggy to spin out entering the corner. More anti-squat allows the buggy to accelerate better through the rough parts of the track.

## WHEEL BASE



Wheel base is the distance from the center of the front wheel to the center of the rear wheel. Lengthening the wheel base of the Evader increases steering, but decreases rear traction as a result of increased weight distribution to the front wheels. Decreasing the wheel base of the Evader will increase rear traction, but decrease steering.

## BATTERY PLACEMENT

The battery placement of the Evader can be adjusted with the foam spacers which will affect the buggy's rear traction. Spacing the battery in the forward position will create less rear traction. Spacing the battery in the rear position will create more rear traction.

## RIDE HEIGHT

The ride height of the Evader BX Pro affects how it jumps and handles. The ride height of the Evader BX Pro is adjustable through the threaded pre-load adjusters on the shock bodies. To measure the ride height of the Evader, set the buggy up as if you are ready to run. Push the front of the buggy down all of the way and release it. When the buggy returns the front arms should be parallel with the surface. The rear ride height is set up the same except that the drive shafts are parallel with the surface. Lowering the front ride height will increase steering response due to more weight on the front wheels. Lowering the rear ride height will increase rear traction and reduce steering response due to more weight on the rear wheels.

## CAMBER LINK PLACEMENT

The camber link placement affects the traction and handling on rough tracks. Using a long mounting position will increase traction but decrease stability. Shortening the link will increase stability, but decrease traction.

## SLIPPER ADJUSTMENT

The slipper clutch is designed to help prevent gear breakage during jumping and controls traction. The slipper should not be overtightened. This could cause damage to the differential gears. The slipper should be set so that it slips for 1-2 feet from a stop with a fully charged battery.

## FRONT SHOCK ADJUSTMENT

Moving the tops of the shocks out will increase steering and produce quicker suspension reaction. Moving the tops of the shocks in will result in slower steering reaction, but greater smoothness over bumps. Mounting the bottoms of the shocks in the inside hole will give more slow speed steering but will take away some high speed steering.

## REAR SHOCK ADJUSTMENT

Moving the tops of the shocks in will result in more traction in the corners and greater smoothness over the bumps. Moving the tops of the shocks out will give the buggy more steering and enable it to handle large jumps better.

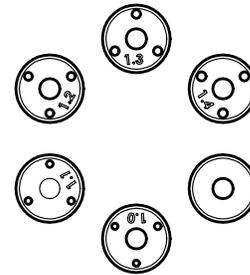
## SHOCK OILS AND SHOCK SPRINGS

Many different combinations can be used between the shock oils and shock springs. Some basic guidelines when setting up the Evader are that if the rear end is stiff, the buggy will have more steering and less rear traction. Hardening the front will result in less steering and more rear traction. (Changing

the position of the threaded shock pre-load adjusters results in ride-height change. It does not change the spring tension.)

Thinner shock oil will make the shocks react faster, but makes the buggy less stable and may cause the buggy to bottom out over large jumps. Thicker shock oil makes the buggy smoother over large jumps and in straights, but less reactive over rough sections. We have filled the shocks with 20 weight shock oil, which is a good choice for most driving conditions.

## SHOCK PISTONS



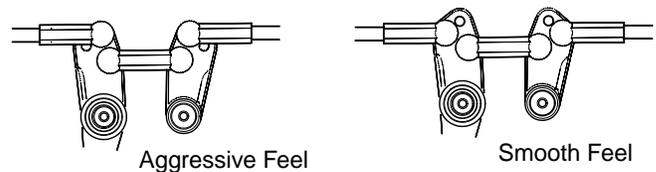
**"1x3" Shock Piston:** 1 = The diameter of each piston hole.  
3 = How many holes the piston has.

The Evader BX Pro comes with optional shock pistons to help you tune your kit to the different track conditions. You will find a 1x3, 1.10x3, 1.20x3 (stock), 1.30x3 and a 1.40x3. You can obtain the same static feel by going with a larger hole in the piston and thicker oil or a smaller hole in the piston and a thinner oil. However, the handling of the car will be different. Typically you would use a large hole piston with thicker oil for bumpy or rutted tracks. This helps keep the oil from "packing" up. You would use small hole with thinner oil for tracks with large jumps. This helps keep the chassis from "slapping" the ground.

## ADJUSTABLE STEERING RATE

Adjust the D/R to increase or decrease the steering travel. When first learning to drive, adjust the dual rate for less steering travel. As you get to be a better driver, adjust the dual rate for more steering travel.

## STEERING ADJUSTMENT (ACKERMAN)



Choose the best steering link location for your driving style. Use the outer location (most common) for a smoother, more predictable feel. Use the inner location for a more aggressive, responsive feel.