Mini LST2

Operation Manual

Introduction

Thank you for purchasing the Mini-LST2 from Losi®. This guide contains the basic instructions for operating your new Mini Monster Truck. While the Mini-LST2 is great for first-time R/C drivers, it does require some mechanical experience and/or adult supervision for drivers under the age of 12. It is crucial that you read all of the instructions, safety warnings, and accompanying printed material in order to operate your new model correctly and avoid unnecessary damage. Please take a moment to look the documentation over before running your new Mini-LST2.

Warning

An R/C model is not a toy! If misused, it can cause serious bodily harm and damage to property. Operate only in open areas and follow all instructions included with your radio and model.

Warranty Period

Horizon Hobby, Inc., (Horizon) warranties that the Products purchased (the “Product”) will be free from defects in materials and workmanship at the date of purchase by the Purchaser.

Limited Warranty

(a) This warranty is limited to the original Purchaser ("Purchaser") and is not transferable. REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE PURCHASER. This warranty covers only those Products purchased from an authorized Horizon dealer. Third party transactions are not covered by this warranty. Proof of purchase is required for warranty claims. Further, Horizon reserves the right to change or modify this warranty without notice and disclaims all other warranties, express or implied.

(b) Limitations- HORIZON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCT. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER’S INTENDED USE.

(c) Purchaser Remedy- Horizon's sole obligation hereunder shall be that Horizon will, at its option, (i) repair or (ii) replace, any Product determined by Horizon to be defective. In the event of a defect, these are the Purchaser's exclusive remedies. Horizon reserves the right to inspect any and all equipment involved in a warranty claim. Repair or replacement decisions are at the sole discretion of Horizon. This warranty does not cover cosmetic damage or damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or modification of or to any part of the Product. This warranty does not cover damage due to improper installation, operation, maintenance, or attempted repair by anyone other than Horizon. Return of any goods by Purchaser must be approved in writing by Horizon before shipment.

Damage Limits

HORIZON SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCT, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY. Further, in no event shall the liability of Horizon exceed the individual price of the Product on which liability is asserted. As Horizon has no control over use, setup, final assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly, the user accepts all resulting liability.

If you as the Purchaser or user are not prepared to accept the liability associated with the use of this Product, you are advised to return this Product immediately in new and unused condition to the place of purchase.

Law: These Terms are governed by Illinois law (without regard to conflict of law principals).

Safety Precautions

This is a sophisticated hobby Product and not a toy. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this Product in a safe and responsible manner could result in injury or damage to the Product or other property. This Product is not intended for use by children without direct adult supervision. The Product manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual, prior to assembly, setup or use, in order to operate correctly and avoid damage or injury.

Questions, Assistance, and Repairs

Your local hobby store and/or place of purchase cannot provide warranty support or repair. Once assembly, setup or use of the Product has been started, you must contact Horizon directly. This will enable Horizon to better answer your questions and service you in the event that you may need any assistance. For questions or assistance, please direct your email to productsupport@horizonhobby.com, or call 877.504.0233 toll free to speak to a service technician.

Inspection or Repairs

If this Product needs to be inspected or repaired, please call for a Return Merchandise Authorization (RMA). Pack the Product securely using a shipping carton. Please note that original boxes may be included, but are not designed to withstand the rigors of shipping without additional protection. Ship via a carrier that provides tracking and insurance for lost or damaged parcels, as **Horizon is not responsible for merchandise until it arrives and is accepted at our facility**. A Service Repair Request is available at www.horizonhobby.com on the “Support” tab. If you do not have internet access, please include a letter with your complete name, street address, email address and phone number where you can be reached during business days, your RMA number, a list of the included items, method of payment for any non-warranty expenses and a brief summary of the problem. Your original sales receipt must also be included for warranty consideration. Be sure your name, address, and RMA number are clearly written on the outside of the shipping carton.

Warranty Inspection and Repairs

To receive warranty service, you must include your original sales receipt verifying the proof-of-purchase date. Provided warranty conditions have been met, your Product will be repaired or replaced free of charge. Repair or replacement decisions are at the sole discretion of Horizon Hobby.

Non-Warranty Repairs

Should your repair not be covered by warranty the repair will be completed and payment will be required without notification or estimate of the expense unless the expense exceeds 50% of the retail purchase cost. By submitting the item for repair you are agreeing to payment of the repair without notification. Repair estimates are available upon request. You must include this request with your repair. Non-warranty repair estimates will be billed a minimum of ½ hour of labor. In addition you will be billed for return freight. Please advise us of your preferred method of payment. Horizon accepts money orders and cashiers checks, as well as Visa, MasterCard, American Express, and Discover cards. If you choose to pay by credit card, please include your credit card number and expiration date. Any repair left unpaid or unclaimed after 90 days will be considered abandoned and will be disposed of accordingly. **Please note: non-warranty repair is only available on electronics and model engines.**

Electronics and engines requiring inspection or repair should be shipped to the following address:

Horizon Service Center
4105 Fieldstone Road
Champaign, Illinois 61822

All other Products requiring warranty inspection or repair should be shipped to the following address:

Horizon Product Support
4105 Fieldstone Road
Champaign, Illinois 61822

Please call 877-504-0233 with any questions or concerns regarding this product or warranty.

Safety, Precautions, and Warnings

As the user of this product, you are solely responsible for operating it in a manner that does not endanger yourself and others or result in damage to the product or the property of others.

Carefully follow the directions and warnings for this and any optional support equipment (chargers, rechargeable battery packs, etc.) that you use.

- Always operate your model in an open area away from cars, traffic, or people.
- Avoid operating your model in the street where injury or damage can occur.
- Never operate the model out into the street or populated areas for any reason.
- Never operate your model with low transmitter batteries.
- Carefully follow the directions and warnings for this and any optional support equipment (chargers, rechargeable battery packs, etc.) that you use.
- Keep all chemicals, small parts and anything electrical out of the reach of children.
- Moisture causes damage to electronics. Avoid water exposure to all equipment not specifically designed and protected for this purpose.

This is a sophisticated radio controlled model that must be operated with caution and common sense. Failure to operate your Mini-LST2 in a safe and responsible manner could result in damage to the model and property. The Mini-LST2 is not intended for use by children without direct adult supervision. Team Losi and Horizon Hobby shall not be liable for any loss or damages, whether direct, indirect, special, incidental, or consequential, arising from the use, misuse, or abuse of this product or any product required to operate it.

Note on Lithium Polymer Batteries

Lithium Polymer batteries are significantly more volatile than alkaline or Ni-Cd/ Ni-MH batteries used in R/C applications. All manufacturer's instructions and warnings must be followed closely. Mishandling of Li-Po batteries can result in fire. Always follow the manufacturer's instructions when disposing of Lithium Polymer batteries.

Required Equipment

- 4 AA Alkaline batteries for the transmitter

Tools and Items You Will Find Handy

- Soft bristle brush for cleaning
- 5.5mm nut driver for the wheel nuts.
- #0 or #1 Phillips screwdriver
- LOSA99100 .050″ Allen Wrench

Note: Use only Losi tools or other high quality tools. Use of inexpensive tools can cause damage to the small screws and parts used on this type of model.

The Radio System

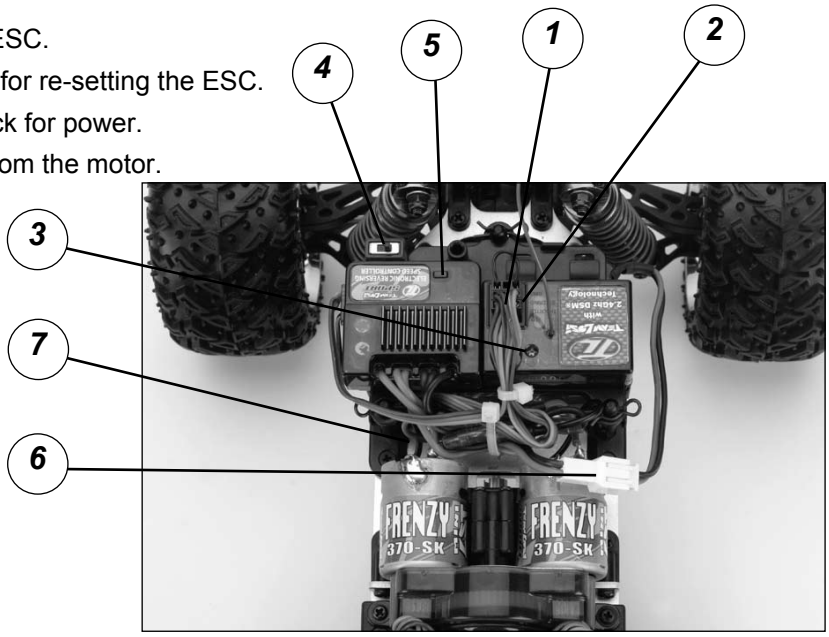
The following is an overview of the various functions and adjustments found on the Losi DSM® radio system. It is important for you to read and understand about all of these functions and adjustments before driving.

The Receiver

1. **Throttle Port**: Where the Electronic Speed Control (ESC) plugs in.
2. **Steering Port**: Where the steering servo(s) plug in.
3. **Bind Status LED**: Blinking LED signifies binding in process, solid light indicates binding complete.

The Electronic Speed Controller (ESC)

4. **On/Off Switch**: Powers the receiver and ESC.
5. **Setup Button and Indicator Light**: Used for re-setting the ESC.
6. **Battery Lead**: Connects to the battery pack for power.
7. **Motor Lead**: Connects to the wire leads from the motor.



Resetting the ESC

The ESC comes from the factory pre-set and ready for use. If for some reason you should need to re-set the ESC, use the following instructions.

1. Turn on the transmitter and ESC. Press the set-up button—both the RED and GREEN LEDs will come on.
2. Pull the throttle trigger all the way back (full speed) and press the set-up button once—only the GREEN LED will come on.
3. Push the throttle trigger full forward (brake/reverse) and push the set-up button once—only the RED LED will come on.
4. Let the throttle trigger return to the neutral (center) position and press the set-up button once more to save the program and exit set-up mode—only the GREEN LED will be on.

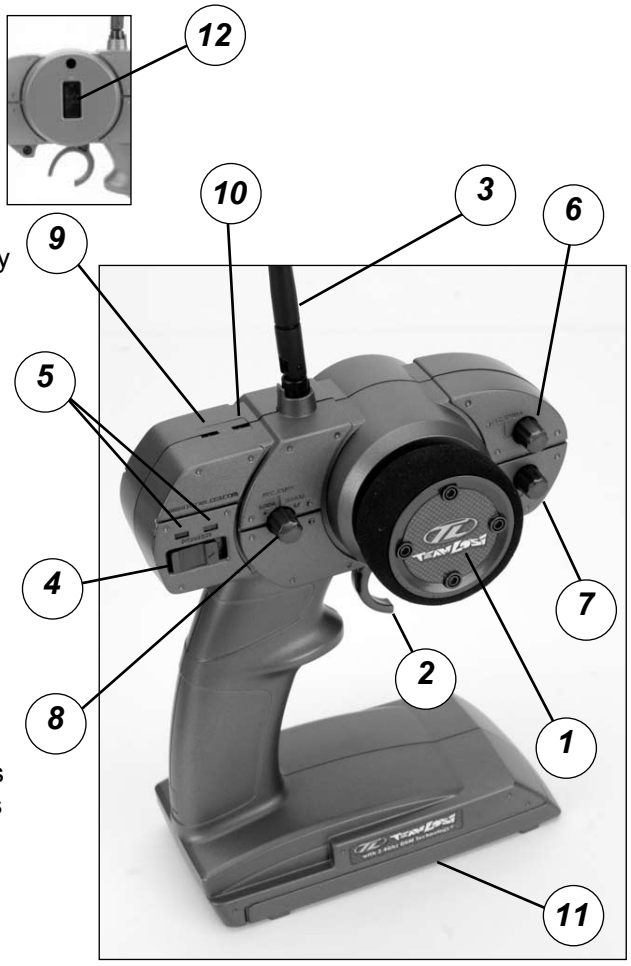
Notes:

A: If the receiver does not receive a signal from the Transmitter, or if during the bind process, the ESC will not enter the Program mode.

B: While in Program mode, the motor will not run.

C: If the set-up button is not pressed for 20 seconds while in the Program mode, the ESC will exit the Program mode and the data will be saved.

The Transmitter



1. **Steering Wheel**: Controls direction (left/right) of the model.
2. **Throttle Trigger**: Controls speed and direction (forward/ reverse) of the model.
3. **Antenna**: Transmits signal to the model.
4. **On/Off Switch**: Turns the power on for the transmitter operation.
5. **Indicator Lights**: Green (top) light indicates adequate battery power. Red (bottom) light indicates signal strength.
6. **Steering Trim (ST. TRIM)**: Adjusts the "hands off" direction of the model.
7. **Throttle Trim (TH. TRIM)**: Adjusts the motor speed to stop at neutral.
8. **Steering Rate**: Adjusts amount front wheels move when the steering wheel is turned left or right.
9. **Steering Reverse Switch (ST. REV)**: Reverses the function of the steering when the wheel is turned left or right.
10. **Throttle Reverse Switch (TH. REV)**: Reverses the function of the speed control when pulled back or pushed forward.
11. **Bottom Cover**: Covers and holds the batteries powering the transmitter.
12. **Binding LED**: The orange LED blinks when the transmitter is binding to the receiver. A solid light indicates binding process completed successfully.

Re-Binding the Transmitter to the Receiver

The Losi DSM radio system included in the Mini-LST2 operates on 2.4 GHz, and provides 79 different channels which are automatically selected when the transmitter and vehicle are turned on. The communication between the transmitter and receiver begins in the few seconds after the transmitter and vehicle are both turned on. This is called the "binding process." The Losi DSM radio system will not interfere with previous technology radio systems that operate on 27 MHz or 75 MHz frequencies and you will not receive any interference from them.

Although set at the factory, below are the steps required to re-bind your transmitter to the receiver should the need arise. During the bind process there is a unique ID from the transmitter communicated to the receiver to ensure trouble-free radio operation.

Steps to Re-Bind

1. Ensure that the transmitter and vehicle are both turned off.
2. Using the supplied Bind plug (which looks like a standard receiver plug with a wire loop installed) insert or plug into the receiver slot labeled "BIND". Looking down on the receiver this slot would be below the LED and is the farthest from the LED, or nearest to the corner of the receiver.

Note: You do not need to remove any of the other plugs to re-bind.

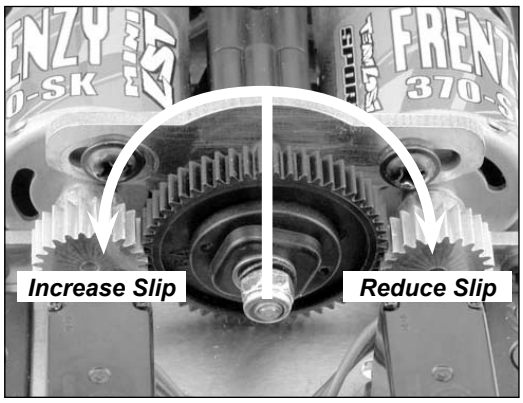
3. With the Bind plug installed, turn on the vehicle. Notice a blinking Orange LED within the receiver.
4. Now you are ready to turn on the transmitter. You should notice on the back of the transmitter a similar blinking Orange LED under the translucent cover.
5. Both the receiver and transmitter blinking Orange LED will stop blinking and become solid, indicating they have "bound" themselves together.
6. Please turn off both the vehicle and transmitter to remove the Bind plug from the receiver. Failing to remove the Bind plug will cause the transmitter to attempt to re-bind every time you turn on the vehicle and transmitter.
7. Turn on both the vehicle and transmitter to ensure operation. If the transmitter does not control the vehicle, please repeat steps 1–6. Should this not correct the problem please call Horizon Service/Repair for further assistance.
8. The Bind process is complete. Your vehicle's radio system should be ready for use.

Chassis Tuning

The Mini-LST2 has several adjustments available to you for tuning the performance for your needs. Although there are multiple shock positions and camber link locations provided. We have built the model with the best overall settings. The following are simple adjustments and easily maintained settings to assure proper operation and performance. It is advised, when making any adjustment, you do so in small increments and always check for other parts of the chassis that are affected.

Slipper Adjustments

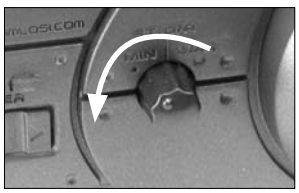
The slipper is a key component of the drivetrain that is designed to absorb sudden or large impacts that would otherwise stress various drivetrain parts. You should never run the Mini-LST2 with the slipper locked (all the way tight). The slipper can also be used as a tuning device for extreme conditions. Running the slipper so it slips for a few inches upon initial acceleration will help the overall drivability of your model. If the surface is very slick, this will allow the tires to establish some grip without spinning; in extremely good traction conditions it will help keep the front tires on the ground and actually provide better acceleration and steering.



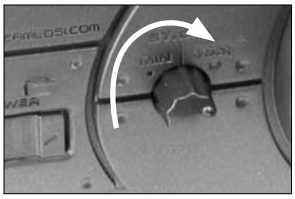
1. Hold the spur gear with your thumb and using the included wrench, tighten the slipper adjustment nut until relatively tight. Do not try to torque it as tight as possible—only until you feel it stop turning.
2. While still holding the spur gear, back off the adjustment nut one full turn (marking one flat on the adjustment nut with a marking pen makes it easy to see how much the nut has turned).
3. Place the Mini-LST2 on the ground, preferably carpet or asphalt, and test the acceleration by rolling it backwards and pulling the throttle trigger.
4. If there is any slippage, turn the adjustment nut clockwise one flat and retest.
5. Replace the gear cover.

Steering Rate

Your transmitter is equipped with a steering rate control to the left of the steering wheel. This advanced feature, usually found only on competition-type radios, allows you to adjust the amount the front tires move when you turn the steering wheel. This is really helpful when you are on slick, as well as high traction, surfaces. If your Mini-LST2 turns too sharply and/or spins out easily, try turning the steering rate down by rotating the knob counterclockwise (to the left). For sharper or additional steering, try turning the knob clockwise (to the right).



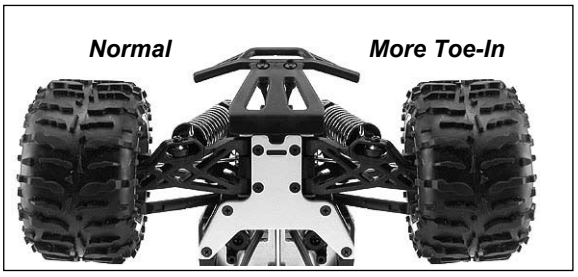
Less Rate



Full Rate

Toe-In/Toe-Out

This is the relationship of the left and right side tires to one another. Ideally you want the front of the tires to be pointed inward toward each other just slightly when viewed from above. This makes the model track straight and stable. This is controlled with the threaded steering rods on either side. As you make them longer you will increase the toe-in and vice versa.



Ride Height

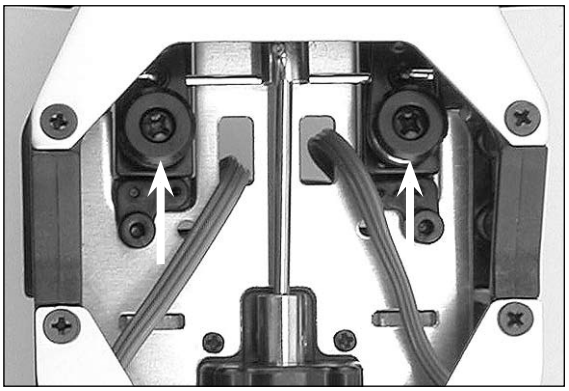
This is the height the chassis sits and runs at. Turning the shock collar clockwise, looking down from the top, will increase the pre-load on the spring and raise the chassis. You may want to try this when running on extremely rough surfaces.

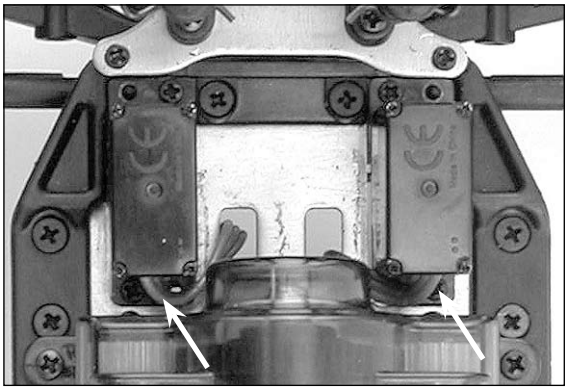
Changing the Spur Gear

If you are changing the size of the spur gear and/or pinion gears, you will have to loosen the four screws that attach the motors (two screws on each motor) to the motor plate and follow the directions for adjusting the gear mesh.

1. Remove the gear cover. Use the included wrench to remove the slipper adjustment nut by turning it counterclockwise.
2. Remove the old spur gear and install the new one of the same size.
3. Replace the slipper plate, washers and nut. See “Adjusting the Slipper” for proper adjustment directions.

Replacing a Steering Servo





1. Locate and disconnect the servo lead where it plugs in the receiver harness. There will be two of these, one for the left servo and one for the right servo.
2. Turn the Mini-LST2 upside-down and with the wheels pointing straight forward, remove the Phillips screw from the center of the servo arm (Figure 1). Set the screw, washer and spring to one side and remove the bell crank.
3. Turn the Mini-LST2 over, remove the small screws at the front and back of the servo (Figure 2). Carefully remove the servo feeding the servo lead through the chassis noting the proper routing for the new servo lead.
4. Install the new servo connecting and routing the wires like the one you removed. Secure the servo with the screws at the front and rear.
5. Turn on the radio and remove the servo saver bottom from the removed servo and install it on the new servo so that the “V-Groove” is pointing toward the other servo.
6. Reinstall the bell crank, spring, and washer, securing them with the Phillips screw.

Changing the Pinion Gear/Gear Ratio

You must always use the same spec of motor and size of pinion gear on both motors in the Mini-LST2. When you install hotter motors you may find it necessary to install smaller pinion gears to keep them from overheating. This is usually caused when you are running in a confined area where the motors are not allowed to rev freely. At this point both motors should be slightly loose on the motor plate.

1. Use the small Allen wrench included to loosen the setscrews in both pinion gears. Slide off the pinions and replace them with the new size. If the new pinions do not slide on to line up with the spur gear, pull the motors away from the spur for more clearance.
2. When aligned properly with the spur gear, tighten the setscrew on each pinion.
3. While looking closely at the teeth of the spur gear and one pinion push the motor toward the spur gear until you can see they are just starting to mesh and slightly snug the mounting screws for that motor. Repeat this for the other motor as well.

Setting the Gear Mesh

1. Insert a small strip of common notebook paper between the pinion and spur gear by feeding it into the gears as you slowly turn the spur gear with your fingers.
2. Lightly push the motor in toward the spur (if the motor will not move freely, loosen the top screw slightly) until the pinion is resting solidly against the spur and tighten both mounting screws.
3. Remove the paper and test the mesh by holding your finger against the pinion while trying to rock the spur gear back and forth. There should be a slight bit of movement before the motor is forced to turn over. If not, loosen the motor screws slightly and push the motor away from the spur ever so slightly.
4. Retest the mesh and repeat with the other motor making sure all motor screws are tight when done.
5. Replace the gear cover or adjust the slipper if you have also changed the spur gear.

Radio Replacement/Service

If you have a radio problem, please call (877) 504-0233 for customer service. Most likely, unless you have gotten the components wet, the service technician can help you fix the problem over the phone. If the problem is more severe, you may be asked to send in the truck and transmitter or the entire radio system, which would include the receiver/ speed control unit and steering servo. In some cases, like a broken servo or a speed control that has failed due to getting wet, your local dealer can sell you the replacement component. The following is a complete guide to removing the system.

Receiver/Speed Control (ESC)

Unplug the power lead, motor leads and steering servo. Do not attempt to open the receiver or electronic speed control (ESC) as only a factory technician has the proper tools and parts to make any repairs necessary. The receiver and ESC are mounted with double-sided foam tape. Use your thumb and index finger at the bottom of the front corners to pull them from the mount. If this is difficult, ask for help. If necessary, carefully use a large flat-blade screwdriver between the unit and the mount to pry it loose. Make sure you remove any leftover foam or adhesive before remounting with common servo tape or hobby-type foam tape.

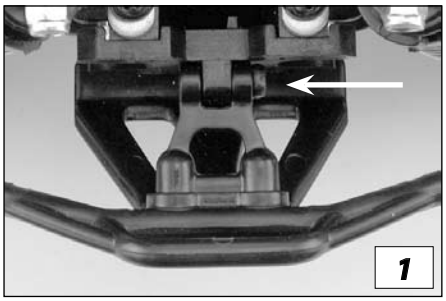
Cleaning

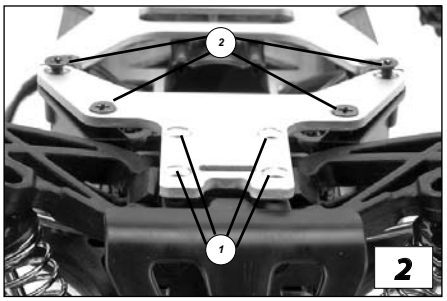
Performance can be hindered if dirt gets in any of the moving suspension parts. Use compressed air, a soft paintbrush, or toothbrush to remove dust or dirt. Avoid using solvents or chemicals as they can actually wash dirt into the bearings or moving parts as well as cause damage to the electronics.

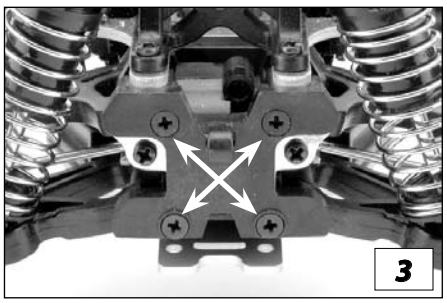
Rebuilding the Front and Rear Differential

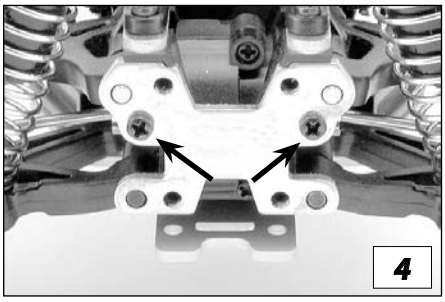
The gears in the differential will wear over time. The same is true for the outdrives, driveshafts, and rear axles. We suggest using a small rag or paper towel to lay out the parts you remove to make it easier to reassemble.

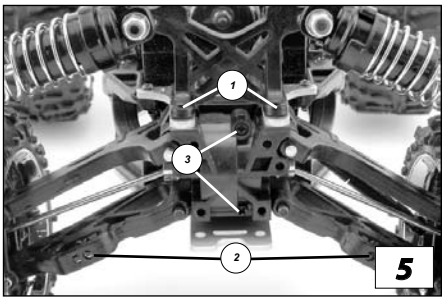
1. Remove the upper bumper mount screw.
2. Remove the four chassis screws (1). Loosen the chassis screws (2) enough to allow the bumper to slide out from under the chassis plate. Note: If you are rebuilding the front differential, skip to Step 6.
3. Remove the four cover screws and remove the cover and remove both screws shown.
4. Remove both screws.
5. Remove both shock tower screws (1). Remove the lower shock mounting screws (2). Remove both differential cover screws (3).
6. Using a small flat-head screwdriver, carefully pry and remove the differential case cover.
7. Remove the complete differential assembly.

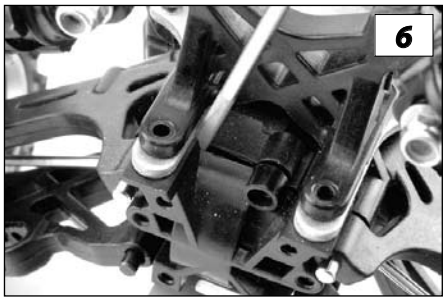


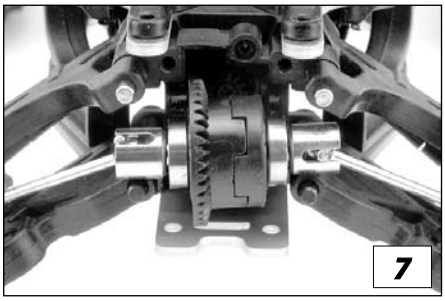


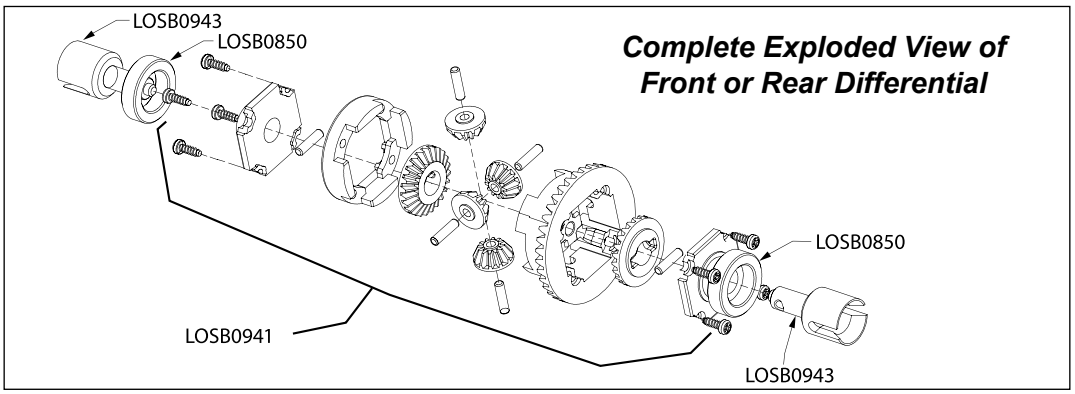






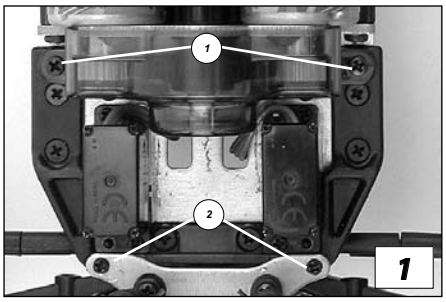


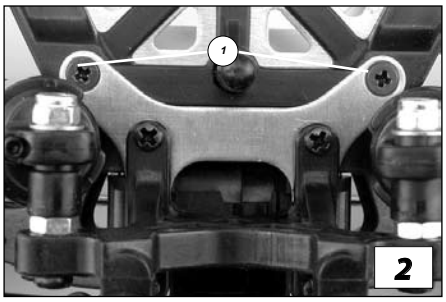


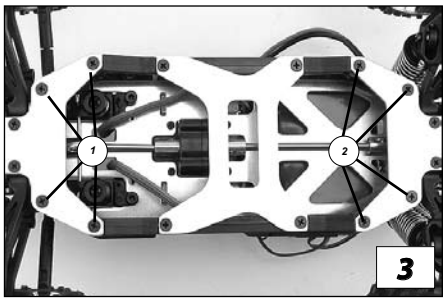


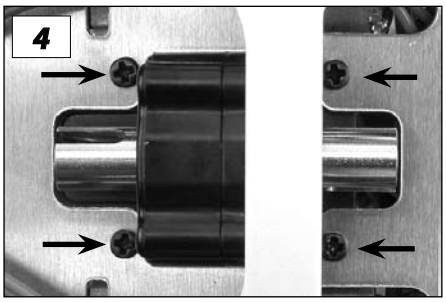
Rebuilding the Center Transmission

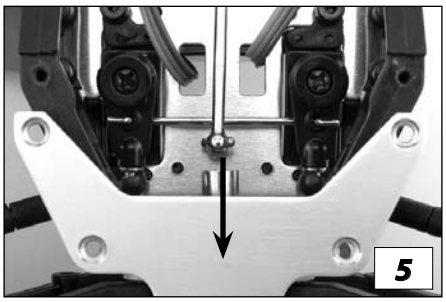
1. Remove both gear cover screws (1). Remove both front top plate screws (2).
2. Remove both rear top plate screws.
3. Remove the four lower chassis plate screws (1). Remove the four lower chassis plate screws (2).
4. Remove all four transmission mounting screws.
5. Slide the complete front end assembly out until the driveshaft slides out.
6. Slide the complete rear end assembly out until the driveshaft slides out.
7. Remove the transmission side-mounting screw from each side. Once the screws have been removed, the transmission can now be removed from the chassis.

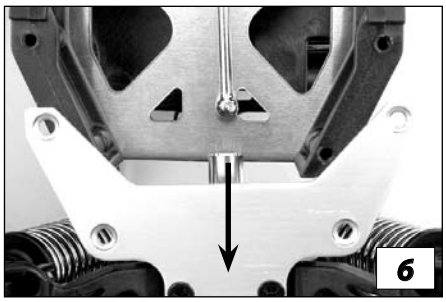


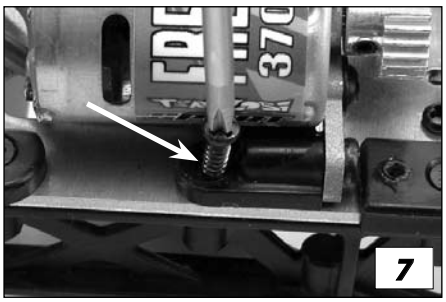


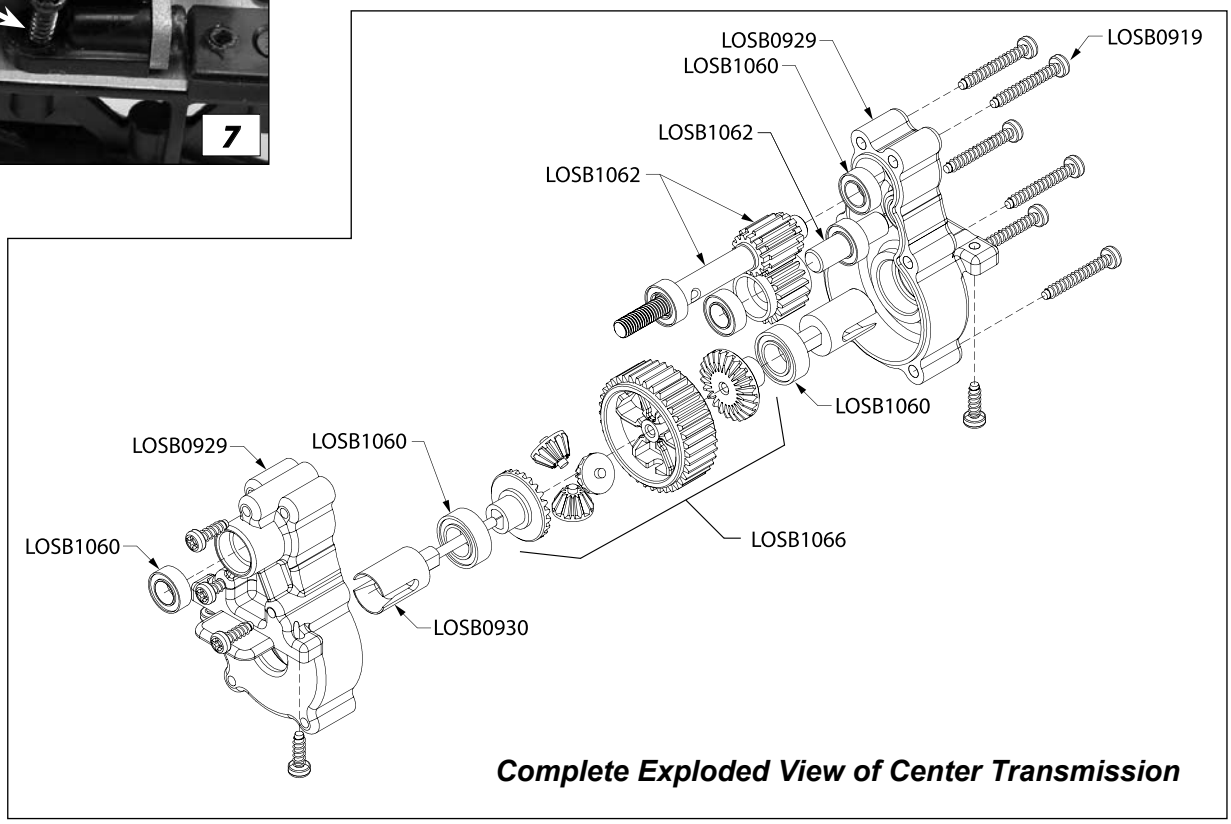






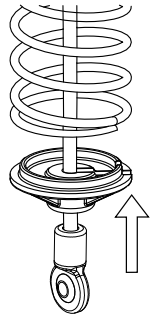




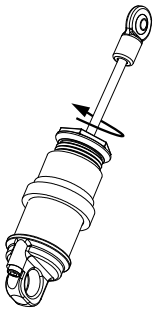


Complete Exploded View of Center Transmission

Rebuilding/Refilling the Shocks

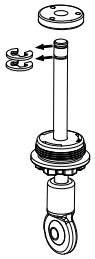


Step 1
After removing the shock, push up on the lower spring cup and remove it from the shaft. Remove the spring and preload spacers.



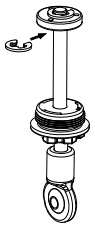
Step 2
Turn the shock upside down and remove the black shock cartridge/shaft assembly from the shock body by turning it counterclockwise.

Note: If you only wish to change or fill the shock fluid, skip to step 5.

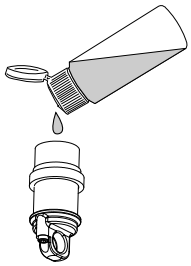


Step 3
Remove the top E-clip from the shock shaft. Remove the shock piston. Remove second E-clip. Remove the old cartridge.

Put a drop of oil on the shock shaft before installing a new shock cartridge.



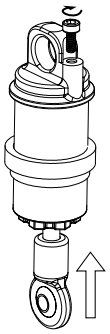
Step 4
Reinstall the lower E-clip. Slide the shock piston onto the shock shaft against the E-clip. Reinstall the top E-clip.



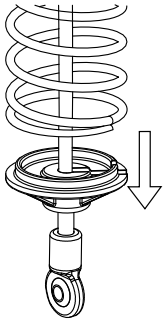
Step 5
If you plan on completely changing the shock fluid (suggested), dump out the old fluid from the shock body. Carefully fill the shock body with fluid to the bottom of the threads inside the shock body.

Note: Your Mini-LST2 comes with 30wt shock fluid from the factory.

Step 6
Pull the shaft out so the piston is next to the cartridge and reinstall the assembly into the shock body, turn in a clockwise direction until snug—DO NOT TIGHTEN yet!



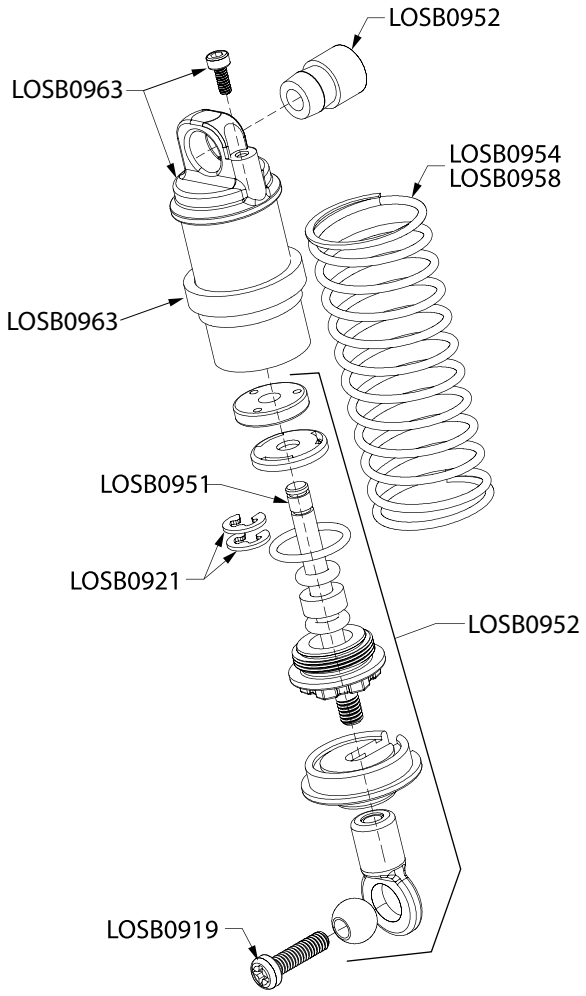
Step 7
Turn the shock over and use a 1/16-inch hex wrench to remove the small bleed screw at the top of the shock. Slowly push the shock shaft up until it stops. Excess fluid should flow out of the bleed hole. Slowly pull the shock shaft halfway back and replace the bleed screw. Use pliers to tighten the cartridge, being careful not to strip the plastic lobes on the cartridge.



Step 8
Replace the spring and spring cup and test the shock action for smoothness and leaks. Retighten the bleed screw or cartridge if either leaks. Remount the shock on your truck.

***** Production shock parts may differ from those shown in above drawings.***

Shock Assembly



FCC Information

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

> **Caution**: Changes or modifications not expressly approved by Horizon Hobby, Inc. could void the user's authority to operate the equipment.

This product contains a radio transmitter with wireless technology which has been tested and found to be compliant with the applicable regulations governing a radio transmitter in the 2.400GHz to 2.4835GHz frequency range.

The following countries associated regulatory agencies recognizing the noted certifications for this product as authorized for sale and use are:

USA	Canada	Belgium
Denmark	France	Finland
Germany	Italy	Netherlands
Spain	Sweden	UK
Ireland		Australia

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