

FPO

SEE:

36654_KALAHARICOVER_SPREAD.INDD

**FOR FRONT AND
BACK COVERS**



NOTICE

All instructions, warranties and other collateral documents are subject to change at the sole discretion of Horizon Hobby, Inc. For up-to-date product literature, visit www.horizonhobby.com and click on the support tab for this product.

MEANING OF SPECIAL LANGUAGE

The following terms are used throughout the product literature to indicate various levels of potential harm when operating this product:

NOTICE: Procedures, which if not properly followed, create a possibility of physical property damage AND a little or no possibility of injury.

CAUTION: Procedures, which if not properly followed, create the probability of physical property damage AND a possibility of serious injury.

WARNING: Procedures, which if not properly followed, create the probability of property damage, collateral damage, and serious injury OR create a high probability of superficial injury.



WARNING: Read the ENTIRE instruction manual to become familiar with the features of the product before operating. Failure to operate the product correctly can result in damage to the product, personal property and cause serious injury.

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. Do not attempt disassembly, use with incompatible components or augment product in any way without the approval of Horizon Hobby, Inc. This 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 serious injury.

AGE RECOMMENDATION: Not for children under 14 years. This is not a toy.

REGISTER YOUR VATERRA PRODUCT ONLINE

Register your vehicle now and be the first to find out about the latest option parts, product updates and more. Click on the Support tab at WWW.VATERRARC.COM and follow the product registration link to stay connected.

SAFETY PRECAUTIONS AND GUIDELINES

- » Always keep a safe distance in all directions around your model to avoid collisions or injury. This model is controlled by a radio signal subject to interference from many sources outside your control. Interference can cause momentary loss of control.
- » Always operate your model in open spaces away from full-size vehicles, traffic and people.
- » Always carefully follow the directions and warnings for this and any optional support equipment (chargers, rechargeable battery packs, etc.).
- » Always keep all chemicals, small parts and anything electrical out of the reach of children.
- » Always avoid water exposure to all equipment not specifically designed and protected for this purpose. Moisture causes damage to electronics.
- » Never place any portion of the model in your mouth as it could cause serious injury or even death.
- » Never operate your model with low transmitter batteries.

WATER-RESISTANT VEHICLE WITH WATERPROOF ELECTRONICS //////////////////////////////////////

Your new Horizon Hobby vehicle has been designed and built with a combination of waterproof and water-resistant components to allow you to operate the product in many “wet conditions”, including puddles, creeks, wet grass, snow and even rain.

While the entire vehicle is highly water-resistant, it is not completely waterproof and your vehicle should NOT be treated like a submarine. The various electronic components used in the vehicle, such as the Electronic Speed Control (ESC), servo(s) and receiver are waterproof, however, most of the mechanical components are water-resistant and should not be submerged.

Metal parts, including the bearings, hinge pins, screws and nuts, as well as the contacts in the electrical cables, will be susceptible to corrosion if additional maintenance is not performed after running in wet conditions. To maximize the long-term performance of your vehicle and to keep the warranty intact, the procedures described in the “Wet Conditions Maintenance” section to follow must be performed regularly if you choose to run in wet conditions. If you are not willing to perform the additional care and maintenance required, then you should not operate the vehicle in those conditions.



CAUTION: Failure to exercise caution while using this product and complying with the following precautions could result in product malfunction and/or void the warranty.

GENERAL PRECAUTIONS

- » Read through the wet conditions maintenance procedures and make sure that you have all the tools you will need to properly maintain your vehicle.
- » Not all batteries can be used in wet conditions. Consult the battery manufacturer before use. Do not use Li-Po batteries in wet conditions.
- » Most transmitters are not water-resistant. Consult your transmitter’s manual or the manufacturer before operation.
- » Never operate your transmitter or vehicle where lightning may be present.
- » Do not operate your vehicle where it could come in contact with salt water (ocean water or water on salt-covered roads), contaminated or polluted water. Salt water is very conductive and highly corrosive, so use caution.
- » Even minimal water contact can reduce the life of your motor if it has not been certified as water-resistant or waterproof. If the motor becomes excessively wet, apply very light throttle until the water is mostly removed from the motor. Running a wet motor at high speeds may rapidly damage the motor.
- » Driving in wet conditions can reduce the life of the motor. The additional resistance of operating in water causes excess strain. Alter the gear ratio by using a smaller pinion or larger spur gear. This will increase torque (and motor life) when running in mud, deeper puddles, or any wet conditions that will increase the load on the motor for an extended period of time.

WET CONDITIONS MAINTENANCE

- » Remove the battery pack(s) and dry the contacts. If you have an air compressor or a can of compressed air, blow out any water that may be inside the recessed connector housing.
- » Remove the tires/wheels from the vehicle and gently rinse the mud and dirt off with a garden hose. Avoid rinsing the bearings and transmission.

NOTICE: Never use a pressure washer to clean your vehicle.

- » Use an air compressor or a can of compressed air to dry the vehicle and help remove any water that may have gotten into small crevices or corners.
- » Spray the bearings, drive train, fasteners and other metal parts with WD-40® solvent or any other water-displacing light oil. Do not spray the motor.
- » Let the vehicle air dry before you store it. Water (and oil) may continue to drip for a few hours.
- » Increase the frequency of disassembly, inspection and lubrication of the following:
 - Front and rear axle hub assembly bearings.
 - All transmission cases, gears and differentials.
 - Motor—clean with an aerosol motor cleaner and re-oil the bearings with lightweight motor oil.

INTRODUCTION

Thank you for purchasing the Vatterra™ Kalahari™ 4WD Desert Raider 1/14th RTR. This guide contains the basic instructions for operating your new Kalahari vehicle. It is critical that you read all of the instructions in order to operate your model correctly and avoid unnecessary damage.

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Please read the entire manual to gain a full understanding of the Vatterra Kalahari 4WD Desert Raider 1/14th RTR vehicle, fine-tuning the setup, and performing maintenance.

- 1 Read the safety precautions found in this manual.
- 2 Charge the battery. Refer to the included charging warnings and instructions for battery charging information.
3. Install the AA batteries in the transmitter. Only use alkaline or rechargeable batteries.
- 4 Install the fully charged battery in the vehicle.
- 5 Power ON the transmitter and then the vehicle. Always power the transmitter ON before the vehicle and power it OFF after the vehicle has been powered OFF.
- 6 Check the steering and throttle control directions. Verify that the servos are moving in the correct direction.
- 7 Drive your vehicle.
- 8 Perform any necessary maintenance.

COMPONENTS

- » 1/14-Scale Kalahari 4WD Desert Raider RTR
- » Spektrum™ DX2L 2.4GHz DSM™ Radio System
- » Dynamite™ Fuze™ Mini Waterproof Sensorless Brushless ESC
- » Dynamite Fuze 280 4500Kv Mini Sensorless Brushless Motor
- » VTR11000 Mini Waterproof Servo
- » Dynamite 7.2V 1200mAh 6C Ni-MH Battery
- » Dynamite 10W Ni-MH AC Peak Charger
- » 4 AA Batteries (for transmitter)



REQUIRED TOOLS

- » Soft bristle cleaning brush
- » #0 or #1 Phillips screwdriver

OPTIONAL TOOLS

- » Nut driver: 5.5mm - DYN2803
- » Hex driver: .050 - DYN2820

** Use only Dynamite 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.*

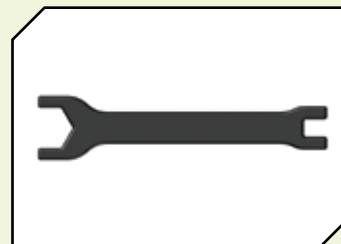
SUPPLIED TOOLS



- » "L" shaped hex wrench
 - 1.5mm, 2mm, 2.5mm



- » 4-way wrench
 - 7mm, 5.5mm, 5mm, 4.5mm



- » Slipper adjustment tool

THE VEHICLE BATTERY

Refer to the charging warnings. It is recommended you charge the battery while you inspect the vehicle. The battery will be required to confirm proper operation in future steps.

WARNING: Failure to exercise caution while using this product and comply with the following warnings could result in product malfunction, electrical issues, excessive heat, FIRE, and ultimately injury and property damage.

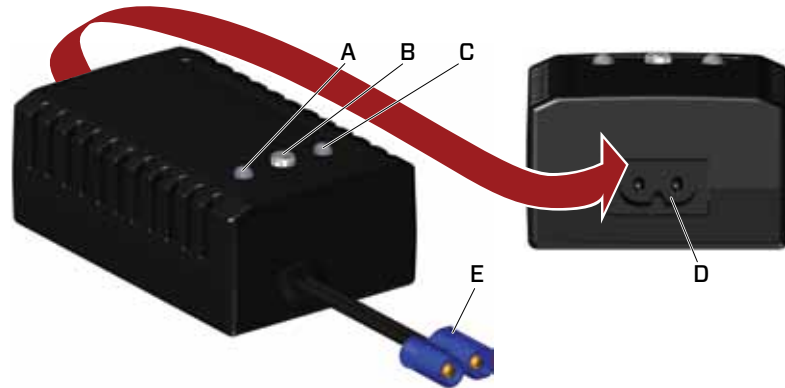
CAUTION: If at any time during the charging process the battery becomes hot to the touch, disconnect the battery immediately and discontinue the charging process.

Charge only batteries that are cool to the touch and are not damaged. Inspect the battery to make sure it is not damaged, e.g., swollen, bent, broken or punctured.

CHARGING WARNINGS

- » Read all safety precautions and literature prior to use of this product.
- » Never leave the battery and charger unattended during use.
- » Never allow children under 14 years of age to charge batteries.
- » Never attempt to charge dead or damaged batteries.
- » Never charge a battery if the cable has been pinched or shorted.
- » Never allow the batteries or charger to come into contact with moisture at any time.
- » Never charge batteries in extremely hot or cold places (recommended between 50–80°F (10–26°C)) or place in direct sunlight.
- » Always use only Ni-MH rechargeable batteries. This charger cannot charge batteries such as “heavy duty”, “alkaline”, “mercury” or “lithium” batteries.
- » Always connect to the charger correctly.
- » Always disconnect the battery and charger after charging and let them cool between charges.
- » Always inspect the battery before charging.
- » Always terminate all processes and contact Horizon Hobby if the product malfunctions.
- » Always make sure you know the specifications of the battery to be charged or discharged to ensure it meets the requirements of this charger.
- » Always constantly monitor the temperature of the battery while charging.
- » Always end the charging process if the charger or battery becomes hot to the touch or starts to change form during the charge process.

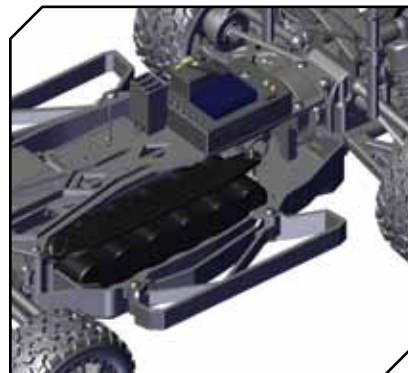
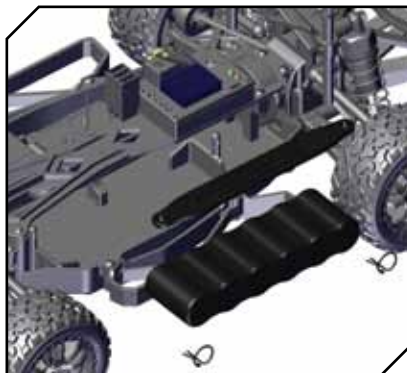
- A Power LED
- B Start/Stop Button
- C Charging LED
- D AC Power Slot
- E Charger to Battery Connector



- 1 Connect the AC power cord to the power slot on the charger, then connect the other end of the power cord to an AC power source.
- 2 The Power LED and Charging LED will turn green when the charger is connected to the AC power source.
- 3 Connect the battery connector to the charger connector.
- 4 Press the Start/Stop button to charge the battery. The Charging LED turns red.
- 5 When the battery is fully charged, the Charging LED will turn green.
- 6 Press the Start/Stop button to stop charging. Disconnect the battery pack connector from the charger connector.
- 7 Disconnect the AC power cord from the AC power source.

INSTALLING THE VEHICLE BATTERY

- 1 Ensure the ESC is powered OFF.
- 2 Remove the clips from the battery strap posts and remove the battery strap.
- 3 Install the fully charged battery into the chassis as shown. Ensure the battery is lying flat on the chassis.
- 4 Connect the battery to the ESC.
- 5 Reinstall the battery strap and clips.
- 6 Power ON the transmitter, then the vehicle.

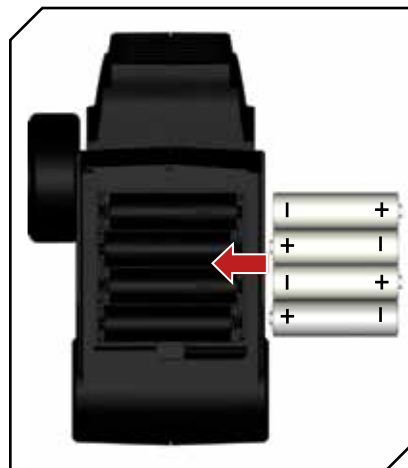


CAUTION: NEVER remove the transmitter batteries while the vehicle is powered ON, as loss of control, property damage or injury may result.

THE TRANSMITTER

INSTALLING THE TRANSMITTER BATTERIES

- 1 Push in the battery cover a small amount to release the retaining tab, then remove the cover.
- 2 Install 4 AA batteries, taking care to align the battery polarity to the diagram in the transmitter's battery case.
- 3 Carefully reinstall the battery cover by aligning the tabs with the slots on the transmitter.



CAUTION: If using rechargeable batteries, charge only rechargeable batteries. Charging non-rechargeable batteries may cause the batteries to burst, resulting in injury to persons and/or damage to property.

For more information on the transmitter, go to www.horizonhobby.com and click on the support tab for the Spektrum DX2L to download the instruction manual.

CHANGING THE RF MODE

The DX2L has a France RF Mode that complies with French regulations. The DX2L must be in France mode when used outdoors in France. At all other times, the transmitter should be in Standard mode.

France mode ON

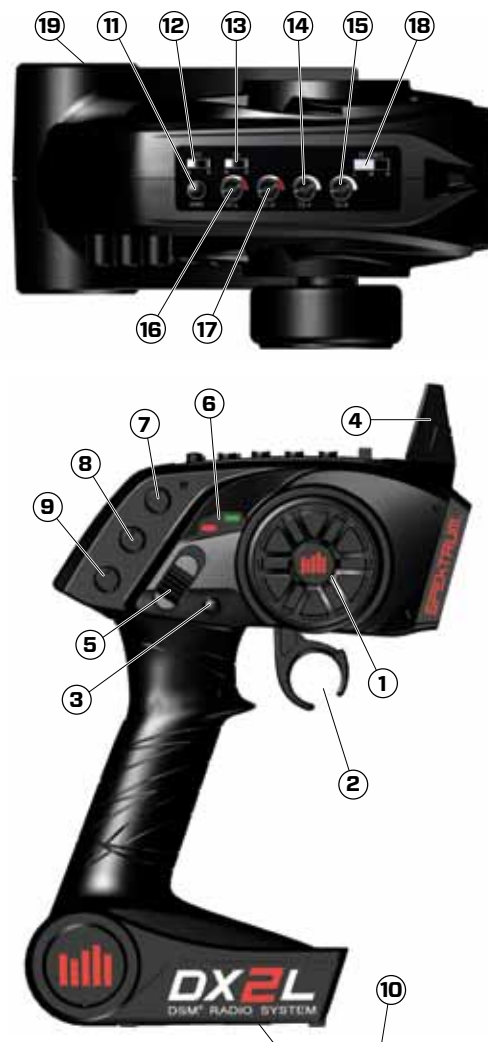
Turn the wheel full left, pull the trigger full throttle and hold down the bind button while turning on the transmitter. The red LED will flash twice.

France mode OFF (Standard Mode)

Turn the wheel full right, pull the trigger full throttle and hold down the bind button while turning on the transmitter. The red LED will flash once.

SPEKTRUM DX2L RADIO SYSTEM

- 1 Steering Wheel** controls direction (left/right) of the model
- 2 Throttle Trigger** controls speed and direction (forward/brake/reverse) of the model
- 3 R.O.S.S. Button** used with vehicles featuring the R.O.S.S. Remote Start System
- 4 Antenna** transmits the signal to the model
- 5 ON/OFF Switch** turns the power ON/OFF for the transmitter
- 6 Indicator Lights**
 - *Solid green (right) light* indicates adequate battery power
 - *Flashing green light* indicates the battery voltage is critically low. Replace batteries.
 - *Solid red (left) light* indicates good signal strength. When the red light fades, signal strength is weakening
- 7 ST. Trim** adjusts the "hands off" direction of the model
- 8 TH. Trim** adjusts the motor speed to stop at neutral
- 9 Steering Dual Rate** adjusts the amount the front wheels move when the steering wheel is turned left and right
- 10 Battery Cover** covers and holds the batteries that power the transmitter
- 11 BIND Button** puts the transmitter into Bind Mode
- 12 ST. REV** reverses the function of the steering when the wheel is turned left or right
- 13 TH. REV** reverses the function of the speed control when pulled back or pushed forward
- 14 TH-F - Forward Endpoint** - adjusts the amount of full throttle
- 15 TH-B - Brake Endpoint** - adjusts the amount of full brake
- 16 ST-L - Steering Left Endpoint** - adjusts the amount of left steering travel
- 17 ST-R - Steering Right Endpoint** - adjusts the amount of right steering travel
- 18 Throttle Limiter** limits the throttle to Low (50%), Medium (75%) or High (full throttle is equal to the high Throttle Travel position)
- 19 Bind Plug Compartment**



TRANSMITTER AND RECEIVER BINDING

BINDING PROCEDURE

- 1 Make sure the transmitter and vehicle are both powered OFF.
- 2 Install a bind plug in the receiver battery/bind port. You do not need to remove any of the other plugs to re-bind.
- 3 With the bind plug installed, power ON the vehicle. The receiver LED will flash green.
- 4 With the steering and throttle in the desired preset failsafe positions (neutral), press and hold the bind button and power ON the transmitter. The transmitter's red LED will flash after 4 seconds when the transmitter is in bind mode. Release the bind button once the red LED flashes. Continue holding the failsafe positions until the binding process is complete.
- 5 When the receiver binds to the transmitter, the receiver LED will turn solid.
- 6 Power OFF the vehicle, then the transmitter.
- 7 Disconnect the battery from the ESC. Remove the bind plug from the receiver.
- 8 Safely store the bind plug in the bind plug compartment in the transmitter.
- 9 The receiver will keep the binding to the transmitter until another binding is done.

Your Spektrum DX2L comes prebound to the vehicle.

If you encounter problems, obey binding instructions and refer to the transmitter troubleshooting guide for other instructions. If needed, contact the appropriate Horizon Product Support office.

CONTROL TEST



Perform a control test with the vehicle wheels off the ground. If the wheels rotate after the vehicle is powered ON, adjust the "TH. Trim" knob until they stop. To make the wheels move forward, pull the trigger. To reverse them, wait for the wheels to stop, then push the trigger. When moving forward, the wheels should maintain a straight line without any steering wheel input. If not, adjust the "ST. Trim" knob so the wheels maintain a straight line without having to turn the steering wheel.

BEFORE RUNNING YOUR VEHICLE //////////////////////////////////////

- 1** Break in the differential. While holding the chassis with only the left side tires firmly on the ground, give the vehicle about 1/8 throttle for 30 seconds. The right side tires should spin freely during this time. Do this with only the right side tires firmly on the ground, allowing the left side tires to spin freely. Repeat this 2–3 times.
- 2** Check for free suspension movement. All suspension arms and steering components should move freely. Any binds will cause the vehicle to handle poorly.
- 3** Charge the battery.
- 4** Check the calibration of the ESC. If recalibration is required, follow the setup instructions.
- 5** Adjust the transmitter settings to your desired configuration.

DRIVING PRECAUTIONS

- » Maintain sight of the vehicle at all times.
- » Routinely inspect the vehicle for loose wheel hardware.
- » Routinely inspect the steering assembly for any loose hardware. Driving the vehicle off-road can cause fasteners to loosen over time.
- » Do not drive the vehicle in tall grass. Doing so can damage the vehicle or electronics.
- » Stop driving the vehicle when you notice a lack of power. Driving the vehicle when the battery is discharged can cause the receiver to power off. If the receiver loses power, you will lose control of the vehicle. Damage due to an over-discharged battery is not covered under warranty.
- » Do not apply forward or reverse throttle if the vehicle is stuck. Applying throttle in this instance can damage the motor or ESC.
- » After driving the vehicle, allow the electronics to cool before driving the vehicle again. Remove the body of the vehicle to reduce cooling time.

RUN TIME //////////////////////////////////////

The largest factor in run time is the capacity of the battery pack. A larger mAh rating increases the amount of run time experienced.

The condition of a battery pack is also an important factor in both run time and speed. The battery connectors may become hot during driving. Batteries will lose performance and capacity over time.

Driving the vehicle from a stop to full speed repeatedly will damage the batteries and electronics over time. Sudden acceleration will also lead to shorter run times.

TO IMPROVE RUN TIMES

- » Clean and oil bearings often. If bearings are dirty, they will increase friction and cause reduced performance.
- » Keep your vehicle clean and maintained.
- » Allow more airflow to the ESC and motor.
- » Change the gearing to a lower ratio. A lower ratio decreases the operating temperature of the electronics. Use a smaller pinion gear or larger spur gear to lower the gear ratio.
- » Use a battery pack with a higher mAh rating.

TUNING, ADJUSTING & MAINTAINING YOUR VEHICLE //////////////////////////////////////

- » Examine your vehicle on a regular basis.
- » Use a brush to remove dirt and dust.
- » Look for damage to the suspension arms and other molded parts.
- » Re-glue the tires to the wheels, if necessary.
- » Clean and oil all wheel bearings.
- » Use suitable tools to tighten fasteners.
- » Make sure the camber and steering linkages are not bent. Replace any bent linkages.
- » Adjust the Toe and Camber settings, if necessary.
- » Remove the shocks and inspect them for damage. Rebuild the shocks if oil is leaking.
- » Inspect electronics and batteries for exposed wires. Repair exposed wires with shrink-wrap, or replace the wire.
- » Make sure the ESC and receiver are secure on the chassis. Replace the double-sided tape, if necessary.
- » Power ON the transmitter. If the green LED is dim or off, replace the AA batteries in your transmitter.
- » Check the spur gear and pinion gear for wear.

SERVICE/REPAIR

If any problems other than those covered in this manual arise, please call the appropriate electronics service department. Refer to the Warranty and Service Information section for the appropriate department to contact.

CLEANING

Performance can be hindered if dirt gets in any of the moving suspension parts. Use compressed air, a soft paintbrush, or a 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.

DYNAMITE FUZE MINI WATERPROOF SENSORLESS BRUSHLESS ESC //////////////////////////////////////

TECHNICAL SPECIFICATIONS

Type	Sensorless/Waterproof
Constant/Peak	30A/260A
Resistance	0.002 Ohms
Function	Forward Only with Brake- Forward/Reverse with Brake
Operation	Proportional forward, proportional reverse with braking delay
Battery Type/ Input Voltage	2-3 cell Li-Po/Li-Fe or 6-9 cell Ni-MH/Ni-Cd
Motor Limit	6000Kv Max
BEC Output	5V/1A
Overload Protection	Thermal, Stall and Over-Voltage
Dimensions (LxWxH)	1.81 in x 1.30 in x 0.79 in (46mm x 33mm x 20mm)
Weight	1.69 oz (48 g) with wires

LED INDICATOR

OPERATION		LED COLOR	LED STATUS	SOUND
Ni-MH at Power ON		Flashing Green	ON	
Li-Po at Power ON		Flashing Red	ON	
NORMAL	Stop	Forward/Reverse with Smart Brake	Solid Green	ON
		Forward Only with Brake	Flashing Green	
	Forward	Both	OFF	
	Forward (full speed)	Red	ON	
	Reverse	Both	OFF	
	Reverse (full speed)	Green	ON	
Brake	Both Solid	ON		
ABNORMAL	Overheat	Both LEDs	LEDs alternately flashing	1 beep per second
	Motor Stalled	Red LED	Flashing quickly 3 times, stopping, then repeating	1 beep per second
	Battery Over Voltage (over 10V)	Both LEDs	Solid Red LED. Green LED flashing once per second	1 beep per second
	Battery Voltage Low	Red LED	Flashing once per second	1 beep per second

ADJUSTING THE TRANSMITTER //////////////////////////////////////

Refer to your transmitter's instructions for specific information on transmitter setup.

FACTORY DEFAULT SETTINGS

Battery Chemistry Type

Ni-MH

ESC Running Mode

Forward/Reverse with Smart Brake

- 1 Set the Throttle Reversing switch to the NORMAL position
- 2 Set the Throttle Trim to the CENTER position.



TRANSMITTER CONTROLLED PROGRAMMING

- 1 Power ON the transmitter and set the transmitter's endpoint travel to maximum.
- 2 Hold the throttle trigger at full throttle, then power ON the ESC.
- 3 Continue holding the throttle trigger at full throttle until a beep sounds and both red and green LEDs flash, then release the throttle to neutral.
- 4 The ESC is now in programming mode. The ESC will cycle through its programmable features in this order:
 - a **Green LED only** Change Battery Chemistry Type: Ni-MH or Li-Po
 - b **Red LED only** Transmitter/ESC Endpoint Calibration
 - c **Red + Green LED** Change ESC Running Mode: Forward/Reverse with Smart Brake or Forward Only with Brake
- 5 Move the throttle trigger to full throttle and back to neutral at A, B or C in order to execute the setting task.

a Change Battery Chemistry Type: Ni-MH or Li-Po

- The respective LED will indicate the current battery type for 4 seconds:
 - *Solid Green LED* Ni-MH
 - *Solid Red LED* Li-Po
- Move the throttle trigger to full throttle and return to neutral within the 4 seconds. A beep will sound and the respective LED will indicate the updated battery type.

- To change back to the previous battery type, repeat the step above within 4 seconds of the beep.
- Both the red and green LEDs will flash 3 times with 3 beeps.
- Power OFF the ESC and then power ON the ESC to return to normal operation.

b Transmitter/ESC Endpoint Calibration

- After executing the setting task, the green LED will flash as you release the throttle trigger to neutral. Once neutral is reached, a beep will sound and the green LED will glow solid for 1 second. The red LED will begin to flash.

OPERATION	LED STATUS	
	waiting for throttle position	position set
Neutral	Flashing Green	Solid Green (1 second)
Forward	Flashing Red	Solid Red (1 second)
Full Brake/Reverse	Solid Red / Flashing Green	Solid Green (1 second) followed by Red and Green flashing 3x

c Change ESC Running Mode: Forward/Reverse with Smart Brake or Forward Only with Brake

- The green LED will indicate the currently selected ESC running mode for 4 seconds:
 - *Green LED Solid* Forward/Reverse with Smart Brake
 - *Green LED Flashing* Forward Only with Brake
- Move the throttle trigger to full throttle within the 4 seconds to select the next ESC mode. A beep will sound and the green LED will indicate the new ESC running mode.
 - *Green LED Solid* Forward/Reverse with Smart Brake
 - *Green LED Flashing* Forward Only with Brake
- To change back to the previous mode, repeat the step up above within 4 seconds of the beep.
- Both red and green LEDs will flash 3 times with 3 beeps.
- Power OFF the ESC and then power ON the ESC to return to normal operation
- At any time that the ESC is powered and the transmitter is at neutral, the green LED will indicate the current running mode:

- Move the throttle trigger to full throttle and hold it until a beep sounds and the red LED glows solid for 1 second. Release the throttle trigger to neutral and the red LED will glow solid while the green LED will begin to flash.
- Move the throttle trigger to full brake/reverse and hold until a beep sounds and the green LED glows solid.
- Release the throttle trigger to neutral. Both red and green LEDs will flash 3 times with 3 beeps.
- Power OFF the ESC and then power ON the ESC to return to normal operation.

SMART BRAKE

When the throttle is changed from Forward to Reverse or Reverse to Forward, the ESC will brake instead of reversing the motor immediately. The ESC will remain in brake mode unless the throttle is returned to the neutral/stop position for a short time.

GEARING

Your vehicle has been equipped with the optimal gearing for the stock platform. It offers an ideal balance between speed, power and efficiency. Should you decide to customize your vehicle with optional batteries or motors, it may be necessary for you to change the pinion or spur gear.

Installing a pinion gear with less teeth or a spur gear with more teeth will provide greater torque and reduced top speed. Likewise, a pinion gear with more teeth or a spur gear with fewer teeth will reduce torque and increase top speed. Care should be taken when installing larger pinion gears as this can “overgear” the vehicle, resulting in overheating of the motor and ESC. When testing different gearing options, pay close attention to the temperature of the motor and speed control to ensure you are operating within the temperature range of the components. The motor or ESC should never be so hot that it cannot be touched. If temperatures are too hot, a different gearing combination with lower pinion gear and/or higher spur gear is suggested.

PRECAUTIONS

- » Never touch moving parts.
- » Never disassemble while the batteries are installed.
- » Always let parts cool before touching.

ADJUSTING THE SLIPPER

Turn the 3mm adjustment nut clockwise (to the right) to reduce the slip or counterclockwise (to the left) to increase the slip.

CHANGING THE PINION GEAR/GEAR RATIO

- 1 Loosen the motor screws and slide the motor back.
- 2 Loosen the set screw and remove the installed pinion gear.
- 3 Place the new pinion on the end of the motor shaft so the set screw is located over the flat on the shaft.
- 4 Position it so the teeth line up with the spur gear and secure by tightening the set screw.

FINAL DRIVE RATIO

		BATTERY			Marginal Thermo OK
		6C Ni-MH	2S Li-Po	3S Li-Po	
PINION	10T	14.31	14.31	14.31	
	12T	11.92	11.92	11.92	
	14T	10.22	10.22	10.22	
	16T	8.95	8.95	8.95	

EXAMPLE

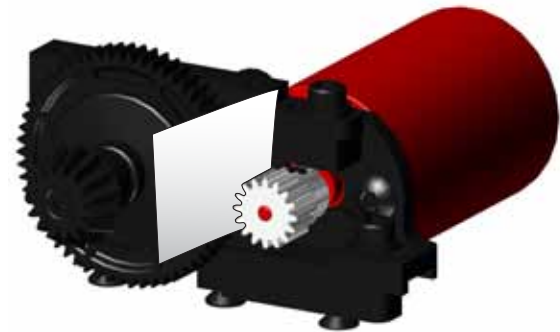
INTERNAL GEAR RATIO	2.47
SPUR	58
PINION	16
FINAL DRIVE RATIO	8.95375

SETTING THE GEAR MESH

The gear mesh has already been set at the factory, and setting it is only necessary when changing motors or gears.

Proper gear mesh (how gear teeth meet) is important to the performance of the vehicle. When the gear mesh is too loose, the spur gear could be damaged by the pinion gear of the motor. If the mesh is too tight, speed could be limited and the motor and ESC will overheat.

- 1 Loosen the motor screws.
- 2 Put a small piece of paper between the pinion and spur gears.
- 3 Push the gears together while tightening the motor screws.
- 4 Remove the paper and the gears should move a small amount.



TROUBLESHOOTING GUIDE

PROBLEM	POSSIBLE CAUSE	SOLUTION
Vehicle does not operate	<ul style="list-style-type: none"> » Battery not charged or connected » ESC switch not ON » Transmitter not ON or low battery 	<ul style="list-style-type: none"> » Charge battery/connect » Turn ON ESC switch » Turn ON/replace batteries
Motor runs but rear wheels don't move	<ul style="list-style-type: none"> » Pinion not meshing with spur gear » Pinion spinning on motor shaft » Slipper too loose » Transmission gears stripped » Drive pin broken 	<ul style="list-style-type: none"> » Adjust pinion/spur mesh » Replace pinion gear on motor » Check and adjust slipper » Replace transmission gears » Check and replace drive pin
Steering does not work	<ul style="list-style-type: none"> » Servo plug not in receiver properly » Servo gears or motor damaged 	<ul style="list-style-type: none"> » Check if connected/all the way » Replace or repair servo
Won't turn in one direction	<ul style="list-style-type: none"> » Servo gears damaged 	<ul style="list-style-type: none"> » Replace servo
Motor does not run	<ul style="list-style-type: none"> » Motor plugs loose » Motor wire broken » ESC damaged 	<ul style="list-style-type: none"> » Plug in completely » Repair or replace as needed » Contact Horizon Hobby Product Support
ESC gets hot	<ul style="list-style-type: none"> » Motor over-gearred » Driveline bound up 	<ul style="list-style-type: none"> » Use smaller pinion or larger spur gear on motor » Check wheels, suspension and transmission for binding
Poor run time and/or sluggish acceleration	<ul style="list-style-type: none"> » Ni-MH pack not fully charged » Charger not allowing full charge » Slipper slipping too much » Motor worn out » Driveline bound up 	<ul style="list-style-type: none"> » Recharge battery » Try another charger » Check/adjust slipper » Replace motor » Check wheels, transmission for binding
Poor range and/or glitching	<ul style="list-style-type: none"> » Transmitter batteries low » Vehicle battery low » Loose plugs or wires 	<ul style="list-style-type: none"> » Check and replace » Recharge or replace » Check all wire connections and plugs
Slipper won't adjust	<ul style="list-style-type: none"> » Drive pin missing in shaft » Spur gear face worn out 	<ul style="list-style-type: none"> » Replace drive pin » Replace spur gear and adjust slipper

LIMITED WARRANTY //////////////////////////////////////

WHAT THIS WARRANTY COVERS

Horizon Hobby, Inc. (“Horizon”) warrants to the original purchaser that the product purchased (the “Product”) will be free from defects in materials and workmanship at the date of purchase.

WHAT IS NOT COVERED

This warranty is not transferable and does not cover (i) cosmetic damage, (ii) damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or due to improper use, installation, operation or maintenance, (iii) modification of or to any part of the Product, (iv) attempted service by anyone other than a Horizon Hobby authorized service center, (v) Product not purchased from an authorized Horizon dealer, or (vi) Product not compliant with applicable technical regulations.

OTHER THAN THE EXPRESS WARRANTY ABOVE, HORIZON MAKES NO OTHER WARRANTY OR REPRESENTATION, AND HEREBY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER’S INTENDED USE.

PURCHASER’S REMEDY

Horizon’s sole obligation and purchaser’s sole and exclusive remedy shall be that Horizon will, at its option, either (i) service, or (ii) replace, any Product determined by Horizon to be defective. Horizon reserves the right to inspect any and all Product(s) involved in a warranty claim. Service or replacement decisions are at the sole discretion of Horizon. Proof of purchase is required for all warranty claims.

SERVICE OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE PURCHASER’S SOLE AND EXCLUSIVE REMEDY.

LIMITATION OF LIABILITY

HORIZON SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY, REGARDLESS OF WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, TORT, NEGLIGENCE, STRICT LIABILITY OR ANY OTHER THEORY OF LIABILITY, EVEN IF HORIZON HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. 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 the Product, purchaser is advised to return the 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). This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Horizon reserves the right to change or modify this warranty at any time without notice.

WARRANTY SERVICES

QUESTIONS, ASSISTANCE, AND REPAIRS

Your local hobby store and/or place of purchase cannot provide warranty support or service. Once assembly, setup or use of the Product has been started, you must contact your local distributor or 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 visit our website at www.horizonhobby.com, submit a Product Support Inquiry, or call 877.504.0233 toll free to speak to a Product Support representative.

INSPECTION OR SERVICES

If this Product needs to be inspected or serviced and is compliant in the country you live and use the Product in, please use the Horizon Online Service Request submission process found on our website or call Horizon to obtain a Return Merchandise Authorization (RMA) number. 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. An Online Service Request is available at http://www.horizonhobby.com/content/_service-center_render-service-center. If you do not have internet access, please contact Horizon Product Support to obtain a RMA number along with instructions for submitting your product for service. When calling Horizon, you will be asked to provide your complete name, street address, email address and phone number where you can be reached during business hours. When sending product into Horizon, please include your RMA number, a list of the included items, and a brief summary of the problem. A copy of your original sales receipt must be included for warranty consideration. Be sure your name, address, and RMA number are clearly written on the outside of the shipping carton.

NOTICE: Do not ship Li-Po batteries to Horizon. If you have any issue with a Li-Po battery, please contact the appropriate Horizon Product Support office.

WARRANTY REQUIREMENTS

For Warranty consideration, you must include your original sales receipt verifying the proof-of-purchase date. Provided warranty conditions have been met, your Product will be serviced or replaced free of charge. Service or replacement decisions are at the sole discretion of Horizon.

NON-WARRANTY REPAIRS

Should your service not be covered by warranty, service 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 service you are agreeing to payment of the service without notification.

Service estimates are available upon request. You must include this request with your item submitted for service. Non-warranty service estimates will be billed a minimum of 1/2 hour of labor. In addition you will be billed for return freight. Horizon accepts money orders and cashier's checks, as well as Visa, MasterCard, American Express, and Discover cards. By submitting any item to Horizon for service, you are agreeing to Horizon's Terms and Conditions found on our website http://www.horizonhobby.com/content/_service-center_render-service-center.

NOTICE: Horizon service is limited to Product compliant in the country of use and ownership. If non-compliant product is received by Horizon for service, it will be returned unserviced at the sole expense of the purchaser.

CONTACT INFORMATION

COUNTRY OF PURCHASE	HORIZON HOBBY	ADDRESS	PHONE NUMBER / EMAIL ADDRESS
United States of America	Horizon Service Center (Electronics and engines)	4105 Fieldstone Rd Champaign, Illinois 61822 USA	877-504-0233 productsupport@horizonhobby.com
	Horizon Product Support		
United Kingdom	Horizon Hobby Limited	Units 1-4 Ployters Rd Staple Tye Harlow, Essex CM18 7NS United Kingdom	+44 (0) 1279 641 097 sales@horizonhobby.co.uk
Germany	Horizon Technischer Service	Christian-Junge-Straße 1 25337 Elmshorn	+49 (0) 4121 2655 100 service@horizonhobby.de
France	Horizon Hobby SAS	11 Rue Georges Charpak 77127 Lieusaint, France	+33 (0) 1 60 18 34 90
China	Horizon Hobby - China	Room 506 No. 97 Changshou Rd. Shanghai, China 200060	+86 (021) 5180 9868 info@horizonhobby.com.cn

FCC STATEMENT //////////////////////////////////////

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.

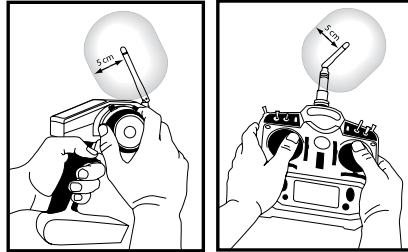
⚠ CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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.

ANTENNA SEPARATION DISTANCE

When operating your Spektrum transmitter, please be sure to maintain a separation distance of at least 5 cm between your body (excluding fingers, hands, wrists, ankles and feet) and the antenna to meet RF exposure safety requirements as determined by FCC regulations.

The following illustrations show the approximate 5 cm RF exposure area and typical hand placement when operating your Spektrum transmitter.



COMPLIANCE INFORMATION FOR THE EUROPEAN UNION //

AT	BE	BG	CZ	CY	DE	DK
ES	FI	FR	GR	HU	IE	IT
LT	LU	LV	MT	NL	PL	PT
RO	SE	SI	SK	UK		

DECLARATION OF CONFORMITY

(in accordance with ISO/IEC 17050-1)

No. HH2012101101

Product(s): VTR Kalahari 4WD Desert Raider RTR 1/14

Item Number(s): VTR010011

Equipment class: 2

The object of declaration described above is in conformity with the requirements of the specifications listed below, following the provisions of the European R&TTE directive 1999/5/EC, EMC Directive 2004/108/EC and LVD Directive 2006/95/EC:

EN 300-328 V1.7.1: 2006

EN 301 489-1 V1.7.1: 2006

EN 301 489-17 V1.3.2: 2008

EN 60950-1:2006+A12: 2011

EN55022: 2010

EN55024: 2010

EN61000-3-2:2006+A1:2009+A2:2009

EN61000-3-3:2008

Signed for and on behalf of:

Horizon Hobby, Inc.

Champaign, IL USA

October 11, 2012

Steven A. Hall

Executive Vice President and Chief Operating Officer

International Operations and Risk Management

Horizon Hobby, Inc.



INSTRUCTIONS FOR DISPOSAL OF

WEEE BY USERS IN THE EUROPEAN UNION

This product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the product.