Seahorse REVO4 and Matrix KontikiDrone

Thanks for purchasing your Seahorse REVO4 or Matrix KontikiDrone. These fishing drones are the culmination of many years of development to ensure your drone fishing experience is both safe, enjoyable and successful.

Fishing Drones combine the technology of avionics, electronics and robotics to create a flying machine. We add complexity by pulling a line from the beach over water. When flying a drone, you are a pilot with all the responsibilities that go with that. This includes ensuring everything is in good working order and operating and responding correctly before flying. If you have any concerns or worries while flying, release the load and return the KontikiDrone to the beach to land.

Remember - Always perform the pre-flight checklist.
Seahorse recommends you follow the training guide in this manual and only proceed to the next stage after you have mastered the current stage. You need to be comfortable flying so you can correctly respond to the actions of the KontikiDrone.

Seahorse offers one on one learn to fly lessons to teach the basics of drone flying. Details are on our website – www.seahorse.net.nz

Read and understand the manual before attempting to fly. This manual contains several warnings. This is based on what we have learnt the hard (and expensive) way. There is little room for error with flying and if you are not careful you could crash and maybe lose your KontikiDrone.

Your new Seahorse KontikiDrone has passed it's Quality Assurance checks and have completed several test flights before being released for sale.

PAYLOAD

The REVO4 is a very powerful fishing drone and can lift large baits or payloads. The REVO4 will happily pull 25 hooks out to 1150 metres or carry a large single bait up to 4kg's over a shorter distance. The other option for the West Coast beaches is a larger weight and less (say 15) hooks over a shorter distance.

As the load increases, the flight characteristics of the drone will change including makes it slower to respond to control inputs. Larger payloads will result in higher wear and tear on the battery, frame and motors. Flight time is also reduced and your stress levels will be higher. It is best to develop your skills so you are experienced and comfortable before attempting large payloads.

INSTRUCTIONAL VIDEOS

This manual will step you through the operation of the Seahorse REVO4 KontikiDrone, but it is very difficult to describe all the steps and procedures to fly a drone. In addition to the manual, there will be instructional videos available online. These will be on our website as well as on our YouTube channel.
It is recommended you watch the videos.
The Cuta-copter videos are also available to watch.

WARNINGS

All instructions, warranties and other collateral documents are subject to change at the sole discretion of Seahorse. For up-to-date product literature, visit www.seahorse.net.nz

Read the ENTIRE instruction manual. Watch the instructional videos. Become familiar with the features of the drone before operating. Failure to operate the drone correctly can result in damage to the drone, personal property and cause serious injury.

The Seahorse fishing drones are large powerful machines that can cause damage and serious injury. It must be operated in a safe manner, responsibly and with caution. Seahorse fishing drones are not intended for use by children. Hooks are dangerous to the unwary.

- Keep children and animals clear of the KontikiDrone and the fishing equipment, including the Drone, line, hooks, and the winch (or reel).
- Ensure all users and helpers are instructed or trained in using the Seahorse products.
- Warn onlookers or passers-by of the dangers of the KontikiDrone, its likely flight path. Highlight the hooks and the location of the line.
- Operate your Seahorse KontikiDrone system Responsibly and be considerate of other beach users.
- Do not operate your Seahorse KontikiDrone system on a crowded beach, or among swimmers. You are not allowed to fly over crowds.
- Unplug the batteries when not in use.
- Keep Clear of the Propeller at all times – Remove the propellers when not in use.
- Be aware of the tides and currents and where they could carry or drag your fishing line.
- Retrieve the fishing line if it presents a danger to other beach users.
- Do not use your KontikiDrone where it could endanger other beach users.
- Do not use your KontikiDrone where it could be a hazard to navigation of boats and ships.
- Do not use your KontikiDrone where it could be a hazard to aircraft, people or traffic.
- Seahorse recommends having a minimum separation of 400 metres between Beach fishers.
- Check for other beach users before launching your Seahorse kontikiDrone. If there are other fishers already on the beach, find out where their line is and set your fishing line accordingly.
- Be aware of the local flying regulations, including restricted areas. Do not break them, as penalties could include fines and jail time.
- Be aware of the local fishing regulations, including size and bag limits. Do not break them, as penalties could include loss of your drone and equipment.

THE SEAHORSE KONTIKIDRONES ARE NOT A TOY

Safety Precautions

- Do not operate inside
- Do not operate near or over other people
- Always fly with a fully charged battery – never fly with a partially or fully discharged battery.
- Never fly with a faulty or damaged LiPo Battery. - Dispose of the battery immediately.
- Do not operate where there is strong radio interference, ie near radio towers or high powered overhead lines.

Indemnity
The user accepts all liability and responsibility for the safe operation of the Drone. The user understands that Seahorse cannot be held responsible for any damage resulting from an accident as well as any consequential damage.
The user undertakes to only operate the Drone when they are competent in the operation of the craft.
The user must understand the operation of the drone and the meanings of the various LED lights and messages.
The user must be aware and knowledgeable of any local flight regulations that could affect the operation of the Drone.
The user should arrange appropriate insurance if required.
Only Seahorse is authorised to service and repair REVO4 KontikiDrones in New Zealand

You agree that by operating the KontikiDrone you are aware of the risks and have the know-how to operate the drone safety.

Register your drone with Seahorse to extend your warranty to nine months

Naming your Drone
A lot of people give their drones names. It is also good to put your name and phone number on your drone, transmitter and other equipment.
This will enable anyone finding your drone or equipment to contact you and return it.

Serial Number
The serial number of the drone is on the right or starboard side of the drone. This number is the same number recorded in the transmitter. The serial number is also noted in the manual.

What is in the box
1 * Carry bag backpack
1 * KontikiDrone
1 * FlySky Transmitter
1 * Smart LiPo Battery Charger
1 * Battery tester
1 * Landing Pad
2 * 5000mAh 6S high-performance batteries
4 * Carbon Propellers
1 * Manual and logbook

FIRST STEPS
Before learning to fly, there are a couple of steps to follow before you take off.

Charging the Battery
Seahorse has supplied a smart charger with the REVO4 KontikiDrone.
These chargers can charge different types of batteries including Lead-acid, Lithium Iron Phosphate (LiFePo4), Lithium-Ion (LiIo) and Lithium Polymer (LiPo). It is important to choose the correct battery type. Using the wrong battery type will damage your battery.

The batteries used in the Seahorse KontikiDrone is a LiPo battery. LiPo Batteries should not be left unattended with charging. Place the LiPo battery on a concrete floor or a metal tray when charging.

Read the manual for the battery charger.

Before connecting the battery ensure you set up the charger to the correct settings for the battery.

Battery Type

- Choose - **LiPo**

Program

- Choose - **Balance Charge** for charging to 100% charge
- Choose - **Battery Storage** for storing the batteries for a week or more

Settings
Battery Capacity – 5000mAh
Charging Rate – 5AH
Cell Count – 6S (22.2v)

A LiPo battery can charge at 1AH for every 1000mAh's of capacity.
The battery will take approximately one hour to charge from flat, and 30 minutes from storage mode. Once complete, the charger will show the mAh's (MilliAmp Hours) that has been put into the battery.

The Battery
Seahorse uses a high-performance 5000mAh (or 5AH) Lithium Polymer (LiPo) 6S, 25.2v battery.

- The Battery is made up of six separate cells linked in series to give 25.2 volts of power.
- The battery has the power lead with its XT90 yellow connector.
- The battery has a separate set of seven wires known as the balance cable. The balance cable connects to each cell in the battery and is used to ensure the cells are charged correctly and the voltage of the cells are balanced.
- A fully charged battery is 25.2v
- A discharged or flat battery is 23v
- Never discharge below 20v or 3.3v per cell.

If you are not using the battery for a week or more, store the battery in storage mode.

Do not use the battery

- if there is any visible damage to any of the cells,
- if the battery is swollen or puffy.
- The power leads or connector is damage.
- If the battery is not holding its charge.
- Large variance (>0.1v) in the voltage of the cells.

These are all signs of a faulty or failing battery and failure in flight could result in a crash.

The battery charger can operate from a DC or battery power supply. This means you could use an SLA (Lead Acid) battery to charge the LiPo batteries at the beach. The charge time will be up to one hour. One 14ah SLA battery would be able to charge one 6S 5000mAh LiPo battery.

1. Checking Battery Voltage

Seahorse supplies a battery checker with the KontikiDrone. The battery checker will check the voltage of the battery and the voltage of each cell in the battery.
Plug the balancer cable of the battery into the battery tester. The tested will BEEP, and then show the total voltage of the battery, followed by the voltage of each cell.
A fully charged LiPo 6S battery is 25.2V and each cell should be 4.20v. The cells may vary up or down by 0.02v (range 4.18v to 4.22v) Do not use if there is a variance greater than 0.1v between the cells.

Always fly will a fully charged battery. Do not fly with a partially discharged battery as you do not know how much energy or flight time is left in the battery.
Never fly with a battery that has a voltage reading less than 23 volts. This is a flat battery.

2. Transmitter Operation

Fully understand the operation of the transmitter (the controller) before you try flying. The transmitter is your control box which you use to control the flight of the KontikiDrone.

The transmitter has several switches and the two control joysticks.

- On the transmitter, Up is away from you, Down is towards you.
- The outside left switch selects normal flying mode in the up position and Return To Launch (RTL) in the down position.
    - Remember to release before selecting RTL. To select RTL, pull the switch down for one second and then return to the up position. This will activate the RTL and still allow horizontal flight adjustments if required as the drone is landing.
- The inside left switch operates the release. Up is loaded and towards you is released. Pull the switch towards you to drop the hooks.
- The Inside right switch selects GPS or manual stabilised flying mode. GPS mode is the recommended mode. This switch is also used to start a compass calibration.
- The outside right switch selects the Auto-Fly option. This options is not used.

The left-hand joystick controls the throttle and Yaw, which is rotating the drone clockwise or counter-clockwise.

- Pull the stick down reduce the throttle and to lose altitude
- Push the stick up to increase the throttle and gain altitude
- Position the stick in the centre to hover or maintain altitude
    - Always centre the throttle before selecting RTL.
- Push the stick to the left to rotate the drone counter-clockwise (to the left)
- Push the stick to the right to rotate the drone clockwise (to the right)

The right-hand joystick controls the forward and sideways movements of the drone.

- Push the stick up and the drone will fly forward
- Pull the stick down and the drone will fly backwards
- Push the stick to the left and the drone will fly to it's left
- Push the stick to the right and the drone will fly to it's right.
- Position the stick in the centre to hover or maintain position
    - Always centre the stick before selecting RTL.

IMPORTANT These movements are based on the drones situation and direction, not yours. For example, if the drone is facing you the movements of the drone will be opposite to what you may expect.

The transmitter uses standard AA batteries. Have a spare set on hand.
The transmitter battery status is shown on the screen.

Power switch – Always turn on the transmitter before powering up the drone. Ensure all the switches are push up away from you and the throttle is down towards you. If not you will get a warning.

The Seahorse REVO4 KontikiDrone
The Seahorse REVO4 KontikiDrone is a simple drone designed to pull hooks and baits out to sea. Drones only fly because they have counter-rotating propellers, the front left and rear right propellers rotate clockwise and the front right and rear left rotate counter-clockwise. Another way to view it is the propellers rotate into the ends of the drone.
The propellers are fitted with easy screw on/screw off attachments and the motors have the matching part.

Release System
The release line is permanently attached to the left bottom side of the drone and the release is on the right-hand side of the drone.
There is a loop at the end of the release line that loops over the forward arm of the release horn. Ensure the line stays forward of the release horn so it doesn't tangle on release.

Attaching the Propellers
Match the colours of the attachment on the propellers to the matching colour on the motors. Match silver to silver and gold to gold.
The propellers screw on in the opposite direction to the rotation of the motor. The front left will screw on counter-clockwise and the front right screws on clockwise. The propellers will self tighten as the motors are running. The screw thread runs the same direction of the pitch on the prop. Follw the pitch of the propeller - Wind the prop backwards and down to fit, and up and forward to remove.
To remove the propellers, hold the motor and push the propeller in the direction of normal rotation. Front left is clockwise to remove.

Connecting the Battery
The battery slides into the battery compartment. Tuck the balance lead securely under the battery. Place the foam retainer in place and plug the battery lead into the connector on the Drone. Ensure

the connector is secure and firm fitting. If the connector is getting loose – contact Seahorse to replace the connectors.

Regulations

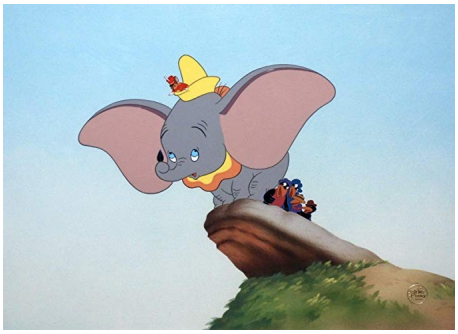
A Drone is an aircraft and therefore is controlled by aircraft flying regulations. Special regulations for drones include

- Must not fly over 120 metres in altitude – REVO4 is limited to 50 metres
- Must stay within line of sight – REVO4 is limited to 1150 metres
- Must not fly over private property unless you have the prior permission of the landowner
- There are special rules for flying within restricted air space, including four km's of an airport or hospital.

New Zealand has a great website resource called **AIRSHARE** that will help show you where you can safely fly your drone. The Website is here - https://www.airshare.co.nz/
Download their App to you phone. The resources include maps showing the restricted air space in New Zealand along with some of the contact phone number you may need.
They also have an online course called DRONE 101 that teaches you the rules and safety procedures you should follow.

Another good resource is https://www.flyyourdrone.nz/ which outlines the rules regarding the flying drones.

LEARNING TO FLY



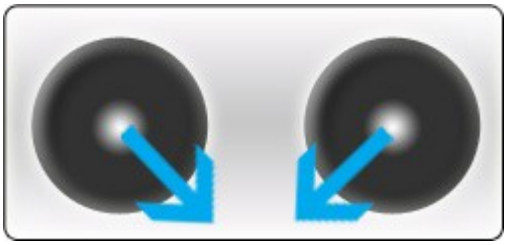
Learning to fly by trial and error can be both expensive and dangerous. Follow the stepped process noted below.
There is a theory test at the end of this manual to test and enforce your understanding of the operation of the REVO4 KontikiDrone

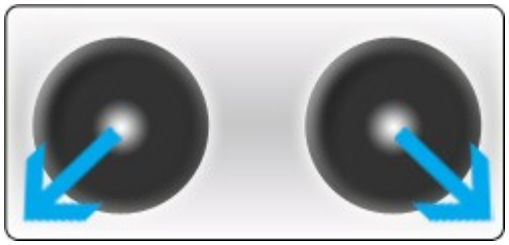
1. Learn the Transmitter

The first thing to learn is the operation of the transmitter.
The safest way to learn is to do pretend flights with just the transmitter. This way you can practice using the switches and joysticks and learn the correct process.

1. Move all the switches to the up position
2. Move the throttle into the down position
3. Turn on the Transmitter

First, you need to learn to ARM (turn on) and DISARM (turn off) the motors.





To ARM

Before you can fly you need to ARM, or turn on the motors. Once you have landed and finished flying, you need to DIS-ARM or turn off the motors.
To ARM - to pull both joysticks down and inwards (towards the middle) and hold for approx. Two seconds. Once the motors start, release the joysticks.

To DIS-ARM

Once your KontikiDrone has landed it may automatically DIS-ARM, but it is still best to move the throttle to zero and be ready to manually DIS-ARM on landing.
To DIS-ARM is to pull both joysticks down and outwards (towards the sides of the transmitter) and hold until the motors stop, which will be approx two seconds.
DO NOT DIS-ARM while the drone is in the air – it will stop flying and crash.

Practice first with just the transmitter. You can practice later with the Drone. If you are practising with the Drone remember to remove the propellers.

Practice a flight with the Transmitter only
A good way to get use to the transmitter is to practice the movements and actions with the transmitter by itself performing pretend flights.
Perform several pretend flights to learn the procedure.

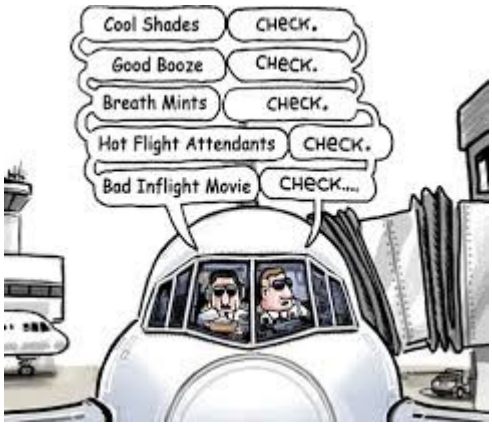
- Switches into the correct position (up and away from you)
- Throttle to zero (down and towards you)
- Turn on Transmitter
- Resolve any error messages (generally switch or throttle warnings)
- Arm Motors (pretend motors arm)
- Once arms, push throttle to full throttle to climb (pretend drone is flying)
- Throttle back to the centre to hover
- Push the right joystick forward to fly forward.
- While flying forward pull the release switch (inside left) towards you to release the baits.
- Release right joystick to hover
- Check both joysticks are centred. If the throttle is not centred they drone may not automatically land.
- Pull the left outside switch towards you to engage RTL, and then push back. If you leave the switch in the RTL position, you will have no directional control of the drone.
- The drone will now fly back to you and land
- During the landing, you may need to guide the drone left or right, or forward or backwards to land in the correct spot.
- Once the drone has landed DISARM

The important step is to centre the joysticks before engaging RTL
Get comfortable with these steps before risking your drone.

Pre-Flight Checklist
Before flying **ALWAYS** complete the pre-flight checks.

Preflight check

- Turn on transmitter
- Check the voltage of transmitter batteries – do not fly with flat batteries in the transmitter.
- Check the switches and joysticks of the transmitter
- Check battery voltage to ensure battery is fully charged – 25.1 to 25.2v
- Check to ensure all the cells in the battery have similar (><0.1v) voltage Approx 4.2v per cell.



- Check all propellers are not damaged or unbalanced
- Check the propellers are screwed on tight
- Check the drone for any damage or loose parts.

Pre fishing check

- Test the release clip is operating correctly with the transmitter.
- Check the fishing line is on the release line and the release line is positioned correctly on the release.
- Check the fishing line is passing under one of the rear feet and is running straight and tight to a weight (4-8oz) approximately one metre along the line. This will stop the line getting sucked into the propellers.

Area check

- Check other beach users are clear of the flight area and the water in front of you is clear of swimmers etc.
- Warn anyone close (watching) what is going to happen and the need to stay clear.
- Check the weather conditions that it is still safe to fly.
- Check there are no obstructions in the flight area or boats moving along the shore who may cross in front of you.

Prelaunch check

- Check transmitter is turned on
- Load the battery onto the drone and connect the battery plug to power up the drone.
- **DO NOT MOVE THE DRONE UNTIL GREEN LIGHT FLASHING SLOWLY.**
- Check the balance lead is tucked securely away
- Ensure the battery connector is fully inserted and is secure.
- Wait for the 20 very fast green flashes and the LED is flashing green once every second.
- If LED is showing RED do not fly.
- **DO NOT MOVE THE DRONE UNTIL GREEN LIGHT FLASHING SLOWLY.**

Practice with the Drone

The REVO4 is a large drone and you need a large area to comfortably fly it. Seahorse recommends performing your practice flights in a park or other open area (school sports field). Drones are affected by the wind, so it is better to practice on a calm day that is not too windy.
Always turn the Transmitter on before plugging a battery into the Drone.

Practice 1

Practice ARM and DISARMING the motors to see how the motors react to the commands.
You can do this with no props on the motors.

Practice 2

Practice take off, hover and landing.
Arm the motors
Once the motors start, slowly apply throttle until it is just above halfway (say 60%) the Drone should slowly lift off.
Apply some more throttle and the drone will increase the rate of climb. In GPS flight mode, there will be a slight delay in responding to the throttle

Take off to five to ten metres and pull the throttle back to the centre and hover.
When ready – reduce the throttle slowly to just below halfway (say 40%) and the drone will start to lose altitude – remember there is a slight delay to responding to the throttle
Once the drone has landed pull the throttle down to zero and the motors should turn off automatically.
DISARM if required.

WARNING
* If the drone will not hover in one place it is likely the compass calibration process will need to be redone. See instruction later in the manual.
* DO NOT pull the throttle all the way down when flying. This will make the motors idle and the drone will fall out the sky.
* If the drone suddenly starts flying erratically in GPS mode, it is recommended to switch to Manual mode (pull right inside switch down towards you) to take full manual control over the flight of the drone.

Practice 3
Same as Practice 2, but once you are hovering try flying forward, backwards and side to side. You can also yaw left and right.
If you need to, you can let go of the right joystick and it will automatically self centre bringing the drone into a hover.
Once it has landed throttle down and the motors should stop.
DISARM if required.

Practice 4
Practice flight in manual stabilised mode
Before ARMING, move the right inside switch down from GPS flight mode to the manual stabilised mode. In stabilised mode, the throttle response is quicker and the drone will drift with the wind.
Repeat the practice 3 flight but this time you are in the manual stabilised mode.

The manual stabilised mode gives you total control over the drone as the GPS (fly by wire) inputs are not used. You may use the manual stabilised mode if you need to take control of the drone and manually fly or land it. Always check the throttle is set at 50% before switching to manual stabilised mode to ensure the drone maintains a stable hover.

WARNING
* If the drone suddenly starts flying erratically in GPS mode, it is recommended to switch to Manual mode (pull right inside switch down towards you) to take full manual control over the flight of the drone.

Practice 5
Practice Return to Launch Function.
The RTL function has two stages, the first is to return to drone to the launch location and the second is to land.
In GPS mode - Take off and fly up to 30 metres.
Fly forward 100 to 300 metres away
Release the right joystick (it should centre itself) and
Pull the release (middle left) switch towards you to (pretend) release
Now Pull the RTL (outer left) switch towards you to start the RTL

As the drone flies back to you, centre the throttle to 50%. If the throttle is above 50%, then the drone will not automatically land. If it is below 50% it could start descending too early.
With the throttle at 50%, push the RTL switch up away from you.
Once the drone arrives overhead, after a short delay begin it's descent to land
Once it has landed throttle down and the motors should stop.
DISARM if required.

What could possibly go wrong!

- The drone does not fly back to you.
    - Check to see right joystick is centred
    - try flicking the RTL switch towards you again.
    - Or manually fly the drone back to you by pulling the right joystick down towards you. You may need to add in some left or right to fly in the correct direction if the drone has yawed.

- The drone will not automatically descend
    - The likely cause is the throttle was not correctly centred at 50%.
    - Centre the throttle (check and recheck)
    - Switch from GPS flight mode to manual stabilised mode and back to GPS mode
        - This resets everything.
    - Fly forward 30 metres
    - Pull the RTL switch towards you and then return to the up position.
    - The drone should automatically begin its return journey back to you and then descend and land.

- If it does not work for the second time
    - Centre the throttle (check and recheck)
    - Reduce the throttle to 40% and manually land the drone guiding it back to the landing spot.

- You lose sight or orientation of the drone
    - Don't panic
    - Centre the joysticks to bring the drone into a hover.
    - Check the throttle is centred – if not then the RTL will not automatically land
    - Pull the RTL switch towards you and then return to the up position.
    - The drone should automatically begin its return journey back to you.

Practice 6
Repeat practice 5, but fly out to 500 or more metres.
I find it useful to have a stopwatch to see how long I have been flying for. With no load, it only takes two minutes to fly 500 metres.

Practice 7
Do a flight with a load under the drone.
Tie a line onto a one lt milk bottle fill of water and connect to the release line
I enjoy flying a 1lt milk bottle full of water and releasing it from 30 metres.
After flying with a small 1kg payload you can try a 2kg payload to see the difference.

The REVO4 will fly for seven minutes with a 2kg payload.

You are now ready to practice flying over water

Practice 8
Seahorse recommends doing a practice flight with your fishing gear to ensure everything works how you are expecting it to work.
This is best with a second person watching your reel so they can warn the pilot of any issues.
The pilot should have their finger on the release switch ready to release if there is an issue.
Seahorse recommends fly out slowly to ensure the fishing reel, line, hooks and traces are operating as expected.

Helpful Hint
If you discover on the TTL flight home, you selected RTL without centring the throttle, you can correct this on the flight home. First centre the throttle, second push the RTL switch up away from you for one second, and then return it back to the RTL position. The drone should now return and land successfully.

Time to go Fishing
You have completed your practice flying and you now feel ready for your first fishing trip.

Test Flight
Seahorse recommends performing a short test flight to ensure the drone is operating correctly and the weather (wind) conditions are as expected. A simple 30 second up, out, back and land flight should suffice.

Line set up
You will need to put a small cable tie (looped) or a 12mm ring on the end of your line so the fishing line can hand from the release line. This also allows the fishing line to slide off the release line when released.
Place an 6oz spike weight (with the folding back wires) one metre along the line. This will pull the line away from the drone during flight keeping it away from the propellers.
The simplest hook section is a length of nylon (monofilament) with a small loop tied every 1.5 to 2 metres, to which you can attach a short trace to.
Seahorse recommends using 80lb braid as your mainline. Braid has the advantage of not stretching and it is better behaved as it comes off the reel. Braid is lighter and easier for the drone to pull.

Laying out the line for launching
It is best to connect the fishing line before connecting the battery to the drone. The carbon propellers can cause significant injury.
Feed the release line through the ring on the end of the fishing line and place loop on to the release horn.
Lead the fishing line under one of the rear feet and directly out to the weight – keep the line tight.
Lay the hook section and traces along the beach leading away from the drone. A handful of sand on the line will help to keep the line under control. And have your reel in free spool and ready for the deployment.

Take off
After completing the pre-flight checks, take off and perform a steady climb to 30 metres or until all the hooks are off the ground.
Leave the throttle at 100% while flying out the baits. The drone will automatically manage the power to stay at the maximum altitude of 30 metres.
Now push the right joystick forward and the drone will start flying out to sea. Do not go too fast. Be ready to release the line at any time.
You need to release the line while the drone is moving, otherwise, all your traces and hooks will end up with everything in a tangle on the seabed.
You can release the line as the drone is flying out to sea, or if you get to the distance limit of 1150 metres, the drone will stop and hover. If this happens, simply fly the drone to the left or right for approximately ten seconds and release as the drone is moving. This will lay your hooks sideways at the limit of 1150 metres.

If you are using the Seahorse winch with 1000 metres of line, drop as the line changes from the 80lb braid to the 300lb braid. The drone will be 1000 metres out and still moving forward, thus laying your hooks out in the line.

Once the line has been released, select RTL by pulling the outside left switch towards you. The drone should now start flying home. Once the drone is nearer home (say 300 metres), centre the throttle (left joystick) and push the left outside switch up away from you and this will engage the automatic landing. Once the Drone arrives above you, it should start to descent and land as it did in the practice flights.
Once the drone lands, throttle down and the motors should stop by themselves.

Use the landing pad to minimise the sand blown around by the propellers.

Fishing
Braid (even sinking braid) is lighter than water and it will tend to float on the surface. By keeping tension on the line, you should be able to pull the line tight and the line underwater. Be aware of any boats in the area. If it looks like a boat is going to cross your line, start winding in to get the line tight and pulled under the water.

TECHNICAL INFORMATION

Fail-Safe Protection
The REVO4 has built-in Failsafe protection. If the drone loses transmitter signal or the battery voltage drops to a certain level, the drone will **attempt** to return home and land. The Failsafe will only work if the drone is flying in GPS mode as it will need to use the GPS to find its way home.

If you notice the drone returning home before you have released the line, immediately release the line. This will reduce the current draw on the battery and will give the drone a chance to fly home.

Maintenance
The REVO4 is easy to look after and there is minimal maintenance needed, But the beach and marine environment are harsh on equipment. A small bottle of Corrosion X is supplied with the REVO4 and Seahorse also sells it in a spraycan.

- Treat your battery and REVO4 connectors with Corrosion X

- Treat the motor top and bottom bearings with Corrosion X after use. Wipe away any excess.
- Do not leave your REVO4 in direct sunlight or a hot car for extended periods.
- Wipe any salt spray or moisture after using near the sea. Remove any sand after using near the beach.
- Test the battery connections for every flight. The fit should be tight and firm. If the connections are loose, a sharp object can be used to open the metal connections. Replace the connectors as soon as possible.

If you have a hard landing, the plastic rivets can come loose. If you have any loose rivets, pull it out, separate the barrel and the shaft. Align the holes of the outer and inner skins. Insert the barrel into the hole through both skins, followed by pushing the shaft into the barrel and locking everything back into place.

Saltwater Exposure

Saltwater is corrosive and it can do a lot of damage to your drone if left. This is why we do not call the REVO4 waterproof. Water or salt moisture damage is not covered by warranty. Onshore winds will carry a lot of moisture and salt inshore. If you need to clean your sunglasses or your windshield of your car, you will need to clean your drone.

Drone received a mild water splash and no water in the frame

- Wash the outside of the drone with a salt removal product like Salt Away or warm soapy water. It is OK to use car washing liquid, but not dishwashing liquid as that has salt in it.
- Dry off with a cloth.
- Leave in a warm dry place to dry (hot water cupboard). Do not leave in the direct sun light as this could overheat the frame.
- Check the shock valve at the rear of the drone. Pull out the plunger, pull out the tampon and check if it is wet. Replace if wet.
- Treat the motor bearings with Corrosion X and wipe the outsides of the motors to prevent any rust.

Drone was completely submerged in saltwater for an extended time

- Once you have recovered your drone, it's important to wash and remove any salt or saltwater as soon as possible. Even a small delay will allow the salt to do damage.
- Wash the drone with a salt removal product like Salt Away or warm soapy water.
- Open the REVO4 by removing the mounting rivets with a sharp side cutter. Do not cut the rivets, use the sharp edge to get under the lip and pull the rivets out.
- Keep rivets safe for re-installation
- Carefully remove the top and bottom – do not damage the wiring.
- Wash the inside of the drone with a salt removal product like Salt Away or warm soapy water.
- Dry off with a cloth or a soft towel.
- Leave in a warm dry place to dry (hot water cupboard). Do not leave in the direct sunlight as this could overheat the frame.
- Once the drone is completely dry, inspect the wiring for any corrosion or greening of the wires/connectors etc.
- Treat any corrosion or greening with Corrosion X
- Check the shock valve at the rear of the drone. Pull out the plunger, replace the tampon.
- Treat the motor bearings with Corrosion X and wipe the outsides of the motors to prevent any rust.

- Re-assemble the REVO4
- Check the operation of the electronics. Any issues contact Seahorse
- Test the motors (ARM and DISARM) with the props off. If the motors will not start please contact Seahorse for assistance.
- If the drone crashed for unexplained reasons, then the above procedure needs to be completed before any other maintenance is completed. Once the salt has been removed, then work can begin to determine the reason for the crash.
- Finally, a test flight is needed to determine everything is working correctly. This best completed on the soft grass and in the manual stabilised mode (inside right switch down).

If you have any concerns please contact Seahorse and Seahorse is also happy to perform any repairs and test flights required.

Trouble Shooting

The transmitter will not turn on.

- Batteries may be flat - replace the batteries in the transmitter.

The motors will not arm or start

- Check all the switches and joysticks are in the correct position.
- Check battery voltage – ensure the battery is fully charged at 25.2v
- With the battery disconnected – check the rotation of the motors.
- Check you have a GPS lock (green flashing LED)

The Drone will not take off

- Check the battery voltage.
- Check the propellers are installed correctly and rotating the correct way.

One motor will not spin when ARM and throttling up

- Call Seahorse – it could be a damaged or faulty motor
- With the battery disconnected – check the rotation of the motors.

The drone is suffering vibrations or the shudders

- Land immediately Something is unbalanced
- Check the propellers and motors are not damaged or unbalanced
- Check the drone for loose parts

The drone will not hover in one place – it wanders or hovers in a large circle

- The compass is out of calibration – Land and calibrate the compass.

Power drops off when wiggling the battery leads

- There is possible damage to the battery wires or the connectors
- Check the connector fit is firm and tight – not loose
- Try a different battery
- Do not fly as there is a risk of power failure – call Seahorse for advice.

Theory Test – This is a multi choose test - Answers at the end.

1. Where is the best place to do your first test flight?

A) Inside so no-one can see if you make a mistake
B) A large open area like the local park
C) Bugger that – I'm off fishing, it can't be that hard I will learn as I go.

2. How close to an airport can I fly?

A) As close as I want. Air Traffic Control will keep the other plans away.
B) Generally, there is a restriction flying within 4 km of an airport. It is best to check before flying in a new area.

3. What is AirShare? - Hint – the answer is here - https://www.airshare.co.nz/

A) AirShare means I can fly anywhere as the air is shared.
B) AirShare is an App I can load onto my phone which shows me where I can and cannot fly, plus heaps of other useful information.

4.After I have connected the battery - What is the best thing to do with the drone?

A) It is best to pick it up and move it around so it can get a GPS lock quicker.
B) Leave the Drone on the ground and don't touch it until the green light has completed it's 20 fast green flashes.

5. When is the best time to hook the fishing line onto the KontikiDrone?

A) Hover the drone and connect the line while the drone is flying – it looks really cool!
B) Connect the line before I connect the battery.
C) Just after I have connected the battery as I have time waiting for the flashing green light.

6. How many flights can I do on one battery?

A) As many as I can – The drone has a low voltage failsafe.
B) The best practice is using a fully charged battery for each flight as you can never be certain of how much energy is left in the battery.
C) If I check the voltage first, it will be OK.

7. How often should I get my KontikiDrone serviced?

A) Once every six months – it's a lot cheaper than having to replace it.
B) Only if something is broken
C) Never – It's a high tech product and it should run forever.

8. Should I store the LiPo batteries fully charged so they won't build up a memory.

A) No – LiPo batteries do not build up a memory. If storing a LiPo battery for more than a week, then I should store the battery in storage mode.
B) Yes – All batteries need to be stored fully charged so I can go fishing wnen I want.

9. Is it safe to approach the drone with the propellers moving?

A) Yes – they are only small motors – they won't be able to do much damage.
B) No – While the motors are small they are powerful and the carbon propellers are sharp. They will cut off fingers and cause serious injuries.

10. It's best to fly the line out as fast as possible as this saves battery power?

A) No. Full speed uses more power and it increases the chance of the line tangling on the reel
B) Yes. It spends less time in the sky.

11. If the line of bait does not release, is it time to panic?

A) Yes, Panic – The world has ended!
B) No – simply fly the drone back to the beach and land. This can be done by the pilot or using the RTL feature.

12. I have a brilliant idea for my drone and I want to modify it – Is this a good idea to check with Seahorse first?

A) No. It's a brilliant idea and it will work.
B) Yes, It's worth a phone call to check. It might not be such a good idea after all and it will invalidate the warranty.

13. Do I need to take off from flat level ground?

A) Yes, the drone needs to know what way is up.
B) No. The drone can take off from uneven ground, but it is best to ensure it is clear of obstructions to make the landing easier.

14. Do I need to manually DIS-ARM on landing – Is this good practice?

A) No – the drone will automatically dis-arm on landing
B) Yes – the drone will automatically disarm, but it is good practice to disarm manually as this ensures the motors are DISARMED.

15. I am not sure about flying – is there anyone who can help me?

A) No – toughen up and go for it.
B) Yes – Seahorse offers one on one learn to fly lessons

16. When is the best time and way to drop the line?

A) It is best to drop the line and hooks when the drone is moving.
B) It is best to wait until the drone has stopped at the limit of 1150 metres. That way I get out as far as I can.
C) Any time – it doesn't manner.

Answers

1. B. The REVO4 is a large drone so you need a large open area to fly. A local park of sports field is best.

2. B. The general rule is 4km's but there are special rules for busier airports. Hospitals have heliports and they are classed as airports. Check the Airshare maps to see the restrictions.

3. B. Airshare is an App that provides a lot of information about where you can fly and the regulations governing unmanned aircraft including drones.

4. B. Make sure everything is ready and organised before you connect the battery. Then leave the Drone alone and wait for the 20 flash green flashes. The green flashes are indicating the autopilot has calculated the home location so it can fly home.

5. B. Connect the line before connecting the battery. It is safer and there is no chance of upsetting the flight controller.

6. B. The best practice is to always take off with a fully charged battery. You never know how long your flight will be. If you are doing short flights, then it is possible to check the battery voltage and make a decision on the battery status. Never use a battery showing less than 23V as that is a flat battery. The LiPo battery charger can work off a DC supply, so it is possible to charge your batteries at the beach. A fuly charged battery will give a maximum of 10 to 12 minutes of flight time while fishing.

7. A. Seahorse recommends every six months. Drones are high-performance machines that need to be kept in excellent working condition.

8. A. Storing LiPo batteries fully charged will shorten their performance life. The best practice is to store in storage mode and only fully charge when you are going to use them. If you do not use them, it is best to return them to storage mode.

9. B. No. The motors are almost as powerful as the motors on the Seahorse Kontikis. They will do serious damage.

10. A. No. The best airspeed is 20 to 25km/hr. That is 2 to 2 1/2 minutes of flight time to get to 1150 metres. Fly at a speed where the line is coming off the reel at a reasonable speed. Remember the faster you are going the less time you have if something goes wrong.

11. B. DON'T PANIC. Calmly fly back to shore and land. You can use the RTL feature.

12. B. Call Seahorse. We have seen more bright ideas than you have had hot dinners. Learn from others mistakes.

13. B. The REVO4 drone can take off and land on uneven and unlevel ground. The three-leg design allows the REVO4 to sit securely in most locations. It is best to have a reasonably open area for take-off and landing. Trying to land on top of a rock is not easy.

14. B. It is good practice to manually disarm and it is extra important to manually disarm on uneven or unlevel ground. The drone will only disarm automatically if the landing surface is reasonably level.

15. B. Seahorse offers a range of "one on one" "learn to fly" lessons ranging from one hour at the Seahorse factory to a whole day at a beach near you. These range from getting you off the ground to stepping you through the various steps including flying a line out to sea. These lessons are weather dependent.

16. A. The best time to drop the line is when the drone is moving. This will lay the hooks in a line. If the drone is stopped, then the hooks will fall into a heap on the seabed. If you reach the range limit of 1150 metres, the trick is to fly sideways for 10 seconds and release the hooks as the drone is flying sideways.

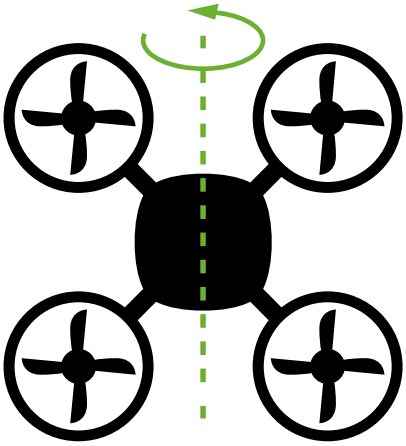
Compass Calibration

The Compass Calibration is easy to do once you understand the process. Watch the video is the easiest way to understand the process. The simplest way to rotate the drone during the calibration process is to hold it out in front of you and for you to then rotate around in a circle.

(1) Please DO NOT calibrate the compass in magnetic interference zone. This includes being inside or near vehicles.
(2) Please DO NOT carry ferromagnetic materials during calibration, such as keys and phones.
(3) The compass calibration is very important, please DO NOT ignore.

Calibration Procedures:
(1) Turn on the Remote Controller and power up the drone (no prop's).
(2) Switch the inside right switch back and forth about 8 times until the solid Yellow light is on. The calibration procedure is now enabled.
(3) When Yellow LED is on, hold and rotate the drone horizontally until Green LED is on. Hold the drone out in front of you and rotate around in a circle until the green LED comes on.

(4) When Green LED is on, hold the drone vertically with its nose pointing upwards out in front of you and Rotate around in a circle.



If the RED LED starts blinking twice slowly, the calibration has failed. Remove the battery and then do again.
If LED blinks either yellow or green calibration is successful. For instance, before calibration, it is Attitude Mode and Yellow LED blinks once. When calibration finishes, Yellow LED blinks once again.

You should calibrate the compass in the following circumstances
A significant change in flight location
If the drone is drafting and does not fly straightforward
If any RED LED's blink during calibration – Do it again.

LED Indicators

: Blink : On

1. Normal Status

LED Status	Descriptions	Reasons
No	LED Light is not blinking or constantly on.	Manual Mode
*1	Yellow Light blinks once per second slowly.	Attitude Mode
*1	Green Light blinks once per second slowly.	GPS Mode
*10	Green Light blinks 10 times quickly.	IOC Records.
*20	Green Light blinks 20 times quickly.	GPS is OK.
	Yellow Light is on.	Compass Calibration. Please rotate the aircraft horizontally.
	Green Light is on.	Compass Calibration. Please rotate the aircraft vertically.

2 Abnormal Status

LED Status	Descriptions	Reasons
	Yellow Light blinks quickly.	RC Signal Lost
*2	Yellow Light blinks twice.	RC Initialization Error
	Red Light blinks slowly.	First-Level Protection
	Red Light blinks quickly.	Second-Level Protection
*2	Red Light blinks twice.	Compass Calibration fails / Compass Error
*3	Red Light blinks 3 times.	GSP Module Data are unavailable.
*4	Red Light blinks 4 times.	Inertial Sensors Error
*10	Red Light blinks 10 times.	No-Fly Zone Warning

Seahorse KontikiDrone Service Log
Retain with KontikiDrone

Model	REVO4 Pro
Serial Number	
Date Purchased	
Owner	
Contact Phone number	

Item	**Seahorse**	**6 month**	**1st Year**	**6 month**	**2nd Year**	**6 month**	**3rd Year**
Date							
Technician							
Firmware Update	Yes						
Gyro Calibration	-						
Gains Checked	-						
Acc. Calibration	-						
Mag. Calibration	Yes						
Voltage Calibration	Yes						
Flight Controller	-						
ESC's	-						
Transmitter	Yes						
Receiver	-						
Motors	Yes						
Propellers	Yes						
Frame	-						
Body/Flotation	-						
Legs	-						
Connectors	Yes						
Wiring	-						
Plunger	-						
Release & Line	Yes						
Batteries	Yes						
Test Flight to Alt.	Yes						
GPS & Stab Mode	Yes						
RTL	Yes						
Recommendations							

Seahorse KontikiDrone Flight Log
Retain with the KontikiDrone

Model	REVO4 Pro
Serial Number	
Date Purchased	
Owner	
Contact Phone number	

Pilot	**Location**	**Date**	**Flight Time**	**Autoland**	**Issues / Signed**
Factory	S. Africa		5 minutes	Yes	
Factory	S. Africa		5 Minutes	Yes	
Seahorse	Tauranga		5 minutes	Yes	

Pack Checklist

Packed By	
Date	
Drone Type	
Serial Number	

Item		**Check**
KontikiDrone	Drone	
	Propellers	
	Battery Holder	
	Safety Line	
Batteries	Note Number	
Transmitter		
Charger		
Battery Checker		
Seahorse Drone Manual		
Cuta Drone Manual		
Landing Pad		