

# NEXUS Metal Detectors

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User Manual

## GENERAL DESCRIPTION

The Nexus Ultima is an Analogue Induction Balance (IB) metal detector that operates in the very low frequency (VLF) range and it is designed for use on in land sites and salt water beaches.

It may be used in either of the following basic modes of operation; for In Land mode - All-Metal, Discriminate, Voltage Controlled Oscillator or combination between them; for salt water Beach Mode - All-Metal, Discriminate, Voltage Controlled Oscillator or combination between them.

The Nexus Ultima is designed to be a deep seeking hoard hunting metal detector, capable of finding large targets and hoards at extreme depths. However if used with any of the search coils available from the Ultima accessory range the Nexus Ultima will be the most versatile metal detector available on the market.

The standard coil supplied is the dual 20" Ultima and this is ideal for very deep searching operations. The mentioned above Ultima range of accessory search coils is available for optimum performance when searching for the tiniest targets in difficult conditions or performing a general field survey. All of the coils are capable of finding the largest and smallest of targets.

To obtain the best results with the Nexus Ultima, as with all metal detectors, it is essential to understand the settings and operation of the detector. Some experience in metal detecting will be beneficial. Users may need to practice and experiment in order to obtain the best possible results on any particular site. All sites and soils are different and settings that will give good results on one site may be less successful if used elsewhere. The Nexus Ultima is designed to detect the very deepest of targets and operates above the limits of any other metal detector.

Each Nexus Ultima is hand-built so that there may be minor cosmetic differences between individual units. Each accessory search coil is tuned to a slightly different frequency within the design range, to minimize interference from other Nexus detectors. Performance values for all Nexus Ultima detectors will be identical.

## ASSEMBLY AND PREPARATION



The Nexus Ultima is supplied ready assembled, with the telescopic stem retracted. To prepare the Nexus Ultima for use, simply extend the lower stem section and by using the locking pin underneath fix the two poles in working position to the desired length. Then tighten the locking collar to eliminate movement between the two parts of the stem.

By holding the two rubber washers together with the stem joint, slacken the coil to stem joint bolt slightly and adjust the coil angle to the stem so that, when holding the Nexus for searching, the coil is parallel to the ground surface. It is recommended that a small amount of lubricant (WD40) is applied to the inner sides of the coil attachments for easier assembly. Tighten the coil bolt by hand. Ensure that the search coil cable is reasonably tight all the way over the stem, but not strained. Check that the coil connector plug is fully inserted into the socket on the back panel of the control box.

The Nexus Ultima is designed to work with 8 AA dry cell alkaline batteries or rechargeable pack of 8AA batteries. Remove the four cross-head screws from the base panel of the battery box (the battery box is below the arm cup at the top of the detector stem). Lift off the cover. Insert the batteries, in their correct alignments, into the plastic holder and make sure that all the terminals have a good electrical contact. Locate the battery holder into the compartment, ensuring the connecting cable is not strained or pinched. Do not over-tighten the screws.

Connect the headphones to the 6mm jack socket on the battery box. The Nexus Ultima does not have an internal loudspeaker so headphones are essential. For any headphones that have a volume control, ensure that this is set to MAXIMUM and use the Nexus Volume knob to set the volume level

## CONTROLS



The Nexus Ultima has seven primary rotary control knobs and one toggle switch control. Six of the rotary controls are located on the front of the control box and the seventh is located on the back of the Meter box. The toggle switch controls is located underneath the Meter box.

### Power switch

The Power switch is located on the front of the control box and it is combined with the Volume control knob. It turns the detectors on or off.

### Meter Sensitivity

The meter provides visual discrimination analysis in all modes. The Meter Sensitivity control is a rotary knob on the back side of the meter housing. It controls the strength of the meter needle reaction.

### Discrimination

This knob sets the level of the discrimination. Rotating the Discrimination knob clockwise (Accept) will DECREASE the level so that more iron is detected. Generally, the discrimination level should be set as low as is possible; to avoid masking the smallest and deepest desired targets.

### Ground Balance

This knob is used to set the balance of the Nexus Standard SE to suit the soil conditions on any given site.

### Voltage Controlled Oscillator (VCO)

This knob turns on or off the VCO and it also sets the frequency pitch for the target responses. Using the VCO will result in small loss of depth penetration, but it will make the use of the detector easier. If the VCO is turned on the Threshold level will have to be readjusted.

### Threshold

This knob sets the level of the threshold tone. The Nexus Ultima may be operated in silent mode, with no audible background tone or with this tone set to give a slight tone level. In order to readily discern the faintest and smallest of signals, operation with a slight background tone is recommended.

### Sensitivity

This knob controls the level of sensitivity of the responses. The sensitivity level setting will depend on the soil conditions but, in general, low sensitivity setting is recommended. On contaminated or highly mineralised sites, it may be necessary to reduce the sensitivity to avoid excessive amount of signals.

### Volume

This knob sets the volume of the tone and audio responses. This knob should always be used for setting the volume. Any volume control on the headphones should be set to MAXIMUM.

### Discrimination Mode Toggle Switch

Located under the meter box and accessible from the hand-grip, this toggle switch is used to change modes. When pushed forward, the detector operates in Discrimination Mode. In the centre position, the detector operates in All-Metal Mode. The final position is for Discrimination Mode again and is spring-loaded held towards the user to give temporary access to the Discrimination Mode. On releasing this last position, the switch will automatically revert to the centred position, All-Metal Mode setting.

## OPERATION

No metal detector, however powerful, will operate at its best unless it is set up properly for the conditions in which it is to be used. To obtain the best results, maximum depth and sensitivity to desired targets, the Nexus Ultima must be properly tuned to the site.

Having assembled the Nexus Ultima, inserted batteries and connected the headphones, the detector is ready for use.

First ensure that no metal is in close proximity to the coil. It is also advisable to carry out the tuning and setting up of the Nexus Ultima away from other detectors or potential sources of electronic interference.

Click the **On-Off switch** on the control box to turn the Nexus Ultima on. A tone will be heard and the meter needle will kick. The tone will fade after 2 - 3 seconds. If the initial tone sets for much longer than 3 seconds that will indicate **Low Battery Condition**.

Holding the Nexus Ultima with the coil well above ground level, adjust the Gain control knob to minimum. Adjust the Threshold knob to obtain a minimal tone setting. Adjust the Volume knob to set a comfortable level. Lower the coil to the ground and sweep slowly to ensure that there are no metal targets in the place you are tuning the detector. When you are satisfied that no metal is in the ground where you are standing, the procedure for tuning can be started.

There are two basic ground balance tune modes for Nexus Ultima when it is equipped with the dual 20" Ultima search coil.

#### MODE 1.

Position the coil on the ground surface. Raise the coil gently to about 4 or no more than 5 inches above the ground and lower back to the ground several times. Note whether the threshold tone remains the same or if it increases or decreases while raising and lowering the coil. If the tone rises when **LOWERING** the coil towards the ground, then adjust the Ground Balance knob slightly in an anti-clockwise direction. If the tone rises when **LIFTING** the coil away from the ground, then adjust the Ground Balance knob slightly in a clockwise direction. Repeat this procedure to ensure that an accurate assessment of the tone is obtained. If the tone remains constant, then the ground balance is set properly. To achieve the best ground balance tuning, it is essential that the coil be held parallel to the ground surface at all times during the procedure. If the Ground Balance is not properly adjusted the Meter needle will move to the left or to the right in some cases. If the Meter needle moves while raising and lowering the search coil to the ground, that indicates inaccurate Ground Balance adjustment.

After this Ground Balance procedure is complete the working zone for Nexus Ultima above the ground surface will be from 0 to 5 inches. In this mode of Ground Balance adjustment the Nexus Ultima will retain relatively

high sensitivity to large coins (30mm) and similar to their size or smaller other targets. If you do not wish to detect relatively small targets please follow MODE 2 of Ground Balance adjustment.

#### MODE 2.

Position the coil around 5 inches (12 cm) above the ground surface. Raise the coil gently to around 12 inches (30 cm) and lower back to 5 inches high and repeat this movement several times.

Note whether the threshold tone remains the same or if it increases or decreases while raising and lowering the coil. If the tone rises when LOWERING the coil towards the ground, then adjust the Ground Balance knob slightly in an anti-clockwise direction. If the tone rises when LIFTING the coil away from the ground, then adjust the Ground Balance knob slightly in a clockwise direction. Repeat this procedure to ensure that an accurate assessment of the tone is obtained. If the tone remains constant, then the ground balance is set properly. To achieve the best ground balance tuning, it is essential that the coil be held parallel to the ground surface at all times during the procedure. If the Ground Balance is not properly adjusted the Meter needle will move to the left or to the right in some cases.

After this Ground Balance (MODE 2) procedure is complete the working zone for Nexus Ultima above the ground surface will be from 5 to 20 inches.

In this adjustment mode the Nexus Ultima will lose some of its sensitivity to small targets, but the sensitivity to large deep targets and hoars will remain.

The next stage is to adjust the sensitivity to suit the site conditions. From the minimum setting of the Sensitivity knob used in the initial ground balancing procedure, adjust the Sensitivity knob clockwise to increase the sensitivity.

Repeat the procedure of raising and lowering the coil, as for ground balancing according to the chosen Ground Balance mode. If there is no change in tone while doing this, then the sensitivity may be increased further. For best results, the gain setting should be at the maximum possible (fully clockwise). However minimum level of the Sensitivity setting is recommended for new Nexus users. At maximum sensitivity settings, a slight tone change may be noted when both raising and lowering the coil. This will not adversely affect the operation of the Nexus Ultima, providing that the coil is kept at a reasonably constant level above the ground surface and parallel to it while detecting. Each Nexus metal detector is supplied with a scale positioned around the Discrimination knob. Rotating the Discrimination knob CLOCKWISE (Accept) will REDUCE the discrimination

level and INCREASE the sensitivity to smaller ferrous signals. Rotating the Discrimination knob ANTI-CLOCKWISE (Reject) will INCREASE the discrimination level and DECREASE the sensitivity to some non-ferrous targets and will result in desired targets being missed. To obtain best Discrimination setting please follow this procedure;

Firstly, for this procedure an iron nail (rusty if possible) around 2" long is required. While the detector is on turn the Discrimination knob fully clockwise (accept). Push the Discrimination mode toggle switch forward (Iron rejection mode). Then begin to move the nail from side to side across the windings, pointed at 90 degrees against the middle of the coil. The nail should be pointed to the coil with its peak side at no more than 1 1/2" distance. In this case the nail will be detected as non ferrous target. While moving the nail side to side begin turning the Discrimination knob slowly anti clock wise until the tone in the headphones change from clear to clicking. The position of the Discrimination knob in which the signal from the nail begins clicking is the best Discrimination level for all Nexus metal detectors. Having the scale around the Discrimination knob will make it easy to remember the optimum level setting. Finally, check again the threshold and volume settings for comfortable levels.

The Nexus Ultima is now ready for use. The coil should be swung smoothly and quite slowly (approx. 2 seconds per swing) from side to side, above the ground surface. If smaller than Ultima coil is in use it will be ineffective to 'scrub' the coil on the surface of the ground. Minimum suggested operating heights for the standard coils are:

9" coil: 2" minimum above ground surface

6" coil: 1,5" minimum above ground surface

4" coil: 1" minimum above ground surface

Make sure that the coil is swung evenly over and parallel to the ground surface and that the coil does not rise at each end of the swing. Cover the ground in smooth, parallel swings to ensure maximum ground coverage. **DURING NORMAL SEARCH, THE METER NEEDLE SHOULD REMAIN STABLE OR ONLY NEGLIGIBLE, SMALL MOVEMENTS COULD OCCUR.**

The Meter is only used for Target Analysis of audio responses in any mode. When detecting in Discrimination Mode, it is not necessary to use the meter as the audio discrimination provides sufficient Target Analysis. In All-Metal Mode, both ferrous and non-ferrous targets will give the same audio response by a sudden increase in the intensity of the threshold tone. A strong response indicates a large or relatively shallow target and a weak response indicates a small or deep target. Any audio signal in All-Metal Mode may be analysed by using the Meter. To analyse a signal with the



Meter, sweep the coil slowly across the target and observe the meter needle response. The meter needle will kick to the right for non-ferrous targets when the audio signal is heard. The meter needle will kick to the left for ferrous targets when the audio signal is heard.

In Discrimination Mode, good non-ferrous targets will give a clear, well-defined, two-way, repeatable audio signal. Ferrous targets will give a 'clicking' audio response or indistinct and erratic response.

Pinpointing is carried by simply X-ing the coil across the signal. The position where the signals are strongest indicates where the target is buried. As with all detectors, when targets are of complex shape or are located at an angle in the soil, pin-pointing may not be entirely accurate. In VCO Mode the pitch of the sound will get higher for non-ferrous targets and lower for ferrous targets. The exact amount of pitch change can be set by turning the VCO knob.

Turning to the setting 10 will result in highest possible audio pitch for the non-ferrous targets and the audio difference between the ferrous and non-ferrous target responses will be most definite.

### **TIPS**

The Nexus Ultima may seem very different in operation to some detectors presently available. Some practice and experimentation with the settings will be beneficial to get the best results on different sites.

Work slowly when detecting. Sweeping the coil too fast over the ground will result in signals being missed. It must always be remembered that no detector can find what is not there – nor can any detector give a signal unless the coil is passed directly over that target. Using the Nexus does not guarantee good finds!

There will always be sites on which any single detector does not work to peak efficiency. All detectors and sites are different and a particular combination of frequency and filtering might be best on a specific site.

Site conditions will significantly affect depths and performance. Heavily furrowed or broken ground or thick stubble is especially difficult. Sites where the ground conditions vary to a considerable degree may require the Ground Balance to be adjusted for best results.

## BEACH MODE ADJUSTMENT

In Beach Mode setting the Nexus Ultima is equally powerful, accurate and sensitive as it is in land.

On the beach there are no different modes for balancing the salt water signals as they are for balancing the ground mineral signals.

The Beach Mode adjustments are done as described below.

Turn on the detector from the Power Switch.

Set the Sensitivity control on minimum.

Turn the Discrimination Mode switch in medium position, All Metal Mode.

Lift the search coil of the detector high above the salt water and tune the Threshold at minimum tone level. Only very small audio signal is to be left.

Set the Discrimination knob at 12 a clock.

Set the Ground Balance knob at 4 a clock.

Start swinging the search coil close above the very wet sand or salt water and try to find a place free from metal targets.

When you are satisfied that there are no metal targets in the area, begin vertical movements above the very wet sand up and down from the level of the sand to around 10" above the sand. During this procedure use the Ground Balance knob to cancel out the signals from

the salt water in the same way as in a standard In land ground balancing procedure. In this

case the procedure will be called **SALT WATER BALANCE. REMEMBER! The Salt Water Balance is done only in All Metal Mode.**

If the Salt Water Balance has been done accurately while moving the search coil up and down only very small or no signals from the salt water should be possible to hear in both ways of the movement, if the detector is set on minimum Sensitivity.

Also with correct Salt Water Balance the Meter needle should remain stable like in the In Land Mode.

**HIGH SENSITIVITY** setting is not recommended when working on the beach unless the search is been conducted a few meters from the wave line where the moisture content in

the sand is lower. That is to minimize some false signals, which could occur in high Sensitivity setting around the salt water.

If the Salt Water Balance procedure is done properly the Nexus Ultima will be capable to achieve the same deep search results under salt water wet sand as in normal ground

search. For small targets the depth capabilities will depend on the local contamination, mineral content and above all the size of the search coil. Search coils with smaller size and relatively high frequency settings would be always more compatible for hunting small targets - tiny ear rings, small coins etc.

In Beach Mode Adjustment the Nexus Ultima will not detect white gold jewellery. It will detect all yellow gold targets, all coins and natural gold nuggets.

## **CARE**

All metal detectors are precision instruments and require careful handling to ensure they remain in good working order.

Avoid dropping, impacts or violent shaking of the detector and protect it while transporting.

The Nexus Ultima metal detector should not be used in extremely wet weather conditions, such as heavy rain, without protecting the control box, battery box and meter housing. The coil assembly is fully waterproof.

If water penetrates any of the boxes, switch off the detector and remove the batteries. It is suggested that the detector be placed in a warm place to dry out slowly.

Mud and soil should be carefully removed, using a damp cloth or water only. Do not use detergents or abrasives and avoid getting water in the control boxes.

When storing the detector for long periods or when shipping, the batteries should be removed.

Avoid storing the detector in areas where it will be exposed to extreme temperatures, dust, moisture or contaminants.

Do not attempt to modify or repair the detector or allow any unauthorised repair centre to do so.

## **GUARANTEE**

The Nexus Ultima metal detector is guaranteed for a period of 24 months from date of purchase against all manufacturing defects or loss of performance.

The Control Box is sealed and contains no user-serviceable parts Opening the Control Box will invalidate the Guarantee.

This Guarantee does not cover:

Damage due to dropping, impact or accident  
Damage due to improper use or care of the detector  
Damage resulting from leakage of batteries  
Damage to the coil or coil cable

In the event of any problem, please contact. Any detector returned under Guarantee must be properly packed and be sent by insured carrier. The sender is responsible for any loss or damage in transit.

A full repair and replacement parts service is available.

## **TECHNICAL SPECIFICATIONS**

Operating Frequency Range: 2.5 kHz or from 2.5 to 18 kHz (subject to search coil in use)

Coil Design: Twin Concentric Overlapping

Coil Weights:

20" :1,5kg

9" :700g

6" :460g

4" :400g

Weight (with dual 9" coil): 2.7 kg (with 8AA batteries or Nexus battery pack included)

Coil Construction: Glass Fibre open frame

Audio Frequency: Custom tuned

Audio Output: 6mm stereo headphone jack

Power Supply: 12v (8 AA alkaline batteries or Nexus battery pack)

Battery Life: up to 45 hours intermittent

Operating Modes: All-Metal and Discriminate and VCO

Optimum Temperature Range: -15° to +60° C

Optimum Humidity Range: 0 to 85% RH