

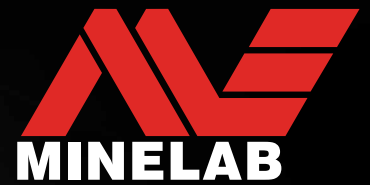


**MANTICORE<sup>®</sup>**

**Instruction Manual**

**Multi-IQ<sup>™</sup>**

High Power Simultaneous Multi-Frequency



# MANTICORE<sup>®</sup> by Minelab

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MANTICORE<sup>®</sup> is a powerful, fast and precise metal detector featuring MULTI-IQ+<sup>®</sup> Simultaneous Multi-Frequency technology. It has an advanced 2D Target Identification (ID) Map, rich audio options and an intuitive user interface packaged in a rugged, lightweight and waterproof housing.

## CAUTION

Before assembling, charging, or using your detector for the first time, read the warnings and safety information listed in the following sections:

- ▶ "Charger Information and Safety" [page 13]
- ▶ "General Care and Safety" [page 77]



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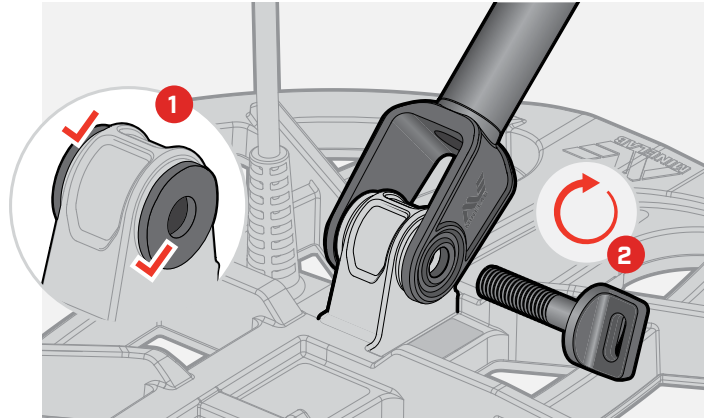
# Getting Started

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# Assembly

## ATTACH THE COIL

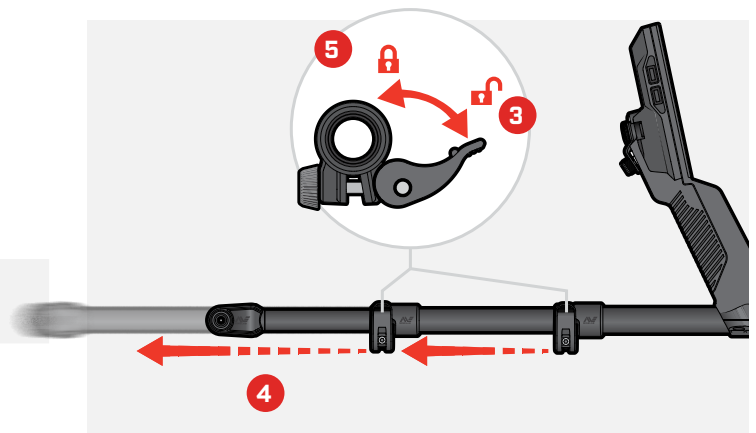
1. Confirm that the 2× Coil Washers are in the Yoke Bracket on the top of the Coil.
2. Slide the Shaft Yoke over the Yoke Bracket, align the holes, then insert the Bolt through the Yoke and the Yoke Bracket and tighten by hand. Do not use tools to tighten, over-tightening may damage the shaft.



## EXTEND THE SHAFTS

3. Open the Upper and Lower Camlocks.
4. Extend the Shafts to their approximate detecting length. Do not extend beyond the red line.
5. Close the Camlocks.

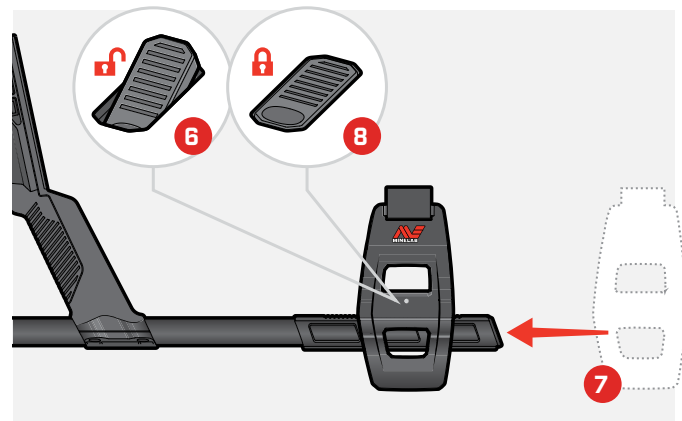
**i** If the Shafts are slipping, they can be adjusted. See "Tightening the Camlocks" on page 78.



## ATTACH THE ARMREST

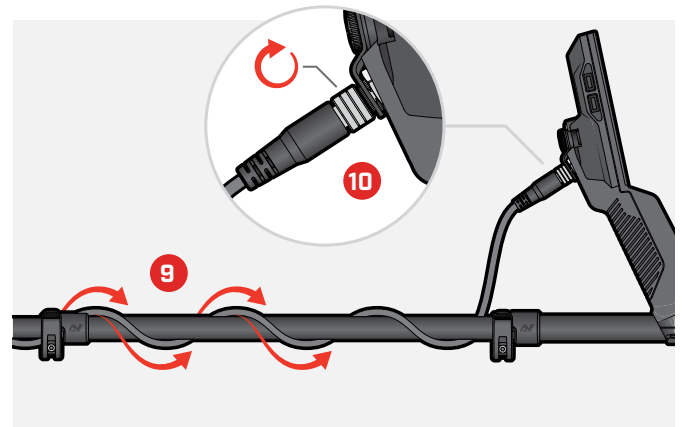
6. Unlock the Armrest Lock.
7. Slide the Armrest onto the Armrest Rail.
8. Lock the Armrest, then insert your arm into the Armrest to check the position is correct and adjust as needed — the armrest should be positioned just below your elbow.

**i** If you are left-handed, you can reverse the Armrest Strap so that it fastens away from your body for improved comfort.



## CONNECT THE COIL

9. Wrap the Coil Cable around the Shaft enough times to take up the slack, but so the Coil can still tilt without restriction.
10. With the arrow on the Coil Connector at the top, align the Coil Connector with the Interface on the back of the Control Pod. Plug-in and tighten the Retaining Ring.



# Quick Start

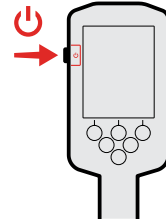


Before first use, it is recommended that you fully charge the battery. This may take 7 to 8 hours (page 13).

# 1

## TURN ON

Press the Power button on the side of the Control Pod.

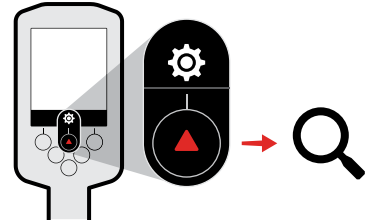


# 2

## SELECT A SEARCH MODE

Select a Search Mode that suits your detecting location and intended target type.

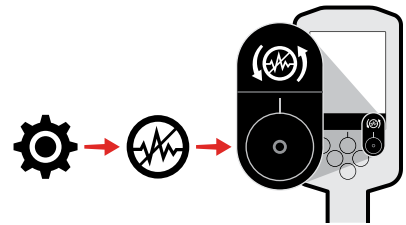
Navigate to Search Mode: Settings > Search Mode, then press / to select a Search Mode.



# 3

## NOISE CANCEL

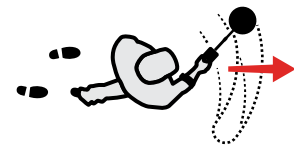
Navigate to Noise Cancel: Settings > Noise Cancel, then press the Right Soft Key [] Auto Noise Cancel].



# 4

## GO DETECTING

Press [ Back] to return to the Detect Screen, and begin detecting.



If there is excessive ground noise after completing the Quick Start steps, perform a Ground Balance (page 60). If excessive noise is still being experienced, try reducing the Sensitivity Level a little (page 21).

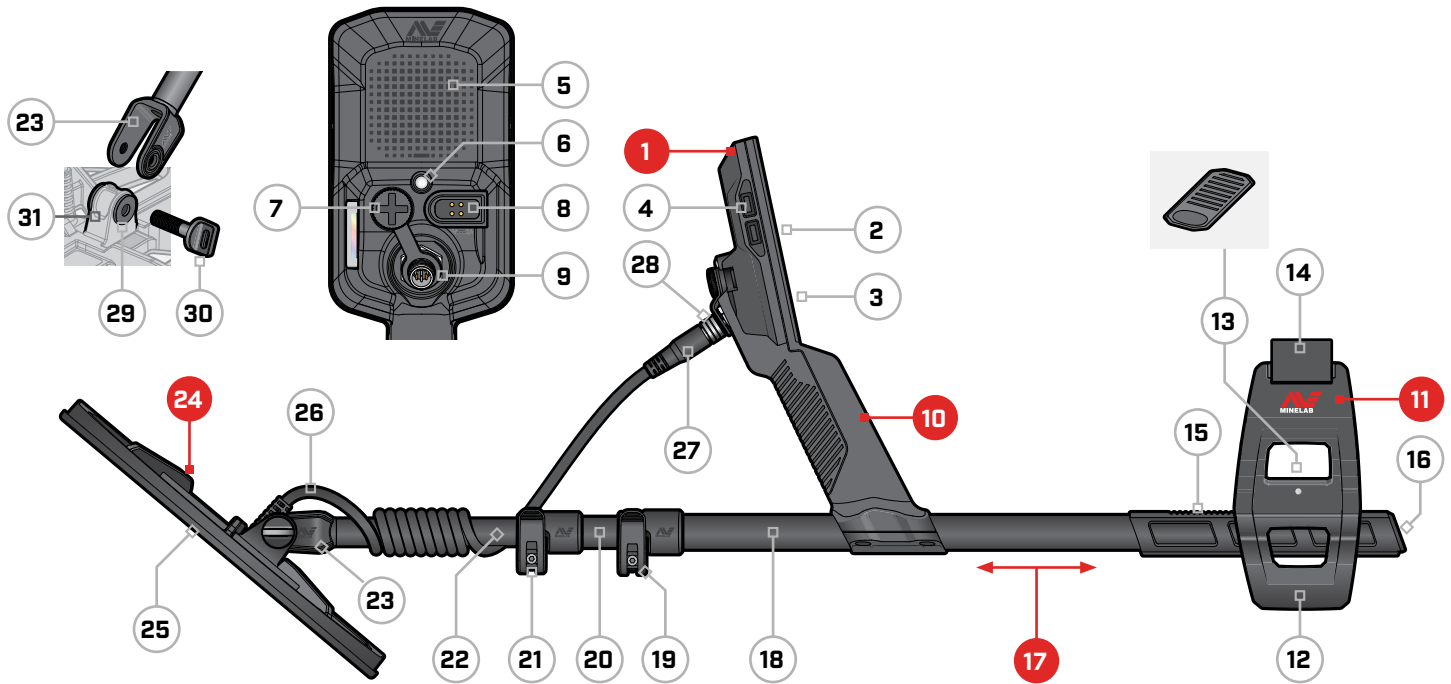
For more information on how to manage noise, see "Solving Noise" on page 71.



# Overview

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# Parts of the Detector



- 1. Control Pod**
- 2. Display
- 3. Keypad
- 4. Side Buttons [×4]
- 5. Speaker
- 6. Flashlight
- 7. Headphone Socket 3.5 mm/1/8"  
(with waterproof dust-cap)
- 8. Charging Interface
- 9. Coil Connector Interface
- 10. Handgrip**  
with vibration and internal  
Lithium-ion Rechargeable Battery

- 11. SCORPION™ Armrest**
- 12. Stand
- 13. Armrest Lock
- 14. Armstrap
- 15. Armrest Rail
- 16. Shaft Bung
- 17. Shafts**
- 18. Upper Shaft
- 19. Upper Camlock
- 20. Middle Shaft
- 21. Lower Camlock
- 22. Lower Shaft
- 23. Shaft Yoke

- 24. Coil (with cable)**
- 25. Skidplate
- 26. Coil Cable
- 27. Coil Connector
- 28. Retaining Ring
- 29. Coil Washers [×2]
- 30. Coil Bolt
- 31. Yoke Bracket

## SCREEN PROTECTOR APPLICATION

Applying a screen protector will protect your screen against scuffing and scratching from normal use.

**! NOTICE:** Never clean the Display lens using solvents or alcohol-based cleaners. To clean the Display lens, use a slightly damp cloth with mild soap detergent.

1. Remove the thin plastic film from the detector screen. Make sure the screen is free of dust and fingerprints.
2. Peel the backing off of the screen protector, being careful not to touch the adhesive side.
3. Hold the edges of the screen protector, align it to the screen, and apply gently.
4. Wipe any bubbles to the edge with a soft, clean cloth.
5. Peel off the front layer.

# Controls



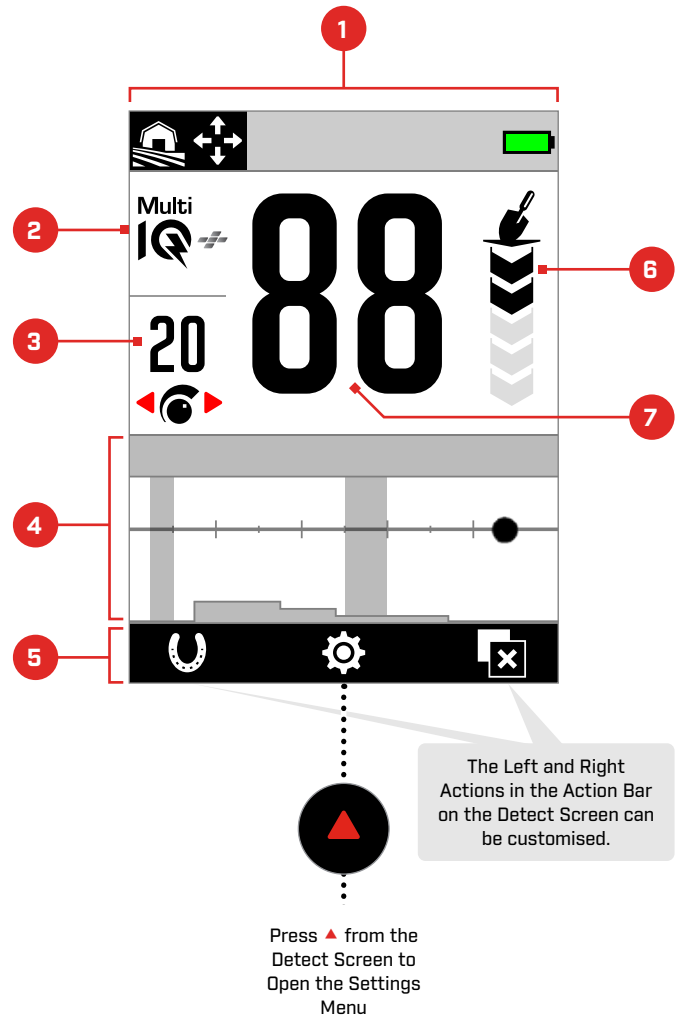
- 1. Charge Status LED** (page 14)  
Displays the charge status when charging the detector battery.
- 2. Power** (page 39)  
Turns the detector On/Off.  
Press-and-hold from Off (7 seconds) for Factory Reset.
- 3. Backlight/Lighting** (page 35)  
Press to open the Lighting Menu. Press again to adjust the Display Backlight brightness from high-to-low.
- 4. Action Bar Soft Keys [\*2]** (page 36)  
The Soft Key Actions change depending on the Screen you are viewing. The available Actions are displayed directly above each Soft Key in the Action Bar.  
  
The Soft Keys are user-customisable. When in the Detect Screen, the Soft Keys will perform the Actions assigned by the user.
- 5. Keypad** (page 35)  
Keypad with Backlight for detecting at night.
- 6. Light Sensor** (page 35)  
When the Display Backlight setting is Auto, the Light Sensor monitors environmental light levels and automatically adjusts the Backlight brightness.
- 7. Wireless Audio On/Off** (page 68)  
Turns Wireless Audio On/Off.  
  
Long-press to initiate Wireless pairing mode to connect wireless headphones.
- 8. Side Soft Key** (page 36)  
Provides a short-cut to a user-assigned Action.  
  
Long-press to open the Soft Keys Selector.
- 9. Navigation Arrows [\*4]**  
Navigate the user interface menus and adjust settings.  
  
Press ▲ from the Detect Screen to open the Settings Menu (page 41).  
  
Press ◀/▶ from the Detect Screen to adjust Sensitivity.  
  
Press ▼ from the Detect Screen to turn Pinpoint Mode On/Off (page 30).




# Screens

## THE DETECT SCREEN













1. **Status Bar** (page 12)  
The Status Bar is displayed at the top of all Screens.
2. **Frequency** (page 42)  
Shows the current operating Frequency.
3. **Sensitivity Level** (page 21)  
Displays the Sensitivity Level.
4. **ID Map** (page 26)  
Detected targets appear on the ID Map depending on their conductive and ferrous properties.
5. **Action Bar**  
Displays the Actions that will be performed by the Soft Keys directly below each icon the Action Bar.
6. **Target Depth Indicator** (page 22)  
Shows the approximate depth of a detected target.
7. **Target ID Number** (page 24)  
A numerical value between 0 to 99 is assigned to each detected target based on its Conductive properties. This allows objects to be identified before digging. For example, a US quarter will always have a Target ID Number of 88.

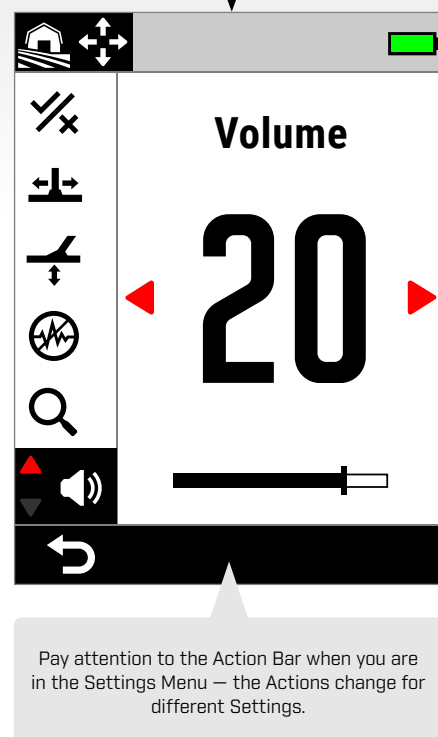


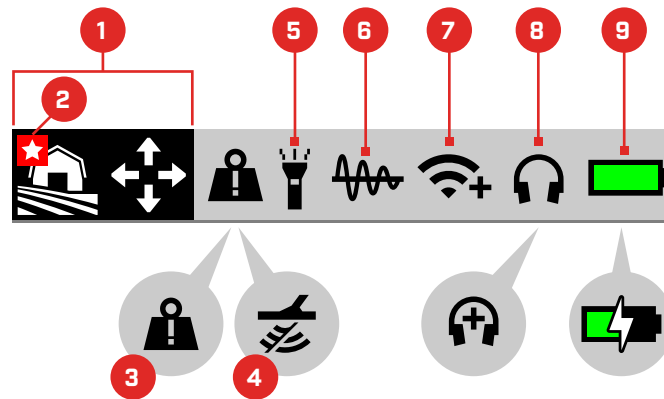
## THE SETTINGS MENU

 The Settings Menu contains key detecting settings as well as general settings for customisation and control of your MANTICORE detector.

For detailed information for each setting, see the "Settings Menu" section starting on [page 41](#).

|   |   |
|---|---|
|  <b>General Settings</b> |  <b>Discrimination Pattern</b> |
|  <b>Frequency</b>        |  <b>Recovery Speed</b>         |
|  <b>Audio Theme</b>      |  <b>Ground Balance</b>         |
|  <b>Target Tones</b>     |  <b>Noise Cancel</b>           |
|  <b>Ferrous Tones</b>    |  <b>Search Mode</b>            |
|  <b>Ferrous Limits</b>   |  <b>Volume</b>                 |





## THE STATUS BAR

- 1. Search Mode** [\[page 15\]](#)  
Displays the current Search Mode.
- 2. Favourite Mode** [\[page 64\]](#)  
Indicates the Favourite Search Mode.
- 3. Large Metal Overload Indicator** [\[page 74\]](#)  
Indicates a large metal object is overloading the detector electronics.
- 4. Tx Disable**  
Indicates that the Coil transmit is temporarily disabled because the detector is connected to a computer via the supplied USB charging/data transfer cable.
- 5. Flashlight Indicator** [\[page 35\]](#)  
Indicates that the Flashlight is On.
- 6. Tracking Ground Balance** [\[page 61\]](#)  
Indicates that the Tracking Ground Balance is On. Flashes during Auto Ground Balance.
- 7. Wireless Audio Indicator** [\[page 68\]](#)  
Indicates the current Wireless audio connection status.
- 8. Headphones Connection** [\[page 67\]](#)  
Appears when headphones are connected – wireless or wired.  
'+' appears when Underwater Boost is On [\[page 40\]](#).
- 9. Battery Level/Charging** [\[page 13\]](#)  
Indicates the current battery level and charging status. Lightning bolt appears when the detector is charging.

# Batteries and Charging

## CHARGER INFORMATION AND SAFETY

MANTICORE is supplied with a USB charging cable with a snap-on magnetic connector.

The charge time from completely flat to 100% is approximately 7 hours when a high capacity (> 2A @ 5V) charger is used. A range of charging accessories are available for separate purchase.

Any standard USB port compatible with USB battery charging can be used to charge your battery, however charge times may be longer if using lower-power ports or chargers.

**CAUTION:** Charge your detector with a good-quality USB charger that has a minimum charging capacity of 2A @ 5V. Risk of USB charger failure if a low-quality charger is used.

Look for the following marks on USB chargers:



**CAUTION:** Only charge the detector in ambient temperatures between 0°C and +40°C.

**CAUTION:** DO NOT use the detector underwater whilst charging or when connected to a power bank.

**NOTICE:** Minelab Metal detectors and accessories are not intended to be operated while connected to a mains (AC) charger.

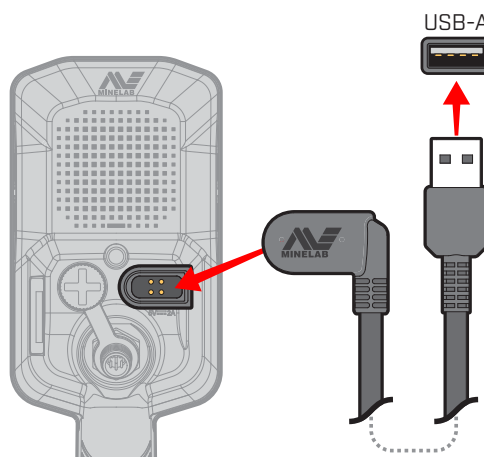
**NOTE:** Going detecting with a fully charged battery is recommended. Typical battery runtime is approximately 10 hours.

**NOTE:** All-Terrain High Conductors is a high-powered Search Mode that will reduce battery runtime by approximately one hour.

## CHARGING THE BATTERY



If the detector is powered On during charging, the charge time will be longer.

1. Plug the supplied charging cable into any standard powered USB-A port.
2. Connect the magnetic connector to the Charging Interface on the rear of the Control Pod. Make sure the interfacing parts are clean and dry before connecting.



3. The green Charge Status LED on the top left of the Control Pod will flash slowly. When the battery is fully charged, the Charge Status LED will remain On.

### Charge Status LED

-  Charging (flashing)
-  Fully charged (on)




# Batteries and Charging *(Continued)*


## Battery Level Indication

The current battery level is shown in the Status Bar.



 100%–90%

 90%–7% (50% shown)

 Less than 7%

 Charging



The detector regulates the battery voltage so that detector performance remains constant regardless of the battery level.

## Automatic Shut-Down

When the battery level is critically low (< 1% remaining), an Error message will be displayed briefly before the detector automatically powers Off. See "[Critically Low Battery Error](#)" (page 74).

## OPERATING WITH A POWER BANK



**CAUTION:** DO NOT use the detector underwater or in a wet, salty environment whilst charging or when connected to a power bank.

You can use your MANTICORE detector whilst plugged into a portable power bank. This means you can continue detecting even if the detector battery is flat.

Connect the power bank to your detector using the supplied USB charging cable, and continue detecting.

## BATTERY MAINTENANCE

See "[Battery Maintenance](#)" (page 78).

# Search Modes

---

# Introduction to Search Modes

## CHOOSING THE RIGHT SEARCH MODE

Search Modes each have unique characteristics and default settings optimised for specific targets and conditions.

Choosing the right Search Mode is important to get the best performance for the environment you are detecting in, and your detecting intent. For example, if detecting an inland field with the intent of finding large silver coins, choose All Terrain High Conductors to maximise your chances of success.

Each Search Mode belongs to one of three typical detecting locations: All-Terrain, Beach, and Goldfield. Each Search Mode is uniquely pre-configured to optimise the detector for the best performance in the conditions typical to that location.

There are additional options for each Search Mode that can be edited/viewed via the Search Mode Menu. You are able to:

- Change the Search Mode [\(page 64\)](#)
- Set the Favourite Search Mode [\(page 64\)](#)
- Reset the Search Mode to its factory preset settings [\(page 65\)](#)
- View information about the Search Mode [\(page 65\)](#)

First, choose the location that best matches your surroundings.

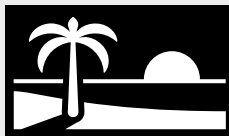


Then, choose the Search Mode that best suits your detecting intent.



### ALL-TERRAIN

Great for high-trash recreational areas, fields and historical locations including most general detecting.



### BEACH

Perfect for all salty conditions – dry sand, wet sand, surf and underwater.



### GOLDFIELD

Ideal for gold nugget prospecting in mineralised goldfield locations.



General



General



General



Fast



Low Conductors



Low Conductors



Deep



High Conductors



Surf & Seawater



Trash Reject



**Can't decide which Mode to use?**

Use the General Mode for your detecting location.

# All-Terrain



**Great for high-trash recreational areas, fields and historical locations including most general detecting.**

All-Terrain Modes are designed for searching inland sites including parks, agricultural fields, pasture, ruins, and other sites of modern or ancient habitation where there may be coins, jewellery and other relics. There is often a lot of other metallic litter such as iron nails, aluminium foil, pull tabs and bottle caps at these sites.

The All-Terrain Modes provide great depth, accurate Target Identification and good discrimination in the conditions that each Search Mode is optimised for.

If in doubt in a new area or when first detecting, try an All-Terrain Mode, or All-Terrain General first.



## General

Inland general purpose detecting. Excellent all round performance for most targets and conditions.

Target Separation  
★★★★★

Trash Rejection  
★★★★★



## Fast

Inland detecting optimised for separation of targets. Coke rejection makes this mode suitable for sites of ancient habitation.

Target Separation  
★★★★★

Trash Rejection  
★★★★★



## Low Conductors

Inland detecting optimised for small or thin metal targets such as hammered or cut coins and fine jewellery. Coke rejection makes this mode suitable for sites of ancient habitation.

Target Separation  
★★★★★

Trash Rejection  
★★★★★



## High Conductors

Inland detecting optimised for large or thick metal targets, such as copper, gold, or silver coins. Special discrimination capabilities make this mode ideal for highly conductive targets such as coin stacks.

*This is a high-powered Search Mode that will reduce battery runtime by approximately one hour.*

Target Separation  
★★★★★

Trash Rejection  
★★★★★



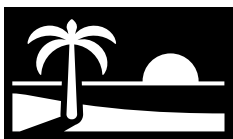
## Trash Reject

Inland detecting optimised for maximum rejection of iron trash and foil.

Target Separation  
★★★★★

Trash Rejection  
★★★★★

# Beach



## Perfect for all salty conditions – dry sand, wet sand, surf and underwater.

Beach Modes are for saltwater beaches including dry sand, wet sand, surf and underwater conditions. Beach modes are designed to minimise the noise generated by the presence of conductive saltwater for a smooth, quiet detecting experience in these conditions. Multi-IQ+ is better able to reduce this noise than any single-frequency can. Therefore Multi-IQ+ is the only Frequency option.

Beach Modes specifically identify any residual salt response and assign a Target ID of 0 (zero), and a low tone similar to that given to ferrous targets so that it is easily distinguished from desirable targets, and can be discriminated out.



### General

Saltwater beach general-purpose detecting. Excellent all round performance for most targets in dry sand or wet sand.

Target Separation



Trash Rejection



### Low Conductors

Saltwater beach detecting for small or thin metal objects such as fine jewellery items in dry or wet sand.

Target Separation



Trash Rejection



### Deep

Saltwater beach detecting for small or thin metal objects such as fine jewellery, with aggressive settings for maximum depth. Suitable for dry and wet sand.

Target Separation



Trash Rejection



### Surf & Seawater

Saltwater Beach detecting, suitable for difficult saltwater conditions, including in the surf zone and salt wash.

Target Separation



Trash Rejection





# Goldfield



## Ideal for gold nugget prospecting in mineralised goldfield locations.

Goldfield General Mode is for gold prospecting. Generally, gold nuggets are found in remote goldfields where the ground is often mineralised and targets are more sparsely distributed.

For Goldfield General Mode, the default Audio Theme is set to Prospecting (page 45), providing a 'true' threshold tone which maximises sensitivity to weak target signals. When a target is detected, the signal volume and pitch vary proportionally to the strength of the target signal.

Most goldfield locations have a variable level of iron mineralisation that requires constant Ground Balance adjustment, therefore Tracking Ground Balance is the default setting.

Goldfield Mode is suited to finding smaller surface gold nuggets (and some larger deeper ones) in mineralised ground.



### General

Goldfield detecting, suitable for small nuggets in benign to moderate soil mineralisation conditions.

Target Separation



Trash Rejection



# Detect Screen Settings

---

# Sensitivity

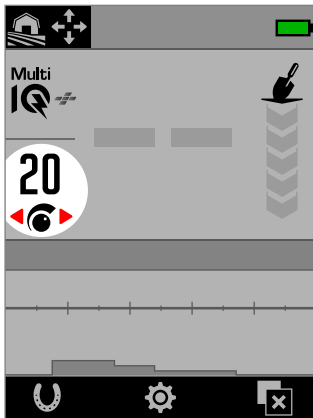


MANTICORE is highly sensitive and has an adjustable Sensitivity setting. Adjusting the Sensitivity to suit individual detecting conditions will maximise detection depth.

Sensitivity adjusts the detector's level of response to targets and the environment by controlling the amount of amplification applied to signals received by the detector (sometimes called 'Rx gain').

Sensitivity is global, and has a range from 1 to 35 with a default setting of 20.

The Sensitivity Level is displayed on and adjusted from the Detect Screen.



Sensitivity Level on the Detect Screen.

## WHEN TO ADJUST SENSITIVITY

Always choose the highest stable Sensitivity setting to get the best performance from your detector. Therefore, before decreasing the Sensitivity setting to eliminate noise, first Noise Cancel and Ground Balance the detector. Doing this may resolve the noise problem so you can continue detecting at the highest possible Sensitivity setting.

## RECOMMENDED SENSITIVITY SETTINGS

Some experimentation with the Sensitivity Level may be beneficial for different detecting locations. For beginners, start with a low setting and increase it progressively.

Decreasing the Sensitivity may reduce false signals and interference. This will also improve differentiation between signals caused by metal targets and soil mineralisation.

## EXTREME SENSITIVITY SETTINGS

Some users set the Sensitivity to a high setting (between 31 and 35) with the intent to not miss any targets. This can be counterproductive, because unless the detecting conditions are perfect (i.e. completely quiet), increasing the Sensitivity may cause targets to be masked by noise.



The Sensitivity Level on the Detect Screen changes to red when an extreme Sensitivity Level (31 to 35) is selected.

## SENSITIVITY BOOST

Sensitivity Boost is a Soft Key Action that temporarily increases the Sensitivity by 5 levels (or to maximum). This is a convenient shortcut when investigating a target.

Press the assigned Soft Key from the Detect Screen to turn Sensitivity Boost On/Off.

Sensitivity Boost will automatically turn Off if Sensitivity is adjusted manually.



Before you can use Sensitivity Boost, it must first be assigned to a Soft Key – see [page 36](#).

## ADJUSTING THE SENSITIVITY LEVEL



Before reducing the Sensitivity, always try to resolve noise by first performing:

- Noise Cancel ([page 62](#)), followed by
- Ground Balance ([page 60](#))

For steps to identify the source of noise, see "[Identifying the Source of Noise](#)" on [page 71](#).

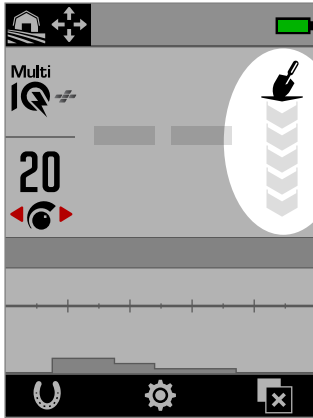
1. Hold the Coil stationary.
2. From the Detect Screen, press ► to increase the Sensitivity Level until false signals occur.
3. Press ◀ to reduce the Sensitivity Level just enough that the false signals disappear.
4. Sweep the Coil over a clear patch of ground, and reduce the Sensitivity Level further if there is still some ground noise.

# Depth Indicator



The Depth Indicator shows the approximate depth of detected targets. After a target is detected, the Depth Indicator reading remains on the screen for 5 seconds, or until the next target is detected.

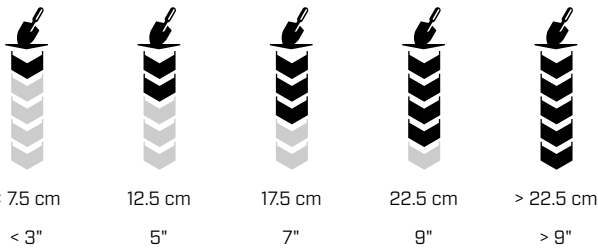
If a target is detected but is masked by the Discrimination Pattern or Ferrous Limits, no depth indication is given.



The Depth Indicator on the Detect Screen (when no target is detected).

The Depth Indicator is a guide only. Fewer arrows indicate a shallower target, more arrows indicate a deeper target. The accuracy can vary depending on the target type and ground conditions.

Here is an example of the Depth Indicator reading and the approximate target depth for a US quarter detected in benign soil.



**i** The Depth Indicator accuracy is reduced in highly mineralised soil.

# Target Identification, Pinpointing & Recovery

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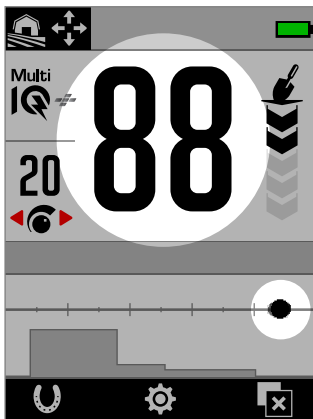
# Target ID Number

## TARGET ID NUMBER OVERVIEW

When a target is detected, the detector assigns a Target Identification (Target ID) number to it based on its conductive properties, and then classifies it as either ferrous or non-ferrous based on its ferrous properties. The Target ID is displayed on the Detect Screen for five seconds, or until another target is detected.

Target ID numbers range from 0 to 99. These numbers correspond to the horizontal axis of the ID Map.

MANTICORE's Target ID technology gives consistent, repeatable Target IDs, giving you a high chance of predicting what you have found before you begin digging. For example, a US quarter has a Target ID of 88. This means that each time a Target with an ID of 88 is detected, there is a good chance that it will be a US quarter.



The Target ID number on the Detect Screen, showing detection of a US quarter with a Target ID of 88.

The Target Trace also appears in the '88' position along the horizontal axis of the ID Map.

**i** Record the Target IDs of the objects you find. Over time, you can use this information to make your own Discrimination Pattern, making detecting sessions more productive. See ["Edit a Discrimination Pattern"](#) on page 57.

## FERROUS TARGET IDS

When the Frequency is set to Multi-IQ+, ferrous targets are assigned a conductivity ID on the same 0 to 99 scale as non-ferrous targets. It is then classified as ferrous, indicated by a low audio tone and accompanying red Ferrous Indicator beneath the Target ID number.

By having separate ferrous indication, a greater Target ID resolution for ferrous targets can be achieved, which is more useful for relic hunting. It also has the benefit that targets located on the Ferrous Limits boundary have more stable Target IDs, so you can easily identify it as a single

target with uncertain ferrous/non-ferrous properties, as opposed to multiple separate ferrous and non-ferrous targets in close proximity.

The exception to this is in Single Frequency, where Ferrous Targets are given a Target ID on a scale of 1 to 19 with ferrous indication, based on the ferrous properties of the target. This is because single frequencies cannot accurately determine the conductive properties of a ferrous target.

## TARGET ID TYPES

**64** **Target ID**  
The Target ID number indicates how conductive the detected target is.

**64** **Target ID with Ferrous Indication**  
The Ferrous Indicator is displayed when the target has been classified as ferrous.  
The Ferrous Indicator only appears when All Metal mode is enabled.

**64** You can choose to display the Target ID Number in red for Ferrous Indication. See ["Choose the Appearance of Ferrous Indication"](#) (page 38).

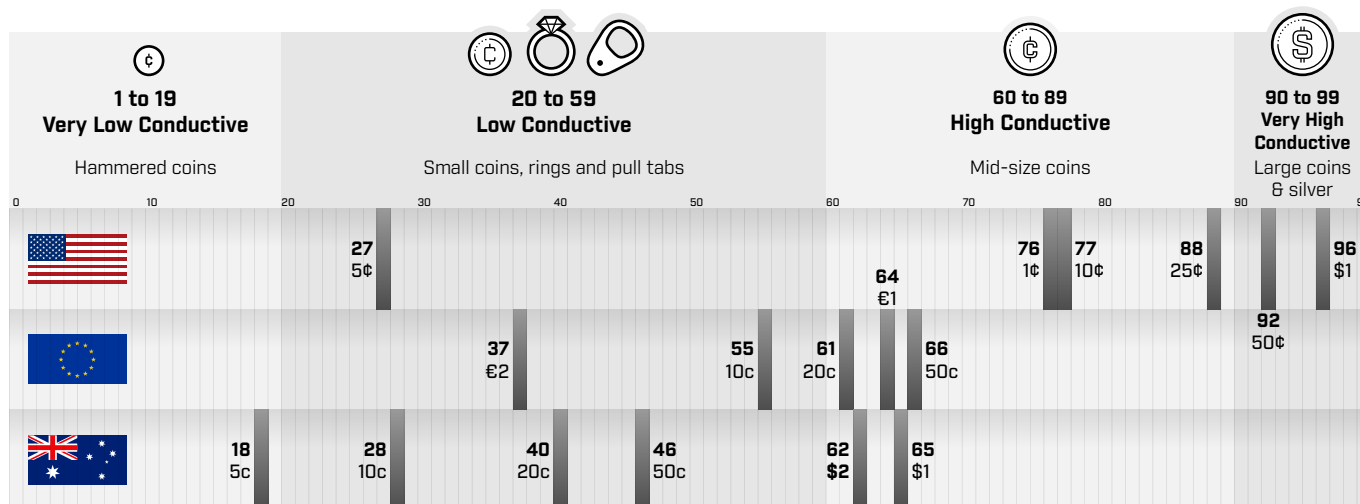
**00** **Salt Indication**  
A Target ID of '00' and the Salt indicator are displayed if using the Beach Modes in extremely salty conditions.  
The Salt indicator only appears when All Metal mode is enabled.

**--** **No ID**  
The Target ID shows two large dashes when there is no detection, or a weak detection where an accurate ID number cannot be determined. They also appear for targets within the grey areas of the Discrimination Pattern or Ferrous Limits.

# Target ID Number *[Continued]*

## TYPICAL TARGET EXAMPLES

While both the Target ID number and ID Map give a good representation of a target's ferrous and non-ferrous properties, good and bad targets can fall anywhere within the overall range from 1 to 99. The table gives some common examples for good and bad targets, showing the area where they are likely to appear.



## ACCURACY FACTORS

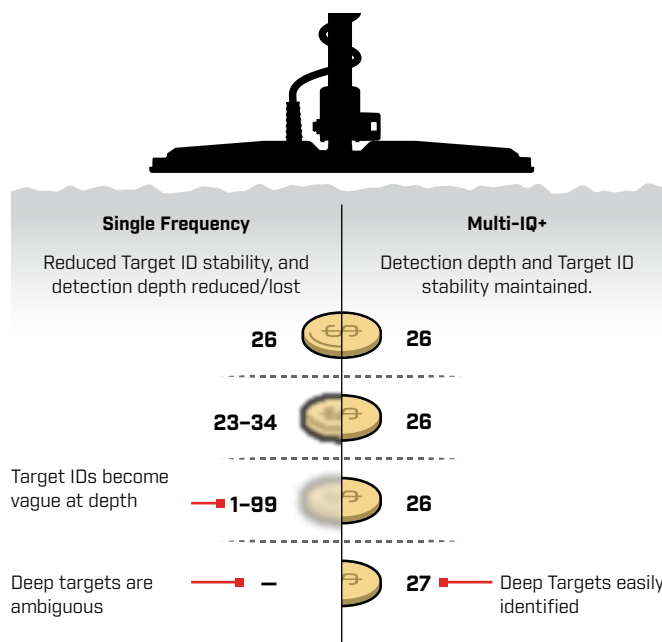
Target IDs can vary by a couple of numbers depending on a range of factors including metallic composition, orientation, depth, swing rate and Frequency setting.

### Frequency – Multi-IQ+ Benefit

Detecting the same target with different Frequency settings may vary the Target's ID by one or two numbers.

Multi-IQ+ technology gives greater Target ID accuracy and increased detecting performance, especially in heavily mineralised ground. In benign ground, a single frequency may perform adequately, however depth and Target ID stability will be limited by ground noise.

Multi-IQ+ simultaneous multi-frequency will achieve maximum depth with a very stable target signal. In mineralised ground, single frequencies will not be able to effectively separate the target signal from the ground signal, giving decreased results. Multi-IQ+ will still discriminate effectively at depth, losing a minimal amount of Target ID accuracy.



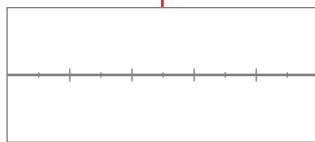
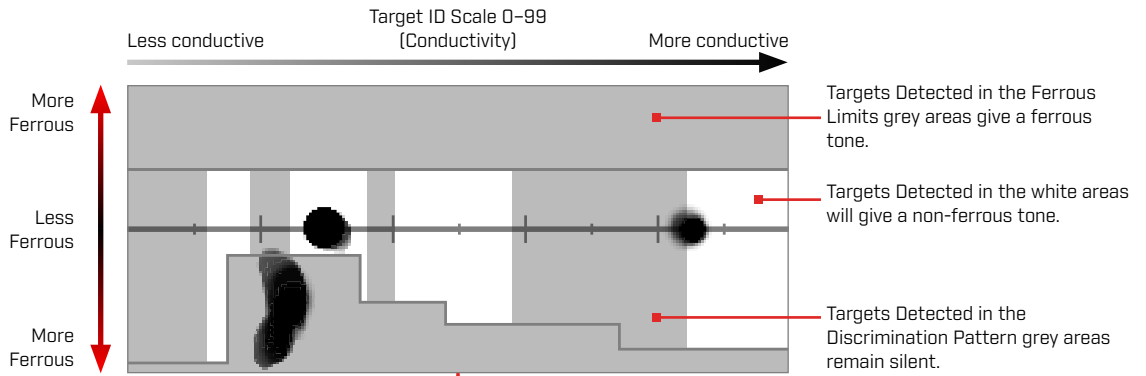
### Overlapping or Adjacent Targets

Targets that are adjacent or overlapping can influence one-another, resulting in misidentification. A common effect is that a weaker target will be 'dragged' closer to the stronger target, causing a different Target ID than if the targets were detected individually. Targets of a similar type and signal strength can move towards each-other, 'meeting halfway'. Conversely, if one target is very dominant, then the weaker target may not be detected at all.

# ID Map

## ELEMENTS OF THE ID MAP

The ID Map is made up of multiple layers of information combined into a single visualisation. It provides a simultaneous and comprehensive overview of the discrimination settings and target information.



### ID Map

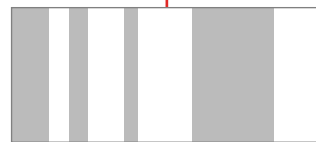
The ID Map has a conductive horizontal axis and ferrous vertical axis.

The horizontal axis correlates to the Target IDs ranging from 1 to 99. It indicates how conductive a target is.



### Target Trace

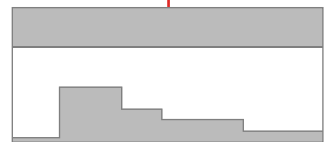
Detected targets generate a black dot/smudge called a Target Trace. Its placement is determined by the target's Conductive and Ferrous properties, and its opacity is determined by signal strength.



### Discrimination Pattern

The vertical grey columns define which Target IDs will be accepted, and which will be rejected.

To create or edit:  
 ✕ **Discrimination Pattern**  
 (page 57)



### Ferrous Limits

Ferrous Limits are the upper and lower grey areas that control whether the target will be classified as ferrous or non-ferrous.

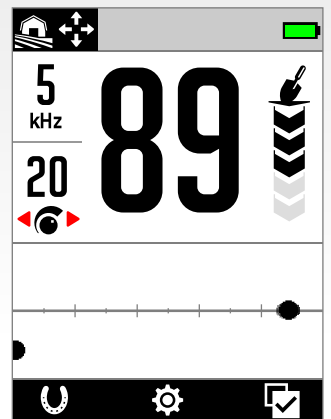
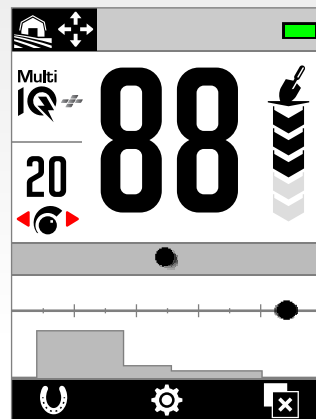
To select or edit:  
 ⚙️ **Ferrous Limits**  
 (page 52)

## SINGLE FREQUENCY ID MAP

When operating in a single frequency, the detector cannot gather enough target information to plot both conductivity and ferrous properties for each target, so the ID Map is simplified.

Non-ferrous targets will only appear along the centreline, and ferrous targets appear along the lower left of the vertical axis. For a Single Frequency, the Target ID is either 0 to 99 for conductive targets, or 1 to 19 with a red ferrous indication for ferrous targets.

Ferrous Limits is disabled when operating in a single frequency, so is not displayed on the ID Map and cannot be edited via the Settings Menu.



This example shows the detection of a coin and a nail in Multi-IQ+, then again using a single frequency. While the coin's Trace and ID remain very similar, the ferrous nail appears on the far lower left when in a single frequency.

# Target Trace

## INTERPRETING THE TARGET TRACE

Most detected targets will show a distinct Target Trace that accompanies a solid, repeatable Target ID number. Just like the ID number, the Trace fades away over 5 seconds.

Learning to interpret the Target Trace is a worthwhile skill because it shows you additional information about the target that cannot be conveyed by the Target ID number alone and may not be obvious from listening to the detection audio. For example, if you detect a Target ID that you aren't interested in, but the ID Map is showing an elongated or irregularly shaped Trace, then there may be an adjacent object that is affecting the accuracy of the Target ID. You can now choose to investigate the target further.

Factors that affect the shape and position of the Target Trace include metallic composition, complexity, orientation and depth as well as swing rate and Frequency setting.

The opacity of the Target Trace is dependant on target strength. Strong signals generate a darker trace (are more opaque) whereas weaker signals generate a lighter trace (are more transparent).

## CLEAR ID MAP

Clear ID Map is a Soft Key Action that instantly clears the ID Map by refreshing the Target Trace. This is useful when the ID Map is covered by lots of Traces that are making it difficult to interpret the true target.

Press the assigned Soft Key from the Detect Screen to clear the ID Map.



Before you can use Clear ID Map, it must first be assigned to a Soft Key – see [page 36](#).

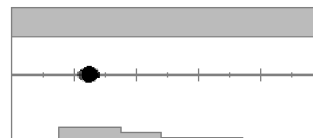
## TARGET TRACE EXAMPLES

The following examples show some typical targets on the ID Map.

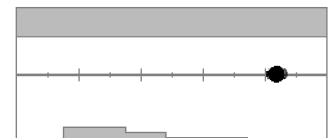
### Coins

Most non-ferrous coins appear on the centreline as a distinct round dot. Low conductive coins (e.g. hammered or cut coins) appear to the left, and high conductive coins (e.g. large silver coins) appear to the right.

Note that some countries have ferrous coins, which will not appear on the centreline.



Detection of a low conductive coin.

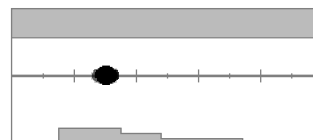


Detection of a high conductive coin.

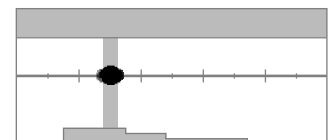
### Pull tabs (and large aluminium foil)

Aluminium pull tabs are a common trash target that appear on the centreline as a distinct round dot, similar to coins.

Aluminium pull tabs are conductive and have no ferrous content, therefore there cannot be dealt with by adjusting the Ferrous Limits setting. Instead, adjust the Discrimination Pattern ([page 57](#)) to reject this type of undesirable non-ferrous target. Each time you dig up a new type of pull tab, use it to edit your Discrimination Pattern. Eventually, you will be rejecting most pull tabs. Take care however, to avoid masking out coins and jewellery that share the same Target IDs as pull tabs.



Detection of an aluminium pull tab (ID 30)



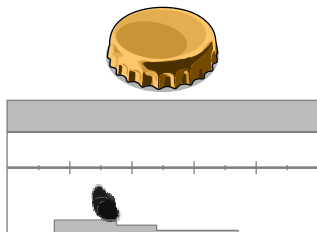
The Discrimination Pattern edited to Reject IDs 28 to 32 so that the pull tab will not give a detection tone.

# Target Trace *[Continued]*

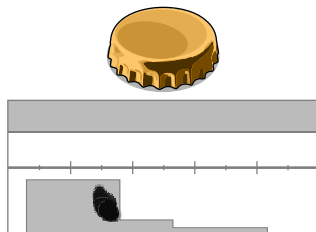
## Bottle caps

Bottle caps, complex targets and highly variable junk targets that have a combination of ferrous properties and conductive properties very similar to coins generally appear in the bottom half of the map. The Preset Lower Limits settings in Ferrous Limits (page 52) are designed to capture this area of the ID Map to assist in classifying bottle caps as ferrous.

If you repeatedly find the same type of bottle cap, choose a different Ferrous Limits Preset, or edit the Ferrous Limits to cover the Target Trace. In general, a higher-numbered Preset Lower Limits setting will be more effective at classifying most bottle caps as ferrous.

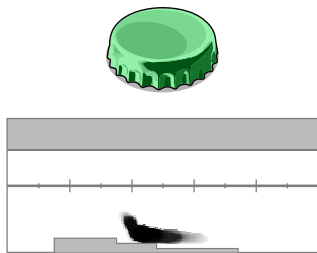


Detection of a common brand beer bottle cap (bottle cap A), detected parallel to the Coil.

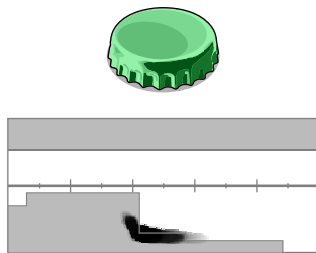


The Lower Ferrous Limits edited to cover the Trace and mask out the bottle cap.

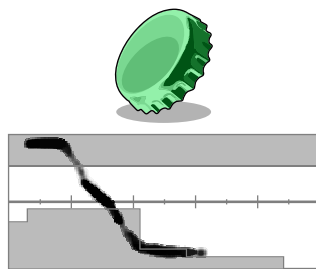
These Target Trace examples show the variation that is possible for a single bottle cap.



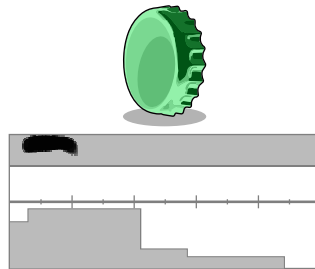
A different bottle cap (bottle cap B), showing a different shaped Trace to bottle cap A – bottle caps are highly variable in composition, making them difficult to discriminate.



Bottle cap B is more difficult to reject as iron, and requires a higher Ferrous Limit Lower preset setting.



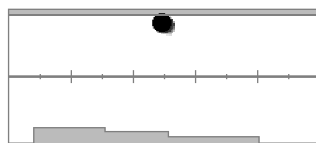
Bottle cap B laid at a 45 degree angle. In this case the detector is seeing both the flat shape of the object, and the narrower sides of the object, which tends to appear in the upper ferrous region.



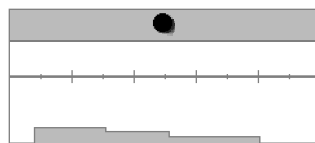
Bottle cap B laid on edge (vertical). In this case the detector sees very little of the flat shape of the object, and the response lies in the upper ferrous region.

## Nails

Nails are highly ferrous objects that generally appear in the top half of the ID Map, and can be easily managed by adjusting the Upper Ferrous Limits.



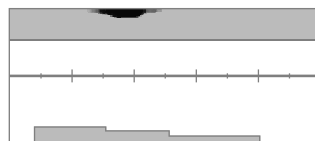
Detection of a nail.



The Upper Ferrous Limits edited to capture the Trace.

## Ground signal

The ground signal often appears at the very top of the ID Map around ID 35. The exact shape and position varies depending on the ground conditions.

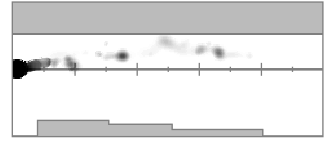




# Target Trace *[Continued]*

## Electromagnetic interference (EMI)

EMI often appears as a concentrated smudge near IDs 0 and 2, similar to a very low conductive coin. There are often some accompanying random scattered Traces.

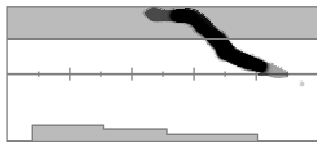


## Large or complex ferrous objects

Ferrous objects with complex shapes can often create unusual shapes on the target trace, and like bottle caps, are usually variable with orientation.

Such targets often have ferrous material properties, but also have large cylindrical shapes (e.g. bolt heads) with highly conductive properties. In some orientations, these can result in a target trace that slants down and to the right, from the upper ferrous region into the non-ferrous region.

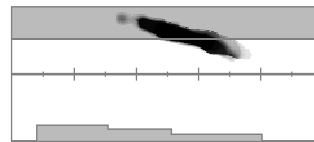
Sweeping over the complex target from different directions while checking the target trace can provide a better indication of the ferrous properties of the target.



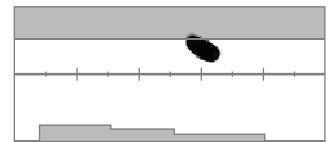
A thick rusted iron bolt falsing in one orientation.



The same thick rusted iron bolt checked from a different direction, more clearly showing it is ferrous.



A thick iron nail with large square head falsing.



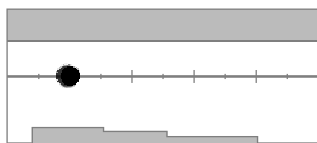
A screw with a large hex head falsing.

## Non-ferrous objects masked by nearby iron

Non-ferrous objects with nearby iron trash can also create an unusually shaped Target Trace.

Often iron trash is much stronger and dominates the detection, pulling the target trace towards the ferrous region.

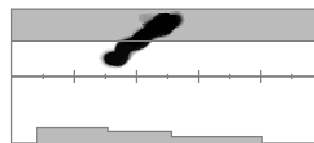
However with the superior target separation of MANTICORE, the non-ferrous target can often be seen to pull the target trace just into the non-ferrous region, unmasking the non-ferrous detection.



A medieval cut quarter farthing (coin).



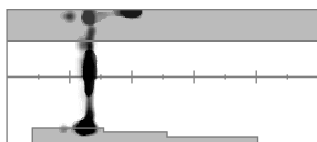
An iron nail on its own.



A medieval cut quarter farthing (coin) next to an iron nail. Note how the coin pulls the target trace down and in the direction of the correct ID for the coin.

## Coin buried deep in mineralised ground

Mineralised ground creates special challenges for discrimination, because the detector sees the target as a mixture of signals from both target and ground response. This can create three dark Traces; one in the upper ferrous region, one on the centre line where the coin would appear if detected in air, and one in the lower ferrous region. They are sometimes connected by a vertical line.



A hammered coin (low conductor) buried deep in highly mineralised soil, showing a solid Target ID, but uncertain ferrous characteristics due to being mixed with the ground signal response.

# Pinpointing

## PINPOINTING METHODS

Pinpointing helps you to quickly narrow down the location of a buried target, allowing you to determine its exact location before digging. There are two methods for pinpointing a target:

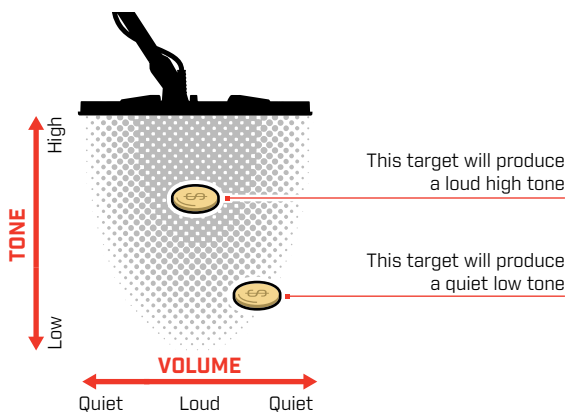
- Using Pinpoint Mode (see "Locate a Target Using Pinpoint Mode")
- Using a manual pinpointing technique (see "Locate a Target Manually" on page 31)

## PINPOINT MODE

When Pinpoint Mode is turned On, all targets are detected regardless of the Discrimination Pattern and Ferrous Limits. Pinpoint Mode also switches Off motion detection, so target signals occur even when the Coil is stationary.

Pinpoint Mode progressively masks the target response by reducing the Sensitivity with each sweep until only a very narrow target response remains.

The detector's response indicates the strength of the target signal directly below the coil. The difference in tone and volume helps to locate the position and depth of the target.



## The Pinpoint Bar

When Pinpoint Mode is enabled, the Pinpoint Bar will appear at the bottom of the screen.

As the centreline of the Coil approaches the target, the Pinpoint Bar fills from the outside towards the centre. When the Bar is full, the target is directly beneath the centreline of the Coil.



Weak/off-centre target signal. The target is located nearer to the outside of the Coil.



Strongest target signal. The target is located directly below the centreline of the Coil.

## LOCATE A TARGET USING PINPOINT MODE

1. Hold the Coil away from the approximate target location.
2. From the Detect Screen, press ▼ to turn On Pinpoint Mode. The Pinpoint Bar will appear at the bottom of the screen.

Keeping the Coil parallel to the ground, sweep slowly over the target location two or three times. This calibrates the detector for more accurate audio responses.

3. Locate the centre of the target by listening for the loudest signal and/or watching the Pinpoint Bar.

The Target ID and ID Map continue to update whilst in Pinpoint Mode so that you can confirm that you are pinpointing the correct target rather than adjacent trash.

4. When the Pinpoint Bar fills all of the way to the centre and the Pinpoint icon highlights, the target is below the centre of the Coil.

If you have difficulty Pinpointing the target, or if the detector becomes too noisy when Pinpoint is turned On, turn Pinpoint Mode Off and then return to Step 1 to repeat the Pinpoint procedure.

# Pinpointing *(Continued)*

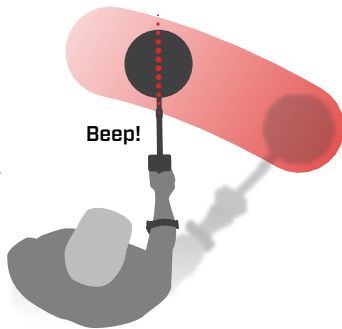
## LOCATE A TARGET MANUALLY

It is possible to locate a target successfully without using Pinpoint Mode, however this requires practice. This method may be required when a desirable target is surrounded by trash.

1. Sweep the Coil slowly across the target location keeping the Coil parallel to the ground.
2. Locate the centre of the target by listening for the loudest target signal response.
3. Make a mental note of the position, or mark a line on the soil with your shoe or a digging tool.
4. Move to one side so that you can pass the Coil over the target at right angles to your initial direction.
5. Repeat steps 1 and 3 from your new position. The target is located where the two imaginary lines cross.

1-3

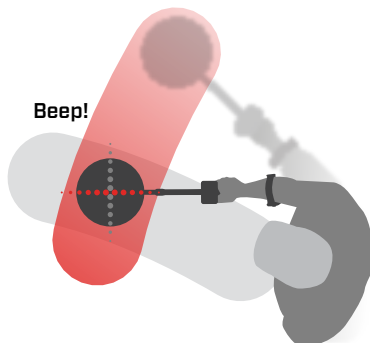
Make a line where the strongest signal is heard.



4-5

Stand at right-angles to your initial position and repeat.

The intersection of the two lines marks the exact location of the target.



# General Settings

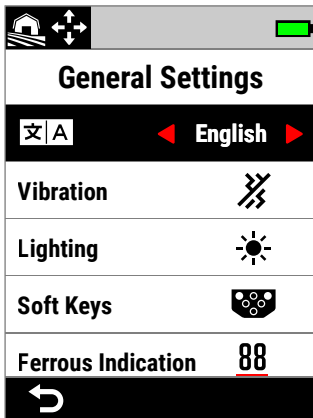
---

# Language

## CHANGE THE LANGUAGE

1. Navigate to the Language setting:  
⚙️ *Settings* > ⚙️ *General Settings* > 🗣️ *A*
2. Press ◀️/▶️ to select your language.

**Note:** After a Factory Reset, the Language will return to the default setting (English).



Language in the General Settings Menu.



# Vibration

MANTICORE has a Vibration feature that provides tactile feedback through the detector Handgrip.

Vibration varies in intensity proportional to the target signal strength when detecting and when Pinpoint is enabled.

The Vibration setting is remembered after the detector is powered Off.



When Vibration is On, battery runtime is decreased.

## TURN VIBRATION ON/OFF

1. Navigate to Vibration:  
⚙️ **Settings** > ⚙️ **General Settings** > **Vibration**
2. Press ◀️/▶️ to turn Vibration On (🔊) or Off (🔕).

# Lighting

## OPEN THE LIGHTING MENU


The Lighting menu can be opened in two ways:


- By pressing Backlight/Lighting (☀️)
- Via the Settings Menu:  
⚙️ **Settings** > ⚙️ **General Settings** > ☀️ **Lighting**

## DISPLAY BACKLIGHT

The MANTICORE Display backlight brightness can be adjusted to suit all lighting conditions, from bright daylight to complete darkness.

Brightness levels range from 1 (dimpest) to 10 (brightest), plus an Auto setting. The screen backlight cannot be completely turned Off.

 Using a lower Display Backlight brightness setting will extend battery runtime.

 You can assign Display Backlight as a Soft Key Action — see [page 36](#).


## Adjust the Display Backlight

1. Open the Lighting menu by pressing Backlight/Lighting (☀️), or navigate to it:  
⚙️ **Settings** > ⚙️ **General Settings** > ☀️ **Lighting** > **Display**
2. Press ◀️/▶️ to select the Display Backlight setting.

Alternatively, you can adjust the Display backlight by pressing Backlight/Lighting (☀️). Each press reduces the brightness by one level before cycling back to the highest setting.

## Auto Display/Keypad Backlight

The Display and Keypad each have an Auto setting that automatically adjusts the backlight brightness depending on the light levels sensed by the Light Sensor.

 For the Light Sensor to function correctly, make sure the Light Sensor is not covered and is kept free of dirt and dust.

## KEYPAD BACKLIGHT

The MANTICORE Keypad has a backlight for maximum Keypad visibility even in complete darkness.

Brightness settings are Off, Low, Medium and High, plus an Auto setting which automatically adjusts the Keypad Backlight according to the current Display Backlight setting.

## Adjust the Keypad Backlight


1. Open the Lighting menu by pressing Backlight/Lighting (☀️), or navigate to it: ⚙️ **Settings** > ⚙️ **General Settings** > ☀️ **Lighting** > **Keypad**
2. Press ◀️/▶️ to select the Keypad Backlight setting.


## FLASHLIGHT

MANTICORE has a Flashlight located at the back of the Control Pod for detecting in low-light situations.

Flashlight settings are Off, Low, Medium and High.

The Flashlight is Off by default each time the detector is powered On.

 Continuous use of the Flashlight will result in decreased battery runtime.

 You can assign the Flashlight as a Soft Key Action — see [page 36](#).

## Adjust the Flashlight

1. Open the Lighting menu by pressing Backlight/Lighting (☀️), or navigate to it: ⚙️ **Settings** > ⚙️ **General Settings** > ☀️ **Lighting** > **Flashlight**
2. Press ◀️/▶️ to select the Flashlight setting.

When the Flashlight is On, the Flashlight icon (🔦) is displayed in the Status Bar.



# Soft Keys

Three Soft Keys can be assigned an Action, allowing you to customise the user interface. They provide convenient shortcuts for your favourite settings.

User-assigned Soft Key functions are only available from the Detect Screen.



The **Side Soft Key** is the bottom right Side Button on the Control Pod. Actions assigned to it do not display an icon until the Soft Key is pressed.

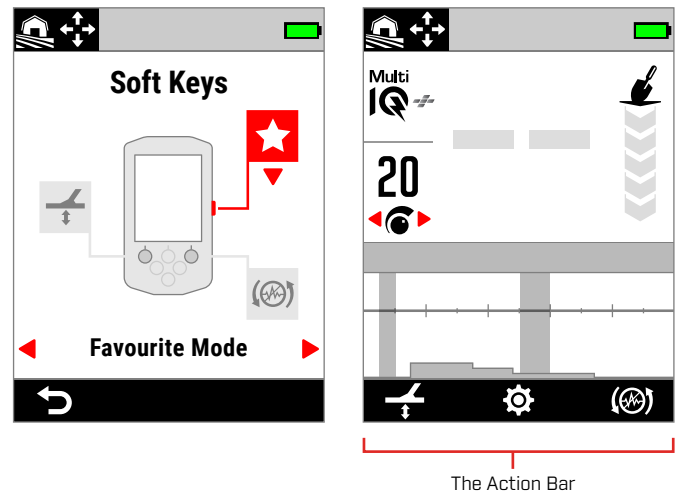
The **Action Bar Soft Keys** are the top left and right buttons on the Keypad, directly below the Action Bar.

## ASSIGN THE SOFT KEYS

See the full list of Soft Key Actions on [page 37](#).

1. Long-press the Side Soft Key (⌘) to open the Soft Keys Selector, or navigate to it via the Settings Menu: **Settings** > **General Settings** > **Soft Keys**, then Press ▶ to open the Soft Keys Selector.
2. Press ▲/▼ to select the Soft Key you want to assign – the selected Soft Key is highlighted in red.
3. Press ◀/▶ to cycle through the assignable Soft Key Actions. Changes are automatically applied.

When you return to the Detect Screen, the Soft Key icons in the Action Bar will show the newly assigned Actions for the Left and Right Soft Keys.




The Soft Keys Selector and the resulting Action Bar on the Detect Screen.


## SOFT KEY ACTIONS

### **All Metal**

Turns All Metal On/Off.

### **Accept / Reject**

When All Metal is Off, press the Soft Key  **Reject** to reject IDs when they are detected.

When All Metal is On, press the Soft Key  **Accept** to accept IDs when they are detected.

### **Noise Cancel**

Performs an Auto Noise Cancel.

Press-and-hold to perform a Continuous Auto Noise Cancel (not available for the Side Soft Key).

### **Ground Balance**

Turns Tracking Ground Balance On/Off.

Press-and-hold while raising and lowering the Coil over the ground to perform an Auto Ground Balance (not available for the Side Soft Key).

### **Favourite Mode**

Toggles between the Favourite Search Mode and the last-used Search Mode.

The Favourite Search Mode is user-definable; see "[Set the Favourite Search Mode](#)" on page 64.

### **Search Mode**

Cycles through all Search Modes.

### **Flashlight**

Toggles the Flashlight On and Off at the last-used brightness level.

### **Display Backlight**

Cycles through the Display Backlight settings from highest to lowest.

This is a useful shortcut for detecting at dusk, as it allows you to reduce the Display brightness incrementally as the sun goes down.

### **Sensitivity Boost**

Temporarily increases the Sensitivity by 5 levels (or to maximum). More on [page 21](#).

### **Speaker Mute**

Speaker Mute allows you control Speaker audio.

Ordinarily, the Speaker turns Off when headphones are connected. The Speaker Mute Soft Key allows you to turn the Speaker On, so that you can share audio temporarily without disconnecting your headphones. Audio is generated in the headphones and the Speaker simultaneously.

If no headphones are connected, Speaker Mute turns the loudspeaker On/Off.

Speaker Mute is only available when assigned to a Soft Key. If it becomes unassigned or the detector restarts, the Speaker will return to its default behaviour.

### **Recovery Speed**

Cycles through the available Recovery Speeds from low-to-high. The new setting is shown briefly when the Soft Key is pressed.

### **Frequency**

Cycles through the available Frequencies from low-to-high.

This is a useful shortcut for quickly identifying difficult targets.

### **Clear ID Map**

Clears the ID Map by refreshing the Target Trace. This is useful when the ID Map is covered by lots of Traces that are making it difficult to interpret the true target.

# Ferrous Indication

---

You can customise the colour of the Ferrous Indication on the Detect Screen.

The default indication is a black Target ID Number with a red line underneath. There is an additional option to display the Target ID Number in red if preferred.



Default Ferrous Indication.



Optional red Ferrous Indication.

## CHOOSE THE APPEARANCE OF FERROUS INDICATION

1. Navigate to the Ferrous Indication setting:  
⚙️ **Settings** > ⚙️ **General Settings** > **Ferrous Indication**
2. Press ◀️/▶️ to select the Ferrous Indication Appearance.

# Reset

---

For information on how to reset a single Search Mode only, see "Reset a Search Mode" on page 65.

## FACTORY RESET

Factory Reset can be done in two ways; via the Settings Menu, or via the Power Button.

Factory Reset will return all detector settings to their default state, including Search Modes.

### Reset Via the Settings Menu

1. Turn the Detector On (🔌).
2. Navigate to Reset:  
⚙️ **Settings** > ⚙️ **General Settings** > 🔄 **Reset**
3. Press ▶ to display the Reset confirmation screen.
4. A warning message will be displayed – if you are sure you want to reset the detector, confirm again by pressing the Right Soft Key [✓ **Confirm**].

There will be a confirmation tone and message when Reset is complete. Note that the message is displayed in English, the default Language setting.


### Reset Via the Power Button

1. Turn the Detector Off (🔌).
2. Press-and-hold the Power button (🔌) until there is a confirmation tone and 'Factory Reset Complete' message. Note that the message is displayed in English, the default Language setting.
3. Release the button.








# Underwater Boost


The Underwater Boost setting increases the maximum volume of the Minelab 3.5 mm (1/8-inch) waterproof headphones.

 High volume may harm your hearing – therefore Underwater Boost should **ONLY** be used with Minelab 3.5 mm (1/8-inch) waterproof headphones, available as an accessory.

## TURN UNDERWATER BOOST ON/OFF

1. Navigate to Underwater Boost:  
 **Settings** >  **General Settings** > **Underwater Boost**
2. Press  /  to turn Underwater Boost On/Off.

When turning Underwater Boost On, a warning message will be displayed – read the message carefully, then confirm by pressing the Right Soft Key [ **Confirm**].

When Underwater Boost is On, a Plus (+) symbol is displayed inside the headphones icon () in the Status Bar.

# Settings Menu

---

# Frequency



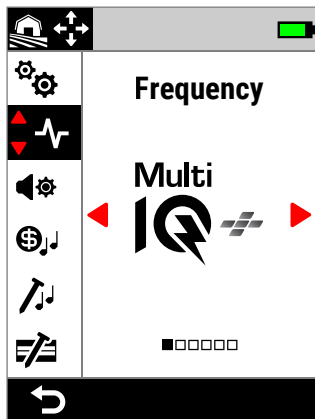
MANTICORE features a high-power simultaneous multi-frequency technology called Multi-IQ+, and also has a selection of single frequencies.

Frequency adjustment is local; only the current Search Mode is affected by changes to this setting.

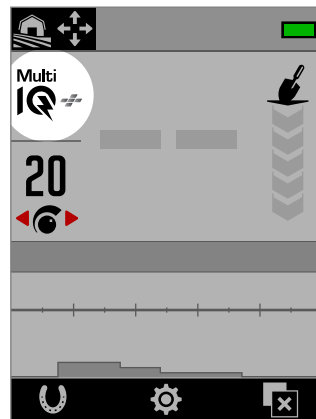
Multi-IQ+ is the default and recommended Frequency setting for all Search Modes.

**!** Perform a Noise Cancel (page 62) each time the Frequency is changed.

**~** You can assign Frequency as a Soft Key Action – see page 36.



Frequency in the Settings Menu.



Frequency on the Detect Screen.

## CHANGE THE FREQUENCY

1. Navigate to: **Settings** > **Frequency**
2. Press **◀/▶** to select a Frequency. The new Frequency setting will be displayed on the Detect Screen.
3. Perform a Noise Cancel (page 62).

## FREQUENCIES AND SEARCH MODES

Each Search Mode is limited to the frequencies that provide the best performance for that mode.

All-Terrain modes can operate successfully across every available frequency setting, therefore single frequencies are available in All-Terrain.

Beach modes can only perform successfully in typical beach conditions in Multi-IQ+, therefore the single frequencies are not available.

Similarly, Goldfield is optimised for detecting low conductive gold nuggets that are more easily detected at higher frequencies. Therefore the lower single frequencies (5, 10 and 15 kHz) are not available in this mode.

MANTICORE does not have a 4 kHz single frequency setting. Instead, the All-Terrain High Conductors Search Mode provides a Multi-IQ+ based mode that can achieve an operating frequency even lower than 4 kHz. This provides the benefits of a low frequency/high power mode for detection and discrimination of high conductors, while retaining the substantial benefits of Multi-IQ+.

### MANTICORE Frequencies

|             | Frequency (kHz) |   |    |    |    |    |
|-------------|-----------------|---|----|----|----|----|
|             | Multi-IQ+       | 5 | 10 | 15 | 20 | 40 |
| All-Terrain | ✓               | ✓ | ✓  | ✓  | ✓  | ✓  |
| Beach       | ✓               | ✗ | ✗  | ✗  | ✗  | ✗  |
| Goldfield   | ✓               | ✗ | ✗  | ✗  | ✓  | ✓  |

## MULTI-IQ+ OPERATION

Multi-IQ+ operates across the full spectrum of frequencies simultaneously, allowing it to cover a much broader range of targets than a single frequency can.

Multi-IQ+ delivers superior performance over single frequency operation in almost all conditions.


Detecting using Multi-IQ+ at all times is recommended because:


- It gives the best chance of detecting a broad range of targets.
- Multi-IQ+ Target IDs are more stable and accurate than single frequencies. See "Accuracy Factors" on page 25 for more information.

## SINGLE FREQUENCY OPERATION

The single frequency settings are high-powered and may give an advantage over multi-frequency in some limited detecting situations. For example; if you were searching only for larger high conductive targets located at great depth in very benign soils, using 5 kHz may give an advantage. Similarly, if you were hunting only for very fine gold jewellery at a shallow depth, then 20 kHz or 40 kHz may give better results in some detecting environments.

In some noisy environments (e.g. high EMI locations where Noise Cancel is not fully effective), a single frequency may pick up less noise than Multi-IQ+, however maximum target sensitivity over a wide range of target sizes will be reduced.

 The Ferrous Limits setting is disabled when using single frequencies. To enable Ferrous Limits, change the Frequency to Multi-IQ+.

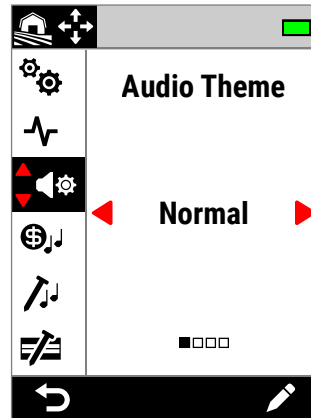
 The ID Map changes to a simplified linear scale when using single frequencies. For more information, see "[Single Frequency ID Map](#)" on [page 26](#).

# Audio Theme



Audio Themes are configured for specific detecting scenarios, and allow the user to customise how their audio sounds to suit their particular detecting style.

Audio Theme adjustment is local; only the current Search Mode is affected by changes to this setting.



Audio Theme in the Settings Menu.

## CHOOSING AN AUDIO THEME

Choose the Audio Theme that best suits your location and detecting intent. While the choice of Theme is partly personal preference, it is worthwhile to understand each Audio Theme and the individual benefits that they bring to specific detecting scenarios.

|                            | Normal                        | Enhanced                      | Depth                         | Prospecting     |
|----------------------------|-------------------------------|-------------------------------|-------------------------------|-----------------|
| <b>Threshold Type</b>      | Reference                     | Reference                     | Reference                     | True            |
| <b>Threshold Level</b>     | 0 to 25                       | 0 to 25                       | 0 to 25                       | 0 to 25         |
| <b>Threshold Pitch</b>     | 1 to 50                       | 1 to 50                       | 1 to 50                       | 1 to 50         |
| <b>Profile</b>             | Simple, Medium, Rich (Volume) | Simple, Medium, Rich (Timbre) | Simple, Medium, Rich (Volume) | —               |
| <b>Min. and Max. Pitch</b> | —                             | —                             | 1 to 65                       | —               |
| <b>Ferrous Pitch</b>       | —                             | —                             | 1 to 65                       | —               |
| <b>Ferrous Tone</b>        | —                             | —                             | —                             | On/Off          |
| <b>Target Tones</b>        | Enabled                       | Enabled                       | Disabled                      | Disabled        |
| <b>Pitch driven by</b>     | Target ID                     | Target ID                     | Signal Strength               | Signal Strength |

## NORMAL

The Normal Audio Theme is a good choice for everyday detecting. It gives full-sounding audio responses that vary in both pitch and volume.

The pitch of audio responses is determined by the Target ID as defined by the Target Tones setting (page 48).

The volume of audio responses is modulated according to the signal strength/depth of the target, with strong/shallow targets giving louder responses than weak/deep targets. Choose the amount of volume modulation by changing the Profile.

This theme uses a 'Reference' threshold tone that blanks for rejected targets (see "'Reference' Threshold Tone" on page 47). You can adjust the Threshold Level (Off by default) and Threshold Pitch.

# Audio Theme *(Continued)*

## ENHANCED

**The Enhanced Audio Theme is similar to Normal, but is optimised for detecting in high EMI scenarios.**

Weak detections like EMI chatter will remain audible, but will have a modulated audio timbre that will sound more 'thin' or 'tinny' than stronger detections. This has the effect of suppressing EMI chatter, making it easier to listen 'through', to hear non-random signals that consistently repeat with each swing. Larger signals from strong/shallow targets will sound more 'robust' similar to the Normal Audio Theme. This Audio Theme can also allow users to increase Sensitivity (in EMI-limited locations) higher than would be possible using the Normal Audio Theme.


The pitch of audio responses is determined by the Target ID as defined by the Target Tones setting (page 48).

Choose the amount of frequency modulation by changing the Profile.

This Theme uses a 'Reference' threshold tone that blanks for rejected targets (see "'Reference' Threshold Tone" on page 47). You can adjust the Threshold Level (Off by default) and the Threshold Pitch.

## DEPTH

**The Depth Audio Theme is useful for improved target separation at inland locations that contain high amounts of ferrous trash.**

 The Target Tones setting is disabled when using the Depth Audio Theme. To enable Target Tones, change the Audio Theme to Normal or Enhanced.

The pitch of non-ferrous targets varies continuously according to the signal strength or depth of the target. Weaker non-ferrous signals will have a lower pitch and stronger signals will have a higher pitch. Ferrous targets will have a low pitch response.

The Ferrous Pitch, Minimum Pitch (non-ferrous) and Maximum Pitch (non-ferrous) are adjustable. The amount of volume modulation can be modified using the Profile setting.

This theme uses a 'Reference' threshold tone that blanks for rejected targets (see "'Reference' Threshold Tone" on page 47). You can adjust the Threshold Level (Off by default) and Threshold Pitch.

## The Depth Theme Pitch Settings


The Depth theme has additional unique settings that allow you to control the pitch of ferrous tones, and to set the minimum/maximum pitch of conductive tones.

The Depth pitch settings have a range from 1 to 65.

**NOTE:** The Ferrous Pitch cannot be set higher than the Min. Pitch. If you cannot adjust the Ferrous Pitch (the arrows are greyed-out and there is an invalid button press tone), increase the Min. Pitch setting.

## PROSPECTING

**The Prospecting Theme is useful when maximum sensitivity to weak targets is beneficial, such as for gold prospecting or hunting for fine jewellery at the beach. This theme is best used at low trash sites.**

 The Target Tones setting is disabled when using the Prospecting Audio Theme. To enable Target Tones, change the Audio Theme to Normal or Enhanced.

The pitch of audio responses varies continuously according to the signal strength (or depth) of the target, and whether it is ferrous.

The Ferrous Tone setting allows the ferrous tones to be turned Off. This means that when detecting in All Metal, ferrous targets will not give a ferrous tone, and instead will give a regular detection tone. This is a useful feature when searching for gold, because very weak gold targets can be pulled into the ferrous region by nearby ferrous targets or by the ground signal from highly mineralised ground. By turning Ferrous Tones Off, the gold signals will be more clearly audible.

This theme uses a 'True' Threshold Tone that provides maximum sensitivity to weak targets (see "'True' Threshold Tone" on page 47). You can adjust the Threshold Level (Off by default) and Threshold Pitch.



# Audio Theme *[Continued]*

## PROFILE

*Only available for Normal, Enhanced, and Depth Audio Themes.*

The Profile setting for an Audio Theme controls how much the audio signal is modulated for signal strength (or target depth).

In Normal and Depth Audio Themes, the volume of the audio is modulated (weaker targets have lower volume).

In Enhanced Audio Theme, the frequency content of the audio is modulated (weaker targets sound 'thinner/tinnier').

### Simple

When the Profile is set to Simple, there is minimal modulation of weak/deep targets. All but the weakest/deepest targets will sound similar to shallow/strong targets.

### Medium

When the Profile is set to Medium, there is a moderate amount of modulation applied. Medium depth to weakest/deepest targets will sound different to very shallow/strong targets.

### Rich

When the Profile is set to Rich, there is a large amount of modulation applied. Weakest/deepest targets will sound different to medium depth targets, and both of these will also sound different to very shallow/strong targets.

## Change the Profile

1. Navigate to: **Settings** > **Audio Theme**
2. Press **◀/▶** to select the Audio Theme you want to adjust then press the Right Soft Key [**Edit**].
3. Press **▲/▼** to select Profile, then press **◀/▶** to change the Profile setting. Changes take effect immediately, so listen to the audio to select your preferred setting.

## THRESHOLD LEVEL AND PITCH

A threshold tone is the constant background sound that is useful for distinguishing between desirable and undesirable targets, as well as hearing faint signal responses.

A Threshold Level can be set for all Audio Theme settings, though they may sound a little different to each other due to the underlying difference in the way each Theme generates audio.

The Threshold Level setting has a range from 0 to 25.

The Threshold Pitch setting has a range from 1 to 50.

**NOTE:** the Normal, Enhanced and Depth Audio Themes use a 'Reference' threshold tone, while the Prospecting Theme uses a 'True' threshold tone.

## Adjust the Threshold Level/Pitch

1. Navigate to: **Settings** > **Audio Theme**
2. Press **◀/▶** to select the Audio Theme you want to adjust then press the Right Soft Key [**Edit**].
3. Press **▲/▼** to select Threshold Level or Threshold Pitch, then press **◀/▶** to adjust. Changes take effect immediately, so listen to the audio to select your preferred setting.

# Audio Theme *[Continued]*

## 'REFERENCE' THRESHOLD TONE

The Normal, Enhanced and Depth Audio Themes use a simplified 'reference' threshold tone. It is a simple continuous background tone that blanks when a Rejected ID is detected.

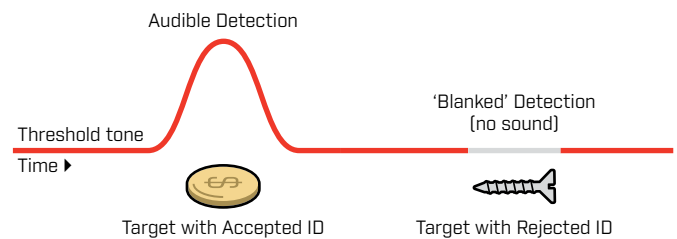
Without a reference threshold, a rejected target detection would be silent, and you would not be made aware of the target's existence.

For typical treasure detecting locations where there is often a large amount of trash in the ground, constant audio blanking may be disruptive, therefore using a Threshold Level setting of 0 (Off) is recommended unless you want to hear audio blanking.

## Reference Threshold Blanking

When a Rejected ID is detected, the threshold tone 'blanks' (becomes silent) to indicate that a rejected target is underneath the Coil.

If the Threshold Level is set to 0 (zero), you will not hear the blanking of the Rejected IDs.

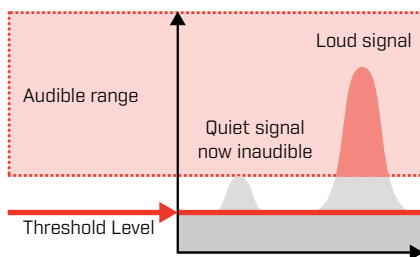


## 'TRUE' THRESHOLD TONE

The Prospecting Audio Theme uses a more nuanced, 'true' threshold tone which is recommended for gold detecting. A 'true' threshold tone can be adjusted to improve the audibility of faint signals from small gold nuggets. Unlike a 'reference' threshold, 'true' threshold allows gold nugget signals to be emphasised in typically mineralised (noisy) goldfield soils.

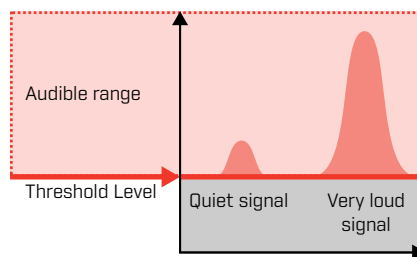
Greater control of the target audio response may be achieved by adjusting the Threshold Level and Volume settings together.

### Too Low



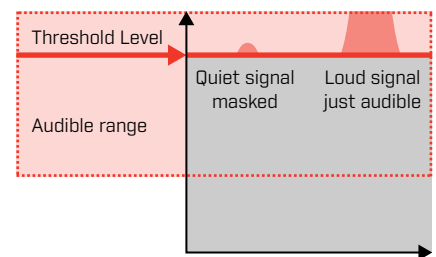
If the Threshold Level is too low, the variation caused by a small or deep target may be inaudible.

### Just Right



If the Threshold Level is just right, it should sound like a faint audible hum. This emphasises variations in signal response making targets easier to hear.

### Too High



If the Threshold Level is too high, it can make faint targets more difficult to hear above the threshold hum.

# Target Tones



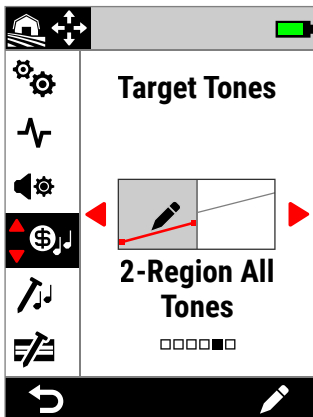
The Target Tones setting divides the Target ID range into separately adjustable Tone Regions. The Start and End points of each Tone Region can be moved to create narrow or wide Tone Regions that group together adjacent Target IDs.

You can then control the pitch and volume of each Tone Region to amplify groups of good targets, or make undesirable targets fade into the background.

The Tone Region Pitch has a range from 1 to 50 (low-to-high).

The Tone Region Volume has a range from 0 (Off) to 25.

Target Tones adjustment is local; only the current Search Mode is affected by changes to this setting.



Target Tones in the Settings Menu.

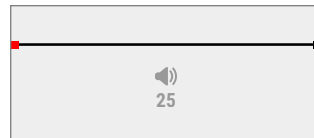
**i** The Target Tones setting is disabled when the Audio Theme is set to Depth or Prospecting. Change the Audio Theme to Normal or Enhanced to enable Target Tones.

## CHOOSING A TARGET TONES SETTING

Target Tones share the same horizontal axis as the ID Map, with Tone Regions corresponding to the Target ID. Each of the below options can be edited; see "The Target Tones Editor" on page 49.

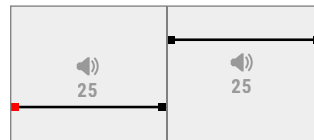
### Single Pitch Settings

A single pitch can be assigned to each Tone Region, indicated by a flat line.



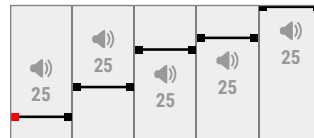
#### 1-Tone

There is one Tone Region. Conductive IDs have the same pitch.



#### 2-Tone

There are two Tone Regions. Conductive IDs within each Tone Region all have the same pitch.

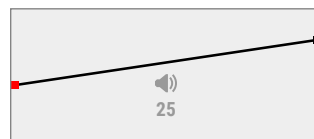


#### 5-Tone

There are five Tone Regions. Conductive IDs within each Tone Region all have the same pitch.

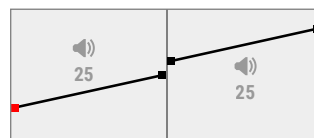
### Variable Pitch Settings

The Start and End points can each be assigned a different pitch, with tonal variation being evenly distributed between them. The result is a tonal gradient, indicated by a sloping line. The steeper the line, the greater the difference in pitch across that Tone Region.



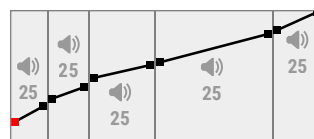
#### 1-Region All Tones

There is one Tone Region. Adjacent Conductive IDs within the Tone Region have a slightly different pitch.



#### 2-Region All Tones

There are two Tone Regions. Adjacent Conductive IDs within each Tone Region have a slightly different pitch.



#### 5-Region All Tones

There are five Tone Regions. Adjacent Conductive IDs within each Tone Region have a slightly different pitch.

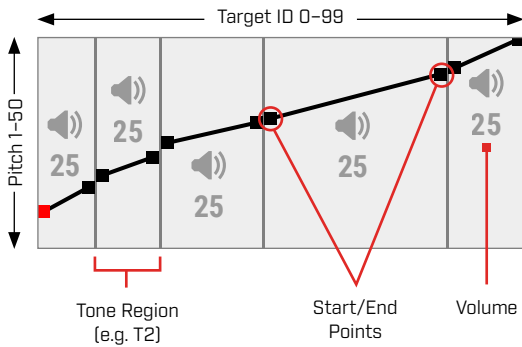
# Target Tones *[Continued]*

## THE TARGET TONES EDITOR

The Target Tones Editor gives you full control of audio properties for targets detected within each Tone Region.

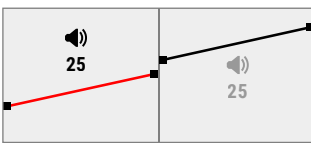
The Target Tones Editor shares the same horizontal axis as the ID Map, with Tone Regions corresponding to the Target ID. The Tone Regions have adjustable Start and End points, so you can change the width of each Region.

The volume of each Tone Region can be adjusted separately to the global Volume setting.

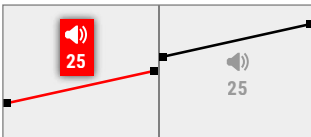


## ADJUST THE VOLUME OF TONE REGIONS

1. Navigate to: ⚙️ **Settings** > 🎵 **Target Tones**
2. Press ◀️/▶️ to select the Target Tones setting you want to adjust then press the Right Soft Key [✎ **Edit**].
3. Press ◀️/▶️ to navigate to the Region Volume that you want to adjust.



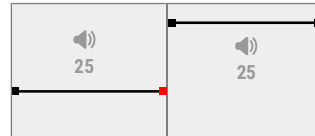
4. Press the Right Soft Key [✎ **Edit**]. The Region Volume will highlight in red.



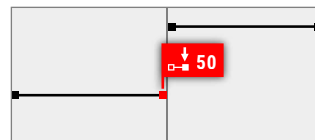
5. Press ◀️/▶️ to adjust the Volume (🔊).
6. Press [↩️ **Back**] to return to the top-level of the Editor.

## ADJUST THE WIDTH/PITCH OF TONE REGIONS

1. Navigate to: ⚙️ **Settings** > 🎵 **Target Tones**
2. Press ◀️/▶️ to select the Target Tones setting you want to adjust then press the Right Soft Key [✎ **Edit**].
3. Press ◀️/▶️ to navigate to the Start/End Point you want to adjust.



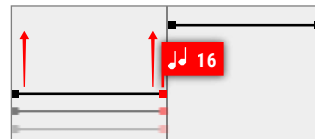
4. Press the Right Soft Key [✎ **Edit**]. The Start/End Point will highlight in red.



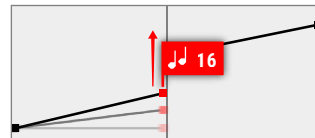
5. Press ◀️/▶️ to move the Start Point (↔️) or End Point (↔️).

Press ▲/▼ to adjust the Pitch of the Start/End Point (🎵).

In 1/2/5-Tone, only one Pitch can be assigned per Tone Region. Therefore the Start and End Points move together as the Pitch is adjusted.



In the 1/2/5-Region All Tones settings, the Start and End points can have a different pitch within a Tone Region. Each point can move independently as the Pitch is adjusted.



6. Press [↩️ **Back**] to return to the top-level of the Editor.

# Ferrous Tones

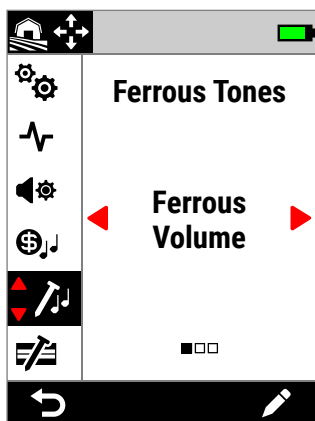


The Ferrous Tones setting allows you to set the volume and pitch of ferrous targets. It also includes a Stabiliser setting that manages false ferrous detections in mineralised ground.

This means that ferrous targets can be made to sound louder or quieter, and higher or lower pitched for a nuanced audio experience.

The defaults are set very low so that ferrous targets are quiet and low pitched and therefore distinctly different from loud, high pitched conductive targets.

Ferrous Tones adjustment is local; only the current Search Mode is affected by changes to this setting.



Ferrous Tones in the Settings Menu.

## FERROUS VOLUME

The Ferrous Volume setting controls the loudness of ferrous detections. This can be useful for making unwanted ferrous detections quieter.

Ferrous Volume has a range from 0 (Off) to 25.

### Adjusting Ferrous Volume

1. Navigate to Ferrous Tones:  
⚙️ **Settings** > 🎵 **Ferrous Tones**
2. Press ◀️/▶️ to select **Ferrous Volume** then press the Right Soft Key [✎ **Edit**].
3. Press ◀️/▶️ to adjust the Volume.

**i** In trashy or iron infested locations, set the Ferrous Volume to be just-audible. Next, adjust the Target Tone setting (page 48) to increase the volume of the Tone Regions where your preferred targets will appear. This will emphasise them.

This way, you can hear how much ferrous trash is being detected. If you hear lots of ferrous trash, detect more slowly so you don't miss good targets. If you hear very little ferrous trash, you can detect more quickly.

## FERROUS PITCH

The Ferrous Pitch setting controls the pitch of ferrous detections. This can be useful for differentiating good targets from bad targets using the audio alone.

Ferrous Pitch has a range from 1 to 50 (low-to-high).

### Adjusting Ferrous Pitch

1. Navigate to Ferrous Tones:  
⚙️ **Settings** > 🎵 **Ferrous Tones**
2. Press ◀️/▶️ to select **Ferrous Pitch**, then press the Right Soft Key [✎ **Edit**].
3. Press ◀️/▶️ to adjust the Pitch.

# Ferrous Tones *(Continued)*

## STABILISER

*Only available in All Terrain Modes when the Frequency is set to Multi-IQ+.*

The Stabiliser setting reduces false detections from ferrous objects, sometimes referred to as 'falsing'. Falsing of this type can be more common at sites heavily contaminated with iron, and where the soil is mildly mineralised.

The Stabiliser has a range from 0 (Off) to 12.

The Stabiliser setting improves the overall stability of detector audio at sites where iron falsing may be experienced. It adds nuance to the audio to help users better distinguish good targets from iron. It can also improve the stability of Target IDs and the ID Map.

As the Stabiliser setting is increased, the false audio responses on iron objects will be reduced and become more nuanced. At higher Stabiliser settings, the audio from iron objects will begin to break up.

At sites where iron discrimination is not particularly challenging, a low Stabiliser setting will normally provide the best overall performance. The Stabiliser is best employed at sites with significant iron contamination where the performance and productivity of the detector is limited by the presence of iron in the ground.

### Adjusting Stabiliser

1. Navigate to Ferrous Tones:  
⚙️ **Settings** > 🎵 **Ferrous Tones**
2. Press ◀/▶ to select **Stabiliser**, then press the Right Soft Key [✎ **Edit**].
3. Press ◀/▶ to adjust.

## STABILISER FILTER

The Stabiliser Filter setting adds additional nuance to the audio for detections affected by the Stabiliser.

When the Stabiliser Filter is On, additional processing is applied to false audio responses from iron objects. This makes the audio from these false detections sound weaker.

When the Stabiliser Filter is Off, audio responses will sound normal unless broken up by the Stabiliser.

### Turn Stabiliser Filter On/Off

*Only available when the Stabiliser setting is 1 or higher.*

1. Navigate to Ferrous Tones:  
⚙️ **Settings** > 🎵 **Ferrous Tones**
2. Press ◀/▶ to select **Stabiliser**, then press the Right Soft Key [✎ **Edit**].
3. Press ▲/▼ to select **Stabiliser Filter**.
4. Press ◀/▶ to turn Stabiliser Filter On/Off.



# Ferrous Limits



The Ferrous Limits setting allows you to control whether the detector classifies targets as ferrous or non-ferrous based on their ferrous and conductive properties.

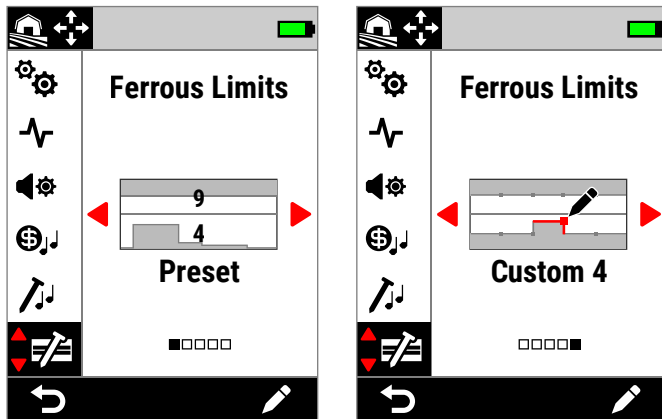
This setting is very similar to the Iron Bias setting in other Minelab Multi-IQ detectors, but provides far more control over how it is applied to targets.

There are a range of Preset settings to choose from that are suitable for most detecting conditions, or you can create your own Custom Ferrous Limits. A customised Ferrous Limits pattern is able to reject difficult ferrous junk items, or can accept desirable ferrous items like ferrous coins.

The Ferrous Limits setting is local, however changes made to the Custom Ferrous Limits settings are Global and available in all Search Modes.



The Ferrous Limits setting is disabled when using single frequencies. To enable Ferrous Limits, change the Frequency to Multi-IQ+. See ["Change the Frequency" on page 42](#).

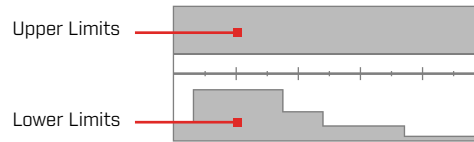


Ferrous Limits in the Settings Menu. There are two main Ferrous Limits options; Preset and Custom.

For the Preset setting, the currently selected Preset Limits are indicated by the overlaid numbers.

## UPPER AND LOWER LIMITS

The ID Map is divided in-half horizontally, creating Upper and Lower Limits.



### Upper Limits

The Upper Limits control the ferrous classification of most iron objects. This includes the most common small iron objects such as screws and nails, which typically appear in the top half of the ID Map.

Increasing or closing the Upper Limits (moving them closer to the centreline on the ID Map) will classify more targets as iron, and result in less iron falsing. However, this will also reduce target separation performance (the ability of the detector to separate good targets from nearby iron).

Conversely, decreasing or opening up the Upper Limits (moving them further away from the centreline) will classify fewer targets as iron and increase falsing on iron, but will also increase target separation performance.

### Lower Limits

The Lower Limits control the ferrous classification of some types of flat iron objects such as bottle caps and pieces of sheet metal, which often appear in the lower half of the ID Map.

Increasing or closing the Lower Limits (moving them closer to the centre line on the ID Map) will classify more flat iron objects completely as iron. However, this may also reduce depth on some deep targets in mineralised ground, particularly low-mid conductors.

Decreasing or opening the Lower Limits (moving them further away from the centre line) will classify fewer flat iron objects as iron, but may also improve depth on some deep targets in mineralised ground.

Bottle caps often have an ID within the 0-40 range, which is why the Preset Lower Limits have a raised region in this zone of the ID Map.

# Ferrous Limits *(Continued)*

## FERROUS LIMITS AUDIO

Targets detected within the Ferrous Limits grey area will give no target response or ferrous indication. In All Metal, targets will give a ferrous tone as defined by the Ferrous Tones setting (page 50), and the Ferrous Indicator will be displayed.

Targets detected outside of the Ferrous Limits in the white area will give a regular target response as defined by the Target Tones setting (page 48).

## PRESET FERROUS LIMITS

The Preset Ferrous Limits are pre-defined settings that maximise the rejection of common ferrous targets that appear in specific zones of the ID Map. The Preset settings are designed to cover most detecting scenarios so you can confidently detect using the Presets, rather than needing to create your own Custom Ferrous Limits.

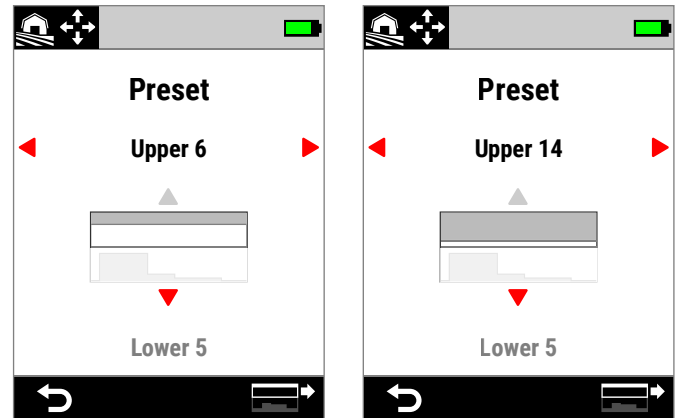
Preset Ferrous Limits provide a range of settings suitable for almost all scenarios, and most users will operate using Presets, rather than Custom Ferrous Limits.

The Presets can be copied to any of the Custom Ferrous Limits to serve as a starting point for further editing – see "Copy Preset Limits to Custom" (page 54).

The use of Custom Ferrous Limits enables tuning for very specific detecting scenarios, such as the ability to accept specific ferrous coins, or to reject ferrous trash.

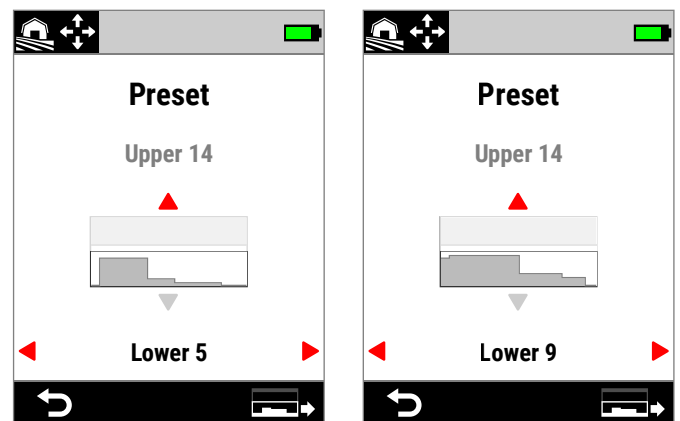
## SELECT THE PRESET FERROUS LIMITS

1. Navigate to: **Settings** > **Ferrous Limits**
2. Press **◀/▶** to select **Preset**, then press the Right Soft Key (**Edit**) to open the Preset Ferrous Limits Selector.
3. Press **▲** to select the Upper Limits, then press **◀/▶** to select an Upper Limits setting.



The Upper Limits Preset increased from 6 to 14 by pressing **▶**.

4. Press **▼** to select the Lower Limits, then press **◀/▶** to select a Lower Limits setting.



The Lower Limits Preset increased from 5 to 9 by pressing **▶**.

5. Press (**↶** Back) to return to the Settings Menu.

# Ferrous Limits *(Continued)*

## COPY PRESET LIMITS TO CUSTOM

The Upper and Lower Preset Ferrous Limits can be copied to the Custom Limits, replacing the existing Limits. Once the Preset Ferrous Limits are copied to the Custom Limits, you can edit them further.

1. Navigate to: **Settings** > **Ferrous Limits**
2. Press **◀/▶** to select **Preset**, then press the Right Soft Key **Edit** to open the Ferrous Limits Preset Selector.
3. Press **▲/▼** to select either Upper or Lower Limits.
4. Press **◀/▶** to select the Upper/Lower Limits Preset you want to copy, then press the Right Soft Key **Copy Limits**.
5. From the displayed list, select the Custom Limits you want to copy the Preset to (choose from Custom 1 to 4), then press the Right Soft Key **Confirm** to confirm.

If you are sure you want to replace the existing Custom Limits (this cannot be undone), press the Right Soft Key **Confirm** to confirm.

6. A message will be displayed, and the Custom Ferrous Limits Editor will open with the new Limits applied, ready for editing.

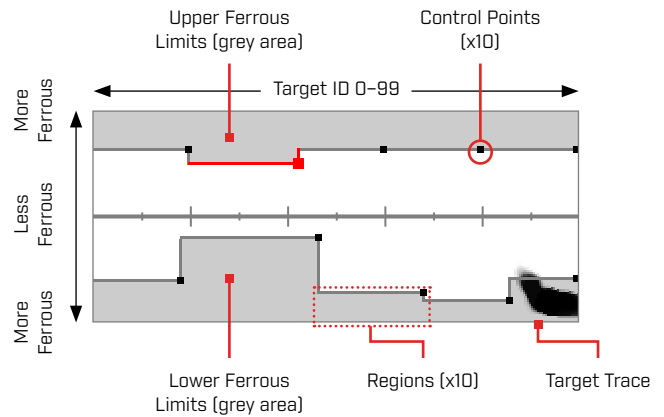
## CUSTOM FERROUS LIMITS EDITOR

For rare occasions where the Preset Ferrous Limits are not achieving the ferrous rejection that you need, you can create your own, more precise Custom Ferrous Limits.

In the Custom Ferrous Limits Editor, the Upper and Lower Limits are each sub-divided into 5 adjustable regions. This lets you fine-tune the classification of targets that are directly adjacent to one another.

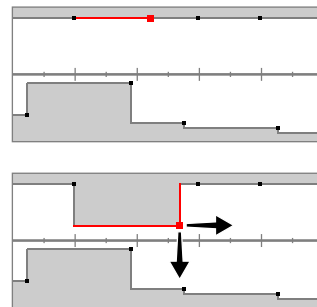
The Target Trace remains live in the Ferrous Limits Editor so you can see detected targets in real-time. You can refer to it as you adjust the Limits in order to include/exclude specific targets.

You can create up to 4 Custom Ferrous Limits.



## EDIT CUSTOM FERROUS LIMITS

1. Navigate to: **Settings** > **Ferrous Limits**
2. Press **◀/▶** to select the Custom Ferrous Limits you want to adjust, then press the Right Soft Key **Edit** to open the Editor.
3. Press **▲/▼/◀/▶** to navigate to the Region that you want to adjust, and then press the Right Soft Key **Edit**.
4. Press **◀/▶** to adjust the Target ID range. Press **▲/▼** to adjust the ferrous range.



5. Press **↵ Back** to return to the top-level of the Editor.

# Ferrous Limits *(Continued)*

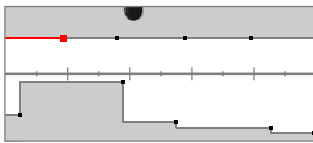
## EDIT FERROUS LIMITS FOR SPECIFIC TARGETS

The Ferrous Limits can be edited to include or exclude specific targets, allowing you to:

- Hear 'good' ferrous targets such as relics or ferrous coins that are produced by some countries, while rejecting directly adjacent ferrous trash.
- Reject difficult ferrous targets that are falsely detected as non-ferrous.

### Edit Ferrous Limits to Find 'Good' Ferrous Targets

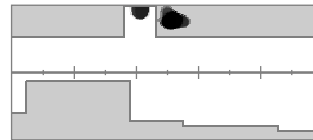
1. Place your test target on the ground in a metal-free location.
2. Navigate to: **Settings** > **Ferrous Limits**
3. Press **◀/▶** to select the Custom Ferrous Limits you want to adjust, then press the Right Soft Key [**Edit**] to open the Editor.
4. Swing the Coil over the test target – in this example, a ferrous Canadian 10¢ coin was used. The Target Trace will appear on the ID Map.



The Target Trace of a 1998 Canadian 10¢ coin.

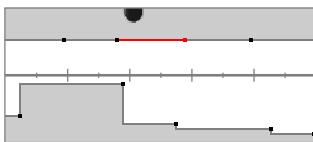
You will now detect ferrous coins directly adjacent to ferrous trash, with the audio sounding the same as non-ferrous coins with the same ID.

Targets with similar ferrous characteristics to the coin, but with different conductivity characteristics will still be rejected.



The Target Trace of a 1998 Canadian 10¢ coin (accepted) and a directly adjacent nail (rejected).

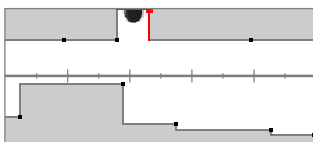
5. Press **▲/▼/◀/▶** to navigate to the Region nearest to the coin's Trace and then press the Right Soft Key [**Edit**].



The Region nearest to the coin's Trace selected for editing.

6. Wave the Coil over the coin at a range of heights, adjusting the Ferrous Limits until all of the Target Trace is captured inside the white area.

To be thorough, you can also change the orientation of the test target a few times in between swings to capture any Trace variation for that target.



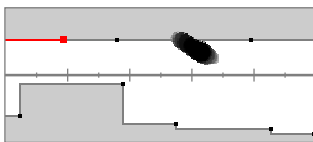
The coin Trace notched out of the surrounding Ferrous Limits.

7. Press [**↵ Back**] to return to the top-level of the Editor.
8. Repeat the process with different coin denominations until you have your final Ferrous Limits pattern.

# Ferrous Limits *(Continued)*

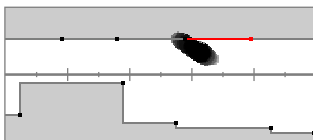
## Edit Ferrous Limits to Reject Difficult Ferrous Targets

1. Place your test target on the ground in a metal-free location.
2. Navigate to: **Settings** > **Ferrous Limits**
3. Press **◀/▶** to select the Custom Ferrous Limits you want to adjust, then press the Right Soft Key **[Edit]** to open the Editor.
4. Swing the Coil over the test target – in this example, a hex head screw was used. The Target Trace will appear on the ID Map. The example shows the hex head screw falsing, i.e. being incorrectly classified as non-ferrous.



The Target Trace of a falsing hex head screw.

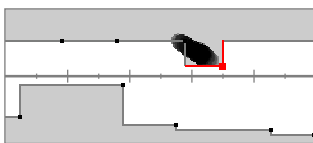
5. Press **▲/▼/◀/▶** to navigate to the Region nearest to the screw's Trace and then press the Right Soft Key **[Edit]**.



The Region nearest to the screw selected for editing.

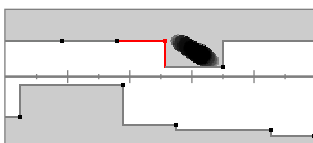
6. Wave the Coil over the screw at a range of heights, adjusting the Ferrous Limits until all of the Target Trace is captured inside the grey area.

To be thorough, you can also change the orientation of the test target a few times in between swings to capture the any Trace variation for that target.



The screw Trace included in Ferrous Limits grey area.

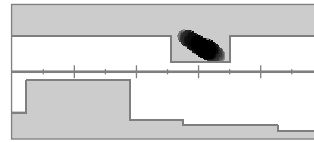
7. You may need to adjust adjacent Regions to capture any last parts of the Trace.



The left adjacent Region adjusted to capture the entire Trace.

8. Press **[↶ Back]** to return to the top-level of the Editor.

You will now reject the difficult ferrous target.



The Target Trace of a hex screw (rejected).

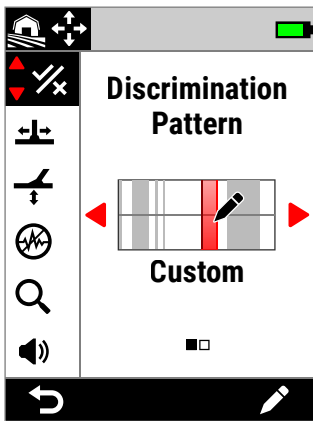
# Discrimination Pattern



The Discrimination Pattern setting lets you decide which Target IDs to detect or ignore, so you can dig more treasure and less trash.

Individual Target IDs can be Accepted or Rejected to create a Discrimination Pattern. Upon detection, Rejected IDs remain silent while Accepted IDs give a target response.

Discrimination Patterns are local – each Search Mode has its own editable Custom Discrimination Pattern.

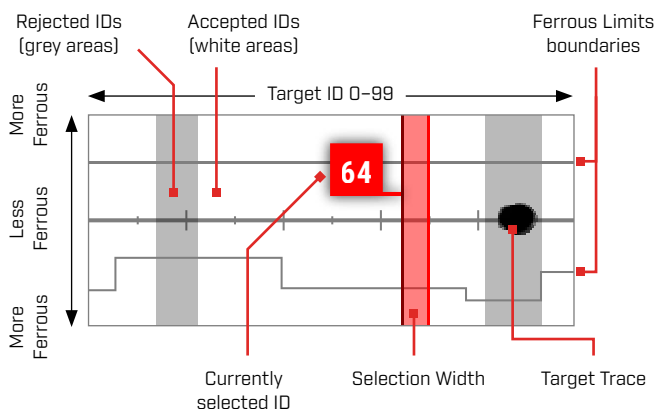


Discrimination Pattern in the Settings Menu.

## THE DISCRIMINATION PATTERN EDITOR

The Discrimination Pattern Editor lets you Accept or Reject Target IDs. The Target Trace remains live in the Editor so you can see detected targets in real-time. You can refer to it as you adjust the Pattern to include/exclude specific targets.

The Ferrous Limits boundary is displayed for reference.



## EDIT A DISCRIMINATION PATTERN

1. Navigate to the Custom Pattern Editor:  
⚙️ **Settings** > ⚡ **Discrimination Pattern**
2. Press ◀/▶ to select **Custom**, then press the Right Soft Key (✍️ **Edit**) to open the Custom Pattern Editor.  
  
The Action Bar options will change to show the editing functions, (☑️ **Accept**) or (❌ **Reject**).
3. **To reject a group of IDs**, press ◀/▶ to select the start ID. Press ▲/▼ to choose the Selection Width (1, 3, 5, 10, or 20) – this is the number of Target IDs selected at the same time.

Press the Right Soft Key (❌ **Reject**). The group of Rejected IDs will change to grey.

**To accept a group of IDs**, press ◀/▶ to select Rejected IDs. Press the Right Soft Key (☑️ **Accept**). The group of accepted IDs will now be white.

If your selection includes a combination of Accepted and Rejected IDs, the Right Soft Key will default to (❌ **Reject**). Press the Soft Key twice to Accept the selection.

4. Continue Accepting or Rejecting Target IDs using the Right Soft Key (☑️ **Accept**/❌ **Reject**) until you have created your final Discrimination Pattern.



# Discrimination Pattern *[Continued]*

## ACCEPT / REJECT AN ID UPON DETECTION

Before you can Accept / Reject an ID upon detection:

- Accept / Reject must be assigned to a Soft Key and;
- You must be in the Detect Screen.

You can assign Accept / Reject as a Soft Key Action – see [page 36](#). Accept / Reject is assigned by default to the Right Soft Key.

### Reject a Target Upon Detection

When an Accepted Target ID is detected, immediately press the Soft Key **[ Reject]**. The Target ID on the ID Map will turn grey. That Target ID will no longer give a target response.

If the same Target ID is detected, and the Soft Key **[ Reject]** is pressed again, the Target ID will remain Rejected. This means you can keep swinging over the target while repeatedly pressing the Soft Key **[ Reject]** to ensure the target is completely rejected. This is useful for targets that have a spread-out Target Trace/slightly varying Target ID.

### Accept a Target Upon Detection

Enable All Metal mode. When a Rejected Target ID is detected, immediately press the Soft Key **[ Accept]**. The Target ID on the ID Map will turn white. That Target ID will now give a target response.

If the same Target ID is detected, and the Soft Key **[ Accept]** is pressed again, the Target ID will remain Accepted. This means you can keep swinging over the target while repeatedly pressing the Soft Key to ensure the target is completely Accepted. This is useful for targets that have a spread-out Target Trace/slightly varying Target ID.

## ALL METAL

All Metal mode disables the Discrimination Pattern so that all metal objects (ferrous and conductive) will be detected.

All Metal is global, and is Off by default.

**NOTE:** When All Metal is enabled, ferrous targets display a Target ID with ferrous indication, and give ferrous detection tones (rather than remaining silent). How they will sound is defined by the Ferrous Tones and Audio Theme settings.

You can assign All Metal as a Soft Key Action – see [page 36](#). All Metal is assigned by default to the Left Soft Key.

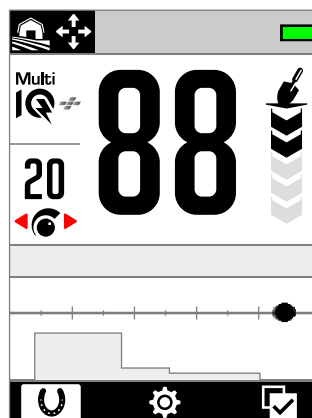
### Enable All Metal

All Metal can be enabled in two ways – via an assigned Soft Key from the Detect Screen, or via the Settings Menu:

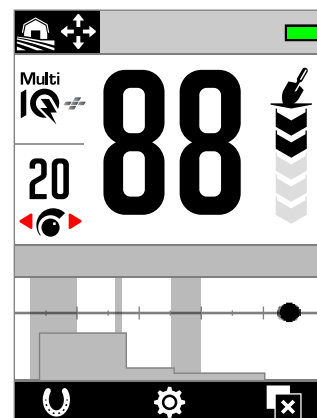
1. Navigate to Discrimination Pattern:  
 **Settings** > **Discrimination Pattern**
2. Press **</>** to select **All Metal**.

When All Metal is enabled, the Discrimination Pattern is turned Off and is not shown on the ID Map, and the Ferrous Limits change to a lighter shade of grey.

3. Press **[ Back]** to return to the Detect Screen.

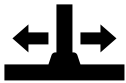


All Metal On – The Discrimination Pattern is turned Off.



All Metal Off – The Discrimination Pattern is turned On.

# Recovery Speed




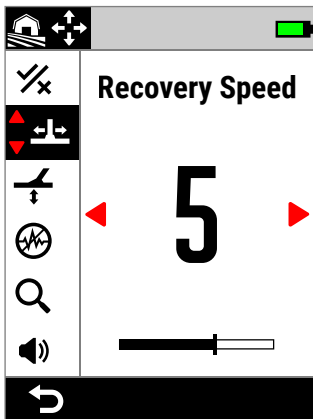
The Recovery Speed setting alters how quickly the detector responds from detecting one target to detecting another target.

By increasing the Recovery Speed, the detector is able to better differentiate between multiple targets that are close together. This assists in high-trash areas with finding smaller good targets amongst larger iron trash.

The Recovery Speed setting has a range from 0 to 8.






Recovery Speed adjustment is local; only the current Search Mode is affected by changes to this setting.

 You can assign Recovery Speed as a Soft Key Action — see [page 36](#).



Recovery Speed in the Settings Menu.

## ADJUST THE RECOVERY SPEED

1. Navigate to Recovery Speed:  
 **Settings** >  **Recovery Speed**
2. Press  /  to adjust the Recovery Speed. Changes are automatically saved.
3. Press  **Back** to return to the Detect Screen.

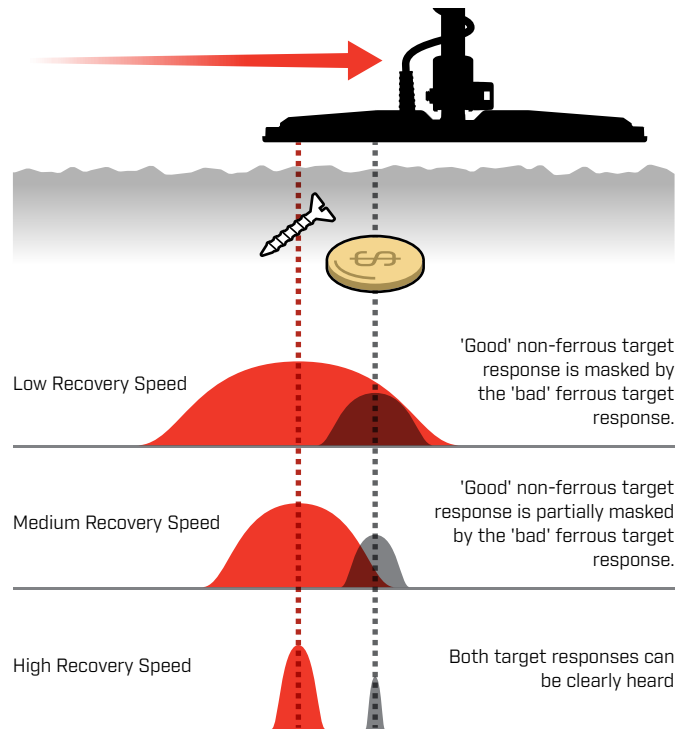
## CHOOSING A RECOVERY SPEED

A higher target Recovery Speed may increase the detector's ability to find difficult targets, however it also reduces Target ID accuracy and detection depth.

Using a lower Recovery Speed may improve detection depth in soils with low mineralisation and may reduce EMI susceptibility.

Using a lower Recovery Speed in soils with high mineralisation may reduce discrimination performance, making difficult targets harder to detect.

## Recovery Speed and Adjacent Targets



## SWING RATE

A good general swing rate is around 2-to-3 seconds from right-to-left-to-right. A higher Recovery Speed generally allows you to swing at a faster rate without missing many targets.

**A higher Recovery Speed at the same swing rate** will help to reject ground noise, however it will also decrease detection depth. If you are experiencing high levels of ground noise at the beach or when detecting underwater, try increasing the Recovery Speed to reduce the noise.

**A lower Recovery Speed at the same swing rate** will increase detection depth, however may mix more ground noise with the target response.

**Varying both Recovery Speed and swing rate** can help minimise ground noise.

# Ground Balance




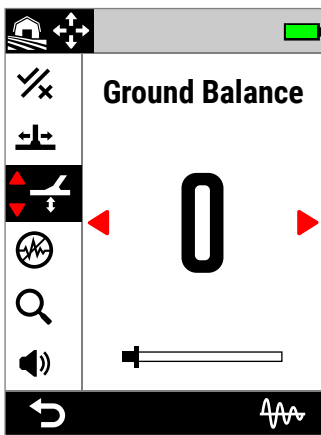
The Ground Balance setting calibrates the detector to the local ground in order to eliminate the false signals caused by mineralisation.

The Ground Balance setting has a range from -9 to 99, with a default of 0 (zero) for all Search Modes.


Tracking Ground Balance is the recommended and default ground balancing method for Goldfield General mode.

Ground Balance adjustment is local; only the current Search Mode is affected by changes to this setting.

 You can assign Auto/Tracking Ground Balance as a Soft Key Action – see [page 36](#).



Ground Balance in the Settings Menu.

 The default Ground Balance setting of 0 (zero) is recommended for All-Terrain modes because these locations typically have less mineralisation than gold prospecting locations.


However, if the ground is generating many noise signals (and/or the Sensitivity Level is set very low), then using Auto Ground Balance is recommended.

If the Auto Ground Balance process does not greatly reduce ground noise (due to highly mineralised ground or high salt levels), then repeat the Auto Ground Balance process by sweeping the Coil from side-to-side, rather than the standard up-and-down motion.




## AUTO GROUND BALANCE


With Auto Ground Balance, the detector automatically determines the best Ground Balance setting after the balancing process is initiated by the operator.

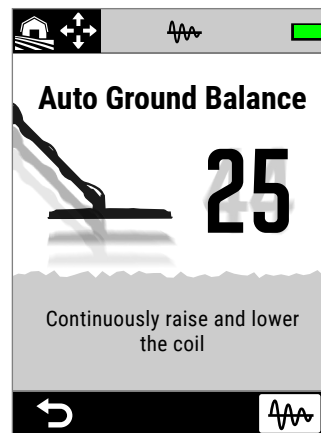
Auto Ground Balance is the recommended Ground Balance Method.

 When using Beach Modes, Auto Ground Balance is strongly recommended for best performance.

### Auto Ground Balance Procedure

1. Navigate to Ground Balance:  
 **Settings** >  **Ground Balance**
2. Press-and-hold the Right Soft Key ( **Auto Ground Balance**), and **continue to hold** throughout the Auto Ground Balance procedure.

The Tracking icon () will flash in the Status Bar, and the Auto Ground Balance animation will appear – immediately begin to raise and lower the Coil over a clear patch of soil that does not contain any targets.



The Auto Ground Balance Animation.

3. Continue to raise and lower the Coil as you observe the Ground Balance value updating dynamically on the screen. Once the number settles on a single value and the audio response has stabilised, release the Soft Key.

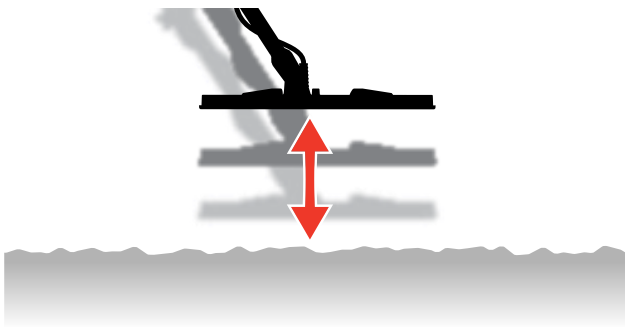
# Ground Balance *[Continued]*

## MANUAL GROUND BALANCE

Ground Balance can be manually adjusted until the minimum amount of ground signal is present.

### Manual Ground Balance Procedure

1. Navigate to Ground Balance:  
⚙️ **Settings** > 🚧 **Ground Balance**
2. Raise and lower the Coil repeatedly over a clear patch of soil that does not contain any targets.



3. Listen to the audio response to interpret the result of the Ground Balance; a low tone indicates that you should increase the Ground Balance value and a high tone indicates that you should decrease it.
4. Press ◀️/▶️ to manually change the Ground Balance value until the minimum amount of ground signal is heard.

**NOTE:** Tracking Ground Balance will be automatically turned Off if Ground Balance is adjusted manually.

## TRACKING GROUND BALANCE

Tracking Ground Balance continuously monitors the ground signal and adjusts the Ground Balance setting to ensure it is always set correctly. This is useful in locations where the ground signals are constantly changing, so you don't have to continually perform a Ground Balance.

Tracking Ground Balance is the default and recommended Ground Balance method for Beach Surf & Seawater mode and Goldfield General mode. It effectively manages the constantly changing conditions in saltwater and mineralised goldfield soils.

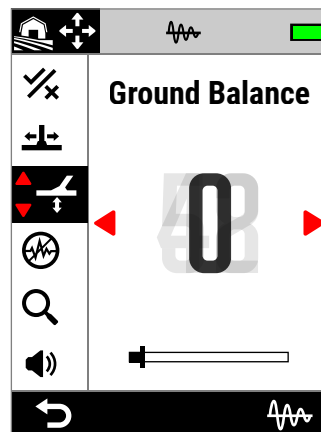
### Turn Tracking Ground Balance On/Off

1. Navigate to Ground Balance:  
⚙️ **Settings** > 🚧 **Ground Balance**
2. Press the Right Soft Key [**Tracking**] to turn Tracking Ground Balance On/Off.

When Tracking is On, the Tracking icon (📶) is displayed in the Status Bar.



**NOTE:** Tracking Ground Balance will be automatically turned Off if Ground Balance is adjusted manually.



The Ground Balance value will update automatically as it tracks to changing ground conditions.

# Noise Cancel



Detectors can become noisy due to electrical interference from power lines, electrical equipment or other detectors operating nearby. The detector interprets this interference as inconsistent, erratic detections or 'noise'.

The Noise Cancel setting allows you to change the noise cancel channel. This slightly shifts the detector transmit frequency to be less responsive to sources of noise.

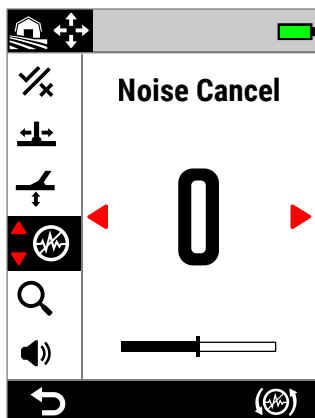
Noise Cancel affects both the audible detection noise level and pinpointing performance.

The Noise Cancel setting has 19 channels with a range from -9 to 9. It has a default setting of 0 (zero) for all Search Modes.

Noise Cancel adjustment is local; only the current Search Mode is affected by changes to this setting.

**i** Auto is the recommended Noise Cancel method. Perform a Noise Cancel each time the Frequency setting or Search Mode is changed.

**(⊗)** You can assign Noise Cancel as a Soft Key Action — see [page 36](#).



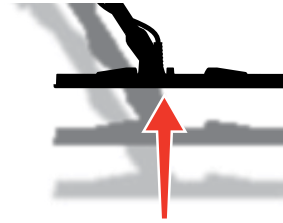
Noise Cancel in the Settings Menu.

## AUTO NOISE CANCEL

Auto Noise Cancel automatically scans and listens to every frequency channel and then selects the one with the least interference.

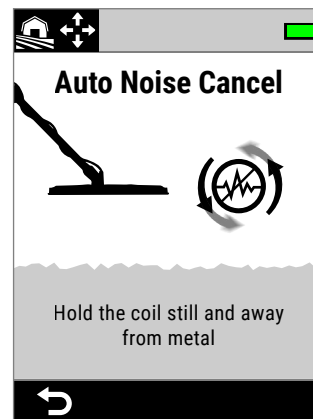
### Auto Noise Cancel Procedure

1. Hold the Coil stationary and away from metal.

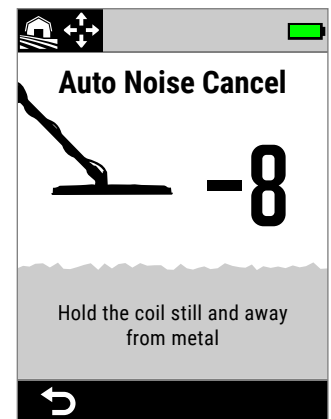


2. Navigate to Noise Cancel:  
**⚙ Settings > ⊗ Noise Cancel**
3. Press the Right Soft Key (**⊗ Auto Noise Cancel**) to start the Auto Noise Cancel process.

An animation will appear on the screen and there will be a series of ascending tones.



Auto Noise Cancel in progress.



Auto Noise Cancel complete.

4. After approximately 3 seconds, the selected channel will be displayed before returning you to the Settings Menu.

**i NOTE:** While Auto Noise Cancel selects the quietest channel based on several criteria, the selected channel may still have some audible noise.

Repeat Auto Noise Cancel or try Continuous Auto Noise Cancel to see if it will further reduce noise.

# Noise Cancel *(Continued)*

## CONTINUOUS AUTO NOISE CANCEL

In some instances, there may be more than one 'quiet' channel suitable for detecting all with similar levels of EMI noise – you might notice this after repeating the Auto Noise Cancel procedure multiple times, with each resulting in a different channel being selected.

Continuous Auto Noise Cancel continuously repeats the Auto Noise Cancel process over a longer period of time to find the quietest channel.

### Continuous Auto Noise Cancel Procedure

1. Hold the Coil stationary and away from metal.



2. Navigate to Noise Cancel:  
⚙ Settings > 📶 Noise Cancel
3. **Press-and-hold** the Right Soft Key [(📶) Auto Noise Cancel] to start Continuous Auto Noise Cancel.

An animation will appear on the screen and there will be a series of ascending tones.

4. When the first cycle is complete (approximately 3 seconds), the selected channel will be displayed.
5. Continue to hold the Soft Key to repeat as many cycles as desired – the channel will change if the detector identifies a quieter channel.

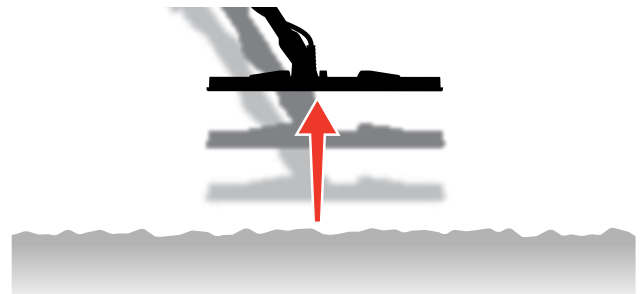
Once the channel settles on a single value and the noise levels have reduced, release the Soft Key.

## MANUAL NOISE CANCEL

Setting the Noise Cancel manually allows you to listen to each channel to select the one with the least interference. This can be useful when detecting in close proximity to other detectors or in locations with lots of electrical interference.

### Manual Noise Cancel Procedure

1. Hold the Coil stationary and away from metal.




2. Navigate to Noise Cancel:  
⚙ Settings > 📶 Noise Cancel
3. Press ◀/▶ to change the channel displayed on the screen. Pause and listen to the interference being received – *Keep the detector still during this process.*
4. Continue until you have chosen the channel with the least interference.

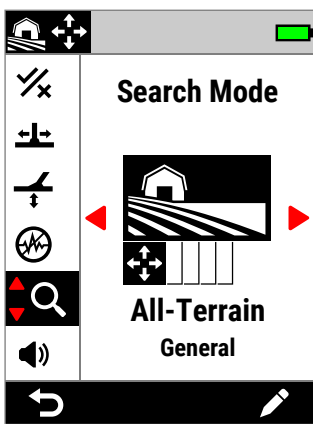
# Search Mode



The Search Mode setting allows you to choose from a selection of preset Search Modes. Each is designed to give you the best overall settings for the location you are detecting in and the types of targets you want to find or avoid.


For detailed information about individual Search Modes, see "Search Modes" starting on [page 15](#).

 You can assign Search Mode as a Soft Key Action — see [page 36](#).



Search Mode in the Settings Menu.

## CHANGE THE SEARCH MODE

 Perform a Noise Cancel ([page 62](#)) each time the Search Mode is changed.

1. Navigate to: **Settings** > **Search Mode**
2. Press **◀/▶** to cycle through the Search Modes. Choose the Mode that best suits your location and detecting intent. If you're not sure which to choose, use the General mode for your detecting location.

Changes to the Search Mode take effect immediately, so you might hear some audio variation as you move from one Search Mode to another.

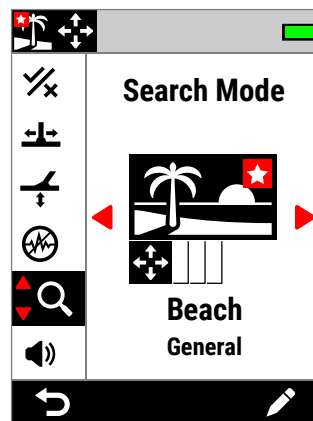
3. Press the Left Soft Key [**↶ Back**] to return to the Detect Screen. The new Search Mode icon will be displayed in the Status Bar.
4. Perform a Noise Cancel ([page 62](#)).

## FAVOURITE MODE


One Search Mode can be set as the Favourite Mode. You can then toggle between the Favourite Mode and the last-used mode by pressing any Soft Key that has Favourite Search Mode assigned to it, or by navigating to it via the Settings Menu.

Beach General is the default Favourite Search Mode.

The Favourite Mode is indicated by a star icon shown in the Status Bar and in the Settings Menu.

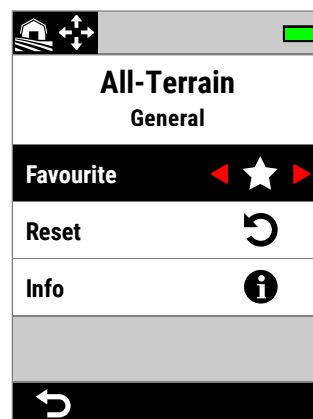


The Favourite Mode star icon in the Settings menu and Status Bar.

 You can assign Favourite Mode as a Soft Key Action — see [page 36](#). Favourite Mode is assigned by default to the Side Soft Key.

## Set the Favourite Search Mode

1. Navigate to: **Settings** > **Search Mode**
2. Press **◀/▶** to select the Search Mode you want to set as the Favourite, then press the Right Soft Key [**✎ Edit**] to open the Search Mode Editor.
3. Press **▲** to navigate to **Favourite** [**★**], then press **▶** to set the Search Mode to Favourite [**★**].



Favourite in the Search Mode Editor.



# Search Mode *(Continued)*

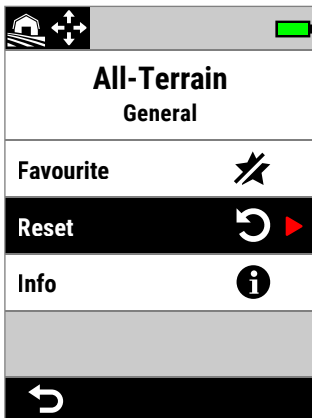
## RESET A SEARCH MODE

Individual Search Modes can easily be returned to their factory preset settings:

- Only the local settings will be reset.
- Global settings will remain in their last-used state.

### Reset a Search Mode

1. Navigate to Search Mode:  
⚙ **Settings** > 🔍 **Search Mode**
2. Press ◀/▶ to select the Search Mode you want to reset.
3. Press the Right Soft Key [**Edit**] to open the Search Mode Editor.
4. Press ▲/▼ to navigate to **Reset**, then press ▶.  
A message will be displayed.



Reset in the Search Mode Editor.

5. If you are sure that you want to reset the selected Search Mode (this cannot be undone), press the Right Soft Key [**Confirm**] to confirm.  
A message will be displayed confirming that the Search Mode has been reset.

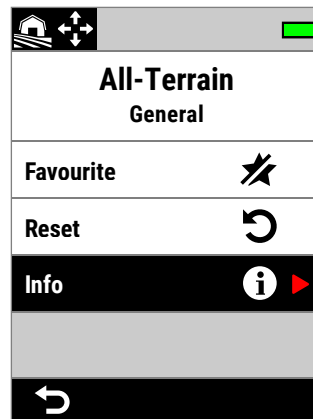
## SEARCH MODE INFORMATION

Each Search Mode has underlying settings to give specific performance advantages in common detecting scenarios.

You can view the Search Mode information on-the-go to help you choose the best mode for your needs.

### View Search Mode Information

1. Navigate to Search Mode:  
⚙ **Settings** > 🔍 **Search Mode**
2. Press ◀/▶ to select the Search Mode you want to view information for.
3. Press the Right Soft Key [**Edit**] to open the Search Mode Editor.
4. Press ▼ to navigate to **Info**, then press ▶ to view information about the Search Mode.



Info in the Search Mode Editor.

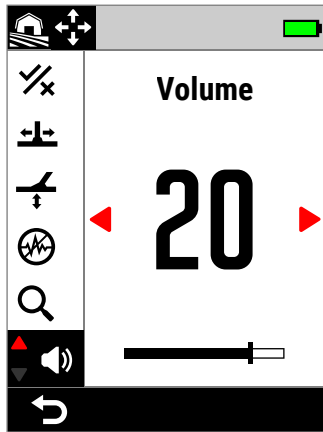
# Volume



Volume adjusts the loudness of all detector audio, including detection signals, the threshold tone, and confirmation tones.

Volume setting is global, and has a range from 0 (Off) to 25 with a default setting of 20.

When the Volume is set to 0, all audio is muted (Off).



Volume in the Settings Menu.

For a more nuanced volume adjustment there are additional volume controls for individual target tones, ferrous tones, and the threshold tone. See the following:

- ["Adjust the Volume of Tone Regions" \(page 49\)](#)
- ["Ferrous Volume" \(page 50\)](#)
- ["Adjust the Threshold Level/Pitch" \(page 46\)](#)

## ADJUST THE VOLUME

1. Navigate to Volume:  
⚙️ **Settings** > 🔊 **Volume**
2. Press ◀️/▶️ to adjust the volume to a comfortable level, making sure that loud signals (close or large targets) do not hurt your ears.

# Detector Audio

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# Wireless Headphones

## ML 105 WIRELESS HEADPHONES

MANTICORE is supplied with Minelab ML 105 low-latency wireless headphones. ML 105 headphones can also be used as wired headphones – see "Wired Headphones" on page 69.

For detailed information on charging, pairing and other controls, refer to the instructions supplied with the headphones. The instructions can also be downloaded at [www.minelab.com/support/downloads/product-manuals-guides](http://www.minelab.com/support/downloads/product-manuals-guides).



Minelab ML 105  
Wireless Headphones.

## PAIR WIRELESS HEADPHONES

1. Long-press (2 seconds) the Wireless Side Button (📶) to initiate Wireless Pairing mode. The Wireless Audio Indicator (📶+) in the Status Bar will flash rapidly.
2. Press-and-hold the Multi Function Button (the centre button) on the ML 105 headphones until the Status LED flashes red and blue.
3. Your headphones will connect automatically – the Wireless Audio Indicator (📶+) in the Status Bar will remain On, and the LED on the headphones will flash blue once every 3 seconds.

If no connection is made within 5 minutes, Wireless Audio will automatically turn Off.

## RE-CONNECT PREVIOUSLY PAIRED HEADPHONES

1. Press the Wireless Side Button (📶) to turn wireless On.
2. Press the Multi Function Button (the centre button) on the ML 105 headphones to turn them On.
3. The headphones will re-connect automatically.

## THE WIRELESS AUDIO INDICATOR

The Wireless icon appears in the Status Bar when Wireless is On. It indicates the current Wireless connection status depending on its display state.



- **Rapid flashing:** Detector is attempting to pair.
- **Solid on:** Detector is connected to wireless headphones accompanied by the Headphones Connectivity icon.
- **Slow flashing:** The detector is attempting to re-connect with previously-paired wireless headphones.

## FACTORY RESET THE HEADPHONES

Refer to the instructions supplied with the headphones.

# Wired Headphones

The ML 105 wireless headphones are supplied with an auxiliary cable that allows the headphones to be used as wired headphones.



Minelab ML 105 Wireless Headphones with included auxiliary cable.

Any standard 3.5 mm (1/8-inch) headphones can also be connected to MANTICORE, however the headphone connector overmold must be less than 9 mm (0.35") in diameter, otherwise the connector will not fit inside the waterproof Headphone Socket.



6.35 mm (1/4-inch) headphones can be used with MANTICORE via a headphone adaptor, available as an accessory.

## CONNECT WIRED HEADPHONES

1. Unscrew the waterproof dust-cap from the Headphone Socket on the rear of the Control Pod. If it is tight, it can be loosened with a small coin.
2. Plug the headphones into the Headphone Socket.

When wired headphones are connected, the Headphones Connection icon (🎧) is displayed in the Status Bar.



! When headphones are not in use, make sure that the waterproof dust-cap on the rear of the Control Pod is screwed firmly into place.

## CONNECT WATERPROOF HEADPHONES

MANTICORE and the Minelab 3.5 mm (1/8-inch) waterproof headphones can be fully submerged to a depth of 5 metres (16-ft).

Minelab waterproof headphones (not included) must be used for underwater detecting because they have a unique connector that forms a waterproof seal when connected to the MANTICORE Headphone Socket.



1. Unscrew the waterproof dust-cap from the Headphone Socket on the rear of the Control Pod. If needed, it can be loosened with a small coin.
2. Make sure that the Headphone Socket and Connector are dry and free from sand, dust and dirt.
3. Plug the headphones into the Headphone Socket on the back of the Control Pod.
4. Carefully align the Retaining Ring over the connector thread and screw them together making sure no cross-threading occurs.

The Headphones Connection icon (🎧) will appear in the Status Bar.

5. Lightly tighten the Retaining Ring.

! If the audio is too quiet when using the Minelab Waterproof Headphones, try turning on Underwater Boost — See "Underwater Boost" (page 40).

## HEADPHONE SOCKET SUBMERSION

Before detecting underwater without headphones, **always** make sure the waterproof dust-cap is securely fitted to the Headphone Socket.

While the uncovered Headphone Socket is waterproof and can be submerged without immediately damaging the internal electronics of the detector, it can cause corrosion of the socket and false headphone detection.

! Whenever the Headphone Socket has been submerged, follow all advice listed in "Headphone Socket Maintenance" (page 78).

# Troubleshooting & Errors

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# Solving Noise

## IDENTIFYING THE SOURCE OF NOISE

Knowing what to do when your detector becomes noisy is a key detecting skill. Accurately identifying the type of noise you are experiencing will help you to apply the correct solution.

Detectors are designed to process a range of complex signals from targets, the ground, nearby electrical equipment, and the environment. There are natural fluctuations in the signals received by the detector throughout an average detecting session – these changes can result in the detector audio becoming noisy and erratic.

When detecting, there are generally three types of noise that can be heard depending on the detector settings, detecting location, or other factors.

### Targets

Detected targets usually produce distinct, repeatable tones that are not considered to be 'noise'.

### Ground Noise

Ground noise is present when the metal detector interprets the ground as being a target due to the changing mineral content of the ground.

If detections are erratic but resolve when the Coil is raised above the ground, this is likely caused by ground noise.



To resolve ground noise, adjust the Ground Balance setting ([page 60](#)).

### Electromagnetic Interference (EMI)

Crackling and popping sounds when the Coil is raised into the air and held still. This is usually caused by Electromagnetic Interference (EMI) due to stormy weather, nearby power-lines or by other metal detectors operating in close proximity.



To resolve EMI, Adjust the Noise Cancel setting ([page 62](#)).

If you have tried Noise Cancel a few times and there is still a lot of EMI present, you can try reducing the Sensitivity Level, or try the single frequencies to see if they are quieter. Each time you change the frequency, perform a Noise Cancel.



# General Troubleshooting

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Try the recommended actions listed, in order, before contacting an Authorised Service Centre.

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## **Detector does not turn On, or turns Off by itself (with or without a Critically Low Battery Error Message)**

1. Check that the Coil is connected.
  2. Charge the detector.
  3. Check that the detector is charging and the green Charge Status LED is flashing.
  4. Check that you are charging from a USB charging source with a 2A @ 5V charging capacity.
  5. Check that the magnetic connector and Charging Interface on the back of the Control Pod are clean and free of debris.
  6. Check that the USB charging cable is properly seated/connected to the detector.
- 

## **Erratic/excessive noise**

1. Move away from local sources of Electromagnetic Interference (EMI).
  2. Perform an Auto Noise Cancel.
  3. Perform a Ground Balance.
  4. Reduce the Sensitivity Level.
- 

## **No sound – Wired headphones**

1. Check that the detector is On, and start-up has completed.
  2. Check that the headphones are plugged in and fully inserted into the Headphone Socket.
  3. Check that the Headphones Connection icon (🎧) is displayed in the Status Bar.
  4. Check that Volume is set to an audible level.
  5. Unplug the headphones and confirm that the detector Speaker is audible.
  6. Check that the headphones connector is free of moisture or debris.
  7. If available, try using a different set of headphones.
- 

## **No sound – ML 105 wireless headphones**

1. Check that the headphones are turned On.
  2. Check that detector Wireless Audio is turned on and paired with headphones (i.e. the Wireless icon is steady on).
  3. Check that the headphones are charged.
  4. Check that the detector Volume is set to an audible level.
  5. Check that the volume control on the headphones is set to an audible level.
  6. Pair the detector to a different set of compatible wireless headphones.
  7. Try wired headphones.
- 

## **ML 105 wireless headphones will not pair**

1. Try powering off the ML 105 headphones and then re-pair.
  2. Ensure the headphones are within 1 metre (3 feet) of the detector Control Pod, with no obstructions between the headphones and detector (including your own body).
  3. Move away from sources of interference such as mobile phones.
  4. If there are many other Bluetooth or Wireless devices nearby, pairing may take longer. Move away from the area and try to pair again.
  5. Factory Reset the headphones and attempt to re-pair to the detector.
  6. Pair the detector to a different pair of compatible wireless headphones, then attempt to re-pair the original headphones to the detector.
- 

## **Distortion/crackling heard in ML 105 headphones when connected via wireless audio.**

1. Ensure the headphones are within 1 metre (3 feet) of the detector Control Pod, with no obstructions between the headphones and detector (including your own body).
-

# General Troubleshooting *(Continued)*

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## **Detector is charging and the Charge Status LED is flashing, but the charge indicator is missing in the Status Bar**

1. Check that you are charging from a USB charging source with a 2 A @ 5 V charging capacity.
  2. If charging from a lower-powered USB port (such as a laptop port), the detector may be discharging the battery at a faster rate than it is charging. This prevents the charge indicator from appearing. Try charging with the detector switched off.
  3. Avoid using a USB extension cable when charging.
- 

## **Speaker is squeaky or muffled after submersion in cold water**

1. Allow up to 30 minutes for the detector internal air pressure to return to normal. Note, laying the detector on the ground with the Control Pod standing up may equalise internal air pressure faster.
- 

## **Headphone icon is On, but no headphones are connected**

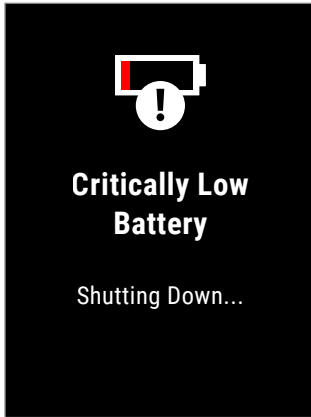
There may be water inside the Headphone Socket causing false detection of wired headphones.

1. Check that the Headphone Socket is clear of water and obstructions.
  2. If water is present, use a warm (not hot) air dryer to dry the Socket.
-

# Errors

In the event of an Error, try the recommended actions listed. If they do not resolve the Error, or for Errors that are not listed here, please contact a Minelab Authorised Service Centre.

## CRITICALLY LOW BATTERY ERROR



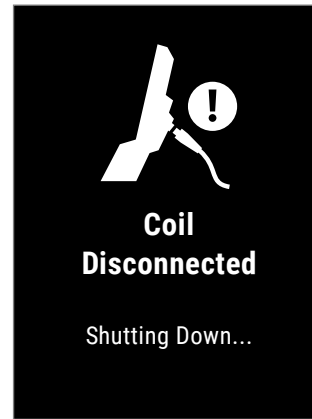
The Criticality Low Battery Error message.

The detector will shut-down automatically 5 seconds after reporting this Error.

To resolve the Error, try the following:

1. Recharge the battery or connect a USB power bank.
2. Check that you are charging from a USB charging source with a 2A @ 5V charging capacity.
3. If charging from a lower-powered USB port (such as a laptop port), the detector may be discharging the battery at a faster rate than it is charging. This prevents the charge indicator from appearing – try charging with the detector switched Off.
4. Avoid using a USB extension cable when charging.

## COIL DISCONNECTED ERROR



The Coil Disconnected Error message.

The detector will shut-down automatically 5 seconds after reporting this Error.

To resolve the Error, try the following:

1. Check that the Coil Connector is connected properly at the back of the Control Pod.
2. Check the Coil Cable and Coil for visible signs of damage.
3. Try another Coil, if you have one available.
4. Contact a Minelab Authorised Service Centre.

## SOFTWARE UPDATE FAILED ERROR

A Software Update Failed Error can occur when a critical part of the Software Update fails preventing the detector from functioning. This is recoverable by the user, and can occur when the update process is interrupted, for example if the magnetic USB cable is disconnected during the update.

To resolve the Error, try the following:

1. Try updating the detector software again.
2. Ensure the magnetic USB cable remains securely connected while the update is in progress, until the Minelab Update Utility (MUU) reports that the update has been successfully completed.

# Errors *(Continued)*

## WIRELESS SOFTWARE UPDATE ERROR



The Wireless Software Update Error message.

Press **(↩ Back)** to resume normal detector operation, but without wireless audio.

A Wireless Software Update Error can occur when the wireless audio component of a detector Software Update fails. Like the Software Update Failed Error, this may occur if the update process is interrupted. The detector may function in this instance, but Wireless audio may not work.

To resolve the Error, try updating the detector software again, ensuring that the magnetic USB cable remains securely connected until the update completes.

## INTERNAL ERROR

To resolve an Internal Error, try the following:

1. Restart the detector.
2. Perform a Factory Reset — see "[Factory Reset](#)" (page 39).

If the Error persists, contact a Minelab Authorised Service Centre.

## LARGE METAL OVERLOAD

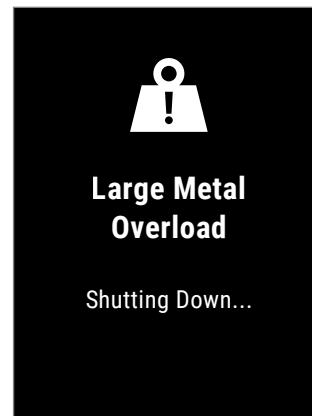
MANTICORE will display the Large Metal Overload icon if a very large metal mass is detected close to the coil. It is designed to prevent the battery from becoming flat in the event that the detector was not turned Off before storing in a vehicle, metal storage locker, etc.

The Large Metal Overload icon will flash in the Status Bar for up to 5 minutes.



To resolve the condition, move the detector away from the overload source. The detector will resume normal operation immediately once the electronics are no longer overloading.

If the overload condition remains uninterrupted for 5 minutes, the Large Metal Overload message will be displayed for 5 seconds before the detector shuts-down automatically.



The Large Metal Overload message.

The detector will shut-down automatically 5 seconds after displaying this message.

# Safety, Care & Maintenance

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# Detector Care and Safety

## GENERAL CARE AND SAFETY

- Wash your hands before handling the detector when using sunscreen or insect repellents.
- The Display lens is made from quality optical plastic for clear viewing of the screen and is therefore prone to scratching or serious damage if not treated with due care. Application of the supplied screen protector is strongly recommended. Replace it periodically if it becomes scuffed or scratched.
- Never clean the Display lens using solvents or alcohol-based cleaners. To clean the Display lens, use a slightly damp cloth with mild soap detergent. Dry with a clean lint-free cloth to remove water-spots.
- Do not use solvent or alcohol-based cleaners to clean any part of your detector. Use a slightly damp cloth with mild soap detergent.
- Do not submerge the detector in water with the Control Pod disassembled from the shaft, as the battery compartment is only waterproof when assembled to the supplied shaft. Note also that the use of after-market shafts prevents the battery compartment from sealing correctly, causing it to leak/become damaged.
- Do not allow the detector to come into contact with gasoline/petrol or other petroleum-based liquids.
- Do not bring the detector or accessories into contact with sharp objects as this may cause scratches and damage.
- Avoid getting sand and grit in any moving parts including the Shafts, Camlocks and Yoke assembly. If sand and grit accumulates in these parts they should be rinsed in fresh water then dried thoroughly.
- Prior to going detecting, check that the Camlocks are gripping the Shafts tightly and do not slip. Follow the advice listed in ["Maintenance of Parts" – "Tightening the Camlocks" \(page 78\)](#).
- Do not expose the detector to extreme temperature conditions. The storage temperature range is from  $-20^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$  to  $+158^{\circ}\text{F}$ ). Avoid leaving it in a hot vehicle.
- Ensure the Coil Cable is kept in good condition, free of strain, kinks and tight bends.
- Do not expose accessories not listed as waterproof to liquid/moisture or excessive humidity.
- Do not allow small children to play with the detector or accessories, small parts are a choking hazard.
- Only charge the detector and accessories according to the instructions provided.
- Do not charge the detector or accessories in extreme temperature conditions – Only charge the detector in ambient temperatures between  $0^{\circ}\text{C}$  and  $+40^{\circ}\text{C}$  ( $+32^{\circ}\text{F}$  and  $+104^{\circ}\text{F}$ ).
- Do not use tools to tighten the Coil Connector to the Control Pod, this will damage the Control Pod. If the Coil Connector is not fitting easily, flush any dirt/grit away with fresh water then allow it to dry before trying again.
- Do not attempt to adjust the Coil Connector nut on the back of the Control Pod. This is locked in place and tampering will damage the Control Pod.
- Do not poke sharp objects into the grille to clean it, this will damage the Speaker and compromise waterproofing. Clean the Speaker by flushing fresh water through the grille.

# Detector Care and Safety *[Continued]*

## MAINTENANCE OF PARTS

### Tightening the Camlocks

The plastic parts of the Camlock stretch slightly during normal use and may need adjusting periodically (every few months of regular use).

Adjust the Camlocks to reduce the tension prior to storing the detector for a month or longer.

1. Open the Camlock.



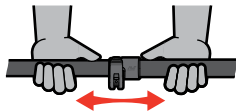
2. Gently tighten the Thumbscrew in small increments.



3. Close the Camlock.



4. Check after adjustment by applying normal force to the Shafts.



5. Repeat until the Shafts do not collapse easily under normal force.

**⚠ Do not over-tighten the thumbscrew** as this may damage the Camlock parts.

### Battery Maintenance

Lithium-ion battery performance may degrade if unused for long periods of time. Fully charge the battery at least once every 3 to 4 months to prevent this from occurring.

Even with correct care and maintenance, Lithium-ion battery performance reduces over time with normal use. Therefore the battery may need to be replaced every few years. Replacement batteries can be supplied and installed by a Minelab Authorised Service Centre.

**⚠ Do not apply any chemicals including O-ring lubricant, grease or silicon grease to seals or O-rings if replacing the internal battery**, as this will damage the battery seal.

### Coil Maintenance

The Skidplate is a sacrificial/replaceable part intended to protect the Coil from damage. Replace the Skidplate when it becomes excessively worn, but before it wears through in any place.

### After Beach/Saltwater Detecting

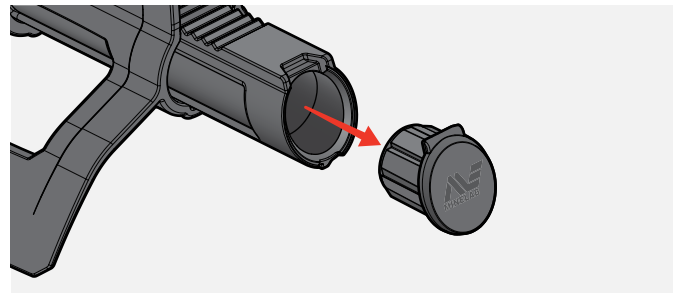
Sand is abrasive, and salt can corrode metal parts of the detector over time. Following the listed advice is essential to avoid damage to parts of your detector.

### Removing Sand From the Detector

Immediately after detecting at the beach or in saltwater, rinse all parts of the detector with fresh water. Avoid wiping the detector to remove sand as this may cause the sand to scratch the detector.

Open both Camlocks and flush with clean fresh water.

Remove the rubber Shaft Bung then flush the insides of the Shafts with clean fresh water.



### Headphone Socket Maintenance

Immediately after underwater detecting sessions, make sure that the area around the connector is dry and free of sand/mud **before** disconnecting the headphones (or the waterproof dust-cap).

If any sand/mud accidentally gets inside the Headphone Socket, flush it gently with fresh water before drying it thoroughly.

### ML 105 Headphones Maintenance

For ML 105 care and safety, refer to the Instructions supplied with the headphones. The instructions can also be downloaded at [www.minelab.com/support/downloads/product-manuals-guides](http://www.minelab.com/support/downloads/product-manuals-guides).



# Specifications, Presets & Compliance

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# Technical Specifications

|                                    |  |
|------------------------------------|--|
| <b>Search Modes (Customisable)</b> | All-Terrain (5), Beach (4), Goldfield (1)  |
| <b>Operating Frequencies</b>       | Multi-IQ+, 5 kHz, 10 kHz, 15 kHz, 20 kHz, 40 kHz   |
| <b>Noise Cancel</b>                | Auto, Continuous Auto, Manual (-9 to +9)   |
| <b>Ground Balance</b>              | Auto, Manual, Tracking (-9 to 99)  |
| <b>Sensitivity</b>                 | 1 to 35  |
| <b>Target Identification (TID)</b> | Conductive: 0 to 99 with ferrous indication  |
| <b>2D ID Map</b>                   | Two-Dimensional ID Map System with Target Trace  |
| <b>Volume (Global)</b>             | 0 to 25  |
| <b>Target Tones</b>                | 1, 2, 5-Tone   1, 2, 5-Region All Tones  |
| <b>Target Volume</b>               | 0 to 25  |
| <b>Target Pitch</b>                | 1 to 50  |
| <b>Ferrous Volume</b>              | 0 to 25  |
| <b>Ferrous Pitch</b>               | 1 to 50  |
| <b>Stabiliser</b>                  | 0 to 12  |
| <b>Audio Themes</b>                | Normal, Enhanced, Depth, Prospecting   |
| <b>Volume Profiles</b>             | Simple, Medium, Rich   |
| <b>Threshold Level</b>             | 0 to 25  |
| <b>Threshold Pitch</b>             | 1 to 50  |
| <b>Recovery Speed</b>              | 0 to 8   |
| <b>Ferrous Limits</b>              | Upper: 0 to 14   Lower: 0 to 9   |
| <b>Ferrous Limits Custom</b>       | 1 to 4   |
| <b>Shortcuts</b>                   | Soft Keys: 2 (Action Bar), 1 (User Button)   |
| <b>Depth Indicator</b>             | 5 levels   |
| <b>Pinpoint Mode</b>               | Yes  |
| <b>Wireless Audio</b>              | Yes  |
| <b>Shaft System</b>                | 3-piece highly collapsible carbon-fibre  |
| <b>Length</b>                      | Extended: 1440 mm (56.7-inch) Collapsed: 630 mm (24.8-inch)  |
| <b>Weight</b>                      | 1.3 kg (2.9 lb)  |
| <b>Standard Coil (M11)</b>         | 11-inch Double-D Coil with skid plate (waterproof to 5 m / 16 ft)  |
| <b>Audio Output</b>                | Speaker, 3.5 mm (1/8") headphones, Wireless low-latency headphones   |
| <b>Headphones (included)</b>       | Minelab ML 105 wireless low-latency headphones (non-waterproof)  |
| <b>Display</b>                     | Colour LCD (3.5")  |
| <b>Display Backlight</b>           | Manual 1 to 10, Auto   |
| <b>Keypad Backlight</b>            | Off, Low, Medium, High, Auto   |
| <b>Flashlight</b>                  | Off, Low, Medium, High   |
| <b>Handgrip Vibration</b>          | On, Off  |
| <b>Battery</b>                     | Internal rechargeable Lithium-ion battery  |
| <b>Battery Runtime</b>             | Approx. 10 hours   |
| <b>Battery Charge Time</b>         | Approx. 7 hours  |
| <b>Operating Temperature Range</b> | -10°C to +40°C (+14°F to +104°F)   |
| <b>Storage Temperature Range</b>   | -20°C to +70°C (-4°F to +158°F)  |
| <b>Waterproof</b>                  | Waterproof to 5 m / 16 ft, IP68  |
| <b>Key Technologies</b>            | Multi-IQ+ (High Power Simultaneous Multi-Frequency)  |
| <b>Included Accessories</b>        | USB Charging Cable, 5x Screen Protectors, 3.5mm (1/8") Auxiliary Cable, Headphone Case   |
| <b>Software Upgradable</b>         | Yes, via USB connection (Windows and Mac OS compatible)  |
| <b>Warranty</b>                    | Register your product warranty online at <a href="https://register.minelab.com">register.minelab.com</a> . Full warranty terms and conditions are available to download at <a href="https://www.minelab.com/support/product-warranty">www.minelab.com/support/product-warranty</a> . |





Equipment may vary according to the model or items ordered with your detector. Minelab reserves the right to respond to ongoing technical progress by introducing changes in design, equipment and technical features at any time. For the most up-to-date specifications for your MANTICORE detector, visit [www.minelab.com](https://www.minelab.com).

# Software Updates

The MANTICORE detector contains software that can be updated via the supplied USB charging cable, which has data transfer capability.

Visit [www.minelab.com](http://www.minelab.com) for the most up-to-date MANTICORE software and updating instructions.

## View Detector Software Info

1. Navigate to:  
 **Settings** >  **General Settings** >  **Software Info**
2. Press  to view software information including Software, Hardware, and Wireless versions, and the User Verification Code (UVC).

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## DISCLAIMER

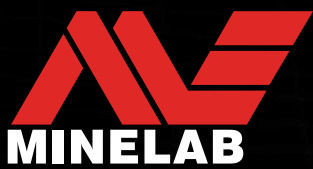
The Minelab metal detector described in this instruction manual has been expressly designed and manufactured as a quality metal detector and is recommended for treasure and gold detecting in non-hazardous environments. This metal detector has not been designed for use as a mine detector or as a live munitions detection tool.

MINELAB®, MANTICORE®, Multi-IQ+®, M11™, and SCORPION™ are trademarks of Minelab Electronics Pty. Ltd.

## COMPLIANCE

To view product compliance information:  **Settings** >  **General Settings** >  **Compliance**


















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4901-0428-2



# MANTICORE® Default Settings

## LOCAL SETTINGS

|                                  | <br><b>All-Terrain</b> |  |  |   |  | <br><b>Beach</b>   |  |  |   | <br><b>Goldfield</b> |     |
|----------------------------------|---|--|--|---|--|---|--|--|---|---|-----|
|                                  | <br><b>General</b>       | <br><b>Fast</b> | <br><b>Low Conductors</b> | <br><b>High Conductors</b> | <br><b>Trash Reject</b> | <br><b>General</b> | <br><b>Low Conductors</b> | <br><b>Deep</b> | <br><b>Surf &amp; Seawater</b> | <br><b>General</b>   |     |
| ★ <b>Favourite Search Mode</b>   | No  | No   | No   | No  | No   | Yes   | No   | No   | No  | No  |     |
| 📡 <b>Frequency</b>               | Multi-IQ+   | Multi-IQ+  | Multi-IQ+  | Multi-IQ+   | Multi-IQ+  | Multi-IQ+   | Multi-IQ+  | Multi-IQ+  | Multi-IQ+   | Multi-IQ+   |     |
| 🔊 <b>Audio Theme</b>             | Normal  | Depth  | Enhanced   | Normal  | Normal   | Normal  | Normal   | Prospecting  | Normal  | Prospecting   |     |
|                                  | Threshold Level   | 0  | 0  | 0   | 0  | 0   | 0  | 0  | 0   | 12  |     |
|                                  | Threshold Pitch   | 8  | 8  | 8   | 8  | 8   | 8  | 22   | 8   | 22  |     |
|                                  | Profile   | Medium   | Medium   | Medium  | Rich   | Medium  | Medium   | Medium   | Medium  | Medium  |     |
|                                  | Ferrous Tone  | —  | —  | —   | —  | —   | —  | —  | On  | —   | Off |
|                                  | Min./Max. Pitch   | —  | Min. 12 / Max. 50  | —   | —  | —   | —  | —  | —   | —   | —   |
|                                  | Ferrous Pitch   | —  | 1  | —   | —  | —   | —  | —  | —   | —   | —   |
| 🎵 <b>Target Tones</b>            | 2-Region All Tones  | —  | 5-Region All Tones   | 2-Region All Tones  | 5-Tone   | 5-Region All Tones  | 5-Region All Tones   | —  | 2-Tone  | —   |     |
|                                  | Tone Break  | 50   | —  | 4, 20, 60, 90   | 5  | 10, 20, 60, 90  | 10, 20, 60, 90   | —  | 50  | —   |     |
|                                  | Tone Pitch  | 15/25, 36/44   | —  | 1/1, 18/24, 25/32, 33/40, 41/48   | 1/1, 20/44   | 10, 14, 24, 36, 50  | 15/21, 22/24, 25/32, 33/40, 41/48  | 15/21, 22/24, 25/32, 33/40, 41/48  | —   | 14, 40  | —   |
|                                  | Tone Volume   | 25, 25   | —  | 4, 25, 25, 25, 25   | 8, 25  | 25, 25, 25, 25, 25  | 25, 25, 25, 25, 25   | 25, 25, 25, 25, 25   | —   | 25, 25  | —   |
| 🎵 <b>Ferrous Tones</b>           | Ferrous Volume  | 8  | 4  | 4   | 8  | 12  | 12   | 12   | 12  | 12  |     |
|                                  | Ferrous Pitch   | 1  | 1  | 1   | 1  | 1   | 1  | 1  | 1   | 1   |     |
|                                  | Stabiliser  | 1  | 4  | 0   | 4  | 7   | —  | —  | —   | —   |     |
|                                  | Stabiliser Filter   | Off  | Off  | Off   | Off  | Off   | —  | —  | —   | —   |     |
| 📏 <b>Ferrous Limits</b> Preset   | Upper 9, Lower 4  | Upper 7, Lower 3   | Upper 9, Lower 3   | Upper 9, Lower 3  | Upper 10, Lower 6  | Upper 8, Lower 5  | Upper 8, Lower 5   | Upper 8, Lower 5   | Upper 8, Lower 5  | Upper 6, Lower 1  |     |
| ✂️ <b>Discrimination Pattern</b> | ✗ Fe, 0 to 4  | ✗ Fe, 0 to 5   | ✗ Fe, 0 to 4   | ✗ Fe, 0 to 5  | ✗ Fe, 0 to 12  | ✗ Fe, 0   | ✗ Fe, 0  | ✗ Fe, 0  | ✗ Fe, 0   | ✗ Fe, 0   |     |
|                                  | ✓ 5 to 99   | ✓ 5 to 99  | ✓ 5 to 99  | ✓ 6 to 99   | ✓ 13 to 99   | ✓ 1 to 99   | ✓ 1 to 99  | ✓ 1 to 99  | ✓ 1 to 99   | ✓ 1 to 99   |     |
| 📏 <b>Recovery Speed</b>          | 5   | 7  | 6  | 5   | 5  | 4   | 4  | 4  | 4   | 6   |     |
| ✈️ <b>Ground Balance</b>         | Manual  | 0  | 0  | 0   | 0  | 0   | 0  | 0  | 0   | 0   |     |
|                                  | Tracking  | Off  | Off  | Off   | Off  | Off   | Off  | Off  | Off   | On  |     |
| 🚫 <b>Noise Cancel</b>            | 0   | 0  | 0  | 0   | 0  | 0   | 0  | 0  | 0   | 0   |     |

## GLOBAL SETTINGS

|                           |            |                         |   |
|---------------------------|------------|-------------------------|---|
| 👁️ <b>Sensitivity</b>     | 20         | 🔑 <b>Soft Keys</b> Side | Favourite Mode                                      |
| 📶 <b>Vibration</b>        | Off        | Left                    | All Metal   |
| ☀️ <b>Lighting</b>        | Display    | 9                       | Right   |
|                           | Keypad     | Off                     | Accept / Reject                                     |
|                           | Flashlight | Off                     | 88 <b>Ferrous Indication</b> Black Target ID Number |
| 👤 <b>Underwater Boost</b> | Off        |                         |   |

**i** All detector settings are applied at either a global or local level.  
**Global settings** are applied to all Search Modes.  
**Local settings** are only applied to the enabled Search Mode.