

MD-5002 Metal Detector



INSTRUCTION MANUAL

1	Set-Up and Safety	3
2	Instructions On Environment Protection	3
3	Warnings	4
4	Safety Instructions	5
5	Introduction	6
6	Location of Controls and Indicators	7
7	Assembly	8
8	Installing Batteries	10
9	Battery Precautions	10
	9.1	11
	9.1	11
10	Battery Power	11
11	Adjusting The Meter	11
12	Using Headphones	12
	12.1 Connection	12
	12.2 Listening Safety	12
	12.3 Traffic and Surrounding Safety	12
13	External Power Supply	13
14	Principle of Operation	13
15	Controls & Definitions	14
	15.1 Zeroing Button	14
	15.2 Power ON / OFF Switch	14
	15.3 Mode Switch	14
	15.4 Critical Sound Tuner Knob	14
	15.5 Ferrous / Non Ferrous Knob	15
16	Tuning Procedures	15
	16.1 Indoor Testing.....	15
	16.2 Field Tests	16
	16.2.1 Ground Balance Mode	16
	16.2.2 Discrimination Mode	17
17	Detection Examples	18
	17.1 Precious Metal.....	18
18	Care and Maintenance	19
19	Technical Specifications	19
20	Customer Service	20

1 Set-Up and Safety

Please observe the following points.



Electrical devices are not for children

Never allow children to use electrical devices unsupervised. Batteries / rechargeable batteries can be extremely dangerous if swallowed.

Therefore keep the device and batteries out of reach of small children. If a battery is swallowed, seek medical help immediately.



Proper Recycling

Batteries and packaging material should not be disposed of in domestic waste. Batteries must be handed in to a used-battery collection point. Separated disposal of packaging material cares for the environment.



Moisture and Cleaning

This product is not waterproof, only the coil is showerproof. Do not immerse the unit in water.

If water penetrates the unit, it can cause serious damage.

Do not use cleaning agents which contain alcohol, ammonia, benzene or abrasives, as these can damage the unit.

Use a soft, damp cloth for cleaning.



Heat

Do not expose the unit to direct sunlight.

Ensure that the device is not exposed to any direct heat sources, such as radiators or open fires.

Ensure that the unit is not covered.

Interference with other equipment

If interference occurs during use, place the device in a different location.

2 Instructions On Environment Protection



Do not dispose of this product in the usual household garbage at the end of its life cycle. Hand it over at a collection point for the recycling of electrical and electronic appliances. The symbol on the product, the instructions for use or the packing will inform about the methods for disposal.

The materials are recyclable as mentioned in its marking. By recycling, material recycling or other forms of re-utilization of old appliances, you are making an important contribution to protect our environment.

Please inquire with your community council for the authorized disposal location.

3 Warnings

- **Before using this unit, read and follow all warnings and instructions in this manual, even if you are familiar with this product.**
- **This unit is not intended for use by young children or infirm persons unless they are adequately supervised by a responsible person to ensure that they can use the unit safely.**
- **Young children should be supervised to ensure that they do not play with the unit.**

Read And Save These Instructions

4 Safety Instructions

This unit has been engineered and manufactured to assure your personal safety. However, improper use can potentially result in electrical shock or fire hazard. In order not to defeat the safeguards incorporated into this unit, observe all the following basic rules for installation, use and servicing.

When using electrical appliances, basic safety precautions should always be followed, including the following:

1. Carefully read this instruction manual before using this unit.
2. Keep unit out of reach of children and ensure they do not play with the unit.
3. Always operate the unit from a power source of the same voltage as indicated on the product identification plate.
4. Use this unit only for its intended use. This Unit is intended for household use only and not for commercial or industrial use.
5. Do not use this unit if it has been damaged.
6. Use only accessories recommended or supplied by an authorised service centre or qualified dealer. The use of accessories not intended for use with this unit may cause injuries to the user or damage to the unit.
7. Do not subject this unit to heat sources (e.g. radiators or stoves), direct sunlight, excessive dust or mechanical vibrations.
8. Turn off and remove batteries before storing.
9. There are no user serviceable parts in this unit.
10. No naked flame sources, such as lighted candles, should be placed on or near this unit.
11. If this unit is to be used by a third party, please supply the instruction manual with it.
12. No liability can be accepted for any damage caused by non-compliance with these instructions or any other improper use or mishandling of unit.
13. This product is not waterproof, only the search coil is showerproof. Do not immerse the unit in water.

5 Introduction

Your MD-5002 Metal Detector is designed by advanced international techniques and is made of high quality components.

Your MD-5002 Metal Detector has excellent features including:

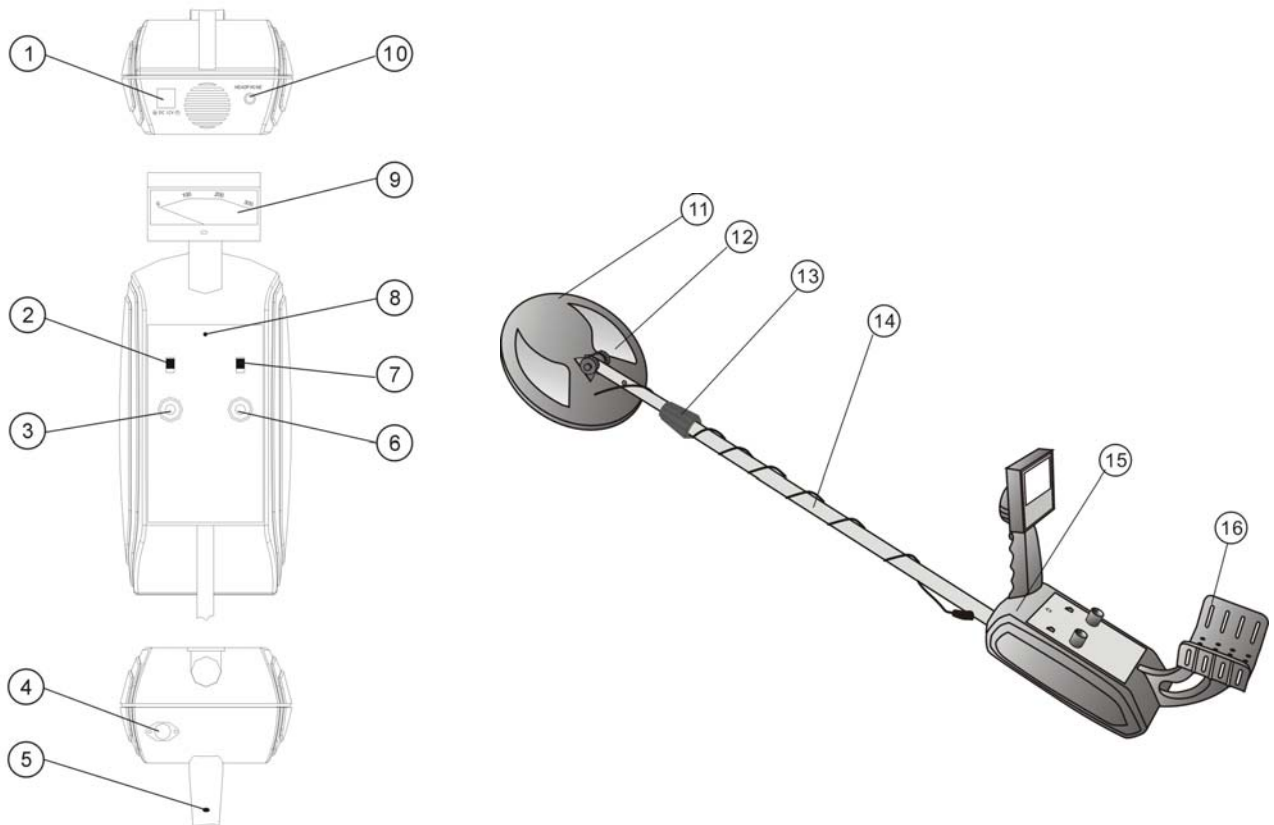
- good detection depth.
- strong pin-point detection.
- excellent discrimination between metals.
- easy operation.

Your MD-5002 Metal Detector is mainly used for:

- detecting metals buried in the ground.
- distinguishing different metal buried in the ground.
- detecting metals which could be in food packaging, etc.
- detecting metals in post packages, baggage, etc.
- detecting nails and screws which could be in timber, etc.
- detecting underground metal pipes.
- detecting buried gold, silver, artefacts in archaeology sites and in mining.

NOTE: Always get permission to prospect on private property.

6 Location of Controls and Indicators



ITEM	DESCRIPTION
1	External Power Input 12Vd.c. 200mA (2.5W)
2	Power On / Off Switch
3	Critical Sound Tuner Knob
4	Coil Lead Connection Socket
5	Zeroing Button
6	Ferrous / Non Ferrous Selector Knob
7	Mode Switch - Ground Balance / Discrimination
8	Power ON / OFF Indicator
9	Viewmeter
10	Headphone Jack Socket
11	Search Coil Assembly
12	Search Coil Adjustment Knobs
13	Stem Lock Nut
14	Adjustable Shaft
15	Controller Unit
16	Armrest

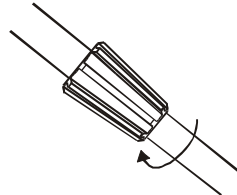
7 Assembly

Assembly of your MD-5002 Metal Detector is simple and requires no special tools.

Follow these steps below:

Step 1

- Turn the stem lock nut clockwise until it loosens.



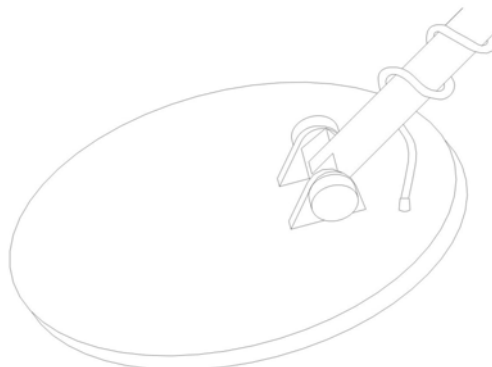
- Lengthen or shorten the stem to your specific requirements so when you stand upright with the detector held in the operating position and your arm relaxed at your side, the search coil is parallel to the ground and 10 – 50mm above the ground.



- When you are satisfied the stem is at the correct length, turn the stem lock nut anti-clockwise to lock it in place. **DO NOT** over tighten.

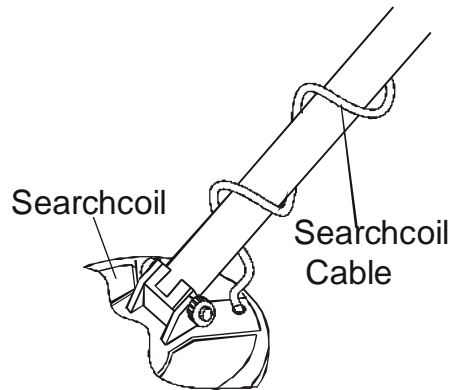
Step 2

- Unscrew the knob on the search coil and remove the knobs and rod connector.
- Ensure the stem – search coil adaptor is located over the end of the stem then insert between the hinge lugs on top on the search coil ensuring all the holes line up.
- Push the connector rod through the holes and tighten both knobs until the search coil stays in position. (Parallel to the ground as in step 1) **DO NOT** over tighten.

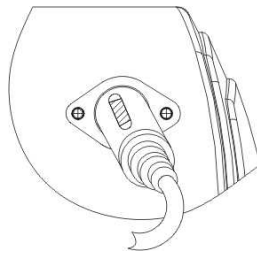


Step 3

- Wind the search coil cable loosely around the stem leaving enough slack to let you adjust the search coil as required. **DO NOT** Stretch the Cable.



- Insert the Search Coil Plug into the input jack on the main housing.



Note: The search coil's plug fits into the connector socket on the main housing only one way.

Do Not force the plug or you may damage the plug and socket. Ensure the pins line up before pushing home.

To disconnect the search coil's plug from the main housing, grasp and pull the plug body. **Do Not** pull the cable.

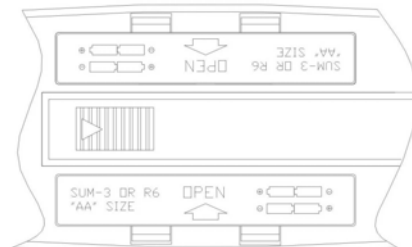
8 Installing Batteries

The battery compartments are located under the main body.

- Ensure the Power Switch is turned to **OFF**.
- Press the right battery compartment cover tabs inwards and lift the cover up and off.
- Insert the 4 "AA" batteries into the battery compartment on top of the ribbon.

Note: Batteries are to be inserted with the correct polarity. i.e. + to + and – to -

- We recommend using a well-known brand of alkaline batteries for longest life and best performance.
- Replace the battery door and snap shut.
- Repeat the same process for the left side battery compartment.



9 Battery Precautions.

- Replacement of batteries must be done by an adult.
- Do not mix old and new batteries.
- Do not mix alkaline, standard or rechargeable batteries.
- The supply terminals are not to be short-circuited.
- Non-rechargeable batteries are not to be recharged.
- Exhausted batteries are to be removed.
- Only batteries of the equivalent type are to be used.
- Batteries are to be inserted with the correct polarity. i.e. + to + and – to -.
- Dispose of batteries properly.
- Do not dispose of batteries in fire. The batteries may explode or leak.

NOTE: You can extend the life of your batteries by using the headphones which require less power than the built in speaker.

9.1

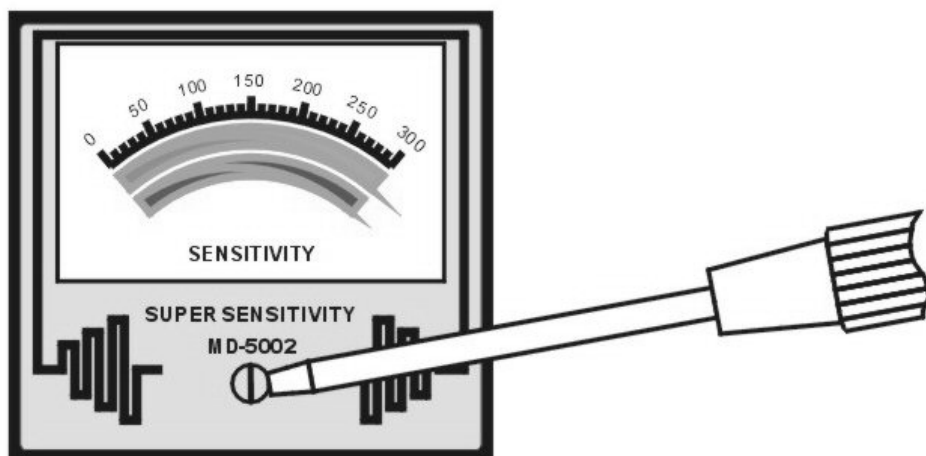
10 Battery Power

Replace the batteries if:

- the indicator light is dim.
- the indicator light does not light up.
- the detector does not turn on.
- the detector has a weak signal.
- the detector will not tune properly.
- the detector has erratic operation.
- the detectors setting drifts.
- the speaker or headphone has low volume.

11 Adjusting The Meter

- Ensure the power switch is set to OFF.
- With the aid of a flat blade screwdriver, rotate the adjusting screw until the needle lines up with "0" on the scale.



NOTE: Take care as the meter is a sensitive piece of equipment.

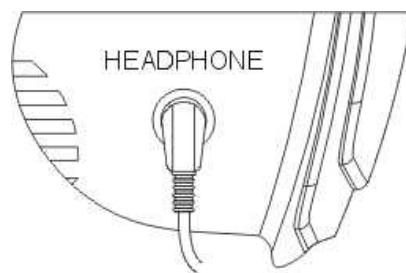
12 Using Headphones

You can connect the headphones to the detector so you can hear the signal clearer or hear faint signals which may be drowned out by background noise.

Using the headphones also conserves battery power as they require less power than the built in speaker.

12.1 Connection

- Insert the 1/8" (3mm) headphone plug into the headphone jack on the back of the detector housing.



NOTE: The detectors main speaker will automatically disconnect when the headphone plug is inserted.

12.2 Listening Safety

To protect your hearing, follow these guidelines when using the headphones.

- Before putting your headphones on, set the volume to the lowest setting.
- Put your headphones on and then gradually increase the volume until a comfortable level is obtained.
- Do Not turn the volume up to high as extended period of loud noise may lead to permanent hearing loss.

NOTE: Once you have set a comfortable volume level, Do Not increase the volume.

Over time, your ears adapt to the volume level so increasing the volume that does not cause discomfort may still be causing hearing damage.

12.3 Traffic and Surrounding Safety

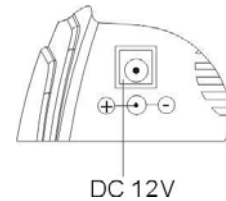
Do Not wear headphones where there is traffic, machinery or the like as you need your full hearing capacity to ensure you are in a safe environment.

Wearing your headphones in this environment diminishes your ability to hear what is happening around you and may be a safety hazard.

13 External Power Supply

Your MD-5002 Metal Detector is fitted with an external power inlet jack.

This is used for use with an external 12Vd.c. 200mA power supply (not supplied) such as a battery pack, for extended periods of use.



NOTE: This jack is **NOT** for recharging purposes.

Remove internal batteries before using the external power supply.

Plug type: Outside metal diameter 5.5mm; Inner diameter 2 - 2.5mm
Connection: Centre positive

Warning:

Using an incorrect rated battery pack will cause permanent damage to your detector.

14 Principle of Operation

Your detector needs to be tuned between the detector's receiver and transmitter circuits to provide a consistent pointer and tone indications.

Tuning operation is essential every time when you turn on the detector.

The detector should also be re-tuned if it has been de-tuned during operation.

During tuning, It is necessary to press and release the ZEROING BUTTON.

By pressing and releasing this BUTTON, the detector will memorise and record the latest state automatically.

The purpose of tuning is to adjust the sensitivity of the detector to its highest level and consequently it can detect the deepest targets.

As the CRITICAL SOUND TUNER KNOB is rotated clockwise, a tone will be heard.

The highest sensitivity of the detector is the point where the loudness level of the tone is just being heard.

At this point, the tone is called the "Critical Sound".

When the detector is at the "Critical Sound", it has the highest sensitivity.

Turn the CRITICAL SOUND TUNER KNOB anticlockwise very slightly to stop the Critical Sound, but note, The sensitivity will be lower if the Critical Sound is too loud or you cannot hear the sound.

To maintain maximum sensitivity, the detector should always be tuned and set just as the Critical Sound is heard.

15 Controls & Definitions

15.1 Zeroing Button

This button, which is located on the underneath of the handle grip, is used for recording the work state in the detectors memory and for tuning while searching.

Forgetting to press and release the button will affect the detection depth and normal work as the ground conditions change.

15.2 Power ON / OFF Switch

Switch ON to start using. The LED will illuminate when there is power.

Switch OFF when you have finished using the unit.

15.3 Mode Switch

There are two Modes, one being "Ground Balance" and the other being "Discrimination"

Ground Balance Mode is used to set the sensitivity for the sound signal and to eliminate "mineral reaction". i.e., metallic minerals in the soil.

Discrimination Mode is used to distinguish between different metal types.

15.4 Critical Sound Tuner Knob

The Critical Sound Tuner Knob is used to tune the sensitivity of detection and the detection sound. (Critical Sound).

Rotate the knob clockwise until the "Critical Sound" is just heard. This is where the detector has its highest sensitivity.

Turn the CRITICAL SOUND TUNER KNOB anticlockwise very slightly to stop the Critical Sound, but note, The sensitivity will be lower if the Critical Sound is too loud or you cannot hear the sound.

Before tuning, it is necessary to press and hold the "Zeroing" button.

Rotate the Critical Sound Tuner Knob until the sound is just heard then release the "Zeroing" button.

During detection, if the "Critical Sound" is getting louder, getting quieter or not being heard at all, press the "Zeroing" button until the "Critical Sound" is heard again.

NOTE: All settings must be performed over an area of ground which is known to be free of all metal objects otherwise it will be impossible to set the controls.

15.5 Ferrous / Non Ferrous Knob

The Ferrous / Non Ferrous Knob is used to tune the sensitivity of detection between different metals.

Rotate the Critical Sound knob clockwise until the “Critical Sound” is heard. This is where the detector has its highest sensitivity.

Before tuning, it is necessary to press and hold the “Zeroing” button.

To use this function, the Mode Switch must be set to either ‘Ground Balance’ or ‘Discrimination’.

In “Ground Balance” mode, use the Ferrous / Non Ferrous knob, which is divided into graduations from 1 to 10, to set the sensitivity to eliminate “mineralisation effect”

In “Discrimination” mode, use the Ferrous / Non Ferrous knob, which is divided into graduations from 1 to 10, to set the sensitivity to distinguish between different types of metal.

16 Tuning Procedures

- Slide the power switch to the “ON” position and rotate the CRITICAL SOUND TUNER KNOB fully anticlockwise.
- Slide the MODE Switch to the “GROUND BALANCE” position.
- Press and release the “ZEROING BUTTON”
- Turn the CRITICAL SOUND TUNER KNOB clockwise slowly until a tone is heard then press and release the ZEROING BUTTON.
- The Critical Sound status can be achieved by slowly rotating the CRITICAL SOUND TUNER KNOB clockwise or anticlockwise and pressing/releasing the ZEROING BUTTON.
- During detection, if the Critical Sound is rising, falling or disappearing, press the ZEROING BUTTON to bring back the Critical Sound status.
- When the detector is at Critical Sound, you may start testing on the detector.

16.1 Indoor Testing

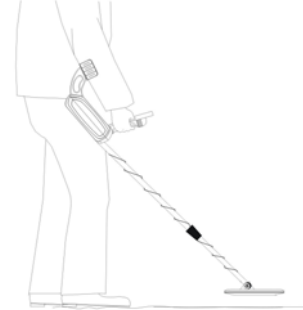
- Remove any watches, rings, or other metal jewellery you are wearing, then place the detector on a wooden or plastic table.
- Adjust the search coil's angle so that the flat part faces the ceiling.
- Sweep a known metal object, such as a coin, 10 - 20cm above the search coil. The tonal frequency will be shifted instantly indicated that a target has been found.

Note: The detector can only detect a relative movement between the search coil and the metal object.

16.2 Field Tests

16.2.1 Ground Balance Mode

- Slide the MODE switch to the GROUND BALANCE position.
- Raise the search coil 70–80cm over the earth.
- Press the zeroing button and set the Critical Sound.
- Lower down the search coil 10-15cm above the ground. If the tone increases, raise the search coil and press the zeroing button. Adjust the CRITICAL SOUND TUNER KNOB anti-clockwise a little, then release the BUTTON.
- Lower down the search coil to the ground again. If the tone still increases, repeat adjusting the CRITICAL SOUND TUNER KNOB and the above process again.
- After tuning a few times, the tone should keep steady as the search coil is lowered down or lifting up from the ground.
- After such adjustment, the "mineralisation reaction" is basically eliminated and the tone doesn't change when the search coil is moved up and down.
- If the tone level decreases when lowering to the ground, raise the search coil, press and hold the ZEROING BUTTON then turn the FERROUS / NON FERROUS Knob clockwise, then release the ZEROING BUTTON.
- If the tone still decreases, repeat adjusting the FERROUS / NON FERROUS Knob and pressing the ZEROING BUTTON as above until the tone keeps steady whenever detector is lowered down or moving away from the ground.



Note: before each adjustment, press and hold the ZEROING BUTTON first and after setting each adjustment you have to release the BUTTON.

- After adjusting, you can move the search coil slowly along the ground.
- During detection, keep the detector in the Critical Sound state.
- If the tone level rises or falls, press and release the ZEROING BUTTON to get the Critical Sound again.
- When metal is found, the viewmeter pointer will swing from its zero position. The stronger the swing, the larger the size (or closer to the search coil) of the object.

16.2.2 Discrimination Mode

This mode is used for discriminating between different types of metal being Ferrous and non ferrous or for areas of high metallic minerals.

In this mode, the search coil must be held above the ground 10 – 15mm and moved along slowly.

To set the discrimination mode, follow these steps below:

- Set the switch to “Discrimination”
- Set the “Critical Sound” as instructed in “Ground Balance” Mode.

Note: During detection, you can eliminate unwanted targets. For example, in an area full of iron (ferrous) nails, iron nail signals will interfere with detection of other targets sort.

To solve this unwanted problem, follow these steps below:

- Place the Iron Nail on the ground in an area where no other nails are present.
- Sweep the search coil over the nail.
- If the “Critical Sound” increases, press and hold the “Zeroing” button, turn the “Ferrous / Non Ferrous Knob” anticlockwise slightly, release the “Zeroing” button and try again.
- If the “Critical Sound” decreases, press and hold the “Zeroing” button, turn the “Ferrous / Non Ferrous Knob” clockwise slightly, release the “Zeroing” button and try again.
- If the “Critical Sound” increases or decreases again, repeat the above steps until a steady signal is heard when the search coil is swept over the nail.
- After tuning, your MD-5002 metal detector will not respond to these iron nails or ferrous metal whose size is smaller than the nail but will respond to ferrous metals whose size is bigger than the nail.
- If you set the Ferrous / Non Ferrous Knob below setting “2”, the “Critical Sound” will increase when detecting larger Non ferrous metals but will decrease when detecting larger ferrous metals.
- If you set the Ferrous / Non Ferrous Knob above setting “7”, the “Critical Sound” will increase when detecting larger ferrous metals but will decrease when detecting larger Non ferrous metals.

Note: If a sheet of iron is detected, a strange phenomena happens.

If the search coil is close to the edge of the iron sheet, the detector reacts as if it has detected ferrous metal.

If the search coil in near the centre of the iron sheet, the detector reacts as if it has detected Non ferrous metal.

17 Detection Examples

17.1 Precious Metal

Your MD-5002 is capable of detecting precious metals buried in the ground, such as, gold nuggets, gold reefs, placer gold or buried treasure.

Detecting natural gold is the same as detecting a metal coin when in Ground Balance Mode.

You must use the Ground Balance mode for detecting gold as the ground where gold is found is highly mineralised.

In a Placer gold mine, gold dust is mixed in with sands and a large amount of heavy metal mine sediment. The signal caused by this environment is the same as if detecting black metal but a little weaker signal than detecting pure metal.

Your MD-5002 Metal Detector can also decipher different types of ore. To do this, follow these steps below:

- Place the detector on a non metallic support.
- Take a sample of ore, to be deciphered, and move it close to the bottom of the search coil.
- Estimate the metal content by the “Critical Sound”. Higher or lower sound.
- Repeat this process with the other ore samples and take note of the “Critical Sound” level for each type of ore.

Note: Press the “Zeroing” button after detecting each piece of ore.

For copper, iron, Stannum, lead, etc. the signal will be different as the composition of each element is different so will create a different signal when detected.

18 Care and Maintenance

If the housing and search coil becomes dusty or dirty, it may be wiped with a soft cloth slightly moistened with a mild soap and water solution.

DO NOT get the search coil plug wet.

Ensure all components are completely dry before reassembling.

DO NOT use any abrasive cleaners, steel wool or scouring pads so as to avoid scratching the housing.

When the sound becomes weak or distorted, and the performance becomes unsatisfactory, replace the batteries as soon as possible.

Never leave weak or exhausted batteries in the unit for an extended period of time.

Turn off the unit prior to cleaning.

DO NOT immerse the unit or search coil in liquid.

Keep the metal detector away from salt water as salt water will corrode the electronics and components.

Keep your MD-5002 dry and clean.

Wipe dirt and dust off the lower stem before sliding into the upper stem and keep the lock nut threads free of sand and dirt.

DO NOT allow the unit to get wet. Only the search coil is showerproof.

19 Technical Specifications

Maximum Detection Depth:	1.5 Meters depending on ground type.
Operation Mode:	Ground Balance / Discrimination.
Emitting Signal Frequency:	6.99+/- 0.2KHz
Audio Signal Frequency:	450+/- 10Hz
Power:	2.5W
Battery Type:	1.5 V Zinc Carbon or Alkaline AA Size, SUM 3, R6 or equivalent
Voltage Range:	9.6 Vd.c. - 12 Vd.c.
Shaft Extendable Length:	47cm (MIN.) 90cm (MAX.)
Operation Temperature Range:	10°C ~ 40°C
Net Weight:	1.26Kg

20 Customer Service

CAUTION: To reduce the risk of electric shock or damage, **do not** disassemble this unit, and do not attempt to service this unit yourself. There are no user serviceable parts inside. For all servicing, take the unit to your nearest authorised service centre or qualified dealer.

Read And Save These Instructions