GPX 6000

GPX 6000 USER MANUAL

GEO
SENSE-PI

MINELAB

Contents

Additional resources are available online at
www.minelab.com/GPX 6000

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GPX6000

GETTING STARTED

This sections shows you how to quickly set up your detector to begin detecting with minimal adjustment, and describes how to identify and adjust key detector functions.

Quick Start

Beginning with Factory Default Settings is recommended for Quick-Start.
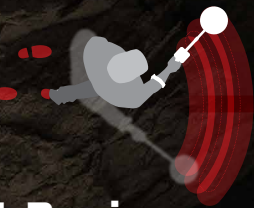
1. Turn On

2. Wait for Noise Cancel

3. Pump coil (< 10 s)

4. Begin Detecting

GPX 6000 automatically compensates for ground noise, EMI, and sensitivity within 20 seconds of turning on.

Factory default settings

The factory default settings are optimised for detecting in almost all conditions, regardless of mineralisation and EMI levels. The default settings are a practical choice for users who want to begin successfully detecting without the need to manually adjust the key detector settings.

Quick Start is best used with factory default settings:

▸ **Sensitivity:** Auto
▸ **Ground Type:** Difficult
▸ **Noise Cancel:** Automatic at startup

Factory Reset

Factory default settings can be restored at any time by conducting a Factory Reset.

1. Ensure the detector is powered off.

2. Press and hold the power button for 7 seconds.

3. When reset is complete there is a confirmation tone, and 'FP' (Factory Preset) appears on the display.

    FP 'FP' appears on the display

Controls

1. Bluetooth Control

Enables Bluetooth for connection of wireless headphones (page 6).

Long-press (> 2.5 s) to enable Bluetooth pairing for connecting Bluetooth headphones (page 6).

2. Backlight Adjust

Cycles through the backlight brightness settings — high, medium, low and off.

3. Power On/Off

Turns the detector on and off.

Restores factory default settings (Press and hold from off, > 7 s) (page 3).

4. Sensitivity Adjust

Adjusts the Sensitivity Level (page 8).

5. Ground Type

Toggles between Difficult and Normal Ground Type (page 9).

6. Noise Cancel

Initiates the Noise Cancel process (page 13).

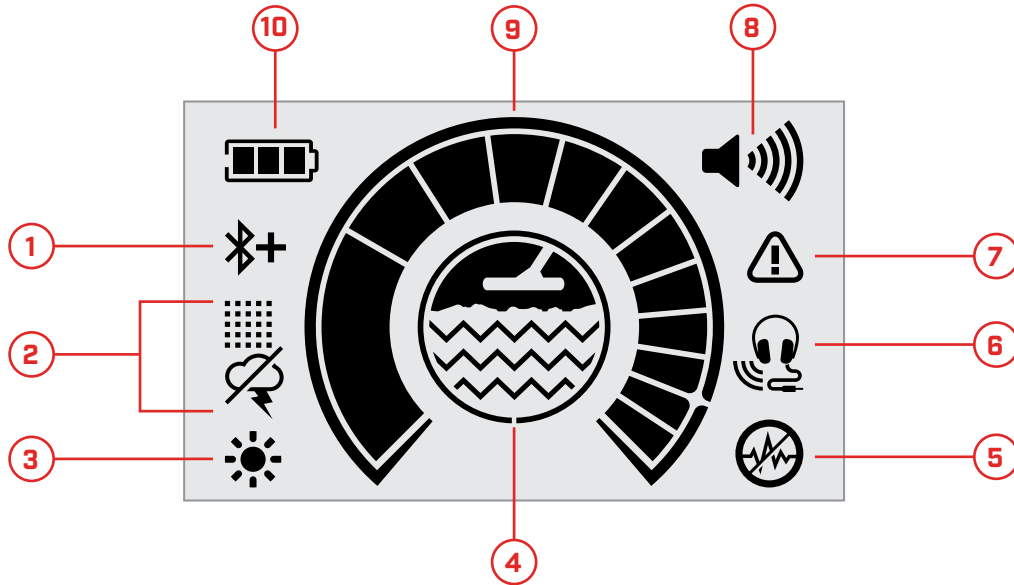Toggles between the Double-D Modes (page 10) — EMI Cancel and Conductive Ground Cancel. (Long-press, > 2.5 s)

7. Volume Adjust

Adjusts the audio Volume Level.

8. Quick-Trak Trigger

Press and hold during Quick-Trak Ground Balance (page 9).

Display

1. Bluetooth Indicator

Indicates that Bluetooth wireless audio is on (page 6).

  Standard Bluetooth

  Bluetooth Qualcomm® aptX™ Low Latency

2. Double-D Modes

Only available when using the Double-D coil (page 10).

  Electromagnetic Interference Cancel (EMI)

  Conductive Ground Cancel

3. Backlight Indicator

Indicates that the backlight is on.

4. Ground Type

Displays the selected Ground Type (page 9).

  Difficult (default)

  Normal

5. Noise Cancel

Flashes when Noise Cancel is in progress (page 13).

6. Headphones Connection

Indicates that headphones are connected.

  Wired headphones connected

  Bluetooth headphones connected (page 6).

7. Error

Indicates that there is a coil or system error (page 16).

8. Volume Level

Displays the detector audio volume.

9. Sensitivity

Displays the Sensitivity level (page 8).

10. Battery Level

Indicates the current battery level.

Bluetooth Headphones

Any standard Bluetooth headphones can be used with the GPX 6000, however use of the Minelab ML 100 wireless headphones is recommended for optimum wireless audio performance.

Minelab ML 100 headphones use aptX™ Low Latency technology, and will deliver faster audio than standard Bluetooth® headphones. aptX™ Low Latency technology is faster than standard Bluetooth, with a delay of 40 ms, giving a faster detection response.
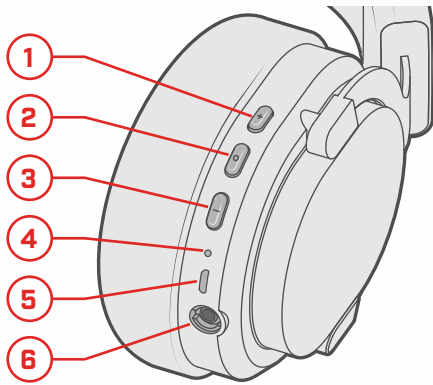
1. Status LED
2. Plus button (+)
3. Multi-function button
4. Minus button (−)
5. Headphone socket 3.5 mm (⅛ inch)
6. USB Micro-B socket

Pairing mode (alternating blue and red)

Connected (flash every 3 seconds)

Headphones on, not connected (flash every 2 seconds)

Charging

Charging complete (Off)

Pairing the ML 100 headphones

Pairing the ML 100 headphones is only required at first time use. They will automatically connect for all future uses. Re-pairing is required following Factory Reset of either the headphones or the detector.

When Bluetooth headphones are paired, the Bluetooth Indicator will indicate the type of headphones that are in use.

Standard Bluetooth   Bluetooth Qualcomm® aptX™ Low Latency

|	
1. **Make sure headphones are off, and close to the detector.**	Ensure the headphones are turned off and are no more than 1 metre (3.3 feet) away from the detector.
2. **Turn on the ML 100 headphones**	Press Multi-Function button on the ML 100 headphones for 2 seconds to enter Pairing mode. Two ascending tones are heard and the LED alternates blue and red.
3. **Enable bluetooth on the detector**	Press the Bluetooth button on the side of the GPX 6000 control panel for 2 seconds until the Bluetooth icon begins to flash rapidly.
4. **Headphones will automatically connect**	If pairing is successful, the headphones beep and the Bluetooth icon and wireless headphones icon remain on. The Status LED on the headphones will flash blue once every 3 seconds during use

Coils

Selecting the correct coil size and configuration allows you to optimise your GPX 6000's performance in a range of detecting scenarios. Understanding when to use each coil will increase the productivity of your detecting sessions.

GPX 11 Mono

The GPX 11 Mono coil is a great general-purpose coil that is recommended for most detecting conditions. It is a good all-rounder that has excellent depth and sensitivity. While it does not cover as much ground as the larger coils, it is a practical choice for detecting smaller areas and is easier to manoeuvre around obstacles.

Like all monoloop coils, the GPX 11 Mono is susceptible to noise in conductive ground or when there are high levels of EMI.
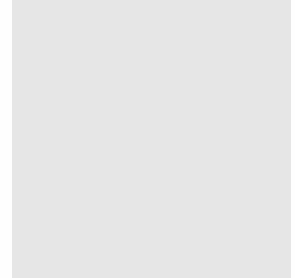
GPX 17 Mono

The GPX 17 Mono coil is the top choice for covering large areas of ground quickly and efficiently. It is the top performer when searching for large deep nuggets in less mineralised ground.

Like all monoloop coils, the GPX 17 Mono is susceptible to noise in conductive ground or when there are high levels of EMI.
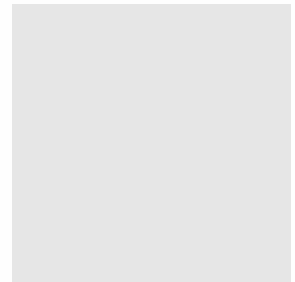
GPX 14 Double-D

The GPX 14 Double-D excels in conditions where there are high levels of EMI or in very conductive soils, allowing it to operate successfully in conditions that render the Mono coils unusable.

This coil should only be used in these extremely noisy conditions, and is not recommended for general detecting use as it is less sensitive than the mono coils.
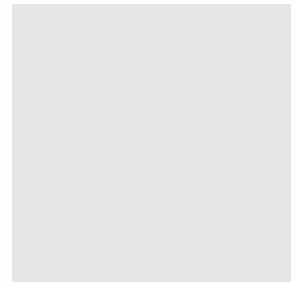
BEYOND DEFAULT SETTINGS

Go beyond the factory default settings to gain even greater control of your GPX 6000. This section describes how and why you should adjust key detector settings to optimise your GPX 6000 for specific detecting scenarios.

Sensitivity

Choose the highest stable sensitivity setting for optimum performance, or use the automatic settings.

Adjusting the Sensitivity

When setting the sensitivity level, find a level that is high enough to hear target signals over typical environmental noise, but not set so low that targets are not detected. As a guide, there should be some variation in the audio responses, but it should not sound erratic.

▸ Always try Noise Cancel (page 13) and Quick-Track (page 9) to resolve noise before reducing the sensitivity level.

▸ Generally start with the Mono coil unless you are detecting in areas with known high levels of EMI or conductivity.

1. Set Sensitivity to level 1		Reduce the sensitivity to level 1.
2. Increase until false signals occur		Increase the sensitivity until false signals begin to occur. ▸ **If noise is the result of EMI**, keep the coil stationary when adjusting the sensitivity. ▸ **If noise is the result of ground noise**, swing the coil close and parallel to the ground when adjusting the sensitivity.
3. Reduce by one level		Reduce the sensitivity level just enough that the false signals disappear.
4. Check over ground and adjust as needed		Sweep the coil over a clear patch of ground, and reduce the sensitivity level further if any ground noise is encountered.

Sensitivity levels guide

Manual

Low Manual Sensitivity
▸ Smoother audio
▸ Some target signals may not be heard
▸ Has threshold tone
▸ Only use if Noise Cancel and Quick-Trak do not reduce noise

High Manual Sensitivity
▸ Likely to hear more targets in low-noise conditions
▸ Some targets may be masked by noisy audio
▸ Has threshold tone

Auto

Auto
▸ Provides smoother audio
▸ No threshold tone
▸ Recommended for most users

Auto +
▸ Use in low EMI and low ground noise locations
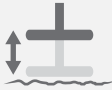▸ No threshold tone

Ground Balance

Ground Balancing enables the detector to separate unwanted ground signals from target signals. The GPX 6000 features Automatic Ground Balance, as well as Quick-Trak and Ground Type settings for even greater Ground Balance control.

Quick-Trak

GPX 6000 tracks automatically to changing ground conditions during normal use. It is effective for typical detecting in less variable ground. Automatic tracking adapts more slowly to ground conditions than Quick-Trak, so if detecting in highly variable soils, ground balance can be initiated manually to quickly reduce noisy ground signals.

Performing Quick-Trak

1. **Press and hold Quick-Track button**	Press and hold the Quick-Trak button — it must be pressed throughout the Quick-Trak procedure.
2. **Raise and lower coil**	Gently raise and lower the coil between 10 and 150 mm (½ and 6 inches) above the ground to expose the coil to the full range of the ground — try to lower the coil as close to the ground as possible without hitting the ground.
3. **Swing coil from side-to-side**	Swing the coil from side-to-side once the ground noise has significantly reduced. This will capture any remaining ground signals for a thorough ground balance.
4. **Release Quick-Trak button**	Once the ground noise is at a comfortable level or will not reduce any further, release the Quick-Trak button.

▶ IS there something to suggest if quick-trak doesnt work as expected, or just 'Continue detecting'

Auto and Quick-Trak guide

Auto

- ▶ Ideal for new users.
- ▶ Tracks successfully to ground that does not have varying levels of mineralisation.
- ▶ Can track to a target rather than the surrounding ground if the coil is repeatedly passed over it — a target signal may be missed.
- ▶ Continuously occurs during detecting.
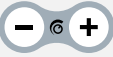
Quick-Trak

- ▶ A manually initiated Ground Balance process for faster ground balancing than Auto.
- ▶ Use to ground balance to a chosen area of ground, such as patches of extreme mineralisation, hot rocks etc.
- ▶ Use in between digging and checking for a target, so as the target is not 'balanced out' accidentally.

Ground Balance Procedure

In order to achieve good ground balance follow the recommended procedure. The procedure steps through a sequence that will help you to identify the type of ground you are detecting and its ground noise levels, and then provides the best steps to manage that noise. Ground is categorised into four types:

▶ **Normal** — Ground with very low levels of mineralisation.
▶ **Difficult** — Ground that has high levels of mineralisation.
▶ **Conductive** — Ground that has high levels of conductivity, often due to high salt content.
▶ **Variable** — Ground that has varying levels of mineralisation and/or conductivity from patch to patch.

Quiet ground

1. **Quick-Trak**		Perform Quick-Trak following the procedure on page 9. This will help the detector collect as much information about the ground as possible for an optimum ground balance.
2. **Adjust Sensitivity**	− ⊚ +	Adjust the sensitivity level following the procedure on page 8.

▶ **If the detector is quiet, begin detecting.**

▶ **If the detector is still noisy when the coil is pumped up-and-down in the air**, then noise is the result of conductive ground conditions. **Continue the steps for conductive ground below.**

Conductive ground

3. **Change to Double-D coil**		Change to the GPX 14 Double-D coil.
4. **Quick-Trak**		Perform Quick-Trak following the procedure on page 9.
5. **Adjust Sensitivity**	− ⊚ +	Adjust the sensitivity level following the procedure on page 8.

▶ **If the detector is quiet, begin detecting.**

▶ **If the detector is still noisy when the coil is swept from side-to-side**, then noise is the result of variable ground conditions. **Continue the steps for variable ground below.**

Variable ground

6. **Change the Ground Type to Difficult**		Change the Ground Type setting to Difficult.
7. **Quick-Trak**		Perform Quick-Trak following the procedure on page 9.
8. **Adjust Sensitivity**	− ⊚ +	Adjust the sensitivity level following the procedure on page 8.

▶ If the detector is quiet, begin detecting.

Mono coil advanced procedure

The GPX 6000 detector combined with a mono coil is a powerful combination that is ultra sensitive to gold nuggets. Mono coils go deeper than Double-D coils, however they are more susceptible to noise.

1. Apply recommended settings	Adjust the detector settings to the following settings: ▸ **Sensitivity:** Level 6 (manual) ▸ **Ground Type:** Normal ▸ **Coil Type:** Mono These settings provide the best basis for the advanced Mono and Double-D coil detecting procedures.
2. Swing the coil and listen for noise	Swing the coil over an area of metal-free ground near to where you will be detecting. Swing the coil as close and parallel to the ground as possible. Listen carefully to the signals. There should be audible tone variation, but not so much that signals sound erratic or noisy.
3. Increase the sensitivity level if quiet	If the signals are very stable and audible indicating very low levels of environmental noise, increase the Sensitivity level.

▸ If the detector is quiet, begin detecting.

▸ If the detector is still noisy, continue the steps below.

4. Conduct a Noise Cancel	If noise is present when the coil is held still over the ground, EMI is likely to be the source of the noise. Conduct a Noise Cancel procedure (page <?>). This will remove noise caused by EMI.
5. Reduce the Sensitivity level	Reduce the Sensitivity level (page <?>). Keep the coil stationary when adjusting the sensitivity in order to remove noise from EMI.
6. Change to the GPX 14 Double-D coil	There is too much EMI for a Mono coil. Power off the detector and change to the Double-D coil, then follow the steps in "Double-D coil advanced procedure" on page <?>.

▸ If the detector is quiet, begin detecting.

Double-D coil advanced procedure

The GPX 6000 Double-D coil excels in locations that have very high levels of interference. They are less noisy than mono coils, but are also less sensitive.

Generally, the Double-D coil should only be used once the Mono coil advanced procedure (page 14) has been completed without success. It can also be used in areas that have known high levels of EMI or very salty (conductive) soils.

1. Turn on

▶ Connect the Double-D coil.

▶ Turn the detector on, and then adjust the detector settings to the following settings:
Sensitivity: Level 6 (manual) | **Ground Type:** Normal | **Coil Type:** Mono
These settings provide the best basis for the advanced Mono and Double-D coil detecting procedures.

2. Select a Double-D mode

▶ Set the Double-D mode (page 11) to based on the noise source.

If noise is present when the coil is held still over the ground, EMI is likely to be the source of the noise.

EMI Cancel: use if the noise is due to atmospheric interference that could not be resolved using Noise Cancel or by reducing the sensitivity level.

Salt Cancel: Use if the noise is due to interference from salty (conductive) soils that could not be resolved by using the Noise Cancel function, by reducing the sensitivity level, or by changing the Ground Type to Difficult. Salt Cancel should only be used if noise resulting from salt is an annoyance to the user.

▶ Swing the coil over an area of metal-free ground near to where you will be detecting. Swing the coil as close and parallel to the ground as possible. Listen carefully to the signals. There should be audible tone variation, but not so much that signals sound erratic or noisy.

If, at this point, there is noise present, try the following steps one-by-one, in order.
All steps may not be required.

Reduce Sensitivity	⊖	Reduce the Sensitivity level (page 8). Proceed to "3. Begin Detecting" if the detector becomes quiet after reducing the sensitivity level.
Power Off	⏻	Persistent noisy conditions are rare, however in the event that all steps to manage noise have been followed, detecting at the chosen location will not be possible.

3. Begin Detecting

▶ Once the noise levels are at an acceptable level, begin detecting.

Noise Cancel

If audio responses become erratic, initiate the Noise Cancel process to automatically select a quieter detecting channel.

Performing Noise Cancel

1. Press the Noise Cancel button.		Press the Noise Cancel button for <2 seconds.
2. Wait for 5 seconds		The Noise Cancel icon will flash while Noise Cancel is in progress (approximately 5 seconds). A confirmation tone indicates that Noise Cancel is complete.

▶ **If the detector is quiet, begin detecting.**

▶ **If the detector is still noisy,** ???

ADVANCED CONCEPTS

Identifying the source of detector noise

EMI: Hold the coil still more than 100 mm (4 inches) above the ground. If noise is present, it is likely to be EMI.

Conductivity: Pump the coil up-and-down approximately 1 metre (3.3 feet) above the ground. If noise is present, it is likely to be casued by Conductivity.

Ground Noise: Swing the coil over the ground. If noise is present, it is likely to be ground noise.

Mono vs. Double-D coil

Coil winding configuration

Mention the pinpointing difference at all?

When to use the Double-D coil

Use of the Double-D coil is only recommended if good results cannot be achieved using a Monoloop (Mono) coil.

Automatic Ground Balance

GPX 6000 tracks automatically to changing ground conditions during normal use. It is effective for typical detecting in less variable ground. Automatic tracking adapts more slowly to ground conditions than Quick-Trak.
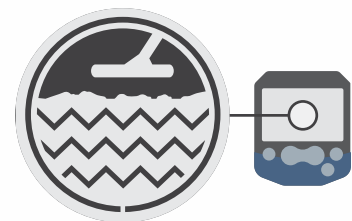
Ground Type

Ground Type controls the amount of unwanted ground noise that is removed from the audio response.

Setting the Ground Type

1. Press the Ground Type button to toggle between Normal and Difficult.

2. The icon for the currently enabled Ground Type is displayed.

Ground Type guide

Difficult *(Default)*

Removes excessive ground signals from audio

▸ Suitable for difficult (mineralised) or variable ground

▸ Generally gives smoother audio

▸ Ideal for less experienced users

Normal

Removes fewer ground signals from audio

▸ Suitable for normal ground (less mineralised)

▸ Generally gives noisier audio

▸ Useful for more experienced users

Double-D Modes manage noise from EMI or conductive ground when using the GPX 14 Double-D coil. These modes are only available when a Double-D coil is in use.
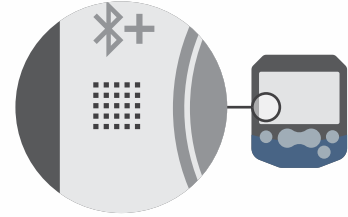
Change the Double-D mode

1. Press the Noise Cancel button for > 2.5 seconds to toggle between EMI Cancel and Conductive Ground Cancel.

    Note: Double-D modes are only available when the Double-D coil is in use.

2. The icon for the enabled Double-D mode is displayed.

Choosing the right Double-D mode:

EMI Cancel: use when noise is caused by atmospheric interference. EMI is noise that is present when holding the coil stationary.

Conductive Ground Cancel: use when noise is caused by interference from conductive soils. Conductivity is the cause of noise that is present when pumping the coil in the air more than 1 metre (3.3 feet) above the ground.

Double-D mode guide

| **EMI Cancel** *(default)*	**Conductive Ground Cancel**
Reduces the effect of EMI.	Reduces the effect of conductive soils.
Use when detecting:	Use when detecting:
▸ near power-lines ▸ in stormy weather ▸ close to other detectors	▸ in large open gold fields with conductive soil ▸ in wet sand ▸ in and around rivers

TROUBLESHOOTING, CARE & SAFETY

Errors

Coil Error

If there is a coil error, the error icon and the coil icon is displayed for 5 seconds before the detector automatically powers off.

System Error

If there is a system error, the error icon is displayed for 5 seconds before the detector automatically powers off.
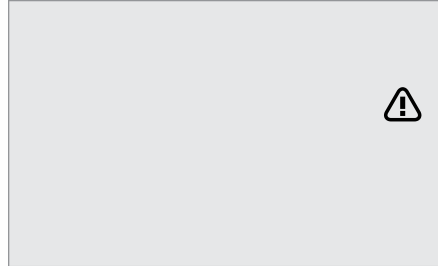
Error Troubleshooting

Error icon and coil icon are displayed, the detector turns off after 5 seconds

1. Check that the coil connector is connected properly at the front of the control box.
2. Check the coil cable for damage.
3. Check the coil for visible signs of damage.
4. Try another coil, if you have one available.

Error icon is displayed, then the detector turns off after 5 seconds

1. Contact an authorised Minelab service centre.

Error icon is displayed, detector remains on

1. Remove the speaker cover screw on the rear of the control box using a Phillips head screw driver.
2. Check that the User Interface connector is connected properly to the input on the control box.
3. If the error persists, contact an authorised Minelab service centre.

General Troubleshooting

Detector does not turn on, or turns off by itself

1. Charge the battery.

No sound — Wired headphones

1. Check that the detector is on, and start-up has completed.
2. Check that the headphones are plugged in.
3. Check that volume is set to an audible level.
4. Unplug the headphones and confirm that the detector speaker is audible.
5. If available, try using a different set of headphones.

No sound — ML 100 Headphones

1. Check that the headphones are turned on.
2. Check that detector Bluetooth is turned on and paired with Bluetooth headphones (i.e. the Bluetooth icon is steady on).
3. Check that the headphones are charged.
4. Check that the detector volume is set to an audible level.
5. Ensure the volume control on the headphones is set to an audible level.
6. Try a different set of Bluetooth headphones.
7. Try wired headphones.

ML 100 Headphones will not pair

1. Power off the ML 100 headphones and then re-pair.
2. Ensure the headphones are within 1 metre (3.3 feet) of the detector control unit, 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 devices nearby, pairing may take longer. Move away from the area and try to pair again.
5. Perform a factory reset on the headphones and attempt to re-pair to the detector.
6. Pair the detector with different Bluetooth headphones, then attempt to re-pair ML 100 headphones to the detector.

Distortion/crackling heard in ML 100 Headphones when connected via Bluetooth

1. Reduce the volume on the headphones until distortion is removed. Increase detector volume if required to compensate for the reduced volume.

Detector shafts are slipping under light load/do not lock tightly

1. Unscrew the upper and lower twist locks. The threaded outer-sleeve of each twist lock will separate completely from the inner-sleeve.
2. Slide the detector shafts apart.
   The coil connector must remain connected to the detector during cleaning to prevent water ingress.
3. Thoroughly rinse the twist lock parts and the shafts in clean water until all sand, dirt and grit is removed.
   Do not use solvents to clean the shafts or twist locks.
4. Dry the shafts with a clean cloth, then reassemble the shafts and twist locks.

In-built speaker sounds muffled or 'scratchy'

1. Make sure the detector is turned off.
2. Remove the screw at the rear of the detector and then remove the speaker cover.
3. Gently clean the speaker with a soft damp cloth or rinse with clean water to remove built-up dust and dirt.
   Do not use sharp tools to remove compacted dirt from the speaker as damage could result. If dirt is stubborn, wet the dirt and allow it to soften before rinsing/wiping it away.
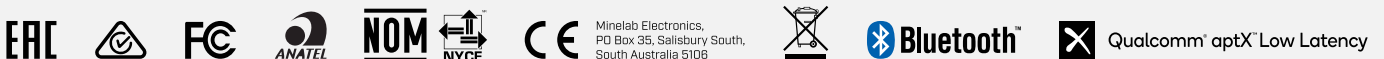
Detector Care and Safety

- Wash your hands before handling the detector after applying sunscreen or insect repellents.

- Do not use solvents to clean. Use a damp cloth with a mild soap detergent.

- Never allow the detector to come into contact with gasoline/petrol or other petroleum-based liquids.

- Avoid getting sand and grit in the shafts and fastenings (e.g. coil yoke assembly and twist locks). If sand and grit accumulates in these parts they should be wiped clean with a damp cloth.

- Do not bring the detector or accessories into contact with sharp objects as this may cause scratches and damage.

- Do not leave the detector in excessive cold or heat longer than necessary. Covering it when not in use will help protect it. Avoid leaving it in a hot vehicle.

- Ensure the coil cable is in good condition and not subject to undue stress.

- Take precautions when transporting or storing the detector. Although the detector is constructed from the highest quality materials and has undergone rigorous durability tests, the display screen could be prone to scratching or serious damage if not treated with due care.

- Do not expose the detector to extreme temperature conditions.

- Storage temperature range is from –20°C to +50°C (–4°F to +122°F).

- Detector operating temperature range is from –10°C to +50°C (+14°F to +122°F).

- Do not submerge the detector body in water — it is rain-proof only.

- All GPX 6000 coils are waterproof to 1 metre (3.3 feet), however care must be taken to ensure the coil connector is not submerged.

- Do not expose the ML 100 headphones or charging accessories to liquid/moisture or excessive humidity.

- Do not allow children to play with the detector or accessories, small parts are a choking hazard.

- Only charge rechargeable batteries and accessories according to the instructions provided.

- Avoid charging rechargeable batteries and accessories in extreme temperature conditions.

- Remove battery prior to air transportation.

Minelab Electronics Pty. Ltd.
Australia & Asia Pacific

📞 +61 8 8238 0888

✉ minelab@minelab.com.au

Minelab Americas Inc.
North, South & Central America

📞 +1 877 767 6522

✉ info@minelabamericas.com

Minelab International Ltd.
Europe & Russia

📞 +353 21 423 2352

✉ minelab@minelab.ie

Minelab MEA General Trading LLC
Middle East & Africa

📞 +971 4 254 9995

✉ minelab@minelab.ae

Minelab do Brasil
Brazil

📞 +55 47 3406 3898

✉ minelabdobrasil@minelab.com

www.minelab.com/GPX 6000

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