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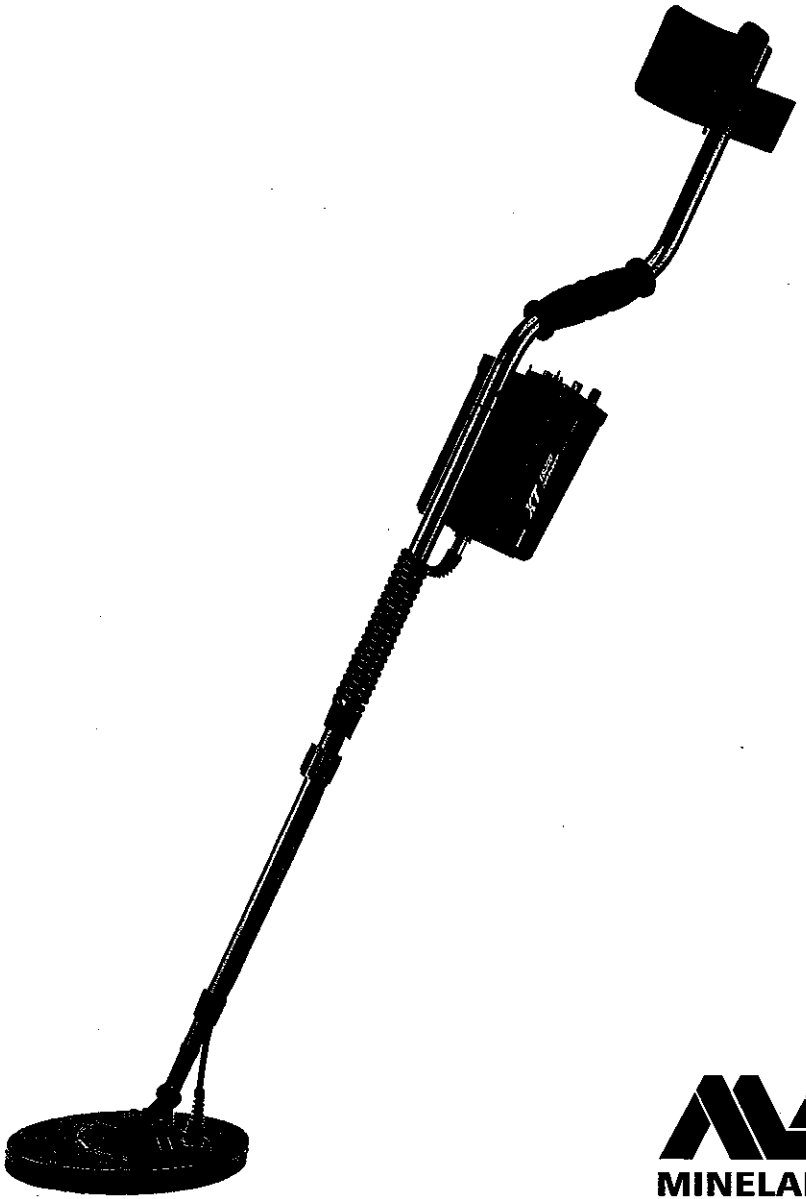
XT 18000
Gold Detector

INSTRUCTION MANUAL



MINELAB

MINELAB XT18000
INSTRUCTION MANUAL

Contents

Introduction

Congratulations on purchasing your new Minelab Electronics XT18000 gold detector.

This detector is a development of the XT17000, providing a range of improvements, while retaining those features which made the XT17000 such a successful detector.

The XT18000 follows in the footsteps of its predecessor with its Automatic Ground Balance. The XT18000 can constantly and automatically adjust the Ground Balance to keep it at the correct setting, reducing operator fatigue and allowing more ground to be covered in a day's detecting.

The XT18000 has a choice of 3 operating frequencies:

- ❑ 6.4 kHz,
- ❑ 20 kHz, and
- ❑ 60 kHz

for sensitivity to a range of targets.

Further refinements include target detection with pitch variation, better signal-to-noise ratio in the electronics, and a 10" (25 cm) elliptical coil as standard equipment.

This manual has been arranged with brief instructions for experienced users in the first few sections. More detailed notes about assembling the detector, how its controls work, and methods of detecting follow.

As always at Minelab Electronics, we strive to provide you with the best metal detection equipment possible. With that in mind we present **the XT18000, the best continuous wave detector available today.**

Quick Start Instructions

a) Switch **On** the power with the **Signal Volume** control.

b) Set the **Signal Volume** control to maximum.

c) Set the **Threshold** control so that the audio signal is just audible.

d) Set the **Signal** switch to **Normal.**

e) Set the **Soil** switch to **Normal.**

f) Set the **Freq** switch to **6.4 kHz** for detecting large deep targets, through to **60 kHz** for small targets near the surface.

g) Set the **Sensitivity** control to maximum. If there is apparent interference while the coil is motionless, reduce the sensitivity just below the level which eliminates the interference.

h) Set the **Select** switch to **All Metals.**

i) Set the **Ground Adjust** switch to **Auto.**

j) Ground balance the detector by raising and lowering the coil above soil which is known to be free of targets until the audio signal is reduced to a minimum.

k) Refer to the "Best Setup Positions" chart on the next page.

l) Start searching for treasure.

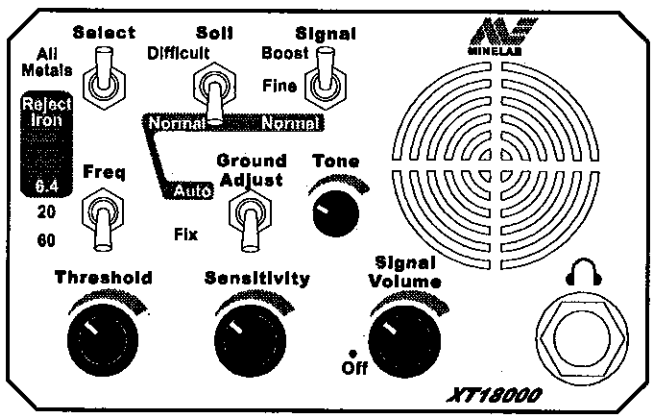


Figure 1 — The XT18000 Control Panel

Best Setup Positions for the XT18000

Gold Field Setting

Signal:	Boost
Soil:	Normal if possible in most conditions
Freq:	20 or 60 kHz
Select:	All Metals
Threshold:	Just audible
Sensitivity:	Maximum
Signal Volume:	Maximum
Ground Adjust:	Auto

Oval/Recreational Ground Setting

Signal:	Normal
Soil:	Normal if possible in most conditions
Freq:	6.4 kHz
Select:	Reject Iron
Threshold:	Just audible
Sensitivity:	Maximum
Signal Volume:	Maximum
Ground Adjust:	Auto

Beach Sand Setting

Signal:	Normal
Soil:	Normal in most conditions
Freq:	6.4 kHz
Select:	Reject Iron
Threshold:	Just audible
Sensitivity:	Maximum
Signal Volume:	Maximum
Ground Adjust:	Auto

Detector Sounds

There are six types of sounds that the detector will produce:

- **Threshold Signal** — A low-level, constant audio signal which is present even when the coil is held motionless.
- **Target Signal** — Small or large variations in the volume and pitch generally indicate metal targets or ground mineralisation.
- **Iron Signal** — When the **Select** switch is set to **Reject Iron**, ferrous targets will be signalled by a staccato audio signal.
- **Overload Signal** — A high-pitched squeal indicates the presence of a very large target or very highly mineralised ground. To overcome this, raise the coil or, if mineralised ground is the problem, set the **Soil** switch to **Difficult**.
- **Discriminator Overload Signal** — A loud "bell-ringing" sound indicates that the XT18000 has detected a signal too large for the discriminator to process accurately. To overcome this, raise the coil, set the **Soil** switch to **Difficult,** or turn the **Select** switch to **All Metals**. Discriminator overloading will occur well before the detector will overload when **Select** is switched to **All Metals**.
- **Low Battery Signal** — A sharp "pip" occurs approximately every 30 seconds when the useful charge of the batteries is near its end.

List of Parts

The box in which the XT18000 is shipped should contain the following items. When you first receive your XT18000, check that all these items are in the box:

- ❑ XT18000 control box
- ❑ 10" (25 cm) elliptical coil
- ❑ 3-piece shaft assembly
- ❑ Black armrest
- ❑ NiCad battery pack
- ❑ NiCad battery charger
- ❑ Blue hipmount bag
- ❑ Basic field guide
- ❑ Warranty card
- ❑ This manual.

Please enter the required details on your warranty card and mail it to Minelab Electronics Pty Ltd.

It is extremely important that we receive your warranty card within 14 days of date of purchase to register your new detector on our warranty file.

Assembling the XT18000

Please follow these simple instructions to assemble your new XT18000. Refer to the drawings to identify the parts and how they are positioned. If you have any difficulties, please call your dealer for further instructions.

Armrest/Upper Shaft Assembly

a) Remove the black nylon bolt and nut from the armrest (1).

b) With its larger fins pointing in the same direction as the foam handgrip (4), slide the armrest (1) onto the end of the grey upper shaft (3).

c) Push the nylon bolt (2) through the holes and tighten the wing nut by hand.

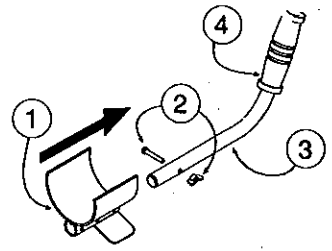


Figure 2 — The Armrest and Upper Shaft Assembly

Intermediate Shaft Assembly

a) Slide the intermediate shaft (7) into the upper shaft. The black "V" clip (6) must be facing down along the foam handgrip section of the upper shaft (see Figures 4 and 5).

b) Ensure that the two pieces click together and do not come apart easily.

Lower Shaft Assembly

a) Remove the tape on the lower fibreglass tube (9) which is holding the black teardrop washers (10) in place.

⚠ ***Make sure the washers do not fall out after removing the tape.***

b) Remove the white nylon nut, washer, and bolt (11) from the coil (12).

c) With the teardrop washers in place, push the lower tube (9) into the bracket on the coil so that the holes line up.

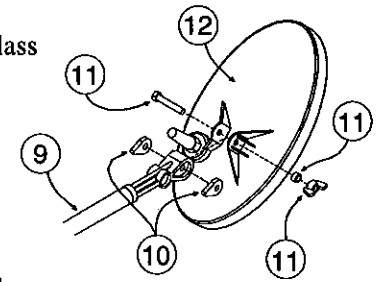


Figure 3 — The Coil and Lower Shaft Assembly

⚠ ***Ensure that the black nylon spring clip near the top of the fibreglass tube is pointing toward the rear of the coil.***

d) Push the white nylon bolt (11) through the holes in the bracket on the coil from the cable entry side, then place the spacer and wing nut on the other end of the bolt, and tighten it by hand.

Completing the Shaft Assembly

a) Slide the lower shaft assembly (9) into the intermediate shaft (7). Note that the black plastic locking nut may need to be loosened to get the lower shaft assembly in.

b) Set the length of the shaft by locking the black nylon spring clip into one of the holes provided, then tighten the plastic locking ring by hand.

c) Minelab recommends that the skidplate (13) be firmly fixed to the bottom of the coil by pressing it on firmly and "clicking" it in position.

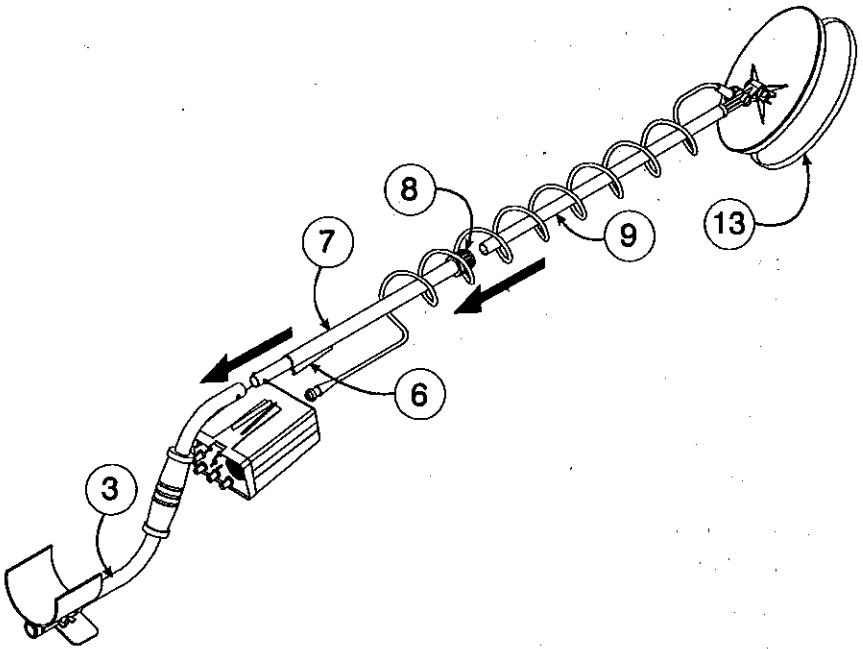


Figure 4 — Completing the Shaft Assembly

Shaft Mount

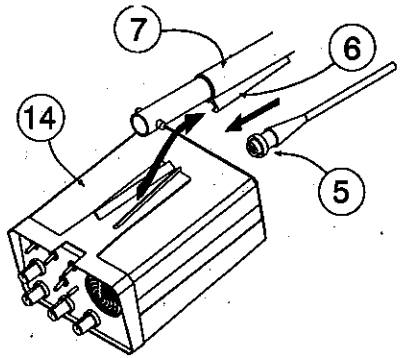


Figure 5 — Mounting the Control Box on the Shaft

a) Check that there are charged batteries in the control box (14).

b) Position the control box (14) intc the shaft "V" clip then push dow hard toward the coil until the box "clicks" into position and cannot be easily removed.

c) Using the Velcro tabs provided, place one on the shaft about 10 cm above the coil. Place the other on the shaft about 8 cm below the control box or, if hipmounting, at a comfortable position.

d) Stand the detector upright so that the coil is sitting flat on the ground. Now lay the detector backwards so that the control box sits on the ground, keeping the coil flat on the ground.

e) Pick the detector up and begin to wind the coil cable from the coil firmly around the shaft. Wind between 25 and 28 turns of the coil until it reaches the control box.

STOP ***Leave enough slack at the bottom of the cable near the coil to adjust the coil position without straining the coil cable.***

f) Connect the cable connector (5) to the plug on the rear of the control box.

Hipmount

Hipmounting is an alternative to mounting the detector on the shaft. Hipmounting significantly reduces the strain on your arm, enabling you to search for longer periods without undue fatigue.

a) Check that there are charged batteries in the control box.

b) With its control panel facing outward, put the control box into the hipmount bag provided.

c) Either thread the bag onto your belt or suspend it from the bag strap.

d) Stand the detector upright so that the coil is sitting flat on the ground. Now lay the detector backwards so that the control box sits on the ground, keeping the coil flat on the ground.

e) Pick the detector up and begin to wind the coil cable from the coil firmly around the shaft. Wind 25 to 28 turns of the coil until it reaches the control box.

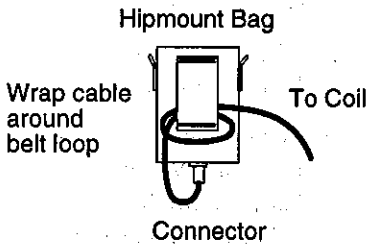


Figure 6 — Hipmounting the Control Box

STOP ***Leave enough slack at the bottom of the cable near the coil to adjust the coil position without straining the coil cable.***

f) Connect the cable connector (5) to the plug on the rear of the control box.

g) Fasten the cable to the shaft using the Velcro tabs provided.

h) To prevent strain being placed on the cable and connector, wrap one turn of the cable through the belt strap and plug the connector into the control box, then hand tighten the locking nut.

Batteries

The XT18000 is supplied with a NiCad battery pack (16), which is a hard plastic case containing a number of NiCad cells. It can be recharged many times, giving a substantial cost saving over using alkaline cells.

Before using the XT18000 for the first time, you should charge the battery pack for 10 to 12 hours.

STOP *The battery pack is* **not** *a seviceable item. It should never be opened — opening it will void its warranty.*

Installation of NiCad Battery Pack

Ensure that the detector is switched Off before opening the battery compartment.

a) Open the battery compartment lid (15) by pushing firmly down and sliding it from the rear of the control box (14).

b) Put the battery pack (16) into the revealed compartment. Ensure that the holes in the pack are aligned with the spring connectors of the compartment.

c) Replace the lid by sliding it back over the compartment.

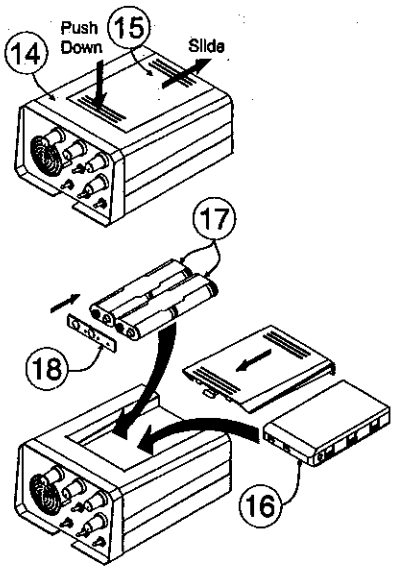


Figure 7 — Installing the Batteries

Installation of Alkaline Cells

A battery of 8 alkaline 'AA' (Penlite) cells can be used instead of the NiCad battery pack.

STOP *We do not recommend the use of ordinary carbon cells and do not guarantee the operation of the XT18000 if you use them.*

a) Place the 8 'AA' cells in the supplied holders (17). Make sure that they are aligned as indicated in the holders.

b) Clip the battery holders onto the "Alkaline Adapter" (18).

c) Install this assembled unit as if it were the battery pack.

Low Battery Warning and NiCad Recharging

The XT18000 has an automatic Low Battery warning system. When the battery charge is critically low, a distinct sharp "pip" will sound at about 30-second intervals through the headphones or loudspeaker. These audio signals are quite distinctive and indicate that the batteries have about 15 to 20 minutes useful charge left.

The NiCad battery pack can be recharged from the supplied mains powered charger. If mains power is not available, an optional 12V charger can be purchased from Minelab to enable you to charge the battery pack from the cigarette lighter of your vehicle.

The Controls

This section gives detailed descriptions of the controls of the XT18000 and their uses and effects. Although these can be difficult to grasp immediately, having such knowledge means that you can get the most out of your XT18000. As you gain more experience with your XT18000, it might be useful to study this section again.

The Control Panel

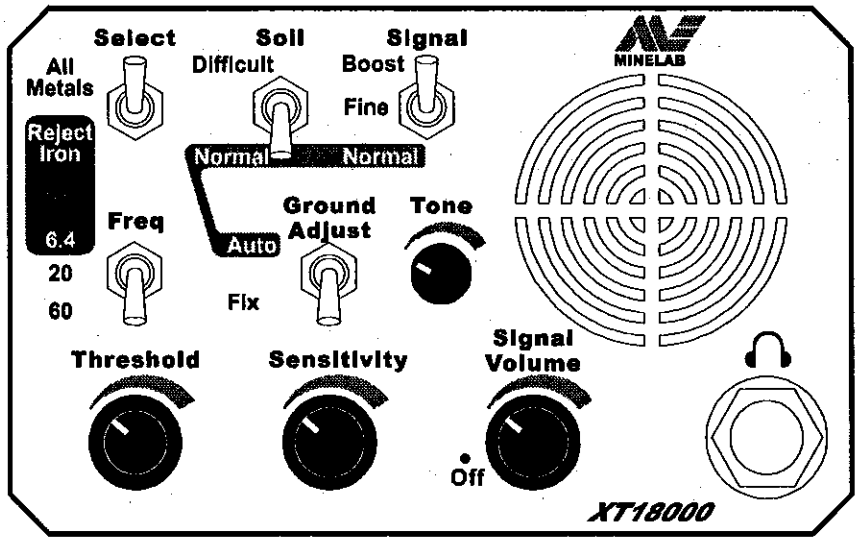


Figure 8 — The XT18000 Control Panel

The Control Panel of the XT18000 has been carefully designed, especially the placement of the controls, so those you will need to use most frequently are at your finger-tips (see Figure 8).

The most commonly used switch positions have been indicated with a green panel enabling you to "set up" your detector in seconds.

The link between the switch position for the **Reject Iron** mode and the optimum frequency for iron rejection has been indicated by the rust-brown panel.

Signal Volume

The **Signal Volume** incorporates the **On/Off** switch. It is **Off** when the control is turned fully counter-clockwise. Turn the **Signal Volume** control clockwise and the XT18000 "clicks" **On**.

This control sets a maximum limit on the loudness of the audio signal obtained from various targets. If the **Signal Volume** is set close to the maximum, the audio signal is proportional to the target signal level (see Figure 9). However, if the **Signal Volume** control is turned down, the audio signal is the same for a small target but limited for a bigger target.

Thus this control is a **volume limiter**. It is a useful feature when using headphones, as audio signals which would otherwise be uncomfortably loud can be limited while maintaining full response to small signals.

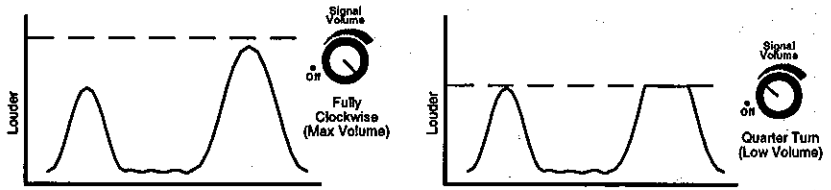


Figure 9 — Signal Volume control
(The maximum audio output (volume) can be limited)

Threshold

The **Threshold** control is used to set the background audio signal or "threshold level". The **Threshold** control should be set just a slight twist of the control past the point where the audio signal is just audible, but not too loud, at a level where prolonged use could be irritating.

It is important to know that small targets or large but deep targets may not produce a distinct audio signal but rather cause only a slight deviation from the threshold level. If the threshold level is set too high or too low, the very small variations in audio signal which indicate very small or deep targets can be missed.

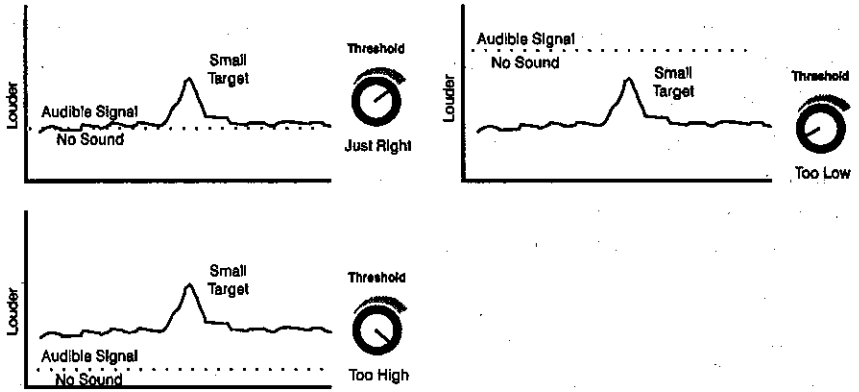


Figure 10 — Threshold control settings

In the above graphs (Figure 10) the dotted line represents the level at which the audio output becomes audible; signals cannot be heard if they are below that dotted line. When the threshold is set correctly it is just above being audible and even small variations in the sound level will be heard (see top left). If the threshold level is set too high then small variations in audio signal might not be discernible above the threshold level (see bottom left). If the threshold level is set too low there is no audible background audio signal and small target signals will not go above the threshold of audibility (see top right).

Sensitivity

The **Sensitivity** control also affects the level of sound produced by the detector for a particular target. However, unlike the **Signal Volume** control, it affects both small and large targets alike.

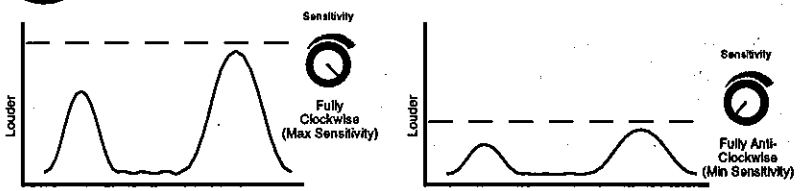
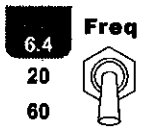


Figure 11 — Sensitivity control
(The audio output is amplified according to the sensitivity setting)

It is recommended that in most ground the **Sensitivity** control should be set to the maximum sensitivity, which is obtained by turning the control fully clockwise.

The **Sensitivity** control should only be decreased in case of electrical interference or poor ground conditions such as heavy mineralisation or heavy ironstone. However, before decreasing sensitivity, try setting the **Soil** switch to the **Difficult** position as this might solve the problem.

Freq



The **XT18000** has three operating frequencies: **6.4 kHz**, **20 kHz** and **60 kHz**. Usually **6.4kHz** is better suited to larger, deeper gold nuggets while **60kHz** is better for smaller nuggets near the surface. The **20kHz** setting is useful for general purpose detecting.

After changing the frequency setting, there will be a period of 2 seconds when the detector will not detect any targets. Also, it might be slightly out of ground balance, but the Automatic Ground Balance will quickly readjust itself as you start sweeping the ground. If you want to make sure you don't miss any targets, you can "pump" the detector as explained in the Operating Instructions (see page 21 for details).

Signal

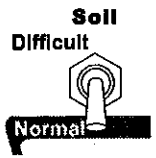
The **Signal** switch provides three levels of audio signal: **Normal**, **Fine** and **Boost**.

In the **Normal** position, a detected signal increases the loudness of the response as is common in most detectors. There is a change in the pitch as well to help segregate target signals from the background threshold tone.

In the **Boost** position, the output signal is further amplified, offering extreme depth penetration in quiet soils or in a small area with constant ground. You are likely to encounter excessive "spurious" noise if you search in variable ground using the **Boost** setting. Use this mode to pin-point a target which gives a faint signal under normal circumstances.

The **Fine** position is specially designed to enable the detection of small and medium size nuggets in highly variable ground. In this mode, a detected target gives a double beep which makes it possible to detect small responses more accurately. Excessive numbers of "hot rocks" could make this mode ineffective in some grounds.

Soil



The **Soil** switch is used to adjust the detector for different degrees of ground mineralisation. The **Soil** switch should always be set to the **Normal** position for ground that is not highly mineralised. In highly mineralised or "hot" ground, which will be very noisy and produce large variable responses, the **Difficult** setting should be used. It should be noted that in the **Difficult** position the sensitivity of the detector will be slightly reduced.

If the detector produces a high pitched "squeal" (called the Overload Signal), this indicates that the ground is extremely "hot" or there is a very large target close to the coil. If the Overload Signal is caused by "hot" ground, set the **Soil** switch to **Difficult**.

Select (Discrimination)

The **Select** switch allows the use of the discriminator built into the XT18000. It has two positions: **All Metals** and **Reject Iron**.

In the **All Metals** position, the detector responds to all targets with the same target signal, i.e. the usual type of sound for all targets.

In the **Reject Iron** position, the detector discriminates between ferrous and non-ferrous targets to the limits of its accuracy. Ferrous targets will be signalled by staccato sounds which are noticeably different from the non-ferrous sound. Using the XT18000 discriminating mode will not sacrifice sensitivity or depth, but it will not necessarily discriminate at the full depth at which the target can be detected.

The discriminator is a useful aid to gold prospecting when its limitations are fully appreciated and the operator understands the conditions under which it will work reliably.

It requires a proper understanding of the paragraphs referring to discrimination in the Detecting Techniques section (see pages 28-9), as well as skill gained from practice and experience.

Many experienced users recommend that you dig all targets detected.

Ground Adjust

The **Ground Adjust** switch selects either Automatic Ground Balancing or fixes the ground balance setting. The **Ground Adjust** switch has two positions, **Auto** and **Fix**. In both positions the XT18000 is a motion detector. The coil must be moving over the target for it to be detected. If the coil is stationary there will be no response.

In the **Auto** position the XT18000 is an Automatic Ground Balance detector. This means that the detector continually adjusts itself to maintain Ground Balance, which will greatly reduce the noises caused by ground interference.

In the **Fix** position the XT18000 will no longer follow the changes in the ground mineralisation and remain set at the ground balance setting produced by the last use of the **Auto** position. This mode is useful when detecting over suspected deep targets after ground balancing on a nearby patch of ground and when testing soil from a hole for the presence of targets.

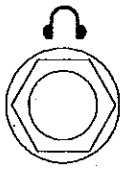
It is important to know that a deep target may be "balanced" out by continual sweeping over it when pin-pointing in the **Auto** mode. By balancing next to the target then switching to the **Fix** mode, the target cannot be balanced out.

Tone

The XT18000 has a **Tone** control which allows the operator to adjust the "tone" or "pitch" of the audio signal to suit the individual. Generally, this should be set to the pitch that you find the easiest to listen to.

However, note that as far as finding nuggets goes, the ear must be sensitive to the selected pitch and the range of pitches around it.

Headphones



The **Headphones** socket is located at the bottom right corner of the front panel. Headphones used should be of low impedance, but no less than 8 ohms. The socket will accept most mono and stereo headphones with a ¼" jack.

When the headphone plug is inserted, **the loudspeaker is automatically disconnected** so that sound comes through only the headphones.

When using headphones, you can adjust the **Threshold** control to a lower threshold level, and outside noises, such as wind, will be less distracting. Using headphones also conserves battery life. If the headphones have a "Stereo/Mono" switch, set it to "Stereo".

Headphones can significantly increase your chances of hearing a small signal, therefore we recommend their use.

Coils

The XT18000 should be used only with coils that have been explicitly indicated by Minelab Electronics as being suitable for use with the XT18000. Please note that XT17000 coils might not be suitable.

The 10" (25 cm) elliptical coil suuplied with the XT18000 is a "Double D" coil, that is, it contains two "D" shaped windings which are partially overlapping. This "Double D" configuration is ideal for locating deep targets in variable ground.

Concentric coils have a different detection profile from "Double D" coils (see Figure 12).

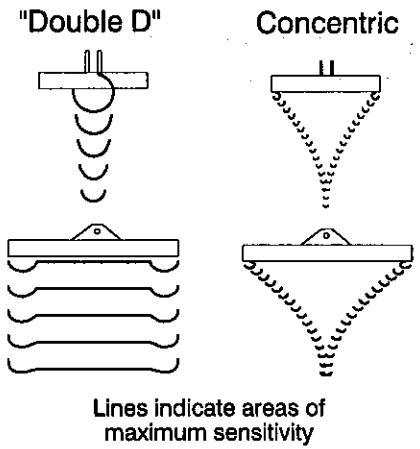


Figure 12 — Coil Sensitivity Patterns

The "Double D" detection pattern is "blade like" and is sensitive across almost its complete width. This makes pin-pointing targets easier than with concentric coils, and allows more ground to be searched with each sweep than the concentric coil, as each sweep has to be overlapped less.

Operating Instructions

Fundamentals

The XT18000 is a motion detector and must be moving over a target to be able to detect it. If the coil is held still for a few seconds, any signals due to ground or targets will die away. The XT18000 is designed to be sensitive to a large range of targets while also having the ability to discriminate between ferrous and non-ferrous targets.

When in use, the detector should have the **Threshold** control set so that there is a quiet but audible signal at all times. Any variation in this signal as the coil is moved over ground can indicate the presence of a metallic target underneath. It could also, however, be due to sudden large variations in soil conditions for which the automatic ground balance cannot adequately compensate. Such differences can be learned only through experience.

Operating the XT18000

a) Turn the XT18000 On with the **Signal Volume** control. In the interests of extending battery life, avoid leaving the detector On unnecessarily.

a) Once the initial turn-on noises have subsided, turn the **Sensitivity** control to maximum then rest the coil on the ground. Once again, after a few seconds, the noises due to the movement will die down. If there are any residual noises, they will be due to electrical interference with the detector. You will need to turn down the **Sensitivity** control until the noises are inaudible, but no further. Reduction of sensitivity reduces the ability to detect targets, so the sensitivity should be reduced as little as possible.

b) It is recommended that the **Ground Adjust** is set to **Auto** for general detecting. The **Fix** setting can be used to hold the ground balance in localised areas when it is suspected that small targets are being balanced out.

c) The **Signal Volume** control is generally turned to maximum. The setting does not affect the threshold level, but sets a limit on the loudest audio signal produced.

If you are going to use headphones, connect them and put them on. Test the volume comfort level by passing a piece of metal over the coil. Adjust the **Signal Volume** control to a comfortable level.

d) Adjust the **Tone** control to a pitch to which your ears are very sensitive. This again allows you to have the threshold set to as low a level as possible.

e) Adjust the **Threshold** control until the audio signal is just audible when the coil is held motionless. It must be audible as small targets might not produce big enough signals to make any sound if there is not an already audible background sound. However, if the audio signal is too loud, small variations might also be missed because they are too small compared with the background sound.

f) Move the coil up and down near the ground surface. This allows the Automatic Ground Balance feature to set the balance. Keep "pumping" the coil until there is no change in the audio signal accompanying the movement (see Figure 13).

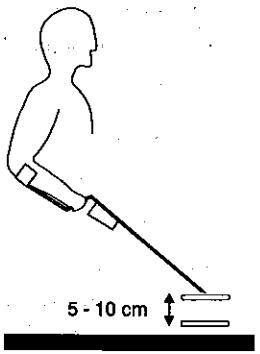


Figure 13 — Pumping

g) Start searching by moving the coil slowly over the ground. Periodically check the control settings to correct any change in the detector or soil conditions. Refer to "Detecting Techniques" (see page 23) for details on finding targets. Refer to the "Best Setup Positions" chart (see page 3) for recommended detector settings in different environments.

Ground Balance

Generally speaking, without the ground balance of the detector being set, passing the coil over an area of ground will produce signals whether or not there are targets in the ground. Signals produced without the presence of targets are due to the magnetic nature of the soil.

To eliminate these unwanted signals the ground balance of the XT18000 must be adjusted.

The XT18000 automatically adjusts its ground balance setting when the **Ground Adjust** switch is set to **Auto**.

When first turning the detector **On**, switch it to **Auto** and raise and lower the coil repeatedly over the ground until the audio signal is constant. Leaving the setting at **Auto** while detecting will ensure that the XT18000 continuously adjusts itself to the changing ground conditions. Note that sudden changes in the ground conditions will still produce a change in the audio signal.

Also note that it is possible for small targets to be balanced out when the detector is set to **Auto**.

Detecting Techniques

For best results with the XT18000, it is recommended that you learn some basic detecting techniques such as sweeping, pin-pointing and digging targets.

Sweeping

One of the most important detecting techniques, and perhaps one of the hardest to perfect, is the sweeping of the coil across the surface of the ground.

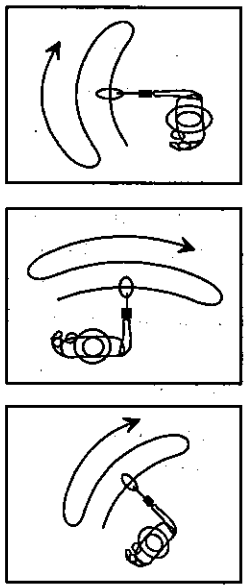


Figure 14 — Sweeping Patterns

The XT18000 is a motion detector which means that in order to detect an target the coil must be moving. It is recommended that you use a sweeping motion for the coil while detecting (see Figure 14). It is essential that the coil sweeps are overlapped in order to ensure that all ground is searched.

Sweeping is carried out in a snaking motion along the ground to cover the search area. Keep the coil parallel to the ground at all times and be aware that there is a tendency for the coil to be raised at the end of each sweep across the body (see Figure 15).

Each sweep from one side of the body to the other should take between 2 and 4 seconds to complete. This speed will depend on the soil conditions and on the area in which you are operating.

Variation in coil height at the end of each swing can cause confusing sounds and will reduce detection depth. Keeping the coil in contact with the ground will increase detection depth and sensitivity to very small targets.

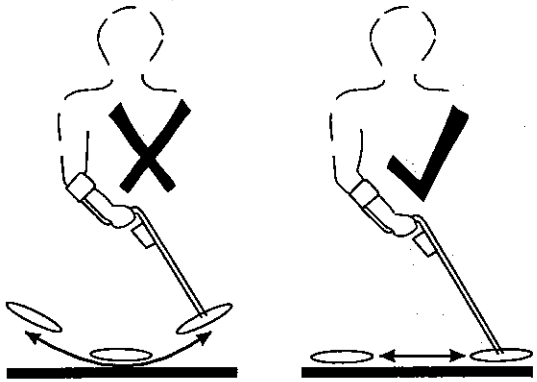


Figure 15 — Sweeping Technique

Pin-pointing the Target

When a target has been detected, it is necessary to accurately determine its position to enable the operator to recover it quickly and minimise any damage to the environment.

To pin-point the actual location of the detected target, sweep the coil over the general area taking note of where the strongest signal is received as the coil is moved over the target. By decreasing the length of the sweep it should be possible to draw an imaginary line in the ground where the strongest signal is located (see Figure 16).

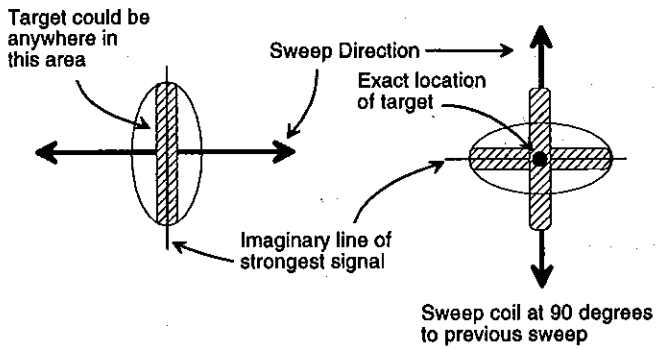


Figure 16 — Pin-pointing the Target

The target could be anywhere along the length of the coil so, in order to pin-point its exact location, it will be necessary for you to turn at a 90 degree angle and repeat the sweep across the target.

Again take note of the point where the strongest signal is and draw another imaginary line in the ground. Where the two imaginary lines cross is where the target is located.

Digging the Target

⚠ *Always remember that when digging, the hole should be kept as small as possible to keep the damage done to a minimum.*

Dig carefully as a heavy blow can split a nugget, causing a drop in its value. All holes dug must be filled in once the target has been recovered.

It is advisable to have some sort of digging tool when searching. Useful tools are:

- ❑ A small strong digging spade.
- ❑ A small knife for grassy areas.
- ❑ A small pick.

Before digging, clear the surface material and check that the signal is still there. If there is no signal, then the target must be amongst the surface material. If the signal is still there, dig down a few centimetres. Dig a dish-shaped hole; any sharp edges of soil might cause a false signal.

If the target is not visible, sweep the coil over the hole. The signal should become louder so continue to dig. If the signal has gone then the target should be in the pile you have just dug. If the target is not clearly visible, you might need to scan the soil which has been dug up, so be sure to pile the soil carefully while digging.

The target can be located in this soil by the following methods:

a) Sweep the coil over the pile of soil to locate the target. Be sure that there are no targets buried under the soil directly below the pile.

b) When the target has been removed from the hole, ensure the **Ground Adjust** control is set to **Fix** and lay the detector down with the coil flat on the ground, near the hole.

c) Pick up a handful of soil from the pile and pass it across the coil (see Figure 17). If there is no signal then place the soil in a second pile away from the first and grab another handful from the pile. Continue this process until the target is in your hand. Sift through the soil in your hand until you find the target.

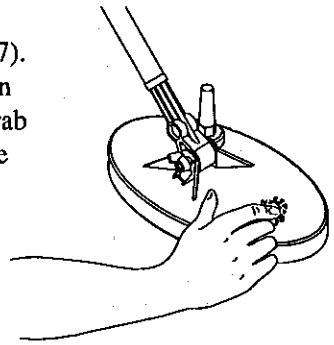


Figure 17 — Locating the Target

Once the target has been recovered it is a good idea to run the detector over the hole again to make sure that there are no other targets to be found. When you have recovered all targets from the hole, it is advisable to search the surrounding area carefully as there is a high chance that more targets will be nearby.

Automatic Ground Tracking

These simplified diagrams (see Figure 18 overleaf) show how Automatic Ground Tracking with the XT18000 allows you to cover more ground in less time.

The top diagram shows normal searching without Automatic Ground Tracking. Ground noises reduce the effective searching depth when you move from where you last ground balanced. The shaded area shows ground which is not properly searched.

The centre diagram shows how a hardworking experienced professional will avoid missing treasure in that area. The detector is rebalanced more often, which is very time-consuming.

The bottom diagram shows how genuine automatic ground tracking covers all the ground quickly and effectively. For this to occur, the detector must track quickly enough and still retain sensitivity.

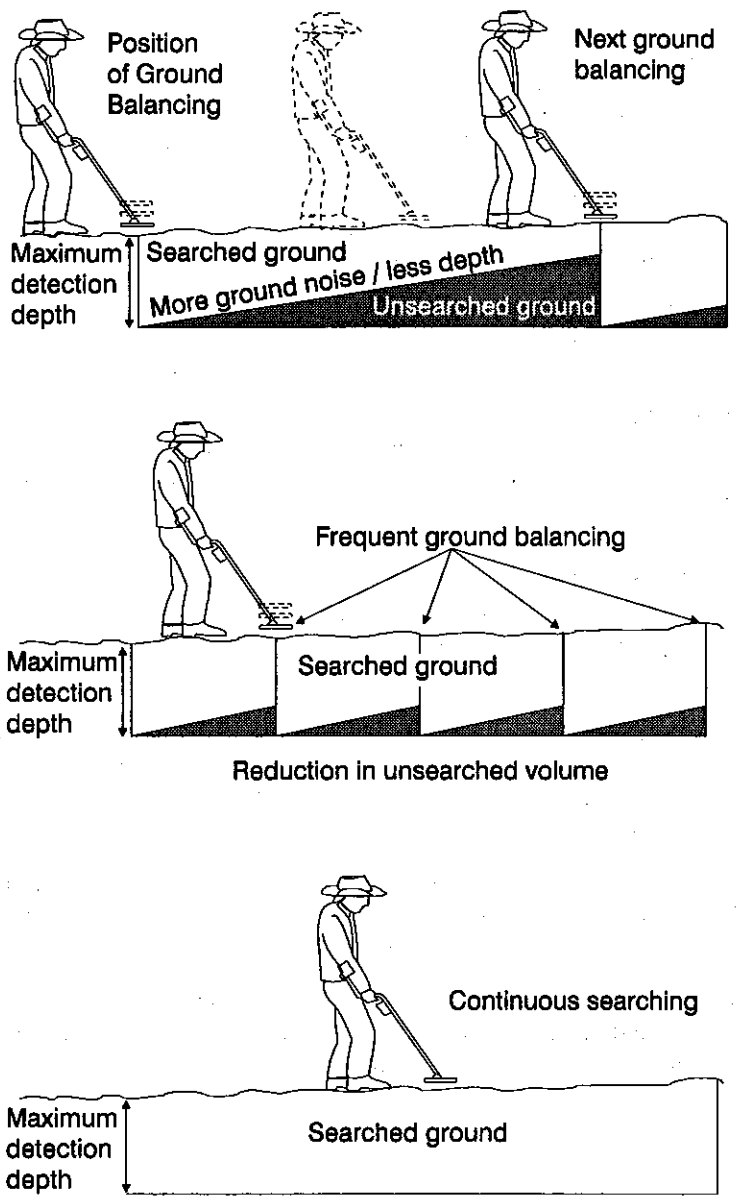


Figure 18 — Automatic Ground Tracking

Discrimination

Discrimination of Iron Targets

When the **Select** switch is set in the **Reject Iron** position, the **XT18000** is able to discriminate between ferrous (iron) and non-ferrous targets (valuables).

A unique feature of the discriminator is its ability to read the degree of ground interference in the process of discrimination. The detector automatically adjusts its discriminating power depending on the type of ground present, thereby achieving the maximum reliable discrimination depth. Thus in "mild" ground the detector will discriminate accurately at greater depth, while in "hot" ground the discrimination depth is reduced to maintain reliable discrimination. At all times, however, an audible "target" sound is heard without loss of sensitivity so that no target can be missed.

⚠ *Be aware that if the detector head is held in the air or stationary over the ground for an extended period, the discrimination sensitivity increases to maximum.*

If it is then used on "hot" ground false discrimination signals will appear. After a short time, however, the detector will adjust to its new condition and the sensitivity of discrimination will automatically be set correctly.

Discriminating in "Hot" Ground

The best procedure for attempting to discriminate in "hot" ground is to move the head over ground near the target to allow it to adjust to the ground conditions, then pass it over the target.

Repeated movement over a ferrous target will again desensitise the discriminator and false signals will begin to occur. During this procedure it is very important to move the search coil across the ground keeping it at the same height.

Discriminating within Holes

The discriminator must not be used to test the target beneath a hole that has been dug in the process of retrieving the target. Moving the detector head within the hole will often produce a false signal.

Similarly, the discriminator should not be used to test a target within the pile of soil which has been taken from this hole as again false signals are likely to occur, particularly in highly mineralised ground. The discriminator will give the most reliable result when the target is tested while it is on or within undisturbed ground. In all other cases it is likely to be unreliable.

When the search coil is passed over large targets near the surface, the discriminator electronics may sometimes overload. This is indicated by a high pitch "chirp" or "bell-ringing" sound. Either sweep the search coil further from the target or set the **Soil** switch to **Difficult.**

The discriminator may sound where ferrous and non-ferrous objects are close together. Consequently, most experienced users recommend that you retrieve all detected targets.

Environmental Concerns

Firstly it should be pointed out that prospecting with a metal detector is the most environmentally friendly way to recover gold. Other methods require the use of toxic chemicals such as cyanide or mercury, or large quantities of water which end up "muddied" and can cause erosion problems.

It is very important to leave an area that you have searched in at least the same condition that you found it. All holes that have been dug must be properly refilled. Not only is it environmentally unacceptable to not fill in your holes, it is also dangerous. Take any junk that you find or produce away with you to dispose of properly. Leaving an area "scarred" can result in action being taken to prevent the use of metal detectors. This has already happened in many productive areas which are now lost to the detector operator.

Prospecting Tips

It will take time and practice to learn how to recognise which signal to pay attention to or to ignore.

The XT18000 is particularly good at minimising these interfering signals or "ground noises", and this is the reason for the exceptional depth capability. However, even with this detector some ground noises will occur, particularly in heavily mineralised ground.

Mineralisation and Hot Rocks

Typically, heavily mineralised ground can make a detector respond with an indication that there may be a target reasonably deep beneath the surface. The sound could be rather broad and not very loud, or sometimes crisp and reasonably sharp. Other noises which most affect detectors are "hot" rocks. These are rocks rich in iron which can produce very strong audio signals. With the strong ones, some detectors have problems in tuning them out, but with the XT18000 signals from hot rocks are not as great a problem.

If you find a broad "positive" sound which you feel is probably due to mineralisation but is positive enough to make you suspect a possible deep target, pass the coil in a circular path around the centre of the positive sound source while maintaining the closest edge of coil about 5 to 10 cm from this centre. After 2 or 3 rotations, each taking 1 to 1.5 seconds, pass the coil directly over the centre and listen to the "positiveness" of the signal. Repeat this procedure but this time with the coil at right angles to the previous orientation and pass the coil over the positive sound centre at right angles to the first pass. If both passes result in a significant positive response, then dig!

It is possible for gold nuggets to be entirely encased in rocks, so thorough checking is necessary to ensure no gold is missed. Breaking rocks in two, then passing each section of the rock across coil, one after the other, will determine which piece contains the gold.

Sometimes "negative" hot rocks or ground "holes" are encountered. In this case the sound from the detector is reduced as it passes over the rock or "hole". Nevertheless, the detector, on recovering from this loss of sound, can give an audible signal which to the beginner may be confused with the sound of a target.

Experience will soon enable the operator to recognise this characteristic sound which is in fact quite different from a target. Setting the **Signal** switch to **Fine** can reduce this problem.

Clay Domes

A common occurrence in nugget-bearing country is soil mineralisation commonly known as "clay domes". These are regions of rather broad sound which could be confused with the sound which would come from a large deep nugget. The following procedure will quickly establish whether or not the sound comes from clay or a metal target:

a) Remove about a 4 cm (1.5") depth of soil in a broad 30 cm diameter circle with no sharp edges. This will allow the coil to approach the "target" by about 4 cm. With the coil in this lowered position over the hole, attempt to ground balance the detector.

b) If ground balance can be achieved, then this source of sound is probably clay since it is not possible to ground balance a metal target which has been brought closer to the coil. In addition, the signal from a metal target is greatly enhanced when the target is brought even slightly closer to the coil, whereas the clay, because it is not concentrated, does not produce a greatly enhanced signal even when the coil is lowered.

c) Be careful that the edges of the shallow hole are not producing spurious signals. The technique requires practice and experience, but it is essential to develop a good technique to avoid digging many deep holes unnecessarily.

Charcoal

Charcoal can sound loud and rather like a metallic target when close to the surface. Charcoal is usually created by farmers burning off tree stumps or by bushfires. The growth is burnt below the ground level, so it is not always obvious what the sounds are until you have actually dug up the causes of these noises a few times.

Again, experience will teach the operator how to read the ground efficiently and gain understanding of the detector's response to the ground.

An indication of charcoal is that the sound seems very spread out and becomes patchier as the ground is dug. Inexperienced operators should continue to dig until the reason for the signal becomes clear.

Gold Lore

To have a good chance of detecting gold, it is necessary to search out areas where "coarse gold" is known to have been found, or other areas where it is likely to occur. The term "coarse gold" refers to gold ranging in size from a grain of wheat to many grams, and in some cases hundreds of grams.

Many nugget-bearing areas are the result of broken-down gold reefs containing quartz and ironstone. Experienced prospectors learn to "read the ground" and look for tell-tale signs indicating potential gold-bearing fields. It is a fascinating and exciting hobby to learn some of these skills and apply them in your search for gold.

The modern metal detector has given today's prospector enormous advantages over the prospectors of old. The ground can be rapidly scanned until a small piece of gold is found and then a study of the area made to decide where other gold nuggets are likely to be located. It is then best to make a systematic search of the area.

The main problem encountered while using metal detectors is the presence of heavy concentrations of ironstone. This is particularly the case in some of the richest known fields in Australia or the "black sands" areas of North America. It appears that gold nuggets and ironstone often go together, and in fact many gold nuggets have ironstone embedded in them or are encased in ironstone and others show strong ironstone staining. Some of these fields have only been superficially worked because of the interference to the detector caused by the ironstone. Usually only the most persistent professional is prepared to spend the time and energy necessary to cope with these conditions and then only partially.

Maintaining and Troubleshooting the XT18000

Proper Care Of Your Detector

The XT18000 is a high-quality electronic instrument, finely engineered and packaged in a durable and rugged housing. Taking proper care is mostly common sense.

a) Do not leave batteries in the control box when the detector is not in use for a period exceeding two weeks. Damage caused by leaking batteries can be severe and would void the warranty through user negligence.

b) If temperatures are very high, do not leave the detector in the sun longer than necessary. Covering it from direct sunlight will help protect it. Try to avoid leaving it in a closed boot of the car sitting in the sunlight.

c) The coil housing will wear through if you scrub the ground with it while searching. We recommend that you use an easily replaceable skid plate to protect it, and replace it before it wears out.

d) The hipmount bag is designed to protect the control box, especially from dust, mist and rain. It will also cushion potentially damaging knocks. Use the hipmount bag where possible.

e) Although the control box has been designed to be water resistant, it is not waterproof. Avoid wetting it unnecessarily. Never allow the box to come into contact with petrol or other oil-based liquids.

f) Should the coil be used in salt water, it must be washed with fresh water.

g) Keep the unit dry and clean and avoid getting sand and grit into the shafts or the tightening nuts. Do not use solvents to clean the detector. Use a damp cloth with mild soap detergent.

Troubleshooting

If your detector is not performing satisfactorily please check the following:

- ❑ **Batteries.** Many detector problems are caused by flat or faulty batteries. Ensure that NiCad batteries are correctly maintained (see the Batteries section on page 10). If using Penlite or "AA" cells, use only Alkaline batteries.
- ❑ **Cables.** Ensure that the Coil cable is in good condition and not subject to undue stress.
- ❑ **Interference.** The XT18000 is a very sensitive VLF radio receiver. There are many external sources of noise that may affect the performance of the detector, including another detector in close proximity, high power transmitters, power lines and electric fences.

STOP *Do not open the control box or attempt to alter the coil in any way. Doing so will void your warranty.*

Warranty and Service

There is a two-year parts and labour warranty on the XT18000. Refer to your Warranty Card for details. The Search Coil has a warranty for one year. Refer to your supplier or Minelab for service whether or not your warranty has expired.

⚠ *NOTE. This warranty is not transferable, nor is it valid unless the enclosed warranty registration card is returned to Minelab Electronics Pty Ltd or an authorised Minelab Electronics Pty Ltd regional distributor within 14 days of the original purchase date. The recorded date of purchase is the actual commencement date of the warranty.*

The Minelab warranty does not cover damage caused by accident, misuse, neglect, alteration, modifications or unauthorised service.

For specific details of the Minelab warranty, please refer to the Warranty Card packaged with this equipment.

Specifications

These specifications are subject to change without notice.

Length	Extended	1350 mm (53")
	Unextended	840 mm (33")
Weight	Control Box (excl. batteries)	560 g
	Shaft and 10" (25 cm) Elliptical Coil	960 g
	Packed	3.3 kg
Batteries	NiCad Battery Pack	12V, 600 mA hr
	Alkaline Cells	eight 1.5V "AA"
Coil	10" (25 cm) Elliptical "Double D" Coil	
Headphones	Impedance	8 Ω
	Jack — stereo/mono	¼"
Frequency	Transmission, sine	6.4 kHz 20 kHz and 60 kHz
Ground Rejection	Automatic with no loss of sensitivity	
Search Modes	Motion Detector	Always
	Ground Adjust	Auto, Fix
	Discrimination	All Metals, Reject Iron
Controls	Signal Volume and On/Off	Pot. and switch
	Threshold	Pot. 1 Turn
	Sensitivity	Pot. 1 Turn
	Tone	Pot. 1 Turn
	Select (Discrimination)	Switch 2 Pos.
	Signal	Switch 3 Pos.
	Soil	Switch 2 Pos.
	Freq	Switch 3 Pos.
	Ground Adjust	Switch 2 Pos.
Warranty	Control Box, parts and labour	2 years
	Coil, parts and labour	1 year
Patents	US 4894618, US 4890064, CAN 1260146, AUS 595835, others pending.	