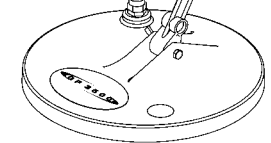
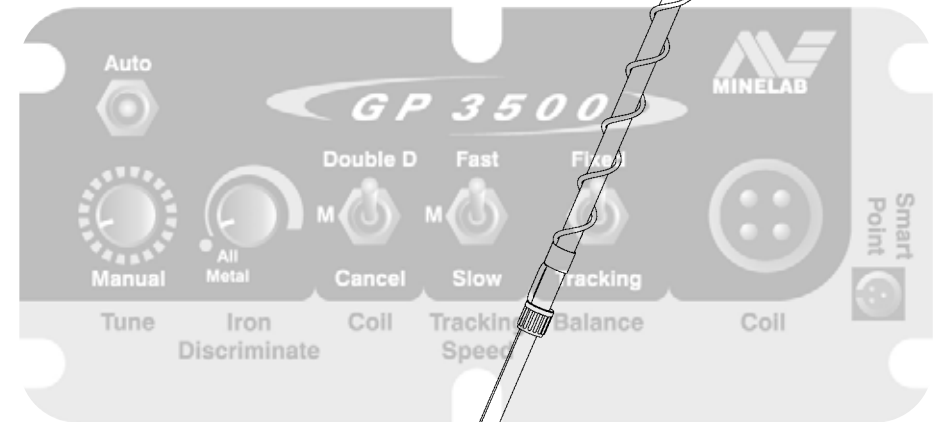
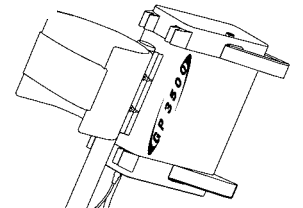




GP 3500



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User's Manual

An IMPORTANT MESSAGE from MINELAB

We ask YOU, as a responsible detector operator, to take all due care regarding the environment.

Minelab cannot stress enough the importance of being responsible when recovering targets.

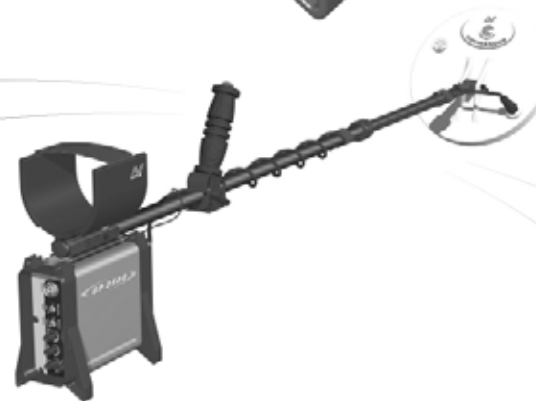
BACKFILL EVERY HOLE YOU DIG.

If care and consideration is taken, during and after the removal of targets, especially with respect to the back filling of holes, this should ensure the continued access to areas for prospecting and treasure hunting. This will also ensure that the pristine condition of our beautiful bushland, forests and dry land areas is maintained with a minimum of damage.

Minelab is working with you towards preserving our natural environment so that the benefits of gold prospecting and treasure hunting can continue to be enjoyed in the years to come.

Every prospector and treasure hunter around the world and the staff of Minelab thank you for your continued efforts towards protecting the environment.

the Minelab ***GP 3500***



Minelab wishes to thank you for purchasing our most advanced gold detector ever, and are confident the GP 3500 will lead you to success in your quest for gold and treasure.

GP 3500



www.minelab.com

GP 3500



page i

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Contact Minelab

Minelab is always interested in your opinions so if you have any questions or comments regarding the GP 3500 or any other Minelab product, please feel free to contact us via your local Authorized Minelab dealer, or write to us:

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Visit our site on the World Wide Web: <http://www.minelab.com> for the latest information on Minelab products and services.

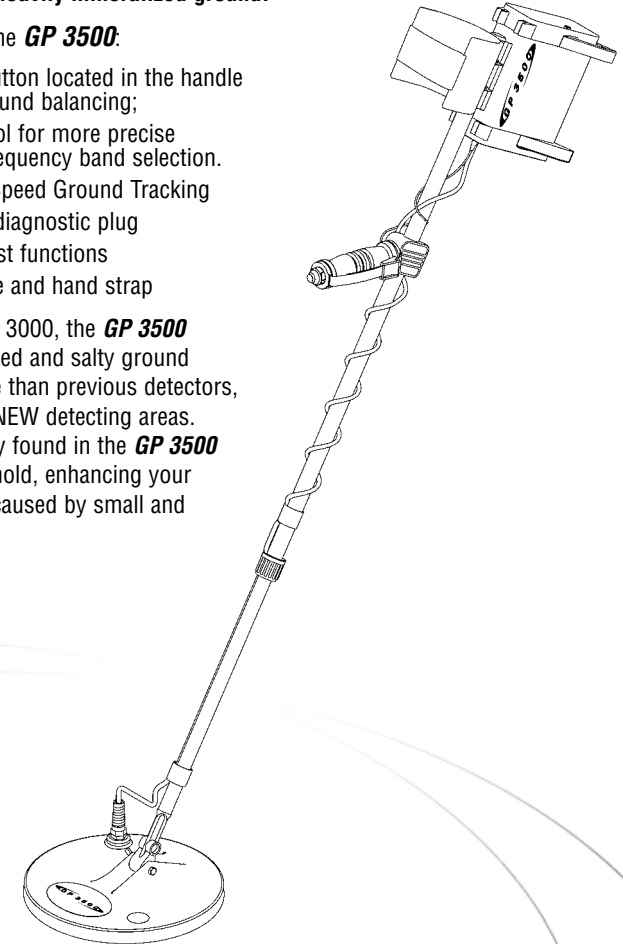
introducing the Minelab GP 3500

The Minelab **GP 3500** utilises "Dual Voltage Technology" (DVT), which assists accurate ground balance and increases sensitivity by overcoming the potential problem of super-saturated electro-magnetic fields in heavily mineralized ground.

Here are some features of the **GP 3500**:

- NEW Quick-Trak push button located in the handle for fast and accurate ground balancing;
- NEW Manual Tune control for more precise interference control & frequency band selection.
- NEW Operator select 3-Speed Ground Tracking
- Improved "Smart Point" diagnostic plug
- Separation of Level Adjust functions
- Easy Adjust Bow Knuckle and hand strap

Like its predecessor, the GP 3000, the **GP 3500** can handle heavily mineralized and salty ground conditions with greater ease than previous detectors, which effectively opens up NEW detecting areas. The new Low-Noise circuitry found in the **GP 3500** results in a smoother threshold, enhancing your ability to hear faint signals caused by small and deep targets.



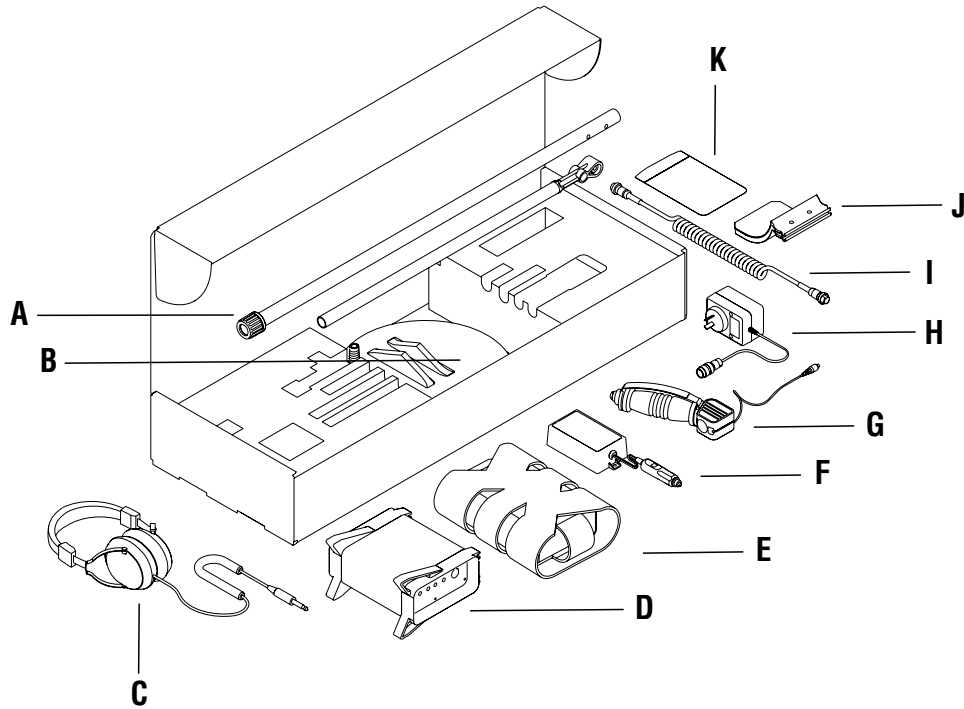


Figure 1.1 – Contents of the GP 3500 pack.

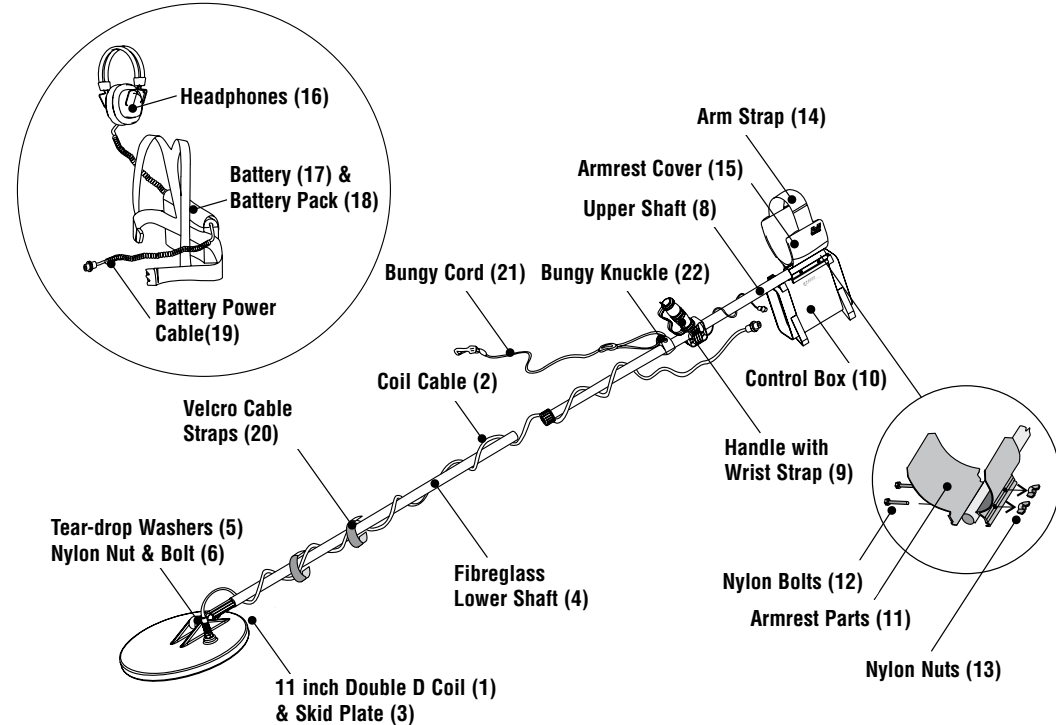


Figure 2.1 – Pre-assembled sections and parts list

The GP 3500 as shipped

- | | |
|--------------------------------|------------------------------|
| A. Shaft Assembly | G. Handle Assembly |
| B. 11 inch Coil | H. Mains Charger |
| C. Headphones | I. Power Lead |
| D. Control Box | J. Arm Rest |
| E. Battery and Backpack | K. Instruction Manual |
| F. 12V Charger | |

- | | |
|--|------------------------------------|
| A. Lower Shaft Assembly | 11. Armrest Parts (2) |
| 1. 11 inch Double D Coil | 12. Nylon Bolt (2) |
| 2. Coil Cable | 13. Nylon Nut (2) |
| 3. Skid Plate | 14. Arm Straps (2) |
| 4. Fibreglass Lower Shaft | 15. Armrest Cover |
| 5. Teardrop Washers | |
| 6. Nylon Nut & Bolt | C. Headphones |
| | 16. Headphones |
| B. Upper Shaft Assembly | D. Battery and Battery Pack |
| 8. Upper Shaft | 17. Battery |
| 9. Handle with Quick-Trak push button | 18. Battery Back-Pack |
| 10. Control Box | 19. Battery Power Cable |
| | F. Extras |
| | 20. Velcro Cable Straps (2) |
| | 21. Bungy Cord |
| | 22. Bow Knuckle |

complete assembly instructions

You will need to assemble the **GP 3500** from all the various components, so we have provided you with detailed assembly instructions.

Attaching the coil

- Step 1.** Check that the coil (1) has a skid plate (3) attached.
 - Step 2.** Take two teardrop washers (5) from the bag and install them into the indentations on the end of the lower fibreglass shaft (4).
- NOTE – The washers should always be full thickness and should be replaced regularly as they wear out and allow the coil to become loose.**
- Step 3.** Push the lower fibreglass shaft (4) into the mounting brackets on the coil and ensure that the spring clip at the rear of the fibreglass shaft, faces the rear of the coil.
 - Step 4.** Line up the holes in the coil with the pivot end of the fibreglass shaft (4). Push the nylon bolt through the holes and fit the nylon wing nut and tighten by hand.

NOTE – Do not over tighten the nut as the coil housing may be crushed or damaged.

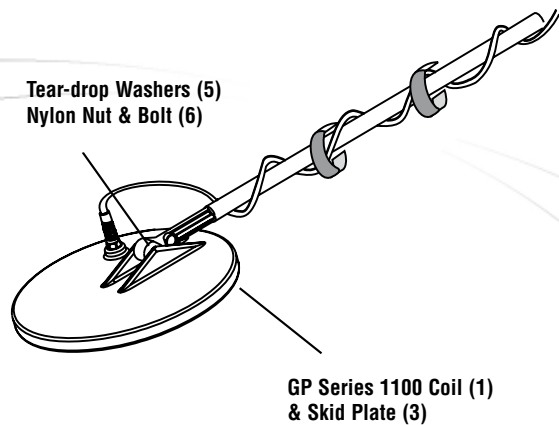


Figure 2.2 – The coil pivot end of the lower fibreglass shaft

complete assembly instructions – *continued*

Assembling the lower and upper shaft sections

Refer **Figure 2.2**

- Step 1.** Slide the lower shaft (4) with coil attached into the end of the upper shaft (8), snap spring clip into place.

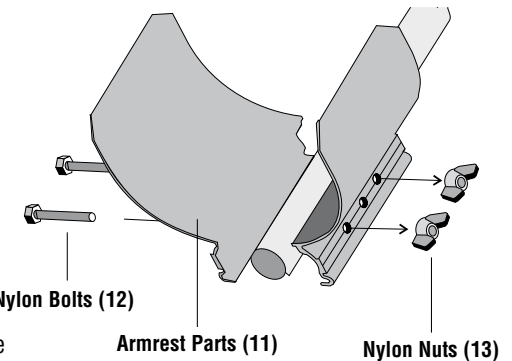
Attaching the handle and arm rest

- Step 1.** Slide the bow knuckle (22) onto the upper shaft (8) and slide it halfway down.

Figure 2.3 - Attaching the armrest
refer also **Figure 2.1**

- Step 2.** Slide the handle (9) onto the upper shaft (8) and slide down.

- Step 3.** Place the two armrest halves (11) on either side of the upper shaft (8) and ensure that the bolt holes are aligned.



- Step 4.** Slide the two nylon bolts (12) through the bolt holes and screw the nylon wing nuts (13) onto the bolts by a couple of turns.

- Step 5.** Attach the armrest straps (14) using the press studs on both sides of the arm rest.

- Step 6.** Push the armrest straps (14) through the slots in the neoprene armrest cover (15) and then push the cover over the armrest (11).

- Step 7.** Position your arm into the armrest and slide the handle to a comfortable position. Tighten the two screws in the base of the handle with a small screwdriver to hold the handle in position.

Tip: For the best balance, the rear of the armrest should be just in front of your elbow.

Attaching the Control Box and achieving balance

- Step 1.** Position the 'T-section' on top of the control box (10) into the armrest with the battery plug at the rear. Tighten the nylon wing nuts by hand.
- Step 2.** Loop the Quick-Trak button cable from the handle, back along the shaft and plug it into the Smart Point connection in the control box (10). (See page 33)
- Step 3.** Adjust the shaft length and coil angle for a comfortable position. The lower fibreglass shaft can be set into position by locating the spring clip into the holes provided in the upper shaft and hand tightening the locking nut at the end of the shaft. The correct length of shaft for your height, is at the point that the coil can be swung in front without you bending, dropping your shoulder or work in a position that will be uncomfortable.

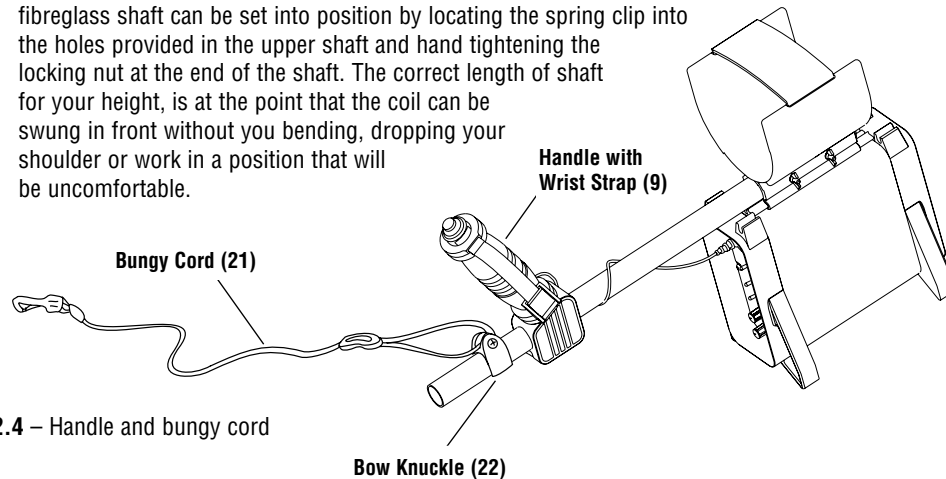


Figure 2.4 – Handle and bungee cord

Securing and connecting the coil cable

NOTE – Always ensure that the control box is turned Off before connecting or disconnecting the coil, to avoid damage to the detectors electronics.

- Step 1.** Wind the coil cable around the shaft and plug the coil connector into the coil socket on the control box. Check that the cable is wound firmly around the shaft without strain, leave enough slack at the bottom of the cable near the coil to allow for adjusting the angle of the coil without placing strain on the coil cable.
- Step 2.** Fasten the cable into position using the Velcro straps provided (20).
- Step 3.** Secure the bungee cord through the bow knuckle (22). Slide the knuckle up or down the shaft (8) to find the balance point and tighten the wing-nut.

HINT If the coil cable is able to move around, especially near the coil, it will be 'seen' by the detector and cause random noises which may be confusing.

Fitting and connecting the battery pack

- Step 1.** Fit the battery (17) into the backpack pouch (18).
- Step 2.** Connect the headphones (16) and the power cable (19) to the appropriate sockets in the cap of the battery.
- Step 3.** Put on the backpack (18).

CAUTION – Use only the 6V battery supplied.

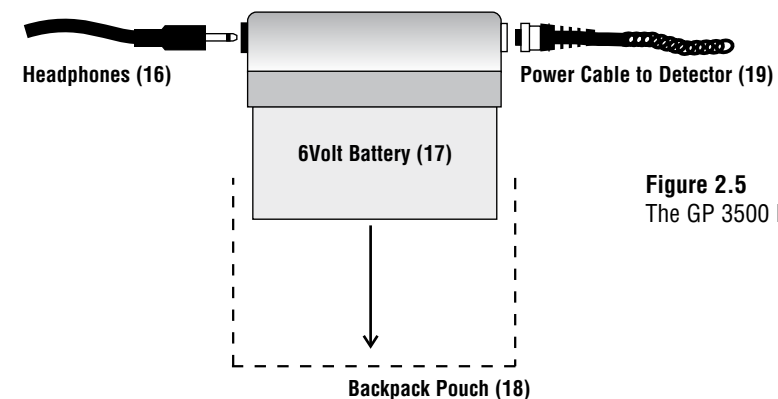


Figure 2.5
The GP 3500 battery assembly

- Step 4.** Ensure that the power switch on the control box is switched Off before plugging the power cable connector (19) into the socket on the control box. This cable connects the battery and headphones to the detector.

Adjust for your own comfort

Step 1. Adjust the bungy cord (21) from the knuckle (22) on the shaft to the correct length to take some of the weight when prospecting.

Step 2. Adjust the hand strap on the handle (9) for your own comfort.

Step 3. Adjust the rear harness strap on the battery bag so that the battery sits at a comfortable position on your back. The ideal position is when the weight of the battery counter balances the weight of the detector, and you can still switch on the detector without putting excess strain on the bungy cord. Taking the time to adjust your detector properly is very important for comfortable long term detecting.

TIP: You may need to change the length of the bungy cord or the position of the bow knuckle when you change coils or detect on sloping ground.

The Battery

The 6V rechargeable battery can provide enough power to operate the detector for 14-15 hrs, when fully charged.

The battery may be recharged at any time during the discharge cycle.

It is very important to fully charge the battery before storage.

Do not leave a battery fully discharged for longer than one day.

CAUTION: Never use a 12V battery because this could damage the detector. This damage is not covered by warranty. The GP 3500 power supply is internally regulated and using an external regulated power supply is not necessary, and may damage your detector. If you wish to operate your detector at full power for longer, we would recommend that you own two batteries and swap halfway through the day.

Low battery indication

If the battery level drops below the required power to give adequate function, a series of alarm signal pulses are given at half second intervals.

Charging the battery

Step 1 Turn the detector Off before disconnecting the battery.

Step 2 Disconnect the battery cable from the detector and connect to the appropriate charger.

Battery chargers

Two types of battery chargers (Mains and 12V Vehicle Charger) are supplied.

Important

When charging, the battery must be kept in an upright position.

Mains battery charger

The mains battery charger will charge the battery from local mains (AC) power outlets.

- Step 1.** Connect the mains charger to a mains outlet.
- Step 2.** Connect charger to the battery using the power cable.
- Step 3.** Switch the mains outlet on.

The charger will recharge a completely flat battery in approximately 24 hours. Partially discharged batteries will require a shorter period to recharge. Allow approximately 1.5 to 2 hours charging for each hour the battery was in use. The flashing rate of the charger LED will decrease as the battery gains charge.

Vehicle battery charger

The vehicle battery charger will charge the battery from the cigarette lighter socket of most motor vehicles.

- Step 1.** Connect the charger to the cigarette lighter socket and turn the ignition switch to Accessories.
- Step 2.** Connect the detector battery to the charger using the power cable. This supplies 12V power to the cigarette lighter socket. This voltage is converted by the charger to charge the detector battery. A red LED indicator will flash while the battery is charging. When the battery is flat the LED may flash fast enough so as to appear constantly on. As the battery gains charge, the LED will flash at a slower rate.
- Step 3.** Leave the battery to charge for approx. 10 hours using this charger. If the battery voltage of your vehicle drops below 11V, the charger will stop operating. Therefore the battery charger should not flatten the vehicle battery. Check that your vehicle battery is in good condition before camping in remote areas and run your engine above idle speed for at least 30 minutes each day to keep your vehicle battery charged.

CAUTION – The Vehicle Battery Charger is designed for use with vehicles, which have a negative earth electrical system. Most cars manufactured after 1970 should have negative earth electrical system. Connecting the charger to a vehicle with a positive earth system will cause the fuse in the cigarette lighter plug to blow and the LED indicator will not light. If you need to replace the fuse located in the cigarette lighter plug, you will need to use a 3ag/10amp fuse.

DETECTOR SOUNDS - Explanations

In the course of operating your detector, there will be various noises and sounds that you may hear. Here is an explanation of some of these sounds.

Threshold and Tone

This is the background sound produced by the detector. The level is set using the Threshold control. The tone of the threshold is set using the Tone control.

Target Signal

This is the abrupt change of the tone and volume of the threshold sound when a target is detected.

- The maximum level is set by the Volume control.
- The amount of tone variation is set by the Signal control.
- If the tone falls first and then rises, as the coil is passed over a target, this generally indicates a large target.
- If the tone rises first and then falls, as the coil is passed over a target, this generally indicates a small target.

Ground Noise

Irregular noises that are difficult or impossible to pinpoint when moving the coil over the ground. Ground noise is caused by the changing chemistry or 'mineralization' of the ground. Maintaining an accurate ground balance will greatly reduce this effect.

Tune Indication

An initial beep sounds, then while the detector is testing the range of bands for the most stable, the threshold may become more quiet or chattery. Once selection is complete, three sharp 'beeps' are given.

Low Battery Indication

If the battery level drops below the desired power to give adequate function, a series of alarm signal pulses are given at half second intervals.

- Step 1.** Set the Coil switch to Double D.
- Step 2.** Set Soil switch to N (Normal).
- Step 3.** Set Balance switch to Fixed.
- Step 4.** Set Iron Discriminate knob to All Metals.
- Step 5.** Set Boost to N (Normal) for general detecting.
- Step 6.** Set Volume to maximum and Signal to 2 o'clock.
- Step 7.** Turn Power Switch on and adjust the Threshold control so that a faint sound is heard through the headphones.
- Step 8.** Adjust the Tone to suit your hearing.
- Step 9.** To tune out interference, hold the detector at waist height with the shaft horizontal and the coil vertical.
- Step 10.** Slowly move the coil around your body through a half-circle until the noise from the interference is loudest.
- Step 11.** Place the detector on the ground in that position and push the Tune button once to start the tuning function. Leave the detector undisturbed until finished sequence.
- Step 12.** Tuning takes approximately 60 seconds. A series of 3 beeps will indicate that the optimum frequency has been selected. Do not move the detector during the tuning process
- Step 13.** Keep the All Metal / Disc control in the All Metal position.
- Step 14.** Put the Balance switch to Fixed and while moving the coil up and down hold down the Quick-Trak push button in the handle. This puts it into Tracking Mode
- Step 15.** Once Ground Balance has been achieved, release the push button.
- Step 16.** The detector is now ready for operation.

TRY OUR WAY FIRST!

Take the time to read this manual thoroughly. The GP 3500 introduces new functions and changes the way some others that you may have been familiar with, now work. However experienced you are at using a metal detector, it is important that you read this chapter to understand these new controls and how to use the GP 3500 to its full capacity.

Rear Control Functions

There are two control panels: the rear panel and the front panel.



Figure 4.1
Rear Panel





Off
Threshold
Power

Figure 4.2

Threshold - On/Off control

Threshold - On/Off

NOTE – Always switch the detector Off before connecting or disconnecting the coil or battery pack and when not in use.

This switch turns the power from the battery to the detector, On and Off. It is also used to set the background “hum” of the detector. This “hum” is known as the Threshold.

Operating Instructions: The Threshold control should be set at a point where the threshold is just audible and stable. This level should not be at a level where prolonged use may become irritating. Ideally it should be a smooth, gentle hum.

NOTE – Small targets or large deep targets may not produce a distinct target signal, but may cause only a small variation in the threshold level. If the threshold level is set too high or too low, these very small variations may be missed. Experiment with known targets to assist in setting all controls to suit your hearing.

Figure 4.3
Threshold control – too high

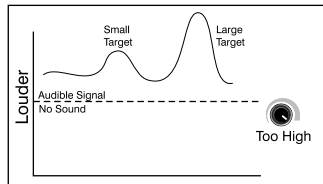


Figure 4.4
Threshold control – too low

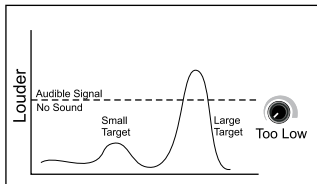
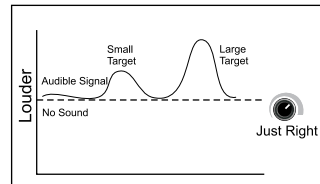


Figure 4.5
Threshold control – just right



In **Figures 4.3 - 4.5**, the dotted line represents the level at which the audio output becomes audible; signals cannot be heard if they are below the dotted line.

If the threshold level is set too high then small variations in audio signal might not be discernible above the threshold level and the threshold will drown out very soft signals. An example of this would be to hear a whisper within a crowded noisy room.

If the threshold level is set too low there is no audible background signal and small target signals will not go above the threshold of audibility.



Volume

Audio

Figure 4.6

Volume control

Volume

Sets a maximum loudness of the target signal obtained from a large target. Refer to Figures 4.7 - 4.9. The dotted line in these figures represents the level of volume set by the volume control.

Operating Instructions:

- If the Volume is set to maximum (fully clockwise), the target signal is unaltered and proportional to the target size and depth (see **Figure 4.7**).
- If the Volume control is turned down to half way, the target signal is unaltered for a small target, but is limited for a bigger target (see **Figure 4.8**).
- If the Volume were to be turned down close to minimum, it potentially will limit all signals to such a degree that most targets will be lost (see **Figure 4.9**).

Figure 4.7
Maximum volume

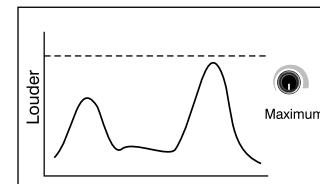


Figure 4.8
Mid-range volume

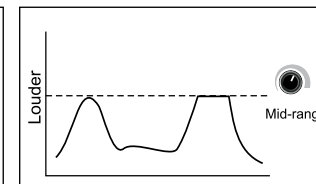
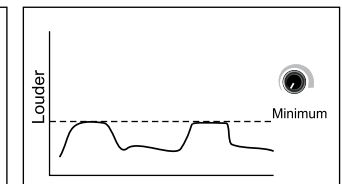


Figure 4.9
Minimum volume



NOTE – Threshold should be reset after adjusting the Volume level.

Volume should be set so that target signals are clear and easy to hear but loud signals are not uncomfortable to your hearing.

Set the Volume by passing the coil across a large target and adjusting volume to a comfortable level. Now test a very small target at this level.





Tone

Adjusts the tone of the threshold. The user may set this to the preferred tone, e.g. the tone at which the operator’s hearing is most sensitive. Some people will find that their hearing is best in a particular range of pitch, setting the tone control to this pitch will mean that the operator is listening more acutely, and probably more comfortably.

Figure 4.10
Tone control

At minimum position, threshold gives a low tone. Turning clockwise increases the tone to a higher pitch.

Operating Instructions: Adjust the Tone control until the threshold is at a comfortable tone for your hearing then test it on a couple of small targets. Adjust until you obtain the best signal response.

HINT Setting Tone to a high pitch may be more fatiguing, but is more suitable for identifying soft target signals.



Signal Audio

Signal Audio

Human hearing is sensitive to changes in tone, so the operator is more likely to hear a target signal when both the volume and the tone change rather than volume alone. Interpretation of the target signals involves understanding the difference between the rising and falling tone and volume of the threshold in response to different targets.

Figure 4.11
Signal control

The Signal control gives the operator the ability to choose between a target signal that has a large variance of tone, or one which has less variation. High variance can give the operator more signal definition to interpret, however in highly mineralized ground this high variance of signal may cause confusion and make the detector appear noisy so a lower setting may be preferred.

The Signal Audio control adjusts the pitch response of the target signal. As a target is located, the target signal will change tone. For small targets it will often drop to a deeper pitch then rise to a higher pitch. The range of variation is controlled using the Signal knob.

Figure 4.12
Reduced pitch variance

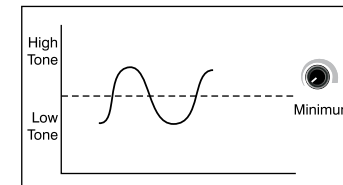
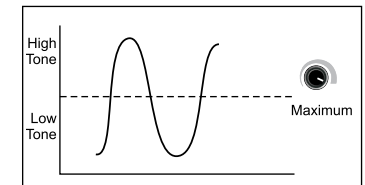


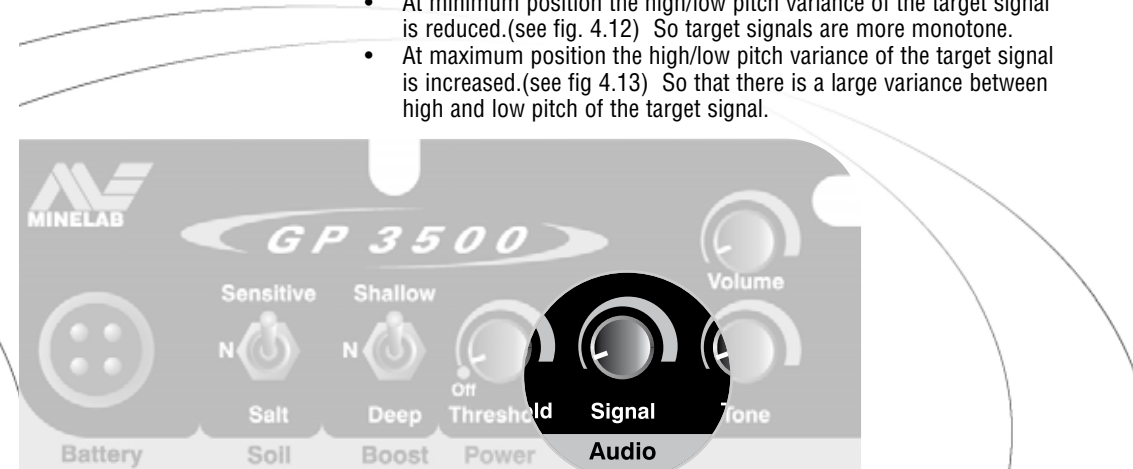
Figure 4.13
Increased pitch variance



Operating Instructions:

In **Figures 4.12 and 4.13** the curving line represents the high/low pitch response to a target. The dotted line represents the threshold tone.

- At minimum position the high/low pitch variance of the target signal is reduced.(see fig. 4.12) So target signals are more monotone.
- At maximum position the high/low pitch variance of the target signal is increased.(see fig 4.13) So that there is a large variance between high and low pitch of the target signal.



Shallow



Deep

Boost

Figure 4.14
Boost switch

Boost (Shallow/N/Deep)

Boost switch selects the type of processing and filtering applied to the detector signals to enhance different target signals in different circumstances.

- **N (Normal)** mode may be used for general detecting conditions. This does not boost any signals.
- **Shallow** mode boosts signals from small targets close to the surface. This makes faint target signals easier to hear. This setting may also boost some ground noise, therefore Shallow is better suited for 'quiet' ground conditions or for pinpointing tiny targets.
- **Deep** may be used when searching for large targets at greater depth in 'noisy' ground. Random soil signals are smoothed, making small changes in the audio signal from large deep targets easier to hear. This may mask some signals from very small targets near the surface.

Selection of the more suitable position should be after considering both the expected target size/depth and ground conditions.

NOTE – When Boost is changed, Threshold may also need to be adjusted. External amplifiers may be used in addition to the Boost switch, provided that they have loudness limiters built in. This prevents loud signals becoming unpleasant or dangerous to the user's hearing.

Sensitive



Salt

Soil

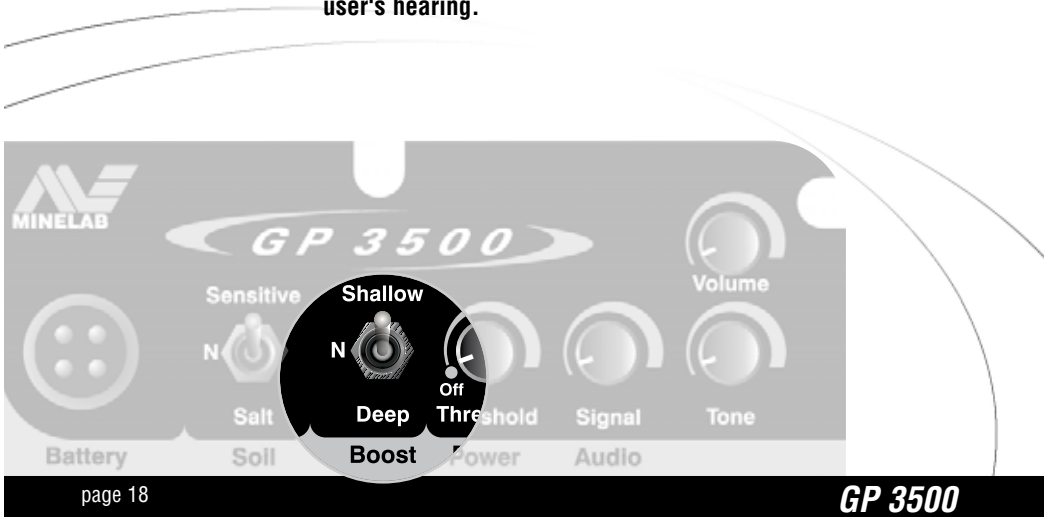
Figure 4.15
Soil switch
(Normal/Sensitive/Salt)

Soil (Sensitive/Normal/Salt)

This switch is used to optimise the detector for different soil conditions and targets by changing the signal processing.

Operating Instructions:

- **N (Normal)** mode may be used in all areas, including areas with highly mineralized soil. This position has very good sensitivity to a wide range of nugget sizes and is the most versatile of the three positions.
- **Sensitive** mode may be used when searching for small nuggets, especially in areas with highly mineralized soil. The extra stability allows the coil to be used closer to the ground in areas of excessive ground noise. Sensitive may not work well if the ground is salty. This setting may reduce the depth at which large nuggets are likely to be found.
- **Salt** mode may be used in areas containing a high salt content, be they neutral or heavily mineralized. In highly mineralized areas without salt, this setting may be less sensitive to small nuggets than Normal or Sensitive settings, but the difference to large targets is marginal



Front Control Functions

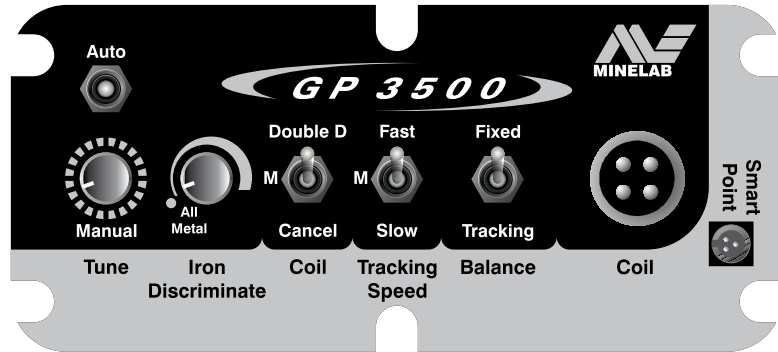


Figure 4.16
Front Panel

Smart
Point

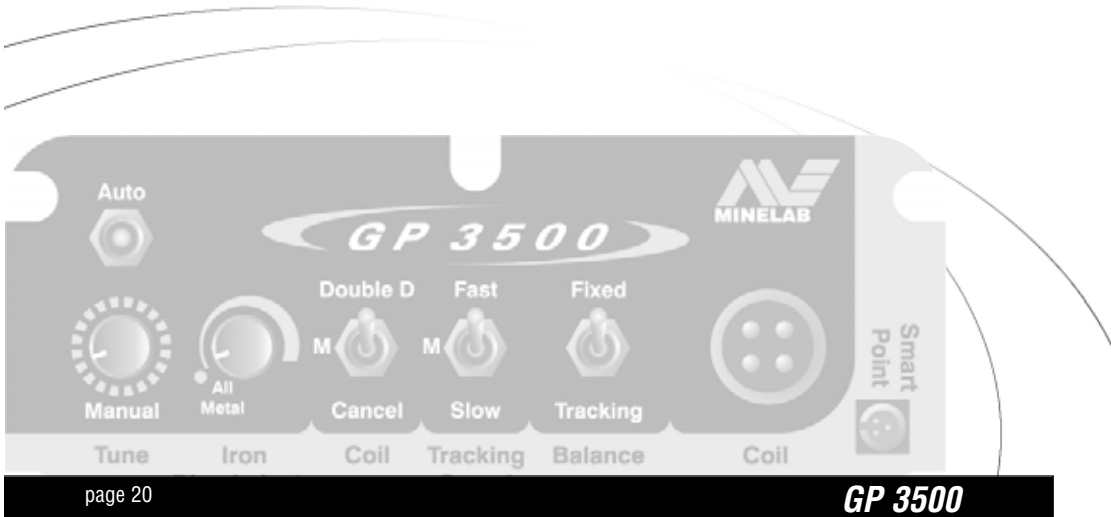


Fig 4.17
Smart Point

Smart Point - A quality initiative from Minelab Electronics

The Smart Point is an intuitive new feature of the GP 3500. It serves two functions

- 1) It is the connection point for the Quick-Trak push button to connect with the control box circuitry; (see page 33 - Quick-Trak reset button for more details.
- 2) It is a diagnostic/test port that ensures that your detector is operating at peak performance before it leaves the factory. Smart Point also allows Authorized Minelab Service Engineers worldwide to service and test your machine to ensure consistent and maximum performance at all times. For service information please contact your local Authorized Dealer. (See p45)





Iron Discriminate

Figure 4.18
All Metal / Iron Discriminate switch

All Metal/Iron Discriminate

Discrimination is the ability of a detector to distinguish between different types of metal objects and to assist the user in identifying a target.

The GP 3500 is capable of rejecting many iron objects while still detecting non-ferrous metals. The ability of the detector to discriminate ferrous targets means that, while detecting in littered goldfields, much of the iron rubbish may be ignored, with a high probability that valuable targets will not be missed.

When the control is turned off (anti-clockwise), you will detect in All Metal and will detect any type of metal. This is the preferred setting for most operators and the use of discrimination is restricted for use in high trash areas.

In All Metal mode, it will give varying volume and pitch signals but this information does not indicate the type of metal in the object.

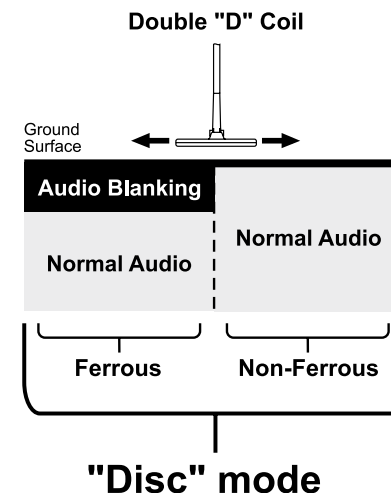
By rotating the control clockwise past the 'click', you switch into the ferrous discrimination mode. In Disc, a strong response from a ferrous (iron) object will cause the threshold and target signal to be momentarily 'blanked' or silenced.

NOTE – If the target response is too weak for accurate discrimination, the detector will give a normal target signal until you dig closer to the target and the signal strength improves.

As the control is turned further clockwise, the operator is able to influence the recognition of a target being ferrous or non-ferrous metal.



Discrimination - continued



Target Signal:	Ferrous: Target signal blanks as coil passes over target
	Non-Ferrous: Signal is more steady as coil passes over target

NOTE: The above zoning is only a stylistic example of how the Discrimination mode works. The above areas are not determined by depth but by the strength of signal.

Figure 4.19 – Discrimination levels

Iron discrimination with the GP 3500 is the silencing or 'blanking' of the threshold and target signal, which occurs when the detector determines a target is comprised of ferrous metal.

There is no discrimination when Iron Discrimination is set to All Metal.

When a target has been located using Disc, the coil should be rapidly passed back and forth over the target centre several times. Remember to set Ground Balance to Fixed for this and keep the sweep across the target at a level height and as close to the ground as possible. You should always test the target from at least two directions (90° to each other) so that the detector sees the target from different profiles.

When detecting a piece of iron, a normal target signal will start to be heard until the target signal becomes strong enough for the detector to determine that the object is ferrous. At this point, the signal will 'blank'.

TIP: For large very deep targets, the hole being dug may not be wide enough for the coil to move sideways across the target. Therefore the discrimination will not be accurate.

Discrimination - continued

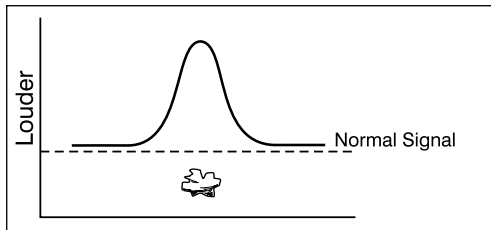
The strength of the target response required for discrimination to occur may be altered by rotating the control knob.

There is usually some merging of characteristics between targets, which are clearly ferrous and others that 'may-be' ferrous. Rotation of the control knob allows the operator to make a fine adjustment in the determination of the 'may-be' signals.

- (Fully anti-clockwise) – just past the 'click' turning discrimination on, will keep the discrimination cautious and 'may-be' targets will respond with a normal non-ferrous signal and only definite ferrous targets give the blanking. (as per **Figure 4.20**).

Figure 4.20

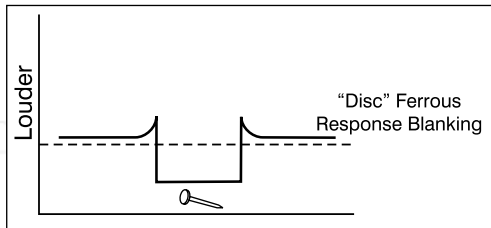
A normal signal on a non-ferrous target.



- (Fully clockwise) In this position, the control becomes a little less cautious and some 'may-be' targets will be seen as ferrous and give a blanking signal (as per **Figure 4.21**). In this position some small non-ferrous targets eg: coated in ironstone, could be mistaken for ferrous.

Figure 4.21

Discrimination target signal on a ferrous target



Discrimination - continued

Keeping the control anti-clockwise requires a slightly stronger signal before discrimination occurs, rotating it clockwise means that discrimination will occur on a weaker target. Discrimination functions will only work with strong, positive target responses. Weak responses will give normal 'all metal' type signals.

HINT It is usually best to dig out all targets and only use the discrimination function in areas where a large amount of rubbish makes the digging of everything impractical.

Discrimination will give the best results when used in combination with the specially designed GP Series Double-D coils and will not work correctly when using mono coils.

NOTE – If Pinpointing a target prior to digging, best results will be from switching out of discrimination and into all metals.

Selection of how far to turn the discrimination knob should be determined by how cautious you want to be and how much trash is in the area. If the area is heavily littered, you may want to use a less cautious discrimination and have the knob in the 5.00 o'clock position. If there is little trash in the area and most close to the surface you may prefer a more cautious position of 9 – 12.00 o'clock.

TIP: If you are on a known gold producing site or successful patch, it is best to dig up all targets.

Double D



Cancel

Coil

Figure 4.22
Coil switch

Coil (Double-D/M/Cancel)

This control changes the sensitivity and search pattern of the coil to allow the GP series of Double-D coils to become multi-versatile with different characteristics to suit different environments. This is achieved by altering the pattern of transmit (TX) and receive (RX) fields of the coil and how the control box interprets the response. Selection of different positions of this switch, changes the electromagnetic field of the coil, thus giving better performance in certain environments.

- **Double-D** has the coil operate in a conventional Double D search pattern and can be used in most areas of medium to very high mineralization, being the most able to cope with these conditions. It is also excellent for pinpointing targets as the response is strongest from the centre of the coil.
- **M (Mono)** changes the way the coil transmits and receives its signal and may be used in most locations of low to medium mineralization, and for locating small nuggets with Soil switch set to Sensitive. Use of Mono will often increase the sensitivity of the detector but may also be a little more unstable in heavily mineralized ground. Pinpointing is not centred in the middle of the coil, but to one side and may give a complex signal when the target is very close to the coil.
- **Cancel** changes the electromagnetic field of the coil so that it is particularly stable in areas of electrical interference. This position is ideal in areas where the operator wants to detect close to suburbia or where the Tune function has difficulty selecting a quiet operational frequency (e.g.: near power lines, phone towers or under poor atmospheric conditions). Pinpoint in Cancel will again be to one side of centre and signals may be complex if the target is close to the coil. This setting will limit sensitivity to deep targets.

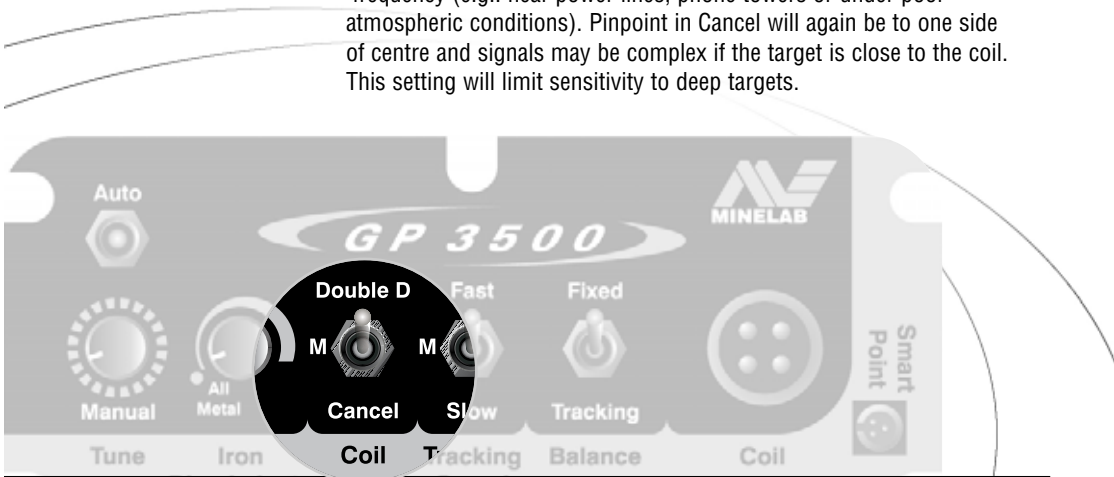
NOTE – Coils not specifically designed for the GP 3500 may behave erratically or be ineffective in either M (Mono) or Cancel modes.

Minelab Monoloop coils can be used on the GP 3500 with excellent results and we recommend their use in conjunction with the coil switch in the M (mono) mode. This allows the use of monoloop coils in soils where prospectors previously had to revert to using Double D coils.

In extreme mineralization, particularly heavy ironstone concentrations, you may experience a loud signal spike when attempting to ground balance or while searching. The signal is random and very sharp and it is not characteristic of a normal target signal. To prevent it from occurring, keep your coil a few centimetres from the ground, or opt to use in Double D mode.

IMPORTANT

You will need to re-ground balance every time you select a new position for the 'Coil' switch.



Fixed



Tracking

Balance

Figure 4.23
Balance switch
(Fixed/Tracking)

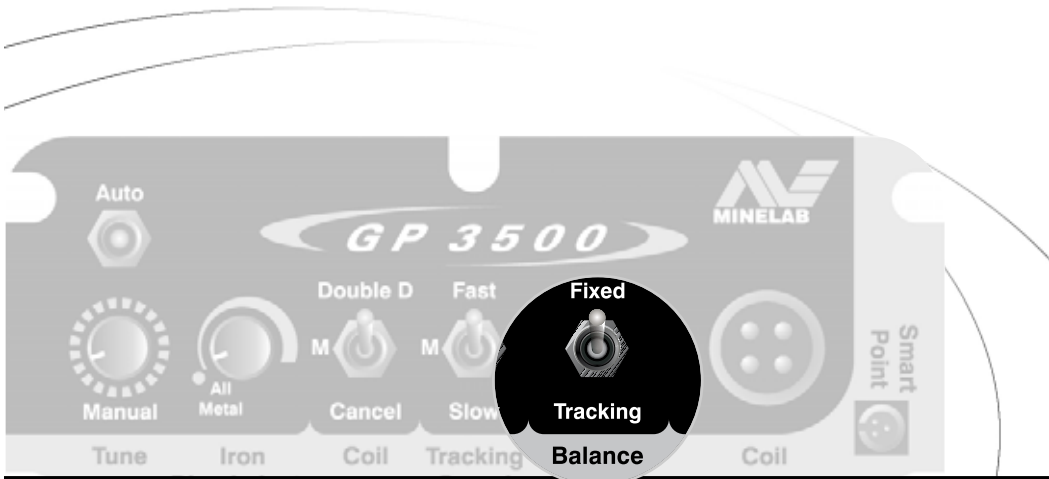
Balance (Fixed/Tracking)

The ground you're searching in contains not only sand, but also many different chemicals, minerals and salts. These extra materials are referred to as ground mineralization. This ground mineralization may often produce a sound from the detector, known as 'ground noise'.

The GP 3500 has the ability to cancel out the effects of ground mineralization automatically. This minimises ground noise and retains maximum sensitivity to metal targets. Cancelling the effects of ground mineralization is referred to as 'ground balancing'. This ensures that target signals from objects, such as gold, are not confused with interfering ground noise.

The GP 3500 automatic ground balance continually adjusts to minimise the effects of changing ground mineralization when balance is set to Tracking. The GP 3500 may be operated with fixed ground balance or automatic tracking ground balance.

- When Balance is set to Fixed, the ground balance remains at the current level. To re-balance, you just press the Quick-Trak push button which triggers a fast re-balance, then returns to Fixed to continue detecting once this button is released.
- When the ground is variable in mineral content requiring repeated re-balancing, use Tracking as the detector continuously tests the ground and makes changes to suit. (see Tracking Speed (p.32) for more information.)



Ground Balancing Procedure

- Have the Fixed / Tracking switch in Fixed position
 - Move the coil up and down between 20mm and 100mm above the ground and, while moving the coil, press down the Quick-Trak push button in the handle
 - When the button is depressed, the Tracking program initiates its automatic ground balance. This begins with a 5 second very fast ground balance, therefore it is important to be moving the coil when the button is held down.
 - Keep moving the coil and keep the button depressed until all ground noise has stopped.
 - A persistent signal may indicate a target in the ground. If this occurs, then move the coil to a new location and repeat the procedure.
- When there is no longer a change in the threshold, while the coil is being raised and lowered, the detector is 'ground balanced'.
- Release the Quick-Trak button and you can commence searching. You are now searching in Fixed position.

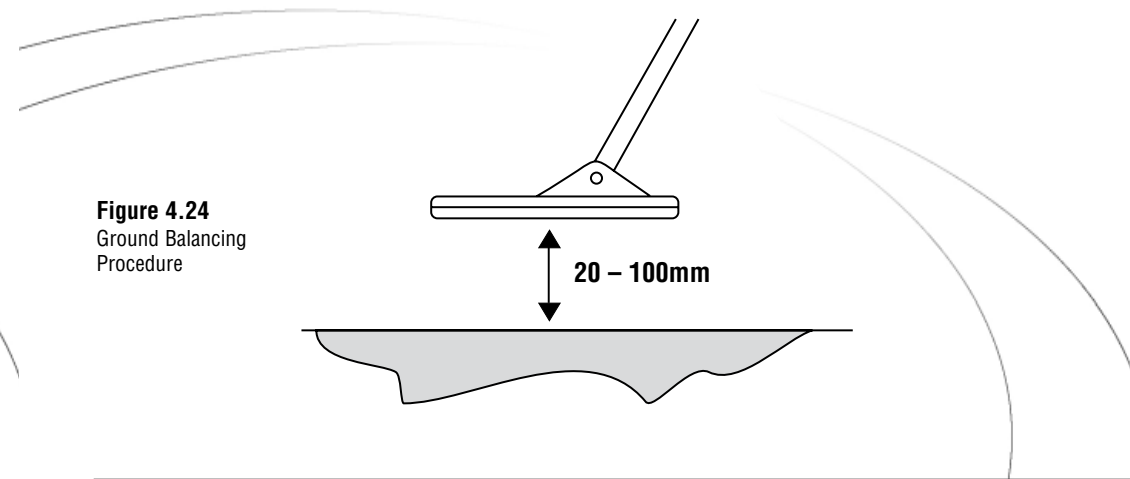


Figure 4.24
Ground Balancing
Procedure

Operating the GP 3500 in Fixed mode

In medium to quiet ground you will achieve better depth by operating your GP 3500 in the Fixed position and using the Quick-Trak push button to re-balance when the ground changes and/or threshold becomes erratic. If the ground is highly mineralized or variable, then searching in Tracking may be the preferred position.

HINTS

- Where possible always search in Fixed position for best depth and only use Tracking mode in areas with excessive ground noise or rapidly changing ground.
- When searching in Fixed position remember to re-balance periodically by pressing the Quick-Trak push button in the handle. This returns you to Fixed once the re-balance is completed and you release the button.
- Always Pinpoint a potential target in Fixed.
- If mineralization is excessive you may need to lift the coil off the ground by a cm or two, rather than keeping it right on the ground. This will help to reduce the effects of high ground mineralization and let you hear more targets much easier.

Operating the GP 3500 in Tracking mode

If the ground is highly mineralized or variable, search in Tracking mode.

To search in Tracking mode, switch the Fixed / Tracking switch on the control box into Tracking position.

In this position the detector is continuously testing and re-balancing to compensate for changes in the ground mineralization. There are three tracking speeds that you can search in – Fast; Medium & Slow. – see next chapter for details.

When searching in Tracking mode, the Quick-Trak push button takes you into Fixed mode while the button is depressed.

While in Tracking mode, the detector usually stops ground balancing when a target signal is detected. However, a weak target response may not be recognised as a target if the coil is repeatedly passed over it, and especially if operating in medium or fast tracking. For this reason the push button should be used to change to Fixed when pinpointing a target. When searching in Tracking, after locating a target or what you believe is a target, sweep the coil around the target area, without passing across it, then hold in the Quick-Trak push button and pinpoint the target location.

When releasing the button, the detector engages a short, fast tracking mode (indicated by a beep) then returns to the Tracking mode.

TIP: When in tracking, you can use the push button as a ground balance reset. Simply raise and lower the coil a few centimeters, periodically to check the ground balance, and if it not completely balanced just push and release the button while continuing the ground balance procedure.



Tracking Speed

Figure 4.25 Tracking speed

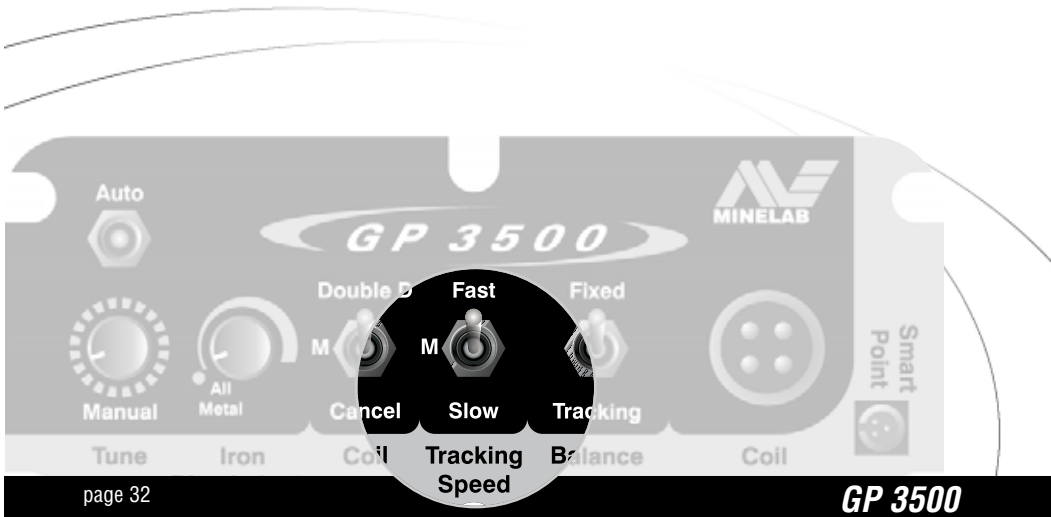
Tracking Speed

If searching in Tracking position, the operator can choose the speed that is best suited to the area. In effect, this gives the operator 4 options to search in: Slow, Medium & Fast plus the 4th being Fixed Balance which is the recommended position subject to variability of the ground mineralization.

NOTE – The Tracking Speed switch does not effect the speed of the initial very fast auto-ground balance. This very fast initial ground balance only lasts 5 seconds.

If the area being detected has the mineralization changing too often for the operator to search in Fixed position, the GP 3500 now allows the operator to gradually step through from Slow auto-tracking, into Medium speed, then into Fast auto-tracking.

Choosing the preferred speed of tracking should be simply stepping through the speeds from Slow through to Fast, with the preferred speed being the slowest speed which still keeps up with the variability of the ground mineralization.



Quick-Trak push button

Located in the handle of the GP 3500 is a push button which allows easy operation of ground balancing.

The Quick-Trak push button has two functions depending on where the balance switch is set on the control box.

If set to Fixed mode:

If the Balance switch on the control box is set into the Fixed position, the detector will operate with Fixed ground balance while detecting. When the ground mineralization changes and the operator needs to rebalance, by holding in the Quick-Trak push button, a 5 second fast rebalance will occur. Once this has been completed, the push button can be released and the operator can continue detecting in Fixed mode.

If set to Tracking mode:

If the Balance switch on the control box is set to Tracking, the detector will continuously test and change ground balance to compensate for changes in the ground mineralization, (the speed of this is controlled by the Tracking speed switch). If a target signal is heard, the operator can change into Fixed mode by pressing and holding in the Quick-Trak push button and while the button is depressed, the detector will operate in Fixed mode for better pinpointing.

On release of the button a short “beep” will be heard and a quick auto-ground balance is initiated prior to returning to Tracking Mode.

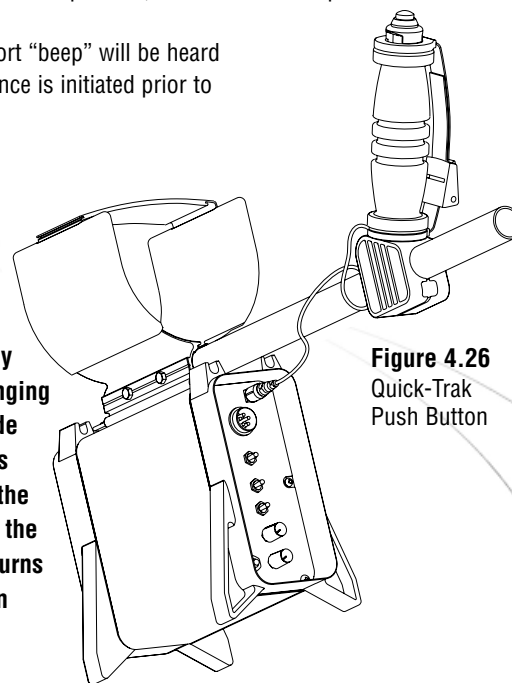


Figure 4.26 Quick-Trak Push Button

NOTE – The Quick-Trak push button is only engaged and changing the operating mode while the button is depressed. Once the button is relaxed, the Balance mode returns to that selected on the control box.



Tune

Figure 4.27
Tune control & button

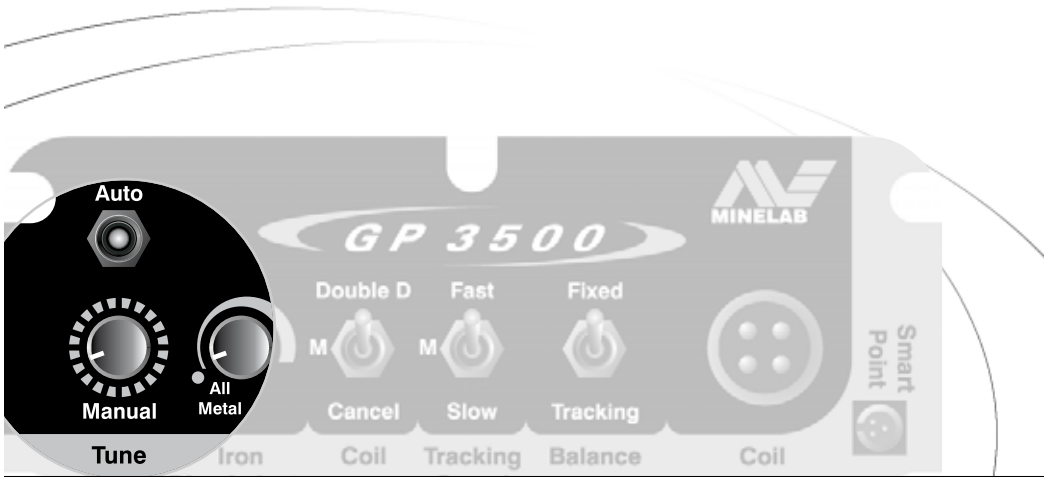
Tune

The Tune function reduces the effects of electromagnetic interference from sources such as power lines, radio transmitters and other metal detectors. There are two controls allowing the operator the greatest flexibility.

Auto push button

Pressing and releasing the Tune button starts automatic tuning. The tuning process takes approx. 60 sec. and completion is indicated by three sharp 'beeps'. Once pressed, the GP 3500 scans through a wide range of search bands, testing each one for its susceptibility to outside electromagnetic waves in the same or similar bands that would cause interference. On completing the search, it selects the most stable band for operating in the environment of operation.

NOTE – Interference in some locations can change during the course of the day so you may need to re-tune from time to time to maintain a smooth threshold as you move around the area.



Set the Tune control

Tuning should be done initially with the Coil switch in Double D or in M (Mono). If the interference is still severe after completing the tuning operation, change the Coil switch to Cancel and then re-tune the detector again.

- Hold the detector at waist height and the coil vertical and slowly rotate through a half-circle (eg: from East to West, or from North to South).
- Listen for any increase in interference as you move and when the interference is loudest, stop moving. Lay the detector on the ground, facing that position, and keeping the coil vertical.
- Press and release the Tune button.
- The detector will then scan through the available range of transmission frequencies and automatically select the frequency that results in the greatest reduction of noise from electromagnetic interference.
- The end of the tuning process (which takes approx. 60 sec.) is announced by three beeps.

NOTE – While the detector is selecting the preferred frequency, the coil must be kept motionless and clear of metal objects. If you move the coil or allow it to sense a metal target, the testing for the quietest band will be influenced.

When tuning the detector in close proximity to other detectors, each operator needs to take turns tuning.

Do not try to tune two detectors at one time.

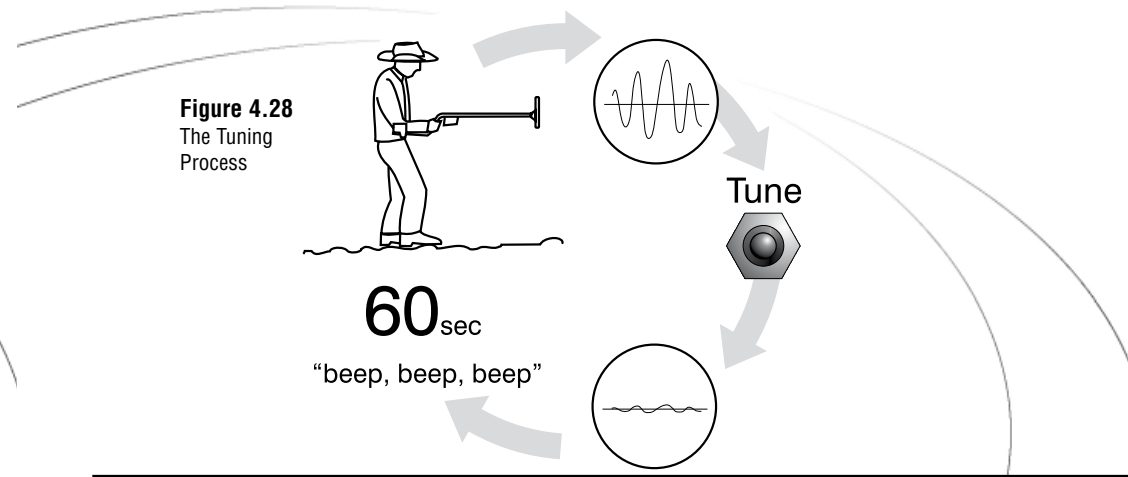


Figure 4.28
The Tuning Process

After completing the Auto-tune, pick the detector up and with the coil rotated flat, into the search position, listen to see if it is stable. If a slight interference is still present, you can use the manual control to fine tune the selected band.

Manual Control

Manual tuning can now be used by the operator to fine tune after the Auto tuning is completed. In areas where there is no interference being experienced, the Manual control can be used to select a personal search band.

After completing the auto-tune, to fine tune the band, start turning the manual control quite slowly in one direction, listening if the threshold becomes more stable or flaky. If this direction does not improve it, try the opposite direction. It is quite important that you turn the control slowly to make very fine adjustments.

If the interference persists after tuning, consider using the Coil switch set to Cancel position and retune again

Hint: If detecting in a benign area of no interference, you may find that you can select a band at one end of the scale or the other. Frequency bands in the counter-clockwise 'start' direction are lower frequency bands and higher frequency bands are toward the clockwise end. Turn the control in the desired direction until the one beep or two beep signal is heard. Then using slow turns in the reverse direction find a band which is stable. This will not make much difference but low frequency bands can give a little more depth to larger targets and high frequency bands can give slightly more sensitivity to smaller targets close to the surface.

Important: The manual control will signal when you have moved to the end of the range of frequency bands. When you arrive at the counter clockwise starting point you will hear a single beep to denote that this is the start, moving clockwise to the other end, you will hear two beeps to denote that it is the finish.

Note – When turning the control rapidly to move to the desired end you want, you will notice noise caused by the rapid movement through the frequencies. This is normal and will not be present when the control is turned slowly.

There are 14 turns of the control from start to finish.

Hints and techniques for better detecting and happy prospecting that will help you to utilise the power of your GP 3500

Some user tips:

- Always ensure that the battery is at full charge so that your detector is working at optimum performance. A worthwhile recommendation is to own a spare battery which you can swap half-way through the day thus making sure that you are always working with full power.
- The battery should be worn in the backpack harness supplied. This places the battery at the furthest practical distance from the coil.
- Ensure that you do not set the shaft length too short. If the coil is too close to your body it might detect your pick, the battery or any other metal which you are carrying. Steel toe boots can obviously cause a problem with false signals. If false signals are occurring as you sweep the coil, check that they are not produced by any metal that you are carrying. Move the coil closer, and then further away from your body, in order to check if the signals are coming from items such as your pick, boots or battery. If they are, you must increase the distance between the coil and these items.
- Take the time to experiment with the different settings, to fully understand how to get the most out of your detector in different locations.

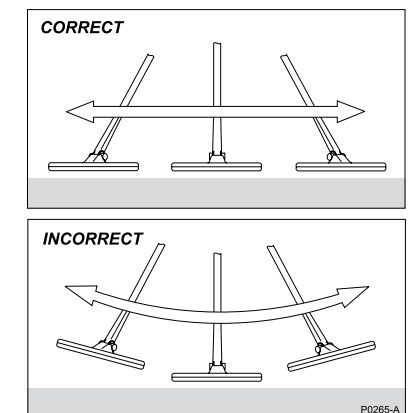
Motion detection

The GP 3500 is a 'motion' detector. Therefore the detector must be moving over a target to detect it.

Figure 5.1 - Parallel Sweeping

Parallel Sweeping Procedure

- The coil should be swept over the ground in a side-to-side sweeping motion.
- While sweeping the coil, it is important to keep it parallel to, and at the same height from, the ground at all times. Lightly skidding the coil across the ground can sometimes help in this, depending on mineralization.
- Do not raise the coil at the ends of each sweep as this will reduce the detection depth and may cause false signals.



Covering the search area

- As the user moves forward slowly, the search pattern should resemble a snaking path.
- To ensure that productive ground is thoroughly searched, approach the area from 3 different directions.

Overlap each sweep

- Each sweep of the coil should overlap the area covered by the previous sweep to ensure a full coverage of the area being searched.
- Be aware of the search pattern of the coil being used and overlap sweeps to take this pattern into account. If using a Monoloop coil a tighter overlap is required to ensure that targets at maximum depth are not overlooked.
- See also Pinpointing Technique, page 41.

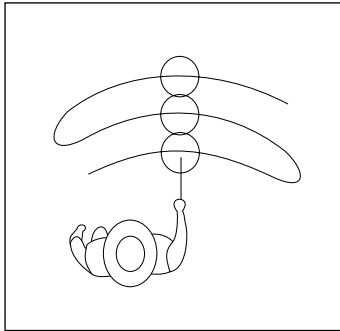


Figure 5.2 Search path

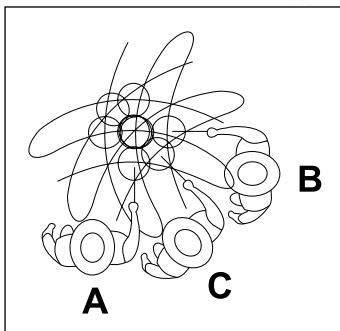


Figure 5.3 Search area from 3 directions

prospecting techniques

The GP 3500 has superior ground balancing and it is possible to find quite large objects near the surface in well-worked areas where other detectors have been unable to cope with the high degree of mineralization and/or salt. Therefore the user should dig all target signals, even in previously detected areas.

- Very sudden or large changes in the mineralization of an area may produce a signal from the detector. Usually this signal is very broad, and often only present in one direction.
- In some goldfields, a response may be received from a concentration of orange/reddish dyke material or clay. Remember, a metal target will get louder by getting the coil even centimeters closer.
- If detecting areas of extremely variable mineralization, detecting with the contours rather than across the changes will often stabilize the effect.
- In some ground (particularly heavily mineralized areas) the operator may need to sweep the coil 1 or 2 cm above the ground. This should give a more stable threshold and less ground noise.
- With faint or indistinct signals that you are not sure of scrape a few centimetres off the surface with your pick and see if the signal becomes clearer.

Big GOLD.

Many detector operators have no trouble finding their share of small gold, but often are disappointed at the lack of larger gold found at depth, even though they have dug up to 1m for a soft drink can or a horse shoe. The reason is that big gold gives a much different response to the smaller shallower pieces. The signal is often quite broad, and there is very little pitch variance. Just something to be aware of.

For Maximum Gold Recovery

- **Keep the coil as close to the ground as possible.**
- **Listen very carefully - this is more important than looking.**
- **SLOW DOWN! Do not rush, take your time.**
- **Have a positive mind set, and imagine a nugget at every next sweep!!**
- **Remember that covering a small section of ground thoroughly will be more productive than randomly searching a larger area.**

identifying target signals

Metallic targets will usually give a 'solid' sounding signal when the coil is swept across the object from any direction. A metallic target generally produces a short, sharp and mostly symmetrical signal. Ground noises usually give a broad uneven signal when the coil is swept from different directions and often may only give a signal from one direction and no signal on the return sweep.

If you are not sure if the sound is ground noise or a target signal, you need to investigate.

Scrape a shallow hole about 70-100mm deep over the suspected target. Sweep the coil over the hole at the original ground level. Do not dip the coil into the hole. If the signal has decreased in volume or is less defined, it is probably ground noise.

If the signal remains the same or becomes louder, it is likely a metallic target. If you are still not sure, make the hole deeper and repeat the process.

A 'halo effect', which may be built up around a buried metal object, makes the object appear to be larger to the detector than it actually is. This will be reduced once the target is disturbed from its position in the ground (e.g. a small object, detected at a substantial depth, may be more difficult to detect once disturbed from the ground and lying in the loose dirt. If the object is reburied, the 'halo effect' will not be present).

HINT Do not try to eliminate what might appear to be a faint, isolated ground noise by balancing the detector on top because you may be 'balancing out' the target response from a deeply buried metallic target. Better to ground balance around the target without going across it, then switch to Fixed and try Pinpointing.

Pinpointing

To find an object and reduce the size of the hole required to remove it from the ground, it is necessary to pinpoint the exact location of the object.

If a target is heard, first confirm it by setting an accurate ground balance and then pinpointing. To ground balance, if detecting in Fixed position, hold down the Quick-Trak push button and pass the coil around the area of the target, making sure that the target is not detected (keep the coil well away from where the target is). Once completed relax the push button.

If detecting in Tracking mode, move the coil slowly around the area of the target, keeping well away from the target itself, then hold down the Quick-Trak push button to go to Fixed and pinpoint across the target.

When a target is detected, sweep the general area with the coil, taking note of where the strongest signal is received.

By shortening the length of the sweep it should be possible to draw an imaginary line in the ground where the strongest signal is located.

Line up the target at 90° from the initial direction and repeat the process. The object is located where the two imaginary lines cross (see **Figure 5.4**).

NOTE – Pinpointing will not locate a target in the centre of the coil if operating with the Coil switch set to M (Mono) or Cancel, it will be slightly to one side of centre

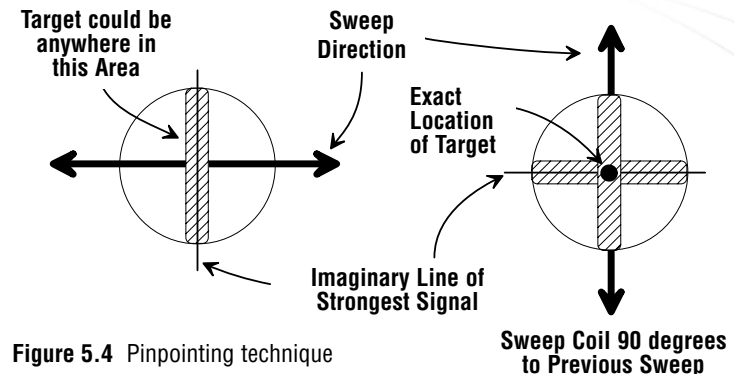


Figure 5.4 Pinpointing technique

recovering the target

When you are sure of the location of the target, it is necessary to dig it out. In order to preserve the environment, the hole should be as small as possible. Afterwards, always replace the soil and grass which is removed.

It is essential to carry at least one of the following digging tools with you when searching:

- small, strong digging spade or shovel.
- pick with broad scraping blade.
- crowbar (for very deep objects in hard ground).

Step 1 Before digging, clear the area of loose surface material and check that the target signal is still there. If it is not, the target should be amongst the surface material. Also remember if there are other signals close to your target. This is important so that when you come to dig your hole, you do not heap the loose dirt on top of another target already in the ground.

Step 2 If the target signal is still present, use your pick to dig to a depth of approx. 50mm.

Step 3 Sweep the coil over the hole to determine if it has been dug. If the target signal is not heard, then the target should be in the pile just dug.

Step 4 Otherwise dig a little deeper and check again.

Step 5 Take care when you dig, as damaging a nugget may reduce its value. Start digging approx. 100mm in front of the target to reduce the chance of damage.

Step 6 Pile the diggings carefully, ensuring that you do not make the pile on top of another target (see step 1.), as it may be necessary to search them.

Step 7 If the target is located in the soil, which was removed, sweep the coil over the pile and pinpoint its exact position.

Step 8 Keep halving the pile which has the target.

Step 9 If it is still difficult to find the target, place the detector on the ground with the coil horizontal.

Step 10 Take a handful of the diggings and pass over the coil.

NOTE – Your hands and wrists must be free of any metallic jewellery and watches.

Step 11 If there is no signal, place the handful carefully in a new pile and repeat with another handful.

Important: Always refill any holes before leaving, and scatter leaves, etc. to restore the area to its original condition. Any rubbish you recover should be taken away with you and disposed of properly. Removing rubbish and refilling holes will help metal detector users maintain a good reputation. This should lead to more areas being readily accessible for prospecting

recovering the target – *continued*

Recovering Deep Targets

The GP 3500 has depth capabilities that will surprise both new and experienced prospectors. If the target appears to be buried deeply, it should help to use the following technique:

Step 1 Use the cross sweeping method to locate the target accurately.

Step 2 Dig a hole large enough to insert the coil, approx. 100mm deep.

Step 3 Keep testing the target location as you dig deeper.

Step 4 Take care that the target is not in the wall of the hole. You may dig past it.

Try pinpointing again to check your hole is in the correct position.

HINT

When the object has been recovered, it may be worthwhile sweeping the hole again to ensure that there are no other targets.

If you find an object in a particular location, search the surrounding area very carefully. It is likely that there are more objects nearby.

If you hear a target signal, keep searching until you find the object; it is there and may be valuable.

Salty Environments

The GP 3500 will find objects at great depths in salty environments.

However, the interfering signals caused by highly concentrated salt may not be able to be completely 'balanced out' if using automatic ground balance alone.

HINT Change Soil switch to Salt setting for salty environments. To use the salt setting, you will have to use the specially designed GP series range of coils.

technical specifications

The GP 3500

Length	Maximum	1300mm
	Minimum	1100mm
Weight	Complete with 11" coil (excluding battery)	2400g
Configuration	Shaftmount	
Transmission	Bi-level Pulse Induction	
Technology	Dual Voltage MPS Technology	
Ground Rejection	Automatic ground balance	
Search Mode	Motion detector	
Controls	On/Off - Threshold	Pot w/ switch
	Signal	1 turn control
	Tone	1 turn control
	Volume	1 turn control
	Boost (shallow/N/deep)	3 pos. Switch
	Soil (sens/N/salt)	3 pos. Switch
	Tune (auto)	Push switch
	Tune (manual)	Digital pot
	Iron Discriminate (All Metal/Disc)	Pot w/ switch
	Coil (DoubleD/M/Cancel))	3 pos. switch
	Track Speed (Fast/M/Slow)	3 pos. switch
	Balance (Fixed/Tracking)	2 pos. switch
	Audio Output	6.35mm (1/4") headphone socket
Headphones		Supplied
Coil (standard)	11" Double D	
Coil (accessory)	18" Double D or 18", 11" and 8" Mono	
Battery	6VDC 12Ahr sealed lead acid 14-15hrs	

Patents Apply

NOTE: In the interest of product improvement, Minelab reserves the right to make changes without notice.

troubleshooting

Use the following table to check for suggested solutions to problems.

Fault	Suggestion
No sound	Turn Threshold control fully clockwise. Turn Volume control clockwise. Check power cable and connections. Check headphones. Check battery.
Threshold but no target signal	Try testing different coils.
Random noises	Check for other detectors interfering. Retune using Tuning button. Charge the battery. Set Coil switch to Cancel . Ground balance again. Check for thunderstorm build-up.
Battery will not charge using vehicle charger	Check for power to cigarette lighter socket in vehicle. Check 10 amp fuse in charger plug.
Battery not holding charge	Try alternative charger. Check power cable.
Very noisy threshold	Check for interference and re-tune. Try detecting in a different location. Set Coil switch to Cancel .

If you need to return your detector to Minelab for service, please supply as many details as possible about the fault. This will enable our service engineers to rectify the fault quickly and efficiently.

Return the detector in a cardboard box for protection along with a copy of the Service Repair Form supplied in this manual.

Please supply your name, address and phone number along with purchase date and serial number when sending detector parts for repair.

Do not open the control box as this will void your warranty.

service repair form

Today's date: _____

Detector Model: _____ Serial No. : _____

Purchased from: _____

Purchase date: _____

Faulty part(s): _____

Description of fault: _____

Owner's name: _____

Address: _____

Phone: Day () _____ Home () _____

Fax :() _____ Email: _____



warranty

The GP 3500 control box has a 2 year warranty covering parts and labour. Refer to your warranty card for details. The GP series coils have a warranty for one year against malfunction.

Refer to either your supplier or Minelab directly for service.

The commencement of the warranty is the date of purchase.

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

For specific details of the Minelab warranty please refer to the Product Warranty card. It is the responsibility of the owner to pay all transport costs for the detector to Minelab. The repaired detector will be returned to the owner freight free.

NOTE – This warranty is not transferable or 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,

Repairs

In the unfortunate circumstance that the detector needs to be returned to Minelab for service, please fill out the Minelab Service Repair Form (or a photocopy of the same) and enclose it with the detector.

Please supply as much detail about the fault as possible. This will assist our service engineers to rectify the problem quickly and efficiently. (See p46)



glossary of common terms

- Control Box** The control box encloses the electronic circuitry of the detector. The control box originates the TX (transmit) signals sent by the coil and interprets the RX (receive) signals detected by the coil. All user selectable functions (knobs & switches) are located on the front and rear panels of the control box.
- Discrimination** The ability of a metal detector to estimate if a located target is made from ferrous metal (iron or steel) or non-ferrous metal (non-magnetic).
- Double-D Coils** Double D coils are coils that have two windings of wire that overlap in the shape of two D's (one reversed). The characteristics of a Double D coil are stability, especially in heavily mineralized ground, good depth and sensitivity and a very thorough search pattern.
- Electromagnetic Field** Commonly called the 'signal from the coil'. An electromagnetic field is generated within the wire windings of the search coil and this field is pulsed or sent into the ground. The presence of a metal target in the ground will disturb the pattern of this field and this disturbance is registered by the receive system of the detector and indicated to the operator by an audible target signal "beep".
- False Signal** False signals are signals, which sound similar to target signals but are caused by other factors. Common causes for false signals are incorrect ground balance, hot rocks, signals caused by knocking the coil on obstacles, etc. With experience, the operator will learn methods to minimise false signals and to hear subtle differences between target signals and false signals.
- Ferrous Metals** Metals composed of or containing iron. A ferrous item is one, which is attracted to a magnet and is predominantly or completely made of iron or steel.
- Ground Balance** The ability of the metal detector to compensate for the effects of ground mineralization. The GP 3500 has "automatic ground balance". When it is used in Tracking mode it continually compensates for changes in the ground mineralization.

glossary of common terms – continued

- Halo Effect** After a metal object has remained undisturbed in the soil for a considerable amount of time, a diffusion occurs around the object. This has the effect of the object appearing to the detector to be a larger size.
- Hot Rocks** A hot rock is an individual rock which has a particularly high degree of mineralization as compared to the average ground around it. Due to this high difference, the detector does not have the opportunity to ground balance on the individual rock so therefore gives a false signal.
- Interference** Electricity or radio waves in the area being detected can cause instability or chattering of the detectors threshold. The types of interference commonly occur due to power lines, underground cables, radar, other detectors or climatic conditions like thunderstorms.
- Mineralization Ground** Most ground contains certain minerals, which can cause false signals to be given by a detector. Heavily mineralized ground requires different ground processing than does neutral or lightly mineralized ground (see Ground Balance).
- Ground containing heavy salt concentrations require entirely different processing again (sea salt).
- Monoloop Coils** Monoloop coils are the style of coil where the multiple strands of wire are wound in a single loop around the circumference of the coil. The field of search of Monoloop coils tend to be cone shaped.
- Non - Ferrous Metals** Metals not containing significant levels of iron. Non-ferrous metals are non-magnetic such as Gold, Silver, Copper, Brass, Lead or Aluminium.
- Pinpoint** The method of locating the precise location of a target prior to digging. Pinpointing uses the design of the search coil windings to determine the exact position of the detected target.
- RX** RX refers to the response or electromagnetic field which is received back by the coil and is used by the control box circuitry to detect a metal item in the ground.

- Salt** The presence of high salt content in the ground being searched will have a similar but different effect on the metal detector ground balance as does mineralization. Salt content causes a negative (-) response rather than the positive (+) response of laterite soils. The detector needs to therefore use different filtering techniques to overcome this effect.
- Search Coil** The search coil is the circular plate which is swept across the ground surface during detecting. It transmits electromagnetic signals into the ground and receives the response.
- Search Pattern** The search pattern is the area of ground underneath the coil which is being scanned. Depending on the style of coil (Double D or Monoloop) and the Coil mode being operated in (Double D/Mono/Cancel) different coils will have a different shaped area being covered by each sweep.
- Threshold** The continuous audible level of sound emitted by the detector is referred to as the Threshold. This threshold hum is the background sound made as the detector operates. Threshold can be set anywhere between silent and loud, but a soft, audible level is normally suggested.
- Target Response** The electro-magnetic effect generated by the metal target under the influence of the TX field.
- Target Signal** The audio signal (or change in threshold) caused by the presence of a metal target as the coil passes across it.
- Tracking** The function of Automatic Ground Balance where the GP 3500 makes continuous adjustments to the ground balance to compensate for changes in the mineralization of the ground.
- TX** TX refers to the transmit signals or electromagnetic pulses, sent into the ground by the coil.

detector care and safety

– take care

The GP 3500 is a high quality electronic instrument. It has been designed for professional gold prospecting use and the electronics circuitry is encased in a rugged housing. Take care of your detector in the following way:

Keep the detector clean and dry. It is very important to keep all electrical connectors clean and dry.

The control box is not waterproof, even though it has been designed to be water-resistant. Take care to avoid it becoming wet.

The coil is water resistant and may be used in rain or wet conditions. The coil is not waterproof. Do not immerse the coil in water.

Regularly replace such items as teardrop washers and skidplates to give long life to your detector.

Do not expose the detector to high temperatures or leave it in the sun for longer than is necessary. Shading will help protect it. Do not leave the detector in a closed vehicle, especially in the sun.

The coil housing will eventually wear through if you scrub the ground with it while searching. Use of a replaceable skid plate will help to protect your coils.

To prevent dirt entering between the coil and the skidplate, silk tape, e.g. Leukosilk®, which is available from chemists, may be used. The use of some other carbon based tapes, e.g. insulation tape, may result in some loss of sensitivity.

The control box and coil should not come into contact with petrol or other oil-based liquids. If any part of the detector comes into contact with corrosive substances, including salt or salt water, it should be washed with fresh water.

Clean the detector with a damp cloth using a mild soap detergent. Do not use solvents.

Do not open the control box as this will void your warranty.

All circuitry repairs should be sent back to Minelab or an Authorised repairer.

accessories

Search coils

The GP 3500 is supplied with the 11" Double D coil. This coil has been specially designed to take advantage of the new technology and features of this detector. In addition to this there are also a number of other size coils now available to give improved performance to your detector.

These range from smaller coils which give greater sensitivity to small targets and are lighter and manoeuvrable in heavy vegetation, up to larger coils which give greater depth. See your Minelab retailer for the full range.

In some circumstances, other brand Double D and Monoloop coils will work on the GP 3500, however there are limitations which will mean that a number of the new benefits of the DVT technology will not work properly. In some cases the use of coils not designed for the GP 3500 will cause the detector to be unstable and noisy.

Batteries

Spare 12Ahr batteries can be an advantage, especially if travelling into the outback. Having a spare battery that you can use after lunch can ensure that you're always detecting at full power.

A smaller light-weight battery is also available from Minelab. This is rated at 4.5Ahr and gives approx. 3 - 4 hours running time per charge. The weight of this battery is 968g.

Corporate clothing

Minelab also has a range of good quality clothing, e.g. caps, shirts and jackets available.

Ask your local dealer for details.



Working for a Cleaner, Greener Future

For Consumers within the European Union: Do not dispose of this equipment in general household waste.

The crossed out wheeled bin indicated on this equipment is an indicator that this unit should not be disposed of in general household waste, but recycled in compliance with local government regulations or environmental requirements.

Please dispose of this equipment via a recycling service or centre, or by returning the unit to the respective Minelab or Halcro outlet as appropriate for your unit. This will enable the equipment to be disposed of in an environmentally safe manner.

Disposal of unwanted electronic equipment in landfilled waste may contribute to adverse long term environmental effect due to the leaching of contaminating and toxic substances contained within some electronic equipment.

Disclaimer: The Minelab metal detector discussed in this operating manual has been expressly designed and manufactured as a quality hobbyist metal detector and is recommended for use in coin, treasure and general metal detection in non-hazardous environments. This metal detector has not been designed for use as a mine detector or as a live munitions detection tool.



Please note: Since there may be a variety of options available for this detector, equipment may vary according to the Model or items ordered with your detector. Certain descriptions and illustrations may also differ (in this manual) from the exact Model that you purchased. In addition, Minelab reserves the right to respond to ongoing technical progress by introducing changes in design, equipment and technical features at any time.

Item Number: 4901 - 0053
Revision: 1.1