

Minelab Sovereign GT

Tips & Tricks

When the very first "Sovereign" model metal detector went on sale in 1990, no one envisaged just what a success it – and indeed the Minelab brand – would eventually become.

The "Sov", as it became known, was a first with its groundbreaking BBS Technology and quickly earned a reputation for itself by going deep while ignoring junk and iron with no apparent depth loss. The Sovereign GT became the latest and sixth iteration of the Sovereign line to be introduced and has enjoyed massive global success.

With its combination of automatic and manually adjustable controls, BBS Technology, Accu-Trak Digital Ground Tracking, Discrimination, Notch Discrimination and Noise Cancel it is very apparent the Sovereign GT is a real "feature-packed" detector that is comfortable at many tasks including coinshooting, hoard hunting, beach use and gold prospecting.

This article will endeavour to demystify and hopefully unlock some of its secrets.

Realities of Depth

The Sovereign GT has some fabulous functions to help maximise your finds. At first glance some of the features can be mystifying, and just what they do (or don't) may be a bit vague to some.

This article could be thought of as an "alternative" Instruction Manual and I will throw some light on these functions to help explain the "how and what" questions we all need answered from time to time.

A newcomer to the Sovereign may at first not experience the depths achievable and this may occur for a number of reasons.

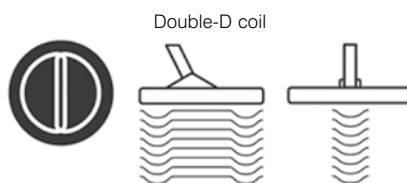
The Sovereign models are not designed like other detectors. They like to find "natural" targets as you are walking, searching at a normal pace and not when freshly planted or tested "in-air".

1. Headphones – Minelab recommends a set with a sensitivity of 32 ohms

and a ¼" jackplug.

2. It is important to listen for the "quiet signals" that the Sovereign produces on the deeper, smaller targets. It is very easy to hear the "big" responses but not so easy to hear the quieter ones, at least not at the start of use because any detector owned prior to that may not have utilised a threshold function. On small deep targets, the threshold (low buzzing hum sound) will barely rise beyond a perceptible level and could be missed simply because the ear has not yet been trained to hear such small responses. Some say this is the real secret to depth with the Sovereign!

3. Inexperience of the BBS System: many signals can produce wide responses. Indeed a large coin several inches deep can sound like a large shallow target. This is due to the Broad Band Spectrum operating principle and a Double D configuration coil which is "live" across the diameter of the coil with a "wiper blade like" search pattern.



Volume Control

It is very important to understand that as well as being the control that dictates the signal volume back from buried targets, the Volume control can also be regarded as a depth control. If you want serious depth it has to be turned fully clockwise until it stops and can go no further. Fit a large coil, for example a 12 inch, and it will be almost unbeatable on wet sand.

Threshold Control

Located at the bottom right of the control panel, the Threshold control allows for the adjustment of the all-



Minelab Sovereign GT showing rear mount and close-up of control panel.



important background hum. This "hum" assists in the location of targets. Ideally, this control should be set to a position where the "low buzzing noise" is just audible.

Sensitivity Control

This control has often been described as being "back to front"! When you click it out of its Auto position and rotate it clockwise it is actually reducing in sensitivity and not increasing (moving clockwise should be an increase but not in this case: it is a decrease). Once you understand this feature a lot of the Sovereign's mysteries can become clearer.

The position of the sensitivity control can also give poor depth results if set incorrectly. Although the manual suggests that "auto-sensitivity" will give optimum performance, this does not mean the detector will give its best possible depth and sensitivity. Auto position is designed to allow the detector to perform at a sensible level with the minimum of interference from the ground or outside interference. More depth is available providing that the ground is

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The author Des Dunne detecting with the Minelab Sovereign GT



suitable. Too much sensitivity on poor ground (magnetic or mineralised) will result in reduced depth. For you to know just how much sensitivity you can use to give the best results possible, then carefully follow the suggestions outlined here.

First, turn all rotary controls fully anti-clockwise. Make sure the sensitivity control is turned fully anti-clockwise and "clicked" as if turning off a switch. The machine is now in auto-sensitivity. Move the toggle switch into Disc position. Turn the detector on and move the volume control to maximum (fully clockwise). This is very important as the volume is a target signal volume and, as previously explained nothing to do at all with the threshold. In reality depth is reduced if the volume is reduced. Next, turn the threshold control clockwise until you can just hear the noise. These settings are ideal for general detecting. Walk with the machine and search for a while. Listen carefully to the threshold noise. You should notice most of the time you can hear it. Occasionally the noise will disappear: this is when the coil is passing over iron, hot rocks, coke or an item which is being "discriminated out". One of the best features of the Sovereign GT is, when items are discriminated out the Threshold returns in the conductive tone of that particular item.

It is important to get used to this Auto position searching, as when the

detector is used with Manual Sensitivity, the detector must respond in a similar way. If while in auto-position the threshold cannot be heard for most of the time, then either the ground is bad or, more likely, there are multiple targets of iron, coke etc. in close proximity of each other. If this is the case, it is then necessary to come out of this auto-sensitivity mode.

Processor – the Detector's "Brain"

The "Processor" is the brains of the detector and let us assume for a moment the detector can think! It can, and in Auto mode it can make decisions on what it has been programmed to compute.

In essence it has been programmed to handle the ground and target information.

But what happens if that information is "interrupted" or made difficult by bad ground and too many junk targets or hot rocks it encounters buried in the soil?

It can process them as "bad items" and so the Auto sensitivity reduces to compensate for what the processor decides is bad ground. A subsequent depth loss could then occur while the Auto mode tries to handle the conditions it meets.

So for potentially greater depth and sensitivity to small targets we then have to override this situation and this is

why the Sovereign GT has this available option.

Next, I describe how to operate the Sovereign GT in Manual sensitivity.

Manual Sensitivity

Turn the Sensitivity control clockwise until it clicks out of the Auto position.

After just clicking, the detector is at maximum sensitivity possible; turning it further in a clockwise direction actually reduces sensitivity.

If the threshold can be heard most of the time (unlikely on poor ground or with many unwanted targets) then all is good. If the threshold cannot be heard most of the time then we must not increase the level of Threshold control. We must instead reduce the sensitivity until the detector is sounding normal. With bad ground, it may be that the sensitivity has only to be reduced a little.

To test this I recently searched the same area of ground with three different coils for the GT. The ground would be considered "moderately mineralised". It was found that the three coils, an 8 inch, a 10 inch and larger 12 inch (all Double D coils) had to be set at three different manual sensitivity positions to maintain a threshold. The 8 inch and 10 inch coils were set at a point close to the quarter to nine position with a tiny variance between them, the 8 inch being closest to Auto. With the large 12 inch coil the position was set around the 12 o'clock position and still provided decent depths with a harness buckle coming up from over a foot which had been buried on edge.

To determine whether it is bad ground or bad targets causing a sensitivity reduction is quite easy – especially in the case of hot rocks and iron – by simply digging a few targets. If signals are heard and nothing is found when checking in all-metal then it's the ground that is bad. If the Threshold cannot be heard after walking several yards then it is advisable to choose Manual sensitivity with the control set very low in order to maintain a threshold. If depth is what is required it's vital that Auto sensitivity is not used in these bad ground areas.

Accu-Trak Digital Ground Balance

If you want to consistently get the maximum depths from your Sovereign GT it is important to get the balance

between sensitivity and ground balance right.

On the GT this is very easy to accomplish. In fact, the GT model has digital ground filtering in the Disc mode and uses Accu-Trak digital ground balance in its All-Metal mode. This is not found on any other Sovereign model. It is highly effective in mineralised (and beach) areas if you search in All-Metal for tiny small and low-conductive targets.

To set it up is easy:-

Method: Turn on the GT; set the Threshold to a gentle hum; place the top left switch to All-Metal; place the Track/Fix/Pinpoint switch to Track; and lower the coil close to the surface of the intended search area. Gently raise and lower it up and down from 2-6 inches a few times without touching the surface until the tone stabilises. That's it...you are all set!

If the ground is less variable you could switch to Fixed and this will keep the detector set to the last Ground Balance point. Fixed might give more depth than Track.

Remember that the ground balance in most ground, will balance to a slightly positive audio level for greater depth.

Searching in All-Metal on saltwater beaches and switched just out of Auto is a great way to maximise depth.

Begin with the Sensitivity in Auto and select the Track position. Detect as normal for about 30 feet or so and then switch into the Fixed position. If the detector remains stable you can change from Auto into Manual as this is how to get the best depth and then check your signals in Discrimination.

Iron Mask

Iron Mask is a strange one to figure out! Just what is it and how does it do what it does?

Iron Mask is a function unique to the Sovereign detectors that helps to enhance the presence of non-ferrous targets in areas liberally scattered with iron or ferrous targets by allowing the machine to react to or "process" the non-ferrous signal first, before trying to "null out" the surrounding ground containing the iron.

The ability to locate a coin near iron has been described by some as "see-through". While a good term, perhaps "see around" might be a better one. While impossible to actually see through iron it



Iron Mask control switch positions.

is possible to "see" something quite close to iron, so "see around" might indeed be a better description of this function.

On the GT the Iron Mask control toggle switch might be difficult for a beginner to figure out. Essentially, there are three modes on the detector: one All-Metal and two Disc modes. These are: in the toggle up position it is set to All-Metal; in the central position it is set to Iron Mask On; and in the toggle downwards position the GT is set to Iron Mask Off.

So what does all that mean?

With Iron Mask On the advantages are that search depth is a little greater and there is greater probability of detecting non-ferrous targets in close proximity to ferrous.

The disadvantage is there can be more iron falsing with it on and the threshold might not be as stable.

With Iron Mask Off the disadvantages would be it may give the occasional "beep" on large ferrous.

Iron Mask Off can actually be the "cleaner" more stable setting and can be advantageous in mineralised soils. It can also be a better beach mode, especially on clean areas where there is no iron at all. Parks and commons might also be places where the Iron Mask could be turned off. But there is a slight trade-off in sweep speed and a slower sweep will have to be used because otherwise you may miss coins that are close to junk.

If you are still confused about which setting to use then just do the "coin near the nail" trick and flick between Iron Mask On and Off while changing the distance between the two targets. You'll quickly see while Iron Mask On has an advantage.

Threshold/Silent Search

We've already discussed the Threshold and the importance of having it on as a barely audible hum the majority of the

time. But, there could be times when the noise becomes bothersome due to many iron targets being rejected and subsequent broken audio responses. You can then engage Silent Search and this turns off the threshold tone.

However, be advised against using this because if set too low to begin with and Silent is engaged then you could be operating below the null zone (just where it goes silent) and as a consequence miss the barely perceptible threshold tone rise of small items.

Tip: leave threshold On as much as possible.

Digital Target Indication Meter

The digital meter (available as an optional accessory) produces a numerical reading of the detected object making discrimination easier. Once set-up by you and calibrated to a specific ID number, you can see and recognise repeating numbers for the same target type ... thus making recovering desired objects (or discriminating) a lot easier.

Iron will produce a slash or minus on the left side of the number displayed while there will be no slash for non-ferrous targets.

An advantage while using Iron Mask On with the DTI meter is that iron with a coin close to it can show both a minus slash and a "positive" target ID number

Digital target indication (DTI) meter.



in succession with accompanying audio sounds while then possibly nulling out the threshold. This is your key that there is something there so dig!

To see an Instructional Video on the Sovereign DTI meter please go to: <http://www.mlotv.com/view/613/sovereign-dti-meter/>

Reverse Searching

This is a trick I use in very iron infested situations. Here's how to do it.

- Switch to All Metal
- Turn the Threshold lower than normal
- Engage Manual Sensitivity to the 12 o'clock position.

Sweep in very short, tight sweeps and listen for faint, narrow and even signals. If a "good signal" is heard (this can take practice) "X" it as in try to ascertain its centre and then move off to the side ever so slightly, engage Disc and come back in across the spot. If a "good tone" is heard, "wiggle" the coil above the target and keep it there as long as possible to

coax a better response. If large iron is close the whole thing might overload but simply begin again and you will be rewarded with deep coins and items missed by others (this method does take some practice).

When to Dig

1. Dig all two-way signals (two-way is a response from both directions).

2. If using a DTI meter dig all the readings that show a mix of minus and positive target IDs.

3. Dig all targets that begin to sound and signal as the coil moves off the centre of the target. In other words, if the target response "continues" as you sweep away from the target.

4. Always dig when there is absolutely no hesitation in an audio response.

5. If the signal tone "climbs" and gets stronger as you sweep dig. These can be the small "faint" targets as described earlier on.

When Not to Dig

1. Do not dig when the Threshold "cuts out" and returns with a low raspy growling sound – the coil has just passed over a piece of iron and discriminated against it.

2. Don't spend too much time on one-way signals, that's when a response comes just once on each sweep: invariably these can be large and unusually shaped ferrous pieces the discriminating

circuitry can not readily interrogate. If doubtful, remove a spade full of soil and check.

3. Do not dig non-repeating signals that appear to move in Disc and are loud and blaring in All-Metal as these can be iron.

4. Do not dig signals that sound on the edges but disappear on long sweeps across the centre portion of the target.

5. If using a DTI meter it is possible to recognise certain false signal responses because the meter can show an often repeating number. At the beginning, dig a few of these to see just what the targets are and you might find nails or a twisted mass of wire bent into a U shape.

Final Thought

I remember being asked by a rally contestant that if I was lost and stranded on a desert island, which detector would I like to have with me? "That's easy", I replied "a Sovereign – I'd like to have a Sovereign".

It's a work-horse of a detector, it can multi-task, it's of rugged construction and likely to last a long time and delivers above average results on land and sea that others brands could not.

If you find this article of interest and would like to discuss any aspect of it with me, feel free to contact me at the following:

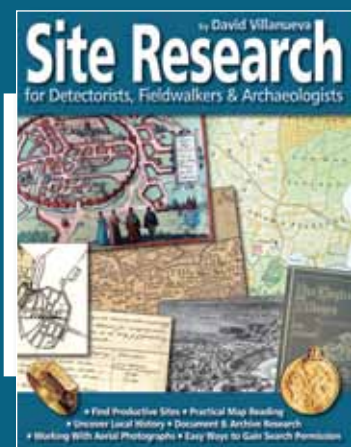
*Des Dunne, Field Application Specialist,
Minelab International, Bandon, Co Cork*

E-Mail: minelab@minelab.ie

Tel: 00+353+23+ 8852101

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