DETECTORMODS

Setup Guide for Modified Minelab Detectors

How to get the best performance from your machine

Revision 1.0 · 18 June 2026 · Replaces all earlier instruction sheets

Welcome, and thank you for trusting us with your detector. This guide covers every machine we modify. **Part 1** explains the thinking behind the controls; **Part 2** is a step-by-step setup for the SD, GP and GPX series; and **Part 3** covers the machines we improve by quietening them rather than by adding controls — the GPZ 7000, GPX 6000 and GM 1000. Read the part that fits your machine; the opening idea below applies to all of them.

There is no need to take it all in at one sitting. Most of it is plain common sense once you have seen the pictures, and the machine itself will teach you the rest.

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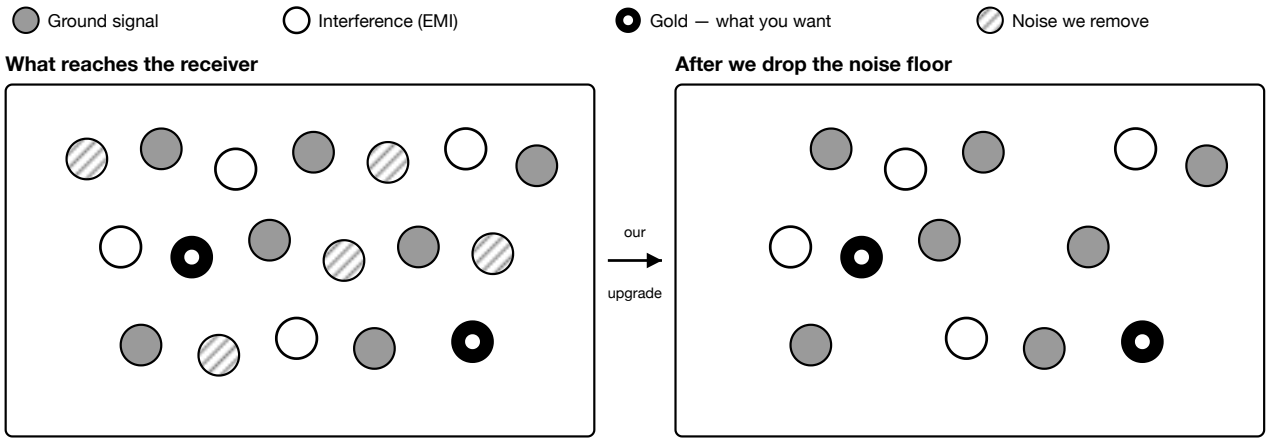
The one idea behind every modification: signal-to-noise

Every metal detector — your SD, GP, GPX, GPZ or GM — is really just a machine for pulling a faint target signal out of a sea of noise. Almost everything we do when we modify a detector serves a single goal: lowering that noise, so the signal you actually care about stands out.

It helps to picture it as marbles. The signal coming up from the ground is marbles of one colour; the electrical interference (EMI) in the air around you is marbles of another; and the whisper from a piece of gold is a third. On top of all that, the detector tips in its own marbles — electrical noise made inside its own circuits. Your job in the field is to sort the gold out of the pile. We cannot change the ground, and we cannot change the interference around you — but we *can* clear out the marbles the detector throws in itself. That is exactly what our upgrades do, and it is why a quieter machine reads the ground more honestly.



Why a quieter machine finds more. The ground signal and the interference around you are fixed — you have to work with them. The detector's own internal noise is not: by lowering it, we take our own marbles back out of the pile, so the few that matter are far easier to pick out. Same ground, same gold — a cleaner view of both.

Where you stand matters as much as any setting

These detectors are built for remote country, well away from mains power, solar gear, and the electrical hum of town. Flood the front end with EMI and even the best upgrade can disappear. We have had people switch on a modified GM 1000 in the shed at home, hear no difference from standard, and assume nothing had changed — then take the same machine bush and find the difference was night and day. Near interference, the input stage is simply swamped, and modern auto modes quietly wind performance back to cope. So if you are testing your machine, test it where you actually intend to detect.

THE GOLDEN RULE OF SETTINGS

More is not better past a certain point. On any of these machines you can wind gain or sensitivity up chasing depth, and an obvious target may shout a little louder — but the noise climbs faster than the depth does, and the small or deep targets you are really after vanish into the racket. Across a day, working targets of all sizes, a machine set **just below its noise floor** will out-find the same machine cranked past it. Turn the settings up until the machine is just starting to get unpleasant to listen to, then ease back a touch. That edge — just below the noise — is where it performs best.

PART 1 — The principles

Everyone, please read this — it applies to every model, and Part 2 leans on it.

1 · Getting the most from your detector

Is your detector more like a raffle ticket, or like a power drill, camera, or car? The more you treat it as a tool that rewards learning and practice, the more it will give back. Learn the settings, understand the sounds it makes, and experiment to find what works. Switch it on and swing it around with no understanding of how it operates, and you will almost certainly get poor results.

You want the odds stacked in your favour. That comes down to good equipment, understanding how it works, and knowing how to set it up correctly. It also comes down to where you search. Are you going over the same popular ground everyone talks about, or are you doing the research to find less-worked or even virgin ground?

Research and experimentation are your friends. If you are willing to spend hours walking the bush with your detector, be willing to spend a few hours researching locations and a few more practising with the machine until you are confident operating it. Most successful prospectors have put in that groundwork — very few people get outstanding results without it.

Please also read the original Minelab manual for your machine. We do not modify every control. In some cases we repurpose existing controls; in others we add entirely new ones. Understanding how the base machine works will help you get the most from any modification.

Be wary of anyone claiming to have the “best settings” or a cheat sheet that makes a detector perform everywhere. More often than not they have a setup that is either “good enough” for most places, or highly optimised for the one location where it was developed.

2 · Settings are personal — and so is ground

There are very few hard numbers when it comes to settings like audio tone. A tone that is perfect for one person may be unpleasant or hard for another to hear. If you dislike the tone you may “tune out” and miss signals; if you have hearing loss at certain frequencies, you may not hear some tones at all. Set the tone to suit you, not someone else — test it in the field with a test target and pick a tone you can hear clearly and listen to comfortably for hours.

Ground conditions vary enormously from place to place, and can change within a small area. Your detector should be adjusted to suit the ground beneath your feet. A generic setup is rarely the optimal setup.

That said, there is real value in a general-purpose setup that is close to “good enough.” Often 90% of maximum performance is more than enough to cover ground, find a productive area, and then fine-tune for that spot. If you plan to prospect for five hours and spend one of them chasing an extra 5–10%, you have already lost 20% of your detecting time. Learn the controls well enough to reach an

almost-optimal setup quickly and start detecting sooner — while still knowing how to fine-tune when conditions justify it.

3 · Meet your new controls

Your modification adds or repurposes a small number of controls. Everything else on the machine still works exactly as your Minelab manual describes, and the factory controls layer well with the new ones. Here is where to find each control on your series:

CONTROL	GPX SERIES	GP SERIES	SD SERIES
Front-end gain (variable gain)	Knob — essentially the same on every model	Knob — essentially the same on every model	Knob — essentially the same on every model
Frequency (pulse width)	The **Manual Tune** setting in the LCD back menu — repurposed, with a far wider range than factory	A single-turn knob, similar in appearance to the gain knob. Clockwise = faster, more sensitive pulse; anti-clockwise = slower, deeper pulse	A switch, labelled for the target size each position suits. The SD-2000 adds an ultra-long pulse mode for very large, deep targets
Variable damping	Knob	Knob	Not fitted — skip any damping step
RX gain	Factory control — works alongside the new gain (see section 7)	—	—

Knob directions in this guide are always described **viewed from above**, looking down at the knob.

4 · Variable damping

The damping control matches the coil to the detector. Over time, Minelab designs and coil technology have evolved, and the internal damping values are set to give a “good enough” match across a wide range of coils. The factory value is reliable for general use, but it is always a compromise — it will never be perfectly optimised for every coil, especially as the emphasis shifts toward smaller gold targets. That is why adjustable damping is worth having.

Preparing a test target

You will use a small test target for damping, and again when setting up each machine in Part 2. A small square cut from an aluminium soft-drink can works well. Electrically, aluminium is closer to gold than most common materials, making it a good stand-in when nuggets are not available.

Avoid lead as a proxy — weight does not correlate with electrical conductivity in any useful way here. (Tungsten, for example, is about as dense as gold but behaves nothing like it electrically.) Cut a small square with scissors and test it over the coil in air first, so you get a clear response that is neither too loud nor too faint.

Setting damping correctly

The best place to set damping is in the field, in real ground, using a small test target that gives only a faint response at the default setting.

- Start in factory default, with front-end gain at minimum and damping at maximum.
- In moderately mineralised ground, find a patch where you can get a smooth, stable ground balance with no audible noise during coil movement. Push the target slightly into the ground. Put the detector into fixed ground balance.
- Sweep the coil back and forth over the target with a consistent motion, keeping height and position as stable as possible. Ideally, your target gives only a faint signal when first scrubbed against the coil — that way you can control the height by keeping the coil against the ground.
- Gradually reduce the damping until you notice a clear improvement in target response.
- Keep reducing until the signal begins to weaken, then increase damping slightly to return to the peak. This peak is the closest practical optimisation for that coil in those conditions.

Fine adjustment and repeatability

There is a small margin around the optimal point. Slight increases or decreases can help manage different levels of mineralisation, but treat the peak as your baseline for that coil.

Once you have found the setting, mark the position on both the detector and the coil for faster setup next time — colour-coded stickers or a marker (for example green for one coil, red for another) let you return to known settings quickly.

> **WORTH REMEMBERING**
>
> **Consistency is critical.** Any change in sweep height, speed, or position will affect the signal and give inaccurate results. Keep the coil at a steady height and move it smoothly over the target without drifting forward or back. After balancing, switch to fixed ground balance so tracking does not change your settings during setup.

5 · Pulse width (frequency)

It helps to think of frequency in this context as a change in pulse width. Changing pulse width changes how many pulses are transmitted per second, and influences how long the receiver takes to activate and collect the incoming signal.

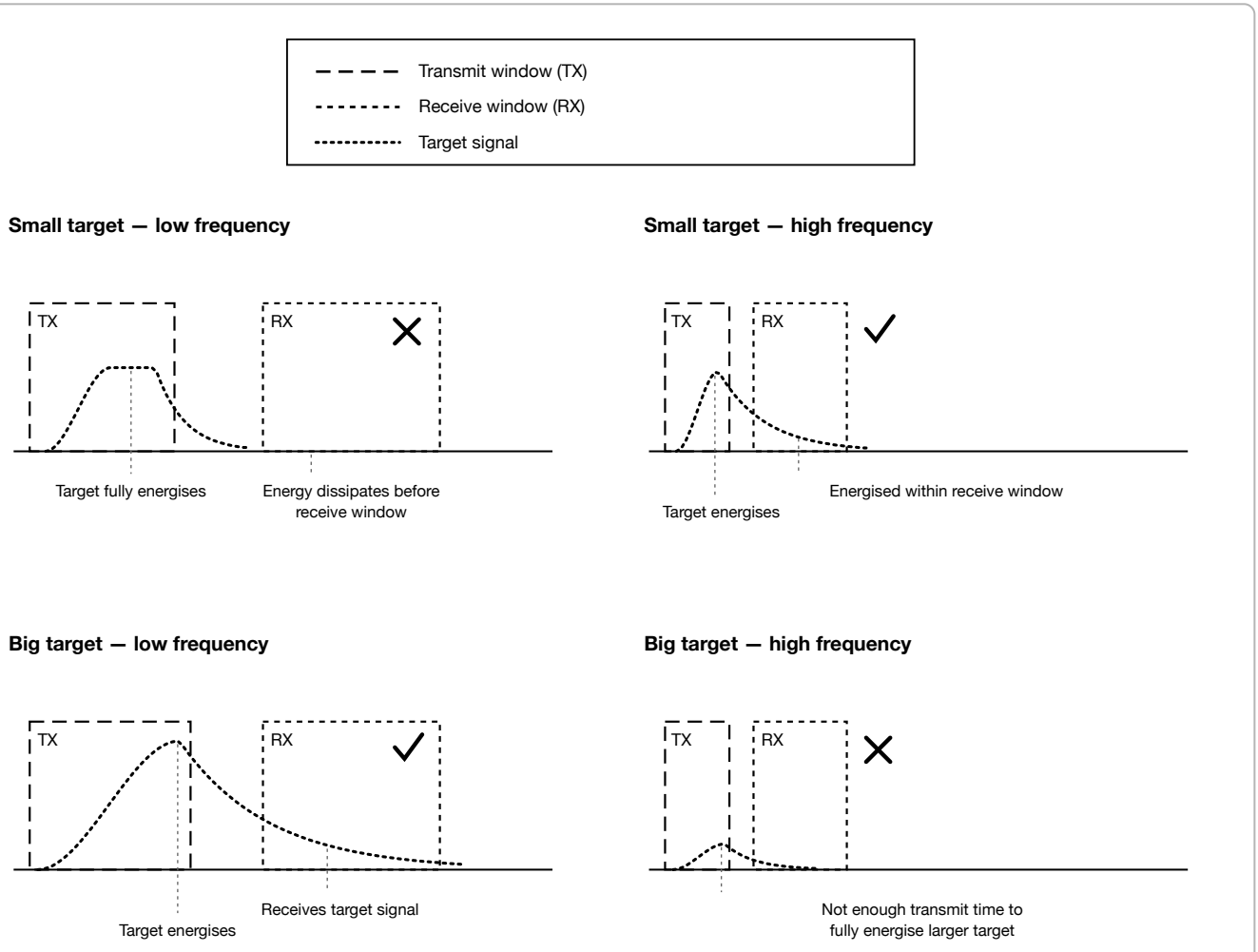
Shorter pulses create a smaller electromagnetic field and so do not penetrate as deeply, but they improve sensitivity to smaller targets. Picture a small target as a small “battery” that holds only a little

charge and loses it quickly — to catch it, the receiver must activate sooner.

There are physical limits to how fast the receiver can operate. In highly mineralised ground, the soil itself produces responses that bleed into the receive window, creating instability and noise — especially when fast coils, high-sensitivity modes, and aggressive timing are combined.

Lowering the frequency (lengthening the pulse width) delays the receiver's activation. This reduces noise and improves stability, particularly in mineralised ground, and favours larger targets. A larger target is like a larger "battery," holding charge longer and giving a more sustained signal, so even with the receiver activating later, the longer pulse and larger field still reach deep. The noise drops because mineralisation tends to produce fast-decaying responses similar to small targets; shifting timing away from that range makes the detector less sensitive to ground noise.

The four pictures below show this "battery" idea as the machine sees it — when the transmit pulse and the receiver's listening window line up with a target, and when they miss:



How pulse width and the receive window line up with different targets. A small target charges quickly and fades quickly — at low frequency (long pulse) its energy is gone before the receiver opens, but at high frequency (short pulse) the receiver opens in time to catch it. A big target needs the long pulse to charge fully and then keeps "ringing" well into the receive window — a short pulse simply never fills it. Neither end of the dial is "best"; each suits a different job.

Frequency as a tuning lever

Treat frequency as a lever that biases the detector toward either sensitivity or stability, depending on conditions and target type. It is never isolated — its effect is always shaped by coil design and operating mode. With fast coils and high-sensitivity modes, reducing frequency will not cancel out those modes; it simply helps manage mineralisation while still allowing good small-target response.

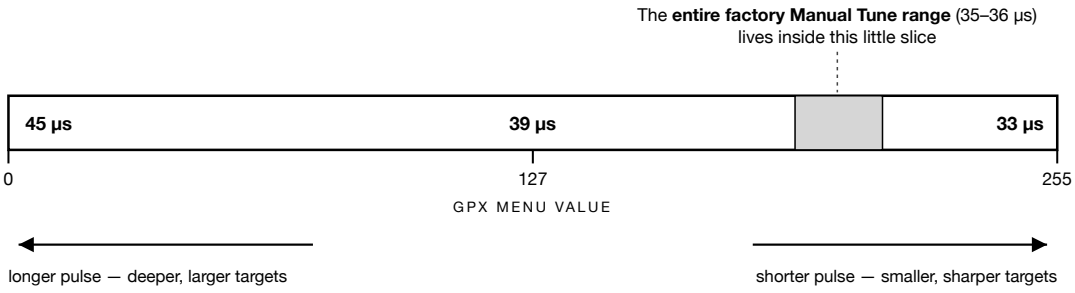
The goal is always the best signal-to-noise ratio: more useful target response while keeping noise low enough that targets stay clearly identifiable. If excessive noise appears at higher frequencies, reducing frequency often lets you raise front-end gain again — a sign you have reached the practical limit of what the ground will support in that configuration. In very hot ground, a high frequency with a fast coil and sensitive mode can be counterproductive; finding a lower-frequency sweet spot often allows higher usable gain and better overall detection.

WHEN TO REACH FOR THE FREQUENCY CONTROL

- You want to bias the machine toward a particular size or depth of gold.
- Interference is making the detector noisy.
- Hot ground is forcing your gain right down — a lower frequency will often buy that gain back.

How this works on modified GPX machines

On GPX-series machines the manual tune function has been repurposed to control frequency. On earlier machines, adjusting manual tune produced only minor changes in pulse length with little practical effect. In the modified configuration, manual tune produces a much larger shift in pulse width, meaningfully altering both pulse length and receive-window position.



Your frequency range, compared with factory. A standard GPX Manual Tune sweeps just 1 µs of pulse width (36 µs down to 35 µs) across its whole 0–255 menu. The modified control sweeps 12 µs (45 µs down to 33 µs) — twelve times the range, in steps of 0.048 µs. That is why each click now does real work. GP owners: your frequency knob spans the same idea — fully anti-clockwise behaves like the left end of this bar, fully clockwise like the right. SD owners: your switch selects fixed points along it. Some older upgraded units will have a switch installed instead of a potentiometer or the manual-tune menu.

Electromagnetic interference (EMI) control is retained. Each manual tune step is now roughly equivalent to several steps on a standard detector, so you can move away from interference much faster while staying in a useful range. For example, if there is a repeating EMI pattern at power-on, rather than

relying only on auto-tune you can select a general operating range, then move several manual tune steps up or down to shift away from the interference while keeping the performance characteristics you want.

CHASING AWAY INTERFERENCE — A WORKED EXAMPLE

Say your manual tune sits at 200 and a repeating tick or warble appears. Try a click or two either side first — 198 to 202 — before reaching for anything else. Each click on your modified machine is a far bigger step than on a factory detector, so small moves go a long way. If the noise stubbornly follows you across most of the range, frequency is not the culprit — go back and ease your gain down instead (section 7).

FOR THE NUMBER-LOVERS: WHAT THE GPX MENU VALUES MEAN

You do not need this table to set up well — the ground, coil and mode decide the right spot, not a chart. But it helps to know which end of the dial you are standing on:

MANUAL TUNE VALUE	PULSE WIDTH	LEANS TOWARD
0–59	45–42 µs	big, deep gold
60–119	42–39 µs	larger targets
120–190	39–36 µs	general prospecting, larger-target bias
191–212	36–35 µs	general prospecting (the old factory range)
213–255	35–33 µs	small, shallow gold

Treat it as a map of the dial, not a list of magic settings. You will never defeat the underlying coil's characteristics — only skew the performance towards what that coil can achieve at different points along the dial.

6 · Matching frequency to your coil and target

The easiest way to plan a setup is to decide first what you are going to look for. Choose a large coil for big, deep gold; choose a small or "sensitive" coil for tiny or hard-to-detect pieces. Then let the frequency control back that choice up: for smaller gold, push the frequency up — a higher manual tune number on GPX machines, further clockwise on GP machines.

IF YOU ARE CHASING…	COIL	FREQUENCY
Big, deep gold	Large coil	Low (long pulse)
General prospecting	Your everyday coil	Middle of the range, then adjust to the ground
Tiny or hard-to-hear pieces	Small or "sensitive" coil	High (short pulse)

A few pairings worth knowing about:

- **Some flat-wound coils have a ceiling.** You can only take the frequency so high before sensitivity starts to fall away or noise becomes overwhelming. It is worth checking how high your machine will go with that coil — raise it until you start to lose depth, then back off. That is the limit for that combination of coil, frequency and mode.
- **Small coil, low frequency.** An unexpected trick: this can buy extra depth on multi-gram nuggets, at the cost of sensitivity on sub-gram pieces — while keeping noise low and allowing higher usable gain.
- **Large coils almost always want lower frequencies.** The exception is a long, skinny elliptical, which can carry a higher frequency happily.
- **DD versus mono.** You can usually run more gain with a DD coil than a mono, since DD coils are typically chosen to tame noisy areas in the first place. That said, a mono with the gain eased back a touch can still be the better performer in a noisy spot — try both if you have them.

7 · Front-end gain

The front end is the stage where the signal from the coil first enters the machine. At that point the detector is pushing a large amount of energy into the ground, then trying to interpret extremely small return signals — like making a big disturbance and listening for the faintest possible response. It is one of the most critical stages in detection.

As gain increases, everything is amplified: target signals, ground response, EMI, solar activity, and internal circuit noise. The detector produces its own inherent noise, much like an engine making mechanical noise as a byproduct. A useful analogy is a vehicle — an older car with little sound insulation is loud and harsh, while a modern, well-damped one is smoother and quieter. The aim is the strongest possible signal while keeping noise stable and manageable.

Ground conditions, coil type, and environment all affect how much gain you can use. Quiet ground may allow high gain; highly mineralised ground may need a large reduction. Just as you would not drive flat out down a narrow residential street, you cannot run maximum gain in highly reactive ground without swamping the detector in noise. In general, more gain is better right up to the point where noise starts to degrade performance — once the machine becomes unstable or overly noisy, you have passed the usable limit.

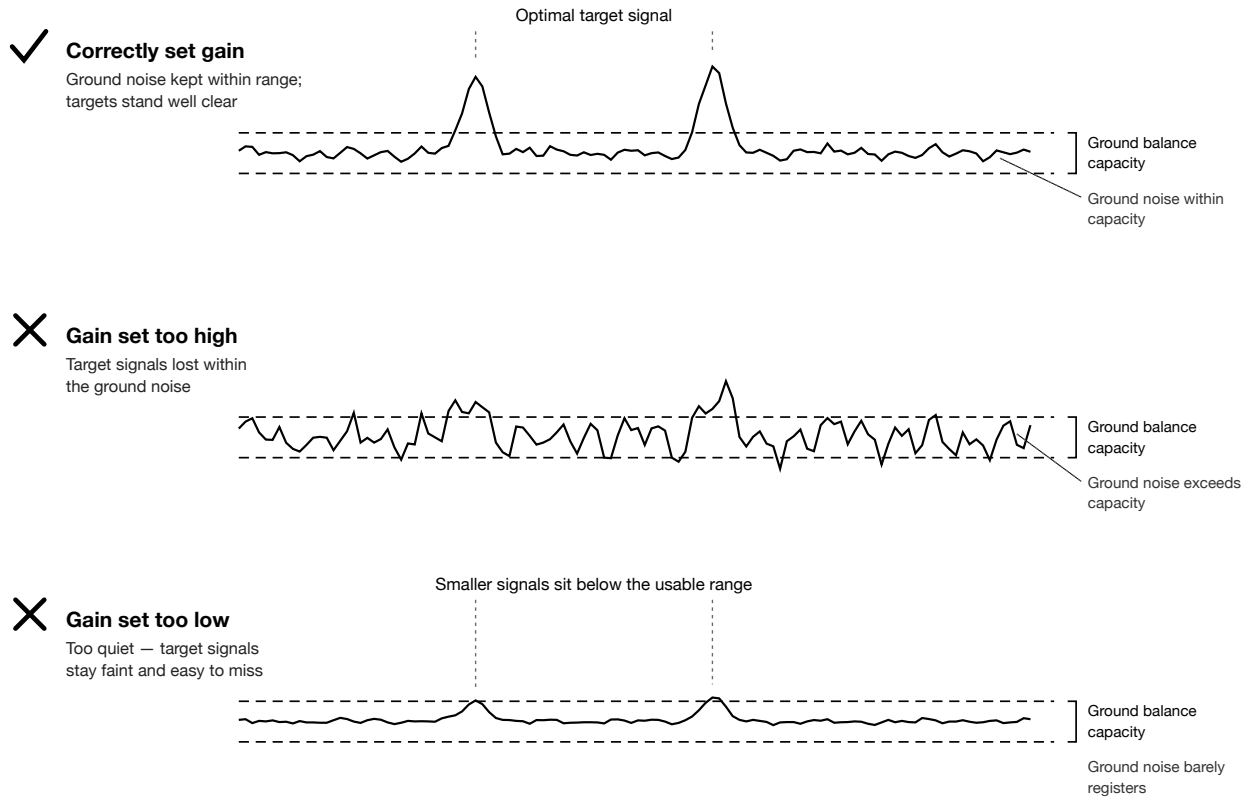
WHEN TO SET THE GAIN

- After turning your detector on.
- After changing settings — including frequency.
- Before working new ground.
- Whenever the ground is noisy or unworkable.

Setting the gain in the field

1. Turn the front-end gain control fully anti-clockwise (minimum).
2. Rotate it clockwise by about 10% of its travel, and ground balance the machine.
3. Repeat step 2 — a nudge up, then re-balance — until the detector becomes just slightly noisy.
4. Ease the control back down slowly until the noise is gone.
5. Ground balance once more. This is the maximum amount of gain you can run for your current conditions.

The gain is a sensitive control — each little fraction of a clockwise turn you can achieve gets you more depth. But if you go too far and make the machine noisy, the targets will be lost in the noise. The pictures below show what each state sounds like on the trace:



What the gain setting does to your signals. The dashed band is the range of ground response your machine's ground balance can absorb. Set correctly, the ground noise sits comfortably inside the band and targets spike well clear of it. Too high, and the ground noise itself breaks out of the band — real targets drown in the racket. Too low, and everything is quiet — including the faint, deep targets you bought the machine to find.

RX gain on GPX machines

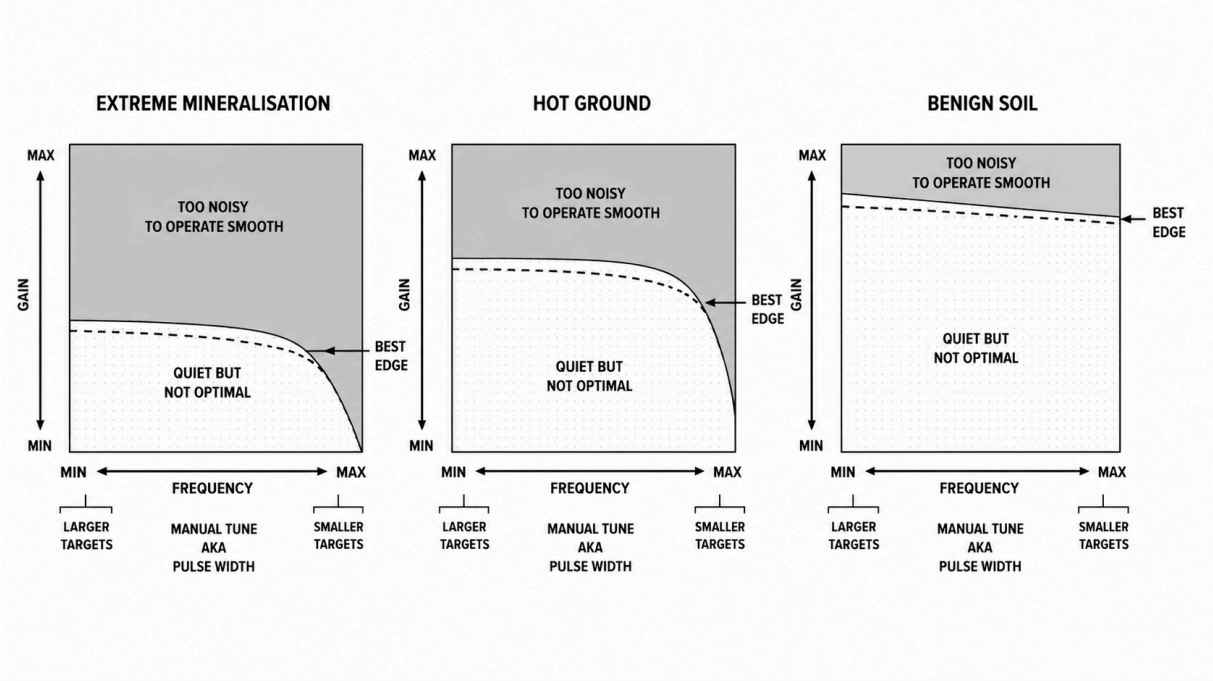
On GPX-series machines, RX gain operates further along the signal chain. It can be left at factory default, or reduced slightly to give the front-end gain more headroom — often the better approach in challenging ground.

The simplest path: leave RX gain on its factory preset and take the front-end gain as high as the ground allows. When the ground is tricky, a staged approach works better: set RX gain conservatively (around mid-range), raise front-end gain until the threshold becomes unstable, then back it off slightly to regain stability. Adjust RX gain afterwards, particularly once you have experimented with frequency. This staged approach has proven effective across a wide range of goldfields, though the optimal settings always depend on location and conditions.

Exclusive to the GPX series, you can also offset RX gain against front-end gain — taking one higher while lowering the other — to chase depth advantages on tricky soil types. There are no perfect gain settings for all the world's soils; experimentation is the best way to see what works for your coil and conditions.

8 · Putting it all together

Everything in this guide so far comes down to one picture: how much gain the ground will let you run, at each frequency. Different ground draws a different ceiling — and your job on the day is simply to find its edge.



The gain–frequency map, for three kinds of ground. In each panel, up means more gain, and right means higher frequency (the small-target end — a higher manual tune number on a GPX, clockwise on a GP). The shaded area is where the machine is too noisy to operate smoothly; the area beneath it is quiet but leaving performance behind. The dashed line between them is the **best edge** — the most gain the ground will support at each frequency. In benign soil the edge sits high almost everywhere, so run generous gain at whatever frequency suits your target. In hot ground the edge falls away at the high-frequency end: push frequency up and you must give gain back. In extreme mineralisation the whole ceiling drops, and chasing small targets at high frequency costs so much gain it usually is not worth it — ease the frequency down and take the gain the ground hands back. Every setup routine in Part 2 is just a reliable way of walking your machine up to this edge.

THE TWO KEY CONTROLS, IN A SENTENCE

Gain is like a tide that raises all signals equally — both targets and noise. **Frequency** (pulse width) is more like a directional control, shifting behaviour toward small-target sensitivity or toward stability in difficult ground. Balancing these two is the heart of a good setup.

PART 2 — Setting up your machine

Find your model and follow the checklist. All three setups share the same backbone: reset, ground balance, set damping, set gain, then tune frequency and mode.

WHICH GPX IS THIS?

This guide covers the whole GPX series **except the GPX 6000**. The 6000 is a different job — we quieten it rather than adding controls — so if you have one, follow the *GPZ 7000* / *GPX 6000* / *GM 1000* guide instead.

GPX series setup

1. Initial setup

Front-end gain: minimum
fully anti-clockwise

Damping: maximum
fully clockwise

Starting positions, viewed from above. You will bring the gain up, and the damping down, during setup.

- **Prepare your test targets.** Have a range of small sizes ready (see *Preparing a test target*, section 4).
- **Set the starting positions.** Front-end gain to minimum (fully anti-clockwise, viewed from above); damping to maximum (fully clockwise).
- **Factory reset (recommended).** With the machine off, hold the power switch until “all settings” appears (after the start-up chime). Select it with the function control and let the machine reboot to factory default.

WHEN CAN I SKIP THE RESET?

If you are confident in your existing setup and know exactly what has been changed, a reset may be unnecessary. If the machine has been altered by others, or you are unsure of its current state, reset for a clean, reliable starting point.

2. Ground balance and damping

- **Ground balance.** On a flat area of ground, achieve a smooth, stable balance.
- **Set damping.** Follow the procedure in *Variable damping* (section 4).

3. Adjusting gain

- **Raise front-end gain.** Increase gradually, rechecking ground balance stability as you go. Continue until the detector becomes just noticeably noisy, then reduce slightly until stability returns (the step-by-step method is in section 7).

At this point the machine should be operating close to its optimal signal-to-noise threshold for the current ground.

4. Frequency and mode selection

- **Tune frequency and mode.** With gain stable, adjust frequency and operating mode for your target and conditions. This is where you learn whether ground response or environment is the limiting factor.

If switching modes adds noise, reduce gain slightly to restore stability; if a mode change smooths things out, you can raise gain further. When raising frequency for smaller targets, watch ground response — if you must drop gain significantly to stay stable, the trade-off may not be worth it (see *Pulse width*, section 5, for the reasoning).

GP series setup

1. Pre-start setup (before powering on)

Damping: maximum
fully clockwise

Frequency: maximum
fully clockwise

Gain: minimum
fully anti-clockwise

All other settings are user preference, or behave as described in the original manual. Once these are set, power on the machine.

2. Initial frequency adjustment

- **Drop frequency to mid-range.** After startup, reduce frequency to roughly the middle so it is not limiting your ability to raise front-end gain during setup.

> **WHY START HIGH AND WORK DOWN?**
>
> Because of how frequency interacts with the main control timing, starting very low and sweeping up during operation can occasionally cause timing mismatches — in rare cases producing instability or noise that needs a full power cycle to clear. If your setup is already stable and you do not intend to change frequency, you can leave it; but in general it is easier to work downward from a higher starting point after power-up.

3. Ground balance and damping

- **Ground balance.** On a flat area of ground, achieve a smooth, stable balance.
- **Set damping.** Follow the procedure in *Variable damping* (section 4).

4. Gain adjustment

- **Raise front-end gain.** Increase gradually while maintaining ground balance stability. Continue until the detector becomes just slightly noisy, then reduce slightly until stability returns (section 7).

The detector should now be operating close to its optimal balance of signal strength and noise for the current ground.

5. Frequency and mode selection

- **Tune frequency and mode.** Adjust to determine whether ground response or environment is limiting further gain, and balance accordingly.

The GP series also includes a **Sensitive Boost Mode**. It works only in Sensitive Mode and provides a higher gain profile than standard factory Sensitive. In highly mineralised ground it may need reduced

gain and/or reduced frequency to stay stable. While not identical, this is broadly comparable to the relationship between Sensitive Smooth and Sensitive Extra on GPX machines.

REMEMBER THE TRADE-OFF

Available gain depends on ground, coil, and mode. Higher gain is usually desirable up to the point where noise degrades usability. If reducing frequency forces a significant gain reduction, that is generally not a good trade. Aim to maximise gain while staying stable, using frequency and damping as supporting controls.

SD series setup

SD machines need a more manual, iterative setup than later models. They have significantly less digital processing and ground-handling capability, so their behaviour varies more with ground conditions and configuration. Treat gain and frequency exactly as you would on the GP series.

> **SD-2200 OWNERS**
>
> Refer to the GP series setup as well — there is significant crossover, and gain and frequency should be handled the same way. The SD-2200 also has a channel-select switch that can help with optimisation in certain conditions.

Key characteristics

- There is **no damping control** on the SD series — skip any damping step.
- Pulse width / frequency works much like later machines. The SD-2000 adds an **ultra-long pulse mode** for very large, deep targets, which is particularly effective with the right coils.
- Any change to frequency affects ground balance, so **re-balance after every frequency adjustment**.

Gain and ground balance (SD-2000 / SD-2100)

These models have two ground balance channels: Channel 1 (commonly the deep channel) and Channel 2 (commonly the shallow channel). On some units these are reversed — always verify on your own machine.

- **Start with gain at minimum.** Set the detector to the frequency mode you intend to use during operation.
- **Tune Channel 1.** Increase gain gradually while locating the null point for Channel 1. At low gain the balance point is broad and forgiving; as gain rises it becomes much tighter, often within a narrow range of pot adjustment.
- **Tune Channel 2.** Switch over and locate its quietest, most stable point. If needed, reduce gain slightly so both channels stay smooth and usable.
- **Confirm across both.** Switch between the channels to check stable operation on both. If instability remains, repeat for finer refinement.

Using channel selection effectively

Channel selection is a useful tool in difficult or heavily worked ground. In deep channel mode the detector generally keeps maximum depth but reduces sensitivity to smaller targets — an advantage where there is a lot of small metallic rubbish such as bullet fragments. If switching to the deep channel cuts unwanted responses while still detecting larger, more significant targets, use it to move through ground more efficiently.

Pulse mode (SD-2100)

The SD-2100 has a selectable pulse mode (typically 3–4 settings). In some ground these improve stability or ground handling; in others the difference is minimal. The default and recommended setting is **4-pulse mode**. Treat the others as experimental, for fine-tuning only when you have time to test and compare.

IN SHORT

SD machines lack modern damping and advanced signal processing, but tuned carefully to the ground — and used with an understanding of their limits — they remain highly capable. Careful gain and channel balancing is the key.

PART 3 — Machines we quieten without adding controls

GPZ 7000 · GPX 6000 · GM 1000 — the improvement is inside, not on the panel.

What we changed — and what we didn't

On the GPZ 7000, GPX 6000 and GM 1000 we deliberately do not add controls. These machines are tightly designed and sealed in ways that make new knobs impractical — so instead we go after the noise floor itself. By quietening the electrical noise inside the unit, we let the receiving stage read the incoming signal more accurately. In the marble terms from the opening section: we take our own marbles back out of the pile, so the ones that matter are easier to find.

There is nothing new on the panel to learn. The machine looks and drives exactly as it did — it is simply working with a cleaner signal underneath. What you should notice is a steadier threshold, and fainter, deeper targets lifting more clearly out of the background, especially in good, quiet ground.

Getting the benefit in the field

Because there are no extra controls, getting the most from your machine comes down to one habit: find the noise floor with the detector's own sensitivity (or gain) control, and sit just below it.

1. **Set up where you'll work.** Test in the kind of ground you intend to detect, away from obvious interference — not in the shed at home.
2. **Start low.** Begin with sensitivity / gain wound down, and let the detector settle to a smooth, quiet threshold.
3. **Bring it up gradually.** As it rises you gain depth — until the threshold starts to chatter and hiss. That hiss is the noise floor.
4. **Back off a touch.** Drop to where the machine is stable and comfortable to listen to for hours. That point, just under the noise, is your sweet spot.
5. **Re-check when things change.** The floor moves with the ground and the location, so reset it when either does.

HOW HIGH IS HIGH ENOUGH?

If a setting makes the machine harder to listen to but is not clearly finding more, it is too high. You are not chasing the loudest the machine can be — you are chasing the most it can *hear*. On auto-managed machines, give the auto modes clean ground to work in and they will hold a better level for you.

Your quick field checklist

The whole guide on one page — keep it in the car or the kit bag.

In your kit: ☐ test target squares ☐ coloured damping labelling material
☐ original Minelab manual ☐ this checklist

1. **Start positions.** Gain to minimum (fully anti-clockwise); damping to maximum (fully clockwise — GP & GPX only).
   GPX: factory reset if unsure of the machine's state. *GP:* frequency fully clockwise **before** power-on, then down to mid-range after startup.

2. **Ground balance.** Flat patch of ground, smooth and stable. Switch to fixed balance while you set up.

3. **Damping** (GP & GPX). Faint test target just under the surface. Reduce damping from maximum until the response clearly improves; when it starts to weaken, come back up to the peak. Mark the spot with your coil's sticker.

4. **Gain.** Up roughly 10% at a time, re-balancing as you go, until the machine turns just noisy — then ease back until it settles, and balance once more. That is today's ceiling.

5. **Frequency & mode.** Bias toward your target: lower for big deep gold, higher for small shallow pieces. If noise rises, trade a little gain or frequency back until the machine runs smooth. Re-balance after frequency changes — on SD machines, every time.

IF IT TURNS NOISY MID-SESSION

First re-ground-balance. Still noisy? Try a click or two of frequency to step around interference. No better? Ease the gain down a touch — the ground may have changed under you. Frequency for *where* the noise lives, gain for *how much* the machine is straining.

Questions? We are happy to help.
We would much rather an email than a frustrating afternoon —
if anything here is unclear, get in touch. We are always glad to help you get the best out of your machine.
Feedback on these instructions is always welcome by email — it helps us improve them for everyone.

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