Field Test
Makro Racer 2

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Foreword

Makro (and Nokta) are companies that don't rest on their laurels. It seems that every few months a new or an improved model is introduced. Previously they were virtually unheard of in the detector industry. Is it a good thing to bring out so many new models? Only time will tell.

This month's detector on test is the new Makro Racer 2, and I was very happy to be given the opportunity to take it for a whirl. The original 'Racer Red' established a good following fairly early on, and I was eager to see what this new model could do.

This is their second stab at producing a mainstream VLF meter ID coinshooting detector in classic S-bend format. This time around they've certainly nailed it, as not only is this machine truly good to look at – much more so than the original, in my view – but it is also very practical, good to use, and has some very interesting design touches.

In the Box

The shipping carton is up to their usual high standards and the 'Pro Pack' included a host of extras detailed on the outside of the carton:-

- RC 29V 11 inch x 7 inch DD coil
- RC 13E 5.5 inch DD coil
- Four rechargeable batteries, charger, car charger
- Koss headphones KPH7 'on ear' type
- Spare lower rod for the second coil
- Rain covers for meter and control box
- Large zipped carry bag
- Instruction Manual, warranty card, nuts and bolts

Instruction Manual

This consists of 28 illustrated pages and is easy to follow as it explains the many functions. Pay particular attention to Pages 13 and 14. Note that Two Tone Mode is its deepest after Deep in its Discrimination Modes. I usually prefer Three Tone Mode, and would have preferred more tones. I quickly got to like Two Tone as it has that 'zippy' response to make non ferrous stand out in iron infested ground.

Build

The build quality is very good and I would say above average. Everything fits together well and detector looks great in black (the Red Racer should have been black to begin with).

The handle angle is changed from the original Racer and the finger grips are gone. To me, the original Racer felt better balanced and I'm not so sure the new handle angle is the correct one. It pulls the coil downwards and one has to 'lift and carry'. The Red appears to be more comfortable to swing and doesn't pull the hand down as the new Racer 2 does, despite all the bad press it received when first released.

I had an issue with 'Lo-Batt' coming on and I thought I had depleted the Varta batteries supplied and changed them; but the warning came back a few seconds later. I traced the problem to one of the springs inside the battery compartment was twisted and losing its connection. So if it happens to you just use something to straighten the spring. I didn't use the supplied battery recharge set.

Another battery issue happened on a different day when the detector wouldn't turn on. I removed the protective neoprene cover and was surprised to see the battery door was missing (found inside the cover) and one of the batteries had fallen out. So make sure you 'tight click' that battery door!

Coil

The new standard coil is of a brand new design. It is now much thinner than the coil supplied with the Red version and

Old coil left, new coil right.

New Racer 2 small coil.

the 'Formula 1' car bonnet hump is gone; therefore it is an altogether more streamlined coil.

The second coil supplied in the 'Pro Pack' is also a new design and is perfectly round and slightly larger than the one supplied with the Red. It is 5.5 inch in diameter and both coils come supplied with covers.

A nice touch is the inclusion of a second lower rod for the second coil. The standard new coil is a slightly narrower than the original, but still has a very effective footprint for great ground coverage. It's exactly 11 inches by 7 inches.

Racer 2 New Features

1. **Deep Mode** – good for clean areas with no iron but has to be used at a very slow sweep. It can help 'clarify' iffy low-volume signals heard in Two and Three Tone. I always did a quick GB when engaged and held the coil approximately 2 inches off the surface. I was able to detect a tin can 6 x 3 inches at over 2 feet. You won't be able to use it every day as it is so slow to work and not suited to every site. But, on a rare occasion a scattered hoard is suspected somewhere this mode could be used to look for the main pot. Or, if somebody asked you to find a buried car! (True story – I was asked that once)
2. **Notch Filter** – this is a useful feature and comes into play after ID 16. It will take a bit of practice to get it right and as always, use with caution to not exclude small hammered coins and rings
3. **Iron Audio** – this is becoming a popular feature on many new models. What it can do is help 'shrink' the audio responses of iron objects. Experiment with this feature as it goes from 00 - 10. At 10 all iron signals can be heard. To be honest, I couldn't hear much benefit compared with other brands that have this feature.
4. **Tone Break** – this is something really handy with one example – that being for tabs and coins that sound the same. The tone can be increased (or decreased) for each item so they won't sound the same
5. **iSAT** – this applies to the All Metal mode and would be of benefit in mineralised soils
6. **Tracking** – is also of use in the All Metal Mode but not the Discrimination Modes
7. **Audio Tone** – allows you to change the Tones and the Threshold tone
8. **Save** – you can now save your settings in each of the search modes – scroll to Save and pull the trigger for around 4 seconds
9. At the very top of the screen is a new numbered scale with coloured graphics; interestingly ring pulls feature three times as do rings!
10. The meter itself is also better looking and shows improved graphics for Ground Phase and Mineral Content; my sites rarely went above three bars. The meter also has better target ID spread to significantly 'show the difference' between many coins that read as 82 on the original Racer. Higher silver content coins should now display greater than 82.

Bench Tests

Bench testing is a critical feature in any detector for assessment and a variety of targets were tested to judge response time, target ID, accuracy of target IDs and Discrimination.

Two search coils were used for the bench tests:-

1. The supplied 11 x 7 inch
2. The supplied accessory 5 x 5 inch

Bench Target IDs

Comparing the two coils most of the target IDs were consistent with one another. However, the larger standard 11 inch coil tended to put up higher ID values. When tested on some high silver content USA coinage this was most noticeable.

A few UK targets are shown below:-

- 11 inch coil a silver Roman coin showed 53, the small coil 53
- 11 inch coil a small hammered halfpenny showed 37, the small coil 37
- 11 inch coil a silver love token sixpence showed 65, the small coil 66

NB. The target IDs 'refresh' too quickly and disappear from screen in a second. So you have to make sure

Small and standard Racer 2 coils.

Meter shows cursor, Target ID, Ground Phase and Mineral Content.

you see what's displayed immediately or otherwise you have to scan again and possibly multiple times.

Bench Audio

Some test items produced what I call 'dirty audio' which is a blend of two tones. This happened with UK £1 coins in particular. The Target IDs were 'typically' 68-69 and the most recent years of minting produced this unclear tone. The older £1 coins from the 1980s were okay.

I also heard this 'dirty audio' in the field and that surprised me because usually the targets were bigger than coins and might be predominantly bronze, brass or copper; for example parts of a door lock, old door knobs etc.

Bench Unmasking Test

During the bench tests the Racer 2 displayed very good 'unmasking' abilities. It's easy to get a positive signal and proper high target ID with a silver coin right next to an iron bolt.

Target ID Stability

One of the other changes and improvements made to the Racer 2 is Target ID Stability in All Metal as well as the other modes. This took considerable research time for Makro. So, if a target displays an ID 42, it should display 42 in all modes.

In the interest of brevity, this discussion assumes the reader is familiar with ground conditions, angles at which items are buried, depth, for how long buried, and most importantly, the (chosen) settings of the detector.

So, before recovering selected targets from either field or beach the task of assessing Target ID Stability was observed. It's a fairly time consuming process but worth doing for complete assessment of a detector during a field test.

The assessment must be done on a sufficiently large number of coil passes; anywhere from 12-20 times. Each coil sweep is different, so it is impossible to do a dozen passes and have them all the same (unless some form of pendulum device is used).

For each pass an ID number was recorded. The spread (if any) of the target IDs produced by each pass is the measure of ID instability; obviously the less the spread the better the stability. A spread of three target IDs is acceptable. For the majority of times the spread of the target IDs consistency rate from Racer 2 was only plus one or minus one. As an example, a small silver UK coin from 1918 showed 80 and 81 (plus one in this instance).

NB. It must be noted that generally, when targets are deeper than 6-8 inches the target ID 'accuracy' falls off and becomes less reliable.

In soils, in the case of Racer 2, there were times when the meter target ID remained 'blank' and didn't produce any ID at all but still produced the audio portion of a signal.

'Deep Mode' always produced target IDs. When 'Gain' was set to around 50' or below the instance of no IDs was higher. This might be a problem for some users in 'tough soils' who depend on Target IDs.

High Conductivity Coins

For high conductivity coins and other targets the situation between both Racer models is very similar.

There can be variations in target IDs from one digit to several; the instances would be higher relative to copper coins. For example, a UK copper penny dated 1936 reads as 84 on the Red and 78 on Racer 2.

I'd imagine the USA wheat pennies and 'zincs' will have even wider variations because such finds are the norm in the States and people really don't care much for these low denomination coins.

Low Conductivity Coins

The spread of the target IDs between both Racer models on low conductivity coins is huge and could come as a shock to some. Makro has increased this on the Racer 2 specifically for coinshooters.

The spread of target IDs can vary from as much as between 20-30 digits on certain coins. For example, a small gold coin on the Red shows ID 58, whereas on Racer 2 it registers 34. A small thin gold ring on the Red is ID 49, but on Racer 2 is ID 20 (I wouldn't use the ID Filter any higher than 19 – typically I used it

Targets from iron patch.

The author field testing the Racer 2.

at 11 most of the time). Pull tabs on the Red have IDs in the 50s, while Racer 2 produce IDs in the 30s. Similarly, there is also a large spread on UK cupro-nickel coins from the 1950s.

Land Searches

The Racer 2 was used over a variety of soils ranging from grass pasture (with heavy deep clay) to stubble fields where crops had been cut and removed and the soil surface was loose and wet. Many other known test sites were visited as well as some new search permissions.

The detector behaved reasonably well everywhere. It ground balanced very easily and I liked the bleep when it ground balances (just push the trigger forward for GB).

The new coil is perfect as it can be kept really low with a smooth sweep almost all of the time. I found dozens of different targets including: iron, foil, lead, brass, bronze, copper, and silver.Iron rejection is definitely improved over the original Racer.

However, one still 'hears' a lot of it even employing the new Iron Audio feature. I remained fooled by 'larger iron' particularly long straight pieces (for example 20cm in length, 7cm wide by about half a centimetre thick).

Similarly, curved pieces were often retrieved from 'good signals'. These were sized about 12cm long and around 7cm in diameter.

The detector displayed very good unmasking, one example being a small button I found on the surface; however, an iron sound was heard too and when dug there was a large piece of iron 4 inches beneath the soil. Sometimes, after a coin was found, the area was checked again and iron sounds were heard from nearby. The detector has great pinpointing by way of volume with the centre of the coil as the sweet spot; pull the trigger to activate the PP function.

The Small Coil

The small 5.5 inch coil was used in a very trashy spot that I have frequented for years in the quest for an alleged lost ring. Quite simply, all you will hear when scanning this site are iron sounds. However, on a few occasions using the small coil I could make out 'zippy' responses perhaps indicating non ferrous? I dug several and was startled to indeed retrieve shallow foil, and screw caps (often with iron close by). In one instance a rusted spanner came up and when checking the hole a small nail came up as well! Not only can the standard coil drive the 'overload' warning but so can the small coil.

No, I haven't found the ring...yet!

Beach Searches

The Racer 2 was taken onto the wet sand (tide out) and Ground Balanced via the trigger (push forward and bob the coil up and down until it 'bleeps'). It accomplished this in just 3 seconds.

Sensitivity was increased slowly as I walked into the salt water with the coil submerged. The detector remained quiet. The coil was splashed around in the breaking waves and again, remained quiet. I was pleased that I was still able to get the ground balance 'bleep' even with the coil submerged! As the coil emerged from the water the 'overload' sounded, but given it was very frigid conditions it could be forgiven.

A further GB was done again quickly when the detector was out of the water. A sharp signal was heard on the flat wet sand area and the ID showed 30-31. The signal was sharp with a medium tone. Bench tested afterwards it identified at ID 30 (this was good and showed stable operation). The target was a square pull tab.

On the 'dry sand' (higher up the beach but rain soaked) it was very quiet and sensitivity in the 70s was used here. The new coil provided excellent coverage and it was fast to cover a large area. Just a single euro was found from around 8 inches; it was blackened so must have been brought in by the storm.

On a different day, after a few storms over several days and with one gaining in strength as I searched along the beaches and shingle areas, the Racer 2 located coins everywhere from surface finds to the 10 inch level in wet sand.

No matter where I put the coil it located coins. These were not recent losses but were mostly lost years ago as they ranged from shiny discs to green or black examples corroded after years in the salt.

Finds.

Battered bullhead sixpence from pasture.

Farthing with beautiful patina from stream.

EMI

Very little interference was noted. The original Red was prone to EMI from electric fencing. However, some mild interference was noticed from the Racer 2 a couple of times; reducing Sensitivity helped to stop it. There is a 5 channel offset to use via the trigger (push away) and down arrow so use this first before reducing valuable sensitivity.

Two pals invited me to detect on a new permission and the main job of the day was to locate the farmer's iPhone. This had been accidentally left on the wheel fender, fell off on a turn, and got ploughed in! I arrived to see the two lads detecting away merrily with a machine from Los Banos and another machine from Australia; the farmer meanwhile was shifting soil into piles that were then scanned. I was shown the approximate area of the loss, but as we all know, it's very hard to locate just where the exact area might have been.

I set off and began searching in the Racer 2's Deep Mode. After a few iffy targets I decided to place my own iPhone on the soil and scan it. It showed ID 96. I then walked on with full trust in the machine.

My very first proper signal showed 94. Could it be? Dare it be as easy as this? I had to really push down with the spade due to the compacted soil made by the tractor continually going back and forth.

I had reached about a foot and then saw what looked like the same 'Otter Box' casing as I have on my own mobile but in blue. At this point I knew that I had found the iPhone.

Everyone was delighted, especially the landowner as he could produce the damaged article for an insurance claim (it was smashed to bits when found). The other two lads had spent two days looking for the mobile without success. Later the same afternoon I visited some fields I had searched last year with the Red. This had been virtually unusable due to electric fencing, whereas the Racer 2 just gave an occasional 'bleep'.

What did unsettle it was the pock-marked urine soaked surface caused by cattle when winter feeding on a kale crop (which was very smelly). The detector was a bit unstable from those issues and the very long stalks made it hard to get a proper sweep.

The fences, however, were not a problem this time thanks to the newly designed and better shielded coil Makro have produced for the Racer 2.

I decided to experiment and engaged Beach Mode. I then ground balanced and like magic the cattle field was silent! Just to prove that it was working I threw a small coin down; it 'beeped' from several inches above it.

It wasn't long before I had a high tone signal, a meter ID of 82 and up came a copper coin. It was the first of three found in that field, along with other bits and pieces. So that's a good trick if you come across anything similar where cattle urine can change the soil to become more conductive like beach sand. I was impressed.

Conclusions

The 'overload' sound alerts you to large targets, those close to the coil, or the type that the detector cannot properly interpret. If this happens, just raise the coil a few inches off the ground, allow it to reset, and scan the area again. Work slowly and move the coil around in tight moves to try to interpret the signals. The Racer 2 can then stop producing one if it decides the target is rubbish.

Rubbish can identify itself by jumping in large ID variances without settling on any. A valid target should give a solid ID (possibly with just a single ID variation).

The speaker volume is adequate but as it faces down towards the ground some subtle characteristics of the audio signals can be lost, especially when the included control box rain cover is fitted. So a good quality set of headphones will ensure you hear all the signals properly. I got lucky because I have a very good set of 'Troy' headphones. With these on I could hear full harmonics and echoes unlike anything heard before, and in some instances could tell the good from the bad. So I'd recommend the Racer 2 user experiment with different headphones to find the ones that suits their own individual hearing range.

There are some audio clues to be heard while working in Three Tone as this mode provides a very good spread of tones (but remember Two Tone is deeper).

I'd also recommend turning mobile phones off while searching with the Racer 2.

With the usable Gain on tap some will be inclined to 'max' it out and could unwittingly bring some unwanted EMI (e.g. telephone signals as I found out on my first outing).

With Gain set too high on some soils it can have a very 'sparky' response and

The smashed iPhone.

The landowner with his recovered phone.

Optional accessory – 10" x 5" RC26 coil.

then produces many 'Snap, crackle and pop' sounds. If this happens reduce Gain and increase the ID Filter.

Regarding Ground Balance, there are several pages dedicated to this in the Instruction Manual with some emphasis describing 'searching in rocky terrains'

This is obviously aimed at gold prospectors or those searching in isolated areas. iSAT and Tracking would also be aimed at prospectors. I did not use the Racer 2 in any such area.

Is the new Racer 2 better than the original Racer (the Red)? I found it to be so and the 'increased capabilities and/or better performance' are best described in a single word – refined. It's far more refined in how it goes about its business and on trash infested sites is a lot less chirpy than the original Racer.

But, the singular most positive thing about the detector – it's so easy to use. Just press a button, make a change and it's 'instant!' And, of course, the best thing is you can now save your Mode settings compared to the original (which you couldn't do) and that's important. Less time playing with settings equals more detecting time.

Some detectors are more suited to either a modern site (park, common, or beach) or an old site. This new Racer 2 is a perfect choice on as many sites as you care to use it due to its better ferrous discrimination, clever Tone Break and Notch option. That's not to forget its increased ability to display 'more' and different Target IDs for items that might have all got rolled together in the Red version.

In my opinion it's a nice package then, and one that provides a lot more bells and whistles than you might reasonably expect.

Specifications

Operating Principle: VLF
Operating Frequency: 14kHz
Search Modes: All Metal / Two Tone / Three Tone / Beach / Deep
Ground Balance: Automatic, Manual or Tracking
Search Coil: 11 x 7 inch DD
Power: 4 AA 1.5 volt batteries
Weight: (including batteries) 1.4kg (3lbs)
Length: 47-55 inch adjustable
Warranty: 2 years

Check out my YouTube Channel: Des Dunne1 and see some video footage from the testing of the machine. TH