Field Test **C.Scope CS4Pi**

Very solid construction.

Search head.

Hip mount bracket insertion.

One of the most iconic UK brands associated with metal detecting has to be C.Scope. It's been around since I first became interested in the hobby and was the 'go-to' detector for many enthusiasts particularly those taking up the hobby. Many old hands, including myself, would readily admit to the fact that their humble beginnings starting out with one of this company's models.

I remember going to the Post Office (for a Postal Order to the tune of £56.25) and sending it off to my local C.Scope retailer to buy my very first metal detector, a C.Scope IB100, which duly arrived two days later. Thereby began a love affair with the hobby that has lasted for 38 years!

No one was that far from a C.Scope retailer! I note there was a retailer as far removed as Oban! Perusing a *Treasure Hunting Manual* from 1978, I counted 192 retailers, from Lands End to John o' Groats. I'm positive there were many more not included in that listing. C.Scope detectors are now available in many European countries as well.

Their original glossy brochure stated: "No other British detector can boast as many major regular finds!" I was hooked!

C.Scope, now located in Ashford, Kent are still going strong and produce a good economical range of detectors. It is one of these that I have on test this month, the Pulse Induction model called the CS4Pi.

Assembly

The assembly of the CS4Pi is a doddle with the coil cable being 'hard-wired' into the control box. It is just a simple step of inserting the lower rod into the top shaft and winding the cable to a snug fit ensuring the coil can tilt fully backwards. You then tighten the knurled twist lock for a firm grip.

Fit 8 AA alkaline cells into the battery holder, insert the holder into the control box with correct polarity, and tighten the four lock-screws to close.

Once the detector is fully assembled it has a quality feel to it. You can even remove the control box and fit it by way of a plastic adapter (supplied) onto your belt. There is no arm rest strap, nor is it hollowed out to accept one. I would have liked a strap.

Instruction Manual

The Instruction Manual is a short seven pages, but to the point, describing only the two control knobs and the signal intensity LED.

It has an 'Overview' and a 'Rapid Start' instruction which will have you up and running within minutes. The illustrations are good and are photographs and not those annoying 'cartoons'. A blaze yellow sheet is included with warranty details.

Controls

On the bottom left is the On, Off and Sensitivity control. Top right is the Pulse Frequency Control and I will expand more on this a bit later. This control also works as a battery check. Located centrally is a large speaker. The headphone socket is at the back of the control box and takes quarter inch plugs. The speaker produces adequate volume and faces the operator. It is best to use good quality headphones, preferably with a volume control, because things can get noisy by the sea and you have to be able to hear the signals.

At lower centre position is a large red LED that shows signal intensity.

What is Pulse Induction?

Readers might be familiar with the name Eric Foster who quite simply is the 'guru' of pulse induction within the industry, and is also responsible for much of the circuitry and innovations

The author using the CS4Pi hip mounted.

The CS4Pi faceplate.

Pulse frequency control set at 3.

within the 'PI' world, including some collaborations with C.Scope and others. I had the pleasure of meeting Eric at a rally years ago.

Although the pulse induction (PI) detector is simple in principle it is difficult to make. It depends for its operation on the fact that currents in the coil can be switched off very quickly, but currents in the targets can't. In operation, a large 'pulse' of current is passed through the coil for a few thousandths of a second then switched off abruptly. This causes currents to flow in the target. The target current and – its companion field – dies away quite rapidly, but it does persist long enough to 'induce' a tiny voltage in the now 'silent' search coil. This voltage, amplified enormously, indicates the presence of the target.

The most desirable feature of the pulse induction detector is it completely ignores the salt in wet sand, and can therefore concentrate its energy to cut through the salt effect and can go very deep indeed when compared with a normal VLF system.

Another useful feature of a PI system is that temperature doesn't appear to affect it.

As there is no discrimination, PIs can be very reactive to ferrous targets including some very thin items such as tiny nails and wire slivers; but when using PIs in the right environment they can be rewarding because not much is missed! As we all know, the most successful searchers in the club are always the ones who appear to 'dig everything!'

Bench Testing

Testing your CS4Pi at home should be an important part of the learning curve (associated with any metal detector) and should be done with a variety of targets and playing around with the Pulse Frequency control as you do so.

Use similar targets that you would like to find in search conditions and test with as many metals as you have available.

Pulse systems can be the complete opposite of VLF systems when compared in air tests. A VLF machine might signal a coin at 12 inches but probably won't reach that in the ground! The range of a PI system should match in ground what it achieves 'in air' on targets.

One observation when bench testing the CS4Pi was a lack of sensitivity to copper bullets while remaining quite sensitive to brass casings. Would this happen in the 'real world'? Only time would tell.

Pulse Frequency Selector

This control is calibrated in the frequency of the detection signal (pulses per second).

The recommended setting is within the green zone on the scale. If interference is heard it's possible to use this control to eliminate interference. However, if operating within the black zone it is likely that sensitivity to some targets might result in the non-detection of some metals. It is therefore advisable to ensure the selector is set in the green zone.

C.Scope has made a change to the colour of the face plate decal. In the Instruction Manual it is white but newer models, and the one I had been sent for testing, have black decals.

Halo Effect

The term 'halo effect' is when a metal object buried in the soil over time begins to corrode and leach into the surrounding soil. This effectively makes the target appear larger than it really is. It can occur with nearly all metals, but the effect can be greatly enhanced with iron objects (ferrous) and to a lesser degree with bronze, copper and lead objects. In other words, an inch long nail when rusted out and leached into the soil can fool a detector into producing a signal far larger than the original size of the nail. After digging these rusted items they often cease to produce a signal when they have been landed on the surface. Why? Because the chemical relationship with the target and the subsequent corrosion was broken, and thereby cannot now form a signal. In the soil rusty items produce an orange

General beach finds.

Wave action.

colour, while a copper item can show green discolouration. At times you might first see this coloured material before spotting the coin!

Beach Tests

My first trip to the coast was well out of season (March to be precise) and it was a wet, cold and windy day. However, I wanted to get to grips with the CS4Pi as quickly as I could.

Turning the detector on, I had no idea what to expect; but a while later I was very happy in that it behaved like a regular VLF detector despite the fact the audio sounded like the robot toy, Brian from the confused.com advert on television when changing the setting of the Pulse Frequency Control.

There isn't any need to ground balance the CS4Pi so all I needed to do was to calibrate it to search for the metal targets I wanted to find. My 'calibration kit', was a gold coin, gold ring and some silver coins in a small plastic bag. I buried these a few inches down in the wet sand and experimented with the two controls. A good threshold tone was set with the On/Off control at the 12 o'clock position. Then, adjusting the Pulse Frequency Control to generate the best signal on my test targets, I found that the optimum response was with this set to 3.

I then began to scan the wet surface slowly and right away found a few modern pull tabs, some small nails, and other tiny items.

As an experiment, I moved the coil into the salt water and it remained 'whisper quiet'. This was all very impressive.

Soon after an anomaly was noted. I saw a small square piece of compressed foil on the surface and scanned over it; there was no response from the detector! Picking it up and examining the soft silver foil I placed it back on the surface again and couldn't coax a signal from it while making adjustments to the pulse frequency control. This didn't bother me because I didn't want to be digging foil anyway; but it did leave me wondering about the sensitivity to other items? Further bench testing showed it was reactive to heavier, thicker foil of the 'cake tray' sort.

It was easy to pinpoint targets despite the detector being a 'motion machine' (meaning the search coil must be kept moving to detect metal). I also found a few tricks while experimenting. The first was that if you are trying to pinpoint, by turning the coil on its side and using the left edge of it, the operation becomes much simpler (especially on shallow targets). The old fashioned 'Xing' or drawing crossed lines in the sand were useful too. The third method became apparent after more use as will be explained later.

Time passed and the weather changed to a beautiful day. I ventured further afield to a few large beaches that had previously been very productive for me. On my last visit I had noted a small series of coves accessed by a steep climb down to them. They would not be easy to get to, and it therefore seemed probable that they would not have been searched by anyone else.

Having made the treacherous climb down, and minutes into the search on the loose shingle by a huge sea wall, it was clear that this area was a trap for many objects flung up against it during storm activity. I began to find items of all shapes and sizes including knives, forks and spoons, rusted euro coppers, dozens of small nails, and slivers of wire (all with 'dig me' signals).

I wasn't missing much. Some finds were so small (for example, individual wire slivers) that after digging them out of the wet mass the 'halo effect' broke and they were near impossible to find without the assistance of a pinpointer probe. I was testing a new waterproof design of one of these and it proved invaluable.

Moving down onto the wetter sand, the detector gave fewer signals and they

The author detecting on the beach.

Small coins and rivets.

were further apart. A large signal gave up an old pre-decimal copper penny. More coins followed that were nearly all small rusted blobs. These are current 'copper coins' that can confuse a novice due to the fact they are not copper at all but copper coated with an iron core inside! It is that iron core that corrodes from the inside out.

Unfortunately, some very deep iron was dug as well as the signals sounded like big coins. Sometimes one find was very close to the next one and once I figured that out it helped.

The fine weather continued and April was the sunniest month ever. Crowds were drawn to the beaches and acted like it was midsummer some even venturing into the water. However, out on the open sands a chill wind blew through me as I combed the sands with the CS4Pi and my large spade for getting to the deep signals quickly before the holes filled with water.

It was quiet. Few signals were heard and I was wearing a good set of headphones. A few stray euro coins came up from around the 10 inch level with noticeable signals.

Earlier testing had shown the CS4Pi to be quite a heavy detector (3.2lbs) with the bulk of the weight at the wrist, and I therefore opted to use it hip-mounted. As explained earlier the supplied attachment for the conversion is easy to use and I would recommend using a plain flat belt that slips through the attachment. Belts with braids are impossible to put through the spaces.

Searches coincided with low spring tides and some areas previously covered by water were within reach. There were many rock pools and tiny coves covered by soft shingle and I made a bee line to those.

I carefully threaded my way on the slippery rocks and searched some of the exposed shingle beaches. I found some well-worn coins encrusted with tiny sand particles and some other ferrous junk too deep to be recovered. I knew this when the water turned orange and didn't waste further energy. But some copper rivets were dug and I always take that as a good sign.

Audio

I noted the CS4Pi can take a while to settle down, but is very stable after an hour although some careful attention has to be paid to the controls to stabilise the threshold. If not set exactly to suit 'local and current conditions' then it can be difficult to decipher whether it is an erratic threshold or genuine signal. Interference or EMI can occur anywhere, so always be prepared for it and reduce the detector's sensitivity.

It's also important not to touch the coil on the wet surface and not to bang the coil into obstacles such as rocks because both will trigger an audio response that sounds exactly like a genuine signal can, and takes several seconds to die away.

Some 'out of the blue' sounds came and that told me I was probably sweeping too quickly or my spade was within feet of the coil. There is a lot to the audio in this very interesting detector!

I had heard some CS4Pi operators can tell and hear the difference between ferrous and non ferrous targets. Good on you if you can!

I wouldn't agree but I could soon tell with a reasonable degree of accuracy the 'double blip' of small nails of which many dozens were found probably originating from the campfires. With other ferrous items I could not distinguish real clues to be definitely sure that they were indeed iron that could be ignored. Hours were spent trying to decipher the clues in the audio and while there were some, for example, fuzzy sounds, there weren't many and I continued to dig ferrous objects: you name it, I dug it!

It's not the detector's fault – it's the way it is with a PI system.

On dry sand, with freshly dropped

New Zealand $2 coin 1998.

Modern coinage.

Aluminium nail.

coins, I could definitely hear the short sharp beeps and could almost guarantee they were coins.

On items buried for a long time the 'halo effect' made it almost impossible to tell a good target from a bad one because they generate long flat sounds no matter what the metal.

More Beach Work

Spoons, forks, and knives were common finds all along the beaches with masses of storm thrown debris littering the sands, and I was kept busy digging scrap and shredded metal.

I walked onto the sands of a sheltered cove and lowered the coil to the white sands. A sharp signal produced an unfamiliar yellow coin, a 1998 2 dollar piece from New Zealand. Checking the area another signal produced a euro coin and another; eventually I had eight coins, a pocket spill perhaps lost by a tourist who enjoyed the unusually warm weather? Little did they know that I would be coming along to recycle their cash! A few more euro coins were picked up as I walked the short beach and then another sharp signal produced a ring with a stone. Not a gold one but a ring is a ring...we won't fight about that!

The good weather broke and reverted to the wind and grey we are more used to. I visited another beach that had been popular in Victorian times undergoing some refurbishment to the beach walls. Some groins had also been removed as part of a 'Health and Safety' initiative. I'm still trying to figure that one out? A JCB digger was parked on the prom and had dug out the old groins; some black sand and rotted timbers lay exposed on the surface. "Surely something old will turn up?" I thought. I followed the holes to the water and a large signal produced a huge surprise when a 7 inch aluminium nail surfaced. Could you imagine the damage such a thing could do to a child's foot?

I followed a line of shiny euro coins spaced every 10 feet or so and then it all went quiet. "Where is the old stuff? This beach is too long!" I thought.

Crisscrossing the wet sand expanses between the groins, not yet removed, I was finding large and deep scrap metal pieces, car keys, door locks, hinges, and aluminium shelving – but nothing Victorian surfaced.

This was a disappointment so I took stock of my surroundings and noted a small 'cut' where the wet sand met the loose shingle. I followed it and found a large assortment of mostly non-ferrous items (e.g. small coins, small scraps of copper and pull tabs), the majority being shallow at around 6-10 inches.

I then experimented with the other method of pinpointing. It was possible to 'hover' the coil above the sand. In the case of the shallow finds, with careful, deliberate, and slow manipulation of the coil, signals could be obtained that were similar to that obtained from a non-motion machine. It was also very easy to pinpoint with the concentric coil as it naturally 'narrows' the detection field.

Wet sands between groins.

This way to the beach....

On deeper targets the effect wasn't as noticeable with the 'decay' of the signal dying away quicker than with the shallow ones. One memorable find was deep and consisted of a car cigarette lighter! Checking another signal next to it resulted in a small ball towing hitch. I'm still looking for the rest of the car!

Conclusion

In my opinion the CS4Pi, at £325, is a bargain and is an underrated candidate as a beach detector. From what I have seen it gives those a good run for the money...literally!

Battery life is very good as PI systems are normally noted for high drain from large battery cells. While not being the most powerful PI system available it is certainly a very good introduction to this specialist form of detecting. Most of those involved in it will admit that wet sand beach hunting isn't easy. It's hard work shifting water saturated sand with a spade!

During my months with this detector the weather was mild, unseasonably warm, and beaches had too much sand on; so some of 'the good stuff' was beyond reach.

However, the situation could be totally different when winter storms strip away the sands; who knows what could surface then?

The ergonomics of this detector are good if you hip-mount the control box. With this done, it facilitates one of the best coil sweeping movements of all the detectors that I've used. The materials are of top quality (particularly the hard plastic control box) and all tough enough to withstand years of service. It is a pity that the detector was not made to be entirely waterproof. However, should that have been the case it would have attracted a far more expensive price tag.

Even if you have never intended to buy a PI detector, I would urge you to at least try one if you are at all interested in beach detecting. You will find this particular PI to provide a short learning curve that is easy to live with. It's great for 'scrubbing' the dry sand to pick out the recent coin losses with sharp signals. It gave me the confidence that if something was there it had nowhere to hide!

Who should buy a CS4Pi? I would say anyone interested in beachcombing or perhaps those living close to the sea. If you are a land-based hunter the CS4Pi is not for you, but is definitely worth considering if you only get to the coast once or twice a year on holiday.

Considering the cost, I thought this was a really good detector and I loved my time with it. I'm sure anyone who tries one will arrive at a similar conclusion. My thanks to C.Scope for giving me the opportunity to try the CS4Pi.

This detector summed up in a single word: Genuine.

Technical Specifications

- On/Off Sensitivity Control
- Pulse Frequency Tuning (variable from 1000-4200 pps)
- LED signal intensity indicator
- Loudspeaker
- Quarter inch headphone socket
- Adjustable length fully extended to 42.5 inches
- Waterproof 10 inch concentric coil with coil cover
- Power 8 x AA cells
- Battery – check switch
- Warranty 2 years
- Price £325.00

The CS4Pi is available from C.Scope directly or from many dealers nationwide.

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