

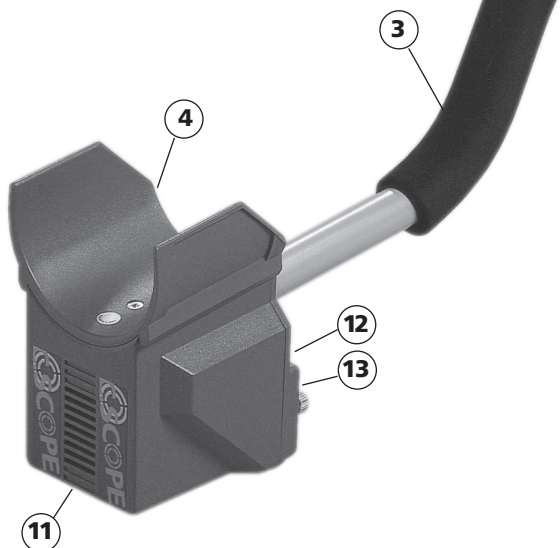
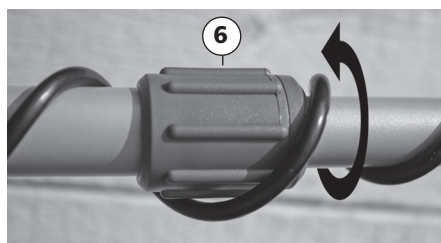
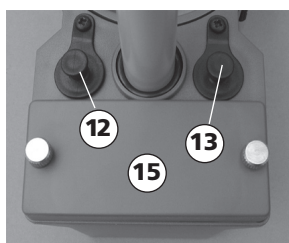
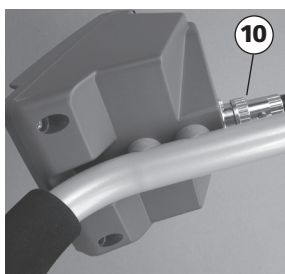
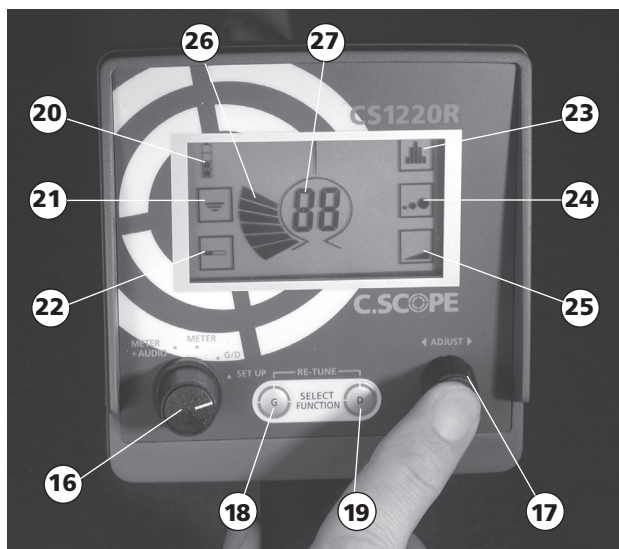
C.SCOPE

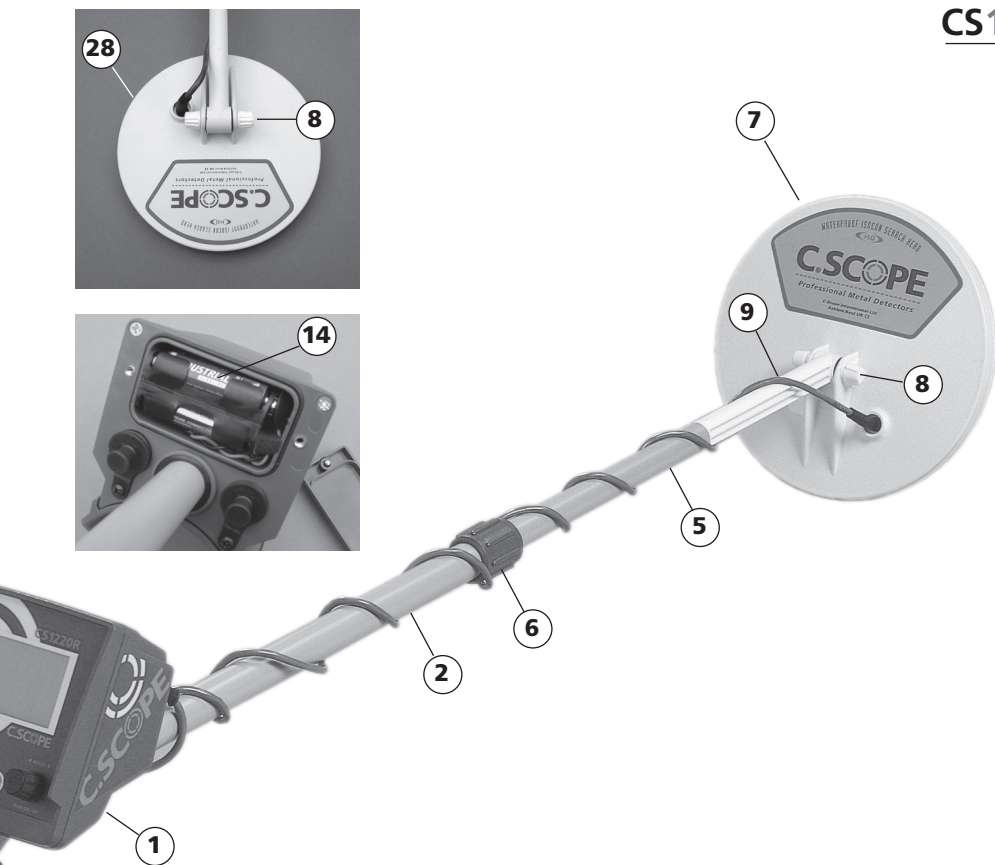
CS1220R

operating instructions

Naming of the parts

1. Control box
2. Main stem
3. Hand grip/Armrest
4. Battery box/Armrest
5. Lower stem
6. Twistlock stem adjuster
7. Search-head
8. Search-head retaining screw, washers, nut
9. Search-head lead
10. Search-head plug, socket
11. Loudspeaker
12. Headphone socket
13. Charger socket.
14. Battery pack
15. Battery box cover
16. Mode change switch
17. On/off/adjustment control
18. Ground Search Mode active and re-tune
19. Discrimination Mode active and re-tune
20. Battery level indicator
21. Ground Search Mode confirm
22. Discrimination Mode confirm
23. Set-up Tune level active
24. Set-up Sensitivity level active
25. Set-up Volume level active
26. Bar graph
27. Control setting number
28. Small search-head (optional accessory).





CS1220R

Overview

C.Scope design engineers have spent many years perfecting the 3 mode operating system of the CS1220R.

The ways that professional detectorists use their detectors have been analysed and incorporated in the CS1220R as three distinctly different detecting styles.

Please take a little time to understand what it is that makes the CS1220R unique in the world of detectors.

You will be better at using your detector if you fully understand the controls and what they are doing.

If you can't wait to give your CS1220R a tryout, go straight to the section; **'RAPID GET YOU GOING INSTRUCTIONS.'**

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the Controls and the Screen Display

There are 5 different aspects of CS1220R operation which can be changed. The first 3 of these, tuning, sensitivity and volume are adjusted before you start searching, in the SET-UP mode. The 3 icons (23) (24) (25) which appear one after the other down the right hand side of the screen during SET-UP tell you which item you are setting. For advice on how to set tuning and sensitivity levels, see the section, '**Learn about Sensitivity and Tuning**'. The large number in the centre of the screen (27) confirms your setting.

The remaining 2 adjustments are the ground setting and the discrimination level which can both be adjusted during the search. 2 icons (21) (22) representing 'Ground adjust' and 'Discrimination setting' appear on the left hand side of the screen to confirm which item requires adjustment. The large number in the centre of the screen is telling you the point at which you established a setting. To understand the significance of ground balancing and discrimination, see, '**Learn about GROUND and DISCRIMINATION.**'

The BAR GRAPH (26) which swings to the right or left when you locate a target is reading the signal strength if the display is set to show all metal signals, (bar graph swings only towards the right on detection of metal), or it is making a target analysis if set in either of the 2 meter discriminate modes, (bar graph swings left for bad or right for good targets).

The BATTERY LEVEL INDICATOR (20) with 4 bars is at the top left hand side of the screen. You are going to need new batteries soon when only one segment is left illuminated.

The MODE CHANGE SWITCH (16) on the left hand side selects SET-UP MODE or the 3 SEARCH MODES. The ON/OFF/ADJUSTMENT CONTROL (17) has 2 functions, press for 'ON', press for 'OFF' and rotate to adjust any selected item.'

The 2 PUSH-BUTTONS (18)(19) marked 'G' and 'D' have 3 different functions:

- 1) In the SET-UP mode they are used to select tuning, sensitivity, and volume for individual adjustment.
- 2) In G/D mode they are used to switch between 'G' (high depth all metal) detecting and 'D' (target analysis). The push buttons are also used to retune the detector in each mode to maintain optimum performance.
- 3) In METER mode and METER+AUDIO mode either push button can be pressed at regular intervals during the search to retune the detector and maintain optimum performance.

To understand more about 'push button retune' see the section,

'Learn about Sensitivity and Tuning.'

Switch on the detector by pressing the right hand control knob.

Press for 'on'. Press for 'off'.

Assembly

Join the two stem sections (5)(2) together. Wind the search-head lead (9) around the stem as shown in the photograph. Adjust the stem for length and tighten the twistlock stem adjuster (6) Ensure that the search-head plug (10) is firmly in its socket and tightened. (keep this connector clean and dry - never force or bend the pins). Check that the search-head (7) is parallel to the ground when being swept in an arc and tighten the search-head retaining screw (8) (keep these parts clean - if they become covered in mud or sand wash and dry these parts at the end of a day's detecting).

Batteries

Fit 8 AA batteries to the battery pack (14) being careful to observe polarity and that there is good contact with the battery terminals. Connect the pack to its connector and place into the battery compartment. Secure the battery compartment cover (15) with the 2 retaining screws. There is a constant display of battery level at the top left of the screen (20) Change the batteries when all segments of the icon are uncovered. Remove the batteries if the machine is to be stored for more than a few days. Rechargeable batteries can be recharged in

the machine if using a C.Scope charger plugged into the charger socket. When using non C.Scope rechargeable systems, batteries should be removed from the detector and recharged according to the manufacturers' instructions. (Note that rechargeable batteries may not register full on the battery level indicator even after charging.) The charger socket (13) and headphone socket (12) have covers designed to keep out water and dust when not in use.

CS1220R – rapid get you going instructions

- Assemble and adjust for length, twist surplus lead around stem.
- Insert batteries (8 x AA type)
- Select **SETUP** on the rotary switch.
- Switch on by pressing the on/off adjustment control, wait for display check sequence to finish. The tune icon should be displayed. Rotate the adjust control clockwise until a quiet buzz can be heard from the speaker. This is called the threshold point.
- Press **G** button, the sensitivity icon will now be displayed, turn the adjust control until 05 is displayed.
- Press **G** button again, the volume icon, will now be displayed, rotate the adjust control until 08 is displayed.
- Set Mode Switch to **meter + audio**, rotate the adjust control until 50 is displayed, then lower the search head to 1-2 cm above the ground and start to search. If the audio tone drifts from threshold, press the **G** button to reset it. You are now searching in meter and audio discrimination mode.

How to set up the 1220R

To set up tuning level

Rotate the MODE CHANGE SWITCH (16) to SET-UP position. Note that the TUNING icon (23) at the top right of the screen is illuminated to show that 'TUNING LEVEL' can be adjusted.

Press the 'G' PUSH-BUTTON (18). Note that the 'GROUND' ICON (21) on the left hand side of the screen is illuminated to show that the tuning level in the 'G' (high depth all metal mode) can be adjusted.

Rotate the ADJUSTMENT CONTROL (17) until the required setting is achieved. (TIP: a setting of about '50' is usually about right).

Press the 'D' PUSH-BUTTON (19). Note that the 'DISCRIMINATE' ICON (22) on the left hand side of the screen is illuminated. Rotate the adjustment control to achieve the required setting. (TIP: so that you can hear fading signals more clearly, you might want to set this tuning level a little higher, around '70' for example).

To set up sensitivity level

Press the **G** PUSH-BUTTON again.

Note that the middle icon **(24)** on the right of the screen is now illuminated to confirm that SENSITIVITY can be adjusted. Rotate the adjustment control to the desired setting. (TIP: the highest sensitivity setting may make the detector unstable particularly on wet beaches or mineralised ground. Use the highest sensitivity you can - a setting of '7' or '8' is OK).

Press the 'D' push-button. Check to see that the DISCRIMINATE ICON **(22)** at bottom left of the screen is illuminated to show that sensitivity level in the 'D' (target analysis mode) can be adjusted. Rotate the adjustment control to achieve the required setting. (TIP: Ground effects are more noticeable when discriminating. The detector will be more stable in operation if you keep off the highest sensitivity level. Wait until you are more experienced before using sensitivity '10'!).

To set up volume level

Press either 'G' or 'D' push-buttons one more time. Check that the VOLUME ICON **(25)** at bottom right of the screen is illuminated. Rotate the adjustment control to achieve the desired volume level applicable to all modes.

The CS1220R remembers all your settings even when you switch off.

(Tip: The 'G' or 'D' push-buttons are pressed to scroll through set-up of tuning, sensitivity and volume one after the other. Don't worry if you get mixed up about where you are in the set-up program - the symbol on the right hand side of the screen is always there to confirm which aspect of operation is being adjusted and the symbol on the left of the screen confirms 'G' or 'D' mode selected).

To reset to factory settings

If you want to start over and return the CS1220R to its factory settings, switch the machine 'OFF' and switch 'ON' again whilst simultaneously pressing 'G' and 'D' push-buttons.

Choosing the SEARCH mode

All brands of metal detector have controls but only the CS1220R offers those controls perfectly matched to 3 distinct styles of detecting. These search modes have been devised after detailed discussion with detector users to understand exactly which combination of settings works the best. All of that experience is condensed so that all you have to do is decide which mode you prefer and flick a switch to select.

The G/D mode enables you to work in maximum depth all metal mode. Any targets located in 'G' mode can be quickly checked out by pressing the 'D' button and sweeping the search head across the target again for analysis. This is great for maximum depth detecting, on deeply furrowed fields for example.

The METER mode puts all the information at your disposal simultaneously. The audio channel is deep seeking while the meter channel is discriminating.

Perfect for beginners - once the detector is set up, off you go.

The ultimate user-friendly metal detection system.

The METER + AUDIO mode with its innovatory wide range audio discrimination

feature puts the CS1220R focus on target analysis. Just the thing for sites with high trash contamination. Both the visual and audio channels are switched to target analysis in this mode.

How to use G/D mode

If depth of detection is your main priority and your detecting site is not excessively contaminated with rubbish, G/D is probably the best search mode for you. Tip: Main search in 'G' (max depth all metal) mode. Check out signals in 'D' (discriminate mode). Rotate the mode select switch to G/D mode. Press the 'G' push-button to enter 'G' (max depth all metal search mode). Note that the Ground symbol on the left hand side of the screen is illuminated to indicate that the ground setting of the machine should be adjusted.

Adjust the ground setting by rotating the adjustment control until a point is reached where raising and lowering the search head to and from the ground causes minimal change of signal tone. (Tip: an average ground setting is '50'. The best ground setting point will be more difficult to find for wet sand beach and highly mineralised ground). To understand more about ground setting, see **'Learn about Ground and Discrimination.'**

Press the 'D' push-button to enter 'D' (discriminate mode). Note that the Discriminate symbol on the left hand side of the screen is illuminated to indicate that the discriminate setting of the machine should be adjusted.

Rotate the adjustment control to set the desired discrimination point. This is a point on a scale 1 - 99 below which certain types of metal will be classified as rubbish and will cause the audio signal to diminish and the bar graph to swing to the left. Above the number certain types of metal will be classified as valuable and will cause the audio tone to increase and the bar graph to swing to the right. Small iron targets and then larger iron targets are at the low end of the scale and modern aluminium based rubbish is at the top of the scale. (Tip: keep the discrimination level as low as you can. A setting of about '40' is best. This will identify most iron rubbish which is the main problem on typical farmland detecting).

To understand more about discrimination, see **'Learn about Ground and Discrimination.'**

Push-button retuning ('G' or 'D' depending on which mode is selected) may be necessary every few minutes to automatically reset the electronics to optimum.

How to use METER + AUDIO mode

This is the mode most enjoyed by professional and experienced treasure hunters. Both the 'eyes and ears' of the CS1220R are set for maximum target analysis. The bar graph display is swinging left on bad and right on good targets just as in the METER mode but the really valuable target information is contained in the audio signal. In METER + AUDIO mode the CS1220R allocates higher frequency tones to good targets and lower frequency tones to bad

targets. Experienced CS1220R users say that they can tell what a target is, before they dig it up, just by the sound it gives !

Rotate the mode select switch to METER + AUDIO mode. Note that the Ground symbol on the left hand side of the screen is illuminated to indicate that the ground setting of the machine should be adjusted. (Tip: no need to set the ground point again if you already did it in another mode).

Start searching. Listen to the signals and watch the reaction of the bar graph display for full target analysis. (Tip: try out the machine at home with some samples of different metals so you get to know how the detector reacts). The level of meter and audio discrimination is pre-set in METER + AUDIO mode. If you require a wider band of discrimination, you must switch to G/D mode.

Push-button tuning ('G' or 'D' has the same effect) may be necessary every few minutes to automatically reset the electronics to optimum.

How to use METER mode

This is a mode which is great for beginners. The two channel detection system of the CS1220R is working at its optimum to give you the best of both worlds.

The audio channel is set for maximum depth location with all targets giving an increase in tone. The visual channel is set for discrimination with the bar graph swinging left for bad targets and right for good targets.

Rotate the mode select switch to METER mode. Note that the Ground symbol on the left hand side of the screen is illuminated to indicate that the ground setting of the machine should be adjusted. (Tip: if you have already set the ground point in another mode there is no need to do it again. The CS1220R remembers the ground setting you last used).

Start searching. Listen for signals first. Pass the search head over the target position again and watch the bar graph movement for target analysis.

The level of meter discrimination is pre-set in METER mode. If you require a wider band of discrimination, you must switch to G/D mode.

Push-button tuning ('G' or 'D' has the same effect) may be necessary every few minutes to automatically reset the electronics to optimum.

Learn about GROUND

Ground excluding is the way in which the 1220R can be adjusted to ignore the conductive and magnetic particles of the soil which would otherwise appear as targets to the detector.

There are 3 different ground excluding modes of operation on the CS1220R:

- 1) **G/D mode** which is selected by switching to **G/D** and pressing the **G push-button**.
- 2) **Meter mode** which is selected by switching to **METER**.
- 3) **Meter+Audio** mode which is selected by switching to **METER+AUDIO**.

Whenever a ground excluding mode is selected the 'GROUND EXCLUDE' ICON **(21)** is visible on the left side of the screen.

When searching in one of these three ground excluding modes the **ADJUST** control is controlling the ground exclude level. The ground exclude level can be varied from 1 to 99 as indicated on the numbers in the centre of the display. The detector leaves the factory with the ground exclude level set to 50 which has been found to be a good level typical of most inland sites. The ground exclude level should be adjusted so that there is little or no change in the audio volume (or movement on the display meter if you are in G mode) as the search head height above the ground changes as it is swept over the ground. The ground exclude setting is less critical at low sensitivity levels, (at sensitivity level 1 the ground effect may be unnoticeable.) but becomes more important as the sensitivity is increased.

Find an area of ground free from metal.

Select a reasonably high sensitivity level say 8.

Switch in G/D mode and press the G button so that the ground exclude icon is displayed. Hold the detector head 10-20 cm above the ground.

Press G (to zero the audio and display meter).

Lower the head slowly towards the ground.

If the audio level increases, rotate the ADJUST control clockwise (to increase the ground exclude level) a little and repeat from 4. Should the audio level decrease, rotate ADJUST control anti clockwise a little and repeat from 4.

Learn about DISCRIMINATION

The CS1220R can distinguish between different metals and classify targets into 'good' and 'bad' categories.

Whenever the discrimination symbol **(22)** is shown on the screen, the CS1220R can be adjusted to sort signals according to their characteristics on a scale 1 - 99, confirmed by the number in the centre of the screen. At the low [1- 50] end of the scale iron based metals will cause the screen display to swing to the left, accompanied by a reduction in audio level tone, whilst other targets will cause the screen display to swing to the right with an increase in audio level tone. At the high end of the scale [50- 99] more categories of unwanted target such as ring pulls and bottle tops will cause a negative discrimination signal. Care must be taken using high discrimination levels because some desirable targets such as thin section hammered silver coins may be rejected by the detector as having similar magnetic characteristics to rubbish items. Higher

discrimination levels tend to reduce the detection range of the detector. Some very large iron objects may be regarded as desirable targets. If in doubt, dig it! In the meter plus audio and meter modes of operation the amount of discrimination is pre-set to reject small iron based rubbish at the lower end of the scale. If higher levels of discrimination are required G/D mode must be used.

Learn about SENSITIVITY & TUNING

The electronics of the CS1220R are highly tuned. The principle of operation involves 2 coils, transmit and receive, which need to be kept in a delicate state of balance. The presence of a metal target upsets that balance and a signal is triggered in the detector. The closer that the detector can be maintained at that state of balance, the more sensitive will be the detector. The tuning control is used to achieve that state of balance and the optimum setting is where an audio tone is just starting to become apparent. If you go beyond that point to where the signal is constantly loud, it becomes impossible to discern the target signal from the background signal. Set too low a tuning threshold and the detector would not be working to its highest potential. Retune is used to reset the tuning point to its optimum setting. It is good detecting practice to press the retune button every few minutes or whenever you feel that the detector may have drifted away from its setting.

The laws of physics dictate that when you increase the sensitivity of a detector beyond a certain point, the ground itself is detected and it becomes impossible to tell which is a ground signal and which is a metal target signal. Ground excluding techniques can reduce the effect on detector performance but there are real limits to the depths of detection which can be achieved. Generally speaking you will want to use the highest sensitivity setting ('10') on your CS1220R but there will always be certain types of ground, maybe in mining areas or beaches with high salt levels, where you will have to back off the sensitivity a little. It may be necessary to set lower sensitivity levels in discrimination modes in order to achieve stable operation.

SEARCHING TECHNIQUE

Sweep the detector head from side to side with a relaxed motion. Move forward at each sweep the width of the search head. Keep the detector head as close to the ground as possible. Maintain a logical search pattern so that the area being searched is completely covered.

(Tip: You will be more successful if you search a small area of ground thoroughly than if you search a large area of ground in a random fashion.

The CS1220R non-motion search system encourages a careful detecting technique).

Do not trespass. Ask permission before searching on private land. Check for local by-laws about detecting on public land. Observe the country code. Fill in all holes. Report all valuable or historically interesting finds to the appropriate authority. Do not touch any item suspected of being unexploded munitions - report to the police immediately.

Optional ACCESSORIES

Contact C.Scope or your local detector supplier for a range of C.Scope accessories.

Small search-head (28) A small (15cm) search-head is available for the CS1220R. The small head makes detecting easier in undergrowth, stubble and furrows for example. The small head is also good for beach use being less susceptible to ground effects.

Headphones. Headphones make it easier to hear signals and increase battery life. The headphone socket (12) is found under its protective rubber cover next to the battery compartment.

Search-head cover. Covers are available for the standard (20cm) search-head. They protect the search-head from abrasion damage.

Rechargeable batteries. Digging tools and detector bags.

Detector CARE

The CS1220R is a robust design, however the control box should be treated with similar care as any electronic product. Dry off any water splashes immediately. The search-head may be immersed in water. Stem and search-head parts should be cleaned and dried at the end of a day's detecting. Do not use solvents. If the detector has been used on a beach it will be necessary to wash sand and salt residue off the stem adjustment mechanism and the search-head retaining parts using tap water. Remove batteries if the detector is going to be stored for any length of time. Do not open the control box front panel. There are no user serviceable parts inside and you may invalidate your warranty.

Warranty & Service

CS1220R is guaranteed free of manufacturing defects as confirmed in our written warranty document. Contact us if you have any concerns about the operation of your detector.

The C.SCOPE Customer Service Team really know about metal detectors and are always ready with good advice and rapid after-sales-service.

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This equipment conforms to the EMC directive 89/336/EEC.

System performance may be impaired by unusually strong electromagnetic fields.

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