# GROUND SEARCH METAL DETECTOR

## 地下金属探测器

Model / 型号

**TS352A**

OWNERS MANUAL，P01-19

用户使用手册(简体中文)，P20-32

Read this owners manual thoroughly before use

使用前请详细阅读本说明书

# GENERAL DESCRIPTION

This metal detector can be used for the detection and identification of metals buried underground. It is easily operated, has high resolving power and is extremely accurate.

There are various kinds of mineral in the soil, and they can interfere with the detection of the target metal object. The soil signal interference is called the effect of mineralization. The detector has been equipped with advanced ground balance system which is very effective in eliminating the soil signal interference. Therefore, depth of detection is enhanced enormously.

It is furnished with two search heads. Under common situation such as indoors or in the place of complex soil condition, you had better use the small one. Using the small search head, the metal detector operates stably, discriminates accurately and has powerful anti-interference capability. If you want to detect outdoors in the area of homogeneous soil and the target is buried deeply, you can use the large one. Using the large search head improves the depth of detection, but the detection is liable to be disturbed by the stray wave.

**Applications:**

1. To check for metal objects in material and food.
2. To detect concealed metal object.
3. Recycling the used metal.
4. For archaeological studies and for detecting minerals.
5. To search for buried gold and silver cultural relics.

# TECHNICAL SPECIFICATION

Transmitting Frequency: 6.99kHz
Signal Frequency: 437Hz
Power Supply: Storage battery supplied, or eight 1.5V batteries (AA or equivalent)

Operating Temperature: 0°C ~ 40°C
Storage Temperature: -10°C ~ 50°C
Weight: about 3kg ( without storage battery )
Maximum Depth of Detection: 6m
Note: The maximum depth of detection mentioned above is in regard to an aluminum plate 60×60×1(cm) buried in dry soil.

## ASSEMBLY

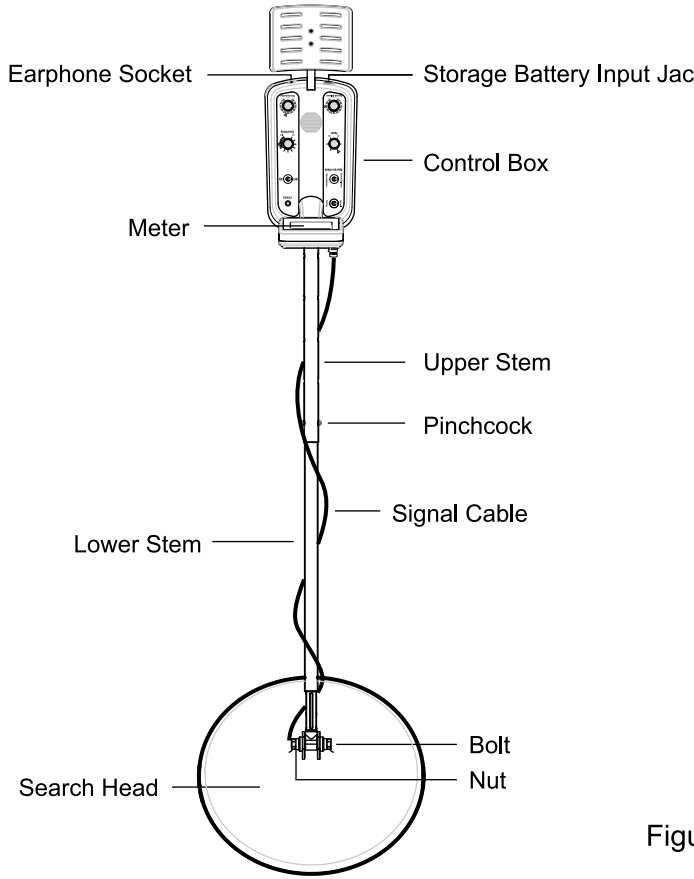


Figure 1

**To assemble the detector, follow this simple procedure:**

1. Use the three screws supplied with the detector to fix the upper stem on the control box. ( The longest screw should be installed in the hole which is the nearest to the meter. The other two screws should be installed in the other two holes. )
2. Connect the lower stem and the search head together with the bolt and the nut. Don't fasten the nut too loosely or too tightly in order that the search head does not swing randomly but can still be adjusted if necessary.
3. Press the pinchcock on the lower stem and push the lower stem into the upper stem. Let the pinchcock pop into the desired holes to achieve desired stem length.
4. Wrap the signal cable around stem and connect the plug of the signal cable to the socket carefully. Don't pull the cable with force. The cable should be snug but still slightly loose so that the angle of the search head can be changed easily, when required.
5. Connect the storage battery supplied with the detector to the detector with the storage battery cable.

**Note:**

1. During detection, the search head is parallel to and about 20cm above the ground.
2. The storage battery is designed to be carried by the user's shoulder.
3. If you need to operate the detector in noisy environments or during the night, you can use it with the earphone.
   For safety reasons, do not use earphone when near traffic.
   To avoid hearing impairment, don't use the earphone if using it make you feel uncomfortable.

# INSTRUCTION

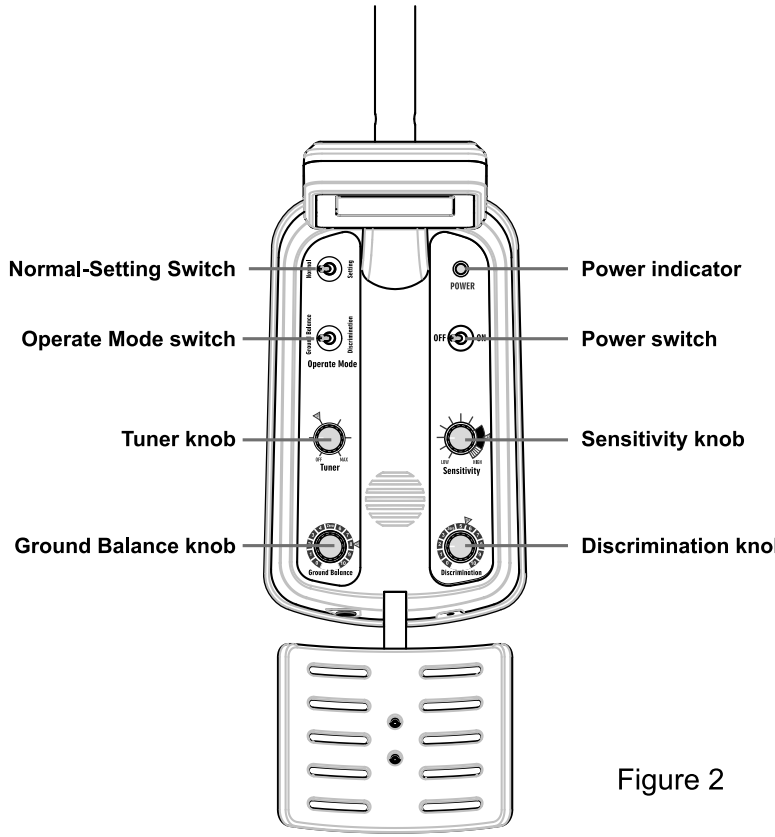


Figure 2

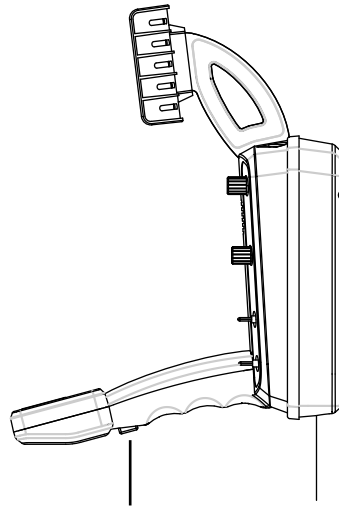


Figure 3

## 1. Push Button

The push button is also called memory button. When you press it, the memory circuit is activated, and memorize the current environmental conditions. For example, when the search head is over soil, the detector will give the soil's signal, and if you press the push button, the signal will be eliminated. Don't press this button if the search head is near metallic object, otherwise the detector may fail to detect metal when it move across another metal object. If you keep pressing this button, the detector will stay in the memory state and will not respond to anything.

Before you adjust any knob of the control box, you should press and hold this button, don't release it until the adjustment is finished. Owing to change of environment, the meter needle may deviate from the " 0 " position. If you press the button once, the needle will return to the " 0 " position. During detection, the push button is pressed and released from time to time.

## 2. Tuner knob

Adjust the knob clockwise while pressing and holding down the push button, the sound of the detector will increase gradually. Don't stop adjusting the knob until the detector gives a faint buzz which is called the "Critical Sound". The detector has the highest sensitivity when operated at this Critical Sound. If the sound is too loud or not there at all, the detector's sensitivity will be reduced. Before you start to adjust the knob for the "Critical Sound", you must press and keep pressing the push button. When the detector is giving "Critical Sound", stop adjusting the knob, and release the push button.

If the "Critical Sound " increases gradually or disappears gradually while you are detecting for metal, you should press the push button and then release it to restore the "Critical Sound".

## 3. Sensitivity knob

The knob can control the sensitivity of the detector. By turning the knob counterclockwise to the end, the sensitivity is reduced to the lowest and the detection depth is also shallow. If the knob is turned clockwise, the sensitivity will increase gradually, at the right end the sensitivity is highest, the detection depth is also maximum.

Usually, user hopes the detector has a higher depth capability, however, be sure not to neglect the effects of mineralization. In heavily mineralized ground, if the sensitivity is increased, false signal will occur, the detector gives signals everywhere so that the detector can not detect normally. In this situation, decreasing the sensitivity properly reduces the effects of mineralized ground on the detector. In the area where the soil condition is homogeneous and there are no junk items, the sensitivity may be set to the highest and so the detector has its maximum detection depth.

Note: Before the sensitivity knob is adjusted, press and hold the push button. After the adjustment is finished, release the button.

## 4. Ground Balance knob

In order to minimize the effect of mineralization, the detector is equipped with a circuit of ground balance.

To detect in ground balance mode, first set the Operate Mode switch to the "Ground Balance" position. Lift the search head off ground, press and hold the push button, adjust the tuner knob until the "Critical Sound" is being heard, release the button. If you set the ground balance knob to "10" on the scale, and then lower the search head to the ground again, the volume of the detector will increase. If you set the ground balance knob to "0" and repeat the procedure mentioned above, the volume of the detector would decrease. It indicates within the full scale of the ground balance knob the volume would be enhanced at one end and weakened at the other. It is obvious that there must be a scale reading at which the "Critical Sound" would not change when you lift and lower the search head. This is the ground balance point, which we want.

**The adjustment procedure of the ground balance knob :**

a. Set the Operate Mode switch to "Ground Balance" position.
b. Raise the search head until its height is about 60cm. Press and hold the push button, adjust the tuner knob until the "Critical Sound" is being heard, release the push button.
c. Lower the search head until its height is about 20cm. If the sound increases, raise the search head again ( height: about 60cm ), press and hold the push button, and turn the ground balance knob slightly anticlockwise, release the button. Lower again the search head to the ground. If the "Critical Sound" still increases, you can continue to turn the ground balance knob anticlockwise as above. Keep trying until the "Critical Sound" remains basically unchanged when you raise and lower the search head.
   If the "Critical Sound" decreases, turn the ground balance knob slightly clockwise and try again. Repeat this procedure until the "Critical Sound" remains basically unchanged when you raise and lower the search head.
d. If it is impossible for the "Critical Sound" to remain basically unchanged when you raise and lower the search head, you may be over some metal. Move to another spot and repeat the above steps.

**Note:** Before adjusting any knob, press and hold the push button. After the adjustment is finished, release the button.

After the ground balance knob is set properly in the manner described above, the signal caused by mineralized ground will be cancelled largely. Therefore, the search head may move along the ground at will and the detector will not give signal unless it detects a metallic object.

## 5. Discrimination knob

The knob works in conjunction with discrimination mode. Before the knob is adjusted, the Operate Mode switch should be set to the "Discrimination" position.

The discrimination knob allows user to selectively interpret targets within the range of the scale from "0" to "10". Setting the knob at different scale reading can choose different target signal. With the characteristic we can distinguish ferrous metal from nonferrous metal and also can tell the large from the small in the same kind of metal.

If the index of this knob is set to less than "2", the critical sound will increase for ferrous metals and decrease for nonferrous metals. If the knob is set to more than "7", the critical sound will increase for nonferrous metals and decrease for ferrous metals.

If the detected target is an iron plate, a strange phenomenon will appear: When you move the search head close to the edge of the plate, the detector reacts just like it meets ferrous metal, and when the search head is over the plate, the detector reacts just like it meets non-ferrous metal. In this case you can not only determine it is an iron plate, but also estimate its size.

Another function of the discrimination knob is that in the same kind of metal it can be used to distinguish between the large and the small. For example, we bury a coin of nonferrous metal in the ground, turn the discrimination knob clockwise from left to right, then move the search head over the coin to get a signal sound. After several times of adjustments, we can find a point on the discrimination scale at which the detector gives the "Critical Sound" when the search head is above the coin. This point is the coin's detection point. If the discrimination knob is set to the point, any nonferrous metal target larger than the coin will produce a sound, and all the nonferrous metal objects smaller

than the coin will be ignored.

Note: Before adjusting any knob of the control box, press and hold the push button. After the adjustment is finished, release the push button.

## 6. Operate Mode switch

The operate mode switch has two positions, ground balance position and discrimination position.

In the ground balance mode, the detector responds to all metals and gives sound. The ground balance mode has no function of discrimination, but it can eliminate the effect of mineralized ground. The detector has adequate see-through capability, works stably and indicates accurately after it has been adjusted properly in ground balance mode. Therefore, at beginning of detection in an area, it is recommended to use the ground balance mode.

The discrimination mode is used in cooperation with the ground balance mode. Normally, you should use the ground balance mode first, once a metal is found, use the discrimination mode to identify the kind of the target, or to select the large and valuable object in some places where there are a lot of junk items.

## 7. Normal-Setting Switch

The switch is set at "Normal" position generally, and so the detector is in the normal operate condition. With this switch in "Normal" position, the detector has adequate sensitivity and larger detection depth .

If the switch is moved to the "Setting" position, the detector is in the setting operate condition and the sensitivity may decrease a little. What is more, only when the search head is moving across the target can the detector give a signal. If the search head stays still above the target, the signal will disappear. Hence, if you select the "Setting" position, the search head should be swung from side to side while moving along the ground. When it encounters a metal object, the detector will give a short and strong sound.

If two metal objects buried in the ground are separated by a space of only one meter and we detect them with the switch in the "Normal" position, within the

range of the one meter the detector may sound everywhere so that the user can't pinpoint them respectively. In this case the switch should be moved to the "Setting" position in order to pinpoint them respectively.

The "Setting" position is very useful for detection in field. There are too many junk items under some ground so that the detector may sound everywhere. In this situation, you should set the switch at the "Setting" position first, then sweep the search head over the whole region to be detected and dig out the junk items in the shallow soil. When there are no junk items in the surface stratum, move the switch to the "Normal" position to perform detecting toward depth.

Note: If the switch is in the "Setting" position, the detector's sensitivity is relatively low, and so the "Setting" position is not suitable for the detection of the deeply buried target.

## METAL HUNTING

Connect the storage battery to the detector with the storage battery cable. Turn on the power switch of the storage battery and the power switch of the detector. The detector has a short preheating time after it is turned on. During the course of preheating, the search head should be lifted off ground and stays still in the air. If the meter needle returns to the "0" position and will not deviate after you press and release the push button, the preheating is over. User can begin to detect metal.

The detector has been supplied with two search heads, one large, and one small. When using the small one, the detector works stably and locates accurately, but the detection depth is relatively small. When using the large one, the detector may reach the maximum detection depth, but stability is lower. Freshman is apt to seek after the detection depth blindly and likes to use the large search head first at the beginning of detection, as a result of complex geological structure, the detector sounds everywhere so that nothing can be ascertained. It is recommended that

the small search head be used at beginning under general condition, especially in the area where there are a lot of junk items. The large search head should be used only if the soil of the detection area is homogeneous, free of junk items in the surface stratum and the target to be detected is buried deeply.

Operating the detector is similar to detecting a mine, operator holds the handle of detector and moves the search head slowly along the ground. While searching, the distance between search head and ground should be about 20cm. When a target is detected, the detector will sound and meter needle will move to one side.

**Note:** a. After you detects a metal object, move the search head far away from the metal object, and then press and release the push button before proceeding.

b. If you select the "Setting" position, once a target is found the signal sound will die away gradually and meter needle will also come back to zero point slowly. Therefore, the search head shouldn't stay over the target too long. In order to confirm the target, operator can move the search head away from the target, press and release the push button and then detect it once more.

c. Metal objects carried with operator can affect detection. Before searching, operator should remove any watch, ring, jewelry, metal belt buckle, and so on. Operator should not wear leather shoes with nails, It is recommended to wear cloth shoes or plastic shoes.

d. When moving along ground, the search head should be parallel to the ground.

e. Before adjusting any knob of the control box, always press and hold down the push button. After the adjustment is finished, release the button.

## 1. Ground Balance Mode

Move the Operate Mode switch to "Ground Balance" position to set the detector in the ground balance operate mode. The ground balance mode can eliminate the effect of ground mineralization and has adequate see-through capability. Therefore, it is often the prior choice mode for both indoor and outdoor detections. Only after some metal has been discovered, should the discrimination mode be used to identify the kind of the metal.

In ground balance mode the detector will sound and meter needle will deviate from zero point as soon as the search head is moved over any kind of metal target.

### Operation instruction for ground balance mode:

1. Connect the storage battery to the detector.
2. Turn on the power switches of the storage battery and the detector.
3. Move the Operate Mode switch to "Ground Balance" position.
4. Lift the search head about 60cm from ground, let the detector warm up for a moment. If the meter needle returns to "0" and no longer deviates after you press and release the push button, you can proceed.
5. Press and hold the push button, adjust the Tuner knob until the "Critical Sound" is being heard, release the button.
6. Using the method described in the **Step c** and **Step d** of the section of " **The adjustment procedure of the ground balance knob :** " in Page 7, adjust the ground balance knob until the "Critical Sound" remains basically unchanged when you lift and lower the search head.
7. During detection, search head should be moved along the ground in smooth even swings. Keep a distance of about 20cm between the search head and ground.

## 2. Discrimination Mode

The mode can distinguish ferrous metal from nonferrous metal and also can eliminate the small metal object so as to choose the large one in the same kind of metal. The mode has no function of ground balance, operator must be prudent in using.

### Operation instruction for this mode:

1. Turn on the power switches.
2. Move the Operate Mode switch to "Discrimination" position.
3. Let the detector warm up.
4. Press and hold the push button, adjust the Tuner knob until the "Critical Sound" is being heard, release the button.
5. To distinguish between ferrous metal and nonferrous metal:
   Set the index of the discrimination knob to less than "2", ferrous metals ( iron, steel ) will make the critical sound increase, nonferrous metals ( gold, silver, copper, aluminum ) will make the "Critical Sound" decrease.

If the knob is set to more than "7", nonferrous metals will make the "Critical Sound" increase, and ferrous metals will make the "Critical Sound" decrease.

If the target to be detected is a plate of iron and when the search head is moved close to its edge, the response will be the same as that caused by ferrous metal. However, after the search head has been moved over it, the response would be like that caused by nonferrous metal.

6. To eliminate the targets undesired:

   If the place to be detected is indoor or ruins, there must be a lot of miscellaneous abandoned metal items there. Generally they are useless, and should be eliminated during detection. For example, when user searches in an area where a lot of waste nails exist, the nails' signals are heard from place to place, consequently, detecting target metal is very difficult. In this case user can put a nail on the ground, then move the search head over the nail. If the "Critical Sound" increase, press and hold the push button, turn the discrimination knob slightly clockwise, release the push button and move the search head over the nail again. Repeat the procedure until the "Critical Sound" remains unchanged when you move the search head over the nail. Now the detector will no longer respond to the buried nails and the ferrous metal objects smaller than the nail, but all nonferrous metal objects as well as the ferrous metal objects larger than the nail will make the detector sound.

## 3. Practical Example

We have described two operate modes. In actual detection operator should select a mode according to the specific circumstance. Sometimes it is necessary to use the two modes alternatively.

For example, you want to hunt an old house for the deeply buried things left behind by predecessors, there must be a lot of various abandoned scraps (such as nails, wire, scraps of iron pot and etc) in the ground. Generally these things are buried near surface, and so their signals are strong. In order to eliminate these waste objects while detecting the deeply buried target, which mode should be selected depends on the accuracy of the information about the target. If it is merely said that there might be something buried there, but you

are not sure, you may use discrimination mode, set the Discrimination knob at the point where nail is eliminated, then sweep along the ground grossly. When the search head moves above a ferrous metal object larger than a nail or moves above a nonferrous metal, the detector will sound, but this mode can't eliminate the effect of mineralized soil and so the detecting result is not very accurate.

If you are very sure that something you want is under the ground, the ground balance mode must be used. First of all, you should remove all metal furniture out of the room, then equip the detector with the small search head, slightly decrease sensitivity and carefully set ground balance knob. Whenever a metal object is found during detection, it must be dug out and in this way most miscellaneous waste metal things in the surface will be taken away. After the surface has been cleared, you can replace the small search head with the large one to search toward depth.

Detection is a careful and difficult work. It is necessary for user to be patient, confident and perseverant. No detector can indicate all the buried metal objects perfectly clearly, it can merely predict the target's most likely position. To pinpoint desired target accurately, it is necessary for operator to have rich experiences and the ability to make right judgment on the basis of analysis of the detector’s response.

# PROSPECTING

Nugget hunting, which is like coin hunting, is done in the ground balance mode. Most gold is found in heavily mineralized areas, so ground balance must be adjusted carefully in advance.

In sandy gold mines, the gold is very tiny and is often mixed with sand, soil and other metal depositing substances. The signal caused by this kind of blend is similar to but weaker than that caused by ferrous metal, and it is common that the area giving out a signal is wider. The detector can be operated to filtrate the mineral blocks. When carrying out this job, it is unnecessary to carry the detector by hand. You can fix it to a nonmetallic holder, and then adjust to locate and maintain the "Critical Sound'. Then move the ore close to the search head one by one, and you can judge how much content there is by the magnitude of the sound. You should remember to press and then release the button whenever you finish detecting. The detecting technology of metal content is very useful for the filtration of gangue gold mines and for the detecting of relics in old mines. Some people take the minerals on which there is visible gold, and throw away the other minerals which may contain gold inside.

For mines of copper, iron, tin, lead, etc, signal will vary according to its content. The operator can experiment with a standard mineral, and then watch how the detector responds to the standard mineral to determine the difference between the target mineral and a common mineral.

# CHARGING THE STORAGE BATTERY

## Storage Battery Instruction

1. **" Charging " LED**
   When the storage battery is being charged, this LED lights.
2. **Power Switch**
   Used to turn on/off the storage battery.
3. **" Battery " LED**
   When the storage battery is exhausted, this LED lights red. When the storage battery is charged, this LED lights green if the storage battery has been fully charged.
4. **Socket**
   It is an output socket for outputting voltage to the detector.
   It is also an input socket for charging the storage battery.

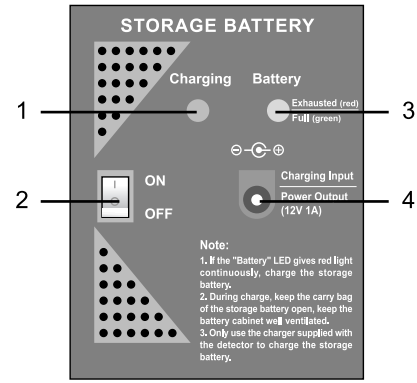


Figure 4

If the detector's power indicator is dim or doesn't light after the detector is turned on, the storage battery is exhausted and should be charged immediately; otherwise the life of the battery will be shortened.

**To charge the storage battery:**

1. Connect the output plug of the charger supplied with the detector to the socket of the storage battery.
2. Turn on the power switch of the storage battery.
3. Connect the charger to a standard ac outlet. The charger starts charging the storage battery. The charging time is 6 to 10 hours.
4. After charging is finished, turn off the power switch of the storage battery, disconnect the charger from the outlet and the storage battery.

**Note:**
If you don't use the detector in a long period, you should check the charge of the storage battery periodically ( once every 2 to 3 months ). If the storage battery is exhausted, charge it immediately.

**To determine whether the storage battery is exhausted or not:**
1. If the "Battery" indicator gives red light continuously after you turn on the power switch of the storage battery, the storage battery is exhausted.
2. If the "Battery" indicator is dead no matter you turn on or turn off the power switch of the storage battery, the storage battery is exhausted.

## REPLACING BATTERY

If you don't use storage battery as power supply, you can use eight 1.5V AA batteries to power the detector.
If you use batteries as power supply and if the detector's power indicator is dim or doesn't light after you turn on the detector, the batteries are low and should be replaced immediately.

**To replace the batteries:**
1. Turn off the detector by setting the Power Switch to " OFF " position.
2. Remove the two battery covers which are located on the back of the control box.
3. Remove all the old batteries, then install four new 1.5V batteries (AA or equivalent) in each battery compartment, make sure that polarity connections are correct.
4. Reinstall the two battery covers.

## NOTE

1. After the detector detects a metal object, move the search head far away from the object, press the push button once before proceeding.
2. After you finish detection, turn off the power switch of the detector, and turn off the power switch of the storage battery if you use the storage battery as power supply.
3. If the detector can't work normally, check the storage battery first, then make sure you operate the detector correctly.
4. The plug of the signal cable must not be affected with damp, otherwise the detector will lose its detecting ability. In the situation you should dry the plug.
5. Don't use the detector in the rain or under strong sunshine.
6. Search head must be kept away from stove or any other high temperature circumstance.
7. Don't open the control box or change the circuit.
8. Keep the detector clean, always wipe the housing with cloth after use. Keep in mind that the control box is not water proof.
9. Don't connect the charger to the detector, otherwise the detector will be damaged.
10. If you don't use the detector in a long period, remove all the batteries from the detector.

## WARNING

Any metal detector may discover underground power lines, explosives or other items which when struck could cause personal injury. When searching for metals observe these precautions:

1. Do not search in an area where you believe there may be shallowly buried underground electric lines or pipes.
2. Do not detect in a military zone where bombs or other explosives may be buried.
3. Avoid striking any line known to be or suspected to be carrying electrical power.
4. Do not disturb any pipeline, particularly if it could be carrying flammable gas or liquid.

5. Use reasonable caution when digging toward any target, particularly in areas where you are uncertain of underground conditions.
6. Do not operate the detector around explosive gas, vapor, or dust.
7. Observe all national, state and local laws while detecting.

## ACCESSORIES

Manual: 1 piece
Earphone: 1 piece
Storage Battery: 1 unit
Carrying Bag of Storage Battery: 1 unit
Storage Battery Cable: 1 piece
Charger: 1 piece

## DECLARATION

1. This manual is subject to change without notice.
2. Our company will not take the other responsibilities for any loss.
3. The content of this manual can not be used as the reason to use the detector for any special application.

### DISPOSAL OF THIS ARTICLE

Dear Customer,
If you at some point intend to dispose of this article, then please keep in mind that many of its components consist of valuable materials, which can be recycled.
Please do not discharge it in the garbage bin, but check with your local council for recycling facilities in your area.

# 简介

本仪器是采用最新技术研发的新一代金属探测器．它具有较大的探测深度和准确的识别能力，是专业型超深探测器，特别适用于地层深部的探测作业．

在使用旧式金属探测器时，最令人讨厌的问题是地面的影响：随着探测盘与地面的距离变化仪器的信号也跟着变化，若把探测盘扫过凹凸不平的地面，这个变化就更大了，操作者仿佛到处都听到信号声，弄不清那里真正埋有金属．这种现象叫做"矿化反应"．造成"矿化反应"的原因，是由于构成土壤和各种矿物使仪器发出信号.在土壤结构复杂的地方，"矿化反应"非常强烈，它引起的信号比金属信号还要大，这时操作人员就很难判断发出信号的地方到底是埋有金属还是"矿化反应"．

本仪器内设有地平衡线路，能排除一切"矿化反应"的影响，只有在探测盘遇到金属时才发出信号，从而大大提高了探测深度和准确性．

本仪器配有大小两个探测盘．在一般的情况下，例如在室内或者土质条件较复杂的地方，使用小探测盘作常规探测．常规探测时工作稳定、分辨准确、抗土质干扰能力强．在特殊的情况下，例如在野外土质均匀的地段，所寻找的目标又埋得很深，可以使用大探测盘进行加深探测，加深探测时仪器具有更大的探测深度，但容易受到杂波干扰．

# 主要技术参数

发射频率：6.99kHz
信号频率：437Hz
重量：约3kg (不含电池)
电源：蓄电池或8节AA电池
最大探测深度：6米

注：最大探测深度是指一块60×60×1厘米的铝板埋入干燥泥土之中，仪器所能探测的最大深度．

# 如何装配仪器

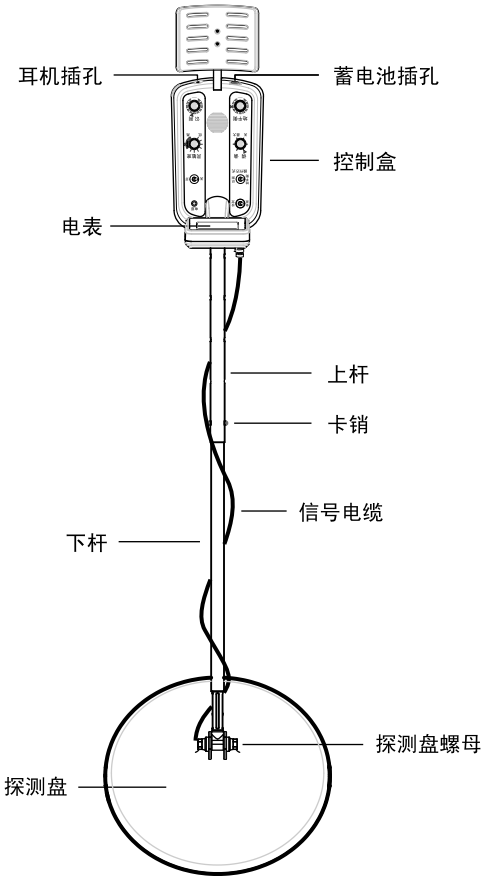


图1

1. 用随机提供的三个螺丝将上杆固定在控制盒上， 其中较长的螺丝应锁在离电表最近的孔， 另两个较短的螺丝应锁在其余的两个孔上.
2. 用探测盘专用的螺丝和螺母把探测盘和下杆接好. 锁螺母应松紧适度，且勿过度用力.
3. 首先压住下杆的卡销，将其插入上杆. 用户可以根据实际情况调节伸缩杆的长度以方便工作.

4. 把信号电缆绕在上下杆上，然后将其插头接到主机盒的插座上．缠绕信号电缆时，信号电缆必须保持足够的松弛度，以方便调节探测盘的角度．
5. 用DC电源线将蓄电池接到蓄电池插孔．

注意:

1. 不要用力拉信号电缆，否则可能造成损坏．连接信号电缆时，应手持其插头．
2. 使用仪器时，应将蓄电池的携带包提带吊在肩上，手握仪器的手柄，以方便探测．
3. 仪器可以使用耳机，插上耳机之后，喇叭响声中断，操作人员可以从耳机听到声音，以便于在嘈杂的环境中或夜间操作．
   在有车辆来往的地方，为了安全，不要使用耳机．如果耳机的声音让您觉得不适，请不要使用耳机．

## 仪器介绍

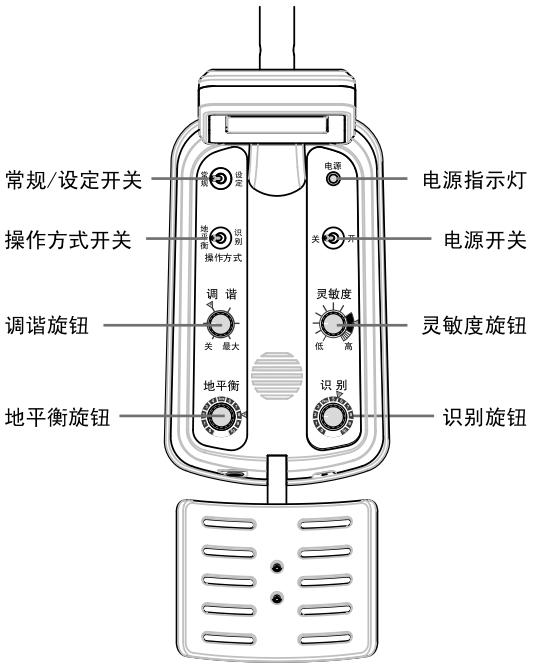


图2

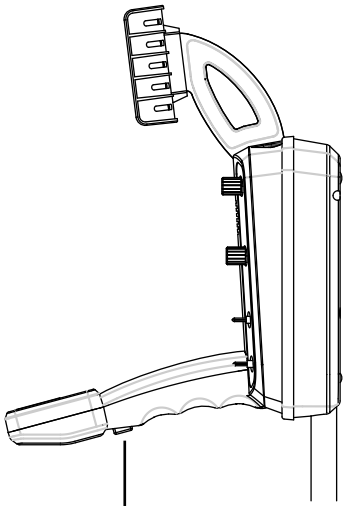


图3

## 按钮

在手柄靠近电表处有一按钮，又叫做记忆按钮．把它按一下就能启动机内的记忆电路以记住仪器的工作环境．譬如探测盘在泥土上方，泥土对仪器产生一定的信号，按一下按钮之后，泥土的信号就没有了．在金属物体的周围是不能按下按钮的，因为按了之后仪器记忆了金属的信号，再遇到金属就探测不到了．如果按住按钮不放，则仪器就一直处在记忆的状态，对什么信号都不会有反应．

在调节仪器的任何一个旋钮前，都必须先按下按钮，调好之后，松开按钮．仪器工作时，随着环境的变化电表的指针会偏离零点，按、放一次按钮，指针就回零了．在整个探测过程中常需要按、放此按钮．

## 调谐旋钮

按住按钮不放，把调谐旋钮由左边顺时针旋转，仪器的声音从无到有，从小到大．当声音刚刚开始出现，勉强可以听到时，就是我们所需的"临界声"．只有调出这种微弱的"临界声"，仪器才具有最高的灵敏度．在调"临界声"之前，必须先按下按钮，调好之后，松开按钮．在使用仪器的过程中，如果"临界声"逐渐增大或减小甚至消失，就按一下按钮以恢复"临界声"．

## 灵敏度旋钮

灵敏度旋钮用于控制仪器的灵敏度．把旋钮反时针方向转到尽头，仪器的灵敏度会降到最低，探测深度也较小；若往顺时针方向转动旋钮，灵敏度就会逐渐提高，转到最右边时，灵敏度最高，探测深度也最大．

用户常希望探得深一些，但不要忽略"矿化反应"的影响．在"矿化反应"大的地段，提高了灵敏度之后会引起假信号，仪器到处乱响，反而探不到东西．当遇到这种情况，应当把灵敏度适当降低，以减少复杂的地层对仪器的影响．在土质均匀而又没有杂物的地方，可以把灵敏度调到最高，此时仪器具有最大的探测深度．
每调一次灵敏度旋钮时都要按住按钮不放，调好之后才松开按钮．

## 地平衡旋钮

本仪器装备了地平衡线路，可把"矿化反应"的影响降到最低．

如果要使用地平衡的探测模式，首先要把操作方式开关放在地平衡档，然后调节地平衡旋钮．

把探测盘抬离地面，按住按钮不放，调出"临界声"之后松开按钮．把地平衡旋钮转到刻度"10"，使探测盘在降到地面上，仪器的声音就会增大；如果把地平衡旋钮转到刻度"0"，再按上述过程做一次，仪器的声音便减小了．说明了平衡旋钮在刻度的一端使声音增大，另一端使声音减小，那么在这两端之间然存在这样一个刻度，旋钮对准这个刻度之后由地面引起的声音既不增大也不减小，它就是我们所要调到的地平衡点．

具体做法如下：

1. 把操作方式开关拨到地平衡档；
2. 把探测盘抬离地面约60厘米左右，按住按钮不放，调出"临界声"，松开按钮；
3. 把探测盘降落到离地面20厘米左右，如果声音变大了，就抬起探测盘（高度约60厘米），把地平衡旋钮朝反时针方向拧一点，然后把探测盘靠近地面试一试，如果声音仍然增大，则再往反时针方向拧一点，直到抬起和放下探测盘时声音基本不变为止．
   如果上述过程中声音是减小的，则需把地平衡旋钮朝顺时针方向调整直到抬起和放下探测盘时声音基本不变为止；
4. 如果不管怎样调整声音都是增大的，说明该处地下埋有金属，应该换一个地方调试；
5. 旋转地平衡旋钮前，都应该先按下按钮，调好地平衡旋钮之后松开按钮．

按照上面的方法调好地平衡之后，仪器基本上消除了"矿化反应"的信号，探测盘在地面上随意移动也不会引起声音变化，只有在遇到金属时才发出声响．

## 识别旋钮

识别旋钮是在识别模式下使用的，因此在调节这个旋钮之前应先把操作方式开关拨到识别档.

识别旋钮的周围刻有0-10的刻度，把旋钮对准不同的刻度可以选择不同的信号，利用这个特点我们能够区分有色金属和黑色金属，也能在同类金属中区分大块金属.把识别旋钮拧到2的左边，黑色金属（钢、铁）使声音增大，有色金属（金、银、铜、铝……等）使声音减小，如果拧到7的右边，则有色金属使声音增大，黑色金属使声音减小.

如果被识别的目标是一块铁板，将会出现如下的现象：在探测盘移近它的边缘时，反应与黑色金属相同，探测盘进入铁板上方之后，反应跟有色金属一样. 遇到这样的情况，你不但可以判断地下是一块铁板，而且还能大致估量它的面积范围.

识别档的另一个功能是能够在同类金属中排除小块金属而选择大块金属. 例如把一个5分币埋在地下，我们把识别旋钮从左边顺时针向右边拧转（注意按放按钮），然后把探测盘移到钱币上方，经过几次调整，使探测盘接近钱币时刚好发出一点微弱的声音，这一点就是钱币的探测点. 调好这一点之后，所有体积大于5分币的有色金属都能发出声音，体积小于5分币的有色金属因没有信号而被排除掉.

注意：每次调整识别旋钮之前都要按下按钮，调好之后再松开按钮.

## 操作方式开关

操作方式开关有两个档位，一档是地平衡，另一档是识别.

在地平衡档，仪器对所有的金属都发出响声，没有识别的作用，但是能够排除地层中"矿化反应"的影响. 当仪器调好地平衡之后，它具有足够的穿透力，工作稳定，指示准确，因此一般开始对某一地段探测时都采用这个方式.

识别方式是配合地平衡方式使用的. 用地平衡方式探明存在金属之后，再用识别档去区分金属的种类. 或者在那些有大量废弃金属的地方寻找大件的有价值的金属.

## 常规/设定开关□

在一般的情况下，把此开关拨到常规档，仪器处在常规工作状态，常规档具有足够的灵敏度和最大的探测深度.

如果把开关拨到设定档，仪器处于设定工作状态. 在设定工作状态下，仪器灵敏度会有所降低，而且只有当探测盘在金属目标上移动时才有信号发生. 如果探测盘停在金属上方不动，信号将会消失. 因此使用设定档探测时，应使探测盘在地面上来回移动，遇到金属时，喇叭就会发出短促有力的声音.

如果地下埋有两块金属，它们的距离只有一米左右，我们用常规探测时，在这一米的范围之内仪器都有声音，令人难以确定两块金属的准确位置．这时可以把开关拨到设定一边，让探测盘扫过发出信号的区域，仪器就会发出两次短促的响声，发声的地方分别是这两块金属的具体位置．

在实际工作中设定档是很有用的．有些地方地下的金属杂物较多，探测器到处是信号声，遇到这样的情况应该首先使用设定档，让探测盘在整个探测区扫一遍，把浅土层中的金属杂物挖掉，在表层干净的情况下再使用常规档向纵深的部位探测．

注意：设定档的灵敏度较低，在探测埋得很深的目标时不要用设定档．

## 探测金属

把蓄电池接到仪器的电池插孔，打开蓄电池的电源开关，然后打开仪器的电源开关．仪器开始预热，在这段时间应把探测盘提到空中不动．如果按过按钮后，表针能处在零位不再偏移，则表示预热结束，可以进行探测工作．

随机配有大小两个探测盘．使用小探测盘时，仪器工作稳定、指示准确，但探测深度较小．使用大探测盘时，仪器可以达到最大的探测深度，但是稳定性较差．初学者往往盲目追求探测深度，一开始就使用大探测盘，结果由于地质结构复杂的原因使仪器到处乱响，反而探不到东西．建议在一般情况下，先使用小探测盘探测，尤其在金属杂物多的地方更应如此．只有在土质均匀，表层中没有金属杂物，而目标又埋得很深的情况下，才能使用大探测盘．

仪器实际探测时有如工兵探雷，操作者握着手柄让探测盘缓缓地沿着地面移动，整个探测过程中应保持探测盘与地面距离为20厘米左右，尽量不要使距离忽大忽小的变化．探到金属时，仪器便发出声音，同时电表的指针也会有刻度指示．

注意：a．如果常规/设定开关处在设定档，当探到金属之后，报警声会慢慢地减小消失，电表的指针也慢慢的回零，因此探测盘不要在目标的上方停留太久．为了再一次证金属的存在，可以把探测盘移开目标区域之后，按、放一次按钮恢复"临界声"，然后再探探一次．

b．人身上的金属物品会影响探测，要求操作者把身上的戒指、手表、金属皮带扣、香烟盒等金属杂物全部除掉，并且不能穿带钉的皮鞋，建议穿塑料鞋或布鞋工作．

c．调整任何旋钮之前都要按下按钮，调好之后再松开按钮．

d．使用过程中，仪器报警后，移开探测盘以远离被测物，然后按放一次按钮，

再进行下一次探测.

## 一、地平衡模式

把操作方式开关拨到地平衡档，选择地平衡的工作模式. 地平衡的模式能排除大地的"矿化反应"，而且又具有较佳的穿透力，因此不管是室内搜寻或者是野外作业通常使用这一方式. 探明地下确实存在金属之后，才用识别方式去区分金属的种类. 在地平衡工作方式中，只要探测盘对准了目标，仪器便发出声响，电表也有刻度指示，不管是有色或黑色金属都会使声音增大.

操作程序如下

1. 打开蓄电池和仪器的电源开关.
2. 把操作方式开关拨到地平衡档.
3. 把探测盘提离地面60厘米左右不动，按、放几次按钮，让仪器预热片刻，直到电表的指针回复零位之后不再偏移为止.
4. 转动调谐旋钮直到调出"临界声".
5. 按前面介绍过的方法调好地平衡（见第5页）.
6. 探测盘沿着地面探测时，应始终与地面保持约20厘米的距离.

## 二、识别模式

识别模式能区分有色金属和黑色金属，也能在同一类金属中排除小块的而选择较大块的金属. 识别方式没有地平衡的作用，因而土层的"矿化反应"很大，操作人员要谨慎使用.

操作过程如下：

1. 打开电源开关.
2. 把操作方式开关拨到识别档.
3. 仪器预热.
4. 转动调谐旋钮直到调出"临界声".
5. 区分黑色、有色金属：

   把识别旋钮拧到2的左边，黑色金属（钢、铁）使声音增大，有色金属（金、银、铜、铝……等）使声音减小，如果拧到7的右边，则有色金属使声音增大，黑色金属使声音减小.

   如果被识别的目标是一块铁板，探测盘移近它的边缘时，反应跟黑色金属相同，探测盘进入铁板上方之后，反应跟有色金属一样.

6. 排除不需要的目标：

如果探测的地点在室内或是一片废墟，土层中有很多废弃的金属杂物，它们一般都没有什么用处，探测时可以把它们排除掉．例如在一个废铁钉很多的地方探测时，到处是铁钉的信号，以致无法正常探测．遇到这样的情况时，可以预先放一颗铁钉在地上，让探测盘扫过它的上方，如果仪器的声音增大了，就按下按钮，把识别旋钮向右(顺时针方向)转动一点，松开旋钮再探一次，经过反复调节识别旋钮直到探测盘扫过铁钉上方时刚好没有声音变化为止．调好之后，地面埋藏的铁钉以及比铁钉小的黑色金属都不会使仪器的声音增大，而所有的有色金属以及比铁钉大的黑色金属都会使仪器发出较大的信号声．

## 探测实例

前面介绍了仪器的两种探测模式，即地平衡模式和识别模式，在实际探测时操作者要根据具体情况来选择不同的探测模式，有时又需要交替地使用这两种探测模式．

例如在一座古老的房子里寻找埋藏较深的遗物，由于长期以来地下掩埋着各种被丢弃的金属杂物如铁钉、旧锁、铜丝、铁锅的碎片……等，这些东西一般埋在浅表层中，距离探测盘较近，信号自然是很大的．为了排除这些杂物而去探测埋藏深处的目标，应该采用什么探测模式呢？这就要看信息的准确程度了．如果只是猜测该处可能埋有东西，但没有把握，我们可以采用识别档，把识别旋钮拧到排除铁钉那一点然后进行粗略的扫描，假若地下埋有比铁钉大的黑色金属或有色金属，仪器都会发出响声，但是这种探测方式不能排除地层的"矿化反应"，探测的结果是不够准确的．如果所获的信息非常真切，有十分的把握，那么就必须采用地平衡操作方式了．我们首先应把屋内的金属家具搬出去，然后插上小探测盘，略为降低灵敏度并仔细地调好地平衡．探测时，每发现有金属就必须挖出来，经过细致的清理工作，浅土层的金属杂物基本上清除掉了，在土层干净的情况下改用大探测盘向纵深的部位搜寻．

探测工作是一项细致而又艰苦的工作，它要求操作者有耐心、信心和毅力．任何金属探测器都不可能将地下的金属物体显示的一清二楚，它只能大概地预示金属目标的位置，要能准确地找到所需的东西，还要求操作者具有丰富的经验，根据仪器的反应仔细地分析，以作出正确的判断．

## 探矿

探测自然金块就像寻找金属硬币那样用地平衡方式进行，大多数金块埋藏在矿化程度较高的岩层中，因此事先必须仔细地调好地平衡.

在沙金矿中，金子以碎细的形式跟沙土混合在一起，并且往往伴随着重金属矿的沉积物，这种混合物的信号与黑色金属相同，但反应较弱，而反应的区域比较宽阔. 本仪器亦可以进行矿块的筛选工作. 进行这项工作时操作者不必手提探测器而是把仪器固定在一个非金属的支撑物上，调出"临界声"，然后把矿石一块一块地靠近探测盘，根据声音的大小来确定含量的高低. 应记住，每测完一块样品就按放一次按钮. 这种金属含量的测定技术对脉金矿的筛选以及对旧矿井留下的矿尾的测定是很有用的，有些采矿人常把表面看得见金子的矿石留下，其余的就仍掉了. 其实，被仍掉的矿石中有一部分仍含有金子.

对于其它的金属矿，有些信号比较大，有些则没有反应，操作者可以用一块标准的矿石来做实验，看仪器对它的反应情况，从而确定此类矿石与普通岩石在信号上的区别.

## 蓄电池充电

当仪器的电源指示灯变暗或不亮时，说明蓄电池的电力不足了，应及时给蓄电池充电，否则会缩短蓄电池的使用寿命.

充电步骤：

1. 把充电器的输出插头插到蓄电池上的插座上.
2. 开启蓄电池的电源开关.
3. 把充电器的电源插头插在电源插座上. 充电器开始对蓄电池充电，充电时间约6至10小时.
4. 充电完成后，关闭蓄电池的电源开关，然后把充电器从电源插座和蓄电池插孔取下.

注意:

长期不使用仪器时，应定期（每2～3个月）检查蓄电池电量. 如果蓄电池的电

量不足，应及时给蓄电池充电．检查蓄电池电量的方法：开启蓄电池的电源开关，如果″电池″指示灯亮连续发红光，说明电池电量已不足．

## 蓄电池介绍

1. ″充电″ 指示灯
   当对蓄电池充电的时候，此灯亮起．
2. 电源开关
3. ″电池″ 指示灯
   当蓄电池的电量不足时，发出红光．
   对蓄电池充电时，当电量充满时，
   发出绿光．
4. 插座
   用于输出电压和充电输入．

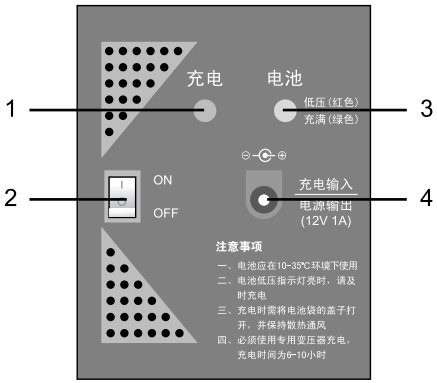


图4

## 更换电池

如果您不使用蓄电池，您也可以使用8节1.5V，AA电池给探测器供电．

如果使用8节AA电池给探测器供电，当仪器的电源指示灯变暗或不亮时，说明电池的电力不足了，应及时更换电池．更换电池前，应首先将探测器的电源开关关闭，然后取下控制盒背面的两个电池仓盖， 用新的8节1.5V，AA电池更换旧电池（每个电池仓安装4个新电池）， 确保新电池的极性正确.重新装好电池仓盖．

## 注意事项

1. 如果使用蓄电池给探测器供电，则每次用完探测器后应关闭蓄电池的电源开关. 无论是使用蓄电池还是AA电池给探测器供电，每次用完探测器后都应关闭探测器的电源开关.
2. 如果仪器工作不正常，可能是仪器电源的电力不足了，应及时给蓄电池充电或更换电池.
3. 探测盘电缆所连的插头不能受潮，插头受潮后仪器就丧失了探测能力，遇到这种情况要把插头烘干才能使用.
4. 雨天和烈日暴晒之下均不能使用本仪器.
5. 不要把探测盘放在高温的环境中.
6. 不要打开控制盒及更改线路.
7. 调整任何旋钮之前都要按下按钮，调好之后再松开按钮.
8. 使用过程中，仪器报警后，移开探测盘，然后按放一次按钮，再进行下一次探测.
9. 不要将充电器接到仪器的电源插孔，否则会造成仪器损坏. 仪器只能由专用的蓄电池供电.
10. 长期不使用仪器时，请取出电池.

## 警告

任何金属探测器都可探测到地下的电缆，金属管道及一些爆炸物体. 为了避免造成人身伤害或财产损失，请遵循以下几点:

1. 不要在可能埋有电缆或管道的地方进行探测.
2. 不要碰触地下任何可能带电的线缆.
3. 不要碰触任何地下管道，尤其是可能带有可燃性气体或液体的管道.
4. 挖撅地下物体时保持必要的谨慎，尤其是在不了解地下状况的地域.
5. 遵守有关法令,法规.
6. 使用充电器时，手或皮肤不要接触任何带电导体.

## 附件

说明书:　1本
蓄电池:　1个
蓄电池携带包:　1个
DC电源线:　1条
充电器:　1个
耳机:　1个

## 声明

1. 本公司保留对说明书内容修改的权利.
2. 本公司不负责任何由于使用时引起的其它损失.
3. 本说明书内容不能作为将产品用做特殊用途的理由.

### 产品的处置

尊敬的用户
当您不再使用本产品，想要丢弃时，请记住它的许多元件包含可回收的有价值的材料.
请不要把本产品随意丢弃，而应向当地有关部门谘询.

- 源自美國技術 -

# 臺灣奧勝科技集團

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