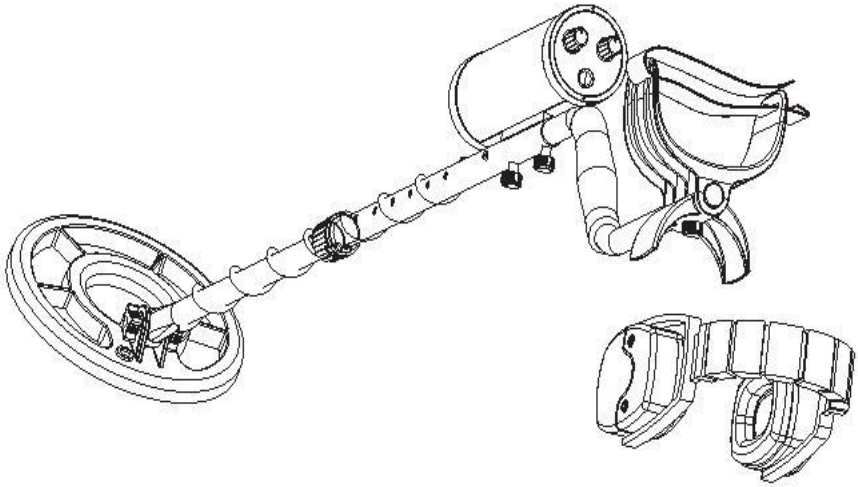# MD027 Metal Detector

Owner's Manual

The detector is a metal detector with both motion and non-motion modes. In the motion mode, it has higher sensitivity, and it has different colors of LED to indicate metal types, helping the operator to find lost coins, gold/silver jewels, and other metal objects. In the non-motion mode, the operator can move the search coil slowly. The detector has good waterproof function, it is suitable for detection underwater, so operators can enjoy the pleasure of exploration under water.

Read this manual carefully before using. Most importantly, review the **Quick-Start**

TABLE OF CONTENTS

Specification

Operation frequency: About 2.4KHZ
Operation mode: Motion-ALL-METAL, DISC,Non-motion
Target display: Red / green / blue LED indicates three kinds of metals
                Low, medium, high sound indicates three kinds of metals
Discrimination adjustment: Yes
Sensitivity adjustment: Yes
Search coil: 210mm or 250mm
Earphone: Piezoelectric
Arm length adjustment: 100cm-120cm
Weight: About 2kg
Work environment: Land, seaside, river, sea
Waterproof: The depth of water is not more than 40 meters
Power supply: 1x9V alkaline batteries (batteries not supplied)
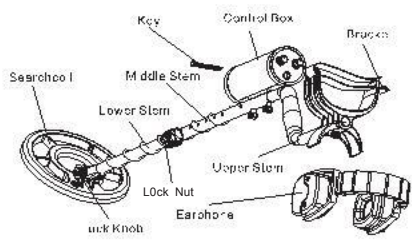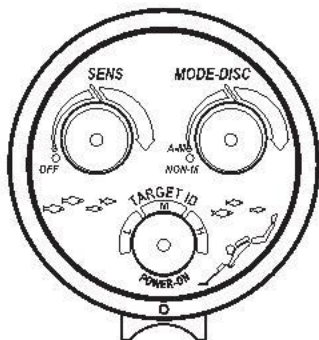
Assembly

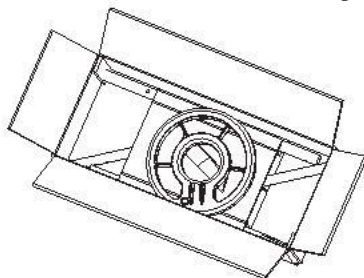1. Take out the aluminium stem and search coil from the packing box(see Fig.1).

Fig.1

2. Unscrew the lock knob on the search coil,and take off the bolt.Attach the lower stem to the search coil, and lock it(see Fig.2). Note: the rubber gasket should be placed properly.
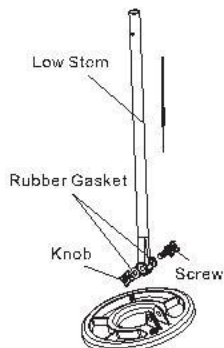

Fig.2

3

3. Take out the upper stem, the middle stem and the control box from the packing box.Press the silver button on the upper stem,and insert it into the middle stem. Let the silver button align with the two holes of the middle stem. (see Fig.3)

Silver Button
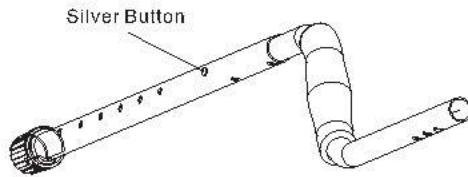
Fig.3

4. Loosen the two triangular fastening screws at the bottom of the control box, install the control box on the stem, and lock it. (see Fig.4)

Silver Button

Fig.4

5. Install the bracket arm on the upper stem.The bracket arm has three positions, loosen the triangle fastening knob under the bracket arm, let the bracket arm separate up from down.Take off the bracket arm, place it in a certain position, and then tighten the triangle fastening knob(see Fig.5).

Fig.5

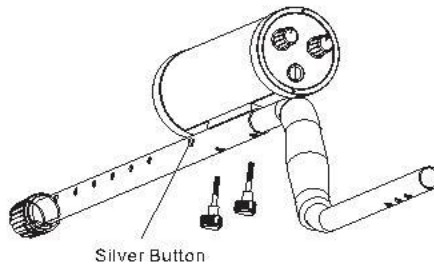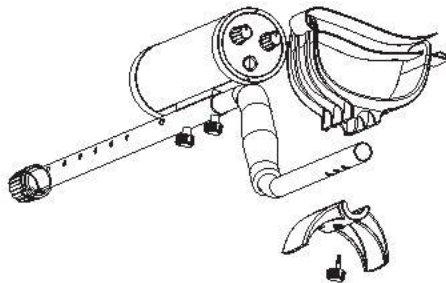6. Relax the Lock Nut on the middle stem. According to need, the operator can adjust the length of the aluminum rod, by aligning the silver button on the lower stem into a group of holes on the middle stem. Wrap the cable around the aluminium stem, tighten moderately, so that the cable does not shake (see Fig.6). Tighten the lock nut.
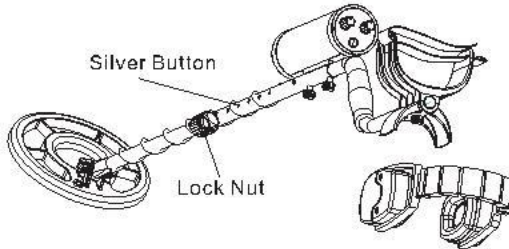
Fig.6

Battery

A 9V 6F22 battery is used to power the detector.
1. Set the "SENS" switch at the position of "OFF".
2. Unscrew the battery cover in the direction of the arrow. Push a 9v 6F22 battery into the battery cap, according to the battery polarity symbols. Note: the battery cap attachment should be placed above, push into the battery box. (see Figure.7)

Fig.7

Install the battery cover. A waterproof rubber washer is installed on the battery cover, the battery cover should be tightened by hand. If it is detected underwater, a key is needed to tighten it.(see Figure.8)

Fig.8

Note: If not used for a long time, please remove the battery. In case the leakage of the battery will destroy the detector. Depending on the battery capacity, a 9V alkaline battery can be used for more than 20 hours.

Panel and controller

Panel(see Figure.9)
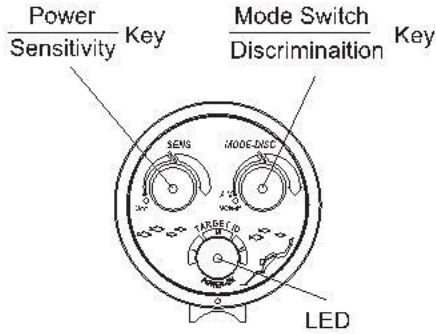
Fig.9

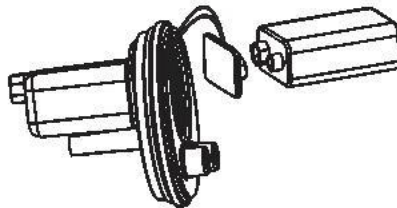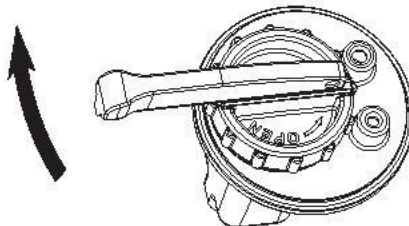**1. POWER-SENS knob**
The power switch also acts as sensitivity adjustment. Turn counter-clockwise to OFF, to turn off the power supply, turn clockwise to turn on the power supply, and turn up the sensitivity.

2.MODE-DISC knob
The MODE switch also acts as DISC adjustment.
Turn counterclockwise to NON-M, the detector is in non-motion mode. Move the search coil slowly when in detecting, but it can't discriminate the metal category. Turn clockwise to enter motion mode, scan with the search coil, it can discriminate the metal category. The default mode is the ALL METAL mode, the detector will respond to all kinds of metals. Rotate the MODE-DISC knob, you can adjust discrimination type, it will reject the metal type according to gold conductivity from low to high.

LED and earphone
The operation state and detection result of the detector is indicated by colors of the LED and earphone. See the table below:

LED and sound indication table

Color LED	Sound	State
Green light flashes at interval	Sound short DU tone at interval	MOTION works normally.
Red light flashes quickly	Long low tone	In the MOTION mode, it finds ferrous metal.
Green light flashes quickly	Long medium tone	In the MOTION mode, it finds medium conductivity metal such as nickel, tin (5¢, pull-tab, etc).
Blue light flashes quickly	Long high tone	In the MOTION mode, it finds high conductivity metal, such as copper, silver.
Blue light flashes at interval	Sound short Du tone at interval	It gets into NON-MOTION mode.
Blue light flashes frequency conversion	Frequency conversion tone	In the NON-MOTION mode, it finds metal.
Red light flashes slowly	Sound short Du tone at interval	Indicate the operation is abnormal, and the voltage is low.

Quick-start

Prepare for three kinds of metal samples
- Iron nail
- Pull-Tab
- 25¢ silver coin

Lay the detector
Put the detector on a wooden or plastic table, and let the search coil stretch out of the table above 30cm, Keep it away from walls, ceilings and floors, turn off all kinds of electrical appliances that cause electromagnetic interference, remove watches and rings from hands. (see Figure 10).
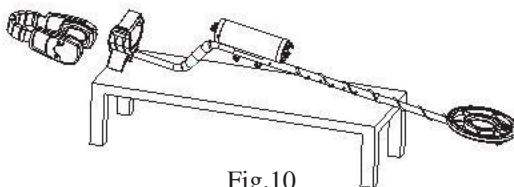

Fig.10

1. Turn On

Rotate the "SENS" knob clockwise to turn on the detector, rotate the "MODE-DISC" clockwise to the position of DISC. The green light flashes twice , the speaker sound "dudu" tone. Then the green light flashing and the "Du" tone sound occasionally, the detector is ready to detect now. Set the "SENS" at the middle position.

2. ALL METAL Mode Test

Set the "MODE-DISC" knob at A-M position. Sweep the three samples above the search coil 8-10cm respectively, the unit will all respond, the LED will flash with red, green and blue light respectively, and the speaker will sound low, middle and high tone (see Figure 11). It is indicated that the detector responds to all kinds of metals.
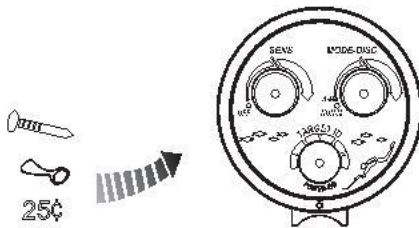

Fig.11

3. Discrimination function test

Set the "SENS" and "DISC" knobs to the middle position. Sweep the three metal samples about 8-10cm above the search coil respectively (the sample should be swept out of the edge of the search coil). When sweeping the pull-tab and the 25$\cancel{C}$ coin, the detector responds, the LED gives out green or blue light, the speaker sounds middle or high tone. When sweeping the iron nail, the detector has no response. The iron nail is rejected.

Set the "SENS" knob to the middle position, and set the "DISC" knob to the maximum position of clockwise direction. Sweep the three metal samples about 8-10cm above the search coil respectively. When sweeping the 25$\cancel{C}$ coin, the detector responds, the LED gives out blue light, the speaker sounds high tone. When sweeping the pull-tab and the iron nail, the detector has no response. The pull-tab and the iron nail are rejected.

4. Sensitivity adjustment function test

Sweep the 25$\cancel{C}$ coin above the search coil at different heights, meanwhile adjust the sensitivity knob from low to high, the maximum height that the detector detected will also get larger.

5. NON-MOTION mode test

Rotate the "MODE-DISC" knob to the maximum position counter clockwise, the detector gives out blue light continuously and sound DU tone, after several times

balance, the detector gives out blue light and sound DU tone at interval, the detector enters the NON-MOTION mode. The operator can move the search coil slowly to detect. Note that in the NON-MOTION mode, the detector does not have the ability to identify metal categories.

Let the 25 ¢ coin approach the search coil slowly, the detector sounds frequency conversion tone, and the blue light flashes faster. Until the metal sample is very close to the central of the search coil, the speaker will sound long tone, and the blue light will be lighted all the time, entering the saturation. Keep the metal sample immovable, switch the MODE-DISC knob once, and the detector balance once, the detector will resume give out blue light and sound DU tone at interval. Now, you can continue to detect.

Through learning, you have learned the operation of the detector preliminary. In the field, because of the influence of the soil, sea sand, ore and the electromagnetic field, especially under the water, the sensitivity and the discrimination position of the detector will all change. Repeated test, accumulate experience, to master the technique of detection gradually, and then realize the happiness of the exploration.

Field Skills

Metal detector is used outdoors. There are too many metals indoors, and all kinds of electrical equipment that will bring interference signals. So it is not fit for using the detector indoors.

Field detection is more complicated, the composition of the regional soil, the component, size, shape and the oxidation degree of the underground metals will all affect the detection results. This chapter is only the general step of the field detection. It's necessary for the operator to practice again and again and accumulate experience, so as to achieve good results.

When using it in mineralized soil, sea, city dump or other place has strong interference, it will give a deviate result in discrimination mode. In this case, it is recommended to bring some samples, such as iron nails, pull-tabs, coins, and silver coins we said above to have a test. Bury these samples in the soil of the detection area, try to detect and record the DISC location is detected, then make a comparison to the place where you actually bury the metals. In this way, it will improve the accuracy of the target's category and its place.

1. Move the search coil
When moving, you should move the search coil in a steady speed, not unsteadily.

Fig.12

Let the search coil be parallel with about 1/2 inch from the surface, not to swing it like a pendulum to move it up and down from the ground(See Fig.12,13).
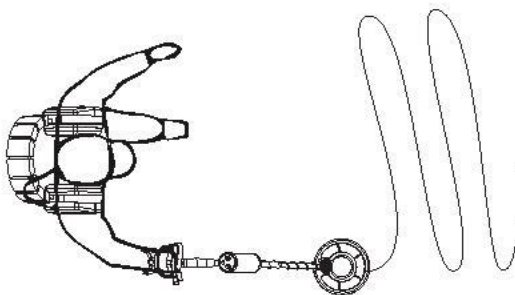

Fig.13

NON-MOTION mode
In water or on the uneven ground, it is difficult to move the search coil quickly.

You can choose the NON-MOTION mode, move the search coil slowly to detect. In the areas where electromagnetic interference is relatively strong, the NON-MOTION mode can also be selected. The detector gives out blue light and sound Du tone occasionally, which means the NON-MOTION mode works normally. If it is found that the detector doesn't give out blue light and sound Du ton internally in the NON-MOTION mode, it means that there is metal, strong mineralizer or conductive soil around the search coil. You can switch the MOTION-DISC button one or two times, to reduce the interference.

Note: If the unit has no interval blue light and "DU" tone in NON-MOTION mode, you can reduce the interference by switching the MOTION-DISC button one or two times.

CAUTION

1. In heavy traffic area, please do not wear earphone, in case an accident.
2. Keep away from the region where may bury the electrical line, cable line or pipeline, in particular, the pipes that are full of flammable gases and liquids. Do not detect in the military area where may bury bombs or gas explosives.
3. When excavating the target, use the reasonable method, don't destroy the vegetation. After the excavation, the ground surface should be restored. A sand bucket can be used to get objects in the water.
4. If there are 2 detectors in your detection area, they shouldn't be very close to each other, which will cause mutual distress. In this case, you should reduce sensitivity or keep 2 detectors away from each other for more than 10 meters.

Maintenance

The metal detector is specially designed as a waterproof detector. The following suggestions will help you maintain the metal detector for long time use.

1. Do not open the front and back cover of the control box. The control box adopts special waterproofing measures. Do not open it with any special tools, as it will affect its waterproof function seriously.
2. Don't open the earphone. The waterproof measures of the earphone are installed in the buzzer, after using in water. It is normal if there is water in the headphone box, and it will not affect its waterproof performance. As long as the earphones are erected, the water will get out.
3. Do not cut the sheath of the cable, otherwise, it will affect the waterproof performance.
4. After using at the seaside, rinse with water and dry it with a dry towel. It is forbidden to use hand sanitizers or detergents to clean detectors.
5. When not in used, stored it in a dry place.

TROUBLESHOOTING GUIDE

SYMPTOM	SOLUTION
No power, no boot sound.	1.Be sure that the batteries are installed correctly. 2.Replace the batteries.
Sound a successive "DU" "DU" tone	1.Make sure that there is no other metal detector operating around.
Sound an irregular tone.	1.Don't use it indoors, because there is many metals there. 2.Make sure whether there is electromagnetic interference sources, such as power lines,cables, electronic fences and so on. Keep away from these areas, or try to reduce the sensitivity. 3.Change a place to scan, in order to determine whether you can get a more stable signal. 4.The target burying deeper, try to increase the sensitivity or speed up the speed of scanning the search coil, in order to get a more stable signal. 5.Maybe more than one metal targets buried there. 6.It maybe find serious oxidation targets or the ground is severe magnetic, try to reduce the sensitivity.
The battery case is taken in water.	1.The battery cover is too loose. 2.Add a little silicone grease on the rubber washer, or replace the attachment rubber washer.