



FUTURE KIT
HIGH QUALITY ELECTRONIC KITS

METAL DETECTING
CODE 919

LEVEL 1

This circuit is a very useful electronic circuit for police, military or other security purposes to look for concealed weapons. It can be used to look for hidden wires before drilling in walls or searching for buried treasure! The circuit will detect ferrous metals such as copper, bronze, aluminium and iron. The sensitivity of the coils is adjustable to obtain the best performance.

Technical specifications:

- power supply: 9VDC.
- consumption: 40mA. max. (working)
- Sensitivity : adjustable by potentiometer.
- Detecting distance : max. 50mm.
- dimensions: 3.01 x 1.71 inches.

How to works:

TR1 and TR2 are connected to produce a frequency of around 150KHz fed to L1 and C1, when L1 oscillates it will induce power to L2 which causes TR2 to switch the collector at the frequency of the collector at TR1. When L1 is close to metal it will interact with it and reduce the inductance at L2, TR2 therefore is off, and there will be more power at the collector of TR2. Allowing TR3 and TR4 to power the buzzer and LED. LED1 will light and TR5, TR6 and TR7 will be active. TR5 and TR6 generate the frequency which is fed to TR7 to drive the buzzer. VR1 will adjust the circuits sensitivity to metal.

PCB assembly:

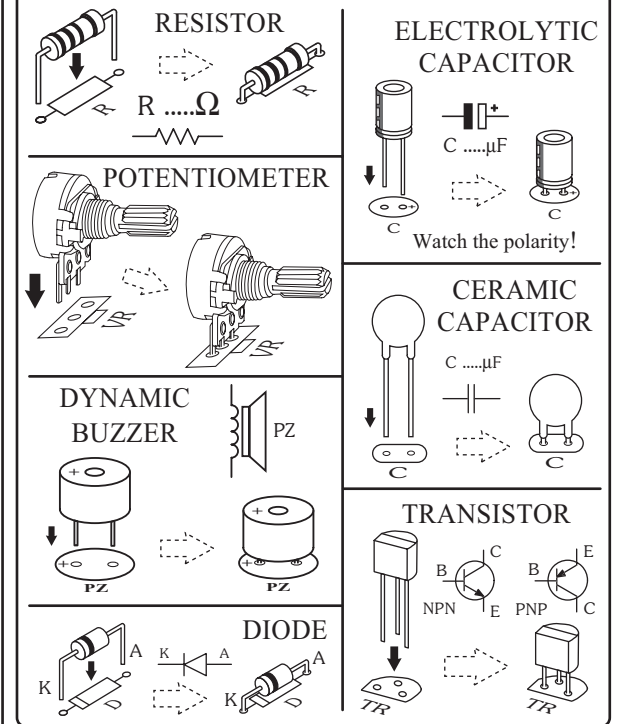
Shown in Figure 3 is the assembled PCB. Starting with the lowest height components first, taking care not to short any tracks or touch the edge connector with solder. Some tracks run under components, and care should be taken not to short out these tracks. If the pins will not enter the holes with ease, use a small drill to slightly enlarge the opening. All components with axial leads should be carefully bent to fit the position on the PCB and then soldered into place. Make sure that the electrolytic capacitors are inserted the correct way around. Some components are particularly sensitive to heat (ie: Transistors, IC's, diodes etc.) extra care must be taken to only apply the iron for as little time as possible, using a pair of pliers to grip the leads will help

conduct heat away. Trim components leads with wire cutters to prevent excess lengths causing a short circuit. Now check that you really did mount them all the right way round!

Testing:

Apply 9 volts to the circuit and turn the adjustment knob clockwise to it's limit. The buzzer should be sounding and LED1 should be lit. Now slowly adjust the knob anti clockwise until LED1 goes out and the buzzer stops. This is the optimal setting, and introducing metal near the coil will cause the buzzer and LED to activate.

Figure 1. Installing the components



Troubleshooting:

The most problem like the fault soldering. Check all the soldering joint suspicious. If you discover the short track or the short soldering joint, re-solder at that point and check other the soldering joint. Check the position of all component on the PCB. See that there are no components missing or inserted in the wrong places. Make sure that all the polarised components have been soldered the right way round.

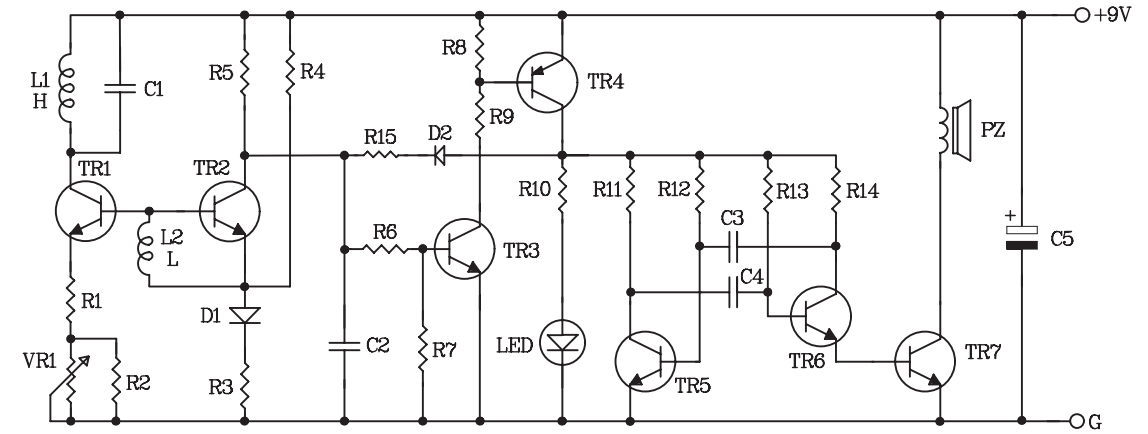
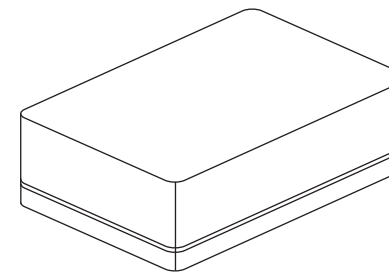
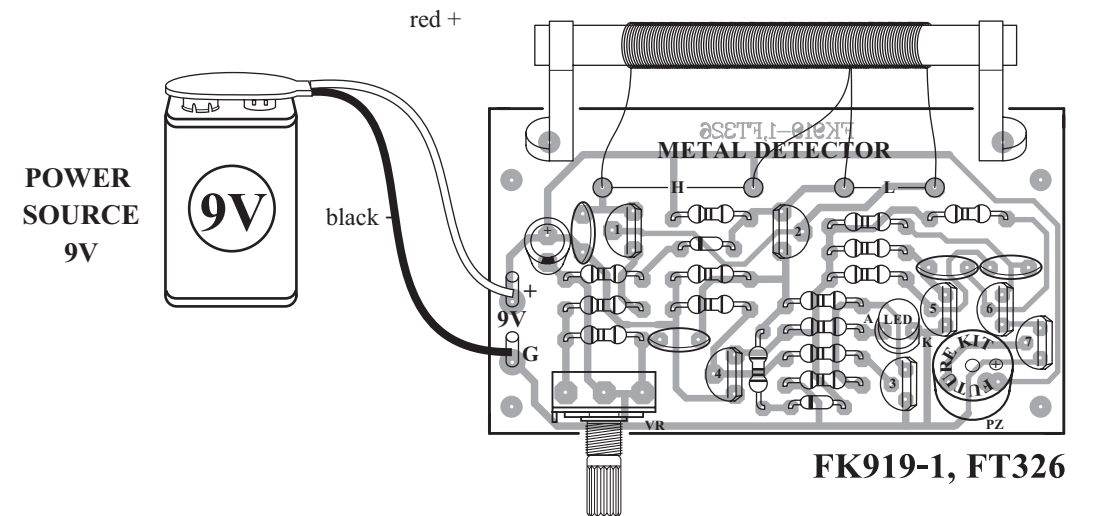


Figure 2. The metal detecting circuit

Figure 3. Connections



NOTE:

FUTURE BOX FB04 is suitable for this kit.

NEW KIT SET NEW

CODE FK	DESCRIPTION	POWER
167	FIREFLY LIGHT (NIGHT ACTIVATE)	3VDC
326	DUAL STATION INTERCOM&DOOR BELL (WITH 2 SPEAKER)	6-12VDC
436	UHF REMOTE CONTROL 1 CH.	TX. 9VDC RX. 12VDC
673	MINI POWER AMP 1+1W. STEREO	3-12VDC