

Total solder points: 47

Skill level :

Beginner 1 2 3 4 5 Advanced

HIGH-Q
velleman-kit



METAL DETECTOR

K7102

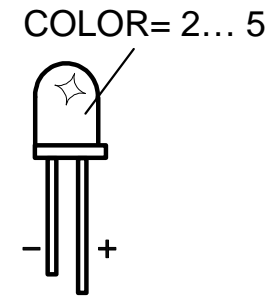
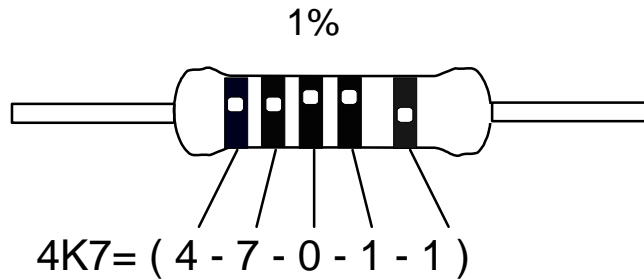
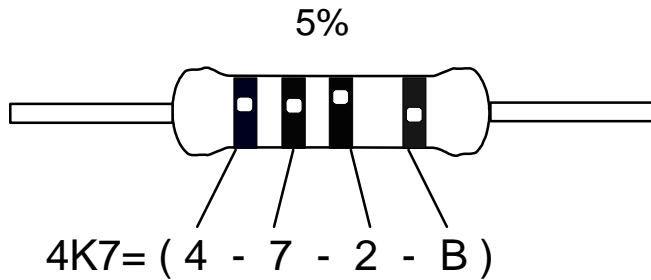
Applications :

- Avoid disasters when drilling holes in walls
- Locate pipes, cables, metal studs, ...
- Great project for novices
- Your own unique application

Specifications :

- Detection range adjustable up to 8cm/ 3.1"
- Push button operation
- Power supply : 9V battery
- Power consumption : 30mA max.
- LED indicator (Buzzer SV4/12AS optional)
- Dimensions : 55x64mm / 2.2"x2.5"
- Optional enclosure : G407

modifications reserved



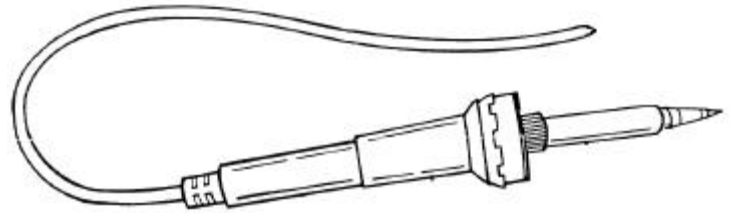
C O D E	I	P	E	SF	S	DK	N	D	GB	F	NL	C O D E
	<i>CODICE COLORE</i>	<i>CODIGO DE CORES</i>	<i>CODIGO DE COL- ORES</i>	<i>VÄRI KOODI</i>	<i>FÄRG SCHEMA</i>	<i>FARVE KODE</i>	<i>FARGE KODE</i>	<i>FARB KODE</i>	<i>COLOUR CODE</i>	<i>CODIFI- CATION DES COU- LEURS</i>	<i>KLEUR KODE</i>	
0	Nero	Preto	Negro	Musta	Svart	Sort	Sort	Schwarz	Black	Noir	Zwart	0
1	Marrone	Castanho	Marrón	Ruskea	Brun	Brun	Brun	Braun	Brown	Brun	Bruin	1
2	Rosso	Encarnado	Rojo	Punainen	Röd	Rød	Rød	Rot	Red	Rouge	Rood	2
3	Aranciato	Laranja	Naranjado	Oranssi	Orange	Orange	Orange	Orange	Orange	Orange	Oranje	3
4	Giallo	Amarelo	Amarillo	Keltainen	Gul	Gul	Gul	Gelb	Yellow	Jaune	Geel	4
5	Verde	Verde	Verde	Vihreä	Grön	Grøn	Grønn	Grün	Green	Vert	Groen	5
6	Blu	Azul	Azul	Sininen	Blå	Blå	Blå	Blau	Blue	Blue	Blauw	6
7	Viola	Violeta	Morado	Purppura	Lila	Violet	Violet	Violet	Purple	Violet	Paars	7
8	Grigio	Cinzeno	Gris	Harmaa	Grå	Grå	Grå	Grau	Grey	Gris	Grijs	8
9	Bianco	Branco	Blanco	Valkoinen	Vit	Hvid	Hvidt	Weiss	White	Blanc	Wit	9
A	Argento	Prateado	Plata	Hopea	Silver	Sølv	Sølv	Silber	Silver	Argent	Zilver	A
B	Oro	Dourado	Oro	Kulta	Guld	Guld	Guldl	Gold	Gold	Or	Goud	B

1. Assembly (Skipping this can lead to troubles !)

Ok, so we have your attention. These hints will help you to make this project successful.

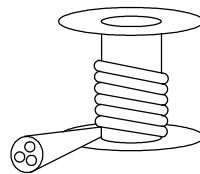
Read them carefully.

1.1 Make sure you have the right tools:

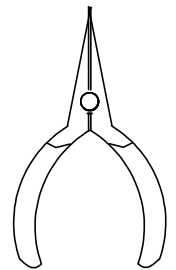
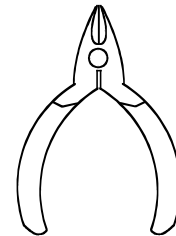




- A good quality soldering iron (25-40W) with a small tip.
- Wipe it often on a wet sponge or cloth, to keep it clean; then apply solder to the tip, to give it a wet look. This is called 'thinning' and will protect the tip, and enables you to make good connections. When solder rolls off the tip, it needs cleaning.

- Thin raisin-core solder. Do not use any flux or grease.



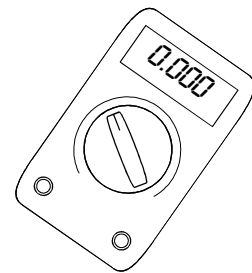
- A diagonal cutter to trim excess wires. To avoid injury when cutting excess leads, hold the lead so they cannot fly towards the eyes.



- Needle nose pliers, for bending leads, or to hold components in place.
- Small blade and phillips screwdrivers. A   basic range is fine.



For some projects, a basic multi-meter is required, or might be handy

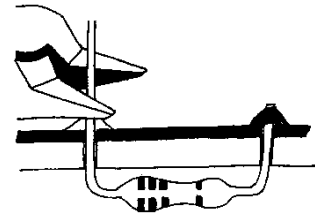
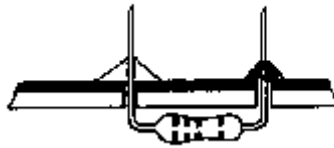
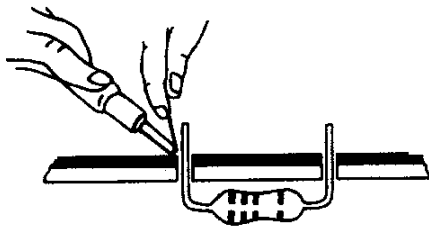


1.2 Assembly Hints :

- ⇒ Make sure the skill level matches your experience, to avoid disappointments.
- ⇒ Follow the instructions carefully. Read and understand the entire step before you perform each operation.
- ⇒ Perform the assembly in the correct order as stated in this manual
- ⇒ Position all parts on the PCB (Printed Circuit Board) as shown on the drawings.
- ⇒ Values on the circuit diagram are subject to changes.
- ⇒ Values in this assembly guide are correct*
- ⇒ Use the check-boxes to mark your progress.
- ⇒ Please read the included information on safety and customer service

* Typographical inaccuracies excluded. Always look for possible last minute manual updates, indicated as 'NOTE' on a separate leaflet.

1.3 Soldering Hints :



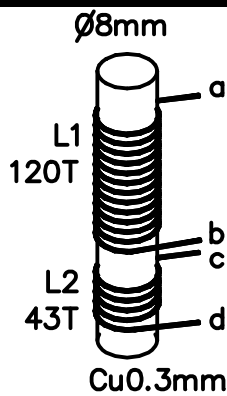
Mount the component against the PCB surface and carefully solder the leads

Make sure the solder joints are cone-shaped and shiny

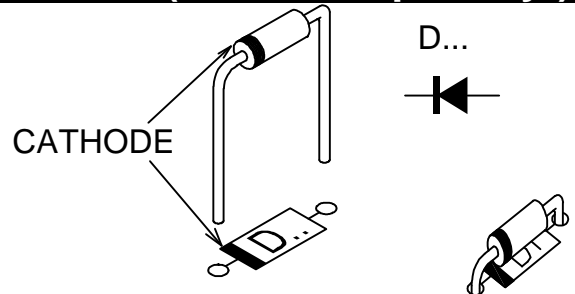
Trim excess leads as close as possible to the solder joint

Assembly:

1. WIND THE COILS ON THE ROD

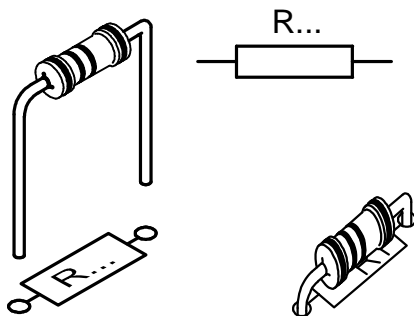


3. DIODE (Watch the polarity!)



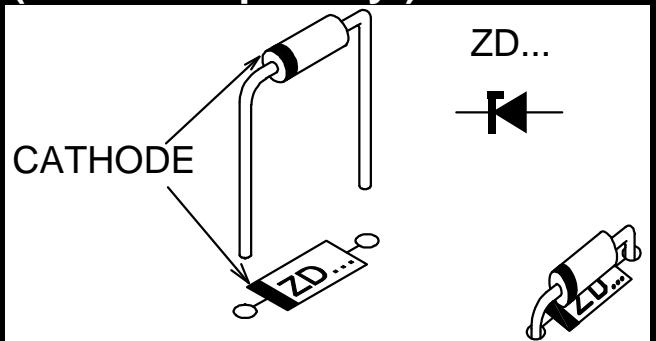
D1 : 1N4148

2. RESISTORS



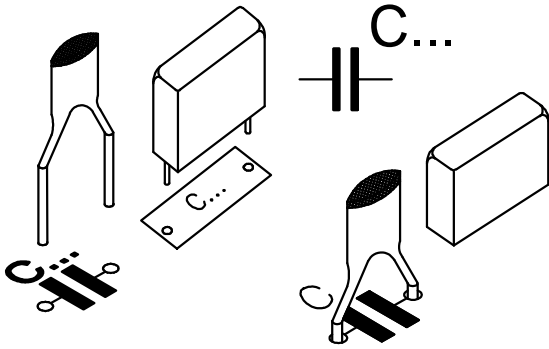
- R1 : 330 (3 - 3 - 1 - B)
- R2 : 470 (4 - 7 - 1 - B)
- R3 : 470 (4 - 7 - 1 - B)
- R4 : 2K7 (2 - 7 - 2 - B)
- R5 : 10K (1 - 0 - 3 - B)

4. ZENER DIODE (Watch the polarity!)



ZD1: 3V9

5. CAPACITORS

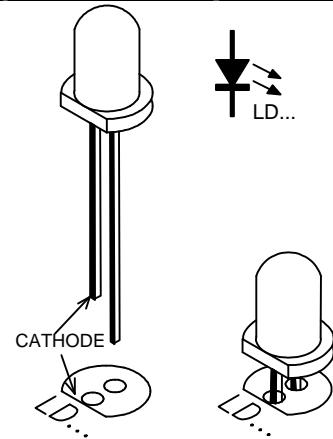


□ C1 : 1n2 (122) or 3n3 (332)*

□ C2 : 47nF (473)

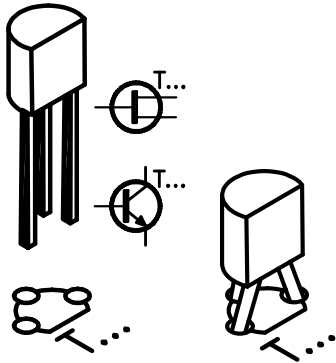
*Experiment for best result

7. LED (Watch the polarity !)



□ LD1 : 5mm LED

6. TRANSISTORS

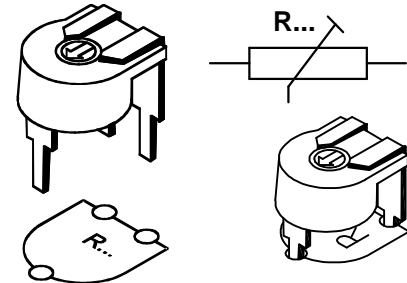


□ T1 : BC547

□ T2 : BC547

□ T3 : BC547

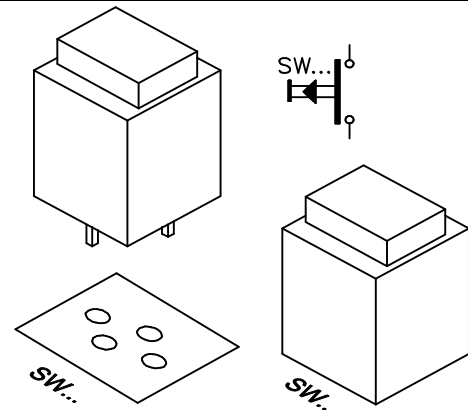
8. TRIM POTENTIOMETERS



□ RV1 : 2K2 (2K5)

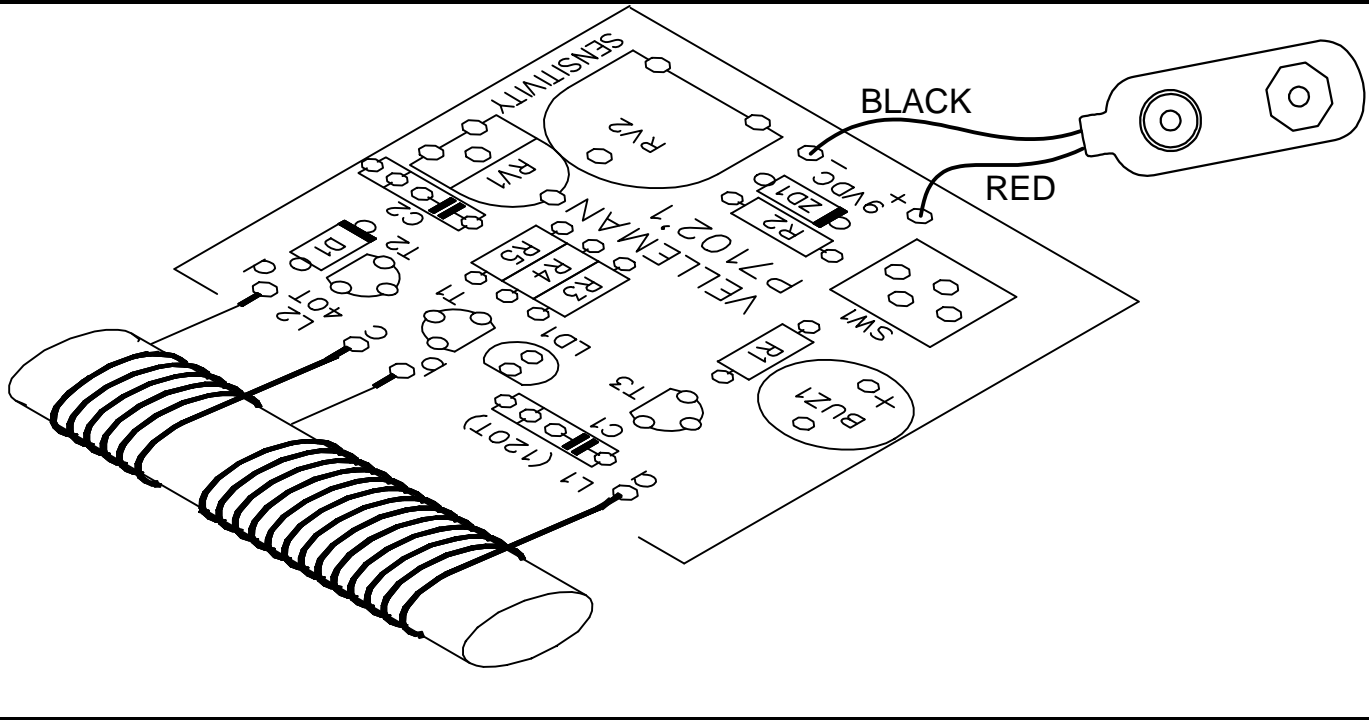
□ RV2 : 100

9. PUSHBUTTON



□ SW1 : 1P

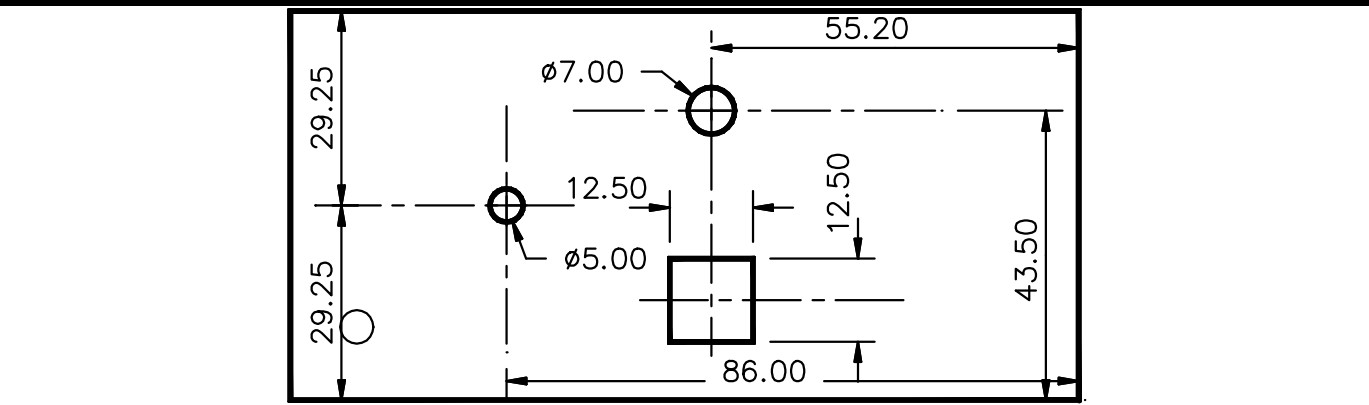
10. MOUNTING OF THE COIL AND THE BATTERY SNAP



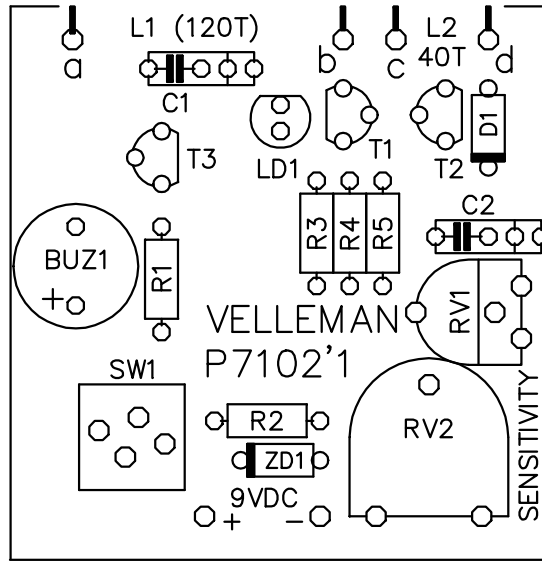
11. ADJUSTMENT AND USE

- Connect a 9V battery
- Move away from any metal object
- Turn pre-set RV1 fully clockwise
- Turn RV2 fully anti-clockwise
- Press and hold SW1
- Turn RV1 anti-clockwise until the LED is about to light
- All further sensitivity adjustments should now be done by turning RV2
- To set maximum sensitivity, turn RV2 until the LED is weakly lit.
- The brightness of the LED indicates the distance and the size of the metal object.
- An optional buzzer (SV4/12AS) can be mounted to give an audible indication.

12. DRILLPATTERN FOR OPTIONAL G407 ENCLOSURE



13. PCB LAYOUT



14. DIAGRAM

