

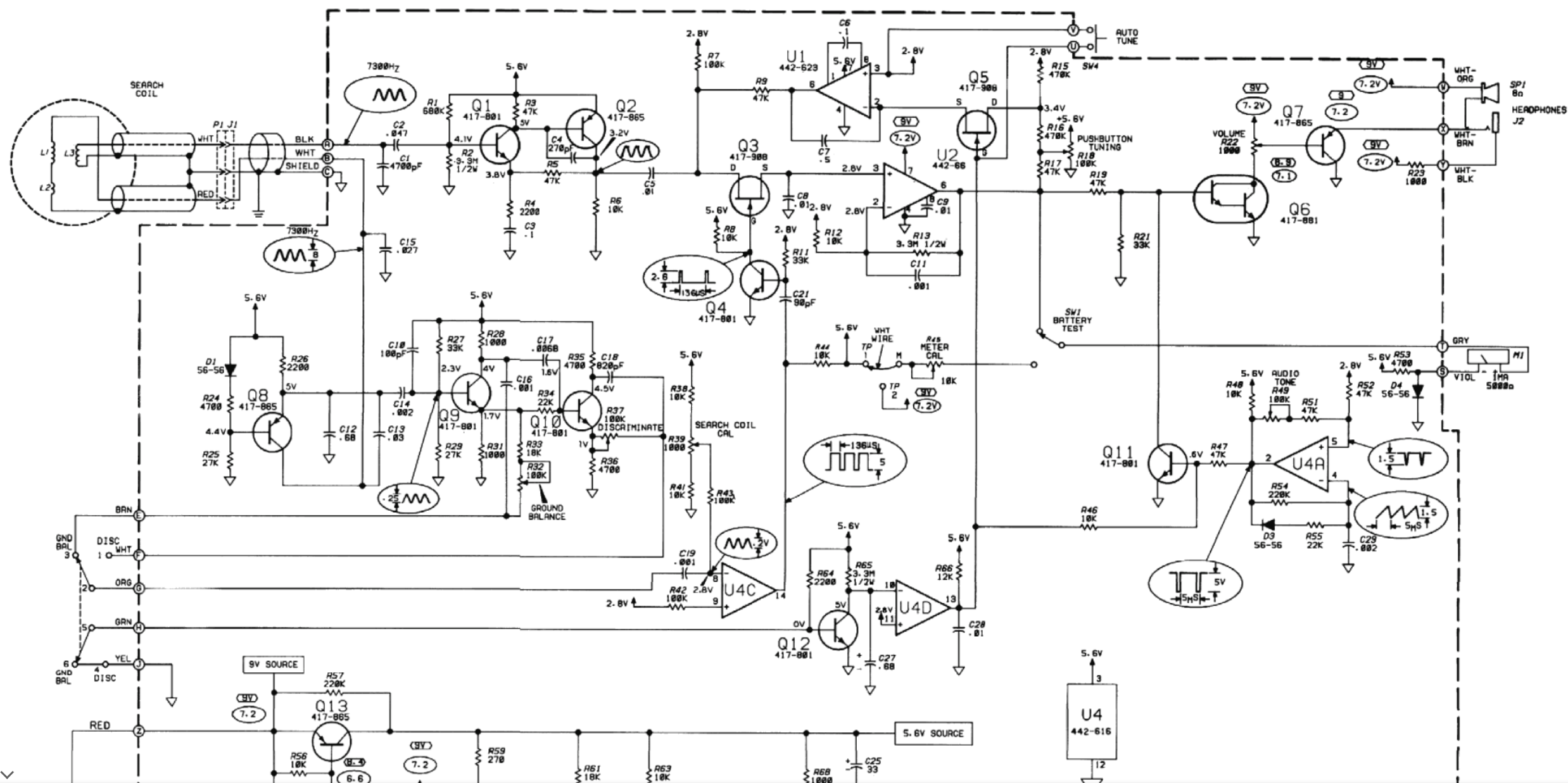
Linear Position Sensors

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Heathkit Groundtrack GR-1290 VLF metal detector

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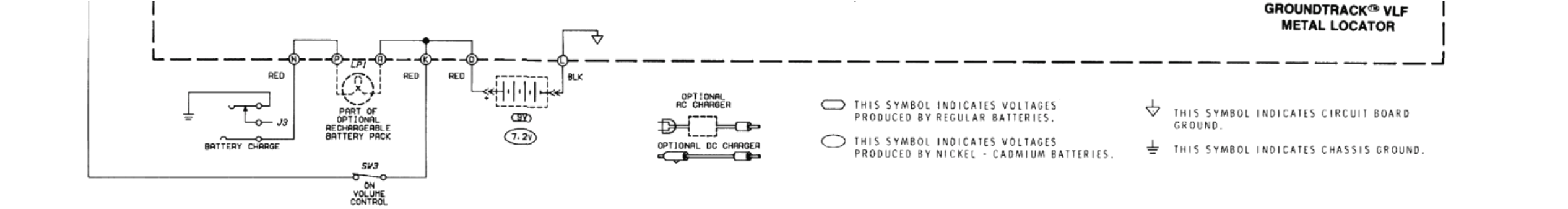


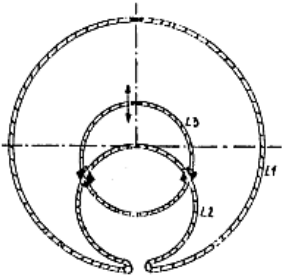
Fig. 1: Heathkit GR-1290 VLF metal detector schematic diagram

Notes

All resistors are 1/4 watt, 5% tolerance and all capacitors are in microfarads (uF) unless marked otherwise.

Voltages were taken with a 9 Volt supply and a setting with no sound coming from the speaker. The controls were set as follows:

- Volume -- fully counterclockwise
- Pushbutton tune -- center of rotation
- Discriminate -- center of rotation
- Audio Tune -- center of rotation



The original coil that came with the Heathkit project was preassembled at the factory. It had a diameter of around 15cm (6 inch). A larger (30cm, 12inch) coil can be made using the following data:

- L1 = 300mm diameter, 90 turns, .4mm wire
- L2 = 140mm diameter, 90 turns, .4mm wire
- L3 = 130mm diameter, 550 turns, .1mm wire

See also:

- [Heathkit Cointrack Gd-1190 Metal Locator](#)
- [Heathkit GD-48 metal detector schematic](#)
- [Tesoro Bandido II metal detector schematic](#)
- [White's Classic I metal detector schematic](#)
- [White's Surfmaster PI metal detector schematic diagram](#)
- [Simple BFO metal detector schematic diagram](#)

Parts list

ICs:

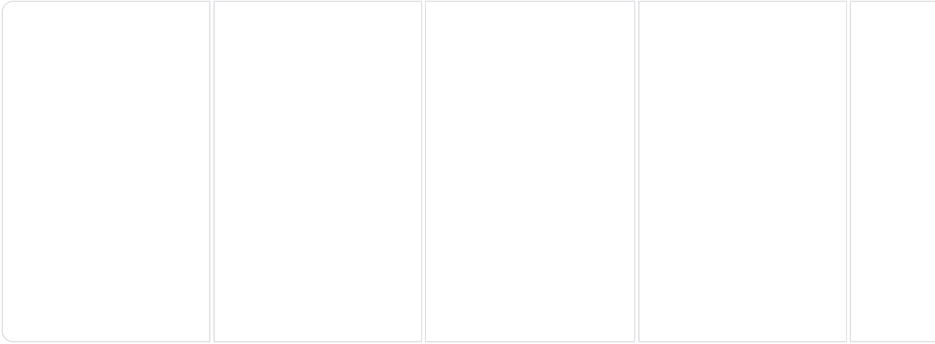
- U1: CA3130S (BiMOS Operational Amplifier)
- U2, U3: LM308 (Precision operational amplifiers)
- U4: LM2901 (Quad Single Supply Comparator IC)

Transistors:

- Q1, Q4, Q9, Q10, Q11, Q12: MPSA20 (NPN 40V 100mA)
- Q2, Q7, Q8, Q13: MPSA55 (PNP 60V 500mA)
- Q3, Q5: 2N4117 (N-channel JFET transistors)
- Q6: MPSA13 (NPN Darlington transistor)

Diodes:

- D1, D3, D4: 1N4149 or 1N4148 (switching diodes)
- D2: 1N5230B (4.7V, 0.5W Zener Diode)



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