

Operation theory of GC-1001/MD-3001 handheld metal detector

The oscillating frequency of sine wave oscillating circuit consisting of L1, L2, C1, Q1 and Q2 is 52KHZ, range is 4Vp-p. Each of collector (Q1, Q2) creates one sine wave, the two waves are of 180° phase difference and will add together in the emitter and create a 104KHZ half sine wave which will be integral by C7 (capacitance) to create some definite DC. When the upper part of the search coil passes metal objects, this will cause the range of the half sine wave and DC change. The detected change will be amplified by U4A and U4B and to drive the changeable pulse width and frequency of audio oscillating circuit (U6) and finally drive the audio amplifying circuit (Q3, Q7) to make the speaker sound and red LED (ALERT) (D12, D15) light and pointer show that find a metal object. To guarantee the unit will operate normally and steadily, recover compensation circuit (U5A, U5B) and DC examining circuit (U3D, U2A) and auto-scanning and switch controller circuit (U1, U2) are set in. The flashing indicator of green Ready LED light (indicates that the unit is working normally) consists of flashing circuit (U2C) and flashing controller circuit (Q5, Q4). Low battery alert circuit (U3C). Lowering sensitivity circuit consists of S1-2 and R31. DC supplier circuit (U3A) supplies power needs of 5Vdc, 2.5Vdc and 9Vdc to interior circuit.