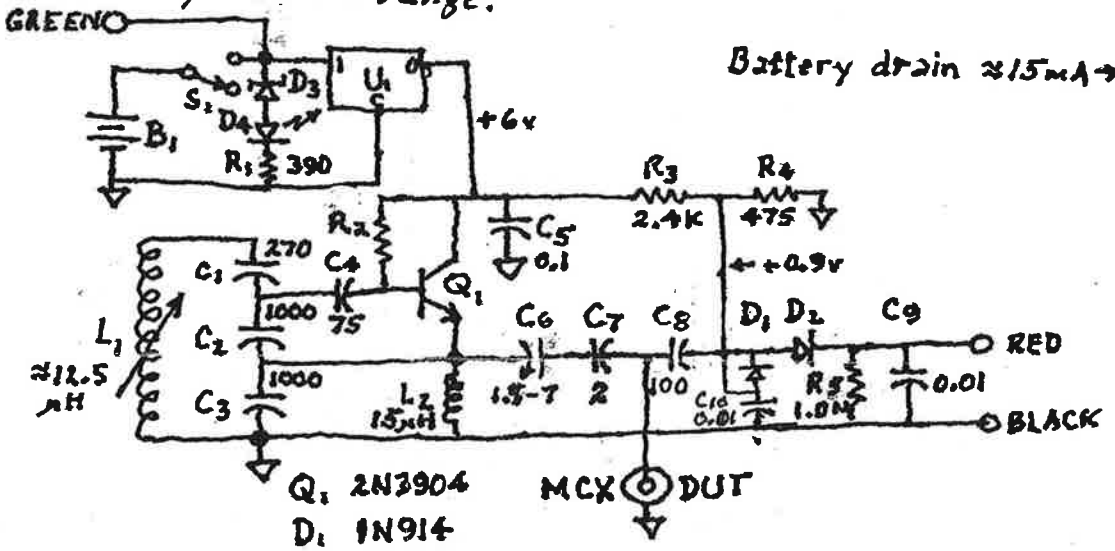
11-22-02

POSITION-SENSOR TESTER

The sensor is a tape-wound inductor with an inductance of about 15μH and has a 270pF coaxial cable attached. The Q of this resonator is approximately 31. at a frequency of about 3.35MHz. (In use, a lower frequency is used in a bridge circuit).

An oscillator, tunable in the vicinity of 3.35MHz, having a fixed amplitude (regulated 6v power supply) is loosely coupled to the device under test (which plugs into a MCX coaxial connector) having a rectifier and voltmeter attached. A digital voltmeter is to be connected to the red and black terminals (marked V_o). The oscillator frequency is then adjusted for a maximum reading. The Q of the renonating sensor under test is about 10 times the DC voltage at V_o.

The tester is designed around a single sensor known to be good, but the frequency and Q of all seasors should fall in a very narrow range.



Q1 2N3904
D1 1N914
D2 1N914
D3 1N4734A
D4 Green LED
U1 7806

Note: D4 is battery indicator which dims as battery ages, extinguishing at 7.5v which is where the regulator reaches dropout error.

R_2 selected for transistor Q_1 100K in unit 1, 200K in unit 2.