

* Murray loop bridge

The Murray Loop bridge is a bridge circuit used for locating faults in underground cable. It has been used for more than 100 years but is being replaced by the more precise Time domain reflectometer.

One end of the faulted cable is connected through a pair of resistors of the voltage source. Also a null-detector is connected. The other end of the cable is shorted. The bridge is brought to balance by changing the values of R_{B1} and R_{B2} which is achieved when.

$$\frac{R_x}{R_0 + R_y} = \frac{R_{B1}}{R_{B2}}$$

which is equivalent to:

$$R_x = (R_0 + R_y) \cdot \frac{R_{B1}}{R_{B2}}$$

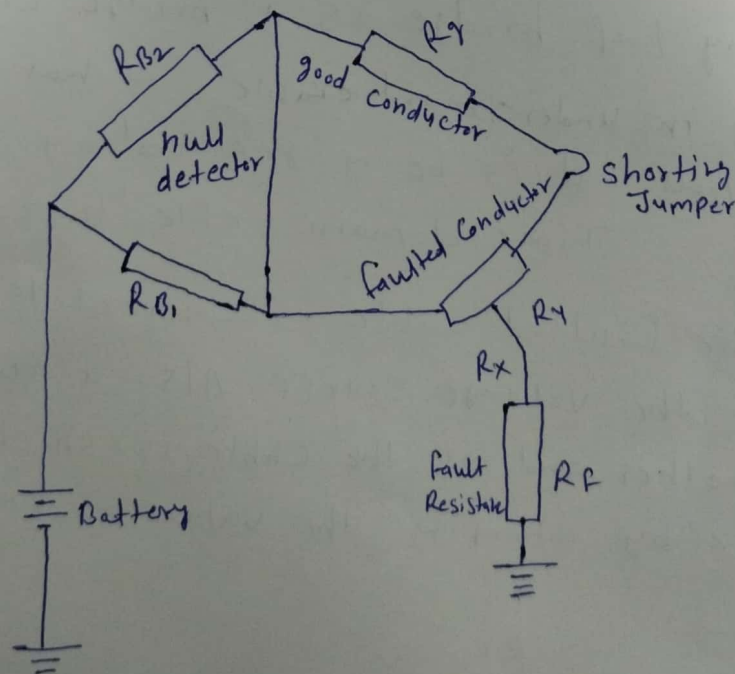
The value of resistance R_x is proportional to the length L_x thus the location of the fault can be calculated

$$L_x = 2L \frac{R_{B1}}{R_{B1} + R_{B2}}$$

Varley loop \Rightarrow

~~This~~ The similar Varley loop use fixed resistors for R_{B1} and R_{B2} and Inserts a Variable resistor in the faulted leg. Test sets for Cable testing can be connected for either bridge technique if the fault resistance is high, the sensitivity of the Murray bridge is reduced and the Varley loop may be more suitable.

\Rightarrow Murray Loop bridge



(Murray Loop Bridge)