

1. Summary

DIY Inductance Bridge 14uH to 113mH measurement span.

Inductance bridge with:

- Transformer coupling input for oscillator excitation.
- Transformer coupled connection for detector.
- Reference inductance coil with 12 steps from 142uH to 10.7mH and 656uH variable adjustment, with DCR from 2.7Ω to 8.6Ω .
- Reference Inductor added series resistance variable from zero to 120Ω .
- Q balance 2Ω slidewire, and added series 15Ω setting for DUT.
- Resistor multiplier with x0.1, x1, and x10 settings.
- Wagner earth pot

RSa and other switch connections cleaned with contact spray. Part values measured. Front Perspex/paper cover removed to identify original equipment chassis.

DIY construction by William James Waite in 1978, using chassis and some parts from RAAF's AT5 M/F aircraft communication installation's Aerial Coupling Unit. [Photos of installation.](#)

The circuit schematic of the Aerial Coupling Unit, and some internal/external photos are shown in the [AT5 instruction manual](#). The coil is designated L4.

Measured reference inductor values with variable at min/max line

1: 142uH + 2.7R	2: 627uH + 4.0R	3: 1.5mH + 4.7R	4: 2.51mH + 5.3R
5: 3.59mH + 5.9R	6: 4.62mH + 6.3R	7: 5.72mH + 6.8R	8: 6.86mH + 7.3R
9: 8.08mH + 7.7R	10: 9.29mH + 8.2R	11: 10.58mH + 8.6R	12: 10.67mH + 8.6R

Inductor step values:

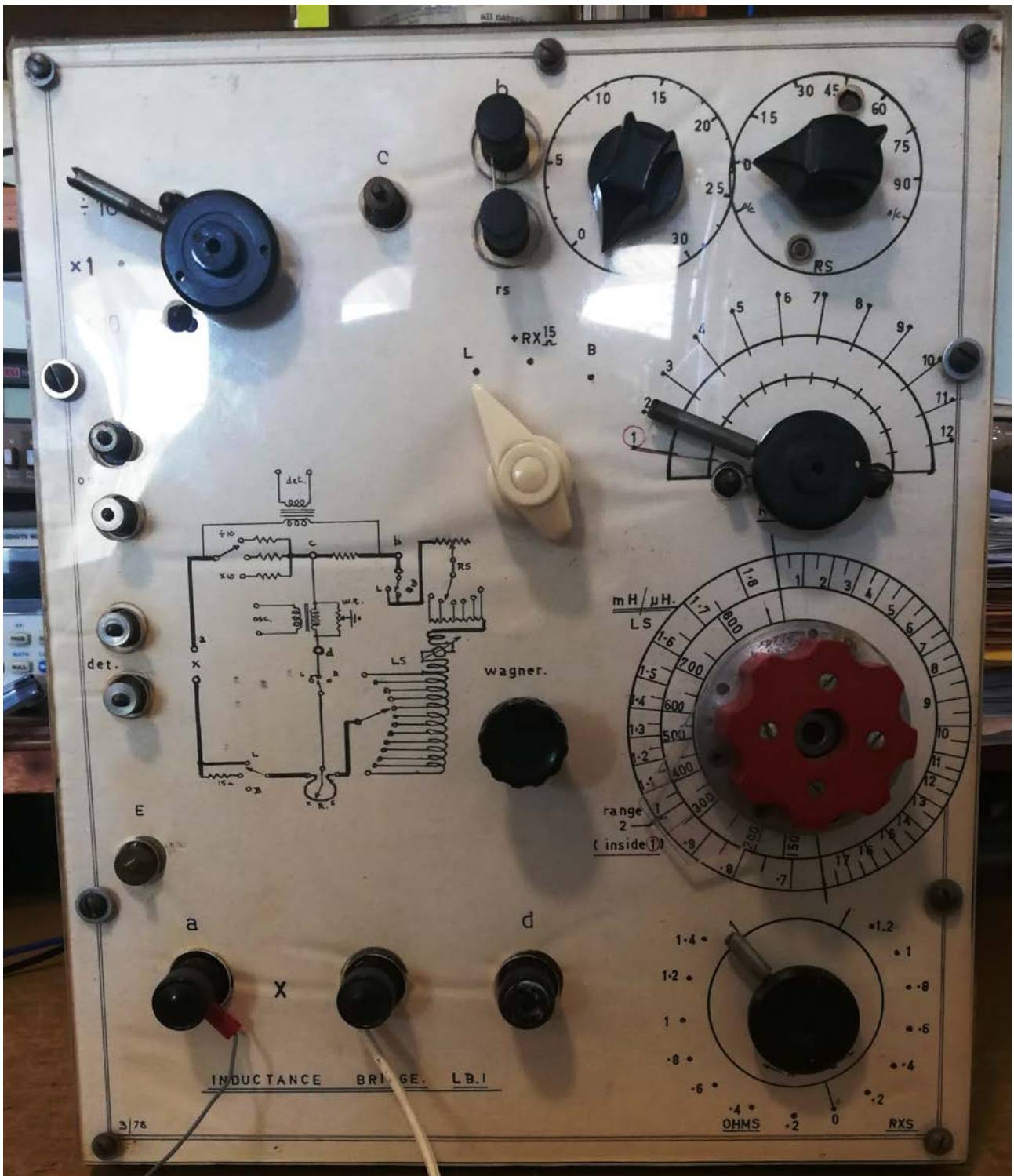
1-2 = 485uH	2-3 = 873uH	3-4 = 1.01mH	4-5 = 1.08mH	5-6 = 1.03mH
6-7 = 1.1mH	7-8 = 1.14mH	8-9 = 1.22mH	9-10 = 1.21mH	10-11 = 1.29mH
11-12 = 90uH	All sum to 10.67mH			

Variable element varies inductance by $798-142 = 656\mu\text{H}$ max.

Slight change to coil inductance when enclosure aluminium outer cover fitted.

Oscillator excitation transformer primary winding impedance plot indicates inductive to abt 7kHz with 45kHz res. Turns ratio is $3.075/0.221 = 13.9$ (sec to pri, so step up). Marking appears to be 10K 574., with 03.

Detector transformer primary winding impedance plot indicates 32-40H with 1.4-1.7nF shunt cap, and 23kHz res followed by 48kHz. Turns ratio is $990/255 = 3.88$ (sec to pri, so step up).





Inductance Bridge

William James Waite - DIY

