# LINES TEST SET N0.2

**(Telstra Serial/Item 138/66)**


## Operating Instructions

**THE SELECTOR SWITCH**:

NOTE: return selector switch (left hand side) to volts position when meter is not in use to preserve the battery.

CAUTION: do not measure voltage when the selector switch is set on k-ohms range, as with most analogue ohm meters, this action would cause damage to the k-ohms function only.

**The selector switch (right hand side) is wired to switch as follows:**

1. When selected to "AB" the red lead connects to positive of the meter, the black lead connects to negative of the meter, and the green lead is not used.
2. When selected to "AE" the red lead remains connected to positive of the meter, the black lead is not used, and the green lead connects to negative of the meter
3. When selected to "BE" the red lead is not used, the black lead connects to negative of the meter, and the green lead connects to positive of the meter.

**BATTERY TEST:**

To test the battery in the test set,

1. Switch to Megohms. and “A-B”
2. Short the Red & Black leads.
3. Check that the reading is in the "Batten/ OK" range.
4. If reading is below this range replace battery with 9V (6F22) battery.
5. Replace battery by unscrewing terminals at back of unit.

Before testing a line always check with a buttinski, to ensure the line Is not in use.

**EXCHANGE BATTERY, EARTH & CONTINUITY:**

1. Switch to “Volts”, and select “AB”.
2. Connect red lead to earth (earth tag of pillar, sheath of lead covered cable or probe in moist ground).
3. Tap Black Probe onto both legs Exchange battery is indicated by 50V, approx, on "B" leg, “0”V on “A” leg. A reading below 45V indicates earth fault or foreign battery.
4. Connect red lead to "A" leg, black lead to "B" leg. A 50V reading indicates continuity.
5. If an earth is suspected on the "A" leg, have the “A" leg opened at the exchange &.repeat 4. A 50V reading indicates earth fault on "A" leg.

**FOREIGN BATTERY (COUNTRY SIDE):**

NOTE: If AC voltage is detected on the line (indicated by AC light and buzzer) then all results outlined on this sheet will be severely affected.

A working exchange should have 48V-52V between the A and B legs when no call is in progress. To test for foreign battery (Country Side)

1. Remove the exchange battery and earth by opening both legs of the pair at the test point.
2. Connect each Country Side leg to earth to discharge the telephone capacitor.
3. Switch to "Volts", select "AB".
4. Connect the red lead to earth.
5. Connect the black lead to "A" leg, then to "B" leg (Country Side). The voltage reading will indicate the amount of foreign battery on either leg.

**INSULATION RESISTANCE:**

1. Test first for foreign battery, proceed only if no foreign battery found.
2. Switch to "Megohms", select “AB".
3. Connect red and black leads across pair, green lead to earth. The reading will indicate the insulation resistance between legs. A good pair should read greater than 1 Megohm
4. Test each leg separately to earth by selecting "AE" first, then "BE". These readings Indicate insulation resistance of each leg to earth. A good pair should read greater than 1 Megohm
5. Reverse test leads and retest steps 1-4.

**CAPACITANCE (KICK) TEST**:

NOTE: in some cases, particularly with paper insulated cable, a fault condition can disappear due to "electrolytic polarisation". In all cases except for foreign battery faults, the fault can be made to reappear by pressing the line reversal switch (reversing the current through the fault).

1. Test first for foreign battery, proceed only if no foreign battery found.
2. Switch to 'Megohms", and select "AB".
3. Connect red and black leads across pair. On long lines the distance to open circuit can be estimated by noting the momentary deflection of the needle across the scale caused by the capacitance of the pair.
4. To regain the momentary deflection, repeatedly press the line reversal switch.

**SHORT CIRCUIT TEST (LINE LENGTH):**

1. Test first for foreign battery. Proceed only if no foreign battery found.
2. At the far end from the test site connect both ends of the pair together.
3. Switch to 'K-Ohms", and select "AB".
4. Connect red and black leads to the cable pair.

This reading shows the line length to the far end and back again in ohms. To obtain the approximate distance from the test point, to the far end in meters, multiply the reading by the appropriate number below.

| **CABLE GAUGE** | **Km/K OHM** |
|---|---|
| 0.32 | 2.1 |
| 0.40 | 3.6 |
| 0.64 | 9.0 |
| 0.90 | 18.0 |

eg: If the reading on the Lines Test Set was 1,500 ohms (1.5Kohm) on a 0.64 cable,
distance to far end short = 1.5 x 9
= 13.5 Km approx.

If you obtain a value far less than the length of the line then a short circuit fault is indicated.

NOTE: Further details of Telstra's test procedures can be found in Telstra Publications TP0168 (e). or Contractor Appendicis Notes

**LINES TEST SET No 2 (SERIAL 138/66)**
**ELECTRICAL SPEC1FICATIONS**.

**Power Supply:**
9 volts, type 8f22, 6lr61 or equivalent
Voltage Supply Range: 7.5v -- 10.5v
**Current Draw:**
On Megohms Range:- +10%

| Supply Voltage | 7.5v | 9v | 10.5v |
|---|---|---|---|
| Current Draw | 2.66ma | 3.50ma | 4.30ma |

**On Kilohms Range**:-
Supply Voltage 7.5v -- 10.5v
Current Draw 4.32ma + 1.5ma

**AC Indicator**:- 15ma ± 20% From Battery at AC
Input = 30 VRMS – 300 VRMS, 50Hz

**Meter:**
Movement 100~A (As 1042)
Dc Volts = 0 -- 80v, 10,000 Ω Per Volt ~ 1% (Scale to read Left to Right)
Kilohms = 0 -- 5k Ω + 2% (Scale to read Right to Left)
Megohms = 0 -- 5M Ω ± 2% (Scale to read Right to Left)

Colour Zone Use With Megohms Scale
Green = Good
Yellow = Fair
Red = Bad

**Terminal Voltage & Current:**

Megohms:- 30vdc ± 5% Pointer Resting At ∞ Ω
100µA ± 2% Pointer Resting At 0 Ω

Kilohms:- 486mV ± 10% Pointer Resting At ∞ Ω
500µA ± 5% Pointer Resting At 0 Ω

**Temperature Range**: Operating 0 - 40°0
Storage 0 - 60°C