TESTER No. 159A

Description and Use

1. General – This instruction describes The Tester No 159A which in conjuction with an oscillator & search probe (Tester No 132B) can be used for the identification of cable quads without interruption to service, provided the phantom is not in use. It can also be used with the minimum interruption to service, for the identification of individual wires within the quad provided a spare wire is available in the cable. The tester is particularly useful when replacing a section of cable during maintenance work or for a cable diversion.

The circuit of the tester is given in Dgm. RP/RPW 6189.

2. Description.—The tester consists of two phantom deriving transformers, isolating capacitors, a milliammeter, a rheostat and a six-position switch, assembled in a wooden case approx. $10\frac{5}{16}$ in. × $5\frac{3}{8}$ in. × $5\frac{1}{2}$ in. high with a detachable lid. Terminals are provided for the connexion of external tone and battery supplies, the quad under test and an independent battery return wire.

3. Principle of operation.—At the 'Control End' the tester is connected to the quad under test by means of clip leads and its phantom derived by means of the two transformers. When the six-position switch is in the TONE position a tone from the externally connected oscillator is applied to the phantom. Capacitors in each wire between the transformers and the quad terminals isolate the quad from a d.c. aspect. There is thus no interference with the side circuits. Care must be taken to ensure that the phantom is not in use.

When the quad has been identified at the 'Distant End' by use of the search probe each individual wire can be identified by means of a meter at both ends and the externally connected battery, which is applied to each wire, in turn, by means of the six-position switch on the tester. A separate battery return wire prevents interference with other circuits.

METHOD OF USE

4. Setting-up.—The end of the cable, or cable section, where the identity of the pairs is known is designated the 'Control End,' and the other end the 'Distant End.' Set up the equipment as follows:—

(*a*) *Control End*

(i) Connect a suitable oscillator, e.g. Oscillator No. 87B (part of Tester No. 132B) or Reed Hummer No. 2, to the osc terminals on the tester.

(ii) Rotate switch SA to the OFF position.

(iii) Connect the BATTERY RETURN terminal to a suitable spare wire within the cable under test.

(iv) Rotate the ADJ METER control fully anticlockwise.

(v) Connect a suitable battery supply to the tester.

(vi) Using the test leads provided, connect the tester to the first quad taking care not to short-circuit or earth any of the wires.

(*b*) *Distant End*

(i) Connect up the Amplifier and Probe section of the Tester No. 132B.

(ii) Connect the positive terminal of a Detector No. 4, switched to the 500 mA scale, to the spare wire which returns to the Control End.

5. Quad identification.—

(*a*) *Control End*

(i) Rotate switch SA on tester to the TONE position.

(ii) Switch the oscillator to INTERRUPTED tone.

(*b*) *Distant End.*—Locate the quad with the tone on using the Detector section of the Tester No. 132B.

6. Wire identification.—The following preliminary adjustments must be carried out, but need only be repeated when there is a change of line conditions, e.g. loaded to unloaded pairs, change of weight of conductor.

(*a*) *Distant End.* Using a suitable probe, connect the negative terminal of the Detector No. 4 to any wire of the identified quad.

(*b*) *Control End*

(i) Set the ADJ METER control on tester to mid-position.

(ii) Rotate switch SA to position A, B, C or D until a maximum deflexion is obtained on the tester meter.

(iii) Adjust the ADJ METER control until the tester meter reads 100 mA maximum.

7. After completing the preliminary setting-up, proceed as follows:—

(*a*) *Control End*

(i) Rotate switch SA to position A and request Distant End to identify the A wire.

(ii) After identification of the A wire, rotate switch SA to position B to allow identication of the B wire.

(iii) Continue until the C and D wires are identified.

(*b*) *Distant End*

(i) Identify the A wire with the probe of the Detector No. 4 (maximum deflexion indicates the correct wire).

(ii) Note colour or coding of identified wire.

(iii) Advise the Control End that the A wire has been identified.

(iv) Identify the B wire and advise the Control End.

(v) Continue until the C and D wires are identified.

(c) When carrying out this test, interruptions can be be caused to the circuit therefore the probe should be tapped on to the wires for the minimum possible time to ensure an accurate identification.

Sv 5.2.2
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END