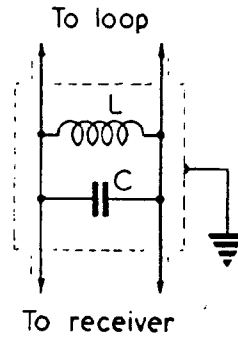
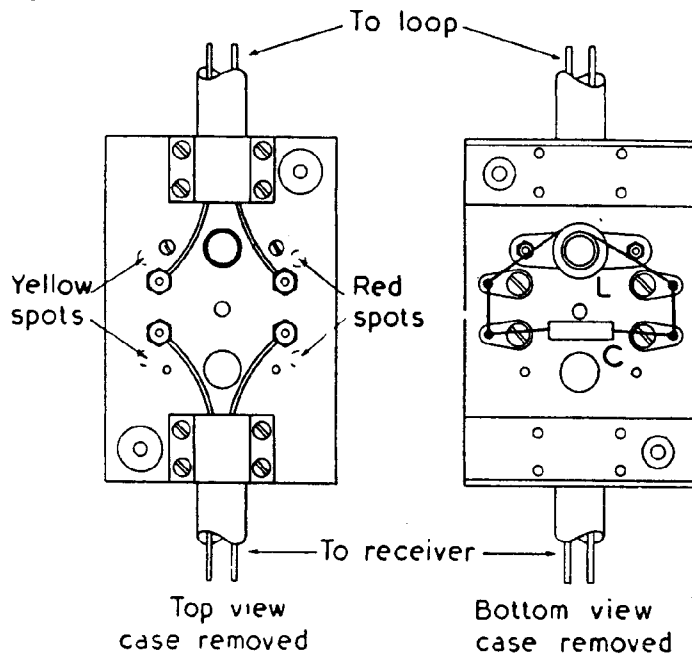


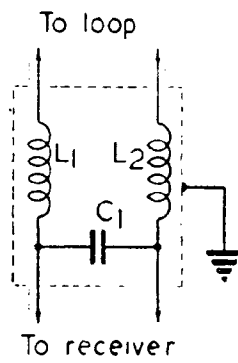
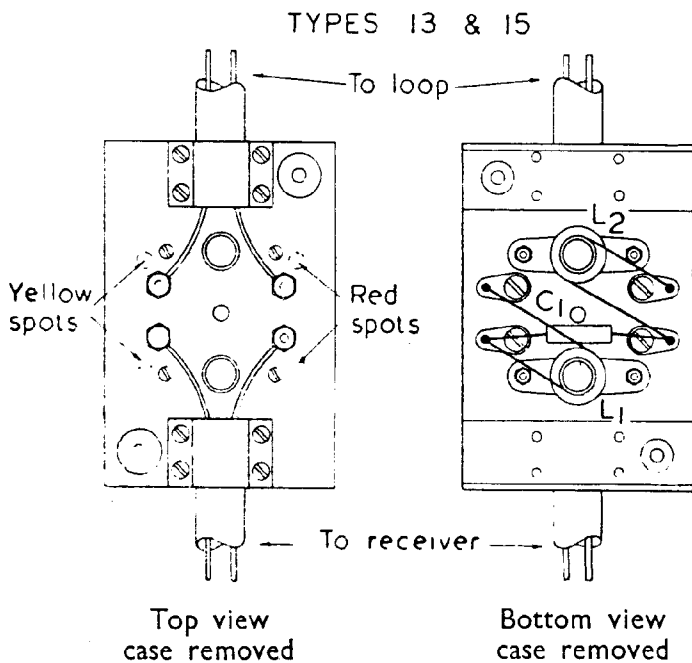
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TYPE 12	
C	40 μF
L	410 μH

TYPE 12



TYPE 13	
C1	70 μF
L1	20 μH
L2	20 μH
TYPE 15	
C1	70 μF
L1	8 25 μH
L2	8 25 μH

Fig. 24.—THE IMPEDANCE MATCHING UNITS, TYPES 12, 13, AND 15

APPENDIX 1

ASSOCIATED EQUIPMENT

The impedance matching units, types 12, 13, and 15

1. The R.1155 is designed for use with the D.F. loop aerial, type 3, which has an inductance value of approximately $100\mu\text{H}$ and a self-capacitance of $20\mu\mu\text{F}$. Should the inductance placed across the loop terminals differ appreciably from this value, the input tuned circuit will not gang correctly with the other tuned circuits. As the receiver is required for use with loop aerials of widely differing values of inductance from the type 3, a matching unit is necessary with these loops. The impedance matching units, type 12 (Stores Ref. 10A/12148), type 13 (Stores Ref. 10A/12245) and type 15 (Stores Ref. 10A/12247) have been designed for application as indicated in para. 73. The matching unit consists of a small metal box containing a panel of bakelized linen carrying four terminals to which are connected the Duradio No. 20 screened cables from the loop and to the receiver. The matching coils and condensers are also mounted on this panel. The unit weighs about 12 oz.

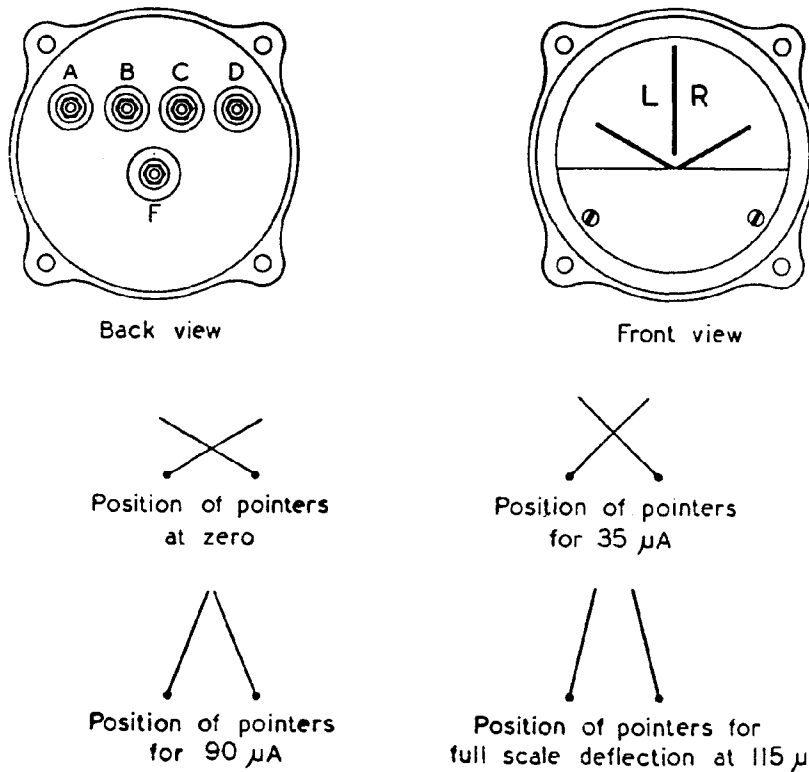


FIG. 25.—VISUAL INDICATOR, TYPE I

2. The theoretical circuits and constructional details of the matching units are shown in fig. 24. The matching unit circuit depends upon whether it is required to reduce the inductance of the loop or to increase it. If a reduction in value is required a shunt unit (type 12) is used. This consists of one matching coil L with a condenser C both in shunt across the twin leads of the loop. If an increase in value is necessary the series units (types 13 and 15) are used. To preserve the symmetry of the loop two series coils L_1 and L_2 , of equal inductance, are connected, one to each lead from the loop to the receiver. A condenser C_1 is connected in shunt across the receiver leads. The condenser brings the total capacitance of the circuit to the correct value.

3. The unit condenser C, type 12, has a capacitance of $40 \mu\mu\text{F}$ and the coil L consists of 150 turns of 38 d.s.c. wire on a former and is adjusted by a dust-iron screwed core to $410 \mu\text{H}$. The unit condenser C_1 , type 13, is $70 \mu\mu\text{F}$ and the coils L_1 and L_2 each consist of 29 turns of 30/48 litz wire adjusted to $20 \mu\text{H}$. The corresponding values for components of the unit, type 15, are $70 \mu\mu\text{F}$ and $8.25 \mu\text{H}$. The four terminals are colour-coded by indicator spots of red and yellow and it is essential that due regard should be paid to these when fixing the cable ends.

The visual indicator, type 1

4. The visual indicator, type 1 (Stores Ref. 10Q/2) consists essentially of two D.C. milliammeter movements mounted side by side. The windings, which are connected in series, each have a resistance of 500 ohms. The current sources applied to opposite ends of the conjoint winding produce deflection of a heavily damped indicator needle in opposite sense. The intersection of the indicator needles follows a straight line between zero and 90 microamps current. Approximately 2.4 microamps are required to produce one degree scale deflection. The visual indicator is shown in fig. 25.

5. The visual indicator is contained in a circular metal screening case of, approximately, $3\frac{1}{4}$ in. diameter. The depth of the casing may vary in different models but the overall maximum depth is $3\frac{3}{8}$ in. The instrument weighs 1 lb. 7 oz. Its general appearance is shown in the drawings of fig. 25 and a theoretical circuit forms part of fig. 13.

6. The indicator is fixed in position through four fixing lugs of 0.187 in. dia. and a space of 4.12 in. dia. by 4 in. deep should be allowed behind the panel for an anti-vibrational mounting. Five terminals, nominated A, B, C, D, and F, are mounted on the rear of the indicator. The terminal F is a binding post for securing the cable. The connections of terminals A, B, C, and D differ according to the number of indicators installed. The normal connections are shown in the installation diagram of fig. 21.

7. The mounting, type 119 (Stores Ref. 10A/12954) has been introduced for use with the visual indicator. The lampholder, type 61 (Stores Ref. 10A/13078), lamp, filament, 12 volts, jack type, G.P.O. No. 3 (Stores Ref. 5L/1150) or lamp, filament, 24 volts, jack type, G.P.O. No. 3 (Stores Ref. 5L/1898) are also used when required. The equipment required and the installation procedure are detailed in para. 78 and is the subject of leaflet A.P.1186/E85.