BOOK OF INSTRUCTIONS

for

TUNER AMPLIFIER B35 (Patt: W8126)

and

D/F ATTACHMENT. (Patt: W8150).

Introduction.

Patt: W 8126 Tuner Amplifier B35 consists of a modified Receiver of Marconi manufacture, Type CR100/2, and is used in certain D/F Outfits in lieu of Tuner Amplifier B21A. CR 100/2 is similar to Receiver B28 with the exception of the types of connections employed. A D/F and Sense Unit (Patt: W8150 D/F Attachment) will be supplied with each Receiver B35 together with certain other items as follows :-

Pattern No.	Description.	No. for each Outfit.
W.8126	Tuner Amplifier B.35	1
W.8150	Attachment D/F for Tuner Amplifier B.35	1
W.3694	Straps, securing, pair of; Receiver B.28	1
4461	Switch and socket	1
4462	Plug for Pattern 4461 switch	1
9085	Cable, electric, 2-core, copper braided ..	6 ft.
A.M. ref : 10A/12027	Receivers, telephone, Type 10 complete with plug and lead. ..	2 prs.
	Set of spare valves, comprising :-	
10E/278	VR100	7
10E/277	VR99	1
W.1526	NR68 or 6Q7G	1
W.1535	NR85 or KT63	1
W.1624	NU20	1

2. General.

The useful frequency range of the D/F Outfit using Tuner Amplifier B35 is restricted to the Subranges 4, 5 and 6 of the B35 (see EMI 697 Section 4, para 2.)

Although the frequency coverage of the B35 is greater it should not normally be used for D/F outside these subranges. The internal power pack of the B35 should be supplied from 230 volts 50 C.P.S. A.C. mains.

3. D/F attachment. (Patt: No.W8150)

The purpose of this attachment is the same as the input switching of the tuner amplifier B21A. The general arrangement is shown in the simplified circuit drawing No D.2A 572 & wiring diagram W.Sk.14282. The input circuits are changed according to the position of the switch marked "D/F", "Sense", "Reversed Sense".

The shielded twin feeders from the loops pass through the "D/F - - sense" switches in the attachment and thence to the goniometer field coils. These feeders are shunted by resistances of 300 ohms across the terminals in the attachment.

The "sense" feeder is similarly damped and connected to the primary of the sense transformer incorporated in the attachment.

The search coil of the radiogoniometer is connected through the attachment to the "dipole" input of the B35, either direct or through the split secondary winding of the sense transformer according to the position of the "D/F" "sense" switch (The connections between the attachment and the B35 are made through the screened low capacity cables fitted at the rear of the attachment) In both "sense" and "reversed sense" positions of the switch, the search coil is shunted by the inductance coil L.1. (W.Sk. 14282) in order to reduce the amplitude of the loop signal to equality with that from the "sense" aerial. This coil has six windings to give a suitable range of inductances. For the earlier S25 frame coils and for S25B frame coils, the "4 turns" winding is used. For S25 frame coils with suffix "A" to the pattern number and S25 frame coils which have been modified by the addition of a 12 pF. condenser between sense aerial and mast head, the "3 turns" winding is used. Due to the reduction of the effective capacity of the link circuit, when the shuntcoil is inserted in "sense" and "reversed sense" positions, a condenser C.1. (W.Sk.14282) is included to compensate this effect. No provision is made for a search aerial. The operation of the "D/F-sense" switch is exactly as described on pages 8 & 9 of the handbook of the D/F Outfit with which B35 is fitted except that the search position is omitted.

4. Tuner amplifier B35. (Patt: No.W8126.)

This is as described in E.M.I.697, included in this handbook, except for the following points:-

1. The input connections to the receiver have been altered by omitting condenser C51 and resistance R55 thus removing the existing vertical aerial input from one of the screened Air Ministry type plugs.
2. The dipole input coupling coils on ranges 4, 5, and 6 have been modified in value, and connections have been altered so that these dipole inputs are brought to the inners of the two Air Ministry screened sockets by the shortest possible leads.
3. The existing condenser (C90) across the mains input has been replaced by two condensers of 0 01 pF each fitted as close as possible to the entry point of the mains leads.
4. The line output leads, i.e. those from the output transformer to the line terminals, have been disconnected. The line terminals have been earthed.
5. The A.V.C. line has been earthed, i.e. R32 has been disconnected from C74, and C74 has been earthed.
6. Either of the two positions on the right of S13 (circuit diagram in E.M.I. 697) now gives C.W. without A.V.C. and either of the two positions on the left gives reception of modulated signals without A.V.C. The front panel engraving on the operational switch has been altered to obliterate the "A.V.C. ON" positions on either side of the centre position.
7. The telephone output level has been increased by altering R11 from 500,000 ohms to 50,000 ohms.
8. To reduce saturation of the receiver on strong signals R38 has been increased to 4700 ohms.

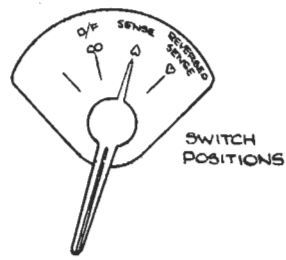
Operation.

The procedure for operating the tuner amplifier B35 is as described in E.M.I. 697, whilst bearings and sense will be determined as described in the handbook for the D/F Outfit with which B35 is fitted, but the following points should be noted:-

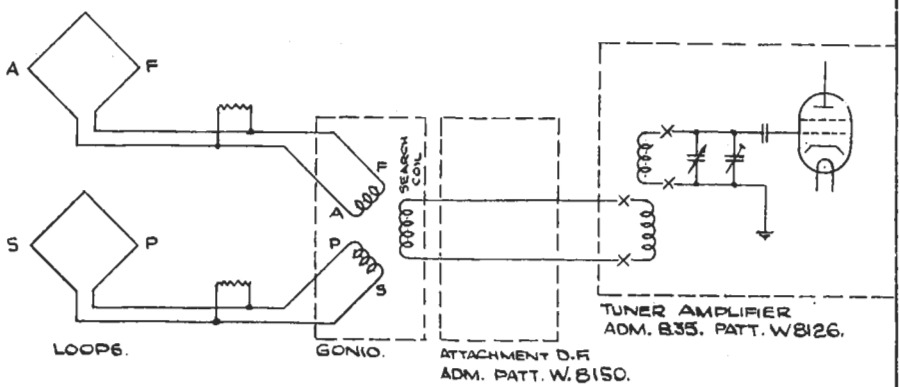
a. The pass band will normally be set to 3 kc/s. for D/F work.
b. Care should be taken to have the B.F.O. note control in such a position that an audible note is obtained in the phones. (see E.M.I. 697 page 2.)
c. The relative positions of the R/F and A/F gain controls must be adjusted with care, since for the set to be in its most sensitive condition for the reception of weak signals the R/F control must be turned fully clockwise and the background noise set to a suitable level by means of the A/F control. However, when taking a bearing on a strong signal it is necessary to turn the R/F control anticlockwise whilst bringing up the signal level with the A/F control. Lack of this precaution will result in bad "blurring" and deterioration of sense finding, owing to the overload of the valves. If bad "blurring" or lack of sense is experienced the effect of turning the R/F control anticlockwise - making up the signal strength with the A/F control - should always be tried before drawing any conclusions from the results obtained.

d. The phones used are of high resistance (2000 ohms). The phone jack is P.O. Gauge B, which will not grip correctly a normal Admiralty plug (Gauge A) so the phones supplied for the tuner amplifier should always be used with it.

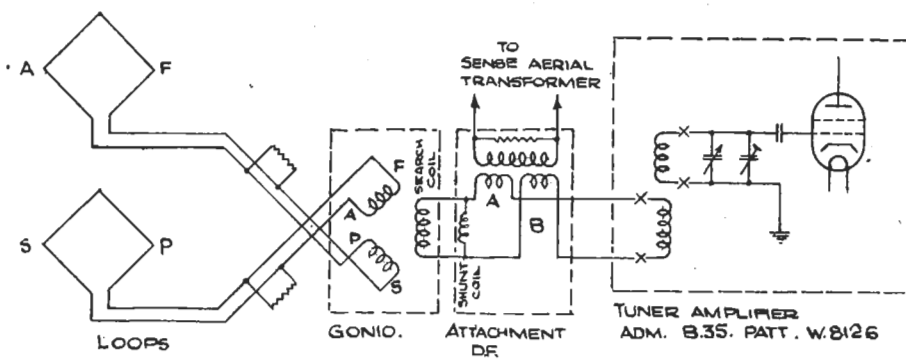
e. The Tuner Amplifier B35 and the D/F attachment comprised in one outfit are tested together and should normally be used only in this combination, both being replaced if repairs become necessary.



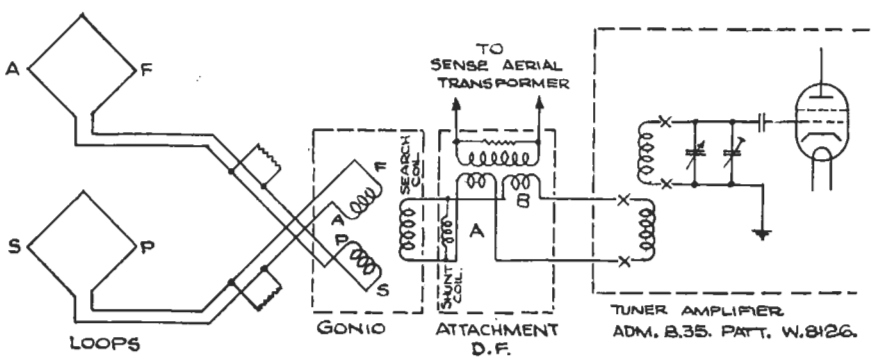
D/F POSITION.



SENSE POSTION.



REVERSED. SENSE POSITION.



D.F. EQUIPMENT AERIAL ARRANGEMENTS. D.2A.572.