4 AMPLIFIER TYPE 'D' (ENVELOPE MONITOR)

4.1 GENERAL

The Amplifier Type D has been designed for use as a continuous indicator of the modulation performance of a transmitter.

When tuned to the carrier frequency of a transmitter it can be used as a programme indicator and will show the amplitude of the modulated carrier. This gives a quick assessment of peaks of modulation. In the absence of any modulation it will indicate the carrier amplitude.

Under test conditions, when using a steady tone as modulation, it can be used to give a direct indication of depth of modulation, using the special graticule provided. (This gives a calibration in percentage modulation.)

4.2 SPECIFICATION

The amplifier gives continuous coverage over the range 2.5 - 32 Mc/s in four switched ranges. Sensitivity, when tuned to resonance, is approximately 1 volt per cm. deflection.

The modulation frequency is available as a sync. output.

Input impedance is 50 ohms.

All supplies are drawn from the main oscilloscope body.

4.3 CIRCUIT DESCRIPTION

The input signal is applied across a high wattage 50 ohm resistor, and AC coupled to the grid of a cathode follower V1a, via a GAIN control RV3.

Signal at the cathode of V1a is fed to a tuned RF amplifier V2. The anode of V2 has a fixed centre tapped coil tuned by C8, and the push-pull output frequency is AC coupled to the Y plates.

Shift voltage is applied direct to the Y plates by R12.

The input signal is also applied via C2 to the grid of V1b. This valve acts as a leaky grid detector, and the modulation frequency appears at V1b anode. This sync. signal is applied to the time base.

RV13, the ASTIG BAL, is used to adjust the astigmatism correction for the trace.

4.4 TEST SPECIFICATION

1. Check that the amplifier is wired correctly to circuit diagram.
2. Plug the amplifier into the oscilloscope. Switch on. Check the H.T. lines are correct (210V, 360V).
3. Check that the SHIFT control works.
4. With the trace centred, adjust the ASTIG. BALANCE control for correct astigmatism.
5. Connect an input signal and check that the GAIN control functions.
6. To tune coil 1.

   Switch to the 2.5 - 5 Mc/s band. Set the trimmer to maximum capacity and with an input signal frequency of 2.5 Mc/s tune coil 1. to give maximum deflection on the C.R.T.
7. Set the amplitude of deflection to 3 cms. and check that the response is reasonably flat over the band.
8. Set the frequency to mid-band (3.7 Mc/s). Tune for resonance and check the sensitivity is better than 1 volt per cm.

9. To tune coil 2.

   Switch to the 4 - 8 Mc/s band. Set the trimmer to maximum and the frequency to 4 Mc/s and adjust coil 2. to maximum deflection.

10. Set deflection to 3 cms. and check that the response is flat over the band.

11. Set the frequency to mid-band (6 Mc/s). Tune for resonance and check the sensitivity is better than 1 volt per cm.

12. To tune coil 3.

    Switch to the 8 - 16 Mc/s band. Set the trimmer to maximum and the input frequency to 8 Mc/s. Adjust coil 3. to maximum deflection.

13. Set deflection to 3 cms. and check the response is reasonably flat over the band.

14. Set the frequency to mid-band (12 Mc/s). Tune for resonance and check the sensitivity is better than $1\frac{1}{2}$ volts per cm.

15. To tune coil 4.

    Switch to the 15 - 32 Mc/s band. Set the trimmer to maximum and the frequency to 15 Mc/s. Adjust coil 4. to maximum deflection.

16. Set deflection to 3 cms. and check that the response is reasonably flat over the band.

17. Set the frequency to mid-band (23 Mc/s). Tune for resonance and check that the sensitivity is better than 2 volts per cm.

18. Check SYNC. OUTPUT 5v P-P approximately.

AMPLIFIER TYPE 'D'
(ENVELOPE MONITOR)

Part No.	C.C.T. Ref.	Value	Description	Tolerance	Rating @ 70°C
S10510	R 1	1M	C	10%	¼w
S27110	R 2	270	C	10%	¼w
9C	RV 3	2.5K	Potentiometer 'Gain Control'		¼w
S10110	R 4	100	C	10%	¼w
S47310	R 5	47K	C	10%	¼w
S33110	R 6	330	C	10%	¼w
S10110	R 7	100	C	10%	¼w
912510	R 8	1.2M	C	10%	¼w
S10110	R 9	100	C	10%	¼w
S10410	R10	100K	C	10%	¼w
S10410	R11	100K	C	10%	¼w
10C	RV12	100K + 100K	Potentiometer 'Y Shift'	20%	
60C	RV13	25K	Potentiometer 'Astig Balance'		
104L	R14	100	C		10w
Y15310	R15	15K	C	10%	½w
104L	R16	100	C		10w
S10110	R17	100	C	10%	¼w
Y47210	R18	4.7K	C	10%	½w
S10410	R19	100K	C	10%	¼w
67J	C 1	0.01uf	P.E.	20%	400v
59K	C 2	100pf	S.M.	20%	500v
61K	C 3	1000pf	SM	2%	500v
59K	C 4	100pf	SM	20%	500v
61K	C 5	1000pf	SM	2%	500v
110J	C 6	47pf	SM	20%	500v
61K	C 7	1000pf	SM	2%	500v
23J	C 8	60pf	Var. Capacitor		
59K	C 9	100pf	SM	20%	500v

AMPLIFIER TYPE 'D' (continued)
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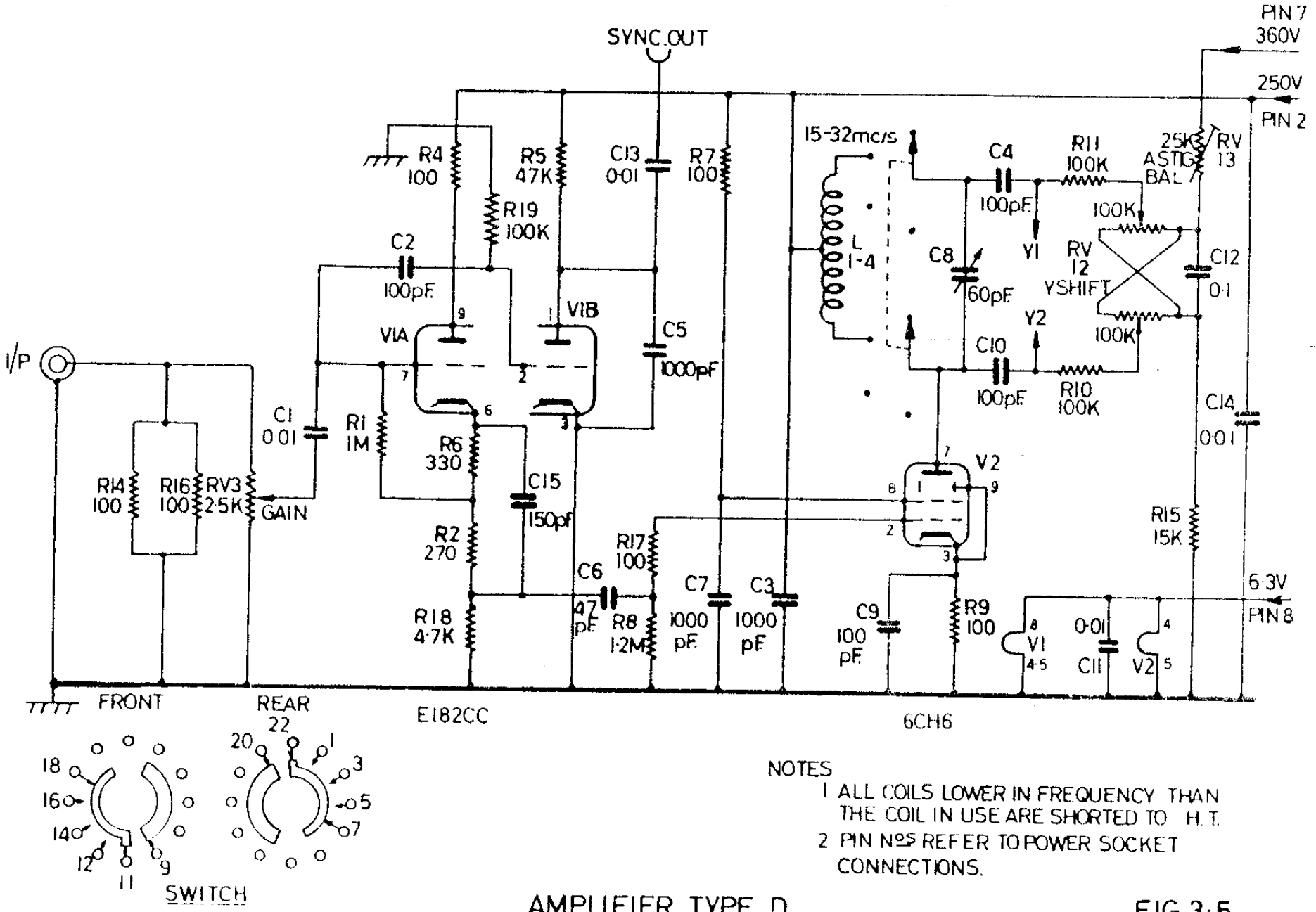
Part No.	C.C.T. Ref.	Value	Description	Tolerance	Rating @ 70°C
59K	C10	100pf	MM Capacitor	20%	500v
67J	C11	0.01	POL "	20%	400v
16K	C12	0.1	POL "	20%	400v
67J	C13	0.01	POL "	20%	400v
67J	C14	0.01	POL "	20%	400v
101J	C15	150pf	MM "	20%	500v
2T	V1		Valve Mullard E182CC		
15T	V2		Valve 6CH6		
	L1		Variable Inductance		
	L2		" "		
	L3		" "		
	L4		" "		
54D	S1		Switch 'Range'		



NOTES

1 ALL COILS LOWER IN FREQUENCY THAN THE COIL IN USE ARE SHORTED TO H.T.

2 PIN Nos REFER TO POWER SOCKET CONNECTIONS.

AMPLIFIER TYPE D

FIG 3·5