

### CIRCUIT ALIGNMENT

**Equipment Required.**—An accurately calibrated signal generator, modulated 30 per cent; an A.C. voltmeter for use as an output meter; a 20,000Ω/V meter; a non-metallic trimming tool.

Check that with the gang at maximum capacitance the cursor coincides with the arrow heads at the extreme right-hand ends of the A.M. and F.M. tuning scales.

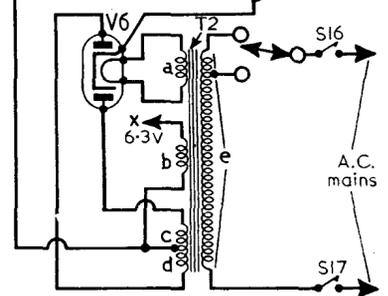
#### A.M. Alignment

- 1.—Switch receiver to M.W. Turn the gang to maximum capacitance; volume and tone controls fully clockwise. Connect output meter across T1 secondary winding. Connect signal generator output between V3 control grid (pin 2) and chassis.
- 2.—Feed in a modulated 470kc/s signal and adjust the cores of L18 (F4) and L17 (B1) for maximum output.

- 3.—Connect signal generator output across C19 (B2). Feed in a modulated 470kc/s signal and adjust L16 (G4) and L15 (C1) for maximum output.
- 4.—Connect signal generator, via a dummy aerial, to the A.M. aerial and earth sockets. Switch receiver to M.W., and tune it to 500m. Feed in a 600kc/s signal and adjust L11 (C2) and L9 (D1) for maximum output. Adjust L9 by sliding its former along the ferrite rod.
- 5.—Tune the receiver to 230m. Feed in a 1,304kc/s signal and adjust C25 (C2) and C19 (B2) for maximum output.
- 6.—Repeat operations 4 and 5.
- 7.—Switch receiver to L.W., and tune it to 1,500m. Feed in a 200kc/s signal and adjust C27 (B2) and L10 (C1) for maximum output. Adjust L10 by sliding its former along the ferrite rod.
- 8.—Secure the formers of L9 and L10 to the ferrite rod with an adhesive to prevent them from moving.

#### F.M. Alignment

- 1.—Remove or disconnect existing output meter from T1. Connect 20,000Ω/V D.C. meter, switched to its 10V range, across C44 (F3), positive meter lead to chassis. Connect signal generator to the junction of S6, C21 (G4).
- 2.—Switch receiver to F.M. Feed in an unmodulated 10.7Mc/s signal and adjust the cores of L19 (B1), L14 (G4) and L13 (C1) for maximum output, reducing the signal generator output as the circuits are brought into line.



MASTERADIO - D160

**Resistors**

R1	220Ω	G4
R2	2.2kΩ	G4
R3	1MΩ	G3
R4	2.2kΩ	G3
R5	1kΩ	C1
R6	470kΩ	G4
R7	27kΩ	G4
R8	68kΩ	F4
R9	68Ω	G4
R10	2.2kΩ	F4
R11	68Ω	F4
R12	100kΩ	F3
R13	2.2MΩ	F4
R14	47kΩ	F4
R15	220kΩ	F4
R16	27kΩ	F3
R17	1MΩ	A2
R18	500kΩ	A2
R19	10MΩ	F4
R20	11kΩ†	F4
R21	220kΩ	F4
R22	470kΩ	F4
R23	4.7kΩ	F4
R24	4.7kΩ	B1
R25	220Ω	F4
R26	1kΩ	A2
R27	180Ω	A2
R28	1kΩ	E3

**Capacitors**

C1	0.001μF	G4
C2	0.001μF	G4
C3	47pF	G3
C4	—	H3
C5	10pF	G3
C6	10pF	G3
C7	0.001μF	G3
C8	20pF	G3
C9	5pF	H3
C10	10pF	G3

C11	47pF	H3
C12	—	H3
C13	10pF	G3
C14	0.001μF	G4
C15	82pF	G3
C16	20pF	C2
C17	150pF	C1
C18	0.005μF	D1
C19	—	B2
C20	—	H3
C21	0.001μF	G4
C22	0.01μF	G4
C23	—	H3
C24	470pF	C2
C25	—	C2
C26	320pF	B2
C27	—	B2
C28	0.01μF	C1
C29	47pF	C1
C30	47pF	C1
C31	320pF	C1
C32	320pF	C1
C33	0.1μF	G4
C34	0.01μF	F4
C35	0.005μF	F4
C36	320pF	B1
C37	320pF	B1
C38	100pF	F4
C39	10pF	B1
C40	47pF	B1
C41	300pF	F4
C42	470pF	F3
C43	100pF	F4
C44	5μF	F3
C45	300pF	F4
C46	0.01μF	F3
C47	4μF	E4
C48	0.005μF	A2
C49	0.001μF	F4
C50	0.05μF	F4
C51	0.005μF	B2
C52	50μF	F4
C53	32μF	F3
C54	32μF	F3

**Coils\***

L1	—	C1
L2	—	C1
L3	—	H4
L4	—	C2
L5	—	C2
L6	—	G4
L7	—	C2
L8	—	C2
L9	2.0	D1
L10	3.0	C1
L11	2.5	C2
L12	—	C2
L13	—	C1
L14	—	C1
L15	3.0	C1
L16	3.0	C1
L17	3.0	B1
L18	3.0	B1
L19	—	B1
L20	—	B1
L21	—	B1
L22	2.5	—

**Other Components\***

T1	{ a 350.0 } B2
	{ b — }
T2	{ a — } A1
	{ b 155.0 }
	{ c 155.0 }
	{ d 42.0 }
	{ e — }
S1-S15	— F3
S16, S17	— A2

\* Approximate D.C. resistance in ohms.

† Two 22kΩ resistors in parallel.

- 3.—Connect signal generator output across C4 (H3). Feed in an unmodulated 10.7Mc/s signal and adjust the cores of L8 (G3) and L7 (C2) for maximum output.
- 4.—Remove D.C. output meter from C44 (F3) and reconnect A.C. output meter across T1 secondary winding. Feed in a modulated 10.7Mc/s signal and carefully adjust L20 (F4) for minimum output.
- 5.—Reconnect 20,000Ω/V D.C. meter across C44. Tune the receiver to 91Mc/s; feed in a 91Mc/s unmodulated signal and adjust L5 (C2), L3 (H4) and L2 (C1) for maximum output.

**Press-button Switch Table**

Switches	Gram.	L.W.	M.W.	F.M.
S1	..	—	—	C
S2	..	—	—	—
S3	..	C	—	—
S4	..	—	C	C
S5	..	—	—	C
S6	..	C	—	—
S7	..	—	C	—
S8	..	C	—	C
S9	..	—	C	—
S10	..	—	—	—
S11	..	C	—	—
S12	..	—	C	—
S13	..	—	—	—
S14	..	—	—	C
S15	..	C	—	—

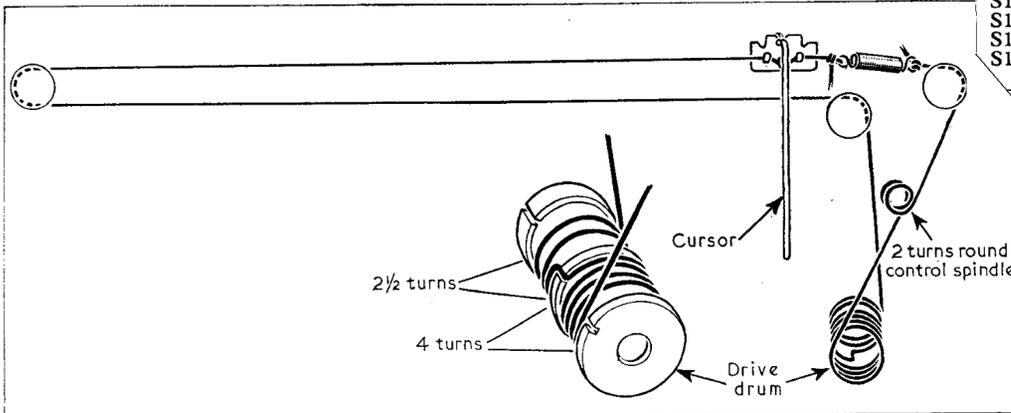


Diagram of the tuning drive system, drawn as seen from the front of the chassis with the gang at maximum.

**Modifications.**—Receivers of earlier production than our sample model, from which this Service Sheet was prepared, may have the following variations: R7 may be 33kΩ; A.M. I.F. transformer winding L15 may be connected to H.T. positive at the junction of R8 and R10. V2 may be a 20D4, and V3 may be a 9D7.

**Drive Cord Replacement.**—About 54in of nylon cord is required for a new tuning drive cord, which should be run as shown in the sketch of the tuning drive system in cols. 2 and 3, where it is drawn as seen when viewed from the front of the chassis with the gang at maximum capacitance.

Valve	Anode (V)	Screen (V)	Cath. (V)
V1a ECC85	185	—	—
V1b ECC85	185	—	1.5
V2a ECH81	70	—	—
V2b ECH81	70	70	—
V3 EF85	210	80	0.5
V4d EABC80	190	75	0.5
V5 EL84	40	—	—
V6 EZ80	235	225	7.0
	230	200	6.2
	235†	—	245.0
	235†	—	240.0

\* Measured with receiver switched to A.M.  
† Measured with receiver switched to F.M. A.C. reading.