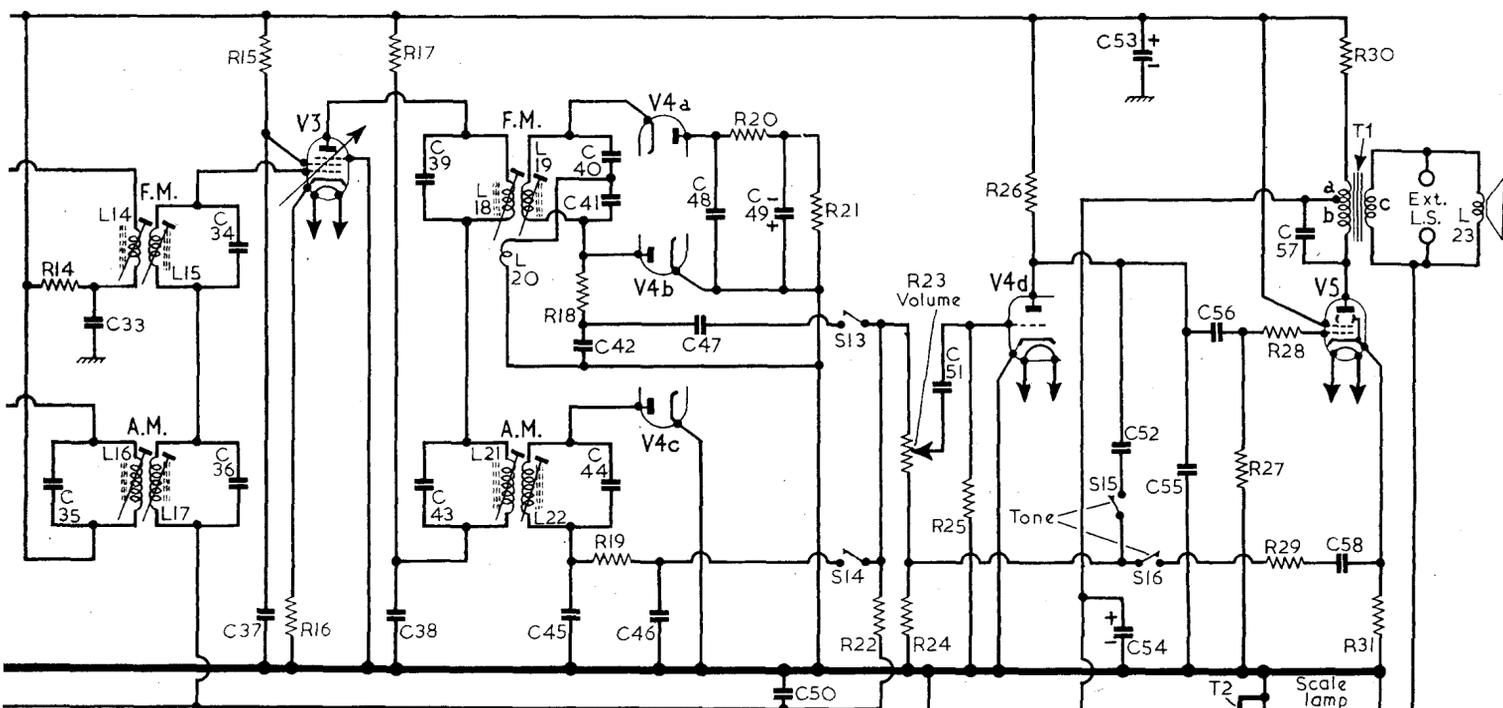
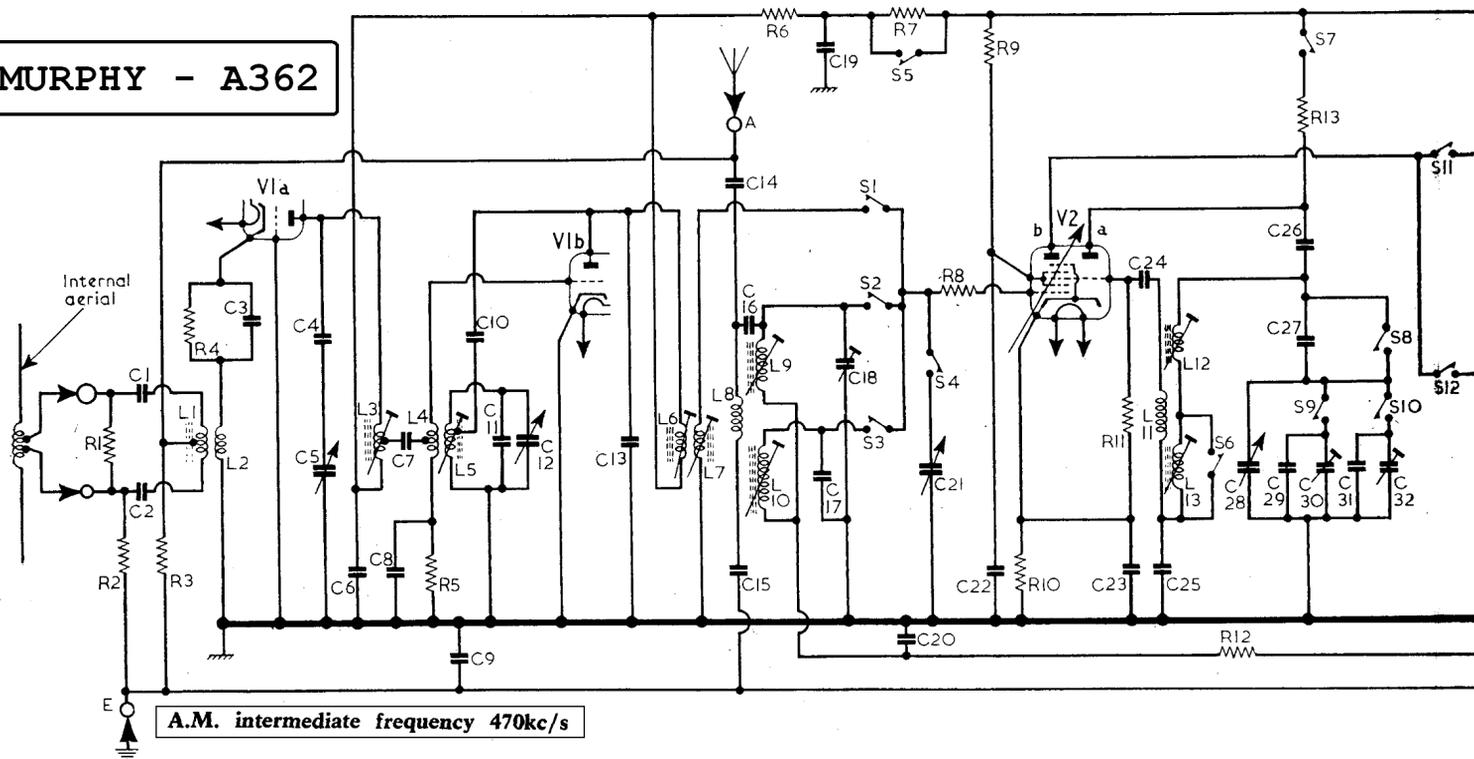


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Resistors	Capacitors
R1	10kΩ
R2	1MΩ
R3	1MΩ
R4	100Ω
R5	220kΩ
R6	2.2kΩ
R7	470kΩ
R8	47Ω
R9	33kΩ
R10	150Ω
R11	68kΩ
R12	1MΩ
R13	220kΩ
R14	4.7kΩ
R15	68kΩ
R16	120Ω
R17	4.7kΩ
R18	100kΩ
R19	100kΩ
R20	330Ω
R21	18kΩ
R22	1.5MΩ
R23	500kΩ
R24	680Ω
R25	10MΩ
R26	150kΩ
R27	470kΩ
R28	22kΩ
R29	10kΩ
R30†	1.35kΩ
R31	270Ω
R32‡	195Ω
R33	160Ω
C1	15pF
C2	15pF
C3	270pF
C4	56pF
C5	17pF§
C6	560pF
C7	100pF
C8	3.3pF
C9	0.01μF
C10	10pF
C11	22pF
C12	17pF§
C13	5pF
C14	470pF
C15	1,800pF
C16	2.7pF
C17	120pF
C18	40pF
C19	1,800pF
C20	0.04μF
C21	528pF§
C22	0.01μF
C23	0.04μF
C24	68pF
C25	520pF
C26	100pF
C27	390pF
C28	528pF§
C29	140pF
C30	40pF
C31	15pF
C32	40pF
C33	0.01μF
C34	10pF
C35	100pF
C36	100pF
C37	0.01μF
C38	0.01μF
C39	15pF
C40	100pF
C41	100pF
C42	470pF
C43	100pF
C44	180pF
C45	100pF
C46	100pF
C47	0.04μF
C48	470pF
C49	5μF
C50	0.04μF
C51	0.04μF
C52	0.005μF
C53	50μF
C54	50μF
C55	1,500pF
C56	0.005μF
C57	0.005μF
C58	0.04μF
C59	0.05μF
C60	0.001μF
C61	0.001μF
C62	1,800pF
C63	1,800pF
C64	1,800pF

*Approximate D.C. resistance in ohms.
 †Two 2.7kΩ ‡Two 390Ω.
 §Swing value, min. to max.

CIRCUIT ALIGNMENT

Equipment Required.—An accurately calibrated signal generator covering the frequency range 100kc/s-100Mc/s; an A.C. voltmeter for use as output meter; a 20,000Ω/V meter or valve-voltmeter; a G.E.C. G.E.X.34 crystal diode and a 0.01μF capacitor; a damping unit consisting of a 2.2kΩ resistor and a 0.01μF capacitor connected in series; two matched 100kΩ resistors; a non-metallic trimming tool.

Remove the chassis from the cabinet. As the tuning scale remains fixed to the cabinet when the chassis is removed, it is necessary to use the 0-180 degree calibration scale on the circumference of the tuning drum, shown in the sketch of the tuning drive system in col. 5. With the gang at maximum, the notch on the tuning indicator should coincide with the 0 degree mark on the cali-

bration scale. When the chassis is inside the cabinet, and with the gang at maximum capacitance, the middle of the cursor should coincide with the right-hand edges of the tuning scale apertures.

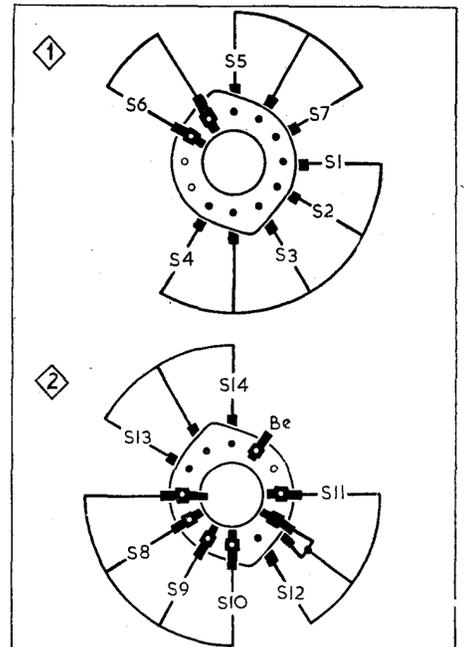
With the exception of L10, the correct peak associated with the iron-dust tuning cores is the first one reached from the adjusting end of the coil former.

A.M. Alignment

1.—Switch receiver to M.W. and turn tuning gang and volume control to maximum. Connect A.C. voltmeter to the extension speaker sockets. Connect signal generator via a 0.01μF capacitor to V3 control grid (pin 6) and chassis. At all times during the A.M. alignment operations adjust the signal generator attenuator so that the A.F. output meter reading does not exceed 0.7V A.C.

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Switch Diagrams



Diagrams of the switch units as seen in the direction of the numbered arrows shown in locations G3 and G4.

- 2.—Unscrew the cores of L21 (B1), L17 (B1) and L16 (B1). Feed in a modulated 470kc/s signal and adjust the cores of L22 (B1) and L21 for maximum output. Do not readjust L22.
- 3.—Connect signal generator output via a 0.1µF capacitor across C18 (H3). Feed in a modulated 470kc/s signal and adjust L17 (B1) and L16 (B1) for maximum output. Do not readjust L17.
- 4.—Switch the receiver to M.W. and tune it to the 32-degree calibration mark on the gang drum. Connect signal generator output to the A.M. aerial and earth sockets via a dummy aerial. Feed in a modulated 600kc/s signal and adjust L12 (B2) and L9 (D2) for maximum output.
- 5.—Tune the receiver to 143 degrees. Feed in a 1,364kc/s signal and adjust C32 (F3) and C18 (H3) for maximum output.
- 6.—Repeat operations 4 and 5 until no further improvement can be obtained.
- 7.—Switch receiver to L.W. and tune it to 48 degrees. Feed in a 176.5kc/s signal and adjust L13 (F3) and L10 (H3) for maximum output. (Tune L10 to the second peak obtained from the adjusting and of the coil.)
- 8.—Tune the receiver to 158.5 degrees. Feed in a 300kc/s signal and adjust C30 (G3) for maximum output.
- 9.—Repeat operations 7 and 8 until no further improvement can be obtained.

F.M. Alignment

- 1.—Remove output meter from the external speaker sockets. Switch the receiver to F.M. and turn volume control to minimum and gang to maximum. Connect 20,000Ω/V meter across C49 (E4), positive lead to chassis, and set it to the 10V range. Connect signal generator output via a 0.01µF capacitor to the cathode (pin 8) of V1a and chassis. (To facilitate the connection of the signal generator, bare both ends of a short piece of insulated wire, loop one end round the valve pin and connect signal generator to the other end.) Adjust the signal generator output to maintain 8V output reading across C49.
- 2.—Feed in an unmodulated 10.7Mc/s signal and adjust L18 (B2) for maximum output, while progressively adjusting the signal generator output to maintain an 8V reading across C49.
- 3.—Remove output meter from C49. Connect two matched 100kΩ resistors in series across C49. Connect output meter between the junction of the two 100kΩ resistors and the junction of R18, C42 (F4).

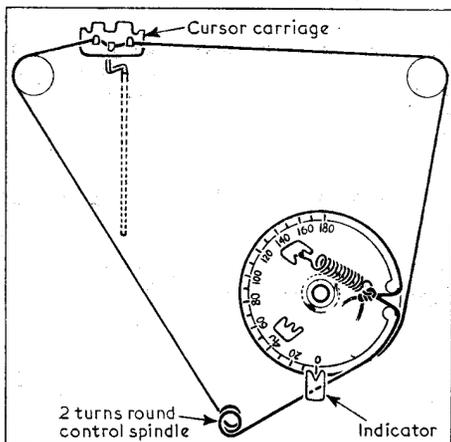


Diagram of the tuning drive system as seen from the front of the chassis, and with the gang turned to maximum capacitance.

- 4.—Feed in an unmodulated 10.7Mc/s signal, and unscrew the core of L19 (F4). Starting with the core well out screw it inwards until a maximum positive or negative peak is obtained. Continue to screw the core in through a zero and then on to a peak in the opposite direction. The correct tuning point is the zero position between the two peaks.
- 5.—Remove the two 100kΩ resistors, and reconnect the output meter across C49. Connect the 0.01µF, 2.2kΩ damping unit across L14 (F4). Feed in an unmodulated 10.7Mc/s signal and adjust L15 (B2) for maximum output, while progressively adjusting the signal generator output to maintain a 4V reading across C49.
- 6.—Connect damping unit across L15. Feed in an unmodulated 10.7Mc/s signal and adjust L14 (F4) for maximum output, adjusting signal generator output as in operation 5.
- 7.—Remove damping unit and repeat operation 2.
- 8.—Connect damping unit across L6 (H4). Feed in a 10.7Mc/s signal and adjust L7 (D1) for maximum output, adjusting signal generator output as in operation 5.
- 9.—Connect damping unit across L7. Feed in a 10.7Mc/s unmodulated signal and adjust L6 for maximum output.
- 10.—Connect signal generator to F.M. aerial sockets via 80Ω termination. Tune the receiver to 56 degrees. Feed in an unmodulated 91Mc/s signal and adjust L5 (C1) for maximum output, reducing the signal generator output to maintain an 8V reading across C49.

Balancing Capacitor C8.—In our sample receiver, from which this *Service Sheet* was prepared, C8 is a fixed 3.3pF ceramic capacitor, but in the majority of receivers this will be a variable pre-set trimmer capacitor, and will be situated in location reference H4. The setting of C8 is normally very stable, and should only require adjustment if V1, L4, L5 or any associated components have been replaced.

If it is desired to adjust C8, an R.F. meter is required to observe the oscillator voltage present at V1a anode. This may be made up by shunting a 20,000Ω/V meter with a G.E.C. GEX34 crystal diode, and connecting it, via a 0.01µF capacitor between V1a anode (pin 6) and chassis. To facilitate

the connection of the R.F. meter to V1a anode, bare both ends of a short piece of insulated wire, loop one end round the valve pin and connect the R.F. meter to the other end. Remove signal input and tune the receiver to 90 degrees. Adjust C8 for minimum reading (dip between two peaks) on the R.F. meter. Where complete realignment is required, this adjustment should be carried between operations 9 and 10 in the F.M. alignment instructions.

Switch Table

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

Valve	Anode (V)	Screen (V)	Cath. (V)
V1a UCC85	146	—	0.9
V1b UCC85	146	—	—
V2a 10C1	13	—	0.99
V2b 10C1	197	60	1.03
V3 10F9	155	57	1.03
V4d EABC80	172	70	1.01
V5 10P14	148	59	0.88
V6 U404	76	—	—
	70	—	—
	210	197	11.5
	204	170	9.9
	245 ¹	—	231.0
	245 ¹	—	222.0

*Measured with receiver switched to A.M.
 †Measured with receiver switched to F.M.
 ‡2.7V.
¹A.C. Reading.