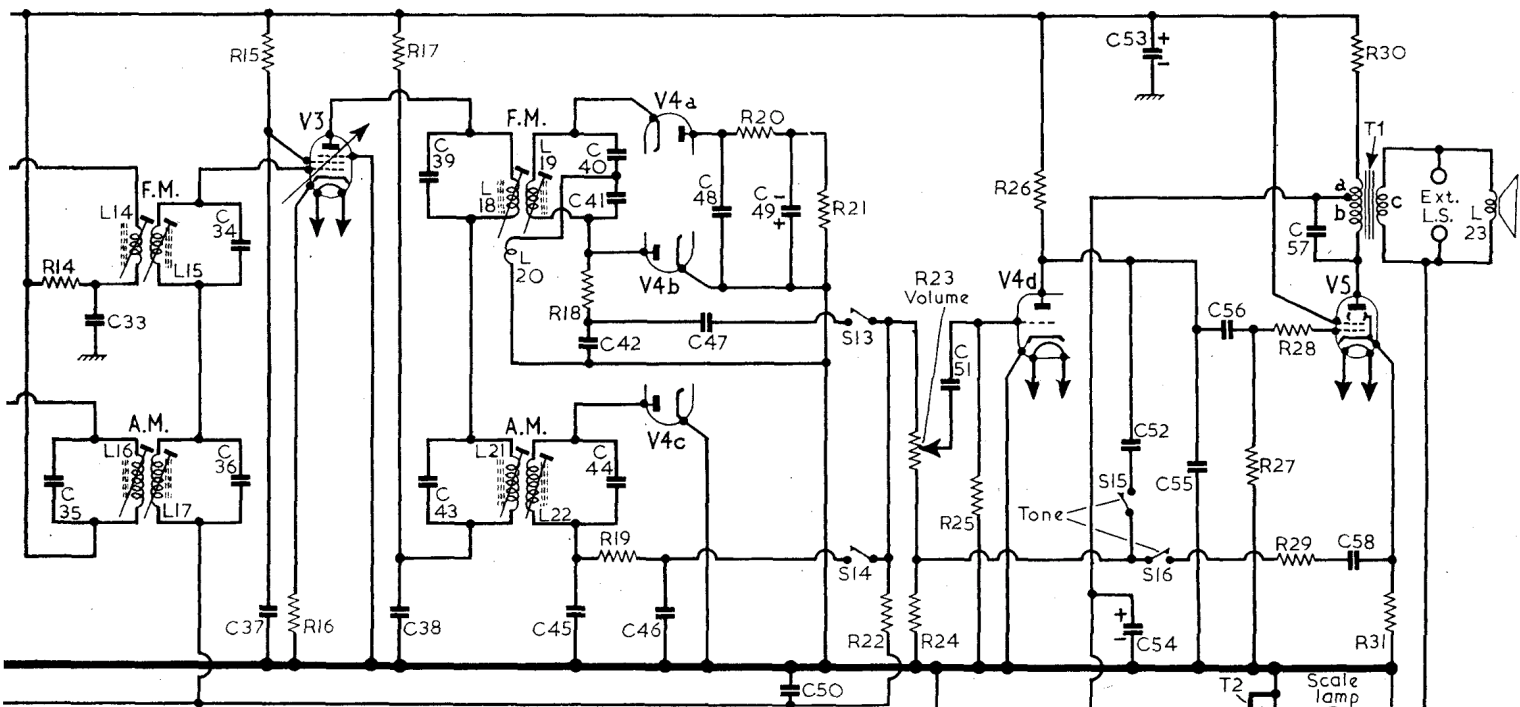
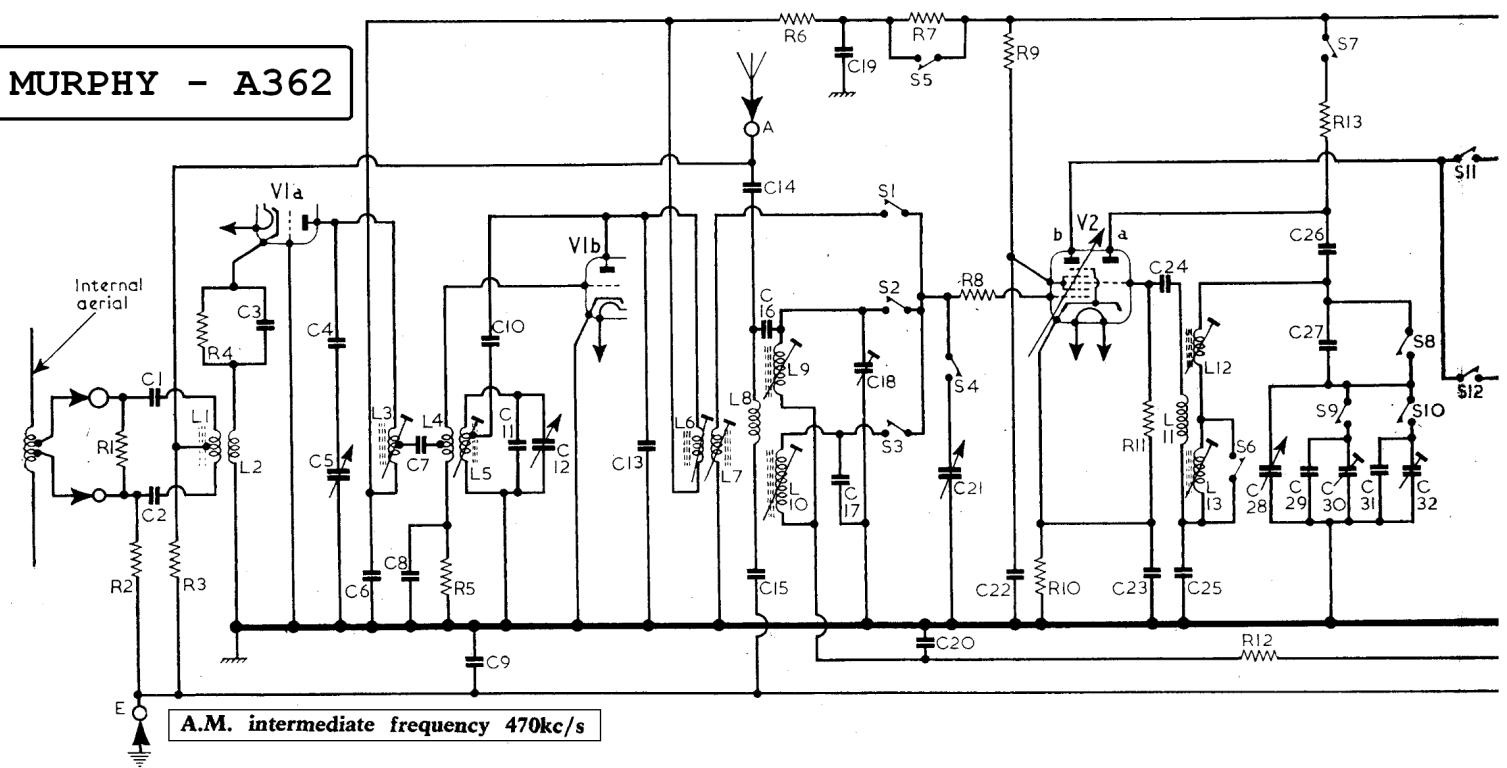


# MURPHY - A362



Resistors	Capacitors
R1 10kΩ	C1 15pF
R2 1MΩ	C2 15pF
R3 1MΩ	C3 270pF
R4 100Ω	C4 56pF
R5 220kΩ	C5 17pF§
R6 2.2kΩ	C6 560pF
R7 470kΩ	C7 100pF
R8 47Ω	C8 3.3pF
R9 33kΩ	C9 0.01μF
R10 150Ω	C10 10pF
R11 68kΩ	C11 22pF
R12 1MΩ	C12 17pF§
R13 220kΩ	C13 5pF
R14 4.7kΩ	C14 470pF
R15 68kΩ	C15 1,800pF
R16 120Ω	C16 2.7pF
R17 4.7kΩ	C17 120pF
R18 100kΩ	C18 40pF
R19 100kΩ	C19 1,800pF
R20 330Ω	C20 0.04μF
R21 18kΩ	C21 528pF§
R22 1.5MΩ	C22 0.01μF
R23 500kΩ	C23 0.04μF
R24 680Ω	C24 68pF
R25 10MΩ	C25 520pF
R26 150kΩ	C26 100pF
R27 470kΩ	C27 390pF
R28 22kΩ	C28 528pF§
R29 10kΩ	C29 140pF
R30† 1.35kΩ	C30 40pF
R31 270Ω	C31 15pF
R32‡ 195Ω	C32 40pF
R33 160Ω	

Capacitors	Approximate D.C. resistance in ohms.
C33 0.01μF	†Two 2.7kΩ
C34 10pF	‡Two 390Ω
C35 100pF	§Swing value, min. to max.
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	

## 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.

- 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).

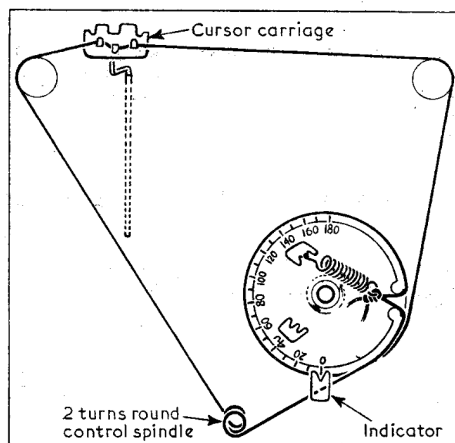


Diagram of the tuning drive system as seen from the front of the chassis, and with the gang turned to maximum capacitance.

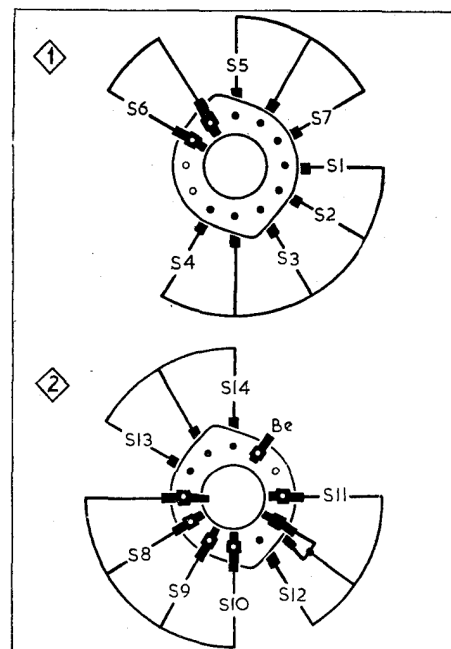
- 4.—Feed in an unmodulated 10.7Mc/s signal, and unscrew the core of **L19** (F4). Starting with the core well out screw it inwards until a maximum positive or negative peak is obtained. Continue to screw the core in through a zero and then on to a peak in the opposite direction. The correct tuning point 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 facili-

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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.

tate 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	C	—
S4	—	C	—
S5	—	—	C
S6	—	C	—
S7	C	C	—
S8	—	C	—
S9	C	—	—
S10	—	C	—
S11	—	—	C
S12	C	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 <sup>1</sup>	—	231.0
	245 <sup>1</sup>	—	222.0

\*Measured with receiver switched to A.M.

†Measured with receiver switched to F.M.

<sup>1</sup>2.7V.

<sup>1</sup>A.C. Reading.