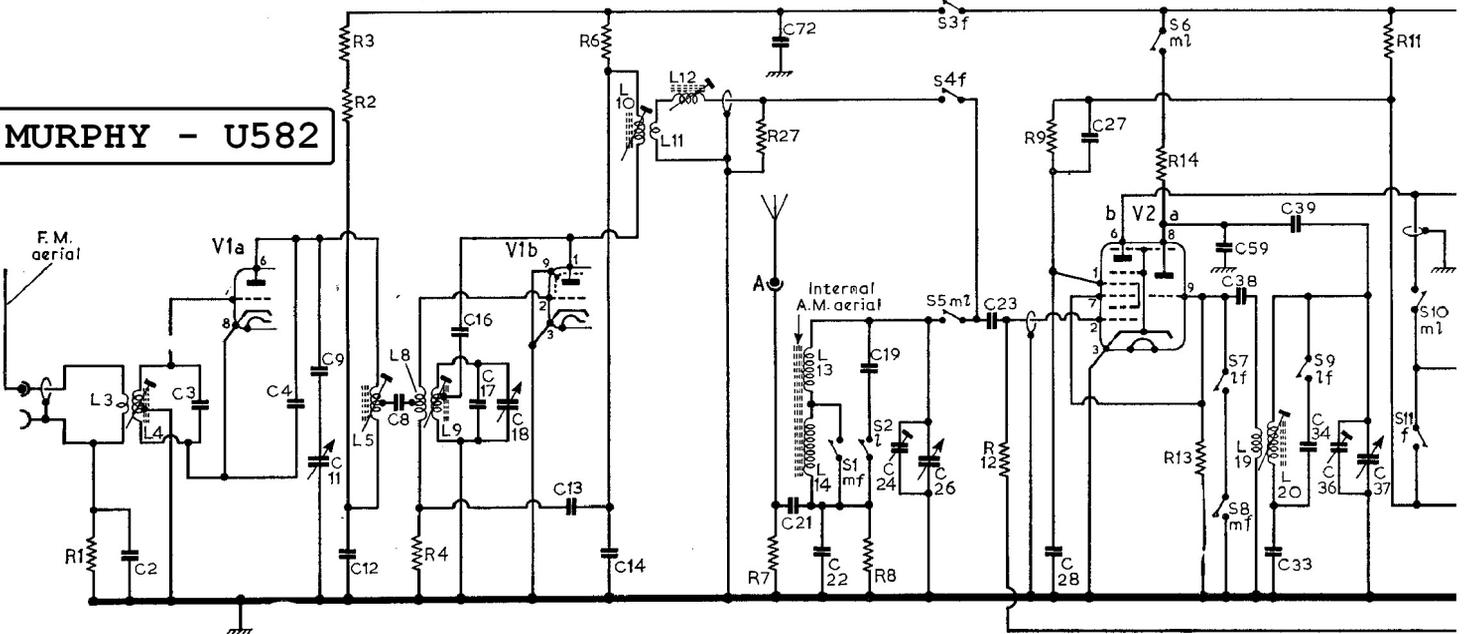
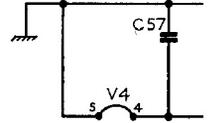
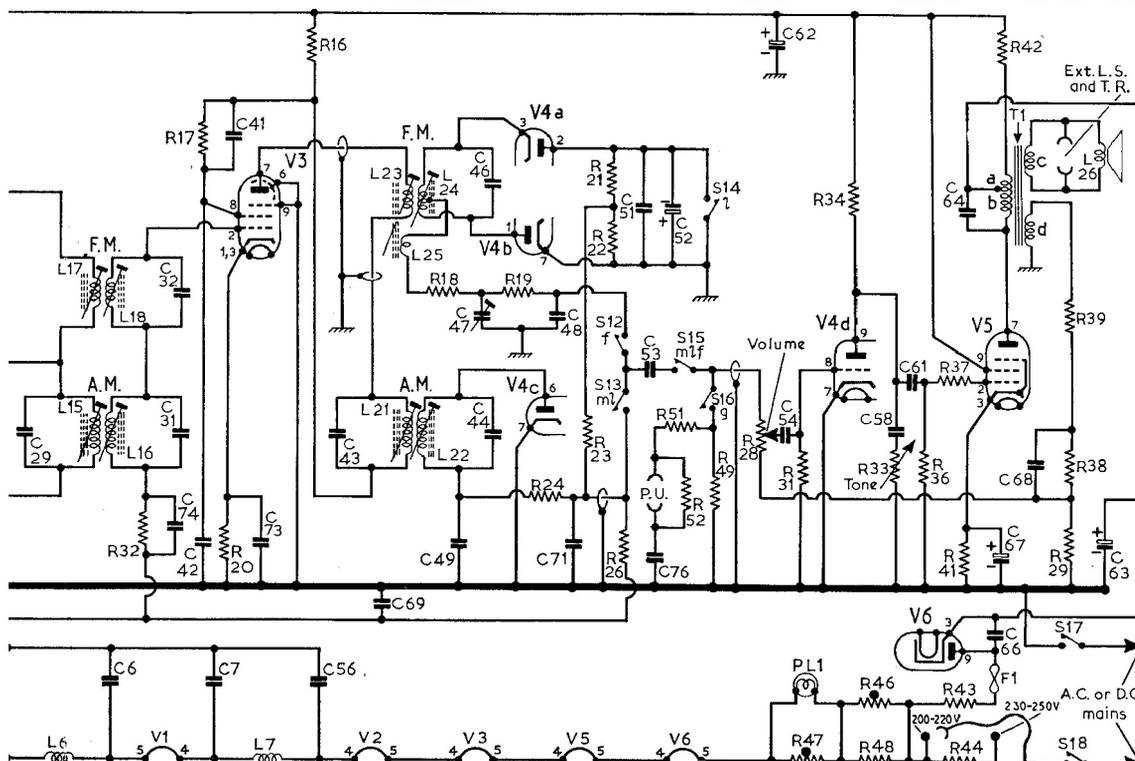


C	2	3	4, 9, 11, 12	8	16, 17	18	13	14	72, 21, 22	19	24	26	23	28	27	59, 38	33, 39, 34, 36, 37	57, 29
R	1		3, 2	4			6		27, 7	8			12	9		14	13	11
L	3, 4			5	8, 9		10, 11	12	13, 14							19, 20		



7, 29	6	74, 32, 31, 42, 7, 41, 73	56, 43	69	49, 47, 46, 44	48, 71	51, 53, 76, 52	62, 54	58, 61	64	66, 67, 68	63	C		
		32	17	20	16	18	19	24	23, 21, 22, 26	51, 52, 49	28	31, 47	34, 46, 48, 33, 36, 37, 41, 43, 44, 42	39, 38, 29	R
	6	17, 18, 15, 16	7		23, 24, 25, 21, 22								26	L	



Valve Table

Valve	Anode (V)	Screen (V)	Cathode (V)
V1a 10L14	75*	—	—
V1b 10L14	100*	—	—
V2a 10C14	65	—	—
V2b 10C14	140	63	—
V3 10F18	115	66	1.25
V3 10F18	130	78	1.1
V4d 10LD12	117	71	—
V4d 10LD12	74	—	—
V5 10P18	70	—	10.5
V5 10P18	173	145	9.6
V6 U381	—	—	192
V6 U381	—	—	188

* Receiver switched to f.m.
† Receiver switched to a.m.
‡ Measured at the junction R2, C12, L5.
§ Measured at the junction R6, G14, L10.

CIRCUIT ALIGNMENT

Check that with the tuning gang at maximum capacitance, the cursor coincides with marks at the right-hand ends of the scale aperture. Coil cores should be adjusted to lie between the middle of the winding and the open end of the former with the exception of L5 and L20 which should be adjusted to the second peak in from the open end of the former.

A.M. Circuits

Equipment Required.—An audio output meter or a 0-1.5V a.c. voltmeter; an r.f. coupling coil comprising about 20 turns of wire wound on a six-inch-diameter former; an a.m. signal generator; a 0.01μF capacitor and a hexagonal trimming tool.

During alignment the signal input level should be regulated so that the audio output does not exceed 180mW (0.7V on the a.c. voltmeter).

1.—Connect the audio output meter in place of the loudspeaker or connect the a.c. voltmeter across the loudspeaker

speech coil. Switch the receiver to m.w., set the volume control at maximum and the tuning gang at maximum capacitance. Ensure that no external signals are being picked up; slightly alter the tuning gang setting if necessary.

2.—Connect the signal generator via the 0.01μF capacitor to V3 pin 2. Unscrew the core of L21 (location reference F3). Feed in a 470kc/s modulated signal, and adjust L22 (location reference B2) and L21 for maximum output. Do not re-adjust L22.

3.—Transfer the signal generator and 0.01μF capacitor to V2 pin 2. Unscrew the core of L15 (F3). Feed in a 470kc/s modulated signal, and adjust L16 (B2) and L15 for maximum output. Do not re-adjust L16.

4.—Disconnect the 0.1μF capacitor and connect the signal generator across the r.f. coupling coil. Place the coil coaxially in line about one foot away from the ferrite rod aerial.

5.—With the receiver switched to m.w., tune to the 500m mark on scale. Feed

in a 600kc/s signal and adjust L20 (G3) to the peak which occurs with the core nearest the printed panel for maximum output. Adjust the m.w. aerial adjusting ring (B1) for maximum output.

6.—Tune receiver to the 220m mark. Feed in a 1,364kc/s signal and adjust C36 (G4) and C24 (F4) for maximum output.

7.—Repeat operations 5 and 6 until there is no further improvement.

Resistors

R1	1MΩ	E3
R2	4.7kΩ	K5
R3	4.7kΩ	K5
R4	1MΩ	K5
R5	—	†
R6	12kΩ	K5
R7	1MΩ	E3
R8	22kΩ	E3
R9	15kΩ	F3
R10	—	†
R11	3.3kΩ	§
R12	470kΩ	F4
R13	47kΩ	E3
R14	39kΩ	F4
R15	—	†
R16	3.3kΩ	F3
R17	22kΩ	F3
R18	180Ω	G3
R19	39kΩ	G4
R20	150Ω	F3
R21	22kΩ	G3
R22	10kΩ	G3
R23	470kΩ	G3
R24	100kΩ	G3
R25	—	†
R26	2.2MΩ	§
R27	100kΩ	F3
R28	1MΩ	D1
R29	220Ω	G4
R30	—	†
R31	10MΩ	G3
R32	100kΩ	F3
R33	1MΩ	D1
R34	220kΩ	G3
R35	—	†
R36	470kΩ	H3
R37	10kΩ	G3
R38	10kΩ	G4
R39	10kΩ	G4
R40	—	†

R41	180Ω	H4
R42	1,350Ω	H3
R43	100Ω	D2
R44	150Ω	D2
R45	—	†
R46	CZ1¶	D2
R47	CZ1¶	B1
R48	2.7kΩ	D2
R49	100kΩ	G3
R50	—	†
R51	470kΩ	G3
R52	10MΩ	G3

Capacitors

C1	—	†
C2	470pF	F3
C3	12pF	J5
C4	2.2pF	J5
C5	—	†
C6	1,800pF	J5
C7	1,800pF	J5
C8	22pF	J5
C9	56pF	J5
C10	—	†
C11	11pF	B1
C12	1,000pF	J5
C13	8.2pF	K5
C14	100pF	K5
C15	—	†
C16	22pF	K5
C17	15pF	K5
C18	11pF	B1
C19	110pF	§
C20	—	†
C21	470pF	E3
C22	3,000pF	E3
C23	470pF	F4
C24	30pF	F4
C25	—	†
C26	392pF	B1
C27	4,700pF	F3

C28	5,000pF	E3
C29	100pF	B2
C30	—	†
C31	100pF	B2
C32	15pF	B2
C33	330pF	G4
C34	320pF	F4
C35	—	†
C36	30pF	G4
C37	392pF	B1
C38	100pF	G3
C39	100pF	F4
C40	—	†
C41	0.01μF	F3
C42	0.01μF	F3
C43	100pF	B2
C44	100pF	B2
C45	—	†
C46	56pF	B2
C47	250pF	G4
C48	1,800pF	G4
C49	47pF	G3
C50	—	†
C51	0.01μF	G3
C52	4μF	G3
C53	0.01μF	G3
C54	0.01μF	G4
C55	—	†
C56	1,000pF	E3
C57	0.01μF	G3
C58	0.02μF	G4
C59	5.6pF	E3
C60	—	†
C61	0.01μF	G3
C62	50μF	H4
C63	50μF	H4
C64	0.01μF	H3
C65	—	†
C66	0.05μF	H3
C67	50μF	H4
C68	0.04μF	G4
C69	0.04μF	F3
C70	—	†
C71	100pF	G3
C72	0.01μF	F4
C73	0.04μF	F3
C74	68pF	F3
C75	—	†
C76	0.02μF	F3

8.—Switch receiver to l.w. and tune to the 1,700m dot on scale. Feed in a 176.5kc/s signal and check for correct calibration.

Do not attempt to adjust the m.w. winding L13 itself, and only adjust the l.w. winding L14 in the event of replacement. First position the l.w. coil $\frac{1}{2}$ in from the end of the rod and check the adjustment of the m.w. adjusting ring at 600kc/s. Then adjust the position of L14 at 176.5kc/s. Repeat these adjustments for optimum results.

F.M. Circuits

Equipment Required.—An a.m. signal generator (an f.m. signal generator is not necessary); an audio output meter as required for alignment of the a.m. circuits; a 20,000Ω/V d.c. voltmeter with 2V and 25V f.s.d. ranges; a 0.01μF capacitor; a damping unit comprising a 470Ω resistor in series with 1,000pF capacitor; a matched pair of 180kΩ resistors and a hexagonal trimming tool.

- 1.—Connect the audio output meter across the loudspeaker terminals and connect the d.c. voltmeter across C52 (G3). Switch receiver to f.m., turn the volume control to minimum and the tuning gang to minimum capacitance.
- 2.—Connect the signal generator via the 0.01μF capacitor to V3 pin 2. Feed in a 10.7Mc/s unmodulated signal and adjust L23 (B2) for maximum output. During this operation adjust the signal input to maintain an output of 5V on the d.c. voltmeter.
- 3.—Wire the 180kΩ resistors in series

and connect them across C52 to form an artificial centre-tap. Connect the d.c. voltmeter between their junction and the junction of R18, R19 and C47. With the signal input left as in operation 2, adjust L24 (G3) for zero reading, i.e. between positive and negative swings, on the meter. Re-connect the meter as in operation 2 and re-adjust L23 for maximum output.

- 4.—Transfer the signal generator and 0.01μF capacitor to V2 pin 2. Connect the damping unit between V2 pin 6 and chassis. Maintaining 5V d.c. output, feed in a 10.7Mc/s unmodulated signal and adjust L18 (F3) for maximum output. Then transfer the damping unit to V3 pin 2 and adjust L17 (B2) for maximum output.
- 5.—Remove the damping unit and adjust the signal input for 15V on the d.c. meter, then re-connect the meter between the junction of the 180kΩ resistors and the junction R18, R19, C47 as in operation 3. Re-adjust L24 (G3) for zero reading on the meter using the 2V range.
- 6.—Leave the signal generator as in operation 5 and switch on modulation. Turn the volume control to maximum and adjust C47 (G4) for minimum output on the audio output meter, i.e. maximum a.m. rejection. If C47 does not adjust through minimum audio output or if it requires to be turned more than 360 deg for this condition, re-adjust L24 as in operation 5 then adjust C47 again.
- 7.—Remove the 180kΩ resistors and connect the signal generator to the f.m. aerial sockets (live lead to thin socket). Connect the d.c. voltmeter across C52. Maintaining 5V output on the meter, feed in a 10.7Mc/s unmodulated signal and adjust L12 and L10 (A2) for maximum output.
- 8.—Tune receiver to 92.5Mc/s, feed in a 92.5Mc/s signal and adjust L9 (A2), L5 (A1 to second peak in) and L4 (A1 to the peak nearest the open end of the former) for maximum output. Rock the tuning control while adjusting L5.

Coils and Transformers*

L1, L2	—	†
L3, L4	—	J5
L5	—	J5
L6	—	J5
L7	—	J5
L8, L9	—	K5
L10	—	K5
L11	—	K5
L12	—	B1
L13	—	B1
L14	5.0	A2
L15	9.0	B2
L16	9.0	B2
L17	1.0	B2
L18	1.6	B2
L19	1.0	G3
L20	2.6	G3
L21	9.0	C2
L22	9.0	C2
L23	1.6	C1
L24	—	C1
L25	—	C2
L26	3.0	—
T1	$\left\{ \begin{array}{l} a \quad 20.0 \\ b \quad 270.0 \\ c \quad — \\ d \quad 42.0 \end{array} \right\}$	H3

Miscellaneous

F1	250mA	D2
PL1‡	19V 0.097A	B1
S1-S14	—	F4
S15, S16	—	G3
S17, S18	—	F4

† No component.
 * Approximate d.c. resistance in ohms.
 ¶ Thermistor.
 ‡ M.E.S., fitting.
 § See press-button switch drawing.

MURPHY - U582

