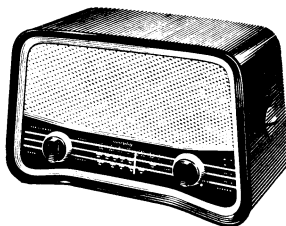


TU352

TU352

MURPHY SERVICE MANUAL



SPECIFICATION

MAINS SUPPLIES:	A. C. :	110-127 and 190-250 volts, 25-100 c/s
	D. C. :	110-127 and 190-250 volts
CONSUMPTION:	110-127 volts:	31 watts average
	190-250 volts:	42 watts average
WAVE-RANGES:	S2:	41.4-13.6m. (7.25-22 Mc/s)
	S1:	136-40.2m. (2.2-7.45 Mc/s)
	M:	568-187m. (528-1605 Kc/s)
INTERMEDIATE FREQUENCY:		470 Kc/s
VALVES:		10C14, 10F18, 10LD13, 10P18, U381
SCALE LAMP:		19 volts, 0.097 amp., m. e. s.
LOUDSPEAKER:	Type:	5 in. (12.7 cm.) dia., permanent magnet
	Impedance:	3 ohms
OVERALL DIMENSIONS:		14½ in. (36.2 cm.) wide, 8¾ in. (22.22 cm.) high, 7 in. (17.78 cm.) deep
WEIGHT:		8½ lb. (3.9 Kg.)

Issued by

**MURPHY RADIO LTD · WELWYN GARDEN CITY
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FOREIGN TELEGRAMS AND CABLES: RADMURPHY, LONDON

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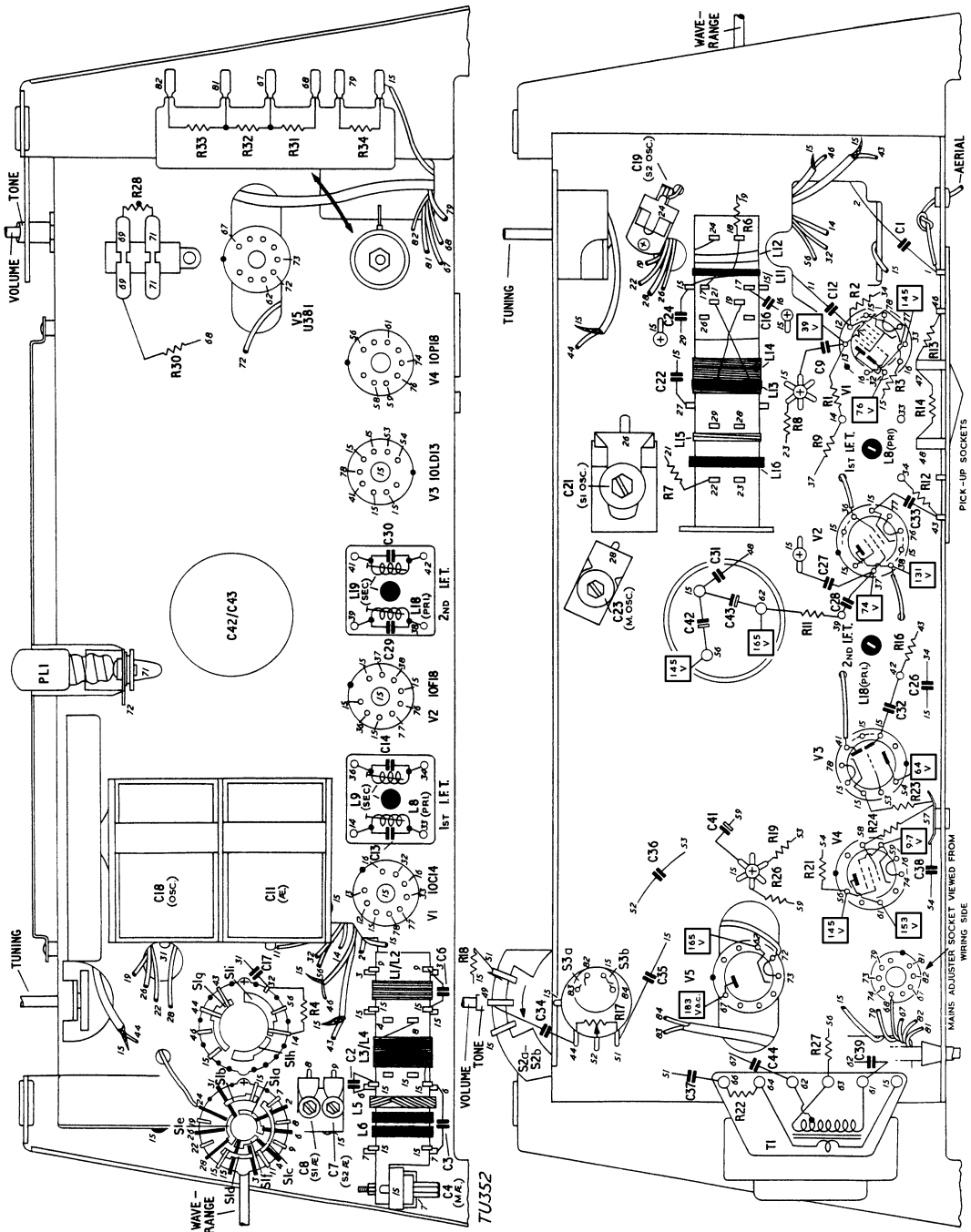


Fig. 1. The layout of the top and the underside of the chassis.

The wave-range switch wafers are viewed from the knob end of the switch and are shown in the M position; the black contacts and inner rotors are on the hidden side of the wafer, and the screw holes marked with a cross are the nearer to the chassis.

CIRCUIT ALIGNMENT

- Receiver output.** Make all adjustments for maximum output with the volume control at maximum. Adjust the signal generator attenuator so that this output does not exceed 180mW or approximately 0.7V across the loudspeaker speech coil.
- Trimming tool.** A non-metallic tool must be used for adjusting the i. f. t. cores.
- Receiver oscillator frequency.** On all wave-ranges this is above the signal frequency.
- Receiver setting.** When the chassis is outside the cabinet, the left-hand edge of the pointer carrier (viewed from the rear with the chassis upright) is used as an indicator and calibration readings are observed on the centimetre scale on the guide rail at the rear of the reflector. The reading must be 0 when the ganged capacitor is at maximum capacitance.

When the chassis is inside the cabinet with the ganged capacitor at maximum capacitance, the pointer itself must register with the dots at the right-hand end of the tuning scale. Calibration dots are also provided at certain points on the scale to facilitate accurate tuning when checking the receiver in its cabinet. These dots are referred to in the table below.

5. Replacement oscillator and aerial coils. The inductance of the M, S1, and S2 tuned windings on the oscillator coil former, and the S1 and S2 tuned windings on the aerial coil former, must be adjusted after the coil is fitted to the chassis. Referring to the circuit alignment table, commence at the low frequency end of the band concerned and, where it states "no adjustments", adjust the spacing of the end turns of the windings. Then adjust the trimming capacitors at the high frequency end of the band. Repeat these adjustments until there is no further improvement and finally seal the windings with wax.

CIRCUIT	NOTES	SIG. GEN SETTING	SIG. GEN TERMINATION	SIG. GEN CONNECTION	RECEIVER SETTING	ADJUSTMENTS
2nd i. f. t.	Unscrew pri. core (below chassis) before starting adjustments	470Kc/s	Via 0.01µF capacitor	V2 grid 1 (pin 2)	Ganged capacitor at maximum	L19 (sec.) top of can L18 (pri.) below chassis DO NOT READJUST SEC. CORE
1st i. f. t.	As above, and switch to M range	470Kc/s	As above	V1 grid 1 (pin 2)	As above	L9 (sec.) top of can L8 (pri.) below chassis DO NOT READJUST SEC. CORE
M		1364Kc/s (220m.)	Dummy Aerial	C1 aerial tag (t.p.1)	8.0 (220m. dot)	C23 (osc.) below chassis C4 (ae.) above chassis
		600Kc/s (500m.)	As above	As above	1.6-1.9 (500m.)	No adjustments (see note 5 above)
S1	Set osc. Trimmer to lower capacitance peak, and rock tuning control for maximum sensitivity while adjusting aerial trimmer	6.1Mc/s (49.2m.)	As above	As above	8.15 (49m. dot)	C21 (osc.) below chassis C8 (ae.) above chassis
		2.5Mc/s (120m.)	As above	As above	1.8-2.0 (120m. dot)	No adjustments (see note 5 above)
S2	As above	17.79Mc/s (16.86m.)	As above	As above	7.45 (16m. dot)	C19 (osc.) below chassis C7 (ae.) above chassis
		9.6Mc/s (31.3m.)	As above	As above	2.90-3.10 (31m. dot)	No adjustments (see note 5 above)

C	1	3	6	8	7	9	12	13	16	17	22	14	19	21	23	26	18	27	29	28	30	32	34	42	3	39	43	44	C				
L	13	5	2	4	6	9	12	14	16	18	19																		L				
R						1	2	4	6	9	11	16	17	13	18										21	27	22		32	33	R		
MISC.	S1a						S1c		V1	S1d				S1e	S1f			V2	S1g	S1h		S1i	S2a	S2b	V3		V4	T1		V5	S3a	S3b	MISC.

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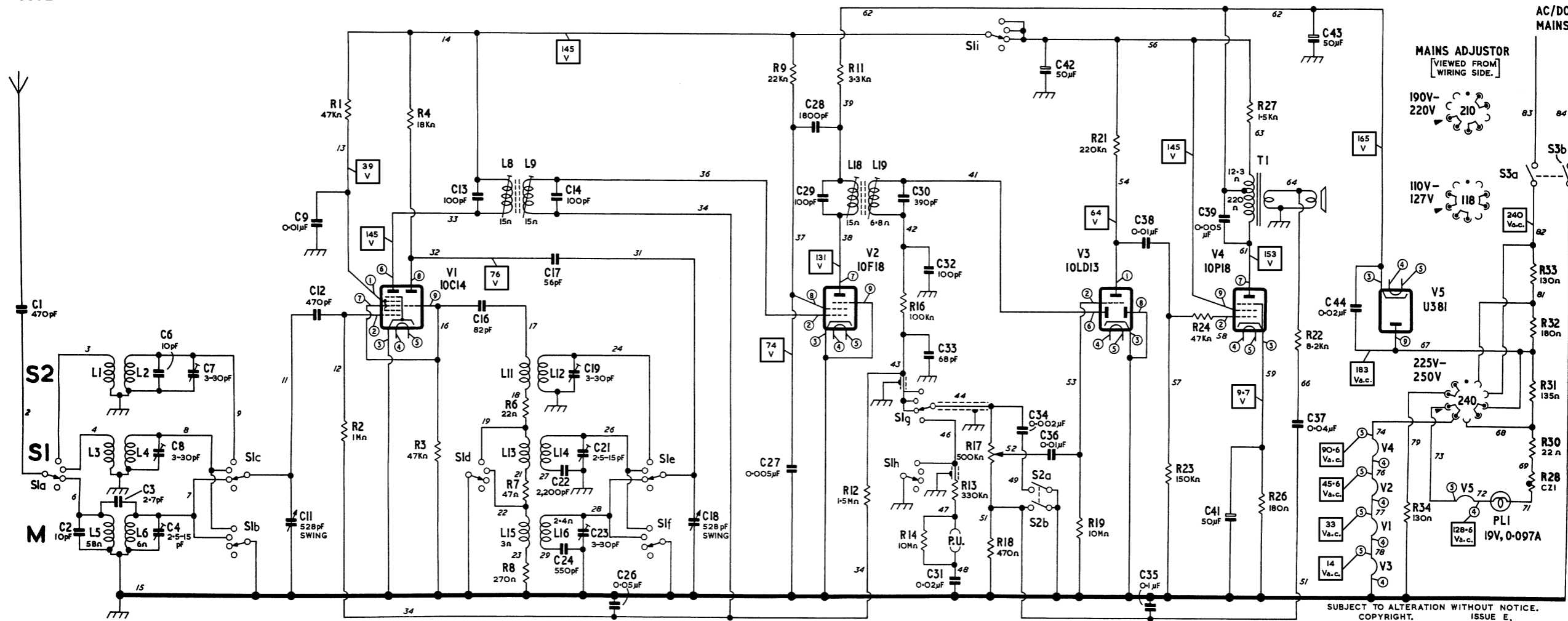


Fig. 2. The circuit diagram.

Circuit voltages are shown within rectangles and were measured with a 20,000 Ω/V meter while the receiver was switched to the M band under no-signal conditions. Where the resistance of a coil is less than one ohm the value is omitted.

Component terminals and connecting leads are identified by test point (t.p.) numbers which correspond with those appearing on the chassis drawings. The valve pin numbers are shown within small circles.

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ALTERNATIVE VALVES

V1	UCH81	V4	UL84
V2	UF89	V5	UY85
V3	UBC81		

PARTS LIST (Electrical Components)

The d.c. resistance quoted for the coil and transformer windings is an average figure and should be used as a general guide only; it is omitted where the value is less than one ohm.

The following abbreviations are used in the table:

cer.	- ceramic	elec.	- electrolytic
p. s. m.	- protected silvered mica	V d. c.	- d. c. voltage rating
tub.	- paper tubular	V a. c.	- a. c. voltage rating
m. tub.	- metallized paper tubular	w. w.	- wire wound
i. s. tub.	- insulated sealed paper tubular (metal case)	W	- wattage rating
p. f. tub.	- plastic film tubular	2 p. c.	- 2% law

Volume control. This control has a new type of track, in which the resistance between the anti-clockwise stop and the slider at 50% rotation is 2% of the total track resistance.

PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS	PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS
60824	C1	470pF	20%, cer., 1,300V a. c., isolator	67502	C17	56pF	10%, cer., N750, 750V d. c.
66157	C2	10pF	20%, cer., N750, 750V d. c.	60763	C18	528pF (swing)	Ganged capacitor, osc. section, with C11
66795	C3	2.7pF	20%, cer., P100, 750V d. c.	56329	C19	3-30pF	Trimmer, S2 osc.
56326	C4	2.5-15pF	Trimmer, M ae.	56326	C21	2.5-15pF	Trimmer, S1 osc.
67493	C6	10pF	±1pF, cer., N750, 750V, d. c.	28353	C22	2,200pF	5%, p. s. m., 350V d. c.
56775	C7	3-30pF	Trimmer, S2 ae., with C8	56328	C23	3-30pF	Trimmer, M osc.
56775	C8	3-30pF	Trimmer, S1 ae., with C7	28375	C24	550pF	1%, p. s. m., 350V d. c.
49453	C9	0.01pF	25%, m. tub., 350V d. c.	78568	C26	0.05pF	20%, tub., 150V d. c.
60763	C11	528pF (swing)	Ganged capacitor, ae. section, with C18	57792	C27	0.005pF	25%, m. tub., 350V d. c.
54083	C12	470pF	20%, cer., 500V d. c.	66192	C28	1,800pF	10%, cer., 500V d. c.
52630	C13	100pF	5%, p. s. m., 350V d. c.	52630	C29	100pF	5%, p. s. m., 350V d. c.
52630	C14	100pF	5%, p. s. m., 350V d. c.	66298	C30	390pF	5%, p. f. tub., 350V d. c.
67504	C16	82pF	10%, cer., N750, 750V d. c.	41420	C31	0.02pF	20%, tub., 1,000V d. c.
				66169	C32	100pF	20%, cer., 750V d. c.
				66167	C33	68pF	20%, cer., 750V d. c.
				49457	C34	0.002pF	25%, m. tub., 350V d. c.
				51555	C35	0.1pF	10%, tub., 350V d. c.
				57815	C36	0.01pF	25%, m. tub., 150V d. c.
				57767	C37	0.04pF	15%, m. tub., 150V d. c.

PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS	PART NO.	CIRCUIT NO.	VALUE	TOLERANCE AND REMARKS
53064	C38	0.01µF	25%, i. s. tub., 500V d. c.	27653	R14	10MΩ	20%, 0.4W
51560	C39	0.005µF	25%, tub., 750V d. c.	27269	R16	100KΩ	20%, 0.4W
75415	C41	50µF	+50% - 20%, elec., 25V d. c.	69564	R17	500KΩ	Volume control, 2p. c., with S3
56152	{ C42	50µF	{ +50% - 20%, elec.	24805	R18	470Ω	10%, 0.4W
	C43	50µF	{ 275V d. c.	27653	R19	10MΩ	20%, 0.4W
41423	C44	0.02µF	20%, tub., 750V d. c.	25829	R21	220KΩ	10%, 0.4W
25573	R1	47KΩ	10%, 0.4W	25285	R22	8.2KΩ	10%, 0.4W
27461	R2	1MΩ	20%, 0.4W	27301	R23	150KΩ	20%, 0.4W
25573	R3	47KΩ	10%, 0.4W	27205	R24	47KΩ	20%, 0.4W
25413	R4	18KΩ	10%, 0.4W	24671	R26	180Ω	10%, 1W
24293	R6	22Ω	10%, 0.4W	25005	R27	1.5KΩ	10%, 0.5W
24421	R7	47Ω	10%, 0.4W	50612	R28	-	Current sensitive, S. T. C. type CZ1
24709	R8	270Ω	10%, 0.4W				10%, 0.4W
25445	R9	22KΩ	10%, 0.4W	24293	R30	22Ω	
25125	R11	3.3KΩ	10%, 0.4W		R31	135Ω	
27493	R12	1.5MΩ	20%, 0.4W	78270	R32	180Ω	5%, w. w.
27373	R13	330KΩ	20%, 0.5W		R33	130Ω	
					R34	130Ω	

PART NO.	CIRCUIT NO.	RESISTANCE (D. C.)	DESCRIPTION AND REMARKS	PART NO.	CIRCUIT NO.	RESISTANCE (D. C.)	DESCRIPTION AND REMARKS
77369	L1	-	Coupling	77370	L11	-	Coupling
	L2	-	Tuned		L12	-	Tuned
	L3	-	Coupling		L13	-	Coupling
	L4	-	Tuned		L14	-	Tuned
	L5	58Ω	Coupling		L15	3Ω	Coupling
67694	L6	6Ω	Tuned	L16	2.4Ω	Tuned	
	L8	15Ω	Pri.	L18	15Ω	Pri.	
	L9	15Ω	Sec.	L19	6.5Ω	Sec.	
					232.3Ω	Pri.	
					total	2nd i. f. t.	
					-	Sec.	o. t.

PARTS LIST (Mechanical Components)

This list contains only those parts which are not included in the Electrical Parts List; items such as self-tapping screws, bolts and nuts, etc., may be obtained from Murphy Radio Ltd, Service Department. When more than one item is used per receiver, the quantity is given in brackets after the description.

PART NO.	TITLE	DESCRIPTION AND REMARKS	PART NO.	TITLE	DESCRIPTION AND REMARKS
60486	Anchor	for mains lead	77606	Bracket, mounting (l. h.)	for chassis support, near mains resistor
78628	Back for cabinet	with heat deflector, less insulating plugs (69141)	52591	Bracket, mounting (r. h.)	on cabinet rear, near fuse
78450	Baffle	for front of cabinet, with dowels	52592	Bracket, mounting (l. h.)	on cabinet rear, near Wave-Range switch
60761	Bearing	for tuning spindle	80964	Cabinet	with fittings
77587	Bracket, locating	for Tone control switch	48506	Channel (2)	for tuning scale
77631	Bracket, mounting	for Wave-Range switch	74323	Circlip (4)	two for each inner knob
77607	Bracket, mounting (r. h.)	for chassis support, under Wave-Range switch	74325	Circlip (4)	two for each outer knob
			42580	Circlip	for tuning spindle
			63877	Circlip	on On-Off/Volume control spindle

PART NO.	TITLE	DESCRIPTION AND REMARKS	PART NO.	TITLE	DESCRIPTION AND REMARKS
78372	Clamp (5)	for retaining baffle in cabinet	55695	Pin (2)	for pointer drive pulleys
77612	Clamp (2)	for retaining scale between reflector and chassis	78169	Plug	for mains adjustment
14662	Collar (2)	in ganged capacitor mounting grommets	69141	Plug, insulating (2)	for eyelets in cabinet back
14770	Collar (3)	for coil cores	77633	Pointer and carrier	
1871/2	Compound	for pointer drive	70489	Pulley (2)	for pointer drive
3962/1	Cord (30 in.)	for L8, L9, L18, L19	74817	Reflector	behind tuning scale
46910	Core, iron dust (4)	on tuning spindle, for outer knob	77857	Scale, tuning	
77616	Coupling	for ganged capacitor	103876	Screw, PK8Y, 3/8 in. (7)	for baffle and scale clamps
60873	Drum, tuning	on front of baffle	103838	Screw, PK10Y, 1/2 in. (4)	for fastening brackets (52591 & 52592) to cabinet
1829/31	Fabric, 1 3/4 in. by 5 1/2 in.	for cabinet front two for each bracket (77606 & 77607)	103267	Screw, OBA, 1/2 in. (2)	for fixing chassis in cabinet
78749	Grille, P. V. C.	for ganged capacitor	103877	Screw, PK8Y, 1/2 in. (4)	for fastening cabinet back
49883	Grommet (4)	for pointer carrier	77867	Socket	for mains adjustment plug
56622	Grommet (3)	for Wave-Range switch	78146	Spindle	tuning
68709	Guide rail	for Tuning and Tone controls	47478	Spring	for pointer drive cord
81028	Knob	for Tuning and Volume controls	61976	Strip, clamping (2)	for ae. and osc. coils
75105	Knob, outer (2)		65263	Studding	threaded rod for mains resistor mounting
75099	Knob, inner (2)		77855	Switch	Wave-Range
16887	Lamp	19V, 0.097A, m. e. s.	77856	Switch	Tone control
69549	Lampholder		79961	Trim	ornamental strip at top of tuning scale
68173	Loudspeaker	5 in. dia., permanent magnet	42035	Washer, centring	for mains resistor
77594	Packing (4)	between loudspeaker and baffle	47955	Washer, (4)	for screws (103877)
80990	Panel	with sockets, for p. u. connection	58556	Washer, felt	behind Wave-Range knob
77868	Panel, indicator	above mains adjustment plug	58654	Washer, felt (2)	behind outer front control knobs
72047	Panel, support	for mounting R28	49910	Washer (2)	for chassis fixing screw
			58567	Washer (2)	Asbestos-Bakelite, for mains resistor

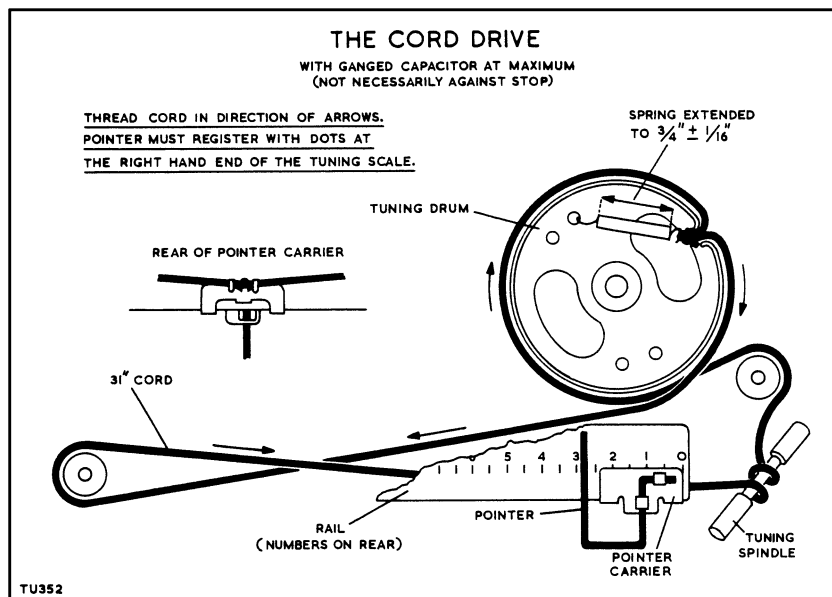


Fig. 3.