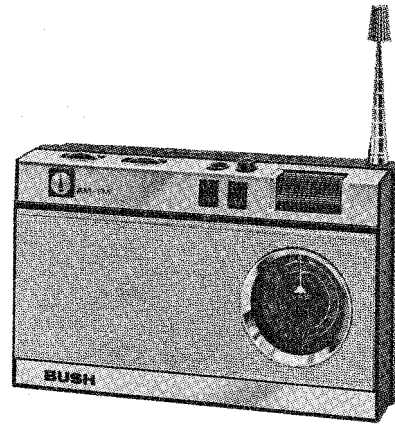


BUSH SERVICE INFORMATION

MODEL VTR125 PORTABLE RADIO



WAVEBANDS

V.H.F. band – 87.5 to 104 MHz.
M.W. band – 185 to 570 metres (1620 to 525 kHz).

INTERMEDIATE FREQUENCIES

A.M. 470 kHz, oscillator high with respect to the signal.
F.M. 10.7 MHz, oscillator low with respect to the signal.

VOLTAGES

Typical quiescent state voltages at various points in the circuit are listed in the table below. All voltages are measured with an AVO 8 voltmeter connected between the specified point and earth (supply positive).

Transistor	Measured at	Volts d.c.		Transistor	Measured at	Volts d.c.	
		M.W.	V.H.F.			M.W.	V.H.F.
VT1	emitter		4.45	VT6	emitter		3.8
	base		3.7		base		2.9
	collector		0		collector		0
VT2	emitter		3.85	VT7	emitter	0.6	0.6
	base		1.95		base	0.72	0.72
	collector		0.25		collector	3.2	3.2
VT3	emitter	0.54		VT8	emitter	0.61	0.61
	base	0.6			base	0.79	0.79
	collector	4.6			collector	4.2	4.2
VT4	emitter	0.74	0.42	VT9, 10	emitter	0.06	0.06
	base	0.94	0.58		base	0.13	0.13
	collector	4.9	5.05		collector	6.0	6.0
VT5	emitter	4.5	4.8				
	base	3.4	3.6				
	collector	0	0				

ALIGNMENT

GENERAL

To prevent possible misalignment, the printed panel should be installed in the cabinet front in the normal operating position. Set the volume and tone controls for maximum output (fully counter-clockwise when viewed from the rear of the cabinet). Check that the battery supply is 6V. The output meter should have an impedance of 8 ohms and may be connected either across the loudspeaker coil or plugged into the earpiece socket. Allow the test equipment a warm-up period of at least five minutes before commencing alignment.

M.W. ALIGNMENT

Set the signal generator to 400 Hz, 30% modulation at 400 c/s and connect the output to a loop aerial placed in close proximity to the ferrite rod aerial of the receiver. Set the receiver to M.W. Adjust the generator output level to obtain a convenient indication on the output meter (e.g. 50 mW). Proceed with the alignment following the sequence of adjustment given in the M.W. alignment table below, adjusting the generator output level, as necessary, to maintain the output level constant.

V.H.F. ALIGNMENT

Connect the signal generator output between the telescopic aerial (TP1) and earth (TP2). Set the AFC switch to OFF and the LOC./DISTANCE switch to DISTANCE. Proceed with the alignment following the sequence of adjustment given in the table below, adjusting the signal generator output, as necessary, to obtain a convenient indication on the valve voltmeter.

M.W. ALIGNMENT

	Tuning dial (metres)	Sig. Gen. (kHz)	Adjust	Remarks
1	181.8	470	H6, H7, H8	Adjust for max. output. Repeat until no further improvement
2	181.8	1650	CT4	Adjust for max. output
3	594	505	L6	Adjust for max. output
4				Repeat 2 and 3
5	214.3	1400	CT3	Adjust for max. output
6	500	600	L5	Adjust for max. output by moving L5 along ferrite rod
7				Repeat 5 and 6

V.H.F. ALIGNMENT

	Tuning dial (MHz)	Sig. Gen. (MHz)	Meter connected at	Adjust	Remarks
1	105	10.7	A to B d.c. range	H4, H3, H2, H1	Adjust for max. output
2	105	10.7	C to E d.c. range	H5	Adjust for ZERO indication
3	105	105	Loudspeaker voice coil a.c. range	CT2	Adjust for max. output
4	86.5	86.5		L4	Adjust for max. output
5					Repeat 3 and 4
6	104	104		CT1	Adjust for max. output
7	88	88		L2	Adjust for max. output
8					Repeat 3 to 7 until no further improvement can be made

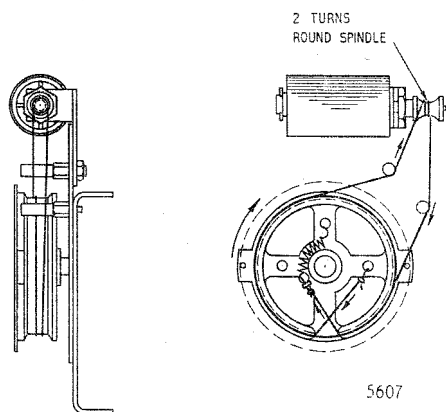
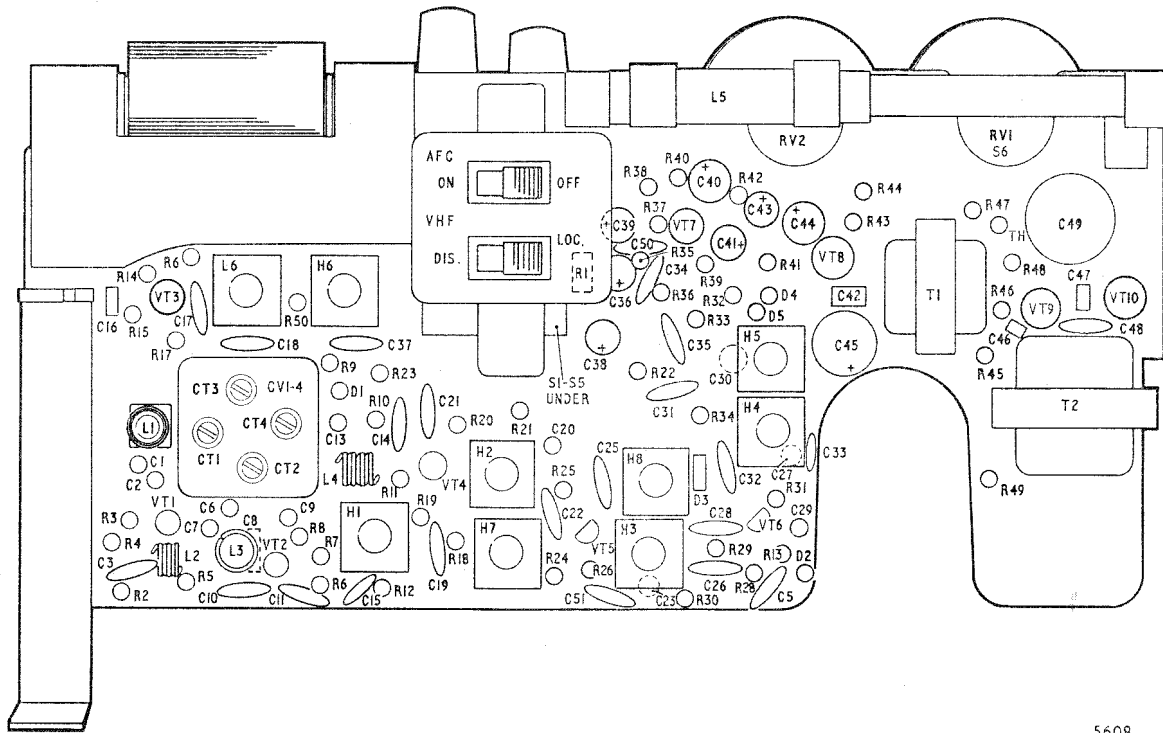


Fig. 1 Cord drive

Note: For 1 and 2, the signal generator output level is set to 0.1V.

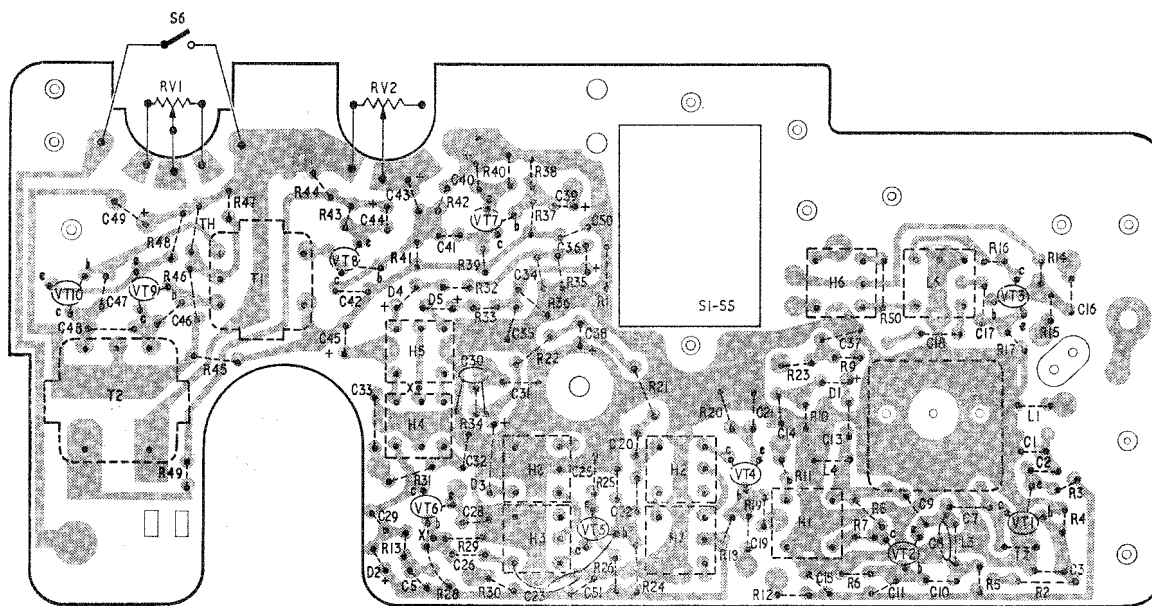
For 3 to 7, the signal generator is set for 30% modulation at 400 c/s.



5608

R	14 15 17 6	50	9 10 11 23	20	21 25 1	36 37 40	42	43 44	47
	3 4 2 5	8 7 6	12 19 18	22	24 26	22 35 36 32 33 34 41	30 29 28 13 31	45 46 48	49
C	16 2 1	CT1-4	18 9 13	14 37 21	20 38 25 36	40	43 44	33 45 42	46 49
	3 7 10	CVI-4	11 15 19	22 51	39 50 34 35 41 32 22	5 29	5 29	47 48	48
MISC.	VT3	L6	H6	VT4	SI-55	L5	H5	RV2	T1
	VT1	L2 L3	L4	H2	VT5	H8 H3	D5	H4 D5 D4	RV1 S6
	VT2	VT2	HI	H7	VT6	D3	D2	VT8	TH VT9 T2
									VT10

Fig. 2 Component side of panel



NOTE: C27 BETWEEN X-X

5609

R	45	RV1 S6	47	44 43	RV2	42 40	36 37	21	20	23 11 10	9 50	9	17 16	15 14
	49	48 46		45	45 42 33	41 34 39 33 32	36 35 1 25 21	24	18 19 12	13 37	6 7 8	9	17 7	15 16
C	48 47	45		44 43	29	40	39	20	19 21 14	15	11	10	12 16	3 4
					26 28	34 31 35 36 38 50 20	23 25 51 22		13 37	11	9	10	1 2	3
MISC.	VT10	VT9	TH	T1	VT8	D4 H4 D5	VT7	H8	SI-55	H6	L6		VT3	
	T2	VT9	VT8	VT8	D2	H5 VT6	D3	H3	VT5	H2	VT4	HI	VT1	L1
													L2	

Fig. 3 Printed wiring side of panel

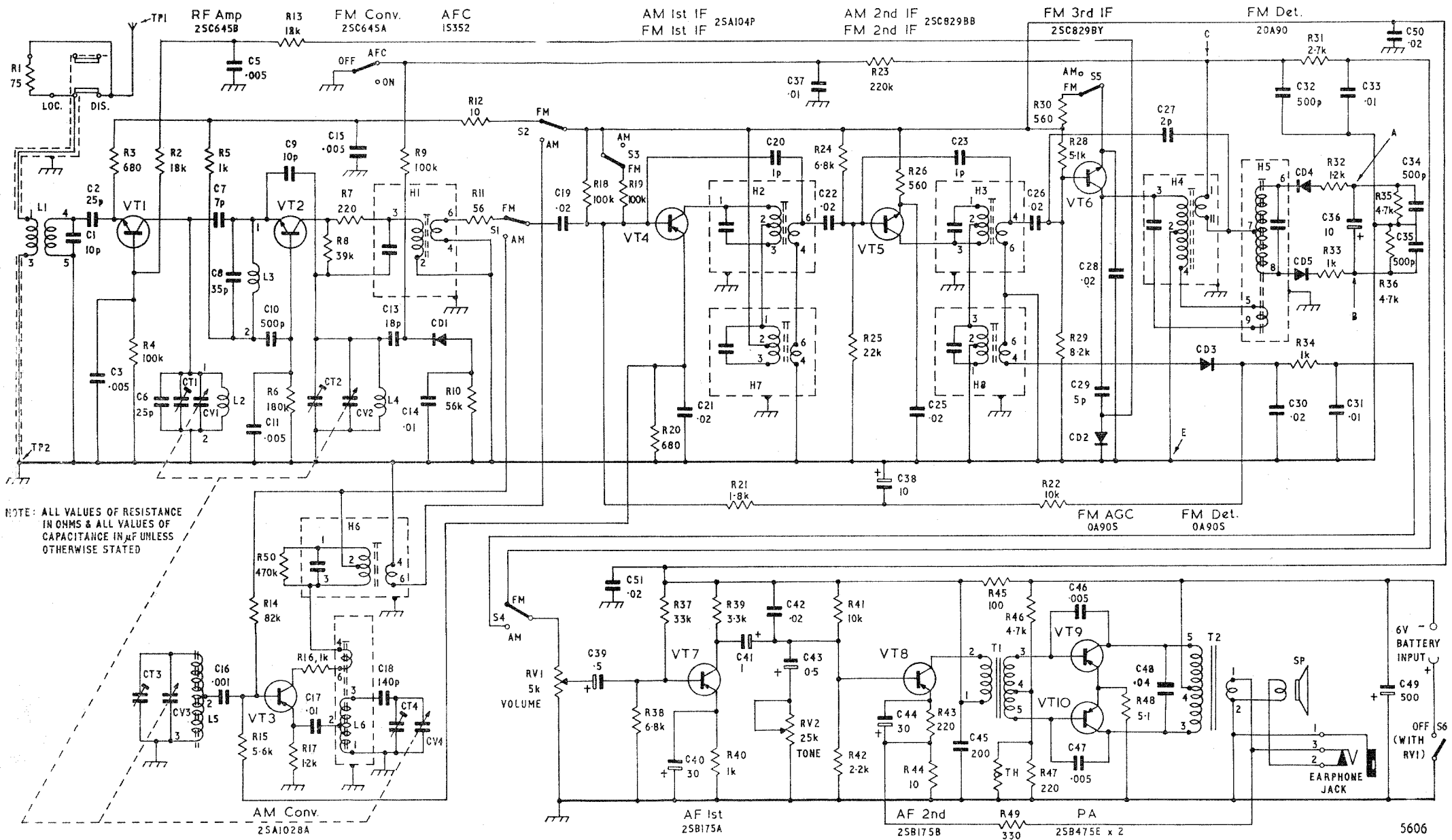


Fig. 4 Circuit diagram - VTR125

PARTS LIST

CAPACITORS

Circuit Ref.	Value (μF) (pF)	Type	Part Number
C1	10	Ceramic	AP54195
C2	25	Ceramic	AP55069
C3	.005	Ceramic	AP55070
C4	—		
C5	.005	Ceramic	AP55070
C6	25	Ceramic	AP55069
C7	7	Ceramic	AP55071
C8	35	Ceramic	AP55072
C9	10	Ceramic	AP54195
C10	500	Ceramic	AP55073
C11	.005	Ceramic	AP55070
C12	—		
C13	18	Ceramic	AP55074
C14	.01	Ceramic	AP54199
C15	.005	Ceramic	AP55070
C16	.001	Mylar	AP54202
C17	.01	Ceramic	AP54199
C18	140	Ceramic	AP55075
C19	.02	Ceramic	AP54197
C20	1	Ceramic	AP55076
C21	.02	Ceramic	AP54197
C22	.02	Ceramic	AP54197
C23	1	Ceramic	AP55076
C24	—		
C25	.02	Ceramic	AP54197
C26	.02	Ceramic	AP54197
C27	2	Ceramic	AP54210
C28	.02	Ceramic	AP54197
C29	5	Ceramic	AP55077
C30	.02	Ceramic	AP54197
C31	.01	Ceramic	AP54199
C32	500	Ceramic	AP55073
C33	.01	Ceramic	AP54199
C34	500	Ceramic	AP55073
C35	500	Ceramic	AP55073
C36	10	Electrolytic	AP54198
C37	.01	Ceramic	AP54199
C38	10	Electrolytic	AP54198
C39	.5	Electrolytic	AP54200
C40	30	Electrolytic	AP54201
C41	1	Electrolytic	AP55078
C42	.03	Mylar	AP55079
C43	.5	Electrolytic	AP54200
C44	30	Electrolytic	AP54201
C45	200	Electrolytic	AP55080
C46	.005	Mylar	AP55081
C47	.005	Mylar	AP55081
C48	.04	Ceramic	AP55082
C49	500	Electrolytic	AP55083
C50	.02	Ceramic	AP54197
C51	.02	Ceramic	AP54197
CV		Tuning gang	AP55084

RESISTORS, CARBON

Circuit Ref.	Value (ohms)	Tolerance (±%)	Rating (watts)	Part Number
R1	75	10	1/8	AP55085
R2	18k	10	1/8	AP55086
R3	680	10	1/8	AP55087
R4	100k	10	1/8	AP55088
R5	1k	10	1/8	AP55089
R6	180k	10	1/8	AP55090
R7	220	10	1/8	AP55091
R8	39k	10	1/8	AP55092
R9	100k	10	1/8	AP55088
R10	56k	10	1/8	AP55093
R11	56	10	1/8	AP55094
R12	10	10	1/8	AP55095
R13	18k	10	1/8	AP55086
R14	82k	10	1/8	AP55096
R15	5.6k	10	1/8	AP55097
R16	1k	10	1/8	AP55089
R17	1.2k	10	1/8	AP55098
R18	100k	10	1/8	AP55088
R19	100k	10	1/8	AP55088
R20	680	10	1/8	AP55087
R21	1.8k	10	1/8	AP55099
R22	10k	10	1/8	AP55100
R23	220k	10	1/8	AP55091
R24	6.8k	10	1/8	AP55101
R25	22k	10	1/8	AP55102
R26	560	10	1/8	AP55103
R27	—			
R28	5.1k	10	1/8	AP55104
R29	8.2k	10	1/8	AP55105
R30	560	10	1/8	AP55103
R31	2.7k	10	1/8	AP55106
R32	1.2k	10	1/8	AP55098
R33	1k	10	1/8	AP55089
R34	1k	10	1/8	AP55089
R35	4.7k	10	1/8	AP55107
R36	4.7k	10	1/8	AP55107
R37	33k	10	1/8	AP55108
R38	6.8k	10	1/8	AP55101
R39	3.3k	10	1/8	AP55109
R40	1k	10	1/8	AP55089
R41	10k	10	1/8	AP55100
R42	2.2k	10	1/8	AP55110
R43	220	10	1/8	AP55091
R44	10	10	1/8	AP55095
R45	100	10	1/8	AP55111
R46	4.7k	10	1/8	AP55107
R47	220	10	1/8	AP55091
R48	5.1	10	1/8	AP55112
R49	330	10	1/8	AP55113
R50	470k	10	1/8	AP55114

COILS AND TRANSFORMERS

Circuit Ref.	Description	Part Number
L1	F.M. Antenna Coil	AP55115
L2	F.M. R.F. Coil	AP55116
L3	F.M. CH Coil	AP55117
L4	F.M. Osc Coil	AP55118
L5	A.M. Antenna Coil	AP55119
L6	A.M. Osc. Coil	AP55120
H1	F.M. 1st I.F. Transformer	AP55121
H2	F.M. 2nd I.F. Transformer	AP55122
H3	F.M. 3rd I.F. Transformer	AP55123
H4	F.M. Discrim. Transformer	AP55124
H5	F.M. Disc. Transformer	AP55125
H6	A.M. 1st I.F. Transformer	AP55126
H7	A.M. 2nd I.F. Transformer	AP55127
H8	A.M. 3rd I.F. Transformer	AP55128
T1	Input Transformer	AP54180
T2	Output Transformer	AP54181

TRANSISTORS AND DIODES

Circuit Ref.	Description	Part Number
VT1	F.M. R.F. Transistor	AP55129
VT2	F.M. Converter Transistor	AP55130
VT3	A.M. Converter Transistor	AP54284
VT4	F.M. A.M. 1st I.F. Amp. Transistor	AP55131
VT5	F.M. A.M. 2nd I.F. Amp. Transistor	AP55132
VT6	F.M. 3rd I.F. Amp. Transistor	AP55133
VT7	A.F. 1st Amp. Transistor	AP54172
VT8	A.F. 2nd Amp. Transistor	AP55134
VT9	Output Transistor	AP55135
VT10	Output Transistor	AP55135
CD1	A.F.C. Diode	AP55136
CD2	F.M. A.G.C. Diode	AP54175
CD3	A.M. Detection Diode	AP54175
CD4	F.M. Detection Diode	AP55137
CD5	F.M. Detection Diode	AP55137

VARIABLE RESISTORS

Circuit Ref.	Description	Part Number
VR1	Control, volume 5kΩ with on/off switch (less knob)	AP54278
VR2	Control, tone, 25kΩ (less knob)	AP54279

CABINET FRONT

Description	Part Number
Cabinet front assembly	AP55157
Grille	AP55160
Pointer, scale	AP55161
Trim for pointer scale	AP54230

CABINET REAR

Description	Part Number
Battery cover assembly	AP55163
Cabinet rear assembly	AP55164

KNOBS

Description	Part Number
Indicator (2) for wavechange push button	AP54253
Knob, assembly, volume, with strip printed	AS54276
Knob assembly, tone, with strip printed	AS54277
Pushbutton (2), wavechange switch	AP54194
Screw (2) hexagonal head, securing volume and tone control knobs	AP54646

MISCELLANEOUS

Description	Part Number
Carrying case with strap	AP55169
Case for earpiece	AP54249
Earpiece	AP54248

THERMISTOR

Description	Part Number
TH Thermistor	AP54176

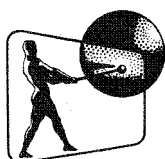
TUNING DRIVE

Description	Part Number
Drive Cord, 24 in.	AP54221
Drum	AP54212
Knob, tuning	AP54215
Pulley shaft (2)	AP54216
Scale, printed	AP55155
Screw, fixing scale, printed	AP55156
Spacer for dial drum	AP54218
Spring from drive cord	AP54220
Tuning shaft assembly	AP54214

MECHANICAL COMPONENTS

Description	Part Number
Aerial, telescopic	AP55151
Battery case	AP54188
Battery connector	AP54191
Ferrite aerial assembly with coil	AP55153
Jack for earpiece	AP54187
Slide switch (2)	AP55148
Slide switch bracket	AP55150
Speaker, 8 ohm	AP54169
Wavechange switch assembly with buttons	AS54192

THE SERVICE DEPARTMENT



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