

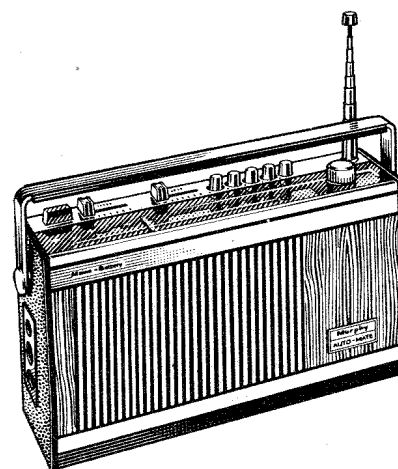
BUSH | MURPHY

SERVICE INFORMATION

MODELS VTR265 & MV5702

RADIO

RECEIVERS



MV5702

SPECIFICATION

GENERAL

These models are mains/battery operated AM/FM radio receivers designed to cover the Medium, Long and VHF wavebands. 11 transistors and 15 diodes are employed with an internal ferrite rod aerial for the LW and MW bands and an extending rod aerial for the VHF band.

DIMENSIONS

with handle down.

Height : 170 mm (6.7 ins.)

Width : 308 mm (12.13 ins.)

Depth : 90 mm (3.54 ins.)

Weight: 1.82 kg (4 lbs.) excluding battery

MAINS SUPPLY

240 volts 50 Hz.

BATTERY SUPPLY

Six 1½ volt cells SP11 or equivalent.

Average battery consumption is 22mA quiescent (27mA normal listening level).

WAVEBANDS

LW : 150 kHz to 285 kHz (2000 to 1050 metres).

MW: 1620 kHz to 515 kHz (185 to 582 metres).

VHF: 87.5 MHz to 104 MHz.

INTERMEDIATE FREQUENCIES

AM bands: 470 kHz oscillator high with respect to the signal frequency.

FM bands: 10.7 MHz oscillator low with respect to the signal frequency.

SOUND OUTPUT

600mW at 1000 Hz for 10% Total Harmonic Distortion.

LOUDSPEAKER

Frame size = 153 × 102 mm (6 × 4 in.) elliptical.

Impedance 16 ohms.

AUTOMATIC GAIN CONTROL

One controlled stage with auxiliary diode on MW band.

AERIALS

An internal ferrite rod aerial for LW and MW bands and a telescopic rod aerial for the VHF band. A car type aerial socket is provided for use on LW and MW with capacitive coupling to the base of the VHF rod aerial. A CAR push button is fitted which substitutes LW and MW aerial coils for the ferrite rod when operated.

CIRCUIT ALIGNMENT

Preliminary Notes

- (i) Equipment required.
 - (a) Sweep generator with markers at 470 kHz and 10.7 MHz.
 - (b) Oscilloscope.
 - (c) FM Signal Generator to cover 86 MHz to 106 MHz.
 - (d) AM Signal Generator to cover 150 kHz to 12 MHz.
 - (e) Power output meter 500mW, 16 ohms impedance.
 - (f) A coupling loop consisting of a 10 inch diameter loop of wire in series with a resistor of a value to match the output impedance of the generator.
- (ii) Set the Volume control to maximum and the Tone control to minimum unless otherwise stated. Switch off the A.F.C. (button fully raised).
- (iii) Disconnect the loudspeaker and connect the Output meter in its place.

AM CIRCUITS

I.F. ALIGNMENT

- (a) Connect the oscilloscope to the test point TP5.
- (b) Connect the Signal Generator to the coupling loop and place the loop about 2 feet from the receiver with its plane at right angles to the ferrite rod aerial.
- (c) Switch the receiver to MW, set the tuning pointer to approximately 300 metres and the V/C to minimum position.
- (d) Inject a modulated signal of 470 kHz and adjust T6, T7 and T8 for maximum output and L11 and L12 (I.F. trap) for minimum output. Repeat adjustments for optimum results.

R.F. ALIGNMENT MW AND LW

Notes: Inject signal using coupling loop. Connect output meter across loudspeaker.

Operation	Wave-band	Sig. Gen. Freq. (mod. 30% 400 Hz)	Tuning	Adjust for Max. Output
1	MW	510 kHz	L.F. end of scale (gang closed)	L14
2	MW	1650 kHz	H.F. end of scale (gang open)	TC8

Repeat operations 1 and 2 for optimum frequency coverage.

3	MW	600 kHz	600 kHz	L7
4	MW	1400 kHz	1400 kHz	TC3

Repeat operations 4 and 5 for correct tracking.

5	LW	145 kHz	L.F. end of scale (gang closed)	L13
6	LW	300 kHz	H.F. end of scale (gang open)	TC7

Repeat operations 5 and 6 for optimum frequency coverage.

7	LW	175 kHz	175 kHz	L8
8	LW	250 kHz	250 kHz	TC4

Repeat operations 7 and 8 for correct tracking.

R.F. ALIGNMENT CAR (MW AND LW)

Notes: Inject signal to TP3. Connect output meter across loudspeaker. Car switch to inner position.

Operation	Wave-band	Sig. Gen. Freq. (mod. 30% 400 Hz)	Tuning	Adjust for Max. Output
1	MW	510 kHz	L.F. end of scale (gang closed)	L14
2	MW	1650 kHz	H.F. end of scale (gang open)	TC8

Repeat operations 1 and 2 for optimum frequency coverage.

3	MW	600 kHz	600 kHz	L9
4	MW	1400 kHz	1400 kHz	TC5

Repeat operations 3 and 4 for correct tracking.

5	LW	145 kHz	L.F. end of scale (gang closed)	L13
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6	LW	300 kHz	H.F. end of scale (gang open)	TC7
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Repeat operations 5 and 6 for optimum frequency coverage.

7	LW	175 kHz	175 kHz	L10
8	LW	250 kHz	250 kHz	TC6

Repeat operations 7 and 8 for correct tracking.

FM CIRCUITS

1. I.F. ALIGNMENT

- (a) Connect the Sweep Generator to the test point TP1, 2 (telescopic rod aerial) and the oscilloscope to the test point TP5.
- (b) Switch the receiver to VHF, set the tuning pointer to maximum frequency and the V/C to minimum position.
- (c) Inject a modulated signal of 10.7 MHz and adjust T1, T2, T3 and T4 for a maximum symmetrical response centred at 10.7 MHz.
- (d) With the same signal applied, adjust T5 for optimum symmetry of "S" shaped curve centred at 10.7 MHz.
- (e) Repeat adjustments for optimum results.

2. R.F. ALIGNMENT

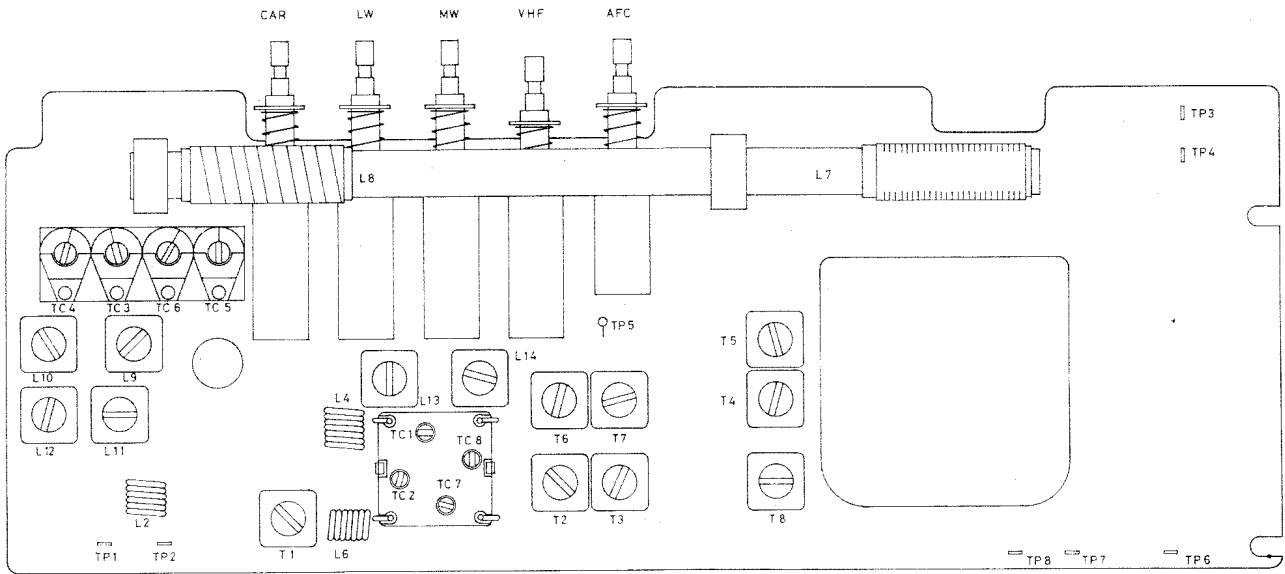
Notes: Inject FM Signal to TP1. Connect output meter across loudspeaker.

Operation	Wave-band	Sig. Gen. Freq. (modulated)	Tuning	Adjust for Max. Output
1	FM	87 MHz	L.F. end of scale (gang closed)	L6
2	FM	104.5 MHz	H.F. end of scale (gang open)	TC2

Repeat operations 1 and 2 for optimum frequency coverage.

3	FM	88 MHz	88 MHz	L4
4	FM	104 MHz	104 MHz	TC1

Repeat operations 3 and 4 for correct tracking.



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Fig. 1 Location of coils and trimmers

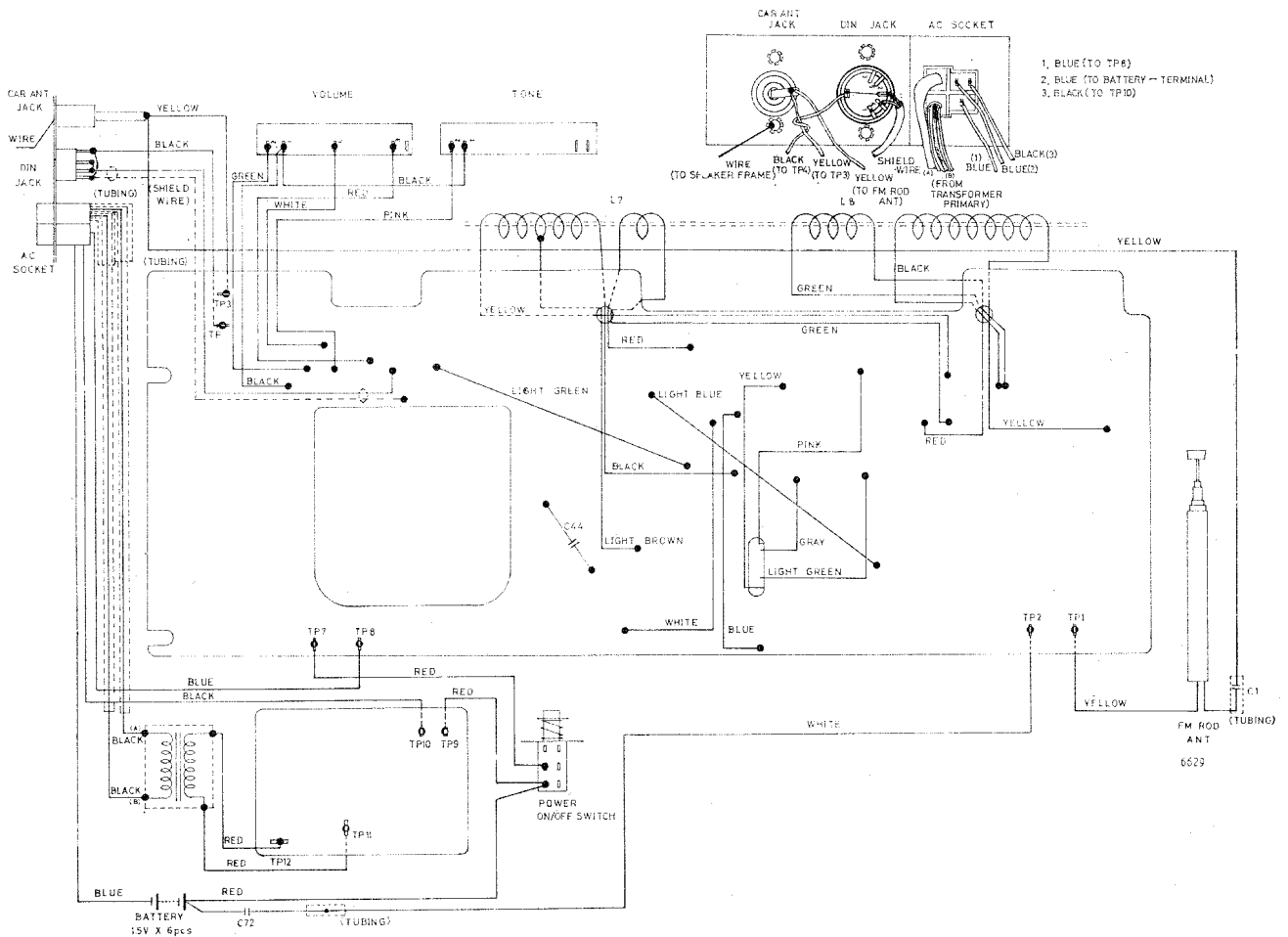
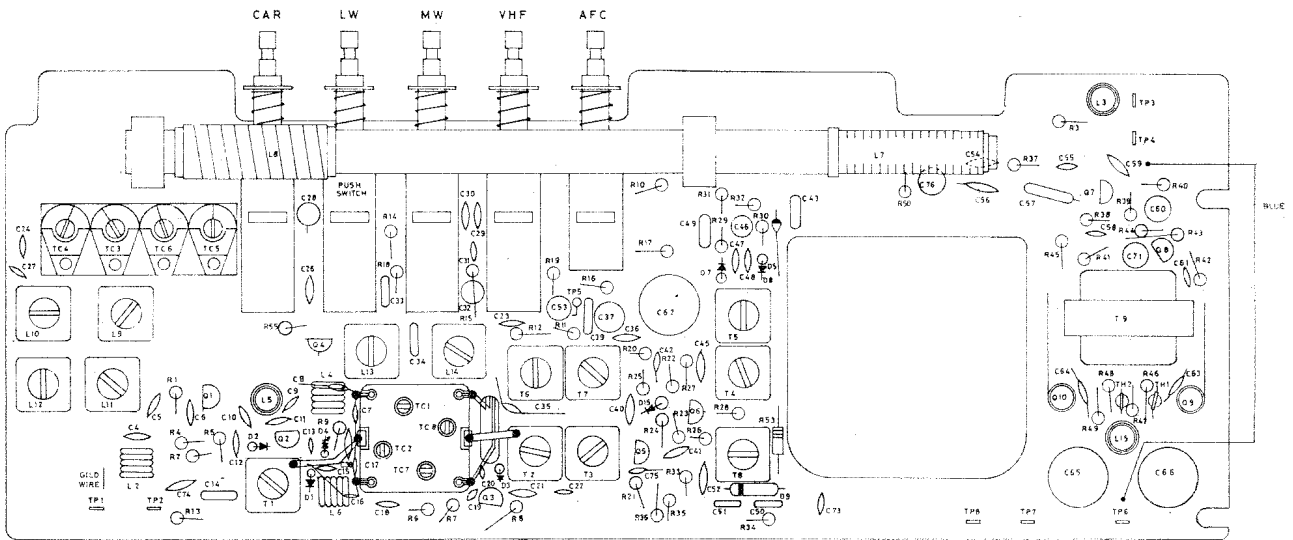


Fig. 2 Interconnections diagram

VTR265 & MV5702



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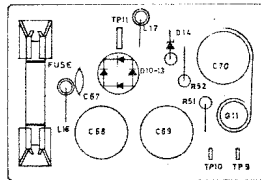
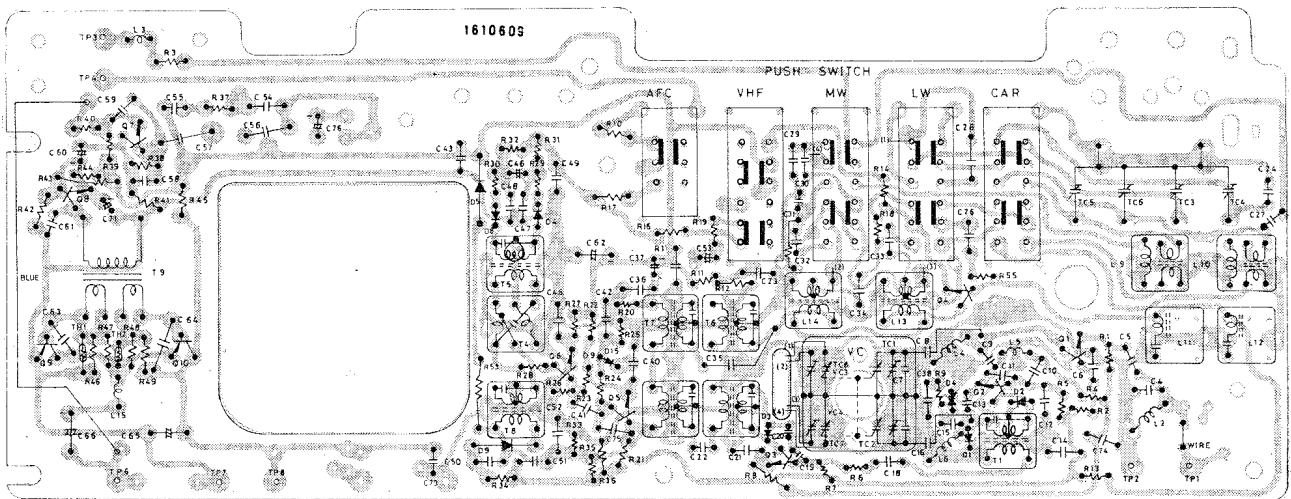


Fig. 3 Components layout



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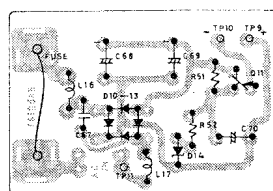


Fig. 4 Print side of components panel

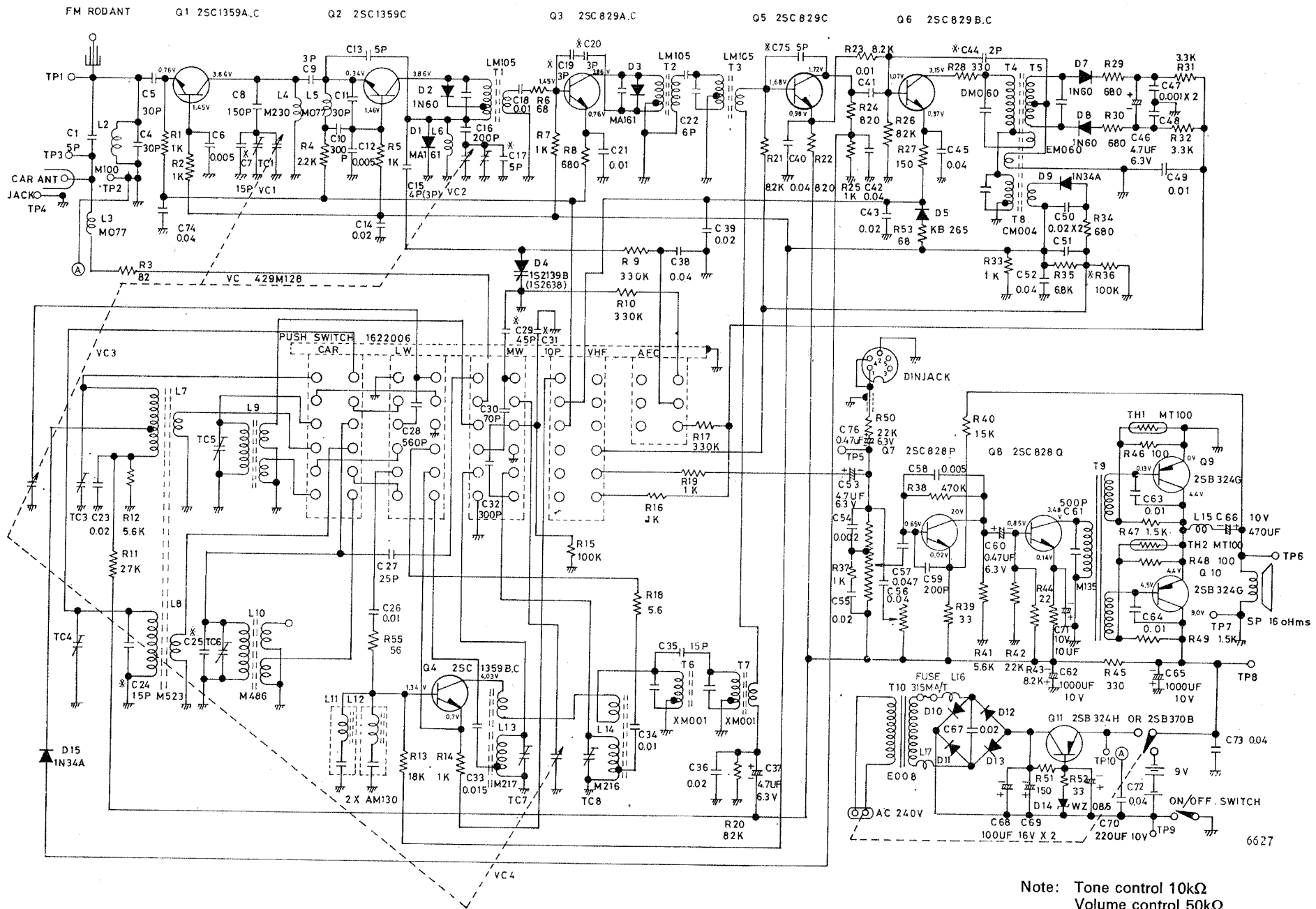


Fig. 5 Circuit diagram VTR265 & MV5702

Note: Tone control 10kΩ
Volume control 50kΩ

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VTR265 & MV5702

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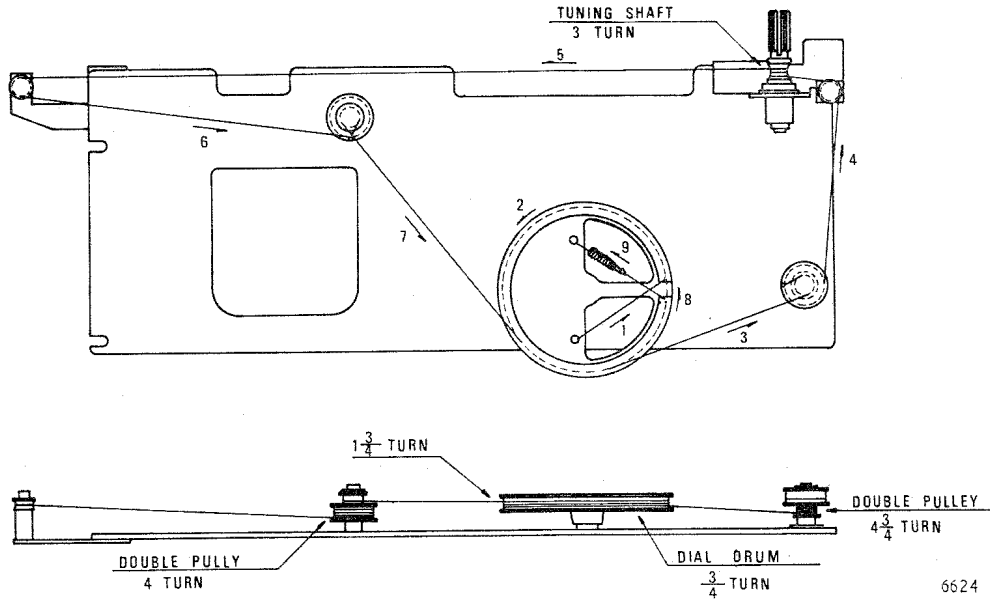


Fig. 6 Cord drive details

PARTS LIST - ELECTRICAL

ABBREVIATIONS: MY—MYLAR CF—CARBON FILM E—ELECTROLYTIC S—STYROL C—CERAMIC

CAPACITORS

Ref.	Value (μ F)	Value (pF)	Type	Part Number	Ref.	Value (μ F)	Value (pF)	Type	Part Number
C1		5	C	AP92472	C33	0.015		MY	AP91032
C2		—	—	—	C34	0.01		MY	AP91848
C3		—	—	—	C35		15	C	AP91951
C4		30	C	AP90048	C36	0.02		C	AP94645
C5		30	C	AP90048	C37	4.7		E 6.3V	AP93424
C6	0.005		C	AP93977	C38	0.04		C	AP94648
C7		15	C	AP91951	C39	0.02		MY	AP92801
C8		150	C	AP93613	C40	0.04		C	AP94648
C9		3	C	AP94061	C41	0.01		C	AP94104
C10		300	C	AP92211	C42	0.04		C	AP94648
C11		30	C	AP90048	C43	0.02		MY	AP92801
C12	0.005		C	AP93977	C44		2	C	AP92215
C13		5	C	AP92472	C45	0.04		C	AP94648
C14	0.02		MY	AP92801	C46	4.7		E 6.3V	AP93424
C15		3	C	AP94061	C47	0.001		C	AP93193
C16		200	C	AP90471	C48	0.001		C	AP93193
C17		5	C	AP92472	C49	0.01		MY	AP91848
C18	0.01		C	AP94104	C50	0.02		MY	AP92801
C19		3	C	AP94061	C51	0.02		MY	AP92801
C20		3	C	AP94061	C52	0.04		C	AP94648
C21	0.01		C	AP94104	C53	4.7		E 6.3V	AP93434
C22		6	C	AP59252	C54	0.002		C	AP90245
C23	0.02		C	AP94645	C55	0.02		C	AP94645
C24		15	C	AP91951	C56	0.04		C	AP94648
C25		—	—	—	C57	0.047		MY	AP92810
C26	0.01		C	AP94104	C58	0.005		C	AP93977
C27		25	C	AP92207	C59		200	C	AP90471
C28		560	ST	AP94656	C60	0.47		E 6.3V	AP93424
C29		45	C	AP92396	C61		500	C	AP94062
C30		70	C	AP94647	C62	1000		E 10V	AP93431
C31		10	C	AP93674	C63	0.01		C	AP94104
C32		300	ST	AP90046	C64	0.01		C	AP94104

CAPACITORS—continued

Ref.	Value (μ F) (pF)	Type	Part Number
C65	1000	E 10V	AP93431
C66	470	E 10V	AP93430
C67	0-02	C	AP94645
C68	100	E 16V	AP90840
C69	100	E 16V	AP90840
C70	220	E 10V	AP93684
C71	10	E 6-3V	AP93425
C72	0-04	C	AP94648
C73	0-04	C	AP94648
C74	0-04	C	AP94648
C75		5 C	AP92472
C76	0-47	E 6-3V	AP93424
TC3, 4, 5, & 6			AP56493
Tuning capacitor, 4 gang			AP94636

RESISTORS

Ref.	Value (ohms)	Type	Part Number
R1	1k	CF	AP93875
R2	1k	CF	AP93875
R3	82	CF	AP94114
R4	2-2k	CF	AP93873
R5	1k	CF	AP93875
R6	68	CF	AP94113
R7	1k	CF	AP93875
R8	680	CF	AP94117
R9	330k	CF	AP93063
R10	330k	CF	AP93063
R11	27k	CF	AP93864
R12	5-6k	CF	AP93378
R13	18k	CF	AP93382
R14	1k	CF	AP93875
R15	100k	CF	AP93180
R16	1k	CF	AP93875
R17	330k	CF	AP93063
R18	5-6	CF	AP94110
R19	1k	CF	AP93875
R20	82k	CF	AP94120
R21	8-2k	CF	AP93380
R22	820	CF	AP93876
R23	8-2k	CF	AP93380
R24	820	CF	AP93876
R25	1k	CF	AP93875
R26	82k	CF	AP94120
R27	150	CF	AP94115
R28	330	CF	AP94116
R29	680	CF	AP94117
R30	680	CF	AP94117
R31	3-3k	CF	AP93872
R32	3-3k	CF	AP93872
R33	1k	CF	AP93875
R34	680	CF	AP94117
R35	6-8k	CF	AP93379
R36	—	—	—
R37	1k	CF	AP93875
R38	470k	CF	AP93695
R39	33	CF	AP94112
R40	15k	CF	AP94118
R41	5-6k	CF	AP93378
R42	22k	CF	AP94119
R43	8-2k	CF	AP93380
R44	22	CF	AP94111
R45	330	CF	AP94116
R46	100	CF	AP93616
R47	1-5k	CF	AP93178
R48	100	CF	AP94116
R49	1-5k	CF	AP93178
R50	22k	CF	AP94119
R51	150	CF	AP94115
R52	33	CF	AP94112
R53	68	CF	AP94113
R54	—	—	—
R55	56	CF	AP93615

TRANSISTORS AND DIODES

Ref.	Type	Part Number
Q1	2SC-1359A	AP58994
Q2	2SC-1359C	AP58993
Q3	2SC-829C	AP92429
Q4	2SC-1359C	AP58993
Q5	2SC-829C	AP92429
Q6	2SC-829C	AP92429
Q7	2SC-828P	AP92796
Q8	2SC-828Q	AP58996
Q9	2SB-324G	AP58997
Q10	2SB-324G	AP58997
Q11	2SB-324H	AP58998
D1	MA 161	AP58999
D2	OA 90	3641 0093
D3	MA 161	AP58999
D4	1S2139B	AP95231
D5	KB 265	AP59000
D6	—	—
D7	OA 90	3641 0093
D8	OA 90	3641 0093
D9	OA 90	3641 0093
D10-D13	WO 2	AP59001
D14	MZ-085	AP59002
D15	OA 90	3641 0093

THERMISTORS

Ref.	Type	Part Number
TH1	MT-100	AP94100
TH2	MT-100	AP94100

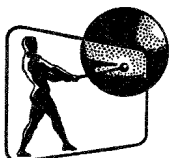
TRANSFORMERS AND INDUCTORS

Ref.	Function	Part Number
L1	—	—
L2	FM Ant. Coil	AP94620
L3	FM Trap Coil	AP56356
L4	FM Coil	AP94077
L5	FM Trap Coil	AP56356
L6	FM Osc. Coil	AP56357
L7-8	MW/LW Ant. Coil for Ferrite Aerial Assy.	AP94631
L9	MW Car Ant. Coil Blue	AP94079
L10	LW Car Ant. Coil Blue	AP94080
L11	I.F. Trap Coil (470 kHz) Green	AP56381
L12	I.F. Trap Coil (470 kHz) Green	AP56381
L13	LW Osc. Coil Yellow	AP94081
L14	MW Osc. Coil Red	AP94082
L15	FM Trap Coil	AP56356
L16	Choke Coil	AP94632
L17	Choke Coil	AP94633
T1	FM I.F.T. A Blue	AP56473
T2	FM I.F.T. B Blue	AP56473
T3	FM I.F.T. B Blue	AP56473
T4	FM I.F.T. D Red	AP56474
T5	FM I.F.T. E Red	AP56474
T6	AM I.F.T. A Yellow	AP94084
T7	AM I.F.T. A Yellow	AP94084
T8	AM I.F.T. C Black	AP58400
T9	I.F.T.	AP94085
T10	Power Transformer	AP94634

PARTS LIST - MISCELLANEOUS

Title	Part Number	Title	Part Number
Car aerial socket	AP94093	Loudspeaker	AP94640
Dial drum	AP94602	Switch on/off	AP94639
Drive cord spring	AP94301	Switch wavechange	AP94089
Fuse 315mA	AP94669	Telescopic aerial	AP94590

THE SERVICE DEPARTMENT



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