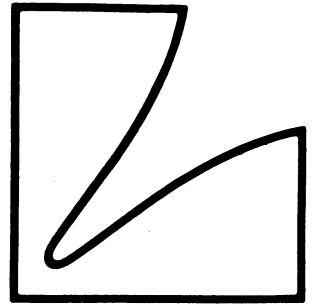


# SERVICE MANUAL

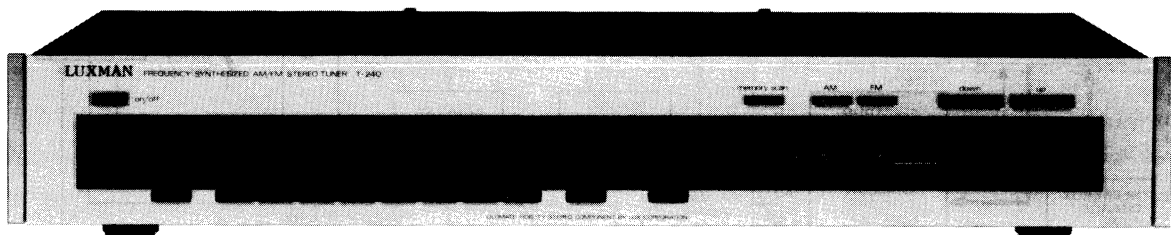


FREQUENCY SYNTHESIZED AM FM STEREO TUNER

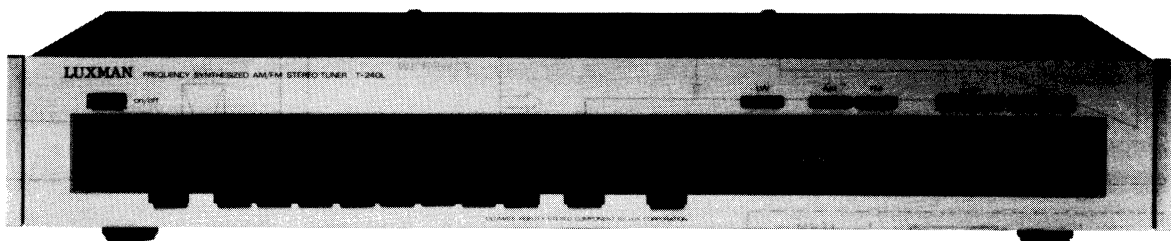
# T-240/T-240L

T-240/T-240L

T-240/T-240L



T-240



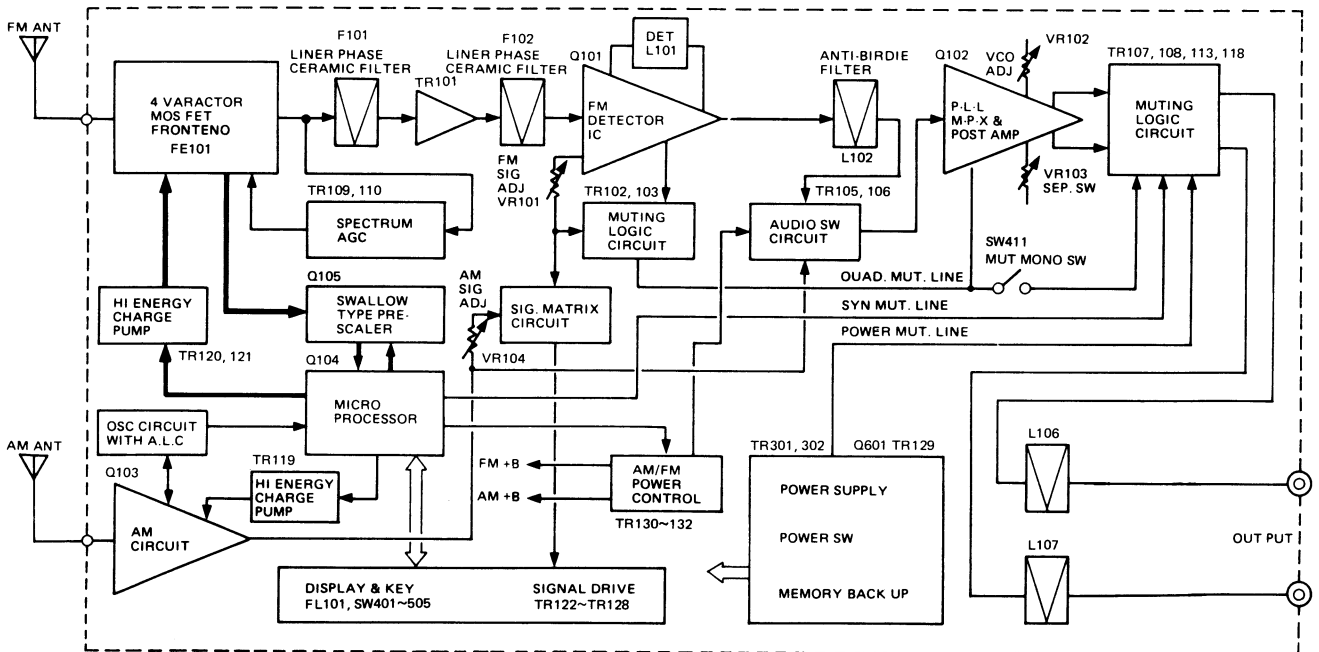
T-240L

# Contents

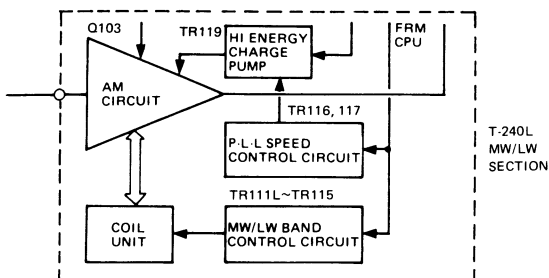
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T-240/T-240L

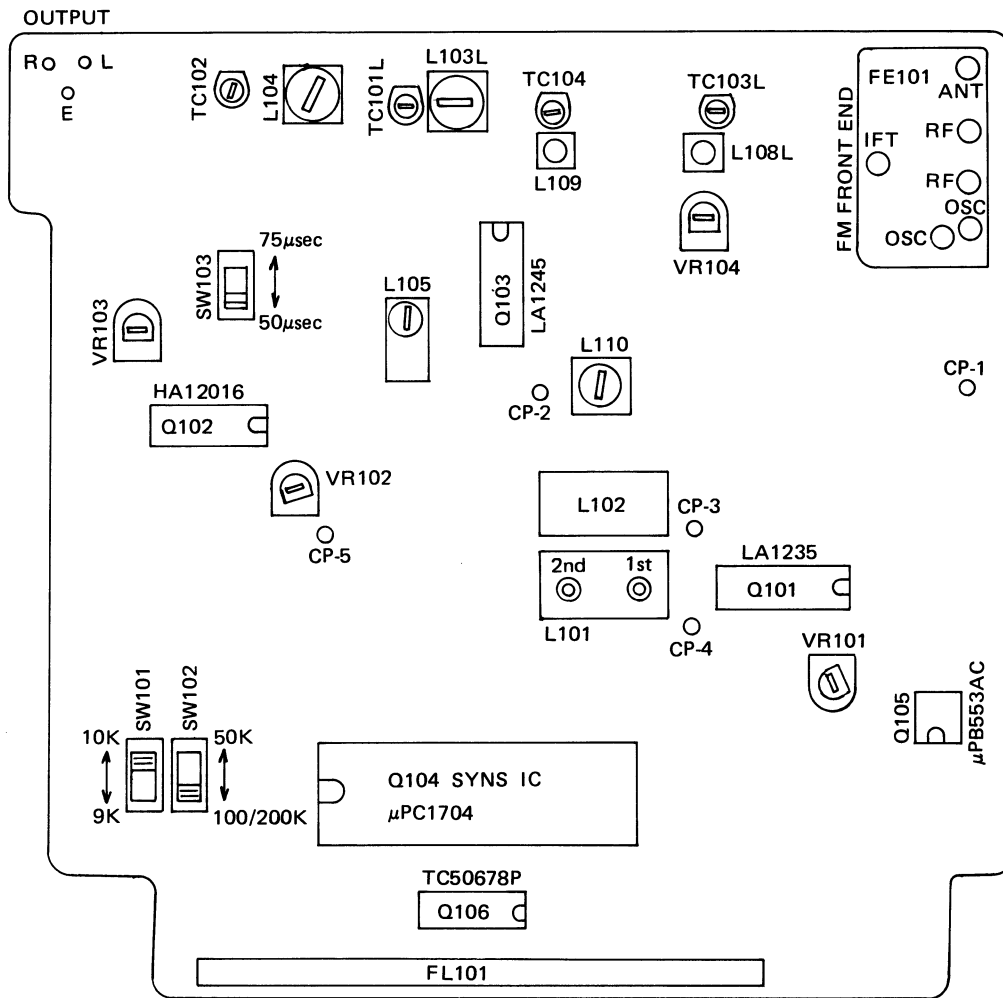
## Block Diagram



T240



# Adjustment Locations



TC101L . . . . .LW ANT. TRIMMER  
 L103L . . . . .LW ANT. COIL  
 TC103L . . . . .LW OSC TRIMMER  
 L108L . . . . .LW OSC COIL  
 TC102 . . . . .MW ANT. TRIMMER  
 L104 . . . . .MW ANT. COIL  
 TC104 . . . . .MW OSC TRIMMER  
 L109 . . . . .MW OSC COIL  
 VR104 . . . . .AM SIGNAL METER ADJ.  
 L110 . . . . .AM IFT

L105 . . . . .AM CERAMIC FILTER  
 CP-2 . . . . .AM AUDIO OUTPUT POINT  
 VR101 . . . . .FM MUTE & SIGNAL METER ADJ.  
 CP-3, CP-4 . . . . .CENTER METER CHECK POINT  
 L101 . . . . .FM DETECTOR  
 CP-5 . . . . .MPX VCO CHECK POINT  
 VR102 . . . . .MPX VCO ADJ.  
 VR103 . . . . .MPX STEREO SEPARATION ADJ.  
 FE101 IFT . . . . .STEREO DISTORTION ADJ.  
 CP-1 . . . . .AM TUNING VOLTAGE CHECK POINT

# Adjustment Procedures

## NOTE

Do not adjust this unit unless absolutely necessary. The following adjustments should NOT be performed unless the technician (This means you!), has a thorough understanding of the circuitry and principals involved AND has proper test equipment. If these conditions are not met, it is quite likely any adjustments made will degrade performance and potentially affect reliability.

1. Unit should be connected to an AC power source. Push power switch on and allow unit to warm up for 5 minutes.

## AM ALIGNMENT

2. In order to properly align the AM section of the T-240, an AM sweep generator is necessary. If you do not have this type of test equipment, please do not attempt to align the unit.
  - a. Activate the AM function button. (MW on T-240L)
  - b. Connect the output of the AM sweep generator to the AM antenna terminal on the T-240, Connect the input of the sweep generator to CP2. The output of the sweep generator should be between 20–50dB/ $\mu$ V.
  - c. Adjust L105 and L110 maximum symmetrical single peak response of the 450KHz signal.
  - d. Connect DC voltmeter to CP1 and ground.
  - e. Set the AM signal generator for 600KHz (603KHz for european version), 400Hz tone at 30% modulation, 60dB/m output. Set the T-240 for 600KHz (603KHz for european version). Adjust L109 to obtain 2.0 volts.
  - f. Change frequency on the generator and the T-240 to 1400KHz (1404KHz for european version). Adjust TC104 to obtain 7.0 volts.
  - g. Because these controls interact with each other, steps e and f should be repeated to obtain the desired voltages. Remove the voltmeter.
  - h. Change the frequency on the generator and the T-240 to 600KHz (603KHz for european version). Adjust L104 for maximum output.
  - i. Again change the frequency on the generator and the T-240 to 1400KHz (1404KHz for european version). Adjust TC102 for maximum output.
  - j. Because these controls interact with each other, steps h and i should be repeated several times for best performance.
  - k. Set the AM signal generator for 1000KHz (999KHz for european version), 400Hz tone at 30% modulation and 80dB/m output. Set the T-240 at 1000KHz (999KHz for european version). Adjust VR104 so the signal strength fluorescent display is fully lighted (all 5 segments). The 5th segment should just be lighted.
  - l. Confirm the tuning operation in 10KHz (9KHz in european models) increments using the up/down tuning buttons from 530KHz (522KHz for european version) to 1620KHz (1611KHz for european version).

## LW ALIGNMENT T-240L

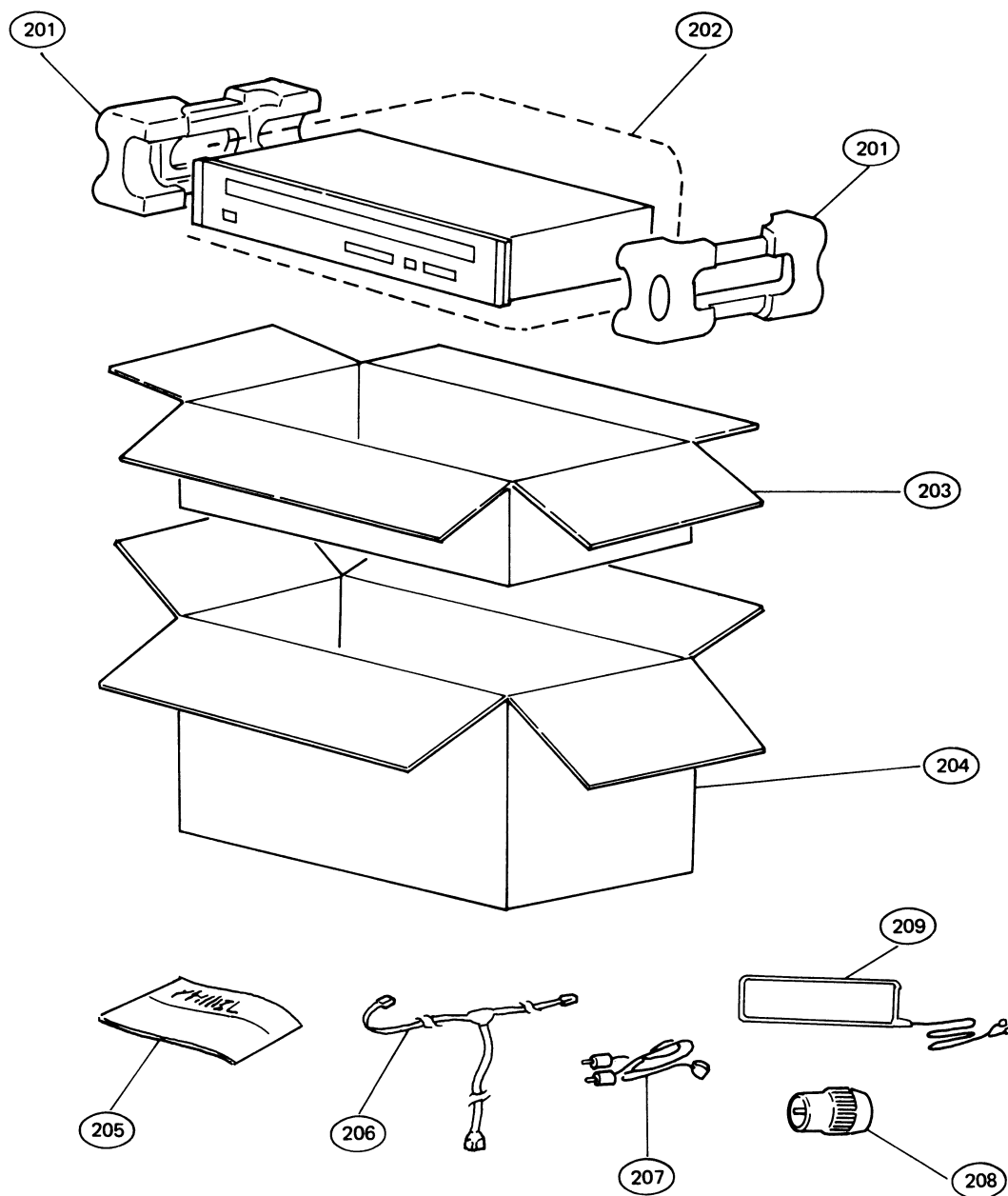
- m. Set the AM signal generator for 155KHz, 400Hz tone at 30% modulation, 60dB/m output. Set the T-240L for 155KHz. Adjust L108L to obtain 2.0 volts.
- n. Change frequency on the generator and the T-240L to 281KHz. Adjust TC103L to obtain 7.0 volts.
- o. Because these controls interact with each other, steps m and n should be repeated to obtain the desired voltages. Remove the voltmeter.
- p. Change the frequency on the generator and the T-240L to 182KHz. Adjust L103L for maximum output.
- q. Again change the frequency on the generator and the T-240L to 264KHz. Adjust TC101L for maximum output.
- r. Because these controls interact with each other, steps p and q should be repeated several times for best performance.
- s. Confirm the tuning operation in 9KHz increments using the up/down tuning buttons from 155KHz to 281KHz.

## 3. FM ALIGNMENT

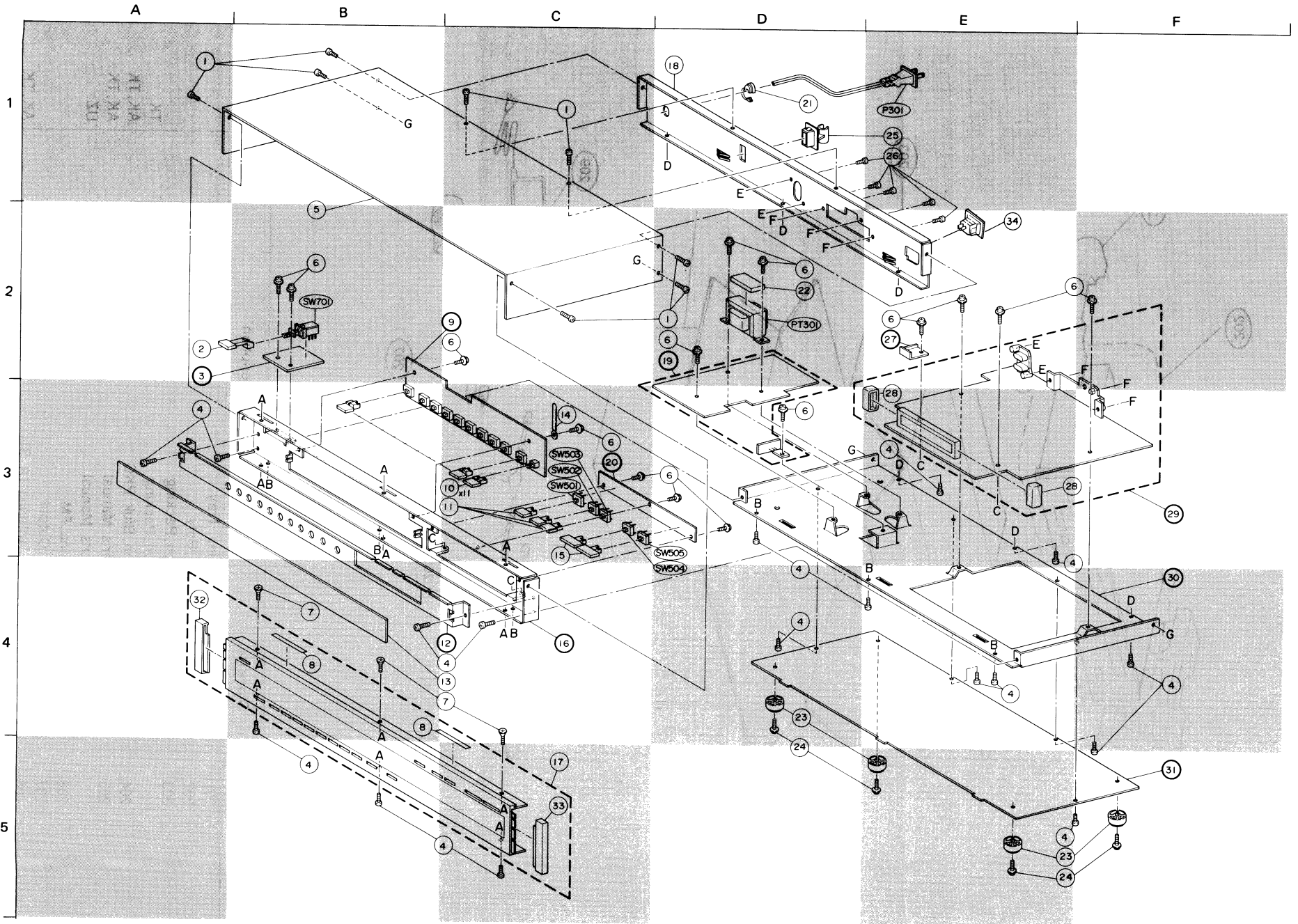
Proper alignment of the FM circuitry is critical. In order to obtain maximum performance, DO NOT adjust any FM circuitry unless you have a stable high quality FM signal generator with an external FM multiplex composite signal modulator. Alignment attempts without using the above type of equipment will likely degrade the units performance.

- a. With the unit on, turn to 98.1MHz.
- b. Connect the FM signal generator output to the antenna 300ohm terminals on the back of the T-240.
- c. Set the FM signal generator for a 98.1MHz, 1KHz 100% modulated monaural signal and 3000 micro-volt output (75dBf).
- d. Connect a digital voltmeter to CP3 and CP4 and adjust L101 primary for "0" reading position on the center meter, the slug to adjust is the one closest to IC (LA1235).
- e. Adjust the secondary of L101 minimum distortion.
- f. Adjust L101 (primary) again for "0" reading on the center meter. Repeat 2 or 3 times for best performance (minimum distortion).
- g. With the mute switch off on the T-240, feed into the antenna terminals 5 micro-volts (22dBf), and adjust VR101 for perfect symmetrical waveform.
- h. Gradually increase the FM signal generator and verify that the 5 segment signal strength meter lights up to the 5th segment.
- i. With a frequency counter connected to CP5 and chassis ground, and no RF input to the antenna terminals, adjust VR102 for free run frequency of the PLL circuit (76KHz + or - 10Hz).
- j. With the FM signal generator set at 98.1MHz, 1KHz, 100% modulated stereo signal (mode L or R), 3000 micro-volt output (75dBf), and with a 10% pilot level, confirm that the stereo light is on.
- k. Confirm that the stereo light goes out when the muting off switch is pushed.
- l. Adjust the front end IF coil + or - 1/2 turn for minimum distortion. Repeat step e through h for minimum distortion.
- m. The stereo separation should be over 45dB, if VR103 is correctly adjusted.
- n. Confirm that the unit reads down to 87.90MHz (87.50MHz for european version) and up to 107.90MHz (108.00MHz for european version).

# Packing Material Parts List



Index	Symbol No.	Stock No.	Description	Remarks
	201	56D56866F01	Packing Tray	
	202	56B40230G34	Sack, Poly	
	203	56C58368F33	Carton, Packing	
		56S60482F33	Carton, Packing	
	204	56C53420F31	Carton, Bluk PKG	TK
	205	68R65432F11	Owner's Manual	AK, TK
		68R63678F01	Owner's Manual	UZ
	206	85T51069F01	Antenna, FM	
	207	28C42374J02	Cord, Output	
	208	28T51066F01	Plug, Antenna (A.S)	AK, TK
	209	85T51078F01	Antenna, Loop	



Exploded View

## Exploded View Parts List

Index	Symbol No.	Stock No.	Description	Remarks
A1, C1	1	03S44205G38	Screw, T-Tite M3X6	
A2	2	36B53266F01	Knob, Push D	
A2	3		Panel, Power SW	
A3, B5	4	03S44205G01	Screw, T-Tite M3X6	
B2	5	15C56855F01	Cover, Top	
B2, C2	6	03C42723U01	Screw, CUP M3X6	
B4, C4	7	03S44205G16	Screw, T-Tite M3X6	
B4	8	※	Insulator, 50X5	
C2	9	※	Ass'y Store PCB	
C3	10	36B63673F01	Knob, Push 1210	
C3	11	36B53265F01	Knob, Push C	
C4	12	※	Bracket, Indicator 1469	
C4	13	61B63672F01	Crystal, Indicator 1139	
		61B63672F02	Crystal, Indicator 1139	TK
C3	14	29C41045P03	Lug Wrap Around	
C3	15	36B63674F01	Knob, Push 1209	
C4	16	※	Chassis, Front 1091	
C5	17	01V64300F60	Ass'y Panel Front	
		01V66300F59	Ass'y Panel Front	TK
C1	18	15C63669F03	Cover, Rear 1241	TK
		15C63669F02	Cover, Rear 1241	AK
		15C63669F01	Cover, Rear 1241	
D2	19	※	Ass'y Power PCB	
C3	20	※	Panel, Function SW	
D1	21	43B41625J02	Support, Cord	
D2	22	43A58041F01	Spacer, 1195	
D4, E5	23	75A52969F01	Pad, Trann—leg	
D4, E5	24	03S40036U10	Screw, T-Tite M3X10	
E1	25	55T51079F01	Lock, Antenna Holder	
E1	26	03S40012G41	Screw, Tapping M3X8	
E2	27	※	Bracket, 1470	
E3	28	15A57286F01	Cover, 1052	
F3	29	※	Ass'y Radio PCB	
F4	30	※	Chassis, Main 1077	
F5	31	※	Cover, Bottom	
A4	32	07B56848F01	Frame, Panel Side L	
C5	33	07B56849F01	Frame, Panel Side R	
E2	34	09T52560F01	Plug, Antenna P2132—A	AK, TK
D2	PT301	25T57254F01	Trans Power	AK, TK
		25T57254F04	Trans Power	UZ
E1	P301	28T43812P04	Plug, AC Cord	AK, TK
		28T40916U01	Plug, AC Cord	UZ
C3	SW501	40T52952F01	Switch KHC10903	
	SW502	40T52952F01	Switch KHC10903	
	SW503	40T52952F01	Switch KHC10903	
D4	SW504	40T52952F01	Switch KHC10903	
D3	SW505	40T52952F01	Switch KHC10903	
B2	SW701	40T57645F01	Switch, Push SUF12(SHORT)	

Note: ※ The parts whose parts numbers are not entered will not be supplied.

## Destination's Parts List

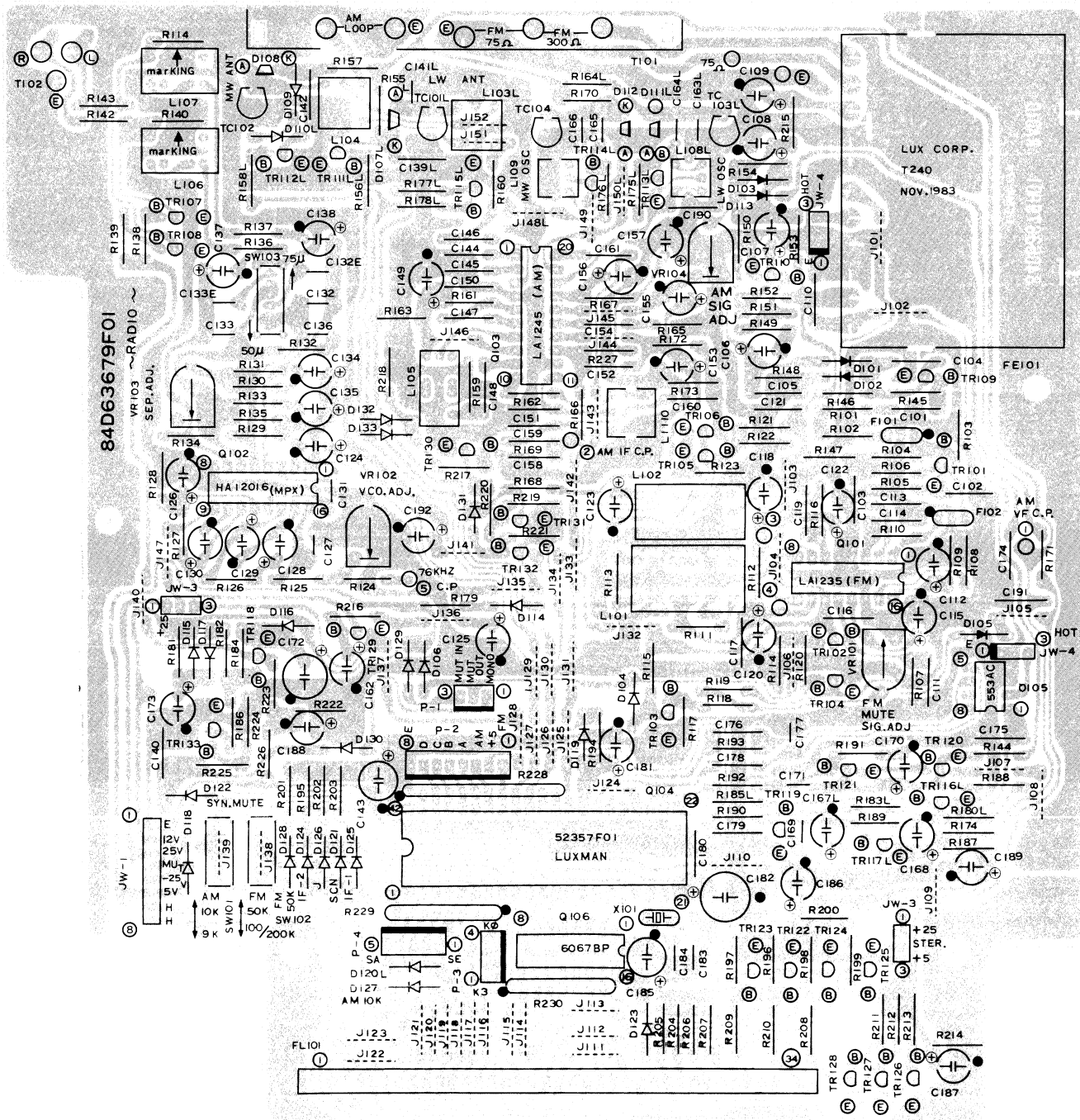
Symbol No.	Description	T-240		T-240L
		UZ 120V USA, CANADA	AK 220V EUROPE	TK 220V FRANCE
13	Crystal, Indicator	61B63672F01	61B63672F01	61B63672F02
17	Ass'y, Panel Front	01V64300F60	01V64300F60	01V66300F59
18	Cover, Rear	15C63669F01	15C63669F02	15C63669F03
P301	Plug, AC Cord	28T40916U01	28T43812P04	28T43812P04
PT301	Trans, Power	25T57254F04	25T57254F01	25T57254F01
34	Plug, ANT.P2132-A	None Use	09T52560F01	09T52560F01
203	Carton, Packing	56C58368F33	56C58368F33	56S60482F13
204	Carton, Bulk Packing	None Use	56C53420F31	56C53420F31
205	Owner's Manual	68R63676F01	68P65432F11	68P65432F11
208	Plug, Antenna	None Use	28T51066F01	28T51066F01
F302, 303, 304, 305, 306	Fuse, T-500mA	None Use	65T42077U13	None Use
SW101, 102, 103	SW, Slide SW343-1	None Use	40T51963F01	None Use
TR111L, 112L, 114L, 115L, 116L	Transistor, 2SC1815Y, GR	None Use	None Use	48S43525F05
TR113L, 117L	Transistor, 2SA1015Y	None Use	None Use	48T51118F01
D109L, 110L, 120L	Diode, 1S1555	None Use	None Use	48T43189F01
D107L, 111L	Varactor, SVC321SP-A2	None Use	None Use	48T52826F01
D128	Diode, 1S1555	None Use	48T43189F01	None Use
TC101L, 103L	Trimmer, TZ03 (Red)	None Use	None Use	20T47503F02
L103L	Coil, Trans LW OSC	None Use	None Use	24T57627F01
L108L	Coil, LW ANT	None Use	None Use	24T56892F01
C132, 133	Cap, PP	08T52448F17	08T52448F13	08T52448F13
C132E, 133E	Cap, PP 0.00056uF	None Use	08T52448F07	None Use
C139L	Cap, Ce 0.022uF	None Use	None Use	08S44505P63
C141L	Cap, Ce 47pF	None Use	None Use	21S40655F19
C163L	Cap, Ce 120pF	None Use	None Use	21S40655F24
C164L	Cap, Ce 220pF	None Use	None Use	21S40655F27
C167L	Cap, EI 2.2uF 50V	None Use	None Use	23S40657F29
R156L, 158L, 175L, 176L, 178L, R180L, 183L	Res, Fc 22K 1/4W	None Use	None Use	06S44593P97
R155L, 164L	Res, Fc 100K 1/4W	None Use	None Use	06S44594P14
R177L	Res, Fc 10K 1/4W	None Use	None Use	06S44593P89
R185L	Res, Fc 47K 1/4W	None Use	None Use	06S44594P06
R306	Res, 2.2M 1/2W	06D40802G44	None Use	None Use

T-240/T-240L



# PCB

## Radio PCB



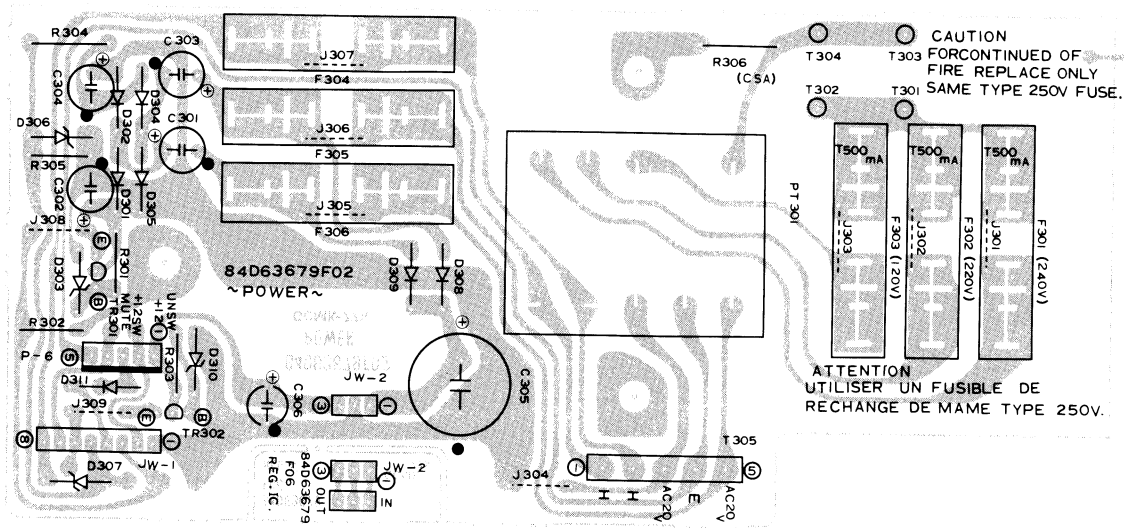
### Remarks

Resistor: Rd . . . Carbon, Ne . . . Network

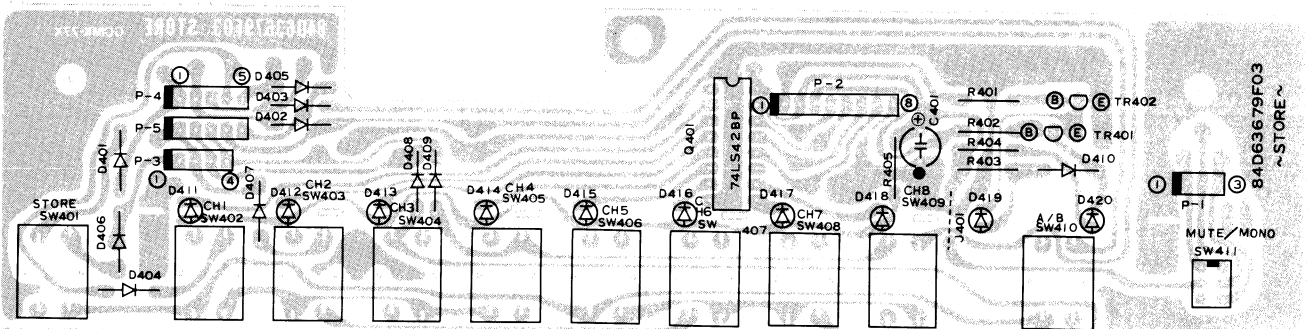
Capacitor: El . . . Electrolytic, Ce . . . Ceramic, My . . . Mylar, Pp . . . Polypropylene

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## Power PCB



## Store PCB



T-240/T-240L

# PCB Parts List

## Radio PCB Parts List

Symbol No.	Stock No.	Description
<b>(Filter)</b>		
F101	91T51130F01	SFE10.7MM
F102	91T51130F01	SFE10.7MM
<b>(FL Meter)</b>		
FL101	65T53335F01	FIP8BM4
<b>(Switch)</b>		
SW101	40T51963F01	Slide (AK)
SW102	40T51963F01	Slide (AK)
SW103	40T51963F01	Slide (AK)
<b>(Variable Resistor)</b>		
VR101	18C42061J13	5K
VR102	18C42061J12	2K
VR103	18C42061J15	50K
VR104	18C42061J13	5K
<b>(Frontend)</b>		
FE101	77T51132F01	UN5AA10
<b>(Terminal)</b>		
T101	09T60383F01	5P
T102	09T50231F01	2P
<b>(Coil)</b>		
L101	24T51128F01	FM DET LA1457
L102	91T51083F01	Anti Birdy
L103L	24T57627F01	Trans LW OSC (TK)
L104	24T51125F01	ANT(AM) LA1210
L105	24T51126F01	IF(450kHz)
L106	91T53325F01	LA1196
L107	91T53325F01	LA1196
L108L	24T56892F01	LW ANT (TK)
L109	24T53326F01	AM OSC
L110	24T53327F01	IF
<b>(Trimmer)</b>		
TC101L	20T47503F02	(Tm) TZ03 (RED) (TK)
TC102	20T47503F02	(Tm) TZ03 (RED)
TC103L	20T47503F03	(Tm) TZ03 (RED) (TK)
TC104	20T47503F02	(Tm) TZ03 (RED)
<b>(X-Tal)</b>		
X101	48T55072F01	(4.5MHZ)-M
<b>(IC)</b>		
Q101	51T51095F01	LA1235
Q102	51T56889F01	HA12016
Q103	51T53323F01	LA1245
Q104	51T52357F01	UPD1704C-534
Q105	51T43271F01	UPB553AC
Q106	51T53316F01	TC5067BP
<b>(Transistor)</b>		
TR101	48S40732P02	2SC1674 L
TR102	48S43525F05	2SC1815-Y,GR
TR103	48S43525F05	2SC1815-Y,GR
TR104	48S43525F05	2SC1815-Y,GR
TR105	48S43525F05	2SC1815-Y,GR
TR106	48S43525F05	2SC1815-Y,GR
TR107	48T51878F01	2SC2878 A,B
TR108	48T51878F01	2SC2878 A,B
TR109	48S40732P02	2SC1674 L
TR110	48S43525F05	2SC1815-Y,GR
TR111L	48S43525F05	2SC1815-Y,GR (TK)

Symbol No.	Stock No.	Description
TR112L	48S43525F05	2SC1815-Y,GR (TK)
TR113L	48T51118F01	2SA1015-Y (TK)
TR114L	48S43525F05	2SC1815-Y,GR (TK)
TR115L	48S43525F05	2SC1815-Y,GR (TK)
TR116L	48S43525F05	2SC1815-Y,GR (TK)
TR117L	48T51118F01	2SA1015-Y (TK)
TR118	48T51118F01	2SA1015-Y
TR119	48T55348F01	2SC1645B
TR120	48S43525F05	2SC1815-Y,GR
TR121	48S43525F05	2SC1815-Y,GR
TR122	48T51118F01	2SA1015-Y
TR123	48T51118F01	2SA1015-Y
TR124	48T51118F01	2SA1015-Y
TR125	48T51118F01	2SA1015-Y
TR126	48S43525F05	2SC1815-Y,GR
TR127	48S43525F05	2SC1815-Y,GR
TR128	48S43525F05	2SC1815-Y,GR
TR129	48S43525F05	2SC1815-Y,GR
TR130	48S43525F05	2SC1815-Y,GR
TR131	48T51118F01	2SA1015-Y
TR132	48S43525F05	2SC1815-Y,GR
TR133	48S43525F05	2SC1815-Y,GR
<b>(Diode &amp; Varactor)</b>		
D101	48T57425F01	1M60FM
D102	48T57425F01	1M60FM
D103	48T57425F01	1M60FM
D104	48T43189F01	1S1555
D105	48T57425F01	1M60FM
D106	48T43189F01	1S1555
D107L	48T52826F01	SVC321 SP (TK)
D108	48T52826F01	SVC321 SP
D109L	48T43189F01	1S1555 (TK)
D110L	48T43189F01	1S1555 (TK)
D111L	48T52826F01	SVC321 SP (TK)
D112	48T52826F01	SVC321 SP
D113	48T57425F01	1M60FM
D114	48T43189F01	1S1555
D115	48T43189F01	1S1555
D116	48T43189F01	1S1555
D117	48T43189F01	1S1555
D118	48T43189F01	1S1555
D119	48T43189F01	1S1555
D120L	48T43189F01	1S1555 (TK)
D122	48T43189F01	1S1555
D123	48T43189F01	1S1555
D124	48T43189F01	1S1555
D125	48T43189F01	1S1555
D127	48T43189F01	1S1555
D128	48T43189F01	1S1555 (AK)
D129	48T43189F01	1S1555
D130	48T43189F01	1S1555
D131	48T43189F01	1S1555
D132	48T43189F01	1S1555
D133	48T43189F01	1S1555
<b>(Capacitor)</b>		
C101	08S44505P63	(Ce) 22000pF
C102	08S44505P63	(Ce) 22000pF
C103	08S44505P63	(Ce) 22000pF

T-240/T-240L

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Symbol No.	Stock No.	Description	Symbol No.	Stock No.	Description
C104	08S44505P49	(Ce) 1000pF	C158	08S44505P63	(Ce) 22000pF
C105	08S44505P49	(Ce) 1000pF	C159	08S44505P53	(Ce) 2200pF
C106	23S40657F27	(EI) 0.47uF 50V	C160	08S44505P63	(Ce) 22000pF
C107	23S40657F28	(EI) 1.0uF 50V	C161	08S44505P63	(Ce) 22000pF
C108	23S40657F10	(EI) 10uF 26V	C162	23S40657F18	(EI) 22uF 25V
C109	23S40657F10	(EI) 10uF 26V	C163L	21S40655F24	(Ce) 120pF (TK)
C110	08S44505P61	(Ce) 10000pF	C164L	21S40655F27	(Ce) 220pF (TK)
C111	08S44505P63	(Ce) 22000pF	C165	08T52448F01	(Pp) 0.00033uF
C112	23S40657F27	(EI) 0.47uF 50V	C166	21S40655F11	(Ce) 10pF
C113	08S44505P63	(Ce) 22000pF	C167L	23S40657F29	(EI) 2.2uF 50V (TK)
C114	08S44505P63	(Ce) 22000pF	C168	23S40657F16	(EI) 4.7uF 25V
C115	23S40657F16	(EI) 4.7uF 25V	C169	08S40805F21	(Ce) 22000pF
C116	08S44505P63	(Ce) 22000pF	C170	23S40657F16	(EI) 4.7uF 25V
C117	08S44505P63	(Ce) 22000pF	C171	08S40805F21	(Ce) 22000pF
C118	23S40657F28	(EI) 1.0uF 50V	C172	23S41198U41	(EI) 220uF 16V
C119	08S44505P37	(Ce) 100pF	C173	23S40657F10	(EI) 10uF 26V
C120	23S40657F14	(EI) 100uF 16V	C175	08S44505P63	(Ce) 22000pF
C121	08S44505P63	(Ce) 22000pF	C176	08S44505P41	(Ce) 220pF
C122	23S40657F14	(EI) 100uF 16V	C177	21S40655F11	(Ce) 10pF
C123	23S40657F12	(EI) 33uF 16V	C178	08S44505P63	(Ce) 22000pF
C124	23S40657F10	(EI) 10uF 26V	C179	08S44505P49	(Ce) 1000pF
C125	23S40657F10	(EI) 10uF 26V	C180	08S44505P63	(Ce) 22000pF
C126	23S40657F16	(EI) 4.7uF 25V	C181	23S40657F10	(EI) 10uF 26V
C127	08T52448F13	(Pp) 1000pF	C182	23S41198U62	(EI) 1000uF 6.3V
C128	23S40657F30	(EI) 3.3uF 50V	C183	21S40655F15	(Ce) 22pF
C129	23S40657F28	(EI) 1.0uF 50V	C184	21S40655F15	(Ce) 22pF
C130	23S40657F30	(EI) 3.3uF 50V	C185	23S40657F04	(EI) 220uF 6.3V
C131	08S40656F21	(My) 47000pF	C186	23S40657F10	(EI) 10uF 26V
C132	08T52448F13	(Pp) 1500pF (AK,TK)	C187	23S40657F10	(EI) 10uF 26V
C132	08T52448F17	(Pp) 1500pF (UZ)	C188	23S40657F28	(EI) 1.0uF 50V
C132E	08T52448F07	(Pp) 1500pF (AK)	C189	23S40657F20	(EI) 47uF 25V
C133	08T52448F13	(Pp) 1500pF (AK,TK)	C190	08S44505P63	(Ce) 22000pF
C133	08T52448F17	(Pp) 1500pF (UZ)	C191	08S44505P61	(Ce) 10000pF
C133E	08T52448F07	(Pp) 1500pF (AK)	C192	23S40657F12	(EI) 33uF 16V
C134	23S40657F18	(EI) 22uF 25V	(Resistor)		
C135	23S40657F18	(EI) 22uF 25V	R101	06S44593P69	(Rd) 1.5KΩ 1/4W
C136	08T52448F15	(Pp) 1200pF	R102	06S44593P41	(Rd) 100Ω 1/4W
C137	23S40657F30	(EI) 3.3uF 50V	R103	06S44593P57	(Rd) 470Ω 1/4W
C138	23S40657F30	(EI) 3.3uF 50V	R104	06S44593P75	(Rd) 2.7KΩ 1/4W
C139L	08S44505P63	(Ce) 0.022uF 50V (TK)	R105	06S44593P53	(Rd) 330Ω 1/4W
C140	08S44505P63	(Ce) 22000pF	R106	06S44593P53	(Rd) 330Ω 1/4W
C141L	21S40655F19	(Ce) 47pF (TK)	R107	06S44594P06	(Rd) 47KΩ 1/4W
C142	08S44505P61	(Ce) 10000pF	R108	06S44593P89	(Rd) 10KΩ 1/4W
C143	23S40657F18	(EI) 22uF 25V	R109	06S44594P12	(Rd) 82KΩ 1/4W
C144	08S44505P63	(Ce) 22000pF	R110	06S44593P53	(Rd) 330Ω 1/4W
C145	08S44505P63	(Ce) 22000pF	R111	06S44593P83	(Rd) 5.6KΩ 1/4W
C146	08S44505P63	(Ce) 22000pF	R112	06S44593P95	(Rd) 18KΩ 1/4W
C147	08S44505P63	(Ce) 22000pF	R113	06S44593P73	(Rd) 2.2KΩ 1/4W
C148	08S44505P63	(Ce) 22000pF	R114	06S44593P81	(Rd) 4.7KΩ 1/4W
C149	23S40657F10	(EI) 10uF 26V	R115	06S44593P81	(Rd) 4.7KΩ 1/4W
C150	08S44505P63	(Ce) 22000pF	R116	06S44593P87	(Rd) 8.2KΩ 1/4W
C151	08S44505P49	(Ce) 1000pF	R117	06S44593P89	(Rd) 10KΩ 1/4W (TK)
C152	08S44505P63	(Ce) 22000pF	R118	06S44593P89	(Rd) 10KΩ 1/4W
C153	23S40657F14	(EI) 100uF 16V	R119	06S44593P81	(Rd) 4.7KΩ 1/4W
C154	08S44505P63	(Ce) 22000pF	R120	06S44594P06	(Rd) 47KΩ 1/4W
C155	23S40657F27	(EI) 0.47uF 50V	R121	06S44593P95	(Rd) 18KΩ 1/4W
C156	23S40657F28	(EI) 1.0uF 50V	R122	06S44593P97	(Rd) 22KΩ 1/4W
C157	23S40657F30	(EI) 3.3uF 50V	R123	06S44593P73	(Rd) 2.2KΩ 1/4W

Symbol No.	Stock No.	Description
R124	06S44594P14	(Rd) 100KΩ 1/4W
R125	06S44593P85	(Rd) 6.8KΩ 1/4W
R126	06S44593P65	(Rd) 1KΩ 1/4W
R127	06S44593P89	(Rd) 10KΩ 1/4W
R128	06S44594P06	(Rd) 47KΩ 1/4W
R129	06S44593P99	(Rd) 27KΩ 1/4W
R130	06S44593P71	(Rd) 1.8KΩ 1/4W
R131	06S44594P06	(Rd) 47KΩ 1/4W
R132	06S44593P53	(Rd) 330Ω 1/4W
R133	06S44593P71	(Rd) 1.8KΩ 1/4W
R134	06S44594P06	(Rd) 47KΩ 1/4W
R135	06S44593P99	(Rd) 27KΩ 1/4W
R136	06S44593P77	(Rd) 3.3KΩ 1/4W
R137	06S44593P77	(Rd) 3.3KΩ 1/4W
R138	06S44593P97	(Rd) 22KΩ 1/4W
R139	06S44593P97	(Rd) 22KΩ 1/4W
R140	06S44593P77	(Rd) 3.3KΩ 1/4W
R141	06S44593P77	(Rd) 3.3KΩ 1/4W
R142	06S44593P41	(Rd) 100Ω 1/4W
R143	06S44593P41	(Rd) 100Ω 1/4W
R144	06S44593P97	(Rd) 22KΩ 1/4W
R145	06S44594P26	(Rd) 330KΩ 1/4W
R146	06S44593P77	(Rd) 3.3KΩ 1/4W
R147	06S44593P41	(Rd) 100Ω 1/4W
R148	06S44594P14	(Rd) 100KΩ 1/4W
R149	06S44593P75	(Rd) 2.7KΩ 1/4W
R150	06S44594P06	(Rd) 47KΩ 1/4W
R151	06S44594P30	(Rd) 470KΩ 1/4W
R152	06S44593P77	(Rd) 3.3KΩ 1/4W
R153	06S44594P12	(Rd) 82KΩ 1/4W
R155L	06S44594P02	(Rd) 33KΩ 1/4W
R156L	06S44594P14	(Rd) 100KΩ 1/4W (TK)
R156I	06S44593P97	(Rd) 22KΩ 1/4W (TK)
R157	06S44593P97	(Rd) 22KΩ 1/4W
R158L	06S44593P97	(Rd) 22KΩ 1/4W (TK)
R159	06S44593P89	(Rd) 10KΩ 1/4W
R160	06S44593P41	(Rd) 100Ω 1/4W
R161	06S44593P79	(Rd) 3.9KΩ 1/4W
R162	06S44593P57	(Rd) 470Ω 1/4W
R163	06S44593P49	(Rd) 220Ω 1/4W
R164L	06S44594P14	(Rd) 100KΩ 1/4W (TK)
R165	06S44593P39	(Rd) 82Ω 1/4W
R166	06S44593P75	(Rd) 2.7KΩ 1/4W
R167	06S44593P89	(Rd) 10KΩ 1/4W
R168	06S44593P35	(Rd) 56Ω 1/4W
R169	06S44593P99	(Rd) 27KΩ 1/4W
R170	06S44594P14	(Rd) 100KΩ 1/4W
R171	06S44593P81	(Rd) 4.7KΩ 1/4W
R172	06S44594P06	(Rd) 47KΩ 1/4W
R173	06S44594P06	(Rd) 47KΩ 1/4W
R174	06S44593P89	(Rd) 10KΩ 1/4W
R175L	06S44593P97	(Rd) 22KΩ 1/4W (TK)
R176L	06S44593P97	(Rd) 22KΩ 1/4W (TK)
R177L	06S44593P89	(Rd) 10KΩ 1/4W (TK)
R178L	06S44593P97	(Rd) 22KΩ 1/4W (TK)
R179	06S44593P65	(Rd) 1KΩ 1/4W
R180L	06S44593P97	(Rd) 22KΩ 1/4W (TK)
R181	06S44594P30	(Rd) 470KΩ 1/4W

Symbol No.	Stock No.	Description
R182	06S44594P06	(Rd) 47KΩ 1/4W
R183L	06S44593P97	(Rd) 22KΩ 1/4W (TK)
R184	06S44594P14	(Rd) 100KΩ 1/4W
R185L	06S44594P06	(Rd) 47KΩ 1/4W (TK)
R186	06S44594P06	(Rd) 47KΩ 1/4W
R187	06S44593P89	(Rd) 10KΩ 1/4W
R188	06S44593P81	(Rd) 4.7KΩ 1/4W
R189	06S44593P73	(Rd) 2.2KΩ 1/4W
R190	06S44593P65	(Rd) 1KΩ 1/4W
R191	06S44593P59	(Rd) 560Ω 1/4W
R192	06S44593P65	(Rd) 1KΩ 1/4W
R193	06S44594P22	(Rd) 220KΩ 1/4W
R194	06S44594P06	(Rd) 47KΩ 1/4W
R195	06S44594P14	(Rd) 100KΩ 1/4W
R196	06S44594P06	(Rd) 47KΩ 1/4W
R197	06S44594P06	(Rd) 47KΩ 1/4W
R198	06S44594P06	(Rd) 47KΩ 1/4W
R199	06S44594P06	(Rd) 47KΩ 1/4W
R200	06S44593P73	(Rd) 2.2KΩ 1/4W
R201	06S44594P14	(Rd) 100KΩ 1/4W
R202	06S44594P14	(Rd) 100KΩ 1/4W
R203	06S44594P14	(Rd) 100KΩ 1/4W
R204	06S44594P14	(Rd) 100KΩ 1/4W
R205	06S44594P14	(Rd) 100KΩ 1/4W
R206	06S44594P14	(Rd) 100KΩ 1/4W
R207	06S44594P14	(Rd) 100KΩ 1/4W
R208	06S44593P89	(Rd) 10KΩ 1/4W
R209	06S44593P89	(Rd) 10KΩ 1/4W
R210	06S44593P89	(Rd) 10KΩ 1/4W
R211	06S44593P93	(Rd) 15KΩ 1/4W
R212	06S44593P97	(Rd) 22KΩ 1/4W
R213	06S44594P02	(Rd) 33KΩ 1/4W
R214	06S44594P14	(Rd) 100KΩ 1/4W
R215	06S44594P02	(Rd) 33KΩ 1/4W
R216	06S44593P81	(Rd) 4.7KΩ 1/4W
R217	06S44593P89	(Rd) 10KΩ 1/4W
R218	06S44594P06	(Rd) 47KΩ 1/4W
R219	06S44593P97	(Rd) 22KΩ 1/4W
R220	06S44593P89	(Rd) 10KΩ 1/4W
R221	06S44593P73	(Rd) 2.2KΩ 1/4W
R222	06S44593P89	(Rd) 10KΩ 1/4W
R223	06S44594P06	(Rd) 47KΩ 1/4W
R224	06S44594P06	(Rd) 47KΩ 1/4W
R225	06S44593P97	(Rd) 22KΩ 1/4W
R226	06S44594P14	(Rd) 100KΩ 1/4W
R227	06S44593P89	(Rd) 10KΩ 1/4W
R228	51T51133F11	(Network) 100KX11
R229	51T51133F01	(Network) 100KX7
R230	51T51133F01	(Network) 100KX7

**Power PCB Parts List**

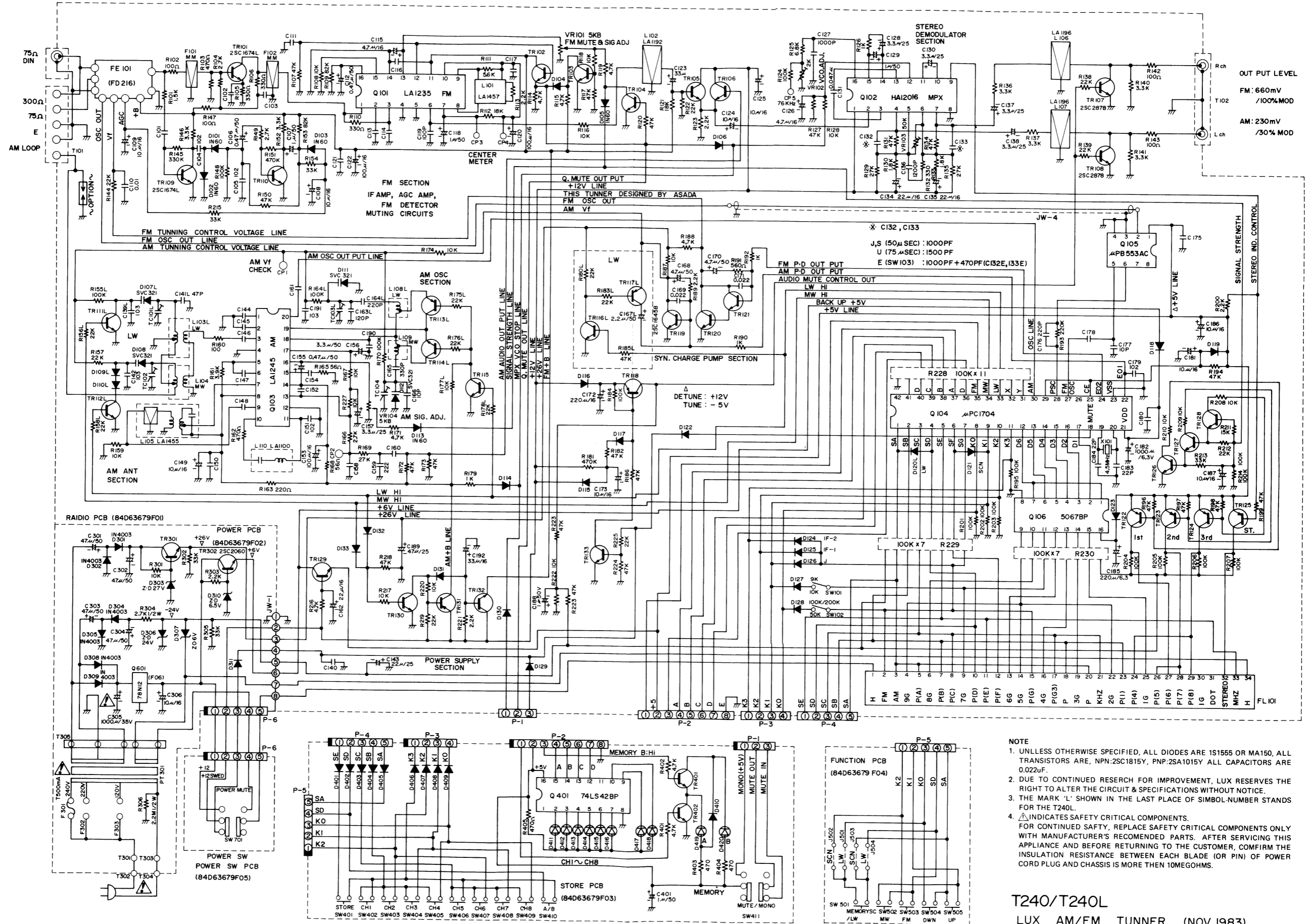
Symbol No.	Stock No.	Description
(Fuse)		
F302	65T42077U13	T-500mA (AK)
F303	65T42077U13	T-500mA (AK)
F304	65T42077U13	T-500mA (AK)
F305	65T42077U13	T-500mA (AK)

Symbol No.	Stock No.	Description
F306	65T42077U13	T-500mA (AK)
(IC)		
Q601	51T56583F07	VOLTAGE L78N 12V
(Transistor)		
TR301	48T55181F01	2SC1740 R,S
TR302	48T55874F01	2SC2060 R,Q
(Diode & Zener)		
D301	48T55186F01	GP10D -AX
D302	48T55186F01	GP10D -AX
D303	48T52739F95	HZ27 -2 -AX
D304	48T55186F01	GP10D -AX
D305	48T55186F01	GP10D -AX
D306	48T52739F92	HZ24 -2 -AX
D307	48T52739F40	HZ 6C-1 -AX
D308	48T55186F01	GP10D -AX
D309	48T55186F01	GP10D -AX
D310	48T52739F43	HZ 7A-1 -AX
D311	48T43189F01	1S1555
(Capacitor)		
C301	23S40657F35	(EI) 47uF 50V
C302	23S40657F35	(EI) 47uF 50V
C303	23S40657F35	(EI) 47uF 50V
C304	23S40657F35	(EI) 47uF 50V
C305	23S41198U66	(EI) 1000uF 35V
C306	23S40657F10	(EI) 10uF 26V
(Resistor)		
R301	06S44593P89	(Rd) 10KΩ 1/4W
R302	06S44594P02	(Rd) 33KΩ 1/4W
R303	06S44593P73	(Rd) 2.2KΩ 1/4W
R304	06D40801G73	(Rd) 2.7KΩ 1/2W
R305	06S44594P02	(Rd) 33KΩ 1/4W
R306	06D40802G44	(Rd) 2.2MΩ 1/2W (UZ)

**Store PCB Parts List**

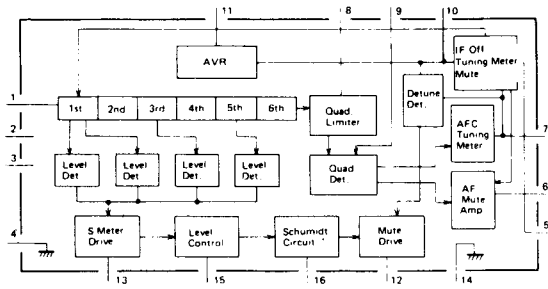
Symbol No.	Stock No.	Description
(Switch)		
SW401-410	40T52952F01	KHC10903
SW411	40T58173F01	SPH221A
(IC)		
Q401	51T53321F01	M74LS42P
(Transistor)		
TR401	48T55181F01	2SC1740 R,S
TR402	48T55181F01	2SC1740 R,S
(Diode)		
D401-410	48T43189F01	1S1555
(Capacitor)		
C401	23S40657F28	(EI) 1.0uF 50V
(Resistor)		
R401	06S44593P81	(Rd) 4.7KΩ 1/4W
R402	06S44593P81	(Rd) 4.7KΩ 1/4W
R403	06S44593P57	(Rd) 470Ω 1/4W
R404	06S44593P57	(Rd) 470Ω 1/4W
R405	06S44593P57	(Rd) 470Ω 1/4W

# Schematic Diagram

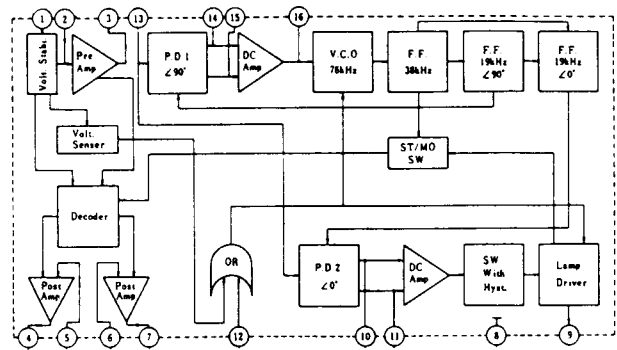


# IC Handling Guide

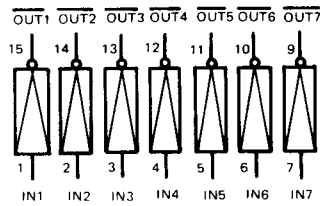
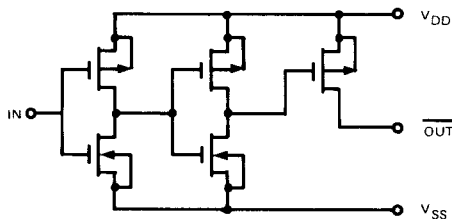
LA-1235 (MONOLITHIC LINEAR IC)



HA-12016 (FM STEREO MULTIPLEX DECODER)

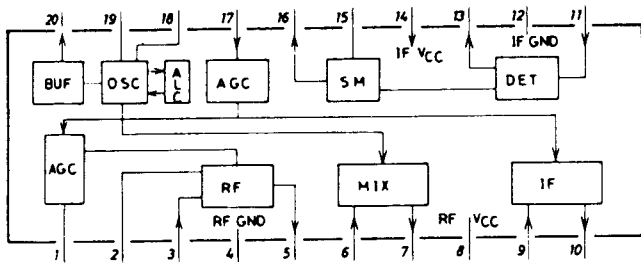


TC5067BP (7-HIGH VOLTAGE BUFFER/INVERTING TYPE)

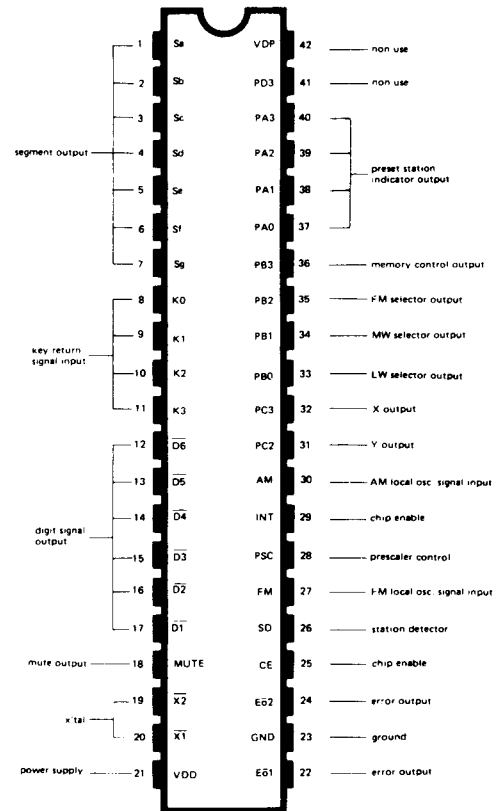


VDD : 16. VSS : 8

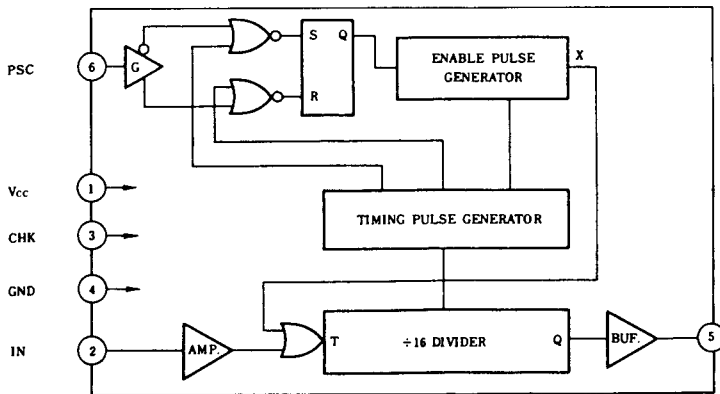
LA-1245 (AM IC)



μPC1704 (SYNTHESIZER IC)



μPB553AC (150MHz PRESCALER)



# Specifications

## FM SECTION

(IEEE/THF Standard)

Usable Sensitivity:	10.3dBf, 1.8 $\mu$ V (300 $\Omega$ )
50dB Quieting Sensitivity (70 $\mu$ sec):	13.7dBf, 2.2 $\mu$ V (300 $\Omega$ )
Alternate Channel Selectivity:	80dB
AM Suppression:	47dB
S/N (Signal-to-Noise Ratio)	Mono 76dB
at 65dB:	Stereo 74dB
Stereo Separation at 1,000Hz:	50dB
Capture Ratio:	1.5dB
Image Response Ratio:	80dB
IF Response Ratio:	100dB
Spurious Response Ratio:	100dB
Frequency Response:	30 – 15kHz : 0.5dB
Distortion at 65dBf:	1kHz Mono 0.03%
	1kHz Stereo 0.1%
Subcarrier Product Ratio:	60dB
SCA Rejection Ratio:	60dB
Muting Threshold:	5 $\mu$ V
Output Level:	660mV

## AM SECTION

Usable Sensitivity at 1MHz, 400Hz 30% Modulation:	500 $\mu$ V/m
Image Response Ratio at 1MHz:	43dB
IF Response Ratio at 1MHz:	50dB
Signal-to-Noise Ratio at 1MHz:	50dB
Distortion at 1MHz 10 $\mu$ V/m 400Hz/30% Modulation:	0.3%

## GENERAL

Power Consumption:	7 Watts
Dimensions:	453mm(W) x 77mm(H) x 244mm(D) (17.8"(W) x 3.0"(H) x 9.6"(D))
Weight:	Net 3.0kg (6.6 lbs.)

\* Specifications and appearance design are subject to change without notice.



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T-240/T-240L