www.freeservicemanuals.info
It's Free

ST-V33L

SERVICE MANUAL

Free service manuals
Gratis schema's
Digitized by
www.freeservicemanuals.info

AEP Model
UK Model

Note: ST-V33L is an FM stereo/FM-AM tuner in LBT-V33 stereo component.

SPECIFICATIONS

System — FM stereo, FM/AM superheterodyne tuner
Quartz-locked PLL digital synthesizer system

FM tuner section

Tuning range — 87.5 – 108 MHz
Antenna terminals — 75 ohms unbalanced
300 ohms balanced
Intermediate frequency — 10.7 MHz

(at 40 kHz deviation)

Sensitivity	at 46 dB quieting 17.3 dBf, 4 μV (mono) 38.3 dBf, 45 μV (stereo)
Usable sensitivity	10.3 dBf, 1.8 μV (IHF) 1.7 μV (S/N = 26 dB)
Signal-to-noise ratio	74 dB (mono) 69 dB (stereo)
Harmonic distortion at 1 kHz	0.15 % (mono) 0.3 % (stereo)
Separation at 1 kHz	45 dB
Frequency response	40 Hz – 12.5 kHz ±0.5 dB 30 Hz – 15 kHz $^{+0.5}_{-2.0}$ dB
Selectivity	at 300 kHz 60 dB (AEP, UK model) 70 dB (G-AEP model)
Image response ratio	50 dB (AEP, UK model) 80 dB (G-AEP model)
IF response ratio	90 dB (AEP, UK model) 93 dB (G-AEP model)

— Continued on page 2 —

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

FM STEREO/FM-AM TUNER

SONY®

MICROFILM

AUD

www.freeservicemanuals.info

www.freeservicemanuals.info It`s Free

MW/LW tuner section

		MW	LW
Tuning range		531 – 1,602 kHz	153 – 344 kHz
Antenna		Layout-free AM antenna, External antenna terminal	
Intermediate frequency		450 kHz	
Usable sensitivity	Layout-free AM antenna	300 μV/m (999 kHz)	700 μV/m (230 kHz)
	External antenna	30 μV (999 kHz)	200 μV (230 kHz)
Signal-to-noise ratio		54 dB (50 mV/m)	
Harmonic distortion		0.3% (50 mV/m, 400 Hz)	
Selectivity		35 dB (9 kHz)	

General

Dimensions Approx.355 x 55 x 245 mm (w/h/d)
(14 x 2¼ x 9¾ inches)
incl. projecting parts and controls

Weight Approx. 1.6 kg (31 lb 9 oz) net

• IF OFFSET ADJUSTMENT (FM IF)

Diode Installations Depending on the Ceramic Filters (CF101, 102)

This set employs two ceramic filters (CF101, 102) which should have the same color marking to identify their center frequency. Therefore FM IF offset adjustment by diodes (D523, 524) installation is necessary to match the center frequency of the ceramic filters used with FM intermediate frequency.

Ceramic filter		Diode installation		FM intermediate frequency (MHz)
Color mark	Center frequency (MHz)	D523	D524	
White	10.750	○	X	10.750
Red	10.700	X	X	10.700
Black	10.650	X	○	10.650

○: installed
X: not installed

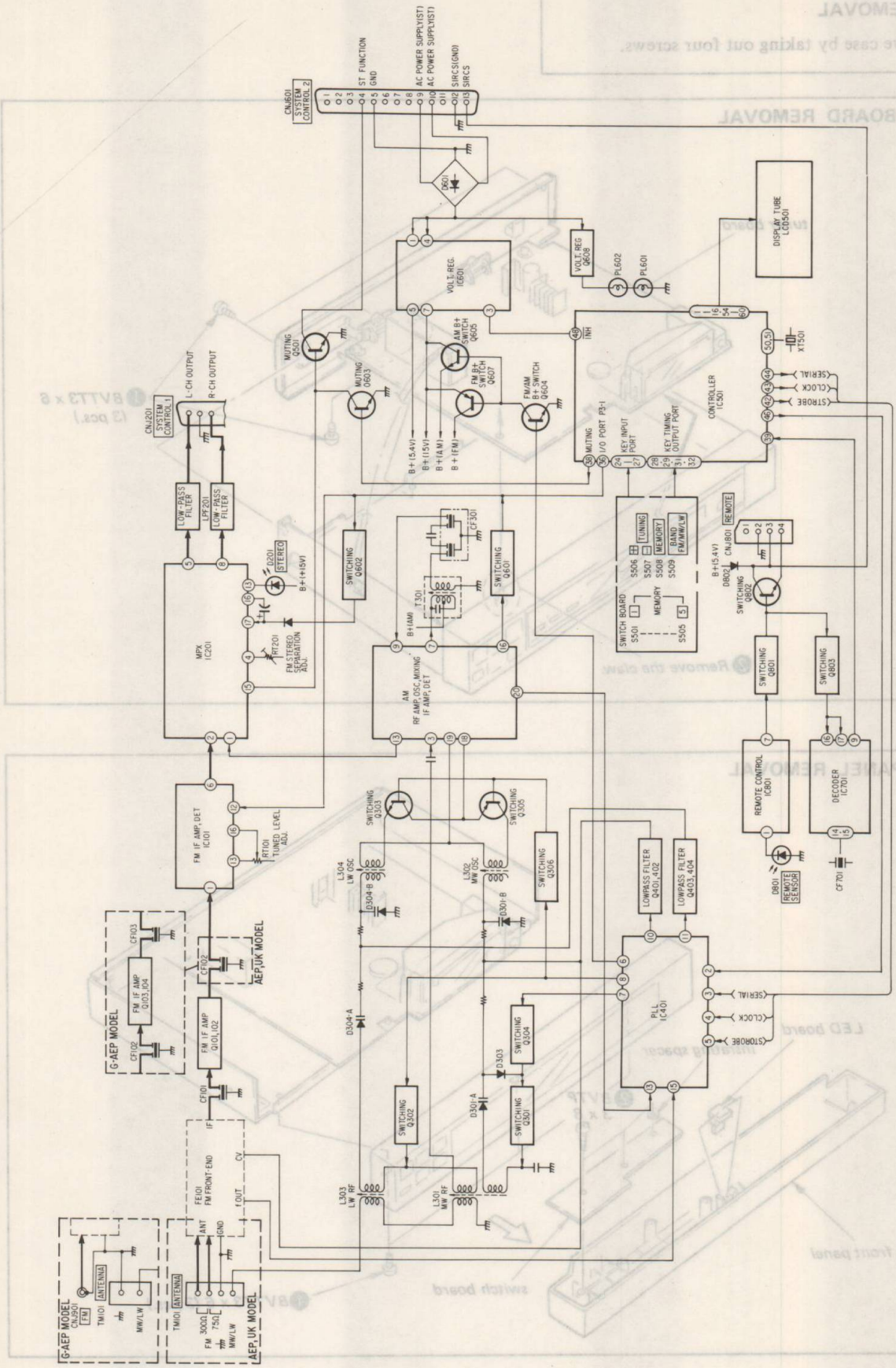
FM intermediate frequency is determined by the three types as shown above. Ceramic filters of same center frequency, i.e., of same color coding should be used for CF101 and CF102.

www.freeservicemanuals.info

www.freeservicemanuals.info

SECTION 1
OUTLINE

1-1. BLOCK DIAGRAM



www.freeservicemanuals.info

www.freeservicemanuals.info
It`s Free

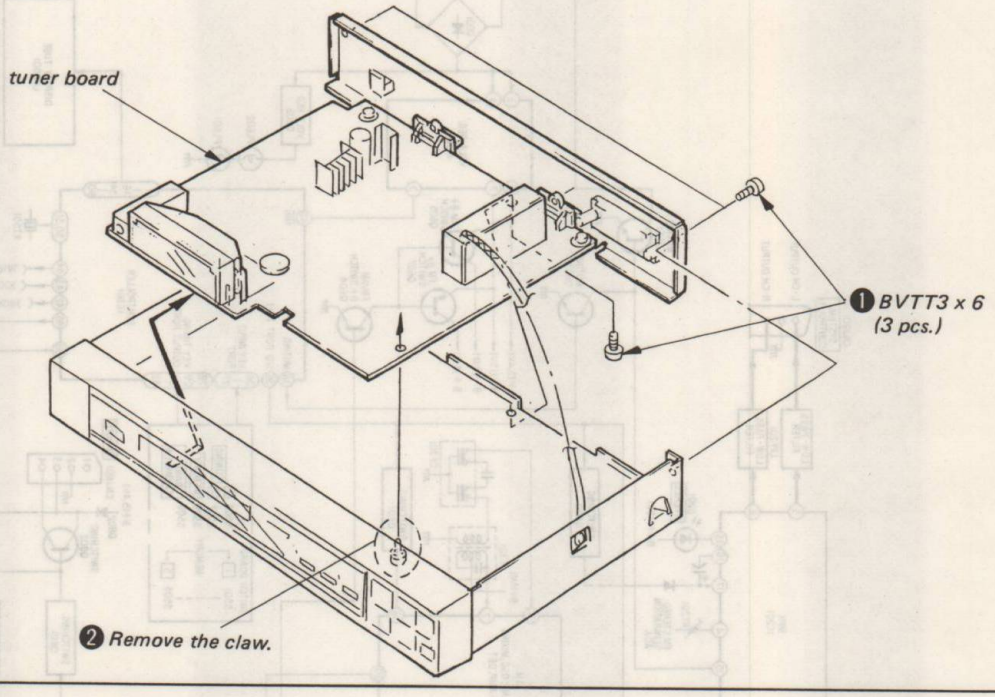
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

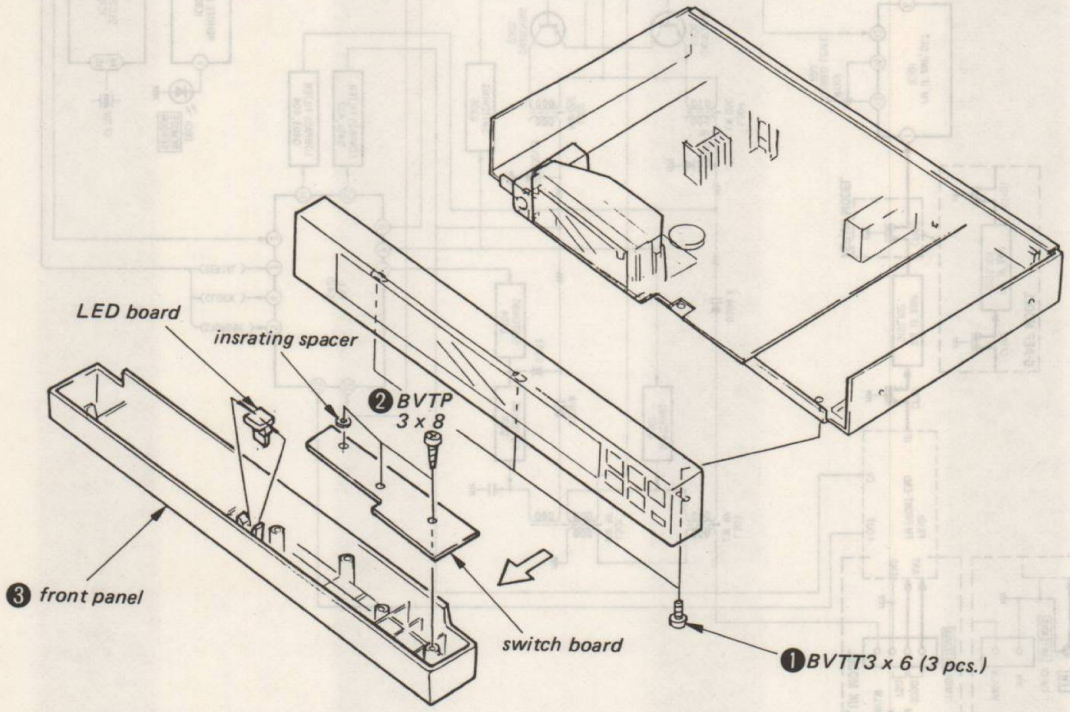
CASE REMOVAL

Remove case by taking out four screws.

TUNER BOARD REMOVAL



FRONT PANEL REMOVAL



www.freeservicemanuals.info

www.freeservicemanuals.info

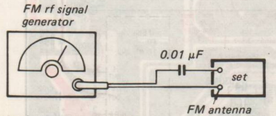
SECTION 3
ADJUSTMENTS

FM SECTION

FM Discriminator Alignment

Setting:
BAND SELECTOR switch . . . . . FM

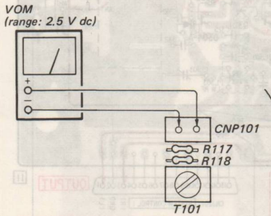
Procedure:



Carrier frequency: 98 MHz
Output level: 1 mV (60 dB)
Modulation: 1 kHz, 40 kHz deviation (100%)

1. Tune the set to 98 MHz.
2. Adjust T101 for 0 V reading on the VOM. . . . . NULL Adjustment

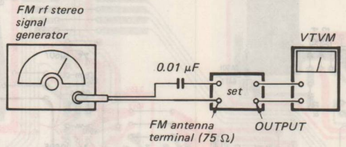
Note: When the ceramic filter is replaced, these adjustments should be made.



FM Stereo Separation Adjustment

Setting:
STEREO/MUTING switch . . . . . ON (STEREO)

Procedure:

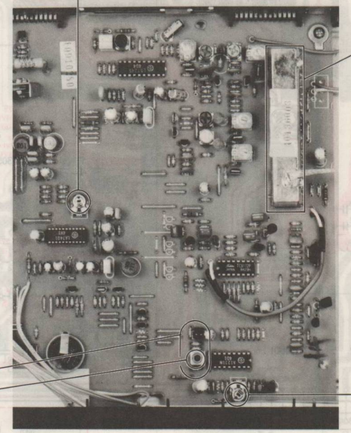


Carrier frequency: 98 MHz
Output level: 1 mV (60 dB)
Mode: Stereo
Modulation:
Audio (1 kHz): 16.25 kHz deviation (40%)
Pilot (19 kHz): 7.5 kHz deviation (10%)
Sub-channel (38 kHz): 16.25 kHz deviation (40%)

FM stereo signal generator output channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	Ⓐ
R-CH	L-CH	Ⓑ Adjust RT201 for minimum reading.
R-CH	R-CH	Ⓒ
L-CH	R-CH	Ⓓ Adjust RT201 for minimum reading.

L-CH Stereo separation: Ⓐ – Ⓑ
R-CH Stereo separation: Ⓒ – Ⓓ

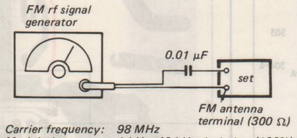
The separations of both channels should be equal.



The FM front-end is carefully adjusted at the factory and is supplied as one whole block for replacement.

TUNED Indication Lighting Level Adjustment

Setting:
STEREO/MUTING switch: OFF

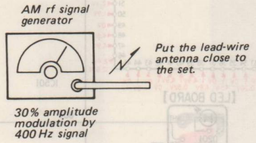


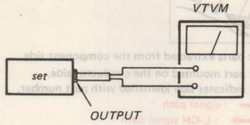
Carrier frequency: 98 MHz
Modulation: 1 kHz, 40 kHz deviation (100%)
Output level: 17.8 µV (25 dB)

1. Tune the set to 98 MHz.
2. Adjust RT101 so that the TUNED indicator goes on.

MW/LW SECTION

Setting:
BAND SELECTOR switch: MW/LW



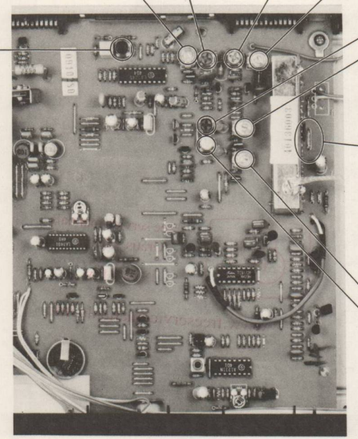


- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

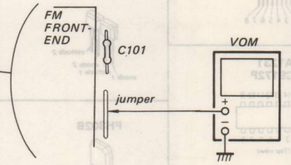
AM IF ALIGNMENT	
Adjust for a maximum reading on VTVM.	
450 kHz	
T301	

MW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
1,404 kHz	603 kHz
CT301	L301

LW TRACKING ADJUSTMENT	
Adjust for a maximum reading on VTVM.	
170 kHz	310 kHz
L303	CT303



MW FREQUENCY COVERAGE ADJUSTMENT		
adjustment part	reading on VOM	frequency indication
L302	1.1 ±0.2 V	531 kHz
CT302	9 ±0.4 V	1,602 kHz



adjustment part	reading on VOM	frequency indication
CT304	9 ±0.4 V	344 kHz
L304	1 ±0.2 V	153 kHz
LW FREQUENCY COVERAGE ADJUSTMENT		

www.freeservicemanuals.info

www.freeservicemanuals.info

SECTION 4
DIAGRAMS

4-1. MOUNTING DIAGRAM — *Conductor Side* —

- **Semiconductor Lead Layouts**

2SA1048-GR
2SC2458
2SC2669
DTA114ES
DTC114ES

2SB731

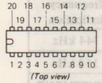
2SC3112

2SK246-GR3

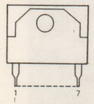
CX20106

LA1231
TC9172P

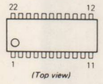
LA1245
M50761-415P



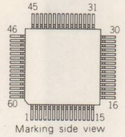
LA5665



LA3401



TC9302F-005



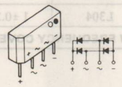
1SS202-1
HZ6A1L

GL-9PR4

KV1236Z

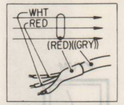
PH302B

S1VB20



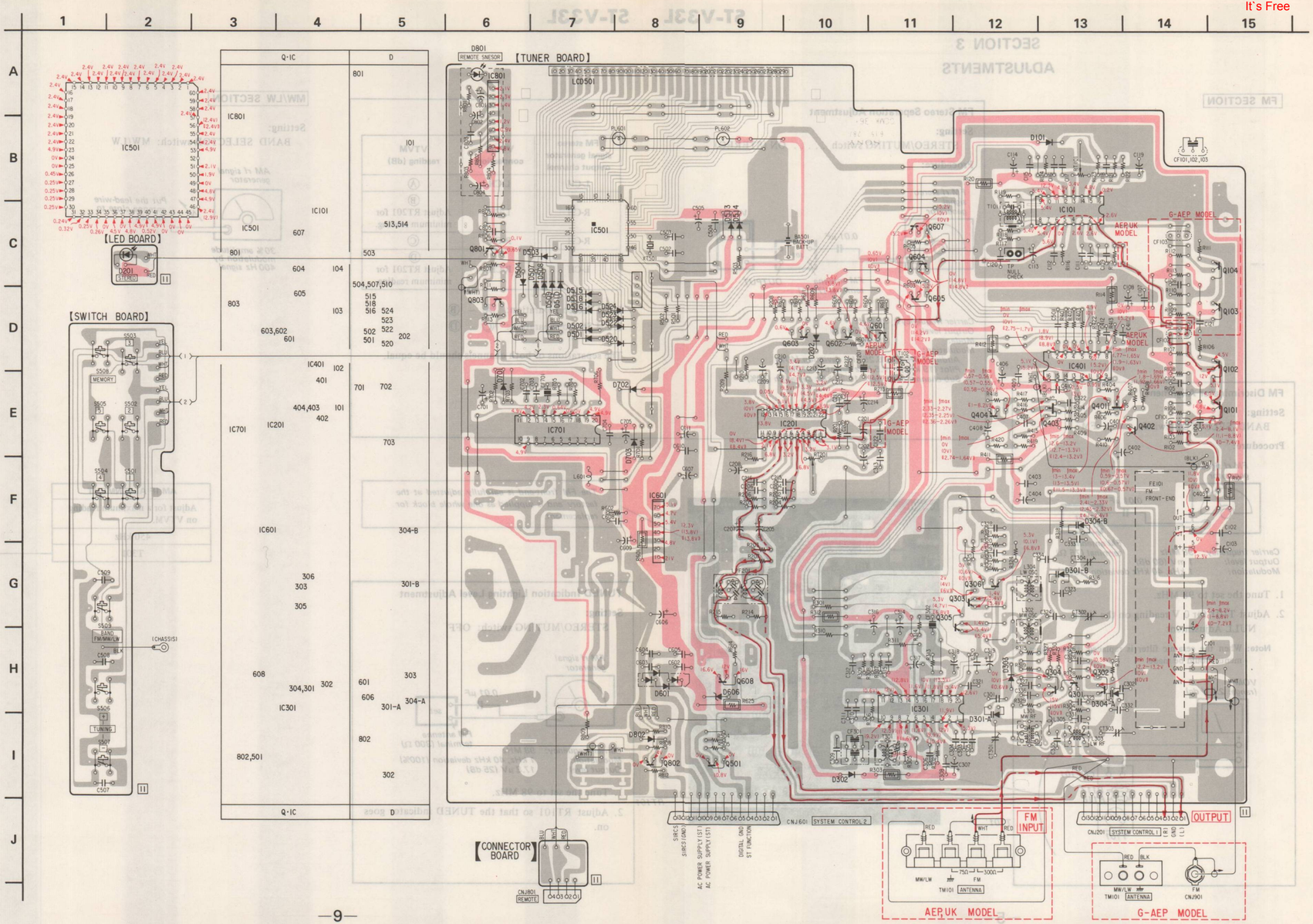
Note:

- Color code of sleeving over the end of the jacket.



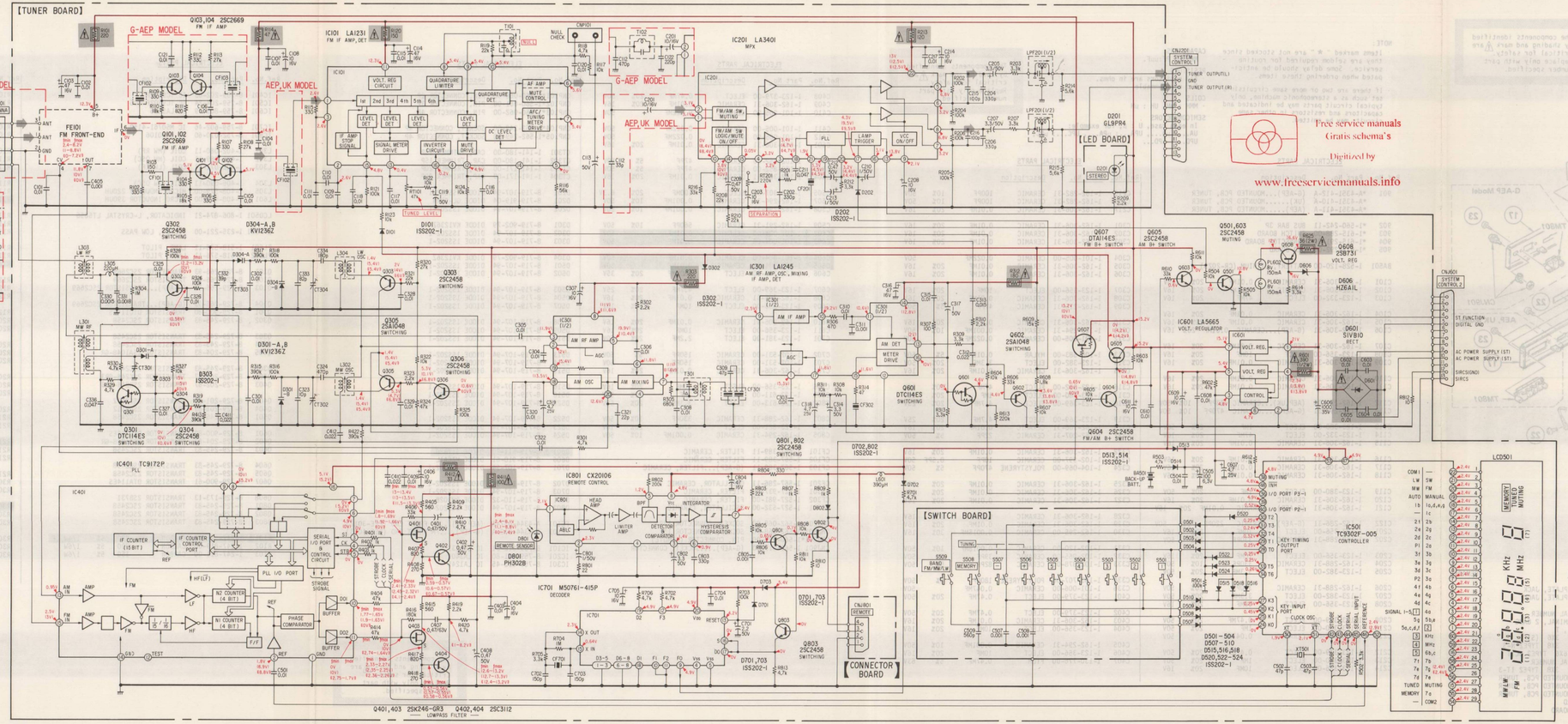
- ○—: parts extracted from the component side.
- ■ : part mounted on the conductor side.
- ⊡ : indicates side identified with part number.
- —▶— : signal path
- —▶— : L-CH signal path
- —▶— : R-CH signal path
- ▒ : B + pattern

Free service manuals
Gratis schema's
Digitized by
www.freeservicemanuals.info



www.freeservicemanuals.info

It's Free



Free service manuals
Gratis schema's
Digitized by
www.freeservicemanuals.info

Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼ W or less unless otherwise specified.
- ▭ : signal path.
- △ : internal component.
- ▭ : nonflammable resistor.
- ▬ : B+ bus.
- ▭ : adjustment for repair.
- Readings are taken under no-signal (detuned) conditions with a VOM (50 kΩ/V).
  no mark : FM
  ( ) : MW
  (( )) : LW
- Voltage variations may be noted due to normal production tolerances.
- Switch

Ref. No.	Switch	Position
S501	PRESET 1	OFF
S502	PRESET 2	OFF
S503	PRESET 3	OFF
S504	PRESET 4	OFF
S505	PRESET 5	OFF
S506	TUNING/+	OFF
S507	TUNING/–	OFF
S508	MEMORY	OFF
S509	BAND	OFF

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

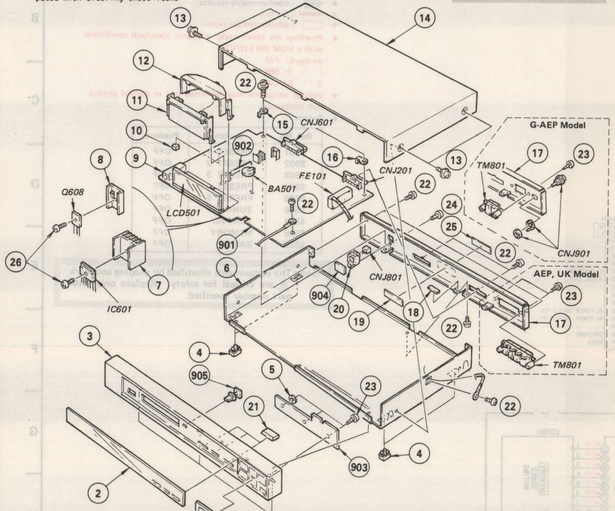
www.freeservicemanuals.info

www.freeservicemanuals.info

EXPLODED VIEW AND PARTS LIST

NOTE:
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked " ★ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.



No.	Part No.	Description	REMARKS
1	4-909-703-01	SHEET (C), CONTROL	
2	4-909-706-11	PLATE (C), INDICATION	
3	4-909-708-11	PANEL	
4	1-4907-603-1	FOOT ASSY	
*5	*3-655-862-00	SPACER, INSRATING	
*6	*4-909-710-21	CHASSIS	
*7	*4-363-146-11	HEAT SINK, V.OUT	
*8	*4-875-327-01	HEAT SINK	
*9	*4-909-705-01	PLATE, SHIELD	
10	9-911-841-XX	CUSHION	
*11	*4-904-514-01	ILLUMINATOR	
*12	*4-904-515-01	HOUSE, LAMP	
13	4-886-821-01	SCREW, M3 CASE	
14	4-909-709-01	CASE	
*15	4-870-539-00	PLATE, GROUND	
16	*4-904-446-01	PLATE, GROUND	

No.	Part No.	Description	REMARKS
17	*4-909-701-01	(G-AEP)....PLATE, JACK	
	*4-909-702-21	(AEP,UK)...PLATE, JACK	
18	9-911-863-XX	SPACER	
19	*3-701-030-00	LABEL, SERIAL NUMBER	
20	4-882-034-00	SPACER, TERMINAL, 2 GANG	
21	4-909-707-01	KNOB (PUSH), T	
22	7-685-871-01	SCREW +BVTT 3X6 (S)	
23	7-685-646-71	SCREW +BVTP 3X8 TYPE2 N-S	
24	7-685-133-14	SCREW +P 2.6X6 TYPE2 SLIT	
25	*4-302-759-00	LABEL, SERIAL NUMBER	
26	7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3	
901	*A-4351-412-A	(G-AEP)....MOUNTED PCB, TUNER	
	*A-4351-410-A	(UK).....MOUNTED PCB, TUNER	
	*A-4351-411-A	(AEP).....MOUNTED PCB, TUNER	
902	*1-560-242-11	BUS BAR 3P	
903	*1-615-288-00	SWITCH BOARD	
904	*1-615-291-00	CONNECTOR BOARD	
905	*1-615-292-00	LED BOARD	

NOTE:
- Items marked " ★ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuitsin a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF:uF, PF:uuF.
RESISTORS
- All resistors are in ohms.
- F : nonflammable
COILS
- MMH : mH, UH : uH
SEMICONDUCTORS
In each case, U : u, for example:
UA...: uA..., UPA...: uPA..., UPC...: uPC,
UPD...: uPD...

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
901	*A-4351-412-A	(G-AEP)...MOUNTED PCB, TUNER			
	*A-4351-410-A	(UK).....MOUNTED PCB, TUNER			
	*A-4351-411-A	(AEP)....MOUNTED PCB, TUNER			
902	*1-560-242-11	BUS BAR 3P			
903	*1-615-288-00	SWITCH BOARD			
904	*1-615-291-00	CONNECTOR BOARD			
905	*1-615-292-00	LED BOARD			
BA501	1-528-120-00	BATTERY, LITHIUM (CR-2025)			
C101	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C102	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C103	1-123-332-00	ELECT 47MF	20%	16V	
C104	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C105	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C106	1-162-306-31	(G-AEP)...CERAMIC 0.01MF	20%	16V	
C107	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C108	1-123-356-00	ELECT 10MF	20%	16V	
C109	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C110	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C111	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C112	1-162-211-00	(AEP,UK)...CERAMIC 33PF	10%	50V	
C112	1-162-290-31	(G-AEP)....CERAMIC 470PF	10%	50V	
C113	1-123-380-00	ELECT 1MF	20%	50V	
C114	1-123-332-00	ELECT 47MF	20%	16V	
C115	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C116	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C117	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C118	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C119	1-123-380-00	ELECT 1MF	20%	50V	
C120	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C121	1-162-306-31	(G-AEP)...CERAMIC 0.01MF	20%	16V	
C122	1-162-286-31	(G-AEP)...CERAMIC 220PF	10%	50V	
C201	1-123-356-00	ELECT 10MF	20%	16V	
C202	1-162-288-31	CERAMIC 330PF	10%	50V	
C203	1-123-356-00	ELECT 10MF	20%	16V	
C204	1-162-288-31	CERAMIC 330PF	10%	50V	
C205	1-123-382-00	ELECT 3.3MF	20%	50V	
C206	1-162-288-31	CERAMIC 330PF	10%	50V	
C207	1-123-382-00	ELECT 3.3MF	20%	50V	
C208	1-123-356-00	ELECT 10MF	20%	16V	
C209	1-123-379-00	ELECT 0.47MF	20%	50V	
C210	1-123-380-00	ELECT 1MF	20%	50V	
C211	1-101-006-00	CERAMIC 0.047MF		50V	
C212	1-123-379-00	ELECT 0.47MF	20%	50V	
C213	1-123-380-00	ELECT 1MF	20%	50V	
C214	1-123-356-00	ELECT 10MF	20%	16V	

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C215	1-162-282-31	CERAMIC 100PF	10%	50V	
C216	1-162-282-31	CERAMIC 100PF	10%	50V	
C217	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C301	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C302	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C303	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C304	1-101-005-00	CERAMIC 0.022MF		50V	
C305	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C306	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C307	1-123-356-00	ELECT 10MF	20%	16V	
C308	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C309	1-162-215-31	CERAMIC 47PF	5%	50V	
C310	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C311	1-162-294-31	CERAMIC 0.001MF	10%	50V	
C312	1-101-005-00	CERAMIC 0.022MF		50V	
C313	1-108-583-00	MYLAR 0.015MF	5%	50V	
C314	1-123-382-00	ELECT 3.3MF	20%	50V	
C315	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C316	1-123-332-00	ELECT 47MF	20%	16V	
C317	1-123-380-00	ELECT 1MF	20%	50V	
C318	1-123-369-00	ELECT 4.7MF	20%	25V	
C319	1-123-369-00	ELECT 4.7MF	20%	25V	
C320	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C321	1-162-207-31	CERAMIC 22PF	5%	50V	
C322	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C323	1-102-997-00	CERAMIC 10PF	0.5PF	50V	
C324	1-104-069-00	POLYSTYRENE 470PF	5%	50V	
C325	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C326	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C327	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C328	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C329	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C330	1-162-295-00	CERAMIC 0.0015MF	30%	16V	
C331	1-102-120-00	CERAMIC 0.0018MF	10%	50V	
C332	1-102-965-00	CERAMIC 39PF	5%	50V	
C333	1-102-878-00	CERAMIC 82PF	5%	50V	
C334	1-103-707-00	POLYSTYRENE 180PF	5%	50V	
C336	1-101-006-00	CERAMIC 0.047MF		50V	
C401	1-123-379-00	ELECT 0.47MF	20%	50V	
C402	1-123-379-00	ELECT 0.47MF	20%	50V	
C403	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C404	1-123-356-00	ELECT 10MF	20%	16V	
C405	1-162-294-31	CERAMIC 0.001MF	10%	50V	
C406	1-123-356-00	ELECT 10MF	20%	16V	
C407	1-130-776-00	FILM 0.47MF	5%	63V	

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C408	1-123-379-00	ELECT 0.47MF	20%	50V	
C409	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C410	1-101-005-00	CERAMIC 0.022MF		50V	
C411	1-101-005-00	CERAMIC 0.022MF		50V	
C412	1-101-005-00	CERAMIC 0.022MF		50V	
C501	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C502	1-102-852-00	CERAMIC 47PF	5%	50V	
C503	1-102-852-00	CERAMIC 47PF	5%	50V	
C504	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C505	1-123-307-00	ELECT 100MF	20%	6.3V	
C507	1-162-294-31	CERAMIC 0.001MF	10%	50V	
C508	1-162-294-31	CERAMIC 0.001MF	10%	50V	
C509	1-162-291-31	CERAMIC 560PF	10%	50V	
C602 ⚠	1-101-004-00	CERAMIC 0.01MF		50V	
C603 ⚠	1-101-004-00	CERAMIC 0.01MF		50V	
C604 ⚠	1-101-004-00	CERAMIC 0.01MF		50V	
C605 ⚠	1-101-004-00	CERAMIC 0.01MF		50V	
C606	1-123-349-00	ELECT 1000MF	20%	35V	
C607	1-123-369-00	ELECT 4.7MF	20%	25V	
C608	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C609	1-123-356-00	ELECT 10MF	20%	16V	
C610	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C611	1-123-356-00	ELECT 10MF	20%	16V	
C701	1-123-381-00	ELECT 2.2MF	20%	50V	
C702	1-102-531-00	CERAMIC 150PF	5%	50V	
C703	1-102-531-00	CERAMIC 150PF	5%	50V	
C704	1-162-306-31	CERAMIC 0.01MF	20%	16V	
C705	1-123-356-00	ELECT 10MF	20%	16V	
C801	1-123-611-00	ELECT 1MF	20%	50V	
C802	1-123-613-00	ELECT 3.3MF	20%	50V	
C803	1-162-288-31	CERAMIC 330PF	10%	50V	
C804	1-123-821-00	ELECT 47MF	20%	16V	
C805	1-162-294-31	CERAMIC 0.001MF	10%	50V	
CF101	1-567-389-11	FILTER, CERAMIC			
CF102	1-567-389-11	FILTER, CERAMIC			
CF103	1-567-389-11	(G-AEP)...FILTER, CERAMIC			
CF201	1-567-286-11	OSCILLATOR, CERAMIC			
CF301	1-527-937-00	FILTER, CERAMIC			
CF302	1-527-981-00	FILTER, CERAMIC			
CF701	1-527-532-00	OSCILLATOR, CERAMIC			
CNJ201	1-562-068-00	SOCKET, CONNECTOR 13P			
CNJ601	1-562-068-00	SOCKET, CONNECTOR 13P			
CNJ801	*1-560-039-00	PIN, CONNECTOR (REMOTE)			
CNJ901	*1-561-919-00	(G-AEP)....SOCKET, CONNECTOR			

ELECTRICAL PARTS

Ref.No.	Part No.	Description
CNP101	*1-560-060-00	PIN, CONNECTOR 2P
CNP102	*1-560-061-00	PIN, CONNECTOR 3P
CNP103	*1-560-062-00	PIN, CONNECTOR 4P
CNP104	*1-562-249-00	SOCKET, CONNECTOR 4P
CNP105	*1-562-249-00	SOCKET, CONNECTOR 4P
CT301	1-141-180-00	CAP, TRIMMER 15P
CT302	1-141-180-00	CAP, TRIMMER 15P
CT303	1-141-171-00	CAP, TRIMMER 20P
CT304	1-141-171-00	CAP, TRIMMER 20P
D101	8-719-107-94	DIODE 1SS202-1
D201	8-719-919-04	DIODE GL-9PR4
D202	8-719-107-94	DIODE 1SS202-1
D301	8-719-902-79	DIODE KV1236Z
D302	8-719-107-94	DIODE 1SS202-1
D303	8-719-107-94	DIODE 1SS202-1
D304	8-719-902-79	DIODE KV1236Z
D501	8-719-107-94	DIODE 1SS202-1
D502	8-719-107-94	DIODE 1SS202-1
D503	8-719-107-94	DIODE 1SS202-1
D504	8-719-107-94	DIODE 1SS202-1
D507	8-719-107-94	DIODE 1SS202-1
D508	8-719-107-94	DIODE 1SS202-1
D509	8-719-107-94	DIODE 1SS202-1
D510	8-719-107-94	DIODE 1SS202-1
D513	8-719-107-94	DIODE 1SS202-1
D514	8-719-107-94	DIODE 1SS202-1
D515	8-719-107-94	DIODE 1SS202-1
D516	8-719-107-94	DIODE 1SS202-1
D518	8-719-107-94	DIODE 1SS202-1
D520	8-719-107-94	DIODE 1SS202-1
D522	8-719-107-94	DIODE 1SS202-1
D523	8-719-107-94	DIODE 1SS202-1
D524	8-719-107-94	DIODE 1SS202-1
D601 ⚠	8-719-511-20	DIODE S1VB20
D606	8-719-910-61	DIODE HZ6A1L
D701	8-719-107-94	DIODE 1SS202-1
D702	8-719-107-94	DIODE 1SS202-1
D703	8-719-107-94	DIODE 1SS202-1
D801	8-719-110-32	DIODE PH3028
D802	8-719-107-94	DIODE 1SS202-1
FE101	A-4344-037-A	(AEP,UK)...FM FRONT END (FEE-3012)
FE101	A-4344-040-A	(G-AEP)....FM FRONT END (FEE-4013)
IC101	8-759-812-31	IC LA1231
IC201	8-759-801-80	IC LA3401
IC301	8-759-812-45	IC LA1245

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

ELECTRICAL PARTS

Ref.No.	Part No.	Description
IC401	8-759-202-63	IC TC9172P
IC501	8-759-204-24	IC TC9302F-005
IC601	8-759-801-79	IC LA5665
IC701	8-759-602-46	IC M50761-415P
IC801	8-752-010-60	IC CX20106
L301	1-402-080-11	COIL (MW RF)
L302	1-406-089-11	COIL (MW OSC)
L303	1-402-071-11	COIL (LW RF)
L304	1-406-090-11	COIL (LW OSC)
L305	1-408-579-00	MICRO INDUCTOR 220UH
L601	1-408-428-00	MICRO INDUCTOR 390UH
LCD501	1-806-874-21	INDICATOR, L-CRYSTAL LT5056
LPF201	1-235-221-00	FILTER, LOW PASS
PL601	1-518-576-11	LAMP, PILOT
PL602	1-518-576-11	LAMP, PILOT
Q101	8-729-266-93	TRANSISTOR 2SC2669
Q102	8-729-266-93	TRANSISTOR 2SC2669
Q103	8-729-266-93	(G-AEP)...TRANSISTOR 2SC2669
Q104	8-729-266-93	(G-AEP)...TRANSISTOR 2SC2669
Q301	8-729-900-80	TRANSISTOR DTC114ES
Q302	8-729-245-83	TRANSISTOR 2SC2458
Q303	8-729-245-83	TRANSISTOR 2SC2458
Q304	8-729-245-83	TRANSISTOR 2SC2458
Q305	8-729-204-83	TRANSISTOR 2SA1048-GR
Q306	8-729-245-83	TRANSISTOR 2SC2458
Q401	8-729-202-67	TRANSISTOR 2SK246-GR3
Q403	8-729-202-67	TRANSISTOR 2SK246-GR3
Q402	8-729-201-83	TRANSISTOR 2SC3112
Q404	8-729-201-83	TRANSISTOR 2SC3112
Q501	8-729-245-83	TRANSISTOR 2SC2458
Q601	8-729-900-80	TRANSISTOR DTC114ES
Q602	8-729-204-83	TRANSISTOR 2SA1048-GR
Q603	8-729-245-83	TRANSISTOR 2SC2458
Q604	8-729-245-83	TRANSISTOR 2SC2458
Q605	8-729-245-83	TRANSISTOR 2SC2458
Q607	8-729-900-61	TRANSISTOR DTA114ES
Q608	8-729-173-13	TRANSISTOR 2SR731
Q801	8-729-245-83	TRANSISTOR 2SC2458
Q802	8-729-245-83	TRANSISTOR 2SC2458
Q803	8-729-245-83	TRANSISTOR 2SC2458
R101 ⚠	1-247-115-00	CARBON 220 5% 1/4W F
R102	1-247-819-00	CARBON 330 5% 1/6W
R103	1-247-811-00	CARBON 150 5% 1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R104	1-247-819-00	CARBON 330	5%	1/6W	
R105	1-247-861-00	CARBON 18K	5%	1/6W	
R106	1-247-819-00	CARBON 330	5%	1/6W	
R107	1-247-819-00	CARBON 330	5%	1/6W	
R108	1-247-865-00	CARBON 27K	5%	1/6W	
R109	1-247-819-00	(G-AEP)...CARBON 330	5%	1/6W	
R110	1-247-861-00	(G-AEP)...CARBON 18K	5%	1/6W	
R111	1-247-823-00	(G-AEP)...CARBON 820	5%	1/6W	
R112	1-247-819-00	(G-AEP)...CARBON 330	5%	1/6W	
R113	1-247-865-00	(G-AEP)...CARBON 27K	5%	1/6W	
R114 ⚠	1-247-099-00	CARBON 47	5%	1/4W F	
R115	1-247-819-00	CARBON 330	5%	1/6W	
R116	1-247-873-00	CARBON 56K	5%	1/6W	
R117	1-247-855-00	CARBON 10K	5%	1/6W	
R118	1-247-847-00	CARBON 4.7K	5%	1/6W	
R119	1-247-863-00	CARBON 22K	5%	1/6W	
R120 ⚠	1-247-111-00	CARBON 150	5%	1/4W F	
R121	1-247-879-00	CARBON 100K	5%	1/6W	
R122	1-247-855-00	CARBON 10K	5%	1/6W	
R123	1-247-855-00	CARBON 10K	5%	1/6W	
R124	1-247-855-00	CARBON 10K	5%	1/6W	
R201	1-247-831-00	CARBON 1K	5%	1/6W	
R202	1-247-879-00	CARBON 100K	5%	1/6W	
R203	1-247-843-00	CARBON 3.3K	5%	1/6W	
R204	1-247-879-00	CARBON 100K	5%	1/6W	
R205	1-247-879-00	CARBON 100K	5%	1/6W	
R206	1-247-879-00	CARBON 100K	5%	1/6W	
R207	1-247-843-00	CARBON 3.3K	5%	1/6W	
R208	1-247-863-00	CARBON 22K	5%	1/6W	
R209	1-247-839-00	CARBON 2.2K	5%	1/6W	
R210	1-247-863-00	CARBON 22K	5%	1/6W	
R212	1-247-843-00	CARBON 3.3K	5%	1/6W	
R213 ⚠	1-247-109-00	CARBON 120	5%	1/4W F	
R214	1-247-849-00	CARBON 5.6K	5%	1/6W	
R215	1-247-849-00	CARBON 5.6K	5%	1/6W	
R216	1-247-867-00	CARBON 33K	5%	1/6W	
R301	1-247-847-00	CARBON 4.7K	5%	1/6W	
R302	1-247-839-00	CARBON 2.2K	5%	1/6W	
R303 ⚠	1-247-115-00	CARBON 220	5%	1/4W F	
R304	1-247-903-00	CARBON 1M	5%	1/6W	
R305	1-247-899-00	CARBON 680K	5%	1/6W	
R306	1-247-823-00	CARBON 470	5%	1/6W	
R307	1-247-807-00	CARBON 100	5%	1/6W	
R308	1-247-855-00	CARBON 10K	5%	1/6W	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

www.freeservicemanuals.info

www.freeservicemanuals.info

ELECTRICAL PARTS

Ref.No.	Part No.	Description				
R309	1-247-843-00	CARBON	3.3K	5%	1/6W	
R310	1-247-839-00	CARBON	2.2K	5%	1/6W	
R311	1-247-855-00	CARBON	10K	5%	1/6W	
R312 ⚠	1-247-113-00	CARBON	180	5%	1/4W	F
R313	1-247-843-00	CARBON	3.3K	5%	1/6W	
R314	1-247-799-00	CARBON	47	5%	1/6W	
R315	1-247-893-00	CARBON	390K	5%	1/6W	
R316	1-247-879-00	CARBON	100K	5%	1/6W	
R317	1-247-893-00	CARBON	390K	5%	1/6W	
R318	1-247-879-00	CARBON	100K	5%	1/6W	
R319	1-247-879-00	CARBON	100K	5%	1/6W	
R320	1-247-865-00	CARBON	27K	5%	1/6W	
R321	1-247-863-00	CARBON	22K	5%	1/6W	
R322	1-247-855-00	CARBON	10K	5%	1/6W	
R323	1-247-839-00	CARBON	2.2K	5%	1/6W	
R324	1-247-871-00	CARBON	47K	5%	1/6W	
R325	1-247-879-00	CARBON	100K	5%	1/6W	
R326	1-247-879-00	CARBON	100K	5%	1/6W	
R327	1-247-855-00	CARBON	10K	5%	1/6W	
R328	1-247-879-00	CARBON	100K	5%	1/6W	
R329	1-247-847-00	CARBON	4.7K	5%	1/6W	
R330	1-247-847-00	CARBON	4.7K	5%	1/6W	
R401	1-247-831-00	CARBON	1K	5%	1/6W	
R402	1-247-831-00	CARBON	1K	5%	1/6W	
R403	1-247-831-00	CARBON	1K	5%	1/6W	
R404	1-247-871-00	CARBON	47K	5%	1/6W	
R405	1-247-825-00	CARBON	560	5%	1/6W	
R406	1-247-867-00	CARBON	33K	5%	1/6W	
R407	1-247-829-00	CARBON	820	5%	1/6W	
R408	1-247-817-00	CARBON	270	5%	1/6W	
R409	1-247-839-00	CARBON	2.2K	5%	1/6W	
R410	1-247-847-00	CARBON	4.7K	5%	1/6W	
R411 ⚠	1-247-107-00	CARBON	100	5%	1/4W	F
R412 ⚠	1-247-095-00	CARBON	33	5%	1/4W	F
R413	1-247-893-00	CARBON	390K	5%	1/6W	
R414	1-247-871-00	CARBON	47K	5%	1/6W	
R415	1-247-825-00	CARBON	560	5%	1/6W	
R416	1-247-885-00	CARBON	180K	5%	1/6W	
R417	1-247-829-00	CARBON	820	5%	1/6W	
R418	1-247-817-00	CARBON	270	5%	1/6W	
R419	1-247-839-00	CARBON	2.2K	5%	1/6W	
R420	1-247-847-00	CARBON	4.7K	5%	1/6W	
R422	1-247-893-00	CARBON	390K	5%	1/6W	
R501	1-247-879-00	CARBON	100K	5%	1/6W	
R502	1-247-843-00	CARBON	3.3K	5%	1/6W	

ELECTRICAL PARTS

Ref.No.	Part No.	Description				
R503	1-247-847-00	CARBON	4.7K	5%	1/6W	
R504	1-247-855-00	CARBON	10K	5%	1/6W	
R505	1-247-855-00	CARBON	10K	5%	1/6W	
R601 ⚠	1-247-230-00	CARBON	390	5%	1/2W	F
R602	1-247-871-00	CARBON	47K	5%	1/6W	
R603	1-247-855-00	CARBON	10K	5%	1/6W	
R604	1-247-855-00	CARBON	10K	5%	1/6W	
R605	1-247-855-00	CARBON	10K	5%	1/6W	
R606	1-247-867-00	CARBON	33K	5%	1/6W	
R607	1-247-855-00	CARBON	10K	5%	1/6W	
R608	1-247-837-00	CARBON	1.8K	5%	1/6W	
R609	1-247-859-00	CARBON	15K	5%	1/6W	
R610	1-247-867-00	CARBON	33K	5%	1/6W	
R611	1-247-855-00	CARBON	10K	5%	1/6W	
R612	1-247-831-00	CARBON	1K	5%	1/6W	
R613	1-247-887-00	CARBON	220K	5%	1/6W	
R614	1-247-843-00	CARBON	3.3K	5%	1/6W	
R625 ⚠	1-206-476-00	METAL OXIDE	36	5%	2W	F
R701	1-247-847-00	CARBON	4.7K	5%	1/6W	
R702	1-247-847-00	CARBON	4.7K	5%	1/6W	
R703	1-247-879-00	CARBON	100K	5%	1/6W	
R704	1-247-903-00	CARBON	1M	5%	1/6W	
R705	1-247-843-00	CARBON	3.3K	5%	1/6W	
R706	1-247-847-00	CARBON	4.7K	5%	1/6W	
R801	1-247-791-00	CARBON	22	5%	1/6W	
R802	1-215-476-00	METAL	200K	1%	1/6W	
R803	1-247-863-00	CARBON	22K	5%	1/6W	
R804	1-247-819-00	CARBON	330	5%	1/6W	
R805	1-247-855-00	CARBON	10K	5%	1/6W	
R806	1-247-855-00	CARBON	10K	5%	1/6W	
R807	1-247-831-00	CARBON	1K	5%	1/6W	
R808	1-247-855-00	CARBON	10K	5%	1/6W	
R809	1-247-831-00	CARBON	1K	5%	1/6W	
R810	1-247-783-00	CARBON	10	5%	1/6W	
R811	1-247-855-00	CARBON	10K	5%	1/6W	
R812	1-247-783-00	CARBON	10	5%	1/6W	
R813	1-247-847-00	CARBON	4.7K	5%	1/6W	
RT101	1-228-996-00	RES, ADJ, CARBON 47K				
RT201	1-228-998-00	RES, ADJ, CARBON 220K				

Free service manuals
Gratis schema's
Digitized by
www.freeservicemanuals.info

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

www.freeservicemanuals.info