JVC

NO. 2336

SERVICE MANUAL

MODEL

4VR-5456X

CD-4

ORIGINATED BY JVC

FM/AM 4-CHANNEL RECEIVER
WITH CD-4 DEMODULATOR

Index

Specifications

DIMENSIONS : 7-1/8"(H)x20-1/4"(W)x15-7/8"(D)
(18cm x 51.3cm x 40.5cm)

WEIGHT : Net: 44.0 lbs. (20.0 kg)
Gross: 49.1 lbs. (22.3 kg)

AMPLIFIER SECTION

RMS Power (All channels driven, 20Hz~20kHz power bandwidth)	: 43W per channel at 8Ω 50W per channel at 4Ω 100W per channel at 8Ω (BTL)
RMS Power (All channels driven, at 1kHz)	: 192W (48W x 4) at 8Ω 256W (64W x 4) at 4Ω 230W (115W x 2) at 8Ω (BTL)
Total Dynamic Power (IHF)	: 280W (70W x 4) at 8Ω 400W (100W x 4) at 4Ω
IHF Power Bandwidth	: 5Hz~45kHz
Total Harmonic Distortion	: 0.5% at rated output 0.1% at half rated output
Intermodulation Distortion	: 0.8% at rated output 0.1% at half rated output
Load Impedance	: 4Ω~16Ω (8Ω~16Ω for BTL, 4ch 1 + 2)
Damping Factor	: 40 at 8Ω
Input Sensitivity, Impedance and S/N Ratio	: Phono (High) 1.5mV/100kΩ,65dB Phono (Low) 3.0mV/100kΩ,70dB Aux-1,-2 150mV/100kΩ,75dB Tape Mon. -1, -2 150mV/100kΩ,75dB FM 4ch Input 150mV/100kΩ,75dB
Recording Output Level	: 150mV
Frequency Response	: 10Hz~50kHz ±1dB
SEA Center Frequencies	: 40, 250, 1k, 5k, 15kHz
SEA Control Range	: ±12dB
Loudness Control	: +11dB at 50Hz + 6dB at 10kHz
Low Cut Filter	: -10dB at 50Hz
High Cut Filter	: -10dB at 10kHz
Crosstalk	: 50dB at 1kHz

FM TUNER SECTION

Tuning Range	: 88MHz~108MHz
Usable Sensitivity	: 1.8μV (IHF) 2.7μV (at S/N 50dB)
Total Harmonic Distortion (400Hz, 100% mod.)	: 0.3% (Mono) 0.4% (Stereo)
Signal to Noise Ratio	: 65dB (at 15μV)
Selectivity	: 65dB (IHF)
Capture Ratio	: 1.2dB (IHF)
Image Rejection	: 80dB
IF Rejection	: 90dB
Spurious Signal Rejection	: 85dB
Stereo Separation	: 38dB at 1kHz
AM Suppression	: 50dB
Sub Carrier Suppression	: 50dB
SCA Carrier Suppression	: 55dB
Stereo Auto Switching Level	: 10μV
Muting Level	: 10μV
Frequency Response	: 20Hz~15kHz ±1dB
FM Detector Output	: 130mV/1.5kΩ, at 100% modulation

AM TUNER SECTION

Tuning Range	: 525kHz~1605kHz
Usable Sensitivity	: 30μV, 200μV/m.
Signal to Noise Ratio	: 50dB
Selectivity	: 30dB
Image Rejection	: 45dB
IF Rejection	: 50dB

FRONT PANEL ATTACHMENTS

Power Switch	: Lever Switch
Function Selector	: AM,FM,Phono(CD-4), Aux-1, Aux-2
Audio Muting	: Yes (-20dB)
FM Muting	: Yes
Loudness	: Yes
Low Cut Filter	: Yes
High Cut Filter	: Yes
Tape Monitor	: Yes (1,2)
Mono	: Mode Switch
Volume Control	: Yes
Mode	: Mono,2Ch, Discrete 4Ch, Matrix-1, Matrix-2
SEA Slide Controls	: Yes (Front, Rear)
SEA Recording Switch	: Yes
Speaker Selector	: BTL 1+2, BTL-2, BTL-1, Off, 4Ch-1, 4Ch-2, 4Ch 1 + 2
Balance Control	: Yes (4-Independent)
Signal Meter	: Yes
Center Tuning Meter	: Yes
FM Stereo Only Switch	: Yes
Mode Indicator	: Yes (Mono, 2Ch, Discrete 4Ch Matrix-1, Matrix-2)
Source Indicator	: Yes (AM, FM, Phono, Aux-1, Aux-2)
CD-4 Indicator	: Yes
Jacks	
Headphone Jack	: Yes (Front, Rear)
Tape Monitor Jack	: Yes
Remote Control Jack	: Yes

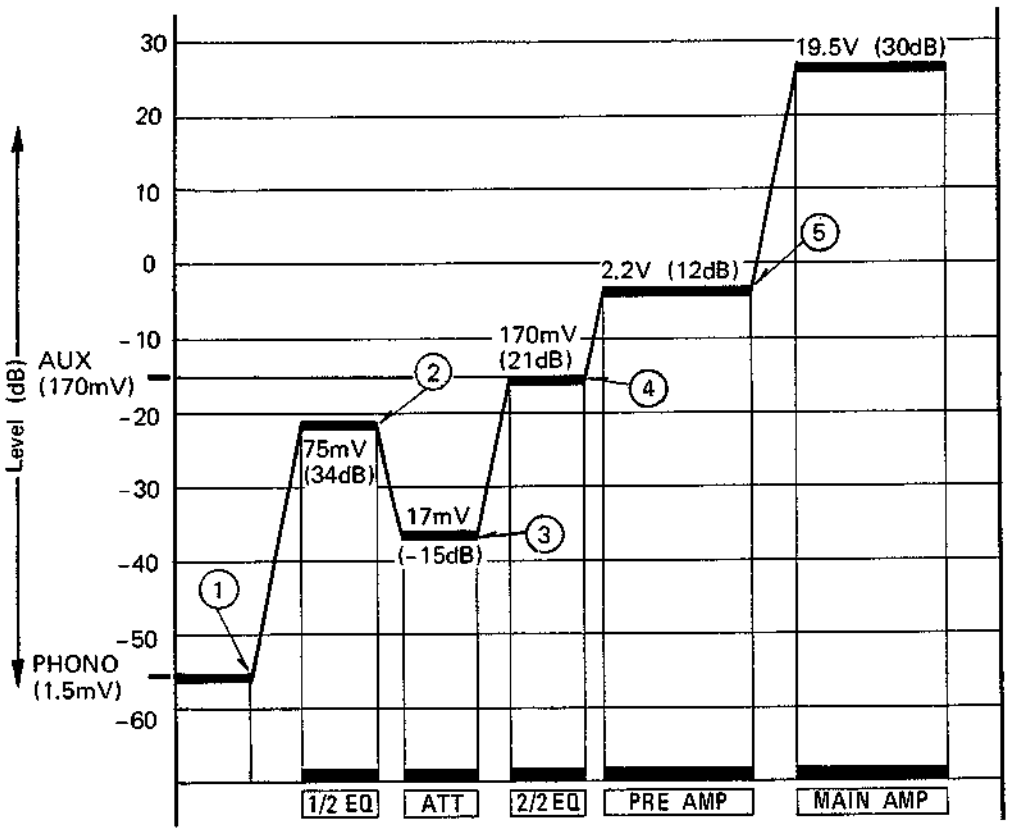
REAR PANEL TERMINALS & CONTROLS

FM Antenna Terminal	: Yes (300Ω, 75Ω)
AM Antenna Terminal	: Yes
Speaker Terminals	: System-1, System-2, (One-Touch Type)
FM Det Out	: Yes
AC Outlet	: Yes (Switched, Unswitched)
DIN Jack	: Yes
Input Terminals (2CH)	: Phono
(4CH)	: Aux-1, Aux-2, Tape-1 Tape-2, FM 4Ch input
CD-4 Separation Control	: Yes
CD-4 30kHz Level Adjust	: Yes
Phono Sensitivity Switch	: High, Low
FM 4Ch Input Switch	: Yes
FM INT Antenna Switch	: Yes
4Ch Scope Out Terminals	: Yes

POWER SOURCE : 120V, 50/60Hz

POWER CONSUMPTION : 320W

Level Diagram



0dB = 0.775V

Fig. 1

MEMO

Block Diagram

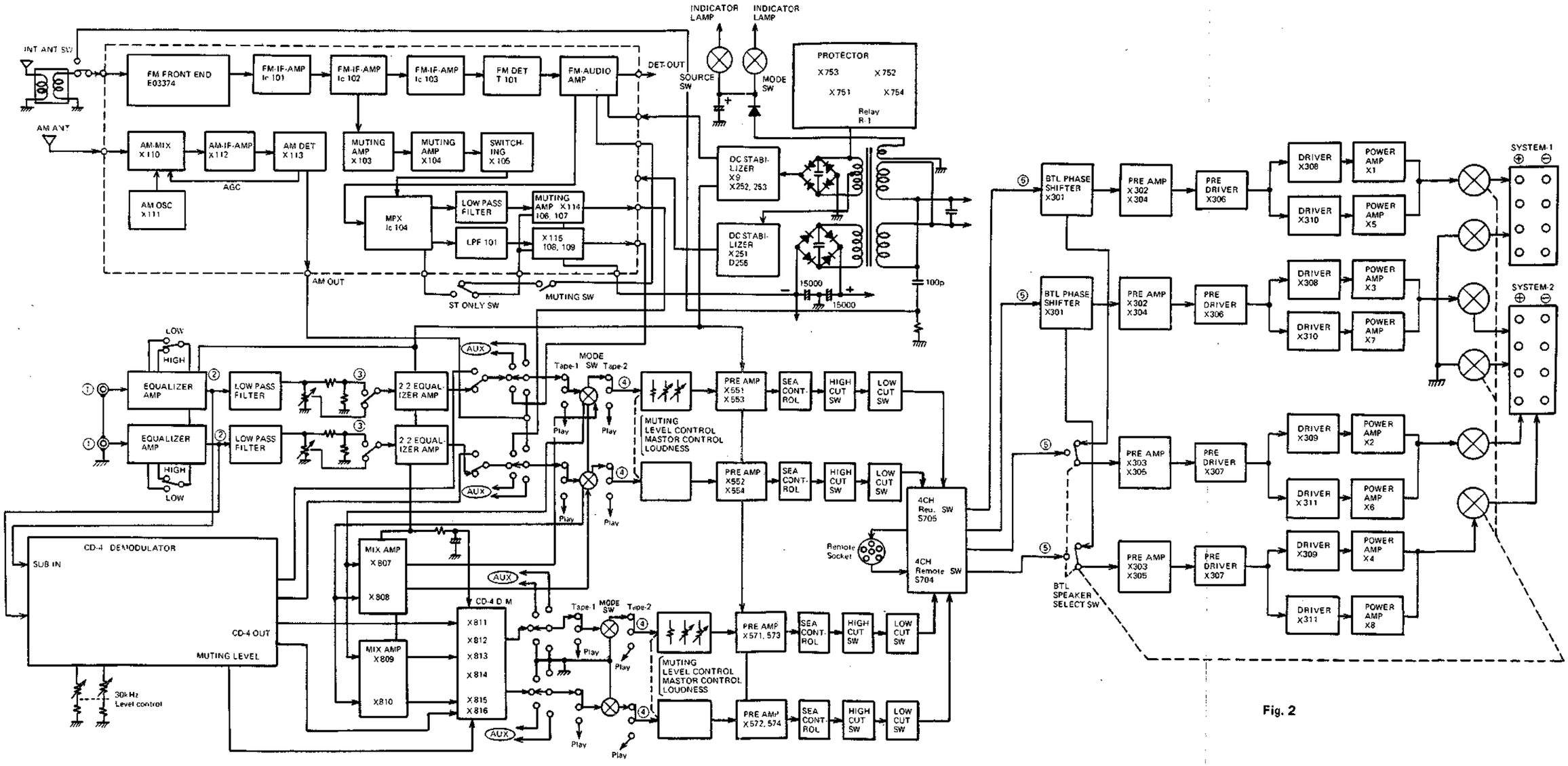


Fig. 2

Technical Information

1. Protector Circuit (U.S. Pat. 3691427)

The protector circuit built into the 4VR-5456X is designed not only to protect the machine when the speakers are short-circuited, but also to protect the speakers when the receiver, and most particularly the OCL amplifier, is damaged by physical shocks, etc. A balancer is provided so that the potential at point A is zero when the OCL amplifier is operating normally. If the transistors in the OCL amp are damaged in any way, the potential at A will no longer be zero and the speakers will be damaged. When the potential at A changes, the change is detected instantaneously by the pickup circuit which switches off the relay connected in series with the speakers so that the speakers are no longer connected to the amplifier.

(When the protector circuit operates, it is ON for 2 or 3 seconds, with the detection being repeated with a predetermined time constant. This is not a defect in the operation of the protector circuit.)

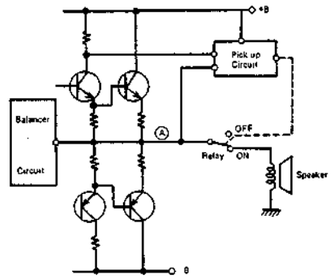


Fig. 3

2. CD-4/MATRIX Auto Switching Circuit

When different types of 4-channel records are being played on an auto-change record player, this circuit switches the mode to DISCRETE 4CH or MATRIX automatically, depending on the record being played.

The detection is done by the presence or absence of the CD-4 30kHz carrier; a transistor is switched by the muting voltage of the CD-4 demodulator. When there is no 30kHz carrier, the circuit is switched to MATRIX playback. When the 30kHz carrier is present, the transistor switches the circuit to CD-4 playback.

3. S.E.A. Recording Circuit

This is designed so that you can use JVC's unique S.E.A. tone control system to enhance your recordings. The S.E.A. operates on the signals at the pre-amp stage and the result is heard from the speakers.

So that the signals can be recorded after they have been modified by the S.E.A. circuit, when the S.E.A. recording switch is pressed, the signal from the speaker terminals passes through the switch to the TAPE-2 REC terminals.

4. FM Stereo Only Circuit

This discriminates between mono and stereo broadcasts. When it is in its OFF position, both mono and stereo broadcasts can be heard. When it is ON, a transistor is switched by the supply voltage of the Stereo Indicator lamp. This lamp is switched on if the 19kHz carrier used in FM stereo broadcasting is present. If the broadcast is monaural, the transistor is conducting, the muting circuit is operating and the sound cannot be heard. If the broadcast is stereo, the transistor does not conduct, the muting circuit does not operate and the sound can be heard.

5. Lower Front Panel Cover Mechanism

To open the lower front panel cover:

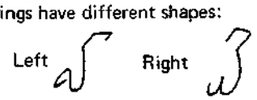
1) Fig. A shows the cover completely closed, held in position by the spring and magnet. The magnet has a mechanism which will push it out.
2) When the cover is pressed lightly, the magnet pushes it out slightly to the position indicated by the broken line in Fig. A.
3) When the cover is moved by hand beyond the position shown in Fig. B it will open itself to the position shown in Fig. C automatically.

To close the lower front panel cover:

1) When the cover is moved back by hand beyond the position shown in Fig. B it will close itself automatically to the position shown in Fig. A by the broken line.
2) Press the cover lightly to return it to its fully closed position.

To fit the springs:

The two springs have different shapes:



First hook the end with the round loop into the bracket on the cover and then hook the other end into the bracket in the body.

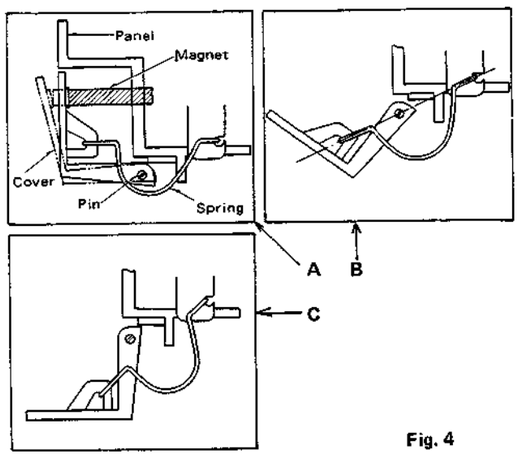
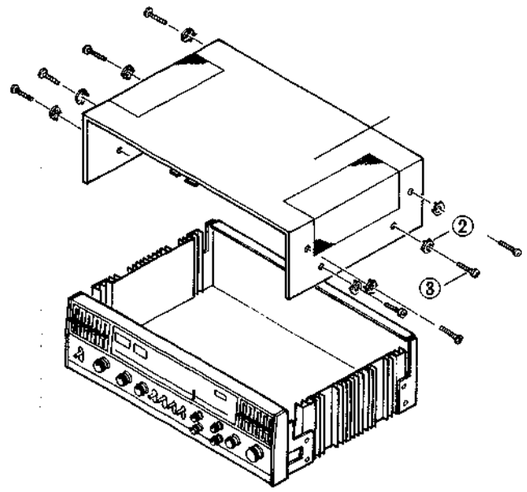


Fig. 4

Removal of The Top Cover and Bottom Plate

1. Remove the 4 screws on either side of the cover.
2. Remove the top cover.
3. Remove the 11 screws from the bottom plate and the bottom plate from the chassis.

Ref. No.	Parts No.	Parts Name
1	DL-ED92472	Wooden Case
2	Q03091-303	Washer
3	SDSP4020MS	Screw
4	E48599-001	Foot
5	SDSB4010N	Tapping Screw
6	E21316-001	Bottom Plate



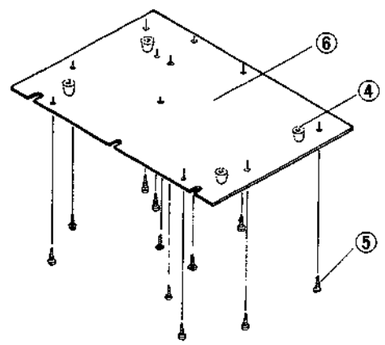


Fig. 5

Final Packing Ass'y

Ref. No.	Parts No.	Parts Name
1	4VR-5456X-PK	Carton Case
2	4VR-5456X-NZ	Packing Materials

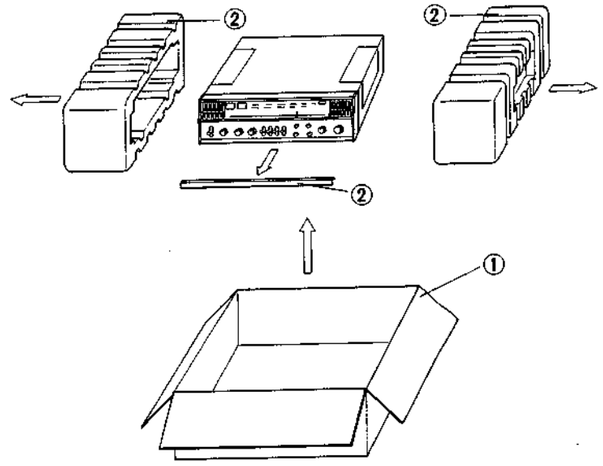


Fig. 6

Main Parts Location

	Ref. No.	Parts No.	Parts Name	
TOP VIEW	1	E03077-16C	Power Transformer	
	2	QEY5008-121	E. Capacitor	15000μ/50WV
	3	TFM-905GUA3	FM/AM Stereo Tuner Ass'y	
	4	TAE-97	Equalizer MTX. C.B. Ass'y	
	5	TAD-140A	Driver Amp. C.B. Ass'y	CH-1, CH-2
	6	TAD-140B	Driver Amp. C.B. Ass'y	CH-3, CH-4
	7	E21479-001	Wire Cover	
	8	2SC897C or B	Power Transistor	
	9	E21360-002	Heat Sink	
	10	E33821-001	Dial Drum Ass'y	
	11	E48627-003	C.B. Stopper	
BOTTOM VIEW	1	TDM-22A	CD-4 Demodulator C.B. Ass'y	
	2	TAP-206	Power Supply C.B. Ass'y	
	3	TAC-310	Relay C.B. Ass'y	
	4	TAC-307	Control SEA Amp. C.B. Ass'y	
	5	TAC-308	Tape Monitor C.B. Ass'y	
	6	E33510-002	Tuning Shaft Ass'y	
	7	ESAC02-03C	Si. Diode	Forward
	8	ESAC02-03N	Si. Diode	Reverse

TOP VIEW

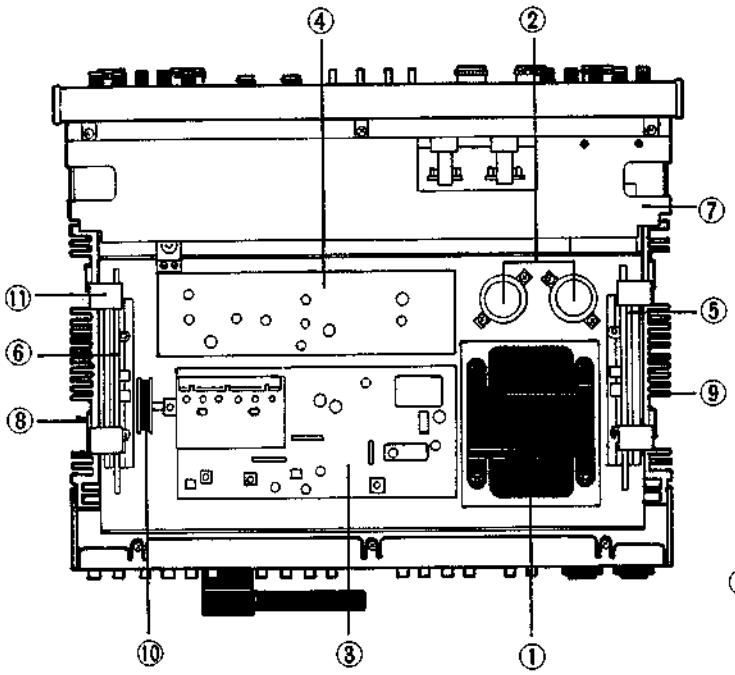


Fig. 7

BOTTOM VIEW

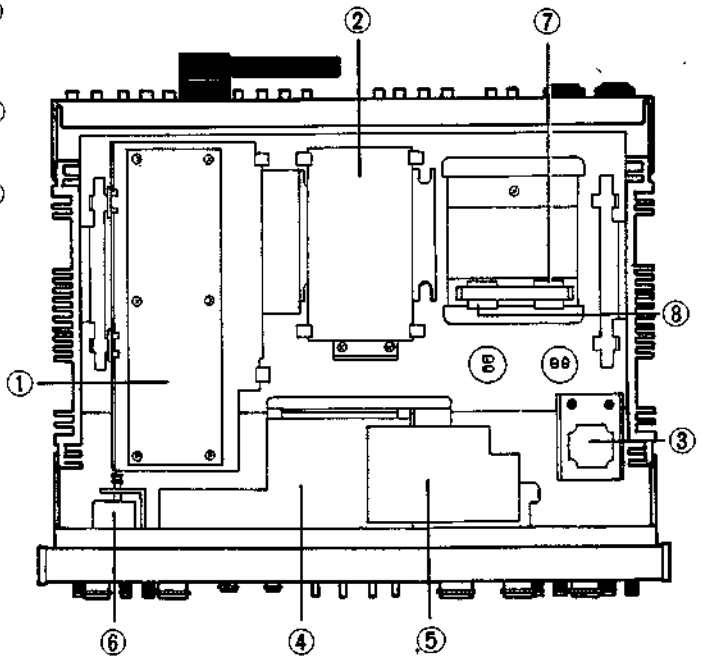


Fig. 8

List of Front Panel Parts for Replacement

Ref. No.	Parts No.	Parts Name	Description
1	E1849-001	Front Panel Ass'y	
2	E48628-001	Volume Knob	
3	E48600-001	Tuning Knob	
4	E48629-001	Level Knob	
5	E48753-001	Select Knob	
6	E48864-001	SEA Knob	
7	E47959-001	Push Knob	
8	E33591-001	Magnet Ass'y	
9	E1760-004	F. Bracket Ass'y	
10	E45979-013	Spacer	Lever Switch Use TV-5 S1
11	QMC0889-002	8-pin Socket Ass'y	Remote Control
12	QSU1222-001	Lever Switch	Power TV-5 S1
13	E03595-001	Push Switch	Door Opener Use
14	QSR0057-001	Rotary Switch	12C-7P Speaker Select
15	E03582-002	Rotary Switch	Mode
16	E03582-003	Rotary Switch	Source
17	E03468-002	H. Phone Jack Ass'y	Tape Monitor & H. Phone
18	TAC-307	Control SEA Amp. C.B. Ass'y	
19	QSP0221-004	Push Switch	Muting, Stereo Only
20	E33510-002	Tuning Shaft Ass'y	
21	E48815-002	Roller Bracket Ass'y	
22	E33460-001	SEA Bracket	
23	TAC-314	SEA Control C.B. Ass'y	FRONT
24	E33593-001	Needle Ass'y	
25	E48618-002	Jack Bracket	H. Phone
26	E49210-001	Heat Protector	
27	E48617-001	Push Sw. Bracket	
28	TAC-308	Tape Monitor C.B. Ass'y	
29	E33451-001	Dial Scale	
30	E33511-004	Color Screen	White
31	QMG1121-004	Fuse Holder	Lamp Use UL SE-1
32	QLP4101-001	Pilot Lamp	12.6V 300mA — Skale
33	E48587-003	Mini Screen	CD-4 Rader
34	E48587-002	Mini Screen	Stereo Rader
35	E1776-001	Reflector	
36	E03176-010	Center Meter	
37	E03176-011B	Tuning Indicator	
38	E49185-001	Meter Holder	
39	QLP4101-004	Pilot Lamp	12V 150mA — VU Meter Wap.
40	TAP-208	Indicator Lamp C.B. Ass'y	
41	E49186-001	Lamp Holder	
42	TAC-314B	SEA Control C.B. Ass'y	REAR

Exploded View of Rear Panel Parts

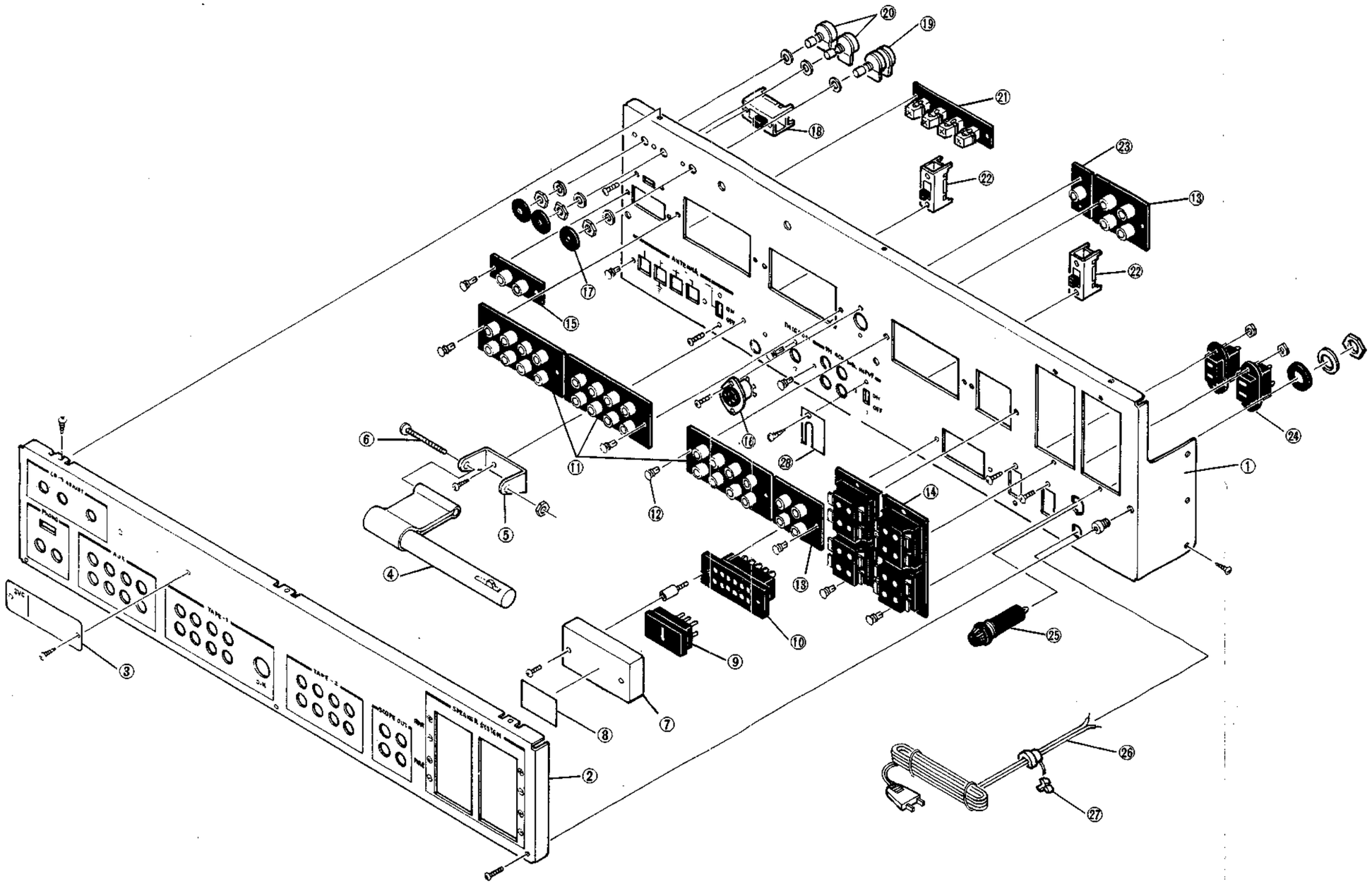


Fig. 10

Exploded View of Front Panel Parts

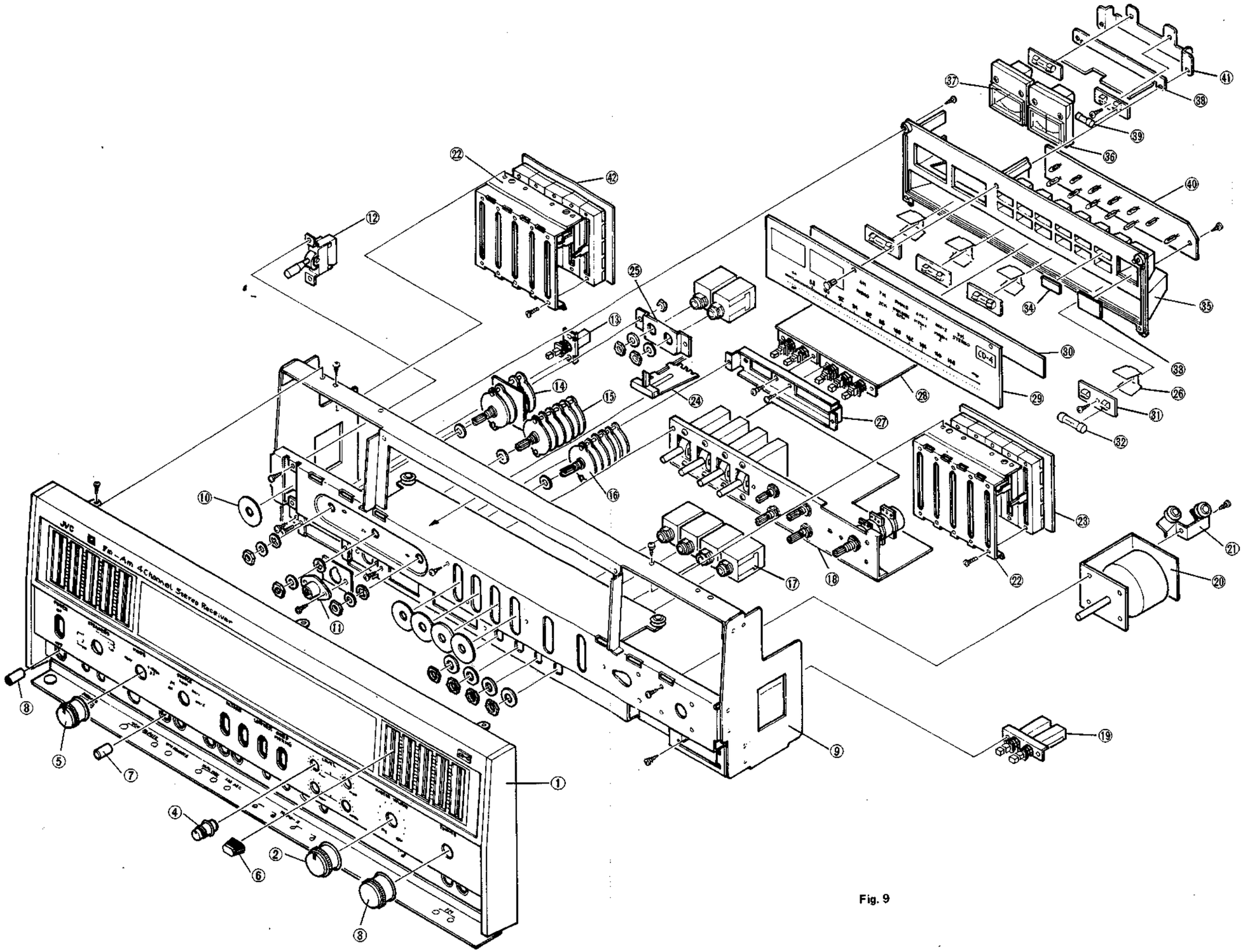


Fig. 9

List of Rear Panel Parts for Replacement

Ref. No.	Parts No.	Parts Name	Description
1	E1764-002	Rear Panel	
2	E1765-002	Decoration Panel	
3	E48761-038	Rating Plate	
4	E03037-28	Bar Ant Coil	
5	E47193-002	Bar Ant Bracket	
6	SPSP4050NS	Screw	Bar Ant Use
7	E46603-002	Cover	Voltage Selector
8	E46789-002	Caution Label	
9	QMC9005-001	Voltage Select Plug	
10	QMC9004-001	Voltage Select Socket	
11	E03043-80	Pin Jack Ass'y	8 Pin
12	E48729-001	Plastic Rivet	
13	E03043-40	Pin Jack Ass'y	4 Pin
14	E03410-002	Speaker Terminal Ass'y	
15	E03043-20	Pin Jack Ass'y	2 Pin
16	E03571-001	DIN Socket Ass'y	
17	E42000-014	Spacer	Mini VR
18	QSS4224-005	Slide Switch	Phono Sensitivity
19	E03504-004	Variable Resistor	30kHz Carrier
20	E03415-003	Variable Resistor	Separation Control
21	E03358-43	Terminal Ass'y	Ant
22	QSS4224-002	Slide Switch	FM 4Ch, FM Int Ant.
23	E03043-10	Pin Jack	1 Pin
24	QMC0234-001	AC Socket	
25	QMG0201-001	Fuse Socket	
26	QMP1200-244	Power Cord With Plug	
27	QHS3876-162	Power Cord Stopper	
28	E48783-001	Switch Stopper	

Removal of The Power Amplifier Circuit Board and Power Transistors

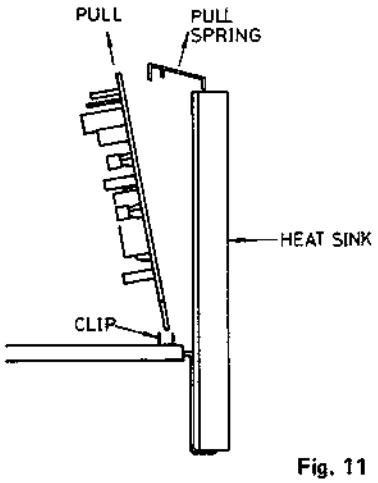


Fig. 11

Ref. No.	Parts No.	Parts Name	Pc	fT
1	2SC897C or B	Power Transistor	60W	15MHz
2	2SA757C or B	Power Transistor	60W	24MHz
3	E41542-2	Insulator Film		
4	SPSP3012NS	Screw		
5	E21360-002	Heat Sink		

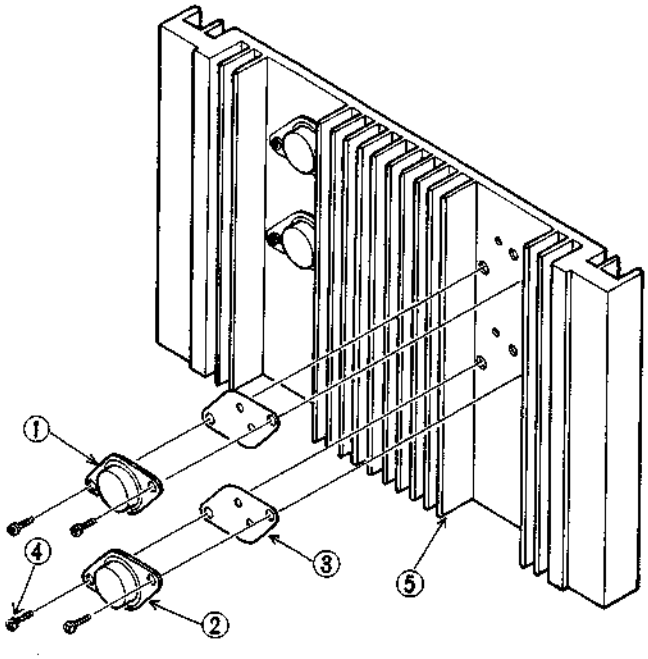


Fig. 12

How to Repair and Check The CD-4 Circuit Board Ass'y

Ref. No.	Parts No.	Parts Name
1	TDM-22A	CD-4 C.B. Ass'y
2	SDSB3008N	Tapping Screw
3	E33466-001	Circuit Board Bracket

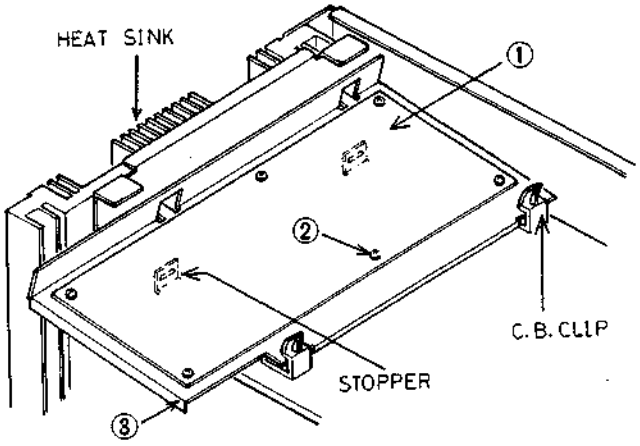


Fig. 13

How to Fit The Dial Cord

1. Set the variable capacitor to maximum.
2. Check that the dial drum is firmly fixed to the shaft.
3. Fit the dial cord as shown in the diagram.
4. Wind 3 turns of the cord round the tuning shaft and 2 turns round the dial drum.
5. Put the needle on the needle rail.
6. Position the needle to zero point on the dial scale and fix to the dial cord.

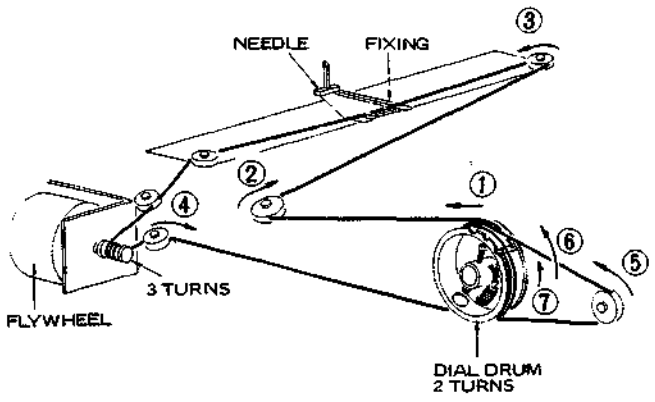


Fig. 14

Tuner Alignment

Before Adjustment

1. Tune to a frequency where there is no broadcast.
2. Connect the RF generator to the antenna terminals.
3. To adjust the IFT. use an insulated screwdriver.

Dummy antenna schematic diagrams

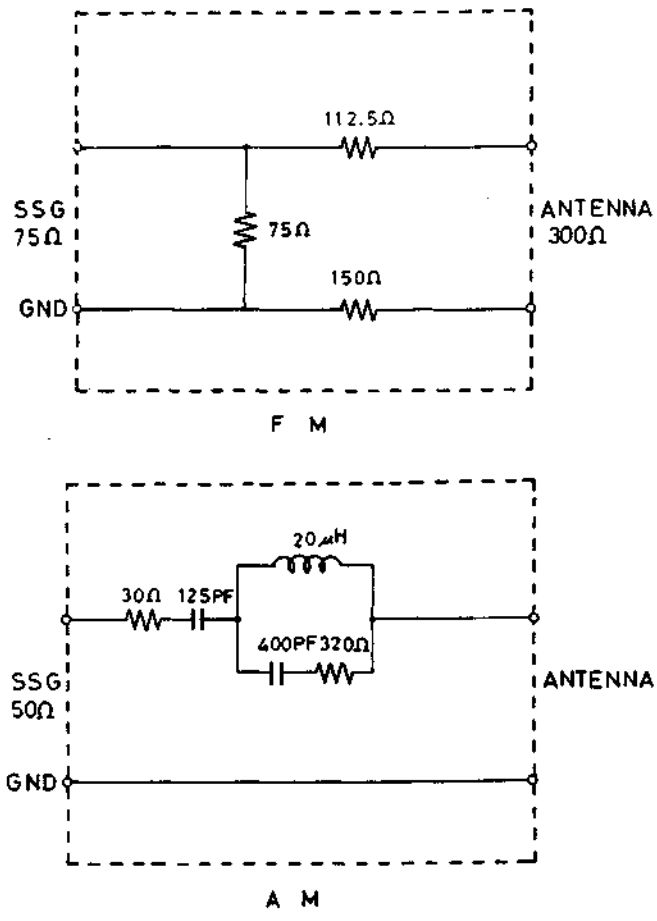


Fig. 15

AM Adjustment

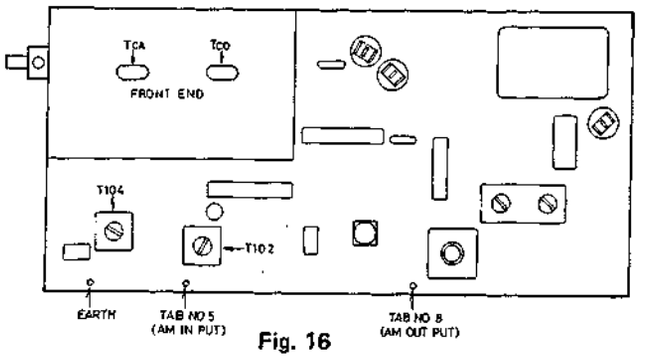


Fig. 16

Adjusting IF Stage

1. Connect the output of a sweep generator to the AM input (Tab No.5) of the Tuner Circuit Board Ass'y (TFM-905GUA). Set the signal to 455kHz.
2. Connect the input of the sweep generator to the AM out terminal (Tab No. 8)
3. Adjust the core of IFT. T102 so that the output is maximized and the waveform is symmetrical as shown in Fig. 17.

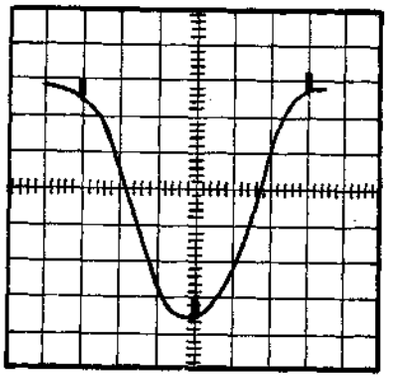


Fig. 17

Adjusting Tracking & Sensitivity

Low Frequency

1. Connect an RF. generator to the antenna terminal on the rear panel. Set this to 600kHz with 40% modulation at 400Hz.
2. Connect a VTVM to the REC jacks or speaker terminals.
3. Tune to 600kHz.
4. Adjust OSC transformer T104 and the ferrite bar-antenna to maximize the output signal.

High Frequency

1. Connect an RF. generator to the antenna terminal on the rear panel. Set this to 1400kHz with 40% modulation at 400Hz.
2. Connect a VTVM to the REC jacks or speaker terminals.
3. Set the dial pointer to 1400kHz.
4. Adjust trimmers Tco and Tca in the AM FRONT-END so that the output signal is maximized.

*Repeat these steps until maximum sensitivity is obtained.

FM Adjustment

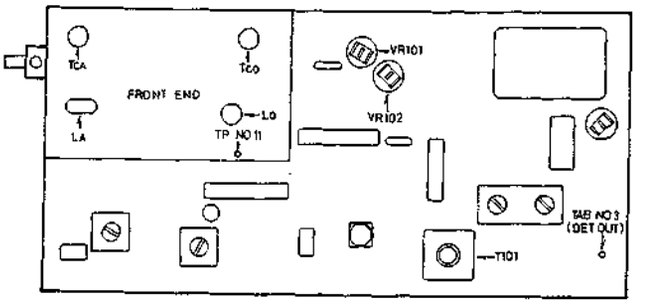


Fig. 18

Adjusting Discriminator

1. Connect a sweep generator to the FM test point (FM FRONT-END, IF. Out) through a 33kΩ resistor. Set this generator to 10.7MHz.
2. Connect an oscilloscope to the FM DET.OUT jack (TP-2).
3. Adjust the primary and secondary cores of T101 to obtain an "S" shaped waveform as shown in Fig. 19 and maximum gain.

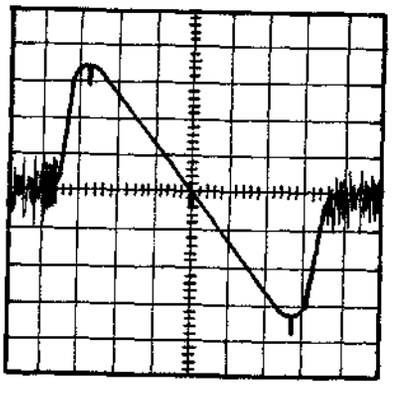


Fig. 19

Adjusting Center Meter & Distortion

1. Connect an RF. generator with 400Hz modulation and 75kHz deviation to the antenna terminals on the rear panel through a dummy antenna.
2. Connect an oscilloscope, distortion meter and VTVM to the REC jacks or speaker terminals.
3. Tune to a frequency where there is no broadcast.
4. Adjust the secondary core of T101 so that the center meter indicates "0".
5. Set the generator to 98MHz.
6. Tune to 98MHz.
7. Adjust the primary core of T101 so that the distortion is minimized at a value less than 0.3%.

Adjusting Tracking & Sensitivity

Low Frequency

1. Connect an RF. generator to the antenna terminals on the rear panel through a dummy antenna.
2. Set the RF. generator to 88MHz, a modulation of 400Hz and a deviation of 75kHz to provide an input of 10μv.
3. Connect a VTVM and an oscilloscope to the REC jacks or speaker terminals.
4. Tune to 88MHz.
5. Adjust coils Lo and La in the FRONT-END to maximize the output.

High Frequency

1. Set the RF. generator to 108MHz, a modulation of 400Hz, and a deviation of 75kHz to provide an input of 10μV.
2. Tune to 108MHz.
3. Adjust FM trimmers Tco and Tca in the FRONT-END to maximize the output.

*Repeat these steps until maximum sensitivity is obtained.

Adjusting Muting Level

1. Connect a VTVM and an oscilloscope to the REC jacks or speaker terminals.
2. Set the RF. generator to 98MHz with 400Hz modulation, and 75kHz deviation to provide an input of 22μV.
3. Switch FM MUTING on.
4. Turn VR101 clockwise and remember the point at which the muting ceases to operate.
5. Turn VR101 counterclockwise slightly so that the output level drops by 1μV.
6. Reset the RF. generator to 18μV output and check that muting still operates.

Balancing Center Meter Deflection

Tune to a signal from a standard signal oscillator or an FM station. Optimize reception and adjust so that when detuned by 70kHz in either direction the deflections to the left and right are symmetrical.

The two widths a should be the same and a should be twice b.

If the deflections a are not symmetrical, ceramic filter CF102 should be replaced. This ceramic filter comes in three different types; black, red and white. Use the one which gives the best result.

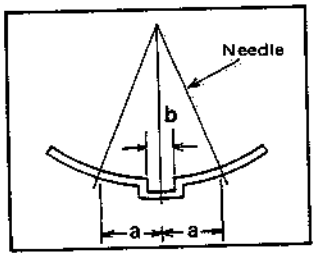


Fig. 20

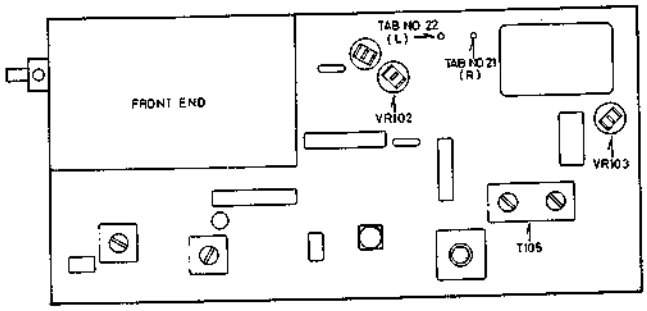


Fig. 21

Adjusting MPX

1. Set a stereo signal generator as follows; Modulation frequency 1000Hz, Deviation pilot 7.5kHz, Main and Sub. 67.5kHz. Connect its output to the EXT input of an RF. signal generator.
2. Connect the RF. generator to the antenna terminals through a dummy antenna.
3. Connect a VTVM, oscilloscope and distortion meter to the REC jacks or speaker terminals.
4. Set the RF. generator to 98MHz and an output of 1mV.
5. Tune to 98MHz.
6. Connect oscilloscope to TP-3 (Tab No. T21, 22).
7. Adjust T105's black core to maximize the 19kHz level.
8. Switch off only the main signal to the stereo modulator.
9. Adjust T105's yellow core so that left and right channel output has maximum gain and minimum distortion.

Adjusting Separation

10. Switch stereo modulator's selector to left.
11. Adjust VR103 so that right channel output is minimized.
12. Switch stereo modulator's selector to right.
13. Adjust VR103 so that left channel output is minimized.
14. If the levels of right and left outputs are different, set VR103 to average.

Adjusting Tuning Meter

1. Connect an RF. generator to the antenna terminals through a dummy antenna.
2. Set the RF. generator output to 10V and adjust VR102 so that the signal strength meter reads around 4 or 5.

Adjusting Idling Current

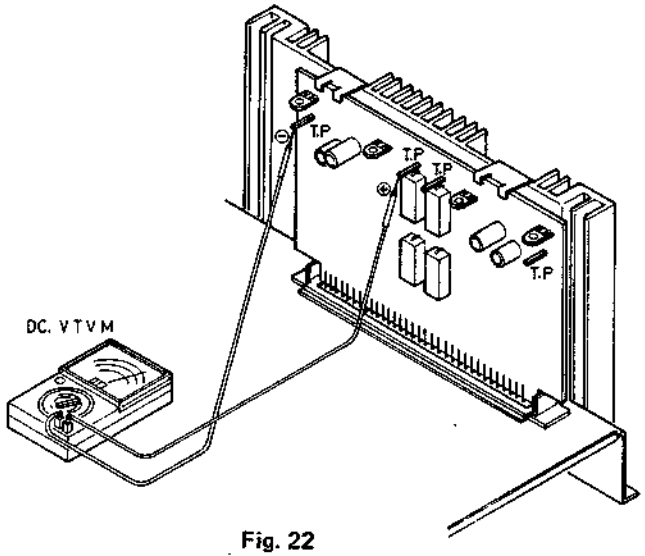


Fig. 22

(Adjusting with Milivoltmeter) Fig. 22

1. Connect DC milivoltmeter across emitter resistor R335 (that is; to the test point of TAD-140A/B).
2. Adjust semi-fixed resistor R351 so that the milivoltmeter reading is 4.5mV.
3. Repeat the procedure for the other channels.

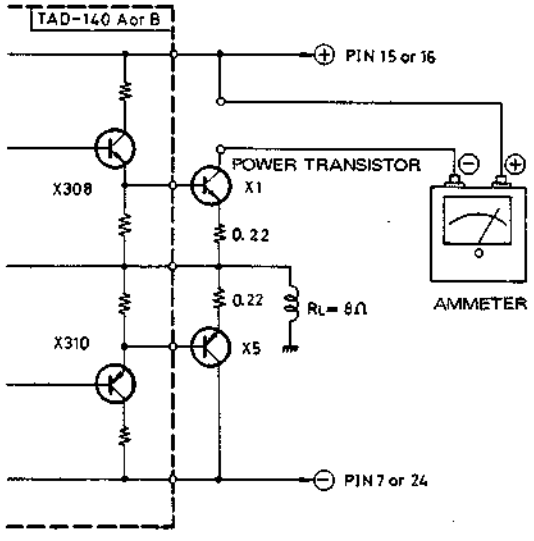


Fig. 23

(Adjusting with Ammeter) Fig. 23

1. Connect a DC ammeter between the collector of power transistor X1 and B+.
2. Adjust R351 semi-fixed resistor so that ammeter reading is 20mA.
3. Repeat the procedure for the other channels.

CD-4 Adjustment

CD-4 adjustment is to match cartridge and stylus with built-in demodulator. Once it has been done it need not be done again until cartridge or stylus is changed.

1. Set source selecto to CD-4 / PHONO.
2. Set mode select to DISCRETE 4CH.

30kHz Level Adjustment

The 30kHz sub-channel carrier output differs between cartridges and this screw on the rear panel is to adjust the level.

1. Turn the 30kHz level screw clockwise until the stop position.
2. On BAND 2 of CD-4 adjustment record there is a 400Hz sub channel signal (4kHz deviation). If the signal is distorted play BAND 2 on adjustment record and turn the screw counterclockwise until a position is reached where distorted sound is not heard. Although distorted sound may still be heard when the screw is fully counter-clockwise, it might be acceptable in sound quality when playing CD-4 music records with the screw in this position. If the sound is still unsatisfactory with CD-4 music record, the cartridge is then considered inadequate for CD-4 record reproduction.

Separation Adjustment

1. Lower the volume of front speakers so that sound is only heard from the rear speakers.
2. Left channel (CH1, CH2) adjust: Turning the left control of separation adjust so that the volume of rear left (CH-2) is as low as possible while playing BAND 3 of CD-4 demodulator adjustment record (4DE-205).
3. Right channel (CH3, CH4) adjust: Adjust the right channel in the same way, by turning right control to minimize the volume of rear right while playing BAND 3.
4. When these operations have been completed, the adjustment is over and the volume of the front speakers should be turned up.

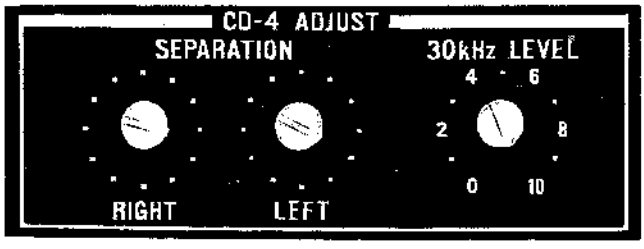


Fig. 24

TAC-308 Tape Monitor C.B. Ass'y

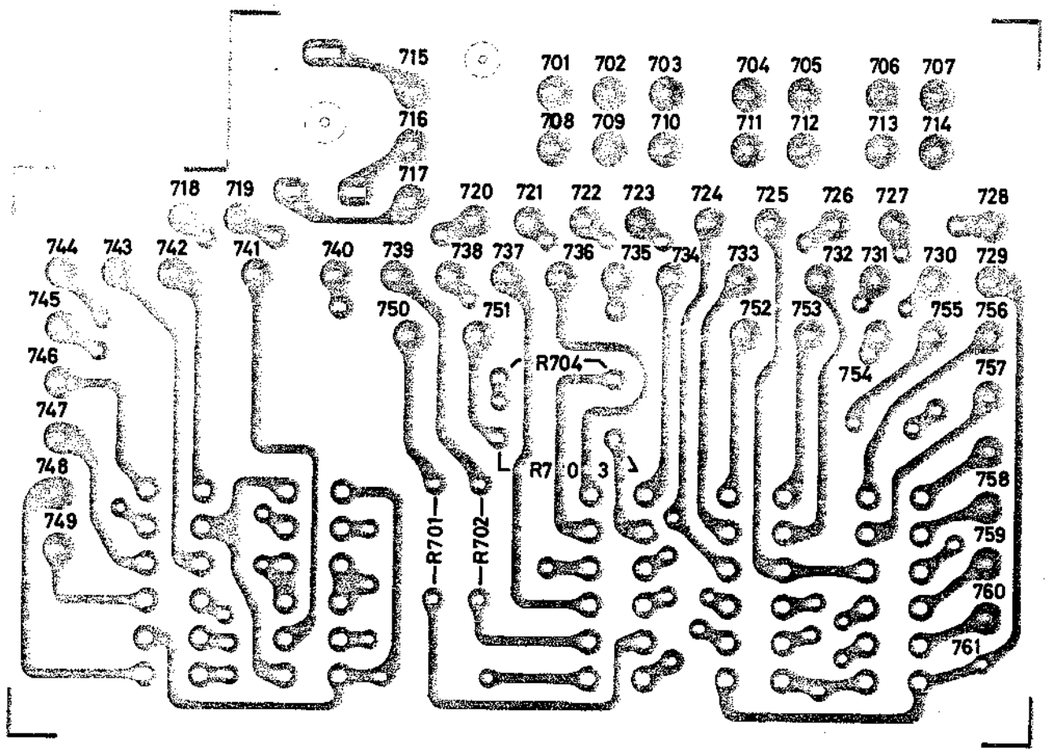


Fig. 25

Resistors

Ref. No.	Parts No.	Parts Name	Description
R701~R704	QRD141J-562	Carbon	5.6kΩ 1/4W

Others

Ref. No.	Parts No.	Parts Name	Description
S701~S703	QSP0230-001	Push Switch Ass'y	4-Circuit, 2-Key
S704~S705	QSP0221-001	Push Switch Ass'y	4-Circuit, 2-Key

TAC-314B SEA Control C.B. Ass'y

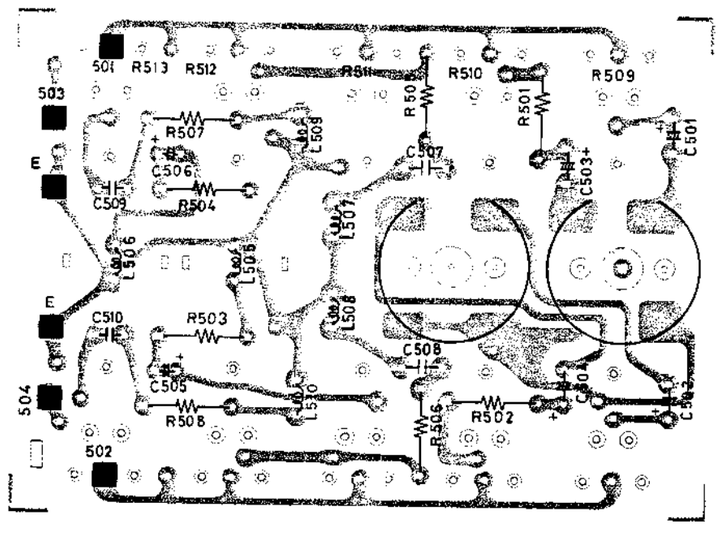


Fig. 26

Resistors

Ref. No.	Parts No.	Parts Name	Description
R501, R502	QRD141J-331	Carbon	330Ω 1/4W
R503, R504	" -471	"	470Ω "
R505~R508	" -561	"	560Ω "

Variable Resistors

Ref. No.	Parts No.	Description
R509~R513	QVZ5010-001	50kΩ (Special "W" Curve)

Capacitors

Ref. No.	Parts No.	Parts Name	Description
C501, C502	QEB41EM-106	L.L.C.E.	10μF 25V
C503, C504	" -684	"	0.68μF "
C505, C506	" -224	"	0.22μF "
C507, C508	QFM41HJ-473	Mylar	0.047μF 50V
C509, C510	" -103	"	0.01μF "

Others

Ref. No.	Parts No.	Parts Name	Description
L501~L504	E03108-19A	Choke Coil	2H, 0.6H
L505, L506	E0747-11	Ferrite Inductor	100mH
L507, L508	" -12	"	22mH
L509, L510	" -9	"	10mH

TAC-307 Control SEA Amp. C.B. Ass'y

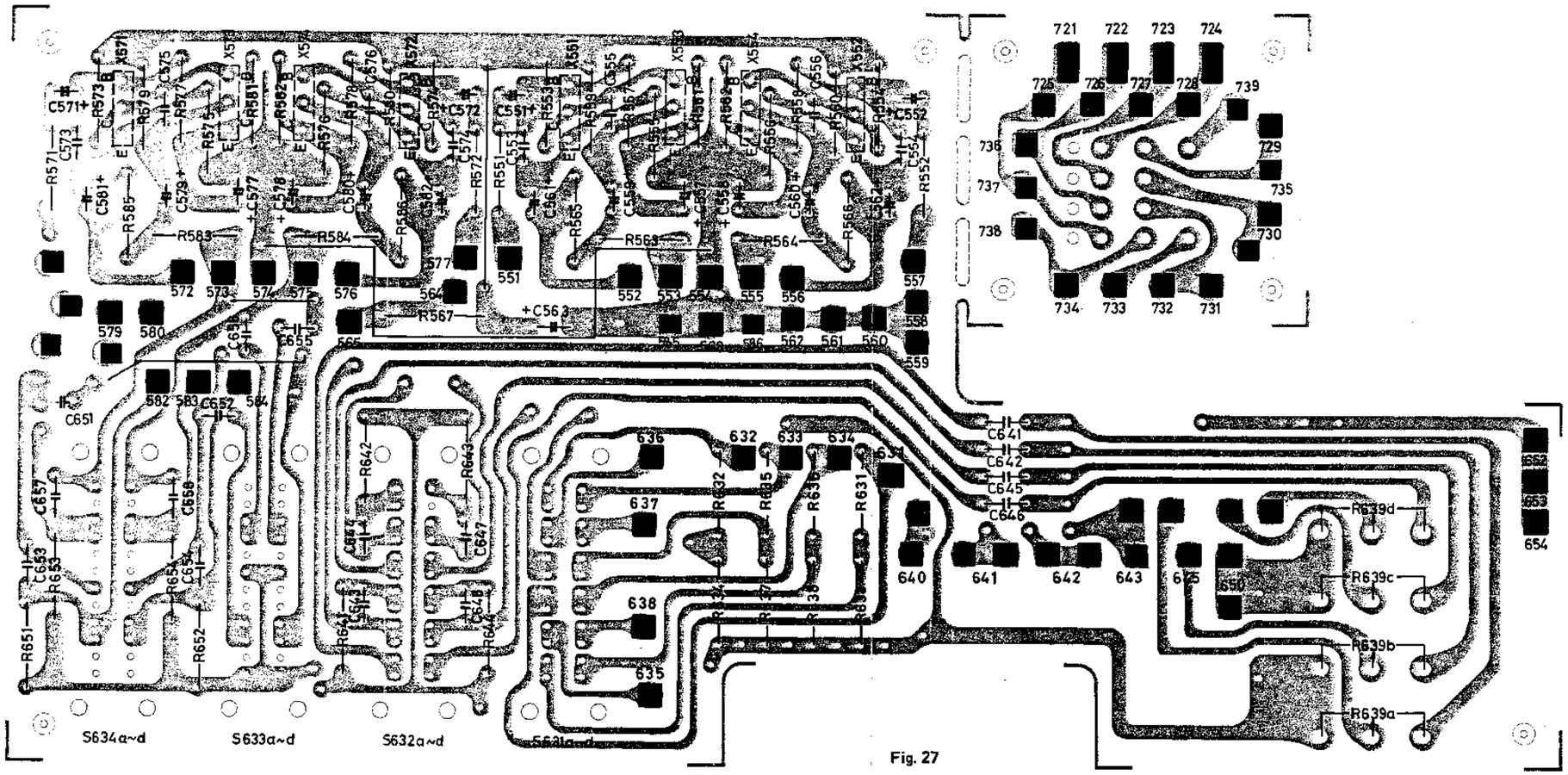


Fig. 27

Transistors

Ref. No.	Parts Name	Description	Pc	fT
X551 ~ X554 X571 ~ X574	2SC458ALGC "	Silicon (HITACHI) " (")	200mW "	240MHz "

Resistors

Ref. No.	Parts No.	Parts Name	Description
R551, R552	QRD141J-222	Carbon	2.2kΩ 1/4W
R553, R554	" -473	"	47kΩ "
R555, R556	" -332	"	3.3kΩ "
R557, R558	" -334	"	330kΩ "
R559, R560	" -562	"	5.6kΩ "
R561, R562	" -102	"	1kΩ "
R563, R564	QRD141J-332	Carbon	3.3kΩ 1/4W
R565, R566	" -223	"	22kΩ "
R567	QRC121K-331	Comp.	330Ω 1/2W
R571, R572	QRD141J-222	Carbon	2.2kΩ 1/4W
R573, R574	" -473	"	47kΩ "
R575, R576	" -332	"	3.3kΩ "
R577, R568	" -334	"	330kΩ "
R579, R580	" -562	"	5.6kΩ "
R581, R582	" -102	"	1kΩ "
R583, R584	" -332	"	3.3kΩ "
R585, R586	" -153	"	15kΩ "
R631, R632	" -334	"	330kΩ "
R633, R634	" -563	"	56kΩ "
R635, R636	" -334	"	330kΩ "
R637, R638	" -563	"	56kΩ "
R641~ R644	" -223	"	22kΩ "
R651~ R654	" -103	"	10kΩ "

Variable Resistors

Ref. No.	Parts No.	Description
R639a~R639b	QVZ1402-001	250K "B" Curve Master
R645~R648	QVZ1611-001	25K "B" Curve Level

Capacitors

Ref. No.	Parts No.	Parts Name	Description
C551, C552	QEW41HA-105	Electrolytic	1μF 50V
C553, C554	QCS11HJ-102	Ceramic	1000pF "
C555, C556	" -330	"	33pF "
C557, C558	QEW41AA-476	Electrolytic	47μF 10V
C559, C560	QEW41EA-336	"	33μF 25V
C561, C562	QEW41CA-336	"	33μF 16V
C563	QEW41HA-476	"	47μF 50V
C571, C572	" -105	"	1μF "
C573, C574	QCS11HJ-102	Ceramic	1000pF "
C575, C576	" -330	"	33pF "
C577, C578	QEW41AA-476	Electrolytic	47μF 10V
C579, C580	QEW41EA-336	"	33μF 25V
C581, C582	QEW41CA-336	"	33μF 16V
C641, C642	QCS11HJ-331	Ceramic	330pF 50V
C643, C644	QFM41HJ-103	Mylar	0.01μF "
C645, C646	QCS11HJ-331	Ceramic	330pF "
C647, C648	QFM41HJ-103	Mylar	0.01μF "
C651, C652	" -333	"	0.033μF "
C653, C654	" -823	"	0.082μF "
C655, C656	" -333	"	0.033μF "
C657, C658	" -823	"	0.082μF "

Others

Ref. No.	Parts No.	Description
S631~S634	QSL0001-001	Lever Switch

TAE-97 Equalizer Matrix Amp. C.B. Ass'y

Transistors

Ref. No.	Parts No.	Description	Pc	fT
X801~X810	2SC458ALGC	Silicon (HITACHI)	200mW	230MHz
X811~X816	2SC711E	Silicon (MITSUBISHI)	"	150MHz

Resistors

Ref. No.	Parts No.	Parts Name	Description	
R801, R802	QRD141J-222	Carbon	2.2kΩ	1/4W
R803, R804	" -683	"	68kΩ	"
R805, R806	" -152	"	1.5kΩ	"
R807, R808	" -182	"	1.8kΩ	"
R809, R810	" -681	"	680Ω	"
R811, R812	" -472	"	4.7kΩ	"
R813, R814	" -474	"	470kΩ	"
R815, R816	" -562	"	5.6kΩ	"
R817, R818	" -223	"	22kΩ	"
R819, R820	" -182	"	1.8kΩ	"
R821, R822	" -472	"	4.7kΩ	"
R823, R824	" -222	"	2.2kΩ	"
R825	QRC121K-331	Comp.	330Ω	1/2W
R827, R828	QRD141J-222	Carbon	2.2kΩ	1/4W
R829~R832	" -474	"	470kΩ	"
R833~R836	" -562	"	5.6kΩ	"
R837, R838	" -473	"	47kΩ	"
R839, R840	" -472	"	4.7kΩ	"
R841, R842	" -222	"	2.2kΩ	"
R843~R846	" -684	"	680kΩ	"
R847, R848	" -472	"	4.7kΩ	"
R849, R850	" -821	"	820Ω	"
R851, R852	" -392	"	3.9kΩ	"
R853, R854	" -222	"	2.2kΩ	"
R855, R856	" -153	"	15kΩ	"
R857, R858	" -683	"	68kΩ	"
R859	" -562	"	5.6kΩ	"
R860	" -472	"	4.7kΩ	"
R861	QRC121K-102	Comp.	1kΩ	1/2W
R863~R866	QRD141J-223	Carbon	22kΩ	1/4W
R867, R868	" -563	"	56kΩ	"
R869~R872	" -823	"	82kΩ	"
R873, R874	" -564	"	560kΩ	"
R875, R876	" -104	"	100kΩ	"
R877, R878	" -223	"	22kΩ	"
R879	" -473	"	47kΩ	"
R880	" -223	"	22kΩ	"
R881	" -473	"	47kΩ	"
R882	" -223	"	22kΩ	"
R883	QRC121K-332	Comp.	3.3kΩ	1/2W
R885	QRD141J-223	Carbon	22kΩ	1/4W
R886	QRC121K-473	Comp.	47kΩ	1/2W
R890, R891	QRD141J-224	Carbon	220kΩ	1/4W
R892, R893	" -563	"	56kΩ	"
R894, R895	" -104	"	100kΩ	"

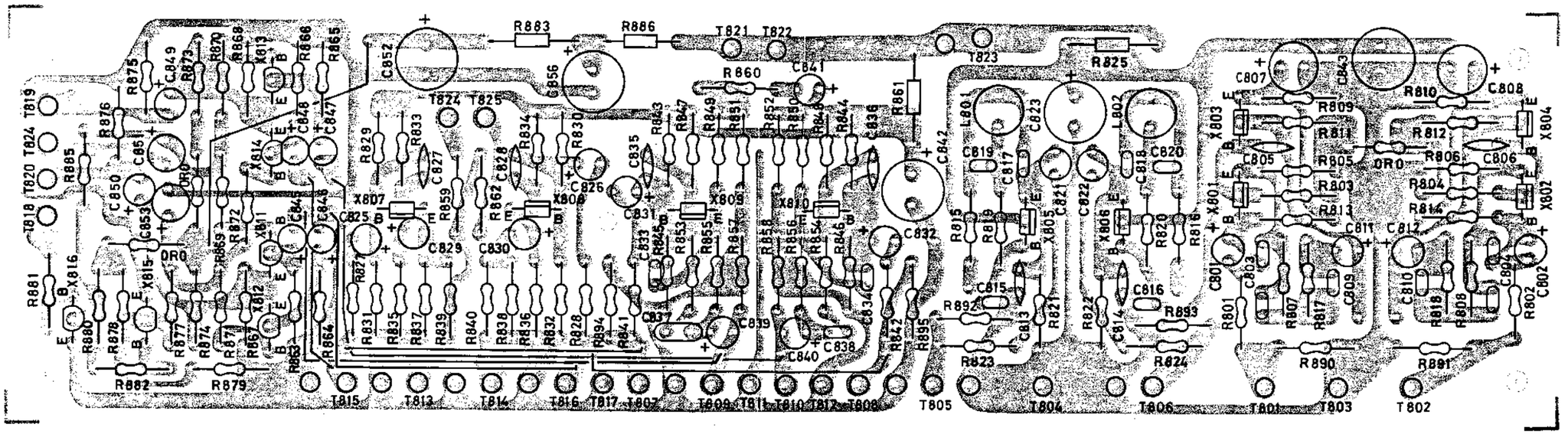


Fig. 28

Capacitors

Ref. No.	Parts No.	Parts Name	Description
C801, C802	QEB41EM-105	L.L.C.E.	1μF 50V
C803, C804	QFM41HJ-102	Mylar	0.001μF "
C805, C806	QCS11HJ-560	Ceramic	56pF "
C807, C808	QEW41AA-107	Electrolytic	100μF 10V
C809, C810	QFM41HJ-332	Mylar	0.0033μF 50V
C811, C812	QEW41HA-335	Electrolytic	3.3μF "
C813, C814	QCS11HJ-151	Ceramic	150pF "
C815, C816	QFM41HJ-272	Mylar	0.0027μF "
C817, C818	" -472	"	0.0047μF "
C819, C820	" -272	"	0.0027μF "
C821, C822	QEW41HA-475	Electrolytic	4.7μF "
C823	" -476	"	47μF "
C825, C826	" -105	"	1μF "
C827, C828	QCS11HJ-390	Ceramic	39pF "
C829~C832	QEW41HA-105	Electrolytic	1μF "
C833~C836	QCS11HJ-101	Ceramic	100pF "
C837	QFM41HJ-683	Mylar	0.068μF "
C838	" -103	"	0.01μF "
C839~C841	QEW41HA-105	Electrolytic	1μF "
C842, C843	" -476	"	47μF "
C845~C848	QEW41CA-106	"	10μF 16V
C849, C850	QEB41EM-335	L.L.C.E.	3.3μF 50V
C851	QEW41HA-475	Electrolytic	4.7μF "
C852	QEW41EA-476	"	47μF 25V
C853	QEW41CA-336	"	33μF 16V
C856	QEW41EA-476	"	47μF 25V

Others

Ref. No.	Parts No.	Parts Name	Description
L801, L802	E03566-103	Ferrite Inductor	10mH

TDM-22A Demodulator C.B. Ass'y

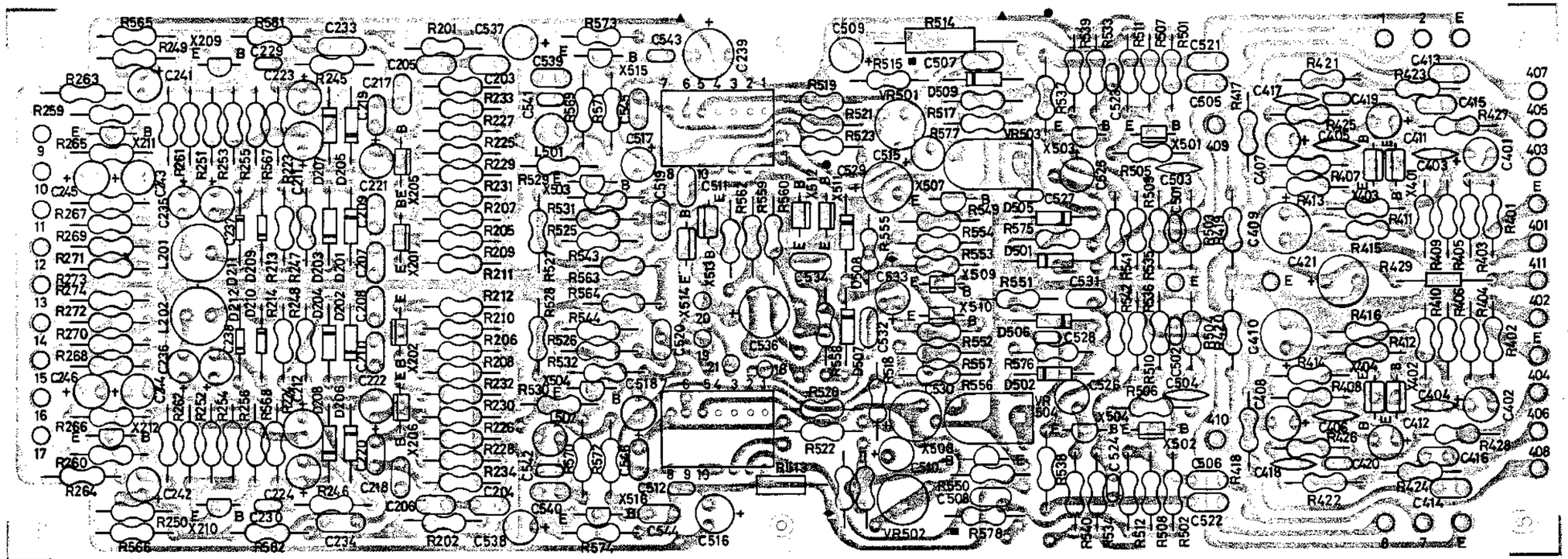


Fig. 29

Transistors

Ref. No.	Parts No.	Description	Pc	fT
X201, X202	2SC458LD	Silicon (HITACHI)	200mW	230MHz
X205, X206	"	" (")	"	"
X209~X212	2SC1312G or 2SC871F	" (MITSUBISHI)	"	150MHz
X401~X404	2SC458ALGC	" (HITACHI)	"	230MHz
X501, X502	2SC458LD	" (")	"	"
X503, X504	2SC1312G or 2SC871F	" (MITSUBISHI)	"	150MHz
X505~X513	2SC458LD	" (HITACHI)	"	230MHz
X514	2SC1166Y	" (TOSHIBA)	600mW	120MHz
X515, X516	2SC1312G or 2SC871F	" (MITSUBISHI)	200mW	150MHz

Diodes

Ref. No.	Parts No.	Description
D201~D208	IN60	Germanium (TOSHIBA)
D209~D212	IS2473	Silicon (TOYO DENGU)
D501, D502	IS990	Silicon VARISTOR (J R C)
D505~D508	IS990	" " (")
D509	E0771-7	Zener (")

ICs

Ref. No.	Parts No.	Description
IC501, IC502	CD-894	P.L.L. (SIGNETICS)

Others

Ref. No.	Parts No.	Parts Name	Description
L201, L202	E0747-17	Ferrite Inductor	100mH
L501, L502	E03566-103	"	10mH

Variable Resistors

Ref. No.	Parts No.	Description
VR501, VR502	QVP4A0B-222	2.2kΩ
VR503, VR504	QVP8A0B-024	20kΩ

Resistors

Ref. No.	Parts No.	Parts Name	Description
R201, R202	QRD141J-822	Carbon	8.2kΩ 1/4W
R205, R206	" -824	"	820kΩ "
R207, R208	" -473	"	47kΩ "
R209, R210	" -562	"	5.6kΩ "
R211, R212	" -121	"	120Ω "
R213, R214	" -273	"	27kΩ "
R223, R224	" -273	"	27kΩ "
R225, R226	" -684	"	680kΩ "
R227, R228	" -473	"	47kΩ "
R229, R230	" -472	"	4.7kΩ "
R231, R232	" -121	"	120Ω "
R233, R234	" -153	"	15kΩ "
R245, R246	" -153	"	15kΩ "
R247, R248	" -682	"	6.8kΩ "
R249, R250	" -333	"	33kΩ "
R251, R252	" -332	"	3.3kΩ "
R253, R254	" -681	"	680Ω "
R255, R256	" -331	"	330Ω "
R259, R260	" -474	"	470kΩ "
R261, R262	" -224	"	220kΩ "
R263~R266	" -102	"	1kΩ "
R267~R274	" -103	"	10kΩ "

Ref. No.	Parts No.	Parts Name	Description
R401, R402	QRD141J-222	Carbon	2.2kΩ 1/4W
R403, R404	" -124	"	120kΩ "
R405, R406	" -564	"	560kΩ "
R407, R408	" -274	"	270kΩ "
R409, R410	" -471	"	470Ω "
R411, R412	" -474	"	470kΩ "
R413, R414	" -103	"	10kΩ "
R415, R416	" -561	"	560Ω "
R417, R418	" -682	"	6.8kΩ "
R419, R420	" -122	"	1.2kΩ "
R421, R422	" -183	"	18kΩ "
R423, R424	" -224	"	220kΩ "
R425, R426	" -823	"	82kΩ "
R427, R428	" -822	"	8.2kΩ "
R429	QRC121K-181	Comp.	180Ω "
R501, R502	QRD141J-334	Carbon	330kΩ "
R503, R504	" -223	"	22kΩ "
R505, R506	" -392	"	3.9kΩ "
R507, R508	" -472	"	4.7kΩ "
R509, R510	" -181	"	180Ω "
R511, R512	" -153	"	15kΩ "
R513	QRG011K-681	O. M. F.	680Ω 1W
R514	QRG021K-391	"	390Ω 2W
R515~R518	QRD141J-103	Carbon	10kΩ 1/4W
R519~R522	" -561	"	560Ω "
R523, R524	" -272	"	2.7kΩ "
R525, R526	" -182	"	1.8kΩ "
R527, R528	" -683	"	68kΩ "
R529, R530	" -822	"	8.2kΩ "
R531, R532	" -152	"	1.5kΩ "
R533, R534	" -334	"	330kΩ "
R535, R536	" -183	"	18kΩ "
R537, R538	" -682	"	6.8kΩ "
R539, R540	" -822	"	8.2kΩ "
R541, R542	" -151	"	150Ω "
R543, R544	" -123	"	12kΩ "
R549, R550	" -472	"	4.7kΩ "
R551	" -563	"	56kΩ "
R552	" -683	"	68kΩ "
R553	" -123	"	12kΩ "
R554	" -331	"	330Ω "
R555	" -472	"	4.7kΩ "
R556	" -681	"	680Ω "
R557	" -273	"	27kΩ "
R558	" -183	"	18kΩ "
R559, R560	" -273	"	27kΩ "
R562	" -333	"	33kΩ "
R563, R564	" -274	"	270kΩ "
R565, R566	" -474	"	470kΩ "
R567, R568	" -473	"	47kΩ "
R569, R570	" -682	"	6.8kΩ "
R571, R572	" -102	"	1kΩ "
R573, R574	" -123	"	1.2kΩ "
R575, R576	" -821	"	820Ω "
R577, R578	" -472	"	4.7kΩ "
R581, R582	" -104	"	100kΩ "

Capacitors

Ref. No.	Parts No.	Parts Name	Description
C203, C204	QFM41HK-223	Mylar	0.022μF 50V
C205, C206	" -273	"	0.027μF "
C207, C208	" -223	"	0.022μF "
C209, C210	" -683	"	0.068μF "
C211, C212	QEW41VA-475	Electrolytic	4.7μF 35V
C217, C218	QFM41HK-823	Mylar	0.082μF 50V
C219, C220	" -392	"	0.0039μF "
C221, C222	QEW41HA-474	Electrolytic	0.47μF "
C223, C224	" -105	"	1μF "
C229, C230	QFM41HK-332	Mylar	0.0033μF "
C233, C234	" -823	"	0.082μF "
C235, C236	QEB41EM-684	L.L.C. Electrolytic	0.68μF 25V
C237, C238	" -224	"	0.22μF "
C239	QEW41HA-106	Electrolytic	10μF 50V
C241, C242	" -105	"	1μF "
C243~C246	" -475	"	4.7μF "
C401, C402	QEB41EM -105	L.L.C. Electrolytic	1μF 25V
C403, C404	QCS11HJ-331	Ceramic	330pF 50V
C405, C406	" -390	"	39pF "
C407, C408	QEW41HA-475	Electrolytic	4.7μF "
C409, C410	QEW41AA-107	"	100μF 10V
C411, C412	QEW41EA -106	"	10μF 25V
C413, C414	QFM41HJ-153	Mylar	0.015μF 50V
C415, C416	" -332	"	0.0033μF "
C419, C420	" -393	"	0.039μF "
C421	QEW41HA-107	Electrolytic	100μF "
C501, C502	QFM41HK-102	Mylar	0.001μF "
C503, C504	QCS11HJ-471	Ceramic	470pF "
C505, C506	QFM41HK-153	Mylar	0.015μF "
C507, C508	" -222	"	0.0022μF "
C509, C510	QEW41HA-105	Electrolytic	1μF "
C511~C514	QFM41HK-272	Mylar	0.0027μF "
C515	QEW41CA-106	Electrolytic	10μF 16V
C516	QEW41EA-106	"	10μF 25V
C517, C518	QEW41HA-105	"	1μF 50V
C519, C520	QFM41HK-153	Mylar	0.015μF "
C521, C522	" -122	"	0.0012μF "
C523, C524	" -102	"	0.001μF "
C525, C526	QEW41HA-474	Electrolytic	0.47μF "
C527, C528	QFM41HK-332	Mylar	0.0033μF "
C529, C530	QEW41CA-336	Electrolytic	33μF 16V
C531	QFM41HK-222	Mylar	0.0022μF 50V
C532	" -333	"	0.033μF "
C533	QEW41HA-474	Electrolytic	0.47μF "
C534	QFM41HK-473	Mylar	0.047μF "
C536	QEW41CA-336	Electrolytic	33μF 16V
C537, C538	QEW41HA-475	"	4.7μF 50V
C539, C540	QFM41HK-153	Mylar	0.015μF "
C541, C542	" -122	"	0.0012μF "
C543, C544	" -182	"	0.0018μF "
C545, C546	" -102	"	0.001μF "

TAD-140A or B Driver Amp. C.B. Ass'y

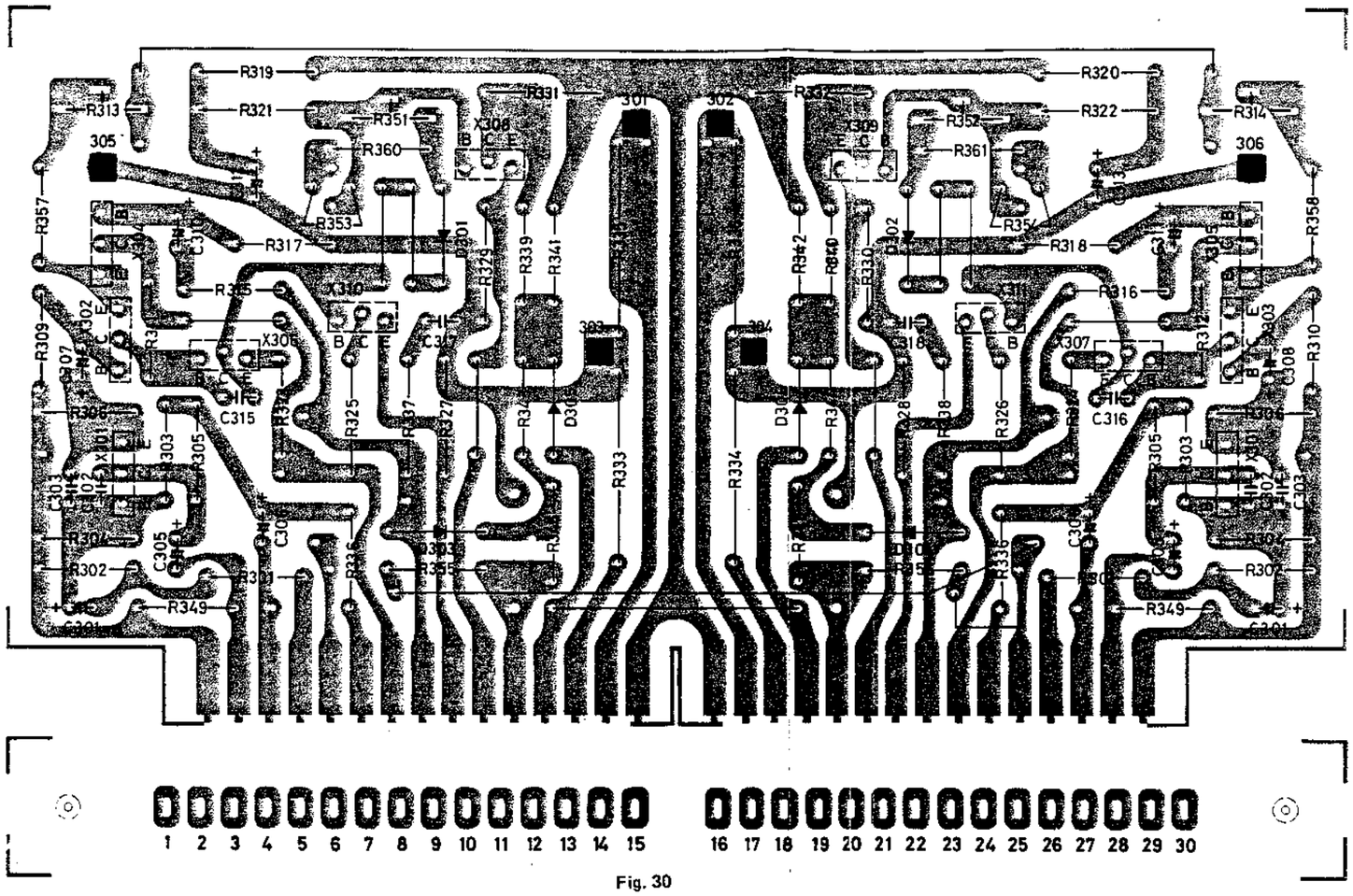


Fig. 30

Transistors

Ref. No.	Parts No.	Description	Pc	fT
X301	2SC458ALGC	Silicon (HITACHI)	200mW	230MHz
X302~X305	2SA726F	" (MITSUBISHI)	150mW	100MHz
X306~X309	2SD357D	" (")	10W	
X310, X311	2SB527D	" (")	"	

Diodes

Ref. No.	Parts No.	Description
D301, D302	SV03	Silicon Varistor
D303~D306	MA150	Silicon Diode

Resistors

Ref. No.	Parts No.	Parts Name	Description
R301	QRD141J-222	Carbon	2.2kΩ 1/4W
R302	" -563	"	56kΩ "
R303	" -334	"	330kΩ "
R304	" -124	"	120kΩ "
R305, R306	" -562	"	5.6kΩ "
R309, R310	" -683	"	68kΩ "
R311, R312	" -332	"	3.3kΩ "
R315, R316	" -152	"	1.5kΩ "
R317, R318	" -563	"	56kΩ "
R319, R320	QRC121K-122	Comp.	1.2kΩ 1/2W
R321, R322	" -392	"	3.9kΩ "
R323, R324	" -150	"	15Ω "
R325, R326	" -220	"	22Ω "
R329, R330	" -221	"	220Ω "
R331, R332	" -220	"	22Ω "
R333~R336	E04117-3-0.22	Unflammable	0.22Ω 3W
R337, R338	QRC121K-100	Comp.	10Ω 1/2W
R339, R340	QRD141J-822	Carbon	8.2kΩ 1/4W
R341, R342	" -272	"	2.7kΩ "
R343, R344	" -473	"	47kΩ "
R345, R346	" -472	"	4.7kΩ "
R355, R356	" -472	"	4.7kΩ "
R357, R358	" -562	"	5.6kΩ "
R359	" -223	"	22kΩ "
R362	" -563	"	56kΩ "

Variable Resistors

Ref. No.	Parts No.	Description
R313, R314	QVP2A0B-014	10kΩ "B" Curve
R351, R352	QVP2A0B-022	200Ω "B" Curve

Capacitors

Ref. No.	Parts No.	Parts Name	Description
C301	QEB41EM-335	L.L.C. Electrolytic	3.3μF 25V
C302	QCS11HJ-560	Ceramic	56pF 50V
C303	QFM41HJ-102	Mylar	0.001μF "
C305	QEW41HA-475	Electrolytic	4.7μF "
C306	" -476	"	47μF "
C307, C308	QEB41EM-224	L.L.C. Electrolytic	0.22μF 25V
C310, C311	QEW40JA-227	Electrolytic	220μF 6.3V
C312, C313	QEW41AA-336	"	33μF 10V
C315, C316	QCS11HJ-270	Ceramic	27pF 50V
C317, C318	QFM41HJ-683	Mylar	0.068μF "

Thermistors

Ref. No.	Parts No.	Description
R353, R354	E04026-4	SDT-20

TAP-206 Power Supply C.B. Ass'y

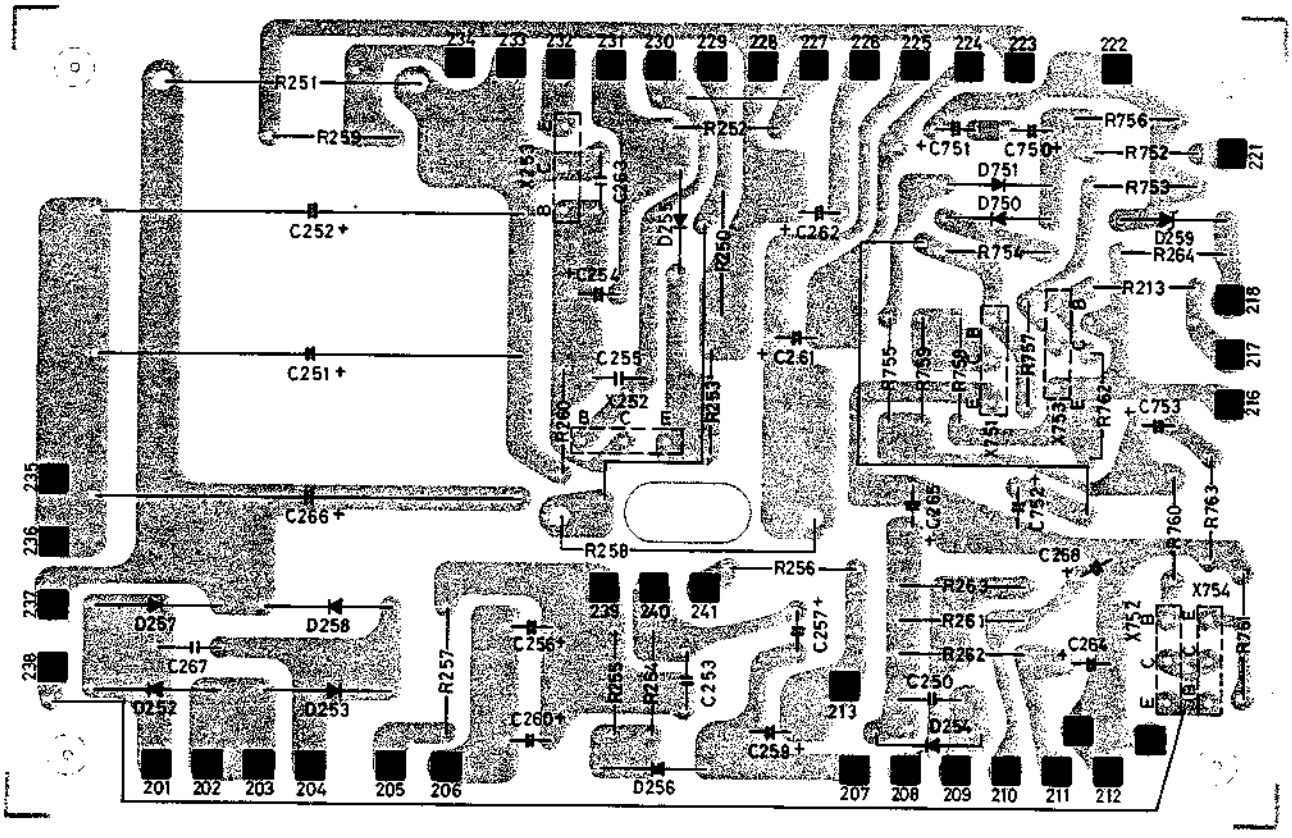


Fig. 31

Transistors

Ref. No.	Parts No.	Description	Pc	f_T
X252, X253	2SC1211C or D	Silicon (MITSUBISHI)	500mW	130MHz
X751, X752	2SC711AE	" (")	200mW	150MHz
X753	2SA628AE	" (")	150mW	100MHz
X754	2SC1166Y	" (TOSHIBA)	100mW	120MHz

Diodes

Ref. No.	Parts No.	Description
D252~D254	FR2-02	Silicon
D255	E0771-12	Zener (WZ-130) (SHIN NIHON)
D256	E0771-14	Zener (WZ-150) (SHIN NIHON)
D257, D258	FR2-02	Silicon (FUJI)
D259	E0771-15	Zener (7V) (SHIN NIHON)
D260	1S2473	Silicon
D750, D751	MA150	Silicon (MATSUSHITA)

Resistors

Ref. No.	Parts No.	Parts Name	Description	
R213	QRD141J-682	Carbon	6.8kΩ	1/4W
R250	E03347-1-470	M.F.	47Ω	1W
R251	QRF021K-100	Unflammable	10Ω	2W
R252	QRD141J-222	Carbon	2.2kΩ	1/4W
R253	" -153	"	15kΩ	"
R254	" -561	"	560Ω	"
R255	" -562	"	5.6kΩ	"
R256, R257	QRC121K-100	Comp.	10Ω	1/2W
R258	QRF051K-221	Unflammable	220Ω	5W
R259	QRD141J-562	Carbon	5.6kΩ	1/4W
R260	" -103	"	10kΩ	"
R261~R263	QRC121K-121	Comp.	120Ω	1/2W
R264	" -472	"	4.7kΩ	"
R752, R753	QRD141J-682	Carbon	6.8kΩ	1/4W
R754	" -683	"	68kΩ	"
R755	" -103	"	10kΩ	"
R756	" -182	"	1.8kΩ	"
R757	" -332	"	3.3kΩ	"
R758	" -274	"	270kΩ	"
R759	" -562	"	5.6kΩ	"
R760	" -561	"	560Ω	"
R761	QRC121K-220	Comp.	22Ω	1/2W
R762	QRD141J-472	Carbon	4.7kΩ	1/4W
R763	" -681	"	680Ω	"
R765	" -124	"	120kΩ	"
R766	" -471	"	470Ω	"

Capacitors

Ref. No.	Parts No.	Parts Name	Description	
C250	QCF12HP-103	Ceramic	0.01μF	500V
C251, C252	QEW21JA-227	Electrolytic	220μF	63V
C253	QCF12HP-103	Ceramic	0.01μF	500V
C254	QEW41HA-107	Electrolytic	100μF	50V
C255	QCF11HP-103	Ceramic	0.01μF	"
C256	QEW41VA-227	Electrolytic	220μF	35V
C257	QEW41EA-336	"	33μF	25V
C259	QEW41CA-477	"	470μF	16V
C260	QEW41VA-227	"	220μF	35V
C261, C262	QEW41HA-227	"	220μF	50V
C263	QCF12HP-103	Ceramic	0.01μF	500V
C264	QEW41CA-107	Electrolytic	100μF	16V
C265	" -477	"	470μF	"
C266	QEW21JA-227	"	220μF	63V
C267	QCF12HP-103	Ceramic	0.01μF	500V
C268	QEW41CA-227	Electrolytic	220μF	16V
C750, C751	" -476	"	47μF	"
C752, C753	" -107	"	100μF	"

TFM-905GUA FM/AM Stereo Tuner C.B. Ass'y

Transistors

Ref. No.	Parts No.	Description	Pc	fT
X101	2SC711F	Silicon (MITSUBISHI)	200mW	100MHz
X102	2SK30Y	FET (TOSHIBA)	PD = 100mW	
X103, X104	2SC710B	Silicon (MITSUBISHI)	200mW	200MHz
X105~X107	2SC711F	" (")	"	100MHz
X108, X109	2SK30Y	FET (TOSHIBA)	PD = 100mW	
X110	2SC710D	Silicon (MITSUBISHI)	200mW	200MHz
X111	2SC711E	" (")	"	100MHz
X112	2SC710C	" (")	"	200MHz
X113	2SC829B	" (NATIONAL)	250mW	230MHz
X114, X115	2SA628E	" (MITSUBISHI)	150mW	100MHz

Diodes

Ref. No.	Parts No.	Description
D101~D103	1S188FM	Germanium (SANYO)
D104	1S2473	Silicon (TOYO YUDEN)
D105~D109	1S188FM	Germanium (SANYO)
D110, D111	1S2473	Silicon (TOYO YUDEN)
D112	1S188FM	Germanium (SANYO)

ICs

Ref. No.	Parts No.	Description
IC101	E03450-005	450-1 (TAIYO YUDEN)
IC102	" -006	450-2 (")
IC103	TA7061AP	(TOSHIBA)
IC104	LA3301	MPX (SANYO)

Resistors

Ref. No.	Parts No.	Parts Name	Description
R101	QRD141J-101	Carbon	100Ω 1/4W
R102	" -100	"	10Ω "
R103	" -221	"	220Ω "
R104	" -331	"	330Ω "
R105	" -100	"	10Ω "
R106	" -471	"	470Ω "
R107	" -102	"	1kΩ "
R108	" -822	"	8.2kΩ "
R109	" -471	"	470Ω "
R110	" -100	"	10Ω "
R111, R112	" -102	"	1kΩ "
R113, R114	" -472	"	4.7kΩ "
R115	" -333	"	33kΩ "
R116	" -562	"	5.6kΩ "
R117	" -563	"	56kΩ "
R118	" -392	"	3.9kΩ "
R119	" -822	"	8.2kΩ "
R120	" -102	"	1kΩ "
R121	" -123	"	12kΩ "
R122	" -822	"	8.2kΩ "
R123	" -471	"	470Ω "
R124	" -123	"	12kΩ "
R125	" -472	"	4.7kΩ "
R126	" -561	"	560Ω "

Ref. No.	Parts No.	Parts Name	Description
R178	QRD141J-182	Carbon	1.8kΩ 1/4W
R179	" -124	"	120kΩ "
R180, R181	" -152	"	1.5kΩ "
R182, R183	" -474	"	470kΩ "
R184	" -683	"	68kΩ "
R185	" -562	"	5.6kΩ "
R186	" -124	"	120kΩ "
R187	" -221	"	220Ω "
R188, R189	" -470	"	47Ω "

Capacitors

Ref. No.	Parts No.	Parts Name	Description
C102	QCF11HP-223A	Ceramic	0.022μF 50V
C103	QCZ0107-473	"	0.047μF 25V
C104	QEW41CA-476	Electrolytic	47μF 16V
C105	QCF11HP-223A	Ceramic	0.022μF 50V
C106	QCZ0107-473	"	0.047μF 25V
C107	QCF11HP-223A	"	0.022μF 50V
C108	QCS11HJ-390	"	39pF "
C109	" -100	"	10pF "
C110, C111	QCF11HP-223A	"	0.022μF "
C113, C115	" -223A	"	0.022μF "
C116, C117	QCS-11HJ-220	"	22pF "
C118	QEW41CA-106	Electrolytic	10μF 16V
C119	QEW41AA-476	"	47μF 10V
C120	QEW41CA-106	"	10μF 16V
C121	QEW41HA-105	"	1μF 50V
C122, C123	QCF11HP-223A	Ceramic	0.022μF "
C124	QEW41HA-474	Electrolytic	0.47μF "
C125	QCF11HP-223A	Ceramic	0.022μF "
C127~C129	QEW41HA-105	Electrolytic	1μF "
C130	QFM41HK-272	Mylar	0.0027μF "
C131	QEW41HA-475	Electrolytic	4.7μF "
C132	QEW41CA-476	"	47μF 16V
C133, C134	QFM41HJ-222	Mylar	0.0022μF 50V
C135, C136	QEW41HA-105	Electrolytic	1μF "
C137	QCS11HJ-220	Ceramic	22pF "
C138	QCF11HP-403	"	0.04μF "
C139, C140	QEB41EM-224	L.L.C. Electrolytic	0.22μF 25V
C141	QCS11HJ-3R0	Ceramic	3pF 50V
C143	QCF11HP-223A	"	0.022μF "
C144	QCZ0107-473	"	0.047μF 25V
C145	QCF11HP-223A	"	0.022μF 50V
C146	QEW41CA-106	Electrolytic	10μF 16V
C147, C148	QCF11HP-223A	Ceramic	0.022μF 50V
C149	QFM41HK-103	Mylar	0.01μF "
C150	QCZ0107-473	Ceramic	0.047μF 25V
C151	QCS11HJ-471	"	470pF 50V
C152	" -180U	"	18pF "
C153	" -331	"	330pF "
C154	QCF11HP-223A	"	0.022μF "
C155	QCZ0107-473	"	0.047μF 25V
C156	QCF11HP-223A	"	0.022μF 50V
C157	QEW41CA-476	Electrolytic	47μF 16V
C158	QCS11HJ-121	Ceramic	120pF 50V
C159	QEW41AA-476	Electrolytic	47μF 10V
C160	QCF11HP-223A	Ceramic	0.022μF 50V
C161	QCS11HJ-820U	"	82pF "
C162	QCF11HP-223A	"	0.022μF "
C163	QEW40JA-227	Electrolytic	220μF 6.3V
C164, C165	QCF11HP-223A	Ceramic	0.022μF 50V
C166	QCS11HJ-221	"	220pF "
C167	QEW40JA-107	Electrolytic	100μF 6.3V
C168	QFM41HK-682	Mylar	0.0068μF 50V
C169	" -103	"	0.01μF "
C170	QEW41AA-476	Electrolytic	47μF 10V
C171	QFM41HK-563	Mylar	0.056μF 50V
C172	QEW41HA-476	Electrolytic	47μF "
C173, C174	" -105	"	1μF "
C176	" -475	"	4.7μF "
C177	" -474	"	0.47μF "
C178	" -335	"	3.3μF "
C179	QEW41CA-476	"	47μF 16V
C189	QCS11HJ-151	Ceramic	150pF 50V
C190	QEW41CA-106	Electrolytic	10μF 16V

Variable Resistors

Ref. No.	Parts No.	Description
VR101	QVP4A0B-473	47kΩ
VR102	" -472	4.7kΩ
VR103	" -102	1kΩ

Others

Ref. No.	Parts No.	Parts Name	Description
BLK101, BLK102	E03448-681	C.R. BLOCK	
CF101	E03357-002	Ceramic Filter	(TAIYO YUDEN)
CF102	E03476-002	"	(")
CF103	E03399-001	"	(")
CF104, CF105	E03357-002	"	(")
LPF101	E03427-007	Low Pass Filter	
T101	E03134-017	Discriminating Transformer	
T102	E03062-31	AM I.F. Transformer	
T103	" -33	"	
T104	E03079-17	AM OSC Coil	
T105	E03117-020	MPX Coil	
L102	E03520-391	Choke Coil	390μH
L103	E03522-120K	"	12μH
	E03347-002	FM Front End	

Marking of Ceramic Filters

E03357-002

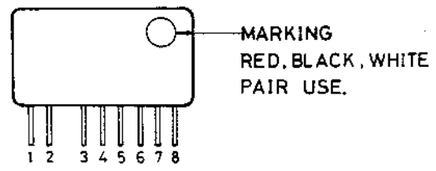


Fig. 33

E03476-002

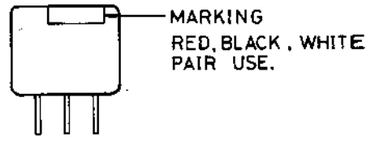


Fig. 34

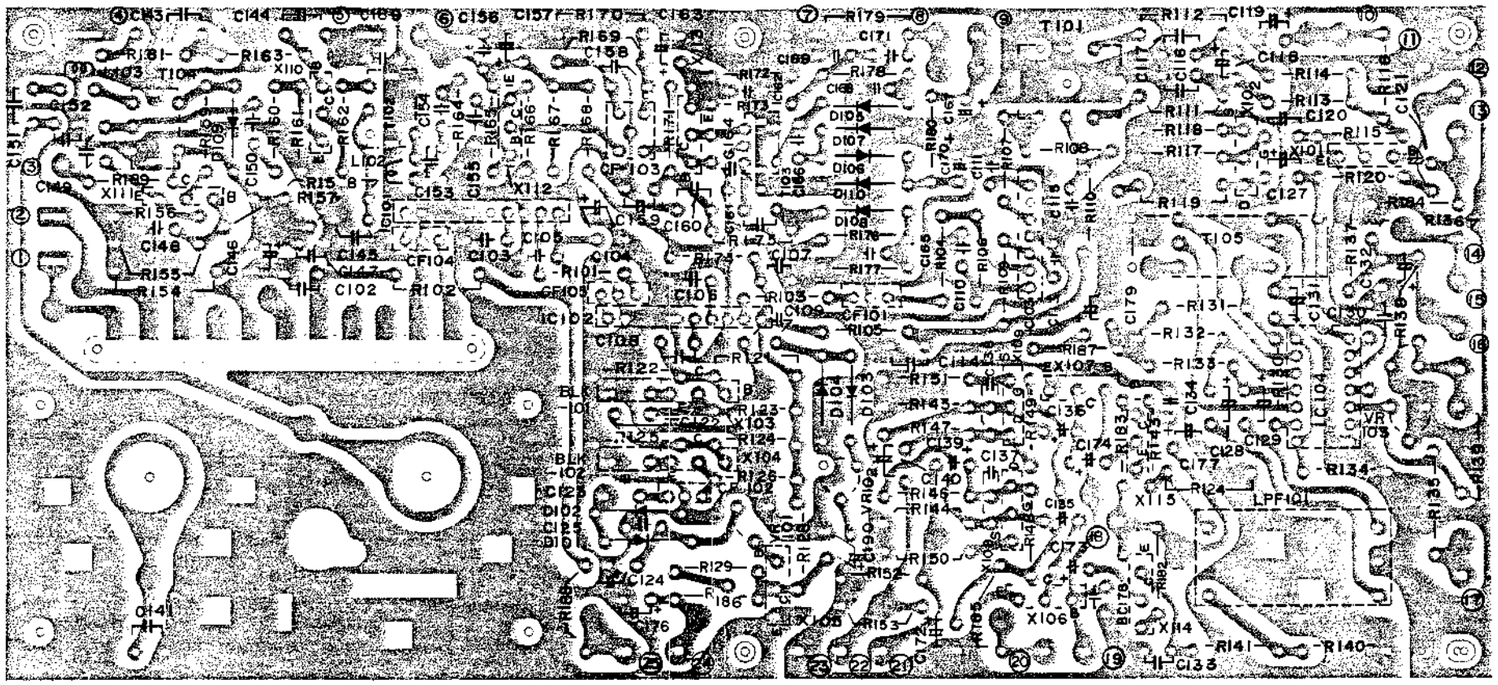
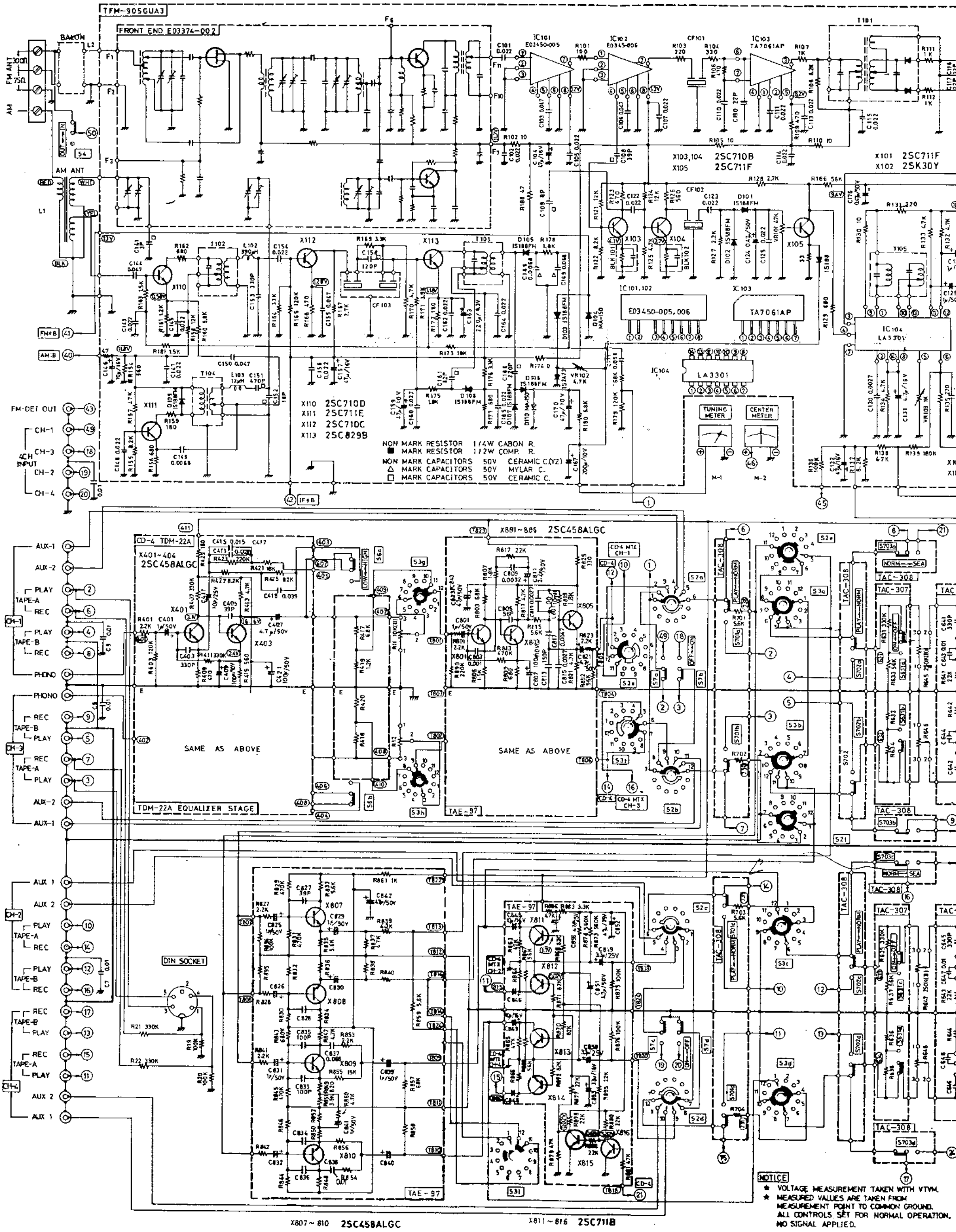


Fig. 32

Ref. No.	Parts No.	Parts Name	Description
R128	QRD141J-272	Carbon	2.7kΩ 1/4W
R129	" -681	"	680Ω "
R130	" -100	"	10Ω "
R131	" -221	"	220Ω "
R132~R134	" -472	"	4.7kΩ "
R135	QRC121K-271	Comp.	270Ω 1/2W
R136	QRD141J-104	Carbon	100kΩ 1/4W
R137	" -822	"	8.2kΩ "
R138	" -473	"	47kΩ "
R139	" -184	"	180kΩ "
R140	" -682	"	6.8kΩ "
R141	" -333	"	33kΩ "
R142	" -682	"	6.8kΩ "
R143	" -333	"	33kΩ "
R144, R145	" -105	"	1MΩ "
R146	" -330	"	33Ω "
R147	" -393	"	39kΩ "
R148, R149	" -153	"	15kΩ "
R150, R151	" -821	"	820Ω "
R152, R153	" -124	"	120kΩ "
R154	QRC121K-561	Comp.	560Ω 1/2W
R155	QRD141J-822	Carbon	8.2kΩ 1/4W

Ref. No.	Parts No.	Parts Name	Description
R156	QRD141J-681	Carbon	680Ω 1/4W
R157	" -473	"	47kΩ "
R158	" -123	"	12kΩ "
R159	" -181	"	180Ω "
R160	" -6R8	"	6.8Ω "
R161	" -122	"	1.2kΩ "
R162	" -681	"	680Ω "
R163	" -152	"	1.5kΩ "
R164	" -333	"	33kΩ "
R165	" -124	"	120kΩ "
R166	" -471	"	470Ω "
R167	" -272	"	2.7kΩ "
R168	" -0R0	Jumping	0Ω "
R169	" -332	Carbon	3.3kΩ "
R170	" -472	"	4.7kΩ "
R171	" -392	"	3.9kΩ "
R172	" -181	"	180Ω "
R173	" -183	"	18kΩ "
R174	" -0R0	Jumping	0Ω "
R175	" -182	Carbon	1.8kΩ "
R176	" -332	"	3.3kΩ "
R177	" -681	"	680Ω "



Schematic Diagram of M

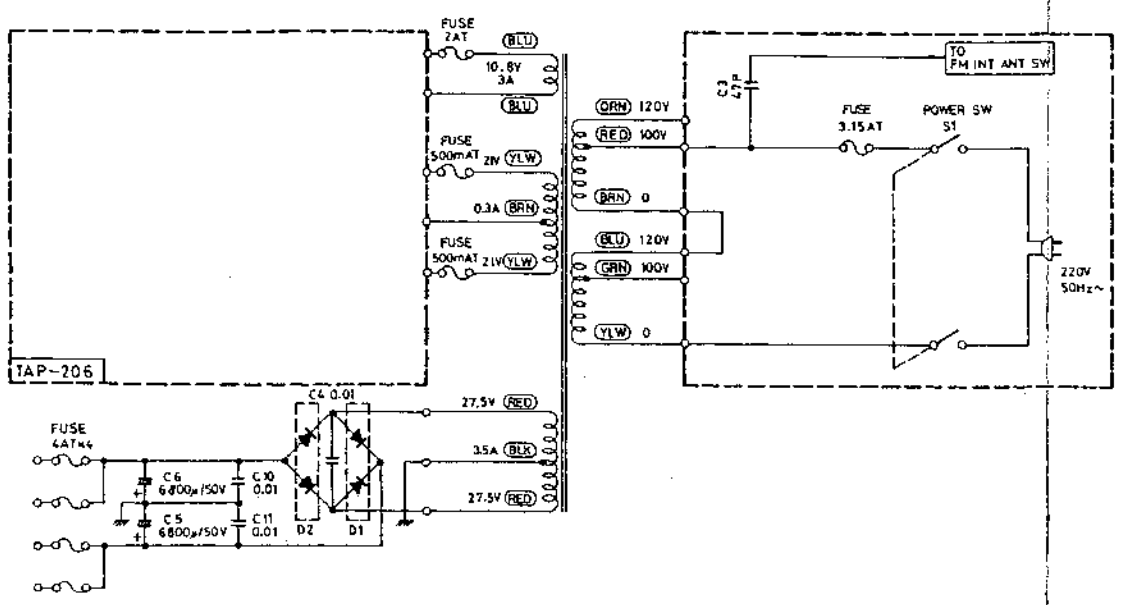
am of Model 4VR-5456X

S1	POWER SW.	S631a~d	AUDIO MUTING SW.	R11~14	10K(B)	SEPARATION CONTROL
S2a~k	SOURCE SW.	S632a~d	LOUDNESS SW.	R645~648	250K(B)	LEVEL CONTROL VOL.
S3a~k	MODE SW.	S633a~d	HIGH CUT FILTER SW.	R639a~d	250K(B)	MASTER VOL.
S4	FM INT. ANT SW.	S634a~d	LOW CUT FILTER SW.	R10a~d	100K(B)	SEPARATION CONTROL VOL.
S5a~f	SPK SELECT SW.	S701a~d	TAPE MONITOR SW.(A)			
S6a~b	PHONO SENSITIVITY SW.	S702a~d	TAPE MONITOR SW.(B)			
S7a~d	4CH INPUT SW.	S703a~d	SEA REC SW.			
S8	ST. ONLY SW.	S704a~d	REMOTE ON-OFF SW.			
S9	FM MUTING SW.	S705a~d	REVERSE SW.			

Subject to change without notice.

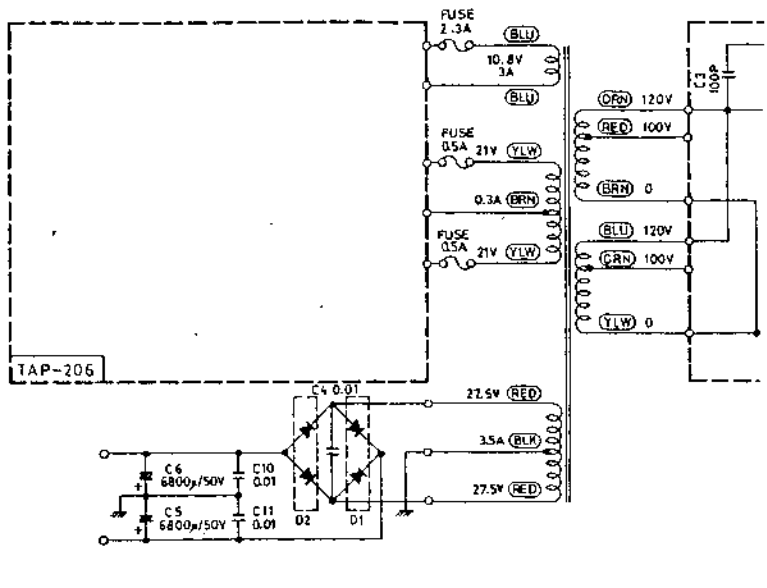
[E] FOR EUROPE (SEMKO, SEV)

■ PRIMARY CIRCUIT (220V 50Hz~)



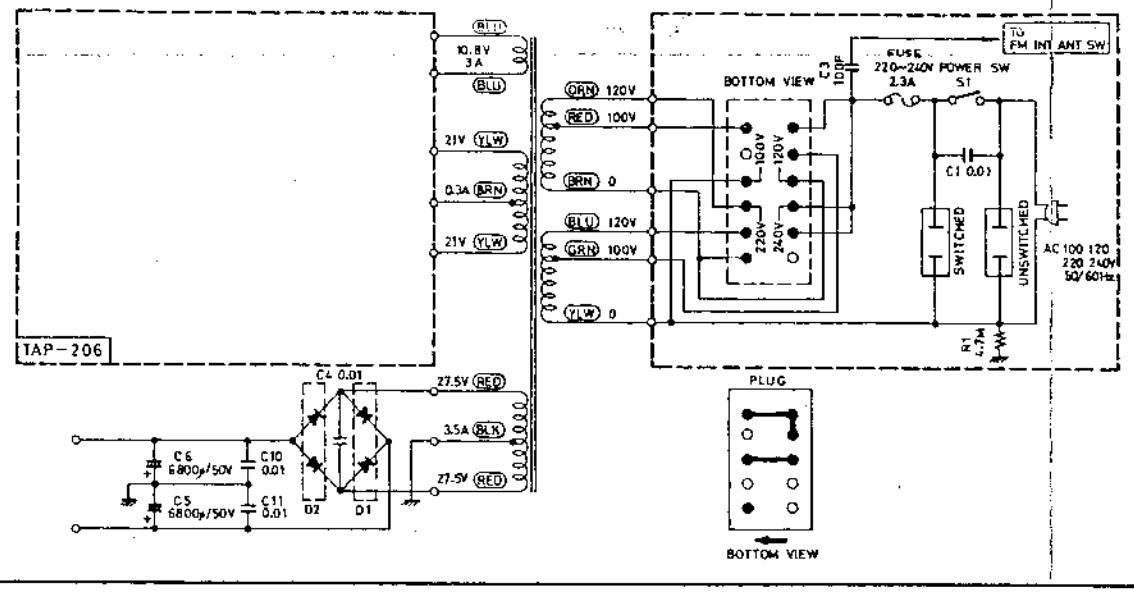
[M] FOR CANADA

■ PRIMARY CIRCUIT (AC 120V



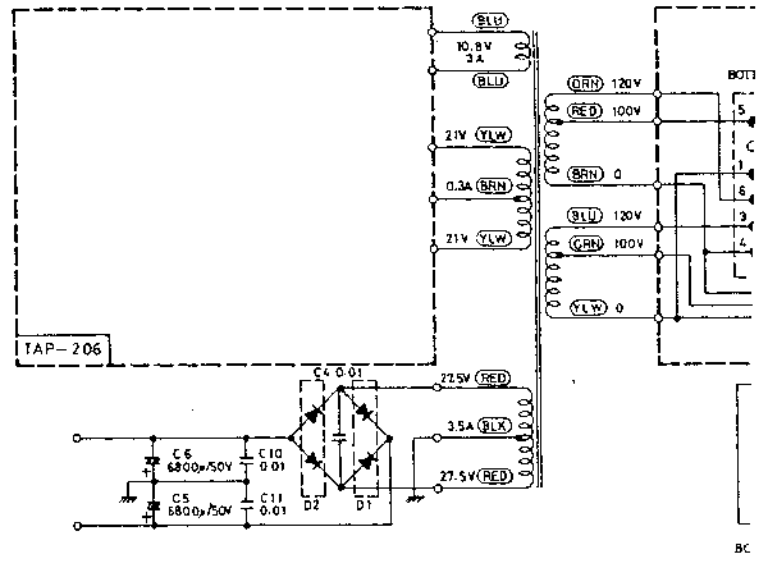
[F] FOR EUROPE EXCEPT SEMKO, SEV

■ PRIMARY CIRCUIT (AC 220, 240V 50Hz)

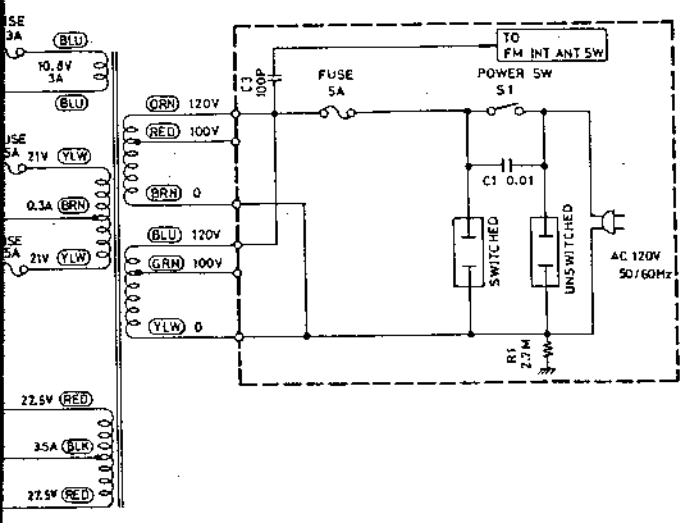


[P] [U] FOR PACEX, NEX AND OTHER COUNTRIES E EUROPE AND AUSTRALIA

■ PRIMARY CIRC

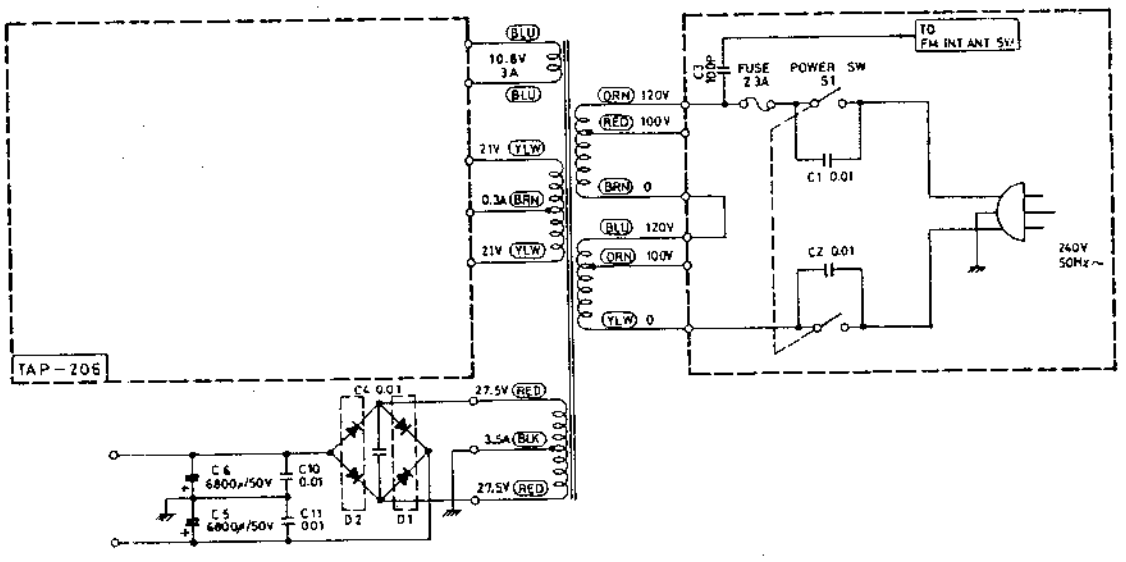


MARY CIRCUIT (AC 120V 50/60Hz)



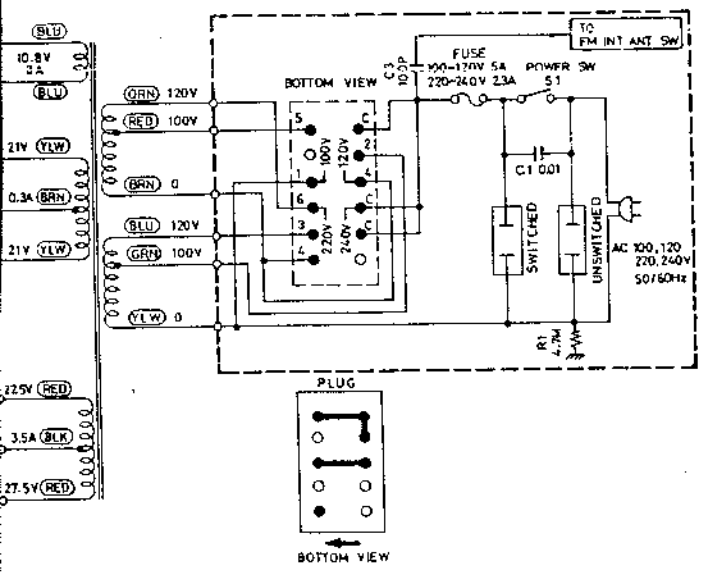
[A] FOR AUSTRALIA AND U.K.

■ PRIMARY CIRCUIT (240V 50Hz~)



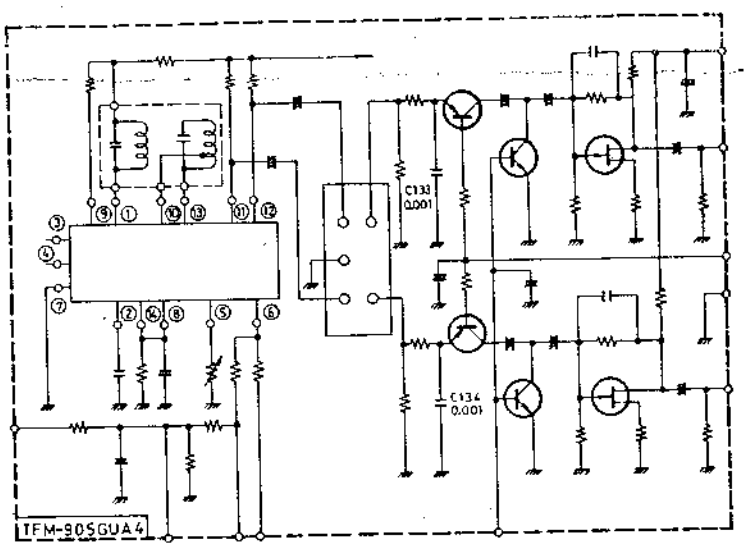
OTHER COUNTRIES EXCEPT U.S.A., CANADA,

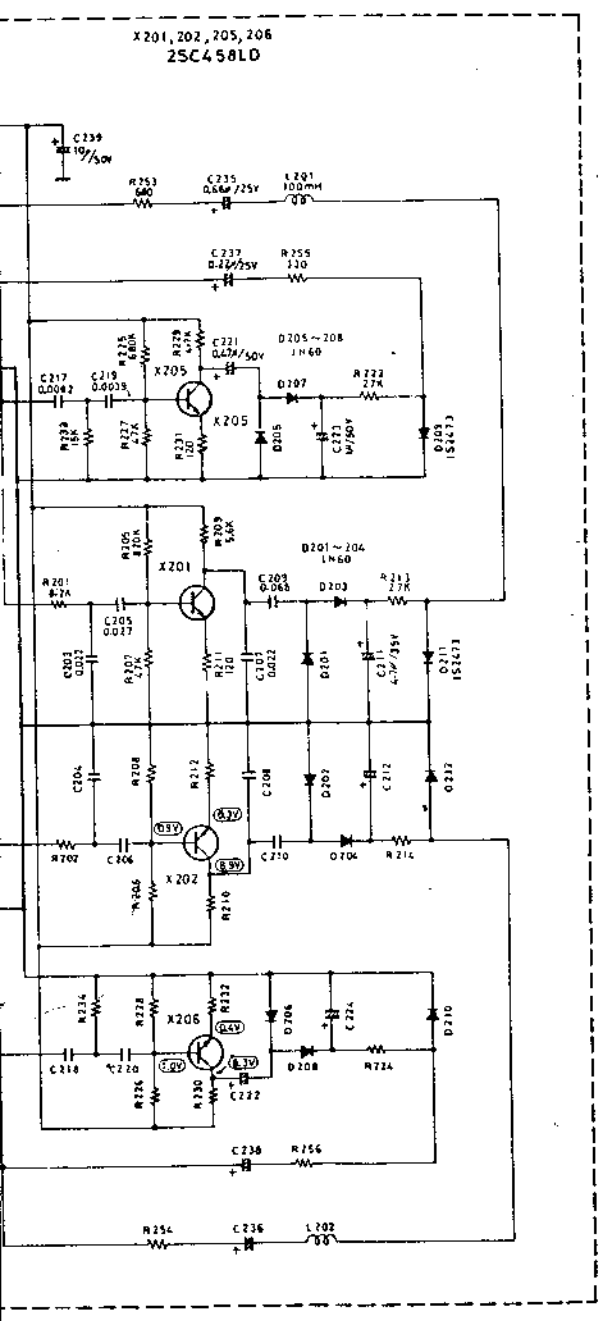
LIA ■ PRIMARY CIRCUIT (AC 100, 120, 220, 240V 50/60Hz)



■ FM MPX CIRCUIT (DE-EMPHASIS 50μS)

[E] FOR EUROPE (SEMKO, SEV)
[F] FOR EUROPE EXCEPT SEMKO, SEV





2SC1312G
2SC871F
2SC458LD
2SC1166Y
2SC458ALGC

2SB527D
2SD313D or E
2SD325D or E
2SD357D

2SK30

2SA726F
2SC710C or D or E
2SC711AE or F or E

2SC829B

WZ-130
WZ-150

FR2-02

2SA757
2SC897

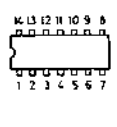
SV-03

IS2473
IN990
MA-150

IN60
IS188AM or FM

E0771-7

TA7061AP



CD894
LA3301

Parts List with Specified Numbers for Designated Areas

Page	Ref. No.	Original	Parts Name	For Europe	For Australia and U.K.	For Europe except SEMKO, SEV	For PACEX, NEX and other countries except U.S.A., Canada, Europe and Australia	For Canada
7	12	QSU1222-001	Power switch	QSY2220-004	QSY2220-004	Same as original	Same as original	Same as original
10	7	E46603-002	Cover	Not included	Not included	E46603-001	E46603-001	"
10	10	QMC9004-001	Voltage select socket	"	"	Same as original	Same as original	"
10	9	QMC9005-001	Voltage select plug	"	"	"	"	"
10	24	QMC0234-001	AC socket	"	"	"	"	"
10	25	QMG0201-001	Fuse socket	QMG0301-000	QMG0102-001	"	"	QMG0102-001
10	26	QMP1200-244	Power cord with plug	E03544-001 (SEMKO) QMP3800-2400 (SEV)	E03551-002	"	"	Same as original
10	27	QHS3876-162	Power cord stopper	Same as original	QHS6374-252	"	"	"
29		TFM905GUA 3 C133, C134 Mylar cap. 0.0022μF	FM/AM STEREO TUNER C.B. ASS'Y	TFM905GUA 4 C133, C134 Mylar cap. 0.0015μF	TFM905GUA 4 C133, C134 Mylar cap. 0.0015μF	TFM905GUA 4 C133, C134 Mylar cap. 0.0015μF	Same as original	Same as original
		Not included	Plate (to be replaced for V. Selector)	E47977-003	E47977-003	Not included	Not included	Not included
			Plate (to be replaced for AC Socket)	E48956-001	E48956-001			
30		QMF61U1-5R0	Fuse	Not included	QMF60R1-2R3	QMF60R1-2R3	QMF60R1-5R0 QMF60R1-2R3	Same as original
		BT-20002B	Warranty card	"	Not included	Not included	E32980-002	BT-20008
		Not included	Toll free slip	"	"	"	BT-10002	Not included
		E30580-456A	Instruction book	E30580-457A	Same as original	E30580-457A	Same as original	Same as original

List of Accessories and Attachments

Parts No.	Parts Name	Parts No.	Parts Name
4DE-205	CD-4 Adjustment record	BT-20002B	Warranty card
E30580-456A	Instruction book	E64207-001	Envelope
E64208-001	Envelope (for fuse)	QMF61U1-5R0	Fuse
E30539-482A	Schematic diagram		
E64103-001	Polishing cloth		

* WHEN YOU ORDER SPARE PARTS FOR THIS MODEL, PLEASE SEND THE ORDER SHEET DIRECTLY TO:

STEREO EXPORT DEPARTMENT,
AUDIO EQUIPMENT DIVISION,
VICTOR COMPANY OF JAPAN, LIMITED
YAMATO PLANT,
1644 SHIMOTSURUMA, YAMATO-SHI,
KANAGAWA 242,
JAPAN.