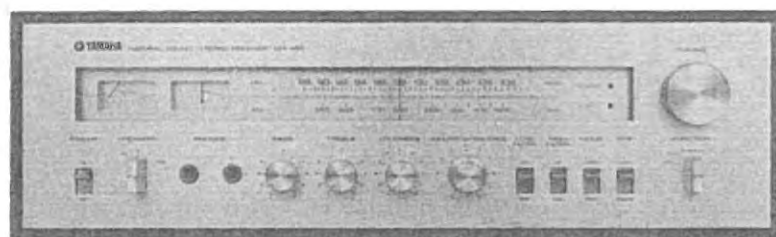


SERVICE MANUAL

CR-450

FM/AM STEREO RECEIVER



SINCE 1887



YAMAHA

NIPPON GAKKI CO., LTD. HAMAMATSU, JAPAN

ASM-36

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Printed in Japan 10/

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SPECIFICATIONS

AUDIO SECTION

Dynamic Power (IHF)	120 W (4 Ω) 90 W (8 Ω)
Continuous RMS Power (each channel driven)	50/50 W (4 Ω) at 1,000Hz 37/37 W (8 Ω) at 1,000Hz
Continuous RMS Power (both channels driven)	40+40 W (4 Ω) at 1,000Hz 32+32 W (8 Ω) at 1,000Hz
Total Harmonic Distortion	
Overall (Aux to Speaker Output)	less than 0.1% at rated power less than 0.05% at 1 watt
Preamplifier Only (Phono to Rec Out)	less than 0.1% at rated power
Intermodulation Distortion (70Hz:7,000Hz=4:1 SMPTE method)	
Overall (Aux to Power Out)	less than 0.1% (8 Ω) at rated power
Frequency Response (at 1 watt)	
Overall (Aux. Tape PB to Power Out)	20 to 20,000Hz +0.5dB, -1dB
Deviation from RIAA (20 to 15,000Hz)	+5dB, -0.5dB
Damping Factor (8 Ω)	better than 50 at 1,000Hz
Channel Separation (at rated power, 1,000Hz)	
Overall from Aux, Tape PB	65dB
Hum and Noise (IHF, Closed Circuit A Network)	
Overall from Phono	better than 75dB
Overall from Aux, Tape PB	better than 90dB
Residual Noise	less than 0.5mV
Input Sensitivity and Impedance (at rated power, 1,000Hz)	
Phono	3mV (47K Ω)
Phono Max. Input Capability	150mV (THD 0.1%)
Aux, Tape PB	150mV (50K Ω)
Output Level and Impedance (at rated power, 1,000Hz)	
Tape Rec Out	150mV (less than 500 Ω)
DIN Tape Rec Out	30mV (less than 80K Ω)
Tone Controls	
Bass	$\pm$ 12dB at 50Hz
Treble	$\pm$ 10dB at 10,000Hz
Filters	
Low	-3dB at 50Hz
High	-3dB at 10,000Hz
Loudness Control (Continuous Loudness Volume at Minimum)	+10dB at 100Hz, +5dB at 10,000Hz

TUNER SECTION

FM:	88~108MHz
Tuning Range	
Sensitivity (mono)	2.0 μ V
IHF	2.0 μ V
DIN (40KHz Dev.; S/N)	1.5 μ V
Sensitivity (stereo)	
DIN (40KHz Dev.; S/N 46dB)	50 μ V
Image Frequency Rejection	45dB

IF Rejection	60dB
Spurious Response Rejection	45dB
AM Rejection	50dB
Capture Ratio	1.5dB
Selectivity (IHF)	(DIN 300KHz/40KHz Hub) (60dB)
Mono	
IHF (75KHz Dev.)	68dB
DIN (40KHz Dev.)	62dB
Stereo	
IHF (75KHz Dev.)	66dB
DIN (40KHz Dev.)	66dB
Total Harmonic Distortion (Antenna Level: 1mV)	
Mono	
IHF (400Hz; 75KHz Dev.)	less than 0.3%
DIN (1KHz; 40KHz Dev.)	less than 0.3%
Stereo	
IHF (400Hz; 75KHz Dev.)	less than 0.5%
DIN (1KHz; 40KHz Dev.)	less than 0.
Stereo Separation	
IHF (400Hz; 75KHz Dev.)	40dB
DIN (40KHz 50~10,000Hz	40dB
IHF (75KHz Dev.)	28dB
DIN (40KHz Dev.)	28dB
Frequency Response	
50~10,000Hz	$\pm$ 1.0dB
Sub-Carrier Suppression	40dB
Antenna Impedance	300 Ω balanced 75 Ω unbalanced
AM:	
Tuning Range	525 to 1,605KHz
Usable Sensitivity (IHF)	50dB/m
Signal-to-Noise Ratio	43dB at 80dB/m
Image Frequency Rejection	40dB at 1,000Hz
Selectivity	25dB at 1,000Hz
IF Rejection	40dB at 1,000Hz

GENERAL

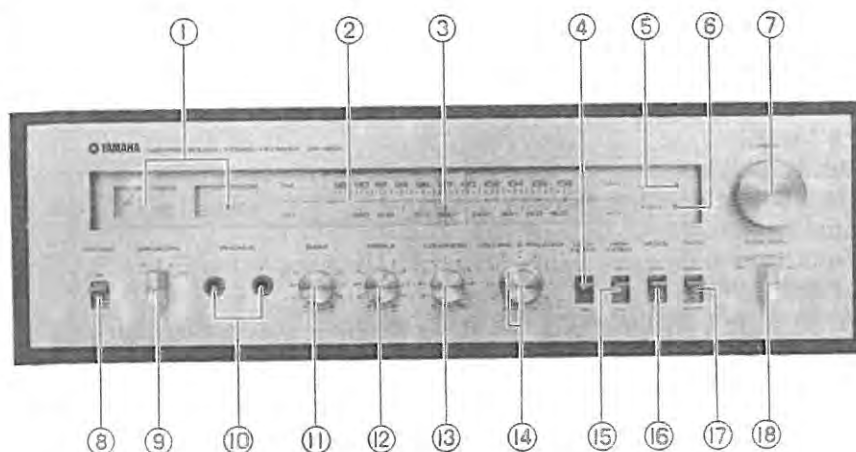
Power Source	
USA & Canada	AC 117V, 60Hz
Other Areas	AC 110/130/220/240V 50/60Hz
Power Consumption	190W
AC Outlets (max. total 200 watts)	
Switched	1
Unswitched	1
Dimensions	465 x 157 x 335mm 18 1/4" x 6 1/4" x 13 1/4"
Weight	9.3Kg (20.5 lbs.)

Specifications subject to change without notice.

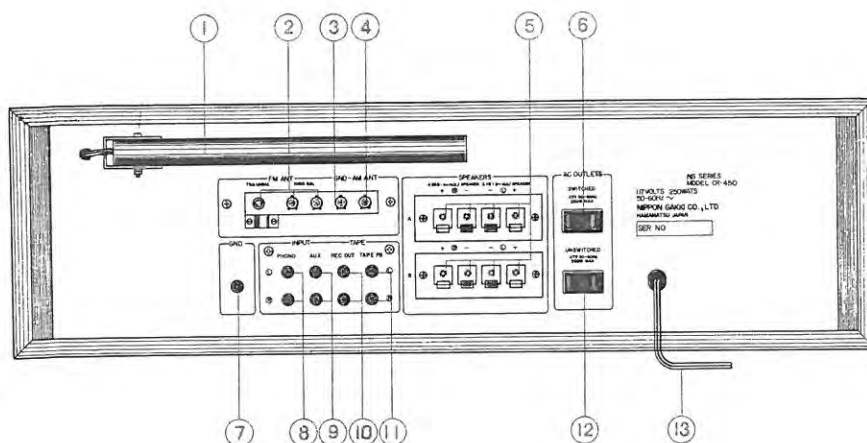
CR-450

EXTERNAL VIEW

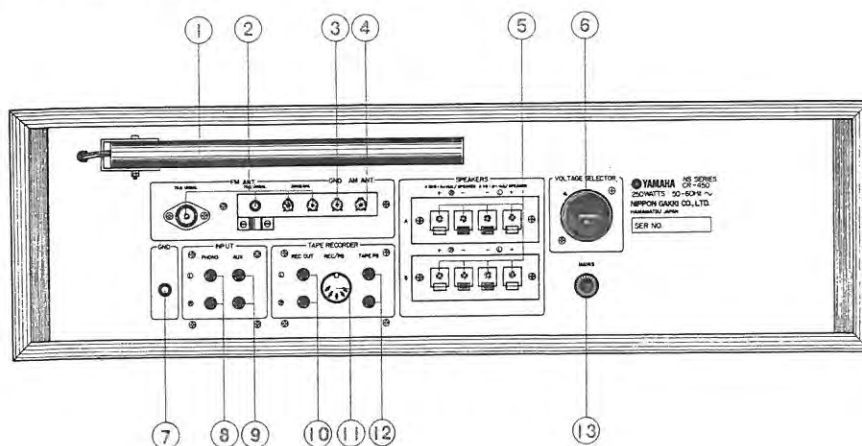
FRONT PANEL



REAR PANEL(U.S.& CADIAN MODELS)



REAR PANEL(EUROPEAN MODEL)



FRONT PANEL

1. SIGNAL AND TUNING METERS
2. DIAL SCALE
3. DIAL POINTER
4. LOW FILTER SWITCH
5. FM STEREO INDICATOR
6. POWER INDICATOR
7. TUNING KNOB
8. POWER SWITCH
9. SPEAKERS SELECTOR SWITCH
10. HEADPHONE JACKS
11. BASS CONTROL
12. TREBLE CONTROL
13. LOUDNESS CONTROL
14. VOLUME AND BALANCE CONTROLS
15. HIGH FILTER SWITCH
16. MODE SWITCH
17. TAPE MONITOR SWITCH
18. FUNCTION SWITCH

REAR PANEL(U.S.& CANADIAN MODELS)

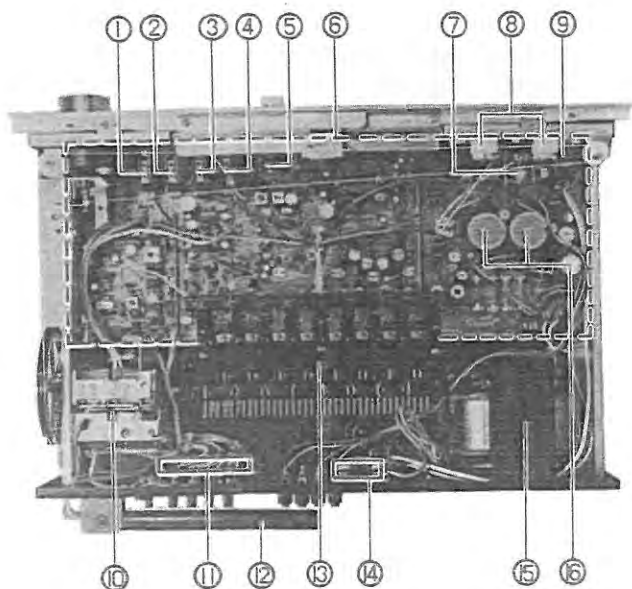
1. AM FERRITE BAR ANTENNA
2. FM ANTENNA TERMINALS
3. AM ANTENNA (GND) TERMINAL
4. AM ANTENNA TERMINAL
5. SPEAKER TERMINALS
6. AC OUTLET (SWITCHED)
7. GROUND TERMINAL
8. PHONO INPUT JACKS
9. AUX INPUT JACKS
10. TAPE REC OUT JACKS
11. TAPE PB JACKS
12. AC OUTLET (UNSWITCHED)
13. AC CORD

REAR PANEL(EUROPEAN MODEL)

1. AM FERRITE BAR ANTENNA
2. FM ANTENNA TERMINALS
3. AM ANTENNA (GND) TERMINAL
4. AM ANTENNA TERMINAL
5. SPEAKER TERMINALS
6. VOLTAGE SELECTOR
7. GROUND TERMINAL
8. PHONO INPUT JACKS
9. AUX INPUT JACKS
10. TAPE REC OUT JACKS
11. TAPE REC OUT/TAPE PB CONNECTOR
12. TAPE PB JACKS
13. PRIMARY FUSE 3.15 AT. 250V (110 ~ 130V)
1.6 AT. 250V (220 ~ 240V)

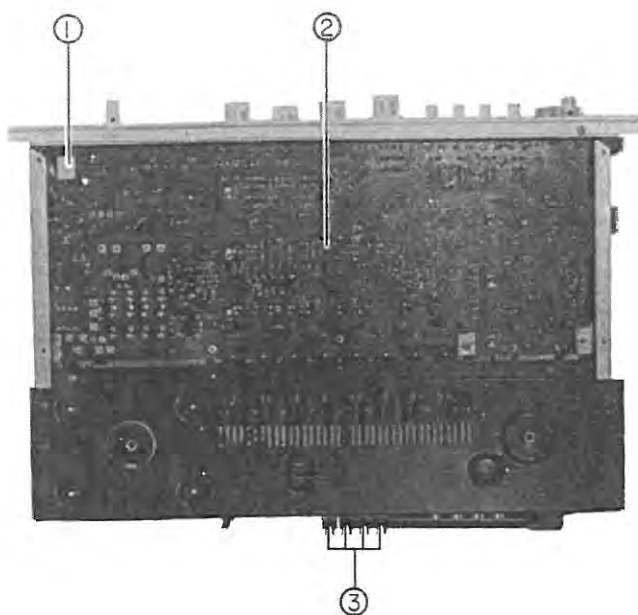
INTERNAL VIEW

TOP VIEW



- ① TAPE MONITOR SWITCH
- ② MODE SWITCH
- ③ HIGH FILTER SWITCH
- ④ LOW FILTER SWITCH
- ⑤ VARIABLE RESISTOR
(VOLUME AND BALANCE CONTROL)
- ⑥ MAIN CIRCUIT BOARD
NA06740: GENERAL MODEL
NA06741: U.S. & CANADIAN MODELS
NA06742: EUROPEAN MODEL
- ⑦ SPEAKER SELECTOR SWITCH
- ⑧ TUNING AND SIGNAL METERS
- ⑨ POWER SWITCH
- ⑩ RF FRONT END PACK (FB511U)
- ⑪ PIN JACK CIRCUIT BOARD
NA06743: 8P, GENERAL, U.S. & CANADIAN MODELS
NA06745: EUROPEAN MODEL
NA06736: EUROPEAN MODEL
- ⑫ AM FERRITE BAR ANTENNA
- ⑬ HEAT SINK
- ⑭ PRIMARY FUSE
- ⑮ POWER TRANSFORMER
GA60791: U.S. & CANADIAN MODELS
GA60792: GENERAL & EUROPEAN MODELS
- ⑯ ELECTROLYTIC CAPACITOR (4,700 μ F/35WV)

BOTTOM VIEW



- ① POWER SWITCH
- ② MAIN CIRCUIT BOARD
- ③ SPEAKER TERMINALS

PARTIAL DISASSEMBLY

CABINET REMOVAL

- a. Set the unit on its side as shown in Photo 1, then remove screws (1) to (4).
- b. Return the set to its normal position and pull the chassis out of the cabinet as shown in Photo 2.

FRONT PANEL REMOVAL

- a. Remove the cabinet as explained above.
- b. Loosen the tuning knob screws (1) and (2) as shown in Photo 3; use a hexagonal Allen wrench. Then pull off the knob.
- c. Use a hexagonal Allen wrench to loosen the Speakers and Function knobs, then pull them off of the front panel.
- d. Pull off the Bass, Treble, Loudness, Volume and Balance control knobs.
- e. Remove screws (1) and (2) in Photo 4, then do the same for screws (3) to (5). Then remove the front panel.

REAR COVER REMOVAL

- a. Remove the cabinet as explained above.
- b. Remove screws (1) to (4) as shown in Photo 5, then remove the rear cover.

GENERAL CIRCUIT BOARD REMOVAL

- a. Remove the cabinet as explained above.
- b. Remove the front panel as explained above.
- c. Remove hexagonal nuts (1) to (8), pull off the lever switches and then remove screws (9) to (16) as shown in Photo 6.
- d. Remove screws (1) to (5) shown in Photo 7.
- e. Remove the leads connected to the circuit board, then remove the circuit board from the chassis, together with its heat shield, switch, variable resistor, etc.

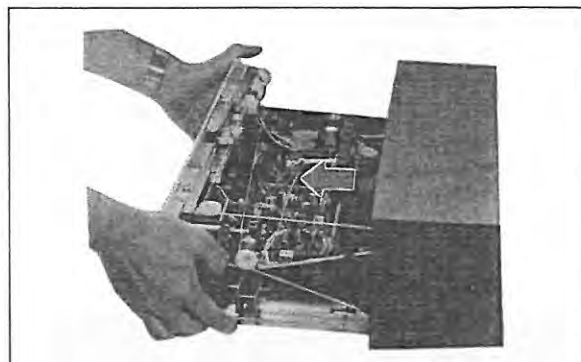


Photo 2

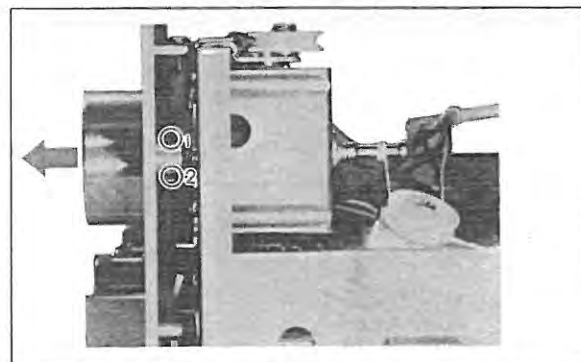


Photo 3

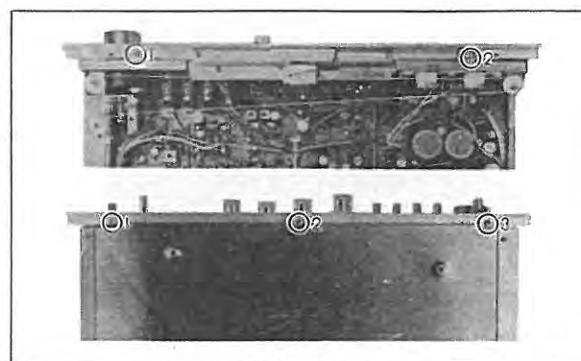


Photo 4



Photo 1

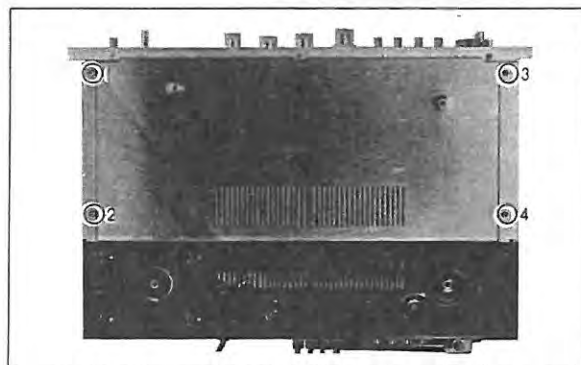


Photo 5

METER REMOVAL

- Remove the cabinet as explained above.
- Remove the dial indicator from the pulley as shown in Photo 8, then remove screws (1) and (2). Then each meter can be removed as a unit with its holder.
- When the meter alone is to be removed, first take

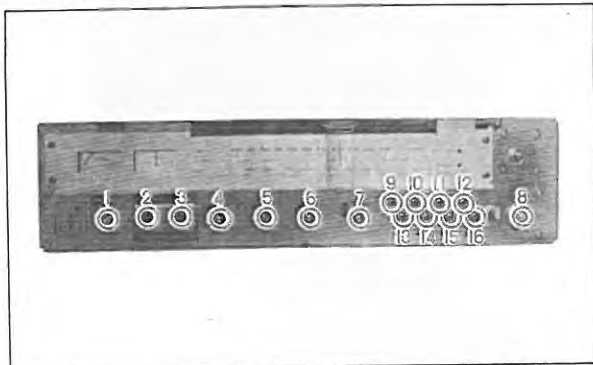


Photo 6

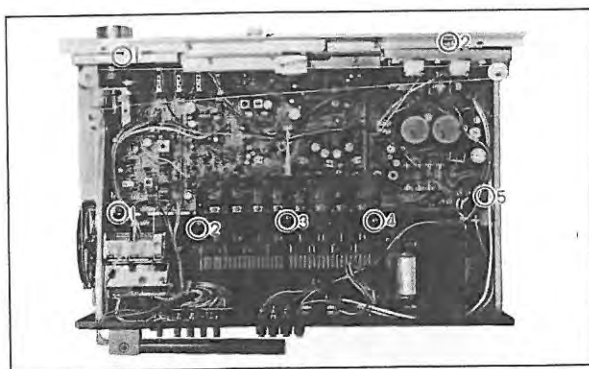
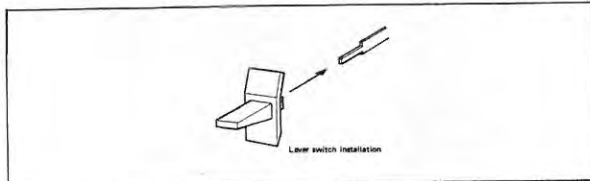
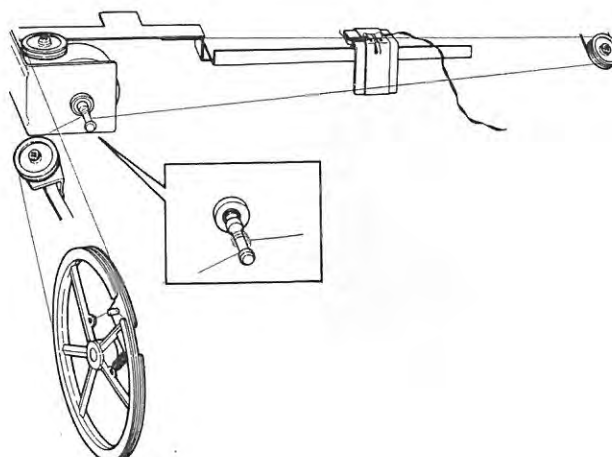


Photo 7

DIAL MECHANISM



off the spring as shown in Photo 8, then remove the meter.

LED CIRCUIT BOARD REMOVAL

- Remove the cabinet as explained above.
- Remove the circled screw in Photo 9, then pull out the LED circuit board.

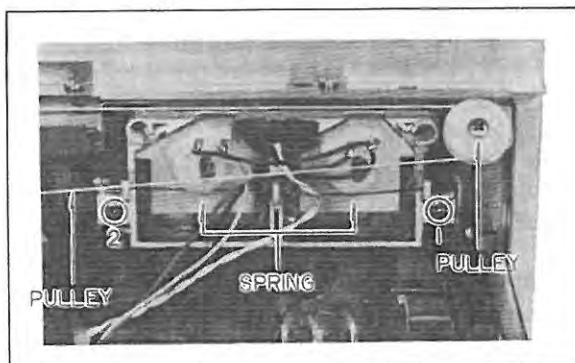


Photo 8

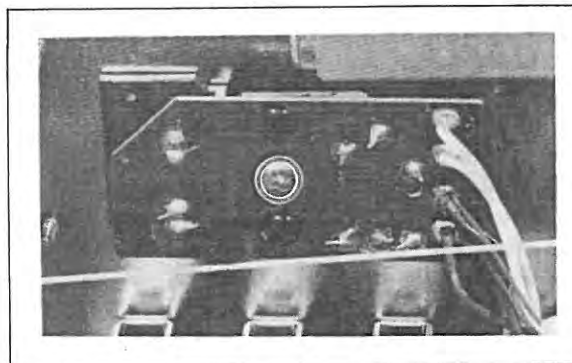


Photo 9

MEASUREMENT AND ADJUSTMENT

1. TUNER SECTION ADJUSTMENT

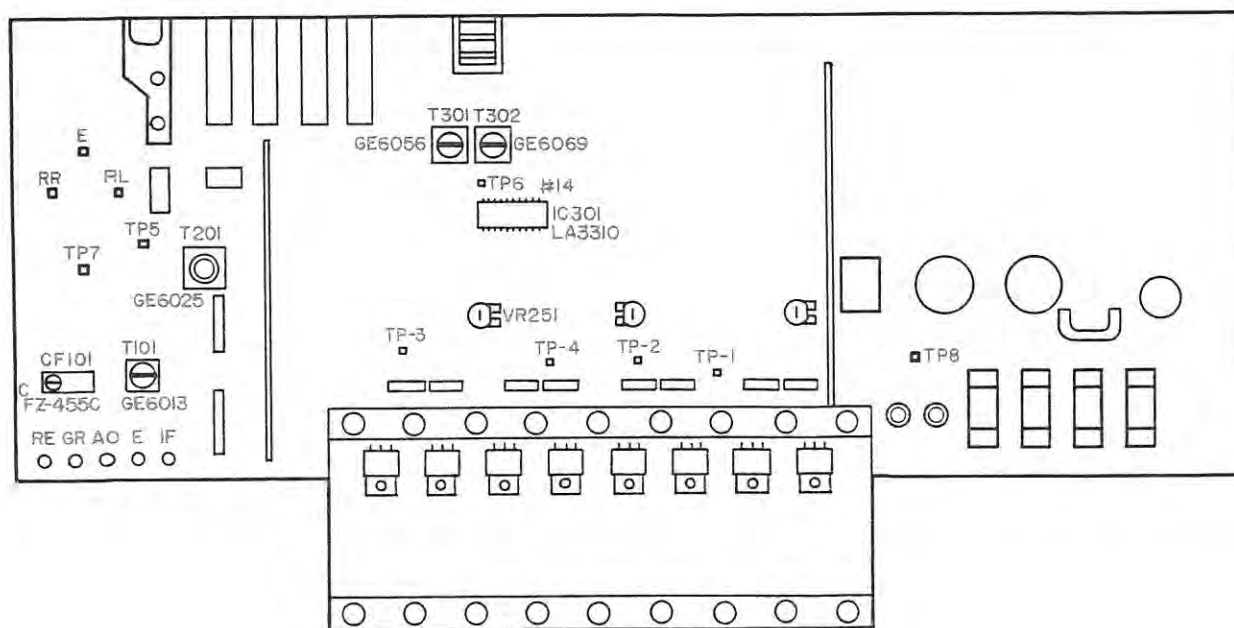


Fig. 1 Tuner Section Adjustment

1-1. FM IF STAGE

STEP	ADJUSTMENT ITEM	CONNECTION POINT	MEASURING INSTRUMENTS	ADJUSTMENT PART	ADJUSTMENT PROCEDURE	STANDARD VALUE	REMARKS
1	S Curve	Tuner Circuit board Connect sweeper output between IF terminal and ground Connect the sweeper input terminal to a point between TP5 and ground, via 10K Ω resistor	10.7MHz IF sweeper— Output 70dB	Discriminator coil T201 (GE 6025) upper & lower core	Adjust for symmetrical waveform from the secondary (upper) core. Adjust for maximum waveform amplitude from the primary (lower) coil	Adjust for over 400mV p-p S curve output EO, with the S curve center f_0 deviation within 200KHz of the 10.7MHz marker	See Figs. 1 and 2 In the case of a finished amp, set after detuning the dial

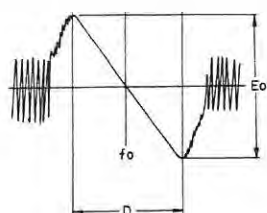


Fig. 2 S Curve Waveform

General Circuit board Connection and Adjustment Points
FM Tracking Trimmer (high range)
FM Tracking Adjustment Coil (low range)

1-2. AM IF STAGE

STEP	ADJUSTMENT ITEM	CONNECTION POINT	MEASURING INSTRUMENTS	ADJUSTMENT PART	ADJUSTMENT PROCEDURE	STANDARD VALUE	REMARKS
1	V Curve	General Circuit board Connect 100Ω between the GR and RE terminals. Connect the sweeper output to the RE terminal via $0.1\mu F$. Connect the sweeper input terminal to a point between TR7 and the ground	455KHz IF Sweeper — Output 40dB	CF101 (AM ceramic filter)	Adjust for a curve as close as possible to that in Fig. 3	See Fig. 3	1. Connect between VC and ground 2. Connect 100Ω between GR and RE terminals

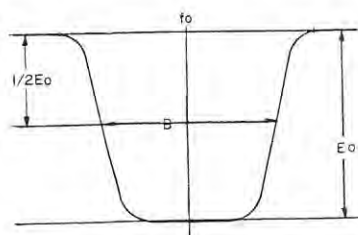


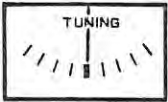
Fig. 3 V Curve Waveform

Center Frequency: $f_o 455 \pm 10 \text{ KHz}$
 Output Voltage: E_o over 800mV
 Frequency Bandwidth:
 B over 5KHz
 Sweeper Output:
 40dB Sweeper Width,
 2KHz/div.

1-3 MPX SECTION ADJUSTMENT

1	Pilot Signal	Connect the signal generator output to the FM antenna terminal via a dummy antenna. Connect the oscilloscope to pin 14 of the multiplex IC LA3310 via a $100K\Omega$ resistance	Oscilloscope Signal generator Set Conditions: fc: 98MHz Antenna input: 60dB Pilot Signal: 10% 400Hz Signal: 90%	T301 (GE6056): orange	Adjust for maximum output and minimum oscillation	Check for approximately 2V p-p at pin 14 of the IC LA3310	
2	Separation I	Between General Circuit board RR terminal and ground	Same as above — L side modulation	VR251 (100KB) T302 (GE6069)	Adjust for minimum distortion-free crosstalk to R		
3	Separation II	Between RL terminal and ground	Same as above — R side modulation	Same as 2 above — fine adjustment	Adjust for minimum distortion-free crosstalk to L		
4	Separation Balance	Between RR and E Between RL and E	Same as above Right modulation Left modulation	VR251 (100KB) T302 (GE6069)	Adjust for same separation, L & R	Adjust for L/R difference within 3dB	

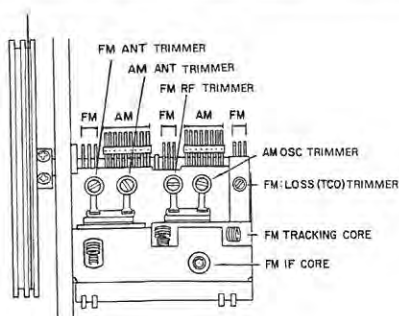
1-4 GENERAL ADJUSTMENT

STEP	ADJUSTMENT ITEM	CONNECTION POINT	MEASURING INSTRUMENTS	ADJUSTMENT PART	ADJUSTMENT PROCEDURE	STANDARD VALUE	REMARKS
1	Tuning Meter (Center Meter)	FM antenna (300 Ω)		Discriminator Coil T201 (GE6025) upper core	Set so that the tuning meter indicates zero due to noise during complete detuning. (See illustration to right)		
2	Tuning Point Set	FM antenna terminal	Antenna Input: 60dB FM SG: 98MHz	Tuning Knob	Set so that the tuning meter indicates center position at this frequency		AFC: off
3	Distortion Adjustment	FM antenna terminal Rec Out	Tune same as 2 above. 400Hz, 100% modulation (mono)	Discriminator coil lower core	Adjust for minimum distortion	Less than 46dB	AFC: off
4	Stereo Sub (L-R) Signal Adjustment	FM antenna terminal RR-E RL-E	Stereo L-R: 400Hz, 100% modulation, oscilloscope, VTVM, distortion meter	T302 (GE 6069): yellow	Adjust for minimal distortion at maximum L-R signal	Distortion under 40dB	If distortion cannot be corrected with T302 alone, also adjust T301
5	Separation Adjustment	FM antenna terminal RR-E RL-E	Same as 2 above Antenna input: 60dB Stereo, 100% modulation	VR251 (100KB)	Adjust for minimum, balance crosstalk	Over 32dB. Over 28dB if both channels modulated at same time.	If crosstalk waveform distortion is excessive, adjust pack 1F core.

1-5 (A) FM TRACKING ADJUSTMENT

1	Indicator Adjustment	FM antenna terminal	Antenna input: 60dB FM SG: 98MHz	Tuning knob, indicator	Turn the knob until the meter is at the center position. Then check that the indicator shows 98MHz		
2	Low and High Range Tracking Check	FM antenna terminal	Low Range: 88MHz, High Range: 180MHz	Tuning knob	Turn the knob so that the Tuning meter is at its mid position. Check the dial deviation	Within ± 2.0 mm of figure center	
3	Tracking Check I	FM antenna terminal	Same as 2 above	Indicator	When tracking error is still greater than specified after the adjustment in Step 2, readjust the pointer to meet the specification	± 2.0 mm	

STEP	ADJUSTMENT ITEM	CONNECTION POINT	MEASURING INSTRUMENTS	ADJUSTMENT PART	ADJUSTMENT PROCEDURE	STANDARD VALUE	REMARKS
4	Tracking Check II	Pack trimmer core or coil			If the values checked in 3 do not fall within the standard range, try adjusting the pack trimmer core and coil.	$\pm 2.0\text{mm}$	

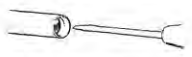


1-5 (B) FM SENSITIVITY ADJUSTMENT (required only if correct sensitivity adjustment not possible via adjustment 3.5-1)

1	High Range Sensitivity	FM antenna terminal (300 Ω) Rec Out terminal L-R	FM SG: 106MHz, 30dB μ , 400Hz, 100% modulation	Front end RF antenna trimmer	Adjust for maximum Signal meter deflection		
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NOTE: When this adjustment is carried, FM tuner section adjustment must then be done from the beginning once again.

1-6 AM SECTION ADJUSTMENT

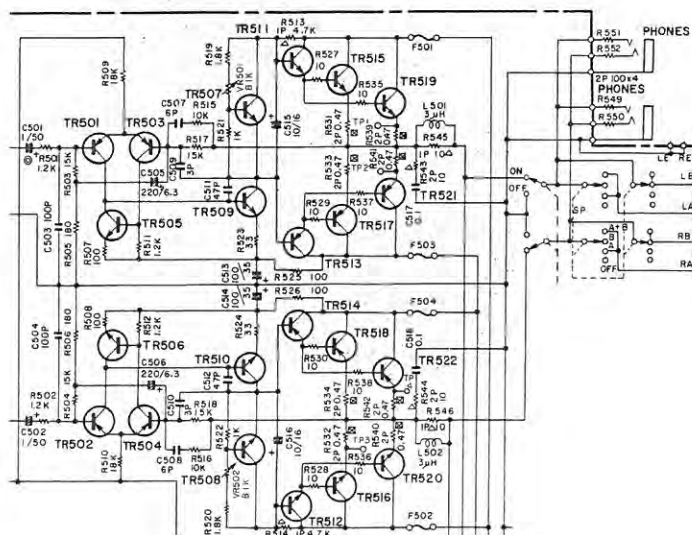
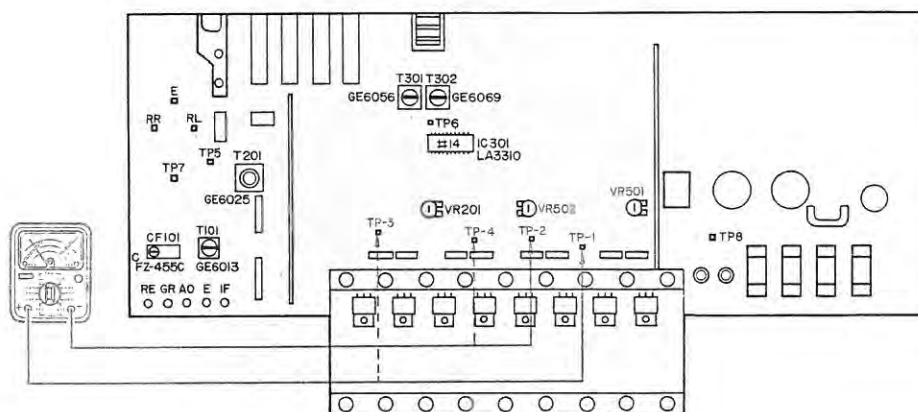
1	Local Oscillator Coil Adjustment	Bar antenna Rec Out	AM SG: 600Hz Oscilloscope Electronic Voltmeter	Tuning knob AM local oscillator coil T101 (GE6013)	Set the tuning indicator for 600KHz and tune by turning the coil core. Adjust for maximum Signal meter deflection		Meter deflection to 21 on gauge
2	Low Range Sensitivity Adjustment	Same as 1 above	AM SG: 600KHz, 54dB	Bar antenna core	Adjust for maximum Signal meter deflection at same point as 1 above		
3	Local Oscillator Trimmer Adjustment	Same as 1 above	AM SG: 1350KHz	Tuning knob AM local oscillator trimmer	Set the dial to 1350 KHz and tune by turning the trimmer. Adjust for maximum Signal meter deflection		7.6 on gauge
4	High Range Sensitivity Adjustment	Same as 1 above	AM SG: 1350KHz, 54dB	Front end AM tuner trimmer	Adjust for maximum Signal meter deflection as same point as 3 above		
5	Sensitivity Variation Adjustment	Same as 1 above	AM SG: 600KHz, 1350KHz	Repeat steps 1 to 4			
6	Mid-Range Check	Same as 1 above	AM SG: 950KHz	Tuning knob	Set for maximum Signal meter deflection	Within $\pm 2.0\text{mm}$ deviation on dial	5.5 on gauge

2.AUDIO SECTION ADJUSTMENT

BEFORE MEASUREMENTS

- To be sure the amplifier performance has stabilized, switch the unit on and warm it up for two or three minutes before beginning.
- Do not connect speakers or dummy load resistors to the speaker terminals; leave them open.

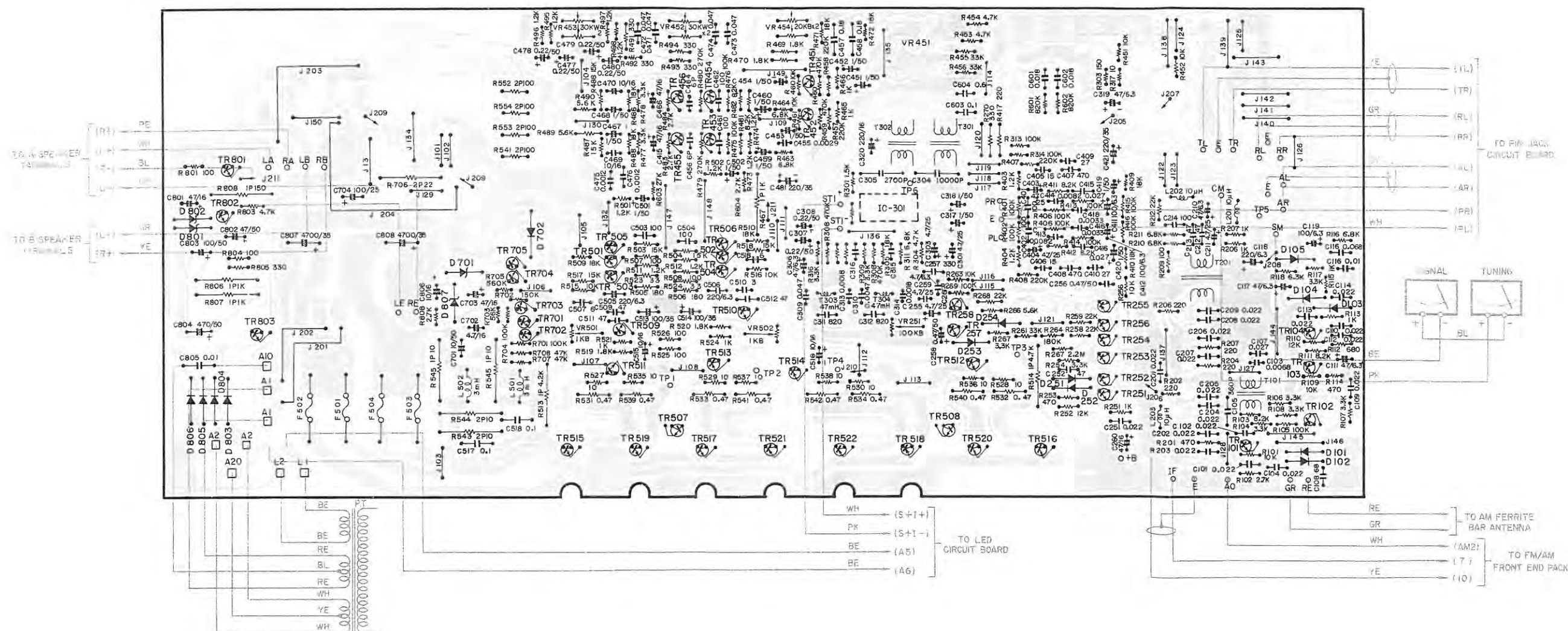
STEP	ADJUSTMENT ITEM	CONNECTION POINT	MEASURING INSTRUMENTS	ADJUSTMENT PART	ADJUSTMENT PROCEDURE	STANDARD VALUE	REMARKS
	Idling Current	L side: TP2-TP1 R side: TP4-TP3	DC Voltmeter	L side: VR501 R side: VR502	Set for standard value	$50 \pm 10 \text{ mV}$	



PRINTED CIRCUIT BOARD

PRINTED CIRCUIT BOARD

1. GENERAL CIRCUIT BOARD



[illegible]

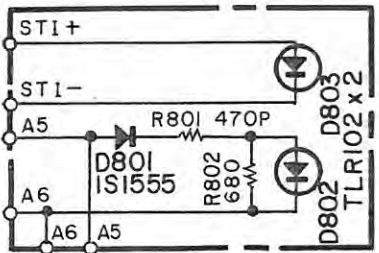
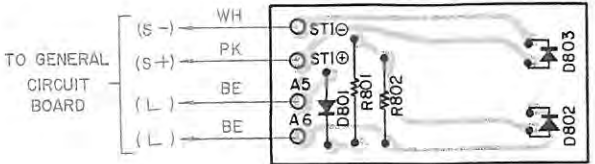
● RESISTOR		● CAPACITOR			● WIRE COLOR ABBREVIATIONS				
SYMBOL	PART NAME	SYMBOL	PART NAME	REMARKS	BL ▶ Black BR ▶ Brown RE ▶ Red OR ▶ Orange YE ▶ Yellow GR ▶ Green BE ▶ Blue			VI ▶ Violet GY ▶ Gray WH ▶ White GG ▶ Light Green SB ▶ Light Blue PK ▶ Pink	
	FUSE RESISTOR		MYLAR CAPACITOR						
	METALIZED OXIDATION RESISTOR	NO MARK	CERAMIC CAPACITOR						
	CEMENT RESISTOR		POLYSTYRENE CAPACITOR						
NO MARK	CARBON RESISTOR	NO MARK	(BI-POLAR) ELECTROLYTIC CAPACITOR						
	CEMENT MOLDED RESISTOR		LOW-NOISE ELECTROLYTIC CAPACITOR						
	METALIZED FILM RESISTOR		TANTALUM CAPACITOR						

2SD 526: go to 2SD 525
2SB 596: go to 2SB 595
2SD 234: go to BD 241A
2SA 763: go to BC 559 (Uni)
2SA 777: go to 2SA 965 (Uni)
2SC 454: go to BF 240/BF 241
2SC 460: go to BF 240/BF 241
2SC 789: go to BD 243A
2SC 944: go to BC 546 (Uni)
2SC 1509: go to 2SD 667 (Uni)

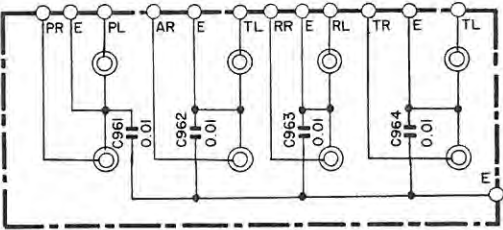
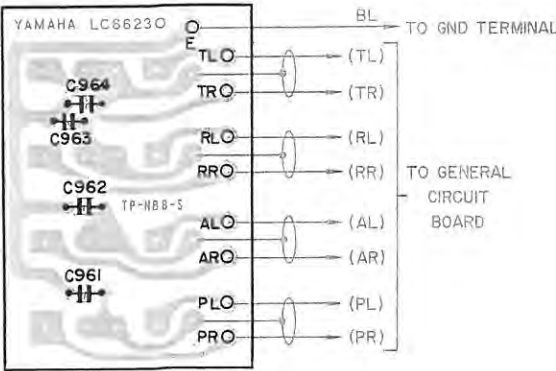
2SC 1571: go to BC 550 (Uni)
2SC 458: original available

- According to ALL substitutions:
check always the right connection of every pin! The pins may be changed!

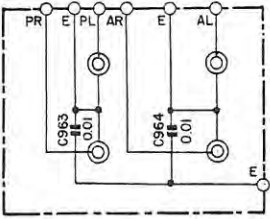
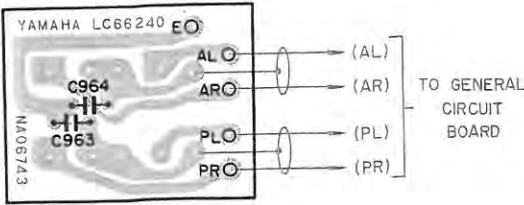
2. LIGHT EMITTING DIODE CIODE CIRCUIT BOARD



3.8P PINJACK CIRCUIT BOARD

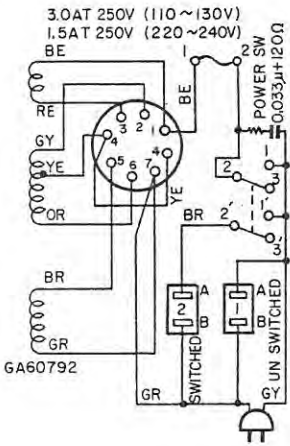


4.4P PINJACK CIRCUIT BOARD

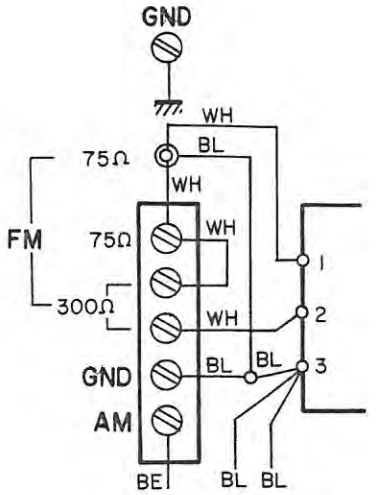
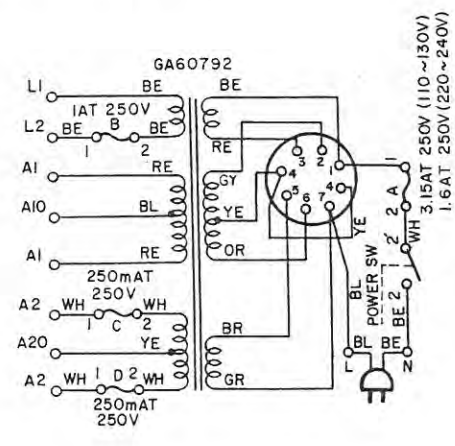


PARTIAC CHANGES MADE ACCORDING TO DESTINATION

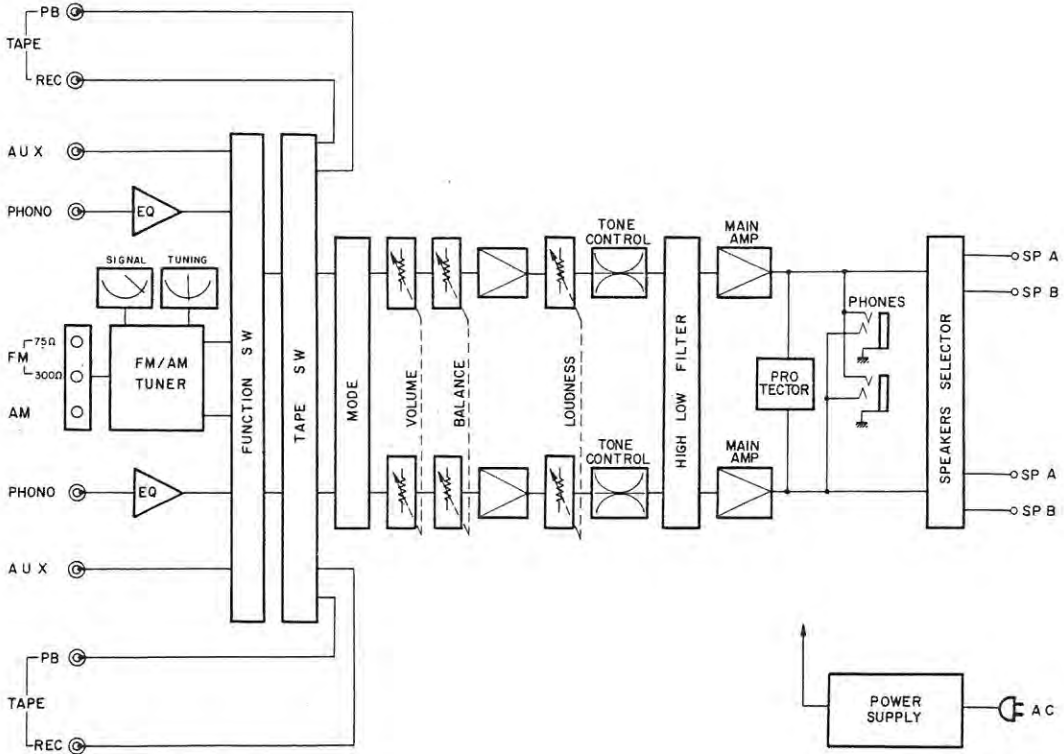
▼GENERAL MODEL



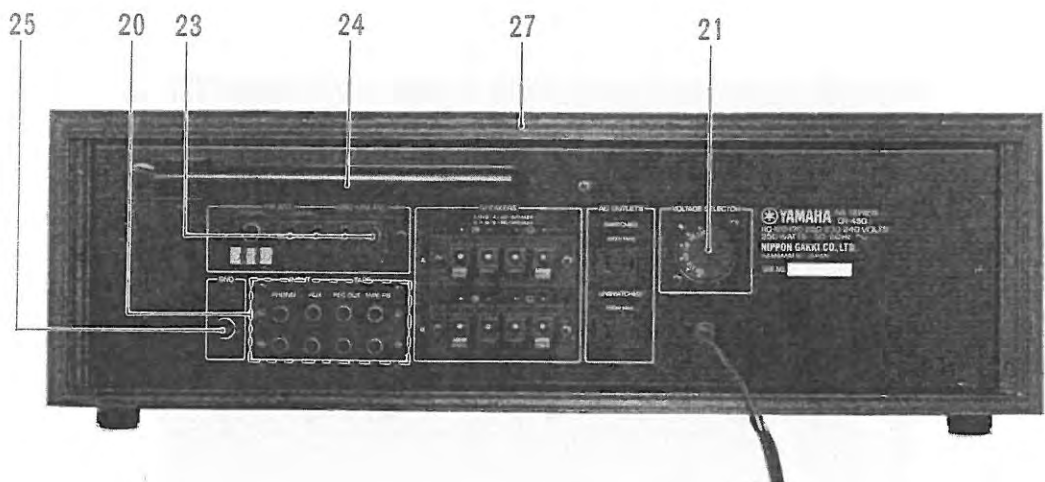
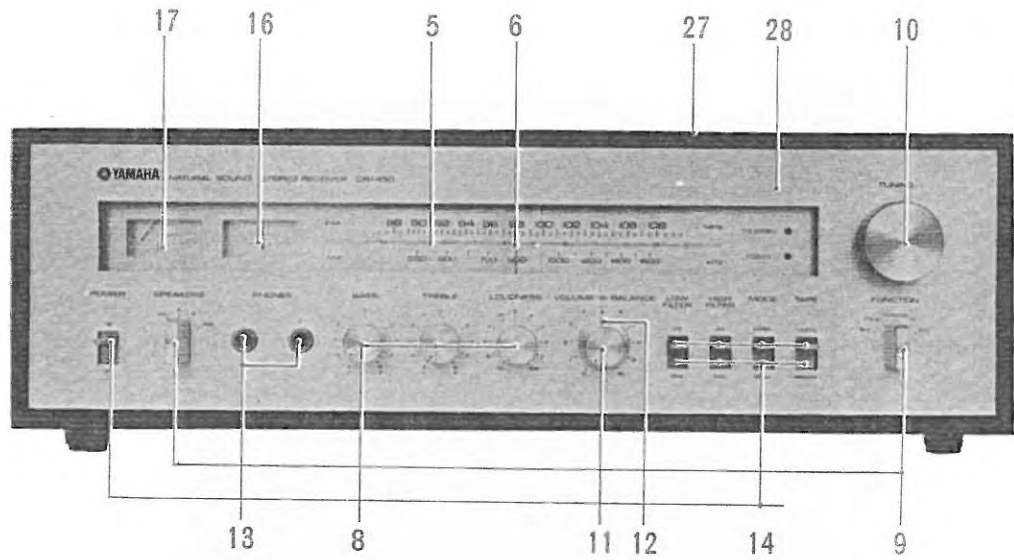
▼EUROPEAN MODEL

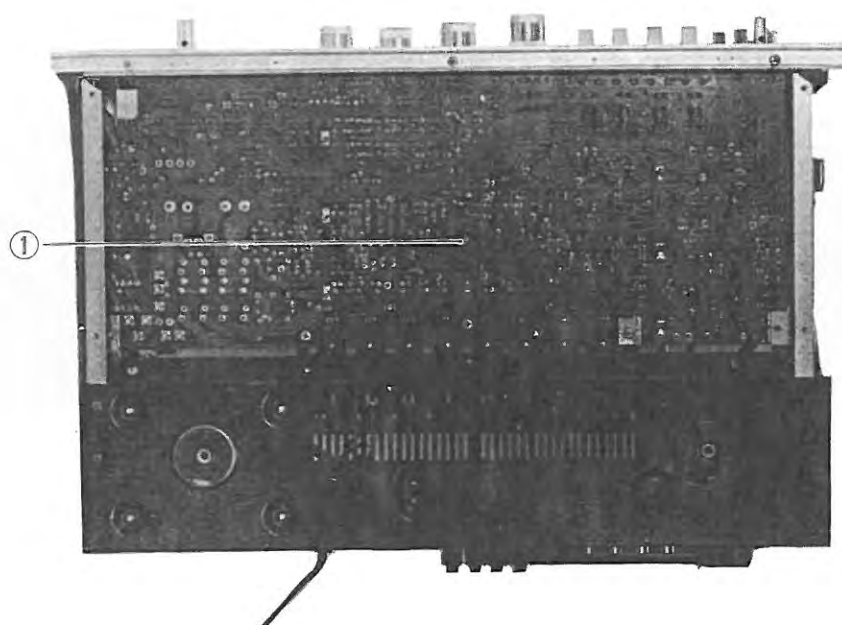
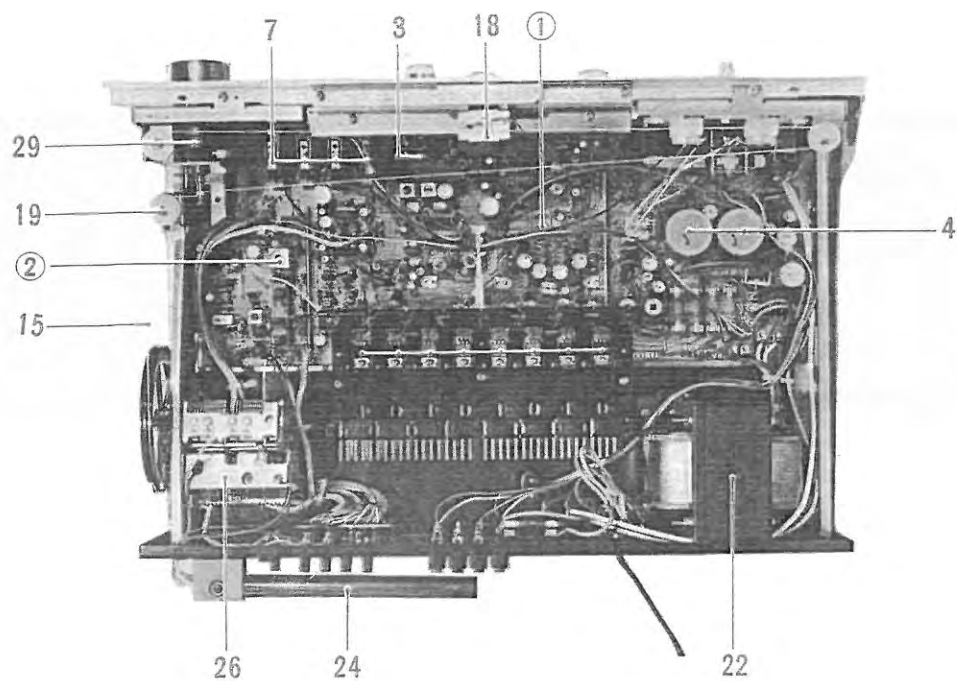


BLOCK DIAGRAM



PARTS LIST





Ref. No.	Part No.	Description	Remarks	Common Models
1	32:00:00:NA:06:74:00	Tuner Amp. Circuit Board #6621	総合シート	General model
1	32:00:00:NA:06:74:10	-do.- #6622	"	U.S. & Canadian models
1	32:00:00:NA:06:74:20	-do.- #6621	"	European model
	42:00:00:IA:07:63:00	Transistor 2SA763	トランジスター	
	42:00:00:IA:07:77:30	-do.- 2SA777	"	
	42:00:00:IB:05:96:00	-do.- 2SB596	"	T517/518, 521/522
	42:00:00:IC:04:54:80	-do.- 2SC454	"	
	42:00:00:IC:04:58:90	-do.- 2SC458	"	
	42:00:00:IC:04:60:80	-do.- 2SC460	"	
	42:00:00:IC:07:89:10	-do.- 2SC789	"	
	42:00:00:IC:09:44:30	-do.- 2SC944	"	
	42:00:00:IC:15:09:30	-do.- 2SC1509	"	
	42:00:00:IC:15:71:20	-do.- 2SC1571	"	
	42:00:00:IC:07:89:10	-do.- 2SD234	"	Substitutional part 2SC789
	42:00:00:ID:05:26:00	-do.- 2SD526	"	T515/516, 519/520
	42:00:00:IF:00:02:20	Zener Diode WZ-310	ツェナーダイオード	
	42:00:00:IF:00:03:50	-do.- WZ-130	"	
	42:00:00:IF:00:02:00	-do.- WZ-120	"	
	42:00:00:IF:00:03:30	Diode IS188	ダイオード	
	42:00:00:IH:00:01:10	-do.- 5B2	"	
	42:00:00:IH:00:02:40	-do.- IS1885	"	
	42:00:00:IG:00:00:60	I.C. LA3310N	I C	
	42:00:00:IG:00:01:10	-do.- TA7122AP	I C	
	42:00:00:IG:00:03:90	-do.- μ PC577H	I C	
	42:00:00:GD:90:00:50	Air Coil 3 μ H	空芯コイル	
2	42:00:00:GE:10:00:60	FM, IFT	F M I F T	
	42:00:00:GE:10:01:50	OSC Coil AM	発振コイル	
	42:00:00:GE:20:00:70	MPX. Coil	マルチプレックスコイル	
	42:00:00:GE:20:01:20	-do.-	"	
	42:00:00:GE:20:01:10	MPX Fixed Coil	マルチプレックス固定コイル	
	42:00:00:GE:30:00:90	RF Inductor 10 μ H	R F インダクター	
	42:00:00:GG:00:00:20	Ceramic Filter CF-10M-12	セラミックフィルタ	
	42:00:00:GG:00:00:80	-do.- CFZ-455C	"	
	42:00:00:HT:17:00:10	Semi Variable Resistor B-1K Ω V8K4-1	半固定 V R	
	42:00:00:HT:17:00:30	Semi Variable Resistor B-100K Ω V8K4-1	半固定 V R	
	42:00:00:KC:00:00:90	Relay MX-2PO	リレー	
3	42:00:00:HS:41:02:70	Potentiometer B-250K Ω x 2 + W250K Ω	ボリューム	Volume Balance
	42:00:00:HS:41:03:30	-do.- B-20K Ω x 2	"	Loudness
	42:00:00:HS:41:02:90	-do.- W-30K Ω x 2	"	Bass, Treble
	42:00:00:HZ:00:00:30	Metal Film Resistor 0.47 Ω /2W	金属板抵抗	
	42:00:00:HL:41:41:00	Metal Oxide Resistor 10 Ω /1W	酸化金属被膜抵抗	
	42:00:00:HL:42:51:00	-do.- 100 Ω /2W	"	
	42:00:00:HL:31:51:50	-do.- 150 Ω /1W	"	
	42:00:00:HL:41:61:00	-do.- 1K Ω /1W	"	
	42:00:00:HL:32:41:00	-do.- 10 Ω /2W	"	
	42:00:00:HL:62:42:20	-do.- 22 Ω /2W	"	

CR-450

Ref. No.	Part No.	Description		Remarks	Common Models
	42:00:00:FE:11:11:00	Polystyrene Film Capacitor 10pF	スチロールコン	Vartical type	
	42:00:00:FE:15:23:60	—do.— 360pF	"	—do.—	
	42:00:00:FE:11:32:70	—do.— 2700pF	"	—do.—	
	42:00:00:FE:11:41:00	—do.— 10,000pF	"	—do.—	
4	42:00:00:FM:29:94:70	Electrolytic Capacitor 4700 μ F/35V	電解コンデンサ	Vartical type	
	42:00:00:FJ:64:64:70	—do.— 4.7 μ F/25V	"	LR type	
	42:00:00:FM:09:64:70	Bi-polar Capacitor 4.7 μ F/16V	B P コンデンサ		
	42:00:00:FZ:00:05:70	Electrolytic M.S. Capacitor 1 μ F/50V	M S コンデンサ		
	32:00:00:NB:07:42:60	Front Panel Unit	フロントパネルユニット		
5	32:00:00:NB:07:42:70	Dial Plate Unit	目盛板ユニット		
6	32:00:00:NB:07:30:10	Dial Pointer Unit	ダイヤル指針ユニット	General & European models	CR200
	42:00:00:CB:06:86:30	Cord Stopper, Heyco	コードストッパー	General & European models	
	42:00:00:AA:08:08:10	Bottom Plate	底板		
	42:00:00:AA:08:05:30	Dial Spring	ダイヤルスプリング		
	32:00:00:AA:07:46:30	Amp. Fitting Washer	角ワッシャー		
6	32:00:00:NB:06:84:90	Dial Pointer Unit	指針ユニット	U.S. model	
	32:00:00:BA:06:68:70	Radiation Plate (Large)	放熱板		
	32:00:00:BA:06:27:60	—do.— (Small)	"		
	32:00:00:CB:07:28:80	Insulation Bush	絶縁ブッシュ		
	42:00:00:IL:00:02:70	Mica Base	マイカ板		
	42:00:00:KA:50:04:10	Rotary Switch, Speakers	ロータリースイッチ		
	42:00:00:KA:50:06:50	—do.—, Function	"		
7	42:00:00:KA:20:01:70	Lever Switch	レバースイッチ		
	42:00:00:LB:30:03:10	Phone Tack	ホーンジャック		
	42:00:00:KB:00:05:70	⑤ Fuse 3.15A/250V	ヒューズ	European model	
	42:00:00:KB:00:01:30	Fuse 3A/125V	ヒューズ	General model	
	42:00:00:KB:00:10:40	—do.— 3A/250V		U.S. & Canadian models	
8	32:00:00:BA:06:65:50	Knob, Bass, Treble & Continuous Loudness	ツマミ		CR200
9	32:00:00:BA:06:68:00	—do.—, Speakers & Function	"		—do.—
10	32:00:00:BA:06:68:10	—do.—, Tuning	"		—do.—
11	32:00:00:BA:06:68:50	—do.—, Volume	"		
12	32:00:00:BA:06:68:60	—do.—, Balance	"		
13	42:00:00:CA:06:37:20	Phone Washer	ホーンワッシャー		
	32:00:00:CB:06:82:70	Phone Nut	ホーンナット		CA1000
14	32:00:00:CB:06:89:30	Lever Knob	レバーツマミ		—do.—
	32:00:00:CB:07:16:00	Variable Capacitor Pulley	バリコンプーリー		CR400
	32:00:00:CB:07:39:20	Lead Wire Clamper	リードクランパー		—do.—
15	42:00:00:CB:07:41:70	Dial String, 1.5 m	ダイヤル糸		
	32:00:00:NA:06:71:20	LED Circuit Board	LEDシート	General & European models	CR200
	32:00:00:NA:06:71:30	—do.—	"	U.S. & Canadian models	—do.—
29	32:00:00:NB:07:24:20	Flywheel, tuning Unit	チューニングユニット		CT400
16	42:00:00:JI:00:01:90	Tuning Meter	チューニングメータ		
17	42:00:00:JI:00:02:00	Signal Meter	シグナルメータ		
	42:00:00:JB:00:03:50	Lead Type Lamp 12V 60mA	リード式ランプ		
	32:00:00:AA:07:36:30	Meter Fitting Spring	メーター押えバネ		CR400
18	32:00:00:AA:07:92:10	Dial Pointer Rail	指針レール		CR200
	32:00:00:BB:06:24:10	Pulley Shaft	滑車軸		CR400
19	42:00:00:CB:06:59:90	Pulley	滑車		—do.—

[illegible]