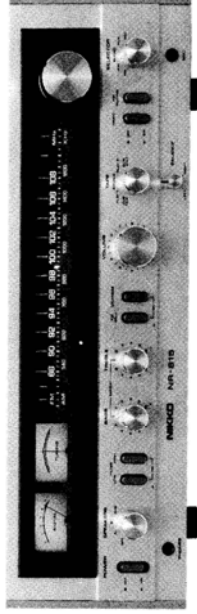

AM/FM STEREO RECEIVER

NR-815



SERVICE MANUAL

TYPE AND VOLTAGE

W-TYPE UL and CSA type	120V
E-TYPE universal type	100/120/220/240V
N-TYPE DEMKO and SEMKO type	220/240V

NIKKO

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SPECIFICATION

	NOMINAL	LIMIT
1. FM TUNER SECTION		
Usable Sensitivity	10.3 dBf (1.8 μ V)	14.2 dBf (2.8 μ V)
50 dB Quieting Sensitivity	14.8 dBf (3 μ V)	19.2 dBf (5 μ V)
Signal-to-Noise Ratio at 65 dBf	.75 dB	.62 dB
T. H. Distortion		
Mono	.01% (1 kHz)	.03% (1 kHz)
Stereo	.03% (1 kHz)	.07% (1 kHz)
Capture Ratio	1 dB	3 dB
Alternate Channel Selectivity	.75 dB	.58 dB
Sprious Response Ratio	100 dB	95 dB
Image Response Ratio (98 MHz)	.90 dB	.75 dB
IF Response Ratio (98 MHz)	100 dB	90 dB
AM Suppression Ratio	.55 dB	.40 dB
Stereo Separation (100 Hz)	.40 dB	.35 dB
(1 kHz)	.40 dB	.35 dB
(10 kHz)	.40 dB	.30 dB
Subcarrier Product Ratio	.65 dB	.55 dB
Muting Sensitivity	13.2 dBf (2.5 μ V)	.6 dB
FM Frequency Range	87.4 – 109 MHz	87.9 – 108.5 MHz
Antenna Impedance	.300 ohms balanced & 75 ohms unbalanced	
Output Level	750 mV	750 mV \pm 3 dB

2. AM TUNER SECTION

Usable Sensitivity	Ferrite antenna	.300 μ V/m	1,000 μ V/m
	Ext. antenna	15 μ V	60 μ V
Signal-to-Noise Ratio		.40 dB	.35 dB
Image Rejection (1,000 kHz)		.45 dB	.40 dB
IF Rejection (1,000 kHz)		.40 dB	.30 dB
Selectivity (\pm 10 kHz)		.35 dB	.30 dB
AM Frequency Range		.520 – 1,650 kHz	.525 – 1,635 kHz
Output Level		.150 mV	150 mV \pm 3 dB

3. AMPLIFIER SECTION

Continuous Power Output (0.05% THD, both channels driven)	
20 – 20,000 Hz, 8 OHMS	.87W + 87W 85W + 85W
20 – 20,000 Hz, 4 OHMS	100W + 100W 95W + 95W
1,000 Hz, 8 OHMS	.95W + 95W 90W + 90W
1,000 Hz, 4 OHMS	.105W + 105W 100W + 100W
T.H. Distortion (both channels driven, 8 ohms)	
RATED POWER OUTPUT Less than 0.05%	
1 W OUTPUT Less than 0.03%	

NOMINAL

LIMIT

Intermodulation Distortion (both channels driven, 8 ohms)

RATED POWER OUTPUT	Less than 0.08%
1W OUTPUT	Less than 0.03%
Power Bandwidth (IHF)	10 – 30,000 Hz
Damping Factor (1000 Hz, 8 ohms)	5 – 50,000 Hz
	70

Frequency Response

PHONO → SP OUT (RIAA curve)	30 – 15,000 Hz ± 1 dB
AUX, TAPE IN → SP TER	10 – 50,000 Hz ± 2 dB

Input Sensitivity for 55 W Power Output/Impedance

PHONE	2.5 mV/50,000 ohms	2.5 mV ± 2 dB/50,000 ohms
AUX, TAPE IN	150 mV/50,000 ohms	150 mV ± 2 dB/50,000 ohms
MIC → SP TER	2.5 mV/50,000 ohms	2.5 mV ± 2 dB/50,000 ohms
4CH (MAIN AMP) IN → SP TER	1,000 mV/50,000 ohms	1,000 mV ± 2 dB/50,000 ohms

Phono Clipping Point (0.1 % THD, 1000 Hz) 250 mV 250 mV ± 2 dB

Signal-to-Noise Ratio (IHF)

TAPE OUT	140 mV/10,000 ohms	140 mV ± 2 dB/10,000 ohms
TAPE OUT (DIN CONNECTOR)	35 mV/10,000 ohms	35 mV ± 2 dB/10,000 ohms
2CH OUT	1,000 mV/10,000 ohms	1,000 mV ± 2 dB/10,000 ohms

Signal-to-Noise Ratio (IHF-A)

PHONO → SP TER	67 dB	60 dB
AUX, TAPE IN → SP TER	87 dB	80 dB
MIC → SP TER	70 dB	60 dB

Tone Control

BASS (70 Hz) CUT	10 dB	10 ± 2 dB
BASS (70 Hz) BOOST	10 dB	10 ± 3 dB
TREBLE (10,000 Hz) CUT	10 dB	10 ± 2 dB
TREBLE (10,000 Hz) BOOST	10 dB	10 ± 2 dB

Loudness Control (VOLUME: -30 dB)

70 Hz	10 dB	10 ± 2 dB
10,000 Hz	+6 dB	+6 ± 2 dB
Low Cut Filter (100 Hz)	-3 dB	-3 ± 2 dB
High Cut Filter (7,000 Hz)	-3 dB	-3 ± 2 dB
Audio Muting	-20 dB	± 2 dB

Idling Current 40 mA 40 ± 20 mA

SP TER. Voltage 0 0 ± 50 mV

Muting Delay Time (RELAY) 5 seconds 5 ± 3 seconds

Protect Circuit Input Sensitivity DC 3V DC 3 ± 2 V

DISASSEMBLY

WOODEN COVER REMOVAL (Photo 1)

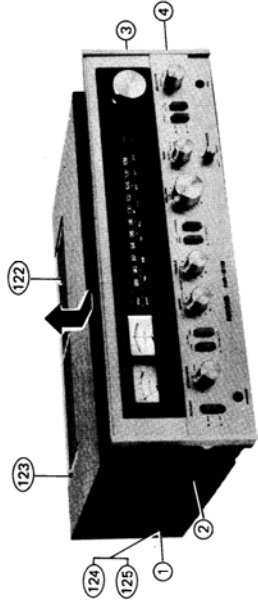


Photo 1

- Remove four tapping screws (1 thru 4) shown in Photo 1 from both sides of the cover. Do not lose these screws and four washers.
- Slide the cover back slightly and lift it up

POWER TRANSFORMER REMOVAL (Photo 3)

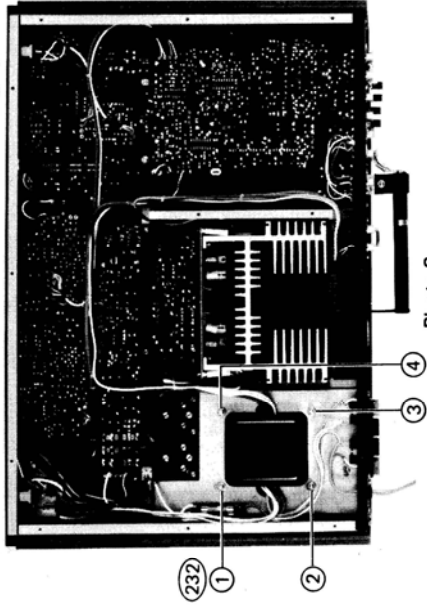


Photo 3

Remove four nuts (1 thru 4) shown in Photo 3 and lift out the transformer.

FRONT PANEL REMOVAL (Photos 5, 6)

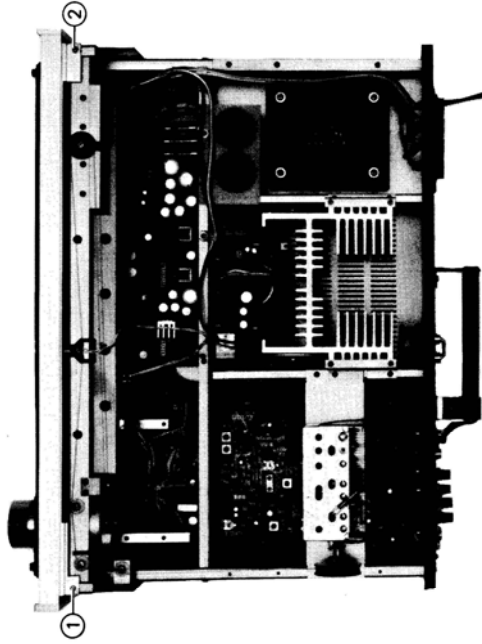


Photo 5

Note: Three figures marked with a (○) relates to "KEY NO." on parts list.

BOTTOM PLATE REMOVAL (Photo 2)

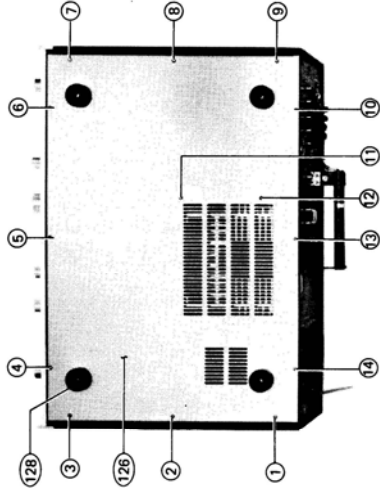


Photo 2

Remove fourteen tapping screws (127) (1 thru 14) shown in Photo 2 from bottom plate and lift out the bottom plate.

MAIN AMP ASSEMBLY REMOVAL (Photo 4)

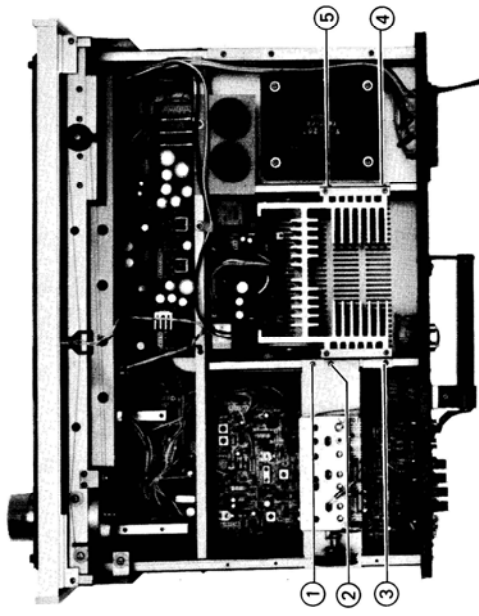


Photo 4

Remove screws (1 thru 5) shown in Photo 4 and lift out the main amp assembly.

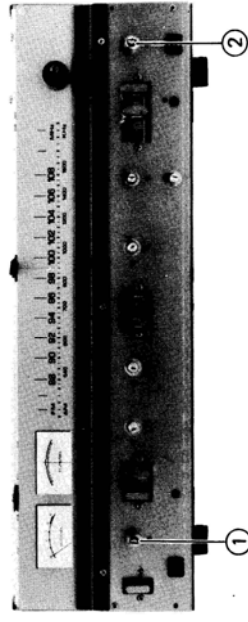


Photo 6

- Remove two tapping screws (1, 2) shown in Photo 5.
- Remove two nuts (119) (1, 2) shown in Photo 6. The front panel is now free to be pulled off.

TUNER-EQUALIZER CIRCUIT BOARD REMOVAL (Photos 7 thru 9)

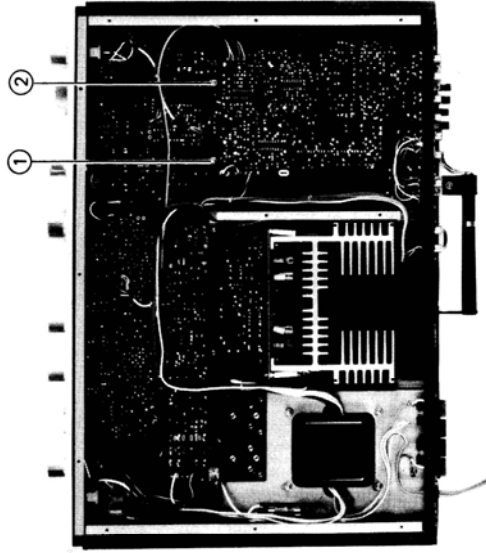


Photo 7

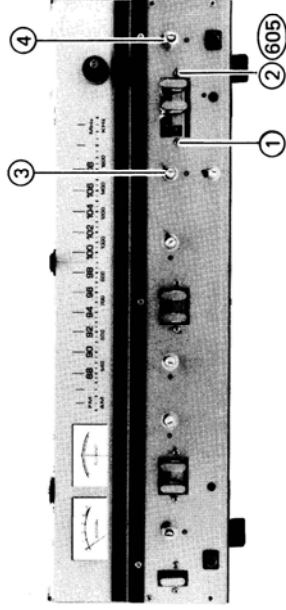


Photo 8

TONE AMP CIRCUIT BOARD REMOVAL (Photo 10)

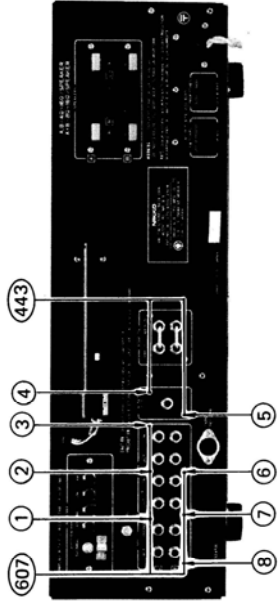


Photo 9

- a. Disconnect cables from the circuit board.
- b. Remove two tapping screws (1, 2) shown in Photo 7.
- c. Remove two tapping screws (1, 2) and two nuts (3, 4) shown in Photo 8.
- d. Remove eight tapping screws (1 thru 8) shown in Photo 9.

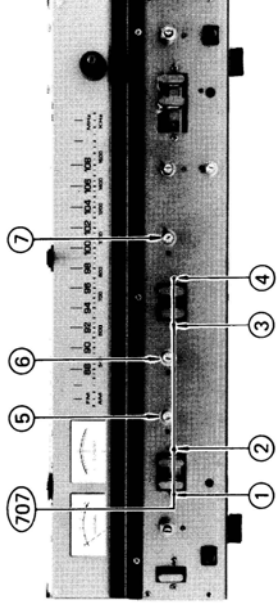


Photo 10

- a. Disconnect cables from the circuit board.
- b. Remove four tapping screws (1 thru 4) and three nuts (5 thru 7) shown in Photo 9.

PROTECTOR-REGULATOR CIRCUIT BOARD REMOVAL (Photo 11)

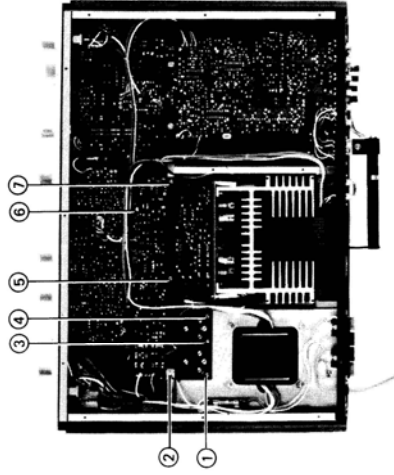


Photo 11

- a. Disconnect plugs and cables from the circuit board.
- b. Remove four tapping screws (1 thru 7) shown in Photo 11. Lift the circuit BOARD up and out of chassis.

LAMP REMOVAL (Photo 12)

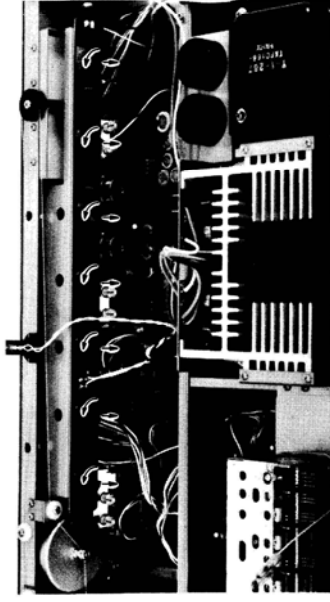


Photo 12

Turn the lamp to the left and pull it out of LAMP PCB as shown in Photo 12.

METER REMOVAL (Photos 13, 14)

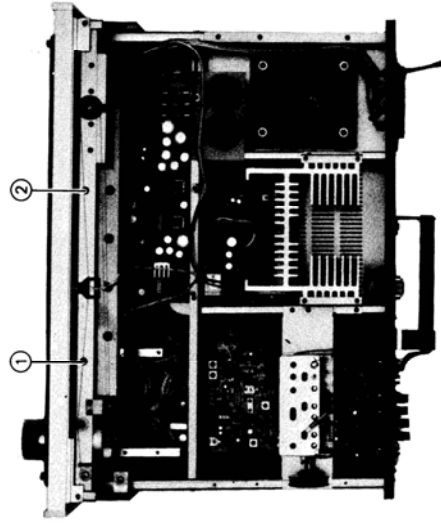


Photo 13

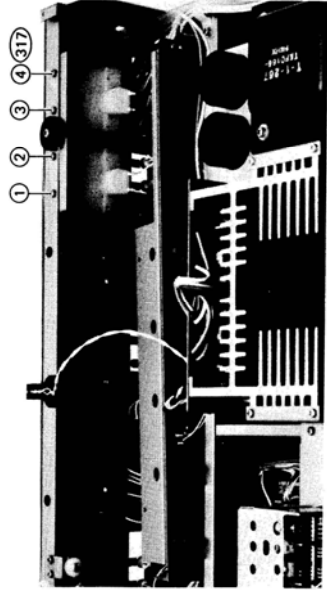


Photo 14

- a. Remove two screws (1, 2) (310) shown in Photo 13, and lift flex plate up slightly and pull it back.
- b. Remove four tapping screws (1 thru 4) shown in Photo 14. Lift out two meter brackets and lift out the meters.

INDICATOR CIRCUIT BOARD REMOVAL (Photos 15 thru 17, Fig. 1)

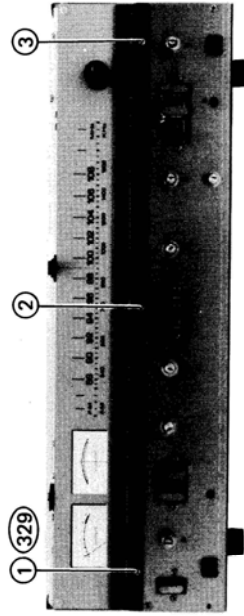


Photo 15

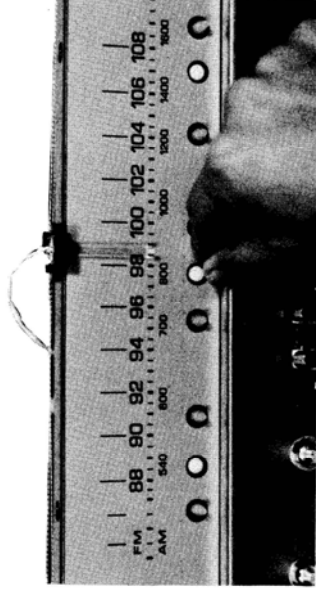


Photo 17

- a. Remove three screws (1 thru 3) shown in Photo 15 and lift out scale angle.
- b. Push the center of push rivet by small screw driver as shown Photo 16 and Fig. 1.
- c. Pull the push rivet forward. The indicator circuit board is now free to be pulled off.

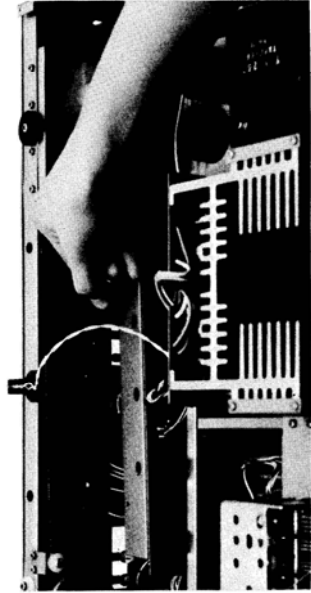
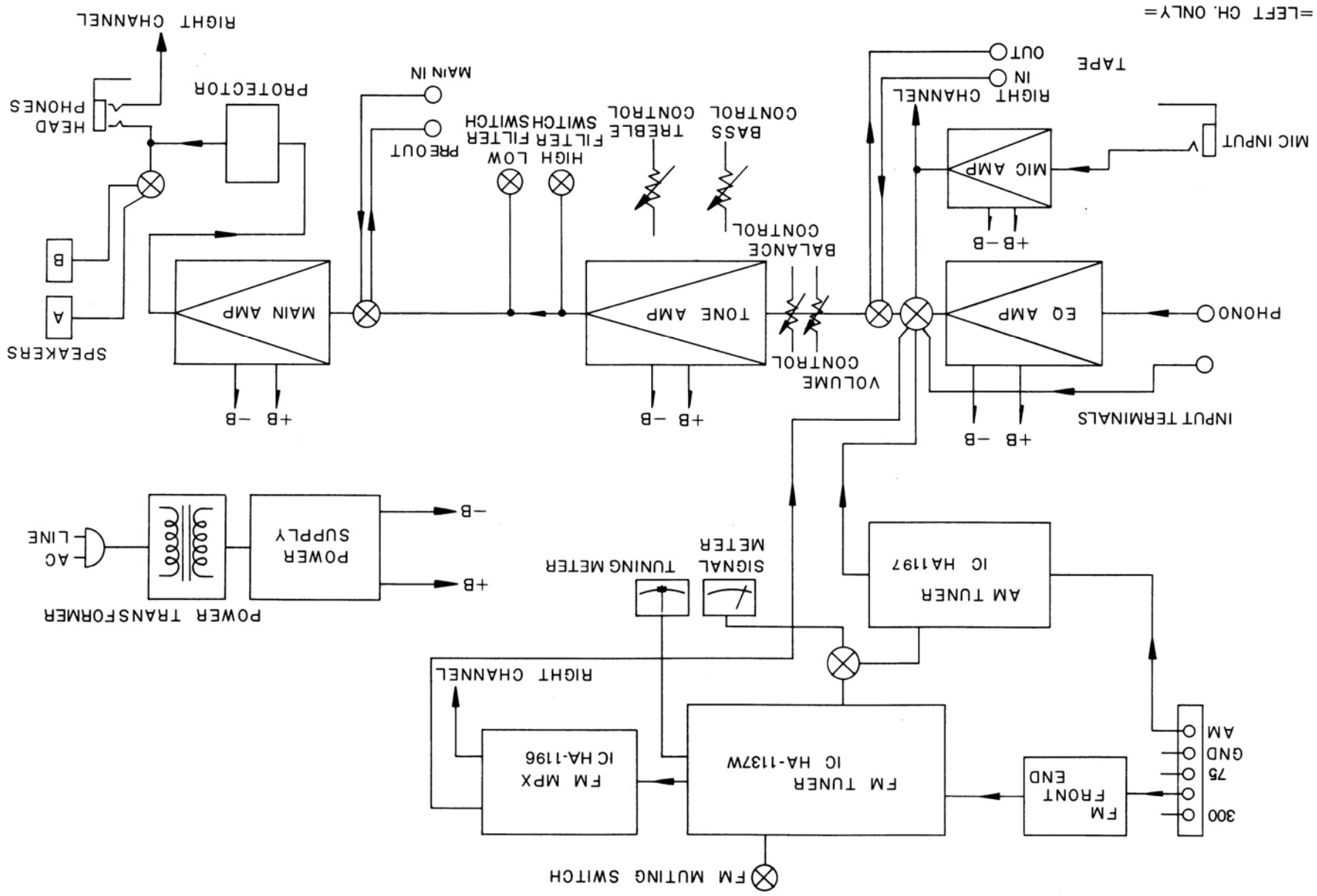


Photo 16



Fig. 1 PUSH RIVET (325)

BLOCK DIAGRAM



CHASSIS ALIGNMENT

Test Equipment

Allow minimum of 10 minute warm-up for receiver to be tested and test equipment.

Maintain line voltage at 120V AC.

FM Stereo/Mono Signal Generator

Vacuum Tube Voltmeter

Oscilloscope

Distortion Meter

Frequency Counter

AM Sweep Generator

FM Section Alignment

Connect test equipment as shown in Fig. 2:

Connect FM Stereo/Mono signal generator through standard dummy antenna to FM antenna terminals of the receiver.

Connect vacuum tube voltmeter, oscilloscope and distortion meter to TAPE OUT terminals of the receiver with shielded cable.

Note: Adjust FM signal generator output level so that waveform on oscilloscope is not deformed.

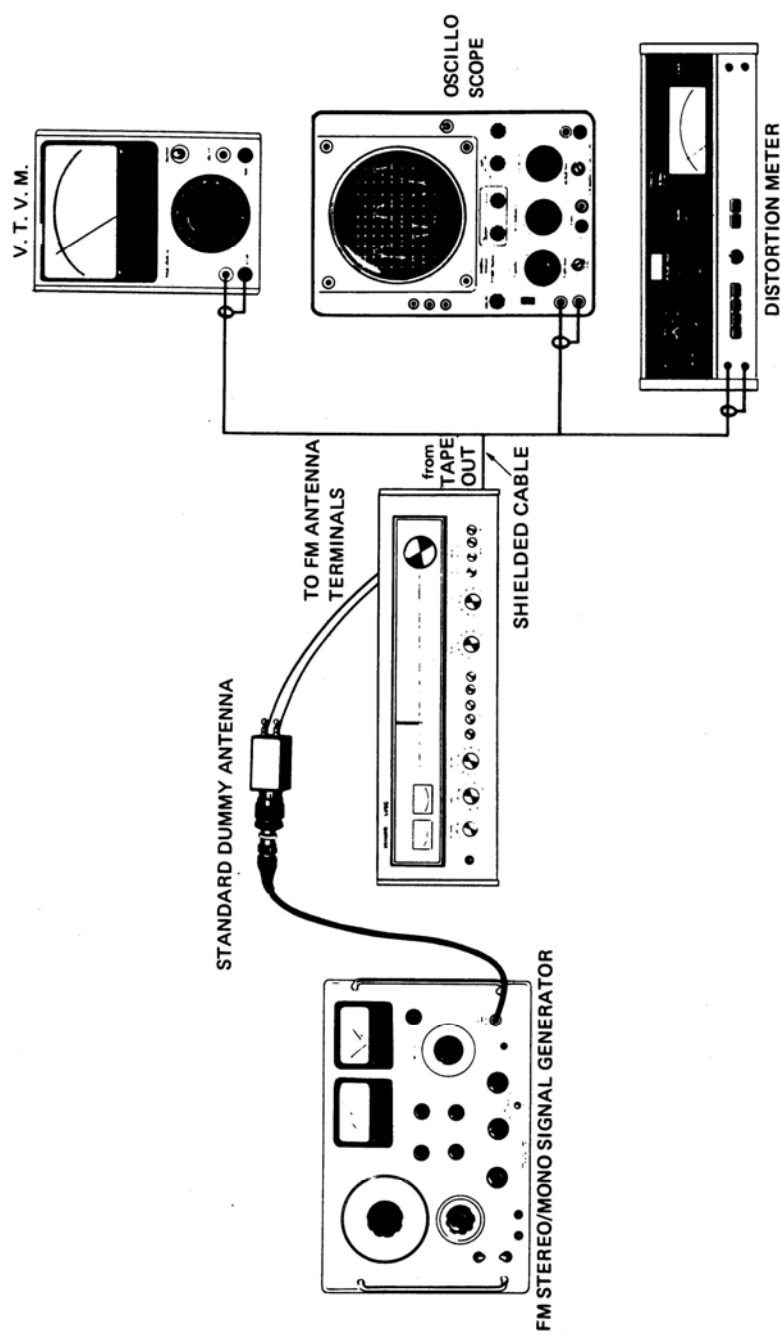


Fig. 2 TEST EQUIPMENT

FM IF Alignment

1. Set generator's STEREO/MONO switch to the MONO position. Set generator frequency to around 98 MHz.
2. Set tuning needle so that no signals are received (a hiss is heard in the sound). Adjust T101 (Top Core) so that M1 (center-of-channel meter) indicates the central position and vacuum tube voltmeter indicates maximum deflection. (See Fig. 3).
3. Tune in to catch around 98 MHz signal. Adjust T102 (Top Core) for minimum distortion. (See Fig. 3)
4. Repeat adjustment of T101 and T102 twice or three times.

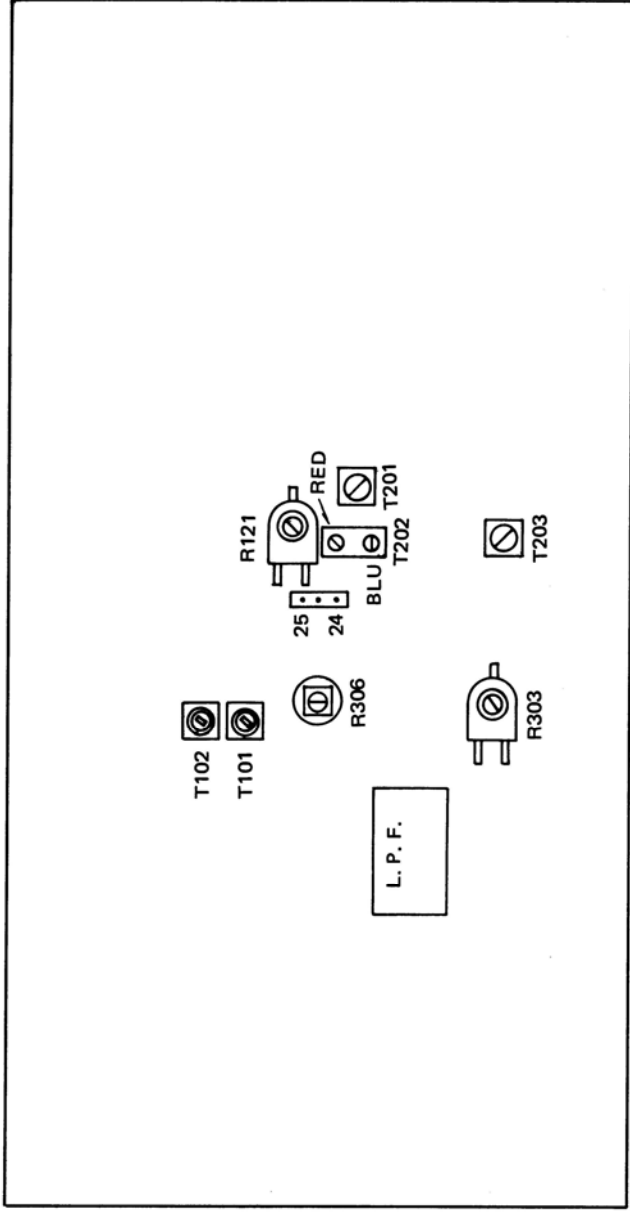


Fig. 3 TUNER/EQUALIZER PCB (TOP VIEW)

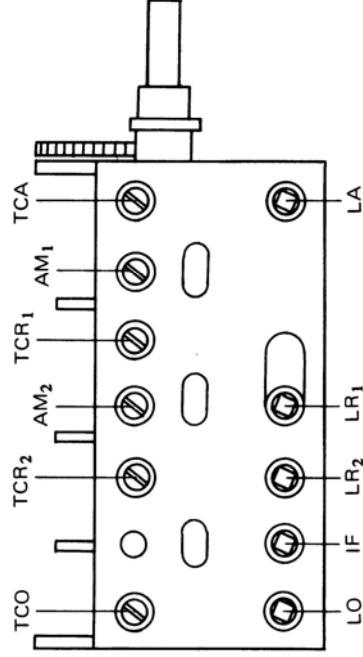


Fig. 4 FRONT END (TOP VIEW)

FM Frequency Coverage Alignment and FM Tracking Alignment

These adjustments are factory preset and normally needs no further adjustment. However, if necessary proceed as follows.

1. Set generator's STEREO/MONO switch to MONO position.
2. Turn tuning knob fully counterclockwise until it does not move. If tuning needle is not located on 87 MHz position of dial scale, reset it to this position by making slide on dial string. (See Fig. 1)

STEP	GENERATOR	DIAL	ADJUSTMENT POINT	OSCILLOSCOPE	VTVM
1	88 MHz	88 MHz	LO (See Fig. 4)	Maximum waveform	Maximum deflection
2	108 MHz	108 MHz	TCO (See Fig. 4)	Maximum waveform	Maximum deflection
3	88 MHz	88 MHz	LA (See Fig. 4) LR ₁ (See Fig. 4) LR ₂ (See Fig. 4)	Maximum waveform	Maximum deflection
4	108 MHz	108 MHz	TCA (See Fig. 4) TCR ₁ (See Fig. 4) TCR ₂ (See Fig. 4)	Maximum waveform	Maximum deflection

3. Repeat adjustment of steps 1 and 2 two or three times.
4. Repeat adjustment of steps 3 and 4 once or twice.
5. Repeat adjustment of steps 1 and 2 once or twice.

FM Stereo Separation Alignment

1. Connect frequency counter to test point (24) at TUNER/EQUALIZER PCB. Set R303 fully counterclockwise. (See Fig. 3)
2. Set generator's STEREO/MONO switch to MONO position. Set generator frequency to 108 MHz.
3. Tune in to catch 108 MHz signal. Adjust R319 for 76.2 to 76.5 MHz. (See Fig. 3)
4. Set generator's STEREO/MONO switch to STEREO position.
5. Tuner in to catch stereo modulated signal. Adjust R303 for maximum separation. (See Fig. 3)

AM Section Alignment

Connect test equipment as shown in Fig. 5.

Connect BC band sweep generator to loop antenna (or several turns of wire). Put the receiver near the loop antenna for inductive coupling. Connect TAPE OUT terminal (L or R) of the receiver to oscilloscope and vacuum tube voltmeter with shielded cable.

Note: Adjust AM sweep generator output level so that waveform on oscilloscope is not deformed.

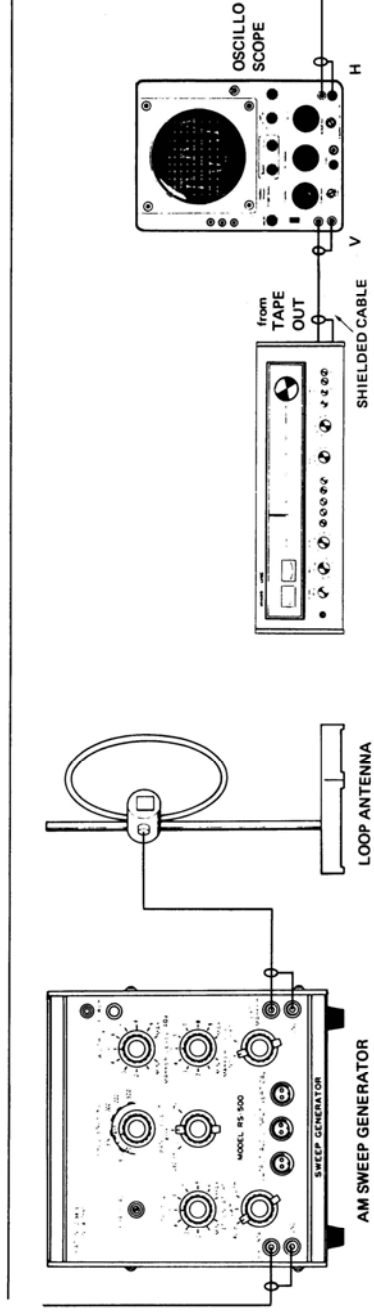


Fig. 5 TEST EQUIPMENT

AM IF Alignment

1. Preset AM sweep generator switch to 455 KHz position.
2. Set tuning needle to around 1,650 KHz (if adjustment is difficult because of interfering signals from outside, move it a little).
3. Adjust T202 (RED) for maximum waveform. (See Fig. 3, 6)
4. Adjust T202 (BLU) for maximum waveform. (See Fig. 3, 6)
5. Adjust T203 for maximum waveform. (See Fig. 3, 6)
6. Repeat adjustment of T202 and T204 two or three times.

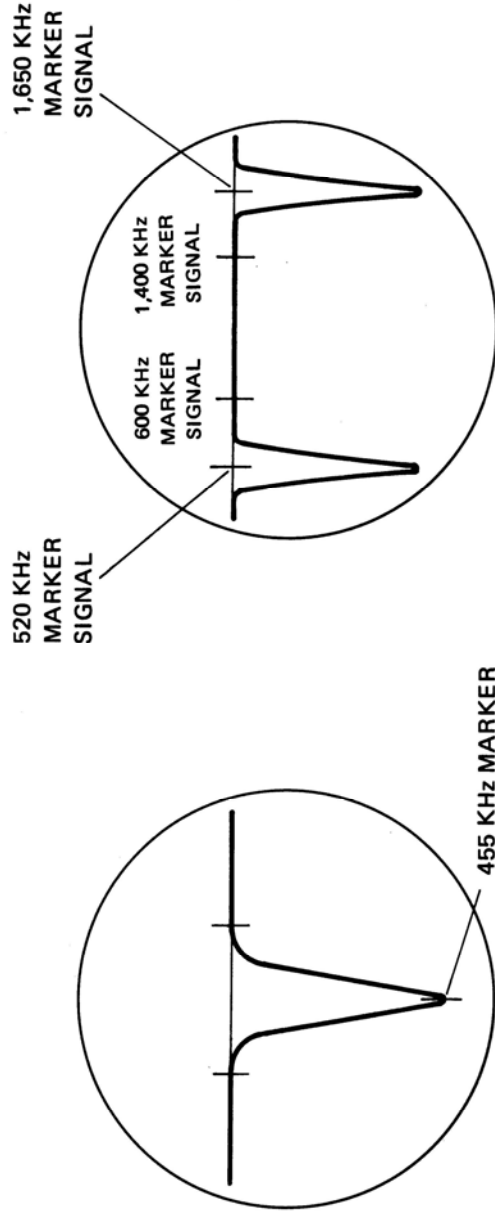


Fig. 6 AM IF

Fig. 7 AM FREQUENCY COVERAGE

AM Frequency Coverage Alignment and AM Tracking Alignment

1. Preset AM sweep generator switch to RF position.

STEP	GENERATOR	DIAL	ADJUSTMENT POINT	OSCILLOSCOPE
1	520 KHz	Set tuning knob fully counterclockwise	T201 (See Fig. 3)	Maximum waveform (See Fig. 7)
2	1,650 KHz	Set tuning knob fully clockwise	AM2 (See Fig. 4)	Maximum waveform (See Fig. 7)
3	600 KHz	600 KHz	T2 (AM bar antenna coil)	Maximum waveform
4	1,400 KHz	1,400 KHz	AM1 (See Fig. 4)	Maximum waveform

2. Repeat adjustment of steps 1 and 2 twice or three times for AM frequency coverage alignment.
3. Repeat adjustment of steps 3 and 4 once or twice for AM tracking alignment.
4. To check tracking errors, use an apparatus made of ferrite rod and copper wire. (See Fig. 8). Move it toward the AM bar antenna coil gradually and check waveform on oscilloscope becoming smaller. If the waveform becomes larger, repeat adjustment of steps 3 and 4. (See Fig. 9)
5. Repeat adjustment of steps 1 and 2 once or twice.

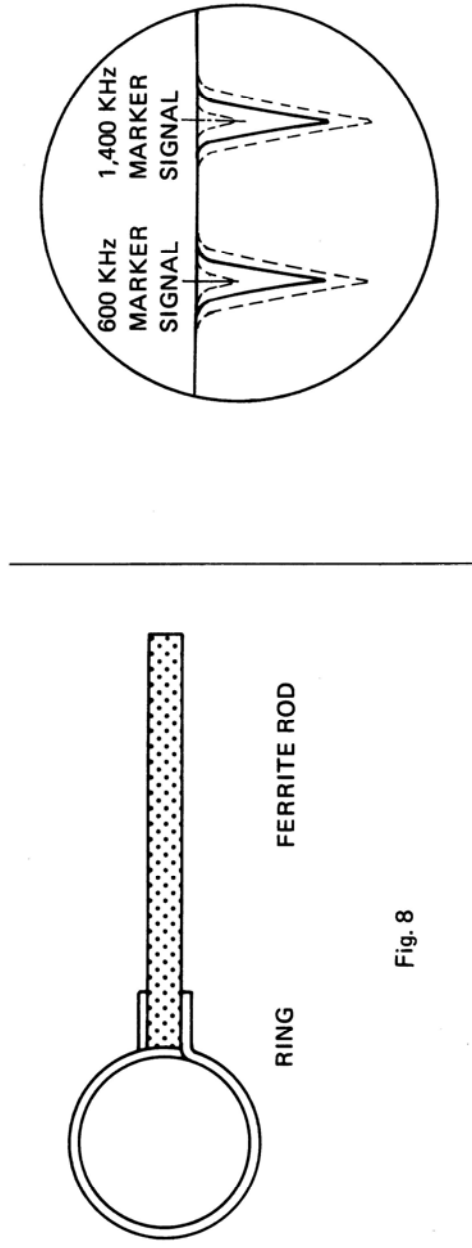


Fig. 8

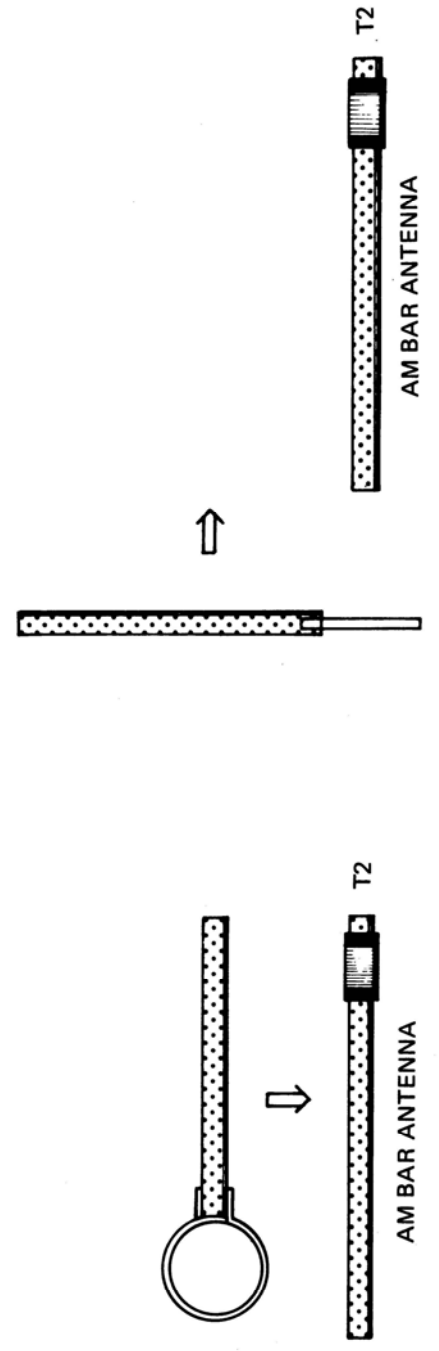


Fig. 9

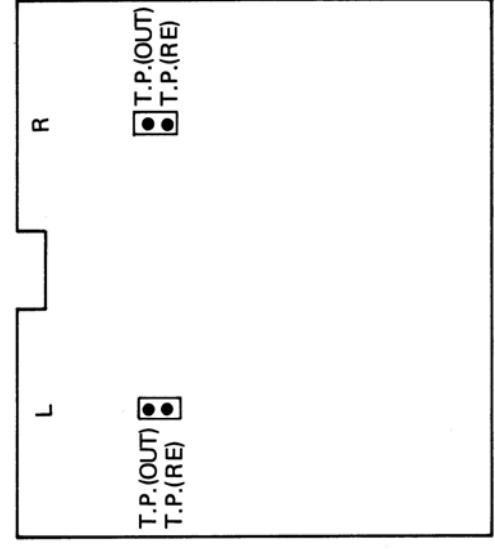


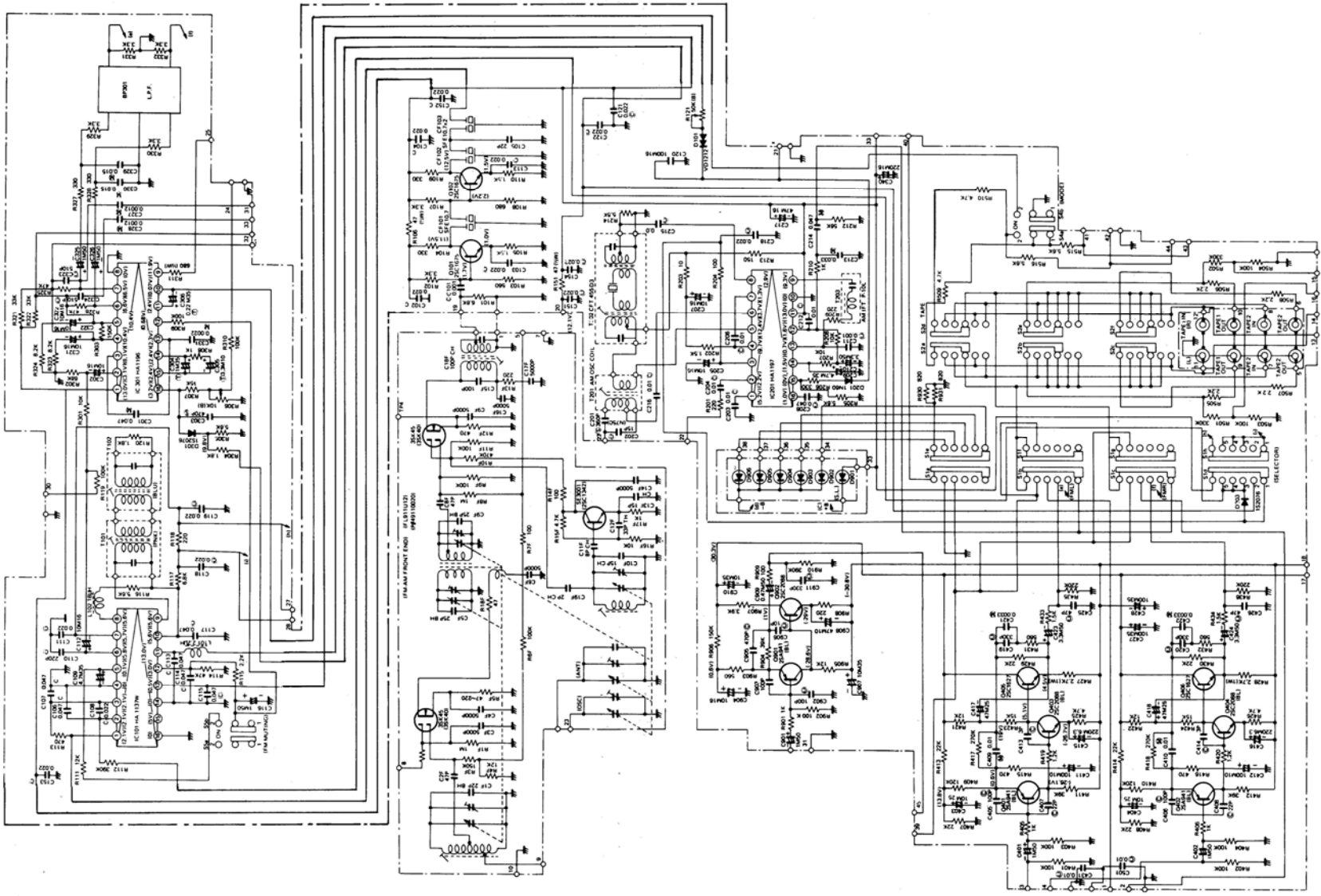
Fig. 10 MAIN AMP PCB (BOTTOM VIEW)

Main Amp Section

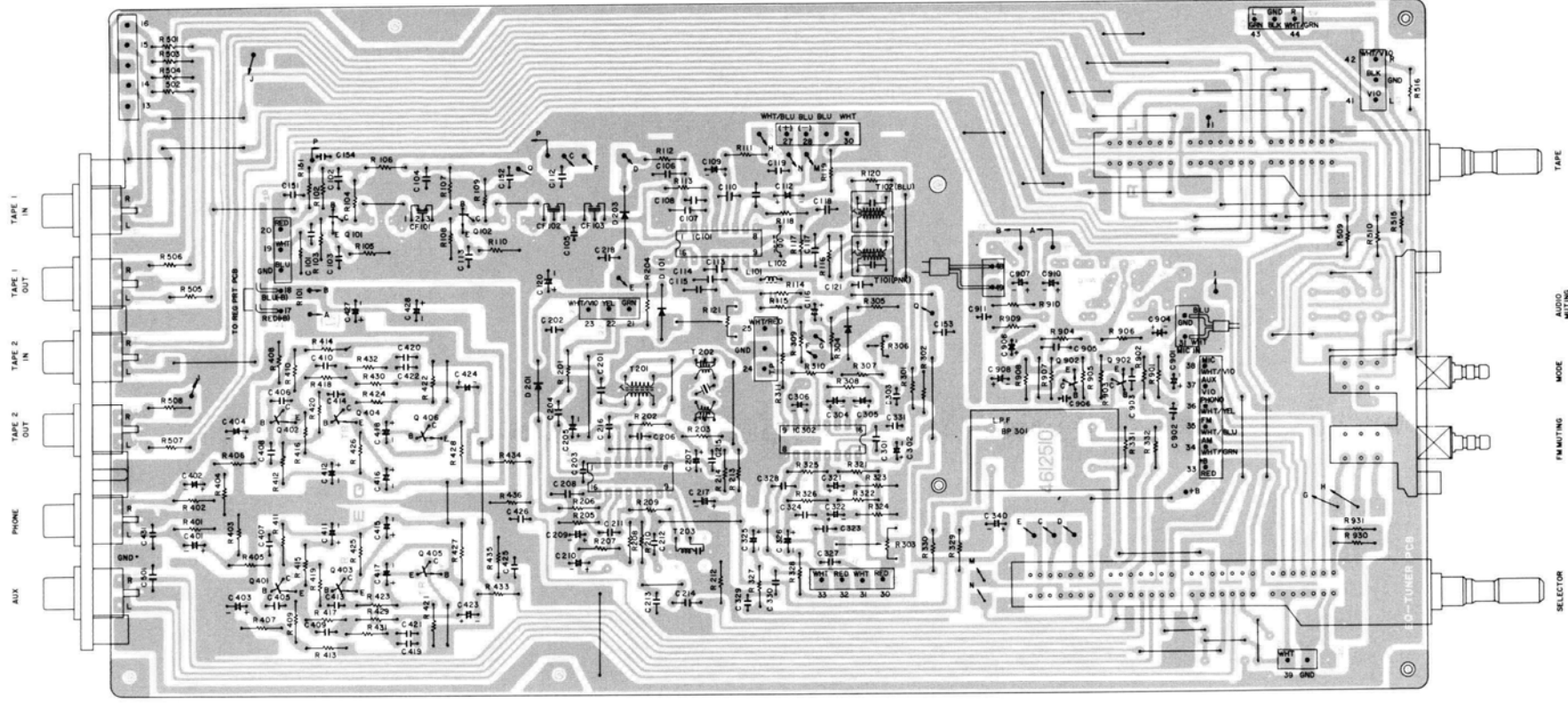
Idling Current Adjustment

Connect 8 ohms dummy load to speaker terminals. Set volume controls to minimum (fully counterclockwise). Using high sensitivity DC voltmeter, make certain that the voltage difference between T.P. (OUT) and T.P. (RE) is 6.6 to 25.4 millivolts, or 16 millivolts average. (See Fig. 10)

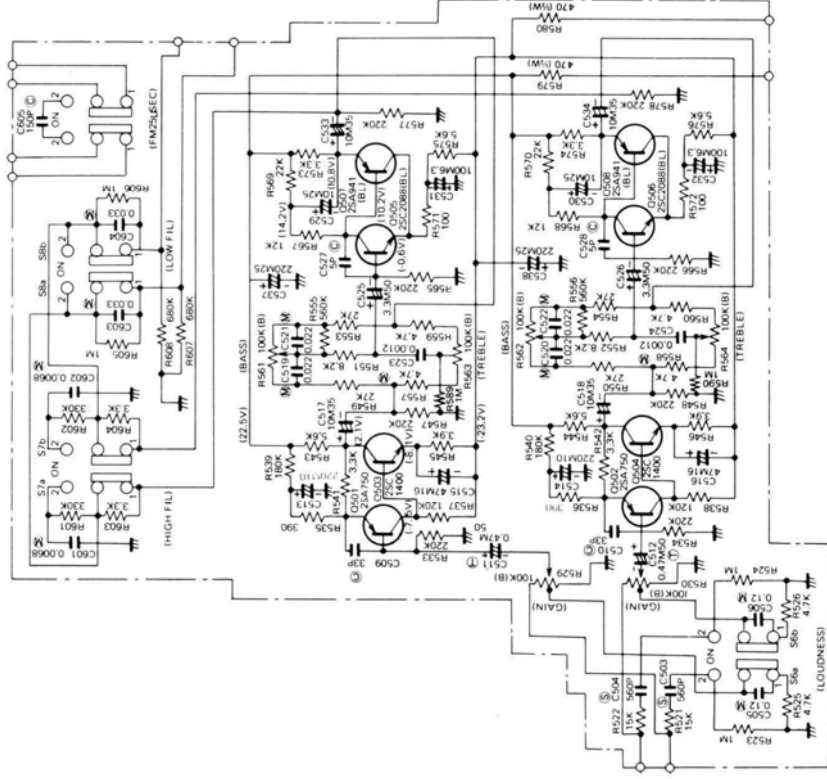
CIRCUIT SCHEMATIC AND CIRCUIT BOARD ASSEMBLY



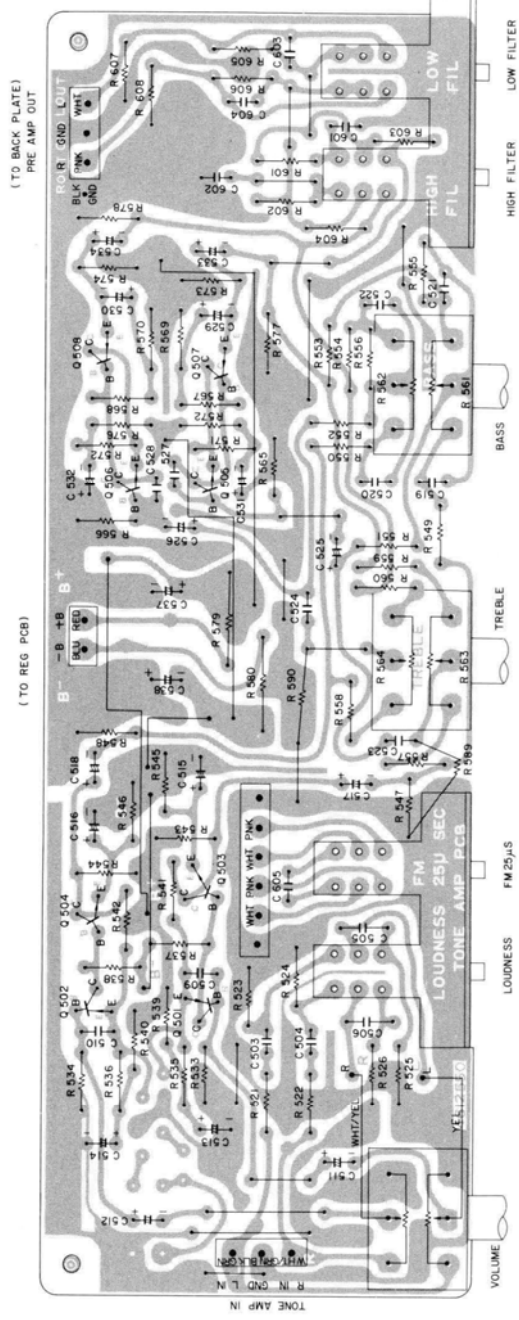
TUNER & EQUALIZER CIRCUIT SCHEMATIC



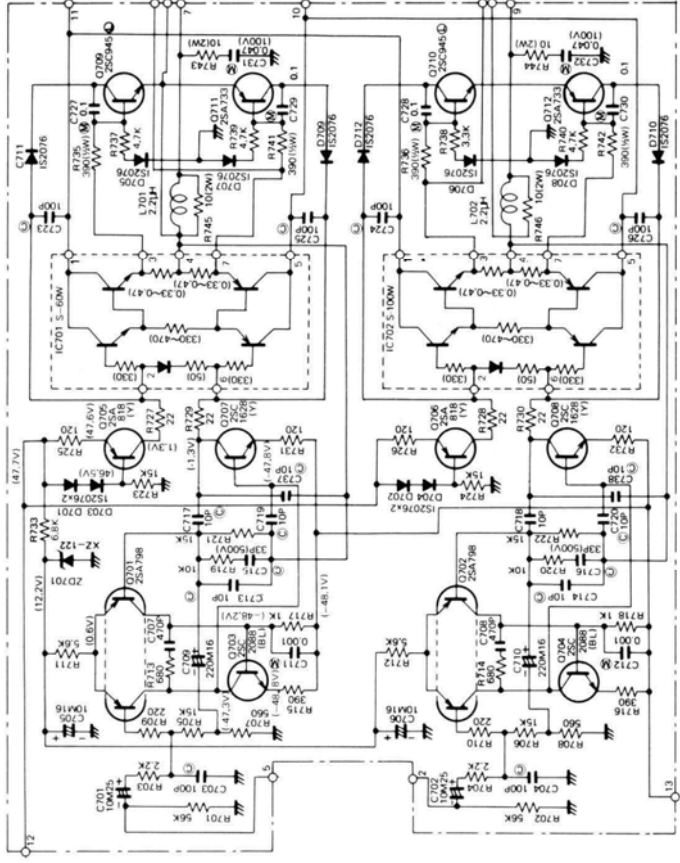
TUNER & EQUALIZER CIRCUIT BOARD ASSEMBLY (BOTTOM VIEW)



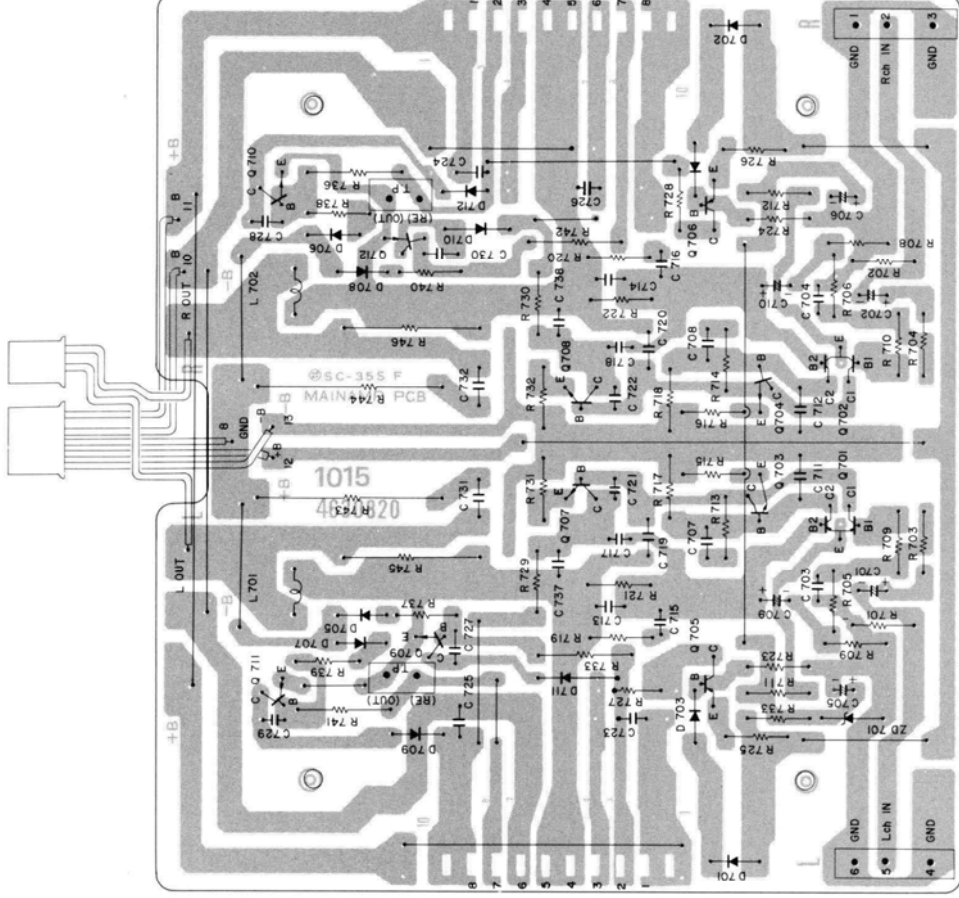
TONE AMP CIRCUIT SCHEMATIC



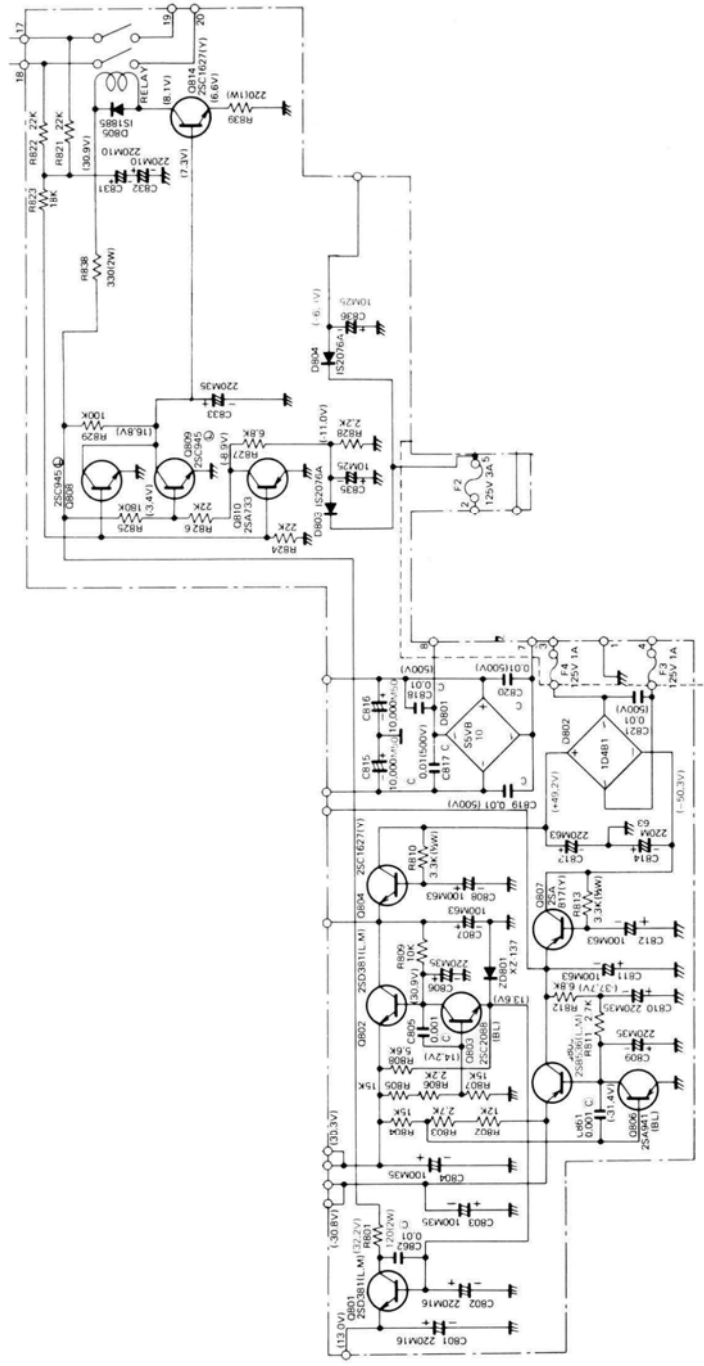
TONE AMP CIRCUIT BOARD ASSEMBLY (BOTTOM VIEW)



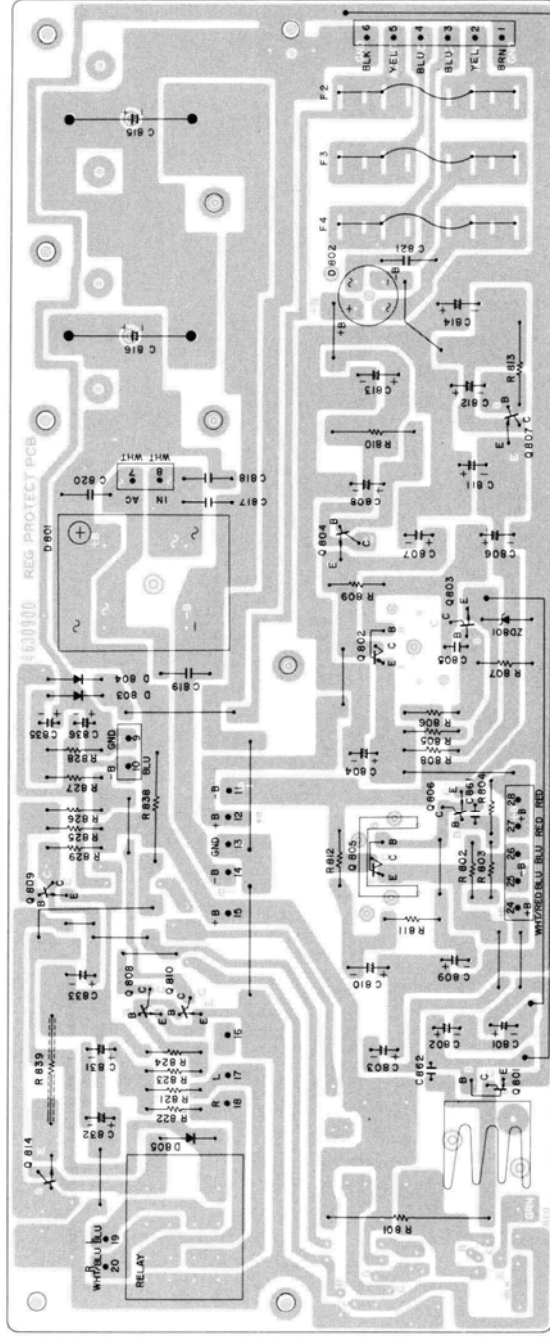
MAIN AMP CIRCUIT SCHEMATIC



MAIN AMP CIRCUIT BOARD ASSEMBLY (BOTTOM VIEW)

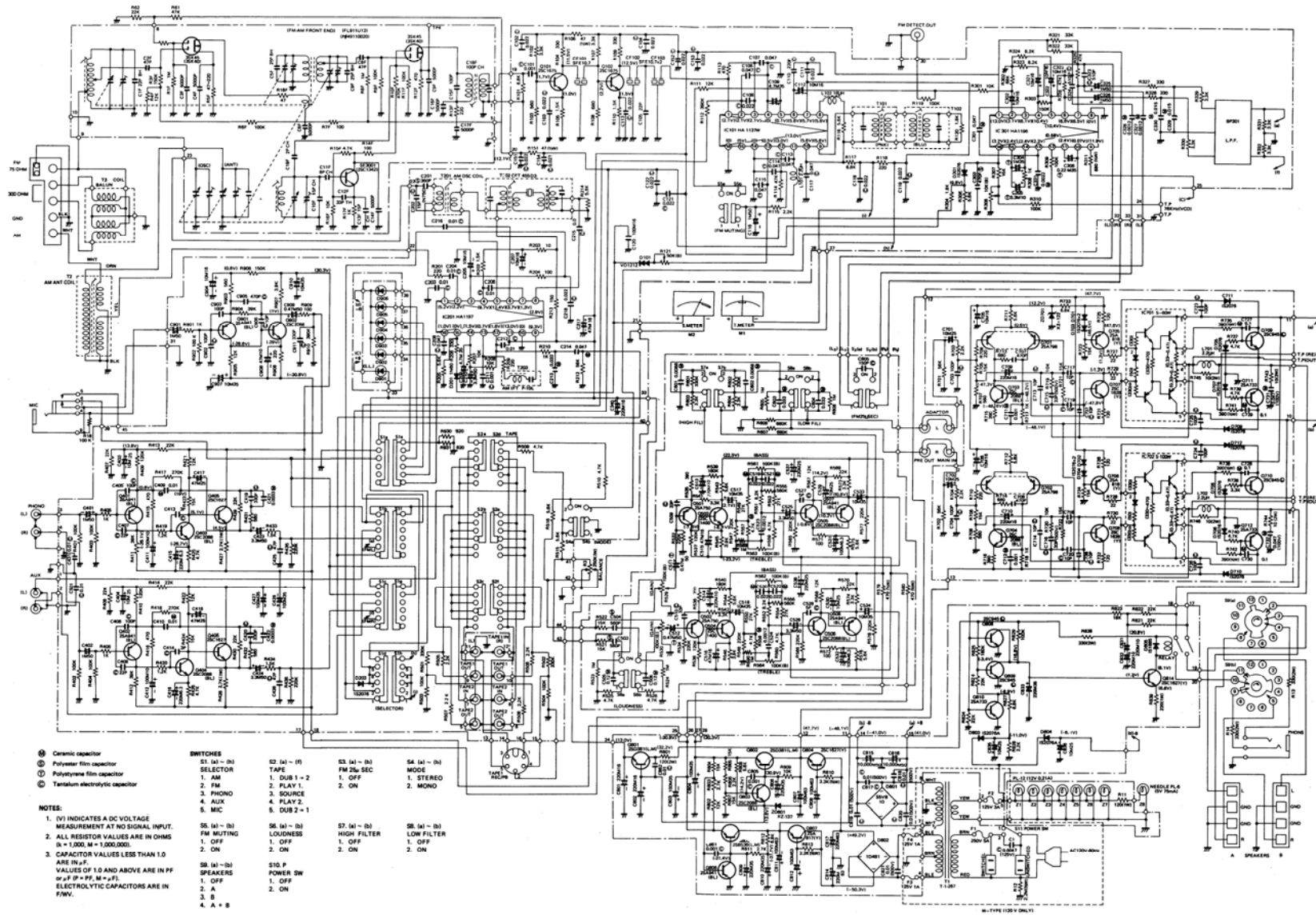


REGULATOR & PROTECTOR CIRCUIT SCHEMATIC



REGULATOR & PROTECTOR CIRCUIT BOARD ASSEMBLY (BOTTOM VIEW)

OVERROLL SCHEMATIC DIAGRAM



PARTS LOCATION

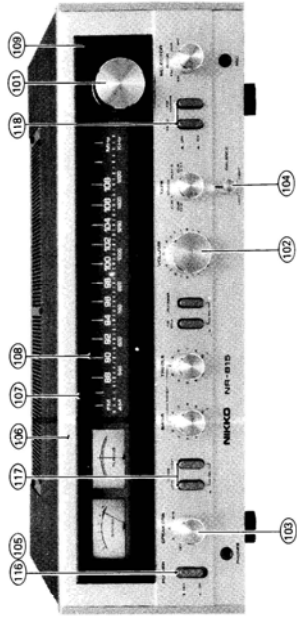


Photo 18

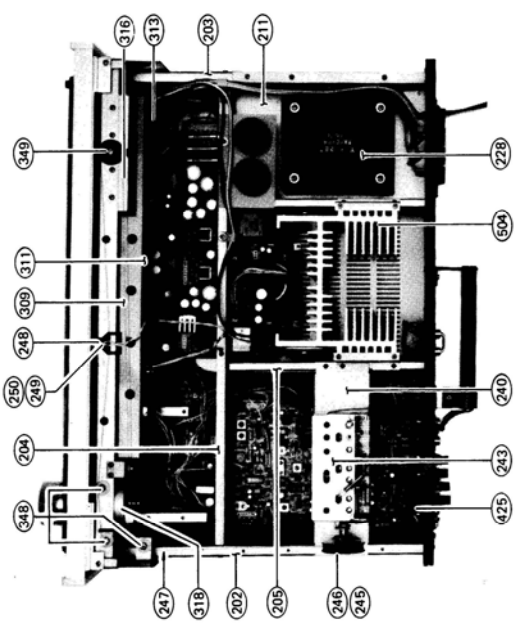


Photo 21

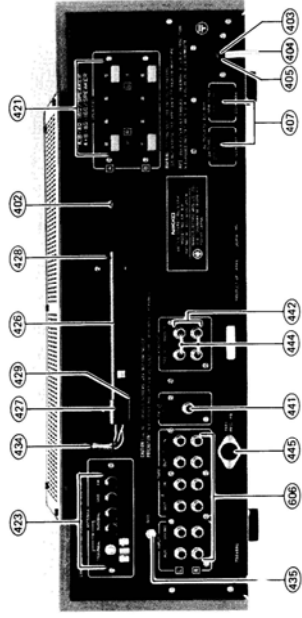


Photo 19

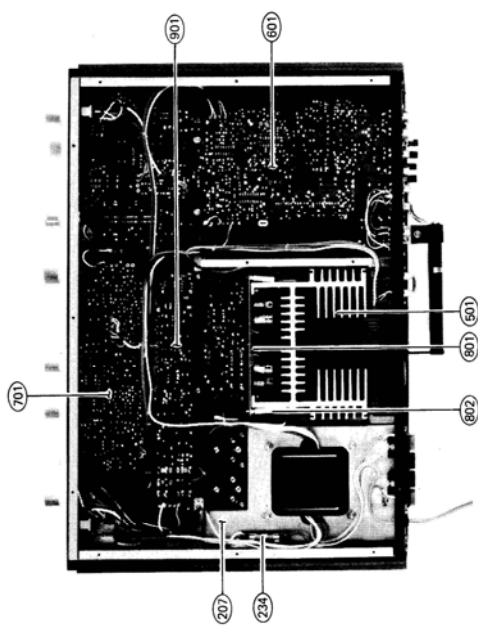


Photo 22

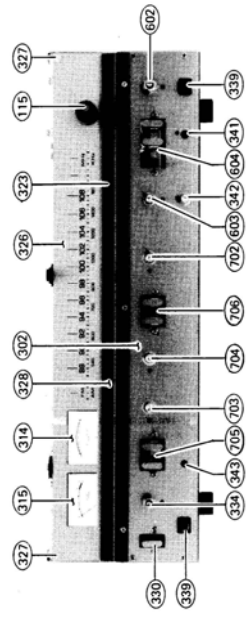


Photo 20

PARTS LIST

NOTE:

1. * "KEY NO.," marked with a (*) on parts list relate to number of three figures put a (○) around of Photo 1 thru 22.
2. + Numerals in file indicate the quantity of a part used in one type.
3. ++ TR : Transistor
FET : Field effect transistor
IC : Integrated circuit
VR : Volume control (Variable resistor)
POT : Potentiometer (Semi-fixed variable resistor)
RES : Carbon film fixed resistor
MORES : Metal oxide film fixed resistor
CEMRES : Cemented wirewound fixed resistor
UF : Uninflammable

- C-CAP : Ceramic capacitor
E-CAP : Aluminium electrolytic capacitor
M-CAP : Polyester film capacitor
S-CAP : Polystyrene film capacitor
T-CAP : Tantalum electrolytic capacitor
BP-CAP : Bipolar electrolytic capacitor

4. Assemblies and parts is subject to change without notice.
5. Parts ordering procedure :
Include in any order
a. Part number.
b. Part description.
c. Model number.

(Any of the above lacking from an order may delay shipment of that order.)

E-CAP and T-CAP values (1 X10 μ F) are in (1) μ F (10 V).

KEY NO.	SYMBOL NO.	TYPE*	DESCRIPTION	PART NO.
PACKING MATERIALS & ACCESSORIES				
001	111	444	CARTON BOX NR-815	9825250
002	222	444	STYROL PAD	9840650
003	111	444	VINYL CLOTH BAG <POLY SACK>	9640600
004	111	444	VINYL CLOTH BAG <POLY SACK #13>	9640320
005a	1--	444	INSTRUCTION MANUAL NR-815 (USA)	960184E
005b			INSTRUCTION MANUAL NR-1015 (Canada)	960210F
005c	-11	444	INSTRUCTION MANUAL NR-1015	960195K
006	1--	444	WARRANTY CARD (N)	9670030
007	111	444	SILICA GEL	9690010
008	111	444	FM ANTENNA <O-MATCH ANTENNA>	4581360

KEY NO.	SYMBOL NO.	TYPE*	DESCRIPTION	PART NO.
WOODEN COVER BLACK				
123d	↑	444	SCREW <TFS 4 x 16>	887416W
*124	↑	444	WASHER <W 5 ϕ >	893105W
*125	↑	444	BOTTOM PLATE <BTM PLT>	7324600
*126	↑	111	SCREW <PTS 3 x 6>	814306S
*127	↑	999	SCREW <PTS 3 x 6>	814306S
*127	↑	555	SCREW <PTS 3 x 6>	814306S
*128	↑	444	FOOT 30 x 14	7400780
129	↑	444	SCREW <PMS 5 x 16>	810516S

CHASSIS ASSEMBLY

201a	1--	1--	CHASSIS ASSEMBLY	9534270
201b	-1-	-1-	CHASSIS ASSEMBLY	9534280
201c	--1	--1	CHASSIS ASSEMBLY	9534290
SIDE ANGLE (R)				
*202	111	111	SIDE ANGLE (R)	7226100
*203	111	111	SIDE ANGLE (L)	7226110
*204	111	111	CENTER ANGLE	7226120
*205	111	111	CENTER BRACKET	7226070
206	↑	666	SCREW <PTS 3 x 6>	814306S
207	↑	111	P.T. CHASSIS	7226140
208	↑	444	SCREW <PTS 3 x 6>	814306S
209	111	111	ANGLE	7031470
210	444	444	SCREW <PTS 3 x 6>	814306S
*211	111	111	E-CAP HOLDER	7001840
212	↑	222	SCREW <PTS 3 x 8>	814308S
301	↑	888	(FRONT PLATE ASSEMBLY)	814306S
213	↑	888	(BACK PLATE ASSEMBLY)	814306S
*401	↑	999	SCREW <PTS 3 x 6>	7121030
*601	↑	222	SCREW <PTS 3 x 6>	810306S
215	↑	444	SCREW <PMS 3 x 5>	7152300
216	↑	111	SPACER 7 ϕ	893403U
217	111	111	WASHER <TW (I) 3 ϕ >	814306S
218	111	111	(MAIN AMP ASSEMBLY)	814306S
*501	↑	444	SCREW <PTS 3 x 6>	814306S
*901	↑	444	(PROTECT-REG PCB ASSEMBLY)	814306S
220	↑	444	SCREW <PTS 3 x 6>	814306S
221	111	111	EARTH LUG 4P	4400080
222	↑	111	SCREW <PTS 3 x 8>	814308S
223	↑	111	WASHER <TW (I) 3 ϕ >	893403U
224	↑	111	NYLON CLIP HP-6N	7400290

CABINET ASSEMBLY

*101	111	111	KNOB R15GL-42 (TUNING)	7841060
*102	111	111	KNOB R15GL-34D (VOLUME)	7851600
*103	555	555	KNOB R15GL-22D (SELECTOR, TA-PE, BASS, TREBLE, SPEAKERS)	7851610
*104	222	222	KNOB R15GL-12D (BALANCE, MIC)	7851620
*105	888	888	PUSHBUTTON (POWER, LOW FILTER, HIGH FILTER, FM 25 μ S, LOUDNESS, MONO, FM MUTING, AUDIO, MUTING)	7851560
*106	111	111	FRONT PANEL <PNL S ASS 1015>	7883540
*107	111	111	DIAL FLAME	7870300
*108	111	111	DIAL GLASS	7802200
*109	444	444	CAP SCREW 4 x 14	7121040
110	↑	444	GLASS WASHER	7401250
110	↑	444	WASHER <TW (I) 4 ϕ >	893404U
112	↑	444	NUT <IN 4 ϕ >	892014S
113	↑	444	WASHER <W 4 ϕ >	893204W
114	↑	222	SCREW <PTS 3 x 6>	814306S
*115	111	111	DUST RING (G)	7001820
*116	111	111	BUTTON GUIDE (1)	7401200
*117	222	222	BUTTON GUIDE (2)	7401210
*118	111	111	BUTTON GUIDE (3)	7401220
*119	111	111	NUT <SN 9 ϕ > for 4050990	892249S
*120	111	111	NUT <SN 9 ϕ >	892249S
121	↑	222	WASHER <W 9 ϕ >	893109S
122	111	111	RADIATION GRILL	7225950
*123a	111	111	WOODEN COVER WALNUT	7831440
123b			WOODEN COVER TEAK	
123c			WOODEN COVER VANDA TEAK	

Parts ordering procedure:

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- c. Model number.

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KEY SYMBOL NO.	NO.	TYPE*	DESCRIPTION	PART NO.
		1 2 3 4 5 6 7 8 9 A B C D E F G H J K L M N O P Q R S T U V W X Y Z		
225	111	111	NYLON CLIP HP-3N	7400270
226	↑	222	SCREW <PTS 3 x 8>	8143068
227	↑	222	WASHER <W 3φ>	893203S
*228a	1--	222	POWER TRANSFORMER T-1-267 120V	1102670
228b	- 1-	1--	POWER TRANSFORMER T-1-281	1102810
			100/120/220/240V	1102820
228c	- - 1	- - 1	POWER TRANSFORMER T-1-299	1102990
			220/240V	1103000
229	↑	444	NUT <IN 5φ>	892072S
230	444	444	WASHER <TW (I) 5φ>	893404U
*231	F1	11-	FUSE 4A 250V MGC	4700550
232a	↑	11-	FUSE HOLDER 1P	4581840
233a	↑	11-	SCREW <PTS 3 x 10>	814310S
231c	F1	- - 1	MIDGET FUSE (S) 3.15A 250V	4720390
232b	↑	- - 1	MIDGET FUSE HOLDER 1P	4581430
233b	↑	- - 1	SCREW <PTS 3 x 8>	814306S
234	↑	- - 1	T-LUG 2L5P	442251W
235	↑	- - 2	SCREW <PTS 3 x 6>	814306S
236	F5-F6	- - 2	MIDGET FUSE (S) 5A 250V	4721410
237	↑	- - 2	MIDGET FUSE HOLDER 1P	4581430
238	↑	- - 2	SCREW <PTS 3 x 8>	814306S
*239	111	111	FM FRONT END FL911U12	4910020
*240	111	111	F.E. HOLDER (FL)	7226080
241	↑	444	SCREW <PMS 3 x 6>	810306S
242	↑	333	SCREW <PTS 3 x 6>	814306S
243	R61	111	RES 47Kohm 5% 1/4W	328473J
244	R62	111	RES 22Kohm 5% 1/4W	328223J
*245	111	111	DIAL DRUM 40φ	7401160
*246	111	111	SPRING (J)	7440290
*247	111	111	DIAL CORD SUPER 404	4581870
*248	111	111	DIAL POINTER <NEEDLE S ASS>	7860520
*249	111	111	LAMP PL-5 BV 75MA	5805050
*250	111	111	BLIND LABEL	7001780
251	333	333	EARTH LUG	440000D
252	↑	333	SCREW <PTS 3 x 6>	814306S
253	↑	333	WASHER <TW (I) 3φ>	893403U
254	L1,L2	222	PEAKING COIL 2.2μH	1210700
FRONT PLATE ASSEMBLY				
301a	1--	1--	FRONT PLATE ASSEMBLY W	9521730
301b	- 1-	- 1-	FRONT PLATE ASSEMBLY E	9521740
301c	- - 1	- - 1	FRONT PLATE ASSEMBLY N	9521750
FRONT PLATE ASSEMBLY				
*302	111	111	FRONT PLATE (FL)	7324610
303	111	111	PULLEY BRACKET	7030130
304	↑	222	SCREW <PTS 3 x 6>	814306S
305	111	111	PULLEY BRACKET	7031210
306	↑	222	SCREW <PTS 3 x 6>	814306S
*701	↑	444	(TONE AMP PCB ASS)	810305S
*308	↑	444	SCREW <PMS 3 x 5>	7226150
*309	111	111	REFLEX PLATE	814306S
*310	↑	222	SCREW <PTS 3 x 6>	7226150
*311	111	111	LAMP CIRCUIT BOARD	4630840
312	R11	111	MO-RES 120 ohm 1W	361121B

KEY SYMBOL NO.	NO.	TYPE*	DESCRIPTION	PART NO.
		1 2 3 4 5 6 7 8 9 A B C D E F G H J K L M N O P Q R S T U V W X Y Z		
*313	Z1	~Z7	LAMP PL-12 0.21A	5801080
*314	111	111	METER (TUNING)	4581850
*315	111	111	METER (SIGNAL)	4581860
*316	222	222	METER BRACKET	7031200
*317	↑	444	SCREW <PTS 3 x 6>	814306S
*318	111	111	DIAL SHAFT & FLY WHEEL	7152310
319	↑	111	NUT <SN 9φ>	892249S
320	↑	111	WASHER <TW (I) 9φ>	893409U
321	↑	111	WASHER <W 9φ>	893109S
322	↑	111	INDICATOR CIRCUIT BOARD (LED)	461249A
*323	D901	666	LED GD-4	5060060
324	~D906	666	LED SPACER	7401240
*325	333	333	PUSH RIVET FNRP 3 x 4,5	7802080
*326	111	111	DIAL SCALE (FL)	7400080
*327	222	222	PUSH RIVET FNRP 3 x 5,5	7226160
*328	111	111	SCALE ANGLE	814306S
*329	333	333	SCREW <PTS 3 x 6>	4040820
*330a	S11	11-	PUSHBUTTON SWITCH (POWER)	4040830
330b	S11	- - 1	<SDG-1P902 TV-5 (UL)>	7121000
331	↑	222	PUSHBUTTON SWITCH (POWER)	810305S
332	↑	222	SCREW <STUD SCW (6,5)>	239472C
333	C1	1--	SCREW <PMS 3 x 5>	239472E
333a	C1	1--	C-CAP 0.0047μF AC125V	4050990
333b	C1	- 1-	C-CAP 0.0047μF AC250V	7152110
334	S10	111	ROTARY SWITCH (SPEAKERS)	4550210
			<SR32N 1-2-4 25KC>	362331B
335	111	111	SPACER 9φ	362331B
*336	111	111	HEADPHONE JACK	4550200
			<HL J0279-01-020>	
337	111	111	MO-RES 330Ω 2W	
338	111	111	MO-RES 330Ω 2W	
*339	111	111	MIC JACK <LJ253-1-2>	
340	340	111		
*341a				
341b	R3	111	VR W250kohm (BALANCE)	
342			<V16L4 (7x6.5) N20KC-3BM250K (CC)>	4310490
343				
344				
*345	444	444	PULLEY 9φ	7400790
*346	111	111	PULLEY 20φ	7400830
348	↑	555	PULLEY SHAFT 4L	7120780
BACK PLATE ASSEMBLY				
401a	1--	1--	BACK PLATE ASSEMBLY W,U	9512760
401b	- 1-	- 1-	BACK PLATE ASSEMBLY E	9512770
401c	- - 1	- - 1	BACK PLATE ASSEMBLY N,D	8512780
*402a	1--	1--	BACK PLATE 1015 W	7324590
402b	- 1-	- 1-	BACK PLATE 815-1015EN	7324810

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KEY NO.	SYMBOL NO.	TYPE*	DESCRIPTION	PART NO.
NO.	NO.	1- 2- 3- 4- 5- 6- 7- 8- 9- A- B- C- D- E- F- G- H- I- J- K- L- M- N- O- P- Q- R- S- T- U- V- W- X- Y- Z		
*403a		1--	POWER SUPPLY CORD KP-2	606002J
403b		- 11	POWER SUPPLY CORD CEE-2T	606507J
403c			POWER SUPPLY CORD CEE-3T	601808J
*404a		1--	CORD STOPPER SR-3P-4	7400620
404b		- 11	CORD STOPPER SR-4N-4	7400690
404c		---	CORD STOPPER	7400740
*405a		1--	CORD BRACKET (UL)	7029300
405b		- 11	CORD BRACKET (EH)	7029800
406	†	- 22	SCREW <PTS 3 x 6>	814306S
*407		22-	AC OUTLET	4500150
408		- 1	BLIND PLATE	7031760
409	R12	1--	RES 2.2MΩ 10% 1/8W	325225K
410		1--	EARTH LUG	440000D
411		1--	SCREW <PTS 3 x 6>	814306S
412	†	1--	WASHER <TW (I) 3φ>	893403U
413	- 1-	- 1-	VOLTAGE CHANGE SOCKET	4530490
414	†	- 1-	VOLTAGE CHANGE PLUG	4530480
415	†	- 2-	SCREW <PMS 3 x 10>	810310W
416	†	- 2-	NUT <IN 3φ>	892013S
417	†	- 2-	WASHER <TW (I) 3φ>	893403U
418		- 1-	VOLTAGE CHANGE COVER	7400990
419	†	- 1-	RATING PLATE 815E	963564A
420	†	222	SCREW <PTS 3 x 14>	814314S
*421		222	4P PUSH SPEAKER TERMINAL	4460480
422	†	444	SCREW <PTS 3 x 10>	814310S
*423		111	ANTENNA TERMINAL	4450520
424	†	222	SCREW <PMS 3 x 6>	810306S
*425		111	BALUN COIL	1210420
*426		111	AM LOOPSTICK ANTENNA	1200320
*427	†	111	ANTENNA SUPPORTER	7400870
*428	†	111	ANTENNA STOPPER	7400880
*429	†	111	ANTENNA BRACKET (L)	7080940
430		111	SCREW <PMS 4 x 20>	810420S
431		111	NUT <IN 4φ>	892014S
432	†	111	WASHER <TW (I) 4φ>	893404U
433		444	SCREW <PTS 3 x 8>	814308S
*434		111	CORD STOPPER SR-3P-4 ANT	7400620
*435		111	GROUND TERMINAL NUT MK2	7152060
436	†	111	GROUND TERMINAL SHAFT	7152050
437	†	111	WASHER <W 3φ>	893203D
438	†	111	NUT <IN 3φ>	892013S
439	†	111	WASHER <TW (I) 3φ>	893403U
440		111	EARTH LUG	440000D
*441		111	WP PIN TERMINAL 1P	4440190
*442		111	WP PIN TERMINAL 2P x 2 SE	4444020
*443	†	444	SCREW <PTS 3 x 10>	814310S
*444		222	CONNECTIVE PIN	4581660
*445		111	DIN CONNECTOR 5P	4530220
446	†	111	SCREW <PTS 3 x 6>	814306S
447		111	MINI CONNECTOR ASSEMBLY (L)	4570160
448		111	MINI CONNECTOR ASSEMBLY (R)	4570170
MAIN AMP ASSEMBLY				
501		111	MAIN AMP ASSEMBLY	9590590
801			(COMPLETE CIRCUIT BOARD <MAIN AMP PCB ASS>)	

KEY NO.	SYMBOL NO.	TYPE*	DESCRIPTION	PART NO.
NO.	NO.	1- 2- 3- 4- 5- 6- 7- 8- 9- A- B- C- D- E- F- G- H- I- J- K- L- M- N- O- P- Q- R- S- T- U- V- W- X- Y- Z		
502	†	444	SCREW <PTS 3 x 8>	814308S
509	†	444	WASHER	893303S
504		111	HEATSINK	7480290
505				
506				
507	IC701	111	IC <POWER PACK S-60 W>-L	518050S
508	IC702	111	IC <POWER PACK S-60 W>-R	518050S
509	†	444	SCREW <PMS 3 x 10>	810310S
510		111	HEATSINK HOLDER (L)	7031120
511		111	HEATSINK HOLDER (R)	7031120
512	†	444	SCREW <PTS 3 x 10>	814310S
TUNER & EQUALIZER CIRCUIT BOARD				
*601a		1--	COMPLETE CIRCUIT BOARD	9460060
			<EQ-TUNER PCB ASS (75μs)>	
*601b		- 11	COMPLETE CIRCUIT BOARD	9460060
			<EQ-TUNER PCB ASS (50μs)>	
*602	S1	111	ROTARY SLIDE SWITCH	4056030
			<SRZ-V085S> (SELECTOR)	
*603	S2	111	ROTARY SLIDE SWITCH	4056020
			<SRZ-V065N> (TAPE)	
*604	S3 ~ S5	111	TWIN PUSHBUTTON SWITCH	4040810
			<SUE-33> (MONO, FM MUTING)	
*605	†	222	STUD SCREW (6.5)	7121000
*606		333	C8 PIN TERMINAL 2P x 2 (SE)	4444030
*607	†	666	SCREW <PTS 3 x 10>	814310S
(FM I-F BLOCK)				
C101		111	C-CAP 0.001μF 80, -20% 50V YG	231102Z
C102		111	C-CAP 0.022μF 80, -20% 50V YG	231223Z
C103		111	C-CAP 0.022μF 80, -20% 50V YG	231223Z
C104		111	C-CAP 0.022μF 80, -20% 50V YG	231223Z
C105		111	C-CAP 22pF 10% 50V SL	232220K
C106		111	C-CAP 0.047μF 80, -20% 50V YG	231473Z
C107		111	C-CAP 0.047μF 80, -20% 50V YG	231473Z
C108		111	C-CAP 0.022μF 80, -20% 50V YG	231223Z
C109		111	E-CAP 35R 4.7μF	211415Q
C110		111	C-CAP 220pF 10% 50V SL	232221K
C111		111	C-CAP 0.022μF 80, -20% 50V YG	231223Z
C112		111	E-CAP 16R 10μF	211220Q
C113		111	C-CAP 0.047μF 80, -20% 50V YG	231473Z
C114		111	C-CAP 0.047μF 80, -20% 50V YG	231473Z
C115		111	C-CAP 0.047μF 80, -20% 50V YG	231473Z
C116		111	E-CAP 50R1μF	211510Q
C117		111	C-CAP 0.047μF 80, -20% 50V YG	231473Z
C118		111	C-CAP 0.022μF 80, -20% 50V YG	231223Z
C119		111	C-CAP 0.022μF 80, -20% 50V YG	231223Z
C120		111	E-CAP 16R 100μF	211230Q

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KEY SYMBOL NO.	TYPE*	DESCRIPTION	PART NO.	KEY SYMBOL NO.	TYPE*	DESCRIPTION	PART NO.
D301	111	DIODE 1S2076	501019S	C428	111	E-CAP 35R100μF	211430Q
IC301	111	IC HA1196	518043S	C429			
R301	111	RES 10 Kohm 5% 1/4W	328103J	C430			
R302	111	RES 68 Kohm 5% 1/4W	328683J	C431	111	C-CAP 0.01μF 80, -20% 50VYG	231103Z
R303	111	Out of use		Q401	111	TR 2SA941 (BL)	510048S
R304	111	RES 1.8 Kohm 5% 1/4W	328182J	Q402	111	TR 2SA941 (BL)	510048S
R305	111	RES 5.6 Kohm 5% 1/4W	328562J	Q403	111	TR 2SC2088 (BL)	511023S
R306	111	Out of use		Q404	111	TR 2SC2088 (BL)	511023S
R307	111	RES 15 Kohm 5% 1/4W	328153J	Q405	111	TR 2SC1627 (Y)	511017S
R308	111	RES 1 Kohm 5% 1/4W	328102J	Q406	111	TR 2SC1627 (Y)	511017S
R309	111	RES 100 Kohm 5% 1/4W	328104J	R401	111	RES 100 Kohm 5% 1/4W	328104J
R310	111	RES 100 Kohm 5% 1/4W	328104J	R402	111	RES 100 Kohm 5% 1/4W	328104J
R311	111	UF-RES 680 ohm 5% 1/4W	329681N	R403	111	RES 100 Kohm 5% 1/4W	328104J
R321	111	RES 33 Kohm 5% 1/4W	328333J	R404	111	RES 100 Kohm 5% 1/4W	328104J
R322	111	RES 33 Kohm 5% 1/4W	328333J	R405	111	RES 1 Kohm 5% 1/4W	328102J
R323	111	RES 8.2 Kohm 5% 1/4W	328822J	R406	111	RES 1 Kohm 5% 1/4W	328102J
R324	111	RES 8.2 Kohm 5% 1/4W	328822J	R407	111	RES 22 Kohm 5% 1/4W	328223J
R325	111	RES 47 Kohm 5% 1/4W	328473J	R408	111	RES 22 Kohm 5% 1/4W	328223J
R326	111	RES 47 Kohm 5% 1/4W	328473J	R409	111	RES 120 Kohm 5% 1/4W	328124J
R327	1--	RES 330 ohm 5% 1/4W	328473J	R410	111	RES 120 Kohm 5% 1/4W	328124J
R328	1--	RES 330 ohm 5% 1/4W	328331J	R411	111	RES 39 Kohm 5% 1/4W	328393J
R329	111	RES 3.3 Kohm 5% 1/4W	328331J	R412	111	RES 39 Kohm 5% 1/4W	328393J
R330	111	RES 3.3 Kohm 5% 1/4W	328332J	R413	111	RES 22 Kohm 5% 1/4W	328223J
R331	111	RES 3.3 Kohm 5% 1/4W	328332J	R414	111	RES 22 Kohm 5% 1/4W	328223J
R332	111	RES 3.3 Kohm 5% 1/4W	328332J	R415	111	RES 470 ohm 5% 1/4W	328471J
R327	-11	RES 270 ohm 5% 1/4W	328332J	R416	111	RES 470 ohm 5% 1/4W	328471J
R328	-11	RES 270 ohm 5% 1/4W	328271J	R417	111	RES 270 Kohm 5% 1/4W	328274J
				R418	111	RES 270 Kohm 5% 1/4W	328274J
				R419	111	RES 1.2 Kohm 5% 1/4W	328122J
				R420	111	RES 1.2 Kohm 5% 1/4W	328122J
				R421	111	RES 12 Kohm 5% 1/4W	328123J
				R422	111	RES 12 Kohm 5% 1/4W	328123J
				R423	111	RES 15 Kohm 5% 1/4W	328153J
				R424	111	RES 15 Kohm 5% 1/4W	328153J
				R425	111	RES 4.7 Kohm 5% 1/4W	328472J
				R426	111	RES 4.7 Kohm 5% 1/4W	328472J
				R427	111	UF-MO-RES 2.7 Kohm 5% 1W	361272L
				R428	111	UF-MO-RES 2.7 Kohm 5% 1W	361272L
				R429	111	RES 22 Kohm 5% 1/4W	328223J
				R430	111	RES 22 Kohm 5% 1/4W	328223J
				R431	111	RES 560 ohm 5% 1/4W	328561J
				R432	111	RES 560 ohm 5% 1/4W	328561J
				R433	111	RES 1.5 Kohm 5% 1/4W	328152J
				R434	111	RES 1.5 Kohm 5% 1/4W	328152J
				R435	111	RES 220 Kohm 5% 1/4W	328224J
				R436	111	RES 220 Kohm 5% 1/4W	328224J
						(SWITCH BLOCK)	
				C501	111	C-CAP 0.01μF 80, -20% 50VYG	231103Z
				C502		Out of use	
				R501	111	RES 330 Kohm 5% 1/4W	328334J
				R502	111	RES 330 Kohm 5% 1/4W	328334J
				R503	111	RES 100 Kohm 5% 1/4W	328104J
				R504	111	RES 100 Kohm 5% 1/4W	328104J
				R505	111	RES 2.2 Kohm 5% 1/4W	328222J
				R506	111	RES 2.2 Kohm 5% 1/4W	328222J
C401	111	E-CAP 50R1μF	211510Q				
C402	111	E-CAP 50R1μF	211510Q				
C403	111	E-CAP 25R10μF	211320Q				
C404	111	E-CAP 25R10μF	211320Q				
C405	111	C-CAP 100pF 10% 50V SL	232101K				
C406	111	C-CAP 100pF 10% 50V SL	232101K				
C407	111	C-CAP 22pF 10% 50V SL	232220K				
C408	111	C-CAP 22pF 10% 50V SL	232220K				
C409	111	M-CAP 0.01μF 5% 50V	222103J				
C410	111	M-CAP 0.01μF 5% 50V	222103J				
C411	111	E-CAP 16R100μF	211230Q				
C412	111	E-CAP 16R100μF	211230Q				
C413	111	C-CAP 3pF ±0.5pF 50V SL	232309D				
C414	111	C-CAP 3pF ±0.05pF 50V SL	232309D				
C415	111	E-CAP 10R220μF	211132Q				
C416	111	E-CAP 10R220μF	211132Q				
C417	111	E-CAP 25R47μF	211325Q				
C418	111	E-CAP 25R47μF	211325Q				
C419	111	M-CAP 0.0033μF 5% 50V	222332J				
C420	111	M-CAP 0.0033μF 5% 50V	222332J				
C421	111	C-CAP 330pF 10% 50V SL	232331K				
C422	111	C-CAP 330pF 10% 50V SL	232331K				
C423	111	E-CAP 50R3.3μF	211513L				
C424	111	E-CAP 50R3.3μF	211513L				
C425	111	C-CAP 47pF 10% 50V SL	232470K				
C426	111	C-CAP 47pF 10% 50V SL	232470K				
C427	111	E-CAP 35R100μF	211430Q				

Parts ordering procedure:

- Include in any order
 - a. Part Number.
 - b. Part description.
 - c. Model number.

(Any of the above lacking from an order may delay shipment of that order.)

KEY SYMBOL NO.	NO.	TYPE*	DESCRIPTION	PART NO.
R507	111	RES	2.2 Kohm 5% 1/4W	328222J
R508	111	RES	2.2 Kohm 5% 1/4W	328222J
R509				
R510				
R511				
R512				
R513				
R514				
R515	111	RES	5.6 Kohm 5% 1/4W	328562J
R516	111	RES	5.6 Kohm 5% 1/4W	328562J
			(MIC AMP BLOCK)	
C901	111	E-CAP	50R 1uF	211510Q
C902	111	C-CAP	100pF 10% 50V SL	232101K
C903	111	C-CAP	100pF 10% 50V SL	232101K
C904	111	E-CAP	16R 10uF	211220Q
C905	111	C-CAP	470pF 10% 50V SL	232331K
C906	111	C-CAP	10pF 10% 50V SL	232100K
C907	111	E-CAP	35R 10uF	211420Q
C908	111	E-CAP	16R 47uF	211225Q
C909	111	E-CAP	50R 0.47uF	211515Q
C910	111	E-CAP	35R 10uF	211420Q
C911	111	C-CAP	330pF 10% 50V	232331K
C912				
C913				
C914				
Q901	111	TR	2SA941 (BL)	510048S
Q902	111	TR	2SC2088 (BL)	511023S
Q903				
R901	111	RES	1 Kohm 5% 1/4W	328102J
R902	111	RES	100 Kohm 5% 1/4W	328104J
R903	111	RES	100 ohm 5% 1/4W	328101J
R904	111	RES	39 Kohm 5% 1/4W	328393J
R905	111	RES	12 Kohm 5% 1/4W	328123J
R906	111	RES	150 Kohm 5% 1/4W	328154J
R907	111	RES	3.9 Kohm 5% 1/4W	328392J
R908	111	RES	220 ohm 5% 1/4W	328221J
R909	111	RES	100 ohm 5% 1/4W	328101J
R910	111	RES	390 Kohm 5% 1/4W	328394J
R911				
R912				
R913				
R914				
R915				
R916				
R917				
R918				
C503	111	S-CAP	560pF 5%	223561V
C504	111	S-CAP	560pF 5%	223561V
C505	111	M-CAP	0.12uF 10% 50V	222124K
C506	111	M-CAP	0.12uF 10% 50V	222124K
C507				
C508				
C509	111	C-CAP	33pF 10% 50V SL	232330K
C510	111	C-CAP	33pF 10% 50V SL	232330K
C511	111	T-CAP	35D 0.47uF	252405M
C512	111	T-CAP	35D 0.47uF	252405M
C513	111	E-CAP	10R 220uF	211132Q
C514	111	E-CAP	10R 220uF	211132Q
C515	111	E-CAP	16R 47uF	211225Q
C516	111	E-CAP	16R 47uF	211225Q
C517	111	E-CAP	35R 10uF	211420L
C518	111	E-CAP	35R 10uF	211420L
C519	111	M-CAP	0.022uF 10% 50V	222223K
C520	111	M-CAP	0.022uF 10% 50V	222223K
C521	111	M-CAP	0.022uF 10% 50V	222223K
C522	111	M-CAP	0.022uF 10% 50V	222223K
C523	111	M-CAP	0.0012uF 10% 50V	222122K
C524	111	M-CAP	0.0012uF 10% 50V	222122K
C525	111	E-CAP	50R 3.3uF	211513Q
C526	111	E-CAP	50R 3.3uF	211513Q
C527	111	C-CAP	5pF ±0.5pF 50V SL	232509D
C528	111	C-CAP	5pF ±0.5pF 50V SL	232509D
C529	111	E-CAP	25R10uF	211320Q
C530	111	E-CAP	25R10uF	211320Q
C531	111	E-CAP	6.3R 100uF	211030Q
C532	111	E-CAP	6.3R 100uF	211030Q
C533	111	E-CAP	35R 10uF	211420L
C534	111	E-CAP	35R 10uF	211420L
C601	111	M-CAP	0.0068uF 10% 50V	222682K
C602	111	M-CAP	0.0068uF 10% 50V	222682K
C603	111	M-CAP	0.033uF 10% 50V	222333K
C604	111	M-CAP	0.033uF 10% 50V	222333K
C605	111	C-CAP	150pF 5% 50V UDS06SL	232151J
Q501	111	TR	2SA750 (I) (E)	514088S
Q502	111	TR	2SA750 (I) (E)	514088S
Q503	111	TR	2SC1400 (E)	511013S
Q504	111	TR	2SC1400 (E)	511013S
Q505	111	TR	2SC2088 (BL)	511023S
Q506	111	TR	2SC2088 (BL)	511023S
Q507	111	TR	2SA941 (BL)	510048S
Q508	111	TR	2SA941 (BL)	510048S
R521	111	RES	15 Kohm 5% 1/4W	328153J
R522	111	RES	15 Kohm 5% 1/4W	328153J
R523	111	RES	1Mohm 5% 1/4W	328105J
R524	111	RES	1Mohm 5% 1/4W	328105J
R525	111	RES	4.7 Kohm 5% 1/4W	328472J
R526	111	RES	4.7 Kohm 5% 1/4W	328472J
R527				
R528				
R529	111	VR	B 100 Kohm x 2	4320710
R530	111		<GJ70E684> (VOLUME)	

*701

COMPLETE CIRCUIT BOARD
<TONE AMP PCB ASS>

TONE AMP CIRCUIT BOARD

*702a
*702b

Parts ordering procedure:

- Include in any order
 - a. Part number.
 - b. Part description.
 - c. Model number.

(Any of the above lacking from an order may delay shipment of that order.)

KEY NO.	SYMBOL NO.	TYPE*	DESCRIPTION**	PART NO.
705	S6,S9	111	DOUBLE PUSHBUTTON SWITCH <TWIN PUSH SW SUE-23> (LOW (LOW FILTER, HIGH FILTER)	4040790
706	S7,S8	111	DOUBLE PUSHBUTTON SWITCH <TWIN PUSH SW SUE-23> (25 μ s, LOUDNESS)	4040790 7121000
*707	↑	444	SCREW <STUD SCW (6.5)>	211332Q 211332Q
MAIN AMP CIRCUIT BOARD				
*801		111	COMPLETE CIRCUIT BOARD <MAIN AMP PCB ASS>	9430580
	C701	111	E-CAP 25R 10 μ F	211320V
	C702	111	E-CAP 25R 10 μ F	211320V
	C703	111	C-CAP 100pF 10% 50V SL	232101K
	C704	111	C-CAP 100pF 10% 50V SL	232101K
	C705	111	E-CAP 16R 10 μ F	211220Q
	C706	111	E-CAP 16R 10 μ F	211220Q
	C707	111	C-CAP 470pF 10% 50V SL	232471K
	C708	111	C-CAP 470pF 10% 50V SL	232471K
	C709	111	E-CAP 16R 220 μ F	211232Q
	C710	111	E-CAP 16R 220 μ F	211232Q
	C711	111	M-CAP 0.001 μ F 10% 50V	222102K
	C712	111	M-CAP 0.001 μ F 10% 50V	222102K
	C713	111	C-CAP 10pF 10% 50V SL	232100K
	C714	111	C-CAP 10pF 10% 50V SL	232100K
	C715	111	C-CAP 33pF 10% 500V SL	234330K
	C716	111	C-CAP 33pF 10% 500V SL	234330K
	C717	111	C-CAP 10pF 10% 50V SL	232100K
	C718	111	C-CAP 10pF 10% 50V SL	232100K
	C719	111	C-CAP 10pF 10% 50V SL	232100K
	C720	111	C-CAP 10pF 10% 50V SL	232100K
	C721	111	C-CAP 10pF 10% 50V SL	232100K
	C722	111	C-CAP 10pF 10% 50V SL	232100K
	C723	111	C-CAP 100pF 10% 500V SL	232101K
	C724	111	C-CAP 100pF 10% 500V SL	232101K
	C725	111	C-CAP 100pF 10% 500V SL	232101K
	C726	111	C-CAP 100pF 10% 500V SL	232101K
	C727	111	M-CAP 0.1 μ F 10% 50V	222104K
	C728	111	M-CAP 0.1 μ F 10% 50V	222104K
	C729	111	M-CAP 0.1 μ F 10% 50V	222104K
	C730	111	M-CAP 0.1 μ F 10% 50V	222104K
	C731	111	M-CAP 0.047 μ F 10% 100V	222473K
	C732	111	M-CAP 0.047 μ F 10% 100V	222473K
	C737	111	C-CAP 10pF 10% 50V SL	232100K
	C738	111	C-CAP 10pF 10% 50V SL	232100K
	D701		DIODE 1S2076	501019S
	~D706	666		501019S
	D707		DIODE 1S2076	501019S
	~D712	666		501019S
R531		111	RES 220 Kohm 5% 1/4W	328224J
R532		111	RES 220 Kohm 5% 1/4W	328224J
R533		111	RES 390 ohm 5% 1/4W	328391J
R534		111	RES 390 ohm 5% 1/4W	328391J
R535		111	RES 120 Kohm 5% 1/4W	328124J
R536		111	RES 120 Kohm 5% 1/4W	328124J
R537		111	RES 180 Kohm 5% 1/4W	328184J
R538		111	RES 180 Kohm 5% 1/4W	328184J
R539		111	RES 3.3 Kohm 5% 1/4W	328332J
R540		111	RES 3.3 Kohm 5% 1/4W	328332J
R541		111	RES 5.6 Kohm 5% 1/4W	328562J
R542		111	RES 5.6 Kohm 5% 1/4W	328562J
R543		111	RES 5.6 Kohm 5% 1/4W	328562J
R544		111	RES 3.9 Kohm 5% 1/4W	328392J
R545		111	RES 3.9 Kohm 5% 1/4W	328392J
R546		111	RES 220 Kohm 5% 1/4W	328224J
R547		111	RES 220 Kohm 5% 1/4W	328224J
R548		111	RES 27 Kohm 5% 1/4W	328273J
R549		111	RES 27 Kohm 5% 1/4W	328273J
R550		111	RES 8.2 Kohm 5% 1/4W	328822J
R551		111	RES 8.2 Kohm 5% 1/4W	328822J
R552		111	RES 27 Kohm 5% 1/4W	328273J
R553		111	RES 27 Kohm 5% 1/4W	328273J
R554		111	RES 560 Kohm 5% 1/4W	328564J
R555		111	RES 560 Kohm 5% 1/4W	328564J
R556		111	RES 4.7 Kohm 5% 1/4W	328472J
R557		111	RES 4.7 Kohm 5% 1/4W	328472J
R558		111	RES 4.7 Kohm 5% 1/4W	328472J
R559		111	RES 4.7 Kohm 5% 1/4W	328472J
R560		111	VR B 100 Kohm x 2 (IIC) <V24L5- G ₄ PHN 2.5 KC> (BASS)	4320630
*703a		111	VR B 100 Kohm x 2 (IIC) <V24L5- G ₄ PHN 2.5 KC> (BASS)	4320640
*703b		111	VR B 100 Kohm x 2 (IIC) <V24- L ₅ G ₄ PHN 25 KC> (TREBLE)	4320640
*704a		111	RES 220 Kohm 5% 1/4W	328224J
*704b		111	RES 220 Kohm 5% 1/4W	328224J
R566		111	RES 12 Kohm 5% 1/4W	328123J
R567		111	RES 12 Kohm 5% 1/4W	328123J
R568		111	RES 22 Kohm 5% 1/4W	328223J
R569		111	RES 22 Kohm 5% 1/4W	328223J
R570		111	RES 100 ohm 5% 1/4W	328101J
R571		111	RES 100 ohm 5% 1/4W	328101J
R572		111	RES 3.3 Kohm 5% 1/4W	328332J
R573		111	RES 3.3 Kohm 5% 1/4W	328332J
R574		111	RES 5.6 Kohm 5% 1/4W	328562J
R575		111	RES 5.6 Kohm 5% 1/4W	328562J
R576		111	RES 220 Kohm 5% 1/4W	328224J
R577		111	RES 220 Kohm 5% 1/4W	328224J
R578		111	RES 220 Kohm 5% 1/4W	328224J
R579		111	UF-RES 470 ohm 5% 1/4W	329471N
R580		111	UF-RES 470 ohm 5% 1/4W	329471N
R589		111	RES 1M ohm 5% 1/4W	328105J
R590		111	RES 1M ohm 5% 1/4W	328105J
R601		111	RES 330 Kohm 5% 1/4W	328334J
R602		111	RES 330 Kohm 5% 1/4W	328334J
R603		111	RES 3.3 Kohm 5% 1/4W	328332J
R604		111	RES 3.3 Kohm 5% 1/4W	328332J
R605		111	RES 1 Mohm 5% 1/4W	328105J
R606		111	RES 1 Mohm 5% 1/4W	328105J
R607		111	RES 680 Kohm 5% 1/4W	328684J
R608		111	RES 680 Kohm 5% 1/4W	328684J

Parts ordering procedure:

Include in any order

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- c. Model number.

(Any of the above lacking from an order may delay shipment of that order.)

KEY NO.	SYMBOL NO.	TYPE	DESCRIPTION*	PART NO.
L701	111	111	CHOCO COIL	1210830
L702	111	111	CHOCO COIL	1210830
Q701	111	111	TR 2SA798 (F or G)	514086S
Q702	111	111	TR 2SA798 (F or G)	514086S
Q703	111	111	TR 2SC2088 (BL)	511023S
Q704	111	111	TR 2SC2088 (BL)	511023S
Q705	111	111	TR 2SA818 (Y or O)	514089S
Q706	111	111	TR 2SA818 (Y or O)	514089S
Q707	111	111	TR 2SC1628 (Y)	515077S
Q708	111	111	TR 2SC1628 (Y)	515077S
Q709	111	111	TR 2SC945 L (P or O)	515077S
Q710	111	111	TR 2SC945 L (P or O)	515077S
Q711	111	111	TR 2SA733 (Q or R)	514074S
Q712	111	111	TR 2SA733 (Q or R)	514074S
R701	111	111	RES 56 Kohm 5% 1/4W	328563J
R702	111	111	RES 56 Kohm 5% 1/4W	328563J
R703	111	111	RES 2.2 Kohm 5% 1/4W	328222J
R704	111	111	RES 2.2 Kohm 5% 1/4W	328222J
R705	111	111	RES 15 Kohm 5% 1/4W	328153J
R706	111	111	RES 15 Kohm 5% 1/4W	328153J
R707	111	111	RES 680 ohm 5% 1/4W	328681J
R708	111	111	RES 680 ohm 5% 1/4W	328681J
R709	111	111	RES 220 ohm 5% 1/4W	328221J
R710	111	111	RES 220 ohm 5% 1/4W	328221J
R711	111	111	RES 5.6 Kohm 5% 1/4W	328562J
R712	111	111	RES 5.6 Kohm 5% 1/4W	328562J
R713	111	111	RES 680 ohm 5% 1/4W	328681J
R714	111	111	RES 680 ohm 5% 1/4W	328681J
R715	111	111	RES 390 ohm 5% 1/4W	328391J
R716	111	111	RES 390 ohm 5% 1/4W	328391J
R717	111	111	RES 1 Kohm 5% 1/4W	328102J
R718	111	111	RES 1 Kohm 5% 1/4W	328102J
R719	111	111	RES 10 Kohm 5% 1/4W	328103J
R720	111	111	RES 10 Kohm 5% 1/4W	328103J
R721	111	111	RES 15 Kohm 5% 1/4W	328153J
R722	111	111	RES 15 Kohm 5% 1/4W	328153J
R723	111	111	RES 15 Kohm 5% 1/4W	328153J
R724	111	111	RES 15 Kohm 5% 1/4W	328153J
R725	111	111	RES 120 ohm 5% 1/4W	328121J
R726	111	111	RES 120 ohm 5% 1/4W	328121J
R727	111	111	RES 22 ohm 5% 1/4W	328220J
R728	111	111	RES 22 ohm 5% 1/4W	328220J
R729	111	111	RES 22 ohm 5% 1/4W	328220J
R730	111	111	RES 22 ohm 5% 1/4W	328220J
R731	111	111	RES 120 ohm 5% 1/4W	328121J
R732	111	111	RES 120 ohm 5% 1/4W	328121J
R733	111	111	UF-RES 6.8 Kohm 5% 1/4W	329682N
R734	111	111	UF-RES 390 ohm 5% 1/4W	329391N
R735	111	111	UF-RES 390 ohm 5% 1/4W	329391N
R736	111	111	RES 4.7 Kohm 5% 1/4W	328472J
R737	111	111	RES 4.7 Kohm 5% 1/4W	328472J
R738	111	111	RES 4.7 Kohm 5% 1/4W	328472J
R739	111	111	RES 4.7 Kohm 5% 1/4W	328472J
R740	111	111	UF-RES 390 ohm 5% 1/4W	329391N
R741	111	111	UF-RES 390 ohm 5% 1/4W	329391N
R742	111	111	UF-MO-RES 10 ohm 2W	362100F
R743	111	111	UF-MO-RES 10 ohm 2W	362100F
R744	111	111	MO-RES 10 ohm 2W	362100B
R745	111	111	MO-RES 10 ohm 2W	362100B
R746	111	111	MO-RES 10 ohm 2W	362100B
ZD701	111	111	ZENER DIODE XZ122	502020S

KEY NO.	SYMBOL NO.	TYPE	DESCRIPTION*	PART NO.
*802	222	222	MAIL PLUG <MINI CONCT PLUG 3P>	4570120
803	111	111	INPUT FEMALE SOCKET <MINI CONCT ASS 5P>	4570180
804	111	111	FEMALE SOCKET <MINI CONCT ASS 3P>	4570190
REGURATOR & PROTECTOR CIRCUIT BOARD				
*901a	11-	11-	COMPLETE CIRCUIT BOARD	9450620
901b	--1	--1	<PROTECT-REG PCB ASS>	9450630
			COMPLETE CIRCUIT BOARD	
			<PROTECT-REG PCB ASS>	
C801	111	111	E-CAP 16R 220uF	211232Q
C802	111	111	E-CAP 16R 220uF	211232Q
C803	111	111	E-CAP 35R 100uF	211430Q
C804	111	111	E-CAP 35R 100uF	211430Q
C805	111	111	C-CAP 0.001uF 80, -20% 50V YG	231102Z
C806	111	111	E-CAP 35R 220uF	211432Q
C807	111	111	E-CAP 63R 100uF	211630V
C808	111	111	E-CAP 63R 100uF	211630V
C809	111	111	E-CAP 35R 220uF	211432Q
C810	111	111	E-CAP 50R 220uF	211532Q
C811	111	111	E-CAP 63R 100uF	211630V
C812	111	111	E-CAP 63R 100uF	211630V
C813	111	111	E-CAP 63R 220uF	211632V
C814	111	111	E-CAP 63R 220uF	211632V
C815	111	111	E-CAP 50T 10000uF	212550P
C816	111	111	E-CAP 50T 10000uF	212550P
C817	111	111	C-CAP 0.01uF 100, -0% 500V	238103P
C818	111	111	C-CAP 0.01uF 100, -0% 500V	238103P
C819	111	111	C-CAP 0.01uF 100, -0% 500V	238103P
C820	111	111	C-CAP 0.01uF 100, -0% 500V	238103P
C821	111	111	C-CAP 0.01uF 100, -0% 500V	238103P
C831	111	111	E-CAP 16R 220uF	211232Q
C832	111	111	E-CAP 16R 220uF	211232Q
C833	111	111	E-CAP 35R 220uF	211432Q
C834	111	111	E-CAP 25R 22uF	211322V
C835	111	111	E-CAP 25R 22uF	211322V
C836	111	111	E-CAP 25R 22uF	211322V
C861	111	111	C-CAP 0.001uF 80, -20% 50V YG	231102Z
C862	111	111	C-CAP 0.001uF 80, -20% 50V YG	231102Z
D801	111	111	DIODE 55V810	560041S
D802	111	111	DIODE 1D481	560031S
D803	111	111	DIODE 1S2076A	501020S
D804	111	111	DIODE 1S2076A	501020S
D805	111	111	DIODE 1S1885	560032S
902a	F2	11-	FUSE 3A	4700010

Parts ordering procedure:

Include in any order

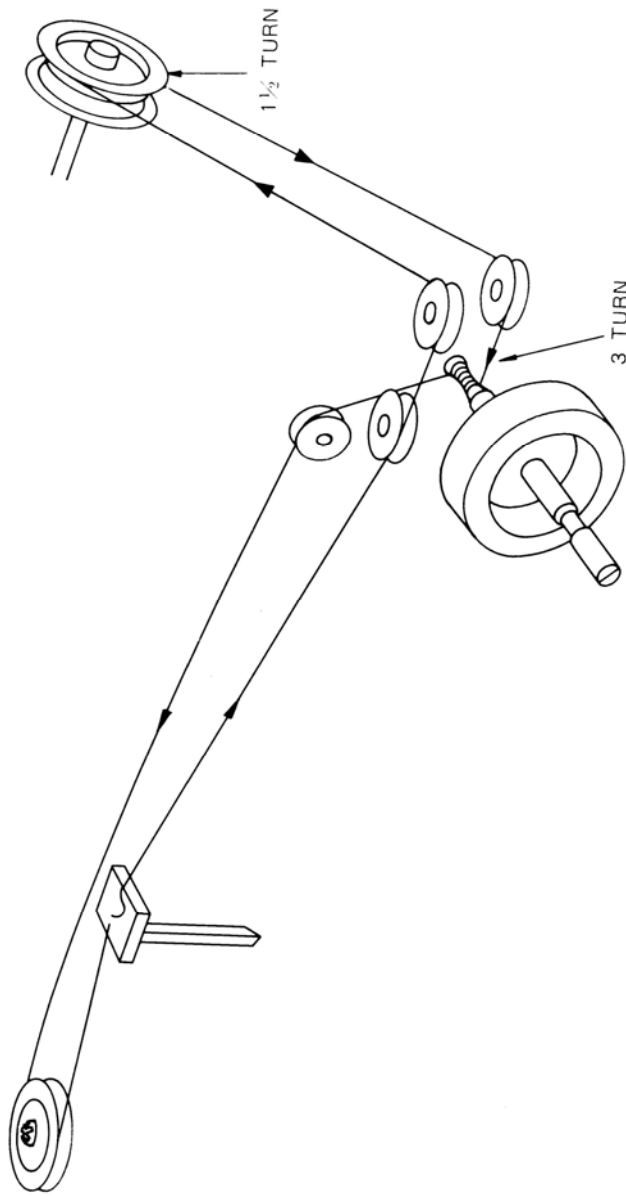
- a. Part number.
- b. Part description.
- c. Model number.

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KEY NO.	SYMBOL NO.	TYPE	DESCRIPTION**	PART NO.
902b	F2	--1	MIDGET FUSE(S) 3.15A 250V	4720390
903a	F3,F4	22-	FUSE 1A	4700020
903b	F3,F4	--2	MIDGET FUSE(S) 1A 250V	4720330
904a		66-	FUSE HOLDER	7050420
904b		--6	MIDGET FUSE HOLDER	7050430
Q801		111	TR 2SD 381 (L or M)	5100388
↑		111	HEATSINK 1625NT	7480270
↑		111	SCREW <PMS 3 x 5>	8103055
↑		111	SCREW <PMS 3 x 6>	8103065
Q802		111	TR 2SD 381 <L or M>	5100388
↑		111	HEATSINK S10	7081820
↑		111	SCREW <PMS 3 x 5>	8103065
Q803		111	TR 2SC2088 (BL)	5110235
Q804		111	TR 2SC1627 (Y)	5110175
Q805		111	TR 2SB536 (L or M)	5100395
↑		111	HEATSINK S10	7081820
↑		111	SCREW <PMS 3 x 5>	8103065
Q806		111	TR 2SA941 (BL)	5140745
Q807		111	TR 2SA817 (Y)	5100475
Q808		111	TR 2SC945 (P or Q)	5150775
Q809		111	TR 2SC945 (P or Q)	5150775
Q810		111	TR 2SC2088 (BL)	5110235
Q811				
Q812				
Q813				
Q814		111	TR 2SC1627 (Y)	5110175
R801		111	UF-MO-RES 120 ohm 2W	362121L
R802		111	RES 12 Kohm 5% 1/4W	328123J
R803		111	RES 2.7 Kohm 5% 1/4W	328272J
R804		111	RES 15 Kohm 5% 1/4W	328153J
R805		111	RES 15 Kohm 5% 1/4W	328153J
R806		111	RES 2.2 Kohm 5% 1/4W	328222J
R807		111	RES 15 Kohm 5% 1/4W	328153J
R808		111	RES 5.6 Kohm 5% 1/4W	328562J

KEY NO.	SYMBOL NO.	TYPE	DESCRIPTION**	PART NO.
R809		111	RES 10 Kohm 5% 1/4W	328103J
R810		111	UF-RES 3.3 Kohm 1/4W	329332N
R811		111	RES 2.7 Kohm 5% 1/4W	328272J
R812		111	RES 6.8 Kohm 5% 1/4W	328682J
R813		111	UF-RES 3.3 Kohm 1/4W	329332N
R821		111	RES 22 Kohm 5% 1/4W	328223J
R822		111	RES 22 Kohm 5% 1/4W	328223J
R823		111	RES 18 Kohm 5% 1/4W	328183J
R824		111	RES 22 Kohm 5% 1/4W	328223J
R825		111	RES 180 Kohm 5% 1/4W	328184J
R826		111	RES 22 Kohm 5% 1/4W	328223J
R827		111	RES 6.8 Kohm 5% 1/4W	328682J
R828		111	RES 2.2 Kohm 5% 1/4W	328222J
R829		111	RES 100 Kohm 5% 1/4W	328104J
R830		111	UF-MO-RES 1.5 Kohm 1W	361152L
R831				
R832		111	RES 6.8 Kohm 5% 1/4W	328682J
R833		111	UF-MO-RES 1.5 Kohm 1W	361152J
R834		111	Out of use	
R835		111	RES 150 Kohm 5% 1/4W	328154J
R836		111	RES 10 Kohm 5% 1/4W	328103J
R837		111	MO-RES 330 ohm 2W	362331B
R838		111	MO-RES 220 ohm 1W	361221B
R839		111		
ZD801		111	ZENER DIODE XZ137	502037S

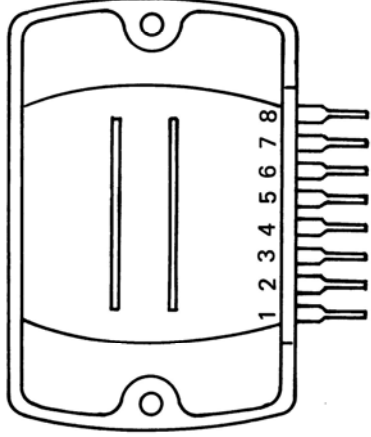
DIAL MECHANISM



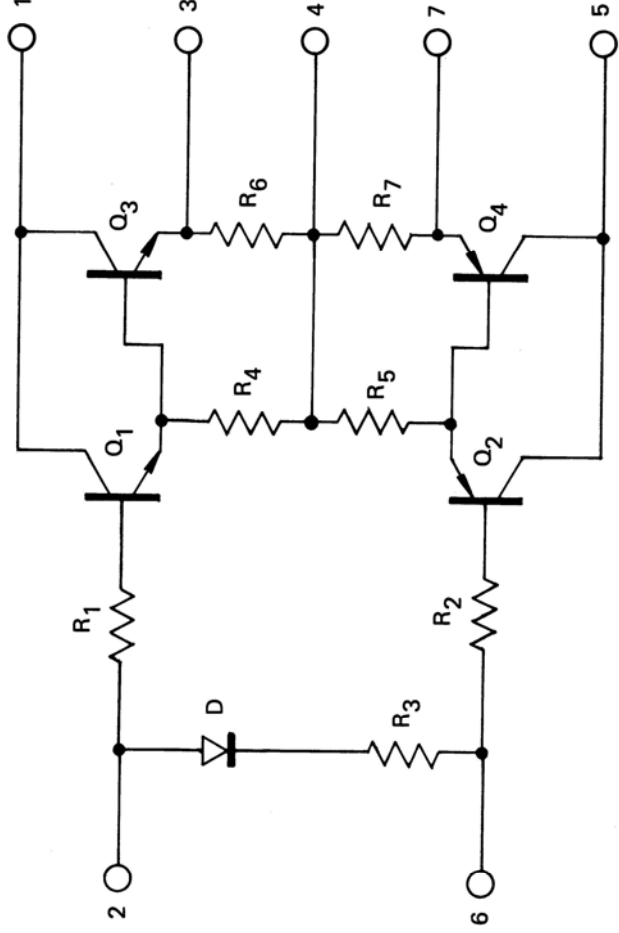
INTEGRATED CIRCUIT COMPLEMENT

DEVICE TYPE	ABSOLUTE MAXIMUM RATINGS (TA = 25°C)		ELECTRICAL CHARACTERISTICS (TA = 25°C) Typical Values							Manufacture
	Supply Voltage (V)	Operating Temperature Range (°C)	Storage Temperature Range (°C)	Idling Current (mA)	IF (Q1 x Q3, Q2 x Q4)	R1, R2 (Ω)	R3 (Ω)	R4, R5 (Ω)	R6, R7 (Ω)	
S-60W	150	-20 ~ +80	-30 ~ +100	40 ± 10 (VCC=±40V)	2,500 min	330 ± 30%	about 50	220 ± 30%	0.33 ~ 0.47	SANKEN

CONNECTION DIAGRAM



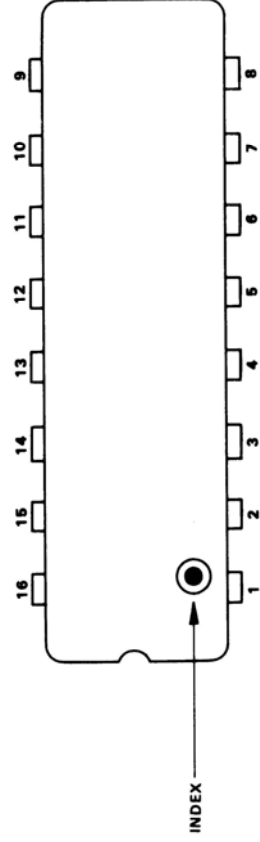
SCHEMATIC DIAGRAM



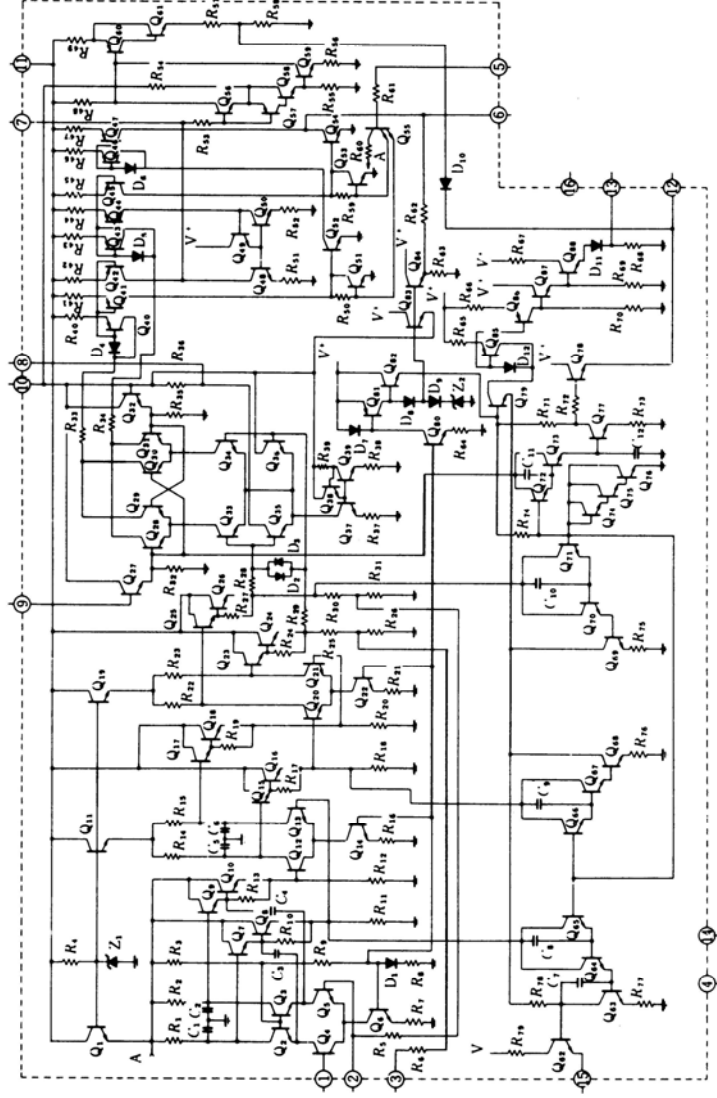
INTEGRATED CIRCUIT COMPONENT

DEVICE TYPE	APPLICATION	ABSOLUTE MAXIMUM RATINGS (T _a = 25°C)			ELECTRICAL CHARACTERISTICS (T _a = 25°C) Typical Values					Muting Sensivity (μV)	AM Rejection (dB)	Signal to Noise Ratio (dB)	Manufacture
		Supply Voltage V _{cc} (V)	Power Dissipation P _T (mW)	Operating Temperature Range T _{opr} (°C)	Storage Temperature Range T _{stg} (°C)	Supply Current (mA)	Input Limiting Sensitivity V _{in} (lim) (μV)	AF Voltage (mVrms)	Total Harmonic Distortion (%)				
HA1137W	FM/IF Amplifier, Quadrature Detector.	14	550 (T _a = 60°C)	-20 ~ +60	-55 ~ +125	32	35 (-3dB point)	92	0.1	60	45	56	HITACHI

CONNECTION DIAGRAM (TOP VIEW)



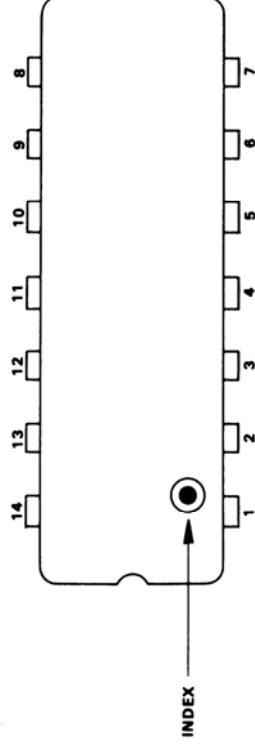
SCHEMATIC DIAGRAM



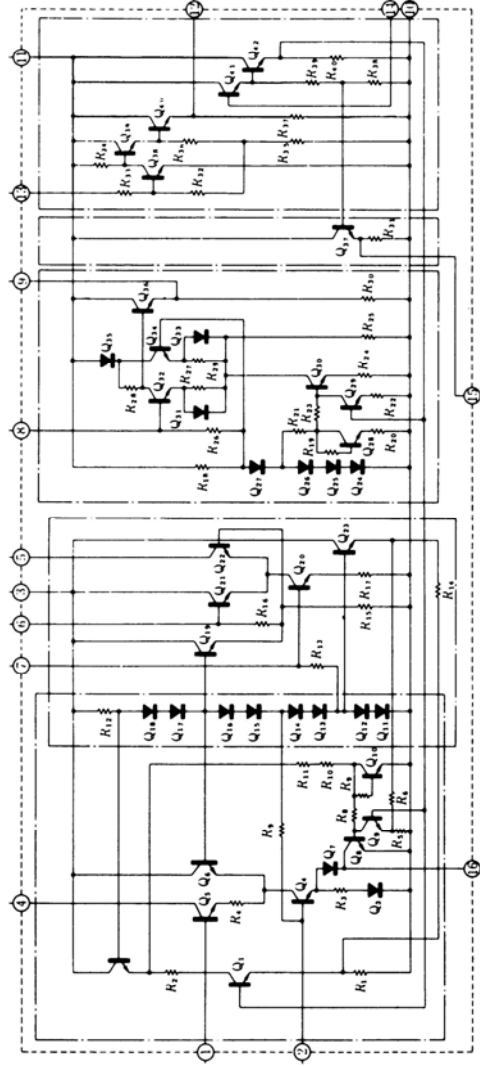
INTEGRATED CIRCUIT COMPLEMENT

Type	Application	Absolute Maximum Rating (T _A =25°C)			Electrical Characteristics (Typical Values) T _A =25°C						Manufacture
		Voltage Supply V _{cc} (V)	Power Dissipation P _d (mW)	Operating Temp Range T _{opt} (°C)	Storage Temp Range T _{stg} (°C)	Signal to Noise Ratio Input=74dB _u Mod.=30% (dB)	Distortion Input=100dB _u Mod.=30% (%)	Output Voltage Input=74dB _u Mod.=30% (mV)	Quiescent Current (mA)		
HA1197	AM Radio	15	450	-20~+70	-55~+125	53	0.4	212	14.5	HITACHI	

CONNECTION DIAGRAM (TOP VIEW)



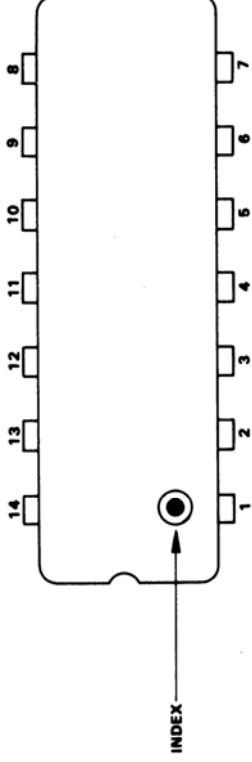
SCHEMATIC DIAGRAM



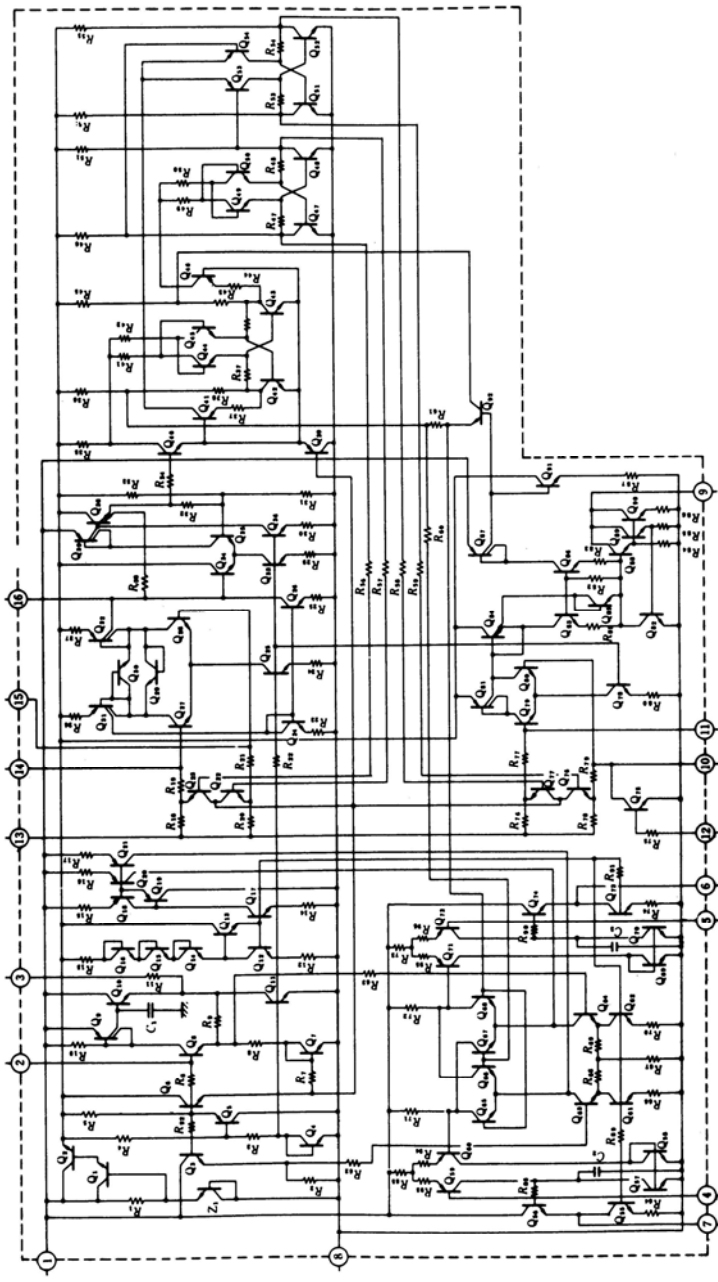
INTEGRATED CIRCUIT COMPLEMENT

DEVICE TYPE	SBSOLUTE MAXIMUM RATINGS (T _A = 25°C)			ELECTRICAL CHARACTERISTICS (T _A = 15°C) Typical Values					Manufacture		
	Supply Voltage (V)	Power Dissipation (mW)	Operating Temperature Range (°C)	Storage Temperature Range (°C)	Lamp Current (mA)	Input Impedance (KΩ)	Stereo Separation (dB)	Stereo Total Harmonic Distortion (%) (f=1kHz)		Output Voltage (V)	SCA Rejection (dB)
HA1196 AM Stereo Demodulator	15	490	-20~+70	-55~+70	75	75	95	0.1 (f=1kHz)	1.2	75 (f _{SCA} =67kHz)	80

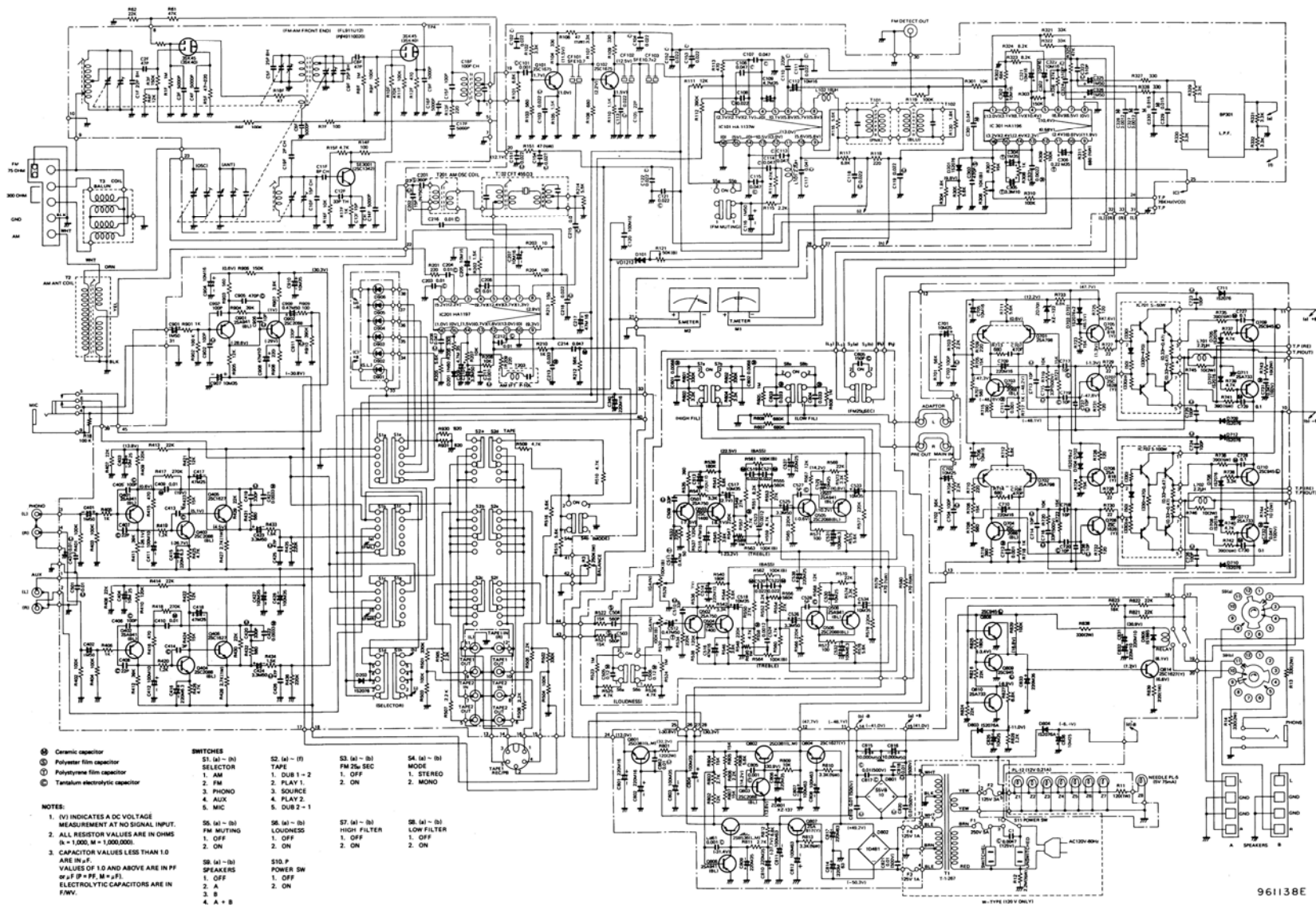
CONNECTION DIAGRAM (TOP VIEW)



SCHEMATIC DIAGRAM



SCHEMATIC DIAGRAM NR-815



- ⊖ Ceramic capacitor
- ⊕ Polymer film capacitor
- ⊙ Polystyrene film capacitor
- ⊗ Tantalum electrolytic capacitor

NOTES:
 (V) INDICATES A DC VOLTAGE MEASUREMENT AT NO SIGNAL INPUT.
 2. ALL RESISTOR VALUES ARE IN OHMS (K = 1,000, M = 1,000,000).
 3. CAPACITOR VALUES LESS THAN 1.0 ARE IN μF.
 VALUES OF 1.0 AND ABOVE ARE IN PF (P = PF, M = μF).
 ELECTROLYTIC CAPACITORS ARE IN F/W.

- SWITCHES**
- | | | | |
|--------------------------|----------------------|----------------------------|----------------------|
| S1 (A) - (B)
SELECTOR | S2 (A) - (F)
TAPE | S3 (A) - (B)
FM 25u SEC | S4 (A) - (B)
MODE |
| 1. AM | 1. DUB 1 - 2 | 1. OFF | 1. STEREO |
| 2. FM | 2. PLAY 1 | 2. ON | 2. MONO |
| 3. PHONO | 3. SOURCE | | |
| 4. AUX | 4. PLAY 2 | | |
| 5. MIC | 5. DUB 2 - 1 | | |
-
- | | | | |
|---------------------------|--------------------------|-----------------------------|----------------------------|
| S5 (A) - (B)
FM MUTING | S6 (A) - (B)
LOUDNESS | S7 (A) - (B)
HIGH FILTER | S8 (A) - (B)
LOW FILTER |
| 1. OFF | 1. OFF | 1. OFF | 1. OFF |
| 2. ON | 2. ON | 2. ON | 2. ON |
-
- | | |
|--------------------------|-------------------|
| S9 (A) - (B)
POWER SW | S10 P
SPEAKERS |
| 1. OFF | 1. OFF |
| 2. A | 2. A |
| 3. B | 3. B |
| 4. A + B | 4. A + B |

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