



Service Manual

GF-9191H
GF-9191E

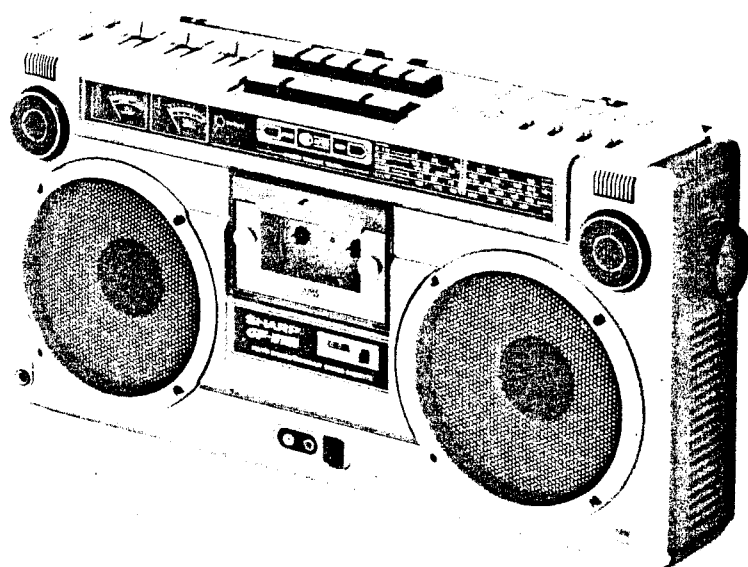


PHOTO : GF-9191H



MODEL GF-9191H GF-9191E GF-9191HB

In the interests of user-safety the set should be restored to its original condition and only parts identical to those specified be used.

SPECIFICATIONS

GENERAL

Type: Portable stereophonic cassette tape recorder with built-in LW/MW/SW/FM 4-band radio

Power source: AC 110/220/240V, 50/60 Hz (GF-9191H/HB)
AC 240V, 50/60 Hz (GF-9191E)
DC 15V (Ten UM/SUM-1, R20, "D" size, HP2 batteries or External DC supply)

Power consumption: 35 W

Speaker: 16 cm (Woofer) x 2,
5 cm (Tweeter) x 2

Power output: MPO 13W (6.5W+6.5W) (DIN45 324) (GF-9191H/HB)
Dynamic Power 19W (9.5W+9.5W) (GF-9191E)

Semiconductors: 6-IC (Integrated Circuit), 34-transistor and 30-diode (3-Light Emitting Diode)

Dimensions: 516mm(W) x 115mm(D) x 271mm(H)

Weight: 6.5 kg (without batteries)

Input terminals:

- 1 EXT. MIC. 600 ohms (J101-A, J101-C)
- 2 Mixing mic. 600 ohms (J401)
- 3 Remote control (J101-B)
- 4 EXT. DC power (J901)
- 5 AC input power (SO901)
- 6 REC/PB DIN socket, 2.5 mV/10 K ohms (SO101)
- 7 FM EXT. antenna (TB1)
- 8 PHONO (J103-A, J103-B)

Output terminals:

- 1 EXT. speaker, 4 ~ 8 ohms (SO102, SO103)
- 2 PHONES, 4 ~ 8 ohms (J 603)
- 3 REC/PB DIN socket, 0.7 V/50 K ohms (SO101)

TAPE RECORDER SECTION

Type: 4-track stereo cassette tape recorder

Tape: Philips type compact cassette tape

Tape speed: 4.8 cm/sec.

Recording system: AC bias

Erasing system: AC erasing

Recording time: 60 minutes (with C-60 tape)

Fast forward or rewind time: 120 sec. (with C-60 tape)

Frequency response: 40 ~ 15,000 Hz (CrO₂ tape)
40 ~ 12,000 Hz (Normal tape)

Wow and flutter: 0.25% (DIN45 511) (GF-9191H/HB)
0.2% (WRMS) (GF-9191E)

S/N ratio: 50 dB

RADIO SECTION

Frequency range:

LW	150 ~ 285 kHz
MW	520 ~ 1,620 kHz
SW	5.95 ~ 18 MHz
FM	87.6 ~ 108 MHz

Intermediate frequency: LW/MW/SW 455 kHz
FM 10.7 MHz

Circuit system: 4-band superheterodyne system

Antenna: LW/MW ferrite core bar antenna
SW/FM telescopic antenna
FM EXT. antenna

SHARP CORPORATION OSAKA, JAPAN

NAMES OF PARTS

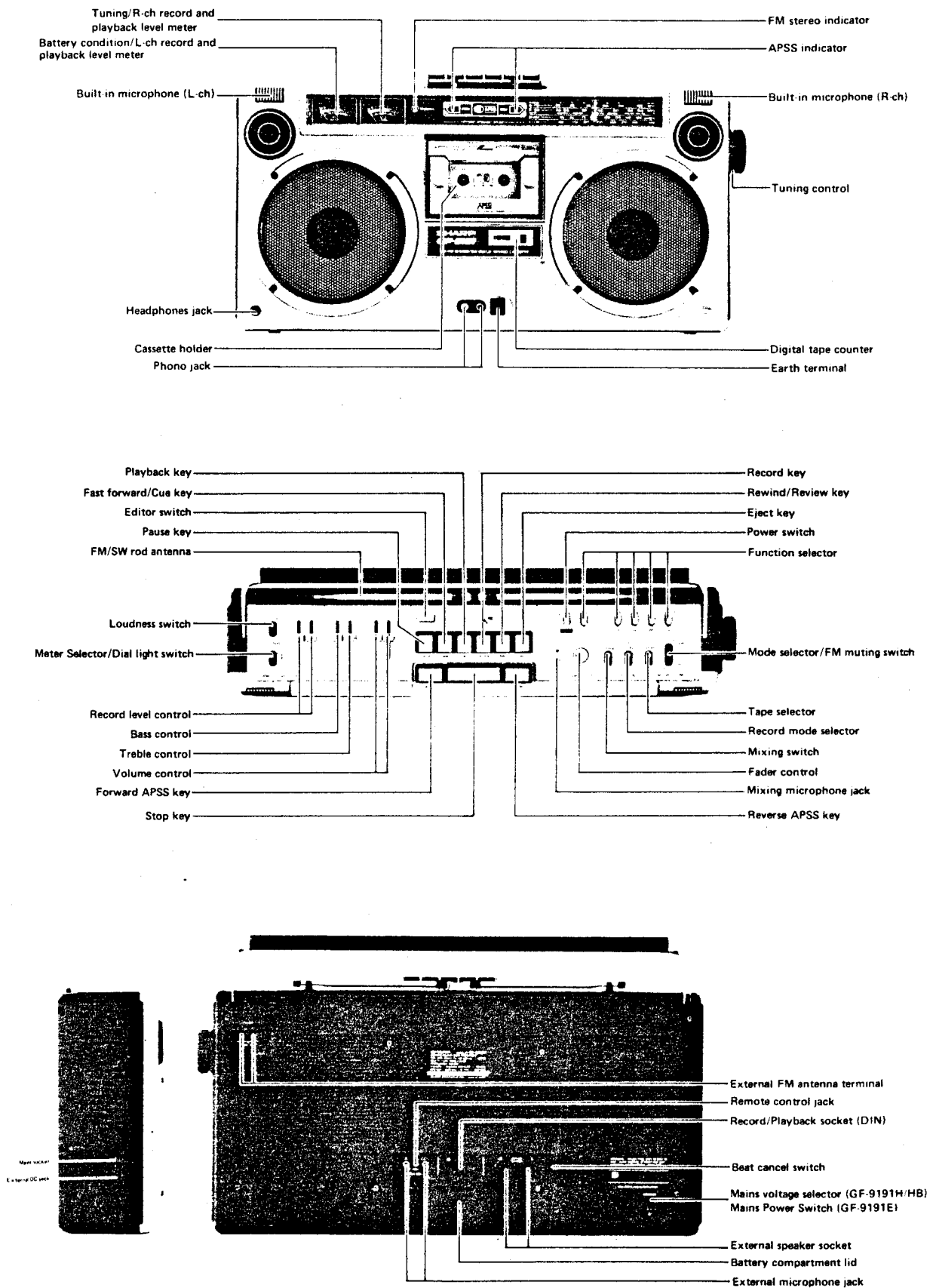
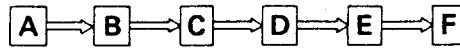


Figure 1

DISASSEMBLY



- A FRONT CABINET REMOVAL** (Refer to Figures 2 and 3)
1. Pull out the power cord plug or adaptor plug from the unit.
 2. Take out the cassette tape from the cassette holder.
 3. Remove eight (8) screws retaining the front cabinet.
 4. Open the battery compartment cover and remove one (1) screw retaining the front cabinet. (GF-9191E only).
 5. Gently pull out the front cabinet and disconnect four (4) tips (Speaker) connected to the main P.W. board.

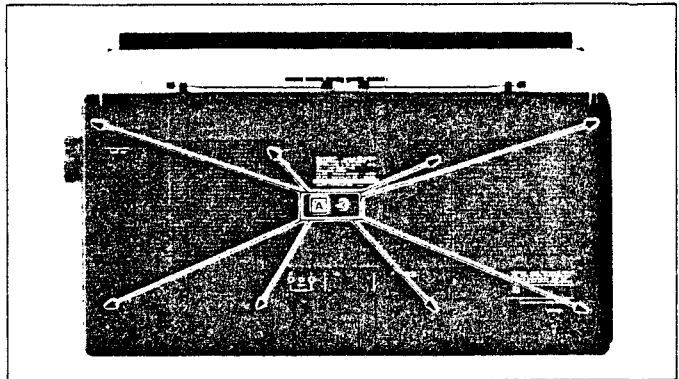


Figure 2

- B OPERATION PANEL REMOVAL** (Refer to Figure 3)
1. Remove the front cabinet as described in front cabinet removal.
 2. Remove seven (7) knobs (RECORD LEVEL, BASS, TREBLE, VOLUME and FADER).
 3. Gently lift up the operation panel from the back cabinet.

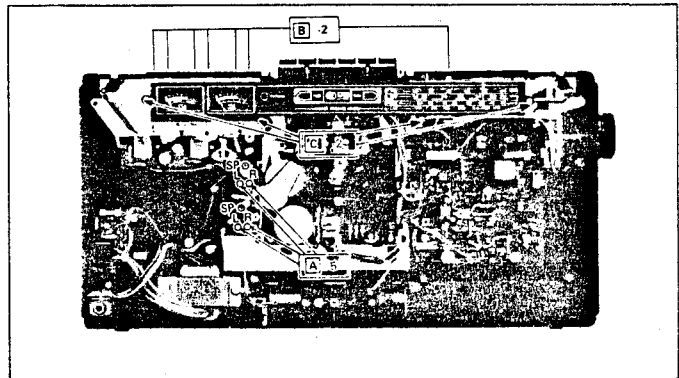


Figure 3

- C DIAL SCALE PLATE REMOVAL** (Refer to Figure 3)
1. Remove the operation panel as described in operation panel removal.
 2. Remove four (4) screws retaining the dial scale plate.
 3. Gently pull out the dial scale plate from the chassis.

- D MECHANISM BLOCK REMOVAL** (Refer to Figure 4)
1. Remove the dial scale plate as described in dial scale plate removal.
 2. Disconnect the tip (Muting) and two (2) sockets (SO501, SO502) connected to the main P.W. board and the motor P.W. board.
 3. Remove four (4) screws retaining the mechanism block.
 4. Gently pull out the mechanism block from the main P.W. board holder.

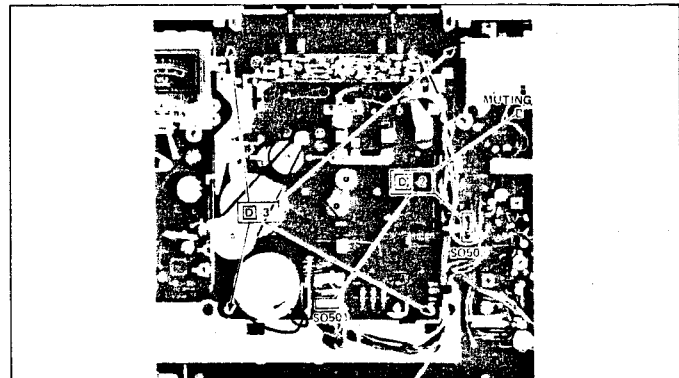


Figure 4

- E PHONO JACK PLATE REMOVAL** (Refer to Figure 5)
1. Remove the mechanism block as described in mechanism block removal.
 2. Remove two (2) screws retaining the phono jack plate.
 3. Gently pull out the phono jack plate from the back cabinet.

- F CHASSIS (P.W.B.) REMOVAL** (Refer to Figure 5)
1. Remove the phono jack plate as described in phono jack plate removal.
 2. Remove TUNING knob.
 3. Disconnect four (4) tips (Antenna) and two (2) tips (DC supply) connected to the main P.W. board.
 4. Remove seven (7) screws retaining the chassis (P.W.B.).
 5. Gently pull out the chassis (P.W.B.) from the back cabinet.

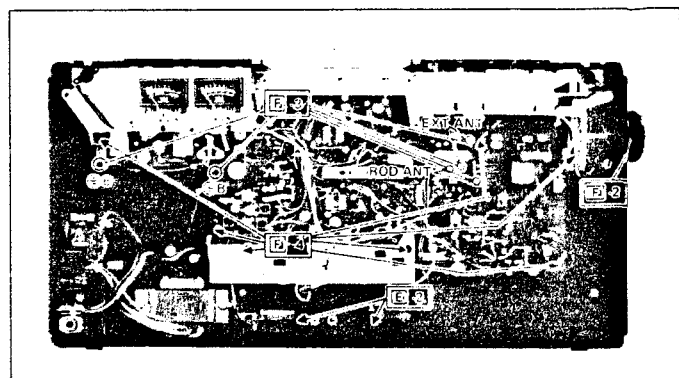


Figure 5

VOLTAGE SELECTION (GF-9191H/HB only)

Before operating the unit on mains, check the pre-set voltage. If the voltage is different from your local voltage, adjust the voltage as follows: Rotate the plug of the voltage selector by using a screwdriver so that your local voltage can be seen. (Refer to Figure 6)

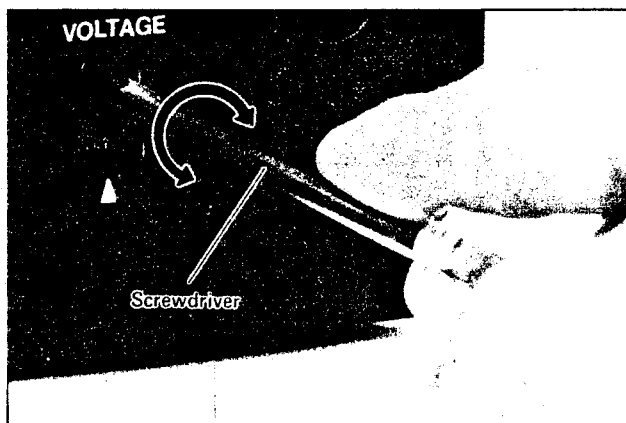


Figure 6

DIAL CORD STRINGING

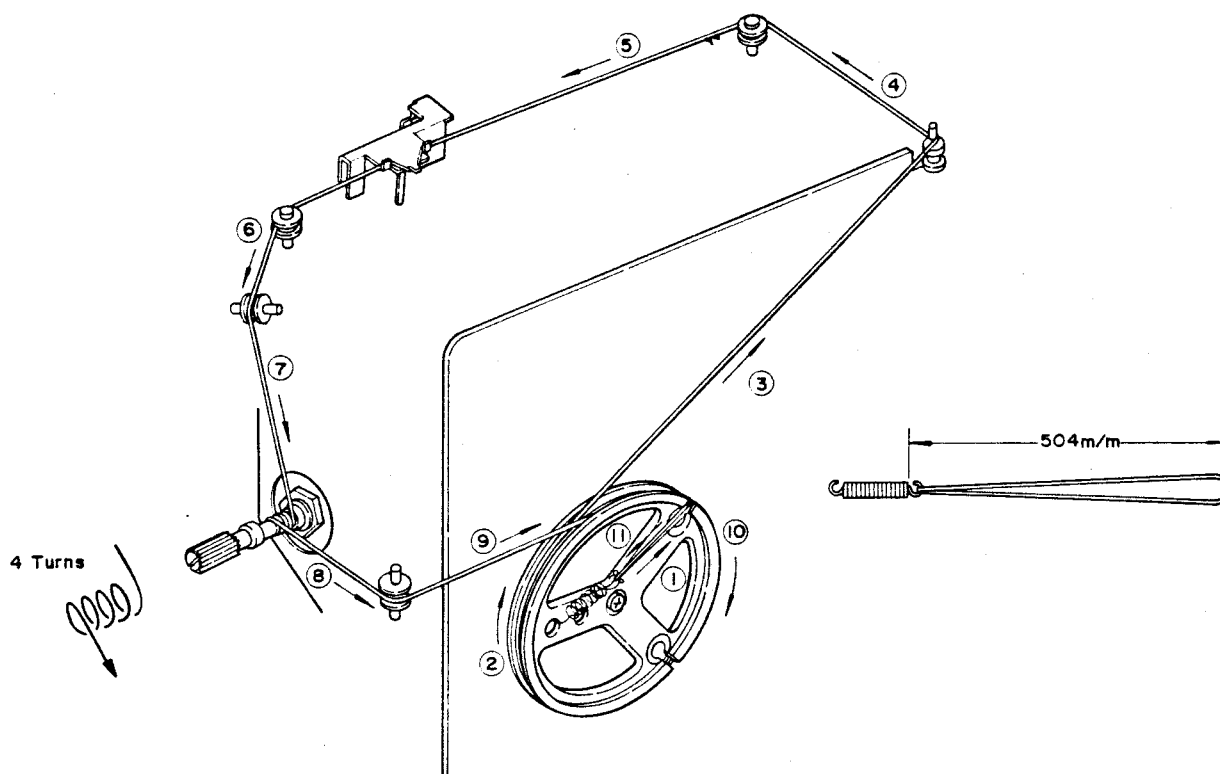


Figure 7

APSS DETECTION CIRCUIT

(Refer to Figures 10, 11 and 12)

The current fed to the APSS detection circuit drives the tape playback signal given from the record/playback head into the APSS pre-amp (IC701) through the equalizer amp (Q101 to Q104), turning "ON" the Q701, and now the signal is amplified to exceed VBE (voltage between base and emitter) and charges the C706 up to +15 volts. Next, when the Q702 is turned "ON", the Q703 is turned "OFF", and the potential of the Q703 collector stabilizes at +15 volts. Therefore the Q704 is not turned "ON", in consequence, neither is the Q705. As a result, the plunger is not actuated. In other words, as far as the tape carries signals, the plunger does not work, that is, the tape is continuously fast forwarded according to the mechanism of the APSS. Meanwhile, when there is no signal on the

tape, the potential, even if amplified by the equalizer amp (Q101 to Q104) and APSS pre-amp (IC701), becomes lower than VBE of Q701, which, therefore, is turned "OFF", and the electric charge of C706 (determined by the value of R706 and C706) is discharged at the time constant. When the potential of C706 is discharged to be below VBE of Q702, the Q702 is turned "OFF" and the Q703 is activated. Therefore, the collector potential of Q703 becomes zero (0) volt and, consequently, the +15 volt voltage passes through the R711, allowing a discharge current to flow towards the C707. By this discharge current, the potential of the Q704 base drops momentarily to zero (0) volt, and the Q704 is turned "ON".

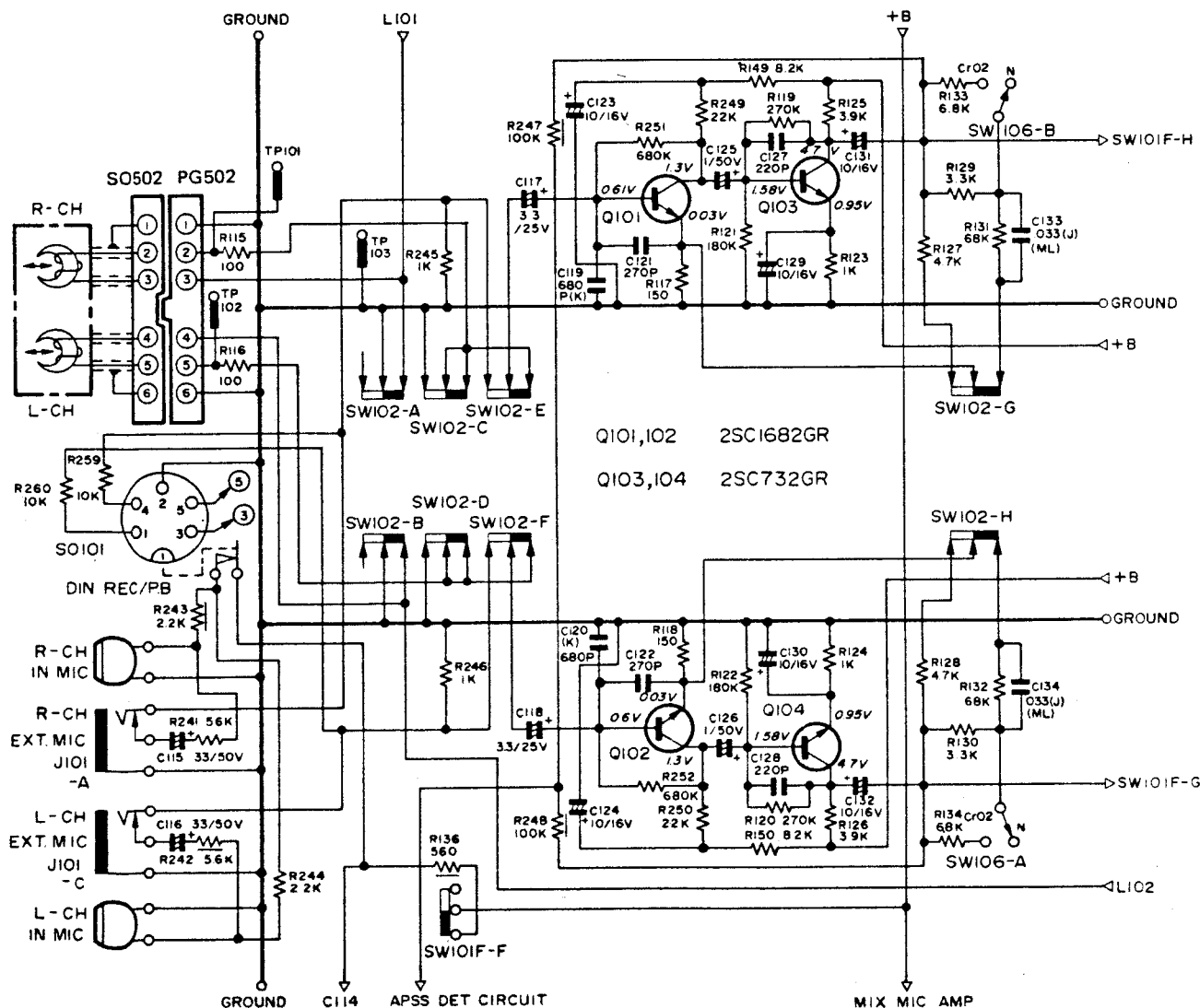


Figure 10 EQ AMP.

Accordingly, the potential of the C707 is permitted to be stabilized from zero (0) volt to +15 volts. When the potential exceeds V_{BE} , the Q704 is turned "OFF". Then the Q704 is turned "ON", and +B is supplied to the base of Q705 through the R712, turning "ON" the Q705. Then, an end of the plunger is grounded and +15V is applied to the plunger, which, in turn, is actuated. When the Q704 is turned "OFF", the Q705 is also turned "OFF", cutting off the potential to the plunger. When the plunger is put in action, the APSS lockplate is stretched out to release the FWD-APSS key. Consequently, the FWD-APSS switch (SW503) is turned "OFF" and the pinch roller is pressed hard against the flywheel shaft. Moreover, the fastforwarding gear is disengaged from the gear of the takeup turntable, setting the unit in normal playback mode again. As the FWD-APSS switch (SW503) is turned "OFF", the light emitting diode of D505 stops flickering and the APSS limiter circuit is made inactive. Further, the muting circuit of Q112 also stops its function. In the meantime, when the REV-APSS key is depressed the fast-forwarding gear meshes with the gear of supply turntable and the REV-APSS switch (SW502) is turned "ON" to set the tape in rewind mode, permitting the light emitting diode of D504 to flicker. The successive function is just as in the case of FWD-APSS behavior. This ends the explanation of the APSS performance.

Note However, that the APSS may malfunction when either one of following recordings is played back, but, remember, this is not a trouble.

1. A prolonged portion of pianissimo in music.
2. A blank portion in the midst of music (more than 3 seconds when measured in playback).
 - * In cases 1 & 2 the FWD-APSS or REV-APSS key, if depressed, resets itself and regular playback mode is resumed.
3. A too short interval between programs (about 1 second when measured in playback).
4. A noisy hum or buzz recorded in a blank portion.
 - * In cases 3 & 4 the condition doesn't allow the APSS circuit to work easily, and the blank portion couldn't be detected.
5. FWD-APSS key depressed within 10 seconds (as measured in playback) from the end of a preceding selection.
6. REV-APSS key depressed within 10 seconds (as measured in playback) from the beginning of a selection.
 - * In cases 5 & 6 the tape runs 10 or 30 times as fast as in playback mode if the FWD-APSS or REV-APSS key is depressed, therefore the tape skips a blank portion while the key is being depressed.

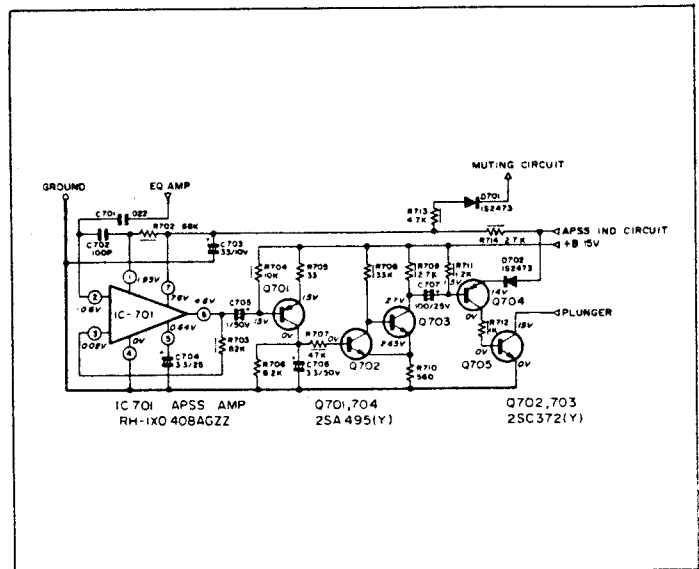


Figure 11 APSS DETECTION CIRCUIT

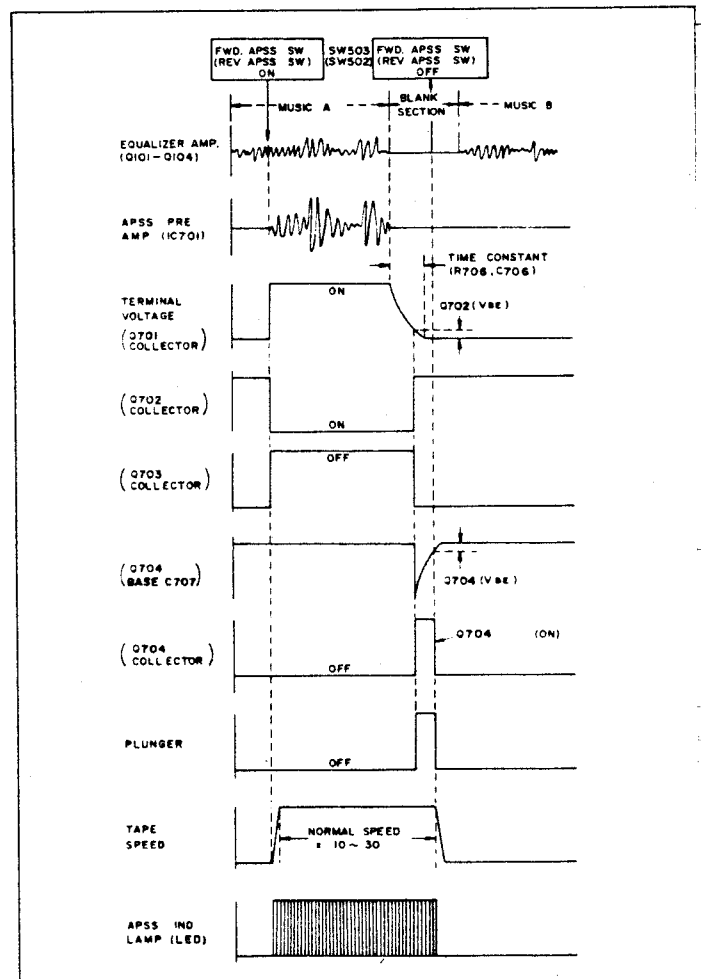


Figure 12 APSS MOVEMENT PRINCIPLE

MECHANICAL ADJUSTMENT

■ FLYWHEEL THRUST CLEARANCE ADJUSTMENT

(Refer to Figure 13)

1. Slowly rotate the flywheel thrust clearance adjusting screw clockwise until there will be no thrust clearance.
2. Next, rotate the thrust clearance adjusting screw about 1/4 of its full turn counter clockwise. (Since 1 pitch of the adjusting screw refers to 0.8 mm, the thrust clearance thus created becomes 0.1 mm to 0.3 mm.)

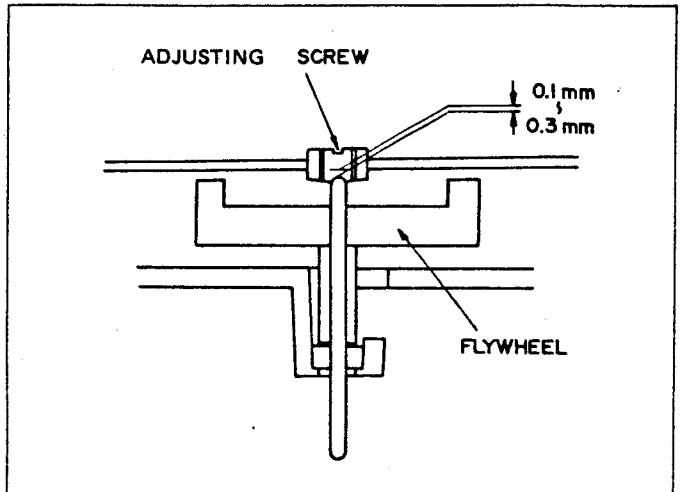


Figure 13

■ PINCH ROLLER PRESSURE ADJUSTMENT

(Refer to Figure 14)

1. Set the unit in PLAY mode.
2. Push the point (A) with a tension gauge (0 gr. to 500 gr.) to make the pinch roller apart from the flywheel shaft. Then, check that the tension gauge will read 300 gr. to 400 gr. when the pinch roller stops to rotate.
3. As a result of the check in the step 2 above, if the reading is found outside the range of 300 gr. to 400 gr., adjust the pressure spring of pinch roller by bending it or replace.

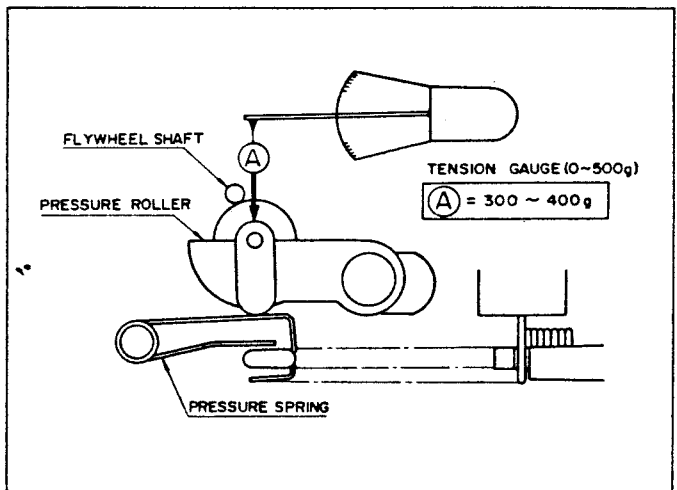


Figure 14

■ OPERATION CHECK OF FWD-APSS AND REV-APSS MECHANISMS

(Refer to Figures 40 and 41, Pages 31 and 32)

Under PLAY mode, slowly push the FWD-APSS key or REV-APSS key to make sure that the pinch roller (74) and the take-up idler (16) come off respectively from the flywheel shaft and the take-up turntable (65), and simultaneously the sub-chassis (09) moves 1 mm to 1.5 mm, and further that thereafter, the roller assembly (73) is pressed against the take-up turntable (65) or the supply turntable (66). Moreover, when the FWD-APSS key or REV-APSS key is released by pushing the FF (CUE) key or the REWIND (REVIEW) key, make ascertain that the sub-chassis (09) is reset and the unit gets in PLAY mode.

■ TORQUE MEASUREMENT AT PLAY, FF AND REWIND MODES

(Refer to Figure 15)

1. Mount a torque measuring reel on the turntable (that is, it is placed on the take-up turntable at PLAY/REWIND mode while on the supply turntable at REWIND mode).
2. Then gradually release the tension gauge and read it when the rotational speed of the turntable becomes almost constant.
3. Measured torques at each mode should be as tabulated below.

Note: When the take-up turntable is stopped at PLAY mode, there should be no slip between the take-up turntable and take-up slip roller and/or between the drive belt and take-up slip roller.

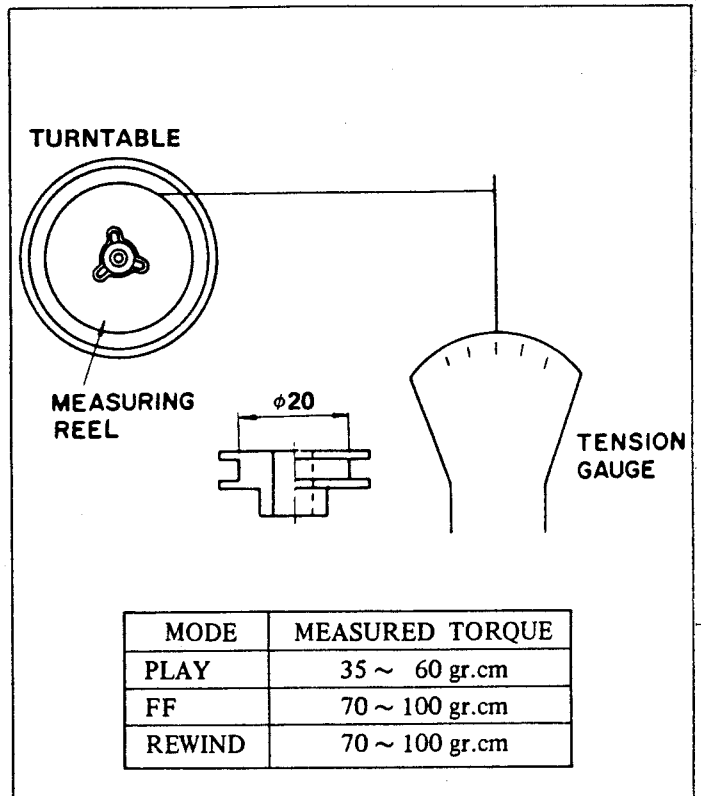


Figure 15

■ GAP ADJUSTMENT BETWEEN MOTOR SWITCH AND BRAKE LEVER

(Refer to Figure 16)

1. Under each of PLAY, FF, and REWIND modes, make ascertain that the motor switch (SW501) is turned "ON" without fail.
2. When the motor is in a stop, check that the gap (A) between the brake lever and the motor switch (SW501) is 2 mm to 3 mm.
3. If the steps 1 and 2 above are still insufficient for the adjustment, the gap can be adjusted by positionally changing the two soldered terminals (B) of motor switch (SW501) located at the motor PWB with a soldering iron.

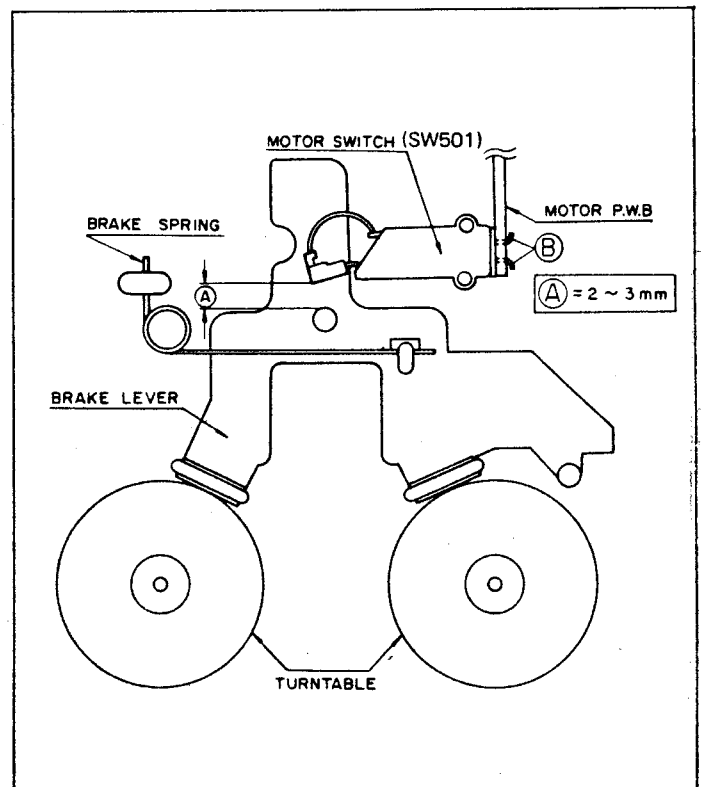


Figure 16

■ OPERATION CHECK OF PAUSE MECHANISM

(Refer to Figure 40, Page 31)

Set the unit in PLAY mode by pushing the key given a mark (◀). Then slowly push the PAUSE key and make ascertain that the take-up idler (16) and the pinch roller (74) come off respectively from the take-up turntable (65) and the flywheel shaft almost at the same time and check that each of the two gaps thus produced is about 0.5 mm.

■ ADJUSTMENT OF PLUNGER SETTING POSITION

(Refer to Figure 17)

1. Under FF mode, loosen the plunger retaining screw, hold up the part (A) of the plunger by hand and while keeping the plunger in contact with the lock shaft, retighten the plunger retaining screw.
2. After the step 1, make sure of the following.
 - Check that each of the PLAY, FF (CUE), REWIND (REVIEW) keys can be locked smoothly.
 - Check that the FWD-APSS key and REV-APSS key can be locked smoothly and they further be released when the plunger operates.
 - Check that the plunger can start to operate smoothly when the STOP key is pushed to release the APSS keys.
3. After the step 2, the adjustments are not yet sufficient, again carry out the step 1.

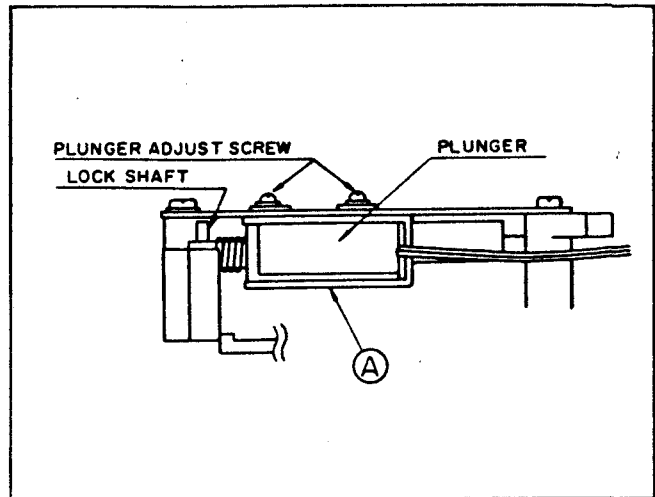


Figure 17

ELECTRICAL MEASUREMENT

- * This unit operates on DC 15V. Check that the power supply is exactly 15V before measurement.
- * Set the POWER switch (SW101F) to "TAPE" position.
- * Refer to Figure 33.

■ RECORD OSCILLATOR BIAS CURRENT AND BIAS FREQUENCY ADJUSTMENT

(Refer to Figure 18)

1. Connect the V.T.V.M. across the 100 ohm resistors (R115, R116).
2. Place the unit in RECORD mode.
3. Adjust the semi-variable resistors (R301, R302) so that the V.T.V.M. reads 50 mV for the right channel (R115) and left channel (R116) respectively.
4. Make sure the record oscillator bias frequency is 53 ± 3 kHz.
5. As a result of the check in the step 5 above, if the reading is found outside the 53 ± 3 kHz, adjust the bias oscillation coil (L301)
6. After the step 5, again make sure of the bias current.

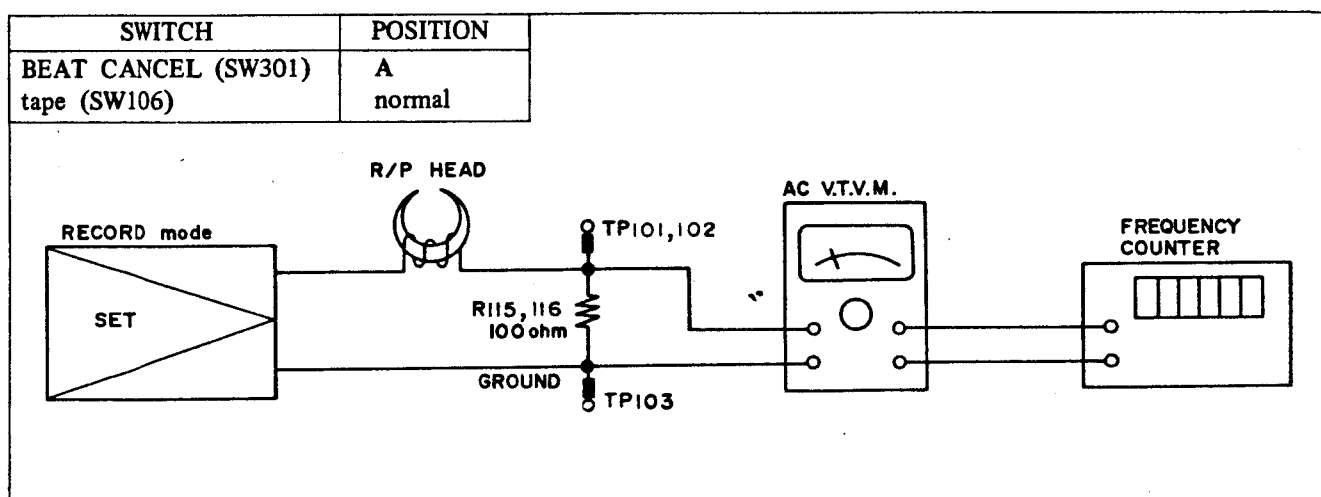


Figure 18

■ ERASE CURRENT CHECK

(Refer to Figure 19)

1. Connect the V.T.V.M. across the 1 ohm resistor (R303).
2. Place the unit in RECORD mode.
3. Make sure the erase current is 100 ± 20 mV.

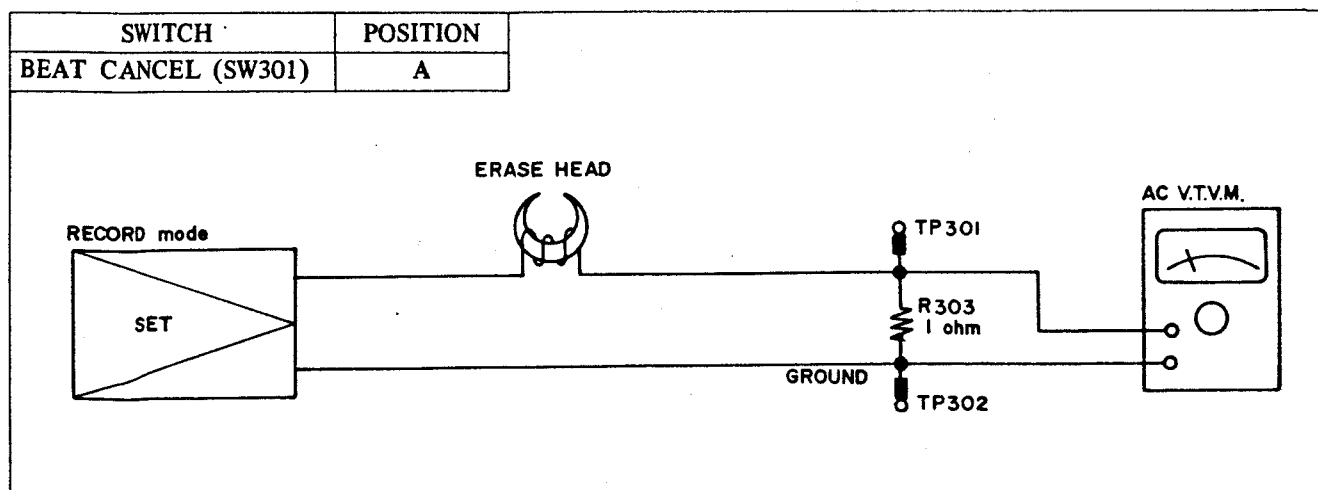


Figure 19

■ RECORD AMPLIFIER SENSITIVITY CHECK

(Refer to Figure 20)

1. Connect the V.T.V.M. across the 100 ohm resistors (R115, R116).
2. Short circuit the primary coil of the oscillation coil (L301) to stop bias oscillator.
3. Connect the signal generator to the EXT MIC jacks (J101-A, J101-C) and apply signal (1000 Hz, -78 dB) to the unit.

4. Place the unit in RECORD mode.

5. If the record amplifier sensitivity is normal, the reading on V.T.V.M. should be approximately 1.75 mV.

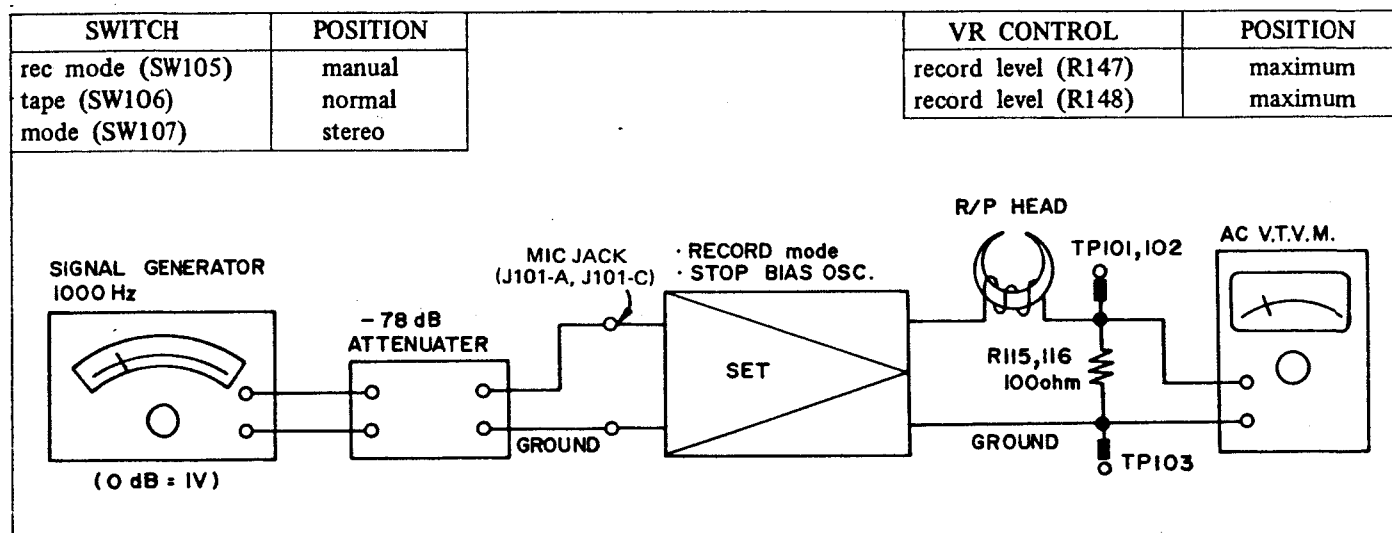


Figure 20

■ PLAYBACK AMPLIFIER SENSITIVITY CHECK

(Refer to Figure 21)

1. Connect load resistor (4ohm) to the EXT. SP sockets (SO102, SO103) and further connect the V.T.V.M. thereto.
2. Connect the signal generator in series of the REC/PB head and apply signal (1000 Hz, -80 dB) to the unit.

3. Place the unit in PLAYBACK mode.

4. If the playback amplifier sensitivity is normal, the reading on the V.T.V.M. should be approximately 1.0 V.

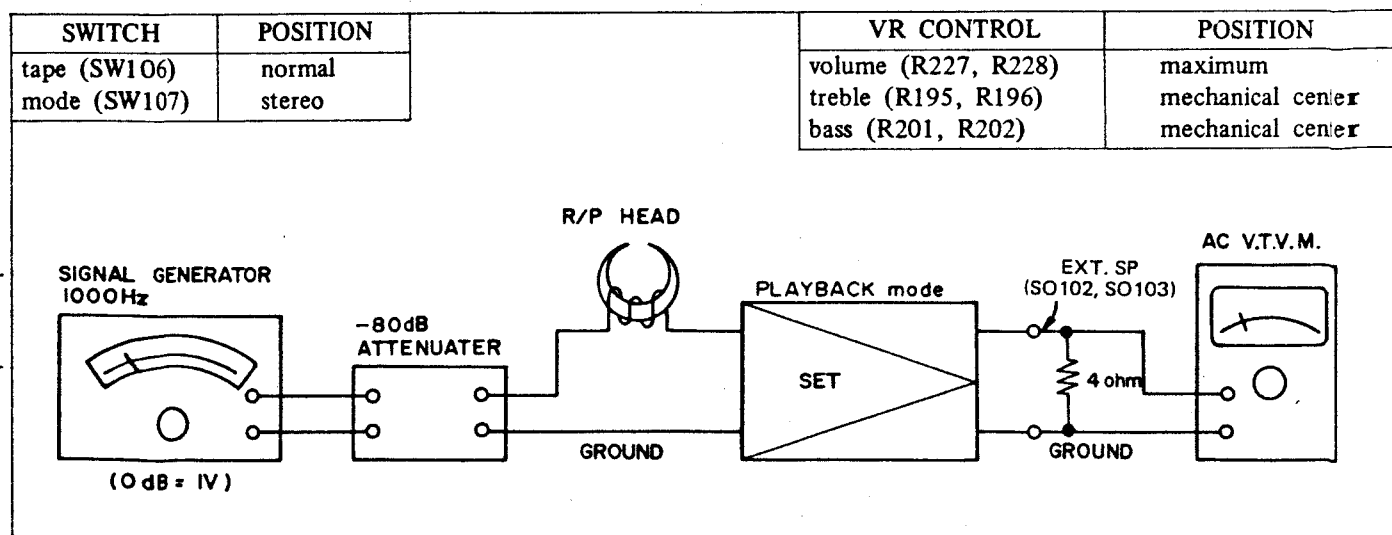


Figure 21

■ PHONO AMPLIFIER SENSITIVITY CHECK

(Refer to Figure 22)

1. Connect load resistor (4ohm) to the EXT. SP sockets (SO102, SO103) and further connect the V.T.V.M. thereto.
2. Connect the signal generator to the phono jacks (J103-A, J103-B) and apply signal (1000 Hz, -54 dB) to the unit.
3. Place the unit in PHONO mode.
4. If the phono amplifier sensitivity is normal, the reading on the V.T.V.M. should be approximately 2.8 V.

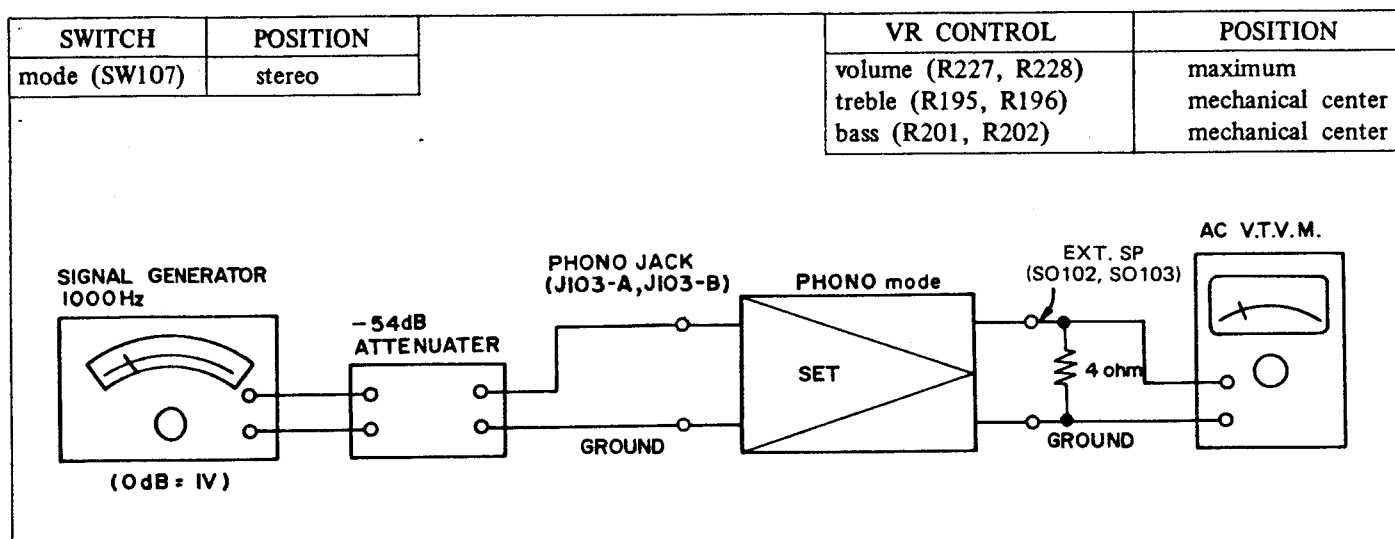


Figure 22

■ SWING ADJUSTMENT OF VU METER

(Refer to Figures 20 and 23)

1. Apply signal (1 kHz, -60 dB) to the EXT. MIC jacks (J101-A, J101-C)
2. Adjust the record volume controls (R147, R148) so that the V.T.V.M. reads 3.5 mV.
3. Rotate the semi-variable resistors (R187, R188) to adjust so that each of the two VU meters (ME101, ME102) indicates around "0" VU and swings to the same extent in right and left of the position "0" VU.

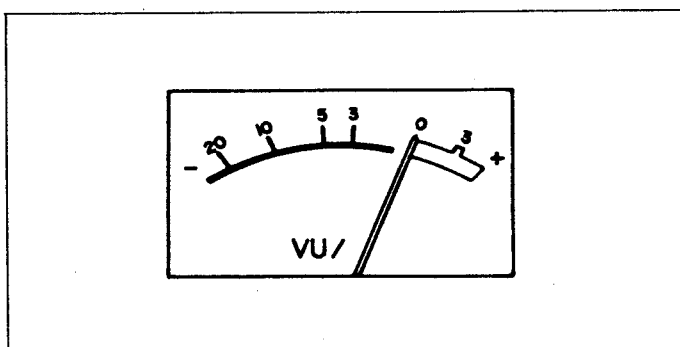


Figure 23

■ RECORD/PLAYBACK HEAD AZIMUTH ADJUSTMENT

(Refer to Figure 24.)

1. Connect load resistor (4ohm) to the EXT. SP sockets (SO102, SO103) and connect outputs of both the right and left channels to the vertical and horizontal input terminals of oscilloscope.
2. Insert the test tape (MTT-114, 10 kHz, -10 dB Recorded).
3. Place the unit in PLAYBACK mode.
4. Adjust the head azimuth adjusting screw so that Lissajou's waveform attains the maximum and the same phase in right and left.

5. Even without using the oscilloscope, also adjust the head azimuth adjusting screw so that outputs of both the right and left channels attain the maximum and the same phase in right and left, and as a result, the output won't be decreased so much considerably even when the mode switch (SW107) is set to "mono".

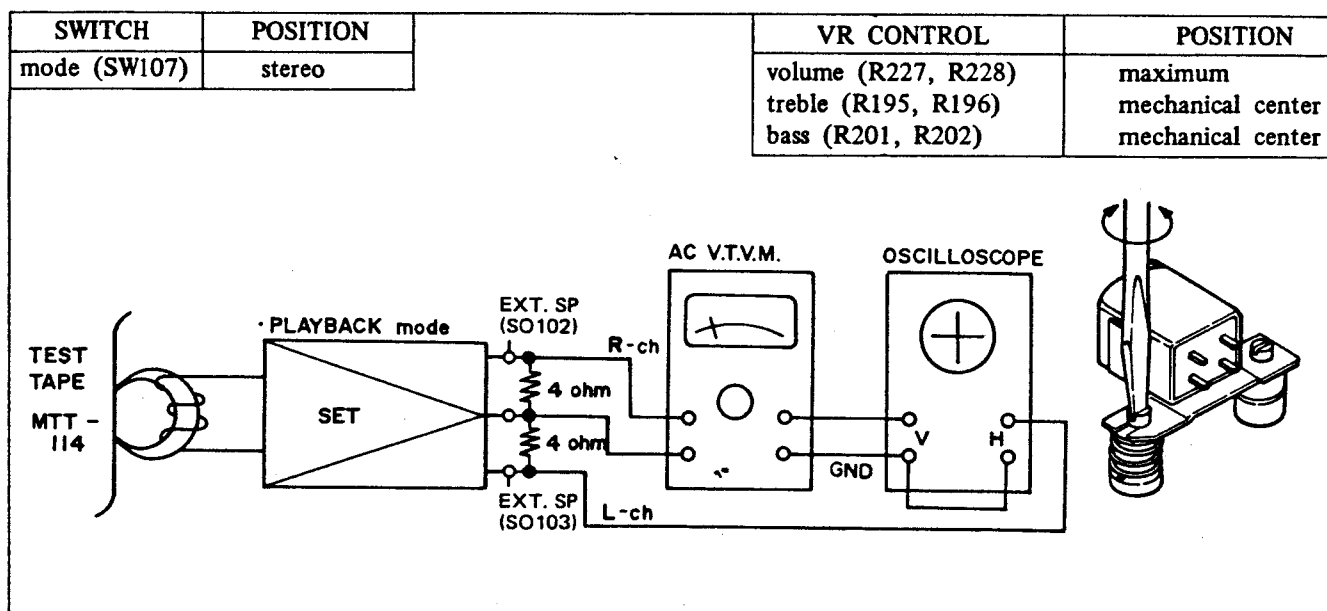


Figure 24

GENERAL ALIGNMENT INSTRUCTION

Should it become necessary at any time to check the alignment of this receiver, proceed as follows;

1. Set the volume control (R227, R228) to maximum.
2. Attenuate the signals from the generator enough to swing the most sensitive range of the output meter.
3. Use a non-metallic alignment tool.
4. Repeat adjustments to insure good results.
5. Set the POWER switch (SW101F) to "ON" position.

THE INSTRUCTION OF FREQUENCY ADJUSTMENT (GF-9191H/HB)

In order to comply with FTZ rule: Nr. 358/1970, please fix the low end of dial frequency (87.5MHz) and the high end of dial frequency (107.9MHz) on FM band, by adjust-

ing oscillation coils (L3 and L4) and oscillation trimmer (TC2), respectively, as illustrated in Figure 33.

AM ALIGNMENT CHART

(Refer to Figure 33)

STEP	BAND	TEST STAGE	SIGNAL GENERATOR		RECEIVER		ADJUSTMENT
			CONNECTION TO RECEIVER	INPUT SIGNAL FREQUENCY	DIAL SETTING	REMARKS	
1	MW	IF	Refer to Figure 25	Exactly 455 kHz. (400 Hz, 30%, AM modulated)	High end of dial. (minimum capacity)	Adjust for maximum output.	Adjust the AM IF transformers (T3) (T4)
2	MW	Band Coverage	Refer to Figure 25	Exactly 510 kHz. (400 Hz, 30%, AM modulated)	Low end of dial. (maximum capacity).	Adjust for maximum output.	Adjust the MW oscillation coil (L9).
3	MW		Same as step 2.	Exactly 1650 kHz. (400 Hz, 30%, AM modulated)	High end of dial. (minimum capacity).	Same as step 2.	Adjust the MW oscillation trimmer (TC7).
4	MW	Tracking	Same as step 2.	Exactly 600 kHz. (400 Hz, 30%, AM modulated)	600 kHz.	Same as step 2.	Adjust the MW antenna coil (L7) (See Note A)
5	MW		Same as step 2.	Exactly 1400 kHz. (400 Hz, 30%, AM modulated)	1400 kHz.	Same as step 2.	Adjust the MW antenna trimmer (TC4). (See Note A)
6	MW	Repeat steps 2, 3, 4, and 5 until no further improvement can be made.					
7	LW	Band Coverage	Same as step 2.	Exactly 145 kHz. (400 Hz, 30%, AM modulated)	Low end of dial. (maximum capacity)	Same as step 2.	Adjust the LW oscillation coil (L10).
8	LW		Same as step 2.	Exactly 295 kHz. (400 Hz, 30%, AM modulated)	High end of dial. (minimum capacity)	Same as step 2.	Adjust the LW oscillation trimmer (TC8).
9	LW	Tracking	Same as step 2.	Exactly 160 kHz. (400 Hz, 30%, AM modulated)	160 kHz.	Same as step 2.	Adjust the LW antenna coil (L7).
10	LW		Same as step 2.	Exactly 260 kHz. (400 Hz, 30%, AM modulated)	260 kHz.	Same as step 2.	Adjust the LW antenna trimmer (TC5).
11	LW	Repeat steps 7, 8, 9 and 10 until no further improvement can be made.					
12	SW	Band Coverage	Refer to Figure 26	Exactly 5.85 MHz (400 Hz, 30%, AM modulated)	Low end of dial. (maximum capacity)	Same as step 2.	Adjust the SW oscillation coil (L8).
13	SW		Same as step 12.	Exactly 18.5 MHz. (400 Hz, 30%, AM modulated)	High end of dial. (minimum capacity)	Same as step 2.	Adjust the SW oscillation trimmer (TC6).

14	SW	Tracking	Same as step 12.	Exactly 6.5 MHz. (400 Hz, 30%, AM modulated)	6.5 MHz	Same as step 2.	Adjust the SW antenna coil (L6).
15	SW		Same as step 12.	Exactly 16 MHz (400 Hz, 30%, AM modulated)	16 MHz	Same as step 2.	Adjust the SW antenna trimmer (TC3).
16	SW	Repeat steps 12, 13, 14 and 15 until no further improvement can be made.					

Note A Check the alignment of the receiver antenna coil by bringing a piece of ferrite (such as a coil slug) near the antenna loop stick, then a piece of brass. If ferrite increases output, loop requires more inductance. If brass increases

output, loop requires less inductance. Change loop inductance by sliding the bobbin toward the center of ferrite core to increase inductance, or away to decrease inductance.

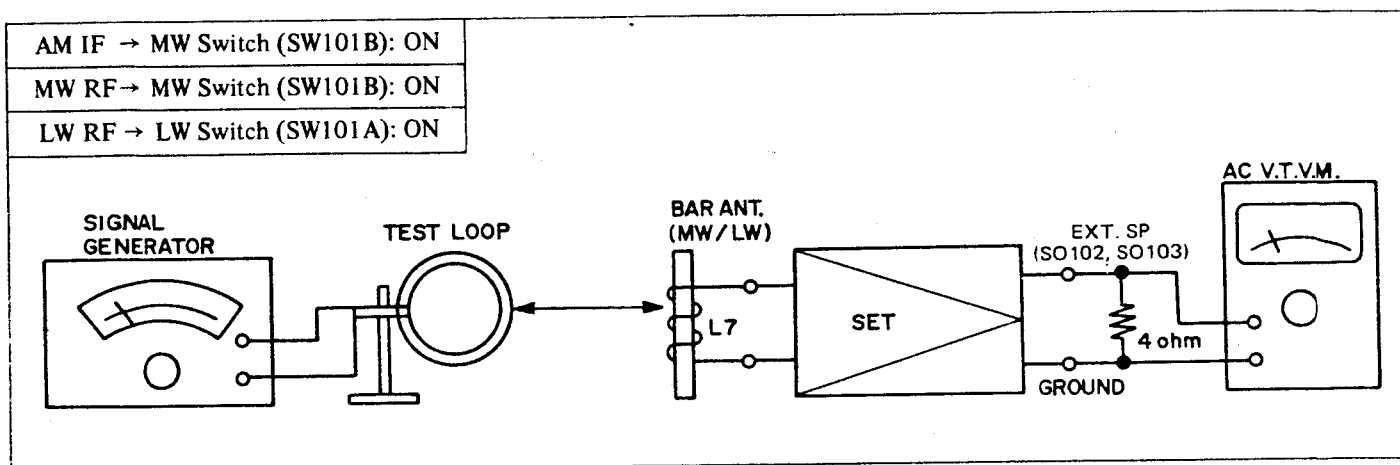


Figure 25 AM IF and MW/LW RF ALIGNMENT EQUIPMENT CONNECTION

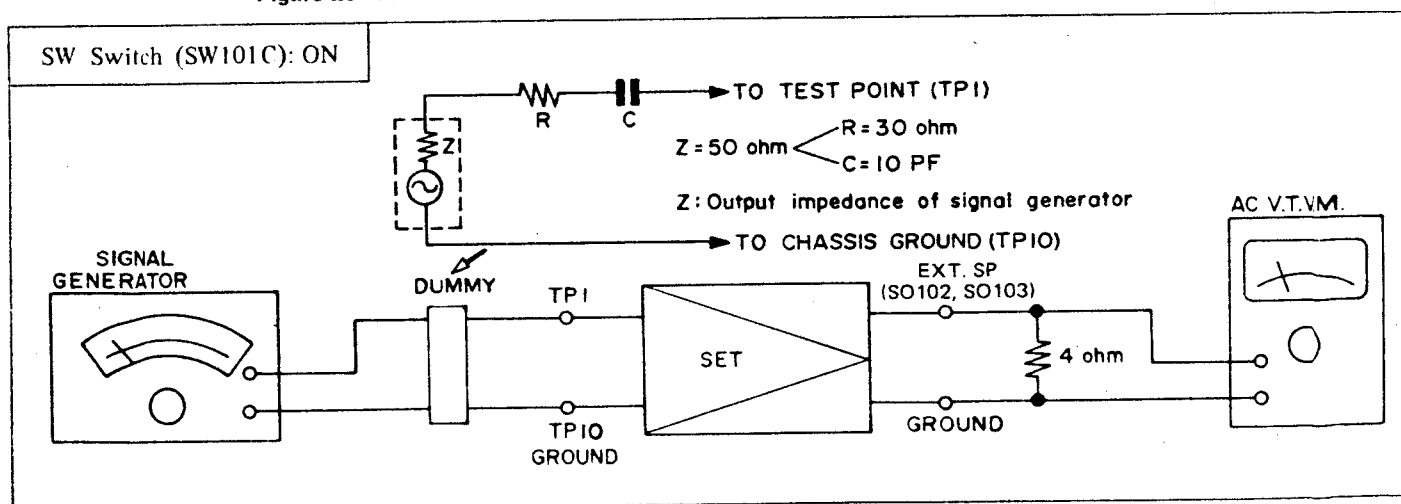


Figure 26 SW RF ALIGNMENT EQUIPMENT CONNECTION

FM ALIGNMENT CHART

(Refer to Figure 33)

STEP	TEST STAGE	SIGNAL GENERATOR		RECEIVER		ADJUSTMENT
		CONNECTION TO RECEIVER	INPUT SIGNAL FREQUENCY	DIAL SETTING	REMARKS	
1	IF	Refer to Figure 27	Exactly 10.7 MHz. (400 Hz, 30%, FM modulated)	High end of dial. (minimum capacity)	Adjust for maximum output.	Adjust the FM IF transformers 1. (T1) 2. (T2) (See Note B)
2	Band Coverage	Refer to Figures 28 and 32	Exactly 87.1 MHz (400 Hz, 30%, FM modulated)	Low end of dial. (maximum capacity)	Adjust for maximum output.	Adjust the FM oscillation coils (L3, L4).
3		Same as step 2.	Exactly 108.5 MHz. (400 Hz, 30%, FM modulated)	High end of dial. (minimum capacity)	Same as step 2.	Adjust the FM oscillation trimmer (TC2).
4	Tracking	Same as step 2.	Exactly 88 MHz. (400 Hz, 30%, FM modulated)	88 MHz	Same as step 2.	Adjust the FM RF coils (L1, L2).
5		Same as step 2.	Exactly 108 MHz. (400 Hz, 30%, FM modulated)	108 MHz	Same as step 2.	Adjust the FM RF trimmer (TC1).
6	Repeat steps 2, 3, 4 and 5 until no further improvement can be made.					

FM Switch (SW101D): ON
mode switch (SW107): mono

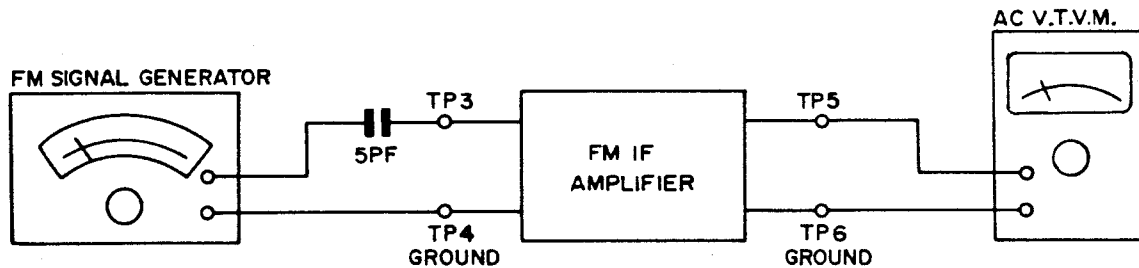


Figure 27 FM IF ALIGNMENT EQUIPMENT CONNECTION

FM Switch (SW101D): ON
mode switch (SW107): mono

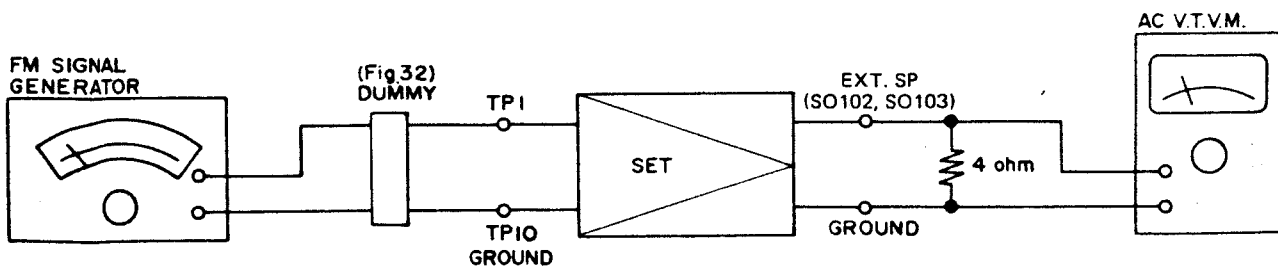


Figure 28 FM RF ALIGNMENT EQUIPMENT CONNECTION

Note B (Refer to Figure 29)

There are 5 kinds of ceramic filters (CF101, CF102) available with this unit and they are given color indication as tabulated below to differentiate the central frequency from one to another among them. When using them, be sure to make the two of the same type a pair. When other ceramic filters than the one (red) having the central frequency of 10.7 MHz are used, note that a marker (10.7 MHz) of FM sweep generator, if used, will be deviated - therefore, adjust the generator by putting off the marker.

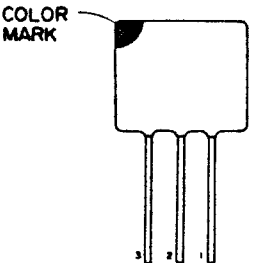
		
Central frequency (fo)	D	Black: 10.64 MHz \pm 30 kHz
	B	Blue: 10.67 MHz \pm 30 kHz
	A	Red: 10.70 MHz \pm 30 kHz
	C	Orange: 10.73 MHz \pm 30 kHz
	E	White: 10.76 MHz \pm 30 kHz

Figure 29

FM MPX ALIGNMENT CHART

STEP	SIGNAL GENERATOR		RECEIVER		ADJUSTMENT
	CONNECTION TO RECEIVER	INPUT SIGNAL FREQUENCY	DIAL SETTING	REMARKS	
1	Refer to Figures 30 and 32	Exactly 98 MHz (54 dB) un modulated.	98 MHz	Adjust for 19 ± 0.1 kHz.	Adjust the semi-variable resistor (R34)

FM Switch (SW101D): ON
mode switch (SW107): stereo

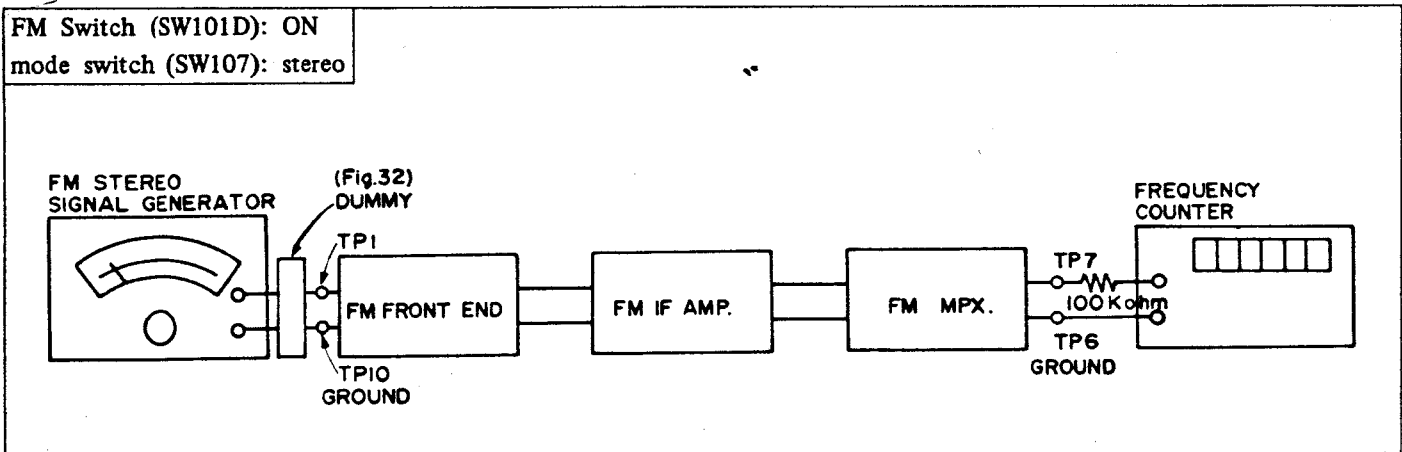


Figure 30 FM MPX ALIGNMENT EQUIPMENT CONNECTION

FM STEREO INDICATOR LIGHTING LEVEL ALIGNMENT CHART

STEP	SIGNAL GENERATOR		RECEIVER		ADJUSTMENT
	CONNECTION TO RECEIVER	INPUT SIGNAL FREQUENCY	DIAL SETTING	REMARKS	
1	Refer to Figures 31 and 32	Exactly 98 MHz (20 dB) (19 kHz, 10%, FM modulated)	98 MHz	Adjust for the indicator starts lighting.	Adjust the semi-variable resistor (R22)

FM Switch (SW101D): ON
mode switch (SW107): stereo

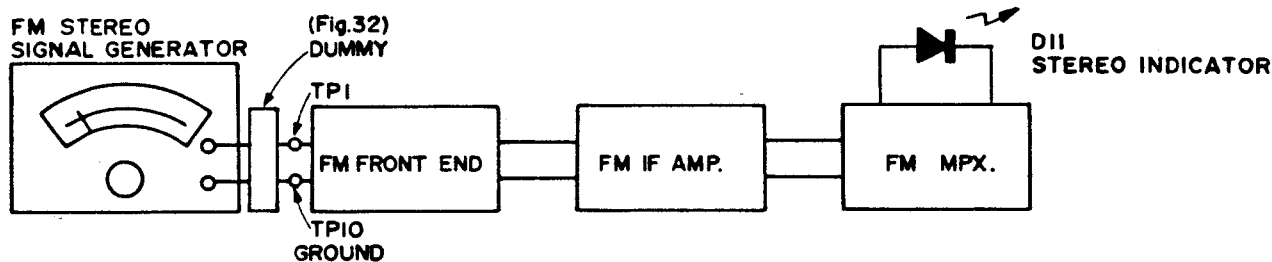


Figure 31 FM STEREO INDICATOR LIGHTING LEVEL ALIGNMENT EQUIPMENT CONNECTION

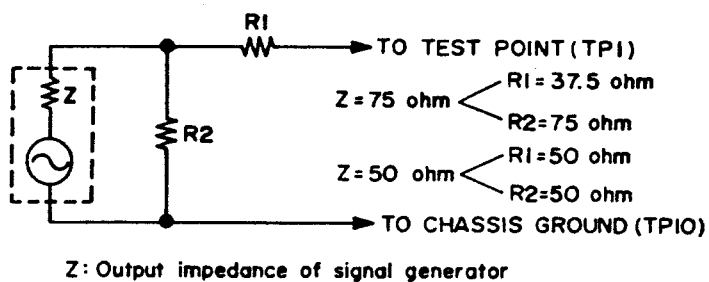
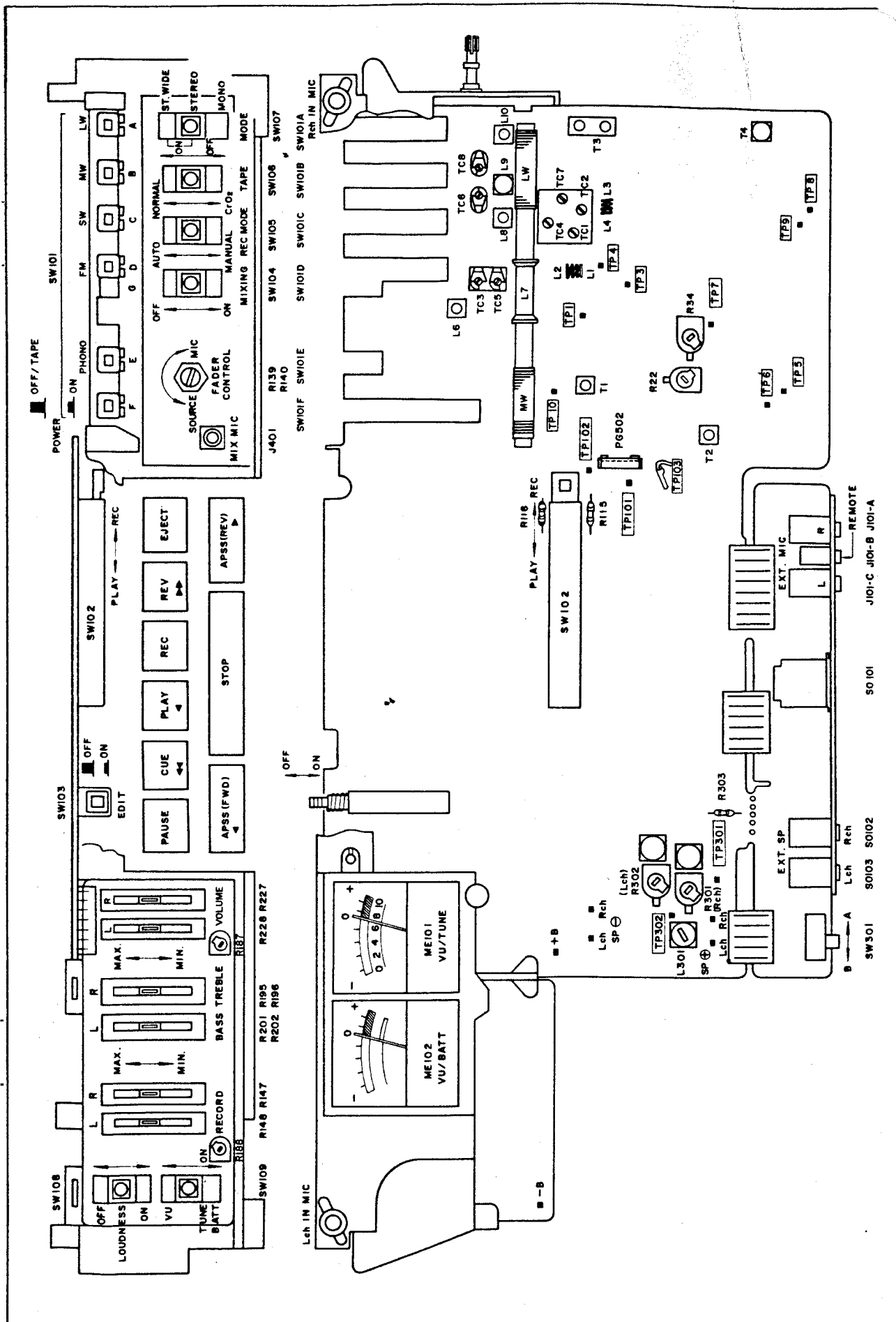


Figure 32 FM DUMMY



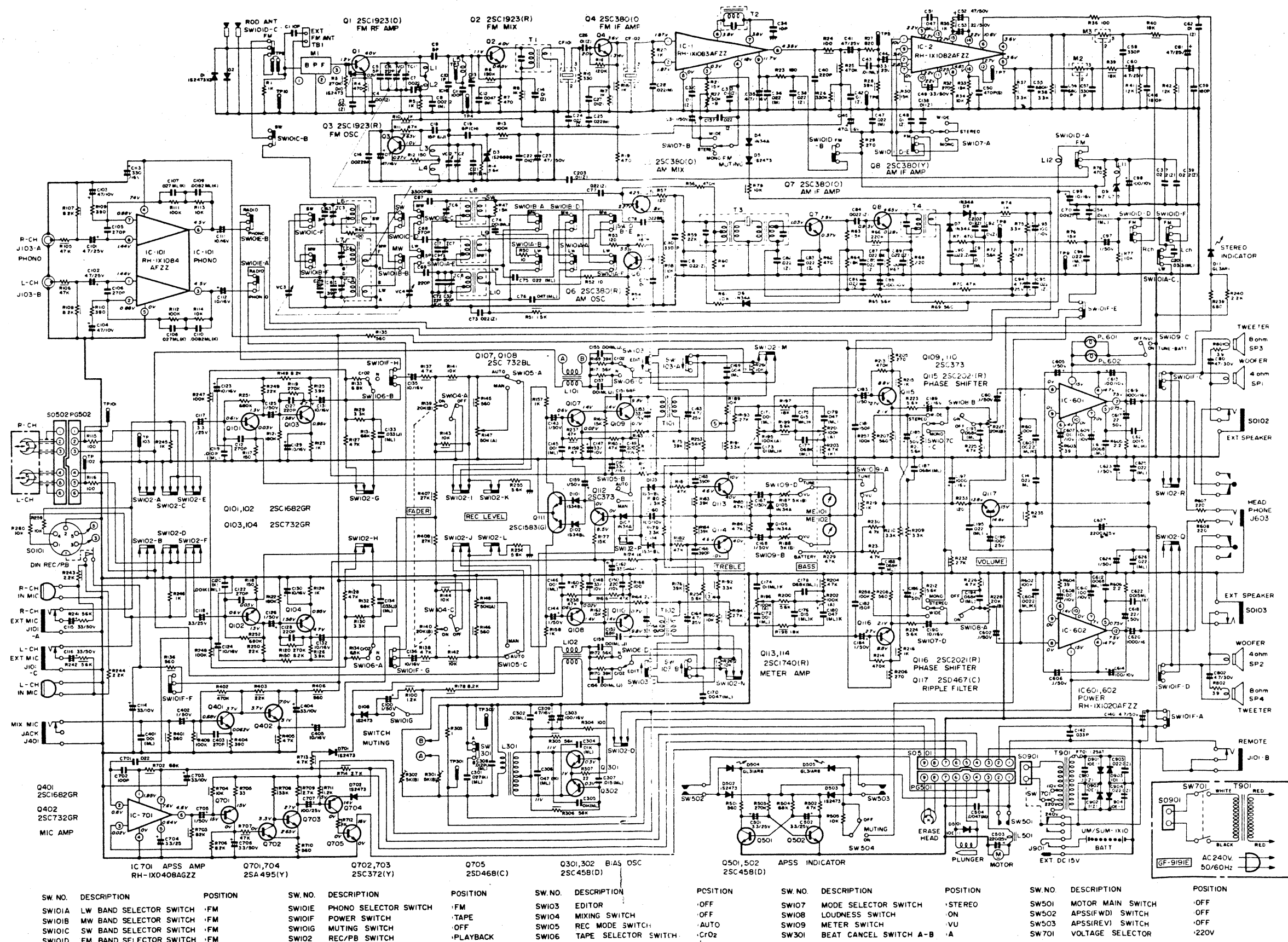


Figure 34 SCHEMATIC DIAGRAM

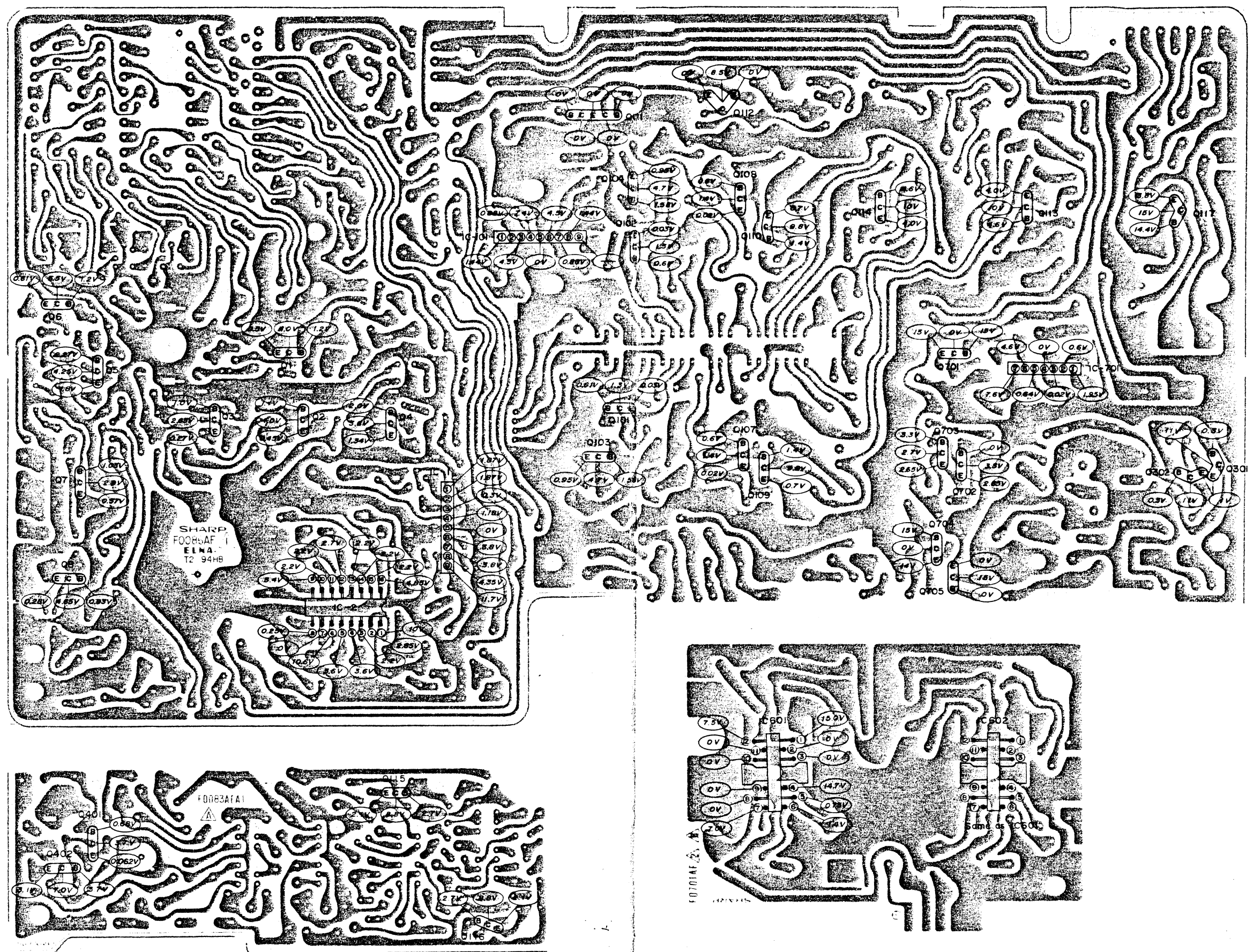


Figure 35 VOLTAGE OF IC AND TRANSISTOR

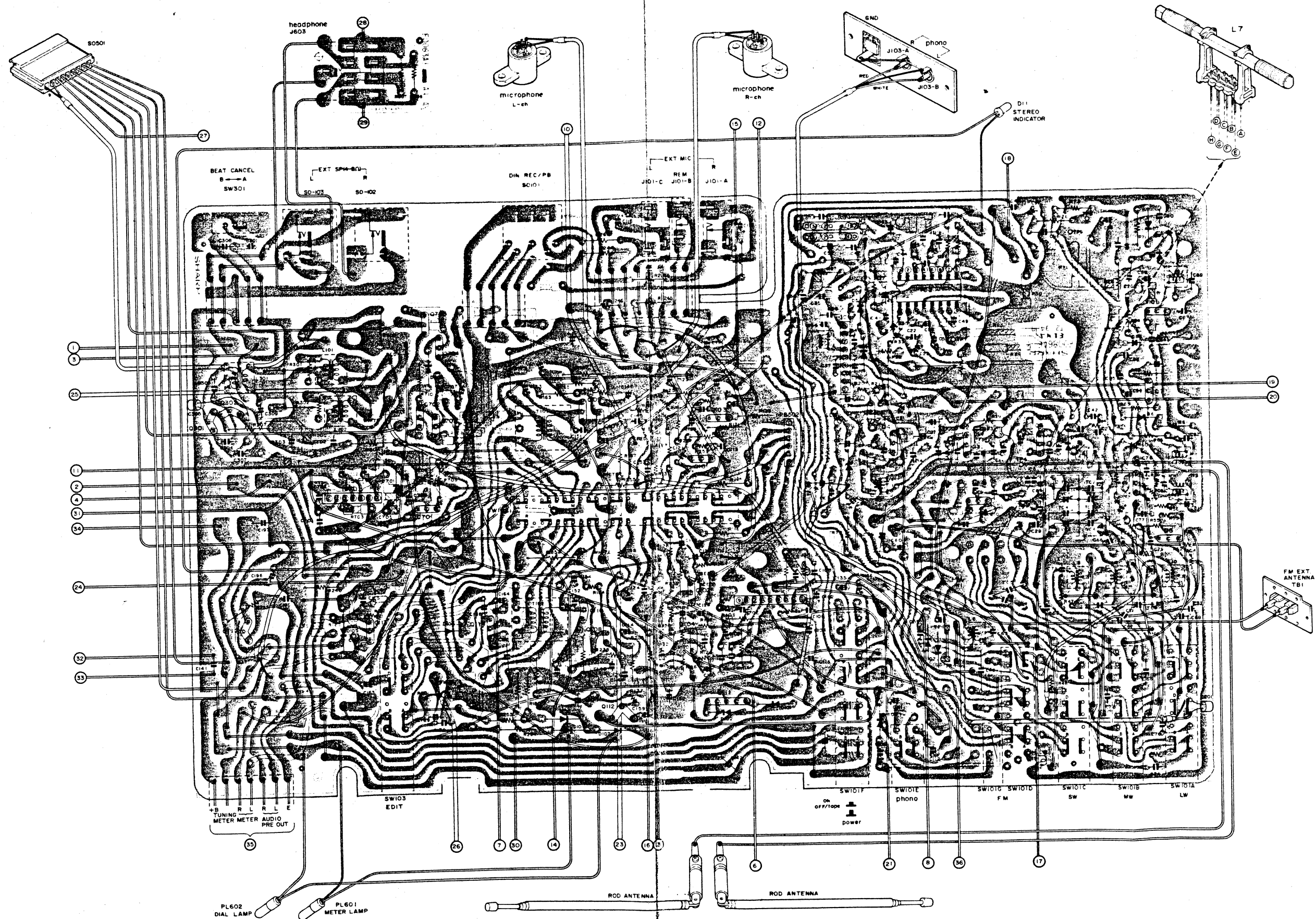


Figure 36 WIRING SIDE OF P.W. BOARD

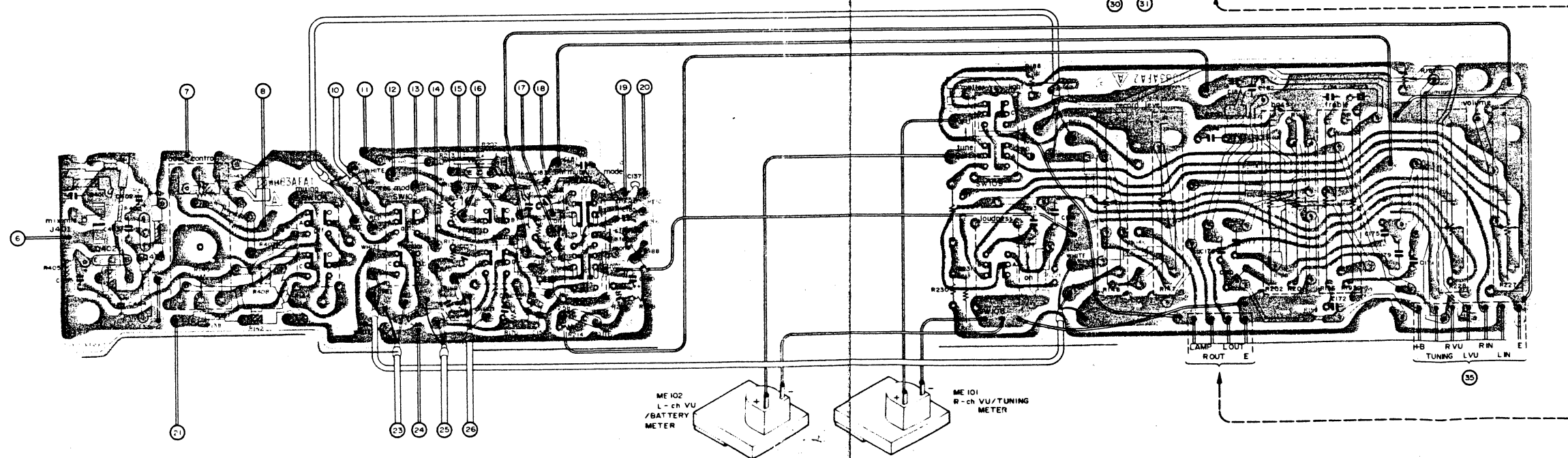
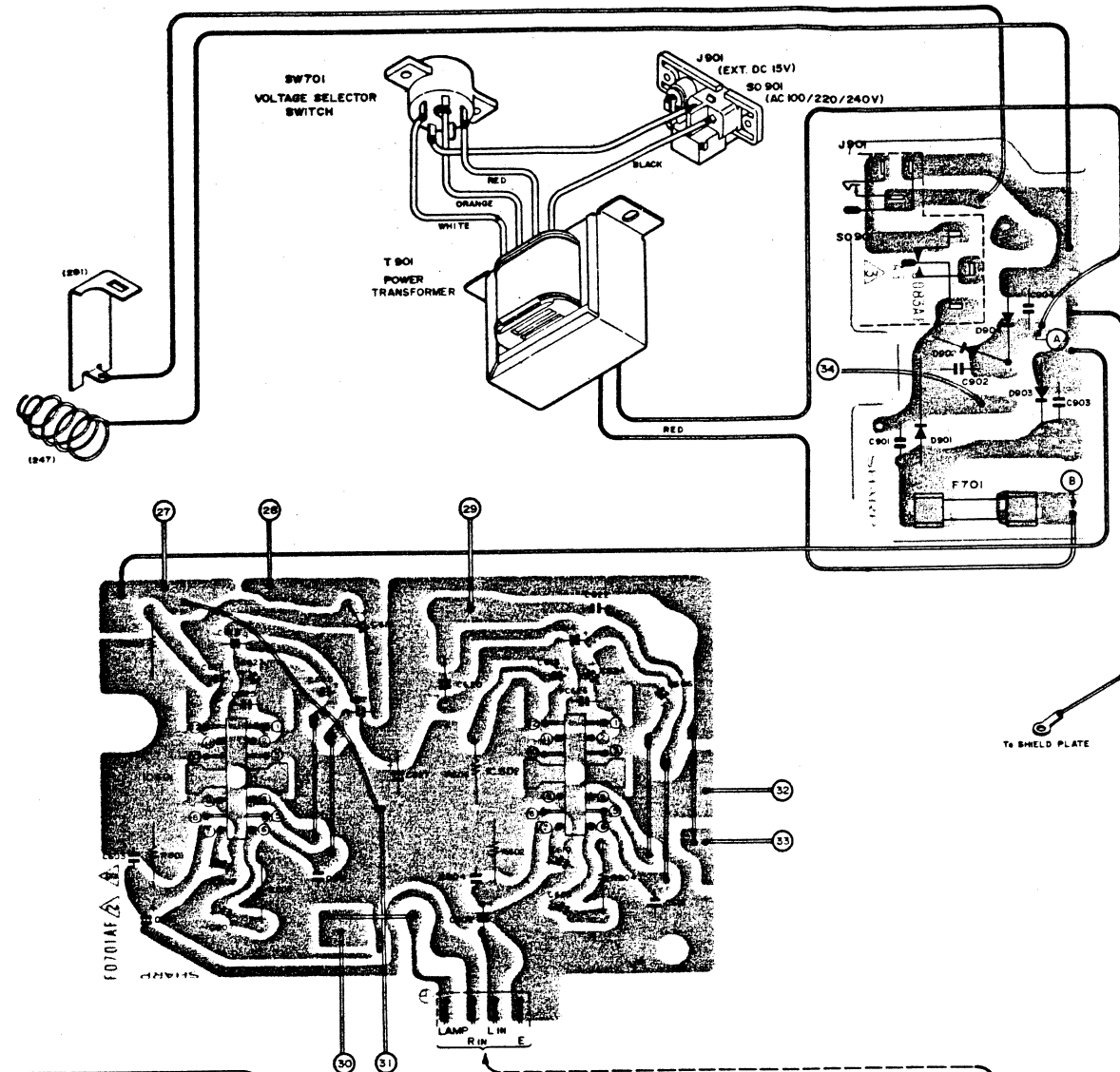
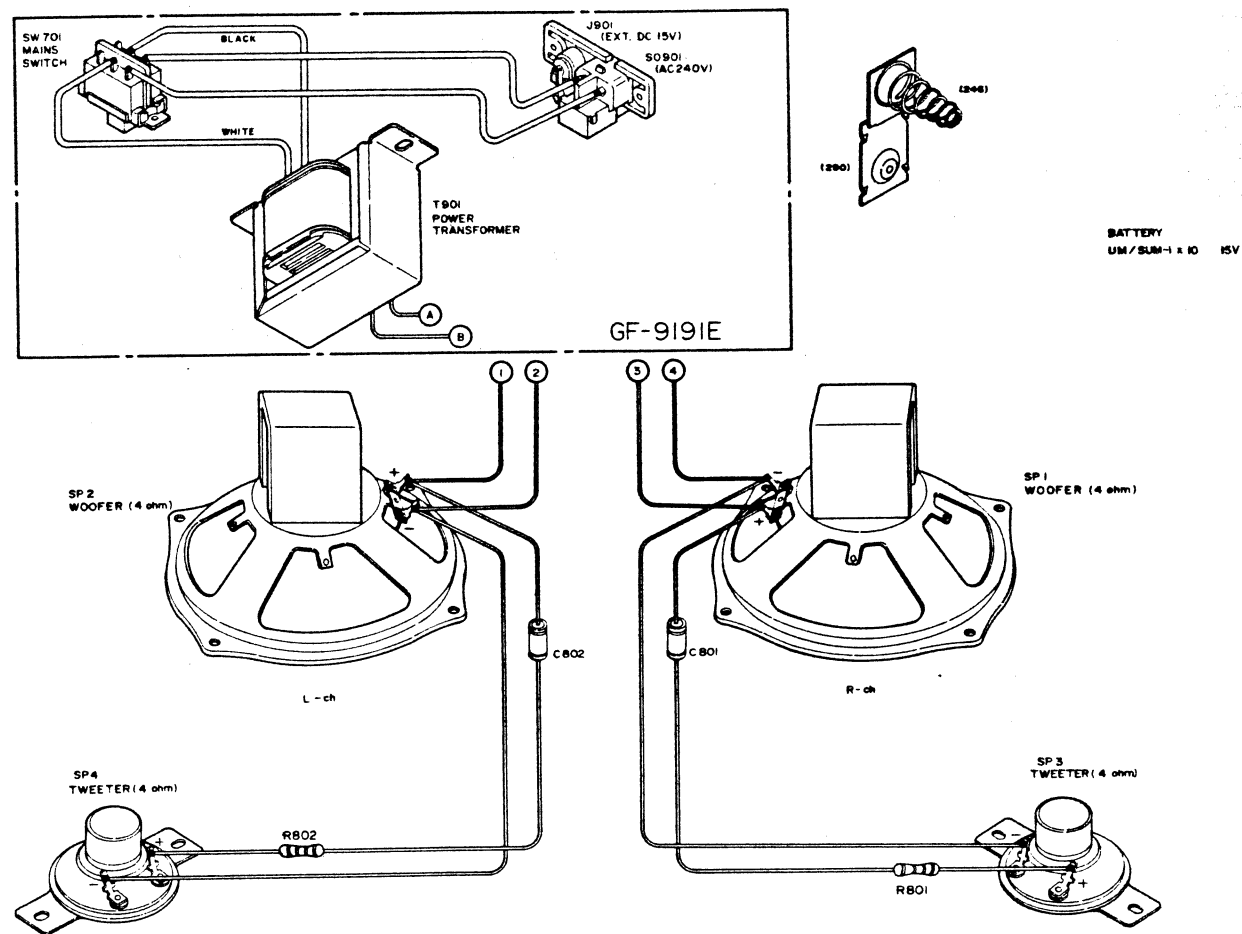


Figure 37 WIRING SIDE OF P.W. BOARD

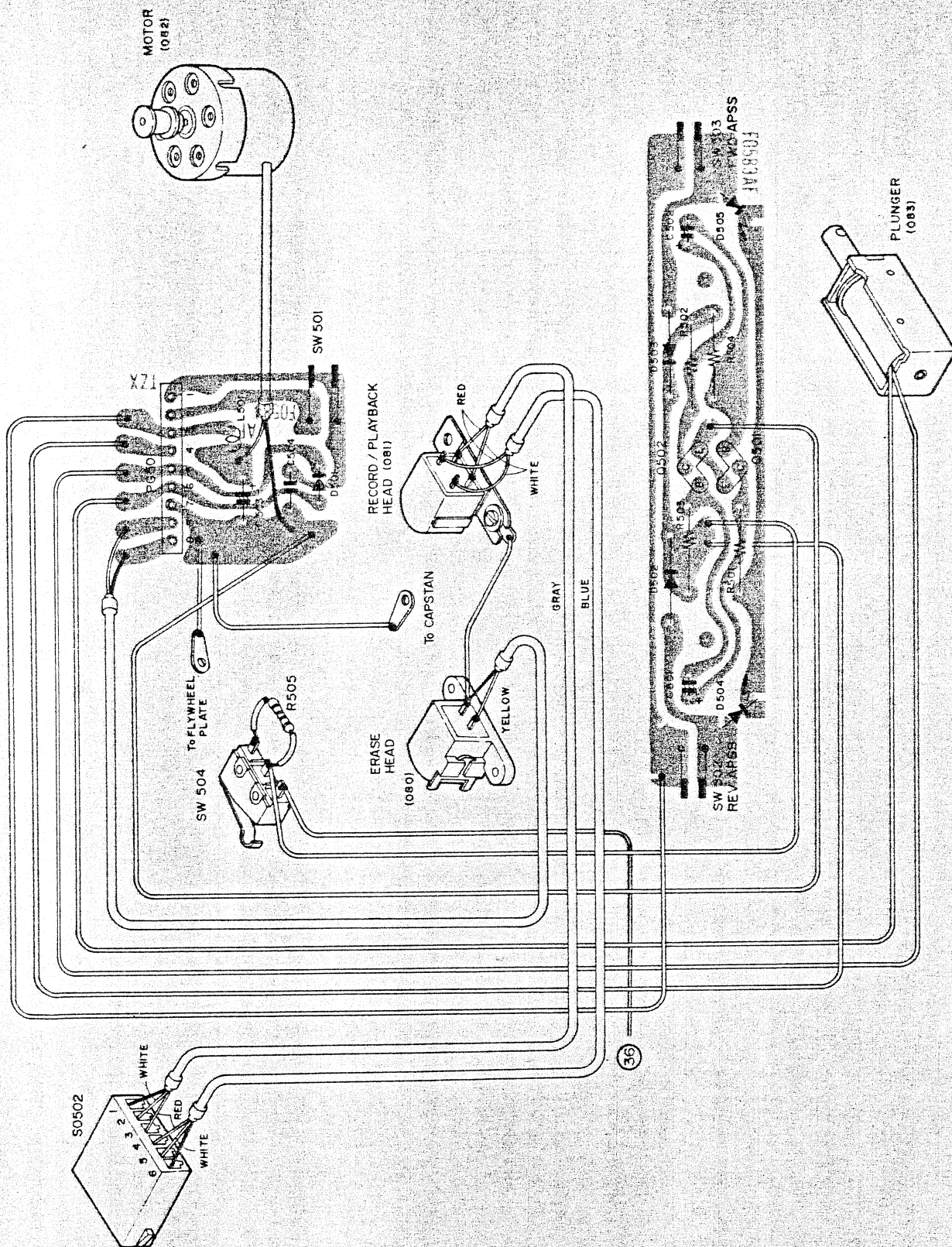


Figure 38 WIRING SIDE OF P.W. BOARD

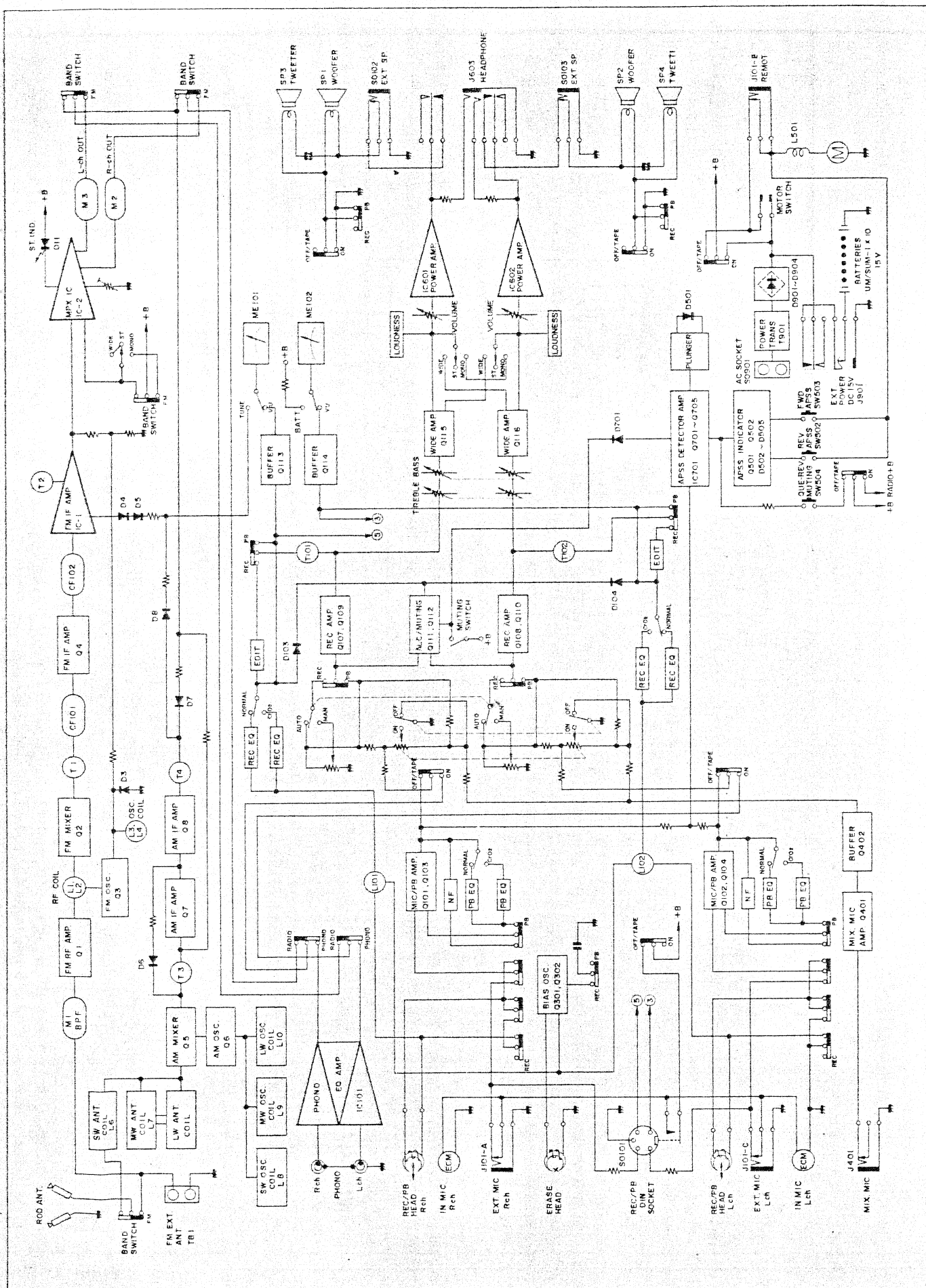


Figure 39 BLOCK DIAGRAM

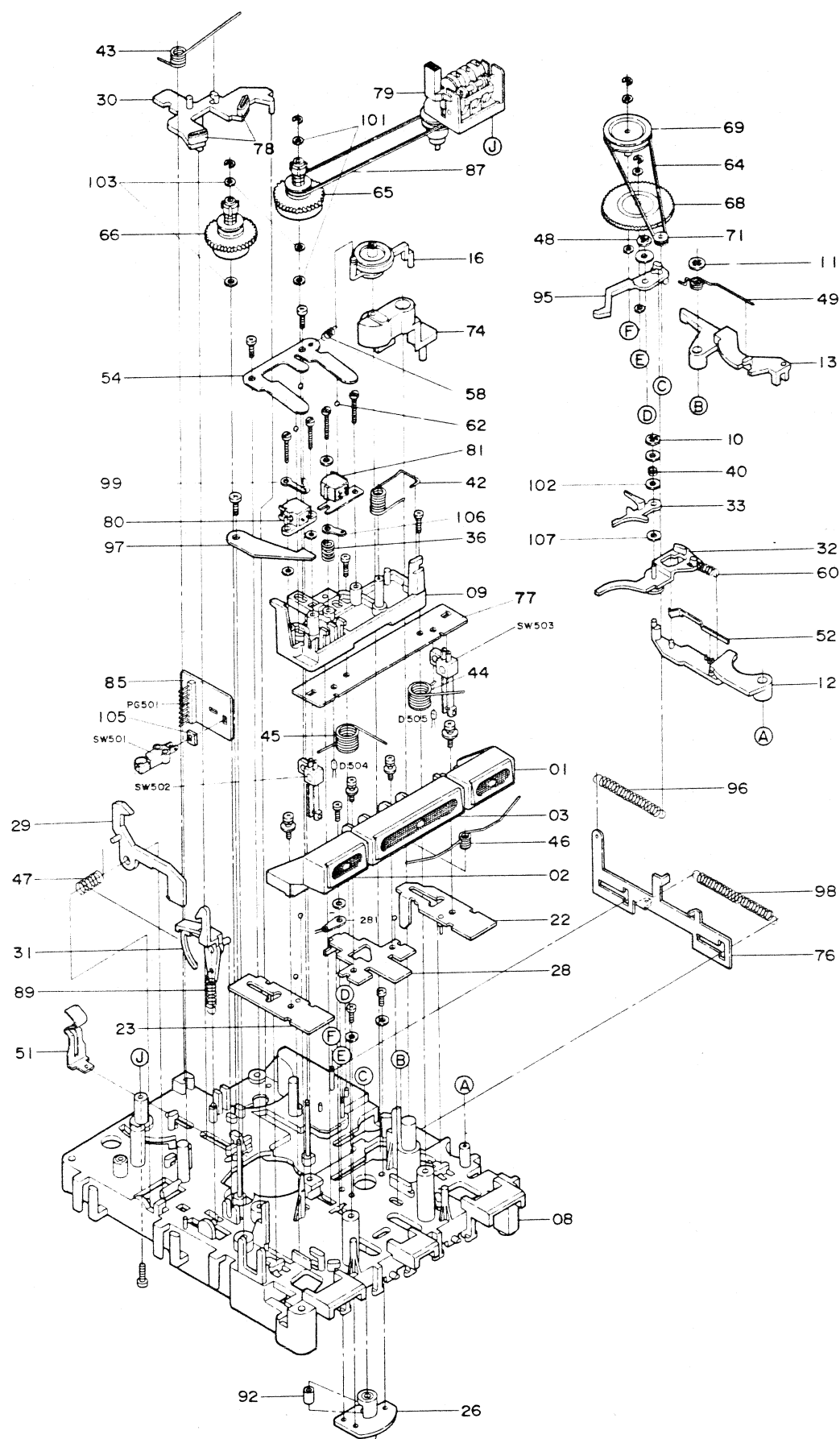


Figure 40 MECHANISM EXPLODED TOP VIEW

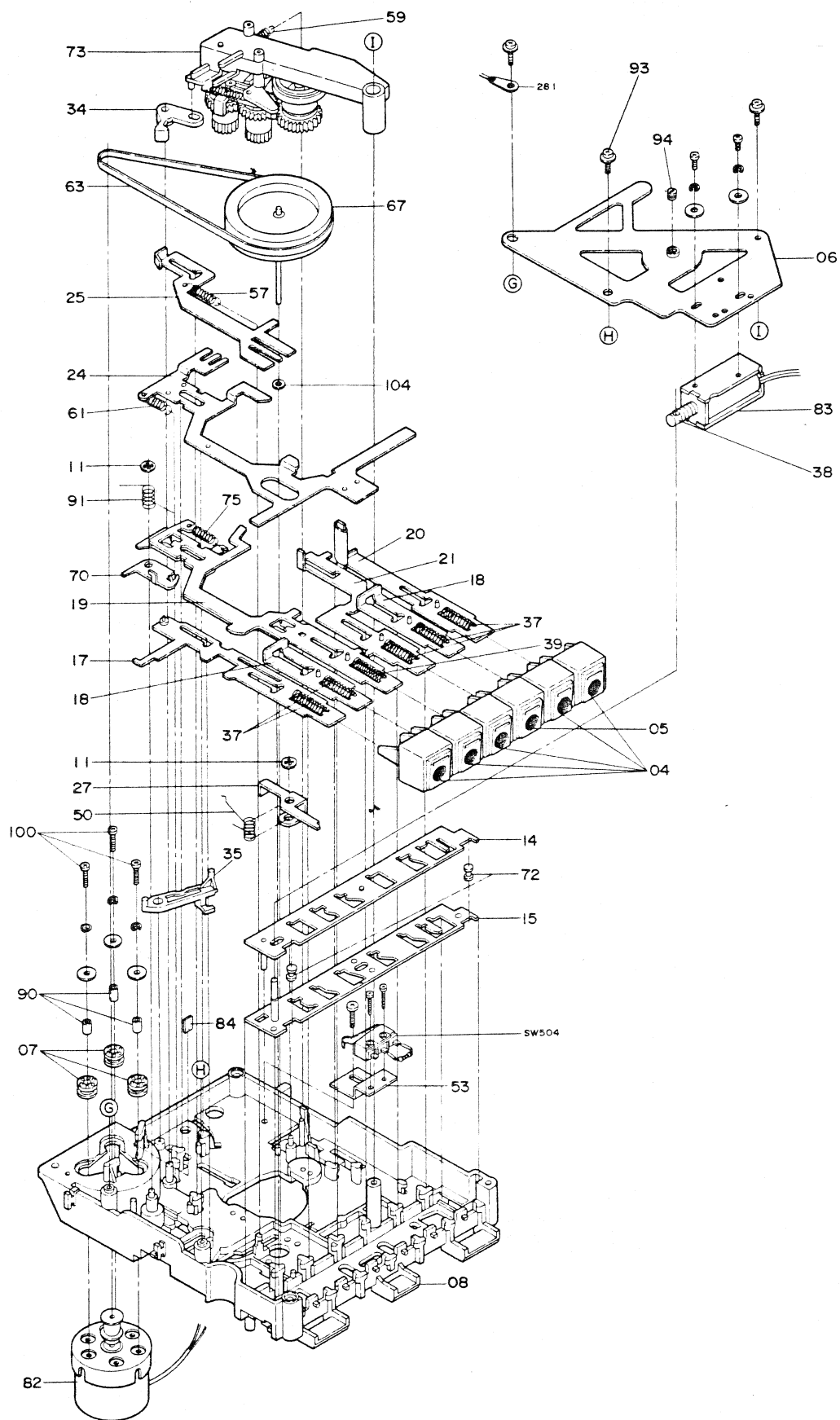


Figure 41 MECHANISM EXPLODED BOTTOM VIEW

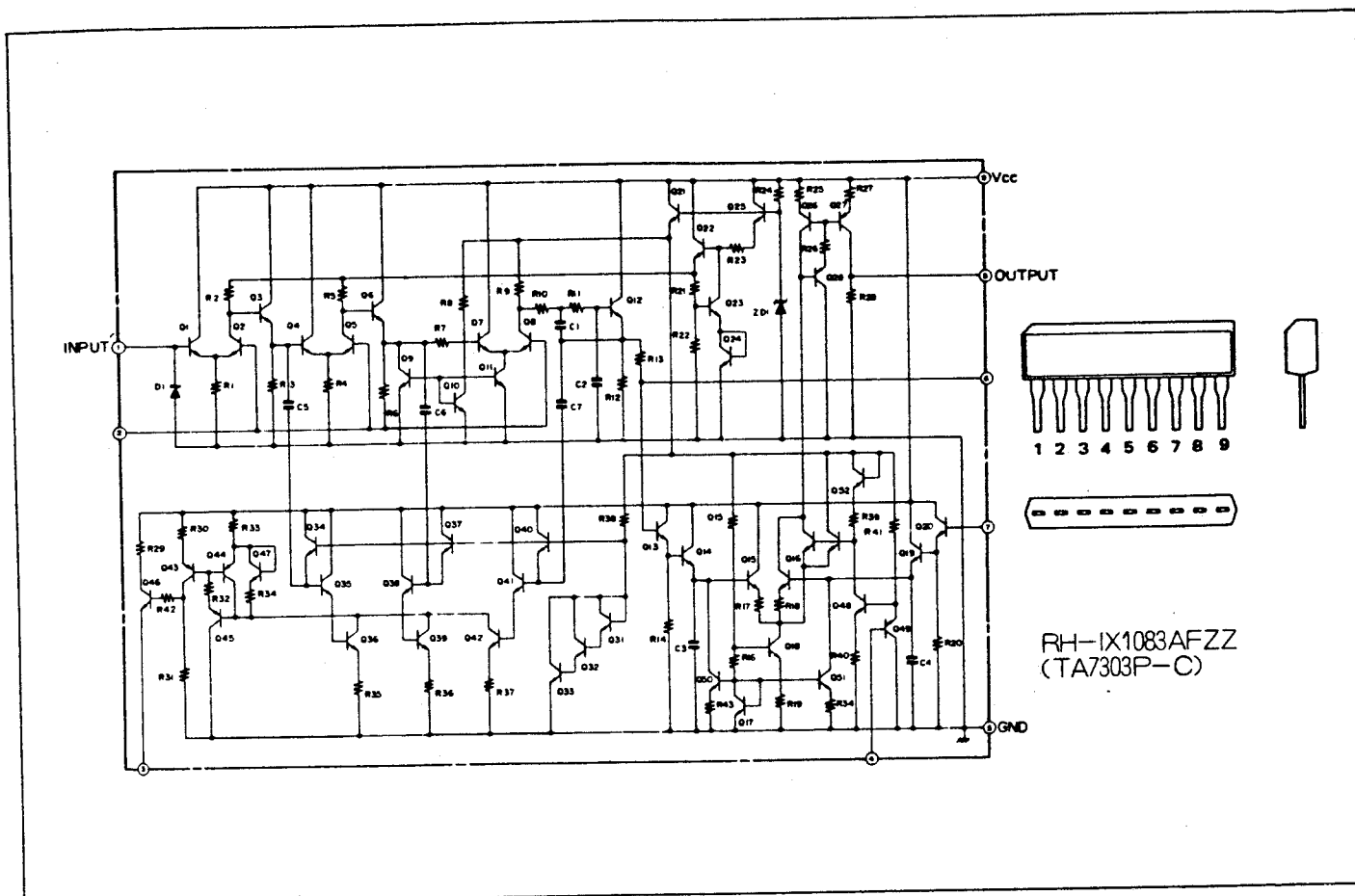


Figure 43 EQUIVALENT CIRCUIT OF IC (IC1)

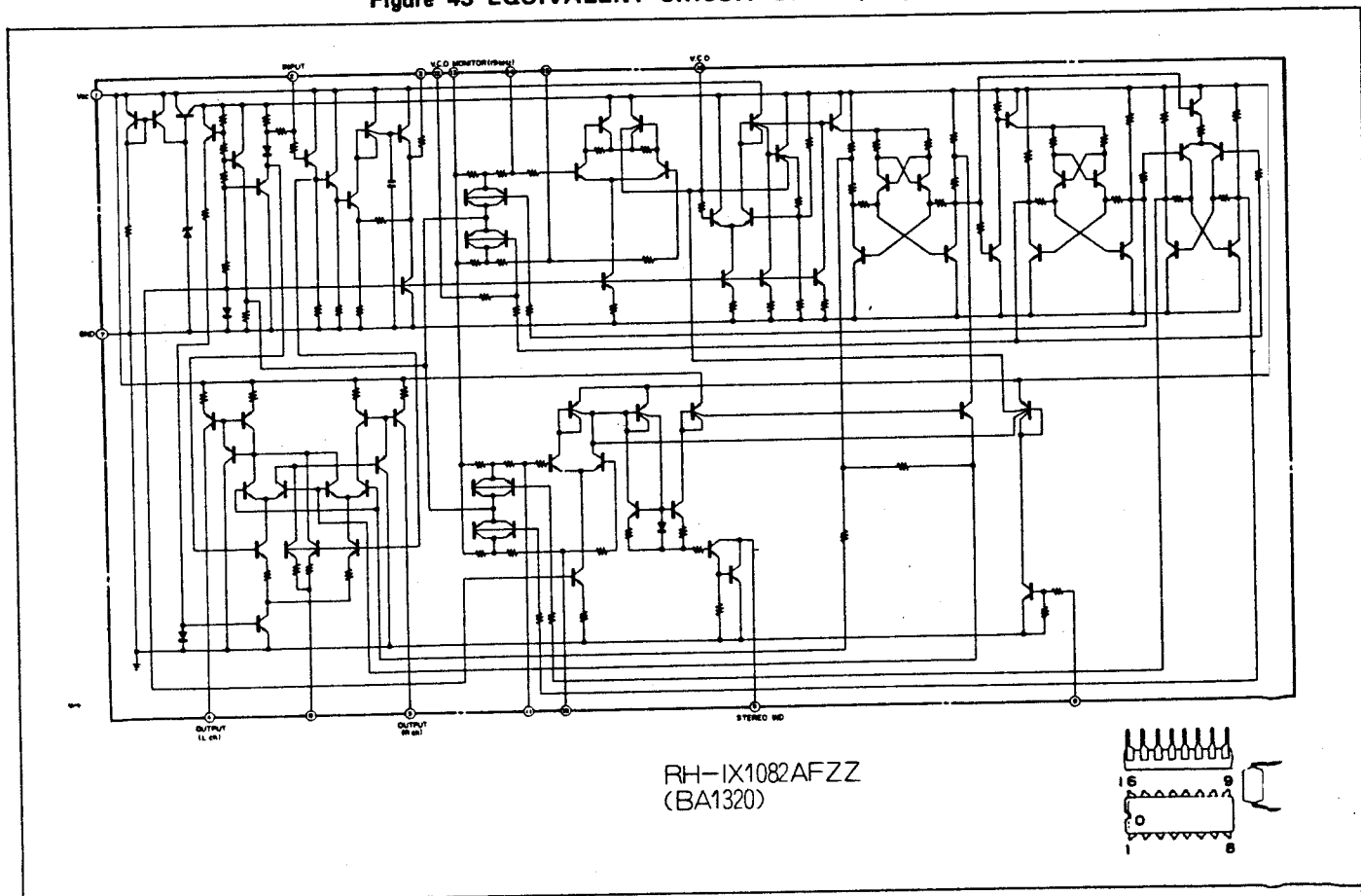
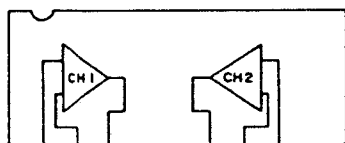
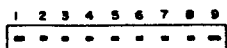
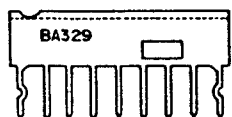


Figure 44 EQUIVALENT CIRCUIT OF IC (IC2)

RH-IX1084AFZZ
(BA329)



1 IN1 2 NFB1 3 OUT1 4 Vcc 5 GND 6 OUT2 7 NFB2 8 IN2 9 NC

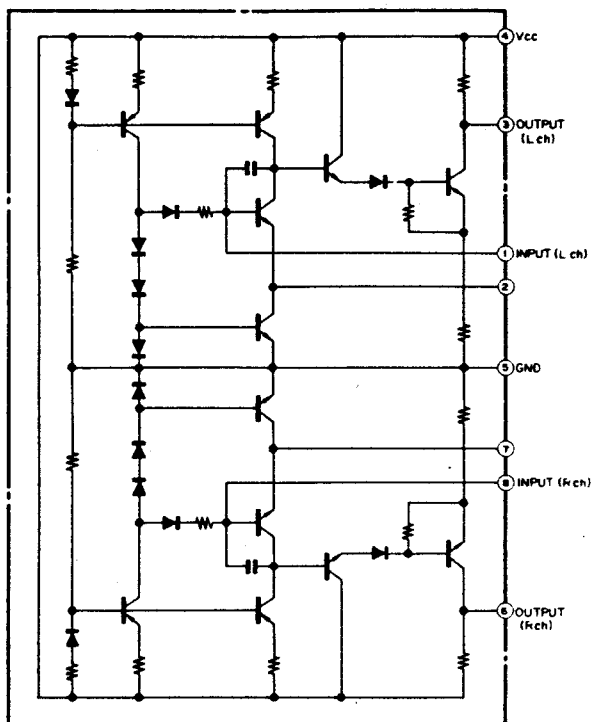
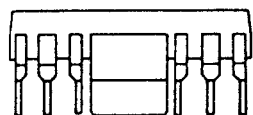
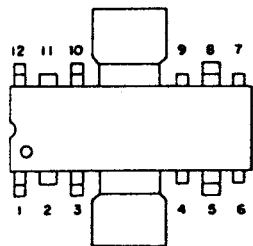
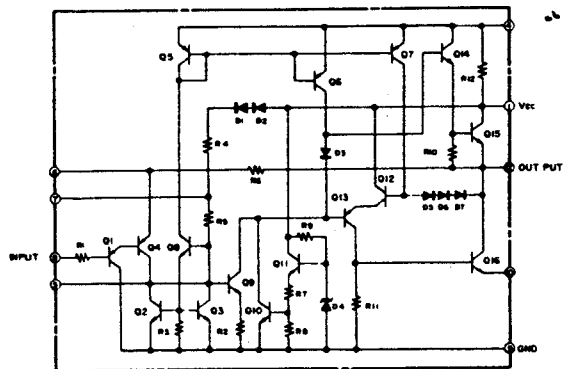
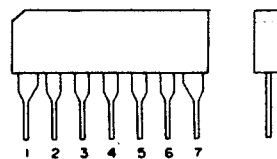
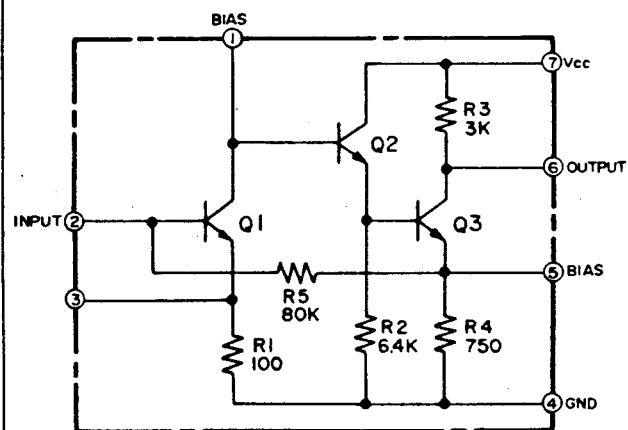


Figure 45 EQUIVALENT CIRCUIT OF IC (IC 101)



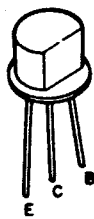
RH-IX1020AFZZ
(TBA810S-H)



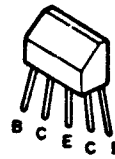
RH-IX0408AGZZ
(TA7120P)

Figure 46 EQUIVALENT CIRCUIT OF IC (IC601, IC602)

Figure 47 EQUIVALENT CIRCUIT OF IC (IC701)

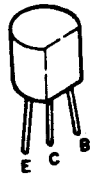


2SA495 Y
2SC372 Y
373 G
380 O, R, Y
732 BL, GR
1682 GR
1476 R



2SC1583 G

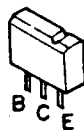
B : Base
C : Collector
E : Emitter



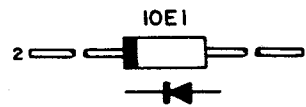
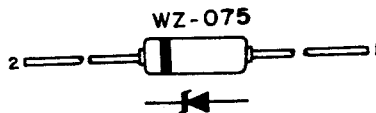
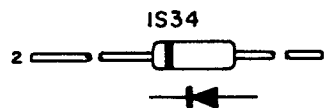
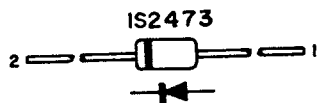
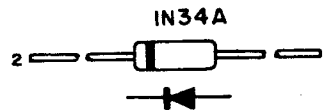
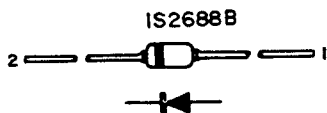
2SC458 D (NEW TYPE)
1923 O, R
2SD467C
2SD468C



2SC458 D (OLD TYPE)



2SC2021 G



GL31AR8

1 : Anode
2 : Cathode



GL3AR1

Figure 48 TRANSISTOR, DIODE AND LED

REPLACEMENT PARTS LIST

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE
INTEGRATED CIRCUITS				DIODES			
IC1	RH-IX1083AFZZ	FM IF Amp. and Detector	AM	D1	VHD1S2473//1	Protector (1S2473)	AB
IC2	RH-IX1082AFZZ	PLL FM Stereo Demodulator	AM	D2	VHD1S2473//1	Protector (1S2473)	AB
IC101	RH-IX1084AFZZ	Phono Equalizer Amp.	AH	D3	VHC1S2688-B1F	FM AFC (1S2688 (B))	AE
IC601	RH-IX1020AFZZ	Audio Power Amp.	AN	D4	VHD1N34A///1	Tuning Meter Bias (1N34A)	AB
IC602	RH-IX1020AFZZ	Audio Power Amp.	AN	D5	VHD1S2473//1	Tuning Meter Bias (1S2473)	AB
IC701	RH-IX0408AGZZ	APSS Amp.	AM	D6	VHD1N34A///1	AM Overload (1N34A)	AB
TRANSISTORS				D7	VHD1N34A///1	AM Detector (1N34A)	AB
Q1	VS2SC1923O/-1	FM RF Amp. (2SC1923 (O))	AC	D8	VHD1N34A///1	AM Tuning Detector (1N34A)	AB
Q2	VS2SC1923R/-1	FM Mixer (2SC1923 (R))	AC	D9	VHEWZ-075//1	Zener, Voltage Regulator (WZ-075)	AD
Q3	VS2SC1923R/-1	FM Oscillator (2SC1923 (R))	AC	D10	VHD1S2473//1	Protector (1S2473)	AB
Q4	CS2SC380-O/-1	FM IF Amp. (2SC380 (O))	AF	D11	VHPGL3AR1//1	LED, Stereo Indicator (GL3AR1)	AD
Q5	VS2SC380-O/-1	AM Mixer (2SC380 (O))	AF	D101	VHD1S34///1	ALC (1S34BL)	AB
Q6	VS2SC380-R/-1	AM Oscillator (2SC380 (R))	AD	D102	VHD1S34///1	ALC (1S34BL)	AB
Q7	VS2SC380-O/-1	AM IF Amp. (2SC380 (O))	AF	D103	VHD1S34///1	ALC (1S34BL)	AB
Q8	VS2SC380-Y/-1	AM IF Amp. (2SC380 (Y))	AD	D104	VHD1S34///1	ALC (1S34BL)	AB
Q101	VS2SC1682GR-1	Equalizer Amp. (2SC1682 (GR))	AD	D105	VHD1N34A///1	VU Meter (1N34A)	AB
Q102	VS2SC1682GR-1	Equalizer Amp. (2SC1682 (GR))	AD	D106	VHD1N34A///1	VU Meter (1N34A)	AB
Q103	VS2SC732-G/-1	Equalizer Amp. (2SC732 (GR))	AD	D107	VHD1N34A///1	ALC (1N34A)	AB
Q104	VS2SC732-G/-1	Equalizer Amp. (2SC732 (GR))	AD	D108	VHD1S2473//1	Muting (1S2473)	AB
Q107	VS2SC732BL/1F	Record Amp. (2SC732 (BL))	AD	D501	RH-DX1006AFZZ	Protector (10E1)	AC
Q108	VS2SC732BL/1F	Record Amp. (2SC732 (BL))	AD	D502	VHD1S2473//1	APSS Indicator Switching (1S2473)	AB
Q109	VS2SC373-G/-1	Record Amp. (2SC373 (G))	AC	D503	VHD1S2473//1	APSS Indicator Switching (1S2473)	AB
Q110	VS2SC373-G/-1	Record Amp. (2SC373 (G))	AC	D504	VHPGL31AR8/-1	LED, APSS Indicator (GL31AR8)	AE
Q111	VS2SC1583G-1F	ALC Amp. (2SC1583 (G))	AF	D505	VHPGL31AR8/-1	LED, APSS Indicator (GL31AR8)	AE
Q112	VS2SC373-G/-1	ALC Amp. (2SC373 (G))	AC	D701	VHD1S2473//1	APSS Muting (1S2473)	AB
Q113	VS2SC1740R/-1	Meter Amp. (2SC1740 (R))	AC	D702	VHD1S2473//1	APSS Muting (1S2473)	AB
Q114	VS2SC1740R/-1	Meter Amp. (2SC1740 (R))	AC	D901	RH-DX1006AFZZ	Rectifier (10E1)	AC
Q115	VS2SC2021-R-1	Phase Shifter (2SC2021 (R))	AC	D902	RH-DX1006AFZZ	Rectifier (10E1)	AC
Q116	VS2SC2021-R-1	Phase Shifter (2SC2021 (R))	AC	D903	RH-DX1006AFZZ	Rectifier (10E1)	AC
Q117	VS2SD467-C/-1	Ripple Filter (2SD467 (C))	AD	D904	RH-DX1006AFZZ	Rectifier (10E1)	AC
Q301	VS2SC458-D/-1	Record Bias Oscillator (2SC458 (D))	AC	COILS			
Q302	VS2SC458-D/-1	Record Bias Oscillator (2SC458 (D))	AC	L1	RCILR0112AFZZ	FM RF	AA
Q401	VS2SC1682GR-1	MIC Amp. (2SC1682 (GR))	AD	L2	RCILR0112AFZZ	FM RF	AA
Q402	VS2SC732-G/-1	MIC Amp. (2SC732 (GR))	AD	L3	RCILR0089AFZZ	FM Oscillator	AA
Q501	VS2SC458-D/-1	APSS Indicator Switching (2SC458 (D))	AC	L4	RCILR0089AFZZ	FM Oscillator	AA
Q502	VS2SC458-D/-1	APSS Indicator Switching (2SC458 (D))	AC	L5	RCILC0030AFZZ	FM IF Trap	AC
Q701	VS2SA495-Y/-1	APSS Switching (2SA495 (Y))	AD	L6	RCILA0255AFZZ	SW Antenna	AE
Q702	VS2SC372-Y/-1	APSS Level Comparison (2SC372 (Y))	AC	L7	RCILA0408AFZZ	MW/LW Antenna	AN
Q703	VS2SC372-Y/-1	APSS Level Comparison (2SC372 (Y))	AC	L8	RCILB0309AFZZ	SW Oscillator	AE
Q704	VS2SA495-Y/-1	APSS Plunger Drive (2SA495 (Y))	AD	L9	RCILB0389AFZZ	MW Oscillator	AD
Q705	VS2SD468-C/-1	APSS Plunger Driver (2SD468 (C))	AE	L10	RCILB0353AFZZ	LW Oscillator	AD
				L11	RCILC0066AFZZ	Choke	AC
				L12	RCILF0014AGZZ	Filter	AC
				L101	RCILB0376AFZZ	Bias Step-up	AE
				L102	RCILB0376AFZZ	Bias Step-up	AE

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE
L301	RCILB0086AGZZ	Bias Oscillator	AE	C4	VCKZPU1HF102Z	.001MFD, 50V, +80 -20%, Ceramic	AA
L501	RCILF0014AGZZ	Noise Suppressor	AC	C5	VCCSPU1HL5R0C	5PF, 50V, ±25PF, Ceramic	AA
TRANSFORMERS				C6	VCCSPU1HL220J	22PF, 50V, ±5%, Ceramic	AA
T1	RCILJ0157AFZZ	FM IF	AE	C7	VCKYPU1HB222M	.0022MFD, 50V, ±20%, Ceramic	AA
T2	RCILJ0208AFZZ	FM IF	AD	C8	VCKYPU1HB222M	.0022MFD, 50V, ±20%, Ceramic	AA
T3	RCILJ0224AFZZ	AM IF	AH	C9	VCCSPU1HL5R0C	5PF, 50V, ±25PF, Ceramic	AA
T4	RCILJ0170AFZZ	AM IF	AD	C10	VCCPU1HH1R0C	1PF (CH), 50V, ±25PF, Ceramic	AA
T101	RTRNI0065AFZZ	Recording	AF	C11	VCCSPU1HL101J	100PF, 50V, ±5%, Ceramic	AA
T102	RTRNI0065AFZZ	Recording	AF	C12	VCKYPU1HB472M	.0047MFD, 50V, ±20%, Ceramic	AA
T901	RTRNP0555AFZZ	Power (GF-9191H/HB)	AW	C13	VCCSPU1HL3R0C	3PF, 50V, ±25PF, Ceramic	AA
	RTRNP0565AFZZ	Power (GF-9191E)	**	C14	VCKZPU1HF103Z	.01MFD, 50V, +80 -20%, Ceramic	AA
FILTERS				C16	VCKYPU1HB222M	.0022MFD, 50V, ±20%, Ceramic	AA
CF101	RFILF0009AFZZ	Ceramic, 10.7MHz, FM IF	AE	C17	VCEAAU1CW476Y	47MFD, 16V, +50 -10%, Electrolytic	AC
CF102	RFILF0009AFZZ	Ceramic, 10.7MHz, FM IF	AE	C18	VCCUPU1HJ150J	15PF (UJ), 50V, ±5%, Ceramic	AB
PACKAGED CIRCUITS				C19	VCCCPU1HH6R0C	6PF (CH), 50V, ±25PF, Ceramic	AA
M1	RFILF0056AFZZ	B.P.F., FM Antenna	AE	C21	VCCSPU1HH180J	18PF (SH), 50V, ±5%, Ceramic	**
M2	RMPTA0104AFZZ	Low Pass Filter	AD	C22	VCKZPU1HF103Z	.01MFD, 50V, +80 -20%, Ceramic	AA
M3	RMPTA0104AFZZ	Low Pass Filter	AD	C23	VCEALU1HW474M	.47MFD, 50V, ±20%, Electrolytic	AB
CONTROLS				C24	VCKZPU1HF223Z	.022MFD, 50V, +80 -20%, Ceramic	AA
VC1, VC2, VC3, VC4, TC1, TC2, TC4, TC7, TC3, TC5	RVC-R0057AFZZ	Variable Capacitor, Tuning with Trimmers TC1: FM RF Trimmer T22: FM Oscillator Trimmer TC4: MW Antenna Trimmer TC7: MW Oscillator trimmer	AQ	C25	VCKYPU1HB223M	.022MFD, 50V, ±20%, Ceramic	AA
				C26	VCKZPU1HF103Z	.01MFD, 50V, +80 -20%, Ceramic	AA
	RTO-H2050AFZZ	Trimmers, TC3: SW Antenna Trimmer TC5: LW Antenna Trimmer	AD	C27	VCKZPU1HF103Z	.01MFD, 50V, +80 -20%, Ceramic	AA
TC6	RTO-H1007AFZZ	Trimmer, SW Oscillator	AC	C28	VCKYPU1HB223M	.022MFD, 50V, ±20%, Ceramic	AA
TC8	RTO-H1007AFZZ	Trimmer, LW Oscillator	AC	C29	VCCSPU1HL5R0C	5PF, 50V, ±25PF, Ceramic	AA
R22	RVR-M0130AFZZ	50K ohm (B), Muting Level Adjust	AC	C30	VCKZPU1HF103Z	.01MFD, 50V, +80 -20%, Ceramic	AB
R34	RVR-M0127AFZZ	10K ohm (B), PLL VCO Adjust	AC	C31	VCEAAU1HW105A	1MFD, 50V, +75 -10%, Electrolytic	AB
R139/ R140	RVR-B0158AFZZ	20K ohm (B), Fader	AH	C32	VCQSMT1HS151J	150PF, 50V, ±5%, Styrol	AB
R147/ R148	RVR-Z0064AFZZ	50K ohm (A), Record Level	AM	C33	VCKZPU1HF103Z	.01MFD, 50V, +80 -20%, Ceramic	AA
R187	RVR-M0003SGZZ	5K ohm (B), Meter Sensitivity Adjust	AC	C34	VCCSPU1HL100F	10PF, 50V, ±1PF, Ceramic	AA
R188	RVR-M0003SGZZ	5K ohm (B), Meter Sensitivity Adjust	AC	C35	VCEAAU1CW476Y	47MFD, 16V, +50 -10%, Electrolytic	AC
R195/ R196	RVR-P0063AFZZ	100K ohm (A), Treble	AH	C36	VCKYPU1HB223M	.022MFD, 50V, ±20%, Ceramic	AA
R201/ R202	RVR-P0063AFZZ	100K ohm (A), Bass	AH	C37	VCKZPU1HF223Z	.022MFD, 50V, +80 -20%, Ceramic	AA
R227/ R228	RVR-Z0063AFZZ	20K ohm (B), Volume	AM	C38	VCKZPU1HF223Z	.022MFD, 50V, +80 -20%, Ceramic	AA
R301	RVR-M0126AFZZ	5K ohm (B), Bias Current Adjust	AC	C39	VCKZPU1HF223Z	.022MFD, 50V, +80 -20%, Ceramic	AA
R302	RVR-M0126AFZZ	5K ohm (B), Bias Current Adjust	AC	C40	VCCSPU1HL221J	220PF, 50V, ±5%, Ceramic	AB
CAPACITORS				C41	VCEAAU1EW475A	4.7MFD, 25V, +75 -10%, Electrolytic	AB
C1	VCCSPU1HL100F	10PF, 50V, ±1PF, Ceramic	AA	C42	VCKZPU1HF103Z	.01MFD, 50V, +80 -20%, Ceramic	AA
C3	VCKZPU1HF102Z	.001MFD, 50V, +80 -20%, Ceramic	AA	C43	VCQYKU1HM103M	.01MFD, 50V, ±20%, Mylar	AB
				C44	VCEAAU1EW335A	3.3MFD, 25V, +75 -10%, Electrolytic	AB

**; Price will be quoted upon receipt of order.

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE
C45	VCEAAU1CW477Y	470MFD, 16V, +50 -10%, Electrolytic	AD	C90	VCKZPU1HF223Z	.022MFD, 50V, +80 -20%, Ceramic	AA
C46	VCCSPU1HL181J	180PF, 50V, ±5%, Ceramic	AA	C91	VCQYKU1HM103M	.01MFD, 50V, ±20%, Mylar	AB
C47	VCKYPU1HB223M	.022MFD, 50V, ±20%, Ceramic	AA	C92	VCKZPU1HF103Z	.01MFD, 50V, +80 -20%, Ceramic	AA
C48	VCKZPU1HF103Z	.01MFD, 50V, +80 -20%, Ceramic	AA	C93	VCEAAU1AW107Y	100MFD, 10V, +50 -10%, Electrolytic	AB
C49	VCEALU1HW335M	3.3MFD, 50V, ±20%, Electrolytic	AC	C94	VCEAAU1EW475A	4.7MFD, 25V, +75 -10%, Electrolytic	AB
C50	VCQSM1HS471J	470PF, 50V, ±5%, Styrol	AB	C95	VCKZPU1HF223Z	.022MFD, 50V, +80 -20%, Ceramic	AA
C51	VCQYKU1HM473M	.047MFD, 50V, ±20%, Mylar	AC	C96	VCQYKU1HM223K	.022MFD, 50V, ±10%, Mylar	AB
C52	VCEALU1HW474M	.47MFD, 50V, ±20%, Electrolytic	AB	C97	VCEALU1HW104M	.1MFD, 50V, ±20%, Electrolytic	AB
C53	VCEALU1HW224M	.22MFD, 50V, ±20%, Electrolytic	AB	C98	VCEAAU1AW107Y	100MFD, 10V, +50 -10%, Electrolytic	AB
C54	VCQYKU1HM103M	.01MFD, 50V, ±20%, Mylar	AB	C99	VCEAAU1CW106Y	10MFD, 16V, +50 -10%, Electrolytic	AB
C55	VCKYPU1HB681K	680PF, 50V, ±10%, Ceramic	AA	C100	VCEALU1HW105M	1MFD, 50V, ±20%, Electrolytic	AD
C56	VCKYPU1HB681K	680PF, 50V, ±10%, Ceramic	AA	C101	VCEALU1EC475M	4.7MFD, 25V, ±20%, Electrolytic	AB
C57	VCCSPU1HL331J	330PF, 50V, ±5%, Ceramic	AB	C102	VCEALU1EC475M	4.7MFD, 25V, ±20%, Electrolytic	AB
C58	VCCSPU1HL331J	330PF, 50V, ±5%, Ceramic	AB	C103	VCEAAU1AW476Y	.47MFD, 10V, +50 -10%, Electrolytic	AB
C59	VCCSPU1HL181J	180PF, 50V, ±5%, Ceramic	AA	C104	VCEAAU1AW476Y	47MFD, 10V, +50 -10%, Electrolytic	AB
C60	VCEAAU1EW475A	4.7MFD, 25V, +75 -10%, Electrolytic	AB	C105	VCCSPU1HL271J	270PF, 50V, ±5%, Ceramic	AB
C61	VCEAAU1EW475A	4.7MFD, 25V, +75 -10%, Electrolytic	AB	C106	VCCSPU1HL271J	270PF, 50V, ±5%, Ceramic	AB
C62	VCKZPU1HF103Z	.01MFD, 50V, +80 -20%, Ceramic	AA	C107	VCQYKU1HM273K	.027MFD, 50V, ±10%, Mylar	AB
C63	VCCSPU1HL3ROC	3PF, 50V, ±25PF, Ceramic	AA	C108	VCQYKU1HM273K	.027MFD, 50V, ±10%, Mylar	AB
C65	VCCSPU1HL390J	39PF, 50V, ±5%, Ceramic	AA	C109	VCQYKU1HM822K	.0082MFD, 50V, ±10%, Mylar	AB
C67	VCQSM1HS332J	3300PF, 50V, ±5%, Styrol	AB	C110	VCQYKU1HM822K	.0082MFD, 50V, ±10%, Mylar	AB
C68	VCCSPU1HL271J	270PF, 50V, ±5%, Ceramic	AB	C111	VCEAAU1CW106Y	10MFD, 16V, +50 -10%, Electrolytic	AB
C69	VCCSPU1HL221J	220PF, 50V, ±5%, Ceramic	AB	C112	VCEAAU1CW106Y	10MFD, 16V, +50 -10%, Electrolytic	AB
C70	VCKZPU1HF102Z	.001MFD, 50V, +80 -20%, Ceramic	AA	C113	RC-EZS337AF1C	330MFD, 16V, +50 -10%, Electrolytic	AC
C71	VCCCPU1HH5ROC	5PF (CH), 50V, ±25PF, Ceramic	AA	C114	VCEAAU1AW336Y	33MFD, 10V, +50 -10%, Electrolytic	AB
C72	VCCCPU1HH220J	22PF (CH), 50V, ±5%, Ceramic	AA	C115	VCEALU1HW334M	.33MFD, 50V, ±20%, Electrolytic	AB
C73	VCKZPU1HF223Z	.022MFD, 50V, +80 -20%, Ceramic	AA	C116	VCEALU1HW334M	.33MFD, 50V, ±20%, Electrolytic	AB
C74	VCQYKU1HM102K	.001MFD, 50V, ±10%, Mylar	AB	C117	VCEALU1EC335M	3.3MFD, 25V, ±20%, Electrolytic	AB
C75	VCQYKU1HM223M	.022MFD, 50V, ±20%, Mylar	AB	C118	VCEALU1EC335M	3.3MFD, 25V, ±20%, Electrolytic	AB
C76	VCQYKU1HM473M	.047MFD, 50V, ±20%, Mylar	AC	C119	VCQYKU1HM102K	.001MFD, 50V, ±10%, Mylar	AB
C77	VCKZPU1HF223Z	.022MFD, 50V, +80 -20%, Ceramic	AA	C120	VCQYKU1HM102K	.001MFD, 50V, ±10%, Mylar	AB
C78	VCKYPU1HB223M	.022MFD, 50V, ±20%, Ceramic	AA	C121	VCCSPU1HL271J	270PF, 50V, ±5%, Ceramic	AB
C79	VCKZPU1HF103Z	.01MFD, 50V, +80 -20%, Ceramic	AA	C122	VCCSPU1HL271J	270PF, 50V, ±5%, Ceramic	AB
C80	VCCSPU1HL331J	330PF, 50V, ±5%, Ceramic	AB	C123	VCEAAU1CW106Y	10MFD, 16V, +50 -10%, Electrolytic	AB
C81	VCKZPU1HF223Z	.022MFD, 50V, +80 -20%, Ceramic	AA	C124	VCEAAU1CW106Y	10MFD, 16V, +50 -10%, Electrolytic	AB
C82	VCKZPU1HF223Z	.022MFD, 50V, +80 -20%, Ceramic	AA	C125	VCEAAU1HW105A	1MFD, 50V, +75 -10%, Electrolytic	AB
C83	VCKZPU1HF223Z	.022MFD, 50V, +80 -20%, Ceramic	AA	C126	VCEAAU1HW105A	1MFD, 50V, +75 -10%, Electrolytic	AB
C84	VCKZPU1HF222Z	.0022MFD, 50V, +80 -20%, Ceramic	AA	C127	VCCSPU1HL221J	220PF, 50V, ±5%, Ceramic	AB
C85	VCKZPU1HF223Z	.022MFD, 50V, +80 -20%, Ceramic	AA	C128	VCCSPU1HL221J	220PF, 50V, ±5%, Ceramic	AB
C86	VCKZPU1HF223Z	.022MFD, 50V, +80 -20%, Ceramic	AA				
C87	VCKYPU1HB223M	.022MFD, 50V, ±20%, Ceramic	AA				
C88	VCEAAU1AW107Y	100MFD, 10V, +50 -10%, Electrolytic	AB				
C89	VCKZPU1HF223Z	.022MFD, 50V, +80 -20%, Ceramic	AA				

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE
129	VCEAAU1CW106Y	10MFD, 16V, +50 -10%, Electrolytic	AB	C169	VCQYKU1HM472M	.0047MFD, 50V, ±20%, Mylar	AB
130	VCEAAU1CW106Y	10MFD, 16V, +50 -10%, Electrolytic	AB	C170	VCQYKU1HM472M	.0047MFD, 50V, ±20%, Mylar	AB
131	VCEAAU1CW106Y	10MFD, 16V, +50 -10%, Electrolytic	AB	C171	VCQYKU1HM102M	.001MFD, 50V, ±20%, Mylar	AB
132	VCEAAU1CW106Y	10MFD, 16V, +50 -10%, Electrolytic	AB	C172	VCQYKU1HM102M	.001MFD, 50V, ±20%, Mylar	AB
133	VCQYKU1HM333J	.033MFD, 50V, ±5%, Mylar	AC	C173	VCQYKU1HM103K	.01MFD, 50V, ±10%, Mylar	AB
134	VCQYKU1HM333J	.033MFD, 50V, ±5%, Mylar	AC	C174	VCQYKU1HM103K	.01MFD, 50V, ±10%, Mylar	AB
135	VCEAAU1CW106Y	10MFD, 16V, +50 -10%, Electrolytic	AB	C175	VCQYKU1HM153K	.015MFD, 50V, ±10%, Mylar	AB
136	VCEAAU1CW106Y	10MFD, 16V, +50 -10%, Electrolytic	AB	C176	VCQYKU1HM153K	.015MFD, 50V, ±10%, Mylar	AB
137	VCKZPU1HF223Z	.022MFD, 50V, +80 -20%, Ceramic	AA	C177	VCQYKU1HM683K	.068MFD, 50V, ±10%, Mylar	AC
138	VCKZPU1HF103Z	.01MFD, 50V, +80 -20%, Ceramic	AA	C178	VCQYKU1HM683K	.068MFD, 50V, ±10%, Mylar	AC
140	VCEAAU1HW475A	4.7MFD, 50V, +75 -10%, Electrolytic	AB	C179	VCQYKU1HM473M	.047MFD, 50V, ±20%, Mylar	AC
141	VCQYKU1HM223M	.022MFD, 50V, ±20%, Mylar	AB	C180	VCQYKU1HM473M	.047MFD, 50V, ±20%, Mylar	AC
142	VCKZPU1HF333P	.033MFD, 50V, +100 -0%, Ceramic	AB	C181	VCCSPU1HL151J	150PF, 50V, ±5%, Ceramic	AA
143	VCEALU1HW104M	.1MFD, 50V, ±20%, Electrolytic	AB	C182	VCCSPU1HL151J	150PF, 50V, ±5%, Ceramic	AA
144	VCEALU1HW104M	.1MFD, 50V, ±20%, Electrolytic	AB	C183	VCEAAU1HW105A	1MFD, 50V, +75 -10%, Electrolytic	AB
145	VCQYKU1HM102M	.001MFD, 50V, ±20%, Mylar	AB	C184	VCEAAU1HW105A	1MFD, 50V, +75 -10%, Electrolytic	AB
146	VCQYKU1HM102M	.001MFD, 50V, ±20%, Mylar	AB	C185	VCEALU1HW104M	.1MFD, 50V, ±20%, Electrolytic	AB
147	VCEAAU1AW336Y	33MFD, 10V, +50 -10%, Electrolytic	AB	C186	VCEALU1HW104M	.1MFD, 50V, ±20%, Electrolytic	AB
148	VCEAAU1AW336Y	33MFD, 10V, +50 -10%, Electrolytic	AB	C187	VCQYKU1HM683K	.068MFD, 50V, ±10%, Mylar	AC
149	VCEAAU1AW227Y	220MFD, 10V, +50 -10%, Electrolytic	AC	C188	VCQYKU1HM683K	.068MFD, 50V, ±10%, Mylar	AC
150	VCEAAU1AW227Y	220MFD, 10V, +50 -10%, Electrolytic	AC	C189	VCEAAU1CW106Y	10MFD, 16V, +50 -10%, Electrolytic	AB
151	VCCSPU1HL680J	68PF, 50V, ±5%, Ceramic	AA	C190	VCEAAU1CW106Y	10MFD, 16V, +50 -10%, Electrolytic	AB
152	VCCSPU1HL680J	68PF, 50V, ±5%, Ceramic	AA	C193	VCQYKU1HM683K	.068MFD, 50V, ±10%, Mylar	AC
153	VCEAAU1AW336Y	33MFD, 10V, +50 -10%, Electrolytic	AB	C194	VCQYKU1HM683K	.068MFD, 50V, ±10%, Mylar	AC
154	VCEAAU1AW336Y	33MFD, 10V, +50 -10%, Electrolytic	AB	C195	VCQYKU1HM223M	.022MFD, 50V, ±20%, Mylar	AB
155	VCQYKU1HM102J	.001MFD, 50V, ±5%, Mylar	AC	C196	VCEAAU1EW107Y	100MFD, 25V, +50 -10%, Electrolytic	AC
156	VCQYKU1HM102J	.001MFD, 50V, ±5%, Mylar	AC	C197	VCEAAU1CW108Y	1000MFD, 16V, +50 -10%, Electrolytic	AE
157	VCQYKU1HM102J	.001MFD, 50V, ±5%, Mylar	AC	C201	VCQYKU1HM333K	.033MFD, 50V, ±10%, Mylar	AB
158	VCQYKU1HM102J	.001MFD, 50V, ±5%, Mylar	AC	C202	VCKZPU1HF103Z	.01MFD, 50V, +80 -20%, Ceramic	AA
159	VCEAAU1HW105A	1MFD, 50V, +75 -10%, Electrolytic	AB	C203	VCKZPU1HF103Z	.01MFD, 50V, +80 -20%, Ceramic	AA
160	VCEAAU1AW107Y	100MFD, 10V, +50 -10%, Electrolytic	AB	C301	VCQYKU1HM273K	.027MFD, 50V, ±10%, Mylar	AB
161	RC-EZS337AF1C	330MFD, 16V, +50 -10%, Electrolytic	AC	C302	VCQYKU1HM103M	.01MFD, 50V, ±20%, Mylar	AB
162	RC-EZS337AF1C	330MFD, 16V, +50 -10%, Electrolytic	AC	C303	VCEAAU1CW107Y	100MFD, 16V, +50 -10%, Electrolytic	AC
163	VCEAAU1EW475A	4.7MFD, 25V, +75 -10%, Electrolytic	AB	C304	VCQYKU1HM103K	.01MFD, 50V, ±10%, Mylar	AB
164	VCEAAU1EW475A	4.7MFD, 25V, +75 -10%, Electrolytic	AB	C305	VCQYKU1HM103K	.01MFD, 50V, ±10%, Mylar	AB
165	VCCSPU1HL391J	390PF, 50V, ±5%, Ceramic	**	C306	VCQYKU1HM473K	.047MFD, 50V, ±10%, Mylar	AC
166	VCCSPU1HL391J	390PF, 50V, ±5%, Ceramic	**	C307	VCQYKU1HM153M	.015MFD, 50V, ±20%, Mylar	AB
167	VCEAAU1HW105A	1MFD, 50V, +75 -10%, Electrolytic	AB	C308	VCQYKU1HM123K	.012MFD, 50V, ±10%, Mylar	AB
168	VCEAAU1HW105A	1MFD, 50V, +75 -10%, Electrolytic	AB	C309	RC-EZS476AF1C	47MFD, 16V, +30 -10%, Electrolytic	**
				C401	VCQYKU1HM102M	.001MFD, 50V, ±20%, Mylar	AB
				C402	VCEAAU1HW105A	1MFD, 50V, +75 -10%, Electrolytic	AB
				C403	VCCSPU1HL271J	270PF, 50V, ±5%, Ceramic	AB
				C404	VCEAAU1AW336Y	33MFD, 10V, +50 -10%, Electrolytic	AB
				C405	VCEAAU1CW106Y	10MFD, 16V, +50 -10%, Electrolytic	AB
				C501	VCEAAU1EW335A	3.3MFD, 25V, +75 -10%, Electrolytic	AB
				C502	VCEAAU1EW335A	3.3MFD, 25V, +75 -10%, Electrolytic	AB
				C503	VCEAAU1EW227Y	220MFD, 25V, +50 -10%, Electrolytic	AC

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE
C504	VCKYPU1HB472M	.0047MFD, 50V, $\pm 20\%$, Ceramic	AA	C904	VCKZPU1HF223Z	.022MFD, 50V, $+80 - 20\%$, Ceramic	AA
C601, C602	VCEALU1HW104M	.1MFD, 50V, $\pm 20\%$, Electrolytic	AB	RESISTORS (Unless otherwise specified resistors are 1/4W, $\pm 5\%$, Carbon type.)			
C603	VCQYKU1HM222K	.0022MFD, 50V, $\pm 10\%$, Mylar	AB				
C604	VCQYKU1HM222K	.0022MFD, 50V, $\pm 10\%$, Mylar	AB	R1	VRD-ST2EY102J	1K ohm	AA
C605	VCEALU1HW104M	.1MFD, 50V, $\pm 20\%$, Electrolytic	AB	R7	VRD-SU2EY471J	470 ohm	AA
C606	VCEALU1HW104M	.1MFD, 50V, $\pm 20\%$, Electrolytic	AB	R14	VRD-SU2EY562J	5.6K ohm	AA
C607	VCEAAU1AW107Y	100MFD, 10V, $+50 - 10\%$, Electrolytic	AB	R15	VRD-SU2EY331J	330 ohm	AA
C608	VCEAAU1AW107Y	100MFD, 10V, $+50 - 10\%$, Electrolytic	AB	R19	VRD-ST2EE471J	470 ohm	AA
C609	VCEAAU1AW107Y	100MFD, 10V, $+50 - 10\%$, Electrolytic	AB	R20	VRD-SU2EY102J	1K ohm	AA
C610	VCEAAU1AW107Y	100MFD, 10V, $+50 - 10\%$, Electrolytic	AB	R21	VRD-SU2EY153J	15K ohm	AA
C611	VCQYKU1HM682M	.0068MFD, 50V, $\pm 20\%$, Mylar	AB	R23	VRD-ST2EE181J	180 ohm	AA
C612	VCQYKU1HM682M	.0068MFD, 50V, $\pm 20\%$, Mylar	AB	R27	VRD-ST2EE821J	820 ohm	AA
C613	VCEAAU1AW107Y	100MFD, 10V, $+50 - 10\%$, Electrolytic	AB	R29	VRD-ST2EE271J	270 ohm	AA
C614	VCEAAU1AW107Y	100MFD, 10V, $+50 - 10\%$, Electrolytic	AB	R32	VRD-ST2EE271J	270 ohm	AA
C617	VCEALU1HW224M	.22MFD, 50V, $\pm 20\%$, Electrolytic	AB	R33	VRD-SU2EY153J	15K ohm	AA
C618	VCEALU1HW224M	.22MFD, 50V, $\pm 20\%$, Electrolytic	AB	R36	VRD-ST2EE101J	100 ohm	AA
C619	VCEAAU1CW108Y	1000MFD, 16V, $+50 - 10\%$, Electrolytic	AE	R46	VRD-SU2EY101J	100 ohm	AA
C620	VCEAAU1CW108Y	1000MFD, 16V, $+50 - 10\%$, Electrolytic	AE	R47	VRD-SU2EY152J	1.5K ohm	AA
C621	VCQYKU1HM152K	.0015MFD, 50V, $\pm 10\%$, Mylar	AB	R50	VRD-SU2EY100J	10 ohm	AA
C622	VCQYKU1HM152K	.0015MFD, 50V, $\pm 10\%$, Mylar	AB	R52	VRD-SU2EY100J	10 ohm	AA
C623	VCEALU1HW104M	.1MFD, 50V, $\pm 20\%$, Electrolytic	AB	R53	VRD-SU2EY121J	120 ohm	AA
C624	VCEALU1HW104M	.1MFD, 50V, $\pm 20\%$, Electrolytic	AB	R54	VRD-SU2EY471J	470 ohm	AA
C625	VCQYKU1HM223M	.022MFD, 50V, $\pm 20\%$, Mylar	AB	R55	VRD-ST2EE184J	180K ohm	AA
C626	VCQYKU1HM223M	.022MFD, 50V, $\pm 20\%$, Mylar	AB	R56	VRD-SU2EY474J	470K ohm	AA
C627	VCEAAU1EW228Y	2200MFD, 25V, $+50 - 10\%$, Electrolytic	AH	R57	VRD-SU2EY121J	120 ohm	AA
C701	VCKZPU1HF223Z	.022MFD, 50V, $+80 - 20\%$, Ceramic	AA	R59	VRD-SU2EY223J	22K ohm	AA
C702	VCCSPU1HL101J	100PF, 50V, $\pm 5\%$, Ceramic	AA	R60	VRD-SU2EY102J	1K ohm	AA
C703	VCEAAU1AW336Y	33MFD, 10V, $+50 - 10\%$, Electrolytic	AB	R61	VRD-ST2EE103J	10K ohm	AA
C704	VCEAAU1EW335A	3.3MFD, 25V, $+75 - 10\%$, Electrolytic	AB	R62	VRD-ST2EE471J	470 ohm	AA
C705	VCEAAU1HW105A	1MFD, 50V, $+75 - 10\%$, Electrolytic	AB	R63	VRD-ST2EE152J	1.5K ohm	AA
C706	VCEALU1HW335M	3.3MFD, 50V, $\pm 20\%$, Electrolytic	AC	R64	VRD-ST2EE182J	1.8K ohm	AA
C707	VCEAAU1EW107Y	100MFD, 25V, $+50 - 10\%$, Electrolytic	AC	R65	VRD-ST2EE562J	5.6K ohm	AA
C801	VCE9AT1SD475M	4.7MFD, 30V, $\pm 20\%$, Electrolytic	AD	R69	VRD-ST2EE561J	560 ohm	AA
C802	VCE9AT1SD475M	4.7MFD, 30V, $\pm 20\%$, Electrolytic	AD	R70	VRD-ST2EE473J	47K ohm	AA
C901	VCKZPU1HF104Z	.1MFD, 50V, $+80 - 20\%$, Ceramic	AC	R71	VRD-ST2EE471J	470 ohm	AA
C902	VCKZPU1HF104Z	.1MFD, 50V, $+80 - 20\%$, Ceramic	AC	R72	VRD-ST2EE562J	5.6K ohm	AA
C903	VCKZPU1HF223Z	.022MFD, 50V, $+80 - 20\%$, Ceramic	AA	R73	VRD-ST2EE123J	12K ohm	AA
				R76	VRD-ST2EE153J	15K ohm	AA
				R78	VRD-ST2EE471J	470 ohm	AA
				R109	VRD-ST2EE391J	390 ohm	AA
				R110	VRD-SU2EY391J	390 ohm	AA
				R111	VRD-ST2EE104J	100K ohm	AA
				R112	VRD-ST2EE104J	100K ohm	AA
				R113	VRD-ST2EE103J	10K ohm	AA
				R114	VRD-ST2EE103J	10K ohm	AA
				R115	VRD-ST2EE101J	100 ohm	AA
				R116	VRD-ST2EE101J	100 ohm	AA
				R117	VRD-ST2EE151J	150 ohm	AA
				R118	VRD-SU2EY151J	150 ohm	AA
				R119	VRD-SU2EY274J	270K ohm	AA
				R120	VRD-SU2EY274J	270K ohm	AA
				R121	VRD-ST2EE184J	180K ohm	AA
				R122	VRD-SU2EY184J	180K ohm	AA
				R123	VRD-ST2EE102J	1K ohm	AA
				R124	VRD-SU2EY102J	1K ohm	AA
				R125	VRD-ST2EE392J	3.9K ohm	AA
				R126	VRD-SU2EY392J	3.9K ohm	AA
				R127	VRD-ST2EE472J	4.7K ohm	AA
				R128	VRD-ST2EE472J	4.7K ohm	AA
				R129	VRD-SU2EY332J	3.3K ohm	AA
				R130	VRD-ST2EE332J	3.3K ohm	AA

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE
R131	VRD-SU2EY683J	68K ohm	AA	R603	VRD-ST2EE390J	39 ohm	AA
R132	VRD-ST2EE683J	68K ohm	AA	R604	VRD-ST2EE390J	39 ohm	AA
R133	VRD-ST2EE682J	6.8K ohm	AA	R605	VRD-ST2BB2R2J	2.2 ohm, 1/8W, $\pm 5\%$, Carbon	AA
R134	VRD-SU2EY682J	6.8K ohm	AA	R606	VRD-ST2BB2R2J	2.2 ohm, 1/8W, $\pm 5\%$, Carbon	AA
R135	VRD-ST2EE561J	560 ohm	AA	R607	VRD-ST2EY221J	220 ohm	AA
R149	VRD-SU2EY822J	8.2K ohm	AA	R608	VRD-ST2EY221J	220 ohm	AA
R150	VRD-ST2EE822J	8.2K ohm	AA	R705	VRD-ST2EE330J	33 ohm	AA
R157	VRD-ST2EE102J	1K ohm	AA	R706	VRD-ST2EE822J	8.2K ohm	AA
R158	VRD-ST2EE102J	1K ohm	AA	R710	VRD-ST2EE561J	560 ohm	AA
R159	VRD-SU2EY470J	47 ohm	AA	R801	VRD-ST2EE3R9J	3.9 ohm	AA
R160	VRD-ST2EE470J	47 ohm	AA	R802	VRD-ST2EE3R9J	3.9 ohm	AA
R161	VRD-SU2EY153J	15K ohm	AA	MECHANICAL PARTS			
R163	VRD-ST2EE223J	22K ohm	AA				
R164	VRD-SU2EY223J	22K ohm	AA	01	JKNBB0064AFSA	Knob, Forward APSS	AE
R165	VRD-ST2EE473J	47K ohm	AA	02	JKNBB0065AFSA	Knob, Reverse APSS	AE
R167	VRD-ST2EE101J	100 ohm	AA	03	JKNBB0063AFSA	Knob, Stop	AG
R168	VRD-ST2EE101J	100 ohm	AA	04	JKNBM0255AFSA	Knob, Eject/REW/Play/FF/ Pause	AE
R169	VRD-SU2EY393J	39K ohm	AA	05	JKNBM0256AFSA	Knob, Record	AE
R170	VRD-SU2EY393J	39K ohm	AA	06	LANGT0514AFZZ	Bracket, Flywheel	AF
R171	VRD-SU2EY563J	56K ohm	AA	07	LBSHS0001AG00	Bushing, Motor	AA
R172	VRD-SU2EY563J	56K ohm	AA	08	LCHSM0228AFZZ	Main Chassis Assembly	-
R173	VRD-ST2EE102J	1K ohm	AA	09	LCHSS0107AF00	Sub Chassis Assembly	-
R174	VRD-ST2EE102J	1K ohm	AA	10	LSTWC2403AFZZ	Stop Washer, $\phi 2.4$	-
R177	VRD-SU2EY153J	15K ohm	AA	11	LSTWC3002AFZZ	Stop Washer, $\phi 3$	-
R179	VRD-ST2EE332J	3.3K ohm	AA	12	MARMP0001AFZZ	Arm, Auto Stop	AC
R180	VRD-ST2EE332J	3.3K ohm	AA	13	MARMP0002AFZZ	Arm, Auto Stop Lock Reset	AC
R181	VRD-SU2EY473J	47K ohm	AA	14	MLEVF0547AFZZ	Lever, Main Lock Plate	AD
R208	VRD-SU2EY561J	560 ohm	AA	15	MLEVF0548AFZZ	Lever, APSS Lock Plate	AD
R213	VRD-ST2EE474J	470K ohm	AA	16	MLEVF0549AFZZ	Idler, Take-up	AG
R214	VRD-SU2EY474J	470K ohm	AA	17	MLEVF0550AFFW	Lever, Pause	AD
R223	VRD-SU2EY562J	5.6K ohm	AA	18	MLEVF0551AFFW	Lever, Fast Forward/Rewind	AD
R224	VRD-SU2EY562J	5.6K ohm	AA	19	MLEVF0643AFZZ	Lever, Play	AG
R229	VRD-ST2EY473J	47K ohm	AA	20	MLEVF0553AFFW	Lever, Eject	AD
R230	VRD-ST2EE472J	4.7K ohm	AA	21	MLEVF0702AFZZ	Lever, Record	**
R231	VRD-ST2EE472J	4.7K ohm	AA	22	MLEVF0555AFZZ	Lever, Forward APSS	AD
R233	VRD-ST2EE121J	120 ohm	AA	23	MLEVF0556AFZZ	Lever, Reverse APSS	AD
R238	VRD-SU2EY473J	47K ohm	AA	24	MLEVF0557AFFW	Lever, Fast Forward/Rewind	AE
R239	VRD-ST2EE681J	680 ohm	AA	25	MLEVF0558AFFW	Lever, Fast Forward	AD
R240	VRD-ST2EE222J	2.2K ohm	AA	26	NBRGC0054AFZZ	Bearing, Flywheel Shaft	AG
R241	VRD-ST2EE562J	5.6K ohm	AA	27	MLEVF0560AFFW	Lever, Record Mistake Proof	AC
R244	VRD-ST2EE222J	2.2K ohm	AA	28	MLEVF0564AFFW	Lever, Stop	AC
R245	VRD-ST2EE102J	1K ohm	AA	29	MLEVP0057AF00	Lever, Erase Proof	AC
R246	VRD-ST2EE102J	1K ohm	AA	30	MLEVP0058AFZZ	Lever, Brake	AC
R249	VRD-ST2EE223J	22K ohm	AA	31	MLEVP0077AFZZ	Lever, Cassette Lock	AC
R250	VRD-SU2EY223J	22K ohm	AA	32	MLEVP0060AFZZ	Lever, Auto Stop	AC
R251	VRD-SU2EY684J	680K ohm	AA	33	MLEVP0061AFZZ	Lever, Tape End Detect	AB
R252	VRD-ST2EE684J	680K ohm	AA	34	MLEVP0062AFZZ	Lever, Fast Forward	AB
R253	VRD-ST2EE562J	5.6K ohm	AA	35	MLEVP0063AFZZ	Lever, Sub Chassis Return	AC
R254	VRD-ST2EE562J	5.6K ohm	AA	36	MSPRC0031AGMN	Spring, REC/P.B. Head Adjust	AA
R255	VRD-ST2EE562J	5.6K ohm	AA	37	MSPRC0139AFFJ	Spring, Eject/REW/REC/FF/ Pause	AA
R256	VRD-ST2EE562J	5.6K ohm	AA	38	MSPRC0109AFFJ	Spring, Plunger	AA
R257	VRD-ST2EY104J	100K ohm	AA	39	MSPRC0110AFFJ	Spring, Play Lever	AA
R258	VRD-ST2EY104J	100K ohm	AA	40	MSPRC0111AFFJ	Spring, Detect Lever	AA
R259	VRD-ST2EE103J	10K ohm	AA	42	MSPRD0107AFFJ	Spring, Pinch Roller	AB
R260	VRD-ST2EE103J	10K ohm	AA	43	MSPRD0108AFFJ	Spring, Brake Lever	AA
R303	VRD-ST2EE1R0J	1 ohm	AA	44	MSPRD0109AFFJ	Spring, Forward APSS Lever	AA
R304	VRS-PT3AB101K	100 ohm, 1W, $\pm 10\%$, Oxide Film	**	45	MSPRD0110AFFJ	Spring, Reverse APSS Lever	AA
R307	VRD-ST2EE220J	22 ohm	AA	46	MSPRD0111AFFJ	Spring, Stop Lever	AB
R501	VRD-ST2EY561J	560 ohm	AA	47	MSPRD0112AFFJ	Spring, Erase Proof Lever	AA
R502	VRD-ST2EY472J	4.7K ohm	AA	48	LSTWC2001AFZZ	Stop Washer, $\phi 2$	-
R503	VRD-ST2EY274J	270K ohm	AA	49	MSPRD0116AFFJ	Spring, Auto Stop Lock Reset Arm	AB
R504	VRD-ST2EY683J	68K ohm	AA				
R505	VRD-ST2EY103J	10K ohm	AA				
R601	VRD-ST2EE104J	100K ohm	AA				
R602	VRD-ST2EE104J	100K ohm	AA				

PARTS LIST

PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE
MSPRD0117AFFJ	Spring, Record Mistake Proof	AA		MISCELLANEOUS		
MSPRP0133AFFW	Spring (Plate Type), Cassette Retaining	**		<i>CC4B-4002 AF02 Front Cabinet Assy</i>		
MSPRP0113AFFJ	Spring (Plate Type), Auto Stop Arm	AB	201	GCABA1469AFSA	Cabinet, Front (GF-9191H/E)	AW
LANGF0393AFFW	Bracket, Muting Switch	AC	202	GCABA1469AFSB	Cabinet, Front (GF-9191HB)	**
MSPRP0115AFFW	Spring (Plate Type), Sub Chassis Stopper	AC	203	GCABB1469AFSA	Cabinet, Back	AY
MSPRT0335AFFJ	Spring, Fast Forward Lever	AA	204	GCOVA1101AFSA	Cover, APSS Indicator (LED)	AC
MSPRT0332AFFJ	Spring, Idler	AA	205	GCOVH1162AF00	Cover, Rod Antenna	AA
MSPRT0333AFFJ	Spring, Roller Assembly	AA	206	GFTAB1104AFSA	Lid, Battery Compartment	AE
MSPRT0334AFFJ	Spring, Auto Stop Lever	AA	207	GFTAC1076AFSA	Holder, Cassette	AG
MSPRT0331AFFJ	Spring, Fast Forward/Rewind Lever	AA	208	GFTAC1077AFSA	Cover, Cassette Holder	AF
NBALS0004AGFJ	Ball, φ3	AA	209	GWAKP9009AFSA	Plate, Operation (GF-9191H/E)	AT
NBLTH0051AF00	Belt, Motor	AD	210	GWAKP9009AFSB	Plate, Operation (GF-9191HB)	AT
NBLTK0053AF00	Belt, Auto Stop	AC	211	HDALP0399AFSA	Plate, Dial Scale	**
NDAIR0110AFSA	Turntable, Take-up	AG	212	HDECB0069AFSA	Decoration Plate, Cassette Holder	AD
NDAIR0129AFSA	Turntable, Supply	AE	213	HDECC0052AFSA	Grille, Tweeter	AF
NFLYC0053AFZZ	Flywheel	AH	214	HDECC0053AFSA	Grille, Built-in Microphone	AD
NGERH0050AFZZ	Gear, Slip Roller	AC	215	HDECQ0078AFSA	Decoration Ring, Woofer	**
NGERP0050AFZZ	Slip Roller	AC	216	TLABZ0105AFZZ	Reflector	-
MLEVF0617AFZZ	Lever, Quick Stop	AB	217	HINDM1133AFSB	Emblem, SHARP	AA
NPLYR0052AFZZ	Pulley, Auto Stop	AB	218	HINDM1195AFSA	Indication Plate, APSS	AD
NROLM0051AFFW	Roller, Lock Plate	AA	219	HINDM1196AFSA	Indication Plate, Mechanism (GF-9191H/E)	AB
NROLV0004AFZZ	Roller Assembly	AQ	220	HINDM1196AFSB	Indication Plate, Mechanism (GF-9191HB)	AB
NROLY0004AFZZ	Pinch Roller	AF	221	HINDM1245AFSA	Indication Plate, Model Spec. (GF-9191H)	**
MSPRT0330AFFJ	Spring, Play Lever	AA	222	HINDM1244AFSA	Indication Plate, Model Spec. (GF-9191H)	AC
MLEVF0618AFZZ	Lever, Pause Mistake Proof	AC	223	HINDM1247AFSA	Indication Plate, Model Spec. (GF-9191HB)	AC
QPWBF0583AFZZ	P.W. Board, APSS (Board only, Not Available)	-	224	HINDM1250AFSA	Indication Plate, Model Spec. (GF-9191E)	**
PCUSG0026AG00	Rubber, Brake Lever	AB	225	HPNC-0111AFSA	Punching Metal, Woofer	AL
KCOUB0061AFZZ	Counter, Tape	AM	226	HPNLD1171AFSA	Plate, Transparent	AH
RHEDA0059AFZZ	Head, Erase	AK	227	HSSND0233AFSA	Dial Pointer	AD
RHEDH0052AFZZ	Head, Record/Playback	AW	228	JHNDG1061AFSA	Handle	**
RMOTM0084AFZZ	Motor with Pulley	AX	229	JKNBM0254AFSA	Knob, Push Switch	AE
RPLU-0053AFZZ	Plunger	AM	230	JKNBN0309AFSA	Knob, Tuning	AC
PZETF0123AFZZ	Stopper	AA	231	JKNBN0331AFSA	Knob, Fader Control	AE
QPWBF0584AFZZ	P.W. Board, Motor (Board only, Not Available)	-	232	JKNBP0080AFSA	Knob, Volume/Treble/Bass/Record Level	AE
NBLTK0105AFZZ	Belt, Counter	AC	233	JKNBZ0109AFSA	Knob, Lever Switch	AB
MSPRT0151AGFJ	Spring, Cassette Lock Lever	AA	234	JKNBZ0127AFSB	Knob, Editor Switch	AF
PSPAA0001AGFJ	Spacer, Motor Bushing	AB	235	LANGS0014AGFP	Bracket, Speaker Fixing	AA
MSPRD0137AFFJ	Spring, Quick Stop Lever	AA	236	LBOSD0050AFFW	Boss, Inserting	AB
NPLYR0050AFZZ	Pulley, Take-up	AB	237	LHLDA1052AFSA	Holder, Rod Antenna	AA
LX-HZ0056AFDD	Screw, Flywheel Bracket	-	238	LHLDF1205AFZZ	Frame, PWB	AP
LX-BZ0107AGZZ	Screw, Flywheel Thrust Adjust	AB	239	LHLDF1206AFZZ	Frame, Jack Plate	AG
MLEVP0076AFZZ	Lever, Pause Mistake Proof	AC	240	LHLDP3061AFFN	Holder, Lamp	AC
MSPRT0390AFFJ	Spring, Pause Mistake Proof Lever	AB	241	LHLDW1067AFZZ	Band, Wire	AA
LANGF0376AFFW	Plate, Sub Chassis Stopper	AB	242	LHLDW1068AFZZ	Band, Wire	AA
MSPRT0389AFFJ	Spring, Pause Mistake Proof Lever	AA	243	LHLDW9003CEZZ	Holder, Wire	AA
LHLDW3007AGFD	Wire Holder	AA	244	LHLZ8055AFZZ	Holder, Built-in Microphone	AB
LX-BZ0148AGFD	Screw, Motor	AA	245	LX-BZ0258AFSA	Screw, Cassette Holder Cover	AF
LX-WZ5013AGZZ	Washer, Turntable	AA	246	LX-CZ0002AFZZ	Screw, Front Cabinet Fixing	-
LX-WZ5015AGZZ	Washer, Tape End Detect Lever	AA	247	LX-HZ0057AFDD	Screw, Mechanism Block Fixing	-
LX-WZ5018AGZZ	Washer, Turntable	AA	248	LX-HZ0058AFDD	Screw, Mechanism Block Fixing	-
LX-WZ5037AGZZ	Washer, Flywheel	AA	249	LX-LZ0060AFSA	Decoration Rivet, Woofer	-
LX-WZ7050AFZZ	Spacer, Motor Switch	AA	250	MLEVF0701AFZZ	Lever, REC/PB Switch	AE
QHWS-2222AGFN	Lug Terminal, Ground	-		MSPRC0021AFFN	Spring, Battery (-)	AA
PFLT-0313AF00	Felt, Tape End Detect Lever	AA		MSPRC0140AFFN	Spring, Battery (-)	AB
				MSPRP0089AGFW	Spring (Plate Type), Cassette Holder	AB
				MSPRT0003AGFW	Spring, Dial Cord	AA
				MSPRT0536AFFJ	Spring, Cassette Holder	AB

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	CODE	REF. NO.	PART NO.	DESCRIPTION	CODE
251	NDRM-0046AFZZ	Drum, Dial Cord	AC	J101	QJAKZ0073AFZZ	Jack Plate Assembly, EXT. MIC/REMOTE	**
252	NPLYB0050AFZZ	Pulley, Dial Cord	AA	J103	QJAKG0052AFZZ	Jack, PHONO	AG
253	NPLYB0051AFZZ	Pulley, Dial Cord	AA	J401	QJAKA0006AFZZ	Jack, MIX.MIC	AD
254	NPLYC0102AFFW	Pulley, Dial Cord	AB	J603	QJAKJ0052AFZZ	Jack, HEADPHONES	AH
255	NSFTD0166AFFW	Shaft, Dial Cord Drive	AE	ME101	RMTRL0152AFZZ	Meter, VU/TUNING	AS
256	PCOV7163AFZZ	Cover, Push Switch	AB	ME102	RMTRL0153AFZZ	Meter, VU/BATTERY	AS
257	PCOVW1100AFZZ	Cover, AC Socket	AA	PG501	QCNCM105JAFZZ	Plug, 9 Pin	AD
258	PCOVZ7050AF00	Cover, Battery Compartment	AC	PG502	QCNCM175FAFZZ	Plug, 6 Pin	AC
259	PCUSG0084AF00	Cushion, Built-in Microphone	AA	PL601	RLMPM0089AFZZ	Lamp, Meter	**
260	PCUSG0085AF00	Cushion, PWB	AA	PL602	RLMPM0089AFZZ	Lamp, Dial	**
261	PCUSS0101AF00	Cushion, Meter	AA	SO101	QSODC2554AFZZ	Socket, REC/PB	AF
262	PCUSS0107AF00	Cushion, Front Cabinet and Jack Plate Frame	AA	SO102	QSODC2268AFZZ	Socket, EXT.SP.	AE
263	PCUSU0092AG00	Cushion, Battery Compartment Lid	AA	SO103	QSODC2268AFZZ	Socket, EXT.SP.	AE
264	PCUSU0128AFZZ	Cushion, Coil	AA	SO501	QCNCW096JAFZZ	Socket, 9 Pin	AC
265	PFLT-0095AG00	Felt, Cassette Holder and Operation Plate	AA	SO502	QCNCW146FAFZZ	Socket, 6 Pin	AB
266	PFLT-0127AF00	Felt, Battery Compartment	AA	SO901/ J901	QSOCZ2469AFZZ	Socket, Mains Supply with EXT. DC POWER Jack	AH
267	PFLT-0324AF00	Felt, 4 Switches (Lower)	AA	SP1	VSP0016P-244P	Speaker, Woofer	**
268	PFLT-0332AF00	Felt, VR	AA	SP2	VSP0016P-244P	Speaker, Woofer	**
269	PFLT-0333AF00	Felt, 4 Switches (Upper)	AD	SP3	VSP0050T-124A	Speaker, Tweeter	AP
270	PFLT-0334AF00	Felt, 2 Switches (Upper)	AB	SP4	VSP0050T-124A	Speaker, Tweeter	AP
271	PFLT-0335AF00	Felt, 2 Switches (Lower)	AA	SW101	QSW-P0171AFZZ	Switch, Power and Function Selector	AV
272	PFLT-0336AF00	Felt, Tweeter	AA	SW102	QSW-S0214AFZZ	Switch, Record/Playback	AM
273	PFLT-0337AF00	Felt, Back Cabinet	AA	SW103	QSW-P0172AFZZ	Switch, Editor	AF
274	PFLT-0341AF00	Felt, Push Switch	AA	SW104	QSW-B0087AFZZ	Switch, Mixing	AG
275	PGUMS0114AF00	Conductive Rubber, Record Level Control	AB	SW105	QSW-B0095AFZZ	Switch, REC. Mode Selector	AF
276	PRDAR0160AFFW	Heat Sink	AB	SW106	QSW-B0087AFZZ	Switch, Tape Selector	AG
277	PSLDM3139AFZZ	Shield Plate	AC	SW107	QSW-B0076AFZZ	Switch, FM Mute/Mode	AG
278	PSPA10127AFZZ	Spacer	AA	SW108	QSW-B0086AFZZ	Switch, Loudness	AF
279	PTPEC0005AG00	Ribbon, Battery Removal	AA	SW109	QSW-B0091AFZZ	Switch, Meter/Light	AF
280	QANTR0107AFZZ	Rod Antenna	AP	SW301	QSW-S0191AFZZ	Switch, Beat Cancel	AE
281	QHWS-3001AGFN	Lug Terminal	-	SW501	QSW-F0044AGZZ	Switch, Motor	AE
282	QLUGP0111CEFW	Lug Terminal	AA	SW502	QSW-F0116AFZZ	Switch, APSS(REV)	AE
283	QLUGP0150AFZZ	Lug Terminal	AA	SW503	QSW-F0116AFZZ	Switch, APSS(FWD)	AE
284	QPRBF0086AFZZ	P.W. Board, Main (Board only, Not Available)	-	SW504	QSW-F0044AGZZ	Switch, CUE/REV Muting	AE
285	QPRBF0083AFA1	P.W. Board, Switch (Board only, Not Available)	-	SW701	QSOCE0551AFZZ	Switch, Mains Voltage Selector (GF-9191H/HB)	AG
286	QPRBF0083AFA2	P.W. Board, Variable Resistor (Board only, Not Available)	-		QSW-S0176AFZZ	Switch, Mains Supply (GF-9191E)	AP
287	QPRBF0083AFA3	P.W. Board, Power Supply (Board only, Not Available)	-	TB1	QJAKF0052AFZZ	Terminal, FM EXT. ANT	**
288	QPRBF0083AFA4	P.W. Board, Headphone (Board only, Not Available)	AB		QCNCW-0284AFZZ	Connecting Wire, 5 Pin	AC
289	QPWBF0701AFA1	P.W. Board, AF Power (Board only, Not Available)	-		QCNCW-0286AFZZ	Connecting Wire, 8 Pin	AC
290	QTANB9102AFFN	Terminal, Battery (+)	AC		QCNCW-0288AFZZ	Connecting Wire, 4 Pin	AB
291	QTANB9103AFFN	Terminal, Battery (+)	AC		QCNCW-0290AFZZ	Connecting Wire, 7 Pin	AC
292	RMICC0057AFZZ	Built-in Microphone	AK		SPAKA0502AFZZ	Packing Add. (Left)	AG
294	HINDM1246AFSA	Indication Plate, Voltage Selector (GF-9191H/HB)	AD		SPAKA0503AFZZ	Packing Add. (Right)	AG
	HINDM1251AFSA	Indication Plate, Mains Switch (GF-9191E)	**		SPAKC1169AFZZ	Packing Case (GF-9191H)	**
296	LHLDW1052AFZZ	Band, Wire	AA		SPAKC1170AFZZ	Packing Case (GF-9191HB)	**
297	PFLT-0345AF00	Felt, Variable Resistor	AA		SPAKC1179AFZZ	Packing Case (GF-9191E)	**
298	QFSDH1001AGZZ	Holder, Fuse	AB		SSAKH0087AGZZ	Polyethylene Bag	AB
299	LHLDW1075AFZZ	Band, Wire	AA		TINSZ0129AFZZ	Operation Manual (GF-9191H/HB)	**
300	LANGK0186AFFW	Bracket, Mains Switch (GF-9191E only)	AC		TINSE0572AFZZ	Operation Manual (GF-9191E)	**
301	PZETV0052AFZZ	Cover, Mains Switch (GF-9191E only)	AA		SSAKH0024AGZZ	Polyethylene Bag, Operation Manual	AA
F701	QFS-C122CAGNI	Fuse, 1.25AT	AE		TTAGH0046AFZZ	Tag (GF-9191H/HB only)	**
					TMAPC0524AFZZ	Schematic Diagram (GF-9191H/HB)	-
					TMAPC0528AFZZ	Schematic Diagram (GF-9191E)	-
					QACCK0050AFZZ	Cord, Mains Supply (GF-9191H/HB)	AM
					QACCB0003AGOV	Cord, Mains Supply (GF-9191E)	AL