

Service Manual

**FM/AM/FM STEREO RADIO WITH FM "SENSOR TOUCH"
PRESET TUNING SYSTEM WITH DOLBY* NOISE REDUC-
TION SYSTEM, CASSETTE PLAYER/RECORDER AND
RECORD PLAYER**

**Compact Stereo
SG-3090L**

Specifications

AMPLIFIER SECTION

Power Output	MPO 2×40W (THD 1%, 4 ohms)
	RMS 2×35W (THD 1%, 4 ohms)
	One Channel Driven
	RMS 2×28W (THD 1%, 4 ohms)
	Both Channel Driven
Frequency Response	10 Hz ~ 25 kHz, ±1.5 dB (DIN)
Power Band Width	10 Hz ~ 30 kHz, -3 dB (DIN)
Input Sensitivity and Impedance:	
Phono	3 mV, 47k ohms
Mic	1 mV, 3k ohms
Tape	300 mV, 30k ohms
Rec Out and Impedance	DIN: 40 mV, 82k ohms
Tone Controls:	
Bass	±15 dB at 50 Hz
Treble	±15 dB at 10 kHz
High Filter	-6 dB/oct. from 7 kHz
Loudness Control	+10 dB at 50 Hz
	(Volume: at -30 dB position)

FM TUNER SECTION

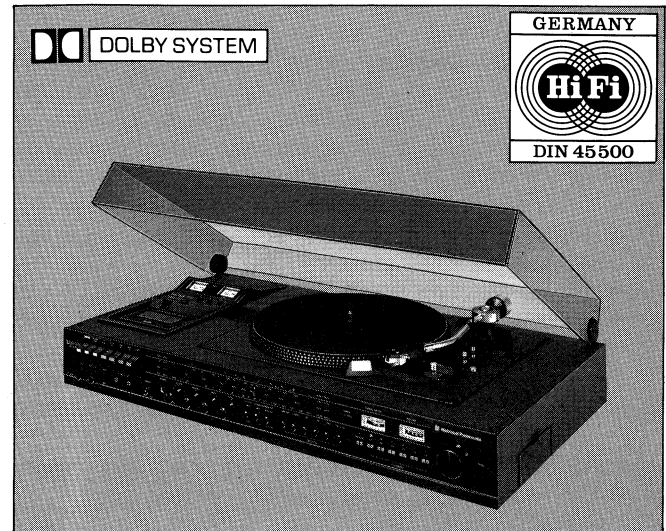
Tuning System	Varactor Diode with 6 "Sensor Touch"
	Pre-selectors and Manual Tuning
Frequency Range	87.5 MHz ~ 108 MHz
Intermediate Frequency (IF)	10.7 MHz
Sensitivity	2.5 μV (IHF)
	3.5 μV (S/N 26 dB, Mod. 40 kHz)
	(DIN)
Image Ratio	45 dB (98 MHz)
Signal to Noise Ratio	60 dB (at 1 kHz, 60 dB, 40 kHz)
Distortion	MONO: 0.4% (at 1 kHz, 60 dB,
	100%)
	STEREO: 0.5% (at 1 kHz, 60dB,
	100%)
Stereo Separation	40 dB (at 1 kHz, 60 dB, 30%)
	30 dB, 250 Hz ~ 6.3 kHz
	(60 dB, 30%) (DIN)
	18 dB, 6.3 kHz ~ 12.5 kHz
	(60 dB, 30%) (DIN)
Selectivity	60 dB (at 1 kHz, 60 dB, 30%)

AM TUNER SECTION

Frequency Range	MW: 525 ~ 1605 kHz (572 ~ 187 m)
	LW: 145 ~ 285 kHz (2070 ~ 1050 m)
	SW: 5.9 ~ 18 MHz (50.8 ~ 16.7 m)
Intermediate Frequency (IF)	455 kHz
Sensitivity	MW: 100 μV/m for 50 mW (1 MHz)
	LW: 250 μV/m for 50 mW (220 kHz)
	SW: 8 μV for 50 mW (12 MHz)
Image Ratio	MW: 45 dB (1 MHz)
	LW: 43 dB (220 kHz)
	SW: 15 dB (12 MHz)

RECORD PLAYER SECTION

Player System	Belt-Drive, Automatic Return
Turntable	30 cm (12"), Aluminum Die-Cast
Turntable Speeds	33-1/3 and 45 rpm, 2-speed with
	Pitch Control and Stroboscope
Wow and Flutter	0.1% (WRMS)
	0.15% (DIN WTD)
Deviation of Turntable	
Speeds	+1.5%, -1.0% (DIN)
Phonomotor	Frequency Generated Servo
	DC Motor
Cartridge	Moving Magnet, EPC-270C-X
Stylus	Diamond, EPS-270SD
Stylus Pressure	1.5g ~ 2.0g
Frequency Response	20 Hz ~ 20 kHz (DIN)
Separation	23 dB (DIN)
Signal to Noise Ratio	60 dB (DIN)



* Dolby is the trade mark of Dolby Laboratories Inc.

CASSETTE PLAYER/RECORDER

Playing System	Full Automatic Shut Off and
	Pause Control
Track System	4-Track, 2-Channel
Recording System	AC Bias, 50 kHz with Dolby
	NR System
Erasing System	AC Erase, 50 kHz
Tape Speed	4.75 cm/sec. (1-7/8 i.p.s.)
Frequency Response	25 Hz ~ 13 kHz (NORMAL)
	25 Hz ~ 16 kHz (FeCr)
	20 Hz ~ 16 kHz (CrO ₂)
Signal to Noise Ratio	DOLBY NR - OUT: 54 dB (DIN)
	DOLBY NR - IN: 60 dB (DIN)
Erase Ratio	70 dB (DIN)
Channel Separation	40 dB (DIN)
Cross Talk	60 dB (DIN)
Wow and Flutter	0.1% (WRMS)
	0.2% (DIN)

POWER CONSUMPTION

POWER SUPPLY	200W
	AC 110V, 120V, 220V, 240V,
	50/60 Hz

DIMENSIONS (W×H×D)

Center Unit	740 mm × 183 mm × 416 mm
	(29-1/16") × (7-7/32") × (16-3/8")

WEIGHT

Center Unit	17.1 kg (37 lb. 10 oz.)
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• Specifications are subject to change without notice for further improvement.

 **National Panasonic**

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

DISASSEMBLY INSTRUCTIONS

■ To Remove Record Player

Lift record player and unplug 5P connector jack from PC board and 2 pin plugs from record player socket.

NOTE:

When removing turntable, be sure to take off the belt from the capstan as shown in Fig. 1.

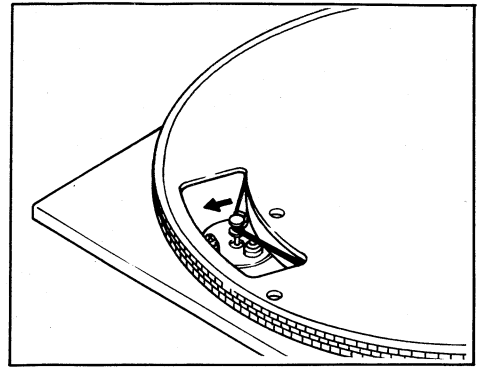


FIG. 1

■ To Replace Components

1. Remove record player. (Refer to above instructions.)
2. Push EJECT button to open cassette cover.
3. Carefully push stops of cassette cover located on both sides, as shown in Fig. 2. Then cassette cover can now be removed from cassette player/recorder panel.
4. Remove two cassette player/recorder panel mounting screws, Nos. 1 ~ 2, as shown in Fig. 7.
5. Remove seven (7) knobs from front panel.
6. Remove four (4) bottom board mounting screws, Nos. 12 ~ 15, as shown in Fig. 7.
7. Remove five (5) rear board mounting screws Nos. 7 ~ 11, and remove four (4) cabinet mounting screws, Nos. 3 ~ 6, as shown in Fig. 7.
8. Unsolder faulty components, and replace it with a new one.
9. To reassemble, reverse above procedure.

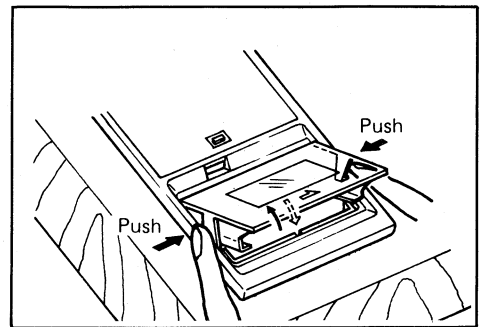


FIG. 2

■ To Remove Escutcheon from Chassis

1. Refer to above instructions 1 to 5.
2. Remove five (5) escutcheon mounting screws Nos. 16 ~ 20, as shown in Fig. 7.
3. To reassemble, reverse above procedure.

■ To Remove Cassette Player/Recorder

1. Refer to instructions 1 to 7 above.
2. Remove seven (7) cassette player/recorder mounting screws Nos. 21 ~ 27, as shown in Fig. 7, and remove mike jack.
3. To reassemble, reverse above procedure.

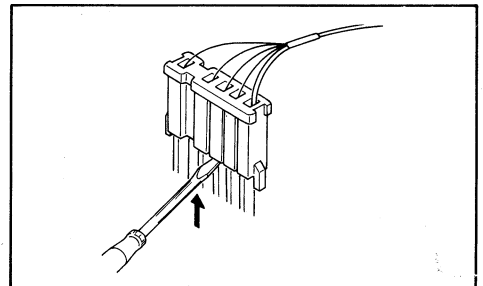


FIG. 3

■ To Remove the Connector Assembly

Raise the connector plug with a screwdriver, and pull it up as shown in Fig. 3.

Be careful not to damage connector lead wires.

■ To Remove Remote Wire Assembly

Lift remote wire assembly upward by pushing the lower portion of plastic hook with a suitable screwdriver, as shown in Fig. 4.

■ To Install Remote Wire Assembly

Put the front portion of remote wire assembly into the mounting board while inclining the plastic body and push the top portion of body, as shown in Fig. 5.

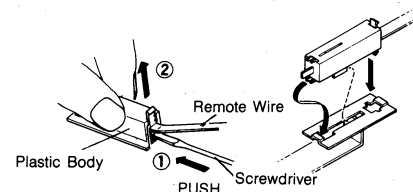


FIG. 4

FIG. 5

■ Note for Treatment of Remote Wire Assembly

When servicing remote wire assembly, be sure to hold gently, and do not bend a part of it tightly, as shown in Fig. 6.

Before lifting the 8-track player/recorder (or circuit board), be sure to remove remote wire assembly carefully to prevent it from being damaged.

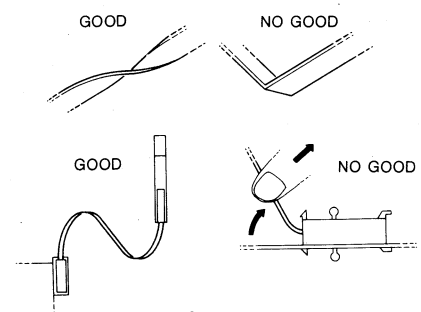


FIG. 6

Exploded view diagram of a radio receiver chassis, showing various components and their assembly points. The diagram includes a legend for component types and a list of components with their assembly points.

Legend:

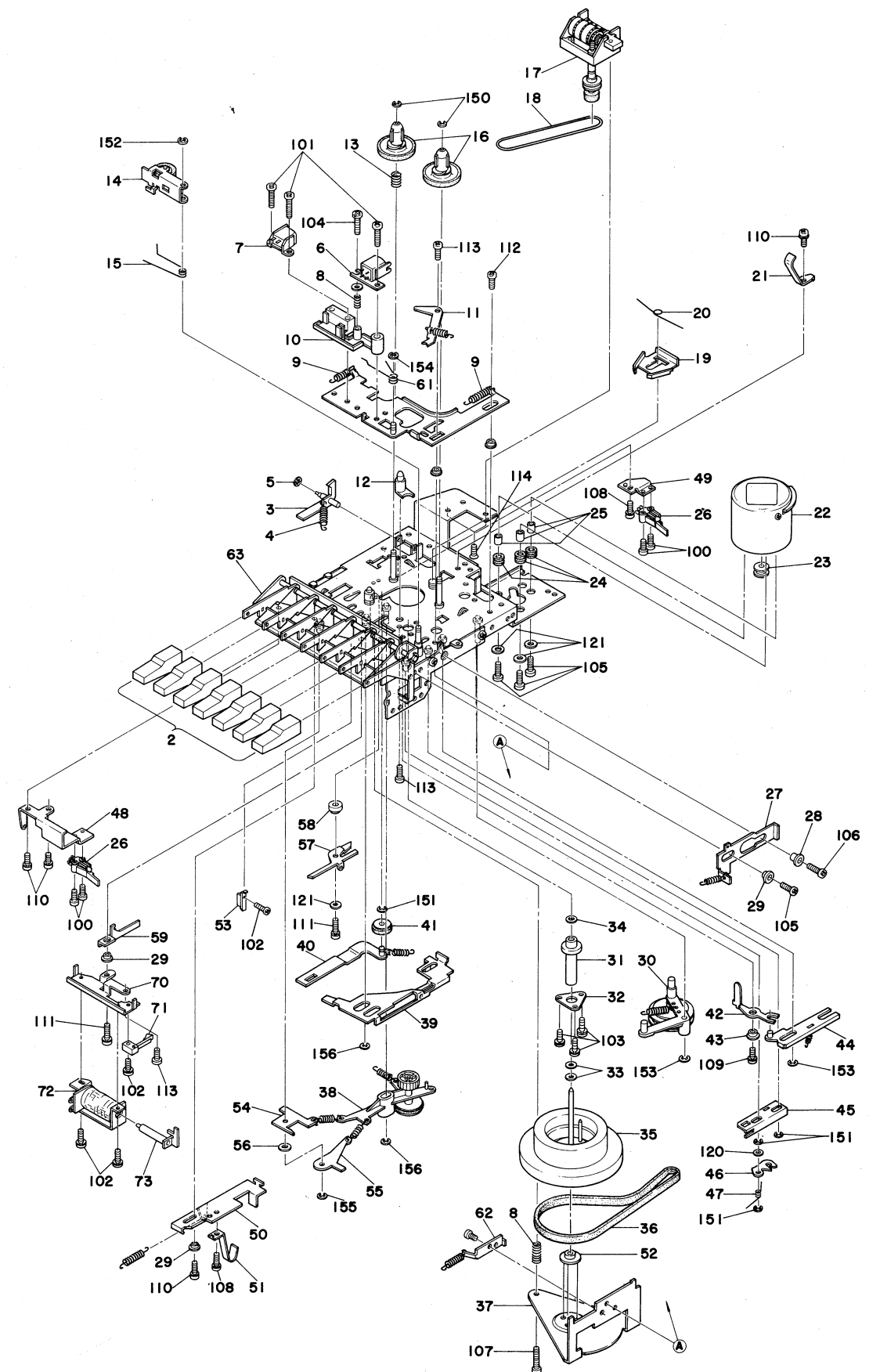
- ①-②XYN26+C8
- ③-⑥XYN4+C12S
- ⑦-⑩XTW3+10FZK
- ⑪-⑬XTW3+8FZK
- ⑭-⑯XTV3+8FZK
- ⑰-⑱XTV3+8BR

Components and Assembly Points:

- CA4-1, CA4, CA2-1, CH37, CA2, CH38, CH39, CA9, CA1-2, CA10, CA1, CA13, CA11, CA5, CA12, CA1-1, CH16, CH4, PL4,5, CH17, CH20 (Two), CH1, S2, S1, CH2, CH3, PL1, CH19, CH25, CH36 (Five), CH20 (Ten), CH26, CH23, CH24, CH18, CH5, CH6, CA8, CH34, CH33, CH35 (Four), CH40 (Five), CH27, CH22, CH21, CA17, CA7, CH34, CH33, CA18, CA23, CA21, CA22, CA16, CA15, CA6, CH34, CH33, CH35 (Four), CH40 (Five), CH27, CH22, CH21, CA17, CA7, CH34, CH33, CA18, CA23, CA21, CA22, CA16, CA15, CA6, CH34, CH33, CH35 (Four), CH40 (Five)

3

EXPLODED VIEW OF CASSETTE TAPE PLAYER/RECORDER



4

SG-3090L

DIAL CORD STRINGING GUIDE

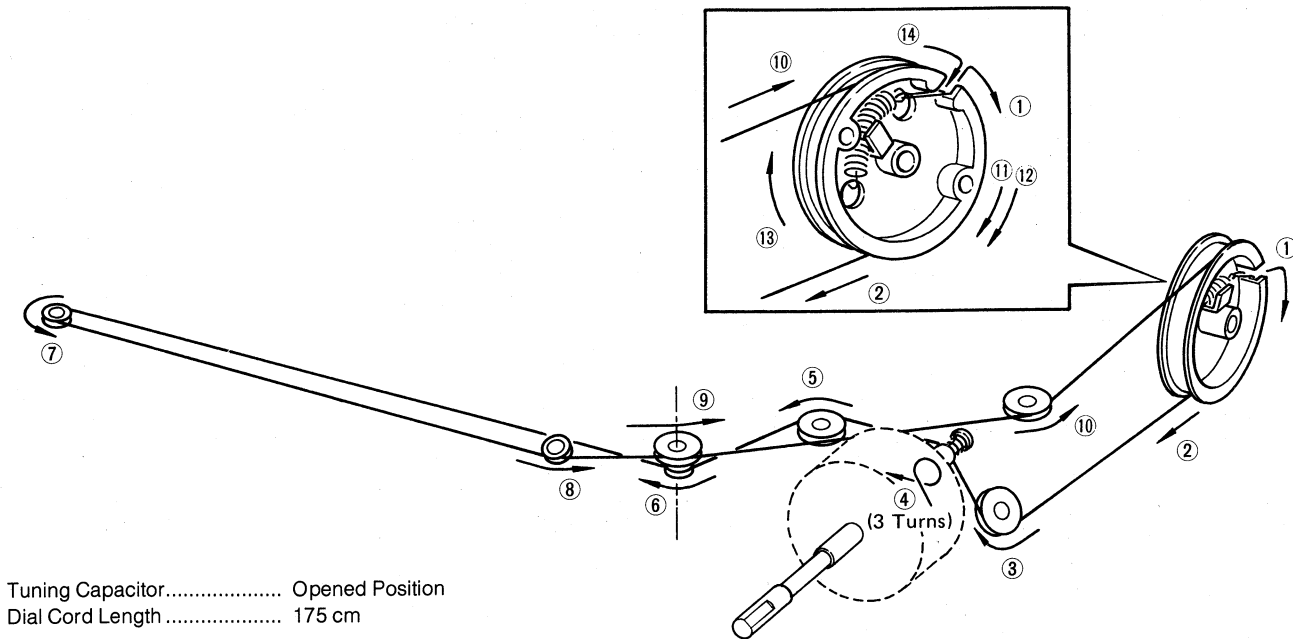


FIG. 9

ALIGNMENT INSTRUCTIONS (RADIO) – 1

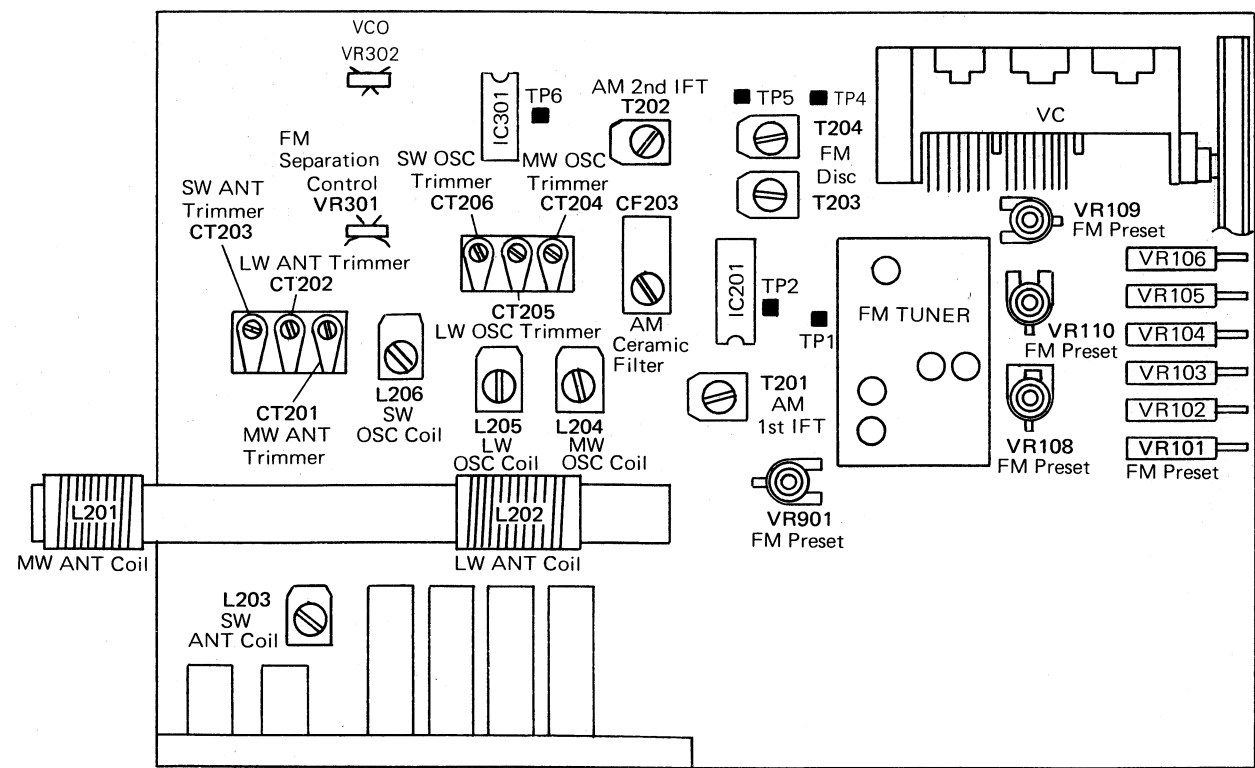


FIG. 10

ALIGNMENT INSTRUCTIONS (RADIO) – 2

- Notes:**
- 1. Volume Control Maximum (AM-IF and RF, FM-RF) Minimum (FM-IF)
 - 2. Bass and Treble Control Center
 - 3. Balance Control Center
 - 4. Band Selector LW, MW, SW, FM AUTO
 - 5. Power Switch ON
 - 6. Tape Monitor SOURCE
 - 7. Output to signal generator should be no higher than necessary to obtain output reading.
 - 8. Make certain that speaker system is connected to the tuner when aligning.

STEP	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (VTVM or SCOPE)	ADJUST	REMARKS
	CONNECTION	FREQUENCY				
AM-IF and RF ALIGNMENT						
1	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455 kHz 30% Mod. with 400 Hz	Point of non-interference (on/about 600 kHz)	Output meter across speaker jack (L). (Imp. 4 Ω)	T201 (AM 1st IFT) T202 (AM 2nd IFT)	Adjust for maximum output.
2 (LW)	Fashion loop of several turns of wire and radiate signal into loop of receiver.	145 kHz 30% Mod. with 400 Hz	145 kHz (15.7 mm)	Output meter across speaker jack (L). (Imp. 4 Ω)	L205 (LW OSC Coil) L202 (LW ANT Coil)	Adjust for maximum output by sliding coil L202 along ferrite core.
3 (LW)	Fashion loop of several turns of wire and radiate signal into loop of receiver	285 kHz 30% Mod. with 400 Hz	285 kHz (194.7 mm)	Output meter across speaker jack (L). (Imp. 4 Ω)	CT205 (LW OSC Trimmer) CT202 (LW ANT Trimmer)	Adjust for maximum output. Repeat steps (2) and (3).
4 (MW)	Fashion loop of several turns of wire and radiate signal into loop of receiver.	550 kHz 30% Mod. with 400 Hz	550 kHz (22.7 mm)	Output meter across speaker jack (L). (Imp. 4 Ω)	L204 (MW OSC Coil) L201 (MW ANT Coil)	Adjust for maximum output by sliding coil L201 along ferrite core.
5 (MW)	Fashion loop of several turns of wire and radiate signal into loop of receiver.	1500 Hz 30% Mod. with 400 Hz	1500 kHz (192.1 mm)	Output meter across speaker jack (L). (Imp. 4 Ω)	CT204 (MW OSC Trimmer) CT201 (MW ANT Trimmer)	Adjust for maximum output. Repeat steps (4) and (5).
6 (SW)	Connect to EXT antenna and ground through SW Dummy antenna. (Refer to Fig. 13)	5.9 MHz 30% Mod. with 400 Hz	5.9 MHz (18.5 mm)	Output meter across speaker jack (L). (Imp. 4 Ω)	L206 (SW OSC Coil) L203 (SW ANT Coil)	Adjust for maximum output.
7 (SW)	Connect to EXT antenna and ground through SW Dummy antenna. (Refer to Fig. 13)	18 MHz 30% Mod. with 400 Hz	18 MHz (201.1 mm)	Output meter across speaker jack (L). (Imp. 4 Ω)	CT206 (SW OSC Trimmer) CT203 (SW ANT Trimmer)	Adjust for maximum output. Repeat steps (6) and (7).

Note: CF203 is pre-aligned. Do not touch it.

FM-IF and DETECTOR ALIGNMENT						
1 (FM)	High side through 0.001mfd to point TP1. Common to chassis (TP2).	10.7 MHz (400 kHz SWP.)	Point of non-interference (on/about 98 MHz)	Connect vert amp. of scope to point TP4. Common to chassis (TP5).	T203 (FM 1st IFT)	Adjust for maximum amplitude and symmetrical curve (Refer to Fig. 11)
2 (FM)	High side through 0.001mfd to point TP1. Common to chassis (TP2).	10.7 MHz (400 kHz SWP.)	Point of non-interference (on/about 98 MHz)	Connect vert amp. of scope to point TP4. Common to chassis (TP5).	T204 (FM Disc. IFT)	Adjust for maximum amplitude and proper linearity between ± 100 kHz markers. (Refer to Fig. 12)

Note: Before aligning step 1, turn the core of T204 fully counterclockwise.

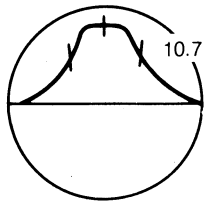


FIG. 11

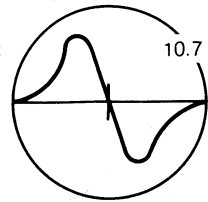


FIG. 12

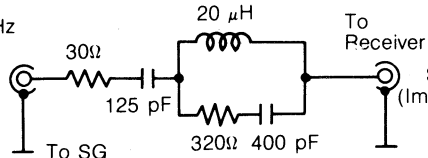


FIG. 13

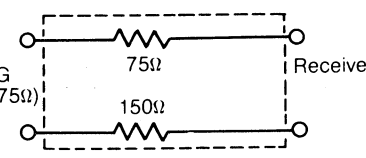
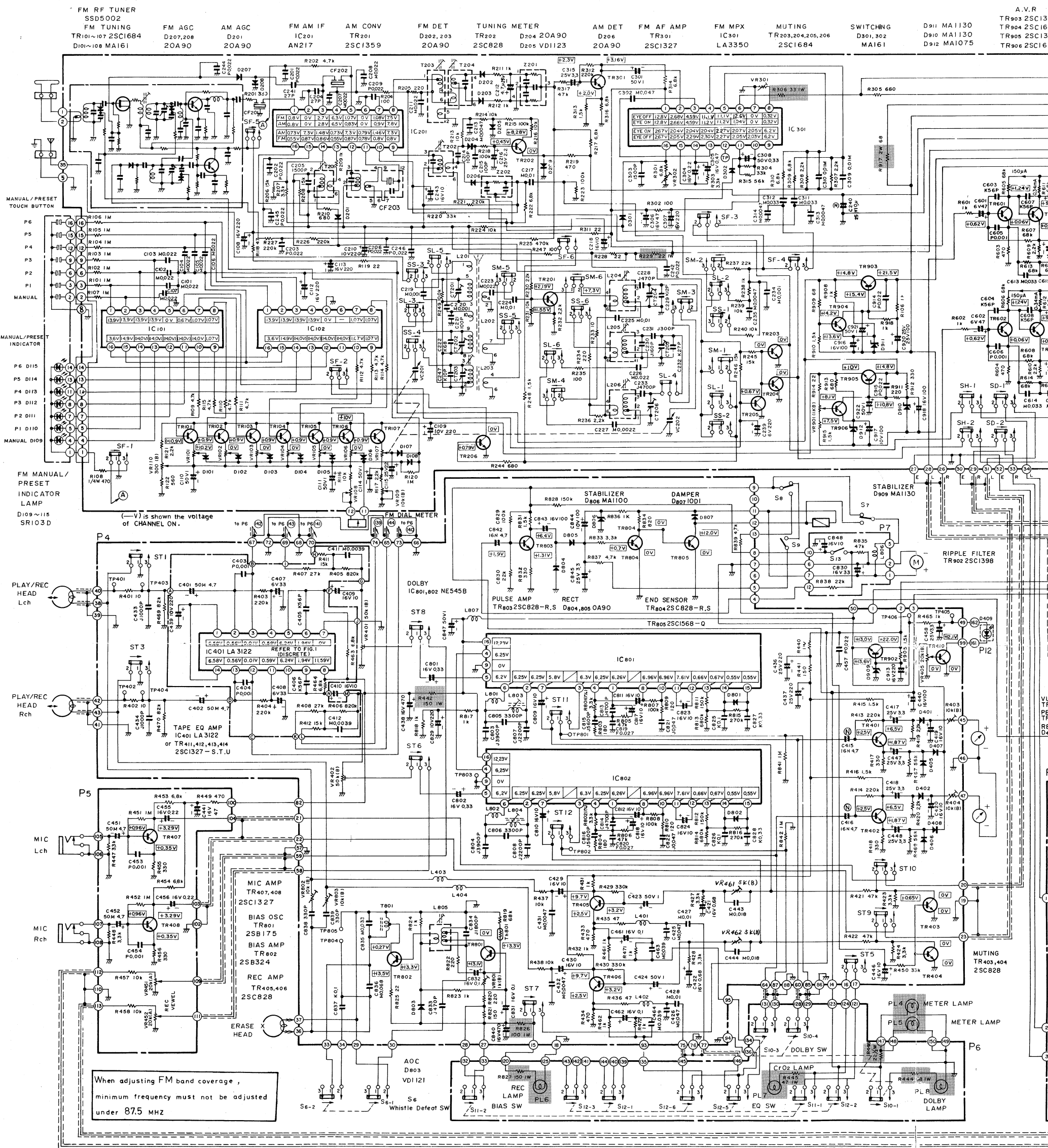


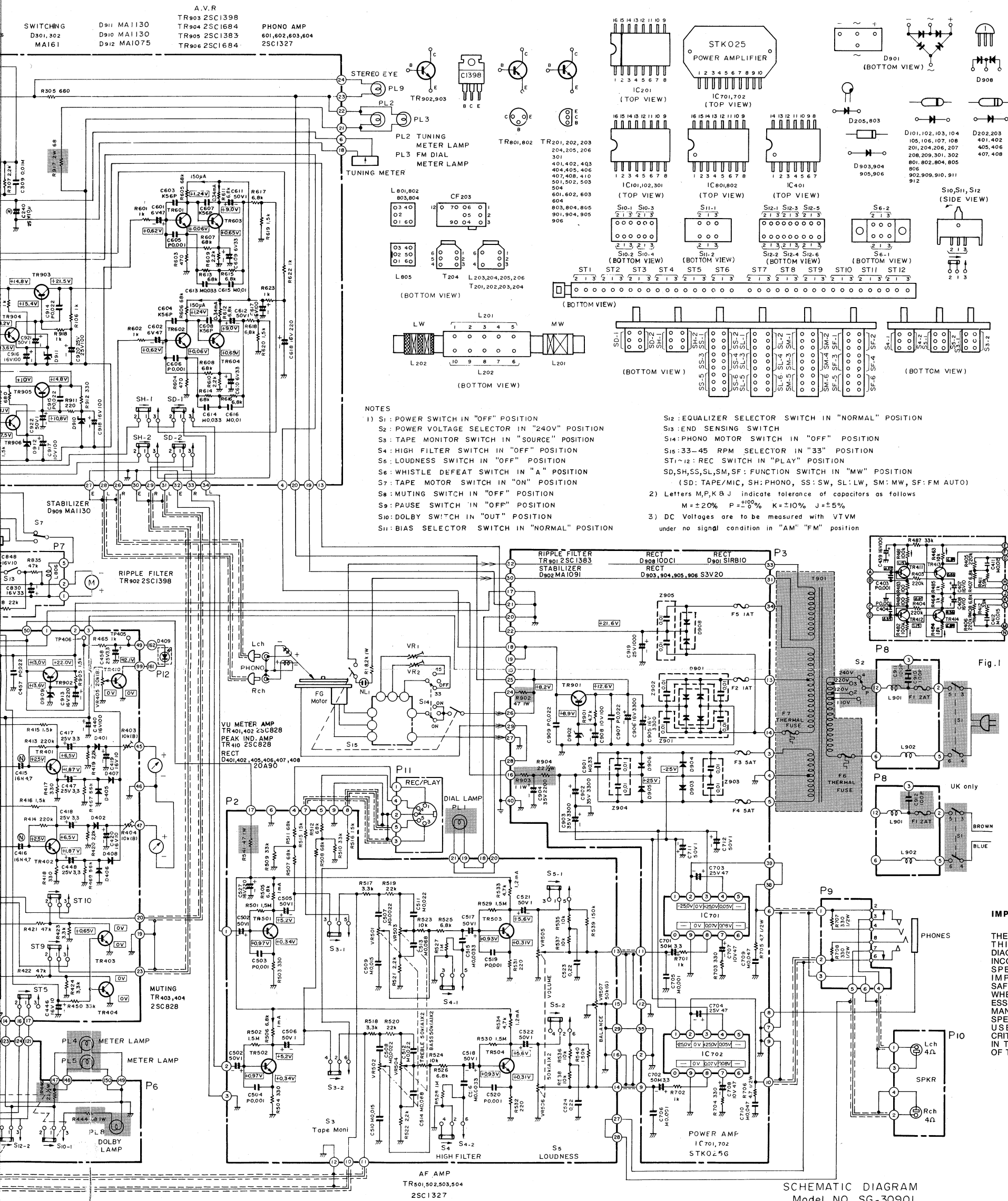
FIG. 14 DUMMY ANTENNA

SCHEMATIC DIAGRAM OF MODE

[illegible]

* This diagram might be modified without notice for further development of technology.

DIAGRAM OF MODEL SG-3090L

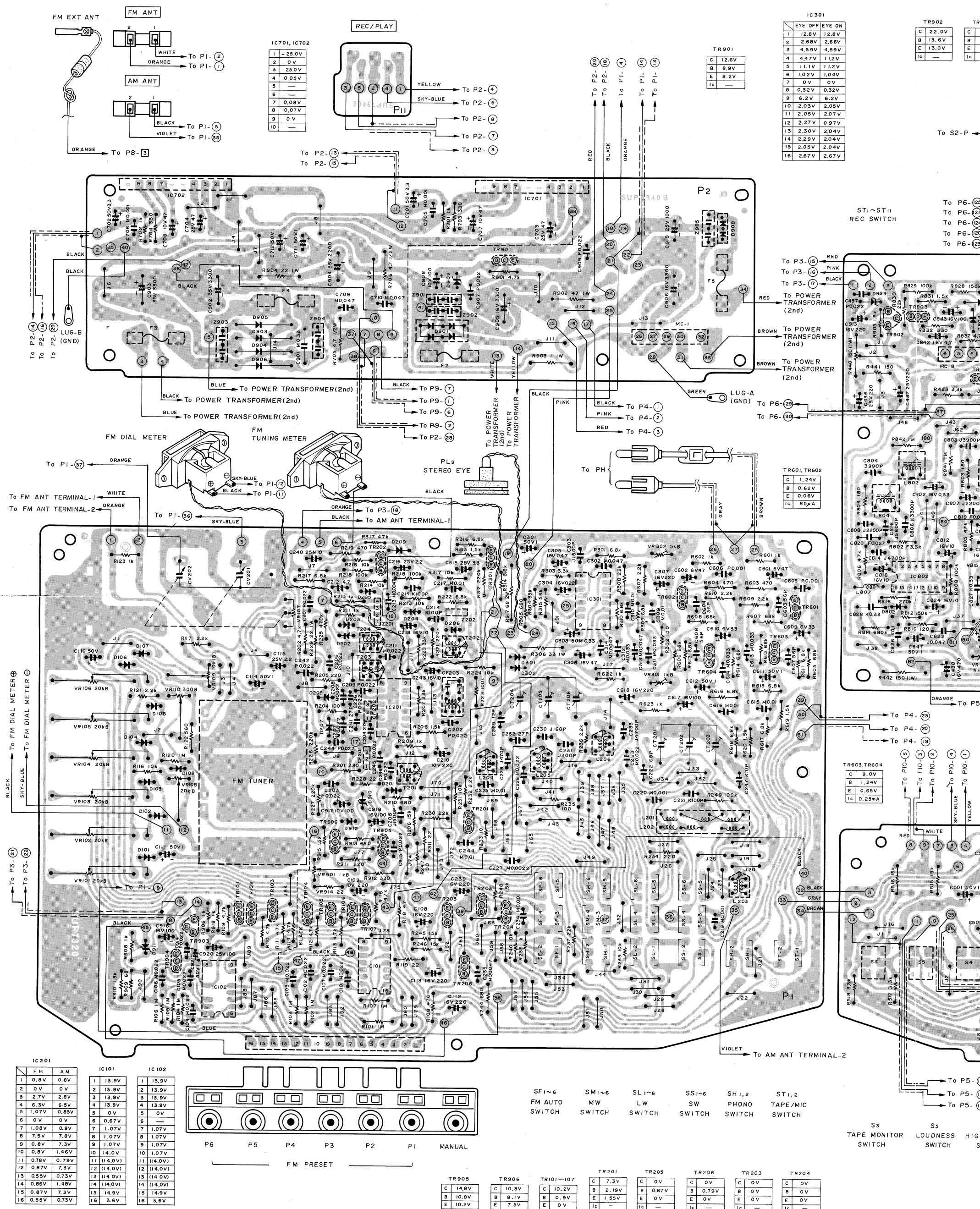


IMPORTANT SAFETY NOTICE

THE SHADED AREA ON THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR SAFETY. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURER'S SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SHADED AREAS OF THE SCHEMATIC.

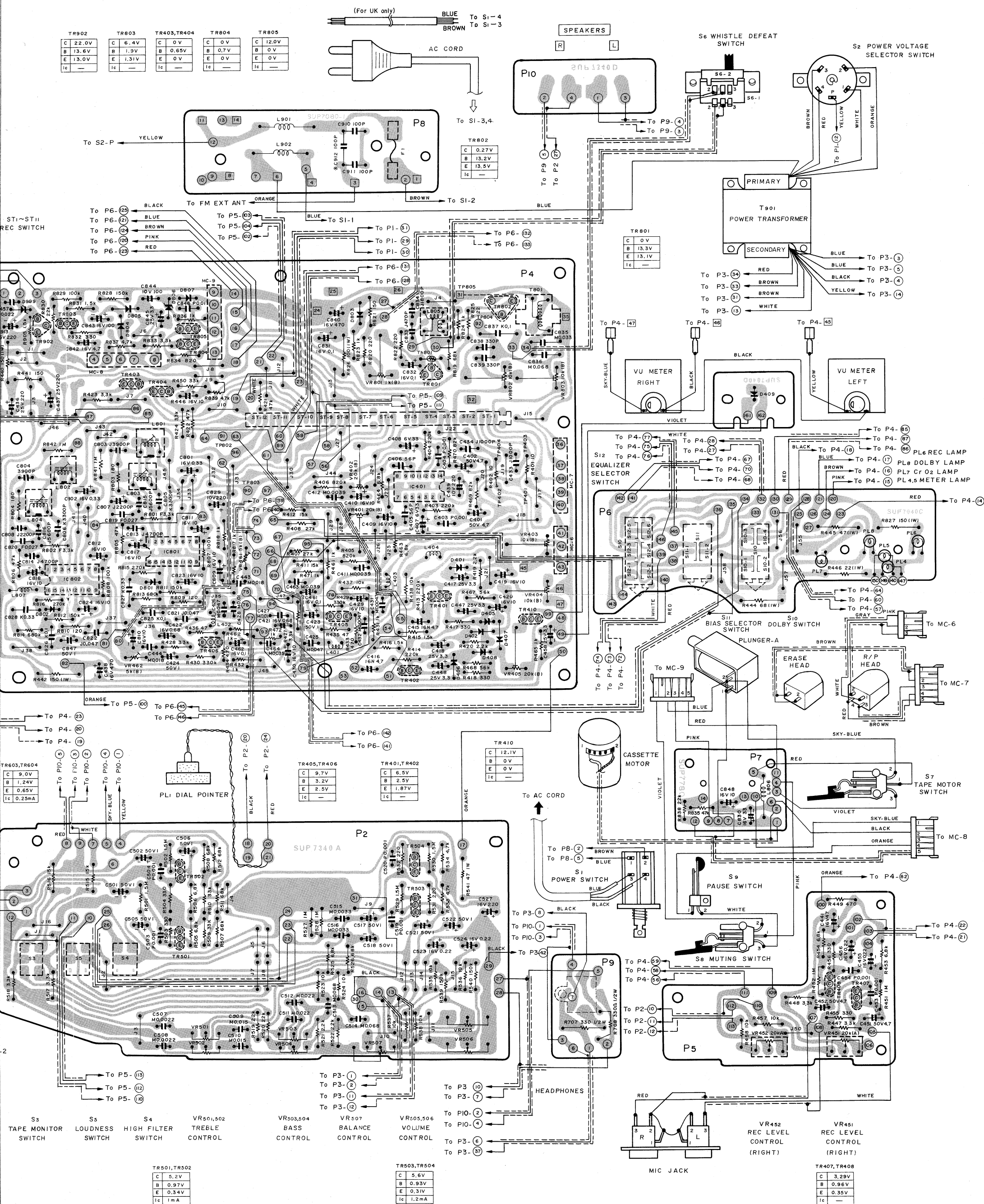
SCHEMATIC DIAGRAM
Model NO. SG-3090L

WIRING DIAGRAM OF MO

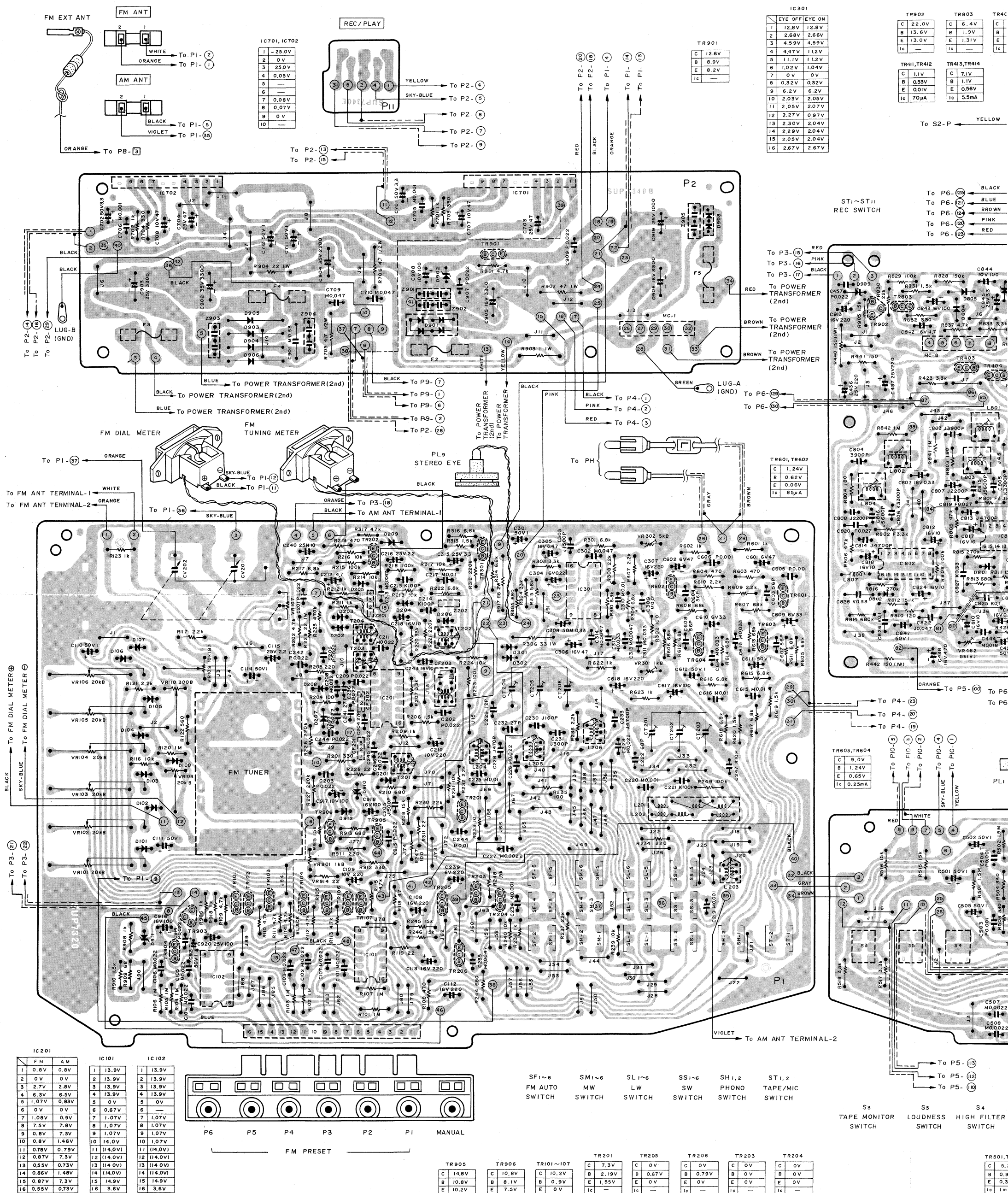


* This diagram might be modified without notice for further development of technology.

RAM OF MODEL SG-3090L

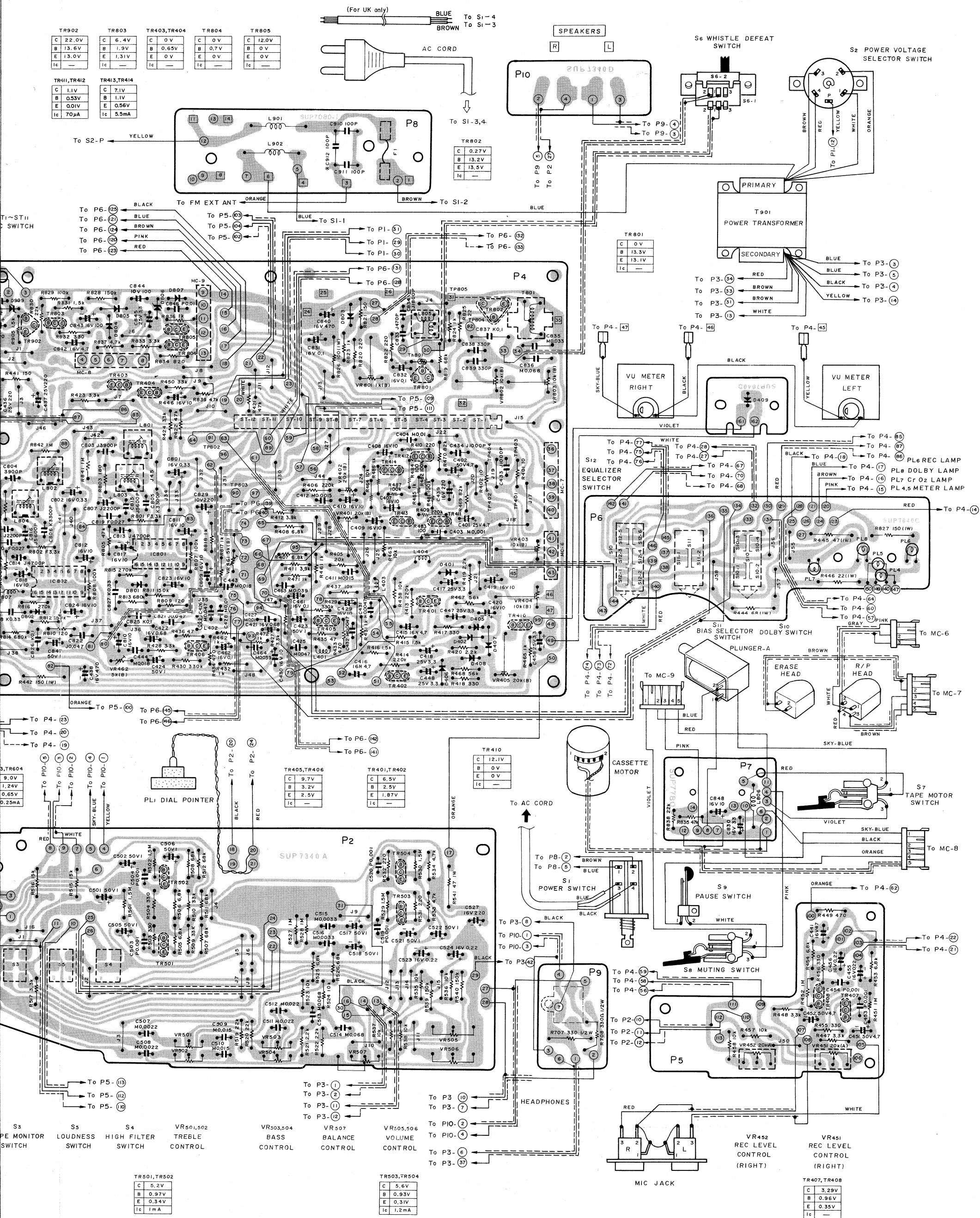


WIRING DIAGRAM (DISCRETE CIRCUIT



* This diagram might be modified without notice for further development of technology.

RETE CIRCUIT OF MODEL SG-3090L)



ALIGNMENT INSTRUCTIONS (RADIO) — 3

■ FM RF ALIGNMENT

Notes: 1. Volume Control Maximum 2. Bass and Treble Control Center 3. Balance Control Center 4. Band Selector FM AUTO 5. FM Sensor Touch Button MANUAL, P1, P2, P3, P4, P5, P6 6. FM Preset VR (VR101 ~ 106) Turn them fully counterclockwise.							
STEP	SIGNAL GENERATOR		RADIO DIAL SETTING	INDICATOR (VTVM or SCOPE)	FM SENSOR TOUCH BUTTON	ADJUST	REMARKS
	CONNECTION	FREQUENCY					
1	Connect to EXT. FM antenna terminal through dummy antenna. Common to chassis. (Refer to Fig. 14)	106 MHz 30% Mod. with 400 Hz	106 MHz	Output meter across speaker jack (L) (Imp. 4Ω)	MANUAL	VR901	Adjust for maximum output.
2	Connect to EXT. FM antenna terminal through dummy antenna. Common to chassis. (Refer to Fig. 14)	87.5 MHz 30% Mod. with 400 Hz	Turn them fully counterclockwise.	Output meter across speaker jack (L) (Imp. 4Ω)	MANUAL	VR109	Adjust for maximum output.
3	Connect to EXT. FM antenna terminal through dummy antenna. Common to chassis. (Refer to Fig. 14)	87.5 MHz 30% Mod. with 400 Hz	Turn them fully counterclockwise.	Output meter across speaker jack (L) (Imp. 4Ω)	P1	VR110	Adjust for maximum output. Repeat step (2).
4	Connect to EXT. FM antenna terminal through dummy antenna. Common to chassis. (Refer to Fig. 14)	106 MHz 30% Mod. with 400 Hz	106 MHz	Output meter across speaker jack (L) (Imp. 4Ω)	P1	VR101	Adjust for maximum output.
5	Connect to EXT. FM antenna terminal through dummy antenna. Common to chassis. (Refer to Fig. 14)	106 MHz 30% Mod. with 400 Hz	106 MHz	FM Dial Meter	P1	VR108	Adjust for 106 MHz indication reading on meter. Repeat steps (1) ~ (4).
Notes: 1. Before aligning step 1, turn the cores of VR108, VR109, VR110, and VR901 fully counterclockwise. 2. FM Tuner is pre-aligned. Do not touch it.							
Caution: To correct the drift of FM band coverage (87.5 ~ 108 MHz), adjust VR108, VR109, VR110 and VR901.							

■ FM STEREO ALIGNMENT

Notes: Tuner: Volume Control Audible level of speaker sound Treble Control MIN Bass Control Center Band Selector FM AUTO Balance Control Center FM Sensor Touch Button MANUAL				
EQUIPMENT CONNECTION			ADJUST	REMARKS
Connect frequency counter to TP6 and ground at no signal condition.			VR302 (VCO)	Adjust VR302 for 19 kHz ± 100 Hz on frequency counter reading.
SEPARATION ALIGNMENT				
Notes: 1. Stereo Modulator: Connect Stereo Modulator to EXT. Mod. terminal of signal generator. 2. Signal Generator: Modulation Rate of 19 kHz Pilot Signal 10% Modulation Rate of Right and Left Signal 27% Output Level 60 dB 3. Tuner (Balance Control): Adjust balance control so that output level from both channels becomes equal.				
EQUIPMENT CONNECTION			ADJUST	REMARKS
SIGNAL GENERATOR	VTVM	OSCILLOSCOPE		
Connect to EXT. FM antenna terminal through dummy antenna. (Refer to Fig. 14)	Connect across speaker jack. (Imp. 4Ω)	Connect vertical amp. input of scope to terminals of VTVM.	VR301 (Separation Control)	Adjust VR301 for minimum indication of VTVM from the left side output when the right side of stereo modulator is modulated. Adjust VR301 in the same way for the right side. Adjust for best balance between "L to R" and "R to L" separation.
Note: When aligning separation, disconnect frequency counter.				

ALIGNMENT INSTRUCTIONS (CASSETTE PLAYER/RECORDER)

- Notes:**
1. Function Selector TAPE
 2. Balance Control..... Center
 3. Depress push buttons PLAY and REC at the same time. (Be sure to release the record safety lever manually.)
 4. Dolby Switch OUT

STEP	CIRCUITS	VTVM CONNECTION	TAPE SELECTOR	ADJUSTMENT	REMARKS
1	AC BIAS CIRCUIT	Connect positive side to TP804 (+) and negative side to TP805 (-). (Refer to Fig. 15)	Bias SW: Normal	L805	Adjust L805 for maximum indication on VTVM.
2	AC BIAS CIRCUIT	Connect positive side to TP804 and negative side to TP805. (Refer to Fig. 15)	Bias SW: CrO ₂	VR801	Adjust VR801 for 12V reading on VTVM.
3	AC BIAS CIRCUIT	Connect positive side to TP401 and negative side to TP403. (Refer to Fig. 15)	Bias SW: Normal	VR803	Adjust VR803 and VR802 for 3.3 mV reading on VTVM.
		Connect positive side to TP402 and negative side to TP404. (Refer to Fig. 15)		VR802	
4	19 kHz TRAP CIRCUIT	Connect positive side to TP801 and negative side to TP803(E). (Refer to Fig. 15)	EQ SW: Normal	L803	Turn Function Selector to AUX and Dolby SW to IN. Apply audio signal (300 mV, 19 kHz) to both L-ch and R-ch AUX terminals. Adjust L803 and L804 for minimum indication on VTVM.
		Connect positive side to TP802 and negative side to TP804(E). (Refer to Fig. 15)		L804	
5	DOLBY CIRCUIT	Connect positive side to TP801 and negative side to TP803. (Refer to Fig. 15)	EQ SW: Normal	VR401	Turn Dolby SW to IN and playback a test tape (MTT-150). Adjust VR401 and VR402 for 580 mV reading on VTVM.
		Connect positive side to TP802 and negative side to TP803. (Refer to Fig. 15)		VR402	
6	VU METER CIRCUIT		EQ SW: Normal	VR403, VR404	Turn Dolby SW to IN and playback a test tape (MTT-150). Adjust VR403 and VR404 so that needle rests at +3 dB ( mark) as shown in Fig. 16.
7	REC CURRENT CIRCUIT	Connect positive side to TP401 and negative side to TP403. (Refer to Fig. 15)	EQ SW: Normal	VR461	Connect TP804 to TP805. Turn Function Selector to AUX and Dolby SW to IN. Apply 1 kHz audio signal to both AUX terminals and set body REC VR's at +3 dB ( mark) on VU meter. Adjust VR461 and VR462 for 0.67 mV reading on VTVM.
		Connect positive side to TP402 and negative side to TP403. (Refer to Fig. 15)		VR462	
8	PEAK INDICATOR	Connect positive side to TP807 negative side to TP806. (Refer to Fig. 15) Use for DC VTVM.	EQ SW: Normal	VR405	Turn Dolby SW to IN and playback a test tape (MTT-150). Adjust VR405 for DC 1V reading on VTVM.

- Notes:**
1. Do not touch R/P Head and Erase Head when aligning.
 2. L801 and L802 are pre-aligned. Do not touch them.
 3. MTT-150 is DOLBY LEVEL calibration tape.

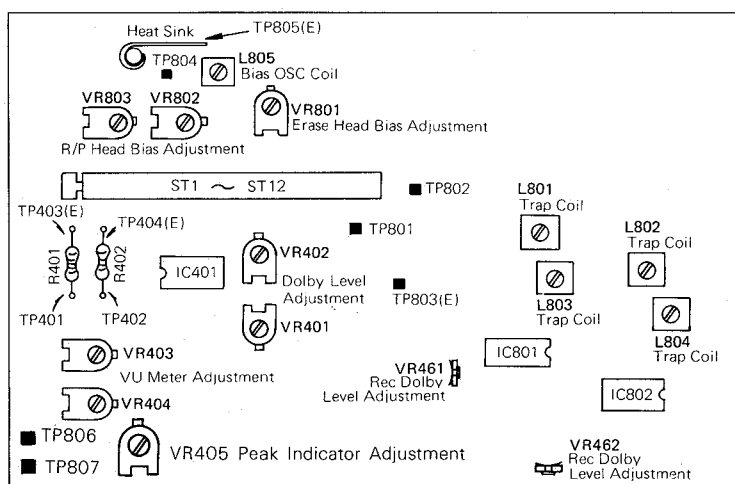


FIG. 15

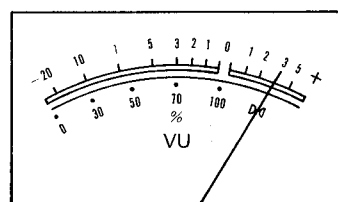


FIG. 16

*** Test Tape (6.3 kHz)**
VTT-652 or Equivalent

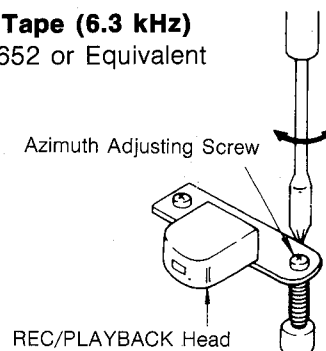


FIG. 17

RECORD/PLAYBACK HEAD AZIMUTH ADJUSTMENT

Playback a Standard Alignment Tape and turn Azimuth Adjusting Screw for maximum loudness.

MECHANICAL ADJUSTMENT OF CASSETTE PLAYER/RECORDER

PRESSURE ROLLER ADJUSTMENT

1. Switch set to PLAY. (Do not insert cassette.)
2. Hook Spring gauge to arm pressure rollers, as shown in Fig. 18.
3. Pull pressure roller away from the capstan in the direction of arrow 1 with spring gauge and slowly permit the pressure roller to return forward capstan in the direction of arrow 2.
4. Measure tension at time when pressure roller makes contact with capstan (or when pressure roller starts rotating.)
5. The standard tension of pressure roller should be 250 ~ 380 g.
6. If pressure is not within these limits;
Clean the rubber roller and capstan with a soft cloth moistened with alcohol or replace pressure spring.

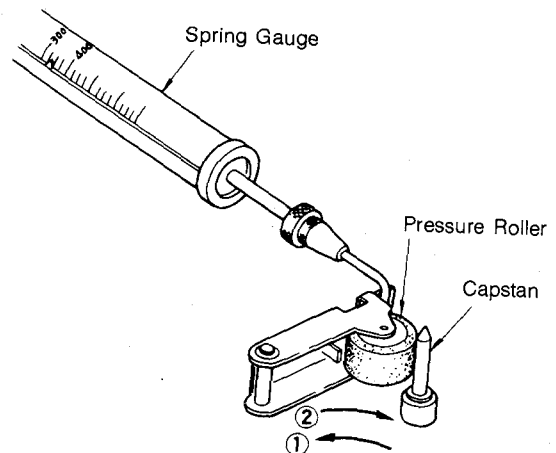


FIG. 18

TAKE-UP TORQUE ADJUSTMENT

- * Test Tape: SRK-CT (Take-up Torque Meter)
1. Insert test tape.
 2. Rewind the tape to its starting point.
 3. Switch set to PLAY.
 4. Read "▶" mark of indicator on take-up side, as shown in Fig. 19.
 5. Repeat PLAY-STOP several times and read the average tension.
 6. The standard take-up tension should be 30 ~ 70 g.cm.
- If take-up tension is not within these limits;
- a) Clean main belt, take-up reel and all parts which contact them with a cotton swab moistened with alcohol, and/or
 - b) Switch set to "OFF", remove main belt and make sure that take-up reel and take-up clutch are rotating smoothly.
 - c) Change take-up clutch tension by turning the friction spring under reel table, as shown in Fig. 20, and/or
 - d) Replace take-up clutch.

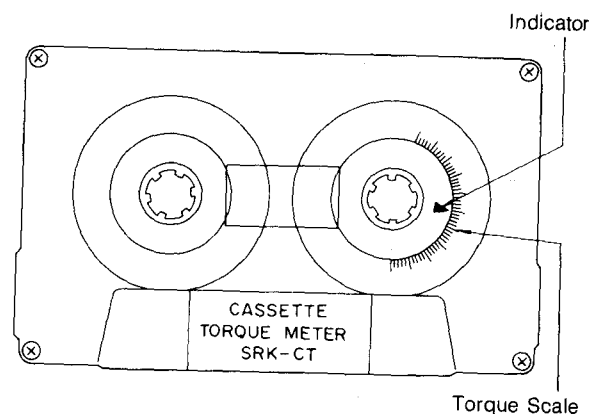


FIG. 19

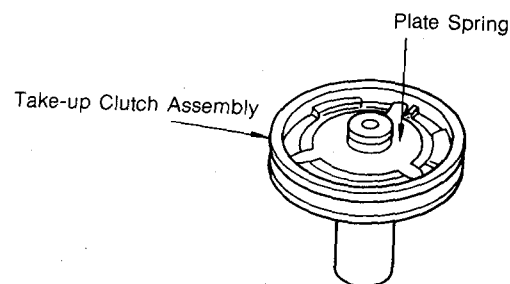


FIG. 20

DOLBY NOISE REDUCTION SYSTEM

GENERAL DESCRIPTION

The Dolby B-Type Noise Reduction System is used in this equipment, which reduces the level of background noise introduced during recording without changing the tone of audio signal.

METHOD OF DOLBY SYSTEM

Signal deviation of Dolby System is shown in Fig. 21.

Low level signal is recorded by boosting and is played back by attenuating as illustrated in the figure.

For example, following a level in Fig. 21:

1. When -30 dB REC signal is applied.
2. It is boosted to -20 dB and recorded on a magnetic head. [ENCODE]
3. Playing back this recorded tape (at -20 dB).
4. The output signal is boosted by Dolby System and reproduced at -30 dB, the same level as recorded. [RECODE]

Fig. 18 shows the boosting frequency characteristics. Generally, the signal deviation increases in proportion to the frequency.

At playback, the characteristics are curved symmetrically against the recording curve and the overall REC and PLAY curve flattens as shown in Fig. 23. This 0 dB is called Dolby Level, which is the flux level of the cassette tape and standardized at the point of 200 pwb/mm, and it is indicated by $+3$ VU on the VU meter of this equipment.

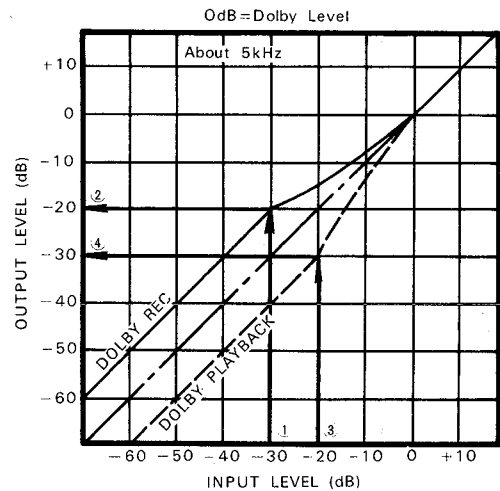


FIG. 21

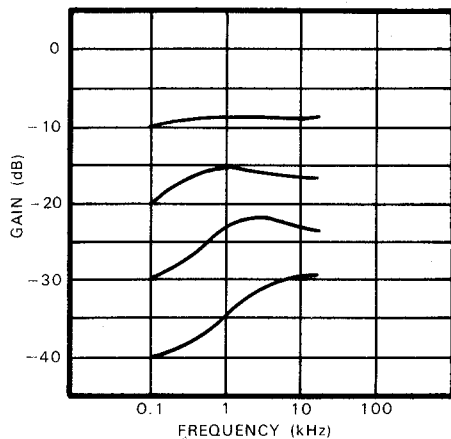


FIG. 22

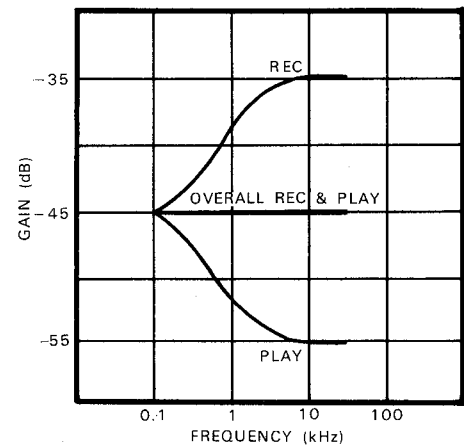


FIG. 23

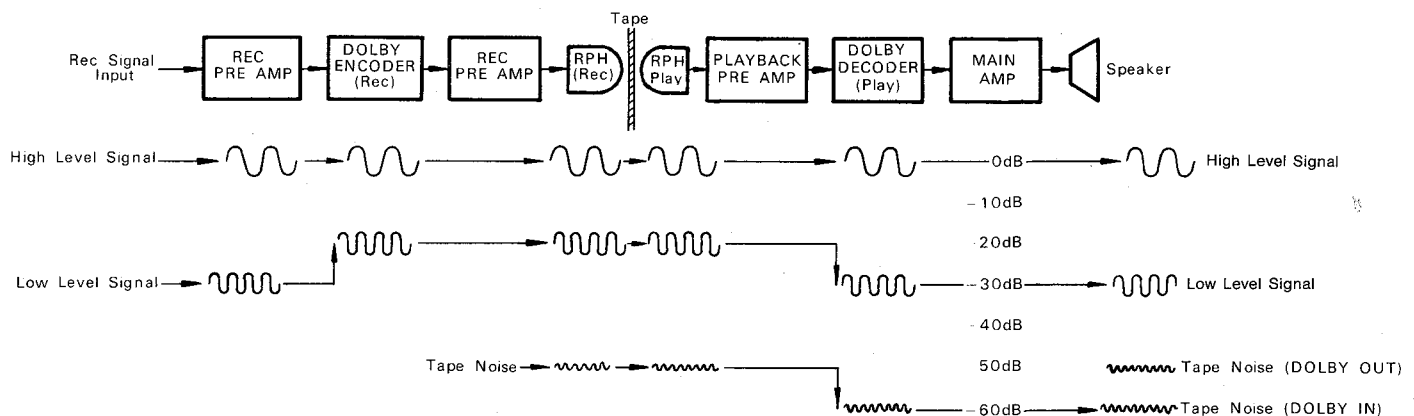


FIG. 24

DOLBY NOISE REDUCTION SYSTEM

PRINCIPLE OF NOISE REDUCTION

Much of the audible noise of a tape recorder is a hiss noise of high and medium frequency created when recording on a magnetic tape while some of it is playback amplifier noise.

A high input signal level suppresses noise but a low input signal level decreases S/N ratio and noise is easily heard.

For solving this problem as shown in Fig. 24, the Dolby System operates by boosting a low-level, high and medium frequency approx. 10 dB when recording, and attenuating the same signal in a complementary manner during playback.

During this process, the hiss noise of high and medium frequency and the amplifier noise are suppressed approx. 10 dB.

Fig. 25 shows noise reduction in Dolby IN/OUT.

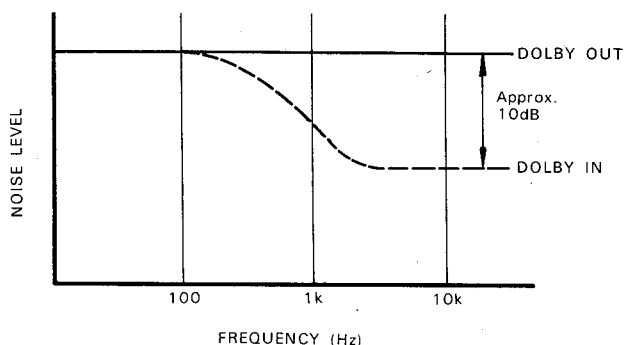


Fig. 25

CIRCUIT OPERATION

The operation of Noise Reduction System is shown in the block diagram of Fig. 26. By turning ST1, ST8, S10-4 and ST11 to REC/PLAY, this circuit operates on ENCODE/DECODE.

[ENCODE] : ST1, ST8 and ST11 in REC position.

Recording signal is applied to REC AMP and passes through AMP "A" of Dolby IC and the low-pass-filter "LPF", and then it enters AMP "B". LPF attenuates unwanted frequencies such as tape recorder bias or FM MPX sub. carrier signals to the level which will not influence the Dolby circuit operation. The output signal of AMP "B" is divided into two paths; one is directly supplied to ADDER "E", which is called a direct signal, while the other controls the noise reduction signal. This signal, passing through ST11, S10-4, high-pass-filter "HPF", variable resistance "F" and AMP "C", enters ADDER "E" and increases the direct signal.

As a result, REC signal from INVERTER "K" is boosted.

[DECODE] : Essentially the same circuitry.

ST1, ST8 and ST11 in PLAY position.

Playback signal from the playback head "RPH" is applied to PLAYBACK PRE AMP and passes through ST8, AMP "A" of Dolby IC, "LPF" and AMP "B", and then it enters ADDER "E" as the direct signal. One part of output signal from INVERTER "K", passing through ST11, is supplied to MAIN AMP, and the other, as Noise Reduction Signal, passes through S10-4, "HPF".

Variable Resistance "F" and AMP "C", are applied to ADDER "E" in opposite phase. As a result, the level of the playback signal is attenuated. This circuit operates to boost at REC position [ENCODE] and to attenuate at PLAY position [DECODE].

"G" is the rectifying and smoothing circuit of Noise Reduction Signal and controls Variable Resistance "F". And "F" and "HPF" compose the dynamic high pass filter, and control the boosting and attenuating degree of high and medium frequency in response to the signal level (Figs. 22 and 23). "T" is the circuit setting the response time of Dolby.

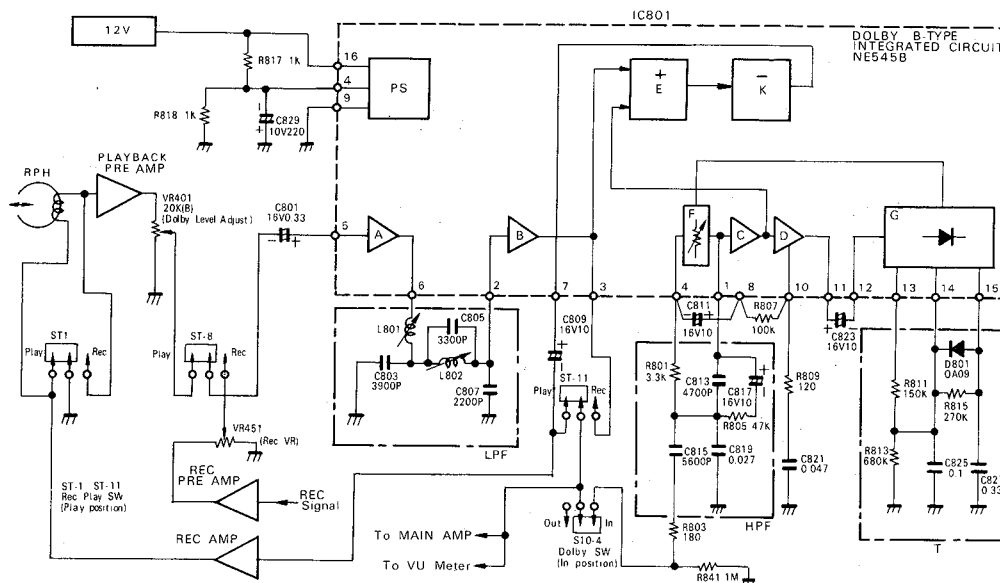


FIG. 26

EXPLODED VIEW OF RECORD PLAYER

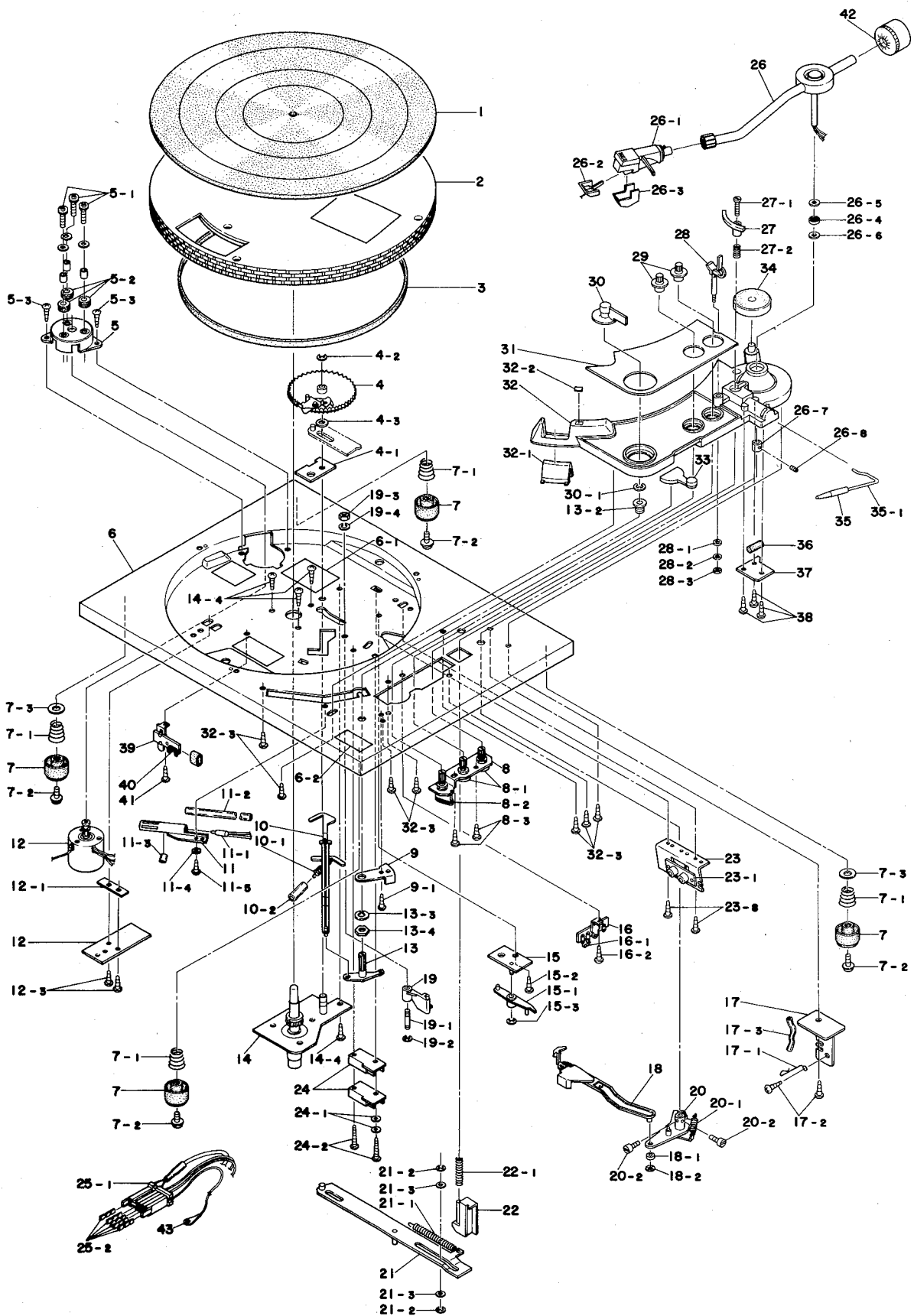


FIG. 27

SERVICING THE RECORD PLAYER

HEADSHELL/CARTRIDGE REPLACEMENT

1. Remove headshell/cartridge fixing nut by turning it clockwise and pull out headshell/cartridge from pickup arm, as shown in Fig. 28.
2. Install a new headshell/cartridge to pickup arm.

NOTE:

Correct stylus position can be obtained by relocating the cartridge, as shown in Fig. 29.

STYLUS REPLACEMENT

1. Lift pickup arm to a position that will make the stylus accessible.
2. Gently remove worn stylus and replace it with a new one, as shown in Fig. 30.

LUBRICATION

The record player has been thoroughly lubricated at the factory and under normal use should not require additional lubrication. When replacing some parts,

however, it may be necessary to lubricate the parts as specified.

(Apply grease to **G** as shown in Figs. 32 and 33.)

NOTE:

Do not allow grease to touch motor pulley, belt and turntable.

STYLUS PRESSURE ADJUSTMENT

1. Release pickup arm from its seated position. Place a record on the turntable. Then, balance the pickup arm by turning in or out the balance weight until the stylus is leveled to the surface of the record (as viewed from the turntable unit side).
2. Set the stylus pressure dial to "0", and since the specified stylus pressure of the cartridge is 2.0 grams, set the balance weight dial to "2" by turning the weight counterclockwise, as shown in Fig. 31.

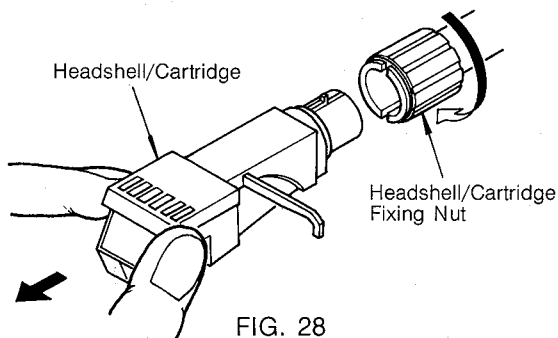


FIG. 28

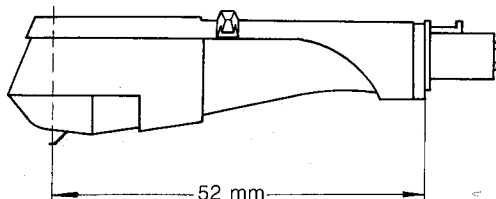


FIG. 29

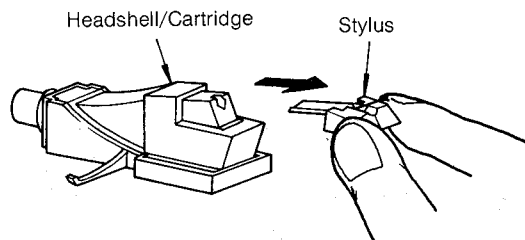


FIG. 30

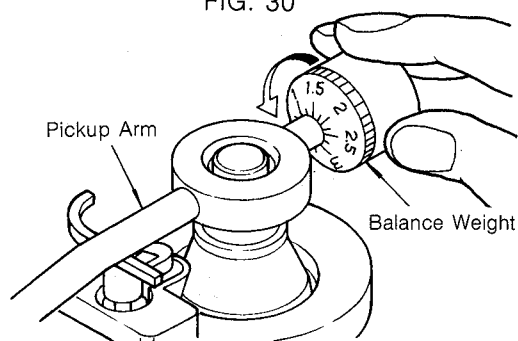


FIG. 31

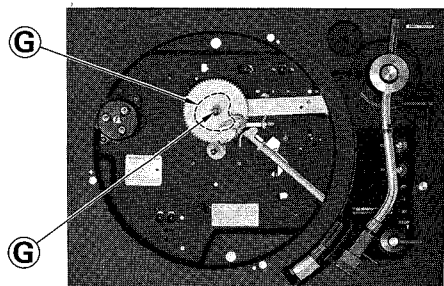


FIG. 32

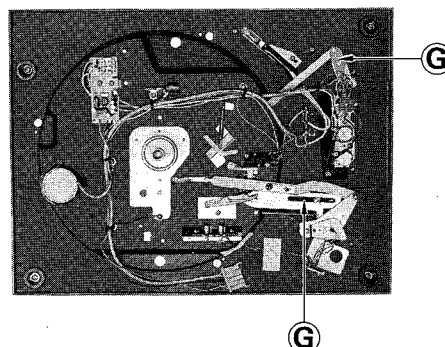


FIG. 33

FM "SENSOR" TOUCH PRESET TUNING SYSTEM

GENERAL DESCRIPTION

The FM "Sensor Touch" Preset Tuning System of the equipment is designed for an easy soft touch selection of six stations.

This system is composed of an electronic tuning circuit equipped with varactor diodes and sensing driver circuit using two integrated circuits, IC101 NS94041 and IC102 NS94042.

CIRCUIT OPERATION

The operation of FM "Sensor Touch" Preset Tuning System is shown in Fig. 34.

IC101 NS94041 operates to select the station for MANUAL, P1, P2 and P3, and IC102 NS94042 is for P4, P5 and P6.

When the sensor button of P1 is touched with a finger, the detecting circuit of P1 operates to energize LED driver and channel out circuit and then a LED lights.

While applying voltage that is adjusted by VR101 to the varactor diode of the electronic tuning circuit, the station is selected.

Muting circuit enables to decrease selection noise when tuning, by flowing the signal from No. 6 pin of IC101 to TR205.

Hold circuit and reset circuit are provided to lock the selected station when releasing the finger.

Initial Set circuit of IC101 operates to tune the station of P1 preferentially when the equipment power switch is turned ON again after turning OFF.

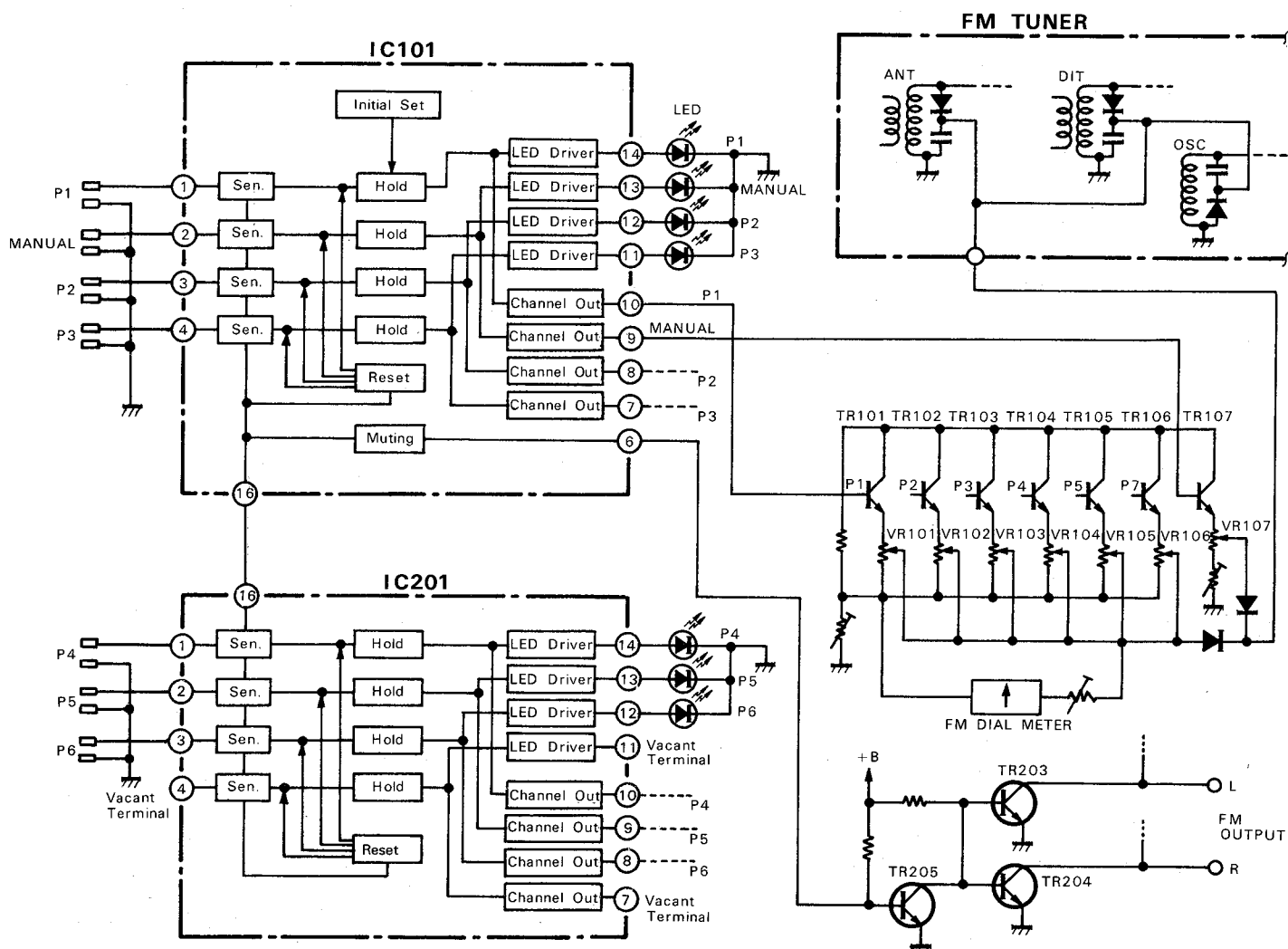


FIG. 34

[illegible]

FIG. 35

REPLACEMENT PARTS LIST

SG-3090L

- NOTES:**
- 1. Part numbers are indicated on most mechanical parts.
 - 2. Please use this part number for parts orders.
 - 3. Part numbers composed by bold face are service standard parts and may differ from production parts.
 - 4. Components identified by shaded area have special characteristics important for safety. When replacing any of these components used only manufacturer's specified parts.
 - 5. A ~ C rank.
 - A rank parts will cover 80% of repair needs.
 - A + B rank parts will cover 95% of repair needs.
 - C rank parts are less necessary.
 - 6. The term "M. Film" is the abbreviation of Metal Film.
 - 7. The term "W. Wnd." is the abbreviation of Wire Wound.

Ref. No.	Part No.	Description	Per Set (pcs.)	Remarks
TRANSISTORS				
TR101~107	2SC828	Transistor, FM Tuning	7	A
TR201	2SC1359	Transistor, AM Conv.	1	A
TR202	2SC828	Transistor, Tuning Meter	1	A
TR203~206	2SC828	Transistor, Muting	4	A
TR301	2SC1327	Transistor, FM AF Amplifier	1	A
TR401,402	2SC828	Transistor, Meter Drive	2	A
TR403,404	2SC828	Transistor, Muting	2	A
TR405,406	2SC828	Transistor, Rec Amplifier	2	A
TR407,408	2SC1327	Transistor, Mic Amplifier	2	A
TR410	2SC828	Transistor, Lamp Drive	1	A
TR501~504	2SC1327	Transistor, AF Amplifier	4	A
TR601~604	2SC1327	Transistor, AF Amplifier	4	A
TR801	2SB175	Transistor, Bias OSC	1	A
TR802	2SB324	Transistor, Bias Amplifier	1	A
TR803,804	2SC828	Transistor, Meter Control	2	A
TR901	2SC1568	Transistor, Voltage Stabilizer	1	A
TR902	2SC1393	Transistor, Voltage Stabilizer	1	A
TR903	2SC1398	Transistor, A.V.R.	1	A
TR904	2SC828	Transistor, A.V.R.	1	A
TR905	2SC1383	Transistor, A.V.R.	1	A
TR906	2SC828	Transistor, A.V.R.	1	A
DISCRETE CIRCUIT				
TR411~414	2SC1327	Transistor, Equalizer Amplifier	4	A

Ref. No.	Part No.	Description	Per Set (pcs.)	Remarks
INTEGRATER CIRCUITS				
IC101	SN94041	IC, Manual/Preset	1	○ A
IC102	SN94042	IC, Manual/Preset	1	○ A
IC201	AN217	IC, FM AM IF	1	A
IC301	LA3350A	IC, FM MPX	1	A
IC401	LA3122	IC, Cassette EQ/REC Amplifier	1	A
IC701,702	STK025G	IC, Power Amplifier	2	A
IC801,802	NE545B	IC, Meter and ALC	2	A
DIODES				
D101~108	MA161	Diode, FM Tuning	8	A
D201	2OA90	Diode, AM AGC	1	A
D202,203	2OA90	Diode, FM DET	2	A
D204	2OA90	Diode, Tuning Meter	1	A
D205	VD1123	Diode, Tuning Meter	1	A
D206	2OA90	Diode, AM DET	1	A
D207,208	2OA90	Diode, FM AGC	2	A
D209	2OA90	Diode, Tuning Meter	1	A
D301,302	MA161	Diode, Switching	2	A
D401	2OA90	Diode, Rect	1	A
D402	2OA90	Diode, Rect	1	A
D405	2OA90	Diode, Rect	1	A
D406	2OA90	Diode, Rect	1	A
D407	2OA90	Diode, Rect	1	A
D408	2OA90	Diode, Rect	1	A
D409	SR103D	Diode, Peak Indicator (PL12)	1	A
D801	OA91	Diode, Meter and ALC	1	A
D802	OA91	Diode, Meter and ALC	1	A
D803	VD1121	Diode, AOC	1	A
D804	2OA90	Diode, Damper	1	A
D805	2OA90	Diode, Damper	1	A
D806	MA1075	Diode, Zener	1	A
D807	10D1	Diode, Damper	1	A
D901	S1RB10	Diode, Rect	1	A
D902	MA1091	Diode, Zener	1	A
D903~906	S3V20	Diode, Rect	4	○ A
D907	10DC1	Diode, Rect	1	A
D909,910	MA1130	Diode, Zener	2	A
D911	MA1130	Diode, Zener	1	A
D912,D913	MA1075	Diode, Zener	2	A

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description	Per Set (pcs.)	Remarks
THERMISTOR				
TH801	RRT-103	Thermistor	1	A
LAMPS AND FUSES				
PL1	XAMR53X300	Dial Lamp	1	A
PL4.5	XAMR53X300	Meter Lamp	1	A
PL6	XAMR53X300	Rec Lamp	1	A
PL7	XAMR53X300	CrO ₂ Lamp	1	A
PL8	XAMR53X300	Dolby Lamp	1	A
PL9	XAMR53X300	Stereo Eye	1	A
F1	XBAF53X300	Fuse	1	A
F2	XBAS2A2001	Fuse	1	A
F3	XBA2G50TH0	Fuse	1	A
F4	XBA2G50TR0	Fuse	1	A
F5	XBAS2A1004	Fuse	1	A
METER				
M1	SSM86	VU Meter	1	B
M2	SSM88	Tuning Meter (PL2)	1	C B
M3	SSM70	FM Dial Meter (PL3)	1	C B
COILS AND TRANSFORMER				
L201, 202	SLE6G28-O	Coil, MW and LW Ferrite Antenna	1	C A
L203	SLA3M6-M	Coil, SW Antenna	1	C A
L204	SLO2M6-M	Coil, MW Oscillator	1	C A
L205	SLO1M4-M	Coil, LW	1	C A
L206	SLO3M2-M	Coil, SW	1	C A
L401, 402	SLOU222-2Y	Coil, Rec EQ	2	A
L403, 404	SLQV393-4Y	Trap Coil	2	A
L801, 802	SLQC363-2K	Coil, 19 kHz (36 mH) Trap	2	A
L803, 804	SLQC233-2K	Coil, 38 kHz (23 mH) Trap	2	A
L805	SLO9Z10-K	Coil, Bias Oscillator	1	A
L806, 807	ELQ250A999	Coil, Choke	2	A
L901, 902	SLQY35S-2S	Coil, RFC	2	A
T201	SLI2M102	AM 1st IFT	1	A
T202	RLI7W105R-T	AM Ceramic Filter	1	A
T203	RLI2M402	AM IFT	1	A
T204	RLI4M501-M	FM Disc	1	A
T205	RLI4M502-M	FM Disc	1	A

Ref. No.	Part No.	Description	Per Set (pcs.)	Remarks
T801	SLT6E2-D	Output Transformer (Bias OSC)	1	A
T1	SLT526-W	Power Transformer	1	C A
CF201, 202	RVFCF10M12CR	FM Ceramic Filter	2	A
VARIABLE CAPACITORS				
CT201 ~ 206	SCV3T12S	Trimmer Capacitor	2	A
CV201, 202	SCVC637W112K	Tuning Capacitor, w/Volume	1	C A
VR107				
VARIABLE RESISTORS				
VR101 ~ 106	SVV2	Pre-set Adjust	6	A
VR108	EVLS3AA00B24	20kΩ FM Dial Meter Adjust	1	A
VR109	EVLS3AA00B14	10kΩ FM Dial Meter Adjust	1	A
VR110	EVLS3AA00B32	300ohmB Pre-set Adjust	1	A
VR301	EVL70AA00B13	1kΩ FM Stereo Separation	1	A
VR302	EVL70AA00B53	5kΩ 19kHz Adjust	1	A
VR401, 402	EVLS3AA00B24	20kΩ Dolby Level Adjust	2	A
VR403, 404	EVLS3AA00B14	10kΩ Bias Meter	2	A
VR405	EVLS3AA00B24	20kΩ Dolby Level Adjust	1	A
VR451, 452	EVH6UA363A24	20kΩ Rec Level Adjust	2	A
VR461, 462	EVL70AA00B53	5kΩ Rec Current Adjust	2	A
VR501 ~ 504	EWK8EA331A54	50kΩ Bass, Treble Control	2	A
VR505, 506	EWFN3AK30A54	50kΩ Volume Control	1	A
VR507	EVH0UA363G54	50kΩ Balance Control	1	A
VR801	EVLS3AA00B13	1kΩ OSC Out Adjust	1	A
VR802, 803	EVLS3AA00B14	10kΩ Bias Meter	2	A
VR901	EVLS3AA00B13	1kΩ Voltage Adjust	1	A
SWITCHES				
S1	ESB7067	Switch, Power	1	A
S2	ESE3742	Switch, Line Selector	1	A
S3 ~ 5	SSH304	Switch, Tape Monitor, Loudness, High Filter Switch	1	C A
S6	SSS28	Switch, WDS	1	A
S10	SSS82	Switch, Dolby	1	A
S11	SSS80	Switch, Bias Nor-CrO ₂	1	A
S12	SSS84	Switch, EQ Nor-CrO ₂	1	A
S13	SSP20	Switch, Lead	1	C A
ST1 ~ 12	ESD6621	Switch, Rec/Play	12	A

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description	Per Set (pcs.)	Remarks
S14	SSH606	Switch, Function	1	○ A
SX1	ESA2055	Remote Wire Assembly	1	A
TUNER				
	SSD5002	FM RF Tuner	1	○ C
COMPONENT COMBINATIONS				
Z201	EXA5DL04C	Component Combination, FM Det	1	B
Z202	EXAF203Z471	Component Combination, AM Det	1	B
Z901~905	RXAF103Z22EY	Component Combination, Rectifier	5	B
RESISTORS				
R101~107	ERD25TJ105	Carbon 1M ohm 1/4W ±5%	7	C
R108	ERD25TJ471	Carbon 470 ohm 1/4W ±5%	1	C
R109	ERD25TJ472	Carbon 4.7k ohm 1/4W ±5%	1	C
R110~115	ERD25TJ472	Carbon 4.7k ohm 1/4W ±5%	6	C
R116	ERD25TJ103	Carbon 10k ohm 1/4W ±5%	1	C
R117	ERD25TJ222	Carbon 2.2k ohm 1/4W ±5%	1	C
R118	ERD25TJ470	Carbon 47 ohm 1/4W ±5%	1	C
R119	ERD25TJ220	Carbon 22 ohm 1/4W ±5%	1	C
R120	ERD25TJ105	Carbon 1M ohm 1/4W ±5%	1	C
R121	ERD25TJ222	Carbon 2.2k ohm 1/4W ±5%	1	C
R122	ERD25TJ561	Carbon 560 ohm 1/4W ±5%	1	C
R124	ERD25TJ474	Carbon 470k ohm 1/4W ±5%	1	C
R201	ERD25TJ331	Carbon 330 ohm 1/4W ±5%	1	C
R202	ERD25TJ472	Carbon 4.7k ohm 1/4W ±5%	1	C
R204	ERD25TJ101	Carbon 100 ohm 1/4W ±5%	1	C
R205	ERD25TJ221	Carbon 220 ohm 1/4W ±5%	1	C
R206	ERD25TJ152	Carbon 1.5k ohm 1/4W ±5%	1	C
R207	ERD25TJ332	Carbon 3.3k ohm 1/4W ±5%	1	C
R208	ERD25TJ153	Carbon 15k ohm 1/4W ±5%	1	C
R209	ERD25TJ102	Carbon 1k ohm 1/4W ±5%	1	C
R210	ERD25TJ681	Carbon 680 ohm 1/4W ±5%	1	C
R211,212	ERD25TJ102	Carbon 1k ohm 1/4W ±5%	2	C
R213,214	ERD25TJ103	Carbon 10k ohm 1/4W ±5%	2	C
R215	ERD25TJ104	Carbon 100k ohm 1/4W ±5%	1	C
R216	ERD25TJ103	Carbon 10k ohm 1/4W ±5%	1	C
R217	ERD25TJ103	Carbon 10k ohm 1/4W ±5%	1	C
R218	ERD25TJ104	Carbon 100k ohm 1/4W ±5%	1	C
R219	ERD25TJ471	Carbon 470 ohm 1/4W ±5%	1	C
R220	ERD25TJ333	Carbon 33k ohm 1/4W ±5%	1	C

Ref. No.	Part No.	Description	Per Set (pcs.)	Remarks
R221	ERD25TJ224	Carbon 220k ohm 1/4W ±5%	1	C
R222	ERD25TJ682	Carbon 6.8k ohm 1/4W ±5%	1	C
R223	ERD25TJ104	Carbon 100k ohm 1/4W ±5%	1	C
R224	ERD25TJ103	Carbon 10k ohm 1/4W ±5%	1	C
R225	ERD25TJ474	Carbon 470k ohm 1/4W ±5%	1	C
R226,227	ERD25TJ224	Carbon 220k ohm 1/4W ±5%	2	C
R228	ERD25TJ220	Carbon 22 ohm 1/4W ±5%	1	C
R229	ERG1ANJ220	M. Film 22 ohm 1W ±5%	1	C
R230	ERD25TJ223	Carbon 22k ohm 1/4W ±5%	1	C
R231	ERD25TJ103	Carbon 10k ohm 1/4W ±5%	1	C
R232	ERD25TJ222	Carbon 2.2k ohm 1/4W ±5%	1	C
R233	ERD25TJ100	Carbon 10 ohm 1/4W ±5%	1	C
R234	ERD25TJ221	Carbon 220 ohm 1/4W ±5%	1	C
R235	ERD25TJ101	Carbon 220 ohm 1/4W ±5%	1	C
R236	ERD25TJ470	Carbon 47 ohm 1/4W ±5%	1	C
R237	ERD25TJ222	Carbon 2.2k ohm 1/4W ±5%	1	C
R238	ERD25TJ223	Carbon 22k ohm 1/4W ±5%	1	C
R239,240	ERD25TJ102	Carbon 1k ohm 1/4W ±5%	2	C
R244	ERD25TJ681	Carbon 680 ohm 1/4W ±5%	1	C
R245,246	ERD25TJ153	Carbon 15k ohm 1/4W ±5%	2	C
R247	ERD25TJ101	Carbon 100 ohm 1/4W ±5%	1	C
R248	ERD25TJ152	Carbon 1.5k ohm 1/4W ±5%	1	C
R249	ERD25TJ104	Carbon 100k ohm 1/4W ±5%	1	C
R250	ERD25TJ102	Carbon 1k ohm 1/4W ±5%	1	C
R301	ERD25TJ682	Carbon 6.8k ohm 1/4W ±5%	1	C
R302	ERD25TJ101	Carbon 100 ohm 1/4W ±5%	1	C
R303	ERD25TJ332	Carbon 3.3k ohm 1/4W ±5%	1	C
R304	ERD25TJ333	Carbon 33k ohm 1/4W ±5%	1	C
R305	ERD25TJ681	Carbon 680 ohm 1/4W ±5%	1	C
R306	ERG1ANJ330	M. Film 33 ohm 1W ±5%	1	C
R307,308	ERD25TJ222	Carbon 2.2k ohm 1/4W ±5%	2	C
R309,310	ERD25TJ682	Carbon 6.8k ohm 1/4W ±5%	2	C
R311	ERD25TJ220	Carbon 22 ohm 1/4W ±5%	1	C
R312	ERD25TJ224	Carbon 220k ohm 1/4W ±5%	1	C
R313	ERD25TJ222	Carbon 2.2k ohm 1/4W ±5%	1	C
R314	ERD25TJ682	Carbon 6.8k ohm 1/4W ±5%	1	C
R315	ERD25TJ563	Carbon 56k ohm 1/4W ±5%	1	C
R316	ERD25TJ682	Carbon 6.8k ohm 1/4W ±5%	1	C
R317	ERD25TJ473	Carbon 47k ohm 1/4W ±5%	1	C
R401,402	ERD25TJ100	Carbon 10 ohm 1/4W ±5%	2	C
R403,404	ERD25TJ224	Carbon 220k ohm 1/4W ±5%	2	C
R405,406	ERD25TJ824	Carbon 820k ohm 1/4W ±5%	2	C
R407,408	ERD25TJ273	Carbon 27k ohm 1/4W ±5%	2	C
R411,412	ERD25TJ153	Carbon 15k ohm 1/4W ±5%	2	C
R413,414	ERD25TJ224	Carbon 220k ohm 1/4W ±5%	2	C
R415,416	ERD25TJ152	Carbon 1.5k ohm 1/4W ±5%	2	C
R417,418	ERD25TJ331	Carbon 330 ohm 1/4W ±5%	2	C

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description	Per Set (pcs.)	Remarks
R419,420	ERD25TJ222	Carbon 2.2k ohm 1/4W ±5%	2	C
R421,422	ERD25TJ473	Carbon 47k ohm 1/4W ±5%	2	C
R423,424	ERD25TJ332	Carbon 3.3k ohm 1/4W ±5%	2	C
R427,428	ERD25TJ332	Carbon 3.3k ohm 1/4W ±5%	2	C
R429,430	ERD25TJ334	Carbon 330k ohm 1/4W ±5%	2	C
R431,432	ERD25TJ102	Carbon 1k ohm 1/4W ±5%	2	C
R433,434	ERD25TJ471	Carbon 470 ohm 1/4W ±5%	2	C
R435,436	ERD25TJ470	Carbon 47 ohm 1/4W ±5%	2	C
R437,438	ERD25TJ103	Carbon 10k ohm 1/4W ±5%	2	C
R440	ERG1ANJ151	M. Film 150 ohm 1W ±5%	1	C
R441	ERD25TJ151	Carbon 150 ohm 1/4W ±5%	1	C
R442	ERG12HJ151	M. Film 150 ohm 1W ±5%	1	C
R444	ERG1ANJ680	M. Film 68 ohm 1W ±5%	1	C
R445	ERG1ANJ470	M. Film 47 ohm 1W ±5%	1	C
R446	ERG12HG220	M. Film 22 ohm 1/2W ±5%	1	C
R447,448	ERD25TJ332	Carbon 3.3k ohm 1/4W ±5%	2	C
R449	ERD25TJ471	Carbon 470 ohm 1/4W ±5%	1	C
R450	ERD25TJ333	Carbon 33k ohm 1/4W ±5%	1	C
R451,452	ERD25TJ105	Carbon 1M ohm 1/4W ±5%	2	C
R453,454	ERD25TJ682	Carbon 6.8 ohm 1/4W ±5%	2	C
R455,456	ERD25TJ331	Carbon 330 ohm 1/4W ±5%	2	C
R457,458	ERD25TJ103	Carbon 10k ohm 1/4W ±5%	2	C
R461,462	ERD25TJ102	Carbon 1k ohm 1/4W ±5%	2	C
R463,464	ERD25TJ682	Carbon 6.8k ohm 1/4W ±5%	2	C
R465	ERD25TJ102	Carbon 1k ohm 1/4W ±5%	1	C
R467,468	ERD25TJ563	Carbon 56k ohm 1/4W ±5%	2	C
R469,470	ERD25TJ823	Carbon 82k ohm 1/8W ±5%	2	C
R471,472	ERD25TJ102	Carbon 1k ohm 1/4W ±5%	2	C
R501,502	ERD25TJ155	Carbon 1.5M ohm 1/8W ±5%	2	C
R503,504	ERD25TJ331	Carbon 330 ohm 1/4W ±5%	2	C
R505,506	ERD25TJ682	Carbon 6.8k ohm 1/4W ±5%	2	C
R507,508	ERD25TJ683	Carbon 68k ohm 1/4W ±5%	2	C
R509,510	ERD25TJ333	Carbon 33k ohm 1/4W ±5%	2	C
R511,512	ERD25TJ153	Carbon 15k ohm 1/4W ±5%	2	C
R517,518	ERD25TJ332	Carbon 3.3k ohm 1/4W ±5%	2	C
R519,520	ERD25TJ223	Carbon 22k ohm 1/4W ±5%	2	C
R521,522	ERD25TJ222	Carbon 2.2k ohm 1/4W ±5%	2	C
R523,524	ERD25TJ103	Carbon 10k ohm 1/4W ±5%	2	C
R525,526	ERD25TJ682	Carbon 6.8k ohm 1/4W ±5%	2	C
R527,528	ERD25TJ105	Carbon 1M ohm 1/4W ±5%	2	C
R529,530	ERD25TJ155	Carbon 1.5M ohm 1/4W ±5%	2	C
R531,532	ERD25TJ221	Carbon 220 ohm 1/4W ±5%	2	C
R533,534	ERD25TJ472	Carbon 4.7k ohm 1/4W ±5%	2	C
R535,538	ERD25TJ103	Carbon 10k ohm 1/4W ±5%	2	C
R539,540	ERD25TJ154	Carbon 150k ohm 1/4W ±5%	2	C
R541	ERG1ANJ470	M. Film 47 ohm 1W ±5%	1	C
R601,602	ERD25TJ102	Carbon 1k ohm 1/4W ±5%	2	C
R603,604	ERD25TJ471	Carbon 470 ohm 1/4W ±5%	2	C
R605--608	ERD25TJ683	Carbon 68k ohm 1/4W ±5%	4	C
R609,610	ERD25TJ222	Carbon 2.2k ohm 1/4W ±5%	2	C
R611,612	ERD25TJ682	Carbon 6.8k ohm 1/4W ±5%	2	C
R613,614	ERD25TJ683	Carbon 68k ohm 1/4W ±5%	2	C
R615,616	ERD25TJ682	Carbon 6.8k ohm 1/4W ±5%	2	C
R617,618	ERD25TJ682	Carbon 6.8k ohm 1/4W ±5%	2	C
R619,620	ERD25TJ222	Carbon 2.2k ohm 1/4W ±5%	2	C
R622,623	ERD25TJ102	Carbon 1k ohm 1/4W ±5%	2	C
R701,702	ERD25TJ102	Carbon 1k ohm 1/4W ±5%	2	C
R703,704	ERD25TJ331	Carbon 330 ohm 1/4W ±5%	2	C
R705,706	ERD50TJ4R7	Carbon 4.7 ohm 1/2W ±5%	2	C
R707,708	ERD50TJ331	Carbon 330 ohm 1/8W ±1%	2	C
R801,802	ERD18TF3301	Carbon 3.3k ohm 1/8W ±1%	2	C
R803,804	ERD25TJ181	Carbon 180 ohm 1/4W ±5%	2	C
R805,806	ERD25TJ473	Carbon 47k ohm 1/4W ±5%	2	C
R807,808	ERD25TJ104	Carbon 100k ohm 1/4W ±5%	2	C
R809,810	ERD25TJ121	Carbon 120 ohm 1/4W ±5%	2	C
R811,812	ERD25TJ154	Carbon 150k ohm 1/4W ±5%	2	C
R813,814	ERD25TJ684	Carbon 680k ohm 1/4W ±5%	2	C
R815,816	ERD25TJ274	Carbon 270k ohm 1/4W ±5%	2	C
R817,818	ERD25TJ102	Carbon 1k ohm 1/4W ±5%	2	C
R819	ERD25TJ683	Carbon 68k ohm 1/4W ±5%	1	C
R820	ERD25TJ221	Carbon 220 ohm 1/4W ±5%	1	C
R821	ERD25TJ151	Carbon 150 ohm 1/4W ±5%	1	C
R822	ERD25TJ221	Carbon 220 ohm 1/4W ±5%	1	C
R823,824	ERD25TJ102	Carbon 1k ohm 1/4W ±5%	2	C
R825	ERD25TJ220	Carbon 22 ohm 1/4W ±5%	1	C
R826	ERG1ANJ101	M. Film 100 ohm 1W ±5%	1	C
R827	ERG1ANJ151	M. Film 150 ohm 1W ±5%	1	C
R828	ERD25TJ154	Carbon 150k ohm 1/4W ±5%	1	C
R829	ERD25TJ104	Carbon 100k ohm 1/4W ±5%	1	C
R830	ERD25TJ223	Carbon 22k ohm 1/4W ±5%	1	C
R831	ERD25TJ152	Carbon 1.5k ohm 1/4W ±5%	1	C
R832	ERD25TJ331	Carbon 330 ohm 1/4W ±5%	1	C
R833	ERD25TJ332	Carbon 3.3k ohm 1/4W ±5%	1	C
R834	ERD25TJ821	Carbon 820 ohm 1/4W ±5%	1	C
R835	ERD25TJ473	Carbon 47k ohm 1/4W ±5%	1	C
R836	ERD25TJ102	Carbon 1k ohm 1/4W ±5%	1	C
R837	ERD25TJ472	Carbon 4.7k ohm 1/4W ±5%	1	C
R838	ERD25TJ223	Carbon 22k ohm 1/4W ±5%	1	C
R839	ERD25TJ472	Carbon 4.7k ohm 1/4W ±5%	1	C
R841,842	ERD25TJ105	Carbon 1M ohm 1/4W ±5%	2	C
R901	ERD25TJ472	Carbon 4.7k ohm 1/4W ±5%	1	C
R902	ERG1ANJ470	M. Film 47 ohm 1W ±5%	1	C
R903	ERG1ANJ101	M. Film 100 ohm 1W ±5%	1	C
R904	ERG12HJ220	M. Film 22 ohm 1/2W ±5%	1	C
R905	ERD25TJ152	Carbon 1.5k ohm 1/4W ±5%	1	C

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description	Per Set (pcs.)	Remarks
R906	ERD25TJ102	Carbon 1k ohm 1/4W ±5%	1	C
R908	ERD25TJ102	Carbon 1k ohm 1/4W ±5%	1	C
R909	ERD25TJ680	Carbon 68 ohm 1/4W ±5%	1	C
R910	ERD25TJ152	Carbon 1.5k ohm 1/4W ±5%	1	C
R911	ERD25TJ221	Carbon 220 ohm 1/4W ±5%	1	C
R912	ERD25TJ331	Carbon 330 ohm 1/4W ±5%	1	C
R913	ERD25TJ681	Carbon 680 ohm 1/4W ±5%	1	C
R914	ERD25TJ220	Carbon 22 ohm 1/4W ±5%	1	C
R915	ERD25TJ152	Carbon 1.5k ohm 1/4W ±5%	1	C
R917	ERG2ANJ680	M. Film 68 ohm 2W ±5%	1	C
R918	ERD25TJ102	Carbon 1k ohm 1/4W ±5%	1	C
DISCRETE CIRCUIT				
R405,406	ERD25TJ224	Carbon 220k ohm 1/4W ±5%	2	C
R407,408	ERD25TJ682	Carbon 6.8k ohm 1/4W ±5%	2	C
R411,412	ERD25TJ392	Carbon 3.9k ohm 1/4W ±5%	2	C
R463,464	ERD25TJ103	Carbon 10k ohm 1/4W ±5%	2	C
R481,482	ERD25TJ104	Carbon 100k ohm 1/4W ±5%	2	C
R483,484	ERD25TJ101	Carbon 100 ohm 1/4W ±5%	2	C
R485,486	ERD25TJ102	Carbon 1k ohm 1/4W ±5%	2	C
R487	ERD25TJ104	Carbon 100k ohm 1/4W ±5%	1	C
CAPACITORS				
C101~107	ECKD1H223MD	Ceramic 0.022mfd 50WV ±10%	7	C
C108,109	ECEA16V220	Electrolytic 220mfd 16WV	2	C
C110	ECEA50V1	Electrolytic 1mfd 50WV	1	C
C111	ECEA50V1	Electrolytic 1mfd 50WV	1	C
C112,113	ECEA16V220	Electrolytic 220mfd 16WV	2	C
C114	ECEA50V1	Electrolytic 1mfd 50WV	1	C
C115	ECEA25V2R2	Electrolytic 2.2mfd 25WV	1	C
C116	ECCD1H100FC	Ceramic 10pF 50WV ±1pF	1	C
C201~203	ECKD1H223PF	Ceramic 0.022mfd 50WV +100,-0%	3	C
C204	ECCD1H270JC	Ceramic 27pF 50WV ±5%	1	C
C205	EQQS1152JZ	Styrol 1500pF 100WV ±5%	1	C
C206	ECKD1H223PF	Ceramic 0.022mfd 50WV +100,-0%	1	C
C207,208	ECKD1H223MD	Ceramic 0.022mfd 50WV ±20%	2	C
C209	ECKD1H223PF	Ceramic 0.022mfd 50WV +100,-0%	1	C
C210	ECEA16V220	Electrolytic 220mfd 16WV	1	C

Ref. No.	Part No.	Description	Per Set (pcs.)	Remarks
C211	ECKD1H223MD	Ceramic 0.022mfd 50WV ±20%	1	C
C212	ECEA35V4R7	Electrolytic 4.7mfd 35WV	1	C
C213	ECKD1H472KB	Ceramic 0.0047mfd 50WV ±20%	1	C
C214,215	ECCD1H101JC	Ceramic 100pF 50WV ±5%	2	C
C216	ECEA25V2R2	Electrolytic 2.2mfd 25WV	1	C
C217	ECKD1H103MD	Ceramic 0.01mfd 50WV ±20%	1	C
C218	ECEA16V10	Electrolytic 10mfd 16WV	1	C
C219,220	ECKD1H102KB	Ceramic 0.001mfd 50WV ±10%	1	C
C220	ECKD1H223MD	Ceramic 0.022mfd 50WV ±20%	1	C
C221	ECCD1H101JC	Ceramic 100pF 50WV ±5%	1	C
C221	ECCD1H471JC	Ceramic 470pF 50WV ±5%	1	C
C222	ECCD1H680JC	Ceramic 68pF 50WV ±5%	1	C
C223	ECKD1H223MD	Ceramic 0.022mfd 50WV ±20%	1	C
C224,225	ECKD1H103MD	Ceramic 0.01mfd 50WV ±20%	2	C
C226	ECKD1H223MD	Ceramic 0.022mfd 50WV ±20%	1	C
C227	ECKD1H222KB	Ceramic 0.0022mfd 50WV ±10%	1	C
C228	EQQS1471JZ	Styrol 470pF 100WV ±5%	1	C
C229	ECCD1H120JC	Ceramic 12pF 50WV ±5%	1	C
C230	EQQS1161JZ	Styrol 160pF 100WV ±5%	1	C
C231	EQQS1301JZ	Styrol 300pF 100WV ±5%	1	C
C232	ECCD1H270JC	Ceramic 27pF 50WV ±5%	1	C
C233	EQQS1472JZ	Styrol 4700pF 100WV ±5%	1	C
C234	ECKD1H102KB	Ceramic 0.001mfd 50WV ±10%	1	C
C235	ECKD1H472KB	Ceramic 0.0047mfd 50WV ±10%	1	C
C236	ECKD1H223PF	Ceramic 0.022mfd 50WV ±10%	1	C
C239	ECEA16V220	Electrolytic 220mfd 16WV	1	C
C240	ECEA25N10	Electrolytic 10mfd 25WV	1	C
C241	ECCD1H270JC	Ceramic 27pF 50WV ±5%	1	C
C242	ECKD1H223PF	Ceramic 0.022mfd 50WV +100,-0%	1	C
C243	ECEA16V10	Electrolytic 10mfd 16WV	1	C
C244~246	ECKD1H223PF	Ceramic 0.022mfd 50WV +100,-0%	3	C
C301	ECEA50V1	Electrolytic 1mfd 50WV	1	C
C302	EQQM05473MZ	Polyester 0.047mfd 50WV ±20%	1	C
C303	EQQS1152JZ	Styrol 1500pF 100WV ±5%	1	C
C304	ECAG16ER22	Electrolytic 0.22mfd 16WV	1	C
C305	ECAG16ER47	Electrolytic 0.47mfd 16WV	1	C
C306	ECEA16V47	Electrolytic 47mfd 16WV	1	C
C307	ECEA16V220	Electrolytic 220mfd 16WV	1	C
C308	ECEA50MR33E	Electrolytic 0.33mfd 50WV	1	C
C309,310	ECKD1H103MD	Ceramic 0.01mfd 50WV ±20%	2	C
C311,312	ECKD1H333MD	Ceramic 0.033mfd 50WV ±20%	2	C
C313,314	ECKD1H472KB	Ceramic 0.0047mfd 50WV ±10%	2	C
C315	ECEA50V3R3	Electrolytic 3.3mfd 50WV	1	C
C401,402	ECAG16E4R7	Electrolytic 4.7mfd 16WV	2	C
C403,404	ECKD1H102KB	Ceramic 0.001mfd 50WV ±10%	2	C
C405,406	ECCD1H560JC	Ceramic 56pF 50WV ±5%	2	C
C407,408	ECEA16V33	Electrolytic 33mfd 16WV	2	C
C409,410	ECEA16V10	Electrolytic 10mfd 16WV	2	C

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description	Per Set (pcs.)	Remarks
C411,412	ECQM05392MZ	Polyester 0.0039mfd 50WV ±20%	2	C
C415,416	ECEA16N4R7	Electrolytic 4.7mfd 16WV	2	C
C417,418	ECEA50V3R3	Electrolytic 3.3mfd 50WV	2	C
C419,420	ECEA16V10	Electrolytic 10mfd 16WV	2	C
C423,424	ECEA50V1	Electrolytic 1mfd 50WV	2	C
C421,422	ECAG16ER68	Electrolytic 0.68mfd 16WV	2	C
C425,526	ECQM05473MZ	Polyester 0.047mfd 50WV ±20%	2	C
C427,428	ECQM05103MZ	Polyester 0.01mfd 50WV ±20%	2	C
C429,430	ECEA16V10	Electrolytic 10mfd 16WV	2	C
C431,432	ECQM05473MZ	Polyester 0.047mfd 50WV ±20%	2	C
C433,434	ECQS1102JZ	Styrol 1000pF 100WV ±5%	2	C
C436,437	ECEA25V220	Electrolytic 220mfd 25WV	2	C
C438	ECEA16V47	Electrolytic 470mfd 16WV	1	C
C439	ECEA16V220	Electrolytic 220mfd 16WV	1	C
C440	ECEA16V100	Electrolytic 100mfd 16WV	1	C
C441	ECEA16V10	Electrolytic 10mfd 16WV	1	C
C443,444	ECQM05183MZ	Polyester 0.018mfd 50WV ±20%	2	C
C446	ECEA16V10	Electrolytic 10mfd 16WV	1	C
C447,448	ECEA50V3R3	Electrolytic 3.3mfd 50WV	2	C
C451,452	ECAG16E4R7	Electrolytic 4.7mfd 16WV	2	C
C453,454	ECKD1H102KB	Ceramic 0.001mfd 50WV ±10%	2	C
C455,456	ECAG16ER22	Electrolytic 0.22mfd 16WV	2	C
C457	ECKD1H223PF	Ceramic 0.022mfd 50WV +100, -0%	1	C
C458	ECEA50V3R3	Electrolytic 3.3mfd 50WV	1	C
C461,462	ECAG16ER1	Electrolytic 0.1mfd 16WV	2	C
C463,464	ECQM05393MZ	Polyester 0.039mfd 50WV ±20%	2	C
C501,502	ECEA50V1	Electrolytic 1mfd 50WV	2	C
C503,504	ECKD1H102KB	Ceramic 0.001mfd 50WV ±10%	2	C
C505,506	ECEA50V1	Electrolytic 1mfd 50WV	2	C
C507,508	ECKD1H222KB	Ceramic 0.0022mfd 50WV ±10%	2	C
C509,510	ECKD1H153MD	Ceramic 0.015mfd 50WV ±20%	2	C
C511,512	ECKD1H223MD	Ceramic 0.022mfd 50WV ±20%	2	C
C513,514	ECQM05683MZ	Polyester 0.068mfd 50WV ±20%	2	C
C515,516	ECKD1H332KB	Ceramic 0.0033mfd 50WV ±10%	2	C
C517,518	ECEA50V1	Electrolytic 1mfd 50WV	2	C
C519,520	ECKD1H102KB	Ceramic 0.001mfd 50WV ±10%	2	C
C521,522	ECEA501	Electrolytic 1mfd 50WV	2	C
C523,524	ECAG16ER22	Electrolytic 0.22mfd 16WV	2	C
C527	ECEA16V220	Electrolytic 220mfd 16WV	1	C
C601,602	ECEA16V47	Electrolytic 47mfd 16WV	2	C
C603,604	ECCD1H560JC	Ceramic 56pF 50WV ±5%	2	C
C605,606	ECCD1H102KB	Ceramic 0.001mfd 50WV ±10%	2	C
C607,608	ECCD1H560JC	Ceramic 56pF 50WV ±5%	2	C
C609,610	ECEA16V33	Electrolytic 33mfd 16WV	2	C
C611,612	ECEA50V1	Electrolytic 1mfd 50WV	2	C
C613,614	ECQM05333MZ	Polyester 0.033mfd 50WV ±20%	2	C
C615,616	ECQM05103MZ	Polyester 0.01mfd 50WV ±20%	2	C
C617	ECEA10V100	Electrolytic 100mfd 16WV	1	C

Ref. No.	Part No.	Description	Per Set (pcs.)	Remarks
C618	ECEA16V220	Electrolytic 220mfd 16WV	1	C
C701,702	ECAG16E3R3	Electrolytic 3.3mfd 16WV	2	C
C703,704	ECEA35V47	Electrolytic 47mfd 35WV	2	C
C705,706	ECKD1H102KB	Ceramic 0.001mfd 50WV ±10%	2	C
C707,708	ECEA16V47	Electrolytic 47mfd 16WV	2	C
C709,710	ECQM05473MZ	Polyester 0.047mfd 50WV ±20%	2	C
C711,712	ECEA50V1	Electrolytic 1mfd 50WV	2	C
C801,802	ECAG16ER33	Electrolytic 0.33mfd 16WV	2	C
C803,804	ECQS1392JZ	Styrol 3900pF 100WV ±5%	2	C
C805,806	ECQS1332KZ	Styrol 3300pF 100WV ±5%	2	C
C807,808	ECQS1222JZ	Styrol 2200pF 100WV ±5%	2	C
C809~812	ECEA16V10	Electrolytic 10mfd 16WV	4	C
C813,814	ECQS1472JZ	Styrol 4700pF 100WV ±5%	2	C
C815,816	ECQS1562JZ	Styrol 5600pF 100WV ±5%	2	C
C817,818	ECEA16V10	Electrolytic 10mfd 16WV	2	C
C819,820	ECQM05273FZ	Polyester 0.027mfd 50WV ±1%	2	C
C821,822	ECQM05473JZ	Polyester 0.047mfd 50WV ±5%	2	C
C823,824	ECEA16V10	Electrolytic 10mfd 16WV	2	C
C825,826	ECQM05104KZ	Polyester 0.1mfd 50WV ±10%	2	C
C827,828	ECQM05334KZ	Polyester 0.33mfd 50WV ±10%	2	C
C829	ECEA16V220	Electrolytic 220mfd 16WV	1	C
C830	ECEA16V33	Electrolytic 33mfd 16WV	1	C
C831,832	ECAG16ER1	Electrolytic 0.1mfd 16WV	2	C
C833	ECQS1471JZ	Styrol 470pF 100WV ±5%	1	C
C834	ECQS1182JZ	Styrol 1800pF 100WV ±5%	1	C
C835	ECQM05333MZ	Polyester 0.033mfd 50WV ±20%	1	C
C836	ECQM05683MZ	Polyester 0.068mfd 50WV ±20%	1	C
C837	ECQM05104KZ	Polyester 0.1mfd 50WV ±10%	1	C
C838,839	ECCD1H331JC	Ceramic 330pF 50WV ±5%	2	C
C840	ECEA16V470	Electrolytic 470mfd 16WV	1	C
C842	ECEA16N4R7	Electrolytic 4.7mfd 16WV	1	C
C843,844	ECEA16V100	Electrolytic 100mfd 16WV	2	C
C845	ECEA50V3R3	Electrolytic 3.3mfd 50WV	1	C
C848	ECEA16V10	Electrolytic 10mfd 16WV	1	C
C847	ECEA50V1	Electrolytic 1mfd 50WV	1	C
C901	ECQM05334MZ	Polyester 0.33mfd 50WV ±20%	1	C
C902,903	ECET35F332SU	Electrolytic 3300mfd 35WV	2	C
C904	ECET35R222SU	Electrolytic 2200mfd 35WV	1	C
C905,906	ECET16R3300S	Electrolytic 3300mfd 16WV	2	C
C907	ECKD1H223PF	Ceramic 0.022mfd 50WV +100, -0%	1	C
C908	ECEA16V100	Electrolytic 100mfd 16WV	1	C
C909	ECKD1H223PF	Ceramic 0.022mfd 50WV +100, -0%	1	C
C910,911	ECKDDS101MB	Ceramic 100pF 250WV ±20%	2	C
C913	ECEA16V220	Electrolytic 220mfd 16WV	1	C
C914,915	ECKD1H223PF	Ceramic 0.022mfd 50WV +100, -0%	2	C
C916	ECEA16V100	Electrolytic 100mfd 16WV	1	C
C917	ECEA16V100	Electrolytic 100mfd 16WV	1	C
C918	ECEA16V100	Electrolytic 100mfd 16WV	1	C

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description	Per Set (pcs.)	Remarks
C919	ECEA25V1000	Electrolytic 1000mfd 25WV	1	C
C920	ECEA25V100	Electrolytic 100mfd 25WV	1	C
C921,922	ECEA50V1	Electrolytic 1mfd 50WV	2	C
DISCRETE CIRCUIT				
C407,408	ECEA16V10	Electrolytic 10mfd 16WV	2	C
C411,412	ECQG05153MZ	Polyester 0.015 50WV	2	C
CABINET				
CA1	SKA1780	Cabinet Assembly (Black)	1	○ A
CA1-1	SKE298	Volume Cover (Black)	1	A
CA1-2	SHG9058-1	Rubber Cushion, Dust Cover	1	B
CA2	SYE446	Cassette Cover Assembly	1	A
CA2-1	SGX996	Cassette Cover Ornament	1	A
CA3	SKU2520-1	Rear Board	1	○ A
CA4	SYE466	Cassette Lid Assembly	1	A
CA4-1	SGX1002	Cassette Lid Ornament	1	○ A
CA5	SGE684	Dust Cover	1	○ B
CA6	SHS3018	Felt, Foot	1	A
CA7	SYL6-1	Foot Assembly	3	A
CA8	SYU304	Bottom Board Assembly	1	○ A
CA9	SBC206	Button, Reset	1	A
CA10	SXE108	Hook Assembly	1	A
CA11	SBH9036	Hinge Substance (Left)	1	○ B
CA12	SBH9038	Hinge Substance (Right)	1	○ B
CA13	SBH9040	Cap	2	○ B
CA14	SYF260	Escutcheon Assembly	1	○ A
CA15	SBN730	Knob Tuning	1	○ A
CA16	SBN714K	Knob Volume Control and Others	4	○ A
CA17	SBC196	Button, Power	1	A
CA18	SBC198	Push Button	9	A
CA19	SHR9044	Blind	1	○ A
CA20	SWE118	Sensor Assembly	1	○ A
CA21	SBN724K	Knob Rec	2	○ A
CA22	SUV122	Headphone Jack Cover	1	A
CA23	SUS184	Spring, Push Button	10	C
CHASSIS				
CH1	SDA182	Pointer Holder	1	○ C

Ref. No.	Part No.	Description	Per Set (pcs.)	Remarks
CH2	SDP592	Pointer	1	○ C
CH3	SHG950-2	Rubber, Lamp	1	C
CH4	RHG211	Rubber, Lamp	2	C
CH5	SDD48K	Drum	1	C
CH6	RDS4170A	Spring, Drum	1	C
CH7	RDR20	Roller	3	C
CH8	RDR23	Roller	4	C
CH9	RDY36	Shaft, Roller	5	C
CH10	RNW150-2	Washer, Roller	6	C
CH11	SHR134	Cord Clamp	2	B
CH12	SDT9304	Tuning Shaft	1	C
CH13	RDY32	Shaft, Roller	1	C
CH16	SHG9102	Rubber, Lamp Holder	1	○ C
CH17	SJA88	AC Cord (SDF, SEV, OVE, GF, GF-2)	1	A
CH18	RHG3-1	Rubber, Line ANT	1	C
CH19	SHG958	Rubber, Stereo Eye	1	C
CH20	SJF110	Fuse Holder	10	○ C
CH21	RJ78	Mic Jack	2	C
CH22	SNE420	Nut, Mic Jack	2	C
CH23	SJS9202-1	DIN FM Terminal	1	C
CH24	SJS9206-1	DIN AM Terminal	1	C
CH25	SJF9028	DIN SPRR Terminal	1	C
CH26	SJF9102	DIN 5P Terminal	1	C
CH27	RJJ1082A-H	Headphone Jack	1	C
CH28	SWK202	3P Connector Assembly	1	C
CH29	SWK200	5P Connector Assembly	1	C
CH30	SWK230	5P Connector Assembly	1	C
CH31	SWK232	5P Connector Assembly	1	C
CH32	SWP56	Lead Assembly, Phone	2	C
CH33	XYN4+C12S	Screw 4 mm × 12	4	C
CH34	XWE4E10	Washer 4φ	4	C
CH35	XSW3+8B	Screw 3 mm × 8	4	C
CH36	XTW3+10FZK	Screw 3 mm × 10	3	C
CH37	XMC27+10FZK	Screw 2.7 mm × 10	2	C
CH38	XYN26+C8	Screw 2.6 mm × 8	2	C
CH39	XWE26D6	Washer 2.6φ	2	C
CH40	XTV3+8FZK	Screw 3 mm × 8	5	C
CH41	XTV3+8BR	Screw 3 mm × 8	7	C
ACCESSORIES				
A1	WN2201N	Microphone	2	C
A2	WN133	Microphone Stand	2	C
A3	SQX5772	Instruction Book	1	○ C
A4	SPT1HCZNRAZ	(SEV, OVE, GF, GF-2, SDF) Demo Tape	1	C

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description	Per Set (pcs.)	Remarks
30	SMQ1672	Clutch Assembly w/Spring	1	C
31	SMQ1674	Flywheel Bearing	1	C
32	SMQ1676	Hold Plate, Flywheel Bearing	1	C
33	SMQ148	Washer, Oil Thrower	2	C
34	SMQ1682	Nylon Washer	1	C
35	SMQ1686	Flywheel	1	C
36	SMQ1688	Belt, Main	1	A
37	SMQ1678	Retainer, Flywheel	1	C
38	SMQ1382-2	FF. Rew Arm Assembly w/Spring	1	C
39	SMQ1432	FF. Lever	1	C
40	SMQ1406	Operation Plate, Brake	1	C
41	SMQ1408	Rewind Arm w/Spring	1	C
42	SMQ1386	Rewind Idler	1	C
43	SMQ1410	Pause Lever	1	C
44	SMQ1412	Spacer, Pause Lever	1	C
45	SMQ1414	Pause Slide Lever A w/Spring	1	C
46	SMQ1416	Pause Slide Lever B	1	C
47	SMQ1376	Pause Click Lever	1	C
48	SMQ1418	Spring, Pause Click Lever	1	B
49	SMQ1668	Bracket, Muting Switch	1	A
50	SMQ1666	Bracket, Motor Switch	1	A
51	SMQ1650	REC Slide Lever	1	C
52	SUS208-1	Spring Plate, REC Switch	1	B
53	SMQ1680	Thrust Pad for Flywheel	1	C
54	SMQ1670	Operating Plate, Muting Switch	1	C
55	SMQ1702	Rewind Lever	1	C
56	SMQ1434	Nylon Washer	1	C
57	SMQ1436-1	Auto Stop Lever	1	C
58	SMQ1684	Spacer, Auto Stop Lever	1	C
59	SMQ1530	Play Lever	1	C
60	SMQ1638	REC Slide Lever Spring	1	C
61	SMQ1444	Spring B, Head Panel	1	B
62	SMQ1526	Auto Stop Adjust Arm w/Spring	1	C
63	SMQ1654	Push Button Frame Assembly	1	C
70	SMQ1696	Solenoid Bracket	1	C
71	SMQ1698	Pause Switch	1	A
72	SMQ1692	Solenoid Assembly	1	C
73	SMQ1694	Shaft, Solenoid	1	C
100	XSN2+8	Screw 2 mm x 8	4	C
101	XSN2+10	Screw 2 mm x 10	3	C
102	XYN2+C4	Screw 2 mm x 4	4	C
103	XYN2+C5	Screw 2 mm x 5	3	C
104	XSN2D6	Screw 2 mm x 6	1	C
105	XSN26+6	Screw 2.6 mm x 6	4	C
106	XSN26+7	Screw 2.6 mm x 7	1	C
107	XSN26+10	Screw 2.6 mm x 10	1	C
108	XYN26+C4	Screw 2.6 mm x 4	2	C
109	XYN26+C5	Screw 2.6 mm x 5	1	C

Ref. No.	Part No.	Description	Per Set (pcs.)	Remarks
PACKING				
PA1	SPN2636	Carton, Inner	1	C
PA2	SPN2576	Pad, Front	1	C
PA3	SPN2578	Pad, Rear	1	C
PA4	SPN2560	Pad, Upper	1	C
PA5	SPN2646	Pad, Knob	1	C
PA6	SPH6050	Sheet, TT Protection	1	C
PA7	SPN2362	Accessory Case A	1	C
PA8	SPN2364	Accessory Case Cover	1	C
PA9	SNE208	Screw, Player Fixing	3	C
PA10	SNW601	Washer	3	C
CASSETTE TAPE PLAYER/RECORDER (SJD80)				
2	SBC234	Push Button	7	O B
3	SMQ1232	REC Safety Lever	1	C
4	SMQ662	Spring, REC Safety Lever	1	B
5	SNE432	Push Nut, REC Safety Lever	1	B
6	SJH34	R/P Head	1	A
7	SJH14	Erase Head	1	A
8	SMQ678	Spring, R/P Head and Flywheel Bracket	2	B
9	SMQ1360	Spring A, Head Panel	2	B
10	SMQ1362-1	Head Base	1	C
11	SMQ1388	Eject Stop Lever w/Spring	1	C
12	SMQ1690	Guide Pin (R)	1	C
13	SMQ462	Spring, Supply Reel	1	C
14	SMQ1658	Pressure Roller Assembly	1	A
15	SMQ1660	Spring, Pressure Roller	1	B
16	SMQ1626	Reel Table	2	B
17	SMQ1624	Tape Counter	1	O B
18	SMQ1588	Belt, Tape Counter	1	A
19	SMQ1354	Brake Arm	1	C
20	SMQ1358	Spring, Brake Arm	1	B
21	SMQ1394	Spring, Tape Holder	1	B
22	MHX5A2RSL	Motor	1	O A
23	SMQ1662	Motor Pulley	1	B
24	SMQ716	Rubber Cushion, Motor	3	C
25	SMQ718	Spacer, Motor	3	C
26	SMQ1664	Switch	2	A
27	SMQ1396	Eject Slide Lever w/Spring	1	C
28	SMQ1374	Spacer A, Eject Slide Lever	1	C
29	SMQ1398	Spacer B	3	C

REPLACEMENT PARTS LIST

SG3090L

Ref. No.	Part No.	Description	Per Set (pcs.)	Remarks
110	XYN26+C6	Screw 2.6 mm × 6	4	C
111	XYN26+C8	Screw 2.6 mm × 8	2	C
112	XSB26+4	Screw 2.6 mm × 4	1	C
113	XSB26+6	Screw 2.6 mm × 6	3	C
114	XSS3+5S	Screw 3 mm × 5	2	C
120	XWE2A6	Washer 2φ	1	C
121	XWE26D7	Washer 2.6φ	4	C
150	XUC12FT	Circlip 1.2φ	2	C
151	XUC15FT	Circlip 1.5φ	4	C
152	XUC19FT	Circlip 1.9φ	1	C
153	XUC20FT	Circlip 2.0φ	2	C
154	XUC25FT	Circlip 2.5φ	1	C
155	XUC32FT	Circlip 3.2φ	1	C
156	XUC4FT	Circlip 4φ	2	C
PLAYER (SAP925DP)				
1	SFTG120-01	Rubber, Turntable	1	C
2	SFTE023L01	Turntable	1	C
3	SFGB321-1	Belt	1	C
4	SFUG623-1A	Main Gear Assembly	1	C
4-1	SFUP827-1	Washer	1	C
4-2	XUC5FT	Circlip 5φ	1	C
4-3	XUC5FT	Circlip 5φ	1	C
4-4	XTV3+6B	Screw 3 mm × 6	1	C
5	SFUM023L01	Case, Motor	1	C
5-1	SFXG023L01	Mounting Shaft, Motor	3	C
5-2	SFGC020L01	Rubber, Cushion	3	C
5-3	XTV3+8B	Screw 3 mm × 8	2	C
6	SFBP925D01E	Panel Assembly	1	C
6-1	SFNN825-02	Paper, Name	1	C
6-2	SFNN018X01	Label, Stylus Replacement	1	C
7	SFGC925D01	Rubber, Panel Cushion	4	C
7-1	SFGC925D01	Spring, Panel Cushion	4	C
7-2	XYN4+A6S	Screw 4 mm × 6	4	C
7-3	XWEBF18BW	Washer 8φ	2	C
8	SFUP925D01	Mounting Plate, Switch	1	C
8-1	EVHBTAK15B53	VR, Speed Adjust	2	C
8-2	ESRE123K20D	Switch, Speed Selector	1	C
8-3	XTV3+8B	Screw 3 mm × 8	2	C
9	SFUP925D02	Stop Plate, Cut Lever	1	C
9-1	XTV3+6B	Screw 3 mm × 6	1	C
10	SFUM623-6	Cut Plate	1	C
10-1	SFQH831-1	Return Spring, Cut Plate	1	C
10-2	SFEB5BT25	Vinyl Tube	1	C

Ref. No.	Part No.	Description	Per Set (pcs.)	Remarks
11	SFUP023L08	Heat Sink	1	C
11-1	SFDNE2HUWMA3	Neon Tube	1	C
11-2	SEEB82UT45	Vinyl Tube	1	C
11-3	SFEB3UT8	Vinyl Tube	1	C
11-4	XWC3BFF	Washer 3φ	1	C
11-5	XTV3+6B	Screw 3 mm × 6	1	C
12	SFMC023L01E	Motor Assembly	1	C
12-1	SFUZ825H01	Insulating Paper, Motor PCW	1	C
12-2	SFUM020L02	Knob, Speed Adjust	2	C
12-3	XTV3+8BFU	Screw 3 mm × 8	2	C
13	SFXL925D01E	Cut Lever Shaft Assembly	1	C
13-1	SFGH825C01	Rubber, Shock Absorption	1	C
13-2	SFXB530-1	Boss, Cut Lever	-	C
13-3	XWA9B	Washer, 9φ	1	C
13-4	SFXN530R1	Nut	1	C
14	SFTU925-01A	Turntable Bearing Assembly	1	C
14-1	SFTJ929-01E	Turntable Shaft Assembly	1	C
14-2	SFYB5-32	Ball	1	C
14-3	SFXG829T01	Screw	1	C
14-4	XTV3+6B	Screw 3 mm × 6	3	C
15	SFUP925D03E	Turntable Shaft Mounting Plate Assembly	1	C
15-1	SFUM023L02	Pressure Plate, Switch	1	C
15-2	XTV3+6B	Screw 3 mm × 6	1	C
15-3	XUC3FT	Circlip 3φ	1	C
16	SFER4B	Lug, 4P	1	C
16-1	ERG1ANJ822	Resistor 8.2k ohm	1	C
16-2	XTV3+6B	Screw 3 mm × 6	1	C
17	SFUP829E01	Bracket, PU Lead Protection	1	C
17-1	SFQS925D01	Spring, Lead Wire	1	C
17-2	XTV3+6B	Screw 3 mm × 6	2	C
17-3	SFEB4BT40	Vinyl Tube	1	C
18	SFUC823-1E	Moving Plate Assembly	1	C
18-1	SFX0925D01	Collar	1	C
18-2	CSTW3	Stop Ring	1	C
19	SFUM925D01	Actuator	1	C
19-1	SFXJ925D01	Shaft, Actuator	1	C
19-2	XUC3FT	Circlip 3φ	1	C
19-3	XNG3BS	Nut 3φ	1	C
19-4	XWA3BFR	Washer 3φ	1	C
20	SFPAB22009K	PU Mounting Plate Assembly	1	C
20-1	SFQH829T05	Return Spring, Mounting Plate	1	C
20-2	XXA3D6FUS	Screw 3 mm × 6	2	C
21	SFUB827-01E	Drive Plate Assembly	1	C
21-1	SFQH823-1	Return Spring, Drive Plate	1	C
21-2	XUC4FT	Circlip 4φ	2	C
21-3	SFXW028-01	Washer	1	C
22	SFPJL22002K	Lift Bar Assembly	1	C

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Description	Per Set (pcs.)	Remarks		
22-1	SFPSP3400	Spring, Lift Bar	1	C		
23	SFUP925P02	Mounting Bracket, PU Socket	1	C		
23-1	SJF3201-1	Socket, Pin Jack	1	C		
23-8	XTV3+6B	Screw 3 mm × 6	2	C		
24	SFDSA75602	Micro Switch	2	C		
24-1	SFXW925D01	Washer	2	C		
24-2	XTN3+30B	Screw 3 mm × 30	2	C		
25-1	SJS9502	Housing, Plug	1	C		
25-2	SJT726	Pin, Plug	5	C		
26	SFP-AM22005K	Pickup Arm Assembly	1	C		
26-1	EPC270C-X	Cartridge	1	C		
26-2	EPS270SD	Stylus	1	C		
26-3	SFCNC8600	Cover, Stylus	1	C		
26-4	SFUP890B01E	Bearing, Pickup	1	C		
26-5	SFPEW3500	Thrust Washer	1	C		
26-6	SFPEW22001	Thrust Washer	1	C		
26-7	SFPJD22004	Stop Ring	1	C		
26-8	XXE3D3FNS	Screw 3 mm × 3	1	C		
27	SFKR925S01E	Lift Assembly	1	C		
27-1	SFXG829-1	Screw, Lift Height Adjustment	1	C		
27-2	SFOA829-03	Spring, Lift Escape	1	C		
28	SFPR22001K	Arm Rest Assembly	1	C		
28-1	XWE26E75EW	Washer 2.6φ	1	C		
28-2	XWA26BFU	Washer 2.6φ	1	C		
28-3	XNG26HBN	Nut 2.6φ	1	C		
29	SFKT130-01A	Knob, Speed Adjust	2	C		
30	SFKT925-01E	Knob, Cut	1	C		
30-1	XUC5FT	Circlip, 5φ	1	C		
31	SFKK925P01	Ornament, Arm Base	1	C		
32	SFPKD22015	Arm Base	1	C		
32-1	SFUM023L05	Cover, Neon	1	C		
32-2	SFKK023L02	Name Plate, Stroboscope	1	C		
32-3	XTV3+8B	Screw 3 mm × 8	5	C		
33	SFKT925D01E	Knob, Speed Select	1	C		
34	SFWE154A1	45 RPM Adaptor	1	C		
35	SFP-AB12002	Button, Lift	1	C		
35-1	SFP-JL22003	Lever, Lift	1	C		
36	SFP-GM22001	Rubber, Cueing	1	C		
37	SFP-AB22006	PCB, Lift	1	C		
38	XTN3+5B	Screw 3 mm × 5	3	C		
39	SFER3B	Lug, 3P	1	C		
40	ERD25TJ333	Resistor, 33k ohm	1	C		
41	XTV3+8B	Screw 3 mm × 8	1	C		
42	SFP-WG22001K	Balance Weight Assembly	1	C		
43	SFEZ16083	Lug, Earth	1	C		

Note:

Handwriting practice lines consisting of 20 horizontal dotted lines.