ORDER NO. SD7607-1118

Service Manual

FM/AM Stereo Tuner

ST-9600

(X), (XG), (XGH), (XSD), (XSW), (XE), (XAL)

TECHNICAL SPECIFICATIONS (IHF)

Specifications are subject to change without notice for further improvement.

FM TUNER SECTION

Frequency range:		88 ~ 108MHz
Antenna terminals:		300Ω (balanced)
		75Ω (unbalanced)
Sensitivity:		1.9μV
Total harmonic distortion (400Hz, 100% modulation):		
	MONO	0.15%
	STEREO	0.25%
S/N:	**MONO**	80 dB
Frequency response:	20Hz ~ 18kHz, +0.2dB, −0.8dB	
Alternate channel selectivity:		85 dB
Capture ratio:		1.0 dB
Image rejection (at 98MHz):		95 dB
IF rejection (at 98MHz):		105 dB
Spurious response rejection (at 98 MHz):		100 dB
AM suppression:		55 dB
Stereo separation:	45 dB at 1kHz, 35dB at 10kHz	
Leak carrier (19kHz, 38kHz):		−65 dB

AM TUNER SECTION

Frequency range:	525 ~ 1605kHz
Sensitivity:	30μV
Selectivity:	25 dB
Image rejection (at 1000kHz):	80 dB
IF rejection (at 1000 kHz):	85 dB

GENERAL

Output voltage	**OUTPUT**	0.077 ~ 1.55V
	REC OUT	0.6V
Power supply:		50/60Hz 110/120/220/240V
		240V Only (Set for Australia)
Power consumption:		25W
Dimensions (W x H x D)		450 x 173 x 362mm (17¾" x 6⅞" x 14¼")
Weight:		8.7kg (19.2 lb.)

TECHNISCHE DATEN (DIN 45 500)

Spezifikationen können infolge von Verbesserungen ohne Ankündigung geändert werden.

UKW-TUNERTEIL

Empfangsbereich:		88 ~ 108MHz
Antennenanschluss:		300Ω (symmetrisch)
		75Ω (asymmetrisch)
Empfindlichkeit:	1.8μV, 30dB Fremdspannungsabstand	300Ω
	1.4μV, 20dB Fremdspannungsabstand	300Ω
	0.9μV, 30dB Fremdspannungsabstand	75Ω
	0.7μV, 20dB Fremdspannungsabstand	75Ω
Fremdspannungsabstand:	**MONO**	75 dB
Frequenzgang:	20Hz ~ 18kHz, +0.2dB, −0.8dB	
Selektivität:		85 dB
Gleichwellen-Selektion:		1.0 dB
Hamonische Verzerrung:	**MONO** 0.15% **STEREO**	0.25%
Spiegelsekektion bei 98MHz:		95 dB
ZF-Festigkeit bei 98MHz:		105 dB
Unselektivitätsfestigkeit bei 98MHz:		100 dB
AM-Unterdrückung:		55 dB
Stereo-Übersprechdämpfung:	45 dB bei 1kHz, 35 dB bei 10kHz	
Trägerrest:		−65 dB
Begrenzung, Einsatzpunkt:		1.2μV
Bandbreite:	**ZF-Verstärker**	250kHz
	UKW-Demodulator	820kHz

AM-TUNERTEIL

Empfangsbereich:	525 ~ 1605kHz
Empfindlichkeit:	30μV
Selektivität:	25 dB
Spiegelselektion:	80 dB
ZF-Festigkeit:	85 dB

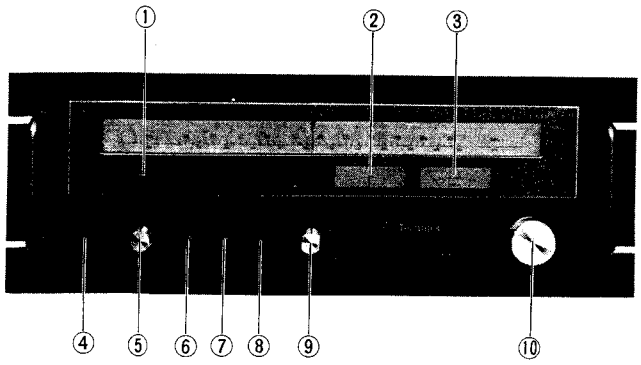
ALLGEMEINE DATEN

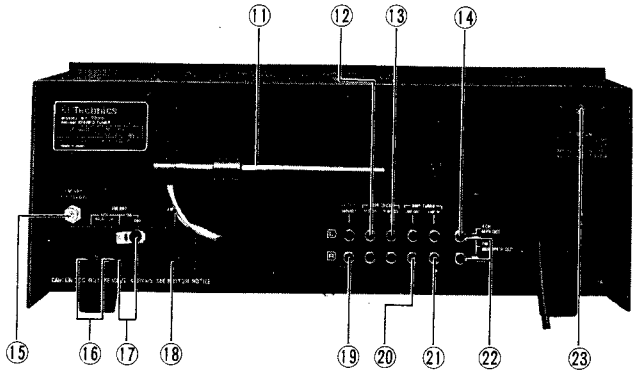
Ausgangsspannung:	**OUTPUT**	0.077 ~ 1.55V
	REC OUT	0.6V
Leistungsaufnahme:		25W
Netzspannung umschaltbar:		110/120/220/240V
Abmessungen (B x H x T):		450 x 173 x 362mm
Gewicht:		8.7kg

Technics

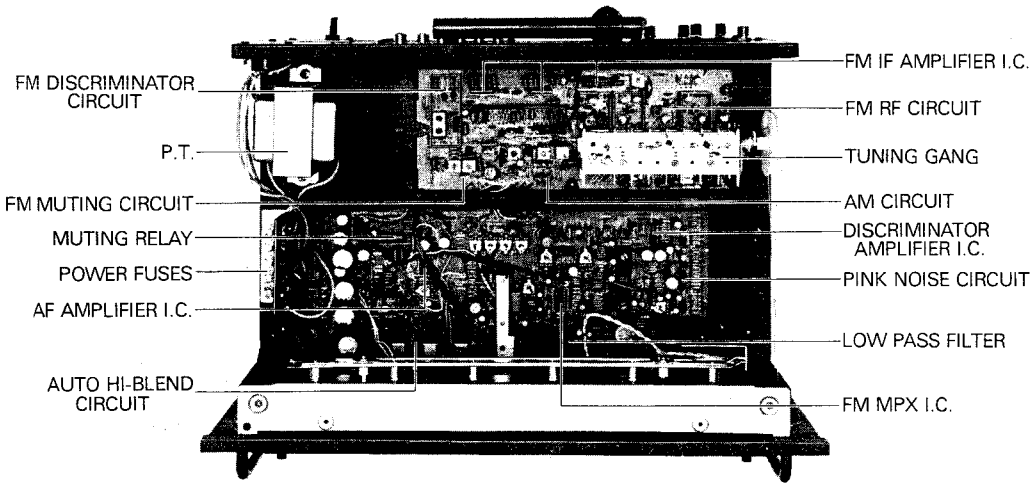
Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

LOCATION OF CONTROLS





① FM STEREO INDICATOR
② FM TUNING METER
③ FM/AM SIGNAL STRENGTH METER
④ POWER SWITCH
⑤ AF OUTPUT LEVEL CONTROL
⑥ MPX HI-BLEND SWITCH
⑦ FM MUTING & SERVO TUNING SWITCH
⑧ TAPE DECK RECORDING/PLAY-BACK SWITCH
⑨ BAND SELECTOR/PINK NOISE CHECK SWITCH
⑩ TUNING CONTROL
⑪ AM ANTENNA COIL
⑫ RECORDING OUTPUT TERMINALS (TO INPUT TERMINALS OF TAPE DECK)
⑬ PLAYBACK INPUT TERMINALS (TO OUTPUT TERMINALS OF TAPE DECK)
⑭ 4CH MPX OUTPUT TERMINAL
⑮ 75Ω COAXIAL FM ANTENNA SOCKET
⑯ 300Ω FM ANTENNA TERMINALS
⑰ 75Ω FM ANTENNA TERMINALS
⑱ AM ANTENNA TERMINAL
⑲ AF OUTPUT TERMINALS
⑳ LINE OUTPUT TERMINALS (TO PLAYBACK TERMINALS OF AMPLIFIER)
㉑ LINE INPUT TERMINALS (TO RECORDING OUTPUT TERMINALS OF AMPLIFIER)
㉒ FM MULTIPATH OUTPUT TERMINALS
㉓ VOLTAGE SELECTOR SWITCH
(Except Set for Australia)



LOW-NOISE RECORDING AND PLAYBACK

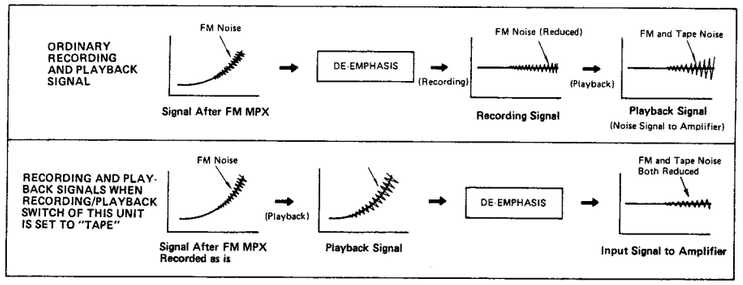
When making an ordinary recording of an FM broadcast, the tuner output is transmitted to the amplifier, and the signal taken from the recording terminals of the amplifier is recorded and played back. When this method is used, any noise which is generated within the tuner, as well as FM noise, is recorded also. Then, during playback, the sound also includes the tape-noise component.

This unit, in order to reduce this noise component, includes special recording and playback circuitry. And, in addition, the operation of one switch also makes it possible to record and playback in the usual way if desired.

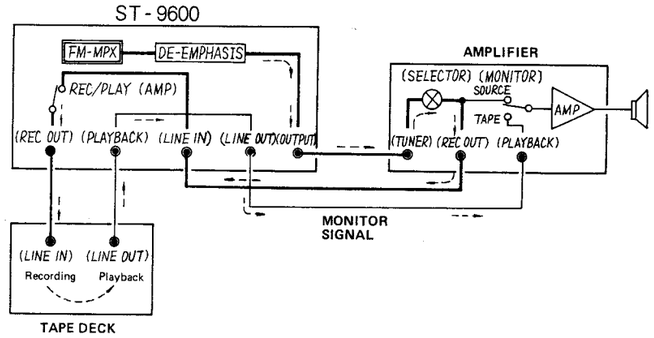
What path the FM signal will follow to the tape deck for recording, playback and monitoring, depending upon the setting of the recording/playback switch of this unit, is shown on the following page.

The frequency response of the FM signal which has been subjected to FM MPX is a high level, high-frequency signal. FM noise is included in this signal, and tape noise will also be included in a signal which has passed through the tape deck. Generally, because the higher the frequency, the higher the noise, the signal is recorded as it is after FM MPX, and, by subjecting the playback signal to de-emphasis, the FM signal will assume a flat response and the noise level can, at the same time, be reduced.

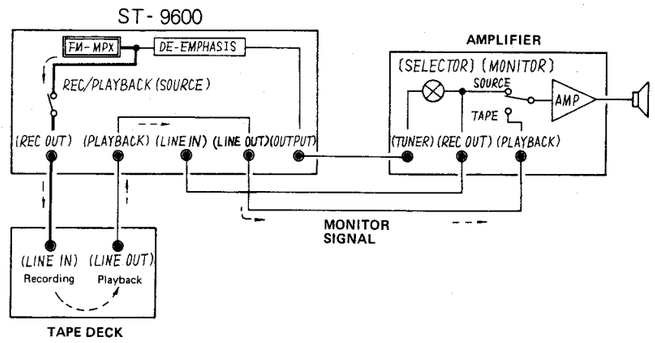
(Tape noise can be reduced by approximately 10 dB/10 kHz lower than when recording in the usual way.)



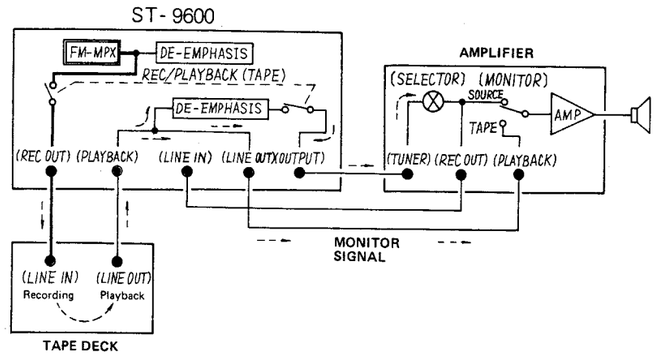
• The Rec/Playback switch is at **"AMP"** position



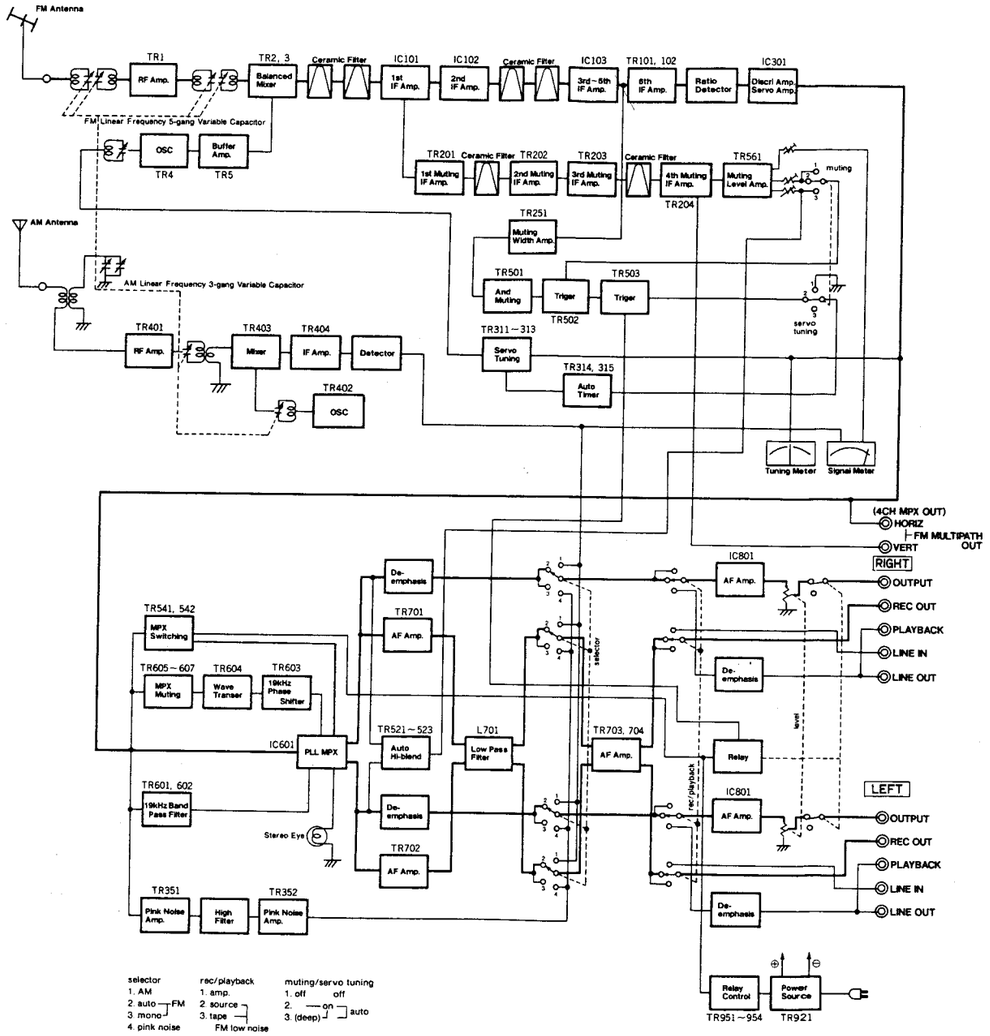
• The Rec/Playback switch is at **"SOURCE"** position



• The Rec/Playback switch is at **"TAPE (LOW NOISE)"** position



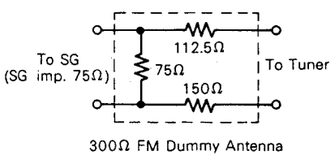
■ BLOCK DIAGRAM



■ ALIGNMENT INSTRUCTIONS

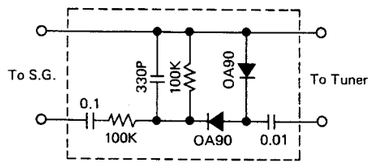
Notes:
1. Output level control . . . . . 0 dB
2. Muting switch . . . . . off
3. MPX high blend switch . . . . . off
4. Rec/Playback switch . . . . . Source
5. Band selector switch . . . . . AM, FM auto (FM-RF, FM-IF)
6. Maintain line voltage at rated voltage.
7. Output of signal generator should be no higher than necessary to obtain an output reading.
8. 300Ω FM dummy antenna . . . . . Refer to fig. 1
9. Detector . . . . . Refer to fig. 2

	SIGNAL GENERATOR or SWEEP GENERATOR CONNECTION	SIGNAL GENERATOR or SWEEP GENERATOR FREQUENCY	DIAL SETING [DISTANCE]	INDICATOR (VTVM or SCOPE) (DISTORTION METER)	ADJUSTMENT POINTS	REMARKS
	AM ALIGNMENT					
1	Sweep generator high side through 0.001μF to TP2. Common to chassis.	455kHz	Piont of non-inter-ference	Connect vertical amplfier of scope to TP3.	T404 (1st IFT) (P) T405 (1st IFT) (S) T406 (2nd IFT)	Adjust for maximum output
2	Fashign loop of several turns of wire and radiate signal into loop of tuner.	600kHz (30% Mod. with 400Hz)	600kHz [17.9mm (23/32")]	Connect VTVM or scope to output terminal of set.	T403 (OSC Coil) L401 (ANT Coil) T402 (DET Coil)	Adjust for maximum output. Adjust ferrite core of L401 by screw driver.
3	Fashion loop of several turns of wire and radiate signal into loop of tuner.	1500kHz (30% Mod with 400Hz)	1500kHz [191.4mm (7 17/32")]	Connect VTVM or scope to output terminal of set	CT403(OSC Trimmer) CT401(ANT Trimmer) CT402(DET Trimmer)	Adjust for maximum output. Repeat steps (2) and (3)
	FM-IF ALIGNMENT					
4	Sweep generator high side through 0.001μF to TP1. Common to chassis.	10.7MHz	Point of non-inter-ference.	Connect vertical amplifier of scope through detector to TP101.	T1 (Main IFT)	Adjust for maximum amplitude and symmet-rical curve.
5	Sweep generator high side through 0.001μF to TP1. Common to chassis.	10.7MHz	Point of non-inter-ference	Connect vertical amplifier of scope to TP251.	T251 (Muting IFT) (P) T252 (Muting IFT) (S)	Adjust for maximum sharp and proper linearity. Adjust center frequency as step 4. Refer to fig. 3.
6		Non-Signal	Point of non-inter-ference	Connect vertical amplifier of scope to output terminal of set	T101 (DISCRI IFT)(P) Brown Core	Adjust for maximum out-put noise level.
7		Non-Signal	Point of non-inter-ference	Tuning meter of set.	T102 (DISCRI IFT)(S) Green Core	Adjust for center of tuning meter indication
	FM-RF ALIGNMENT					
8	Connect to FM antenna teminal through FM dummy antenna.	90MHz (100% Mod. with 400Hz)	90MHz [28.5mm (1 1/8")]	Connect VTVM or scope to output terminal of set.	L6 (OSC Coil) L4 (DET Coil) (S) L3 (DET Coil) (P) L2 (ANT Coil) (S) L1 (ANT Coil) (P)	Adjust for maximum
9	Connect to FM antenna terminal through FM dummy antenna.	106MHz (100% Mod. with 400Hz)	106MHz [181.7mm (7 5/32")]	Connect VTVM or scope to output terminal of set.	CT5(OSC Trimmer) CT4(DET Trimmer)(S) CT3(DET Trimmer)(P) CT2(ANT Trimmer)(S) CT1(ANT Trimmer)(P)	Adjust for maximum output. Repeat steps (8) and (9)
	FM MONO DISTORTION ALIGNMENT					
10	Connect to FM antenna terminal through FM dummy antenna.	98MHz (100% Mod. with 400Hz)	98MHz	Connect distortion meter to output terminal of set.	T101 (DISCRI IFT)(P) Brown Core	Adjust for minimum distortion meter indica-tion. Repeat steps (7) and (10).
	SIGNAL METER ALIGNMENT					
11	Connect to FM antenna terminal through FM dummy antenna. Output level of SG. 100dB (IHF) (about 100mV)	98MHz (30% Mod. with 400Hz)	98MHz	Signal meter of set.	VR561	Adjust VR561 to about 4.7 on signal meter scale.
	MUTING LEVEL ALIGNMENT					
	Note: Muting switch to ON (Lever is center position)					
12	Connect to FM antenna terminal through FM dummy antenna. Output level of SG. . . . . 26 dB (IHF)	98MHz (100% Mod. with 400Hz)	98MHz	Connect VTVM or scope to output terminal of set.	VR562	Adjust that output can be obtained.
	Note: Muting switch to ON (Lever is lower position) . . . . . deep					
13	Connect to FM antenna terminal through FM dummy antenna. Output level of SG. . . . . 40dB (IHF)	98MHz (100% Mod. with 400Hz)	98MHz	Connect VTVM or scope to output terminal of set.	VR563	Adjust so that output can be obtained.



300Ω FM Dummy Antenna

Fig. 1



DETECTOR

Fig. 2

FM MPX PILOT ALIGMENT

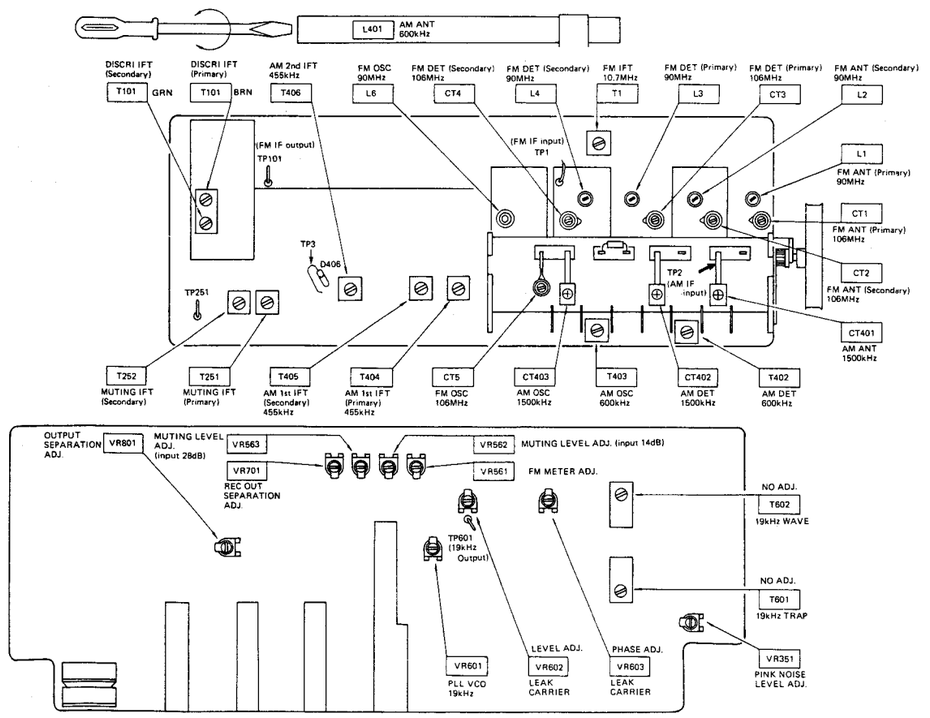
Using a frequency counter	Using alternate system
① 98MHz Non-modulated mono signal applied to set. ② Muting switch to ON. ③ Connect frequency counter to **TP601** through 100kΩ resistor. ④ Adjust **VR601** to 19kHz ±30Hz.	① Apply stereo signal from generator or stereo station to tuner. ② Adjust **VR601** until stereo indicator lights up. Cement arm of **VR601** as shown in fig. 4.

STEREO SEPARATION ALIGNMENT

Notes:
1. Stereo modulator . . . . . Connect stereo modulator output to EXT. MOD terminal of signal generator. Internal OSC . . . . . 1kHz Pilot signal modulation 10%
2. Signal generator . . . . . Frequency approximately 98MHz. Output level 72dB (IHF), Modulation mode to FM
3. Band selector switch . . . . . FM auto

SIGNAL GENERATOR CONNECTION	STEREO MODULATOR MODE and MOD. RATE	INDICATOR (VTVM or SCOPE)	ADJUSTMENT POINTS	REMARKS
LEAK CARRIER ALIGNMENT				
15 FM antenna terminal through dummy antenna.	Only Pilot Signal 19kHz (10% modulation)	Connect VTVM or scope to output terminals.	VR602 (Leak Carrier) VR603 (Leak Carrier)	Adjust for minimum output of set.
OUTPUT TERMINAL STEREO SEPARATION ALIGNMENT				
16 FM antenna terminal through dummy antenna.	L [and R] (30% modulation)	Connect VTVM or scope to OUTPUT terminals through low pass filter, Refer to fig.5	VR801 (OUTPUT SEPARATION)	Adjust for minimum right (and left) output.
REC OUT TERMINAL STEREO SEPARATION ALIGNMENT				
17 FM antenna terminal through dummy antenna.	L [and R] (30% modulation)	Connect VTVM or scope to REC/OUT terminals through low pass filter.	VR701 (REC OUT SEPARATION)	Adjust for minimum right (and left) output.
PINK NOISE ALIGNMENT				
18 ① Apply 60 dB 98MHz FM signal to antenna terminal. ② AF signal level at REC OUT terminal should then be 0 dB.		③ Reduce selector switch to "pink noise ④ Adjust **VR351** so that the output is then 6 dB less than the previous output.		

- **Alignment Points**



ABGLEICHANWEISUNGEN.....VOR DEM ABGLEICH SORGFALTIG DURCHLESEN					
MESSENDER		SKALENZEIGER-EINSTELLUNG DES EMPFÄNGERS (ABSTAND)	ANGEIGE (RÖHRENVOLTMETER ODER OSZILLOGRAPH)	ABGLEICH	BEMERKUNGEN
SCHALTUNG	FREQUENZ				
FM HF-ABGLEICH					
Anschluß an den FM Antennenanschluß über die künstliche. FM Antenne (Vgl. Abb. 1)	87.5MHz (100% Mod bei 400Hz)	87.5MHz (0mm)	Output meter über Lautsprecher-schwingspule anschließen.	L6 (Oszillatorspule)	Auf max. Ausgang abgleichen
〃	90MHz (〃)	90MHz (28.5mm)	〃	L4 (Zwischenkreis) (S) L3 (Zwischenkreis) (P) L2 (Antennenspule) (S) L1 (Antennenspule) (P)	〃
〃	106MHz (〃)	106MHz (181.7mm)	〃	CT5 (OSZ. Trimmer) CT4 (DET. Trimmer) (S) CT3 (DET. Trimmer) (P) CT2 (ANT. Trimmer) (S) CT1 (ANT. Trimmer) (P)	〃

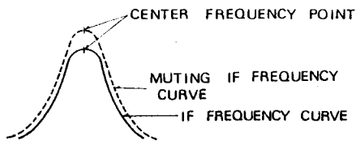
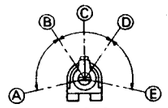
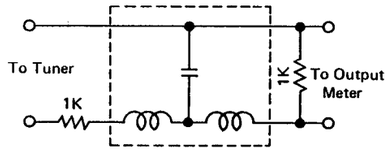


Fig. 3



A – B, D – E: Stereo OFF Position.
B – D: Stereo ON Position (Indicator Lighting).
C: Adjust Point of Pilot Circuit.

Fig. 4



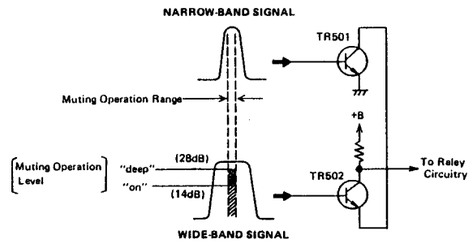
LOW PASS FILTER
(for = 15kHz ~ 19kHz)

Fig. 5

■ SERVICE AID

1. Muting Circuitry

The muting level of this model is electable in two steps. There are three positions of the muting switch: "on," "off" and "deep." This circuitry is designed so that when the muting switch is moved from the "on" position to the "deep" position, the muting circuitry will then operate at an input level which is about 20 dB larger than the level at the "on" position.



(Muting AND Circuitry)

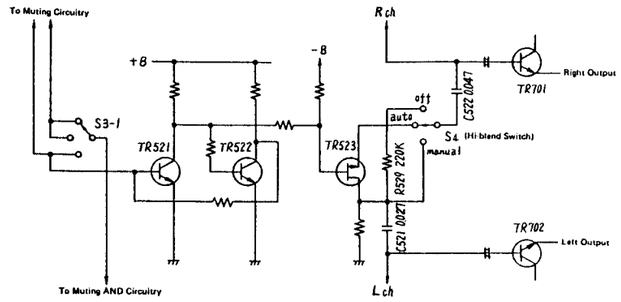
Fig. 6

The principles of this circuitry are as follows. Utilizing the AND circuitry consisting of TR501 and TR502, the FM IF signal from terminal (5) of IC103 passes from TR251 and through the IFT for muting, thus becoming a narrow-band signal, and is applied to TR501. Meanwhile, the FM IF signal from terminal (1) of IC101 passes from TR201 through the control circuitry of CF201 and CF202, and is applied to TR502 as a wide-band IF signal. The muting circuitry operates in the following way. TR503 operates, and, in order to cause the output relay of the AF circuitry to operate, the signals applied to both TR501 and TR502 overlap each other. The reason that the AND circuit consists of TR501 and TR502 is in order to combine the signals of both, and, even if one of the transistors operates, the muting circuitry will not operate.

In addition, in order for the muting level to be selectable in two steps, the level of the wide-band signal applied to TR502 can be changed by a switch (S3-1), and the selection is made according to the change of the operation level of TR502.

2. Automatic High-Blend Circuitry

This circuitry is designed to reduce noise in FM stereo broadcasts, especially that noise heard during reception of weak signals from the broadcasting station, and thus making FM stereo broadcasts more pleasant and easier to hear. This "high blend" circuitry operates automatically, if the input signal is below a certain specified level, as controlled by an electronic switch. (See figure 7.)



(Automatic High-Blend Circuitry)

Fig. 7

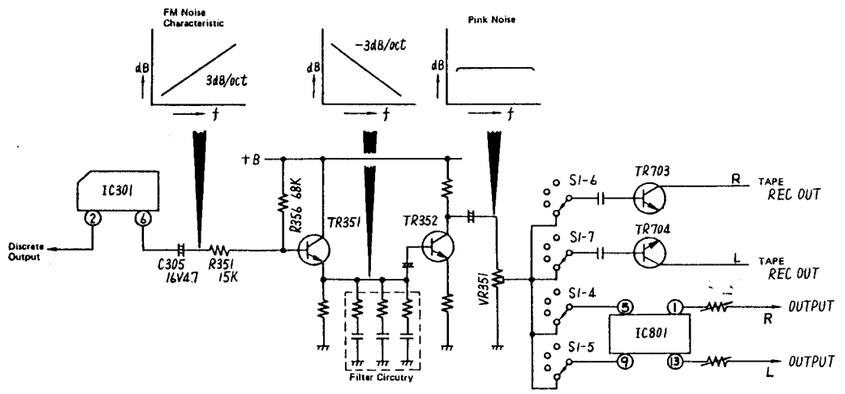
In general, the noise component of a signal is at a high level in the high-frequency range; and, because the reverse-phase noise of the left and of the right FM signals received by the multiplex circuitry becomes mutually mixed with each other, the high-frequency ranges of both channels become blended and the noise components cancel each other, thus giving this circuitry the name "hi blend" circuitry.

When input signals are weak, the circuitry is designed so that TR521 will not function, and positive B voltage is applied to the collector of TR521. Positive and negative B voltages are separately applied to the gate of TR523, and, if the positive voltage is high, TR523 is in the operating condition. In other words, the hi-blend switch will change to the "on" condition.

Then, when an input signal which exceeds the muting level (30 dB) is received, bias begins to be applied to TR521. When this happens, the collector becomes the grounding potential, and, because the voltage becomes negative and the gate of TR523 becomes open, the "hi-blend" switch becomes "off." TR522 and TR521 are transistors provided to make this operation quick.

3. "Pink-Noise" Circuitry

Because the level of "white noise" of discrete output is high in the high-frequency range, it can be used for determination of the recording level, when recording an FM broadcast, by making the frequency response flat. (See figure 8.)

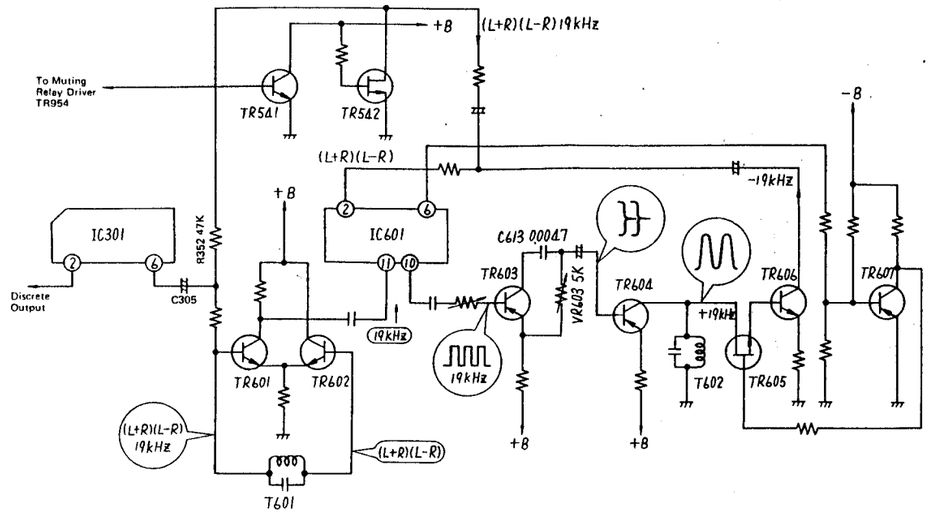


(Pink Noise Circuitry)

Fig. 8

The DC component is taken from the discrete output taken from terminal ⑥ of IC303, and the response is made flat by the filter circuitry. Then, after the signal is amplified to an appropriate level, it passes through the selector switch, and then to the tape input terminals and the output terminals of this unit.

4. Stereo Demodulation Circuitry [MPX]



(MPX Circuit)

Fig. 9

This circuitry is shwon in figure 9. The compound stereo signal taken from terminal ⑥ of IC301 is applied to the differential amplifier of TR601 and TR602. The bases of TR601 and of TR602 are connected by the 19-kHz trap coil, and the signal, from which the pilot signal has been eliminated, is applied to TR602. The sub-signal and main-signal of the compound signal applied to TR601 are canceled by the sub-signal and main-signal applied to TR602, and only the 19-kHz signal is taken from the collector of TR601. This signal is then applied to terminal ⑪ of IC601.

The 19-kHz signal, which has a 90° phase-difference with respect to the input pilot signal, is taken from terminal ⑩ of IC601; this signal is then passed through the phase circuitry formed by VR603 and C613 of TR603, and is given an additional 90° phase-difference. This signal next passes through TR604 and becomes the same phase as the input signal, the waveform is clearly shaped by T602, it passes from the switching circuitry of TR605 through TR606, and a 19-kHz signal which is the opposite phase of the input pilot signal can be taken out. This reverse-phase 19-kHz signal enters terminal ② of IC601, and the stereo compound signal from terminal ⑥ of IC301 is also applied to terminal ②. In other words, the pilot signal of the compound signal and the reverse-phase 19-kHz signal are canceled, and only the sub-signal and the main-signal enter terminal ② of IC601 as input. Then stereo modulation is accomplished by the signal from which excess components have been mutually removed.

The circuitry of TR541 and TR542 is interlocked with the transistor used as the muting relay driver, TR954, and, when TR954 operates, TR541 also becomes activated and TR542 becomes off. When TR954 becomes off, TR542 becomes on, and the input compound signal to IC601 becomes grounded. In other words, the muting circuitry and the circuitry for the suppression of "shock" sounds function to prevent the stereo compound signal from becoming input to IC601 when the relay is not operating.

5. Stereo Switching Circuitry

In figure 9, there is always a 19-kHz signal at terminal ⑩ of IC601, caused by internal oscillation of the phase-locked-loop IC. During a monaural broadcast, the circuitry which prevents this signal from being applied to terminal ② of IC601 is the switching circuitry.

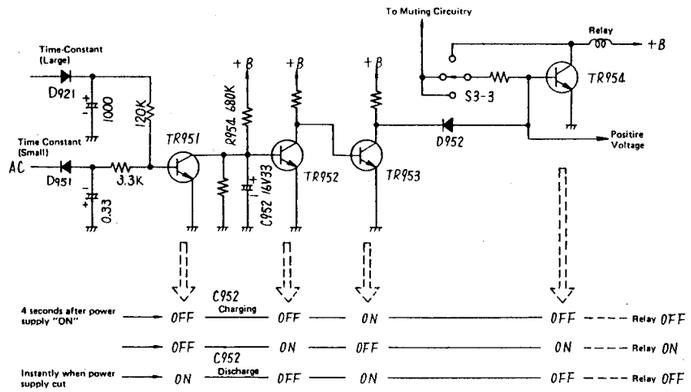
When a stereo signal is applied to IC601 the voltage of terminal ⑥ of IC601 is approximately ground potential, the base voltage of TR607 becomes negative voltage, and TR607 operates. The collector of TR607 is connected to TR605 by way of a resistor, and, when TR607 becomes on, the gate of TR605 becomes ground potential, thus causing the switching circuitry to close.

If a monaural signal enters IC601, positive B voltage appears at terminal ⑥ of IC601, and positive voltage is applied to the base of TR607. This voltage acts as a cut-off to TR607, causing negative voltage to be applied to the gate of TR605, the switch opens, and the 19-kHz signal is not transmitted.

6. Circuitry for prevention of "shock" sound when power supply is turned ON and OFF

(A) When Power Supply is Turned ON

As shown in figure 10, negative voltage with a small time-constant and positive voltage with a large time-constant are divided at the base of TR951, and the result is that the voltage becomes negative voltage and is applied. TR951, consequently, becomes off. The positive voltage passes through R954 and flows to C952, and TR952 becomes off, resulting in bias being applied to TR953, turning it on. At this point, current flows to germanium diode D952, the base of relay driver TR954 becomes gound potential, and the relay becomes off. The voltage, across C952, however, soon increases, TR953 becomes off when bias is applied to TR952, turning it on, and, because reverse bias is applied to D952, TR954 becomes on and current flows to the relay. The time lapse until the relay becomes on depends upon the time-constant of R954 and C952, and is fixed to be about four seconds.



(Circuitry for Prevention of "shock" sound)

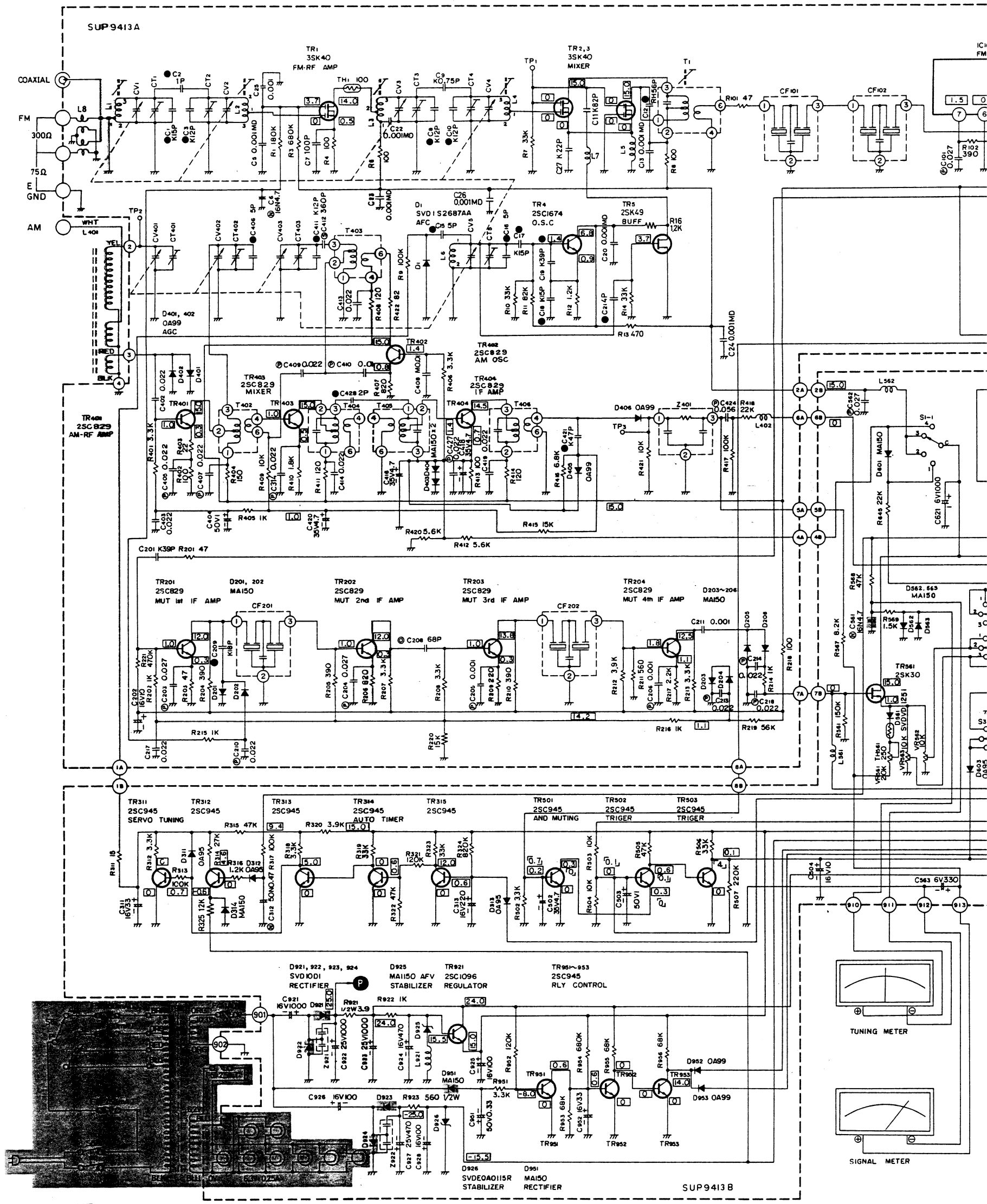
Fig. 10

(B) When Power Supply is Turned OFF

Because its time-constant is small, the negative voltage applied to TR951 rapidly decreases, the positive voltage remains as the base voltage, and turns TR951 on. Because the base of TR952 becomes earth potential when TR951 is on, TR952 becomes off, TR953 becomes on, and TR954 becomes off.

In other words, when the power supply is cut, the relay becomes off at the same time.

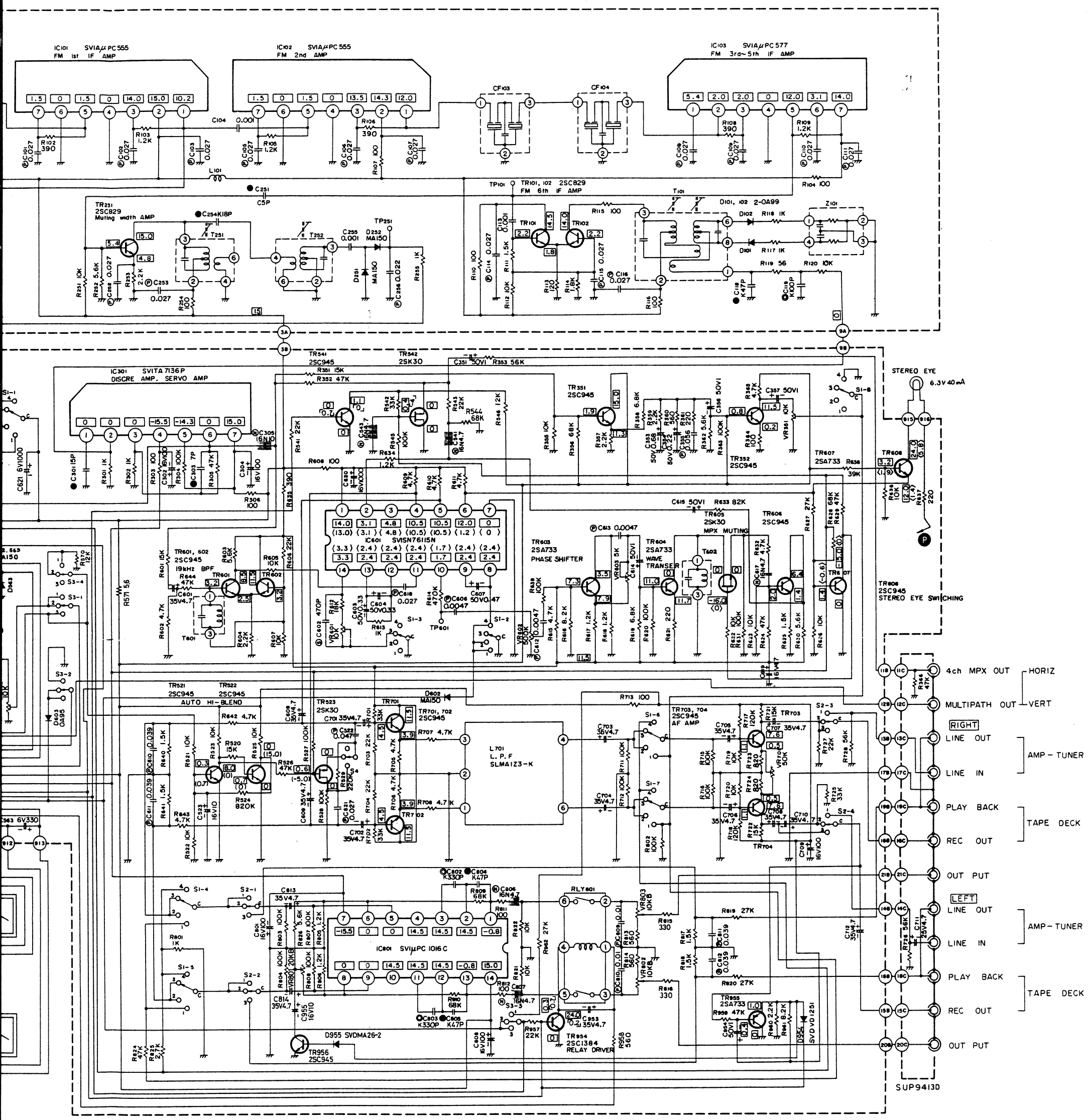
Schematic Diagram ..... Model ST-9600 (X, XG, XGH, XSD, XSW, XE) (This schematic diag



Notes:

1. **S1-1~S1-8 :** E
   ① pink r
2. **S2-1~S2-4 :** T
   ① amp ←
3. **S3-1, S3-3, S3-4**
   ① off ←
4. **S4 :** Mpx hi-bl
   ① off ←
5. **S5 :** Power sw
6. **S6 :** Voltage se
   ①110V -

ematic diagram may be modified at any time with the development of new technology).



1~S1-8 : Band selector/check switch in **"FM auto"** position.
① pink noise ⟷ ② FM mono ⟷ ③ FM auto ⟷ ④ AM

1~S2-4 : Tape deck recording/playback switch in **"source"** position.
① amp ⟷ ② source ⟷ ③ tape

1, S3-3, S3-4 : FM muting switch in **"on"** position.
① off ⟷ ② on ⟷ ③ on (deep)

: Mpx hi-blend switch in **"auto"** position.
① off ⟷ ② auto ⟷ ③ manual

: Power switch in **"off"** position.

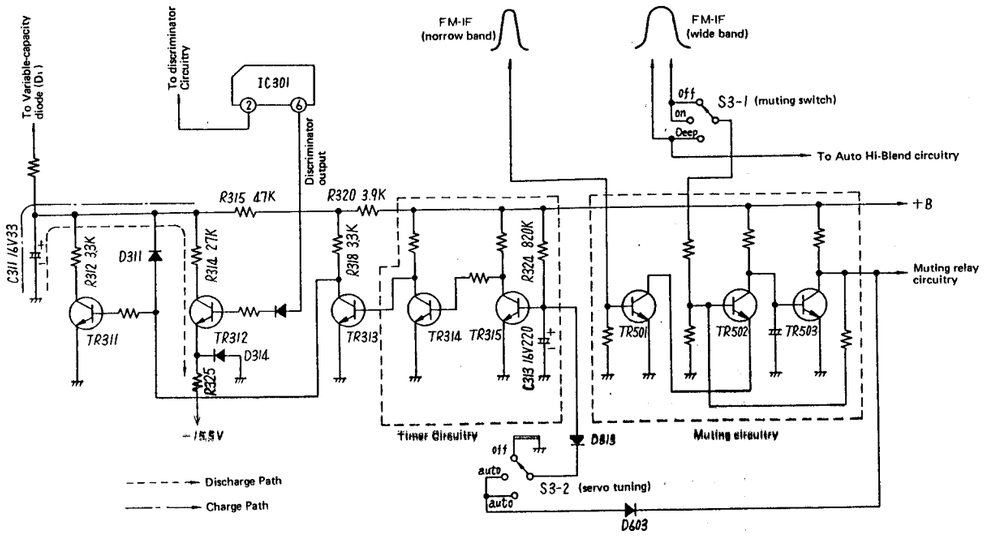
: Voltage selector switch in **"240V"** position.
①110V ⟷ ②120V ⟷ ③220V ⟷ ④240V

7. DC voltage measurements are taken with DC VTVM from chassis ground.
▭ Marks voltage ..... FM monoral or AM signal reception
〈 〉 Marks voltage ..... FM stereo signal reception
⌐ ⌙ Marks voltage ..... Muting circuit operative (muting relay to "ON" condition)
( ) Marks voltage ..... Mpx hi-blend switch to "off" condition

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

7. Servo Tuning

Servo tuning is circuitry which, if the tuned frequency should for some reason become slightly detuned, detects the FM discriminator error voltage, amplifies, and charges and discharges the C311 capacitor. The bias of variable-capacity diode D_1 is then changed by the voltage across the capacitor, the oscillation frequency is regulated, and the tuned frequency is automatically returned to the perfectly-tuned point.



(Servo Tuning Circuitry)

Fig. 11

(1) If muting switch is OFF

Because the muting switch (S3-1) and the servo-tuning switch (S3-2) are interlocked, the servo tuning is off when the muting switch is off.

As shown in figure 11, when (S3-2) is in the "OFF" position, the base of TR315 is near ground potential and is cut off. As a result, bias voltage is applied to the base of TR314, turning it on. When TR314 operates, TR313 becomes off because the collector becomes ground potential, and TR311 becomes on. As a result of this series of operations, current flows from R320, through R318, to D311, and through R312, becoming the emitter current of TR311. Because there is no change in the voltage across C311, there is also no change of the oscillation frequency. (A voltage which is always constant is applied to variable-capacity diode D_1.)

(2) When the muting switch changes from OFF to ON, the timer circuitry operates.

(a) When the muting circuitry operates, the muting AND circuitry (see note below), TR501 and TR502, becomes on, and the base voltage of TR503 thus is turned off by the ground potential. In other words, +B voltage is applied to the collector of TR503, and the bias of D603 and D313 connected there is reversed. That is, the condition of D313 becomes as if not connected to the base of TR315. And the +B voltage passes through R324, and charges C313. When the voltage across C313 (V_{BE} of TR315) is charged to 0.6V, TR315 becomes on, TR314 becomes off, and the timer circuitry functions. The time until TR314 becmoes off, as determined by the time-constant of R324 and C313, is set to be about 6 seconds. When TR314 becomes off, TR313 becomes on, and TR311 becomes off. Because TR311 does not operate, the standard voltage across C311 is affected by the operation of TR312. [Refer to item (4).]

Note: The AND circuitry is circuitry which includes 2 transistors, TR501 and TR502. If, when a narrow-band IF signal is applied to TR501 and a wide-band IF signal is applied to TR502, both inputs do not exceed the pre-set level, neither transistor becomes on. In this unit, 2-step muting changeover is accomplished by the level applied to TR502. (Refer to "1. Muting Circuitry" on page 7.)

(b) If, because the input level is small, the muting circuitry does not operate, TR503 becomes on because TR501 and TR502 are off, and the collector is ground potential. Voltage is, therefore, applied to D313 and D603 in the forward direction, and current flows. However, because these diodes are germanium diodes, no bias can be applied to TR315, and it becomes cut off. This becomes the same circuitry as when the muting switch is off. In other words, the timer operates when the muting switch is changed from "off" to "on" by input which is higher than the muting operation level, or, about 6 seconds after the instant when, with the muting switch "on", a strong signal is received during reception of a weak signal which is less than the muting signal (or no signal).

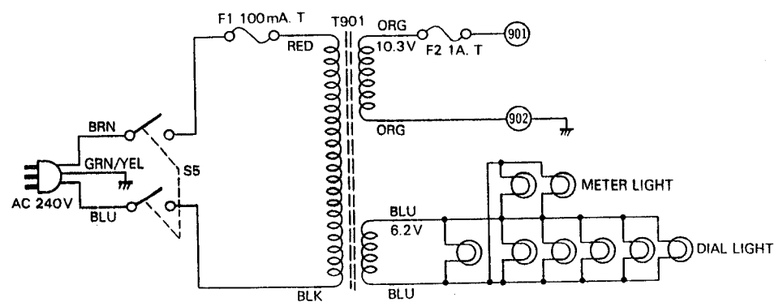
(3) When frequency deviates to a frequency slightly higher than the perfectly-tuned frequency:

The discriminator center voltage from the sixth terminal of IC301 is applied to the base of TR312. Because the center voltage is usually 0V at the time of perfect tuning, TR312 does not operate. If, however, the tuning point is changed to a frequency slightly higher than the perfectly-tuned frequency, a positive voltage is produced at the sixth terminal of IC301 in the proportion that the frequency deviation is to the perfectly-tuned frequency. This voltage changes TR312 to the "on" condition, and the electric charge of C311 passes through R314 and discharges. In other words, the voltage across C311 decreases, and the voltage applied to variable-capacity diode D_1 in the front-end decreases. When this happens, the capacity of D_1 increases, the oscillation voltage becomes low, and the perfectly-tuned point is then reached. When it is tuned, the discriminator center voltage returns to 0V, and, therefore, the operation of TR312 and the discharge of C311 both stop.

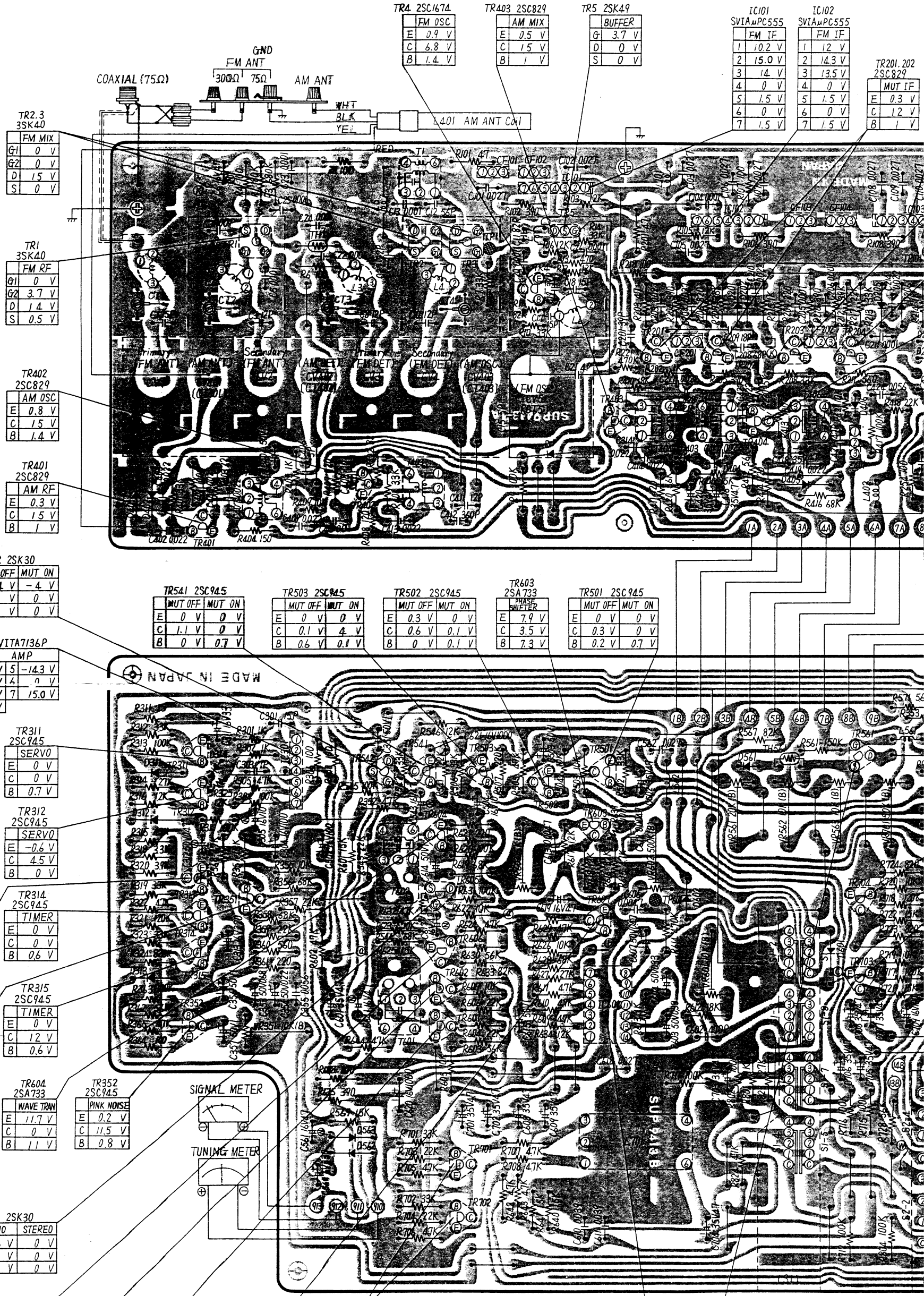
(4) When frequency deviates to a frequency slightly lower than the perfectly-tuned frequency:

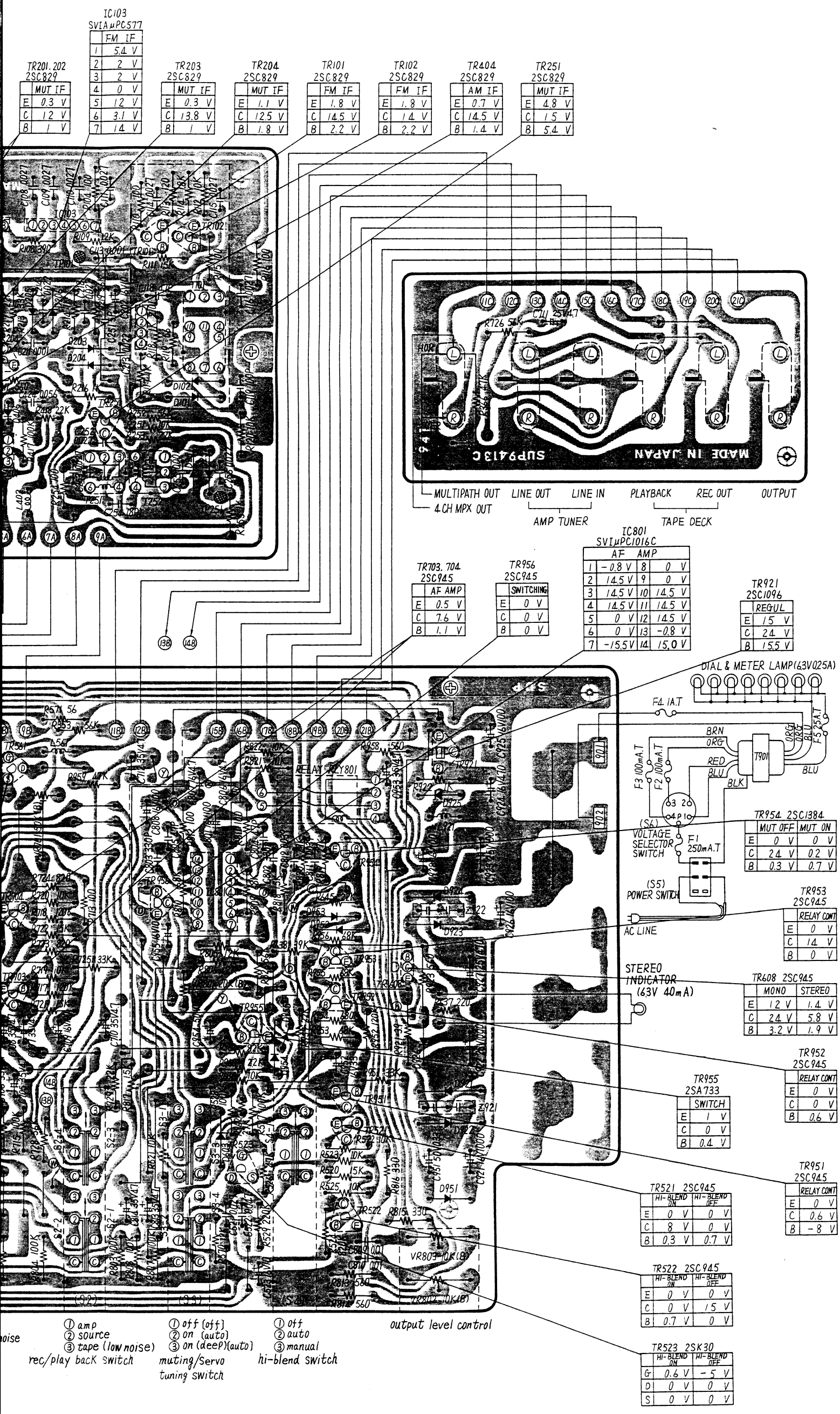
Because the discriminator center voltage also moves in the negative direction, negative voltage in proportion to the frequency deviation is produced at the sixth terminal of IC301. Because TR312 is in the "off" condition at 0V, the "off" condition naturally continues with the negative voltage. As explained previously, TR311 becomes "off" when the timer circuitry operates, and, therefore, +B voltage passes through R315 and flows to C311, thus increasing the voltage across C311. The reverse bias of D_1 is increased by this charging voltage, and the capacity decreases, thus causing the oscillation voltage to become high, and the perfectly-tuned point is reached. The charging of C311 then stops.

■ POWER SUPPLY SCHEMATIC DIAGRAM ..... Set for Australia [XAL]



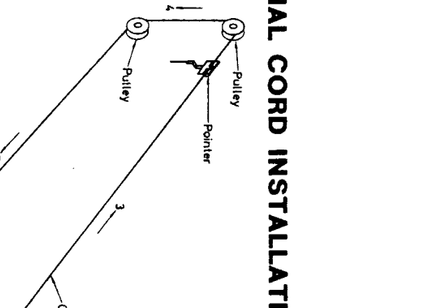
Printed Circuit Board Wiring View.....Model ST-9600



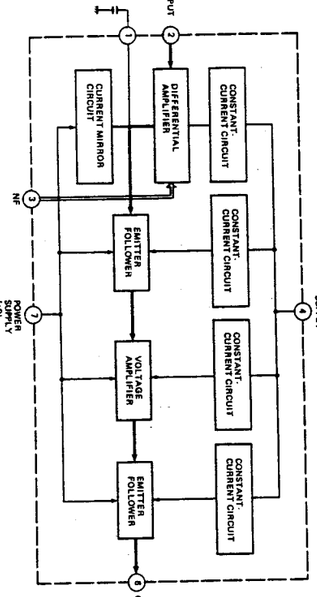

IC103
SVI A μPC577
FM IF
1 5.4 V
2 2 V
3 2 V
4 0 V
5 12 V
6 3.1 V
7 14 V
TR201. 202
2SC829
MUT IF
E 0.3 V
C 12 V
B 1 V
TR203
2SC829
MUT IF
E 0.3 V
C 13.8 V
B 1 V
TR204
2SC829
MUT IF
E 1.1 V
C 12.5 V
B 1.8 V
TR101
2SC829
FM IF
E 1.8 V
C 14.5 V
B 2.2 V
TR102
2SC829
FM IF
E 1.8 V
C 14 V
B 2.2 V
TR404
2SC829
AM IF
E 0.7 V
C 14.5 V
B 1.4 V
TR251
2SC829
MUT IF
E 4.8 V
C 15 V
B 5.4 V
FM OSC, RF & IF Amplifier
AM OSC, RF & IF Amplifier
AF output & Tape Deck Connection Terminal
MULTIPATH OUT
4 CH MPX OUT
LINE OUT
LINE IN
PLAYBACK
REC OUT
OUTPUT
AMP TUNER
TAPE DECK
IC801
SVIμPC1016C
AF AMP
1 -0.8 V 8 0 V
2 14.5 V 9 0 V
3 14.5 V 10 14.5 V
4 14.5 V 11 14.5 V
5 0 V 12 14.5 V
6 0 V 13 -0.8 V
7 -15.5 V 14 15.0 V
TR703. 704
2SC945
AF AMP
E 0.5 V
C 7.6 V
B 1.1 V
TR956
2SC945
SWITCHING
E 0 V
C 0 V
B 0 V
TR921
2SC1096
REGUL
E 15 V
C 24 V
B 15.5 V
DIAL & METER LAMP(63V025A)
F4 1A.T
F5 2.5A.T
F3 100mA.T
F2 100mA.T
F1 250mA.T
T901
BRN
ORG
RED
BLU
BLK
ORG
ORG
BLU
BLU
(S6)
VOLTAGE SELECTOR SWITCH
(S5)
POWER SWITCH
AC LINE
TR954 2SC1384
MUT OFF MUT ON
E 0 V 0 V
C 24 V 0.2 V
B 0.3 V 0.7 V
TR953
2SC945
RELAY CONT
E 0 V
C 14 V
B 0 V
FM MPX, Muting, Auto Hi-Blend & Pink-Noise Circuit
Power Supply & AF Amplifier
STEREO INDICATOR (6.3V 40mA)
TR608 2SC945
MONO STEREO
E 12 V 1.4 V
C 24 V 5.8 V
B 3.2 V 1.9 V
TR952
2SC945
RELAY CONT
E 0 V
C 0 V
B 0.6 V
TR955
2SA733
SWITCH
E 1 V
C 0 V
B 0.4 V
TR951
2SC945
RELAY CONT
E 0 V
C 0.6 V
B -8 V
TR521 2SC945
HI-BLEND ON HI-BLEND OFF
E 0 V 0 V
C 8 V 0 V
B 0.3 V 0.7 V
TR522 2SC945
HI-BLEND ON HI-BLEND OFF
E 0 V 0 V
C 0 V 15 V
B 0.7 V 0 V
TR523 2SK30
HI-BLEND ON HI-BLEND OFF
G 0.6 V -5 V
D 0 V 0 V
S 0 V 0 V
① amp
② source
③ tape (low noise)
rec/play back switch
① off (off)
② on (auto)
③ on (deep)(auto)
muting/Servo tuning switch
① off
② auto
③ manual
hi-blend switch
output level control
MADE IN JAPAN
SUP9413C

■ BLOCK DIAGRAM OF INTEGRATED CIRCUITS

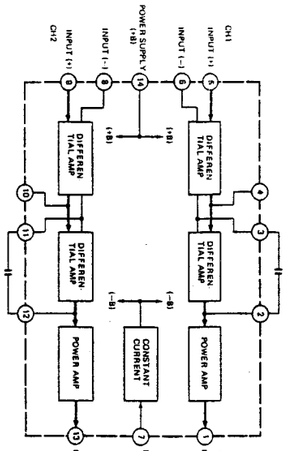
• IC101, 102 (SVIAUPC555) FM IF Amplifier



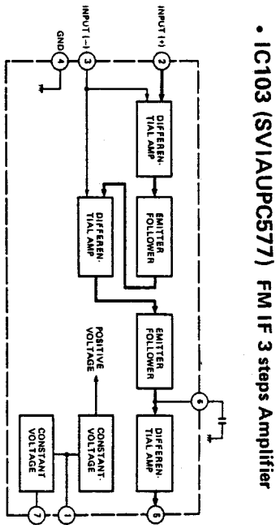
• IC301 (SVITA7136P) FM Composite Signal Amplifier



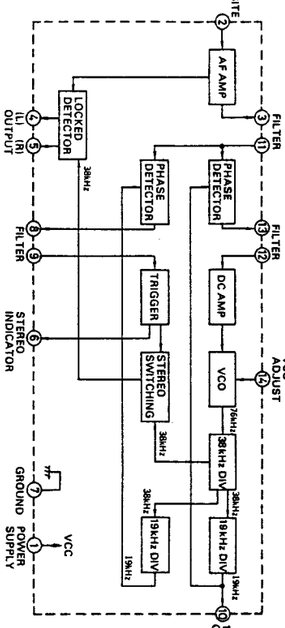
• IC801 (SVIUPC1016C) 2 channel AF Amplifier



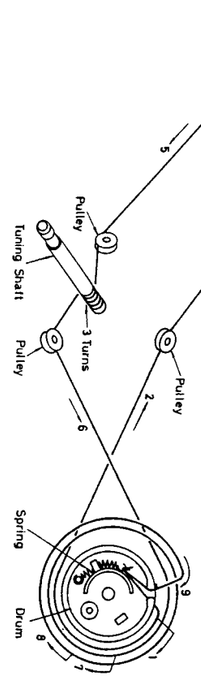
• IC103 (SVIAUPC577) FM IF 3 steps Amplifier



• IC601 (SVISN76115N) FM Multiplex Circuit



■ DIAL CORD INSTALLATION GUIDE



1. Dial cord length is 200cm (78¾").
2. Tuning gang is positioned at maximum capacity. (Frequency is minimum)
3. Arrow marks (1~9) indicated correct order and direction of stringing dial cord.

■ REPLACEMENT PARTS LIST

Important Safety Notice
Components identified by shaded area have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

NOTE: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
INTEGRATED CIRCUITS				
IC101, 102	SVIAUPC555HF	FM IF Amplifier	2	
IC103	SVIAUPC577HF	FM IF Amplifier	1	
IC301	SVITA7136PM	AF Amplifier	1	
IC601	**SVISN76115NA**	FM Multiplex Circuit	1	
IC801	SVIUPC1016C	2 Channel AF Amplifier	1	○
TRANSISTORS				
TR1	3SK40-L	FM RF Amplifier [FET]	1	
TR2, 3	3SK40M	FM Mixer [FET]	2	
TR4	2SC1647-M	FM Oscillator	1	
TR5	2SK49-H1	Buffer Amplifier [FET]	1	
TR101, 102, 201, 202, 203, 204, 251, 401, 402, 403, 404	**2SC829-C**	FM Muting IF Amplifier, AM RF, AM OSC, AM Mix & AM IF Amplifier	11	
TR311, 312, 313, 314, 315, 351, 352, 501, 502, 503, 521, 522, 541, 601, 602, 606, 608, 701, 702, 703, 704, 951, 952, 953, 956	**2SC945-R**	Servo Tuning, FM Noise, AF Amplifier Muting Switching & Relay Driver (in ranks R or P2)	25	
TR523, 542, 561, 605	2SK30A-N	Switching, Hi-Blend & Muting [FET]	4	
TR603, 604, 607, 955	2SA733-P1	Phase Shifter & 19kHz Amplifier	4	
TR921	2SC1096-L	Voltage Regulator	1	
TR954	**2SC1384A-Q**	Relay Driver (in ranks Q or R)	1	
DIODES				
D1	SVD1S2687AA	Variable Capacity Diode	1	
D101, 102	2-OA99	FM Discriminator	1pair	
D201, 202, 203, 204, 205, 206, 251, 252, 314, 403, 404, 562, 563, 601, 602, 951,	MA150	FM AGC, Muting & Meter Detector & AOC	16	
D311, 312, 313, 603	OA95	Servo Tuning Switching	4	
D401, 402, 405, 406, 952, 953	OA99	AOC, AM AGC & AM Detector	6	
D921, 922, 923, 924	SVD10D1M	Rectifier	4	
D925	MA1150A	15V Zener, Voltage Stabilizer	1	
D926	SVDEQA0115R	15V Zener, Voltage Stabilizer	1	
D561, 954	SVDVD1251M	Meter & Relay Control	2	○
D955	SVDMA26-2	Varistor, Separation Control	1	
COILS and TRANSFORMERS				
L1, 2, 4	SLA4N5	FM Antenna Coil	3	○
L3	SLD4N1	FM Detector Coil	1	○
L5	SLQAN40G-1	RF Choke Coil	1	
L6	SLOA4N9	FM Oscillator Coil	1	○
L7	RLQY25S5	RF Choke Coil	1	
L8	SLAA4W1-3	Balun Coil	1	
L101, 561, 921	SLQX101-2D	Choke Coil	3	
L401	SLF2D17	AM Antenna Coil	1	
L402, 562	ELQ223D599G	Choke Coil	2	
L701	SLMA1Z3-K	Low Pass Filter Coil	1	
T1	SLIA4C102	FM IF Transformer	1	
T101	SLIA4D51	FM Discriminator IF Transformer	1	
T251, 252	SLIA4C242	FM Muting IF Transformer	2	
T402	SLDA2C3	AM Detector (Mixing) Coil	1	
T403	SLOA2C7	AM Oscillator Coil	1	
T404, 405	RLI2C157	AM IF Transformer	2	
T406	RLI2C450	AM IF Transformer	1	
T601, 602	SLMA1D3-K	19kHz Band Pass Filter	2	
T901 [XXG, XGH, XE, XSD, XSW]	SLT35M87	Power Transformer, Set for [XL, XGL, XGH, XE, XSD] & [XSW]	1	○
T901 [XAL]	SLT35J33	Power Transformer, Only Set for [XAL]	1	○
CERAMIC FILTERS				
CF101, 102, 103, 104, 201, 202	SVFF10M12CGG	FM IF Circuit, 10.6MHz, Green	each 6	
	SVFF10M12CGB	FM IF Circuit, 10.65MHz, Black		
	SVFF10M12CGR	FM IF Circuit, 10.7MHz, Red		
	SVFF10M12CGW	FM IF Circuit, 10.75MHz, White		
	SVFF10M12CGY	FM IF Circuit, 10.8MHz, Yellow		
THERMISTORS				
TH1	SRTTD5-A110	100Ω, FM RF Amplifier Circuit	1	
TH561	RRT251	250Ω, FM Signal Meter Circuit	1	
RESISTORS				
R1	**ERD25TJ184**	180kΩ, 1/4W, ± 5%, Carbon	1	
R3	**ERD25TJ684**	680kΩ, 1/4W, ± 5%, Carbon	1	
R4	**ERD25TJ101**	100Ω, 1/4W, ± 5%, Carbon	1	
R6	**ERD25TJ101**	100Ω, 1/4W, ± 5%, Carbon	1	
R7	**ERD25TJ333**	33kΩ, 1/4W, ± 5%, Carbon	1	
R8	**ERD25TJ101**	100Ω, 1/4W, ± 5%, Carbon	1	
R9	**ERD25TJ104**	100kΩ, 1/4W, ± 5%, Carbon	1	
R10	**ERD25TJ333**	33kΩ, 1/4W, ± 5%, Carbon	1	
R11	**ERD25TJ823**	82kΩ, 1/4W, ± 5%, Carbon	1	
R12	**ERD25TJ122**	1.2kΩ, 1/4W, ± 5%, Carbon	1	
R13	**ERD25TJ471**	470Ω, 1/4W, ± 5%, Carbon	1	
R14	**ERD25TJ333**	33kΩ, 1/4W, ± 5%, Carbon	1	
R16	**ERD25TJ122**	1.2kΩ, 1/4W, ± 5%, Carbon	1	
R101	**ERD25TJ470**	47Ω, 1/4W, ± 5%, Carbon	1	
R102	**ERD25TJ391**	390Ω, 1/4W, ± 5%, Carbon	1	
R103	**ERD25TJ122**	1.2kΩ, 1/4W, ± 5%, Carbon	1	
R104	**ERD25TJ101**	100Ω, 1/4W, ± 5%, Carbon	1	
R105	**ERD25TJ122**	1.2kΩ, 1/4W, ± 5%, Carbon	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
R106	**ERD25TJ391**	390Ω, 1/4W, ± 5%, Carbon	1	
R107	**ERD25TJ101**	100Ω, 1/4W, ± 5% Carbon	1	
R108	**ERD25TJ391**	390Ω, 1/4W, ± 5%, Carbon	1	
R109	**ERD25TJ122**	1.2kΩ, 1/4W, ± 5%, Carbon	1	
R110	**ERD25TJ101**	100Ω, 1/4W, ± 5%, Carbon	1	
R111	**ERD25TJ152**	1.5kΩ, 1/4W, ± 5%, Carbon	1	
R112	**ERD25TJ103**	10kΩ, 1/4W, ± 5%, Carbon	1	
R113	**ERD25TJ121**	120Ω, 1/4W, ± 5%, Carbon	1	
R114	**ERD25TJ182**	1.8kΩ, 1/4W, ± 5%, Carbon	1	
R115	**ERD25TJ101**	100Ω, 1/4W, ± 5%, Carbon	1	
R116	**ERD25TJ101**	100Ω, 1/4W, ± 5%, Carbon	1	
R117	**ERD25TJ102**	1kΩ, 1/4W, ± 5%, Carbon	1	
R118	**ERD25TJ102**	1kΩ, 1/4W, ± 5%, Carbon	1	
R119	**ERD25TJ560**	56Ω 1/4W, ± 5%, Carbon	1	
R120	**ERD25TJ103**	10kΩ, 1/4W, ± 5%, Carbon	1	
R201	**ERD25TJ470**	47Ω, 1/4W, ± 5%, Carbon	1	
R202	**ERD25TJ102**	1kΩ, 1/4W, ± 5%, Carbon	1	
R203	**ERD25TJ470**	47Ω, 1/4W, ± 5%, Carbon	1	
R204	**ERD25TJ391**	390Ω, 1/4W, ± 5%, Carbon	1	
R205	**ERD25TJ391**	390Ω, 1/4W, ± 5%, Carbon	1	
R206	**ERD25TJ821**	820Ω, 1/4W, ± 5%, Carbon	1	
R207	**ERD25TJ332**	3.3kΩ, 1/4W, ± 5%, Carbon	1	
R208	**ERD25TJ332**	3.3kΩ, 1/4W, ± 5%, Carbon	1	
R209	**ERD25TJ221**	220Ω, 1/4W, ± 5%, Carbon	1	
R210	**ERD25TJ391**	390Ω, 1/4W, ± 5%, Carbon	1	
R211	**ERD25TJ561**	560Ω, 1/4W, ± 5%, Carbon	1	
R212	**ERD25TJ392**	3.9kΩ, 1/4W, ± 5%, Carbon	1	
R213	**ERD25TJ332**	3.3kΩ, 1/4W, ± 5%, Carbon	1	
R214	**ERD25TJ102**	1kΩ, 1/4W, ± 5%, Carbon	1	
R215	**ERD25TJ102**	1kΩ, 1/4W, ± 5%, Carbon	1	
R216	**ERD25TJ102**	1kΩ, 1/4W, ± 5%, Carbon	1	
R217	**ERD15TJ222**	2.2kΩ, 1/4W, ± 5%, Carbon	1	
R218	**ERD25TJ101**	100Ω, 1/4W, ± 5%, Carbon	1	
R219	**ERD25TJ563**	56kΩ, 1/4W, ± 5%, Carbon	1	
R220	**ERD25TJ153**	15kΩ, 1/4W, ± 5%, Carbon	1	
R221	**ERD25TJ474**	470kΩ, 1/4W, ± 5%, Carbon	1	
R222	**ERD25TJ153**	15kΩ, 1/4W, ± 5%, Carbon	1	
R251	**ERD25TJ103**	10kΩ, 1/4W, ± 5%, Carbon	1	
R252	**ERD25TJ562**	5.6kΩ, 1/4W, ± 5%, Carbon	1	
R253	**ERD25TJ222**	2.2kΩ, 1/4W, ± 5%, Carbon	1	
R254	**ERD25TJ101**	100Ω, 1/4W, ± 5%, Carbon	1	
R255	**ERD25TJ102**	1kΩ, 1/4W, ± 5%, Carbon	1	
R301	**ERD25TJ102**	1kΩ, 1/4W, ± 5%, Carbon	1	
R302	**ERD25TJ102**	1kΩ, 1/4W, ± 5%, Carbon	1	
R303	**ERD25TJ101**	100Ω, 1/4W, ± 5%, Carbon	1	
R304	**ERD25TJ104**	100kΩ, 1/4W, ± 5%, Carbon	1	
R305	**ERD25TJ473**	47kΩ, 1/4W, ± 5%, Carbon	1	
R306	**ERD25TJ101**	100Ω, 1/4W, ± 5%, Carbon	1	
R311	**ERD25TJ150**	15Ω, 1/4W, ± 5%, Carbon	1	
R312	**ERD25TJ332**	3.3kΩ, 1/4W, ± 5%, Carbon	1	
R313	**ERD25TJ104**	100kΩ, 1/4W, ± 5%, Carbon	1	
R314	**ERD25TJ273**	27kΩ, 1/4W, ± 5%, Carbon	1	
R315	**ERD25TJ473**	47kΩ, 1/4W, ± 5%, Carbon	1	
R316	**ERD25TJ122**	1.2kΩ, 1/4W, ± 5%, Carbon	1	
R317	**ERD25TJ104**	100kΩ, 1/4W, ± 5%, Carbon	1	
R318	**ERD25TJ332**	3.3kΩ, 1/4W, ± 5%, Carbon	1	
R319	**ERD25TJ333**	33kΩ, 1/4W, ± 5%, Carbon	1	
R320	**ERD25TJ392**	3.9kΩ, 1/4W, ± 5%, Carbon	1	
R321	**ERD25TJ124**	120kΩ, 1/4W, ± 5%, Carbon	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
R322	**ERD25TJ473**	47kΩ, 1/4W, ± 5%, Carbon	1	
R323	**ERD25TJ333**	33kΩ, 1/4W, ± 5%, Carbon	1	
R324	**ERD25TJ824**	820kΩ, 1/4W, ± 5%, Carbon	1	
R325	**ERD25TJ123**	12kΩ, 1/4W, ± 5%, Carbon	1	
R351	**ERD25TJ153**	15kΩ, 1/4W, ± 5%, Carbon	1	
R352	**ERD25TJ473**	47kΩ, 1/4W, ± 5%, Carbon		
R353	**ERD25TJ563**	56kΩ, 1/4W, ± 5%, Carbon	1	
R355	**ERD25TJ103**	10kΩ, 1/4W, ± 5%, Carbon	1	
R356	**ERD25TJ683**	68kΩ, 1/4W, ± 5%, Carbon	1	
R357	**ERD25TJ222**	2.2kΩ, 1/4W, ± 5%, Carbon	1	
R358	**ERD25TJ682**	6.8kΩ, 1/4W, ± 5%, Carbon	1	
R359	**ERD25TJ222**	2.2kΩ, 1/4W, ± 5%, Carbon	1	
R360	**ERD25TJ561**	560Ω, 1/4W, ± 5%. Carbon	1	
R361	**ERD25TJ221**	220Ω, 1/4W, ± 5%, Carbon	1	
R362	**ERD25TJ562**	5.6kΩ, 1/4W, ± 5%, Carbon	1	
R363	**ERD25TJ104**	100kΩ, 1/4W, ± 5%, Carbon	1	
R364	**ERD25TJ101**	100Ω, 1/4W, ± 5%, Carbon	1	
R365	**ERD25TJ472**	4.7kΩ, 1/4W, ± 5%, Carbon	1	
R366	**ERD25TJ473**	47kΩ, 1/4W, ± 5%, Carbon	1	
R401	**ERD25TJ332**	3.3kΩ, 1/4W, ± 5%, Carbon	1	
R402	**ERD25TJ101**	100Ω, 1/4W, ± 5%, Carbon	1	
R403	**ERD25TJ220**	22Ω, 1/4W, ± 5%, Carbon	1	
R404	**ERD25TJ151**	150Ω, 1/4W, ± 5%, Carbon	1	
R405	**ERD25TJ102**	1kΩ, 1/4W, ± 5%, Carbon	1	
R406	**ERD25TJ332**	3.3kΩ, 1/4W, ± 5%, Carbon	1	
R407	**ERD25TJ821**	820Ω, 1/4W, ± 5%, Carbon	1	
R408	**ERD25TJ121**	120Ω, 1/4W, ± 5%, Carbon	1	
R409	**ERD25TJ103**	10kΩ, 1/4W ± 5%, Carbon	1	
R410	**ERD25TJ182**	1.8kΩ, 1/4W, ± 5%, Carbon	1	
R411	**ERD25TJ121**	120Ω, 1/4W, ± 5%, Carbon	1	
R412	**ERD25TJ562**	5.6kΩ, 1/4W, ± 5%, Carbon	1	
R413	**ERD25TJ101**	100Ω, 1/4W, ± 5%, Carbon	1	
R414	**ERD25TJ121**	120Ω, 1/4W, ± 5%, Carbon	1	
R415	**ERD25TJ153**	15kΩ, 1/4W, ± 5%, Carbon	1	
R416	**ERD25TJ682**	6.8kΩ, 1/4W, ± 5%, Carbon	1	
R417	**ERD25TJ104**	100kΩ, 1/4W, ± 5%, Carbon	1	
R418	**ERD25TJ223**	22kΩ, 1/4W, ± 5%, Carbon	1	
R420	**ERD25TJ562**	5.6kΩ, 1/4W, ± 5%, Carbon	1	
R421	**ERD25TJ103**	10kΩ, 1/4W, ± 5%, Carbon	1	
R422	**ERD25TJ820**	82Ω, 1/4W, ± 5%, Carbon	1	
R502	**ERD25TJ332**	3.3kΩ, 1/4W, ± 5%, Carbon	1	
R503	**ERD25TJ103**	10kΩ, 1/4W, ± 5%, Carbon	1	
R504	**ERD25TJ103**	10kΩ, 1/4W, ± 5%, Carbon	1	
R505	**ERD25TJ473**	47kΩ, 1/4W, ± 5%, Carbon	1	
R506	**ERD25TJ333**	33kΩ, 1/4W, ± 5%, Carbon	1	
R507	**ERD25TJ224**	220kΩ, 1/4W, ± 5%, Carbon	1	
R520	**ERD25TJ153**	15kΩ, 1/4W, ± 5%, Carbon	1	
R521	**ERD25TJ103**	10kΩ, 1/4W, ± 5%, Carbon	1	
R522	**ERD25TJ103**	10kΩ, 1/4W, ± 5%, Carbon	1	
R523	**ERD25TJ103**	10kΩ, 1/4W, ± 5%, Carbon	1	
R524	**ERD25TJ824**	820kΩ, 1/4W, ± 5%, Carbon	1	
R525	**ERD25TJ103**	10kΩ, 1/4W, ± 5%, Carbon	1	
R526	**ERD25TJ473**	47kΩ, 1/4W, ± 5%, Carbon	1	
R527	**ERD25TJ104**	100kΩ, 1/4W, ± 5%, Carbon	1	
R528	**ERD25TJ104**	100kΩ, 1/4W, ± 5%, Carbon	1	
R529	**ERD25TJ224**	220kΩ, 1/4W, ± 5%, Carbon	1	
R541	**ERD25TJ223**	22kΩ, 1/4W, ± 5%, Carbon	1	
R542	**ERD25TJ333**	33kΩ, 1/4W, ± 5%, Carbon	1	
R543	**ERD25TJ223**	22kΩ, 1/4W, ± 5%, Carbon	1	
R544	**ERD25TJ683**	68kΩ, 1/4W, ± 5%, Carbon	1	
R545	**ERD25TJ104**	100kΩ, 1/4W, ± 5%, Carbon	1	

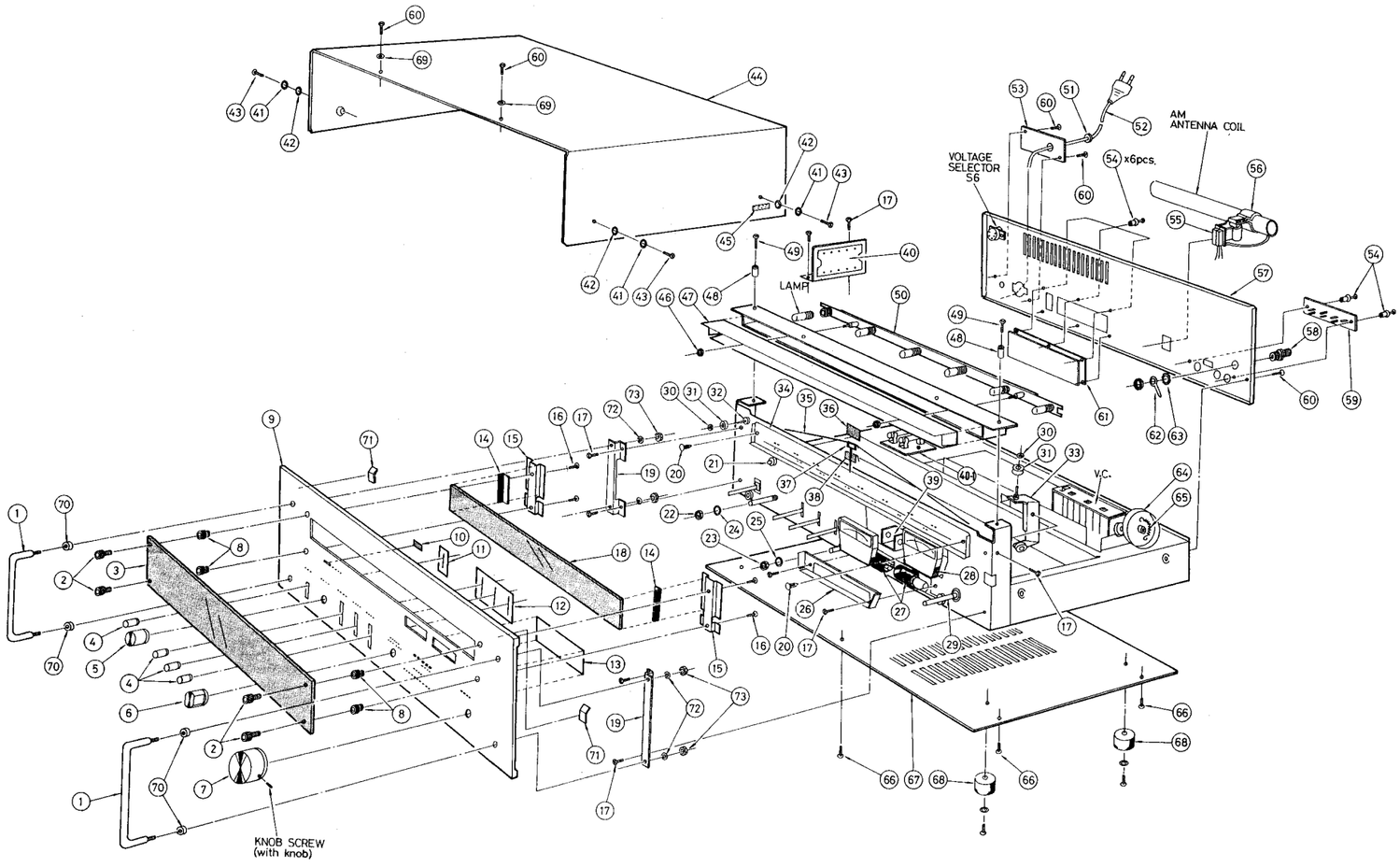
Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
R546	**ERD25TJ123**	12kΩ 1/4W, ± 5%, Carbon	1	
R561	**ERD25TJ154**	150kΩ, 1/4W, ± 5%, Carbon	1	
R567	**ERD25TJ822**	8.2kΩ, 1/4W, ± 5%, Carbon	1	
R568	**ERD25TJ473**	47kΩ, 1/4W, ± 5%, Carbon	1	
R569	**ERD25TJ152**	1.5kΩ, 1/4W, ± 5%, Carbon	1	
R570	**ERD25TJ123**	12kΩ, 1/4W, ± 5%, Carbon	1	
R571	**ERD25TJ5R6**	5.6Ω, 1/4W, ± 5%, Carbon	1	
R601	**ERD25TJ153**	15kΩ, 1/4W, ± 5%, Carbon	1	
R602	**ERD25TJ472**	4.7kΩ, 1/4W, ± 5%, Carbon	1	
R603	**ERD25TJ562**	5.6kΩ, 1/4W, ± 5%, Carbon	1	
R604	**ERD25TJ222**	2.2kΩ, 1/4W, ± 5%, Carbon	1	
R605	**ERD25TJ103**	10kΩ, 1/4W, ± 5%, Carbon	1	
R606	**ERD25TJ223**	22kΩ, 1/4W, ± 5%, Carbon	1	
R607	**ERD25TJ103**	10kΩ, 1/4W, ± 5%, Carbon	1	
R608	**ERD25TJ101**	100Ω, 1/4W, ± 5%, Carbon	1	
R609	**ERD25TJ472**	4.7kΩ, 1/4W, ± 5%, Carbon	1	
R610	**ERD25TJ472**	47kΩ, 1/4W, ± 5%, Carbon	1	
R611	**ERD25TJ472**	4.7kΩ 1/4W, ± 5%, Carbon	1	
R612	**ERD25TJ183**	18kΩ, 1/4W, ± 5%, Carbon	1	
R613	**ERD25TJ102**	1kΩ, 1/4W, ± 5%, Carbon	1	
R614	**ERD25TJ474**	470kΩ, 1/4W, ± 5%, Carbon	1	
R615	**ERD25TJ472**	4.7kΩ, 1/4W, ± 5%, Carbon	1	
R616	**ERD25TJ822**	8.2kΩ, 1/4W, ± 5%, Carbon	1	
R617	**ERD25TJ122**	1.2kΩ, 1/4W, ± 5%, Carbon	1	
R618	**ERD25TJ122**	1.2kΩ, 1/4W, ± 5%, Carbon	1	
R619	**ERD25TJ682**	6.8kΩ, 1/4W, ± 5%, Carbon	1	
R620	**ERD25TJ104**	100kΩ, 1/4W, ± 5%, Carbon	1	
R621	**ERD25TJ221**	220Ω, 1/4W, ± 5%, Carbon	1	
R622	**ERD25TJ103**	10kΩ, 1/4W, ± 5%, Carbon	1	
R623	**ERD25TJ103**	10kΩ, 1/4W, ± 5%, Carbon	1	
R624	**ERD25TJ473**	47kΩ, 1/4W, ± 5%, Carbon	1	
R625	**ERD25TJ152**	1.5kΩ, 1/4W, ± 5%, Carbon	1	
R626	**ERD25TJ103**	10kΩ, 1/4W, ± 5%, Carbon	1	
R627	**ERD25TJ273**	27kΩ, 1/4W, ± 5%, Carbon	1	
R628	**ERD25TJ683**	68kΩ, 1/4W, ± 5%, Carbon	1	
R629	**ERD25TJ473**	47kΩ, 1/4W, ± 5%, Carbon	1	
R630	**ERD25TJ562**	5.6kΩ, 1/4W, ± 5%, Carbon	1	
R631	**ERD25TJ104**	100kΩ, 1/4W, ± 5%, Carbon	1	
R632	**ERD25TJ472**	4.7kΩ, 1/4W, ± 5%, Carbon	1	
R633	**ERD25TJ823**	82kΩ, 1/4W, ± 5%, Carbon	1	
R634	**ERD25TJ122**	1.2kΩ, 1/4W, ± 5%, Carbon	1	
R635	**ERD25TJ391**	390Ω, 1/4W, ± 5%, Carbon	1	
R636	**ERD25TJ103**	10kΩ, 1/4W, ± 5%, Carbon	1	
R637	**ERD25TJ221**	220Ω, 1/4W, ± 5%, Carbon	1	
R638	**ERD25TJ393**	39kΩ, 1/4W, ± 5%, Carbon	1	
R639	**ERD25TJ104**	100kΩ, 1/4W, ± 5%, Carbon	1	
R640	**ERD25TJ152**	1.5kΩ. 1/4W, ± 5%, Carbon	1	
R641	**ERD25TJ152**	1.5kΩ. 1/4W, ± 5%, Carbon	1	
R642	**ERD25TJ472**	4.7kΩ, 1/4W, ± 5%, Carbon	1	
R643	**ERD25TJ472**	4.7kΩ, 1/4W, ± 5%, Carbon	1	
R644	**ERD25TJ473**	47kΩ, 1/4W, ± 5%, Carbon	1	
R645	**ERD25TJ223**	22kΩ, 1/4W, ± 5%, Carbon	1	
R701	**ERD25TJ333**	33kΩ, 1/4W, ± 5%, Carbon	1	
R702	**ERD25TJ333**	33kΩ, 1/4W, ± 5%, Carbon	1	
R703	**ERD25TJ223**	22kΩ, 1/4W, ± 5%, Carbon	1	
R704	**ERD25TJ223**	22kΩ, 1/4W, ± 5%, Carbon	1	
R705	**ERD25TJ472**	4.7kΩ, 1/4W, ± 5%, Carbon	1	
R706	**ERD25TJ472**	4.7kΩ, 1/4W, ± 5%, Carbon	1	
R707	**ERD25TJ472**	4.7kΩ, 1/4W, ± 5%, Carbon	1	
R708	**ERD25TJ472**	4.7kΩ, 1/4W, ± 5%, Carbon	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
R711	**ERD25TJ104**	100kΩ, 1/4W, ± 5%, Carbon	1	
R712	**ERD25TJ104**	100kΩ, 1/4W, ± 5%, Carbon	1	
R713	**ERD25TJ101**	100Ω, 1/4W, ± 5%, Carbon	1	
R715	**ERD25TJ104**	100kΩ, 1/4W, ± 5%, Carbon	1	
R716	**ERD25TJ104**	100kΩ, 1/4W, ± 5%, Carbon	1	
R717	**ERD25TJ124**	120kΩ, 1/4W, ± 5%, Carbon	1	
R718	**ERD25TJ124**	120kΩ, 1/4W, ± 5%, Carbon	1	
R719	**ERD25TJ103**	10kΩ, 1/4W, ± 5%, Carbon	1	
R720	**ERD25TJ103**	10kΩ, 1/4W, ± 5%, Carbon	1	
R721	**ERD25TJ153**	15kΩ, 1/4W, ± 5%, Carbon	1	
R722	**ERD25TJ153**	15kΩ 1/4W, ± 5%, Carbon	1	
R723	**ERD25TJ821**	820Ω, 1/4W, ± 5%, Carbon	1	
R724	**ERD25TJ821**	820Ω, 1/4W, ± 5%, Carbon	1	
R725	**ERD25TJ333**	33kΩ, 1/4W, ± 5%, Carbon	1	
R726	**ERD25TJ563**	56kΩ, 1/4W, ± 5%, Carbon	1	
R727	**ERD25TJ223**	22kΩ, 1/4W, ± 5%, Carbon	1	
R728	**ERD25TJ563**	56kΩ, 1/4W, ± 5%, Carbon	1	
R801	**ERD25TJ102**	1kΩ, 1/4W, ± 5%, Carbon	1	
R802	**ERD25TJ104**	100kΩ, 1/4W, ± 5%, Carbon	1	
R803	**ERD25TJ104**	100kΩ, 1/4W, ± 5%, Carbon	1	
R804	**ERD25TJ104**	100kΩ, 1/4W, ± 5%, Carbon	1	
R805	**ERD25TJ122**	1.2kΩ, 1/4W, ± 5%, Carbon	1	
R806	**ERD25TJ122**	1.2kΩ, 1/4W, ± 5%, Carbon	1	
R807	**ERD25TJ104**	100kΩ, 1/4W, ± 5%, Carbon	1	
R808	**ERD25TJ104**	100kΩ, 1/4W, ± 5%, Carbon	1	
R809	**ERD25TJ683**	68kΩ, 1/4W, ± 5%, Carbon	1	
R810	**ERD25TJ683**	68kΩ, 1/4W, ± 5%, Carbon	1	
R811	**ERD25TJ101**	100Ω, 1/4W, ± 5%, Carbon	1	
R812	**ERD25TJ101**	100Ω, 1/4W, ± 5%, Carbon	1	
R813	**ERD25TJ561**	560Ω, 1/4W, ± 5%, Carbon	1	
R814	**ERD25TJ561**	560Ω, 1/4W, ± 5%, Carbon	1	
R815	**ERD25TJ331**	330Ω, 1/4W, ± 5%, Carbon	1	
R816	**ERD25TJ331**	330Ω, 1/4W, ± 5%, Carbon	1	
R817	**ERD25TJ152**	1.5kΩ, 1/4W, ± 5%, Carbon	1	
R818	**ERD25TJ152**	1.5kΩ, 1/4W, ± 5%, Carbon	1	
R819	**ERD25TJ273**	27kΩ, 1/4W, ± 5%, Carbon	1	
R820	**ERD25TJ273**	27kΩ, 1/4W, ± 5%, Carbon	1	
R821	**ERD25TJ103**	10kΩ, 1/4W, ± 5%, Carbon	1	
R822	**ERD25TJ103**	10kΩ, 1/4W, ± 5%, Carbon	1	
R824	**ERD25TJ473**	47kΩ, 1/4W, ± 5%, Carbon	1	
R825	**ERD25TJ272**	2.7kΩ, 1/4W, ± 5%, Carbon	1	
R826	**ERD25TJ562**	5.6kΩ, 1/4W, ± 5%, Carbon	1	
R921	ERD12TJ3R9	3.9Ω, 1/2W, ± 5%, Carbon	1	
R922	**ERD25TJ102**	1kΩ, 1/4W, ± 5%, Carbon	1	
R923	**ERD25TJ561**	560Ω, 1/4W, ± 5%, Carbon	1	
R951	**ERD25TJ332**	3.3kΩ, 1/4W, ± 5%, Carbon	1	
R952	**ERD25TJ124**	120kΩ, 1/4W, ± 5%, Carbon	1	
R953	**ERD25TJ683**	68kΩ, 1/4W, ± 5%, Carbon	1	
R954	**ERD25TJ684**	680kΩ, 1/4W, ± 5%, Carbon	1	
R955	**ERD25TJ683**	68kΩ, 1/4W, ± 5%, Carbon	1	
R956	**ERD25TJ683**	68kΩ, 1/4W, ± 5%, Carbon	1	
R957	**ERD25TJ223**	22kΩ, 1/4W, ± 5%, Carbon	1	
R958	**ERD25TJ561**	560Ω, 1/4W, ± 5%, Carbon	1	
R959	**ERD25TJ473**	47kΩ, 1/4W, ± 5%, Carbon	1	
R960	**ERD25TJ222**	2.2kΩ, 1/4W, ± 5%, Carbon	1	
R961	**ERD25TJ822**	8.2kΩ, 1/4W, ± 5%, Carbon	1	
R962	**ERD25TJ273**	27kΩ, 1/4W, ± 5%, Carbon	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
		VARIABLE RESISTORS		
VR351, 562, 563, 601	EVLS3AA00B14	10kΩ (B), Pink Noise, Muting & PLL VCO Adjustment	4	
VR561, 801	EVLS3AA00B24	20kΩ (B), Meter & Separation Adj.	2	
VR602	EVLS3AA00B55	500kΩ (B), Leak Carrier Adjustment	1	
VR603	EVLS3AA00B53	5kΩ (B), Leak Carrier Adjustment	1	
VR701	EVLS3AA00B54	50kΩ (B), Rec Out Separation Adj.	1	
VR802, 803	EWF47AF30B14	10kΩ (B), Output Level Control	1	
		CAPACITORS		
C1	ECCD1H150KC	15pF, 50WV, ±10%, Ceramic	1	
C2	ECCD1H010CC	1pF, 50WV, ±0.25pF Ceramic	1	
C3	ECCD1H120KC	12pF, 50WV, ±10%, Ceramic	1	
C5	ECKD1H102MDA	0.001μF, 50WV, ±20%, Ceramic	1	
C6	**ECEA16N4R7**	4.7μF, 16WV, Non-Polar Electrolytic	1	
C7	ECCD1H101K	100pF, 50WV, ±10% Ceramic	1	
C8	ECCD1H120KC	12pF, 50WV, ±10%, Ceramic	1	
C9	ECGN5R75K	0.75pF, 500WV, ±10%, Ceramic	1	
C10	ECCD1H120KC	12pF, 50WV, ±10%, Ceramic	1	
C11	ECCD1H820K	82pF, 50WV, ±10%, Ceramic	1	
C12	ECCD1H560KR	56pF, 50WV, ±10%, Ceramic	1	
C13	ECKD1H102MDA	0.001μF, 50WV, ±20%, Ceramic	1	
C15	ECCD1H050CC	5pF, 50WV, ±0.25pF, Ceramic	1	
C16	ECCD1H050CT	5pF, 50WV, ±10%, Ceramic	1	
C17	ECCD1H150KC	15pF, 50WV, ±10%, Ceramic	1	
C18	ECCD1H150KC	15pF, 50WV, ±10%, Ceramic	1	
C19	ECCD1H390KC	39pF, 50WV, ±10%, Ceramic	1	
C20	ECKD1H102MDA	0.001μF, 50WV, ±20%, Ceramic	1	
C21	ECCD1H040CC	4pF, 50WV, ±0.25pF, Ceramic	1	
C22	ECKD1H102MDA	0.001μF, 50WV, ±20%, Ceramic	1	
C23	ECKD1H102MDA	0.001μF, 50WV, ±20%, Ceramic	1	
C24	ECKD1H102MDA	0.001μF, 50WV, ±20%, Ceramic	1	
C25	ECKD1H102PF	0.001μF, 50WV, +100 −0%, Ceramic	1	
C26	ECKD1H102MDA	0.001μF, 50WV, ±20%, Ceramic	1	
C27	ECCD1H220KC	22pF, 50WV, ±10%, Ceramic	1	
C101	ECQM05273KZ	0.027μF, 50WV, ±10%, Polyester	1	
C102	ECQM05273KZ	0.027μF, 50WV, ±10%, Polyester	1	
C103	ECQM05273KZ	0.027μF, 50WV, ±10% Polyester	1	
C104	ECKD1H102PF	0.001μF, 50WV, +100 −0%, Ceramic	1	
C105	ECQM05273KZ	0.027μF, 50WV, ±10%, Polyester	1	
C106	ECQM05273KZ	0.027μF, 50WV, ±10%, Polyester	1	
C107	ECQM05273KZ	0.027μF, 50WV, ±10%, Polyester	1	
C108	ECQM05273KZ	0.027μF, 50WV, ±10%, Polyester	1	
C109	ECQM05273KZ	0.027μF, 50WV, ±10%, Polyester	1	
C110	ECQM05273KZ	0.027μF, 50WV, ±10%, Polyester	1	
C111	ECQM05273KZ	0.027μF, 50WV, ±10%, Polyester	1	
C113	ECKD1H102PF	0.001μF, 50WV, +100 −0%, Ceramic	1	
C114	ECQM05273KZ	0.027μF, 50WV, ±10%, Polyester	1	
C115	ECQM05273KZ	0.027μF, 50WV, ±10%, Polyester	1	
C116	ECQM05273KZ	0.027μF, 50WV, ±10%, Polyester	1	
C118	ECCD1H470KC	47pF, 50WV, ±10%, Ceramic	1	
C119	ECCD1H101K	100pF, 50WV, ±10%, Ceramic	1	
C201	ECCD1H390KC	39pF, 50WV, ±10%, Ceramic	1	
C202	**ECEA16V10V**	10μF, 16WV, Electrolytic	1	
C203	ECQM05273KZ	0.027μF, 50WV, ±10%, Polyester	1	
C204	ECQM05273KZ	0.027μF, 50WV, ±10%, Polyester	1	
C205	ECQM05102KZ	0.001μF, 50WV, ±10%, Polyester	1	
C206	ECQM05102KZ	0.001μF, 50WV, ±10%, Polyester	1	
C208	ECCD1H680K	68pF, 50WV, ±10%, Ceramic	1	
C209	ECCD1H180KC	18pF, 50WV, ±10%, Ceramic	1	
C210	ECQM05223KZ	0.022μF, 50WV, ±10%, Polyester	1	
C211	ECKD1H102PF	0.001μF, 50WV, +100 −0%, Ceramic	1	
C213	ECQM05223KZ	0.022μF, 50WV, ±10%, Polyester	1	
C214	ECQM05223KZ	0.022μF, 50WV, ±10%, Polyester	1	
C217	ECKD1H223PF	0.022μF, 50WV, +100 −0%, Ceramic	1	
C218	ECQM05223KZ	0.022μF, 50WV, ±10%, Polyester	1	
C251	ECCD1H050CC	5pF, 50WV, ±0.25pF, Ceramic	1	
C252	ECQM05273KZ	0.027μF, 50WV, ±10%, Polyester	1	
C253	ECQM05273KZ	0.027μF, 50WV, ±10%, Polyester	1	
C254	ECCD1H180KC	18pF, 50WV, ±10%, Ceramic	1	
C255	ECKD1H102PF	0.001μF, 50WV, +100 −0%, Ceramic	1	
C256	ECQM05223KZ	0.022μF, 50WV, ±10%, Polyester	1	
C301	ECCD1H150KC	15pF, 50WV, ±10%, Ceramic	1	
C302	**ECEA16V100V**	100μF, 16WV, Electrolytic	1	
C303	ECCD1H070DC	7pF, 50WV, ±0.5pF, Ceramic	1	
C304	**ECEA16V100V**	100μF, 16WV, Electrolytic	1	
C305	**ECEA16N10V**	10μF, 16WV, Non-Polar Electrolytic	1	
C311	**ECEA16V33V**	33μF, 16WV, Electrolytic	1	
C312	ECEA50NR47	0.47μF, 50WV, Non-Polar Electrolytic	1	
C313	**ECEA16V220V**	220μF, 16WV, Electrolytic	1	
C314	ECQM05223KZ	0.022μF, 50WV, ±10%, Polyester	1	
C351	**ECEA50V1V**	1μF, 50WV, Electrolytic	1	
C353	**ECEA50MR68**	0.68μF, 50WV, Electrolytic	1	
C354	**ECEA50MR22**	0.22μF, 50WV, Electrolytic	1	
C355	ECQM05563KZ	0.056μF, 50WV, ±10%, Polyester	1	
C356	**ECEA50V1V**	1μF, 50WV, Electrolytic	1	
C357	**ECEA50V1V**	1μF, 50WV, Electrolytic	1	
C402	ECKD1H223PF	0.022μF, 50WV, +100 −0%, Ceramic	1	
C403	ECKD1H223PF	0.022μF, 50WV, +100 −0%, Ceramic	1	
C404	**ECEA50V1V**	1μF, 50WV, Electrolytic	1	
C405	ECQM05223KZ	0.022μF, 50WV, ±10%, Polyester	1	
C406	ECCD1H050CC	5pF, 50WV, ±0.25pF, Ceramic	1	
C407	ECQM05223KZ	0.022μF, 50WV, ±10%, Polyester	1	
C408	ECKD1H103MD	0.01μF, 50WV, ±20%, Ceramic	1	
C409	ECQM05223KZ	0.022μF, 50WV, ±10%, Polyester	1	
C410	ECQM05103KZ	0.01μF, 50WV, ±10%, Polyester	1	
C411	ECCD1H120KC	12pF, 50WV, ±10%, Ceramic	1	
C412	ECQS1361JZ	360pF 125WV, ± 5%, Styrol	1	
C413	ECKD1H223PF	0.022μF, 50WV, +100 −0%, Ceramic	1	
C414	ECKD1H223PF	0.022μF, 50WV, +100 −0%, Ceramic	1	
C416	**ECEA35V4R7V**	4.7μF, 35WV, Electrolytic	1	
C417	ECKD1H223PF	0.022μF, 50WV, +100 −0%, Ceramic	1	
C418	**ECEA35V4R7V**	4.7μF, 35WV, Electrolytic	1	
C419	ECKD1H223PF	0.022μF 50WV, +100 −0%, Ceramic	1	
C420	**ECEA35V4R7V**	4.7μF, 35WV, Electrolytic	1	
C421	ECCD1H470KC	47pF, 50WV, ±10%, Ceramic	1	
C424	ECQM05563KZ	0.056μF, 50WV, ±10%, Polyester	1	
C427	ECQM05223KZ	0.022μF, 50WV, ±10%, Polyester	1	
C428	ECCD1H020CC	2pF, 50WV, ±0.25pF, Ceramic	1	
C502	**ECEA35V4R7V**	4.7μF, 35WV, Electrolytic	1	
C503	**ECEA50V1V**	1μF, 50WV, Electrolytic	1	
C504	**ECEA16V10V**	10μF, 16WV, Electrolytic	1	
C521	ECQM05273KZ	0.027μF, 50WV, ±10%, Polyester	1	
C522	ECQM05473KZ	0.047μF, 50WV, ±10% Polyester	1	
C523	**ECEA16V10V**	10μF, 16WV, Electrolytic	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
C541	**ECEA16N4R7V**	4.7μF 16WV, Non-Polar Electrolytic	1	
C543	**ECEA16N4R7V**	4.7μF, 16WV, Non-Polar Electrolytic	1	
C561	**ECEA16N4R7V**	4.7μF, 16WV, Non-Polar Electrolytic	1	
C562	ECQM05273KZ	0.027μF, 50WV, ±10%, Polyester	1	
C563	**ECEA6V330V**	330μF, 6.3WV, Electrolytic	1	
C601	**ECEA35V4R7V**	4.7μF, 35WV, Electrolytic	1	
C602	ECQS1471JZ-K	470pF, 125WV, ± 5%, Styrol	1	
C603	**ECEA50MR33**	0.33μF, 50WV, Electrolytic	1	
C604	**ECEA50MB33**	0.33μF, 50WV, Electrolytic	1	
C606	ECQM05472KZ	0.004μF, 50WV, ±10%, Polyester	1	
C607	**ECEA50MR47**	0.47μF, 50WV, Electrolytic	1	
C608	**ECEA35V4R7V**	4.7μF, 35WV, Electrolytic	1	
C609	**ECEA35V4R7V**	4.7μF, 35WV, Electrolytic	1	
C610	ECQM05393KZ	0.039μF, 50WV, ±10%, Polyester	1	
C611	ECQM05393KZ	0.039μF, 50WV, ±10%, Polyester	1	
C612	ECQM05472KZ	0.0047μF, 50WV, ±10%, Polyester	1	
C613	ECQM05472KZ	0.0047μF, 50WV, ±10%, Polyester	1	
C614	**ECEA50V1V**	1μF, 50WV, Electrolytic	1	
C615	**ECEA50V1V**	1μF, 50WV, Electrolytic	1	
C617	**ECEA16N4R7V**	4.7μF, 16WV, Non-Polar Electrolytic	1	
C618	ECQM05273KZ	0.027μF, 50WV, ±10%, Polyester	1	
C619	**ECEA16V47V**	47μF, 16WV, Electrolytic	1	
C620	**ECEA16V1000V**	1000μF, 16WV, Electrolytic	1	
C621	**ECEA16V1000V**	1000μF, 16WV, Electrolytic	1	
C701	**ECEA35V4R7V**	4.7μF, 35WV, Electrolytic	1	
C702	**ECEA35V4R7V**	4.7μF, 35WV, Electrolytic	1	
C703	**ECEA35V4R7V**	4.7μF, 35WV, Electrolytic	1	
C704	**ECEA35V4R7V**	4.7μF, 35WV, Electrolytic	1	
C705	**ECEA35V4R7V**	4.7μF, 35WV, Electrolytic	1	
C706	**ECEA35V4R7V**	4.7μF, 35WV, Electrolytic	1	
C707	**ECEA35V4R7V**	4.7μF, 35WV Electrolytic	1	
C708	**ECEA35V4R7V**	4.7μF, 35WV, Electrolytic	1	
C709	**ECEA16V100V**	100μF, 16WV, Electrolytic	1	
C710	**ECEA35V4R7V**	4.7μF, 35WV, Electrolytic	1	
C711	**ECEA35V4R7V**	4.7μF, 35WV, Electrolytic	1	
C712	**ECEA35V4R7V**	4.7μF, 35WV, Electrolytic	1	
C801	**ECEA16V100V**	100μF, 16WV, Electrolytic	1	
C802	ECKD1H331KB	330pF, 50WV, ±10%, Ceramic	1	
C803	ECKD1H331KB	330pF, 50WV, ±10%, Ceramic	1	
C804	ECCD1H470KC	47pF, 50WV, ±10%, Ceramic	1	
C805	ECCD1H470KC	47pF, 50WV, ±10%, Ceramic	1	
C806	**ECEA16N4R7V**	4.7μF, 16WV, Non-Polar Electrolytic	1	
C807	**ECEA16N4R7V**	4.7μF 16WV, Non-Polar Electrolytic	1	
C808	**ECEA16V100V**	100μF, 16WV, Electrolytic	1	
C809	ECQM05103KZ	0.01μF, 50WV, ±10%, Polyester	1	
C810	ECQM05103KZ	0.01μF, 50WV, ±10%, Polyester	1	
C811	ECQM05393KZ	0.039μF, 50WV, ±10%, Polyester	1	
C812	ECQM05393KZ	0.039μF, 50WV, ±10%, Polyester	1	
C813	**ECEA35V4R7V**	4.7μF, 35WV, Electrolytic	1	
C814	**ECEA35V4R7V**	4.7μF, 35WV, Electrolytic	1	
C921	**ECEA16V1000V**	1000μF, 16WV, Electrolytic	1	
C922	**ECEA25V1000V**	1000μF, 25WV, Electrolytic	1	
C923	**ECEA25V1000V**	1000μF, 25WV, Electrolytic	1	
C924	**ECEA16V470V**	470μF, 16WV, Electrolytic	1	
C925	**ECEA16V100V**	100μF, 16WV, Electrolytic	1	
C926	**ECEA16V100V**	100μF, 16WV, Electrolytic	1	
C927	**ECEA25V470V**	470μF, 25WV, Electrolytic	1	
C928	**ECEA16V100V**	100μF, 16WV, Electrolytic	1	
C951	**ECEA50MR33**	0.33μF, 50WV, Electrolytic	1	
C952	**ECEA16V33V**	33μF, 16WV, Electrolytic	1	
C953	**ECEA35V4R7V**	4.7μF, 35WV, Electrolytic	1	
C954	**ECEA50V1V**	1μF, 50WV, Electrolytic	1	
C955	**ECEA16V10L**	10μF, 16WV, Electrolytic	1	
		VARIABLE CAPACITORS		
CV1, 2, 3, 4, 5, 401, 402, 403 (CT5, 401, 402, 403)	ECV8MX34X13G	Tuning Gang, FM & AM (with Trimmer)	1	O
CT1, 2, 3, 4	ECV1ZW10X32	Trimmer, FM RF & FM DET	4	
		COMPONENT COMBINATIONS		
Z101	EXA5DLO4C	FM Discriminator Circuit	1	
Z401	EXAF203Z471	AM Detector Circuit	1	
Z921, 922	RXAF103P22HD	Rectifier Circuit, Hum Cancel 0.01μF (X2)	2	
		LAMPS		
	XAMR53K	Dial & Meter Lamp, 6.3V 0.25A	8	
	XAMR38S150A	Stereo Indicator, 6.3V 40mA	1	
		FUSES ..... Set for [X], [XG], [XGH], [XSD], [XSW] & [XE]		
F1	XBA2C025TR0	250mA. T Fuse	1	O
F2, 3	XBA2C01TR0	10mA. T Fuse	2	O
F4	XBA2C10TR0	1A.T Fuse	1	O
F5	XBA2C25TR0	2.5A. T Fuse	1	
		FUSES ..... Set for Australia [XAL]		
F1	XBA2C01TR0	100mA. T Fuse	1	
F2	XBA2C10TR0	1A. T Fuse	1	
		SWITCHES		
S1	SSRA81	Selector Switch	1	
S2	SSL9S	Tape Recording/Playback Switch	1	
S3	SSLA29S	Muting/Servo Tuning Switch	1	
S4	SSLA21S	MPX Auto Hi-Blend Switch	1	
S5	SSL5S	Power Switch	1	
S6 [X, XG, XGH, XSD, XSW, XE]	ESE372	Voltage Selector Switch, Except Set for [XAL]	1	
		RELAY		
	SSY9	Relay, Muting	1	

■ CABINET AND CHASSIS PARTS LOCATION

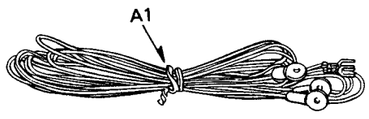


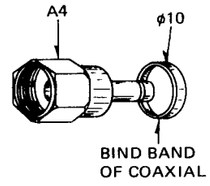
Ref. No.	Part No.	Part Name & Description	Per Set		Remarks
		METERS			
	SSM69	Meter, Signal Strength	1		
	SSM71	Meter, FM Tuning	1		
		CABINET and CHASSIS PARTS			
1	SKYA4	Handle, Front Panel	2		
2	SGXA73S	Screw, Ornament Glass Plate M'tg	4		
3	SGUA32	Glass Plate, Front Panel Ornament	1		
4	SBLA4-3	Knob, Lever Switches	4		
5	SBNA129	Knob, Output Level Control	1		
6	SBSA12	Knob, Selector Switch	1		
7	SBN611S	Knob, Tuning Control	1		○
8	SGXA72S	Nut, Ornament Glass Plate M'tg.	4		
9	SGW7390	Panel, Front	1		○
10	SDUA7-1	Orange Filter, Stereo Indicator	1		
11	SHGA656	Cover, Power Switch Lever	1		
12	SHG603	Cover, Hi-Blend, Muting & Rec Switch Lever	1		
13	SHP13	Paper, Meter Light Reflection	1		
14	SHGA972	Rubber Cushion, Dial Glass Plate	2		
15	SULA83-1	Metal Fitting, Dial Glass Plate M'tg.	2		
16	XYN3+C6S	Screw, Dial Glass Plate M'tg.	4		
17	XTV3+8C	Screw, Metal Fitting M'tg.	9		
18	SGUA33	Glass Plate, Dial	1		
19	SUW881-1	Metal Fitting, Front Panel M'tg.	2		
20	SHRA916-1	Lock Pin, Dial Scale	2		
21	SHGA204	Rubber Bracket, Stereo Indicator	1		
22	XNS8	Nut, Output Level Volume M'tg.	1		
23	XNS7	Nut, Selector Switch M'tg.	1		
24	XWV8	Spring Washer, Output Level Volume	1		
25	XWV7	Spring Washer, Selector Switch	1		
26	SDH317	Cover, Meter Lamp	1		○
27	RJV1A	Socket, Meter Lamp	2		
28	SDUA10-1	Blue Tape, Meter Light	2		
29	SDT9385S	Shaft, Tuning Ass'y (with Flywheel)	1		
30	RNW150-2	Washer, Pulley Lock	5		
31	RDR20	Pulley, Dial Cord	5		
32	RDY34	Shaft, Pulley	3		
33	SXE725S	Shaft, Dial Cord Ass'y	1		
34	SKD2550	Scale, Dial	1		○
35	SDZ051-1	Cord, Dial 78 3/4", (200cm)	1roll		
36	SHR573	Plastic Plate, Pointer	1		
37	SDPA7	Pointer, Dial	1		
38	SHPA4	Paper, Pointer Slide	1		
39	SMM1	Bracket, Meter	2		
40 [X, XG, XGH, XSD, XSW, XE]	SJFA3	Holder, Fuse (Except Set for [XAL])	1		
40-1 [XAL]	SJFA206	Holder, Fuse (Only Set for [XAL])	1		
41	XWA4BFZ	Spring Washer, Cabinet Screw	4		
42	XWG4FZ	Washer, Cabinet Screw	4		
43	XSB4+10FZS	Screw, Cabinet M'tg.	4		
44	SKA7930	Cabinet	1		
45	SQXA4067	Caution Label, Screw	2		
46	XNG3BS	Nut, Dial Lamp Socket M'tg.	2		
47	SHP11	Paper, Dial Light Reflection	1		○
48	SUD7-1	Sleeve, Lamp House Screw	2		
49	XTV3+16C	Screw, Lamp House M'tg.	2		
50	SJSA206	Socket, Dial Lamps	1		
51 [X, XG, XGH, XSD, XSW]	SHR127	Bushing, AC Cord (Set for [X], [XG], [XGH], [XSD] & [XSW])	1		
51 [XE, XAL]	SHR131	Bushing, AC Cord (Set for [XE] & [XAL])	1		
52 [X, XG]	SJA95	AC Cord, Set for [X] & [XG]	1		
52 [XGH, XSD]	SJA81	AC Cord, Set for [XGH] & [XSD]	1		
52 [XE]	SJA73	AC Cord, Set for [XE]	1		
52 [XAL]	SJA79	AC Cord, Set for [XAL]	1		
52 [XSW]	**SJA68**	AC Cord, Set for [XSW]	1		
53 [X, XG, XGH, XSD, XSW]	SGE361	Metal Clamp, AC Cord [Set for [X], [XG], [XGH], [XSD] & [XSW]	1		○
53 [XE, XAL]	SGE363	Metal Clamp, AC Cord (Set for [XE] & [XAL])	1		○
54	SHR401-1	Lock Pin, Input & Antenna Terminal	8		
55	SMA207	Holder, AM Antenna Coil	1		
56	SMA205	Holder, AM Antenna Coil,	1		
57 [X, XG, XGH, XE]	SGP190-3A	Rear Panel, Set for [X], [XG], [XGH] & [XE]	1		○
57 [XSD, XSW]	SGP190-3AD	Rear Panel, Set for [XSD] & [XSW] (with Name Plate [SGT12310]	1		○
57 [XAL]	SGP190-2AL	Rear Panel, Set for [XAL] (with Name Plate [SGT12830])	1		○
58	SJSA67-1	Socket, 75Ω FM Coaxial (with Nut)	1		
59	SJFA4402	Terminal, FM & AM Ext. Antenna	1		
60	XTB3+8BFZ	Screw, Rear Panel M'tg.	6		
61	SJF3011-1	Terminal, Output & Deck Connection	1		
62	SJTA201-1	Terminal, Ground Lead Wire	1		
63	XWD10A	Toothed Ring, Coaxial Socket	1		
64	SDD47-1	Drum, Dial Cord	1		
65	SDSA4121	Spring, Dial Cord	1		
66	XTB4+8BFYR	Screw, Bottom Board M'tg.	6		
67	SYU63	Bottom Board, with Feet	1		
68	SHGA303-1	Foot	4		
69	XWG3FZ	Washer, Cabinet M'tg Screw	2		
70	SGXA64	Bracket, Panel Handle	4		
71	SHG605	Rubber Cushion, Front Panel	2		
72	XWAR6BFZ	Washer, Panel Handle M'tg Nut	4		
73	XNGS6C01	Nut, Panel Handle M'tg	4		
[XAL]	SUE7	Plate, Voltage Selector Switch Hole Cover of Rear Panel, Only Set for [XAL]	1		
		ACCESSORIES			
A1	SSA251	Cord, FM 75Ω Antenna	1		
A2	SJP2129-5	Cord, Connection	1		
A3	SJSA74	Plug, Coaxial (with Bind Band) for "5C-2V"	1		
A4	SJSA68-1	Plug, Coaxial (with Bind Band) for "3C-2V"	1		
A5	SJPA11	Short Pin, with PLAYBACK Terminal of Rear Panel	2		
A6 [X]	SJP5213	AC Plug, Only Set for [X]	1		
		PACKING PARTS			
P1	SPPA27	Soft Cover	1		
P2	SPP465	Polyethylene Bag	1		
P3	SPS137-1	Pad, Right & Left Side	2		○
P4 [X, XAL]	SPN5165	Carton Box, Inner (Set for [X] & [XAL])	1		○
P4 [XG, XGH, XE, XSD, XSW]	SPG713	Carton Box, Set for [XG, [XGH], [XE], [XSD] & [XSW]	1		○
P5 [X, XAL]	SPG711	Carton Box, Outer (Set for [X] & [XAL])	1		○
P6 [X, XG, XGH,	SQF1263	Printed Matter, Set for [X], [XG], [XGH],	1		○

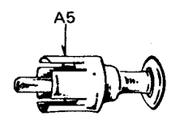
Ref. No.	Part No.	Part Name & Description	Per Set		Remarks
XSD, XSW] P6 [XE] P6 [X]	 SQF1265 SQF1403	[XSD] & [XSW] Printed Matter, Only Set for [XE] Printed Matter, Only Set for [X]	 1 1	 O O	

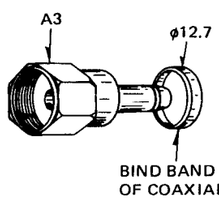
Notes: Set for [X] are European, Asia, Latin America, Oceania, Middle East and Africa.
Set for [XG] are European.
Set for [XGH] is Holland.
Set for [XSD] are Denmark, Sweden, Norway and Finland.
Set for [XSW] is Swiss,
Set for [XAL] is Australia.
Set for [XE] is England.

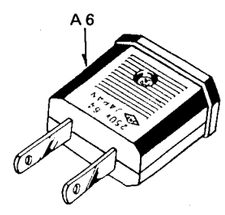
■ ACCESSORIES











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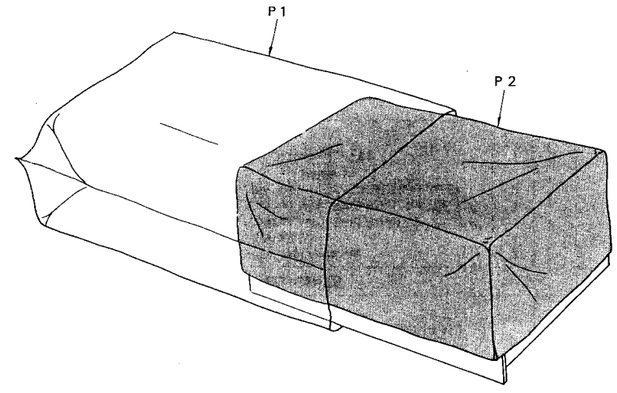

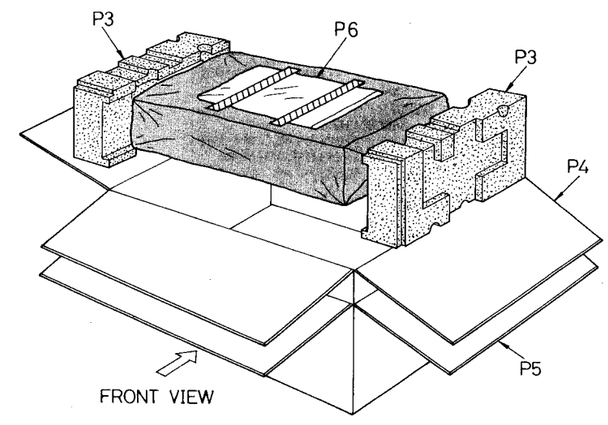

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