ORDER NO. SD8004-1724

Service Manual

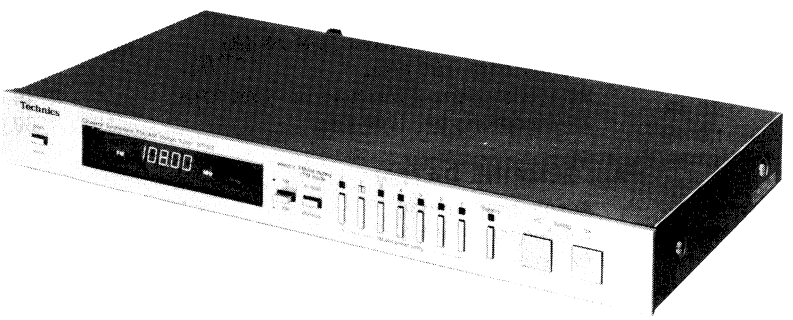
Quartz Synthesizer FM/AM Stereo Tuner

ST-S3

[E],[EG],[XGF],[XGH],
[EB],[XE],[XA],[XAL]

ST-S3(K)

[E],[EG],[XGH],
[XA],[XAL]



Areas

* [E] and [EG] are available in Scandinavia and European except Belgium, United Kingdom, Switzerland, Holland and France.
* [XGF] is available in France.
* [XGH] is available in Holland.
* [EB] is available in Belgium.
* [XE] is available in United Kingdom.
* [XA] is available in Asia, Latin America, Middle East and Africa.
* [XAL] is available in Australia.

*** The cabinet, front panel and knob are available in black color and silver types. The black type model is provided with (K) in the Service Manual.**

TECHNICAL SPECIFICATIONS

Specifications are subject to change without notice for further improvement.

[DIN 45 500]

FM TUNER SECTION

Frequency range	87.50~108.00 MHz
Sensitivity	1.9 μV (IHF, usable)
S/N 30 dB	1.9 μV (300Ω), 1.3 μV (75Ω)
S/N 26 dB	1.7 μV (300Ω), 1.2 μV (75Ω)
S/N 20 dB	1.5 μV (300Ω), 0.9 μV (75Ω)
IHF 46 dB stereo quieting sensitivity	25 μV/75Ω
Total harmonic distortion	
MONO	0.15%
STEREO	0.3%
S/N	
MONO	69 dB (75 dB, IHF)
STEREO	65 dB (70 dB, IHF)
Frequency response	20 Hz~15 kHz, +0.5 dB~ −1.5 dB
Alternate channel selectivity (±400 kHz)	75 dB
Capture ratio	1.0 dB
Image rejection at 98 MHz	65 dB
IF rejection at 98 MHz	100 dB
Spurious response rejection at 98 MHz	90 dB
AM suppression	55 dB
Stereo separation	
1 kHz	45 dB
10 kHz	35 dB
Carrier leak	
19 kHz	−35 dB (−37 dB, IHF)
38 kHz	−48 dB (−50 dB, IHF)
Channel balance (250 Hz~6,300 Hz)	±1.0 dB
Limiting point	1.2 μV
Power bandwidth	
IF amplifier	180 kHz
FM demodulator	1000 kHz
Antenna terminals	300Ω (balanced) 75Ω (unbalanced)

AM TUNER SECTION

Frequency range	531~1602 kHz
Sensitivity (S/N 20 dB)	30 μV, 350 μV/m
Selectivity (±9 kHz)	55 dB
Image rejection at 1,000 kHz	45 dB
IF rejection at 1,000 kHz	50 dB

GENERAL

Output voltage	0.3 V (0.6 V, IHF)
Power consumption	12W
Batteries for memory back-up (optional)	three "AA" size batteries DC 4.5V
Power supply	AC 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (W×H×D)	430 × 53 × 240 mm (16-15/16" × 2-3/32" × 9-7/16")
Weight	2.8 kg (6.2 lb.)

Technics

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

TECHNISCHE DATEN

Spezifikationen können infolge von Verbesserungen ohne Ankündigung geändert werden.

[DIN 45 500]

UKW-TUNERTEIL

Wellenbereich	87,50 ~ 108,00 MHz
Eingangsempfindlichkeit	1,9 µV (nutzbar nach IHF)
S/R 30 dB	1,9 µV (300 Ω), 1,3 µV (75 Ω)
S/R 26 dB	1,7 µV (300 Ω), 1,2 µV (75 Ω)
S/R 20 dB	1,5 µV (300 Ω), 0,9 µV (75 Ω)
Stereoumschaltschwelle bei 46 dB nach IHF	25 µV/75 Ω
Gesamtklirrfaktor	
Mono	0,15%
Stereo	0,3%
Geräuschabstand	
Mono	69 dB (75 dB nach IHF)
Stereo	65 dB (70 dB nach IHF)
Frequenzgang	20 Hz ~ 15 kHz (+0,5 dB ~ −1,5 dB)
Trennschärfe bei Störsender (±400 kHz)	75 dB
Einfangverhältnis	1,0 dB
Spiegelfrequenz-Dämpfung bei 98 MHz	65 dB
ZF-Dämpfung bei 98 MHz	100 dB
Ansprechdämpfung auf Nebenfrequenzen bei 98 MHz	90 dB
AM-Unterdrückung	55 dB
Übersprechdämpfung	
1 kHz	45 dB
10 kHz	35 dB
Trägerrest	
19 kHz	−35 dB (−37 dB nach IHF)
38 kHz	−48 dB (−50 dB nach IHF)

AM-TUNERTEIL

Kanalabweichung (250 Hz ~ 6300 Hz)	±1,0 dB
Begrenzereinsatz	1,2 µV
Bandbreite	
ZF-Verstärker	180 kHz
UKW-Demodulator	1000 kHz
Antennenanschlüße	300 Ω (symmetrisch) 75 Ω (unsymmetrisch)

AM-TUNERTEIL

Wellenbereich	531 ~ 1602 kHz
Eingangsempfindlichkeit (S/R 20 dB)	30 µV, 350 µV/m
Trennschärfe (±9 kHz)	55 dB
Spiegelfrequenz-Dämpfung bei 1000 kHz	45 dB
ZF-Dämpfung bei 1000 kHz	50 dB

ALLGEMEINE DATEN

Ausgangsspannung	0,3 V (0,6 V, nach IHF)
Leistungsaufnahme	12 W
Batterien für den Speicher (Sonderzubehör)	drei Batterien "AA" (4,5 V)
Netzspannung	Wechselstrom 50 Hz/60 Hz, 110V/120V/220V/240V
Abmessungen (B×H×T)	430 × 53 × 240 mm
Gewicht	2,8 kg

CARACTERISTIQUES TECHNIQUES

Sujet à changement sans préaris.

[DIN 45 500]

SECTION SYNTONISATEUR FM

Gamme de fréquence	87,50~108,00 MHz
Sensibilité	1,9 µV (IHF utilisable)
S/B 30 dB	1,9 µV (300Ω), 1,3 µV (75Ω)
S/B 26 dB	1,7 µV (300Ω), 1,2 µV (75Ω)
S/B 20 dB	1,5 µV (300Ω), 0,9 µV (75Ω)
Sensibilité stéréo au seuil de 46 dB, IHF	25 µV/75Ω
Distorsion harmonique totale	
MONO	0,15%
STEREO	0,3%
Signal/Bruit	
MONO	69 dB (75 dB, IHF)
STEREO	65 dB (70 dB, IHF)
Réponse de fréquence	20 Hz~15 kHz, +0,5 dB~ −1,5 dB
Sélectivité alternée par canal (±400 kHz)	75 dB
Taux de capture	1,0 dB
Rejection d'image à 98 MHz	65 dB
Rejection FI à 98 MHz	100 dB
Rejection de réponse parasite à 98 MHz	90 dB
Suppression AM	55 dB
Séparation stéréophonique	
1 kHz	45 dB
10 kHz	35 dB
Fuite de porteuse	
19 kHz	−35 dB (−37 dB, IHF)
38 kHz	−48 dB (−50 dB, IHF)

Equilibrage de canaux (250 Hz~6,300 Hz)	±1,0 dB
Point de limite	1,2 µV
Largeur de bande	
Amplificateur FI	180 kHz
Démodulateur FM	1000 kHz
Bornes d'antenne	300Ω (symétrique) 75Ω (asymétrique)

SECTION SYNTONISATEUR AM

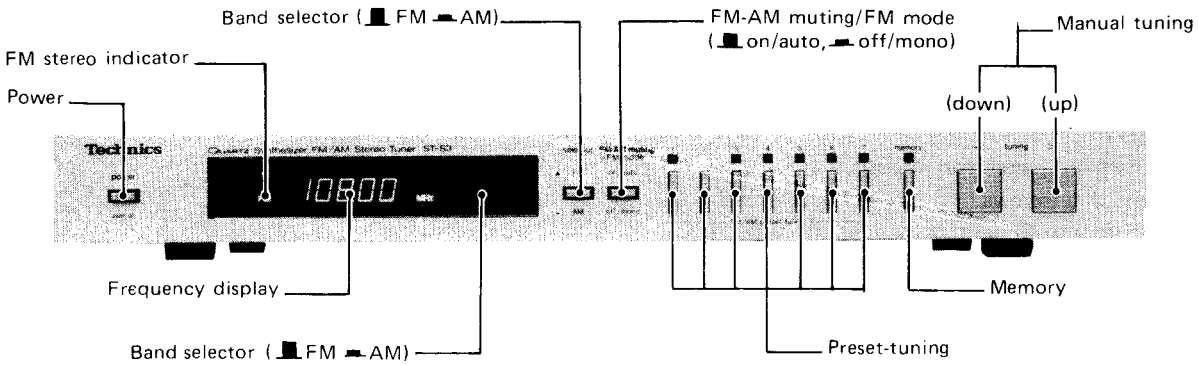
Gamme de fréquence	531~1602 kHz
Sensibilité (S/B 20 dB)	30 µV, 350 µV/m
Sélectivité (±9 kHz)	55 dB
Réjection d'image à 1,000 kHz	45 dB
Réjection FI à 1,000 kHz	50 dB

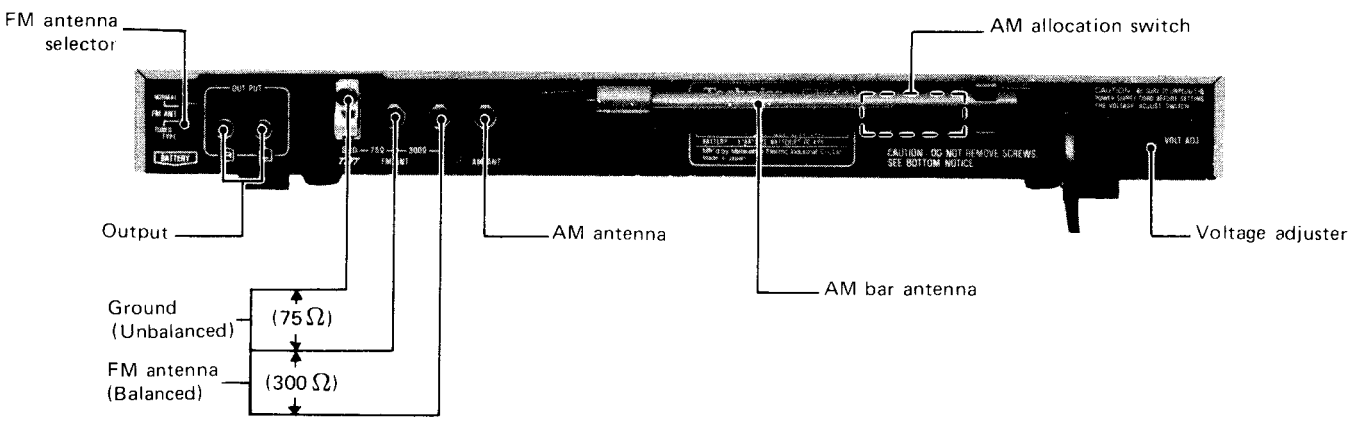
DIVERS

Tension de sortie	0,3 V (0,6 V, IHF)
Consommation	12W
Piles pour préservation des mémoires (en option)	trois piles de type AA (C.C.: 4,5 V)
Alimentation	CA 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (L×H×Pr)	430 × 53 × 240 mm
Poids	2,8 kg

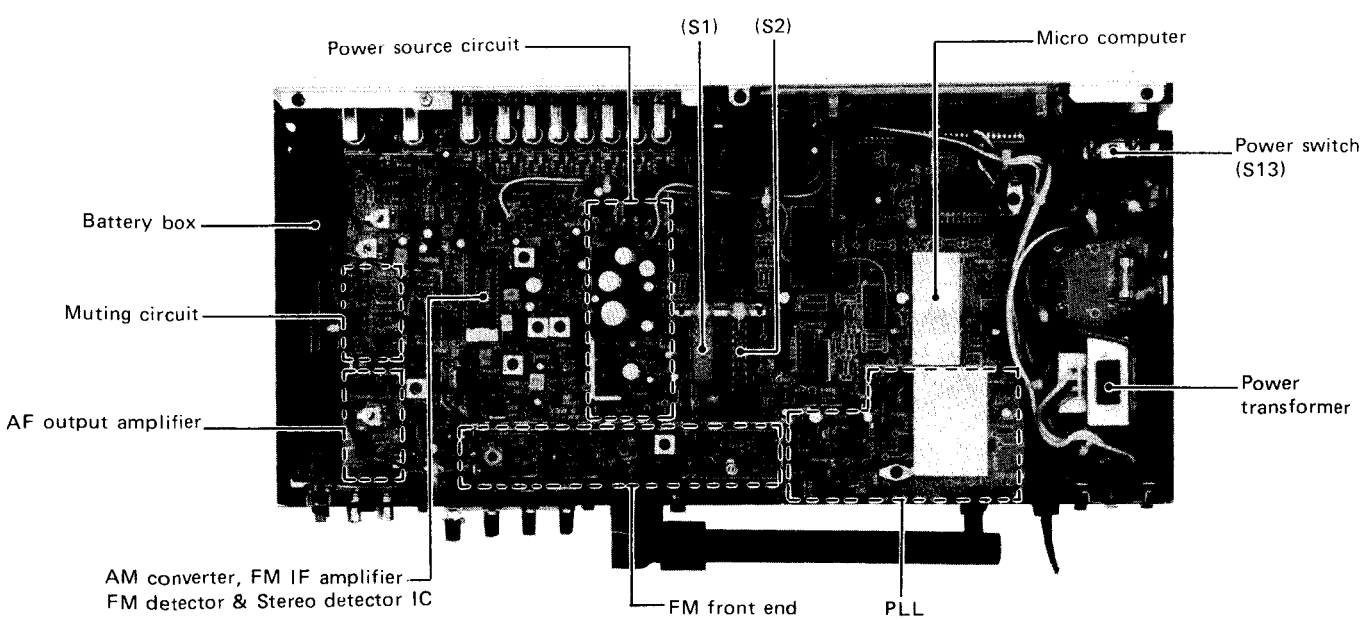
■ CONTENTS

■ LOCATION OF CONTROLS



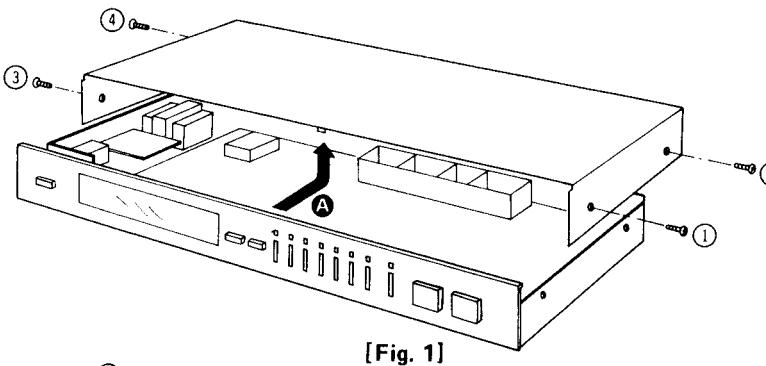


* This photo shows only the products for [XA] and [XAL].
* The product for other destinations except [XA] and [XAL] are not equipped with AM allocation switch.

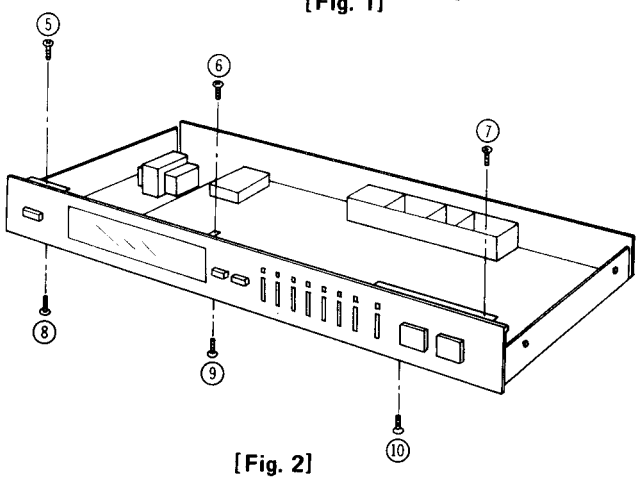


■ HOW TO REMOVE THE CHASSIS

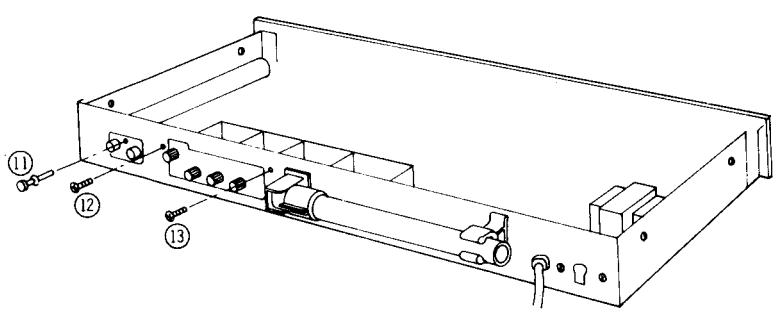
1. Detach the cabinet by removing the 4 setscrews (① ~ ④ in fig. 1)
2. Sliding it toward Ⓐ direction and lifting it upward as shown in fig. 1.
3. Remove the 6 setscrews on the front panel (⑤ ~ ⑩ in fig. 2)
4. Remove the front panel from chassis.
5. Remove the 2 setscrews (⑫ , ⑬ in fig. 3) and the latch (⑪ in fig. 3) used to secure the antenna terminal and output terminal.
6. Unsolder sield cord from rear panel.
7. Remove the 3 setscrews (⑭ ~ ⑯ in fig. 4) of the printed circuit board.
8. The frequency indication plate is fixed on the chassis as shown in Fig. 5. So, push the indication plate a little forwards and lift it up.
   Then it can be removed from the chassis. (See Fig. 6.)
   Next, set up the printed circuit board while being careful of the leads. (Arrow Ⓑ in Fig. 4)
9. After completion of the repair, assemble the parts by reversing the procedure 1 ~ 8.



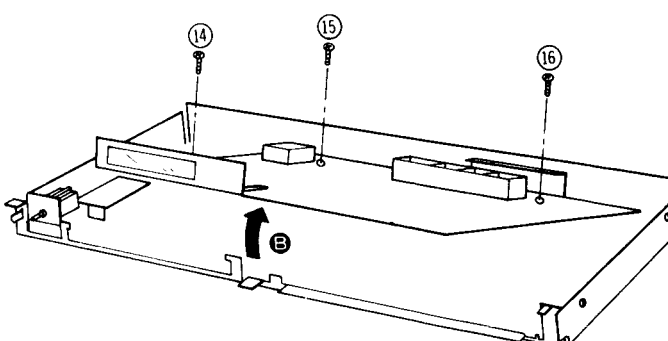
[Fig. 1]



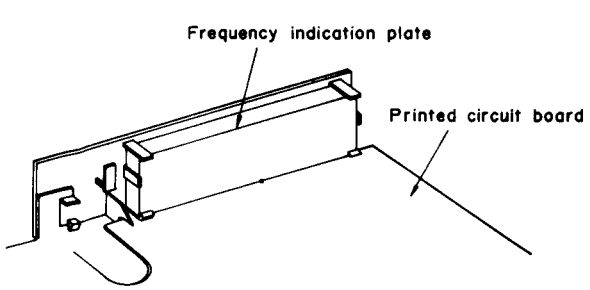
[Fig. 2]



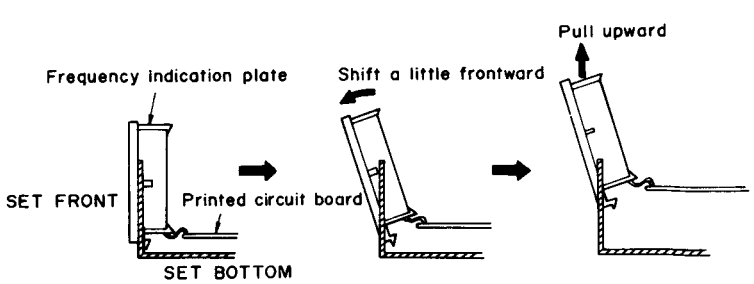
[Fig. 3]



[Fig. 4]

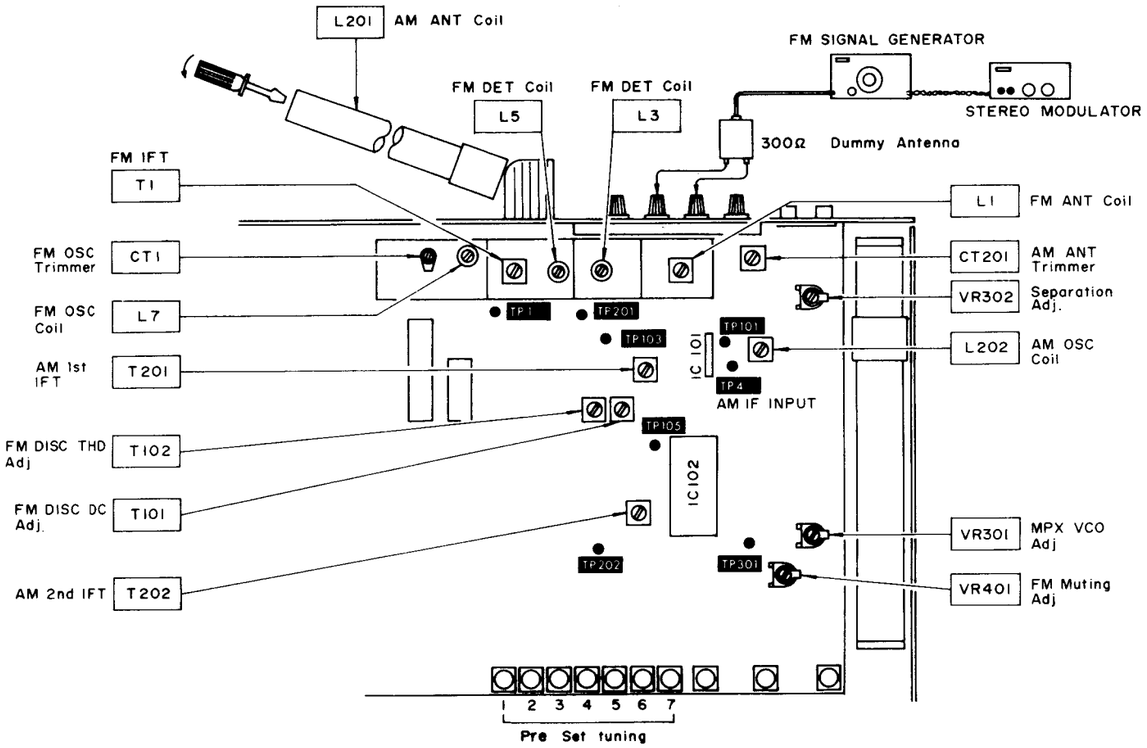


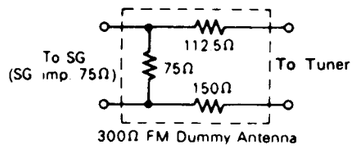
[Fig. 5]



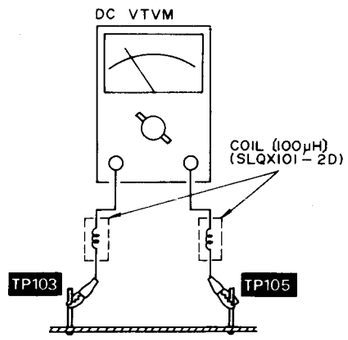
[Fig. 6]

■ ADJUSTMENT POINTS

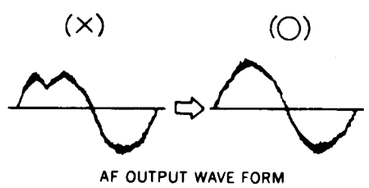




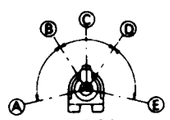
[Fig. 7]
(Abb. 1)



[Fig. 8]
(Abb. 2)



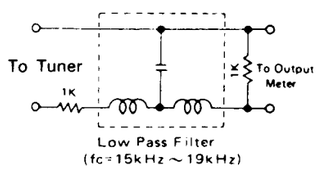
[Fig. 9]
(Abb. 3)



VR301

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

[Fig. 10]
(Abb. 4)



[Fig. 11]
(Abb.5)

■ ADJUSTING INSTRUCTIONS ENGLISH

Notes:
1. Band selector switch . . . . . { AM (AM alignment) / FM (FM Alignment)
2. FM muting & mode switch . . . . . off/mono
3. Maintain line voltage at rated voltage
4. 300Ω FM dummy antenna . . . . . Refer to fig. 7
5. Output of signla generator should be on higher than necessary to obtain an output reading.
6. Adjust the antenna coil (L201) position by using a screw-driver so that it is at approximately 25 degrees to the rear panel.

	AM/FM SIGNAL GENERATOR		FREQUENCY SETTING	INDICATOR (VTVM or SCOPE)	ADJUSTMENT POINTS	REMARKS
	CONNECTION	FREQUENCY				
	AM ADJUSTMENT					
1	High side to TP4 terminal. Common to chassis.	450kHz (30% Mod. with 400 Hz)	Point of non-inter-ference	Connect AC VTVM or scope to "OUTPUT" terminals.	T201 (1st IFT) T202 (2nd IFT)	Adjust for maximum output.
2	Fashion loop of several turns of wire and radiate signal into loop of tuner	531kHz (30% Mod. with 400 Hz)	531kHz	Connect DC VTVM to TP201 terminal.	L202 (OSC Coil)	Adjust L202 to 1.0 ±0.05V.
3	Fashion loop of several turns of wire and radiate signal into loop of tuner	612kHz (30% Mod. with 400 Hz)	612kHz	Connect AC VTVM or scope to "OUTPUT" terminal.	L201 (ANT Coil)	Adjust for maximum output. Adjust ferrite core of L201 by screw driver.
4	Fashion loop of several turns of wire and radiate signal into loop of tuner	1503kHz (30% Mod. with 400Hz)	1503kHz	Connect AC VTVM or scope to "OUTPUT" terminal.	CT201 (ANT Trimmer)	Adjust for maximum output Repeat steps (3) and (4).
	FM IF ADJUSTMENT					
5		No-Signal	Point of non-inter-ference	Connect DC VTVM to TP103, TP105 terminals (Refer to fig. 8)	T101 (DISCRI IFT) A	1. FM muting/mode switch "on/auto" position. 2. Adjust T101 (A) core so that voltage mea-sured in signal mode is 0V in 300mV range.
	FM RF ADJUSTMENT					
6		No-Signal	87.50MHz	Connect DC VTVM to TP1 terminal	L7 (OSC Coil)	Adjust L7 (OSC Coil) to 3.0V
7	Connect to FM 300Ω antenna terminal through 300Ω. FM dummy antenna.	90.10MHz (100% Mod. with 400Hz) weak input	90.10MHz	Connect scope to "OUTPUT" terminal.	L3 (RF DET Coil, 1st) L5 (RF DET Coil, 2nd) L1 (ANT Coil) T1 (FM IFT)	1. Add weak input so that noise is included in the output wave form. 2. Make the adjustment so that the output wave form is vertically sym-metrical. Refer to fig. 9 3. Repeat the steps (7) and (8)
8		106.10MHz (100% Mod. with 400Hz)	106.10MHz	Connect scope to "OUTPUT" terminal.	CT1 (OSC Trimmer)	
	FM MONO DISTORTION ADJUSTMENT					
9	Connect to FM 300Ω antenna terminal through 300Ω FM dummy antenna.	100.10MHz (100% Mod. with 400Hz, 60dB)	100.10MHz	Connect distortion meter to "OUTPUT" terminals.	T102 (DISCRI IFT) B	1. Set the FM muting/ mode switch to "on/auto" and then check step (5) in no signal mode. 2. If it is deflected, re-adjust of T101. 3. Adjust T102 (B) core so that distortion of right and left channels are minimized.
	FM MUTING LEVEL ADJUSTMENT					
10	Connect to FM 300Ω antenna terminal through 300Ω FM dummy antenna. Apply 16dB (6.3μV) to tuner	100.10MHz (100% Mod. with 400Hz)	100.10MHz		VR401 (Muting Level)	1. Set the muting/FM mode switch to "off/ mono" and then tune in 100.10MHz. 2. With the muting/FM mode switch set to "on/auto", adjust VR401 so that the output is given with muting condition released.

	FM MPX PILOT ADJUSTMENT					
	USING A FREQUENCY COUNTER			USING ALTERNATE SYSTEM		
11	1. 100.10MHz Non-modulated mono signal applied to set. 2. FM muting/mode switch to "on/auto" 3. Connect frequency counter to TP301 through resistor (100kΩ). 4. Adjust VR301 to 19kHz, ±30Hz.			1. Apply stereo signal from generator or stereo station to tuner. 2. Adjust VR301 until stereo indicator lights up. Cement arm of VR301 as shown in fig. 10.		
	FM SIGNAL GENERATOR		FREQUENCY SETTING	INDICATOR	ADJUSTMENT POINTS	REMARKS
	CONNECTION	FREQUENCY				
	SEPARATION ADJUSTMENT					
12	Connect to FM 300Ω antenna terminal through 300Ω FM dummy antenna.	100.10MHz (1kHz 30%, Pilot 10% modulation 60dB stereo signal)	100.10MHz	Connect AC VTVM to output terminal (L or R) through low pass filter (Refer to fig. 11)	VR302 (Separation Alignment)	1. Set the FM muting/mode switch to "on/auto", and then tuin in 100.10MHz. 2. Adjust VR302 so that R output is minimized when stereo modulator is in L (Lch. modulation) mode and that L output is minimized in R mode.

■ EINSTELLUNGSANWEISUNGEN ━━━ DEUTSCH ━━━

(Für Deutschland)

Anmerkungen:

1. Bereichsschalter. . . . . { AM (MW Abgleich) / FM (UKW Abgleich)
2. FM Muting/Mode Schalter . . off/mono
3. Netzspannung auf ihren Sollwert halten.
4. UKW-Kunstantenne, 300 ohm. . . Vgl Abb. 1.
5. Der Ausgang des Meßsenders darf nicht höher sein als unbedingt notwendig für eine gute Ablesung.
6. Nittels eines Schraubenziehers die Stellung der Antennenspule (L201) so einstellen, daß, sie gegen die Rückenplatte einen Winkel von ca. 25° macht.

	MW/UKW MESSENDER		FREQUENZ STELLUNG DES TUNER	ANZEIGEGEIRÄT (Röhrenvoltmeter oder Oszillograph ozw. Klirrfaktor-Meßgerät)	ABGLEICHS-PUNKTE	BEMERKUNGEN
	ANSCHLUSS	FREQUENZ				
	MW-ABGLEICH					
1	Hohe Seite zur Klemme TP4 Kaltes Ende an Masse	450kHz (400Hz Modulat., 30%)	Kein Empfang	Wechselstrom Röhrenvoltmeter oder Oszillograph über den Ausgang. "OUTPUT" schließen	T201 (1. IFT) T202 (2. IFT)	Auf max. Ausgang abgleichen.
2	Das Meßsendersignal induktiv in den Tuner speisen. Hierzu behelfsmäßig eine Rahmenantenne fertigen und an den Eingang schließen.	531 kHz (400Hz Modulat., 30%)	531 kHz	Elektronisches GS-Voltmeter an Klemmen TP201 anschließen.	L202 (Osc. Spule)	L202 auf 1.0 ±0,05V justieren.
3	Das Meßsendersignal induktiv in den Tuner speisen. Hierzu behelfsmäßig eine Rahmenantenne fertigen und an den Eingang schließen.	612kHz (400Hz Modulat., 30%)	612kHz	Wechselstrom Röhrenvoltmeter oder Oszillograph über den Ausgang "OUTPUT" scheißen.	L201 (Ant. Spule)	Auf max. Ausgang abgleichen. Den Ferritkern von L201 mit einem Schraubendreher justieren.
4	Das Meßsendersignal induktiv in den Tuner speisen. Hierzu behelfsmäßig eine Rahmenantenne fertigen und an den Eingang schließen.	1503kHz (400Hz Modulat., 30%)	1503kHz	Wechselstrom Röhrenvoltmeter oder Oszillograph über den Ausgang "OUTPUT" scheißen.	CT201 (Ant. Trimmer)	Auf max. Ausgang abgleichen. Schritt (3) und (4) sing zu wiederholen.
	UKW-ZF-ABGLEICH					
5		Kein Signal	Kein Empfang	Elektronisches (GS-Voltmeter an Klemmen TP103 und TP105 anschließen. (Vgl Abb. 2)	T101 (Diskriminator IFT) A	1. FM muting/mode-Schalter auf "on/auto". 2. Den Kern von T101(A) so justieren, daß die gemessene Spannung im signallosen Modus 0V im 300mV Bereich beträgt.
	UKW-HF-ABGLEICH					
6		Kein Signal	87.50MHz	Elektronisches GS-Voltmeter an Klemme TP1 anschließen.	L7 (OSC Spule)	L7 (OSC-Spule) auf 3,0V justieren.

	MW/UKW MESSENDER		FREQUENZ STELLUNG DES TUNER	ANZEIGEGEIRÄT (Röhrenvoltmeter oder Oszillograph ozw. Klirrfaktor-Meßgerät)	ABGLEICHS-PUNKTE	BEMERKUNGEN
	ANSCHLUSS	FREQUENZ				
7	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen	90.10MHz (400Hz Modulat., 100%)	90.10MHz	Oszillograph über den Ausgang "OUTPUT" schließen.	L3 (1. Det. Spule) L5 (2. Det. Spule) L1 (Ant. Spule) T1 (UKW IFT)	1. Einen schwachen Eingang geben, bei den Geräusch in der Ausgangswellenform enthalten wird. 2. So einstellen, daß die Ausgangswellenform vertikal symmetrisch wird. (Abb 3). 3. Die Einstellung von (7) und (8) wiederhoten, bis die Frequenz mit der Skala übereinstimmt.
8	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen.	106.10MHz (400Hz Modulat., 100%	106.10MHz	Oszillograph über den Ausgang "OUTPUT" schließen.	CT1 (Osc. Trimmer)	
	ABGLEICH AUF MIN. VERZERRUNG IN STELLUNG UKW-MONO					
9	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen	100.10MHz (400Hz Modulat., 100% 60dB)	100.10MHz	Klirrfaktor-Meßbrücke über den Ausgang "OUTPUT" schließen.	T102 (Diskriminator FT) B	1. FM muting/mode-Schalter auf "on/auto" stellen dann in signalloser Mode den Schritt (5) feststellen. 2. Wenn Abweichung vorliegt. A (primäre Seite) von T101 wieder einstellen. 3. T102 (B) Kern für minimale Verzerrung der rechten und linken Kanäle justieren.
	UKW-MUTING-ABGLEICH					
10	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen. Meßsender auf 16 dB (6,3 V) einstellen.	100.10MHz (400Hz Modulat., 100%)	100.10MHz		VR401 (UKW-Muting)	1. Den muting/FM mode Schalter auf "OFF/MONO" und auf 100.10MHz abstimmen. 2. Muting/FM mode Schalter auf "ON/AUTO" stellen, VR401 so einstellen, daß der Ausgang unter Bewirken der Dämpfung gegeben wird.
	UKW-STEREO-DEKODER-ABGLEICH					
	Unter Verwendung eines Zählers			Alternativ-Meßmethode		
11	1. Unmoduliertes Mono-Signal 100.10MHz in das Gerät speisen. 2. FM muting/mode-Schalter auf "on/auto" stellen. 3. Zähler über einen Widerstand 100KΩ an **TP301** schließen. 4. **VR301** auf 19kHz ±30Hz einstellen.			1. Stereosignal entweder von einem Stereogenerator. oder einem Sender einspeisen. 2. **VR301** so einstellen, bis die Stereolampe auf leuchtet. Schleifer von **VR301** sichern, wie in Abb. 4 gezeigt.		
	KANALTRENNUNG-ABGLEICH					
12	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen.	100.10MHz Das Gerät auf 100MHz, 1kHz 30%, Pilot 10% Modulation 60dB Stereosignal einstellen.	100.10MHz	Wechselstrom-Röhrenvoltmeter oder Oszillograph durch Tiefpaß filter (fc=15 ~ 19kHz) an Ausgangsanschlüsse des Gerötes anschließen (Vgl Abb. 5)	VR302 (Kanaltrennung-Abgleich)	1. FM-Muting/mode Schalter auf "ON/AUTO stellen und abstimmen. 2. VR302 auf minimale Anzeige des R-Ausgangs bei Stereo-modulator in L-(L-Kanalmodulation) Modus, und auf minimale Anzeige des L-Ausgangs in R-Modus abgleichen.

■ INSTRUCTIONS DE REGLAGE ━━━ FRANÇAIS ━━━

Notes:

1. Sèlecteur de gamme. . . . . { AM (Alignement AM) / FM (Alignement FM)
2. Commutateur de silencieux/mode. . . . . off/mono
3. Conservel la tension du secteur à la tension nominale.
4. Antenne fictive FM 300Ω . . . . . Voir fig. 7.
5. Le signal du générateur ne doit pas être plus élevé qu'il n'est nécessaire à obtenir une lecture en sortie.
6. Régler la position de la bobine (L201) de l'antenne en utilisant un tournevis de telle sorte qu'alle soit environ à 25 degrés de la plaque arriére.

	AM/FM GENERATEUR		AIGUILLE SUR LE FREQUENCE	INDICATEUR (VOLTMETRE ELECTRONIQUE OSCILLOSCOPE OU DISTORSIONMETRE)	POINTS DE REGLAGE	OBSERVATIONS
	BRANCHEMENT	FREQUENCE				
	ALIGNEMENT AM					
1	Côté supérieur à la borne TP4. Commun an shässis	450kHz (modulè à 30% par 400Hz)	Point sans signal	C.A. voltmètre électronique ou oscilloscope sur prise de sortie de l'appareil.	T201 (1 transfo FI) T202 (2 transfor FI)	Réglez au maximum de signal de sortie.
2	Faire une boucle de quelgues tours et rayonner le signal dans le cadre du l'ampli-tuner.	531kHz (modulé à 30% par 400Hz)	531kHz	Brancher le voltmétre électronique á C.C. aux bornes TP201.	L202 (bobine OSC)	Régler la L202 à 1.0 ±0.05V.

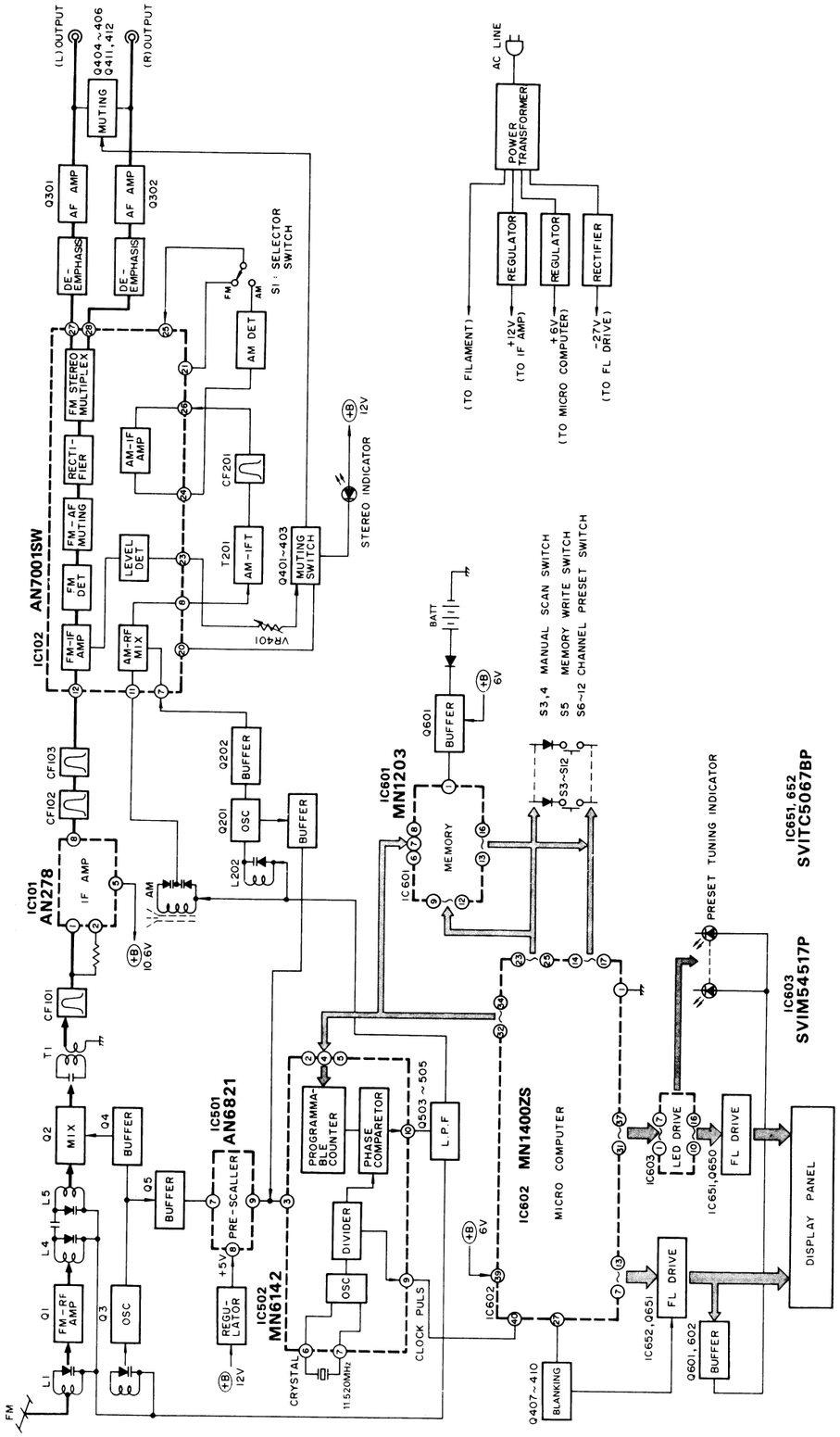
3	Faire une boucle de quelgues tours et rayonner le signal dans le cadre du l'ampli-tuner	612kHz (modulè à 30% per 400Hz)	612kHz	C.A. voltmètre électronique ou oscilloscope sur prise de sortie de l'appareil.	L201 (bobine ANT)	Réglez au maximum de signal de sortie. Régler le noyau ferrite de L201 à l'aide d'un tournevis.
4	Faire une boucle de quelgues tours et rayonner le signal dans le cadre du l'ampli-tuner	1503kHz (modulé à 30% per 400Hz)	1503kHz	C.A. voltmètre électronique ou oscilloscope sur prise de sortie de l'appareil.	CT201 (trimmer ANT)	Réglez au maximum de signal de sortie. Recommencez les étapes (2) et (3).
	ALIGNEMENT FI-FM					
5		Sans signal	Point sans signal	Brancher le voltmètre électronique à C.C. aux bornes TP103 et TP105.	T101 (transfo FI discri) A	1. Commutateur de silencieux sur "on/auto". 2. Régler le noyau T101 (A) de telle sorte que le voltage mesuré dans le mode sans signal, soti de 0V dans la gamme des 300mV.
	ALIGNEMENT RF-FM					
6		Sans signal	87.50MHz	Brancher le voltmètre électronique à C.C. à la borne TP1.	L7 (bobine OSC)	Régler la L7 (Bobine d'oscillation) à 3,0V.
7	Branchez sur la prise d'antenne FM à traves une antenne fictive FM	90.10MHz (modulé à 100% par 400Hz)	90.10MHz	Oscilloscope sur prise de sortie du tuner	L3 (1er détecteur) L5 (2e détecteur) L1 (bobine ANT) T1 (FM IFT)	1. Appliquer une entrée faible de telle sorte que le parasite soit compris dans la forme de l'onde de sortie. 2. Faire le réglage de telle sorte que la forme de l'onde de sortie soit verticalement symétrique. (Voir fig. 9) 3. Refaire les réglages (7) et (8) jusqu'à ce que la fréquence corresponde correctement avec l'échells du cadran.
8	Branchez sur la prise d'antenne FM à travers une antenne fictive FM.	106.10MHz (modulé à 100% par 400Hz)	106.10MHz	Oscilloscope sur prise de sortie du tuner.	CT1 (trimmer OSC)	
	REGLAGE DE LA DISTORSION FM EN MONO					
9	Branchez sur la prise d'antenne FM à travers une antenne fictive FM.	100.10MHz (modulé à 100% par 400Hz, 60dB)	106.10MHz	Distorsiomètre sur prise de sortie du tuner	T102 (Transfo FI discri.) B	1. Placer la commutateur Sourdine FM/Mode sur "on/auto" et vérifier l'étape 4 dans un mode sans signal. 2. S'il est déplacé, re-régler A (côté primaire) de T101. 3. Régler le noyou T102 (B) de telle sorte que la distorsion des canaux droit et gauche soit la plus faible.
10	Branchez sur la prise d'antenne FM à travers une antenne fictive FM. Niveau de sortie du générateur 16dB (6.3 V).	100.10MHz (modulé à 100% par 400Hz)	100.10MHz		VR401	1. Régler le commutateur de mode/réglage silencieux FM sur la position "OFF/MODE" et accorder sur 100.10MHz. 2. Avec le commutateur de mode/réglage silencieux FM réglé sur la position "ON/AUTO", régler le VR401 de telle sorte que la sortie fournie avec le réglage silencieux en position déclenchée.

ALIGNEMENT DU PILOTE MULTIPLEX FM

	Avec un fréquencemétre	Par un outre système
11	1. Signal mono 100.10MHz non modulé appliqué à l'appariel. 2. Commutateur de silencieux sur "on/auto". 3. Branchez le fréquencemètre sur **TP301** à travers une résistance de 100kΩ . 4. Régler **VR301** sur 19kHz ±30Hz.	1. Appliquez à l'appareil un sinal stéréo provenant d'un générateur ou de la réception d'un émetteur. 2. Régler **VR301** jusqu à ce que l'indicateur de stéréophonic s'allume. Collez le curseur de **VR301** comme indiqué sur la fig. 10.

	AM/FM GENERATEUR		AIGUILLE SUR LE FREQUENCE	INDICATEUR (VOLTMETRE ELECTRONIQUE OSCILLOSCOPE OU DISTORSIONMETRE)	POINTS DE REGLAGE	OBSERVATIONS
	BRANCHEMENT	FREQUENCE				
	REGLAGE DE LA SEPARATION DES CANAUX					
12	Branchez sur la prise d'antenne FM à traves une antenne fictive FM	100.10MHz Ajouter 100MHz, 1kHz, Modulation, pilote 10%, signal stéréophonique 60dB, à lappareill.	100.10MHz	Brancher un voltmètre électronique C.A. ou un oscilloscope aux bornes de sortie, par l'intermédiaire du filtre passe-bas (fc= 15 ~ 19kHz). (Voir fig. 11)	VR302	1. Placer le commutateur de mode/réglage silencieux FM sur "ON/FM AUTO" et accorder sur 100.10MHz 2. Régler VR302 de telle sorte que la sortie droite soit minimale quand la commande d'accord stéréophonique est dans le mode gauche (modulation du canal gauche) et que la sortie gauche soit minimale dan mode droit.

■ BLOCK DIAGRAM



u maximum de signal
. Régler le noyau
e L201 à l'aide
rnevis.

u maximum de signal
.
nencez les étapes (2) et

nutateur de silencieux
on/auto".
r le noyau T101 (A)
le sorte que le voltage
é dans le mode sans
, soti de 0V dans la
e des 300mV.

L7 (Bobine
tion) à 3,0V.

quer une entrée faible
e sorte que le parasite
ompris dans la forme
nde de sortie.
le réglage de telle sorte
forme de l'onde de
soit verticalement
rique. (Voir fig. 9)
e les réglages (7) et (8)
à ce que la fréquence
pondre correctement
échells du cadran.

la commutateur
ine FM/Mode sur
uto" et vérifier l'étape
un mode sans signal.
déplacé, re-régler A
primaire) de T101.
le noyou T102 (B)
e sorte que la
sion des canaux droit
che soit la plus faible.

le commutateur de
réglage silencieux FM
position "OFF/MODE"
rder sur 100.10MHz.
e commutateur de
réglage silencieux FM
ur la position "ON/
", régler le VR401 de
rte que la sortie
e avec le réglage silen-
en position déclenchée.

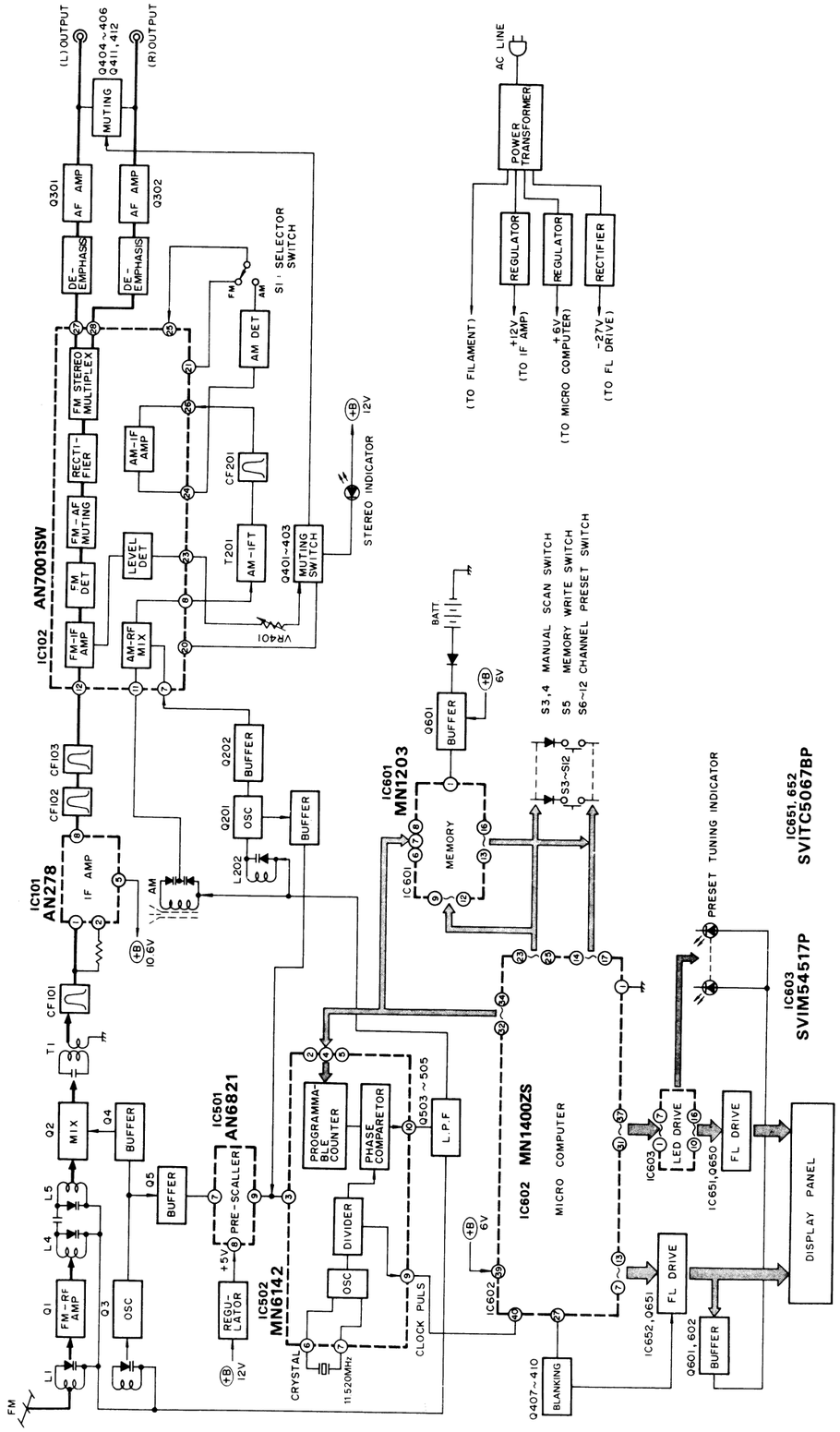
d'un générateur

réophonic s'allume.
la fig. 10.

SERVATIONS

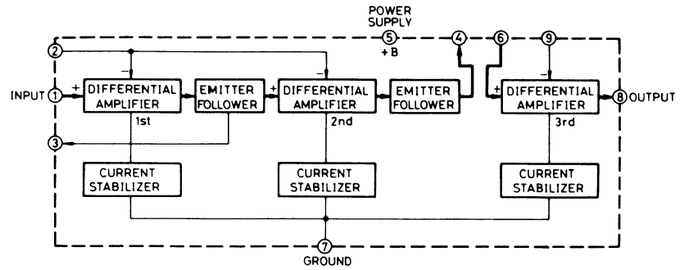
e commutateur de
églage silencieux FM
N/FM AUTO" et
r sur 100.10MHz
VR302 de telle sorte
ortie droite soit
le quand la com-
d'accord stéréopho-
st dans le mode
(modulation du canal
et que la sortie
soit minimale dan
roit.

■ BLOCK DIAGRAM

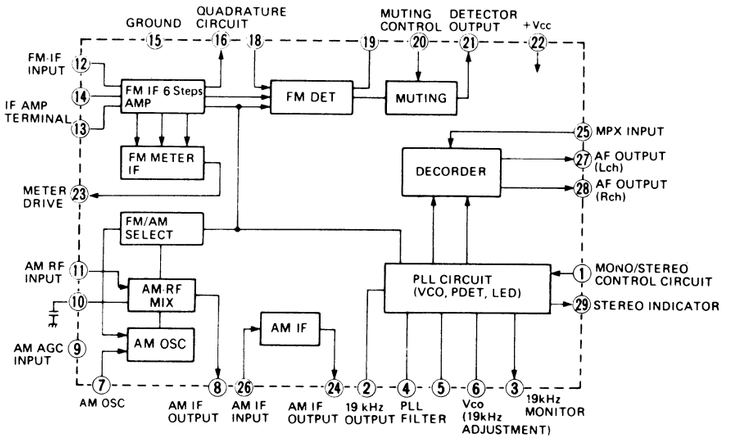


■ BLOCK DIAGRAM OF IC'S

- This is the basic block diagram of the inside circuit of IC. In an actual circuit, there may be sometimes idle terminals or some different functions other than the basic circuit.

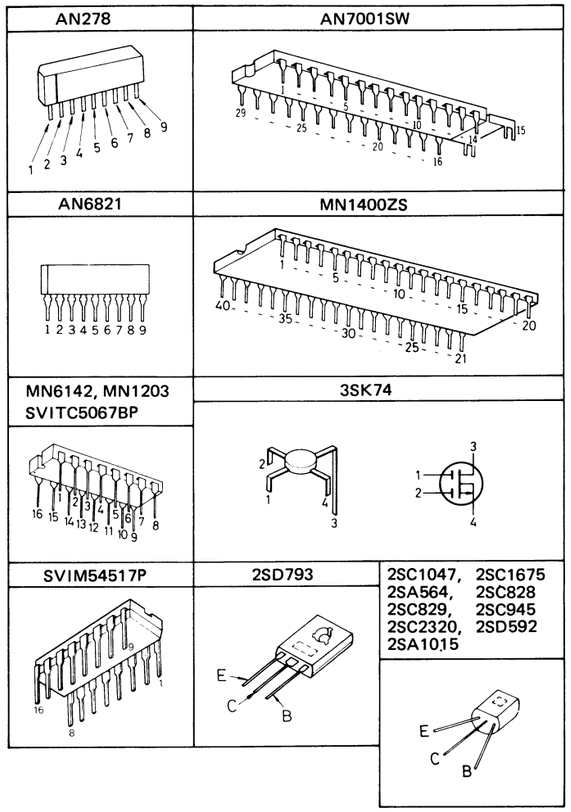


IC101 (AN278) FM IF Amplifier

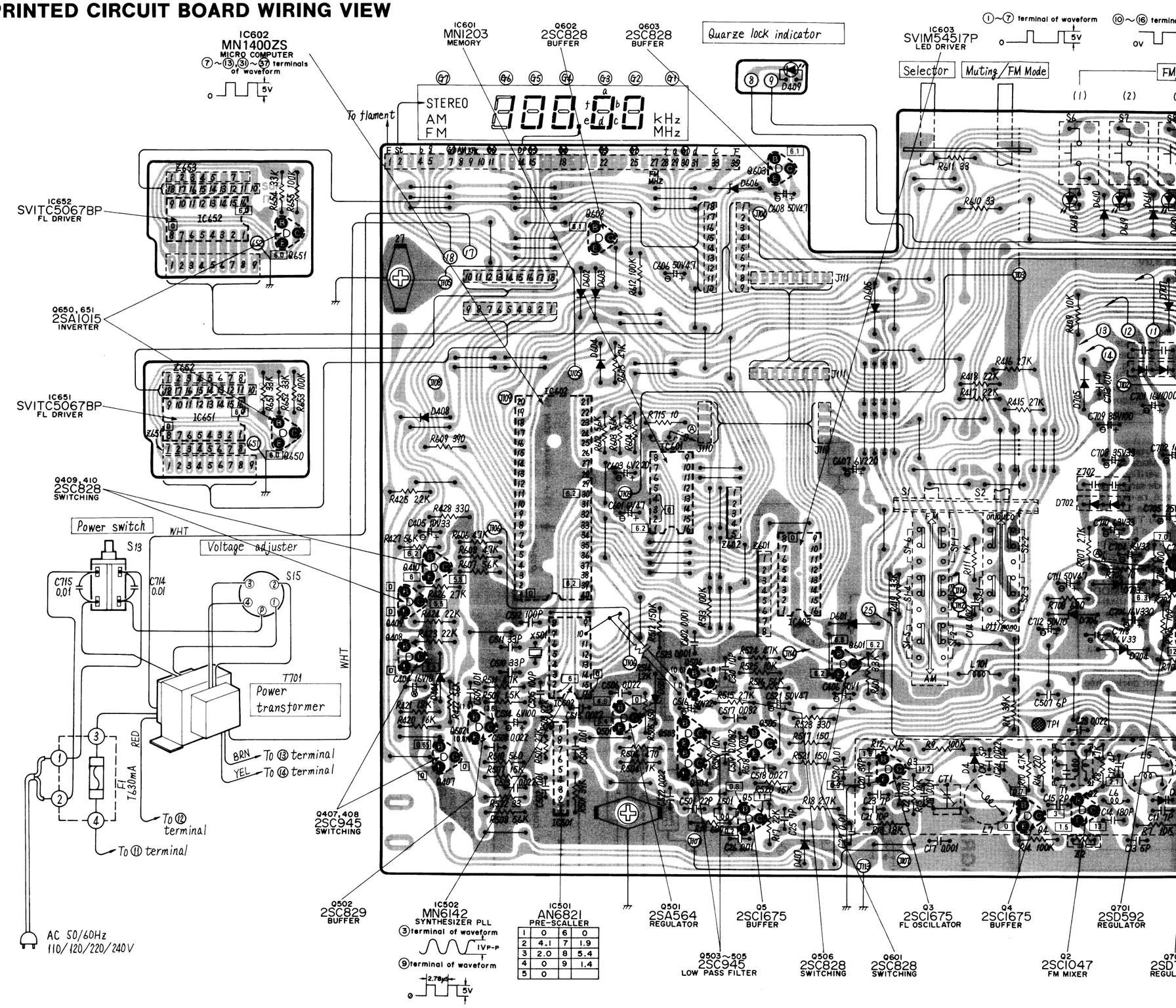


IC102(AN7001SW) AM Converter, FM IF Amplifier, FM Detector & Stereo Decoder (MPX)

■ TERMINAL GUIDE OF TRANSISTORS & IC



■ PRINTED CIRCUIT BOARD WIRING VIEW



1	0	6	0
2	4.1	7	1.9
3	2.0	8	5.4
4	0	9	1.4
5	0		

UIT BOARD WIRING VIEW

Ground (Earth) Line

IC602 MN1400ZS
MICRO COMPUTER
⑦~⑬,㉛~㊲ terminals of waveform

IC601 MN1203 MEMORY

Q602 2SC828 BUFFER

Q603 2SC828 BUFFER

Quarze lock indicator

IC603 SVIM5451I7P LED DRIVER

①~⑦ terminal of waveform

⑩~⑯ terminal of waveform

Q303 2SC828 SWITCHING

Q703,704 2SC828 POWER MUTING

Q413 2SC828 MUTING SWITCH

Q404 2SA564 MUTING SWITCH

STEREO
AM
FM
kHz
MHz

To filament

Selector

Muting/FM Mode

FM/AM preset tuning (1) (2) (3) (4) (5) (6) (7)

Memory

(down)

Tuning

(up)

IC102 AN7001SW
CONVERTER FM IF AMP
DETECTOR & STEREO DECODER(IN

	FM	AM		FM	AM
1	11.2	11.2	16	6.0	6.0
2	4.0	4.0	17	6.0	6.0
3	5.0	5.5	18	6.0	6.0
4	2.4	2.0	19	5.4	6.0
5	2.5	0.7	20	0.5	0.5
6	5.4	3.2	21	5.9	5.6
7	0.5	11.7	22	11.8	11.8
8	2.3	11.2	23	2.0	0
9	5.6	6.0	24	0.3	10.7
10	3.2	6.4	25	7.0	7.0
11	0	1.1	26	2.3	2.3
12	4.0	3.8	27	3.8	3.8
13	4.0	0	28	3.8	3.8
14	4.0	3.8	29	0	0
15	0	0			

Q202 2SC829 BUFFER

Q401~403 2SC828 MUTING SWITCH

Q411,412 2SC828 MUTING SWITCH

Q201 2SC829 AM OSCILLATOR

Q301,302 2SC1684 AF AMPLIFIER

Battery (1.5V) (1.5V) (1.5V)

Q405,406 2SC828 MUTING SWITCH

IC101 AN278 FM IF AMPLIFIER

1	6.4	6	6.8
2	6.4	7	0
3	6.8	8	9.6
4	7.2	9	6.8
5	10.6		

Voltage adjuster

S15

T701 Power transformer

WHT

BRN To ⑬ terminal

YEL To ⑭ terminal

To ⑫ terminal

terminal

Q407,408 2SC945 SWITCHING

Q502 2SC829 BUFFER

IC502 MN6142
SYNTHESIZER PLL
③ terminal of waveform
⑨ terminal of waveform

IC501 AN6821 PRE-SCALLER

1	0	6	0
2	4.1	7	1.9
3	2.0	8	5.4
4	0	9	1.4
5	0		

Q501 2SA564 REGULATOR

Q5 2SC1675 BUFFER

Q503~505 2SC945 LOW PASS FILTER

Q506 2SC828 SWITCHING

Q3 2SC1675 FL OSCILLATOR

Q601 2SC828 SWITCHING

Q4 2SC1675 BUFFER

Q2 2SC1047 FM MIXER

Q701 2SD592 REGULATOR

Q702 2SD793 REGULATOR

Q1 3SK74 FM RF AMPLIFIER

AM ANT

FM ANT

GND

300Ω

75Ω

OUTPUT

AM antenna coil (L201)

13

14

■ REPLACEMENT PARTS LIST ····· Electric Parts

Notes: 1. Part numbers are indicated on most mechanical parts
Please use this part number for parts orders
2. ⚠ indicates that only parts specified by the manufacturer be used for safety.

Ref. No.		Part No.	Part Name & Description
INTEGRATED CIRCUITS			
IC101		AN278	IC, FM IF Amplifier
IC102		AN7001SW	IC, AM Converter, FM IF Amplifier, FM Detector & Stereo Decoder (MPX)
IC501		AN6821	IC, Pre-Scaller
IC502		MN6142	IC, Synthesizer PLL
IC601		MN1203	IC, Memory
IC602		MN1400ZS	IC, Micro Computer
IC603		SVIM54517P	IC, LED Driver
IC651, 652		SVITC5067BP	IC, FL Driver
TRANSISTORS			
Q1		3SK74–L1	Transistor, FM RF Amplifier
Q2		2SC1047–D	Transistor, FM Mixer
Q3, 4, 5		2SC1675–L1	Transistor, FM Oscillator & Buffer (Use in ranks L1 or L2)
Q201, 202, 502		**2SC829–C**	Transistor, AM Oscillator & Buffer
Q301, 302		2SC2320L–F	Transistor, AF Amplifier
Q303, 410, 506 601, 602, 603, 703, 704		**2SC1328–T**	Transistor, Inverter, Blanking Circuit, Switching, Buffer & Power Muting
Q401, 402, 403 405, 406, 409 411, 412, 413		**2SC1328–T**	Transistor, Muting & Blanking Circuit
Q404, 501		**2SA666AI–R**	Transistor, Muting Switch & Regulator
Q407, 408, 503 504, 505		2SC945–P2	Transistor, Blanking Circuit & Low Pass filter (Use in ranks P1 or P2)
Q650, 651		2SA1015–Y	Transistor, Inverter (Use in ranks Y or O)
Q701		2SD592ANC–Q	Transistor, Regulator (Use in ranks Q or R)
Q702		2SD793–Q	Transistor, Regulator (Use in ranks P or Q)
DIODES			
D1, 2, 3, 4		**MA320G1–N**	Diode, Variable Capacitor (FM)
D201		SVDBB113	Diode, Variable Capacitor (AM)
D202, 203, 204 205, 207, 401 403, 407, 604 607, 608, 609~616, 708		**MA162A**	Diode, Switching & AGC
D206, 402, 404		**2–0A99**	Diode, AM Detector & Bias Supply
D408, 601, 603 605, 707, 410		**MA162A**	Diode
D409		LN220RP	Diode, Light Emitting Diode
D501		SVDMZ305AM	Diode, 5V Zener
D602		**MA162A**	Diode, Except Product for [XA]
D606		SVDMZ307A	Diode, 7V Zener
D617, 618~624		LN831RP	Diode, Light Emitting Diode
D626 [XA] only		**MA162A**	Diode
D701, 702	⚠	**RVD10DC4**	Diode, Rectifier
D703		SVDMZ307A	Diode, 7V Zener
D704		**SVDEQA0113RA**	Diode, 13V Zener
D705	⚠	**SVDSR1K2**	Diode, Rectifier
D706		SVDMZ336B	Diode, 36V Zener

Ref. No.		Part No.	Part Name & Description
COILS and TRANSFORMERS			
L1		SLA4N17	Coil, FM Antenna
L2, 501		**RLQY25S2**	Coil, Choke
L3		**SLQAN40G–1**	Coil, Choke
L4		SLD4P35–P	Coil, FM RF Detector (1st)
L5		SLD4P37–P	Coil, FM RF Detector (2nd)
L6		**ELQ5A77**	Coil, Choke
L7		SLO4P67–P	Coil, FM Local Oscillator
L8		SLQAN40GI–P	Coil, Choke
L101		SLQX180–2	Coil, Choke
L102, 203, 204		SLQX101–3M	Coil, Choke
L103		RLQY15G5–Y	Coil, Choke
L201		SLF2D51	Coil, AM Ferrite Core Antenna
L202		SLO2C23–P	Coil, AM Local Oscillator
L301		SLQX393–1Z	Coil, Choke
L701		SLQX101–2D	Coil, Choke
T1		SLI4C109	Transformer, FM IF
T101		SLI4C515–1	Transformer, FM IF
T102		SLI4C517–1	Transformer, Discriminator
T201		SLI2C127	Transformer, AM IF
T202		SLI2C413	Transformer, AM IF
T701	⚠	SLT5J113–W	Transformer, Power Source
T701 [XAL] only	⚠	SLT5J127–W	Transformer, Power Source
CERAMIC FILTERS			
CF101, 102, 103		SVFE107MM–A	Ceramic Filter, 10.7MHz (Red)
CF201		SVFSFP450HT	Ceramic Filter, AM 450kHz
VARIABLE RESISTORS			
VR301		**EVTS3MA00B53**	PLL MPX VCO Adjustment, 5kΩ (B)
VR302		**EVTS3MA00B24**	Separation Adjustment, 20kΩ (B)
VR401		**EVTS3MA00B54**	FM Muting Level Adjustment, 50kΩ (B)
CRYSTAL			
X501		SVQ43U11521	Crystal, 11,520MHz
COMPONENT COMBINATIONS			
Z1		EXRP102Z223C	Component Combination, 22kΩ & 0.01μF
Z2		EXRP103P102C	Component Combination, 1kΩ & 0.01μF
Z101		EXF3SL04C	Component Combination, 0.01μF (X3)
Z601		EXBP87562K	Component Combination, 5.6kΩ (X7)
Z602		EXBP84473K	Component Combination, 47kΩ (X4)
Z651, 652, 653		EXBP87104K	Component Combination, 100kΩ (X7)
Z701, 702		EXRFS203ZS	Component Combination, 0.01μF (X2)
VARIABLE CAPACITORS			
CT1		ECV1ZW06X32E	Trimmer, Local Oscillator
CT201		SVCTY121B269	Trimmer, AM Antenna
SWITCHES			
S1, 2		SSH267	Switch, Selector & FM Muting/Mode
S3~12		SSG1	Switch, Manual Scan, Memory Write & Channel Preset
S13	⚠	SSH119	Switch, Power
S14 [XA,XAL] only		ESD14116	Switch, FM/AM Allocation
S15	⚠	ESE372	Switch, Voltage Adjuster
S16		ESD14116	Switch, FM Antenna Selector
DISPLAY PANEL			
FL		SAD7MT09ZA	Display Panel, Indication
FUSE			
F1	⚠	XBA2C06TRO	Fuse, T630mA (250V)

Ref. No.		Part No.	Part Name & Description			
RESISTORS						
R1, 2		**ERD25TJ104**	Carbon,	100kΩ,	1/4W,	±5%
R3		**ERD25TJ683**	Carbon,	68kΩ,	1/4W,	±5%
R4		**ERD25FJ101**	Carbon,	100Ω,	1/4W,	±5%
R5, 6		**ERD25TJ104**	Carbon,	100kΩ,	1/4W,	±5%
R7		**ERD25FJ103**	Carbon,	10kΩ,	1/4W,	±5%
R8		**ERD25TJ473**	Carbon,	47kΩ,	1/4W,	±5%
R9		**ERD25TJ104**	Carbon,	100kΩ,	1/4W,	±5%
R10		**ERD25FJ472**	Carbon,	4.7kΩ,	1/4W,	±5%
R11		**ERD25TJ393**	Carbon,	39kΩ,	1/4W,	±5%
R12		**ERD25FJ102**	Carbon,	1kΩ,	1/4W,	±5%
R13		**ERD25FJ182**	Carbon,	1.8kΩ,	1/4W,	±5%
R14		**ERD25TJ104**	Carbon,	100kΩ,	1/4W,	±5%
R15		**ERD25TJ183**	Carbon,	18kΩ,	1/4W,	±5%
R16		**ERD25FJ221**	Carbon,	220Ω,	1/4W,	±5%
R17		**ERD25TJ223**	Carbon,	22kΩ,	1/4W,	±5%
R18		**ERD25FJ272**	Carbon,	2.7kΩ,	1/4W,	±5%
R19		**ERD25FJ681**	Carbon,	680Ω,	1/4W,	±5%
R20		**ERD25TJ104**	Carbon,	100kΩ,	1/4W,	±5%
R101		**ERD25FJ271**	Carbon,	270Ω,	1/4W,	±5%
R102		**ERD25FJ151**	Carbon,	150Ω,	1/4W,	±5%
R103, 104		**ERD25FJ331**	Carbon,	330Ω,	1/4W,	±5%
R105		**ERD25FJ391**	Carbon,	390Ω,	1/4W,	±5%
R106		**ERD25TJ123**	Carbon,	12kΩ,	1/4W,	±5%
R107		**ERD25FJ103**	Carbon,	10kΩ,	1/4W,	±5%
R108		ERO25CKF3001	Metal Film,	3kΩ,	1/4W,	±1%
R109		**ERD25FJ332**	Carbon,	3.3kΩ,	1/4W,	±5%
R110		**ERD25FJ100**	Carbon,	10Ω,	1/4W,	±5%
R111		**ERD25FJ102**	Carbon,	1kΩ,	1/4W,	±5%
R201, 202		**ERD25TJ104**	Carbon,	100kΩ,	1/4W,	±5%
R203, 204		**ERD25TJ473**	Carbon,	47kΩ,	1/4W,	±5%
R205		**ERD25FJ103**	Carbon,	10kΩ,	1/4W,	±5%
R206		**ERD25FJ562**	Carbon,	5.6kΩ,	1/4W,	±5%
R207		**ERD25TJ563**	Carbon,	56kΩ,	1/4W,	±5%
R208		**ERD25TJ183**	Carbon,	18kΩ,	1/4W,	±5%
R209		**ERD25FJ122**	Carbon,	1.2kΩ,	1/4W,	±5%
R210		**ERD25FJ681**	Carbon,	680Ω,	1/4W,	±5%
R211		**ERD25FJ221**	Carbon,	220Ω,	1/4W,	±5%
R212		**ERD25FJ391**	Carbon,	390Ω,	1/4W,	±5%
R213		**ERD25TJ183**	Carbon,	18kΩ,	1/4W,	±5%
R214		**ERD25FJ182**	Carbon,	1.8kΩ,	1/4W,	±5%
R215, 216		**ERD25FJ221**	Carbon,	220Ω,	1/4W,	±5%
R217		**ERD25FJ103**	Carbon,	10kΩ,	1/4W,	±5%
R218		**ERD25FJ822**	Carbon,	8.2kΩ,	1/4W,	±5%
R219		**ERD25FJ221**	Carbon,	220Ω,	1/4W,	±5%
R220		**ERD25FJ332**	Carbon,	3.3kΩ,	1/4W,	±5%
R221		**ERD25FJ562**	Carbon,	5.6kΩ,	1/4W,	±5%
R301		**ERD25FJ682**	Carbon,	6.8kΩ,	1/4W,	±5%
R302		**ERD25FJ103**	Carbon,	10kΩ,	1/4W,	±5%
R303, 304		**ERD25FJ102**	Carbon,	1kΩ,	1/4W,	±5%
R305		**ERD25TJ333**	Carbon,	33kΩ,	1/4W,	±5%
R306, 307		**ERD25FJ392**	Carbon,	3.9kΩ,	1/4W,	±5%
R308, 309		**ERD25FJ472**	Carbon,	4.7kΩ,	1/4W,	±5%
R310, 311		**ERD25FJ103**	Carbon,	10kΩ,	1/4W,	±5%
R312, 313		**ERD25FJ103**	Carbon,	10kΩ,	1/4W,	±5%
R314, 315		**ERD25FJ472**	Carbon,	4.7kΩ,	1/4W,	±5%
R316, 317		**ERD25FJ681**	Carbon,	680Ω,	1/4W,	±5%
R318, 319		**ERD25TJ104**	Carbon,	100kΩ,	1/4W,	±5%
R403, 404		**ERD25TJ273**	Carbon,	27kΩ,	1/4W,	±5%
R405		**ERD25TJ333**	Carbon,	33kΩ,	1/4W,	±5%
R406, 407		**ERD25TJ473**	Carbon,	47kΩ,	1/4W,	±5%
R408		**ERD25TJ183**	Carbon,	18kΩ,	1/4W,	±5%
R409		**ERD25FJ103**	Carbon,	10kΩ,	1/4W,	±5%
R410		**ERD25FJ332**	Carbon,	3.3kΩ,	1/4W,	±5%
R411		**ERD25FJ102**	Carbon,	1kΩ,	1/4W,	±5%
R412		**ERD25FJ562**	Carbon,	5.6kΩ,	1/4W,	±5%
R413		**ERD25FJ472**	Carbon,	4.7kΩ,	1/4W,	±5%
R414		**ERD25FJ331**	Carbon,	330Ω,	1/4W,	±5%

Ref. No.		Part No.	Part Name & Description			
R415		**ERD25TJ273**	Carbon,	27kΩ,	1/4W,	±5%
R416		**ERD25FJ272**	Carbon,	2.7kΩ,	1/4W,	±5%
R417, 418		**ERD25TJ223**	Carbon,	22kΩ,	1/4W,	±5%
R419		**ERD25FJ332**	Carbon,	3.3kΩ,	1/4W,	±5%
R420		ERO25CKF1602	Metal Film,	16kΩ,	1/4W,	±1%
R421		**ERD25FJ182**	Carbon,	1.8kΩ,	1/4W,	±5%
R422		**ERD25FJ562**	Carbon,	5.6kΩ,	1/4W,	±5%
R423, 424		**ERD25TJ223**	Carbon,	22kΩ,	1/4W,	±5%
R425		**ERD25FJ222**	Carbon,	2.2kΩ,	1/4W,	±5%
R426		**ERD25FJ272**	Carbon,	2.7kΩ,	1/4W,	±5%
R427		**ERD25FJ562**	Carbon,	5.6kΩ,	1/4W,	±5%
R428		**ERD25FJ331**	Carbon,	330Ω,	1/4W,	±5%
R429, 430		**ERD25TJ684**	Carbon,	680kΩ,	1/4W,	±5%
R431		**ERD25FJ332**	Carbon,	3.3kΩ,	1/4W,	±5%
R439		**ERD25TJ334**	Carbon,	330kΩ,	1/4W,	±5%
R501		**ERD25TJ393**	Carbon,	39kΩ,	1/4W,	±5%
R502		**ERD25FJ272**	Carbon,	2.7kΩ,	1/4W,	±5%
R503		**ERD25FJ822**	Carbon,	8.2kΩ,	1/4W,	±5%
R504		**ERD25FJ102**	Carbon,	1kΩ,	1/4W,	±5%
R505		**ERD25FJ151**	Carbon,	150Ω,	1/4W,	±5%
R506		**ERD25FJ471**	Carbon,	470Ω,	1/4W,	±5%
R507		**ERD25TJ153**	Carbon,	15kΩ,	1/4W,	±5%
R508		**ERD25FJ562**	Carbon,	5.6kΩ,	1/4W,	±5%
R509		**ERD25FJ152**	Carbon,	1.5kΩ,	1/4W,	±5%
R510		**ERD25FJ561**	Carbon,	560Ω,	1/4W,	±5%
R511		**ERD25FJ472**	Carbon,	4.7kΩ,	1/4W,	±5%
R512		**ERD25TJ154**	Carbon,	150kΩ,	1/4W,	±5%
R513		**ERD25TJ104**	Carbon,	100kΩ,	1/4W,	±5%
R514		**ERD25FJ122**	Carbon,	1.2kΩ,	1/4W,	±5%
R515		**ERD25FJ272**	Carbon,	2.7kΩ,	1/4W,	±5%
R516		**ERD25TJ563**	Carbon,	56kΩ,	1/4W,	±5%
R517		**ERD25FJ151**	Carbon,	150Ω,	1/4W,	±5%
R518, 519		**ERD25FJ103**	Carbon,	10kΩ,	1/4W,	±5%
R520		**ERD25TJ153**	Carbon,	15kΩ,	1/4W,	±5%
R521		**ERD25FJ151**	Carbon,	150Ω,	1/4W,	±5%
R522		**ERD25FJ330**	Carbon,	33Ω,	1/4W,	±5%
R523		**ERD25FJ331**	Carbon,	330Ω,	1/4W,	±5%
R524		**ERD25TJ473**	Carbon,	47kΩ,	1/4W,	±5%
R525		**ERD25FJ103**	Carbon,	10kΩ,	1/4W,	±5%
R601		**ERD25FJ332**	Carbon,	3.3kΩ,	1/4W,	±5%
R602, 603		**ERD25FJ562**	Carbon,	5.6kΩ,	1/4W,	±5%
R604		**ERD25FJ562**	Carbon,	5.6kΩ,	1/4W,	±5%
R605		**ERD25TJ473**	Carbon,	47kΩ,	1/4W,	±5%
R606		**ERD25FJ472**	Carbon,	4.7kΩ,	1/4W,	±5%
R607		**ERD25FJ562**	Carbon,	5.6kΩ,	1/4W,	±5%
R608		**ERD25FJ472**	Carbon,	4.7kΩ,	1/4W,	±5%
R609		**ERD25FJ391**	Carbon,	390Ω,	1/4W,	±5%
R610, 611		**ERD25FJ330**	Carbon,	33Ω,	1/4W,	±5%
R612		**ERD25TJ104**	Carbon,	100kΩ,	1/4W,	±5%
R613		**ERD25FJ101**	Carbon,	100Ω,	1/4W,	±5%
R651, 652		**ERD25TJ333**	Carbon,	33kΩ,	1/4W,	±5%
R653		**ERD25TJ104**	Carbon,	100kΩ,	1/4W,	±5%
R654		**ERD25TJ333**	Carbon,	33kΩ,	1/4W,	±5%
R655		**ERD25TJ104**	Carbon,	100kΩ,	1/4W,	±5%
R701	⚠	**ERD50FJ100**	Carbon,	10Ω,	1/2W,	±5%
R702		**ERD25FJ102**	Carbon,	1kΩ,	1/4W,	±5%
R703		**ERD25FJ101**	Carbon,	100Ω,	1/4W,	±5%
R704		**ERD25FJ102**	Carbon,	1kΩ,	1/4W,	±5%
R705		**ERD25FJ101**	Carbon,	100Ω,	1/4W,	±5%
R706		**ERD25FJ100**	Carbon,	10Ω,	1/4W,	±5%
R707		**ERD25FJ272**	Carbon,	2.7kΩ,	1/4W,	±5%
R708		**ERD25FJ681**	Carbon,	680Ω,	1/4W,	±5%
R709		**ERD25FJ222**	Carbon,	2.2kΩ,	1/4W,	±5%
R710		**ERD25TJ154**	Carbon,	150kΩ,	1/4W,	±5%
R711		**ERD25TJ684**	Carbon,	680kΩ,	1/4W,	±5%
R712		**ERD25TJ153**	Carbon,	15kΩ,	1/4W,	±5%
R713		**ERD25TJ474**	Carbon,	470kΩ,	1/4W,	±5%
R714		**ERD25FJ332**	Carbon,	3.3kΩ,	1/4W,	±5%
R715		**ERD25FJ100**	Carbon,	10Ω,	1/4W,	±5%

Ref. No.
CAPACITORS
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C17
C18
C19
C20
C21
C22
C23
C24
C25
C26
C27
C28
C29
C30
C101, 102
C103, 104
C105
C106
C107, 108
C109
C110
C111
C112
C113, 114
C201
C202
C203
C204
C205, 206
C207
C208
C209
C210
C211
C212
C213
C214
C215
C216, 217
C218
C219
C220
C221
C222

Part Name & Description
M Antenna
oke
oke
M RF Detector (1st)
M RF Detector (2nd)
oke
M Local Oscillator
oke
oke
oke
oke
M Ferrite Core Antenna
M Local Oscillator
oke
oke
mer, FM IF
mer, FM IF
mer, Discriminator
mer, AM IF
mer, AM IF
mer, Power Source
mer, Power Source
Filter, 10.7MHz (Red)
Filter, AM 450kHz
X VCO Adjustment, 5kΩ (B)
on Adjustment, 20kΩ (B)
ng Level Adjustment, 50kΩ (B)
1,520MHz
ent Combination, 22kΩ & 0.01μF
ent Combination, 1kΩ & 0.01μF
ent Combination, 0.01μF (X3)
ent Combination, 5.6kΩ (X7)
ent Combination, 47kΩ (X4)
ent Combination, 100kΩ (X7)
ent Combination, 0.01μF (X2)
Local Oscillator
AM Antenna
elector & FM Muting/Mode
lanual Scan, Memory Write &
Preset
ower
M/AM Allocation
oltage Adjuster
M Antenna Selector
anel, Indication
30mA (250V)

Ref. No.	Part No.	Part Name & Description
RESISTORS		
R1, 2	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%
R3	**ERD25TJ683**	Carbon, 68kΩ, 1/4W, ±5%
R4	**ERD25FJ101**	Carbon, 100Ω, 1/4W, ±5%
R5, 6	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%
R7	**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ±5%
R8	**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ±5%
R9	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%
R10	**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ±5%
R11	**ERD25TJ393**	Carbon, 39kΩ, 1/4W, ±5%
R12	**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ±5%
R13	**ERD25FJ182**	Carbon, 1.8kΩ, 1/4W, ±5%
R14	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%
R15	**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ±5%
R16	**ERD25FJ221**	Carbon, 220Ω, 1/4W, ±5%
R17	**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ±5%
R18	**ERD25FJ272**	Carbon, 2.7kΩ, 1/4W, ±5%
R19	**ERD25FJ681**	Carbon, 680Ω, 1/4W, ±5%
R20	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%
R101	**ERD25FJ271**	Carbon, 270Ω, 1/4W, ±5%
R102	**ERD25FJ151**	Carbon, 150Ω, 1/4W, ±5%
R103, 104	**ERD25FJ331**	Carbon, 330Ω, 1/4W, ±5%
R105	**ERD25FJ391**	Carbon, 390Ω, 1/4W, ±5%
R106	**ERD25TJ123**	Carbon, 12kΩ, 1/4W, ±5%
R107	**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ±5%
R108	ERO25CKF3001	Metal Film, 3kΩ, 1/4W, ±1%
R109	**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ±5%
R110	**ERD25FJ100**	Carbon, 10Ω, 1/4W, ±5%
R111	**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ±5%
R201, 202	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%
R203, 204	**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ±5%
R205	**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ±5%
R206	**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ±5%
R207	**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ±5%
R208	**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ±5%
R209	**ERD25FJ122**	Carbon, 1.2kΩ, 1/4W, ±5%
R210	**ERD25FJ681**	Carbon, 680Ω, 1/4W, ±5%
R211	**ERD25FJ221**	Carbon, 220Ω, 1/4W, ±5%
R212	**ERD25FJ391**	Carbon, 390Ω, 1/4W, ±5%
R213	**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ±5%
R214	**ERD25FJ182**	Carbon, 1.8kΩ, 1/4W, ±5%
R215, 216	**ERD25FJ221**	Carbon, 220Ω, 1/4W, ±5%
R217	**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ±5%
R218	**ERD25FJ822**	Carbon, 8.2kΩ, 1/4W, ±5%
R219	**ERD25FJ221**	Carbon, 220Ω, 1/4W, ±5%
R220	**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ±5%
R221	**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ±5%
R301	**ERD25FJ682**	Carbon, 6.8kΩ, 1/4W, ±5%
R302	**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ±5%
R303, 304	**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ±5%
R305	**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ±5%
R306, 307	**ERD25FJ392**	Carbon, 3.9kΩ, 1/4W, ±5%
R308, 309	**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ±5%
R310, 311	**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ±5%
R312, 313	**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ±5%
R314, 315	**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ±5%
R316, 317	**ERD25FJ681**	Carbon, 680Ω, 1/4W, ±5%
R318, 319	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%
R403, 404	**ERD25TJ273**	Carbon, 27kΩ, 1/4W, ±5%
R405	**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ±5%
R406, 407	**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ±5%
R408	**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ±5%
R409	**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ±5%
R410	**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ±5%
R411	**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ±5%
R412	**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ±5%
R413	**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ±5%
R414	**ERD25FJ331**	Carbon, 330Ω, 1/4W, ±5%

Ref. No.	Part No.	Part Name & Description
R415	**ERD25TJ273**	Carbon, 27kΩ, 1/4W, ±5%
R416	**ERD25FJ272**	Carbon, 2.7kΩ, 1/4W, ±5%
R417, 418	**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ±5%
R419	**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ±5%
R420	ERO25CKF1602	Metal Film, 16kΩ, 1/4W, ±1%
R421	**ERD25FJ182**	Carbon, 1.8kΩ, 1/4W, ±5%
R422	**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ±5%
R423, 424	**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ±5%
R425	**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ±5%
R426	**ERD25FJ272**	Carbon, 2.7kΩ, 1/4W, ±5%
R427	**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ±5%
R428	**ERD25FJ331**	Carbon, 330Ω, 1/4W, ±5%
R429, 430	**ERD25TJ684**	Carbon, 680kΩ, 1/4W, ±5%
R431	**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ±5%
R439	**ERD25TJ334**	Carbon, 330kΩ, 1/4W, ±5%
R501	**ERD25TJ393**	Carbon, 39kΩ, 1/4W, ±5%
R502	**ERD25FJ272**	Carbon, 2.7kΩ, 1/4W, ±5%
R503	**ERD25FJ822**	Carbon, 8.2kΩ, 1/4W, ±5%
R504	**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ±5%
R505	**ERD25FJ151**	Carbon, 150Ω, 1/4W, ±5%
R506	**ERD25FJ471**	Carbon, 470Ω, 1/4W, ±5%
R507	**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ±5%
R508	**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ±5%
R509	**ERD25FJ152**	Carbon, 1.5kΩ, 1/4W, ±5%
R510	**ERD25FJ561**	Carbon, 560Ω, 1/4W, ±5%
R511	**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ±5%
R512	**ERD25TJ154**	Carbon, 150kΩ, 1/4W, ±5%
R513	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%
R514	**ERD25FJ122**	Carbon, 1.2kΩ, 1/4W, ±5%
R515	**ERD25FJ272**	Carbon, 2.7kΩ, 1/4W, ±5%
R516	**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ±5%
R517	**ERD25FJ151**	Carbon, 150Ω, 1/4W, ±5%
R518, 519	**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ±5%
R520	**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ±5%
R521	**ERD25FJ151**	Carbon, 150Ω, 1/4W, ±5%
R522	**ERD25FJ330**	Carbon, 33Ω, 1/4W, ±5%
R523	**ERD25FJ331**	Carbon, 330Ω, 1/4W, ±5%
R524	**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ±5%
R525	**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ±5%
R601	**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ±5%
R602, 603	**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ±5%
R604	**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ±5%
R605	**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ±5%
R606	**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ±5%
R607	**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ±5%
R608	**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ±5%
R609	**ERD25FJ391**	Carbon, 390Ω, 1/4W, ±5%
R610, 611	**ERD25FJ330**	Carbon, 33Ω, 1/4W, ±5%
R612	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%
R613	**ERD25FJ101**	Carbon, 100Ω, 1/4W, ±5%
R651, 652	**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ±5%
R653	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%
R654	**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ±5%
R655	**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ±5%
⚠ R701	**ERD50FJ100**	Carbon, 10Ω, 1/2W, ±5%
R702	**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ±5%
R703	**ERD25FJ101**	Carbon, 100Ω, 1/4W, ±5%
R704	**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ±5%
R705	**ERD25FJ101**	Carbon, 100Ω, 1/4W, ±5%
R706	**ERD25FJ100**	Carbon, 10Ω, 1/4W, ±5%
R707	**ERD25FJ272**	Carbon, 2.7kΩ, 1/4W, ±5%
R708	**ERD25FJ681**	Carbon, 680Ω, 1/4W, ±5%
R709	**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ±5%
R710	**ERD25TJ154**	Carbon, 150kΩ, 1/4W, ±5%
R711	**ERD25TJ684**	Carbon, 680kΩ, 1/4W, ±5%
R712	**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ±5%
R713	**ERD25TJ474**	Carbon, 470kΩ, 1/4W, ±5%
R714	**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ±5%
R715	**ERD25FJ100**	Carbon, 10Ω, 1/4W, ±5%

Ref. No.	Part No.	Part Name & Description
CAPACITORS		
C1	ECCD1H220KC	Ceramic, 22pF, 50V, ±10%
C2	ECCD1H220KC	Ceramic, 22pF, 50V, ±10%
C3	ECCD1H050CC	Ceramic, 5pF, 50V, ±0.25pF
C4	ECKD1H102MD	Ceramic, 0.001μF, 50V, ±20%
C5	ECCD1H040CC	Ceramic, 4pF, 50V, ±0.25pF
C6	ECCD1H070CC	Ceramic, 7pF, 50V, ±0.25pF
C7	ECCD1H070CC	Ceramic, 7pF, 50V, ±0.25pF
C8	ECKD1H102MD	Ceramic, 0.001μF, 50V, ±20%
C9	ECBT1HR22K	Ceramic, 0.22pF, 50V, ±10%
C10	ECKD1H102MD	Ceramic, 0.001μF, 50V, ±20%
C11	ECCD1H070CC	Ceramic, 7pF, 50V, ±0.25pF
C12	ECCD1H040CC	Ceramic, 4pF, 50V, ±0.25pF
C13	ECCD1H050CC	Ceramic, 5pF, 50V, ±0.25pF
C14	ECCD1H181K	Ceramic, 180pF, 50V, ±10%
C15	ECCD1H020CC	Ceramic, 2pF, 50V, ±0.25pF
C17	ECKD1H102MD	Ceramic, 0.001μF, 50V, ±20%
C18	ECKD1H103MD	Ceramic, 0.01μF, 50V, ±20%
C19	ECCD1H070CC	Ceramic, 7pF, 50V, ±0.25pF
C20	ECCD1H390KC	Ceramic, 39pF, 50V, ±10%
C21	ECCD1H100KC	Ceramic, 10pF, 50V, ±10%
C22	ECKD1H102ZF	Ceramic, 0.001μF, 50V, +80% −20%
C23	ECCD1H070DC	Ceramic, 7pF, 50V, ±0.5pF
C24	ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80% −20%
C25	ECCD1H070CC	Ceramic, 7pF, 50V, ±0.25pF
C26	ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80% −20%
C27	ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80% −20%
C28	ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80% −20%
C29	ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80% −20%
C30	ECCD1H100KC	Ceramic, 10pF, 50V, ±10%
C101, 102	ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80% −20%
C103, 104	ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80% −20%
C105	**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C106	**ECEA1HS100**	Electrolytic, 10μF, 50V
C107, 108	ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80% −20%
C109	**ECEA50ZR47**	Electrolytic, 0.47μF, 50V
C110	**ECEA1ES220**	Electrolytic, 22μF, 25V
C111	ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80% −20%
C112	**ECEA1CS331**	Electrolytic, 330μF, 16V
C113, 114	ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80% −20%
C201	ECQM1H223KZ	Polyester, 0.022μF, 50V, ±10%
C202	ECQM1H473KZ	Polyester, 0.047μF, 50V, ±10%
C203	ECCD1H050CC	Ceramic, 5pF, 50V, ±0.25pF
C204	ECQS1241JZ	Polystyrene, 240pF, 125V, ±5%
C205, 206	ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80% −20%
C207	ECQM1H472KZ	Polyester, 0.0047μF, 50V, ±10%
C208	ECCD1H390KC	Ceramic, 39pF, 50V, ±10%
C209	ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80% −20%
C210	ECQM1H223KZ	Polyester, 0.022μF, 50V, ±10%
C211	ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80% −20%
C212	ECQM1H122JZ	Polyester, 0.0012μF, 50V, ±5%
C213	ECKD1H103MD	Ceramic, 0.01μF, 50V, ±20%
C214	**ECEA1HS100**	Electrolytic, 10μF, 50V
C215	ECCD1H560KC	Ceramic, 56pF, 50V, ±10%
C216, 217	ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80% −20%
C218	ECEA50ZR1	Electrolytic, 0.1μF, 50V
C219	ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80% −20%
C220	ECKD1H103MD	Ceramic, 0.01μF, 50V, ±20%
C221	ECCD1H121K	Ceramic, 120pF, 50V, ±10%
C222	**ECEA50Z1**	Electrolytic, 1μF, 50V

Ref. No.	Part No.	Part Name & Description
C223	ECKD1H103MD	Ceramic, 0.01μF, 50V, ±20%
C224	ECCD1H820KC	Ceramic, 82pF, 50V, ±10%
C301	ECQS1102JZ	Polystyrene, 0.001μF, 125V, ±5%
C302	**ECEA50Z1**	Electrolytic, 1μF, 50V
C303	ECEA50ZR1	Electrolytic, 0.1μF, 50V
C304	ECQM1H182JZ	Polyester, 0.0018μF, 50V, ±5%
C305	**ECEA50Z1**	Electrolytic, 1μF, 50V
C306	**ECEA1ES220**	Electrolytic, 22μF, 25V
C307, 308	ECQM1H223KZ	Polyester, 0.022μF, 50V, ±10%
C309, 310	ECQM1H272KZ	Polyester, 0.0027μF, 50V, ±10%
C311, 312	ECKD1H331KB	Ceramic, 330pF, 50V, ±10%
C313, 314	ECQM1H222KZ	Polyester, 0.0022μF, 50V, ±10%
C315, 316	ECEA50ZR33	Electrolytic, 0.33μF, 50V,
C401	ECQM1H153KZ	Polyester, 0.015μF, 50V, ±10%
C402	ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80% −20%
C404	**ECEA16N10**	Non-polar Electrolytic, 10μF, 16V
C405	**ECEA1CS330**	Electrolytic, 33μF, 16V
C406	**ECEA50Z1**	Electrolytic, 1μF, 50V
C407, 408	ECQM1H473KZ	Polyester, 0.047μF, 50V, ±10%
C501	ECCD1H220KC	Ceramic, 22pF, 50V, ±10%
C502	ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80% −20%
C504	ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80% −20%
C505	ECCD1H101K	Ceramic, 100pF, 50V, ±10%
C506	ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80% −20%
C507	ECCD1H060CC	Ceramic, 6pF, 50V, ±0.25pF
C508	ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80% −20%
C509	ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80% −20%
C510, 511	ECCD1H330JC	Ceramic, 33pF, 50V, ±5%
C512	ECCD1H101K	Ceramic, 100pF, 50V, ±10%
C513	ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80% −20%
C514	**ECEA1AS101**	Electrolytic, 100μF, 10V
C515	ECQM1H223KZ	Polyester, 0.022μF, 50V, ±10%
C516	**ECEA50M2R2R**	Electrolytic, 2.2μF, 50V
C517	ECQM1H273KZ	Polyester, 0.027μF, 50V, ±10%
C518	ECQM1H153KZ	Polyester, 0.015μF, 50V, ±10%
C519	ECQM1H562KZ	Polyester, 0.0056μF, 50V, ±10%
C520	ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80% −20%
C521	**ECEA1HS470**	Electrolytic, 47μF, 50V
C522	ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80% −20%
C523	ECKD1H102ZF	Ceramic, 0.001μF, 50V, +80% −20%
C601	**ECEA1AS470**	Electrolytic, 47μF, 10V
C602	ECKD1H102ZF	Ceramic, 0.001μF, 50V, +80% −20%
C603	**ECEA1AS221**	Electrolytic, 220μF, 10V
C606	**ECEA1JS4R7**	Electrolytic, 4.7μF, 63V
C607	**ECEA1AS221**	Electrolytic, 220μF, 10V
C608	**ECEA1JS4R7**	Electrolytic, 4.7μF, 63V
C701, 702	**ECEA1CS102**	Electrolytic, 1000μF, 16V
C703	ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80% −20%
C704	**ECEA1CS330**	Electrolytic, 33μF, 16V
C705	**ECEA1VS102**	Electrolytic, 1000μF, 35V
C706	**ECEA1CS331**	Electrolytic, 330μF, 16V
C707	ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80% −20%
C708	**ECEA1VS330**	Electrolytic, 33μF, 35V
C709	**ECEA1VS101**	Electrolytic, 100μF, 35V
C710	**ECEA1JS330**	Electrolytic, 33μF, 63V
C711	**ECEA1JS4R7**	Electrolytic, 4.7μF, 63V
C712	**ECEA1HS100**	Electrolytic, 10μF, 50V
C713	ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80% −20%
⚠ C714, 715	ECKDKC103PF	Ceramic, 0.01μF, 400V AC, +100% −0%
C716	**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C717, 718	**ECEA1CS330**	Electrolytic, 33μF, 16V

■ SCHEMATIC DIAGRAM ····· MODEL ST-S3

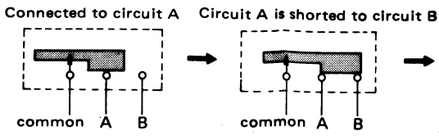
*** This schematic diagram may be modified at any time with the development of new technology.**

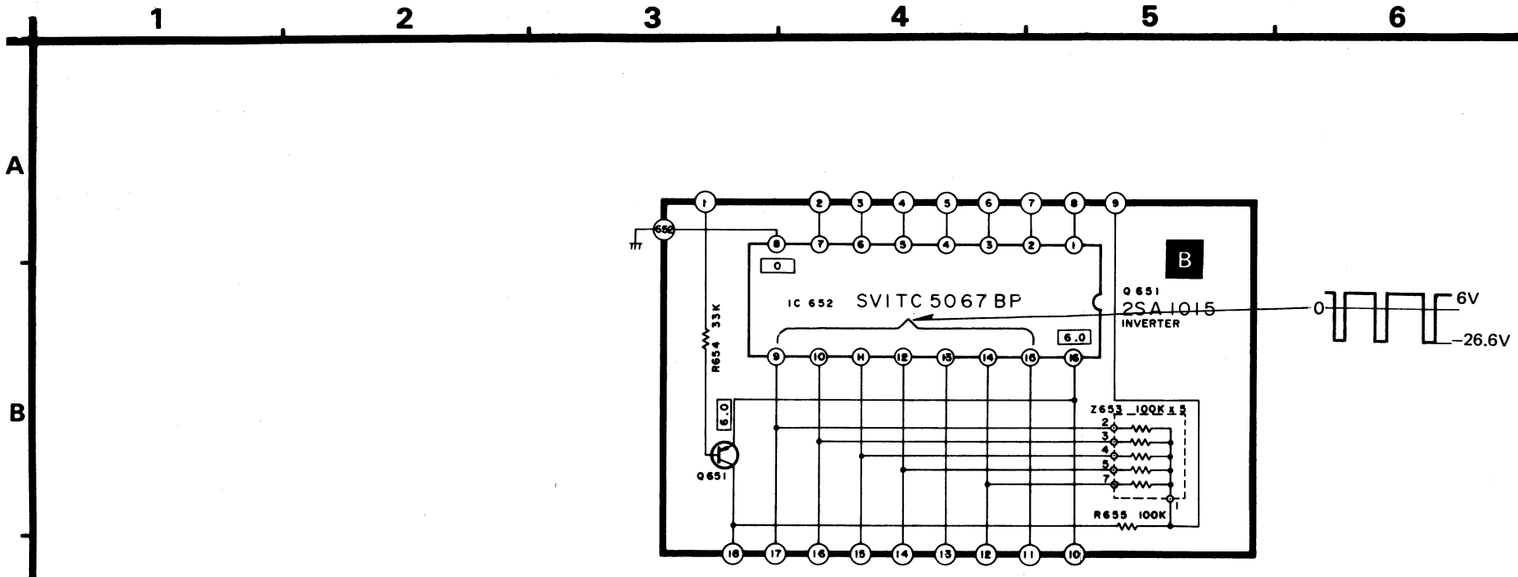
Notes:

1. **S1-1 ~ S1-6:** Band selector switch in "**FM**" position.
2. **S2-1 ~ S2-3:** FM-AM muting/FM mode selector in "**on/auto**" position.
3. **S3:** Manual tuning (down) switch.
4. **S4:** Manual tuning (UP) switch.
5. **S5:** Memory write switch.
6. **S6 ~ S12:** Preset-tuning switch.
7. **S13:** Power source switch in "**on**" position.
8. **S14:** FM-AM allocation switch
9. **S15:** Voltage adjuster switch in "**240V**" position.
   ①110⟷ ②120⟷ ③220⟷ ④240
10. **S16:** FM Antenna selector switch in "**NORMAL**" position.
    NORMAL⟷TUNED TYPE
11. Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
    ▭ Voltage during FM monaural or non-signal reception, ( ) Voltage in AM mode, < > Voltage during FM stereo reception.
    ⌜ ⌟ Voltage during muting circuit operation
12. (With muting switch set to ON, a bias is applied to the switching transistor of muting circuit so that the output comes out in case of over 18 dB antenna input and is grounded when the input is less than 17 dB.)
    ⚠ indicates that only parts specified by the manufacturer be used for safety.
13. Signal lines ⇨FM ⟶AM ➡AF

Shorting Switch

This unit uses a shorting switch. As illustrated b
In the circuit diagram, the shaded area represents t





*** This schematic diagram may be modified at any time with the development of new technology.**

es are the standard values for the unit
electronic circuit tester (high impe-
is taken as standard. Therefore, there
s in the voltage values, depending on
e of the DC circuit tester.
FM monaural or non-signal reception,
1 mode, < > Voltage during FM

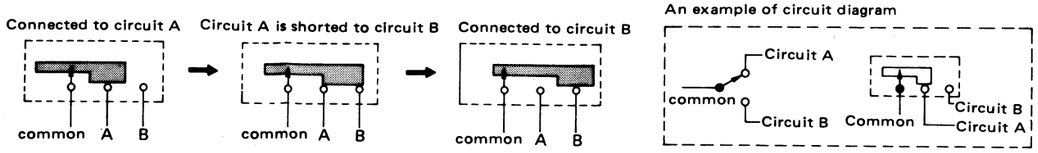
muting circuit operation

(With muting switch set to ON, a bias is applied to the switching transistor of muting circuit so that the output comes out in case of over 18 dB antenna input and is grounded when the input is less than 17 dB.)

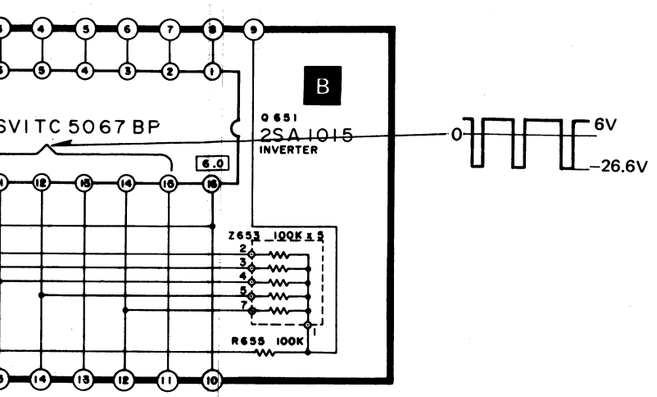
12. ⚠ indicates that only parts specified by the manufacturer be used for safety.
13. Signal lines ⇨FM ⟶AM ⟹AF

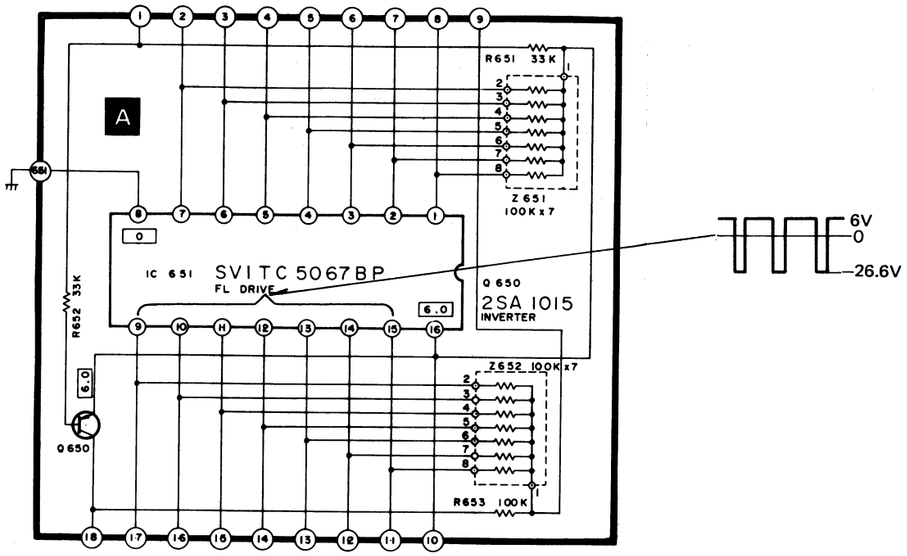
Shorting Switch

This unit uses a shorting switch. As illustrated below, the circuit is shorted to the next circuit without being opened. In the circuit diagram, the shaded area represents the common terminal.

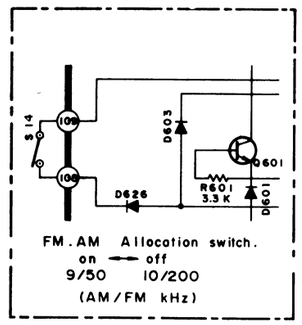


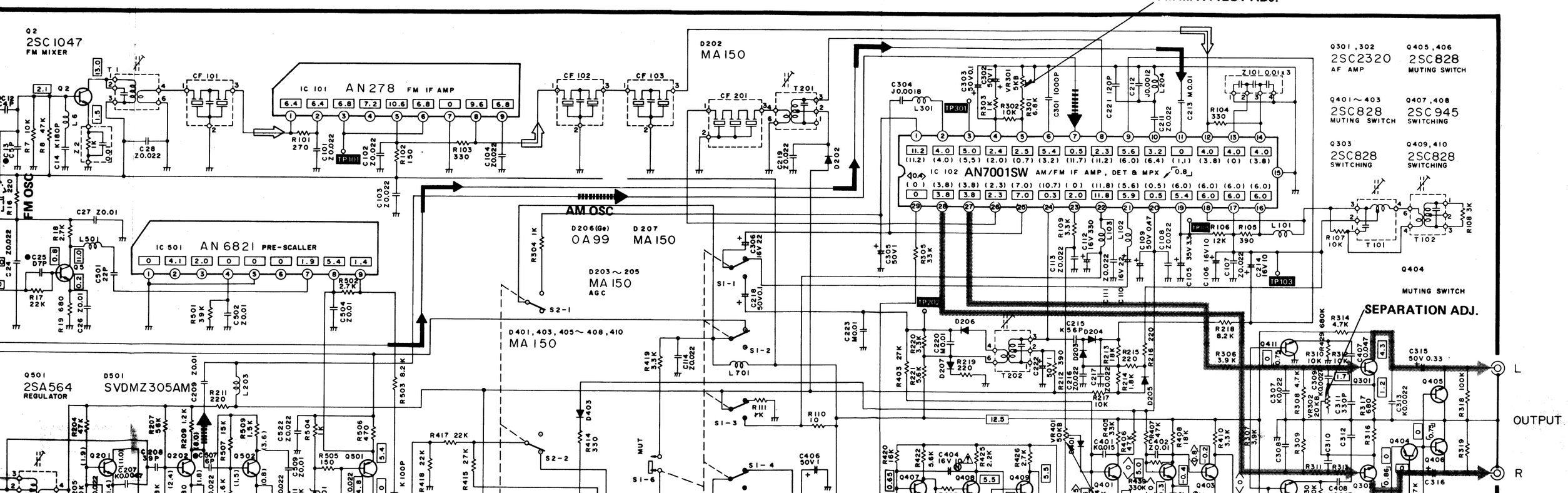
4 5 6 7 8 9 10 11 12 13





Product for [XA], [XAL] only





Q501
2SA564
REGULATOR

D501
SVDMZ305AM

OUTPUT
L
R

D402,404(Ge)
0A99

Q411,412
2SC828
MUTING

D409
LN220RP

D617 ~ 624
LN831RP

FM MUTING ADJ.

IC 601 MN1203
MEMORY

IC 603 SVIM54517P
LED DRIVER

IC 602 MN1400ZS
MICRO COMPUTER

D604,605
MA150

Q413
2SC828
MUTING

Q602,603
2SC828
BUFFER

D701,702
SVDMI151U

Q701
2SD592
REGULATOR

Q702
2SD793
REGULATOR

D704
MA1130

D706
SVDMZ336B

D703
SVDMZ307A

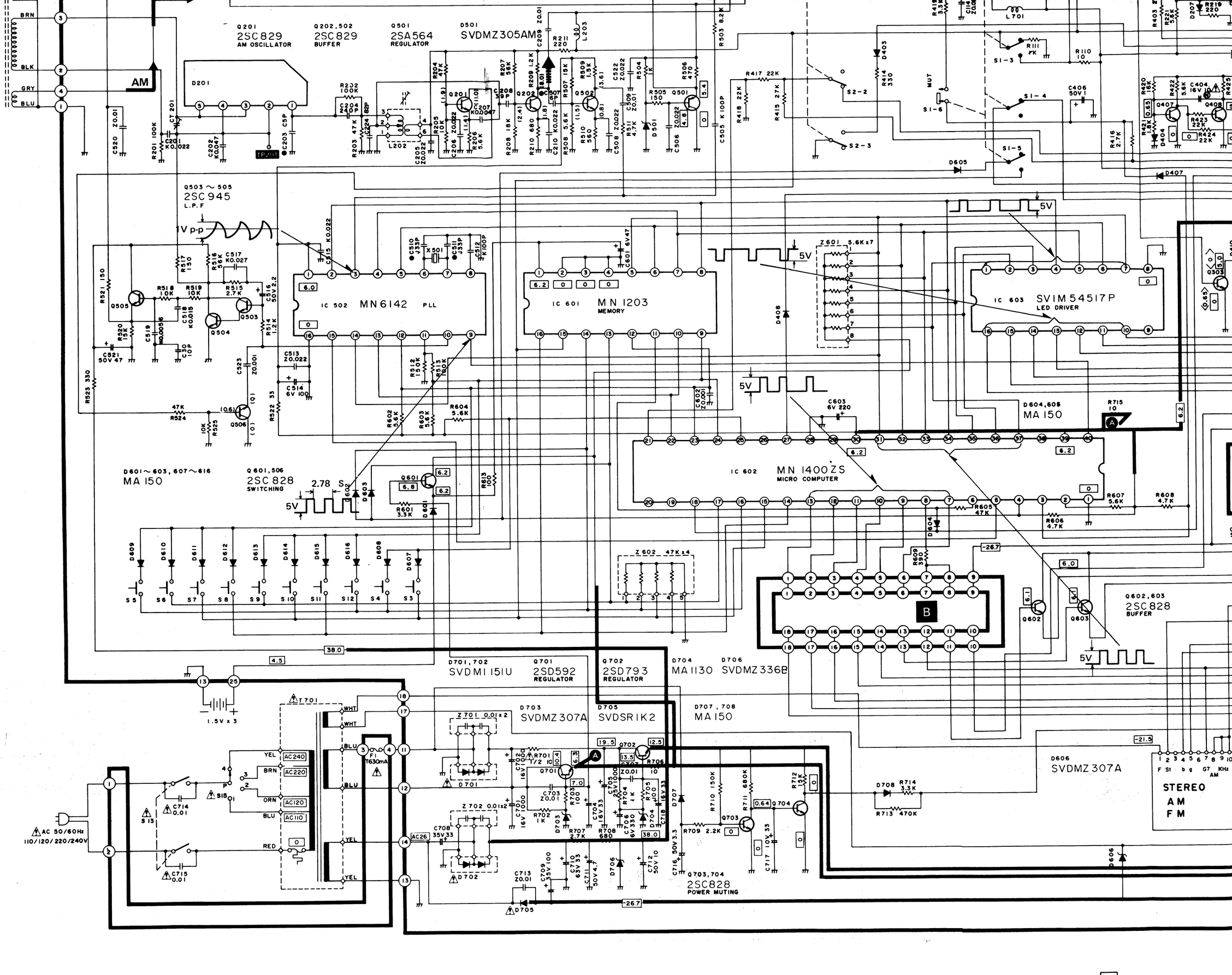
D705
SVDSR1K2

D707,708
MA150

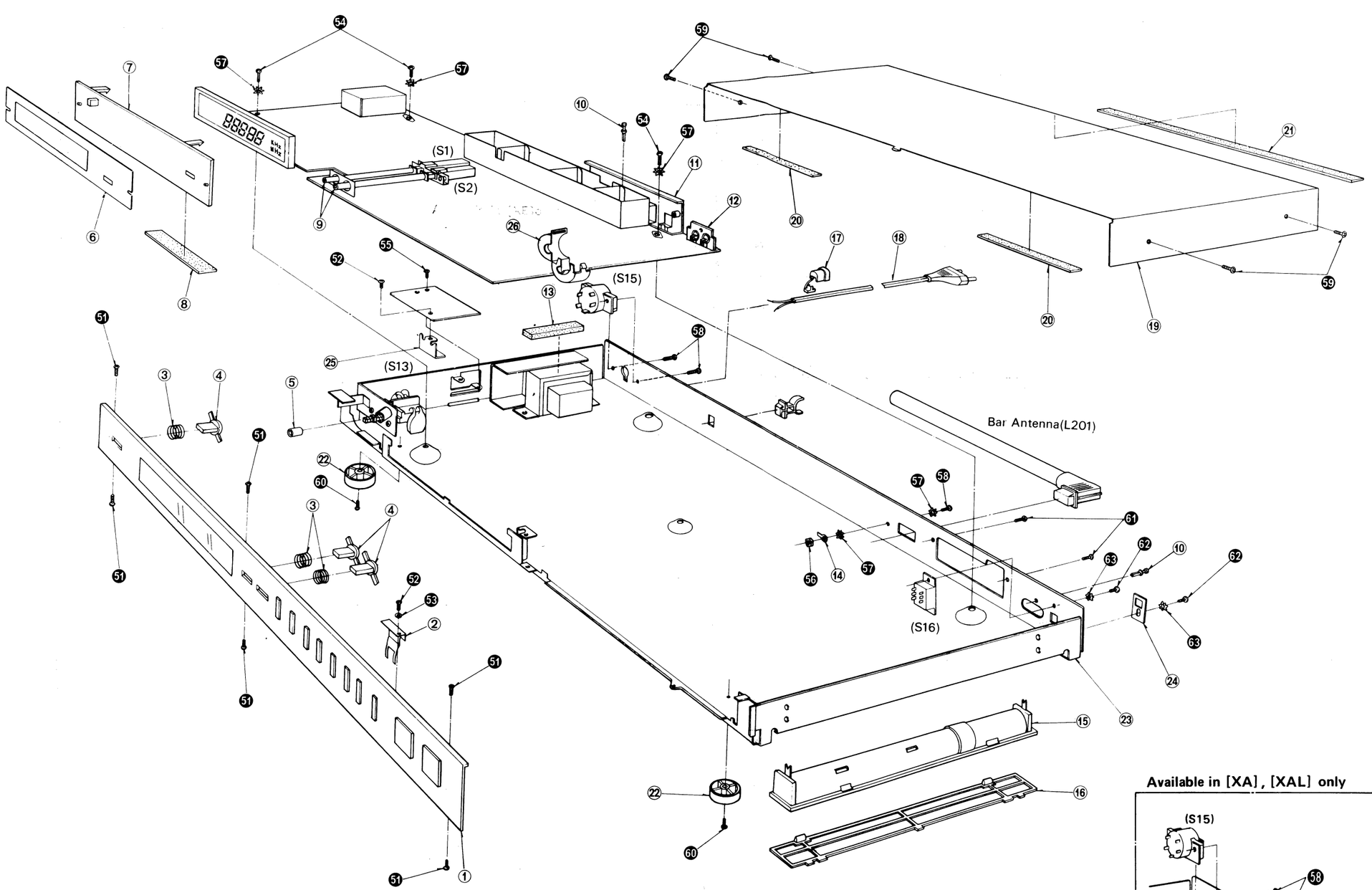
D606
SVDMZ307A

Q703,704
2SC828
POWER MUTING

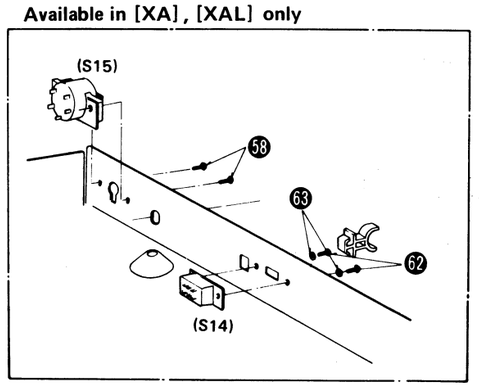
STEREO
AM
FM
000.00
KHz
MHz


Q201
2SC829
AM OSCILLATOR
Q202,502
2SC829
BUFFER
Q501
2SA564
REGULATOR
D501
SVDMZ305AM
AM
BRN
BLK
GRY
BLU
D201
IC 502 MN6142 PLL
IC 601 MN 1203
MEMORY
IC 603 SVIM54517P
LED DRIVER
IC 602 MN 1400ZS
MICRO COMPUTER
Q503 ~ 505
2SC945
L.P.F
1V p-p
5V
D601~603, 607~616
MA 150
Q601,506
2SC828
SWITCHING
2.78 S
D604,605
MA 150
Q602,603
2SC828
BUFFER
D701,702
SVDMI151U
Q701
2SD592
REGULATOR
Q702
2SD793
REGULATOR
D704
MA1130
D706
SVDMZ336B
D703
SVDMZ307A
D705
SVDSR1K2
D707,708
MA150
D606
SVDMZ307A
STEREO
AM
FM
1.5V x 3
AC 50/60Hz
110/120/220/240V
Q703,704
2SC828
POWER MUTING

■ EXPLODED VIEW



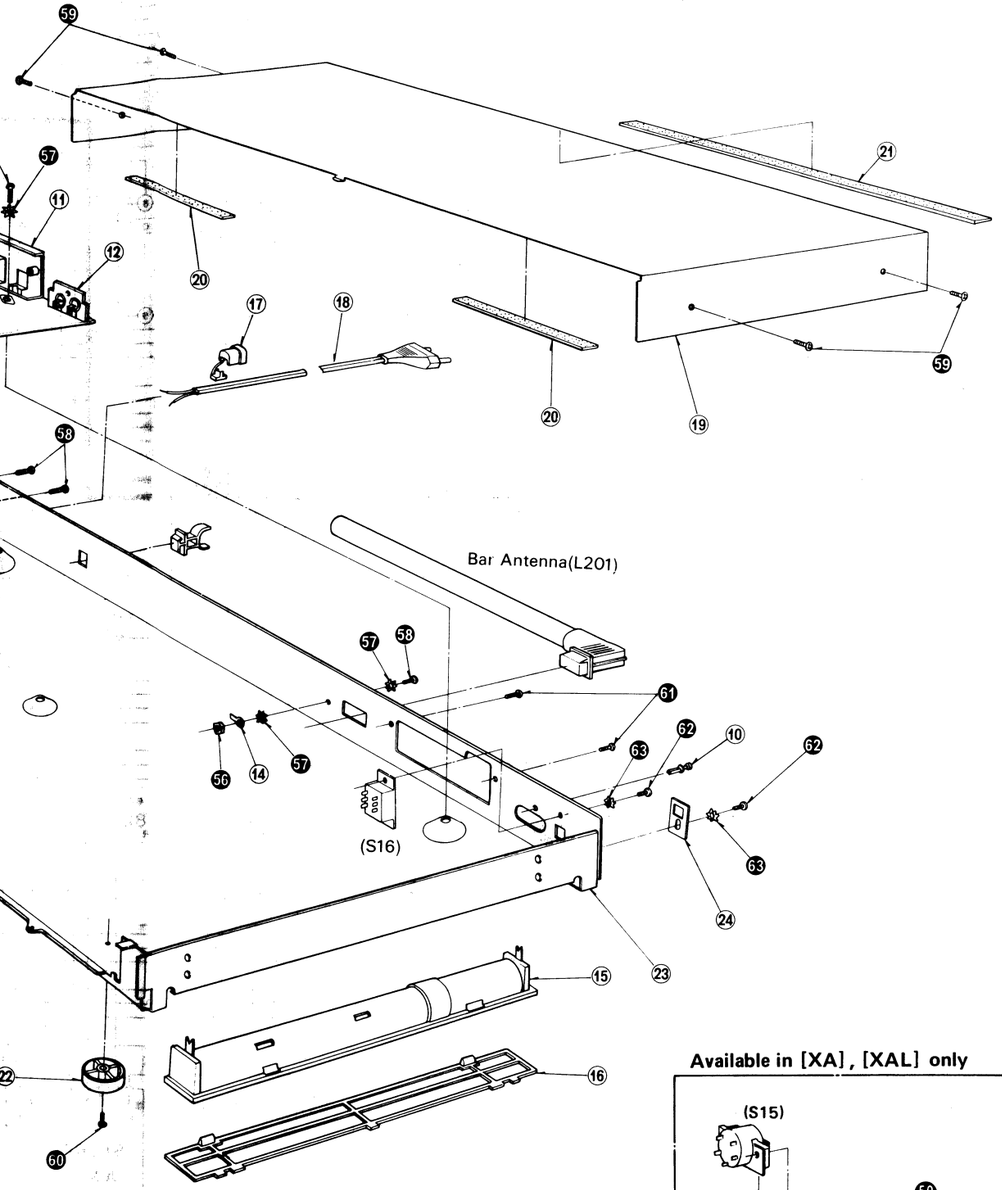
Available in [XA], [XAL] only



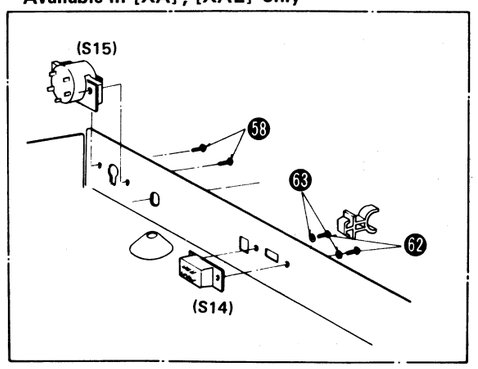
■ REPLACE

Notes: 1. Part
use t
2. ⚠ in
be us
3. K
O -m

Ref. No.		
CABINET and CHASSIS		
1	O	SGW
1	K	SGW
2		SUS
3		SUS
4	O	SBC
4	K	SBC
5		SUB
6	O	SDU
6	K	SDU
7		SGU
8		SHS
9		SUB
10		SHR
11		SJF4
12		SJF3
13		SHG
14		RJT
15		SYE
16		SJB
17		SFS
17 [XE] only		SFS
18	⚠	RJA
18 [XE] only	⚠	RJA
18 [XAL] only	⚠	QFC
19	O	SKC
19	K	SKC
20		SHS
21		SHS
22		SKL
23 [E]		SGP
23 [XE,EG,XGH XGF, EB]		SGP
23 [XA, XAL]		SGP
24		SHR
25		SUW
26 [XE, XAL] only		SUV



Available in [XA], [XAL] only



■ REPLACEMENT PARTS LIST ····· Cabinet & Chassis Parts

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. ⚠ indicates that only parts specified by the manufacturer be used for safety.
3. [K] -marked parts are used for black type only, while O -marked parts are for silver type only.
4. Parts other than [K] -and O -marked are used for both black and silver types.
5. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Black type model No. : ST-S3 (K)

Ref. No.		Part No.	Part Name & Description
CABINET and CHASSIS PARTS			
1	O	SGWTS3D	Panel, Front Ass'y
1	K	SGWTS3KD	Panel, Front Ass'y
2		SUS185	Bracket
3		SUS187	Spring, Power, Selector and FM AM Muting/ FM Mode Switch
4	O	SBC259	Button, Power, Selector and FM AM Muting/ FM Mode Switch
4	K	SBC259–1	Button, Power, Selector, and FM AM Muting/ FM Mode Switch
5		SUB39	Spacer, Power Switch
6	O	SDU25	Filter, Tinted Plate
6	K	SDU25–2	Filter, Tinted Plate
7		SGU105	Transparent Cover, Indication Display Panel
8		SHS1011	Fiber, Indication Display Panel
9		SUB29	Coupling Rod, Selector and FM AM Muting/ FM Mode Switch
10		SHR401–1	Latch, FM/AM Antenna Terminal and Output Terminal
11		SJF4419–2	Terminal, FM/AM Antenna
12		SJF3207–1	Terminal, Output
13		SHG647	Fiber, Power Transformer
14		RJT202B	Lug, Ground
15		SYE697	Battery Box Ass'y
16		SJB9001	Cover, Battery Box
17		SFSR4N4	Bushing, AC Cord
17 [XE] only		SFSR5N4	Bushing, AC Cord
18	⚠	RJA23ZC	AC Cord, Power Source
18 [XE] only	⚠	RJA45ZC	AC Cord, Power Source
18 [XAL] only	⚠	QFC1208M	AC Cord, Power Source
19	O	SKC50H	Cabinet, Ass'y
19	K	SKC50B	Cabinet, Ass'y
20		SHS1013	Fiber, Cabinet
21		SHS1009	Fiber, Cabinet
22		SKL227	Foot, Bottom Board
23 [E]		SGP1710–4A	Chassis
23 [XE,EG,XGH XGF, EB]		SGPTS3E	Chassis, SGP1710-4A with Name Plate (SGT22390)
23 [XA, XAL]		SGP1750–5A	Chassis
24		SHR5073–1	Stopper, FM Antenna Selector and FM/AM Allocation Switch
25		SUW1407	Bracket
26 [XE, XAL] only		SUV473	Cover, Voltage Adjuster

Ref. No.		Part No.	Part Name & Description
SCREWS and WASHERS			
51		**XTB3+8BFZ**	Screw, Tapping ⊕ 3 x 8 (Front Panel)
52		**XTB3+8BFN**	Screw, Tapping ⊕ 3 x 8 (Bracket)
53		**XWE3**	Washer, Plain 3φ
54		**XTB3+8BFZ**	Screw, Tapping ⊕ 3 x 8 (Main P.C.B.)
55		**XTB3+8BFN**	Screw, Tapping ⊕ 3 x 8 (Fuse P.C.B.)
56		**XNG3ES**	Nut, M3 (Ground Lug)
57		**XWC3B**	Washer, Toothed Lock 3φ
58		**XSN3+8BVS**	Screw, ⊕ 3 x 8 (Ground Lug, Voltage Adjuster)
59	O	**XTB4+8BFN**	Screw, Tapping ⊕ 4 x 8 (Cabinet)
59	K	**XTB4+8BFZ**	Screw, Tapping ⊕ 4 x 8 (Cabinet)
60		**XTB3+10BFN**	Screw, Tapping ⊕ 3 x 10 (Front)
61		**XTB3+8BFZ**	Screw, Tapping ⊕ 3 x 8 (FM/AM Antenna Terminal)
62		**XSN3+6BVS**	Screw, Pan Head Machine ⊕ 3 x 6 (FM/AM Allocation Switch, FM Antenna Selector Switch)
63		**XWA3BFZ**	Washer, Spring, 3φ
ACCESSORIES			
A1		SJP2129–5	Cord, Connection Shield
A2		SKL235	Foot
A3		SSA267	Cord, FM Indoor Antenna
A4 [XA] only	⚠	SJP5213–1	Plug Adaptor, Power Source
PACKING PARTS			
P1		SPP647	Polyethylene Bag
P2		SPS2295–1	Pad, Left and Right Side
P2 [XAL] only		SPS2295–2	Pad, Left Side
P2 [XAL] only		SPS2295–3	Pad, Right Side
P3		SPS2297	Pad, Top Side
P4	O	SPG2461	Carton Box
P4 [XGF] only	O	SPG2465	Carton Box
P4 [XAL] only	O	SPG2649	Carton Box
P4 [E,EG,XGH, XA] only	K	SPG2463	Carton Box
P5		SQF10427	Instructions Book, Printed Matter
P5 [XA, XAL] only		SQF10505	Instructions Book, Printed Matter

Areas

* [E] and [EG] are available in Scandinavia and European except Belgium, United Kingdom, Switzerland, Holland and France.
* [XGF] is available in France.
* [XGH] is available in Holland.
* [EB] is available in Belgium.
* [XE] is available in United Kingdom.
* [XA] is available in Asia, Latin America, Middle East and Africa.
* [XAL] is available in Australia.

Printed in Japan
80046800 ®Y.K.