ORDER NO. SD7808-1409

Service Manual

ST-9031/K

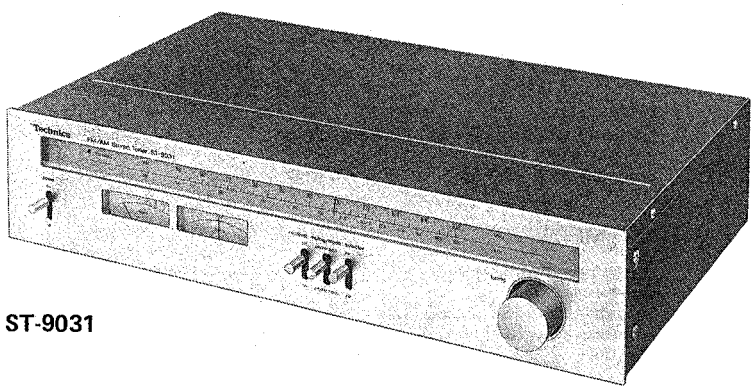
FM/AM Stereo Tuner

ST-9031

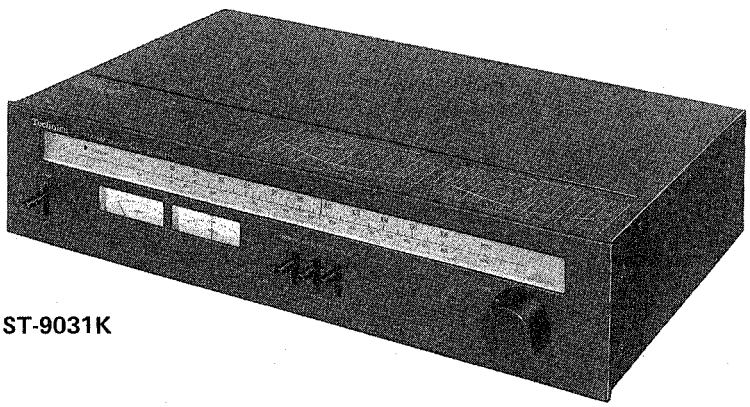
(E), (EG), (X), (XA), (XE), (XGF), (XGH)

ST-9031K

(E), (EG), (XGH)



ST-9031



ST-9031K

* The models ST-9031 (E, EG) and ST-9031K (E, EG) are available in Scandinavia and European only.
* The models ST-9031 (X) and ST-9031 (XA) are available in Asia, Latin America, Middle East and Africa only.
* The model ST-9031 (XE) is available in United Kingdom only.
* The model ST-9031 (XGF) is available in France only.
* The models ST-9031 (XGH) and ST-9031K (XGH) are available in Holland only.

TECHNICAL SPECIFICATIONS

Specifications are subject to change without notice for further improvement.

[DIN 45 500]

FM TUNER SECTION

Frequency range		88 ~ 108 MHz
Antenna terminals		300Ω (balanced), 75Ω (unbalanced)
Sensitivity (±40 kHz deviation)		
S/N 30 dB		1.9μV (300Ω), 1.3μV (75Ω)
S/N 26 dB		1.7μV (300Ω), 1.1μV (75Ω)
S/N 20 dB		1.5μV (300Ω), 0.9 V (75Ω)
IHF usable sensitivity		1.9μV (IHF '58)
IHF S/N 46 dB stereo quieting sensitivity		22μV (75Ω)
Total harmonic distortion	MONO	0.08%
	STEREO	0.1%
S/N (±40 kHz deviation)	MONO	69 dB (IHF: 75 dB)
	STEREO	65 dB (IHF: 70 dB)
Frequency response		20 Hz ~ 15 kHz, +0.2 dB, −0.8 dB
Alternate channel selectivity		75 dB
Capture ratio		1.0 dB
Image rejection at 98 MHz		75 dB
IF rejection at 98 MHz		100 dB
Spurious response rejection at 98 MHz		90 dB
AM suppression		55 dB
Stereo separation	1 kHz	50 dB, 10 kHz 40 dB
Leak carrier	19 kHz	−58 dB (−60 dB, IHF)
	38 kHz	−63 dB (−60 dB, IHF)
Limiting point		1.5μV
Bandwidth	IF amplifier	250 kHz
	FM demodulator	1000 kHz
Channel balance (250 Hz ~ 6300 Hz)		±1.0 dB

AM TUNER SECTION

Frequency range	525 ~ 1605 kHz
Sensitivity (S/N 20 dB)	30μV, 250μV/m
Selectivity	40 dB
Image rejection at 1000 kHz	45 dB
IF rejection at 1000 kHz	40 dB

GENERAL

Output voltage	0.6V
Power consumption	13W
Power supply (50 Hz/60 Hz)	110V/120V/220V/240V
Dimensions (W x H x D)	430 x 98 x 300 mm (16-15/16" x 3-27/32" x 11-13/16")
Weight	4.5 kg (9.9 lb.)

Technics

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

ST-9031/K

TECHNISCHE DATEN

Spezifikationen können infolge von Verbesserungen ohne Ankündigung geändert werden.

[DIN 45 500]

UKW-TUNERTEIL

Frequenzgang		88 ~ 108 MHz
Antennenanschluss		300Ω (symmetrisch), 75Ω (unsymmetrisch)
Empfindlichkeit (±40 kHz Hub)		
30 dB Rauschabstand		1,9μV (300Ω), 1,3μV (75Ω)
26 dB Rauschabstand		1,7μV (300Ω), 1,1μV (75Ω)
20 dB Rauschabstand		1,5μV (300Ω), 0,9μV (75Ω)
Empfindlichkeit nach IHF		1,9μV (IHF '58)
46 dB Rauschabstand utilisable Empfindlichkeit nach IHF		22μV (75Ω), STEREO
Klirrfaktor	**MONO**	0,08%
	STEREO	0,1%
Rauschabstand (±40 kHz Hub)		
	MONO	69 dB (IHF: 75 dB)
	STEREO	65 dB (IHF: 70 dB)
Frequenzgang		20 Hz ~ 15 kHz, +0,2 dB, −0,8 dB
Selektivität		75 dB
Gleichwellen-Selektion		1,0 dB
Spiegelfrequenzunterdrückung bei 98 MHz		75 dB
ZF-Festigkeit bei 98 MHz		100 dB
Unselektivität-Dämpfung bei 98 MHz		90 dB
AM-Unterdrückung		55 dB
Kanaltrennung	**1kHz**	50 dB. **10 kHz** 40 dB
Hilfsträgerdämpfung (Pilotton)		
	19 kHz	−58 dB (−60 dB, IHF)
	38 kHz	−63 dB (−60 dB, IHF)
Begrenzungseinsatz		1,5μV
Bandbreite	**ZF-Verstärker**	250 kHz
	Ratiodetektor	1000 kHz
Kanalabweichung (250 Hz ~6300 Hz)		±1,0 dB

AM-TUNERTEIL

Frequenzgang	525 ~ 1605 kHz
Empfindlichkeit (20 dB Rauschabstand)	30μV, 250μV/m
Selektivität	40 dB
Spiegelfrequenz-Selektion bei 1000 kHz	45 dB
ZF-Festigkeit bei 1000 kHz	40 dB

ALLGEMEINE DATEN

Ausgangssapannung	0,6V
Leistungsaufnahme	13W
Netzspannung (50 Hz/60 Hz)	110V/120V/220V/240V
Abmessungen (B x H x T)	430 x 98 x 300 mm
Gewicht	4.5 kg

CARACTERISTIQUES TECHNIQUES

Sujet à changement sans préaris.

[DIN 45 500]

PARTIE TUNER FM

Gamme reçue		88 ~ 108 MHz
Impédance d'antenne		300Ω (symétrique) 75Ω (asymétrique)
Sensibilité (±40 kHz déviation)		
Signal/bruit 30 dB		1,9μV (300Ω), 1,3μV (75Ω)
Signal/bruit 26 dB		1,7μV (300Ω), 1,1μV (75Ω)
Signal/bruit 20 dB		1,5μV (300Ω), 0,9μV (75Ω)
IHF Sensibilité		1,9μV (IHF '58)
IHF Sensibilité pour S/B 46 dB		22μV (75Ω), STÉRÉO
Distorsion harmonique total		
	MONO	0,08%
	STEREO	1,1%
Signal/bruit (±40 kHz déviation)	**MONO**	69 dB (IHF: 75 dB)
	STEREO	65 dB (IHF: 70 dB)
Réponse de fréquence		20 Hz ~ 15 kHz, +0,2 dB, −0,8 dB
Sélectvité en canaux alternés		75 dB
Taux de capture		1,0 dB
Réjection de fréquence image à 98 MHz		75 dB
Réjection FI à 98 MHz		100 dB
Réjection de réception non sélective à 98 MHz		90 dB
Suppression AM		55 dB
Séparation stéréophonique	**1 kHz**	50 dB, **10 kHz** 40 dB
Courant porteur de dispersion	**19 kHz**	−58 dB (−60 dB, IHF)
	38 kHz	−63 dB (−60 dB, IHF)
Point limite		1,5μV
Largeur de bande	**Amplificateur FI**	250 kHz
	Démodulateur FM	1000 kHz
Equilibrage de canaux (250 Hz ~ 6300 Hz)		±1,0 dB

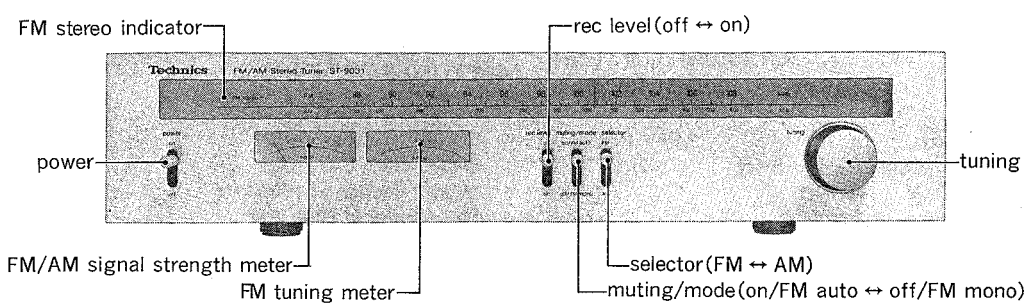
PARTIE TUNER AM

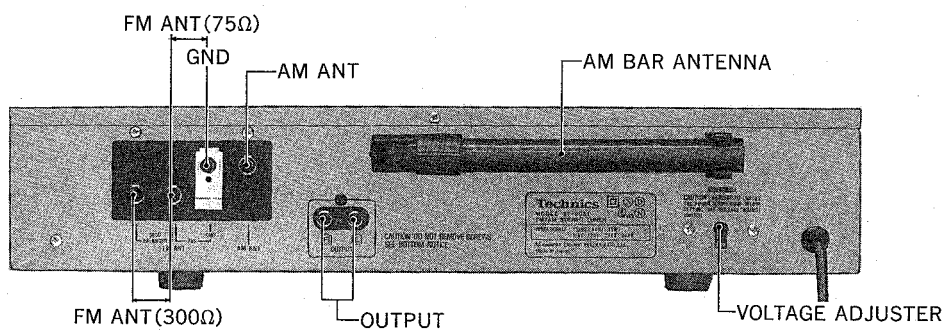
Gamme reçue	525 ~ 1605 kHz
Sensibilité (Rapport S/B 20 dB)	30μV, 250μV/m
Sélectivité	40 dB
Réjection de fréquence image à 1000 kHz	45 dB
Réjection FI à 1000 kHz	40 dB

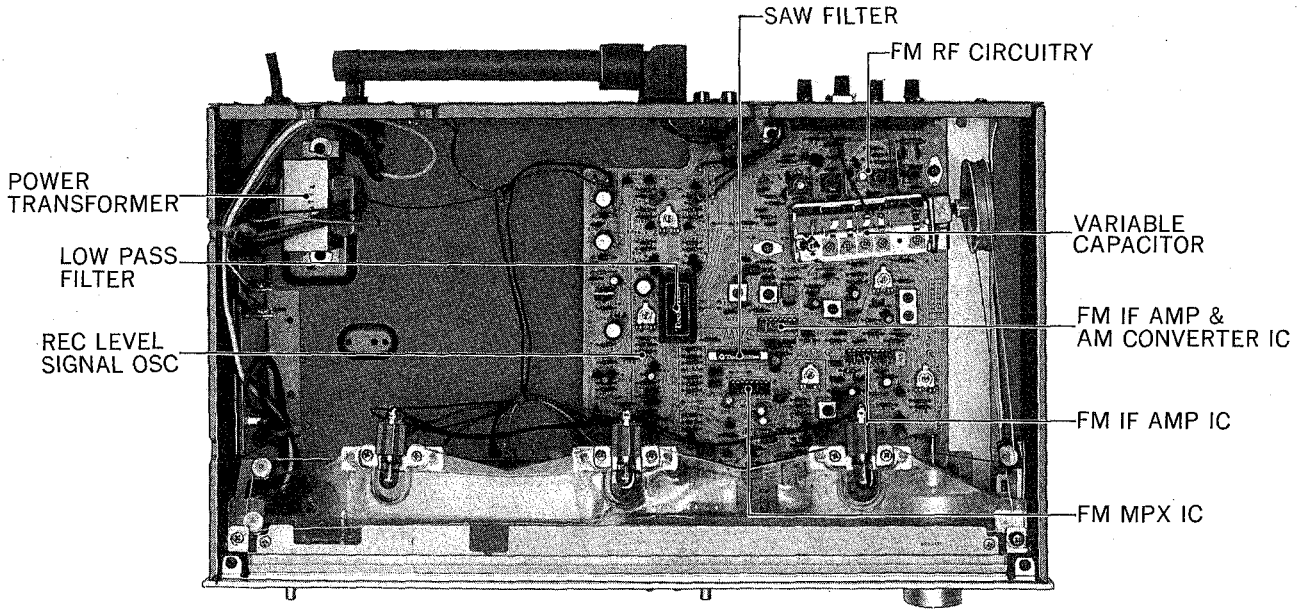
GENERALITES

Tention de sortie	0,6V
Consommation	13W
Alimentation (50 Hz/60 Hz)	110V/120V/220V/240V
Dimensions (L x H x P)	430 x 98 x 300 mm
Poids	4.5 kg

■ LOCATION OF CONTROLS







■ TO REMOVE THE CHASSIS

1. Remove 5 setscrews (①~④ in Fig. 1 and ⑤ in Fig. 2) which fasten the top board.
2. Remove the top board.
3. Remove 5 setscrews (⑥~ ⑩ in Fig. 1) of the front panel.
4. Remove 3 setscrews (⑪ ~ ⑬ in Fig. 2) and 1 latch (No. ⑭ in Fig. 2) of the rear panel.
5. Cut off 2 leads at lead clamps (A and B in Fig. 3, part No. SHR301).
6. Remove 1 setscrew (No. ⑮ in Fig. 4) of the printed circuit board.
7. Then the chassis can be removed as shown in Fig. 4.
8. When assembling the parts, make sure that wires are not caught between the chassis and the printed circuit board or the circuit board is completely fitted in the chassis, and then tighten up each setscrew.

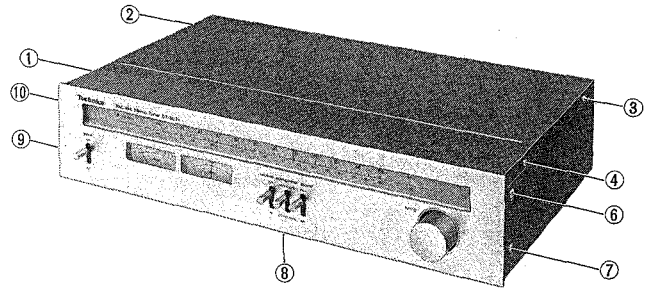


Fig. 1

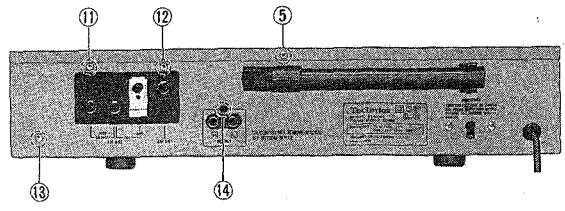


Fig. 2

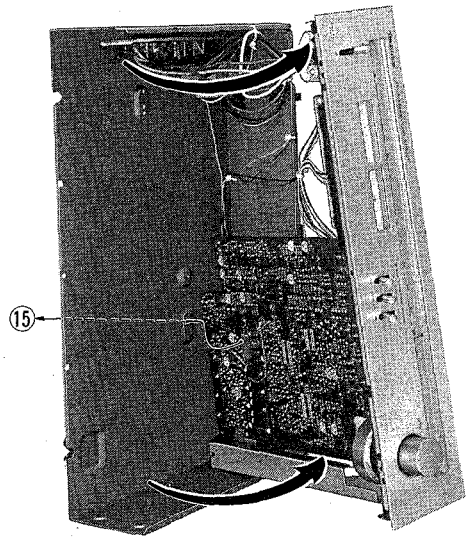


Fig. 4

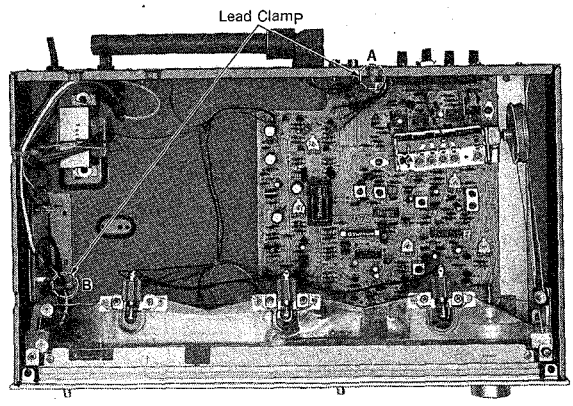
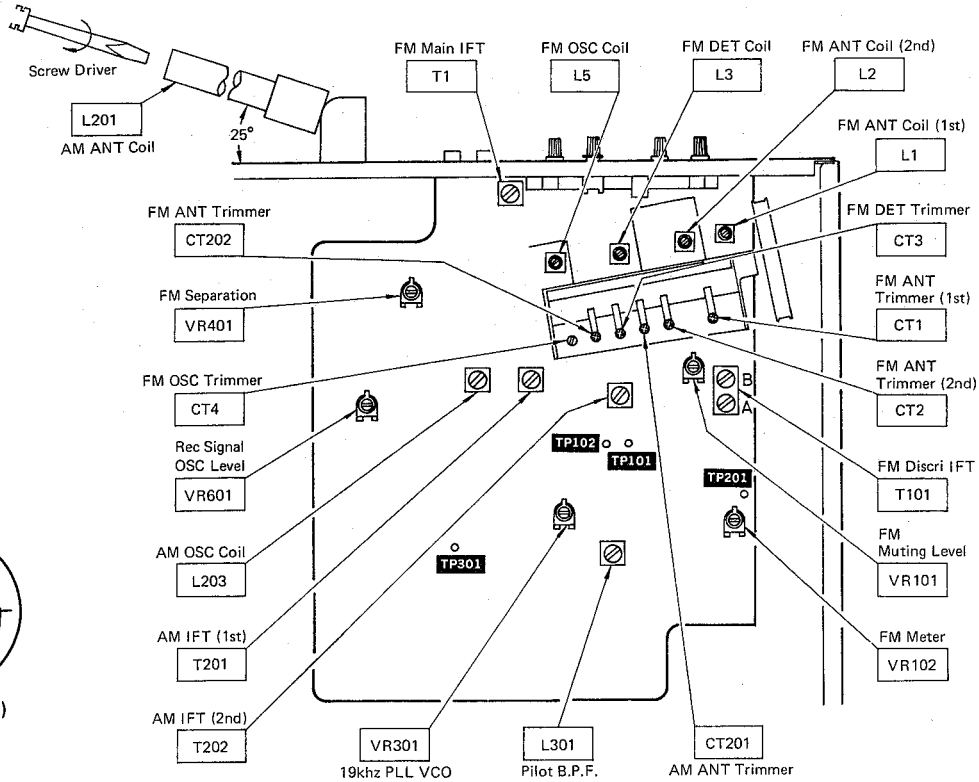
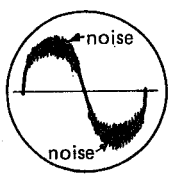


Fig. 3

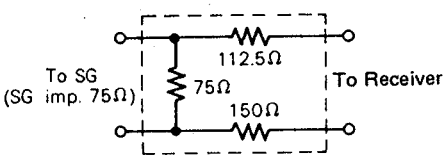
■ ALIGNMENT POINTS





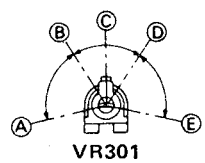
(SINE WAVE)

Fig. 5
(Abb. 5)



300Ω FM Dummy Antenna

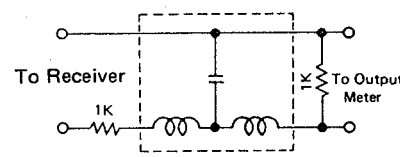
Fig. 6 (Abb. 6)



VR301

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

Fig. 7 (Abb. 7)



Low Pass Filter
(fc=15kHz ~ 19kHz)

Fig. 8 (Abb. 8)

■ ALIGNMENT 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. 6
5. Output of signal generator should be no higher than necessary to obtain an output reading.

	AM/FM SIGNAL GENERATOR		DIAL SETTING	INDICATOR (AC VTVM or SCOPE)	ADJUSTMENT POINTS	REMARKS
	CONNECTION	FREQUENCY				
	AM ALIGNMENT					
1	High side through 0.001μF to **AM** antenna trimmer terminal. common to chassis.	455kHz (30% Mod. with 400 Hz) (For United Kingdom to 470kHz)	Point of non-inter-ference	Connect 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 receiver	600kHz (30% Mod.) with 400Hz)	600kHz	Connect VTVM or scope to "OUTPUT" terminals.	L203 (OSC Coil) L201 (ANT Coil)	Move L201 as shown in "alignment points" Adjust for maximum output, Adjust ferrite core of L201 by screw driver.
3	Fashion loop of several turns of wire and radiate signal into loop of receiver	1500kHz (30% Mod.) with 400Hz)	1500kHz	Connect VTVM or scope to "OUTPUT" terminals.	CT202 (OSC Trimmer) CT201 (ANT Trimmer)	Adjust for maximum output. Repeat steps (2) and (3).
	FM-IF ALIGNMENT					
4		No Signal	Point of non-inter-ference.	Tuning meter of set.	T101 (DISCRI IFT) (A)	Adjust for center position of tuning meter.
	FM-RF ALIGNMENT					
5	Connect to FM 300Ω antenna terminal through FM dummy antenna.	90MHz (100% Mod. with 400Hz)	600kHz	Connect scope to "OUTPUT" terminals.	L5 (OSC Coil) L3 (RF DET Coil) L2 (ANT Coil) L1 (ANT Coil) T1 (FM IFT)	Adjust for maximum amplitude and vertically symmetrical wave form. (Refer to fig. 5)

	FM SIGNAL GENERATOR		DIAL SETTING	INDICATOR (AC VTVM or SCOPE) (DISTORTION METER)	ADJUSTMENT POINTS	REMARKS
	CONNECTION	FREQUENCY				
6	Connect to FM 300Ω antenna terminal through FM Dummy antenna.	106MHz (100% Mod. with 400Hz)	106MHz	Connect scope to "OUTPUT" terminals.	CT4 (OSC Trimmer) CT3 (RF DET Trimmer) CT2 (ANT Trimmer) CT1 (ANT Trimmer)	Adjust for maximum amplitude and vertically symmetrical wave form. Repeat steps (5) and (6).
	FM MONO DISTORTION ALIGNMENT					
7	Connect to FM 300Ω antenna terminal through FM Dummy antenna. Apply 60 dB to set.	100MHz (100% Mod. with 400Hz)	100MHz	Connect distortion meter to "OUTPUT" terminals.	T101 (DISCRI IFT) (B)	Adjust for minimum distortion meter indication
	FM MUTING LEVEL ALIGNMENT					
8	Connect to FM 300Ω antenna terminal through FM dummy antenna. Apply 18 dB(7.5μV) to set.	100MHz (100% Mod. with 400Hz)	100MHz	Connect VTVM or scope to "OUTPUT" terminals.	VR101	FM muting switch to "on". Adjust so that output can be obtained.
	FM SIGNAL METER ALIGNMENT					
9	**1** Apply 100MHz FM signal of 100dB (400Hz 30% modulation) to FM 300Ω antenna terminal through FM dummy antenna. **2** Tuning at 100MHz. **3** Adjust **VR102** for about 4.7 point of signal meter indication					
	FM MPX PILOT ALIGNMENT					
10	Using a frequency counter **1** 100 MHz Non-modulated mono signal applied to set. **2** Muting switch to "ON" **3** Connect frequency counter to **TP301** through resistor (100kΩ). **4** Adjust **VR301** to 19kHz, ±30Hz.				Using alternate system **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. 7.	
	Notes: 1. Stereo modulator ..... • Connect stereo modulator output to EXT MOD terminal of signal generator. • Pilot signal modulation to "10%" 2. FM signal generator ..... • Frequency approximatery 100MHz/Output level to "72dB (IHF)" • Modulation mode to "FM" 3. Selector switch to "FM" 4. FM muting/mode switch to "on/auto"					
	PILOT BAND-PASS FILTER ALIGNMENT					
11	1. Add 100MHz, 400Hz (L−R) 90%, Pilot 10% modulation, 60dB stereo signal to the set. 2. Connect AC VTVM to output terminal of the set through low pass-filter (Refer to fig. 8) 3. Connect distortion meter to L channel output terminal of the set.				4. Adjust **L301** so that output voltage is maximum. 5. Shift OUTPUT MODE so stereo modulator from (L−R) to (L). 6. Re-adjust **L301** so that distortion of L channel is minimized. 7. Distortion of R channel should be nearly the same as L channel.	
	FM STEREO SEPARATION ALIGNMENT					
12	1. Add 100MHz, 1kHz 30%, Pilot 10% modulation, 60dB stereo signal to the set. 2. Connect AC VTVM to output terminal of the set.				3. Adjust **VR401** so that **R** output is minimized when stereo modulator is in **L** (L ch. modulation) mode and the **L** output is minimized in **R** mode.	
	RECORDING SIGNAL LEVEL ALIGNMENT					
13	1. Add 100MHz, 400Hz (L+R) 90%, Pilot 10% modulation, 60dB stereo signal to the set. 2. Connect AC VTVM to L ch. or R ch. output terminal. 3. Output voltage should be 0 dB when mode switch is at "FM" auto".				4. With rec level switch set at "on", adjust **VR601** so that output is the initially obtained output minus 6 dB.	

■ ANWEISUNGEN FÜR ABGLIEICHUNG ■ DEUTSCH

(Für Deutschland)

Anmerkungen:
1. Bereichsschalter ..... { AM (AM Abgleich) / FM (FM Abgleich)
2. FM Muting/Mode-Schalter .... off/mono
3. Netzspannung auf ihren Sollwert halten.
4. UKW-Kunstantenne, 300 ohm ..... Vgl. Abb. 6.
5. Der Ausgang des Meßsenders darf nicht höher sein als unbedingt notwendig für eine gute Ablesung.

	AM MESSENDER		SKALENZEI-GEREIN-STELLUNG DES TUNER	ANZEIGEGEIRÄT (Wechselstrom Röhrenvolt-meter oder Oszillograph ozw. Klirrfaktor-Meßgerät)	ABGLEICHS-PUNKTE	BEMERKUNGEN
	ANSCHLUSS	FREQUENZ				
	AM-ABGLEICH					
1	Heißes Ende des Meßsen-ders über einen 0.001μF Kondensator an den AM Antenneneingang schließen. Kaltes Ende an Masse	455kHz (400 Hz Modulat., 30%)	Kein Empfang	Röhrenvoltmeter oder Oszillograph über den Ausgang "OUTPUT" schließen.	T201 (1. IFT) (A) 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.	600kHz (400Hz Modulat., 30%)	600kHz	Röhrenvoltmeter oder Oszillograph über den Ausgang "OUTPUT" schleißen.	L203 (Osc. Spule) L201 (Ant. Spule)	Auf max. Ausgang abgleichen. Den Ferritkern von L201 mit einem Schrauben-dreher justieren.
3	Das Meßsendersignal induktiv in den Tuner speisen. Hierzu behelfsmäßig eine Rahmenantenne fertigen und an den Eingang schließen.	1500kHz (400Hz Modulat., 30%)	1500kHz	Röhrenvoltmeter oder Oszillograph über den Ausgang "OUTPUT" schleißen.	CT202 (Osc. Trimmer) CT201 (Ant. Trimmer)	Auf max. Ausgang abgleichen. Schritt (2) und (3) sing zu wiederholen.

	AM/UKW MESSENDER		SKALENZEI-GEREIN-STELLUNG DES TUNER	ANZEIGEGEIRÄT (Wechselstrom Röhrenvolt-meter order Oszillograph ozw. Klirrfaktor-Meßgerät)	ABGLEICHS-PUNKTE	BEMERKUNGEN
	ANSCHLUSS	FREQUENZ				
	UKW ZF-ABGLEICH					
4		Kein Signal	Kein Empfang	Abstimmanzeige.	T101 (Diskriminator IFT) [A]	Auf Mittenstellung der Abstimmanzeige abgleichen.
	UKW HF-ABGLEICH					
6	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen.	87.5MHz (400Hz Modulat., 100%	87.5MHz (Frequenz min.	Oszillograph über den Ausgang "OUTPUT" schließen.	L5 (Osc. Spule)	Auf max. Ausgang abgleichen.
6	Meßsender üder eine Kunstantenne an den UKW-Antenneneingang schließen.	90MHz (400Hz Modulat., 100%)	90MHz	Oszillograph über den Ausgang "OUTPUT" schließen.	L3 (Det. Spule) L2 (Ant. Spule) L1 (Ant. Spule) T1 (UKW IFT)	Auf max. Amplitude bei entsprechender Linearität abgleichen. (Vgl Abb. 5)
7	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen.	106MHz (400Hz Modulat., 100%)	106MHz	Oszillograph über den Ausgang "OUTPUT" schließen.	CT4 (Osc. Trimmer) CT3 (Det. Trimmer) CT2 (Ant. Trimmer) CT1 (Ant. Trimmer)	Auf max. Amplitude bei entsprechender Linearität abgleichen. Schritt (5), (6) und (7) sind zu wiederholen.
	ABGLEICH AUF MIN. VERZERRUNG IN STELLUNG UKW-MONO					
8	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen.	100MHz (400Hz Modulat., 100%)	100MHz	Klirrfaktor-Meßbrücke über den Ausgang "OUTPUT" schließen.	T101 (Diskriminator IFT) [B]	Auf min. Verzerrung auf der Klirrfaktor-Meß-bürcke abgleichen Schritt (4) und (8) sind zu wiederholen.
	UKW-MUTING-ABGLEICH					
9	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen. Meßsender auf 18 dB (7.5μV) einstellen.	100MHz (400 Hz Modulat., 100%)	100MHz	Röhrenvoltmeter oder Oszillograph über den Ausgang "OUTPUT" schließen.	VR101	FM Muting-Schalter auf "ON" So einstellen, daß ein Ausgang zu vernehmen ist.
	UKW-FELDSTÄRKEANZEIGE-ABGLEICH					
10	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen. Meßsender für 100dB (ca. 100mV) einstellen.	100MHz (400Hz Modulat., 30%)	100MHz	Feldstärkenanzeige	VR102	VR102 auf ca. 4.7 der Feldstärkean zeige einstellen.
	UKW-STEREO-DEKODER-ABGLEICH					
11	Unter Verwendung eines Zählers 1. Unmoduliertes Mono-Signal 100 MHz in das Gerät speisen. 2. FM Muting-Schalter auf "ON" stellen. 3. Zähler über einen Widerstand 100K ohm an **TP301** schließen. 4. **VR301** auf 19kHz ±30Hz einstellen.				Alternativ-Meßmethode 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. 7 gezeigt.	
	Anmerkungen: 1. Stereo-Modulator ..... Ansgang des Stereo-Modulators an den Eingang EXT MOD des Meßsenders schließen. Eingebauter Oszillator ..... 1kHz/Pilotton-Modulation ..... 10% 2. UKW Meßsender ..... Auf etwa 100MHz einstellen. Ausgangspegel 72dB (IHF). Modulation FM 3. Bereichsschalter ..... FM 4. Mode-Schalter ..... AUTO					
	KONTROLL-BANDPASSFILTER-ABGLEICH					
12	1. Das Gerät auf 100MHz, 400Hz (L-R) 90%, Pilot 10% Modulation, 60 dB Stereosignal einstellen. 2. Tiefpaßfilter (Fig. 8) über Wechselstrom-VTVM an Ausgangsklemme des Gerätes schließen. 3. Verzerrungsmesser an Linkskanal-Ausgangsklemme des Gerätes schließen. 4. **L301** so abgleichen, daß Ausgangsspannung maximal wird.				5. OUTPUT MODE des Stereomodulator von (L-R) auf (L) umschalten. 6. **L301** für minimale Verzerrung des Linkskanals wieder abgleichen. 7. Verzerrung des Rechtskanals soll annähernd gleich wie bei Linkskanal sein.	
	KANALTRENNUNG-ABGLEICH					
13	1. Das Gerät auf 100MHz, 1kHz 30%, Pilot 10% Modulation, 60 dB Stereosignal einstellen. 2. Wechselstrom-Röhrenvoltmeter an Ausgangsklemme des Gerätes schließen.				3. **VR401** 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.	
	AUFNAHMEPEGEL-PRÜF-ABGLEICH					
14	1. Das Gerät auf 100MHz, 400Hz (L+R) 90%, Pilot 10% Modulation, 60 dB Stereosignal einstellen. 2. Wechselstrom-VTVM an L-Kanal oder R-Kanal Ausgangsklemme schließen. 3. Ausgangsspannung muß 0 dB sein, wenn Mode-Schalter auf "FM auto" gestellt ist.				4. Rec level-Schalter auf "on" stellen, **VR601** so abgliechen, daß der Ausgang 6 dB weniger als der am Anfang gewonnene Ausgang ist.	

■ INSTRUCTIONS D'ALIGNEMENT — FRANÇAIS

Notes:
1. Sèlecteur de gamme . . . . . { AM (Alignement AM) / FM (Alignement FM)
2. Commutateur de silencieux/mode. . . off/mono
3. Conserver la tension du secteur à la tension nominale.
4. Antenne fictive FM 300Ω . . . . . Voir fig. 6.
5. Le signal du générateur ne doit pas être plus élevé qu'il n'est nécessaire à obtenir une lecture en sortie.

	AM/FM GENERATEUR		AIGUILLE SUR LE CADRAN	INDICATEUR(C.A. VOLTMETRE ELECTRONIQUE OSCILLOSCOPE OU DISTORSIONMETRE)	POINTS DE REGLAGE	OBSERVATIONS
	BRANCHEMENT	FREQUENCE				
	ALIGNEMENT AM					
1	Côté chaud, à travers 0.001μF, sur le trimmer de l'antenne AM, commum an shâssis	455kHz (modulé à 30% par 400Hz)	Point sans signal	Voltmètre électronique ou oscilloscope sur prise de sortie de l'appareil.	T201 (1 transfo FI) T202 (2 transfo 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.	600kHz (modulé à 30% par 400Hz)	600kHz	Voltmètre électronique ou oscilloscope sur prise de sortie de l'appareil.	L203 (bobine OSC) L201 (bobine ANT)	Réglez au maximum de signal de sortie. Régler le noyau ferrite de L201 à l'aide d'un tournevis.
3	Faire une boucle de quelgues tours et rayonner le signal dans le cadre du l'ampli-tuner.	1500kHz (modulé à 30% per 400Hz)	1500kHz	Voltmètre électronique ou oscilloscope sur prise de sortie de l'appareil.	CT202 (trimmer OSC) CT201 (trimmer ANT)	Réglez au maximum de signal de sortie. Recommencez les étapes (2) et (3).
	ALIGNEMENT FI-FM					
4		Sans signal	Point sans signal	Indicateur d'accord de l'appareil	T101 (transfo FI discri.) [A]	Réglez pour atteindre position médiane sur l'indicateur d'accord.
	ALIGNEMENT RF-FM					
5	Branchez sur la prise d'antenne FM à travers une antenne fictive FM.	90MHz (modulé à 100% par 400Hz)	98MHz	Oscilloscope sur prise de sortie du tuner.	L5 (bobine OSC) L3 (bobine DET) L2 (bobine ANT) L1 (bobine ANT) T1 (transfo FI)	Régler au maximum d'amplitude et de symétrie. (Voir fig. 5)
6	Branchez sur la prise d'antenne FM à travers une antenne fictive FM.	106MHz (modulé à 100% par 400Hz)	106MHz	Oscilloscope sur prise de sortie du tuner.	CT4 (trimmer OSC) CT3 (trimmer DET) CT2 (trimmer ANT) CT1 (trimmer ANT)	Régler au maximum d'amplitude et de symétrie. Recommencez les étapes (5) et (6).
	REGLAGE DE LA DISTORSION FM EN MONO					
7	Branchez sur la prise d'antenne FM à travers une antenne fictive FM.	100MHz (modulé à 100% par 400Hz)	100MHz	Distorsiomètre sur prise de sortie du tuner.	T101 (Transfo FI discri.) [B]	Réglez au minimum d'indication du distorsiomètre. Recommencez les étapes (4) et (7).
	REGLAGE DU SEUIL DU SILENCIEUX D'ACCORD					
8	Branchez sur la prise d'antenne FM à travers une antenne fictive FM. Niveau de sortie du générateur 18 dB (7.5μV).	100MHz (modulé à 100% par 400Hz)	100 MHz	Voltmètre électronique ou oscilloscope sur prise de sortie de l'appareil.	VR101	Commutateur de silencieux sur "ON" Régler pour obtenir une lecture en sortie.
	REGLAGE DE L'INDICATEUR D'ACCORD FM					
9	Branchez sur la prise d'antenne FM à travers une antenne fictive FM. Niveau de sortie du générateur 100 dB(0.1V)	100MHz (modulé à 100% par 400Hz)	100MHz	Indicateur d'intensité	VR102	Réglez VR102 pour obtenir env. "4.7" points sur l'échelle d'intensité
	ALIGNEMENT DU PILOTE MULTIPLEX FM					

	Avec un fréquencemétre	Par un outre système
10	1. Signal mono 100MHz non modulé appliqué à l'appareil. 2. Commutateur de silencieux sur "ON" 3. Branchez le fréquencemètre sur **TP301** à travers une résistance de 100kΩ 4. Réglez **VR301** sur 19kHz ±30Hz	1. Appliquez à l'appareil un signal stéréo provenant d'un gégérateur ou de la réception d'un émetteur. 2. Réglez **VR301** jusqu à ce que l'indicateur de stéréophonic s'allume. Collez le curseur de **VR301** comme indiqué sur la fig. 7

Notes: 1. Modulateur stéréo . . . . . Branchez sa sortie sur la prise EXT. MOD. du générateur.
OSC interne . . . . . 1kHz Modulation du signal pilote 10%
2. Générateur de signal . . . . . Fréquence env. 100MHz, niveau de sortie 72dB (IHF), genre de modulation sur FM.
3. Commutateur de gamme . . . . . FM 4. Commutateur de mode . . . . . AUTO

REGLAGE DE FILTRE PILOTE PASSE-BANDE

11
1. Ajouter 100MHz, 400Hz (gauche–droit) 90%, modulation pilote 10%, signal stéréophonique 60 dB, à l'appareil.
2. Brancher le filtre passe-bas (Fig. 8) à la borne de sortie de l'appareil par un voltmètre à courant alternatif.
3. Brancher le compteur de distorsion à la borne de sortie du canal gauche de l'appareil.
4. Régler **L301** de telle sorte que le voltage de sortie soit maximum.
5. Déplacer le OUTPUT MODE (commutateur de sortie) de la commande de réglage stéréophonique, de (G–D) à (G).
6. Re-régler **L301** de telle sorte que la distorsion du canal gauche (G)soit minimale.
7. La distorsion du canal droit doit être pratiquement la même que celle du canal gauche.

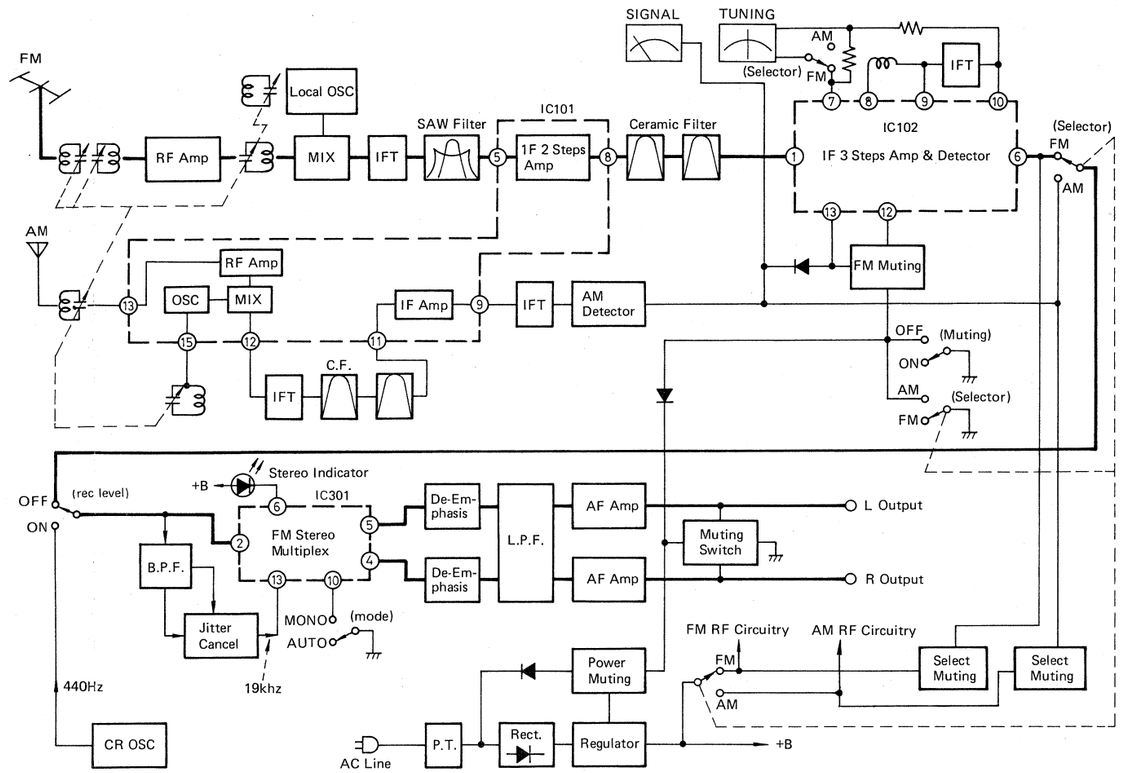
REGLAGE DE LA SEPARATION DES CANAUX

12
1. Ajouter 100MHz, 1kHz, Modulation pilote 10%, signal stéréophonique 60 dB, à l'appareil.
2. Brancher le voltmètre a courant alternatif à la borne de sortie de l'appareil.
3. Régler **VR401** 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 dans le mode **droit.**

REGLAGE DE VÉRIFICATION DU NIVEAU D'ENREGISTREMENT

13
1. Ajouter 100MHz, 400Hz (G + D) 90%, modulation du signal pilote 10%, signal stéréophonique 60dB, à l'appareil.
2. Brancher un voltmètre à courant continu à la borne de sorite du canal gauche ou canal droit.
3. Le voltage de sortie doit être de 0 dB quand le commutateur de mode est sur "FM auto"
4. Quand le commutateur de rec level est réglé sur "on", régler **VR601** de telle sorte que la sortie soit la sortie initialement obtenus moins 6 dB.

■ BLOCK DIAGRAM



■ TECHNICAL GUIDE

- **Surface Acoustic Wave Ceramic Filter**
  Since conventional ceramic filters were unable to satisfy the requirements for selectivity (filter amplitude characteristics) and for waveform transmission (filter's group delay time characteristics), they were used with (wide- and narrow-band IF changeover circuits.
  Unlikes such ceramic filters, SAW filters are excellent in waveform transmission as well as in selectivity, and able to make the most of the basic performance of the tuner.

- **Basic structure and principle of surface acoustic wave ceramic filter**
  The basic structure is shown in Fig. 10. It is an interdigital electrode structure in which fine positive and negative electrode fingers (about 5 ~ 10μ each) are alternately tangles on a piezo-electric board.
  When the piezo-electric board is oscillated, elastic waves are generated at the inter-digital electrode. The energy of the elastic waves is propagated being concentrated on the surface, causing various physical phenomena to take place on the surface. At the same time, the signal can be freely taken out of the surface according to the propagation, and it is easy to obtain non-linear effects.

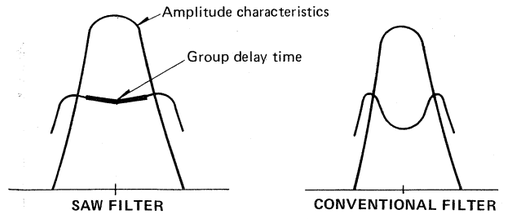


Fig. 9

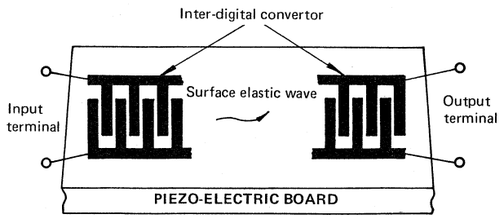


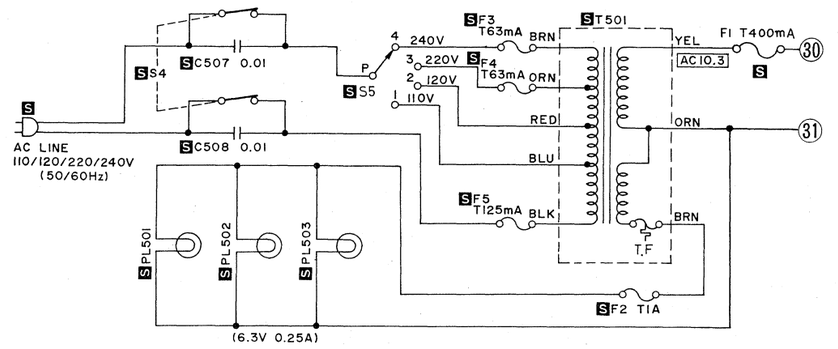
Fig. 10

■ REPLACEMENT PARTS LIST ..... Electric Parts

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

Ref. No.		Part No.	Part Name & Description	Per Set	Remarks
			CERAMIC FILTERS		
CF101		SVFF107MC1-A	SAW Filter, 10.7 MHz (Red)	1	
		SVFF107MC1-B	SAW Filter, 10.67 MHz (Blue)		
		SVFF107MC1-C	SAW Filter, 10.73 MHz (Orange)		
CF102		SVFE107MM-A	Ceramic Filter, 10.7 MHz (Red)	1	
		SVFE107MM-B	Ceramic Filter, 10.67 MHz (Blue)		
		SVFE107MM-C	Ceramic Filter, 10.73 MHz (Orange)		
CF103		SVFE107ML-A	Ceramic Filter, 10.7 MHz (Red)	1	
		SVFE107ML-B	Ceramic Filter, 10.67 MHz (Blue)		
		SVFE107ML-C	Ceramic Filter, 10.73 Mhz (Orange)		
			(Use in pair ranks as same as CF101, 102 and CF103.)		
CF201		SVFSFZ455A	AM Ceramic Filter, 455 kHz	1	
CF201 [XE] only		SVFSFZ470K	AM Ceramic Filter, 470 kHz	1	○
			VARIABLE RESISTORS		
VR101		**EVLS3AA00B54**	Muting Adjustment, 50kΩ (B)	1	
VR102		**EVLS3AA00B24**	Meter Adjustment, 20kΩ (B)	1	
VR301		EVTS3MA00B14	PLL VCO Adjustment, 10kΩ (B)	1	
VR401		**EVLS3AA00B14**	Separation Adjustment, 10kΩ (B)	1	
VR601		**EVLS3AA00B55**	Rec Check Signal Level Adjustment, 500kΩ (B)	1	
			VARIABLE CAPACITOR		
CV1, 2, 3, 4 201, 202 (CT1 ~ 4, 201, 202)		ECV6MD34X71G	Variable Capacitor, FM/AM Tuning Gang with Trimmer	1	
			FUSES		
F1	S	XBA2C04TR0	Fuse, T400mA (Secondary)	1	
F2	S	XBA2C10TR0	Fuse, T1A (Lamp)	1	
F3, 4 [XE] only	S	XBAS2A00602	Fuse, T63mA (Primary)	2	
F5 [XE] only	S	XBAS2A01201	Fuse, T125mA (Primary)	1	
			LAMPS		
PL501 ~ 503	S	XAMR62S	Lamp, Dial (6.3V 0.25A)	3	
			SWITCHES		
S1, 2, 3	S	SSL111	Switch, Selector, Muting/Mode & Rec Level	1	
S4	S	ESL21180	Switch, Power Source	1	
S5	S	ESE372	Switch, Voltage Adjuster	1	
			INTEGRATED CIRCUITS		
IC101		AN217P-BB	IC, FM IF Amp. & AM Converter	1	
IC102		AN377N	IC, FM IF Amplifier & Detector	1	
IC301		AN363N	IC, FM Mpx	1	
			TRANSISTORS		
TR1		3SK40-M	Transistor (FET), FM RF Amplifier	1	
TR2		2SC1674-M	Transistor, FM Mixer	1	
TR3		2SC1675-L1	Transistor, FM Local Oscillator (Use in ranks L1 or L2)	1	
TR101, 102, 301, 302, 401, 402		**2SC1328-T**	Transistor, Muting Switching, 19kHz Amplifier & AF Amplifier (Use in ranks S, T or U)	6	
TR501		**2SC1398-Q**	Transistor, Regulator (Use in ranks Q, R or U)	1	
TR601, 701, 702, 704, 705, 706, 707		**2SC1328-T**	Transistor, Rec Check Signal Oscillator, Power Muting & Muting Switching (Use in ranks S, T or U)	7	
TR703		**2SA666AI-R**	Transistor, Muting Switching (Use in ranks P, Q or R)	1	
			DIODES		
D101, 102, 201, 202, 203		MA150	Diode, Meter Detector & AM AGC	5	
D204		OA99	Diode, AM Detector	1	
D301		LN26RP	Light Emitting Diode, Stereo Indicator	1	
D501, 502	S	**SM112**	Rectifier	2	
D503		MA1130A	Diode, 13V Zener	1	
D701, 702, 703, 704, 705		MA150	Diode, Switching	5	
			COILS and TRANSFORMERS		
L1		SLA4P25	Coil, FM Antenna	1	
L2, 3		SLA4P29	Coil, FM RF Detector	2	
L4		**RLQY15G5**	Coil, Choke	1	
L5		SLO4P31	Coil, Oscillator	1	
L6		**RLQY25S2**	Coil, Choke	1	
L101		SLQX180-2	Coil, Choke	1	
L201		SLF2D49	Coil, AM Antenna	1	
L203		SLO2C9	Coil, AM Oscillator	1	
L301		SLM1C37-Z	Coil, Band Pass Filter	1	
L302		SLMA1Z3-Z	Coil, Low Pass Filter	1	
T1		SLI4C109	Transformer, FM IF	1	
T101		SLI4D513-3	Transformer, FM Discriminator IF	1	
T201		SLI2C123-P	Transformer, AM IF 1st	1	
T202		SLI2C413	Transformer, AM IF 2nd	1	
T501	S	SLT5K87	Transformer, Power	1	○

■ POWER SUPPLY CIRCUITRY OF PRODUCTS FOR UNITED KINGDOM (XE)



NOTES 2: Guide letters of Resistor and Capacitor indicate:

Resistors
ERD . . . .Carbon

Capacitors
ECC . . . . Ceramic
ECG . . . . Ceramic
ECK . . . .Ceramic
ECQM . . Polyester
ECE . . . . Electrolytic
ECQS. . .Polyestylene
ECN . . . Paper
ECE□N . . .Non-Polar Electrolytic

Ref. No.		Part No.
	RESISTORS	
R1		**ERD25TJ223**
R2		**ERD25TJ153**
R4		**ERD25TJ101**
R5		**ERD25TJ333**
R6		**ERD25TJ562**
R7		**ERD25TJ102**
R9		**ERD25TJ221**
R10		**ERD25TJ122**
R11		**ERD25TJ473**
R12		**ERD25TJ123**
R13		**ERD25TJ152**
R14		**ERD25TJ102**
R15, 16		**ERD50TJ684**
R101		**ERD25TJ330**
R102		**ERD25TJ122**
R103		**ERD25TJ391**
R104		**ERD25TJ271**
R105		**ERD25TJ391**
R106		**ERD25TJ104**
R107		**ERD25TJ392**
R108		**ERD25TJ562**
R109		**ERD25TJ822**
R110		**ERD25TJ222**
R111		**ERD25TJ221**
R112		**ERD25TJ271**
R113		**ERD25TJ470**
R114		**ERD25TJ103**
R115		**ERD25TJ472**
R116		**ERD25TJ104**
R117		**ERD25TJ331**
R118		**ERD25TJ103**
R201		**ERD25TJ562**
R202		**ERD25TJ122**
R203		**ERD25TJ392**
R204		**ERD25TJ101**
R205, 206		**ERD25TJ333**
R207		**ERD25TJ274**
R208		**ERD25TJ272**
R209		**ERD25TJ332**
R210		**ERD25TJ104**
R211		**ERD25TJ122**
R301		**ERD25TJ563**
R302		**ERD25TJ562**
R303		**ERD25TJ392**
R304		**ERD25TJ224**
R305, 306		**ERD25TJ104**
R307		**ERD25TJ101**
R308		**ERD25TJ102**
R309		**ERD25TJ153**
R310		**ERD25TJ102**

Ref. No.		Part No.
R311, 312		**ERD25TJ682**
R313, 314		**ERD25TJ472**
R315, 316		**ERD25TJ682**
R401, 402		**ERD25TJ183**
R405, 406		**ERD25TJ104**
R407, 408		**ERD25TJ392**
R409, 410		**ERD25TJ471**
R411, 412		**ERD25TJ104**
R413		**ERD25TJ331**
R415, 416		**ERD25TJ104**
R501		**ERD25TJ272**
R502		**ERD25TJ101**
R503		**ERD25TJ2R2**
R601		**ERD25TJ103**
R602		**ERD25TJ473**
R603		**ERD25TJ123**
R604		**ERD25TJ103**
R605		**ERD25TJ392**
R606		**ERD25TJ104**
R701		**ERD25TJ222**
R702		**ERD25TJ154**
R703		**ERD25TJ684**
R704		**ERD25TJ123**
R705		**ERD25TJ222**
R706, 708		**ERD25TJ104**
R709		**ERD25TJ223**
R710		**ERD25TJ104**
R711		**ERD25TJ102**
R712		**ERD25TJ104**
R713		**ERD25TJ473**
	CAPACITORS	
C1		ECCD1H050CC
C2		ECGN5R91K
C3, 4		ECCD1H120KC
C5		ECKD1H102MDA
C6		ECCD1H040CC
C7		ECCD1H050CC
C8		ECCD1H181K
C9		ECKD1H102MDA
C10, 11		ECKD1H223ZF
C12		ECCD1H220KR
C13		ECCD1H010CC
C14		ECCD1H100KC
C15		ECCD1H390KC
C16		ECCD1H150KC
C17		ECKD1H102ZF
C19, 20		ECCD1H150KC
C21		ECKD1H102ZF
C101		ECQM1H223KZ
C102, 103		ECKD1H223ZF
C104		ECKD1H223ZF
C105		**ECEA1HS100**

Ref. No.		Part No.
C106		**ECEA1JS4R7**
C107		ECCD1H101K
C108		**ECEA2ASR47**
C109		**ECEA1HS100**
C110, 111		ECKD1H103ZF
C112		**ECEA1HS100**
C113		ECKD1H223ZF
C114		ECKD1H103ZF
C115	S	**ECEA16N4R7**
C116		**ECEA2ASR010**
C117		**ECEA1AS221**
C118, 119		ECKD1H223ZF
C202		ECKD1H223ZF
C203		ECKD1H103MD
C204		ECQS05361JZ
C205		ECCD1H100KC
C206		ECKD1H103MD
C207		ECKD1H223ZF
C208		ECCD1H560KC
C209		ECKD1H223ZF
C210		**ECEA1JS4R7**
C211		ECCD1H470K
C212		**ECEA2AS3R3**
C213		ECKD1H223ZF
C214		ECKD1H103MD
C215		ECQM1H333KZ
C301		ECQM1H103KZ
C302		ECQS05562JZG
C303		ECQM1H103KZ
C304		**ECEA1HS100**
C305		**ECEA1ES470**
C306		ECQS05471JZG
C307		**ECEA50MR22R**
C308, 309		**ECEA50MR47R**
C310, 311		ECQM1H123JZ
C401, 402		**ECEA2AS3R3**
C403, 404		**ECEA50M1R**
C405		**ECEA1CS221**
C406, 407		**ECEA50M1R**
C501, 502		ECKD1H103ZF
C503, 504		**ECEA1CS471**
C505		**ECEA1CS331**
C506		ECKD1H103ZF
C507, 508	S	ECNC4A103M
C601, 602		ECQM1H472KZ
C603		**ECEA1JS4R7**
C604		ECKD1H103ZF
C701		**ECEA2AS3R3**
C702		**ECEA1CS330**
C703	S	**ECEA50N1**

Printed Circuit Board Wiring View

Earth (Ground) Lines

IC101 AN217 FM IF AMP & AM CONVERTER

	AM	FM		AM	FM
1	0V	0V	5	1.1V	1.1V
2	0V	0V	6	0V	0V
3	0.5V	0.5V	7	1.1V	1.1V
4	7.1V	8.1V	8	6.9V	7.9V
			9	6.5V	5.9V
			10	1.6V	0.9V
			11	0.8V	0.8V
			12	6.5V	5.9V
			13	0.7V	0.65V
			14	1.6V	1.1V
			15	4.2V	1.1V
			16	0.7V	0.65V

IC102 AN377 FM IF AMP & DET

1	2.1V	7	5.8V	13	0V
2	2.1V	8	5.7V	14	0V
3	2.1V	9	5.7V	15	5V
4	0V	10	5.7V	16	0V
5	1V	11	11.3V		
6	6.3V	12	1.7V		

IC301 AN363 FM MPX

1	10.9V	9	1.7V
2	3V	10	1.8V
3	5.1V	11	1.8V
4	6.4V	12	1.5V
5	6.4V	13	1.7V
6	10.6V	14	1.8V
7	0V	15	1.8V
8	1.4V	16	3.4V

TR102 2SC828 MUTING SWITCHING

	MUTING ON	MUTING OFF
E	0V	0V
C	0V	3V
B	0.65V	0V

TR101 2SC828 MUTING SWITCHING

	MUTING ON	MUTING OFF
E	0V	0V
C	0.65V	0V
B	0V	0.65V

TR301 2SC828 19KHz AMP

TR302 2SC828 SUB & MAIN SIGNAL CANCEL

TR706,707 2SC828 SWITCHING

	MUTING ON	MUTING OFF
E	(0.7V)	0V
C	(0V)	0.7V
B	0.7V	0V

TR702 2SC828 POWER MUTING

	MUTING ON	MUTING OFF
E	0V	0V
C	0.65V	0V
B	0V	0.65V

TR701 2SC828 SWITCHING

	MUTING ON	MUTING OFF
E	0V	0V
C	0.65V	0V
B	0V	0.65V

TR601 2SC1327 RECORDING SIGNAL OSC

	MUTING ON	MUTING OFF
E	1.5V	1.5V
C	0.7V	0V
B	1.5V	1.5V

TR501 2SC1398 REGULATOR

	MUTING ON	MUTING OFF
E	12.5V	12.5V
C	1V	13.2V
B	2.12V	13.2V

TR401 2SC828 AF AMP

	MUTING ON	MUTING OFF
E	0.7V	0.7V
C	13V	0V
B	1.3V	0.7V

TR402 2SC828 AF AMP

	MUTING ON	MUTING OFF
E	0.7V	0.7V
C	13V	0V
B	1.3V	0.7V

TR703 2SA564 SWITCHING

	MUTING ON	MUTING OFF
E	1V	0V
C	0.7V	0V
B	0.4V	0V

TR704,705 2SC828 SWITCHING

	MUTING ON	MUTING OFF
E	0V	0V
C	0V	0V
B	0.7V	0V

TRI 3SK40 FM RF AMP

TR2 2SC1674M FM MIXER

TR3 2SC1675 FM LOCAL OSC

SIGNAL METER

TUNING METER

STEREO INDICATOR

selector

muting/mode

rec level

AM ANT Coil (L201)

VOLTAGE ADJUSTER (S5)

POWER TRANSFORMER (T501)

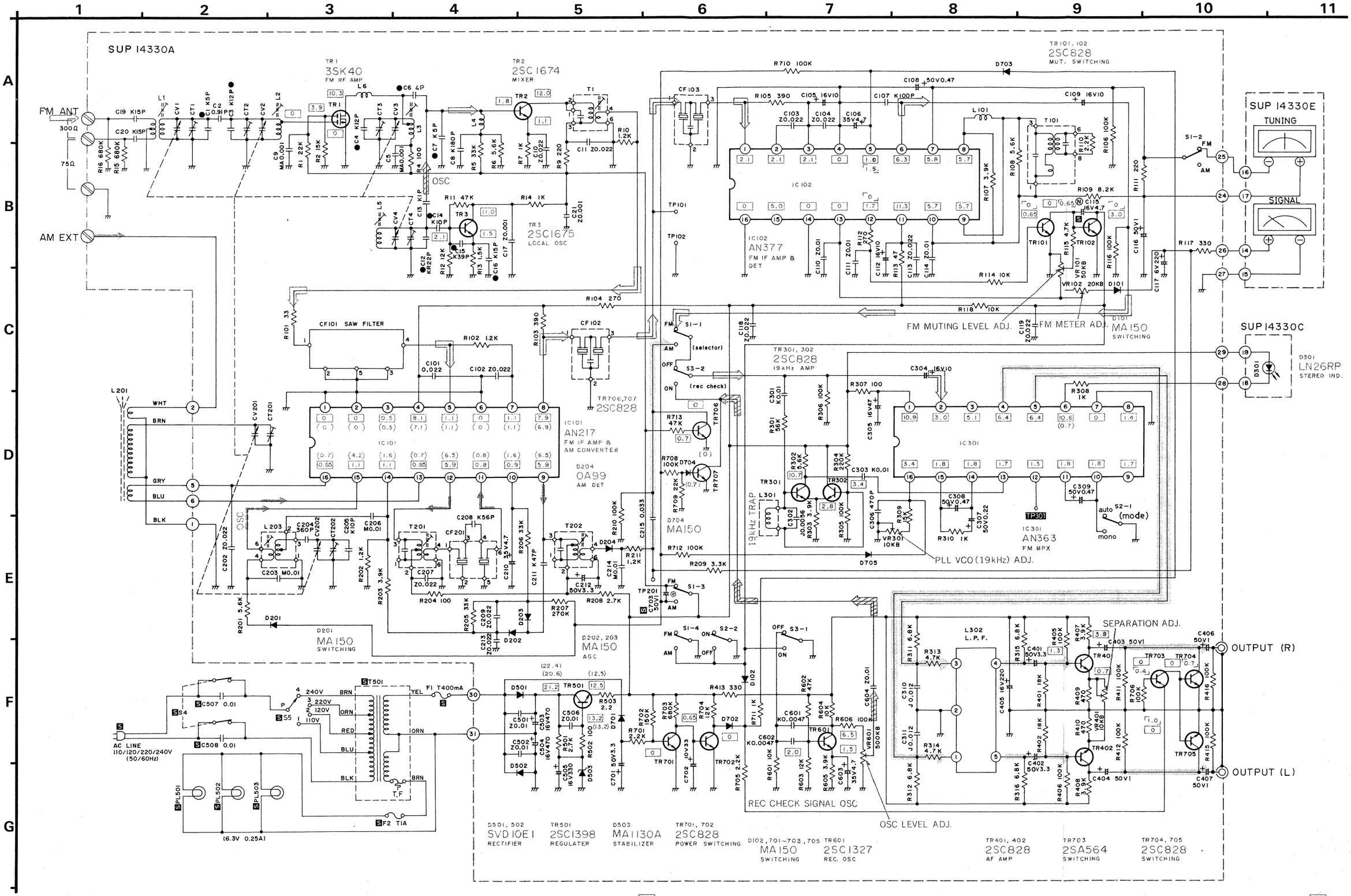
DIAL LAMPS (6.3V 0.25A)

(PL501)(PL502)(PL503)

AC LINE 110/120/220/240V (50/60Hz)

Schematic Diagram ..... Model ST-9031/ST-9031K (E, EG, X, XA, XGF, XGH)

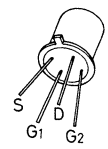
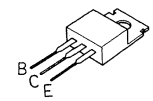
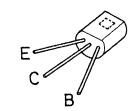
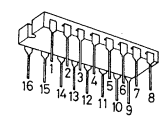
This schematic diagram may be modified at any time with the development of new technology.



Notes:

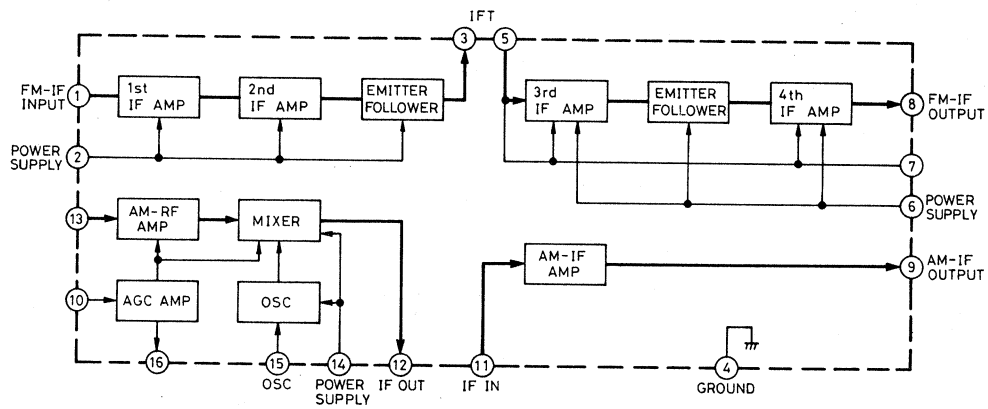
1. S1-1 ~ S1-4: Band Selector switch in **"FM"** position. (FM↔AM)
2. S2-1 ~ S2-2: FM muting/FM mode switch in **"on/auto"** position. (on/auto↔ off/ mono)
3. S3-1 ~ S3-2: Recording level signal switch in **"off"** position.
4. S4: Power source switch in **"on"** position.
5. S5: Voltage adjuster switch in **"240V"** position. (110V↔120V↔220V↔240V)
6. 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
     (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.)
7. **S** indicates that only parts specified by the manufacturer be used for safety.
8. Signal lines ⇨ FM ⟹ AM ⟹ AF ⟹ Rec level signal

■ TERMINAL GUIDE

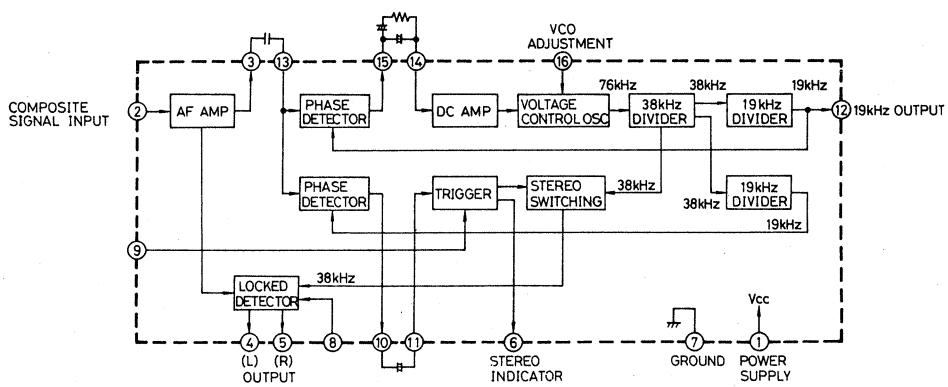
3SK40	2SC1398
	
2SC828 , 2SC829 2SC1674 , 2SC1327 2SA564 , 2SC1675	AN217, AN377, AN363
	

■ BLOCK DIAGRAM OF IC

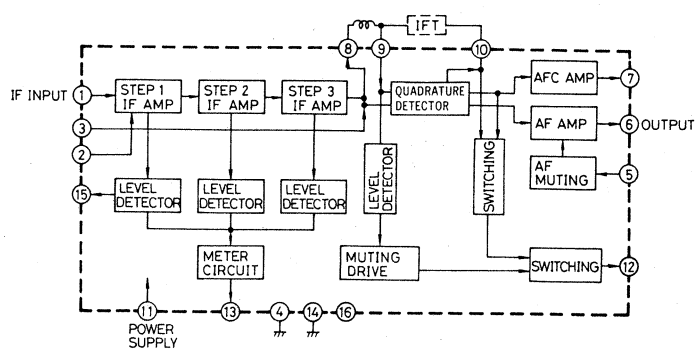
- This is the basic block diagram of the inside circut of IC. In an actual circuit, there may be sometimes idle terminals or some different functions other than the basic circuit.



IC101 (AN217) FM IF amplifier & AM converter



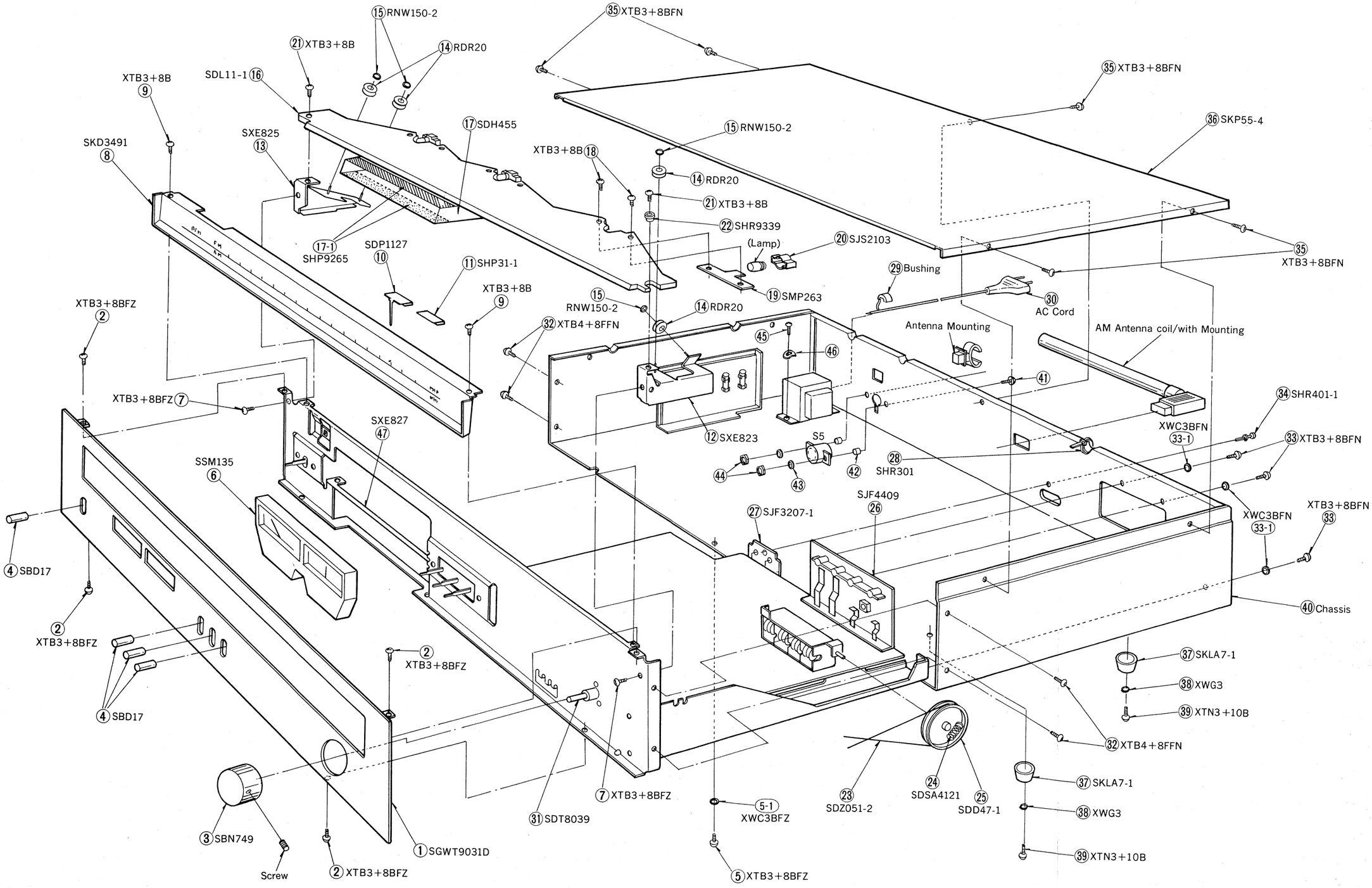
IC301 (AN363) FM multiplex



IC102 (AN377) FM IF Amplifier & Detector

ST-9031

■ EXPLODED VIEW



■ REPLACEMENT PARTS LIST

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

Ref. No.		Part No.	Part Name & Description	Per Set	Remarks
CABINET and CHASSIS PARTS					
1		SGWT9031D	Panel, Front Ass'y	1	○
2		XTB3+8BFZ	Screw, Front Panel M'tg	4	
3		SBN749	Knob, Tuning/with Screw	1	
4		SBD17	Knob, Lever Switches	4	
5		XTB3+8BFZ	Screw, Front Panel & Bottom Board M'tg	1	
5-1		XWC3BFZ	Washer	1	
6		SSM135	Meter, Tuning/Signal	1	
7		XTB3+8BFZ	Screw, Pulley Bracket M'tg	2	
8		SKD3491	Scale, Dial	1	*○
9		XTB3+8B	Screw, Dial Scale M'tg	2	
10		SDP1127	Pointer, Dial	1	
11		SHP31-1	Paper, Pointer Slider	1	
12		SXE823	Bracket, Pulley (Right Side)	1	
13		SXE825	Bracket, Pulley (Left Side)	1	
14		RDR20	Pulley, Dial Cord	4	
15		RNW150-2	Washer, Pulley Lock	4	
16		SDL11-1	Reflector Plate	1	
17		SDH455	Paper, Reflector	1	*
17-1		SHP9265	Plate, Reflector Paper	2	
18		XTB3+8B	Screw, Lamp Holder M'tg	6	
19		SMP263	Bracket, Lamp Holder	3	*
20		SJS2103	Holder, Lamp	3	
21		XTB3+8B	Screw, Reflector Plate M'tg	2	
22		SHR9339	Sleeve, Reflector Plate Right Side Screw	1	
23		SDZ051-2	Cord, Dial 190cm (74-11/16")	1 roll	
24		SDSA4121	Spring, Dial Cord	1	
25		SDD47-1	Drum, Dial	1	
26		SJF4409	Terminal, Antenna	1	
27		SJF3207-1	Terminal, Output	1	
28		SHR301	Clamp, Lead Wire	10	
29		SHR127	Bushing, AC Cord	1	
29 [XE] only		SHR129	Bushing, AC Cord	1	
30	S	RJA23ZC	AC Cord, with Plug	1	
30 [XE] only	S	RJA45ZC	AC Cord	1	
31		SDT8039	Shaft, Tuning (with Fly-wheel)	1	*
32		XTB4+8FFN	Screw, Front Chassis M'tg	4	
33		XTB3+8BFN	Screw, Antenna Terminal & Chassis M'tg	3	
33-1		XWC3BFN	Washer	3	
34		SHR401-1	Latch, Output Terminal M'tg	1	
35		XTB3+8BFN	Screw, Top Board M'tg	5	
36		SKP55-4	Top Board	1	○
37		SKLA7-1	Foot, Set Bottom Side	4	
38		XWG3	Washer	4	
39		XTN3+10B	Screw, Feet M'tg	4	
40 [E] only		SGP1610A	Rear Panel (Chassis)	1	○
40		SGPT9031D	Rear Panel (Chassis), SGP1610A with Name Plate (SGT17310), for EG, XE, XGH, XGF, X, XA	1	○
41		XSB3+14BNS	Screw, Voltage Adjuster M'tg	2	
42		SUDA41	Sleeve, Voltage Adjuster Screw	2	*
43		XWA3B	Washer	2	
44		XNG3BS	Nut, Voltage Adjuster M'tg	2	
45		XTB3+6FFZ	Screw, Power Transformer M'tg	2	
46		XWT3	Washer	2	
47		SXE827	Bracket, Meter Ass'y	1	
ACCESSORIES					
A1		SKL117	Foot	4	
A2		SJP2129-1	Cord, Connector	1	
A3		XTN3+6B	Screw, Foot M'tg } XTW3+6B	4	
A4		XWG3	Washer } XTW3+6B	4	
A5 [X, XA] only	S	SJP5213-1	Plug Adapter	1	
A6		SSA251	Cord, FM Indoor Antenna	1	
PACKING PARTS					
P1		SPP551	Polyethylene Bag	1	
P2		SPS1787	Pad, Left Side	1	
P3		SPS1789	Pad, Right Side	1	
P4		SPS1409	Pad, Upper Side	1	
P5		SPG1685	Carton Box	1	○
P5 [XGF] only		SPG1687	Carton Box	1	○
P6		SQF1987	Instructions Book, Printed Matter	1	○

ST-9031K
(E), (EG), (XGH)

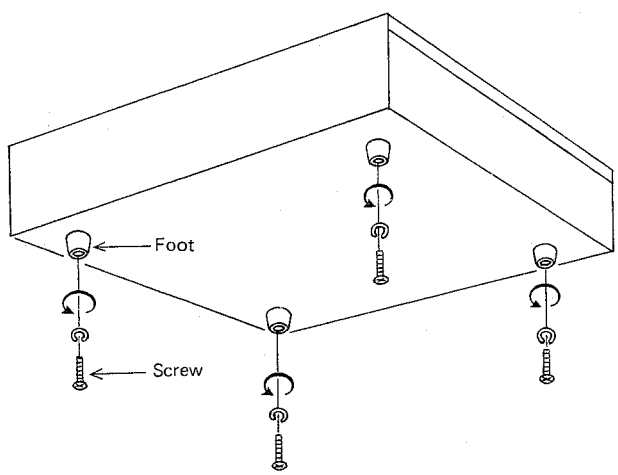
Note: This parts list included only the changes of the model ST-9031 parts list.

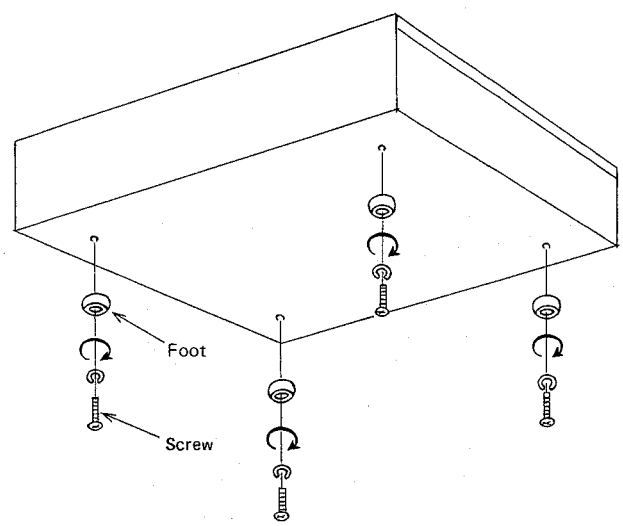
Ref. No.	Change of Part No. ST-9031 → ST-9031K		Part Name & Description	Per Set (Pcs.)		Remarks
			CABINET and CHASSIS PARTS			
1	SGWT9031D	SGWT9031KD	Panel, Front Ass'y	1		○
3	SBN749	SBN749-1	Knob, Tuning/with Screw	1		○
4	SBD17	SBD17-1	Knob, Lever Switches	4		○
29	SHR127 SHR129 [XE]	SHR127	Bushing, AC Cord	1		
30	RJA23ZC RJA45ZC [XE]	RJA23ZC	AC Cord	1		
32	XTB4+8FFN	XTB4+8FFZ	Screw, Front Chassis M'tg	4		
33	XTB3+8BFN	XTB3+8BFZ	Screw, Antenna Terminal & Chassis M'tg	3		
33-1	XWC3BFN	XWC3BFZ	Washer	3		
35	XTB3+8BFN	XTB3+8BFZ	Screw, Top Board M'tg	5		
36	SKP55-1	SKP55-3	Top Board	1		○
40	SGP1610A [E]	SGP1610B [E] only	Rear Panel	1		○
	SGPT9031D	SGPT9031KD [EG],[XGH]	Rear Panel, SGP1610B with Name Plate (SGT17990)	1		○
			ACCESSORIES			
A5	SJP5213-1 [X, XA]	Deletion	----------	0		
			PACKING PARTS			
P5	SPG1685 SPG1687 [XGF]	SPG1689	Carton Box	1		○

■ ATTACHMENT OF FEET (INCLUDED)

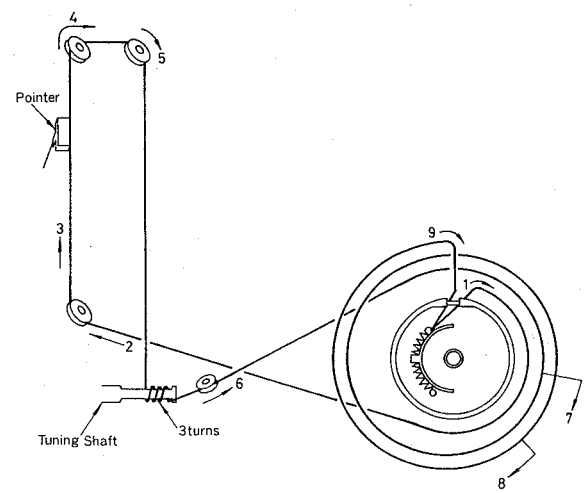
This unit has an extra set of 4 feet which, if installed, lower the height by 5mm, to 93mm.
These feet are especially useful if other audio components in this series (models SE-9021 and SU-9011) are stacked one on top of another.

• Attachment
① Remove the feet alread'y attached to the bottom of the unit.
② Attach the other set of feet (included) by using the screws (also included). Use the same holes as for the original feet.



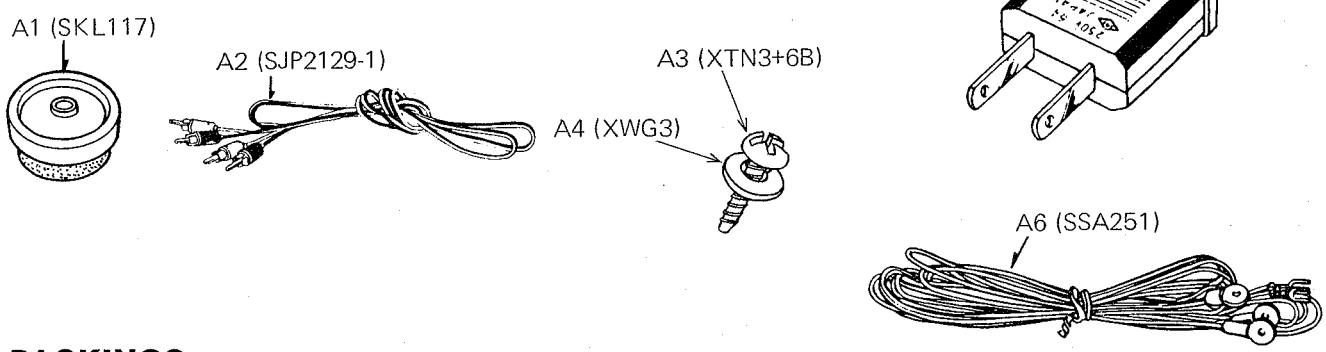


■ DIAL CORD INSTALLATION GUIDE

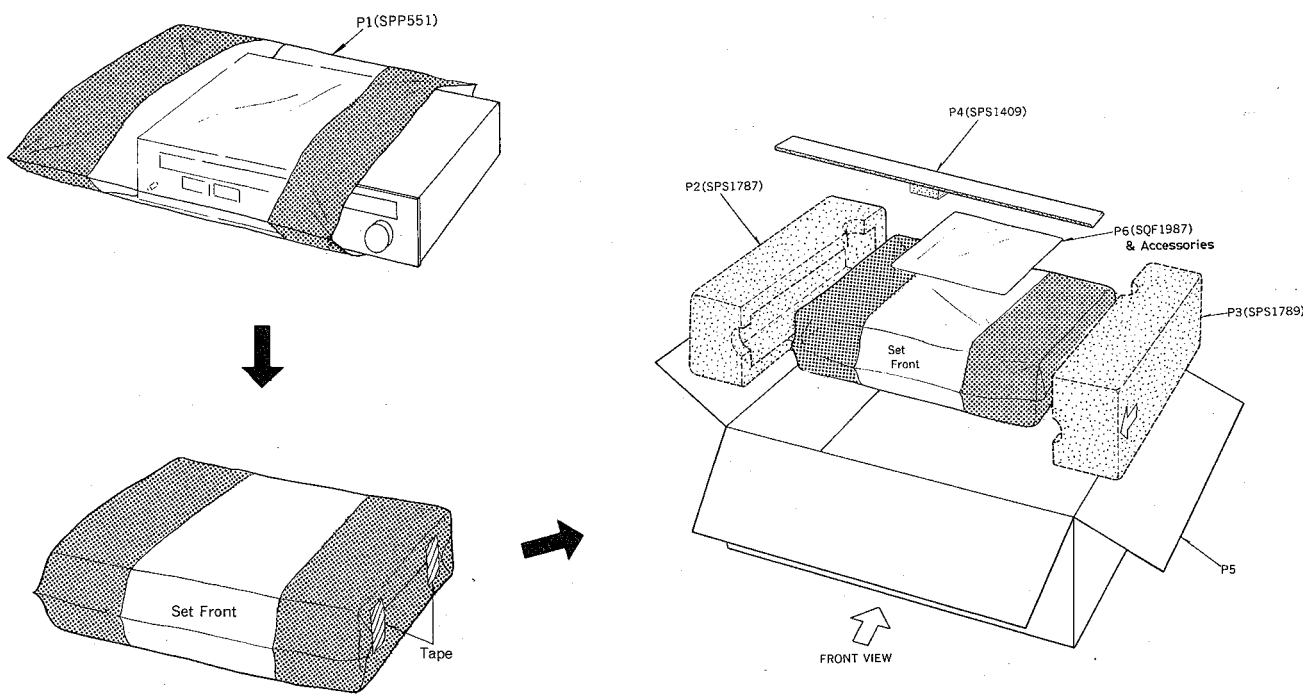


- For threading a fresh cord, proceed as follows.
  1. Prepare a fresh cord more than 190 cm (74-11/16") in length.
  2. Bring the variable capacitor into a state where the drum is completely turned to the right (maximum capacity and lowest frequency for the variable capacitor).
  3. Direct the cord in the order from 1 to 9.
  4. Stretch the cord in such a tension as the spring length is elongated by 1.5 times that of the original state.
  5. Fix the knot of the cord with the bond.

■ ACCESSORIES



■ PACKINGS



Printed in Japan
7808 5000