

Service Manual

Tuner

QUARTZ Synthesizer AM/FM Stereo Tuner
(ST-G45A)

ST-G45A

QUARTZ Synthesizer LW/MW/FM Stereo Tuner
(ST-G45AL)

ST-G45AL

Color

(S)Silver Type
(K)Black Type



Area

color	area
(S) (K)	(EX)Continental Europe. (ST-G45A/G45AL)
(S) (K)	(EK)United Kingdom. (ST-G45AL)
(S) (K)	(EB)Belgium. (ST-G45AL)
(S) (K)	(EH)Holland. (ST-G45A)
(S) (K)	(EF)France. (ST-G45AL)
(S) (K)	(XA)Asia, Oceania, Latin America, Middle Near East and Africa. (ST-G45A)
(S) (K)	(XL)Australia. (ST-G45A)
(S) (K)	(PA)For East PX. (ST-G45A)
(S) (K)	(PE)European Military. (ST-G45A)
(S) (K)	(EG)F.R Germany. (ST-G45A)
(S) (K)	(Ei)Italy. (ST-G45A)

SPECIFICATIONS

(DIN 45 500)

FM TUNER SECTION

Frequency range	87.50~108.00 MHz
Sensitivity	1.5 μ V (IHF, usable)
S/N 30 dB	1.3 μ V (75 Ω)
S/N 26 dB	1.2 μ V (75 Ω)
S/N 20 dB	0.9 μ V (75 Ω)
IHF 46 dB stereo quieting sensitivity	28 μ V/75 Ω
Total harmonic distortion	
MONO (normal)	0.05%
STEREO (normal)	0.1%
S/N	
MONO	72 dB (80 dB, IHF)
STEREO	65 dB (73 dB, IHF)
Frequency response	4 Hz~18 kHz, +0.5 dB~-1.5 dB
Alternate channel selectivity	
normal \pm 400 kHz	65 dB
Capture ratio	1.0 dB
Image rejection at 98 MHz	55 dB
IF rejection at 98 MHz	90 dB
Spurious response rejection at 98 MHz	80 dB
AM suppression	55 dB
Stereo separation	
1 kHz	50 dB
10 kHz	40 dB

Carrier leak	
19 kHz	-55 dB (-60 dB, IHF)
38 kHz	-40 dB (-45 dB, IHF)
Channel balance (250 Hz~6,300 Hz)	\pm 1.0 dB
Limiting point	0.85 μ V
Bandwidth	
IF amplifier	180 kHz
FM demodulator	1000 kHz
Antenna terminals	75 Ω (unbalanced)

AM TUNER SECTION (ST-G45A)

Frequency range	
(For Europe, South Africa and Australia)	
	522 kHz~1611 kHz (9 kHz-step)
	530 kHz~1620 kHz (10 kHz-step)
(For Saudi Arabia and others)	
	531 kHz~1602 kHz (9 kHz-step)
	530 kHz~1600 kHz (10 kHz-step)
Sensitivity (S/N 20 dB)	20 μ V, 300 μ V/m
Selectivity at 999 kHz (\pm 9 kHz)	50 dB
Image rejection at 999 kHz	40 dB
IF rejection at 999 kHz	60 dB

Technics

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Tokyo 105, Japan

■ AM TUNER SECTION (ST-G45AL)

Frequency range	
MW	522 kHz~1611 kHz (9 kHz-step) 530 kHz~1620 kHz (10 kHz-step)
LW	155 kHz~353 kHz (9 kHz-step) 153 kHz~351 kHz (±2 kHz shift)
Sensitivity (S/N 20 dB)	
MW	20 μ V, 300 μ V/m
LW	50 μ V
Selectivity (±9 kHz)	
MW (at 999 kHz)	50 dB
LW (at 254 kHz)	50 dB
Image rejection	
MW (at 999 kHz)	40 dB
LW (at 254 kHz)	40 dB
IF rejection	
MW (at 999 kHz)	60 dB
LW (at 254 kHz)	35 dB

■ GENERAL

Output voltage	0.3V (0.6V IHF)
Power consumption	9W
Power supply	
For United Kingdom and Australia	AC 50 Hz/60 Hz, 240V
For continental Europe	AC 50 Hz/60 Hz, 220V
For others	AC 50 Hz/60 Hz, 110V/127V/220V/240V
Dimensions (W×H×D)	430 × 64 × 241 mm (16-30/32" × 2-17/32" × 9-1/2")
Weight	2.2 kg (4.84 lb.)

Notes:

- Total harmonic distortion is measured by the digital spectrum analyzer (H.P. 3045 system).
- Specifications are subject to change without notice. Weight and dimensions shown are approximate.

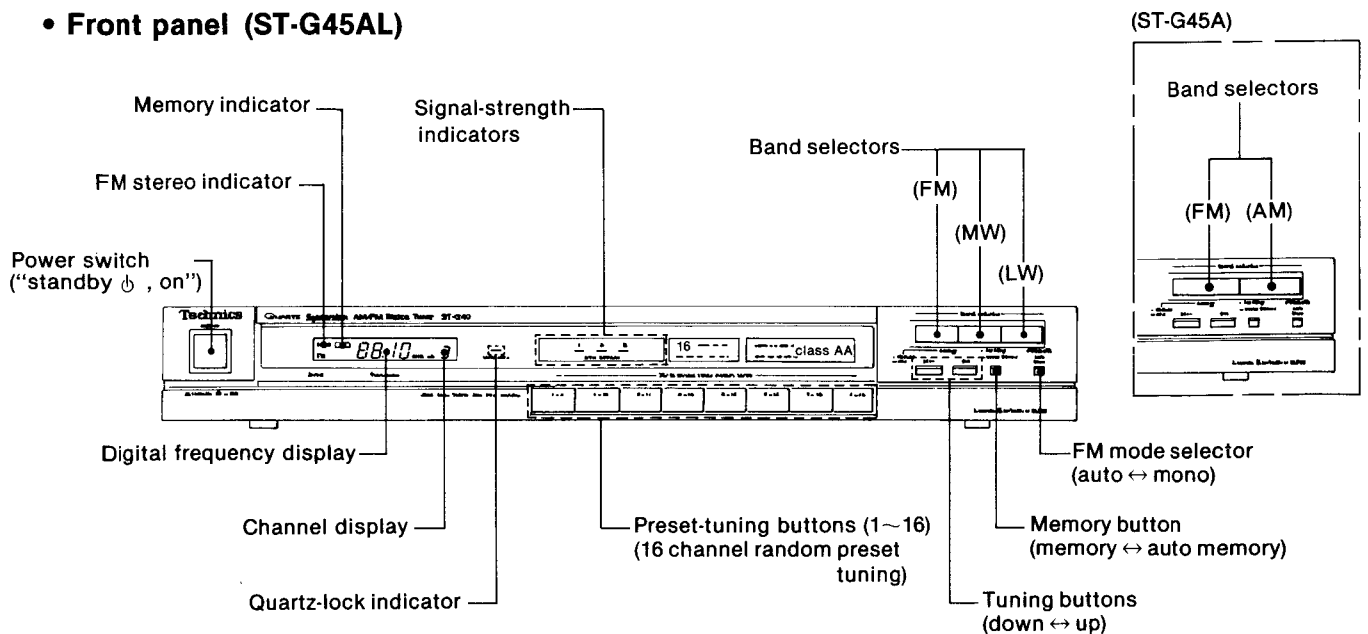
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■ LOCATION OF CONTROLS

• Front panel (ST-G45AL)



Tuner

DEUTSCH

Verwenden Sie bitte diese Broschüre Zusammen
mit der Service-Anleitung für das Modell Nr.
ST-G45A/G45AL

■ MESSUNGEN UND JUSTIERUNGEN

AM/FM(ST-G45A) LW/MW/FM(ST-G45AL)

Einstellungen der Bedienelemente und zu verwendende Geräte.

- MW und UKW Meßsender (MW und UKW Nebsender)
- Stereo-Modulator
- Verzerrungs-Analysator
- Elektronische Wechselstrom-und Gleichstrom-Voltmeter(EVM)
- Keramischer Kondensator(200pF)
- Oszilloskop
- Frequenzzähler
- Drosselspule(100µH)
- Widerstand(100KΩ)

Anmerkung: Für T201 (AM ZFT), L203 (AM (MW)-OSZ, -Spule), L251 (LW-Antennenspule), L303 (L.P.F.) und L301, L302 (L.P.F.), werden justiert Ersatzteil geliefert. Den Kern dieses Teils daher nicht drehen.

AM(MW)-HF-JUSTIERUNG

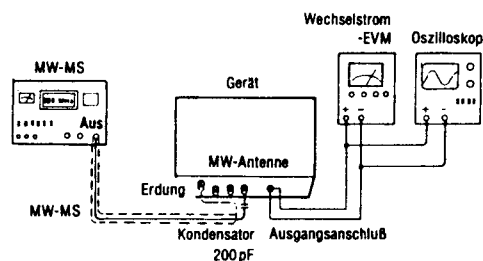
1. Der Testaufbau ist in der Abbildung gezeigt.
2. Stellen Sie die Einheit auf "AM(MW)" Betrieb.
3. Radio und Signalgenerator auf 612kHz einstellen.
4. L202 auf maximale Ausgangsleistung abgleichen.
5. Radio und Signalgenerator auf 1503kHz einstellen.
6. CT201 auf maximale Ausgangsleistung abgleichen.
7. Die Schritte 3 ~ 6 wiederholen.

Anmerkung:

Der Antenneneingang-Signalpegel muß so niedrig wie möglich und frei von automatischer Verstärkungsregelung (AGC) sein.

ZUSTAND DES MW-MESSENDERS

Modulation30%
Modulationsfrequenz400Hz



LW-HF-JUSTIERUNG (Nur ST-G45AL)

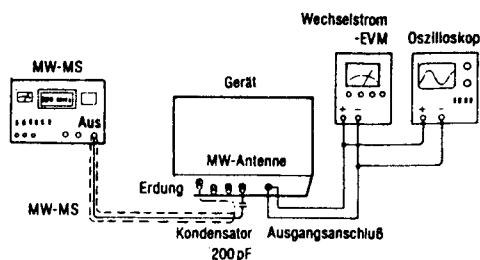
1. Der Testaufbau ist in der Abbildung gezeigt.
2. Stellen Sie die Einheit auf "LW" Betrieb.
3. Die Radiofrequenzanzeige und den Messender auf 155kHz einstellen.
4. L252 auf maximale Ausgangsleistung abgleichen.
5. Die Radiofrequenzanzeige und den Messender auf 353kHz einstellen.
6. CT251 auf maximale Ausgangsleistung abgleichen.
7. Die Schritte 3 ~ 6 wiederholen.

Anmerkung:

Der Antenneneingang-Signalpegel muß so niedrig wie möglich und frei von automatischer Verstärkungsregelung (AGC) sein.

ZUSTAND DES MW-MESSENDERS

Modulation30%
Modulationsfrequenz400Hz



UKW-MONO-VERZERRUNGS-JUSTIERUNG

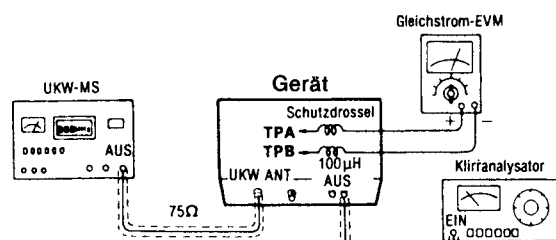
1. Der Testaufbau ist in der Abbildung gezeigt.
2. Stellen Sie die Einheit auf **"FM(UKW)"** Betrieb.
3. Die Radiofrequenzanzeige und den Messender auf **100.10MHz** einstellen.
4. Den Kern von **T101** so justieren, daß die im Signalzustand gemessene Spannung **0mV (0±10mV)** im 150mV-Bereich beträgt.
5. **T102** so justieren, daß der Verzerrungsfaktor des linken Kanals minimal wird.
6. Schritte 4 und 5 einige Male wiederholen.
7. Versichern Sie sich, daß die Verzerrungsfaktoren von Kanal L und Kanal R annähernd gleich sind und auf ein Minimum gehalten sind.

Anmerkung:

Für die Justierung ist ein Schraubendreher aus Kunststoff zu verwenden.

ZUSTAND DES UKW-MESSENDERS

Modulation 100%
Modulationsfrequenz 1kHz
Ausgangspegel 66dB



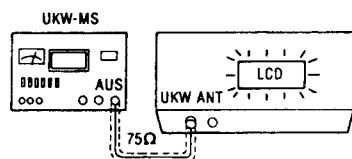
TPA = TP102, TPB = TP101

MPX-SGO-JUSTIERUNG

1. Der Testaufbau ist in der Abbildung gezeigt.
2. Den UKW-Betriebsart-Wahlshalter in die **"on/auto"** Position stellen.
3. Radio und Meßsender auf **100.10MHz** einstellen.
4. **VR302** auf **19kHz ± 30Hz** auf der Frequenzzähleranzeige justieren.

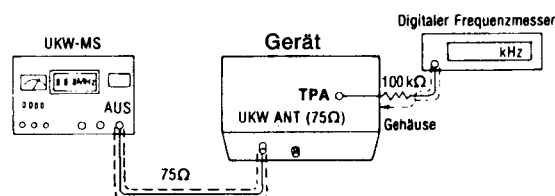
• VERWENDUNG EINES ALTERNATIVSYSTEMS

1. Stereosignal vom Meßsender eingeben oder eine Stereo-Sendung empfangen.
2. **VR302** justieren, bis die Stereo-Anzeige aufleuchtet. Den Arm von **VR302** mit Lack sichern, wie in der Abbildung gezeigt.

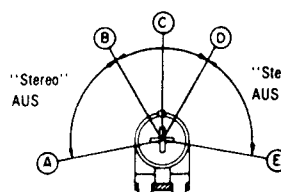


ZUSTAND DES UKW-MESSENDERS

Modulation 0%
Modulationsfrequenz 0
Ausgangspegel 66dB



TPA = TP301, Digitaler Frequenzmesser: 19.00 kHz



- ①-②, ③-④..... "Stereo" AUS Stellung
- ②-⑤..... "Stereo" EIN Stellung (Anzeigebeleuchtung)
- ③..... Einstellpunkt des pilotschaltkreis'

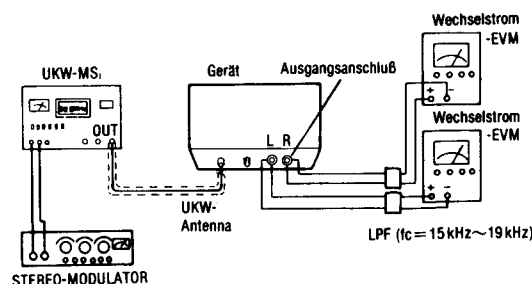
VR302

TRENNUNGS-JUSTIERUNG

1. Der Testaufbau ist in der Abbildung gezeigt.
2. Stellen Sie die Einheit auf **"FM"** Betrieb.
3. Die Radiofrequenzanzeige und den Messender auf **100,10MHz** einstellen.
4. **VR301** so justieren, daß der R-Ausgang minimal ist, wenn der Stereomodulator im L-Betriebszustand (Linker Kanal moduliert) ist.

ZUSTAND DES UKW-MESSENDERS

Modulation "L" oder "R" Betriebsart
45%, Pilotssignal 10%
Modulationsfrequenz 1kHz (Pilot 19kHz)
Ausgangspegel 66dB



UKW STEREO KLIRRFAKTOR-JUSTIERUNG (Nur [EG])

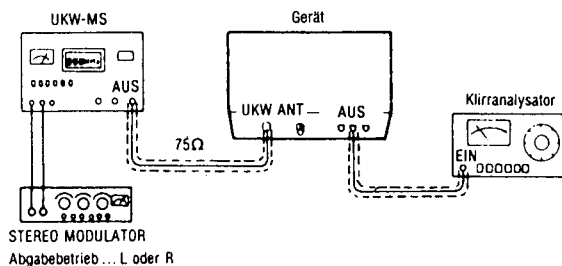
1. Der Testaufbau ist in der Abbildung gezeigt.
2. Stellen Sie die Einheit auf "FM(UKW)" Betrieb.
3. Die Radiofrequenzanzeige und den Messer auf 100.10MHz einstellen.
4. T1 so justieren, daß der Verzerrungsfaktor des linken Kanals minimal wird.
5. Überprüfen, daß die Verzerrungsfaktoren des linken und rechten Kanals fast gleich sind.

Anmerkung:

Für die Justierung ist ein Schraubendreher aus Kunststoff zu verwenden.

ZUSTAND DES UKW-MESSENDERS

Modulation "L" oder "R" Betriebsart
45%, Pilotsignal 10%
Modulationsfrequenz 1kHz (Pilot 19kHz)
Ausgangspegel 66dB



FRANÇAIS

Ceci est à utiliser conjointement avec manuel d'entretien du modèle No. ST-G45A, G45AL

■ MEASURES ET REGLAGES

A.M./M.F. (ST-G45A)

LW/MW/M.F. (ST-G45AL)

Positionnements des commandes et équipement utilisé

- Générateur de signaux AM et FM (AM et FM-SG)
- Modulateur stéréophonique
- Analyseur de distorsion
- Oscilloscope
- Compteur de fréquence
- Bobine d'amortissement d'arrêt (100μH)
- Résistance (100kΩ)
- Condensateur céramique (200pF)
- Voltmètre électronique à C.A. et C.C. (EVM).

Nota: Pour T201 (A.M.) F.I., L203 (bobine oscil. de AM (MW), L251 (bobine ANT LW), L303 (L.P.F.) et L301, L302 (L.P.F.), des éléments réglés sont fournis. Aussi, ne pas tourner les noyaux de ces pièces.

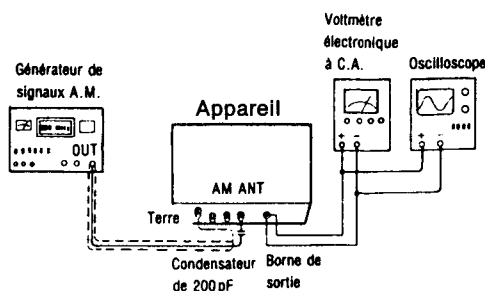
REGLAGE DE O.M.-H.F.

1. Le raccordement de l'équipement d'essai est montré sur l'illustration.
2. Régler l'appareil sur le mode "AM(MW)".
3. Régler le cadran radio et le générateur de signaux sur 612kHz.
4. Régler L202 pour une sortie maximale.
5. Régler le cadran radio et le générateur de signaux sur 1503kHz.
6. Régler CT201 pour une sortie maximale.
7. Répéter les étapes 3 ~ 6.

Nota: Le niveau d'entrée d'antenne doit être aussi bas que possible étant libéré de la commande automatique de gain.

CONDITION DU GENERATEUR DE SIGNAUX AM

Modulation 30%
Modulationsfrequenz 400Hz



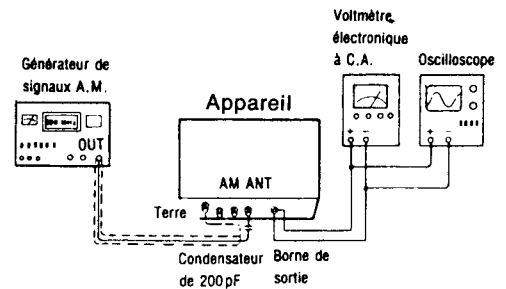
REGLAGE DE RE-LW (ST-G45AL seulement)

1. Le raccordement de l'équipement d'essai est montré sur l'illustration.
2. Régler l'appareil sur le mode "LW".
3. Ajuster le réglage de l'affichage de radiofréquence et du générateur de signaux sur 612kHz.
4. Régler L252 pour une sortie maximale.
5. Ajuster le réglage de l'affichage de radiofréquence et du générateur de signaux sur 353kHz.
6. Régler CT251 pour une sortie maximale.
7. Répéter les étapes 3 ~ 6.

Nota: Le niveau d'entrée d'antenne doit être aussi bas que possible étant libéré de la commande automatique de gain.

CONDITION DU GENERATEUR DE SIGNAUX AM

Modulation30%
Modulationsfrequenz400Hz



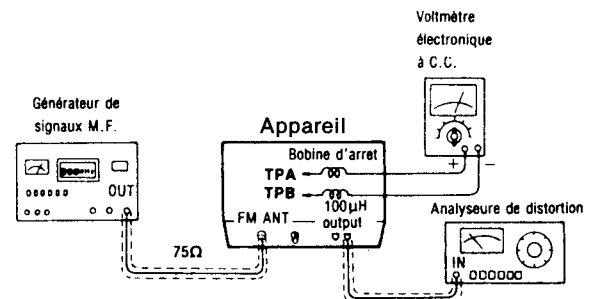
REGLAGE DE DISTORSION MONOPHONIQUE M.F.

1. Le raccordement de l'équipement d'essai est montré sur l'illustration.
2. Régler l'appareil sur le mode "FM".
3. Ajuster le réglage de l'affichage de radiofréquence et du générateur de signaux sur 100.10MHz.
4. Régler le noyau de T101 de telle sorte que la tension mesurée sur le mode de signaux soit de 0mV(0±10mV) dans une plage de 150mV.
5. Ajuster T102 de telle sorte que le facteur de distorsion du canal de gauche soit minimisé.
6. Répéter les étapes 4 et 5 quelques fois.
7. S'assurer que les facteurs de distorsion du canal de gauche et du canal de droite soient sensiblement les mêmes et au minimum.

Nota: Le tournevis de réglage utilisé devra être fait en résines.

CONDITION DU GENERATEUR DE SIGNAUX M.F.

Modulation100%
Fréquenz de modulation1kHz
Niveau de sortie66dB



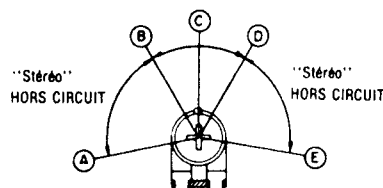
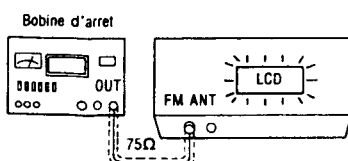
TPA = TP102, TPB = TP101

REGLAGE MULTIPLEX DE L'OSCILLATEUR COMMANDE PAR VARIATION DE TENSION

1. Le raccordement de l'équipement d'essai est montré sur la figure.
2. Régler l'appareil sur la position "on/auto".
3. Régler le cadran radio et le générateur de signaux sur 100.10MHz.
4. Ajuster VR302 pour 19kHz ± 30Hz sur le compteur de lecture de fréquences.

● EN UTILISANT UN SYSTEME ALTERNATIF

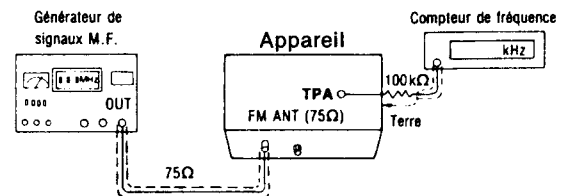
1. Applique un signal stéréo à partir du générateur ou recevoir une émission stéréo.
2. Ajuster VR302 jusqu'à ce que l'indicateur stéréo s'éclaire. Coller le bras de VR302 comme il est montré sur la figure.



VR302

CONDITION DU GENERATEUR DE SIGNAUX M.F.

Modulation0%
Fréquenz de modulation0
Niveau de sortie66dB



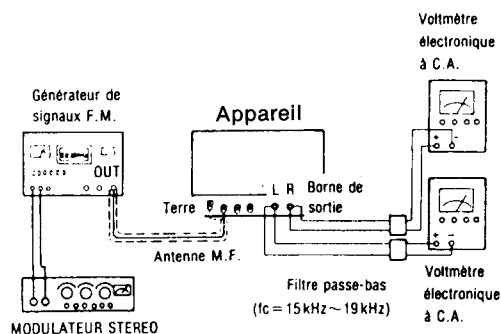
TPA = TP301
Compteur de fréquence: 19.00 kHz

- ①-②, ③-④..... Position de HORS CIRCUIT "Stereo".
- ②-③..... Position de MISE EN CIRCUIT "Stereo". (Eclairage de l'indicateur)
- ③..... Point de réglage du circuit pilote.

REGLAGE DE SEPARATION

1. Le raccordement de l'équipement d'essai est montré sur l'illustration.
2. Régler l'appareil sur le mode "FM".
3. Ajuster le réglage de l'affichage de radiofréquence et du générateur de signaux sur **100,10MHz**.
4. Ajuster **VR301** de telle sorte que la sortie de droite soit minimisée lorsque le modulateur stéréo est sur le mode "G". (modulation de canal de gauche.)

CONDITION DU GENERATEUR DE SIGNAUX M.F.
 Modulation Mode "G" ou mode "D" à 45%,
 Signal de commande à 10%
 Fréquence de modulation 1kHz, Pilot (19kHz)
 Niveau de sortie 66dB

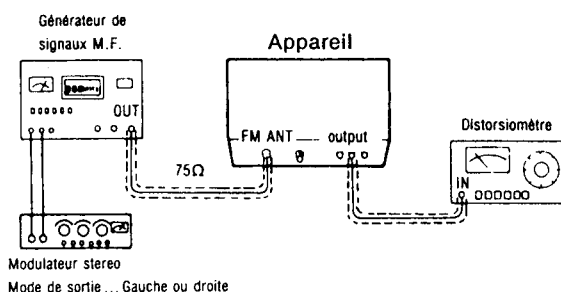


AJUSTEMENT DE LA DISTORSION STEREO FM ([EG] seulement)

1. Le raccordement de l'équipement d'essai est montré sur l'illustration.
2. Régler l'appareil sur le mode "FM".
3. Ajuster le réglage de l'affichage de radiofréquence et du générateur de signaux sur **100,10MHz**.
4. Ajuster **T1** de telle que le facteur de distorsion du canal de gauche soit minimisé.
5. S'assurer que les facteurs de distorsion du canal de gauche et du canal de droite soient sensiblement les mêmes l'un par rapport à l'autre.

Nota: Le tournevis de réglage utilisé devra être fait en résines.

CONDITION DU GENERATEUR DE SIGNAUX M.F.
 Modulation Mode "G" ou mode "D" à 45%,
 Signal de commande à 10%
 Fréquence de modulation 1kHz, Pilot (19kHz)
 Niveau de sortie 66dB



Mode de sortie ... Gauche ou droite

ESPAÑOL

Sírvase utilizarse junto con manual de servicio para el model No. ST-G45A, G45AL

■ MEDICIONES Y AJUSTES

AM/FM(ST-G45A) LW/MW/FM(ST-G45AL)

Posiciones de control y equipo usado.

- Generador de señales de AM y FM (AM y FM-SG)
- Voltímetro electrónico de CA y CC(EVM)
- Analizador de distorsiones
- Osciloscopio
- Frecuencímetro
- Frecuencímetro
- Bobina de choque(100μH)
- Resistor(100kΩ)
- Condensador cerámico(200pF)

Nota: Para T201 (AM-IFT), L203 (bobina de OSC. AM (MW)), L251 (bobina antena LO), L303 (L.P.F.) y L301, L302 (L.P.F.) son suministradas piezas ajustadas. Por lo tanto, no gire los núcleos de estas piezas.

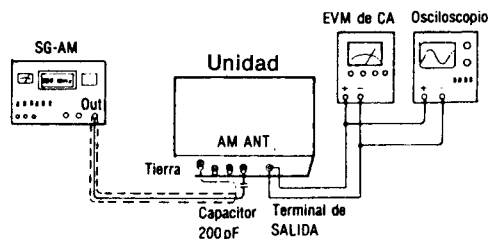
AJUSTE DE AM(MW)-RF

- 1.La conexión del equipo de pruebas se muestra en la figura.
- 2.Poner la unidad en modalidad de "AM".
- 3.Poner la presentación de la radio y el generador de señales en 612kHz.
- 4.Ajustar L202 para salida máxima.
- 5.Poner la presentación de la radio y el generador de señales en 1503kHz.
- 6.Ajustar CT201 para salida máxima.
- 7.Repita los pasos 3. al 6.

Nota:

El nivel de entrada de antena ha de ser lo más bajo posible estando libre de AGC (control automático de ganancia).

CONDICION DE GENERADOR DE SEÑALES DE AM
Modulación30%
Frecuencia de modulación400Hz



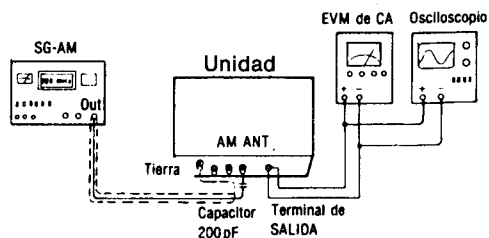
AJUSTE DE LO-RF (Sólo ST-G45AL)

- 1.La conexión del equipo de pruebas se muestra en la figura.
- 2.Poner la unidad en modalidad de "LW".
- 3.Poner la puesta de la presentación de radiofrecuenciay generador de señales a 155kHz.
- 4.Ajustar L252 para salida máxima.
- 5.Poner la puesta de la presentación de radiofrecuenciay generador de señales a 353kHz.
- 6.Ajustar CT251 para salida máxima.
- 7.Repítir los pasos 3. al 6.

Nota:

El nivel de entrada de antena ha de ser lo más bajo posible estando libre de AGC (control automático de ganancia).

CONDICION DE GENERADOR DE SEÑALES DE AM
Modulación30%
Frecuencia de modulación400Hz



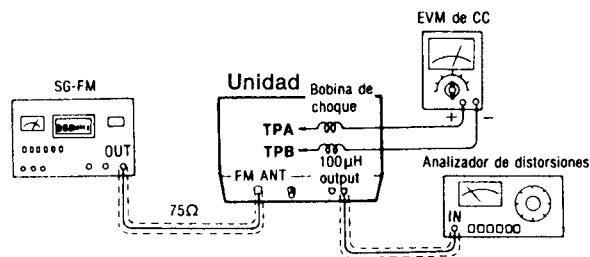
AJUSTE DE DISTORSION MONO FM

1. La conexión del equipo de pruebas se muestra en la figura.
2. Poner la unidad en modalidad de "FM".
3. Poner la puesta de la presentación de radiofrecuencia y generador de señales a 100,10MHz.
4. Ajustar el núcleo de T101 de manera que el voltaje medido en modalidad de señal sea 0mV ($0 \pm 10\text{mV}$).
5. Ajustar T102 de manera que el factor de distorsión de CH-I se minimice.
6. Repetir los pasos 4 y 5 algunas veces.
7. Asegurarse de que los factores de distorsión de CH-I y CH-D sean casi los mismos y los mínimos.

Nota:

El destornillador de ajuste usado debe estar hecho de resina.

CONDICION DE GENERADOR DE SEÑALES DE FM
 Modulación100%
 Frecuencia de modulación1kHz
 Nivel de salida66dB



TPA = TP102, TPB = TP101

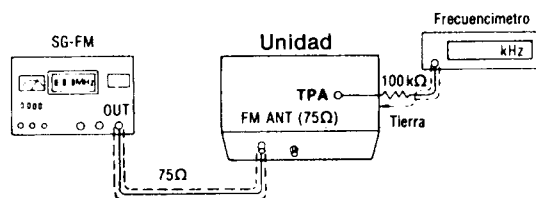
AJUSTE DE MPX VCO(OSCILADOR CONTROLADO POR VOLTAJE MPX)

1. La conexión del equipo de pruebas se muestra en la figura.
2. Poner la unidad en la posición de "on/auto".
3. Poner la presentación de la radio y la puesta del generador de señales en 100,10MHz.
4. Ajustar VR302 para $19\text{kHz} \pm 30\text{Hz}$ en lectura de frecuencímetro.

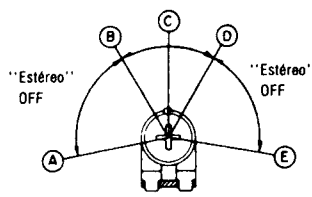
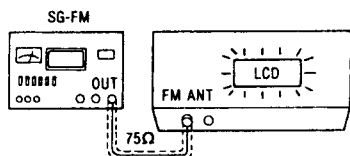
* USANDO SISTEMA ALTERNATIVO

1. Aplicar señal estereofónica del generador o recibir la emisión estereofónica.
2. Ajustar VR302 hasta que la presentación de estéreo se encienda. Fijar el brazo de VR302 como se muestra en la figura.

CONDICION DE GENERADOR DE SEÑALES DE FM
 Modulación0%
 Frecuencia de modulación0
 Nivel de salida66dB



TPA = TP301, Frecuencímetro: 19.00 kHz



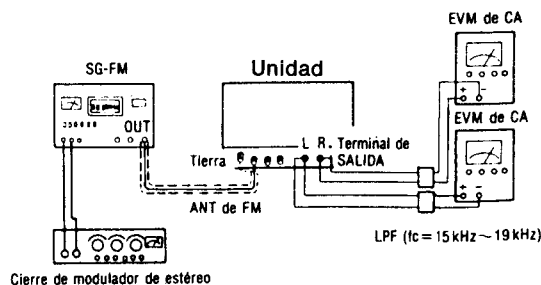
VR302

- (A) - (B),
- (D) - (E) Póición de "estéreo" OFF.
- (B) - (D) Póición de "estéreo" ON. (Indicador encendido)
- (C) Punto de ajuste de circuito piloto.

AJUSTE DE SEPARACION

1. La conexión del equipo pruebas se muestra en la figura.
2. Poner la unidad en modalidad de "FM".
3. Poner la puesta de la presentación de radiofrecuencia y generador de señales a 100,10MHz.
4. Ajustar VR301 de manera que la salida de D quede minimizada cuando el modulador de estéreo esté en la modalidad "I". (modulación de CH-I.)

CONDICION DE GENERADOR DE SEÑALES DE FM
 ModulaciónModalidad de "I" o modalidad de "D" 45%, Piloto 10%
 Frecuencia de modulación1kHz, Piloto(19kHz)
 Nivel de salida66dB



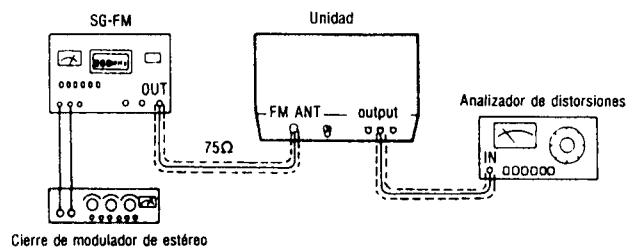
AJUSTE DE DISTORSION DE ESTEREO EN FM (Sólo [EG])

1. La conexión del equipo de pruebas se muestra en la figura.
2. Poner la unidad en modalidad de "FM".
3. Poner la puesta de la presentación de radiofrecuencia y generador de señales a **100,10MHz**.
4. Ajustar **T1** de manera que el factor de distorsión de CH-I se minimice.
5. Asegurarse de que los factores de distorsión de CH-I y CH-D sean casi los mismos uno con el otro.

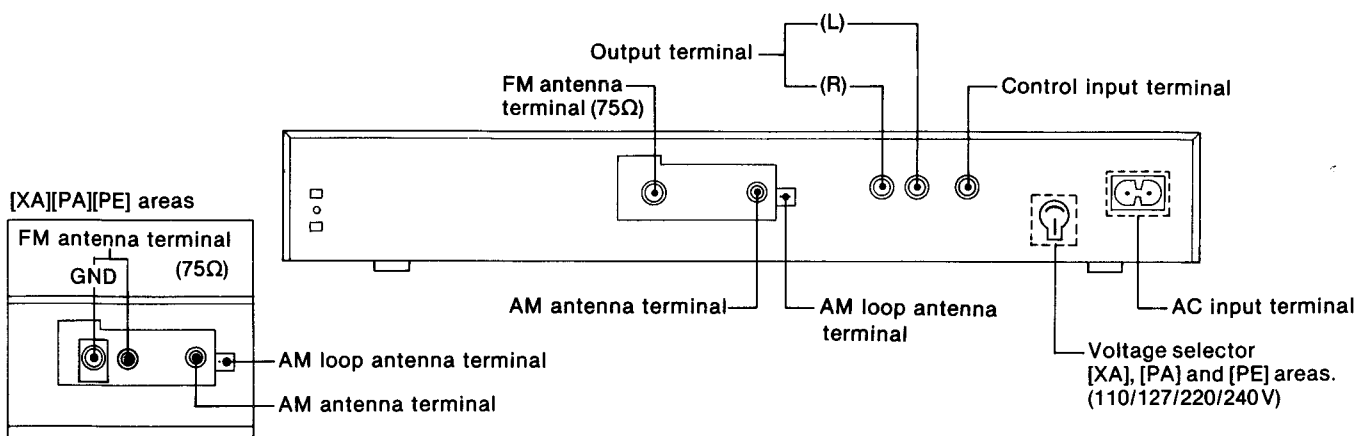
Nota:

El destornillador de ajuste usado debe estar hecho de resina.

CONDICION DE GENERADOR DE SEÑALES DE FM
 Modulación.....Modalidad de "I" o modalidad de "D" 45%, Piloto 10%
 Frecuencia de modulación....1kHz, Piloto(19kHz)
 Nivel de salida.....66dB

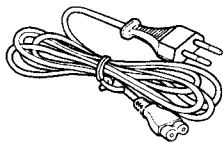


• Rear panel

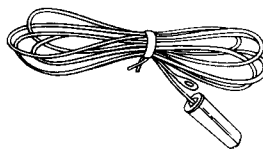


■ ACCESSORIES

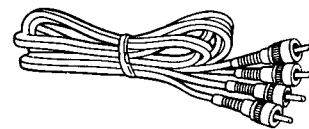
- AC power supply 1
(SFDAC05E03 [EX, EF, EB, EH, EG, Ei])
(SFDAC05G02 [EK])
(SJA163 [XL])
(SJA168-1 [XA, PA, PE])



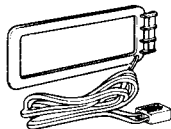
- FM indoor antenna 1
(SSA270M [EX, EK, EF, EB, EH, EG, Ei])
(SSA269M [XL, XA, PA, PE])



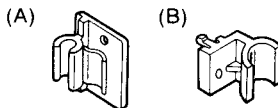
- Stereo connection cable 1
(SJP2249-1)



- AM loop antenna 1
(SPB1152T)



- AM antenna holders 2
(SMA231M) (SMA233-1M)



- Screws 2
(XTN3 + 10AFZ)



■ DISASSEMBLY INSTRUCTIONS

Ref. No. 1	How to remove the cabinet	Ref. No. 2	How to remove the main P.C.B.
Procedure 1	<ul style="list-style-type: none"> Remove the 4 screws. 	Procedure 1 → 2	<ul style="list-style-type: none"> Remove the 9 screws (①~⑨). Remove the 4 screws (⑩~⑬). Slightly pull the front panel toward you and remove the main P.C.B.
Ref. No. 3	How to remove the front panel		
Procedure 1 → 2 → 3	<ul style="list-style-type: none"> Remove the power button. Remove the 1 Nylon rivet. Remove the 2 flatwires (A, B). 		
Ref. No. 4	How to remove the sub panel		
Procedure 1 → 2 → 3 → 4	<ul style="list-style-type: none"> Push out the 9 tabs on the bottom and top side of the sub panel by used minusdriver. 		

Ref. No. 5	How to remove the FM/AM (MW/LW) Channel switch
Procedure 1 → 2 → 3 → 4 → 5	<ul style="list-style-type: none"> Remove the 6 screws (①~⑥).

■ MEASUREMENTS AND ADJUSTMENTS

■ AM/FM(ST-G45A) LW/MW/FM(ST-G45AL)

Control positions and equipment used

- AM and FM signal generator(AM and FM-SG)
- Choke coil (100μH)
- Stereo modulator
- Resistor(100kΩ)
- Distortion analyser
- Ceramic capacitor(200pF)
- Oscilloscope
- AC and DC electronic voltmeter(EVM)
- Frequency counter.

Note: For T201 (AM (MW)-IFT), L203 (AM (MW) OSC coil), L251 (LW ANT coil), L303 (L.P.F.) and L301, L302 (L.P.F.), they are supplied as adjusted parts. So, do not turn the cores of the parts.

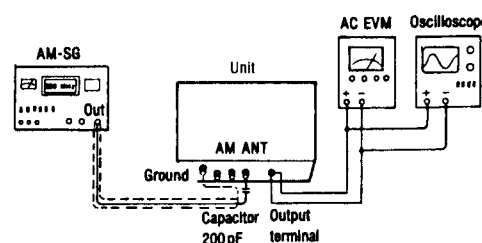
AM(MW)-RF ADJUSTMENT

- Test equipment connection is shown in figure.
- Set the unit to "AM(MW)" mode.
- Set the radio and signal generator to 612kHz.
- Adjust L202 for maximum output.
- Set the radio dial and signal generator to 1503kHz.
- Adjust CT201 for maximum output.
- Repeat steps 3 ~ 6.

Note: Antenna input level must be as low as possible being free from AGC.

AM SIGNAL GENERATOR CONDITION

Modulation30%
Modulation frequency400Hz



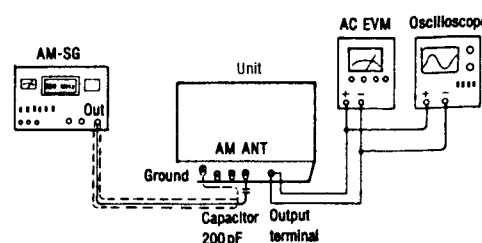
LW-RF ADJUSTMENT (ST-G45AL only)

- Test equipment connection is shown in figure.
- Set the unit to "LW" mode.
- Set the radio frequency display and signal generator to 155kHz.
- Adjust L252 for maximum output.
- Set the radio frequency display and signal generator to 353kHz.
- Adjust CT251 for maximum output.
- Repeat steps 3 ~ 6.

Note: Antenna input level must be as low as possible being free from AGC.

AM SIGNAL GENERATOR CONDITION

Modulation30%
Modulation frequency400Hz



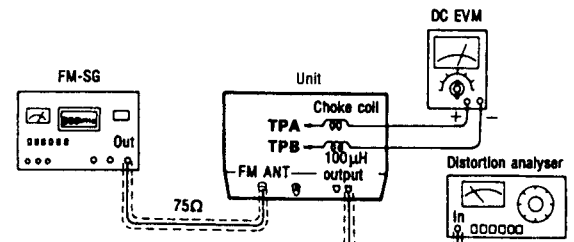
FM MONO DISTORTION ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to "FM" mode.
3. Set the radio frequency display and signal generator to 100.10MHz.
4. Adjust the core of T101 so that the voltage measured in signal mode is 0mV(0±10mV) in 150mV range.
5. Adjust T102 so that the distortion factor of L-CH is minimized.
6. Repeat steps 4 and 5.
7. Make sure that the distortion factors of L-CH and R-CH are nearly the same and minimum.

Note: The adjusting screwdriver used should be made of resin.

FM SIGNAL GENERATOR CONDITION

Modulation100%
Modulation frequency1kHz
Output level66dB



TPA = TP102, TPB = TP101

MPX VCO ADJUSTMENT

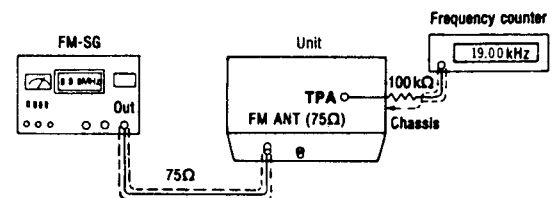
1. Test equipment connection is shown in figure.
2. Set the unit to "on/auto" position.
3. Set the radio dial and signal generator to 100.10MHz.
4. Adjust VR302 for 19kHz±30Hz on frequency counter reading.

USING ALTERNATE SYSTEM

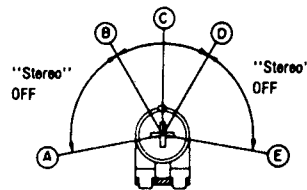
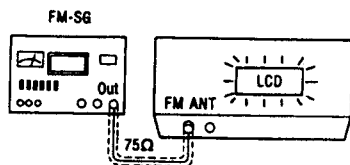
1. Apply stereo signal from generator or receive the stereo broadcast.
2. Adjust VR302 until stereo indicator lights up. Fix the arm of VR302 as shown in figure.

FM SIGNAL GENERATOR CONDITION

Modulation0%
Modulation frequency0
Output level66dB



TPA = TP301, Frequency counter: 19.00 kHz



VR302

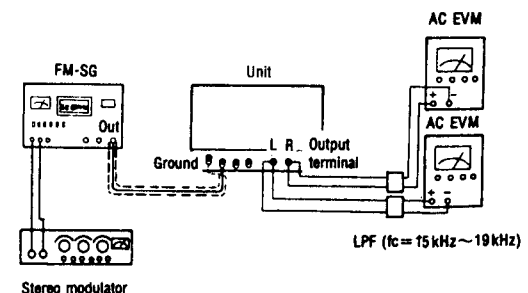
- A—B, D—E..... "Stereo" OFF position
- B—D..... "Stereo" ON position (Indicator lighting)
- C..... Adjust point of pilot circuit

SEPARATION ADJUSTMENT

1. Test equipment connection is shown in figure.
2. Set the unit to "FM" mode.
3. Set the radio frequency display and signal generator to 100.10MHz.
4. Adjust VR301 so that the R-CH output is minimized when stereo modulator is in "L"(L-CH modulation) mode.

FM SIGNAL GENERATOR CONDITION

Modulation....."L" mode or "R" mode 45%, Pilot 10%
Modulation frequency1kHz(Pilot 19kHz)
Output level66dB

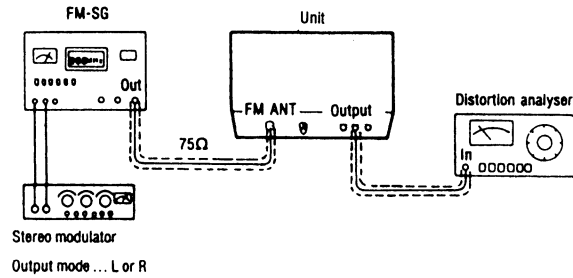


FM STEREO DISTORTION ADJUSTMENT ([EG] only)

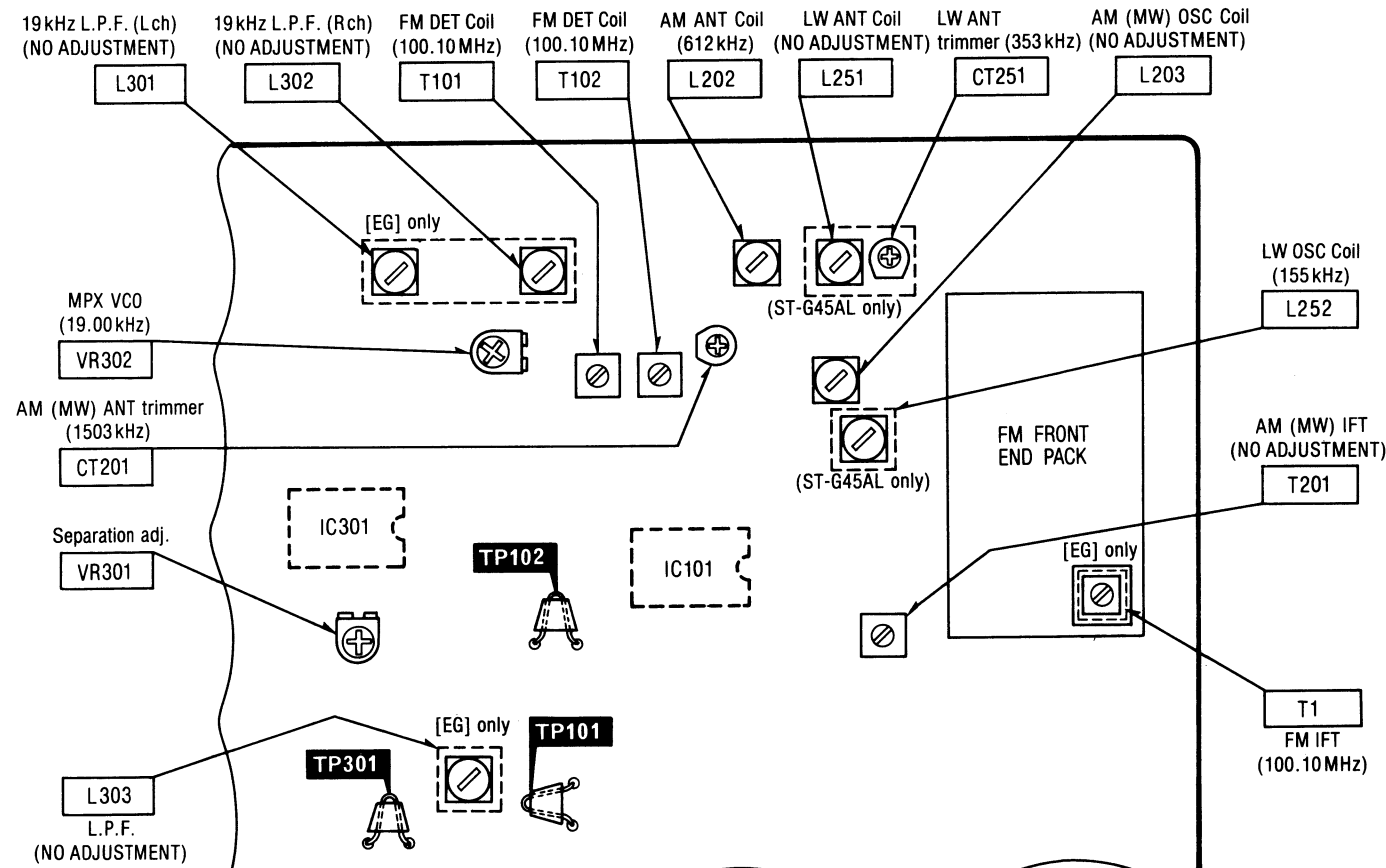
- 1. Test equipment connection is shown in figure.
- 2. Set the unit to "FM" mode.
- 3. Set the radio frequency display and signal generator to 100.10MHz.
- 4. Adjust T1 so that the distortion factor of L-CH is minimized.
- 5. Make sure that the distortion factors of L-CH and R-CH are nearly the same with each other to minimum.

Note: The adjusting screwdriver used should be made of resin.

FM SIGNAL GENERATOR CONDITION
Modulation "L" mode or "R" mode 45%,
Pilot 10%
Modulation frequency 1kHz (Pilot 19kHz)
Output level 66dB



Adjustment Points



FUNCTION OF TERMINAL (IC901: UPD1718G514)

PIN NO.	IN/OUT	MARK	DESCRIPTION OF TERMINAL
1~4	OUTPUT	LCD4~LCD1	Segment signal output for LCD display.
5	OUTPUT	COM2	Common of LCD.
6		COM1	
7	INPUT	V _{DD}	Power supply terminal.
8	INPUT	FM	Input for FM OSC output frequency divided to 1/32 or 1/33 by pre-scaler.
9	INPUT	AM	Input for AM OSC output. 1.84 V 522 kHz 1629 kHz
10	—	GND	Ground terminal.
11	OUTPUT (ST-G40L only)	EO1	Error output of PLL. The frequency is output as a result of comparison between crystal frequency and FM or AM (MW/LW) station frequency.
12	OUTPUT	EO2	
13	INPUT	CE	Power supply detection. "H" input with it connected to home-use power outlet socket. H → 4V, L → 0V
14	—	NC	Not used in this unit.
15	OUTPUT	X1	Connecting terminal for crystal oscillator.
16	INPUT	X2	The crystal connected is at 4.5 MHz.
17	INPUT	SD	Station detection. 1. Signal received → H 2. NO signal → L
18	INPUT	REMOTE	Remote control input terminal.
19	OUTPUT	FM	"H" output in FM mode.
20	OUTPUT	LW. FM MONO	Forcible monaural selection. 4.8V 0V Forcible monaural mode
21~24	INPUT	K3~K0	Input terminal for key return signal from external key matrix.
25~28	OUTPUT	PB3~PB0	Output terminal for key source signal data.
29~31		PC3~PC1	
32	OUTPUT	MUTE	This is the output terminal to eliminate shock noise due to unlocking at PLL. < Muting output > 1. Pin 13 (CE) is L → H or H → L. 2. Power switch "off". 3. Frequency change. (up/down, FM ↔ AM) 4. FM IF selection. 5.0V 0V Muting output operation
33	INPUT	V _{DD}	Power supply terminal.
34~52	OUTPUT	LCD23~LCD5	Segment signal output for LCD display.



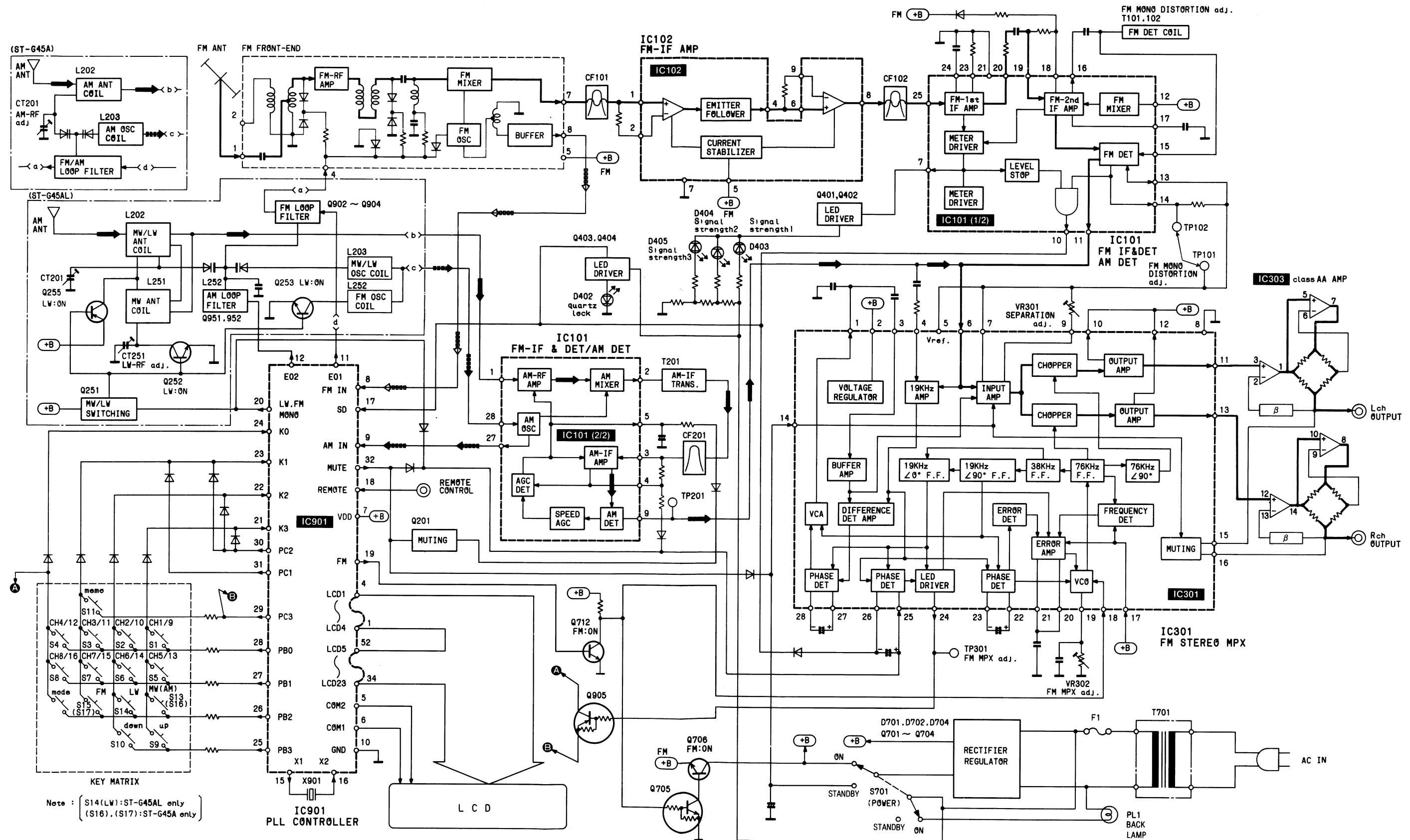
■ CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM (ST-G45AL)

B SWITCH P.C.B

Diagram of the Switch P.C.B. showing various switches and their connections. The board includes a BAND SELECTOR (FM, MW, LW) and a TUNING control. It also features a memory switch and an FM mode switch. The board is populated with 12 switches (S1-S12) and 12 capacitors (C1-C12).

A MAIN P.C.B.

■ BLOCK DIAGRAM



Note)

- FM Signal
- FM OSC
- AM Signal
- AM OSC

RESISTORS & CAPACITORS

Notes: * Important safety notice: Components identified by Δ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts. * Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Numbering System of Resistor

Example table showing resistor numbering system with columns for Type, Wattage, Shape, Tolerance, and Value.

Numbering System of Capacitor

Example table showing capacitor numbering system with columns for Type, Voltage, Value, Tolerance, and Peculiarity.

Table with 3 columns: Resistor Type, Wattage, Tolerance. Rows include ERD, ERG, ERX, ERQ, ERD, ERO, ERC.

Table with 3 columns: Capacitor Type, Voltage, Tolerance. Rows include ECE, ECCD, ECKD, ECQM, ECQP, ECG, ECEA, QCU, ECUX, ECF, EECW.

Main table listing various electronic components including resistors (R1-R323) and capacitors (C1-C251) with their respective part numbers and codes.

Table listing electronic components including resistors (C301-C326) and capacitors (C401-C904) with their respective part numbers and codes.

REPLACEMENT PARTS LIST

Notes: • Important safety notice: Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts. • Part other than ⊗ and ⊙-marked are use for both black and silver type. • Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Table listing replacement parts including integrated circuits, transistors, diodes, and various other components with their descriptions and part numbers.

ge	Tolerance
W	J : ±5%
W	F : ±1%
W	G : ±2%
W	K : ±10%

	Tolerance
C	: ±0.25pF
J	: ±5%
K	: ±10%
Z	: +80%
P	: +100%
	-0%
M	: ±20%
D	: ±0.5pF
G	: ±2%

No.	Part Code
J472	001 152 2362 4
J102	001 152 2346 4
J332	001 152 2357 1
J123	001 152 2424 7
J102	001 152 2346 4
J822	001 152 2455 0

J3R3	001 120 2839 6
03PF	001 103 1449 7
J470	001 120 2835 0
223JZ	001 106 0739 9
J101	001 120 2830 5
102JZ	001 106 0661 4
03PF	001 103 1449 7
700C	001 103 0271 9
01KBY	001 103 5569 4
J101	001 120 2830 5
JR22	001 120 3247 0
4KXL	001 108 0793 3
03PF	001 103 1449 7
02JZ	001 106 0661 4
03PF	001 103 1449 7
3KXL	001 108 0342 6
471	001 120 2924 0
03PF	001 103 1449 7
80JCY	001 103 5591 6
23PF	001 103 1510 9
50K	001 103 0410 6
1JZ	001 106 1107 1
03PF	001 103 1449 7
R2KCY	001 103 5644 0
80K	001 103 0682 4
03PF	001 103 1449 7
330	001 120 3162 4
03PF	001 103 1449 7
R47	001 120 3249 8
23PF	001 103 1510 9
3KXL	001 108 0358 8
03PF	001 103 1449 7
330	001 120 3162 4
1JZ	001 106 1101 7

Ref. No.	Part No.	Part Code	Ref. No.	Part No.	Part Code	Ref. No.	Part No.	Part Code
C301	ECKD1H103PF	001 103 1449 7	C401	ECEA1CU100	001 120 2905 3	C305	ECCD1H330KC	001 103 0569 4
C302	ECQM1H102JZ	001 106 0661 4	C502	ECEA1HUR22	001 120 3247 0	C306	ECCD1H060CC	001 103 0264 8
C303	ECEA1AU101	001 120 2830 5	C701	ECEA16V1000	001 120 2545 7	C307	ECKD1H103PF	001 103 1449 7
C305, C306	ECQM1H153JZ	001 106 0704 0	C702	ECEA1CU222	001 120 3074 3	C308	ECQM1H223JZ	001 106 0739 9
C307, C308	ECEA1EU3R3	001 120 2839 6	C704	ECEA1EU101	001 120 2837 8	C309	ECKD1H103PF	001 103 1449 7
C309, C310	ECEA1CU100	001 120 2905 3	C705, C706	ECKD1H103PF	001 103 1449 7	C310	ECEA25M4R7R	001 120 0838 5
C313	ECEA1HUR47	001 120 3249 8	C707, C708	ECKD1H103PF	001 103 1449 7	C312	ECKD1H103PF	001 103 1449 7
C314, C315	ECEA1HUR22	001 120 3247 0	C717	ECEA1CU100	001 120 2905 3	C314	ECEA1HU010	001 120 2842 1
C316	ECEA1CU100	001 120 2905 3	C901	ECKD1H103PF	001 103 1449 7	C351	ECKD1H223PF	001 103 1510 9
C320, C321	ECFTD223KXL	001 108 0342 6	C902	ECEA0JU222	001 120 3161 5	C352	ECEA1HU010	001 120 2842 1
C326	ECQP1391JZ	001 106 1101 7	C904	ECEA0JU471	001 120 2924 0	C353	ECQM1H223JZ	001 106 0739 9
						C355	ECEA1HUR47	001 120 3249 8

REPLACEMENT PARTS LIST

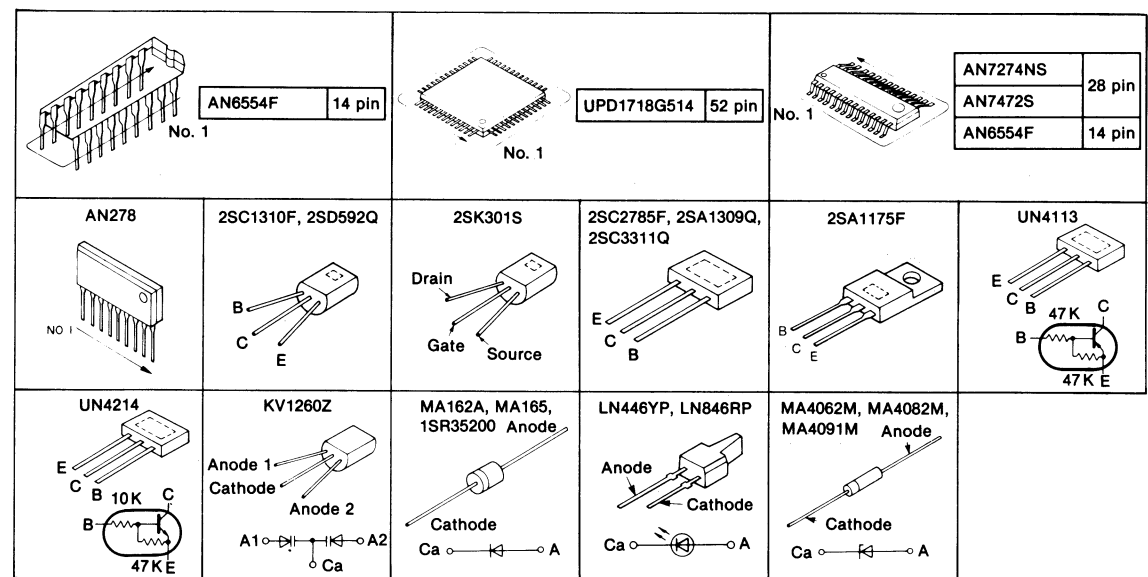
Notes: • Important safety notice:
Components identified by Δ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.
• \textcircled{K} -marked parts are used for black only, while \textcircled{S} -marked parts are for silver type only.

• Part other than \textcircled{K} -and \textcircled{S} -marked are use for both black and silver type.
• Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Ref. No.	Part No.	Part Code	Description	Ref. No.	Part No.	Part Code	Description
INTEGRATED CIRCUITS				THERMISTORS AND VARISTORS			
IC101	AN7274NS	001 060 8244 6	I.C., FM IF/AM	TH102	ERTD22HL332S	001 191 0186 1	THERMISTOR
IC102	AN278	001 060 0102 1	I.C., FM IF	COILS AND TRANSFORMERS			
IC301	AN7472S	001 060 8249 1	I.C., FM MPX	L101	ELEPK101KA	001 211 0855 8	CHOKE COIL
IC303	AN6554F	001 060 2932 1	I.C., AMP	L202	SLA2B3-P	001 211 2249 6	ANTENNA COIL
IC901	UPD1718G514	001 061 1045 4	I.C., PLL	L203	SLQ2B9R-P	001 211 2783 9	OSCILLATOR COIL
TRANSISTORS				L204	SLQB20G-1P	001 211 2711 5	CHOCK COIL
Q201, Q251	2SC3311A-Q	001 030 5279 5	TRANSISTOR	L251	SLA1B7R-P	001 211 2779 5	ANTENNA COIL
Q252, Q253	2SC3311A-Q	001 030 5279 5	TRANSISTOR	L252	SL01B5-P	001 211 2782 0	OSCILLATOR COIL
Q255	2SA1175FE	001 030 5075 5	TRANSISTOR	L901, L902	RLQY25S5-0	001 210 1383 0	CHOKE COIL
Q401, Q402	2SC3311A-Q	001 030 5279 5	TRANSISTOR	T101	SL14B520-Z	001 211 0628 7	I.F. TRANSFORMER
Q403, Q404	2SC3311A-Q	001 030 5279 5	TRANSISTOR	T102	SL14B521-Z	001 211 0629 6	I.F. TRANSFORMER
Q701, Q702	2SD592ANCQ	001 030 1752 7	TRANSISTOR	T201	SL12B104-M	001 215 2837 2	I.F. TRANSFORMER
Q703	2SC3311A-Q	001 030 5279 5	TRANSISTOR	T701	SLT5K171	001 202 8001 5	POWER TRANSFORMER
Q704	2SK301	001 030 2428 2	TRANSISTOR				
Q705	UN4214	001 030 4835 3	TRANSISTOR				
Q706, Q712	2SC3311A-Q	001 030 5279 5	TRANSISTOR				
Q902, Q903	2SC1310-G	001 030 6080 4	TRANSISTOR				
Q904	2SA1175FE	001 030 5075 5	TRANSISTOR				
Q905	UN4113	001 030 2900 9	TRANSISTOR				
Q906, Q951	2SC3311A-Q	001 030 5279 5	TRANSISTOR				
Q952	2SC3311A-Q	001 030 5279 5	TRANSISTOR				
DIODES				FILTERS			
D101	MA165	001 032 0494 0	DIODE	CF101	SVFE107M22-Q	001 241	CERAMIC FILTER
D201	KV1260Z	001 032 7237 7	DIODE	CF102	SVFE107MX2-Q	001 241 1128 0	CERAMIC FILTER
D202, D203	MA165	001 032 0494 0	DIODE	CF201	SVFSFZ450F7L	001 241 0429 4	CERAMIC FILTER
D301, D302	MA165	001 032 0494 0	DIODE	OSCILLATORS			
D304	MA165	001 032 0494 0	DIODE	X901	SVQ43U452-D	001 250 1506 3	CRYSTAL OSC
D305	MA4082M	001 032 4955 6	DIODE	DISPLAYS			
D402	LN846RP	001 032 3839 3	L.E.D	LCD	SALHLC9225-4	001 080 0277 7	LIQUID CRYSTAL DISPLAY
D403, D404	LN446YP	001 032 3834 8	L.E.D	FRONT PACKS			
D405	LN846RP	001 032 3839 3	L.E.D	FE	SNVFE306E15	001 141 0539 6	FRONT END PACK
D701, D702	SVD1SR35200A	001 032 3951 4	RECTIFIER	LAMPS			
D704	MA4062-M	001 032 7211 7	DIODE	PL1	XAMS15S150	002 351 0974 3	LAMP
D710, D711	MA165	001 032 0494 0	DIODE	FUSES			
D901, D902	MA162A	001 032 0493 1	DIODE	F1	Δ XBA2C05TB0	002 380 1350 2	FUSE, T.O.5A 250V
D906, D907	MA165	001 032 0494 0	DIODE	F1	Δ XBA2C05TR0	002 380 0395 3	FUSE, T.O.5A 250V
D908, D909	MA165	001 032 0494 0	DIODE	SWITCHES			
D911, D912	MA165	001 032 0494 0	DIODE	S1, S2	SSG13	003 435 2951 9	SW. CH1/CH2
D926, D931	MA165	001 032 0494 0	DIODE	S3, S4	SSG13	003 435 2951 9	SW. CH3/CH4
D932	MA4091-M	001 032 7213 5	DIODE	S5, S6	SSG13	003 435 2951 9	SW. CH5/CH6
D933	MA165	001 032 0494 0	DIODE	S7, S8	SSG13	003 435 2951 9	SW. CH7/CH8
VARIABLE RESISTORS				S9, S10	SSG13	003 435 2951 9	SW. UP/DOWN
VR301	QVNB3A00B104	001 180 1594 6	VARIABLE RESISTOR	S11, S12	SSG13	003 435 2951 9	SW. MEMO. MODE
VR302	QVNB3A00B103	001 180 1684 5	VARIABLE RESISTOR	S13, S14	SSG13	003 435 2951 9	SW. MW/LW
VARIABLE CAPACITORS				S15	SSG13	003 435 2951 9	SW. FM
CT201	SVCTZ03T110F	001 142 0370 8	VARIABLE CAPACITOR	S701	Δ SSH1214	003 435 5649 0	SW., POWER
CT251	SVCTZ03R200F	001 142 0369 1	TRIMMER				

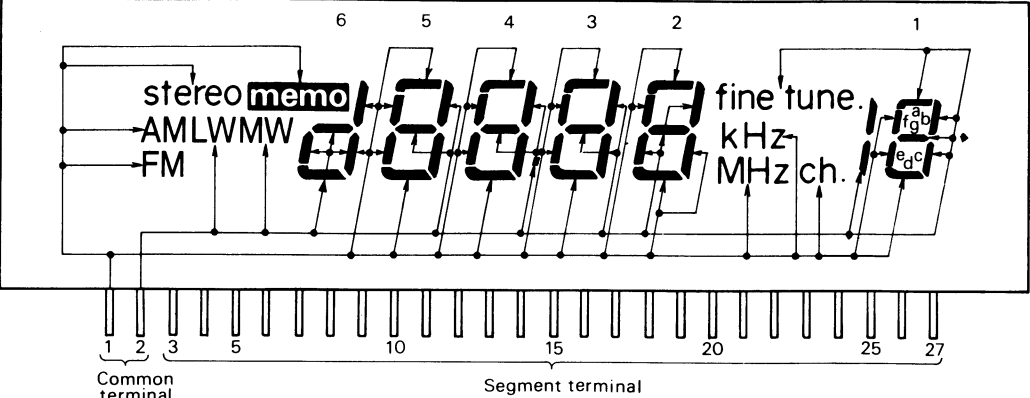
Ref. No.	Part No.	Part Code	Description	Ref. No.	Part No.	Part Code	Description
CABINET AND CHASSIS				24	XTB3+6FFZ	005 501 1590 3	SCREW
1	\textcircled{K} SGWTG45AL-KE	016 840 7883 2	FRONT PANEL (K)	25	XTB3+12JFZ	005 501 2078 0	TAPPING SCREW
1	\textcircled{S} SGWTG45AL-SE	016 840 8002 9	FRONT PANEL (S)	26	XTB3+10G	005 501 2647 9	SCREW
1-1	\textcircled{S} SGU497-6	016 842 1678 9	FILTER	27	\textcircled{S} SNE2129	005 500 8058 5	SCREW
1-1	\textcircled{K} SGU497-7	016 842 1717 9	FILTER	27	\textcircled{K} SNE2129-1	005 500 7938 6	SCREW
2	\textcircled{S} SUW3011	016 650 5196 4	BRACKET	28	XTB3+16F1	005 501 2606 8	TAPPING SCREW
3	\textcircled{S} SBC817-1A	016 702 6498 2	BUTTON, PRESET	29	XTB3+8JFZ1	005 501 2523 0	SCREW
3	\textcircled{K} SBC817A	016 702 6499 1	BUTTON, PRESET	30	XTW3+8TFR	005 501 2602 2	SCREW
4	\textcircled{K} SBC810-4	016 702 6496 4	BUTTON, FUNCTION	31	XTW3+8T	005 501 1358 9	SCREW
4	\textcircled{S} SBC810-5	016 702 6497 3	BUTTON, FUNCTION	32	SJT30640LX-V	003 410 6149 8	CONNECTOR
5	\textcircled{S} SBC812-1A	016 702 6452 6	BUTTON, BAND	33	SJT30940LX-V	003 410 6150 5	LUG TERMINAL
5	\textcircled{K} SBC812A	016 702 6455 3	BUTTON, BAND	PACKINGS			
6	\textcircled{K} SGX7733	016 846 2908 0	ORNAMENT	P1	SPG5947	016 971 5104 6	CARTON BOX
6	\textcircled{S} SGX7733-1	016 846 2497 8	ORNAMENT	(EX, EK, EB)			
7	\textcircled{K} SGX7830-2	016 846 3228 3	ORNAMENT	P1	SPG5948	016 971 5145 7	CARTON BOX
7	\textcircled{S} SGX7830-3	016 846 3284 5	ORNAMENT	(EF)			
8	\textcircled{S} SUW3002	016 650 5184 8	BRACKET	P2	SPS4550-7	016 977 3097 6	PAD
9	\textcircled{S} SBC666	016 702 5545 6	BUTTON, POWER, POWER	P3	SPS4551-4	016 977 2905 3	PAD
9	\textcircled{K} SBC666-5	016 702 6679 9	BUTTON, POWER	P4	SPS4552	016 977 1354 6	PAD
10	\textcircled{K} SKC1710K99	016 800 2120 2	CABINET	P5	\textcircled{S} SPP697	016 978 0194 3	PROTECTION COVER
10	\textcircled{S} SKC1710S98	016 800 2121 1	CABINET	P5	\textcircled{K} SPP725	016 978 0208 4	POLYETHYLENE SHEET
11	SHR9796	016 652 0607 6	PLASTIC SPACER	P6	XZB24X40C04	016 978 0232 4	POLYETHYLENE COVER
12	SDU249-1	016 842 0850 9	GALSS. TRANSPARENT PLATE	ACCESSORIES			
13	SMP408	016 632 1788 4	ANGLE	A1	Δ SFDAC05E03	003 490 4809 5	POWER CORD
14	SHR415	016 652 0088 7	LOCK PIN	(EX, EF, EB)			
15	SJT347	003 410 1830 8	FUSE HOLDER	A1	Δ SFDAC05G02	003 490 2613 3	POWER CORD
16	SHG1639	016 653 0657 1	RUBBER PARTS	(EK)			
17	Δ SJS9236	003 403 4660 7	AC SOCKET	A2	SJP2249-1	003 492 6446 4	OUTPUT CORD
18	SJF8615N	003 410 7262 4	TERMINAL BOARD	A3	SJP9009	003 492 5594 7	PLUG
19	SUS803	016 726 0633 5	COIL SPRING	(EK)			
20	SHE181	016 918 0332 7	SPACER	A4	SSA270M	002 390 1568 0	FM ANTENNA CORD
21	SHE185	016 918 0330 9	SPACER	A5	SPB1152T	016 918 0624 8	ANTENNA
22	SGP6373A	016 840 6547 9	REAR PANEL	A6	SQF12889-2	016 983 5263 6	INSTRUCTION BOOK
22	SNE55	003 410 1905 6	CONNECTOR				
23	SKL304	016 828 0315 9	LEG.CASTER				

TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

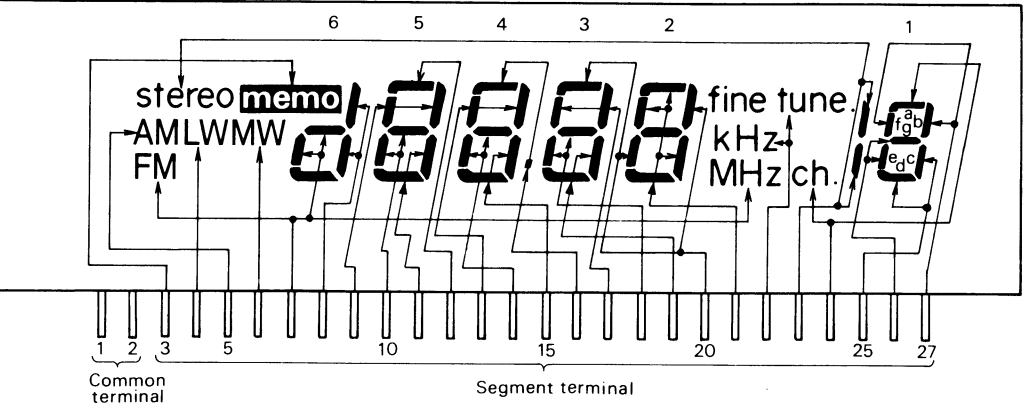


DESCRIPTION OF LCD PANEL

COMMON



SEGMENT

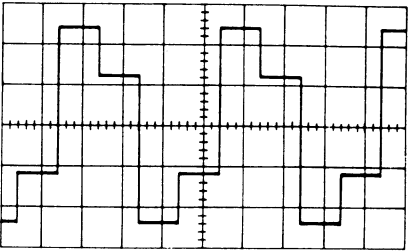


No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
COM1	COM1	—	MEMO	—	AM	—	FM, MHz	6b	5f	5e	5d	5a	4f	4e	4d
COM2	—	COM2	—	LW	—	MW	6deg	6c	5b	5g	5c	—	4b	4g	4c

No.	16	17	18	19	20	21	22	23	24	25	26	27
COM1	4a	3f	3e	3d	3a	2acdf	kHz	stereo	ch	1d	1e	1f
COM2	3b	3g	3c	2bc	2g	fine tune	1a	1c	1g	1b		

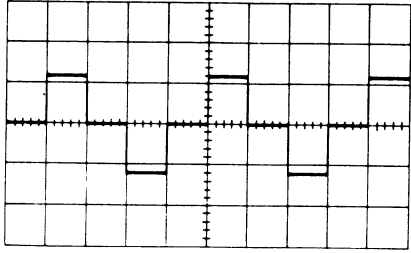
Segment ON

Pin ① or ② of LCD and each segment terminal.



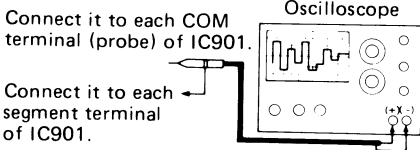
Segment OFF

Pin ① or ② of LCD and each segment terminal.



Each segment waveform measuring method

Note: Potential difference from COM terminal waveform is measured for each segment output waveform. So, do not connect the earth to other equipment on the oscilloscope side. If the earth is connected, IC901 will break down.



SCHEMATIC DIAGRAM

Note 1:

- S1~S8 : Preset tuning switch.
[S1—CH 1/9, S2—CH 2/10, S3—CH 3/11, S4—CH 4/12
S5—CH 5/13, S6—CH 6/14, S7—CH 7/15, S8—CH 8/16]
- S9, S10 : Tuning switch.
[S9 —down (tuning to lower frequency.)
S10—up (tuning to higher frequency.)]
- S11 : Memory switch.
memory ↔ auto memory
- S12 : FM mode selector.
auto ↔ mono
- S13~S15 : Band selector.
(ST-G45AL only) (S13—MW, S14—LW, S15—FM)
- S16, S17 : Band selector.
(ST-G45A only) (S16—AM, S17—FM)
- S701 : Power switch in "on" position. (power)
- S702 : Voltage selector.
(ST-G45A [XA] [PA] [PE] areas only)

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. All voltage values shown in circuitry are DC voltage in FM signal (no signal) reception modes.

- * Figures in () stand for DC voltage in AM (MW) signal reception mode.
- * Figures in () stand for DC voltage in LW signal reception mode.
- * Figures in () stand for muting mode.
- Positive voltage lines.
- FM signal FM OSC AF signal.
- AM signal FM OSC

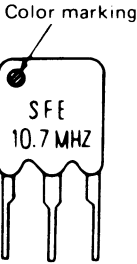
Important safety notice.
Components identified by Δ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

Part No.	Original Part No.	Supplyment Part No.
D901, D902	MA150	MA162A

Note 2:

Use of ceramic filters in pairs

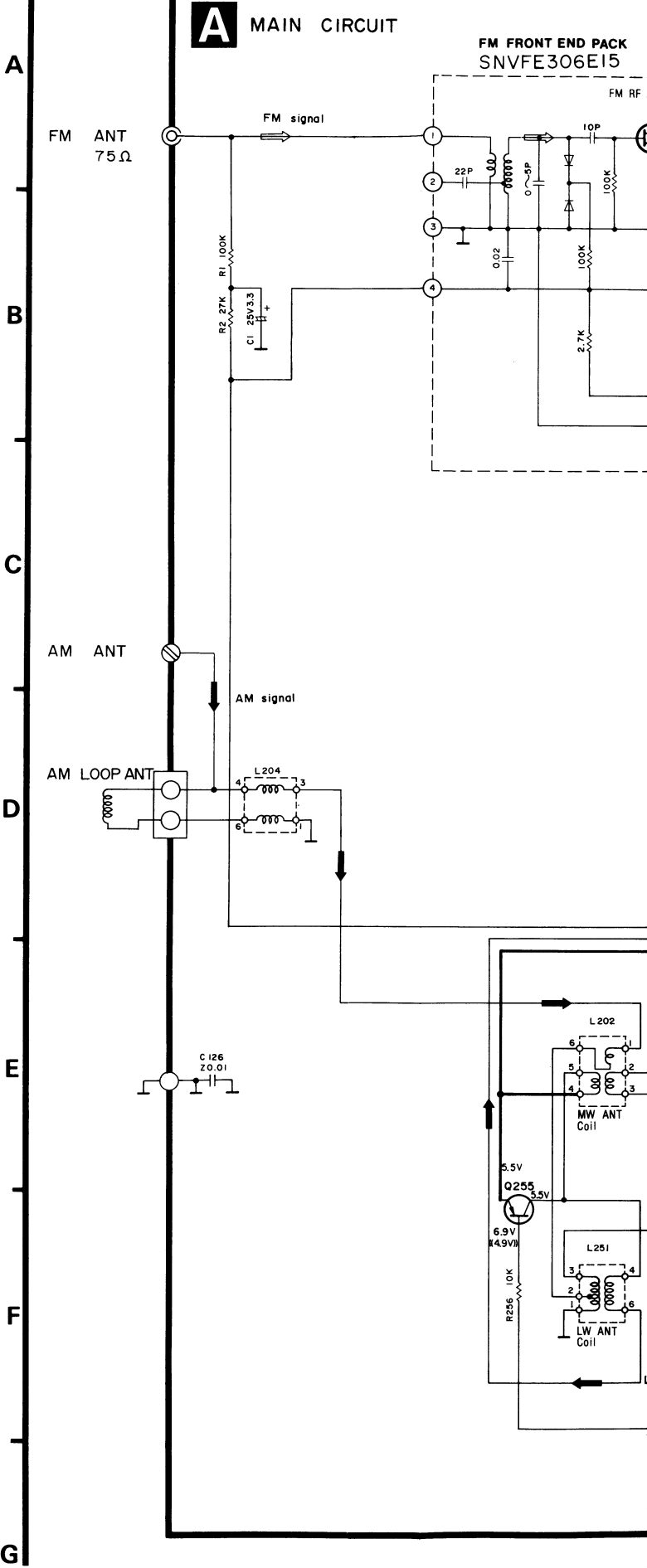
The ceramic filters (CF101, CF102) for FM-IF circuit are available in two ranks.
For this machine, be sure to use the ceramics of the same rank in a pair. At repairing and replacement, pay close attention to the diode (D901, D902) for use as different diode must be used depending on each rank of the ceramic filters.



RANK (Color)	D901	D902
Black	○	×
White	×	○
Red	×	×

Note: ○ mark: Diode is used.
× mark: Diode is not used.

(ST-G45AL only)



- **S1~S8** : Preset tuning switch.
[S1—CH 1/9, S2—CH 2/10, S3—CH 3/11, S4—CH 4/12]
[S5—CH 5/13, S6—CH 6/14, S7—CH 7/15, S8—CH 8/16]
- **S9, S10** : Tuning switch.
[S9 —down (tuning to lower frequency.)]
[S10—up (tuning to higher frequency.)]
- **S11** : Memory switch.
memory ↔ auto memory
- **S12** : FM mode selector.
auto ↔ mono
- **S13~S15** : Band selector.
(ST-G45A only) (S13—MW, S14—LW, S15—FM)
- **S16, S17** : Band selector.
(ST-G45A only) (S16—AM, S17—FM)
- **S701** : Power switch in “on” position. (power)
- **S702** : Voltage selector.
(ST-G45A [XA] [PA] [PE] areas only)

- * Figures in () stand for DC voltage in AM (MW) signal reception mode.
- * Figures in (()) stand for DC voltage in LW signal reception mode.
- * Figures in stand for muting mode.

FM signal FM OSC

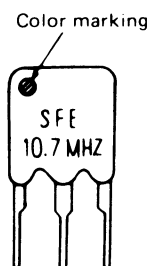
→ AM signal

- Important safety notice.

When replacing any of these components, use only manufacturer's specified parts.

Part No.	Original Part No.	Supplyment Part No.
D901, D902	MA150	MA162A

For this machine, be sure to use the ceramics of the same rank in a pair. At repairing and replacement, pay close attention to the diode (D901, D902) for use as different diode must be used depending on each rank of the ceramic filters.



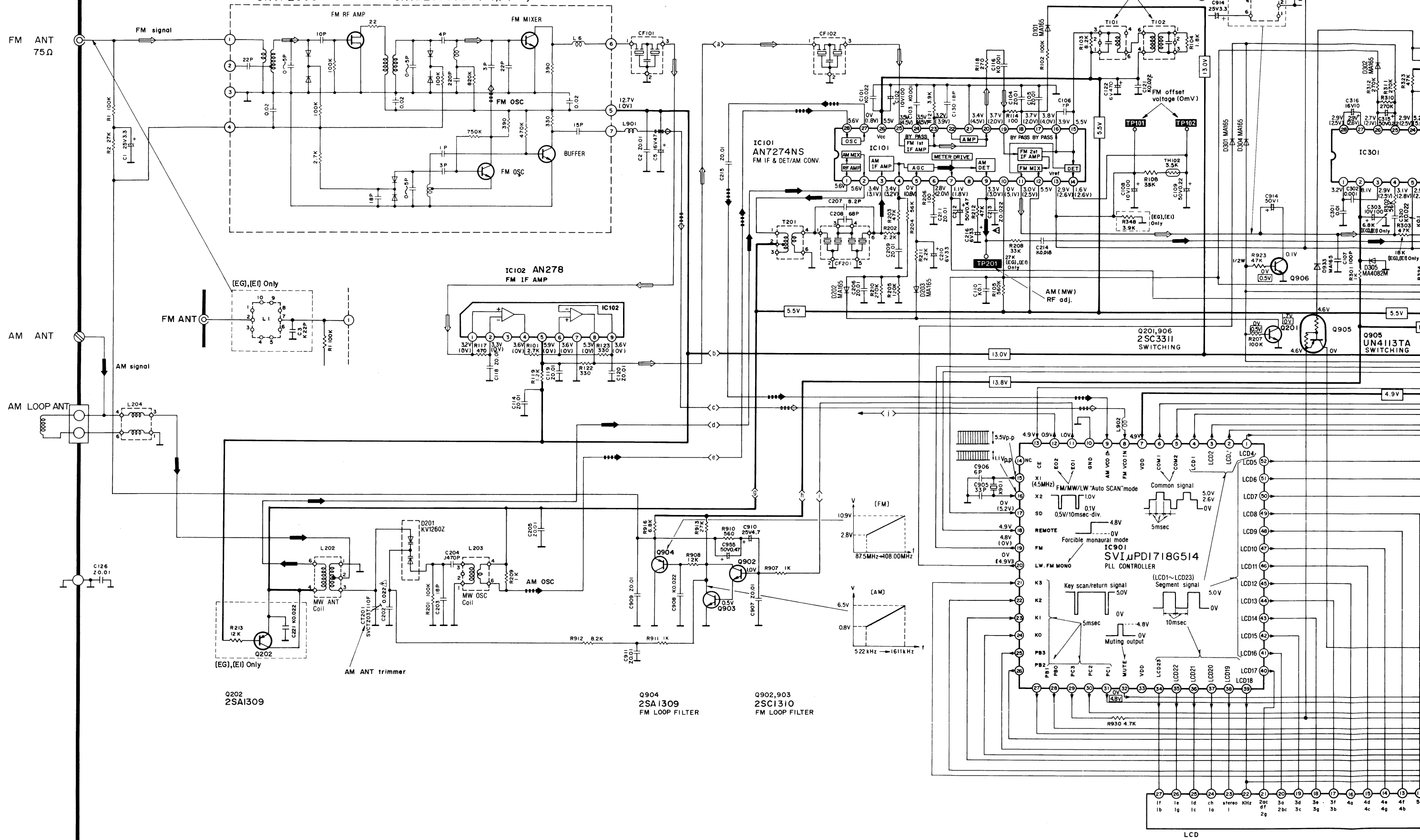
RANK (Color)	D901	D902
Black	○	×
White	×	○
Red	×	×

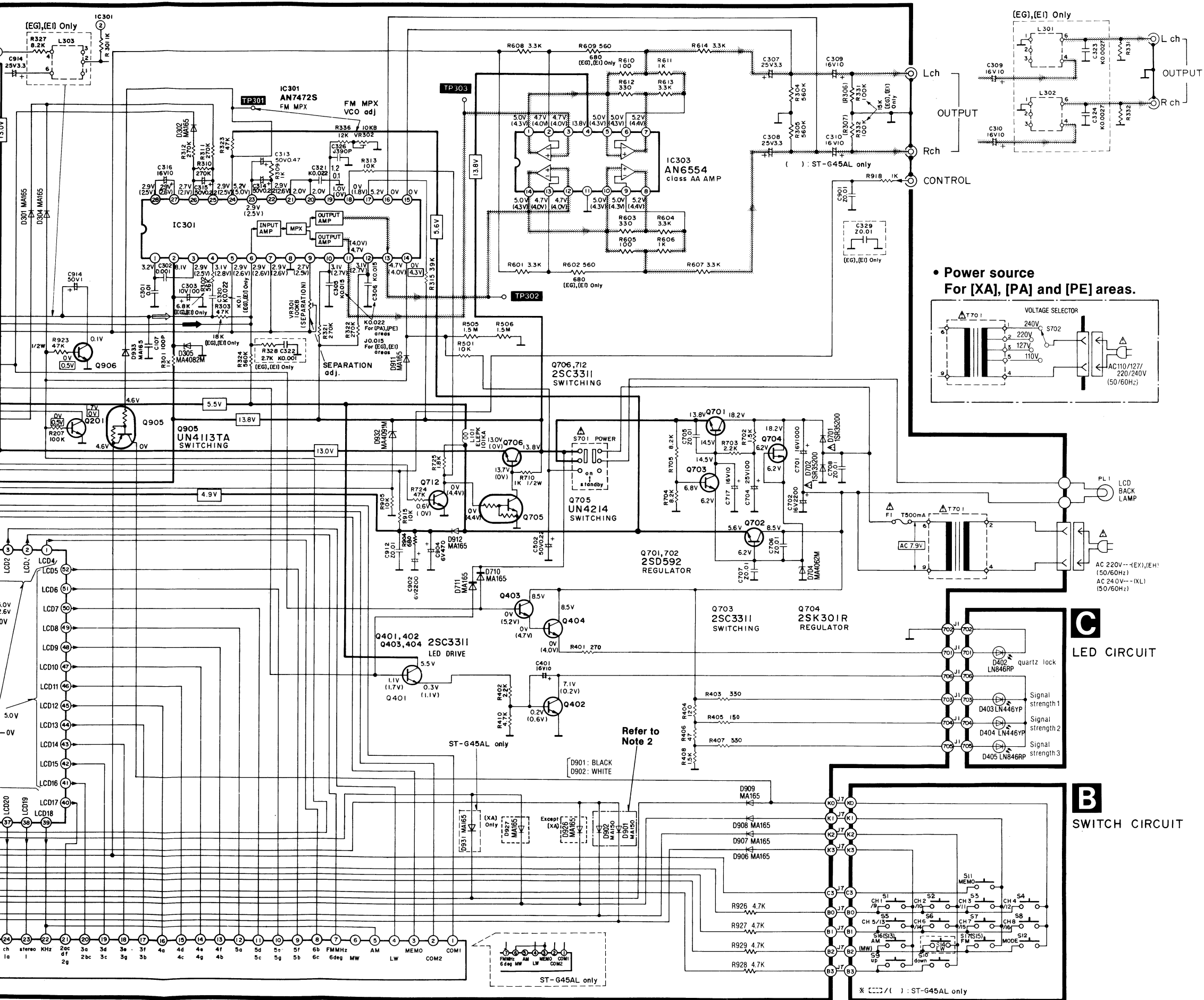
Note: ○ mark: Diode is used.
× mark: Diode is not used.

A MAIN CIRCUIT

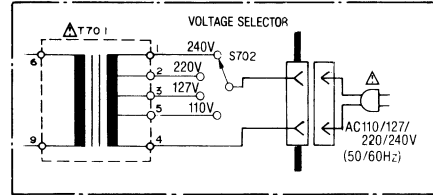
FM FRONT END PACK
SNVFE306E15

SNVFE306G25 (EG),(E) Only





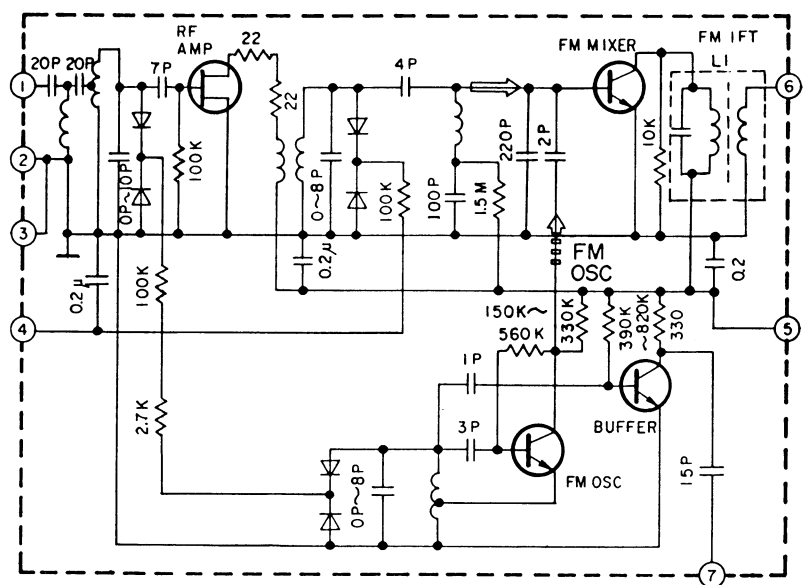
• Power source
For [XA], [PA] and [PE] areas.



C
LED CIRCUIT

B
SWITCH CIRCUIT

• [EG, Ei] only FM FRONT END PACK SNVFE306G25



REPLACEMENT PARTS LIST

• Change of Parts List (ST-G45A from ST-G45AL)

Ref. No.	Change of Part No.		Part Name & Description	Pcs Set	Remarks
	ST-G45AL [EK]	ST-G45A [EX, EH, XL, XA, PA, PE, EG, Ei]			
RESISTORS					
R208	ERDS2TJ333	ERDS2TJ273	27kΩ [EG, Ei] only	1	
R213	————	ERDS2TJ123	12kΩ	1	Addition
R251	ERDS2TJ473	————	————	—	Deletion
R252, 253	ERDS2TJ182	————	————	—	Deletion
R254	ERDS2TJ223	————	————	—	Deletion
R256	ERDS2TJ103	————	————	—	Deletion
R302	ERDS2TJ563	ERDS2TJ682	6.8kΩ [EG, Ei] only	1	
R303	ERDS2TJ473	ERDS2TJ183	18kΩ [EG, Ei] only	1	
R306, 307	ERDS2TJ104	————	————	—	Deletion
R327	————	ERDS2TJ822	8.2kΩ [EG, Ei] only	1	Addition
R328	————	ERDS2TJ272	2.7kΩ [EG, Ei] only	1	Addition
R331, 332	————	ERDS2TJ153	15kΩ [EG, Ei] only	1	Addition
		ERDS2TJ104	100kΩ [other]	1	Addition
R348	————	ERDS2TJ392	3.9kΩ [EG, Ei] only	1	Addition
R602, 609	ERDS2TJ561	ERDS2TJ681	680Ω [EG, Ei] only	2	
R911	————	ERDS2TJ102	1kΩ	1	Addition
R912	————	ERDS2TJ822	8.2kΩ	1	Addition
R951	ERDS2TJ102	————	1kΩ	—	Deletion
R952	ERDS2TJ332	————	3.3kΩ	—	Deletion
R953	ERDS2TJ123	————	12kΩ	—	Deletion
R954	ERDS2TJ102	————	1kΩ	—	Deletion
R955	ERDS2TJ822	————	8.2kΩ	—	Deletion
CAPACITORS					
C203	ECCD1H150KC	RCBS1H180JCY	18PF	1	
C221	————	ECQM1H223JZ	0.01μF	1	Addition
C251	ECQP1391JZ	————	————	1	Deletion
C305, 306	ECQM1H153JZ	ECQM1H223JZ	0.022μF [PA, PE] only	1	
		ECQB1H153JZ	0.015μF [EG, Ei] only	1	
C322	————	ECQM1H102JZ	0.001μF [EG, Ei] only	1	Addition
C323, 324	————	ECFTD272KXL	0.0027μF [EG, Ei] only	1	Addition
C329, 911	————	ECKD1H103PF	0.01μF [EG, Ei] only	2	Addition
C951	ECKD1H223PF	————	————	—	Deletion
C952	ECEA1HU010	————	————	—	Deletion
C953	ECQM1H223JZ	————	————	—	Deletion
TRANSISTORS					
Q251~253	2SC3311A-Q	————	————	—	Deletion
Q255	2SA1175FE	————	————	—	Deletion
Q904	2SA1175FE	2SA1309AQS	————	1	
Q951, 952	2SC3311A-Q	————	————	—	Deletion
DIODES					
D926	MA165	————	[XA] only	—	Deletion
D927	————	MA165	[XA] only	1	Addition
D931	MA165	————	————	—	Deletion
VARIABLE CAPACITORS					
CT251	SVCTZ03R200F	————	————	—	Deletion
COILS AND TRANSFORMERS					
L202	SLA2B3-P	SLA2B1-1M	ANTENNA COIL	1	
L203	SLO2B9R-P	SLO2B7-M	OSCILLATOR COIL	1	

EXPLO

Ref. No.	Change of Part No.		Part Name & Description	Pcs Set	Remarks
	ST-G45AL [EK]	ST-G45A [EX, EH, XL, XA, PA, PE, EG, Ei]			
L251	SLA1B7R-P	——	——	—	Deletion
L252	SLO1B5-P	——	——	—	Deletion
L301, 302	——	SLM5B2-1P	[EG, Ei] only L.P.F.	2	Addition
L303	——	SLM1B1-P	[EG, Ei] only L.P.F.	1	Addition
L701	——	SLQZ650MH49	[EG, Ei] only CHOKE COIL	1	Addition
T701	SLT5K175	SLT5K171	[EX, EH, EG, Ei] only POWER TRANSFORMER	1	△
		SLT5K173	[XA, PA, PE] only POWER TRANSFORMER	1	△
		SLT5K175	[XL] only POWER TRANSFORMER	1	△
FRONT PACKS					
FE	SNVFE306E15	SNVFE306G25	[EG, Ei] only FRONT END PACK	1	
FUSES					
F1	XBA2C05TB0	XBA2C05TR0	250V, T0.5A	1	△
SWITCHES					
S13~15	SSG13	——	——	—	Deletion
S16, 17	——	SSG13	SW, AM/FM	2	Addition
S702	——	SSR187-1	[XA, PA, PE] only VOLTAGE SELECTOR	1	Addition
CABINET AND CHASSIS					
1	SGWTG45AL-KE	SGWTG45A-KE	FRONT PANEL (K)	1	
1	SGWTG45AL-SE	SGWTG45A-SE	FRONT PANEL (S)	1	
5	SBC812A	SBC811A	BUTTON, BAND (K)	1	
5	SBC812-1A	SBC811-1A	BUTTON, BAND (S)	1	
17	SJS9236	SJS9231-1B	[EG, Ei] only AC SOCKET	1	△
18	SJF8615N	SJF8714N	[XL, XA, PA, PE] only TERMINAL BOARD	1	
22	SGP6373A	SGP6373B	[XL] only REAR PANEL	1	
		SGP6373-1A	[XA, PA, PE] only REAR PANEL	1	
		SGP6373-2A	[EG] only REAR PANEL	1	
		SGP6373-2F	[Ei] only REAR PANEL	1	
34	——	SUS772	[PA, PE, EG, Ei] only SPRING	1	Addition
35	——	XTBS3+20F1	[EG, Ei] only SCREW	1	Addition
36	——	SJS9231A	[EG, Ei] only SOCKET COVER	1	Addition
PACKINGS					
P1	SPG5947	SPG5945	[XL] only CARTON BOX	1	
		SPG5946	[Ei] only CARTON BOX	1	
		SPG5944	[other] CARTON BOX	1	
P2	SPS4550-7	SPS4550-1	[XL] only PAD	1	
P3	SPS4551-4	SPS4551-1	[XL] only PAD	1	
P7	——	SPS4672	[XL] only PAD	1	Addition
ACCESSORIES					
A1	SFDAC05G02	SFDAC05E03	[EX, EH, EG, Ei] only POWER CORD	1	△
		SJA163	[XL] only POWER CORD	1	△
		SJA168-1	[XA, PA, PE] only POWER CORD	1	△
A3	SJP9009	SJP9215	[XA, PA, PE] only PLUG	1	
A4	SSA270M	SSA269M	[XL, XA, PA, PE] only FM ANTENNA CORD	1	
A6	SQF12889-2	SQF12891	[PA, PE] only INSTRUCTION BOOK	1	
		SQF12890	[EG] only INSTRUCTION BOOK	1	
		SQF12894	[Ei] only INSTRUCTION BOOK	1	

A

B

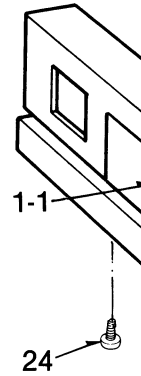
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