

Service Manual

Radio Cassette
RX-5150LS

FM/LW/MW/SW RADIO STEREO CASSETTE RECORDER

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■ SPECIFICATIONS

Power Requirement:	AC; 100 ~ 110/115 ~ 127/200 ~ 220/ 230 ~ 250 V, 50/60 Hz Battery, 12 V (eight-UM-1, D size dry batteries) Car/boat battery; with optional car/boat adaptor RP-952	REC/PB Connection:	5P DIN type IN; 0.1 mV/k Ω OUT; 0.42 V (4.7 k Ω under)
Power consumption:	25 W (AC only)	Speaker:	Woofer; 16 cm (6 $\frac{1}{2}$ ") PM Dynamic speaker (3 Ω) Tweeter; 3 cm (1 $\frac{3}{16}$ ") ceramic speaker (1.3 k Ω)
Power Output:	15 W... (RMS max.)	Radio Frequency Range:	FM; 87.5 ~ 108 MHz LW; 150 ~ 285 kHz (2000 ~ 1060 m) MW; 520 ~ 1610 kHz (577 ~ 186 m) SW; 5.9 ~ 18 MHz (50.8 ~ 16.7 m)
Frequency Range:	60 ~ 14,000 Hz (with normal tape) 60 ~ 15,000 Hz (with CrO ₂ tape) 60 ~ 17,000 Hz (with Metal tape)	Intermediate Frequency:	FM; 10.7 MHz AM; (LW/MW/SW); 455 kHz
Recording System:	AC bias, AC erase	Sensitivity:	FM; 2.9 μ V/50 mW output LW; 170 μ V/m/50 mW output MW; 120 μ V/m/50 mW output SW; 4.5 μ V/50 mW output
Tape Speed:	4.8 cm/s, (1 $\frac{7}{8}$ ips)	Dimensions:	504mm(W)x281mm(H)x175mm(D) [19 $\frac{7}{8}$ "(W) x 11 $\frac{1}{16}$ "(H) x 6 $\frac{7}{8}$ "(D)]
Wow and Flutter:	0.05% (WRMS)	Weight:	5.9 kg (13 lb.) without batteries
Program Time:	1 hour with C-60 cassette tape		
Track System:	4-track 2-channel stereo recording and playback		
Input:	MIC; sensitivity 0.25 mV/applicable microphone impedance 200 ~ 600 Ω (recommended microphone RP-8135) DC IN; 13.2 V		
Output:	EXT SP; 3 ~ 8 Ω HEADPHONES; 8 Ω		

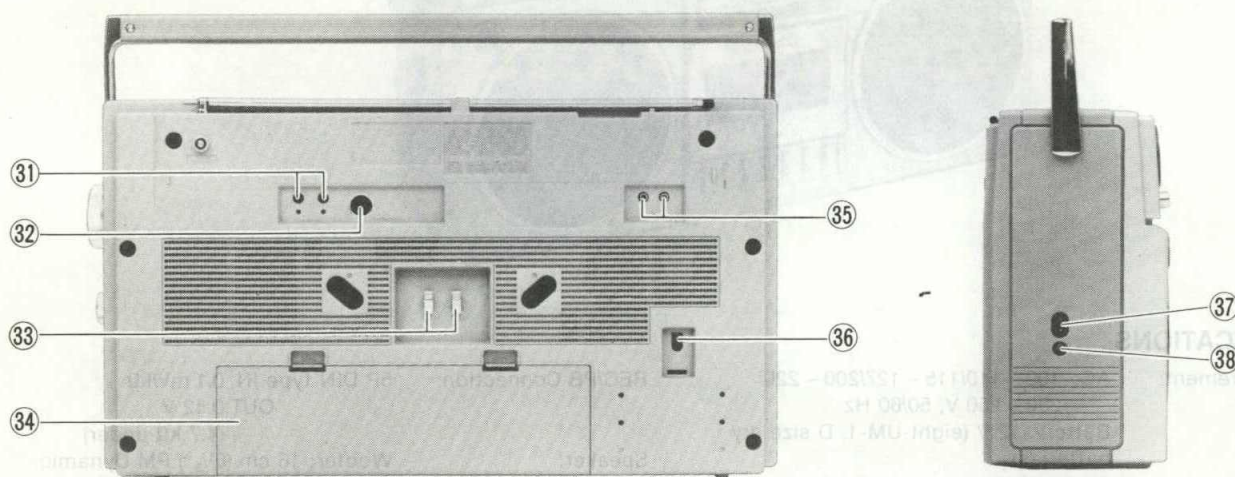
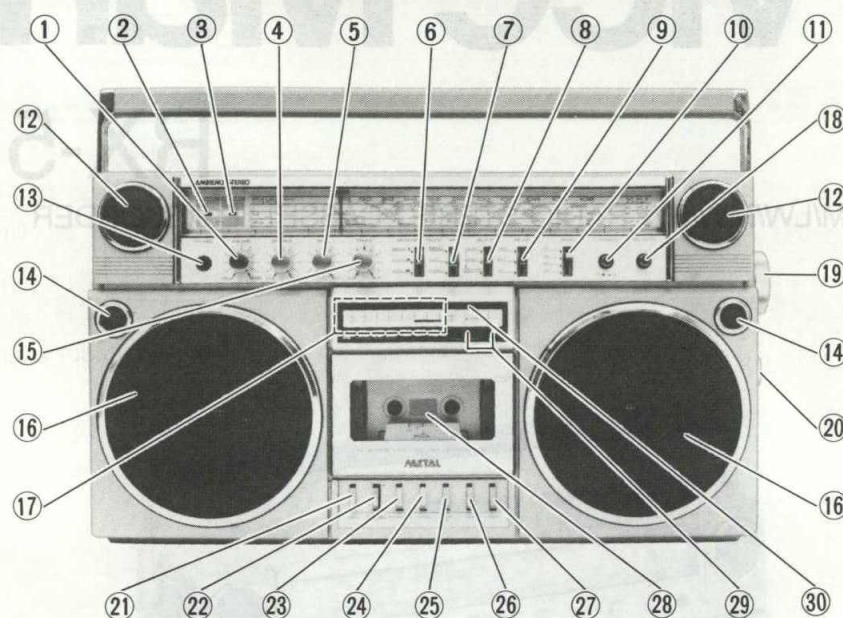
Specifications are subject to change without notice.



Panasonic

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LOCATION OF CONTROLS AND COMPONENTS



[Fig. 1]

- ① Volume Control (VOLUME)
- ② Tuning Indicator (TUNING)
- ③ FM Stereo Indicator (FM STEREO)
- ④ Balance Control (BALANCE)
- ⑤ Bass Control (BASS)
- ⑥ Mode Selector/Beat Proof Switch (AMBIENCE/I, STEREO/II, MONO/III)
- ⑦ Tape Selector (METAL, CrO₂, NORMAL)
- ⑧ Function Selector (SLEEP, RADIO, OFF/TAPE)
- ⑨ Meter Switch (LEVEL, BATT, OFF)
- ⑩ Band Selector (FM, LW, MW, SW)
- ⑪ Loudness Switch (LOUDNESS)
- ⑫ Tweeters (Treble Speaker)
- ⑬ Headphones Jack (PHONES)
- ⑭ Built-in Microphones (MIC)
- ⑮ Treble Control (TREBLE)
- ⑯ Woofers (Bass Speakers)
- ⑰ LED Meter (LEVEL/BATT)
- ⑱ Record Muting Button (REC MUTE)
- ⑲ Tuning Control (TUNING)
- ⑳ Fine Tuning Control (FINE TUNING)
- ㉑ Eject Button (▲EJECT)
- ㉒ Record Button (○ **RECORD**)

- ㉓ Rewind Button (◀◀ REWIND)
- ㉔ Fast Forward Button (▶▶ FF)
- ㉕ Playback Button (▶ PLAY)
- ㉖ Stop Button (■ STOP)
- ㉗ Pause Button (⏸ PAUSE)
- ㉘ Cassette Compartment
- ㉙ Tape Counter and Reset Button (COUNTER)
- ㉚ Operation Indicator (OPERATION)
- ㉛ Microphone Jack (MIC), 0.25mV/200 ~ 600Ω
- ㉜ DIN Connector Jack (DIN REC/PLAY)
IN: 0.1mV/kΩ
OUT: 0.42V/4.7kΩ Under
- ㉝ External Antenna Terminal
- ㉞ Battery Compartment
- ㉟ External Speaker Jacks (EXT SP 3 ~ 8Ω)
- ㊱ Voltage Selector (VOLTAGE SELECTOR)
- ㊲ AC Socket (AC IN ~)
- ㊳ DC Input Jack (DC 13.2 V ⊖ ⊕)

RX-5150LS DEUTSCH

TECHNISHE DATEN

Stromversorgung:	Wechselstrom: 100~110/115~127/200~220/230~250 V, 50/60 Hz Batterien: 12 V (acht Trockenbatterien UM-1, Größe D) Auto-oder Bootsbatterie: über eine Auto/Bootsadapter (RP-952: als Sonderzubehör erhältlich) anschließbar	REC/PB-Anschlußbuchse: 5 polige DIN-Buchse IN: Empfindlichkeit 0,1 mV/kΩ OUT: Ausgangspegel 0,42 V (4,7 kΩ)
Leistungsaufnahme:	25 W (bei Netzbetrieb)	Lautsprecher:
Ausgangsleistung:	15 W eff. (RMS max.)	Tieftonlautsprecher: dynamischer PM-Lautsprecher, Ø16 cm (3Ω) Hochtוןlautsprecher: dynamischer PM-Lautsprecher, ø3 cm (1,3 kΩ)
Frequenzbereich:	60 ~ 14.000 Hz (Normal Band) 60 ~ 15.000 Hz (CrO ₂ -Band) 60 ~ 17.000 Hz (with Metal-Band)	Wellenbereiche:
		LW: 150~285 kHz (2000~1060 m) MW: 520~1610 kHz (577~186 m) KW: 5,9~18 MHz (50,8~16,7 m) FM: 10,7 MHz AM: 455 kHz UKW: 2,9µV bei 50 mW Ausgangsleistung LW: 170µV/m bei 50 mW Ausgangsleistung MW: 120µV/m bei 50 mW Ausgangsleistung KW: 4,5µV bei 50 mW Ausgangsleistung
Aufnahmesystem:	Wechselstrom-Vormagnetisierung, Wechselstromlöschung	Zwischenfrequenz:
Bandgeschwindigkeit:	4,8 cm/s	Empfindlichkeit:
Gleichlaufschwankungen:	0,05% (WRMS)	UKW: 2,9µV bei 50 mW
Spieldauer:	1 Stunde mit Cassette C-60	LW: 170µV/m bei 50 mW
Spurlage:	Stereoaufnahme und -wiedergabe auf 4 Spuren/2 Kanälen	MW: 120µV/m bei 50 mW
Eingangsspannungen:	MIC: Empfindlichkeit 0,25 mV, Mikrofonimpedanz 200~600Ω (empfohlenes Mikrofon: RP-8135)	KW: 4,5µV bei 50 mW
	DC IN: 13,2 V EXT SP: 3~8Ω	Ausgangsleistung
Ausgangs impedanzen:	HEADPHONE: 8Ω	504x281x175 mm (19-7/8"x11-1/16"x6-7/8") 5,9 kg (13 lb.)
		Abmessungen (BxHxT):
		Gewicht (ohne Batterien):

Änderungen vorbehalten.

ABGLEICH

VORGANGSWEISE BEIM ABGLEICH

BITTE DIESEN ABSCHNITT VOR DEM ABGLEICH SORGFALTIG DURCHLESEN	
1. Den Lautstärkereglern in die Maximalposition stellen. 2. Den Klangregler in die Mittelposition stellen. 3. Den Wellenbereichsschalter auf LW, MW, KW oder FM stellen.	4. Den "Tape/Radio"-Wahlschalter auf "radio" stellen. 5. Eine Stromquelle von 12 V Gleichspannung anlegen. 6. Der Signalgeneratorausgang sollte nicht größer sein, als für eine Ausgangsanzeige unbedingt notwendig ist.

LW-, MW- UND KW-ABGLEICH

	WELLENBAND	SIGNALGENERATOR oder WOBELGENERATOR		STELLUNG DES ABSTIMMREGLERS	MESSGERÄT (ELEKTRONIK-VOLTMETER oder OSZILLOSKOP)	ABGLEICH	BEMERKUNGEN
		ANSCHLÜSSE	FREQUENZ				
AM-ZF-ABGLEICH							
(1)	MW	Aus einem Draht einige Schleifen bilden und das Signal in die Empfängerschleife abstrahlen.	455 kHz, 30% mode. (Modulationsfrequenz 400 Hz)	Der Abstimmungspunkt, wo keine Interferenz auftritt.	Ausgangsleistungsmesser parallel zur Lautsprecher-Schwingspule	T2 (1. AM-ZF-Abgleich)	Die maximale Ausgangsleistung einstellen.
LW-HF-ABGLEICH							
(2)	LW	"	145 kHz	145 kHz [21.4 mm (27/32")]	Ausgangsleistungsmesser parallel zur Lautsprecher-Schwingspule	L6 (LW-Oszillatortrimmer) (*1) L2 (LW-Antennenspule)	Die maximale Ausgangsleistung einstellen. L2 durch Verschieben am Ferritkern abgleichen.

(3)	LW	"	285 kHz	285 kHz [179,3 mm (6-21/32")]	"	CT3 (LW-Oszillatortrimmer) CT6 (LW-Antennentrimmer)	Die maximale Ausgangsleistung einstellen. Die Schritte (2) und (3) wiederholen.
MW-HF-ABGLEICH							
(4)	MW	Aus einem Draht einige Schleifen bilden und das Signal in die Empfängerschleife abstrahlen.	550 kHz	550 kHz [21,4 mm (27/32")]	Ausgangsleistungsmesser parallel zur Lautsprecher-Schwingspule	L7 (MW-Oszillatortrimmer) (*1) L12 (MW-Antennenspule)	Die maximale Ausgangsleistung einstellen. L12 durch Verschieben am Ferritkern abgleichen.
(5)	MW	"	1.500 kHz	1.500 kHz [179,3 mm (6-7/8")]	"	CT4 (MW-Oszillatortrimmer) CT7 (MW-Antennentrimmer)	Die maximale Ausgangsleistung einstellen. Die Schritte (4) und (5) wiederholen.
(*1) Nach beendeterm Abgleich ist der Antennenspulenkörper mit Wachs zu befestigen.							
KW-HF-ABGLEICH							
(6)	KW	"	6 MHz	6 MHz [7,5 mm (5/16")]	Ausgangsleistungsmesser parallel zur Lautsprecher-Schwingspule	L8 (KW-Oszillatortrimmer) L3 (KW-Antennenspule)	Die maximale Ausgangsleistung einstellen.
(7)	KW	"	18 MHz	18 MHz [189,5 mm (7-13/32")]	"	CT5 (KW-Oszillatortrimmer)	Die maximale Ausgangsleistung einstellen. Die Schritte (6) und (7) wiederholen.

FM-ABGLEICH

WELLENBAND	SIGNALGENERATOR oder WOBELGENERATOR		STELLUNG DES ABSTIMMREGLERS	MESSGERÄT (RÖHREN-VOLTMETER oder OSZILLOSKOP)	ABGLEICH	BEMERKUNGEN
	ANSCHLÜSSE	FREQUENZ				
FM-ZF-ABGLEICH						
UKW	Über einen 0,001 µF-Kondensator an den Meßpunkt ▼ anschließen. Den negativen Ausgang erden,	10,7 MHz	Der Abstimmungspunkt, wo keine Interferenz auftritt.	Die Vertikal-amplitude des Oszilloskops an den Meßpunkt ▼ anschließen. Den negativen Ausgang Meßpunkt ▼.	T1 (FM-ZF-Abgleich) (Primärspule)	Die Maximalamplitude einstellen. (Siehe Abb. 7.)
UKW	"	"	"	"	T3 (FM-ZF-Abgleich) (Sekundärspule)	Die Maximalamplitude einstellen. (Siehe Abb. 8.)
FM-HF-ABGLEICH						
UKW	Über eine künstliche UKW-Antenne an den Meßpunkt ▼ anschließen. (Siehe Abb. 9.)	87,5 MHz	Drehkondensator ganz geschlossen.	Ausgangsleistungsmesser parallel zur Lautsprecher-Schwingspule	L5 (FM-Oszillatortrimmer)	(*3) Die maximale Ausgangsleistung einstellen.
UKW	"	90 MHz	90 MHz [24,3 mm (31/32")]	"	L4 (FM-Abstimmtrimmer)	(*3) Die maximale Ausgangsleistung einstellen.
UKW	"	106 MHz	106 MHz [168,1 mm (6-3/4")]	"	CT2 (FM-Oszillatortrimmer) CT1 (FM-Abstimmtrimmer)	(*3) Die maximale Ausgangsleistung einstellen. Die Schritte (3) und (5) wiederholen.
(*3) Es gibt drei verschiedene Ausgangsfrequenzkurven. Stimmen Sie die Mittelfrequenz ab.						

KANALTRENNUNGS-ABGLEICH

PRÜFUNG	SIGNALGENERATOR SOURCE-ANSCHLUSS	GERÄTEANSCHLUSS (ELEKTRONISCHER ZÄHLER)	EINSTELLUNG	ANGABEN	BEMERKUNGEN
Einstellung des Pilotons	90 MHz, 60 dB	▼...(+)-seite ▼...(-)-seite	VR1	19 kHz	Mit dem elektronischen Zähler den Spannungskonstanthalter (VR1) auf 19 kHz (±200 Hz) einstellen.

NF-ABGLEICH

EINSTELLUNG	EINGANG	MESSPUNKT	MESSWERT	EINSTELL-PUNKT	BEMERKUNGEN
Azimut	OZZCFM (8 kHz, -20 dB)	EXT SP	Die maximale Ausgangsleistung einstellen.	Azimut-Einstellschraube	bei Wiedergabe Bandsorte...NORMAL
LED-anzeige	OZZCFM (315 Hz, 0 dB)	Anzeige	—	VR303	Die Spannungsregler VR303 so einstellen, daß die zweite LED von beiden Seiten nicht mehr aufleuchtet.
Oszillationsfrequenz für Vormagnetisierung	—	▼ ▼	66 ± 0,5 kHz	L301	bei Aufnahme Oszillator→III Bandsortenwähler ... CrO ₂
Löschstrom	für METAL Band	▼ ▼	150 ± 5/7 mV	VR301	bei Aufnahme Oszillator→III Bandsortenwähler ... METAL
Vormagnetisierungssperre	—	▼ (linker Kanal) ▼ (rechter Kanal) ▼ (Masse)	0 ± 0,5 dB	L101 (linker Kanal) L201 (rechter Kanal)	bei Aufnahme Oszillator→III Bandsortenwähler ...
Vormagnetisierungsstrom	für METAL Band	▼ (linker Kanal) ▼ (rechter Kanal) ▼ (Masse)	CrO ₂ 5,6 ± 0,3 mV	CrO ₂ VR103 (linker Kanal) VR203 (rechter Kanal)	bei Aufnahme Oszillator→III Bandsortenwähler ... CrO ₂

Bemerkungen:

- S1-1 ~ S1-4 ... Wellenbereichsschalter auf "UKW".
(1)...UKW, (2)...LW, (3)...MW, (4)...KW.
- S2-1, S2-2 ... Leeraufnahmeschalter.
- S3-1 ~ S3-6 ... Funktionsschaltler auf „Cassette“
(1)...Cassette, (2)...Radio, (3)...Sleep
- S4-1 ~ S4-6 ... Bandsortenwähler auf „normal“.
(1)...normal, (2)...CrO₂, (3)...Metal)
- S5-1, S5-2 ... Schalter für gehörrichtige Lautstärke auf „AUS“.
- S6-1 ~ S6-10 ... Aufnahme-/Wiedergabeschalter auf „Wiedergabe“.
- S7, 8 ... Wiedergabetaste
- S9 ... Schnellvorlauf-, Rückspultaste.
- S10 ... Wiedergabetaste
- S11-1 ~ S11-4 ... Oszillator-Schalter auf „Mono/II“.
(1)...Ambience/I, (2)...Stereo/II, (3)...Mono/III)
- S12 ... Anzeigenwähler auf „AUS“. (1)...AUS, (2)...Abstimmung & Batterie, (3)...Ausgangsleistung)
- S13 ... Netzspannungswähler
- S14 ... Wahlschalter für Gleichstrom oder Wechselstromberieb
- S15-1 ~ S15-3 ... MIC/DIN-Eingang-Schalter auf "MIC".
(1)...MIC, (3)...DIN Eingang
- Alle Gleichspannungen sind mit einem Elektronikvoltmeter vom negativen Batterieanschluß aus zu messen.
() ...Stellung „FM“, () ...Stellung „AM“.
- VR1 ... VCO
VR101, 201 ... RW zur Einstellung des Vormagnetisierungsstroms
VR102, 202 ... Bafregler
VR103, 203 ... Lautstärkereglern
VR104, 204 ... Höhenregler
VR301 ... RW zur Einstellung des Löschstroms
VR302 ... Balanceregler
VR303 ... Anzeigenregler
- Batteriestrom: ohne Signal ... 160 mA
bei maximaler Ausgangsleistung (Radio) ... 1,68A
bei maximaler Ausgangsleistung (Cassette) ... 1,7A
- Für die Bauelemente, die mit Δ bezeichnet sind, sollen aus Gründen der Betriebssicherheit nur die originalbauteile des Herstellers verwendet werden.



■ SPECIFICATIONS

Généralités:	c.a. 100 à 110/115 à 127/200 à 220/230 à 250 V 50/60 Hz Piles: 12 V (huit piles sèches UM-1, dimension D) batterie pour auto/bateau; avec adaptateur (RP-952) auto/bateau en option	Branchement REC/PB: fiche DIN à 5 broches IN; sensibilité 0,1 mV/kΩ OUT; sortie 0,42 V (4,7 kΩ)
Consommation:	25 W (c.a. seulement)	Haut-parleur:
Puissance de sortie:	15 W... (RMS max.)	Haut-parleur des graves; 16 cm haut-parleur dynamique à aimant permanent (3Ω)
Gamme de fréquence:	60 à 14.000 Hz (avec bande normale) 60 à 15.000 Hz (avec bande CrO ₂) 60 ~ 17.000 Hz (avec bande Métallique)	Haut-parleur des aigus; 3cm haut-parleur dynamique à aimant permanent (1.3kΩ)
Système d'enregistrement:	plarisation c.a., effacement c.a. 4,8 cm/sec.	Fréquence radio:
Vitesse de bande:	0,05% (WRMS)	FM: 87,5 à 108 MHz GO: 150 à 285 kHz (2000 à 1060 m) PO: 520 à 1610 kHz (577 à 186 m) OC: 5,9 à 18 MHz (50,8 à 16,7 m)
Pleurage et scintillement:	1 heure avec cassette C-60	Fréquence intermédiaire:
Durée de lecture:	enregistrement et lecture stéréo 4 pistes, 2 canaux	FM: 10,7 MHz AM: 455 kHz
Pistes:	MIC; sensibilité 0,25 mV; impédance applicable pour microphone 200~600 Ω (microphone recommandé RP-8135)	Sensibilité:
Entrée:	DC IN; 13,2 V EXT SP; 3 à 8Ω HEADPHONE; 8Ω	Dimensions (l×h×Pr) mm:
Sortie:		504x281x175mm (19 1/8" x 11 1/8" x 6 7/8") 5,9 sans piles

Les spécifications sont sujettes à des changements sans préavis.

ALIGNEMENTS

■ REGLAGE

AVANT DE PROCEDER AUX ALIGNEMENTS LIRE ATTENTIVEMENT CE QUI SUIT	
1. Le potentiomètre de volume au maximum. 2. Les commande de tonalite et aigus au centre. 3. Le sélecteur de bande sur LW (GO), MW (PO), SW (OC), ou FM.	4. Le sélecteur bande/radio sur "radio". 5. Régler la tension sur 12 V c.c. 6. Régler la sortie du générateur étalonné de façon à ne pas surcharger les circuits.

ALIGNEMENT GO, PO, et OC

	BANDE	GENERATEUR ETALONNE ou GENERATEUR DE BALAYAGE		POSITION DE L'AIGUILLE SUR LE CADRAN	INDICATEUR (VOLTMETRE ou OSCILLOSCOPE ELECTRO- NIQUES)	REGLAGE	OBSERVATIONS
		BRANCHEMENTS	FREQUENCE				
ALIGNEMENT FI sur AM							
(1)	PO	Via une bobine de fil couplée à l'antenne.	455 kHz (modulation de 30% à 400 Hz)	Point de non- interférence	Voltmètre branché à la bobine oscillatrice	T2 (AM 1 ^{er} IFT)	Régler pour une sortie maximum.
ALIGNEMENT HF sur GO							
(2)	GO	"	145 kHz	145 kHz [21,4 mm (27/32")]	Voltmètre branché à la bobine oscillatrice	L6 (bobine d'oscillateur GO) (*1) L2 (bobine d'antenne GO)	Régler pour une sortie maximum en glissant la bobine L2 le long du noyau en ferrite.

(3)	GO	"	285 kHz	285 kHz [179.3 mm (6-21/32")]	CT3 (trimmer d'oscillateur GO) CT6 (trimmer d'antenne GO)	Régler pour une sortie maximum. Refaire les étapes (2) et (3).	
ALIGNEMENT HF sur PO							
	BANDE	GENERATEUR ETALONNE ou GENERATEUR DE BALAYAGE		POSITION DE L'AIGUILLE SUR LE CADRAN	INDICATEUR (VOLTMETRE ou OSCILLOSCOPE ELECTRO- NIQUES)	REGLAGE	OBSERVATIONS
		BRANCHEMENTS	FREQUENCE				
(4)	PO	"	550 kHz	550 kHz [21.4 mm (27/32")]	Voltmètre branché à la bobine oscillatrice	L7 (bobine d'oscillateur PO) (*1) L12 (bobine d'antenne PO)	Régler pour une sortie maximum en glissant la bobine L12 le long du noyau en ferrite.
(5)	PO	"	1.500 kHz	1.500 kHz [179.3 mm (6-7/8")]	"	CT4 (trimmer d'oscillateur PO) CT7 (trimmer d'antenne PO)	Régler pour une sortie maximum. Refaire les étapes (4) et (5).
(*1) Sceller la bobine d'antenne à la cire après avoir achevé l'alignement.							
ALIGNEMENT HF sur OC							
(6)	OC	"	6 MHz	6 MHz [7.5 mm (5/16")]	Voltmètre branché à la bobine oscillatrice	L8 (bobine d'oscillateur OC) L3 (bobine d'antenne OC)	Régler pour une sortie maximum.
(7)	OC	"	18 MHz	18 MHz [189.5 mm (7-13/32")]	"	CT5 (trimmer d'oscillateur OC)	Régler pour une sortie maximum. Refaire les étapes (6) et (7).

■ ALIGNEMENT FM

	BANDE	GENERATEUR ETALONNE ou GENERATEUR DE BALAYAGE		POSITION DE L' AIGUILLE SUR LE CADRAN	INDICATEUR (VOLTMETRE ou OSCILLOSCOPE	REGLAGE	OBSERVATIONS
		BRANCHEMENTS	FREQUENCE				
ALIGNEMENT HF sur FM							
(1)	FM	Brancher au ▼ via 0,001 μF. Côté négatif à la terre.	10,7 MHz	Point de non- interférence	Brancher la sonde vert. de l'oscilloscope au ▼. Côté négatif à la au ▼.	T1 (FM IFT) (Primaire)	Régler pour une amplitude maximum. (Voir fig. 7.)
(2)	FM	"	"	"	"	T3 (FM IFT) (Secondaire)	Régler pour une amplitude maximum (Voir fig. 8.)
ALIGNEMENT HF sur FM							
(3)	FM	Brancher au ▼ via une atenne fictive FM. (Voir fig. 9.)	87,5 MHz	Condensateur variable totalement fermé.	Voltmètre brasné à la bobine oscillatrice	L5 (bobine d'oscillateur FM)	(*2) Régler pour une sortie maximum
(4)	FM	"	90 MHz	90 MHz [24,3 mm (31/32")]	"	L4 (bobine TUNE FM)	(*2) Régler pour une sortie maximum
(5)	FM	"	106 MHz	106 MHz [168.1 mm (6-3/4")]	"	CT2 (trimmer d'oscillateur FM) CT1 (trimmer TUNE FM)	(*2) Régler pour une sortie maximum Refaire les étapes (3) et (5).
(*2) Il y aura trois réponses de sortie; la syntonisation adéquate est la fréquence du milieu.							

■ ALIGNEMENT DE LA DIAPHONIE

ELEMENT	GENERATEUR ETALONNE BRANCHEMENT SUR LA SOURCE	BRANCHEMENT A L'EQUIPEMENT (COMPTEUR ELECTRONIQUE)	REGLAGE	SPECIFICATION	REMARQUES
Reglage du signal pilote.	90 MHz 60dB	▼ ... côté (+) ▼ ... côté (-)	VR1	19 kHz	Régler VR1 pour 19 kHz (± 200 Hz) en effectuant la lecture sur le compteur électronique.

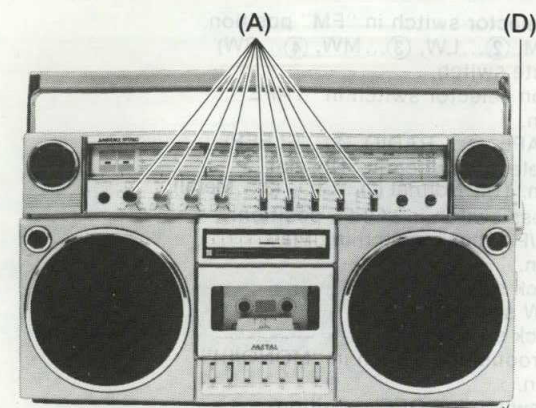
■ ALIGNEMENTS AUDIO

ELEMENT	ENTREE	POINT DE MESURE	SPECIFICATION	POINT DE REGLAGE	OBSERVATIONS
Azimet	QZZCFM (8 kHz, -20 dB)	EXT SP	Régler pour une sortie maximum.	Vis d'azimet	Mode de lecture Sélecteur de bande ...Normal
LED-metres	QZZCFM (315 kHz, 0 dB)	LED-Metres	—	VR303	Régler VR303 de façon que la deuxième DEL de chaque côté commence à disparaître.
Fréquence d'oscillation de polarisation	—	▼ ▼	66 ± 0,5kHz	L301	Mode d'enregistrement anti→ III Sélecteur de bande ... CrO ₂
Courant d'effacement	Utiliser une bande METAL.	▼ ▼	150 ± 5 7 mV	VR301	Mode d'enregistrement anti→ III Sélecteur de bande ... METAL
Eliminateur de polarisation	—	▼ (canal gauche) ▼ (canal droit) ▼ (terre)	0±0,5 dB	L101 (canal gauche) L201 (canal droit)	Mode d'enregistrement anti→ III→ II→ I
Courant de polarisation	Utiliser une bande METAL.	▼ (canal gauche) ▼ (canal droit) ▼ (terre)	CrO ₂ 5,6 ± 0,3mV	CrO ₂ VR101 (canl gauche) VR201 (canal droit)	Mode d'enregistrement anti→ III Sélecteur de bande... CrO ₂

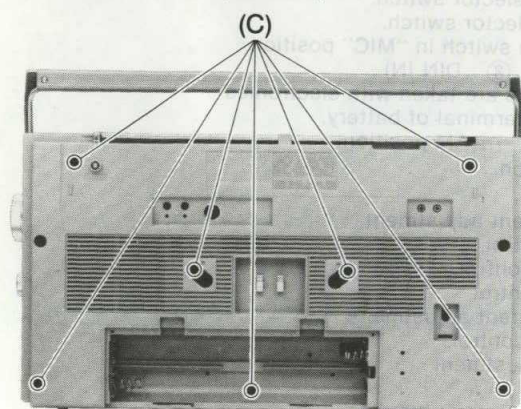
Remarques:

- S1-1 à S1-4 Sélecteur de amme d'onde en position "FM".
(1)...FM, (2)...GO, (3)...PO, (4)...OC).
- S2-1, S2-2 Interrupteur marche/arrêt du d'enregistrement silencieux.
- S3-1 ~ S3-6. Commutateur de fonction en position "Bande".
(1)...Bande, (2)...Radio, (3)...Sleep)
- S4-1 ~ S4-6. Sélecteur de bande en position "Normal".
(1)...Normal, (2)...CrO₂, (3)...Métallique)
- S5-1, S5-2 Commutateur de correction en position "OFF".
- S6-1 ~ S6-10. Commutateur enregistrement/lecture en position "Lecture".
- S7, 8. Commutateur du lecture.
- S9. Touche du d'avance rapide-rebobinage.
- S10. Commutateur du lecture.
- S11-1 ~ S11-4. Commutateur d'anti-battelements en position "III".
(1)...Ambience/I, (2)...Stéréo/II, (3)...Mono/III)
- S12. Commutateur de l'indicateur en position "OFF".
(1)...OFF, (2)...Piles et syntonisation, (3)...Niveau)
- S13. Sélecteur de tension c.a.
- S14. Sélecteur c.a./c.c. en position "c.c.". (1)...MIC, (3)...DIN IN)
- La tension c.c. est mesurée au moyen d'un voltmètre électronique à partir de la borne négative de la pile.
() ...Position FM, () ...Position AM,
- VR1. VCO
R101, 201. Commande de réglage du courant de polarisation
VR102, 202. Commande des graves
VR103, 203. Potentiomzre de volume
VR104, 204. Commande des aigus
VR301. Commande de réglage du courant d'effacement
VR302. Commande de balance
VR303. Commande des indicateurs
- Courant des piles: Pas de signal 160 mA
Sortie maximum (Radio) 1,68 A
Sortie maximum (Bande) 1,7 A
- Les éléments précédés du symbole ▲ ne doivent être remplacés que par des pièces d'origine par mesure de sécurité.

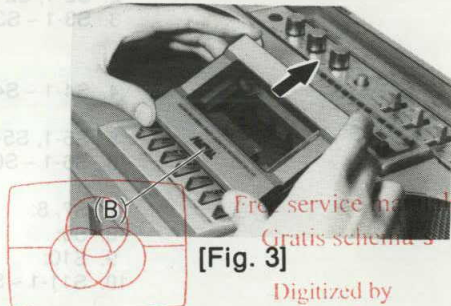
DISASSEMBLY INSTRUCTION



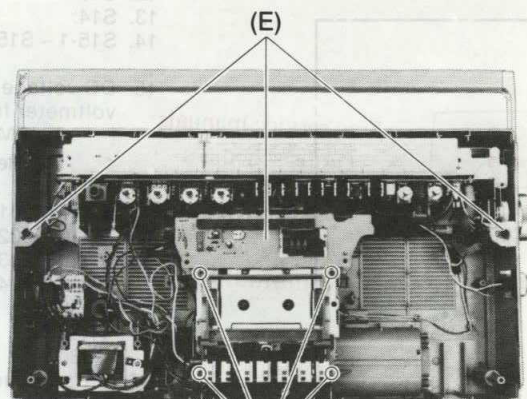
[Fig. 2]



[Fig. 4]



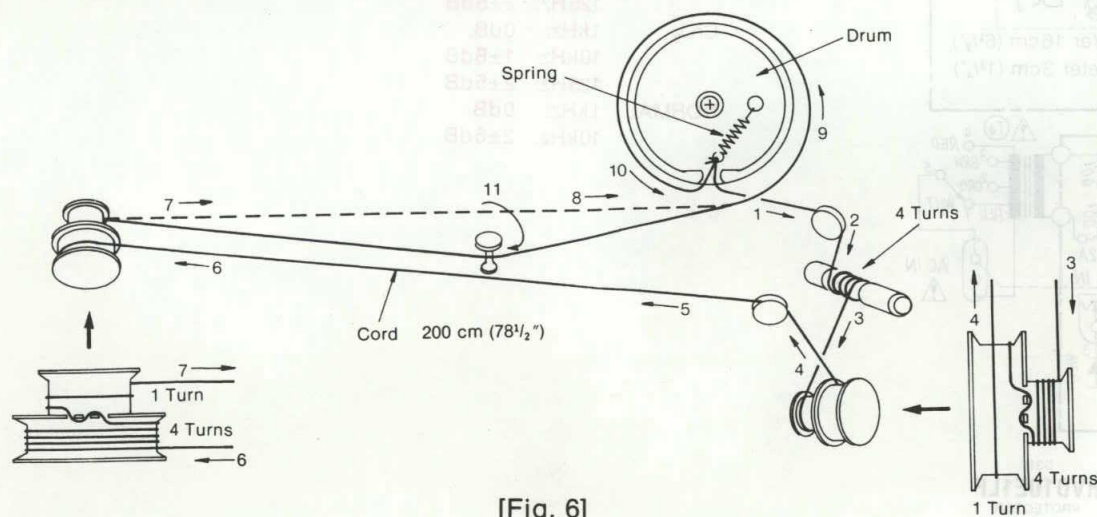
[Fig. 3]



[Fig. 5]

Procedure	To remove —	Remove —	Shown in Fig. —
1	Front Cabinet	Knobs (A) x 9	2
2		Cassette Panel (B) x 1	3
3		Screws (3 x 50) (C) x 7	4
4	Circuit Board	Knob (D) x 1	2
5		Mic & LED Circuit Board (E) x 3	5
6	Mechanism	Screws (3 x 12) (F) x 4	5

DIAL THREADING



[Fig. 6]

MEASUREMENTS AND ADJUSTMENTS

ALIGNMENT INSTRUCTION

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

1. Set volume control to maximum.
2. Set bass and treble control to center.
3. Set band switch to LW, MW, SW or FM.
4. Set fine tuning to center.
5. Set function selector to radio.
6. Set power source voltage to 12V DC.
7. Output of signal generator should be no higher than necessary to obtain an output reading.

LW, MW, AND SW ALIGNMENT

BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLT-METER or SCOPE)	ADJUSTMENT	REMARKS	
	CONNECTIONS	FREQUENCY					
AM IF ALIGNEMENT							
(1)	MW	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455 kHz 30% Mod. at 400 Hz	Point of non-interference.	Output meter across voice coil	T ₂ (AM IFT)	Adjust for maximum output.
LW-RF ALIGNMENT							
(2)	LW	"	145 kHz	145 kHz [21.4mm (2 ¹ / _{32"})]	Output meter across voice coil	L ₆ (LW OSC Coil) (* 1) L ₂ (LW ANT Coil)	Adjust for maximum output. Adjust L ₂ by moving coil bobbin along ferrite core.
(3)	LW	"	285 kHz	285 kHz [179.3 mm (6 ³ / _{32"})]	"	CT ₃ (LW OSC Trimmer) CT ₆ (LW ANT Trimmer)	Adjust for maximum output. Repeat steps (2) and (3).
MW-RF ALIGNMENT							
(4)	MW	"	550 kHz	550 kHz [21.4mm (2 ¹ / _{32"})]	Output meter across voice coil	L ₇ (MW OSC Coil) (* 1) L ₂ (MW ANT Coil)	Adjust for maximum output. Adjust L ₂ by moving coil bobbin along ferrite core.
(5)	MW	"	1,500 kHz	1,500 kHz [179.3 mm (6 ³ / _{32"})]	"	CT ₄ (MW OSC Trimmer) CT ₇ (MW ANT Trimmer)	Adjust for maximum output. Repeat steps (4) and (5).
(* 1) Cement antenna bobbin with wax after completing alignment.							
SW-RF ALIGNMENT							
(6)	SW	Connect to EXT ant. terminal through ceramic capacitor (10 PF) Negative side to earth.	5.9 MHz	5.9 MHz [7.5 mm (6 ¹ / _{16"})]	Output meter across voice coil	L ₈ (SW OSC Coil) L ₃ (SW ANT Coil)	Adjust for maximum output.
(7)	SW		18 MHz	18 MHz [189.5 mm (7 ⁴ / _{32"})]	"	CT ₅ (SW OSC Trimmer)	Adjust for maximum output. Repeat steps (6) and (7).

(* 1) Cement antenna bobbin with wax after completing alignment.

FM ALIGNMENT

BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLT-METER or SCOPE)	ADJUSTMENT	REMARKS
	CONNECTIONS	FREQUENCY				
(1) FM	Connect to test point ▼ through 0.001μF. Negative side to earth.	10.7 MHz	Point of non-interference.	Connect vert. amp. of scope to test point ▼. Negative side to test point ▼.	T ₁ (FM 1st IFT) (Primary)	Adjust for maximum amplitude. (Refer to fig. 7.)
(2) FM	"	"	"	"	T ₃ (FM 2nd IFT) (Secondary)	Adjust for maximum amplitude. (Refer to fig. 8.)
FM-RF ALIGNMENT						
(3) FM	Connect to test point ▼ through FM dummy antenna. (Refer to fig. 9.)	87.5 MHz	Variable capacitor fully closed.	Output meter across voice coil.	L ₅ (FM OSC Coil)	(* 2) Adjust for maximum output.
(4) FM	"	90 MHz	90 MHz [22.9mm (2 ¹ / _{32"})]	"	L ₄ (FM TUNE Coil)	(* 2) Adjust for maximum output.
(5) FM	"	106 MHz	106 MHz [165 mm (6 ³ / _{4"})]	"	CT ₂ (FM OSC Trimmer) CT ₁ (FM TUNE Trimmer)	(* 2) Adjust for maximum output. Repeat steps. (3) ~ (5).

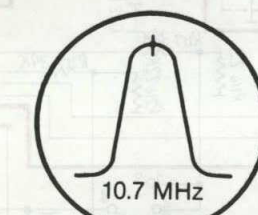
(* 2) Three output responses will be present; proper tuning is the center frequency.

SEPARATION ALIGNMENT

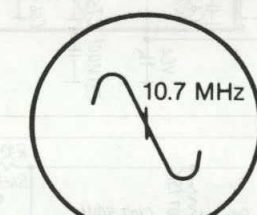
ITEM	FM SIGNAL GENERATOR SOURCE CONNECTION	EQUIPMENT CONNECTION ELECTRONIC COUNTER	ADJUSTMENT	SPECIFICATION	REMARKS
Adjustment of pilot signal.	90 MHz, 60 dB	▼... (+) side ▼... (-) side	VR1	19 kHz	Adjust VR1 for 19 kHz (± 200 Hz) reading on electronics counter.

AUDIO ADJUSTMENT

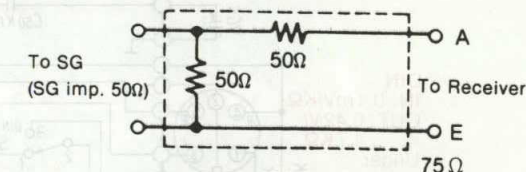
ITEM	INPUT	MEASUREMENT POINT	SPECIFICATION	ADJUSTMENT POINT	REMARKS
Amplitude	QZZCFM (8 kHz, -20 dB)	EXT SP	Maximum output	Azimuth screw	Mode switch stereo Playback mode Tape switch normal
LED meter	QZZCFM (315 Hz, 0 dB)	LED Meter	—	VR303	Adjust VR303 so that the 2nd LED from the left side begin to disappear.
Bias oscillation frequency	—	▼... (+) ▼... (-)	66 ± 0.5 kHz	L301	Record mode Beat proof switch — III Tape selector — CrO ₂
Erase current	Use metal tape	▼... (+) ▼... (-)	150 + 5 mV - 7	VR301	Record mode Beat proof switch — III Tape selector — Metal
Bias trap	—	▼... (Lch) ▼... (Rch) ▼... (-)	0 ± 0.5 dB	L101 (Lch) L201 (Rch)	Record mode Beat proof switch... III — II — I
Bias current	Use metal tape	▼... (Lch) ▼... (Rch) ▼... (-)	CrO ₂ 5.6 ± 0.3 mV	CrO ₂ VR101 (Lch) VR201 (Rch)	Record mode Beat proof switch — III Tape selector — CrO ₂



[Fig. 7]

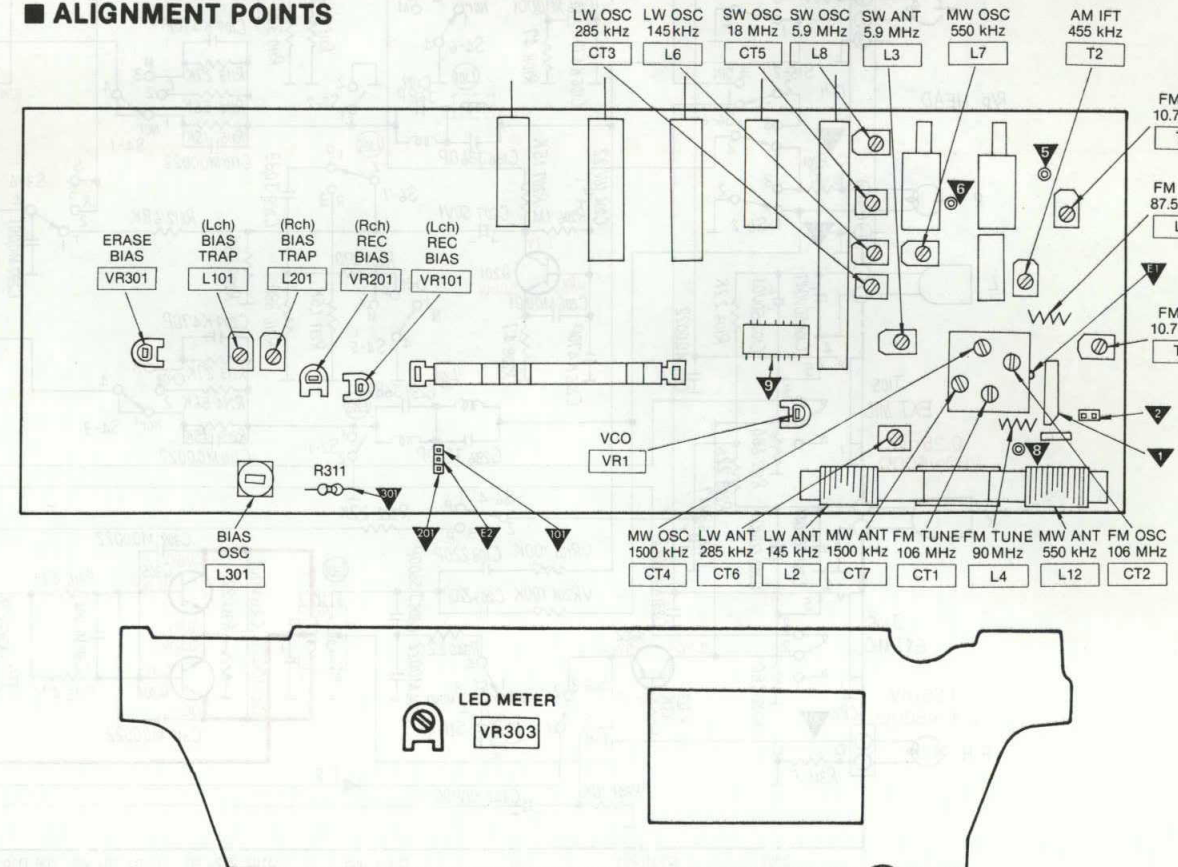


[Fig. 8]

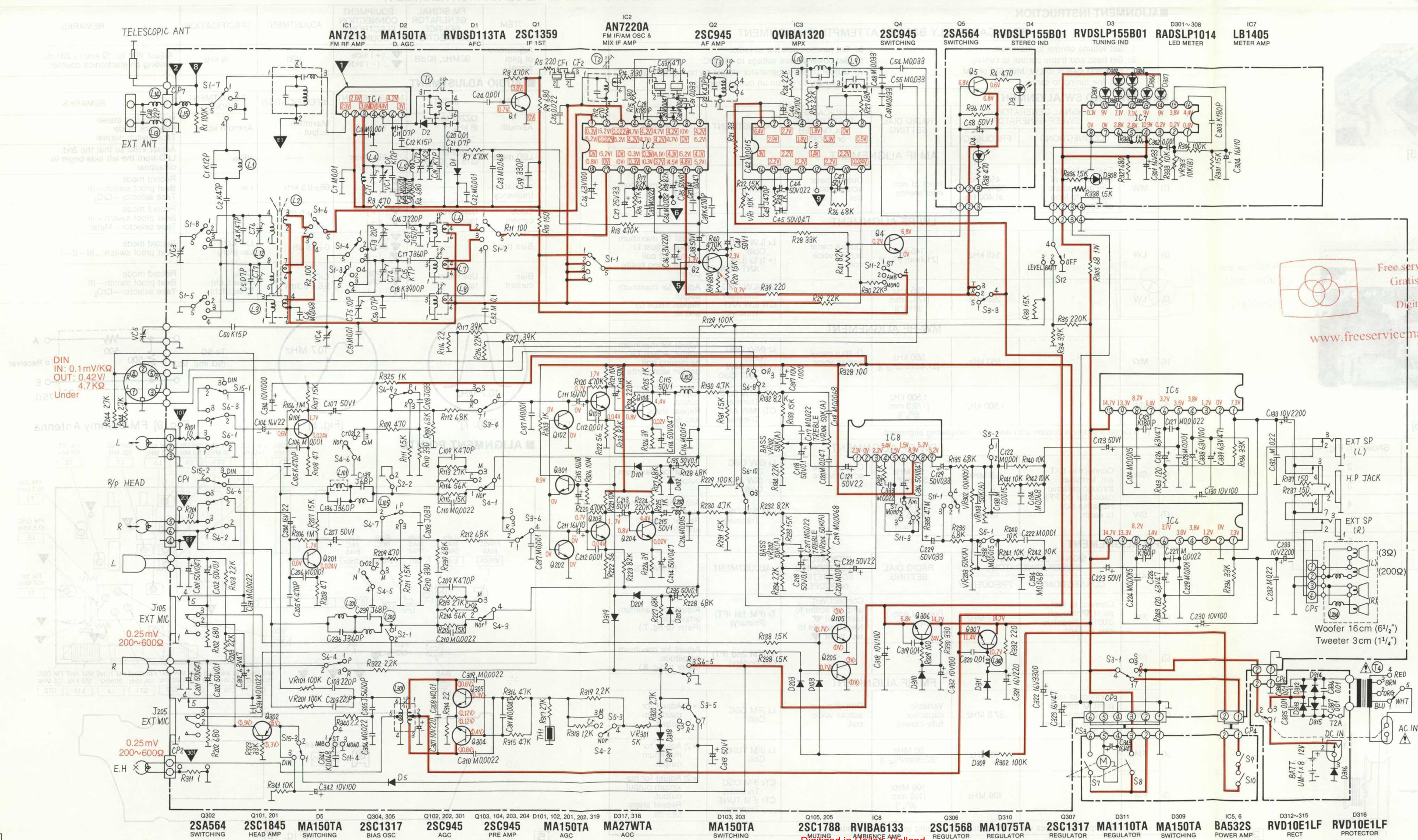


[Fig. 9] FM Dummy Antenna

ALIGNMENT POINTS



SCHEMATIC DIAGRAM MODEL RX-5150LS

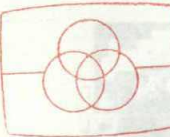


- Notes:**
- S1-1 ~ S1-4: Band selector switch in "FM" position.
(①...FM, ②...LW, ③...MW, ④...SW)
 - S2-1, S2-2: Rec mute switch.
 - S3-1 ~ S3-6: Function selector switch in "TAPE" position.
(①...TAPE, ②...RADIO, ③...SLEEP)
 - S4-1 ~ S4-6: Tape selector switch in "Normal" position. (①)...Normal (2)...CrO₂, (3)...Metal)
 - S5-1, S5-2: Loudness switch in "OFF" position.
 - S6-1 ~ S6-10: Record/Playback switch in "Play" position.
 - S7, 8: Playback switch.
 - S9: FF/REW switch.
 - S10: Playback switch.
 - S11-1 ~ S11-4: Beat proof/Mode switch in "MONO/III" position.
 - S12: Meter switch in "OFF" position.
(①)...OFF, (②)...BATT, (③)...LEVEL)
 - S13: Voltage selector switch.
 - S14: AC/DC selector switch.
 - S15-1 ~ S15-3: Mic/Din in switch in "MIC" position.
(①)...MIC, (③)...DIN IN)
 - DC voltage measurements are taken with electronics voltmeter from negative terminal of battery.
() ... FM position, () ... AM position.
< > ... Recording position.
 - VR1 VCO
VR101, 201 ... Bias current adjustment.
VR102, 202 ... Bass control.
VR103, 203 ... Volume control.
VR104, 204 ... Treble control.
VR301 Erase current adjustment.
VR302 Balance control.
VR303 Meter adjustment
 - Battery current.
No signal 160mA
Maximum output (Radio) 1.68A
Maximum output (Tape) 1.7A
 - 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.

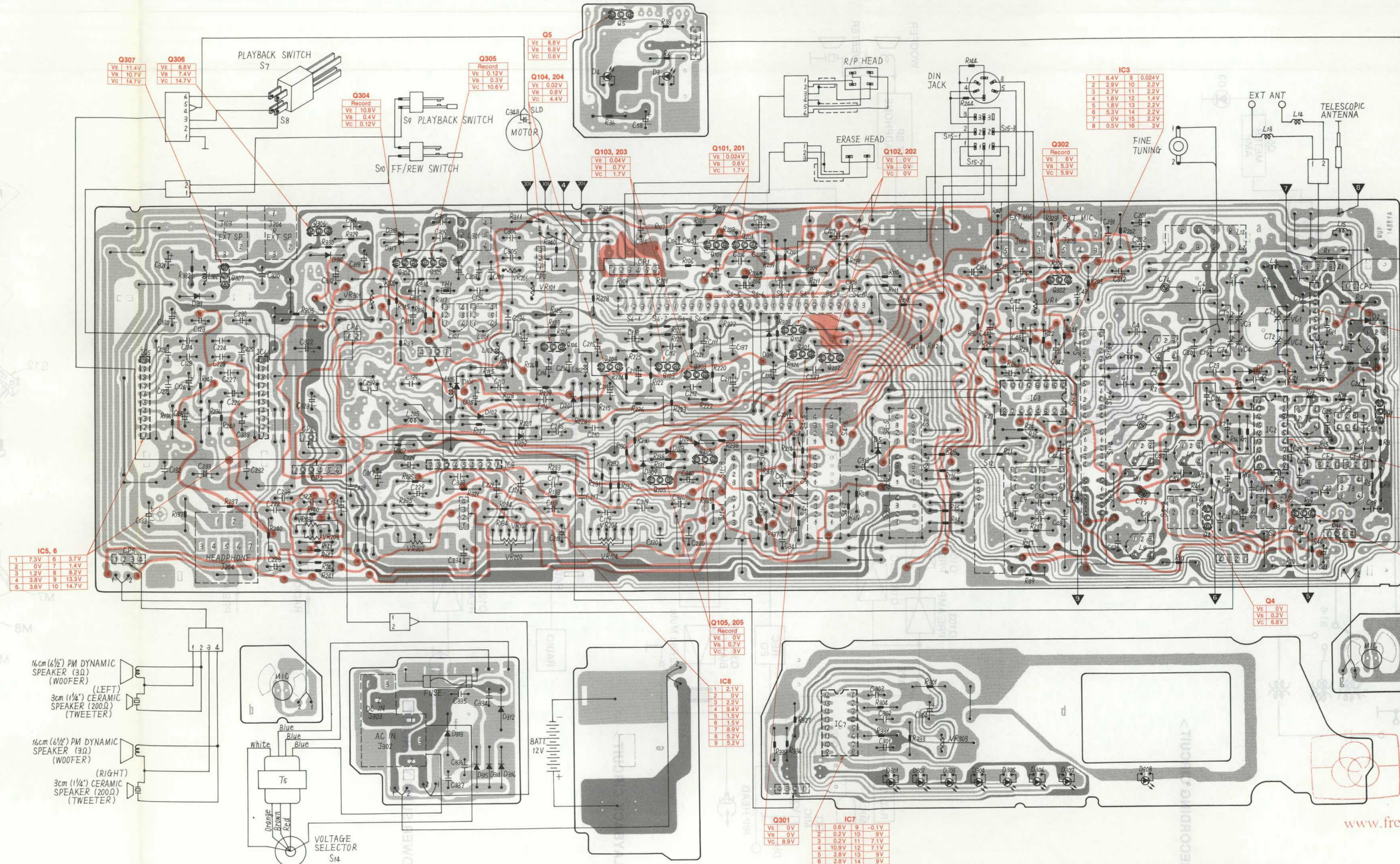
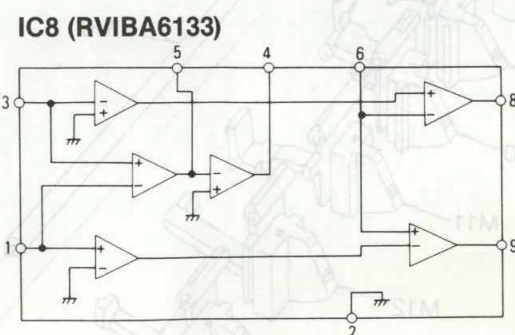
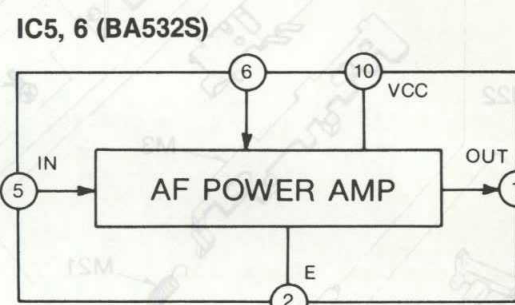
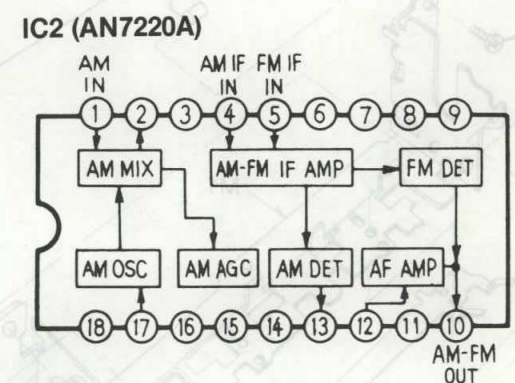
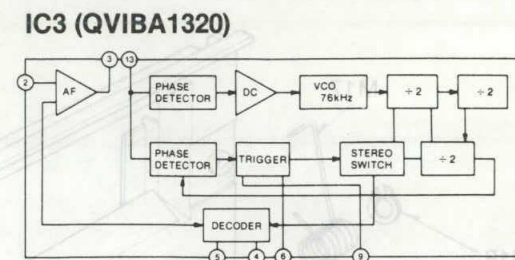
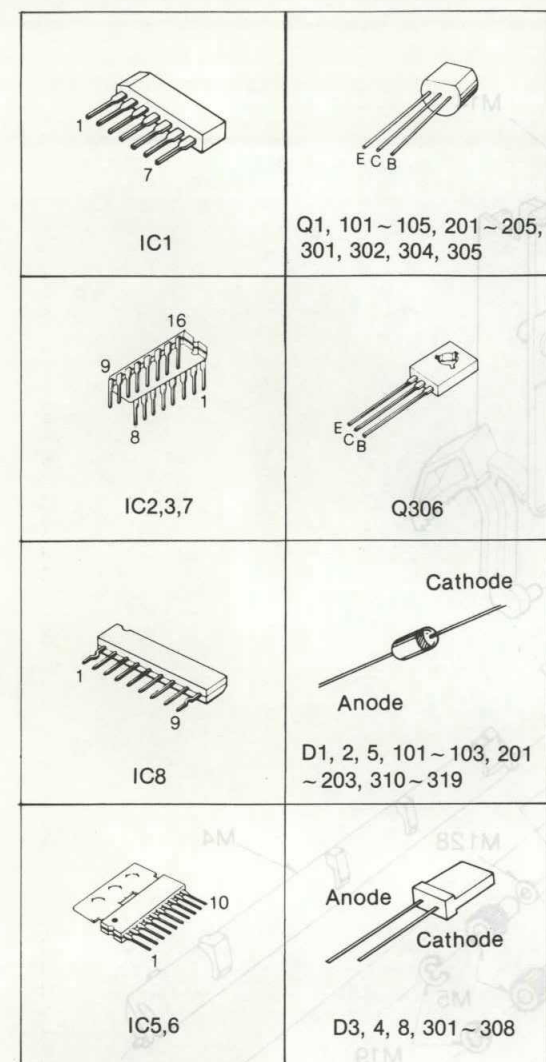
BIAS FREQUENCY $67 \pm 0.5\text{kHz}$
BIAS VOLTAGE: $8 \pm 1.5\text{mV}$ (METAL)
 $5.6 \pm 0.3\text{mV}$ (CrO₂)
 $3.6 \pm 0.5\text{mV}$ (NORMAL)

OVERALL FREQUENCY RESPONSE:
METAL
125Hz: $2 \pm 5\text{dB}$
1kHz: 0dB
10kHz: $2 \pm 6\text{dB}$
CrO₂
125Hz: $2 \pm 5\text{dB}$
1kHz: 0dB
10kHz: $1 \pm 6\text{dB}$
NORMAL
125Hz: $2 \pm 5\text{dB}$
1kHz: 0dB
10kHz: $2 \pm 6\text{dB}$

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CIRCUIT BOARD WIRING VIEW MODEL RX-5150LS

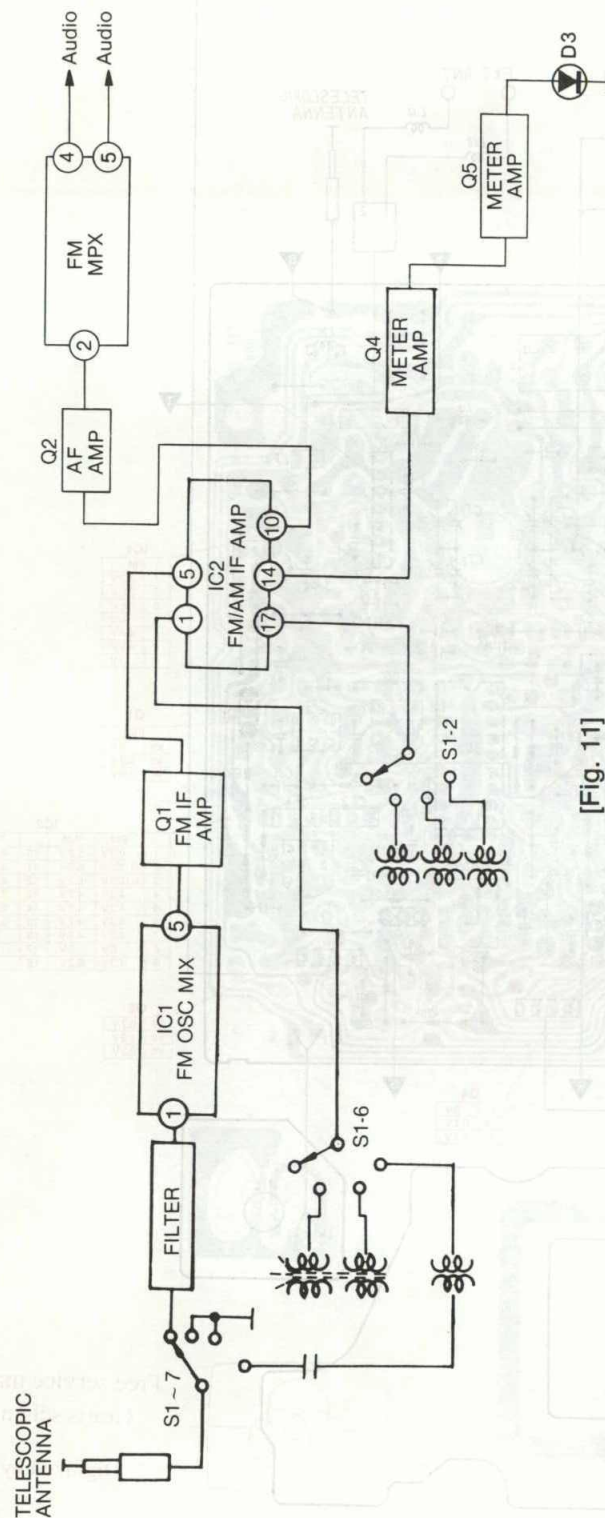


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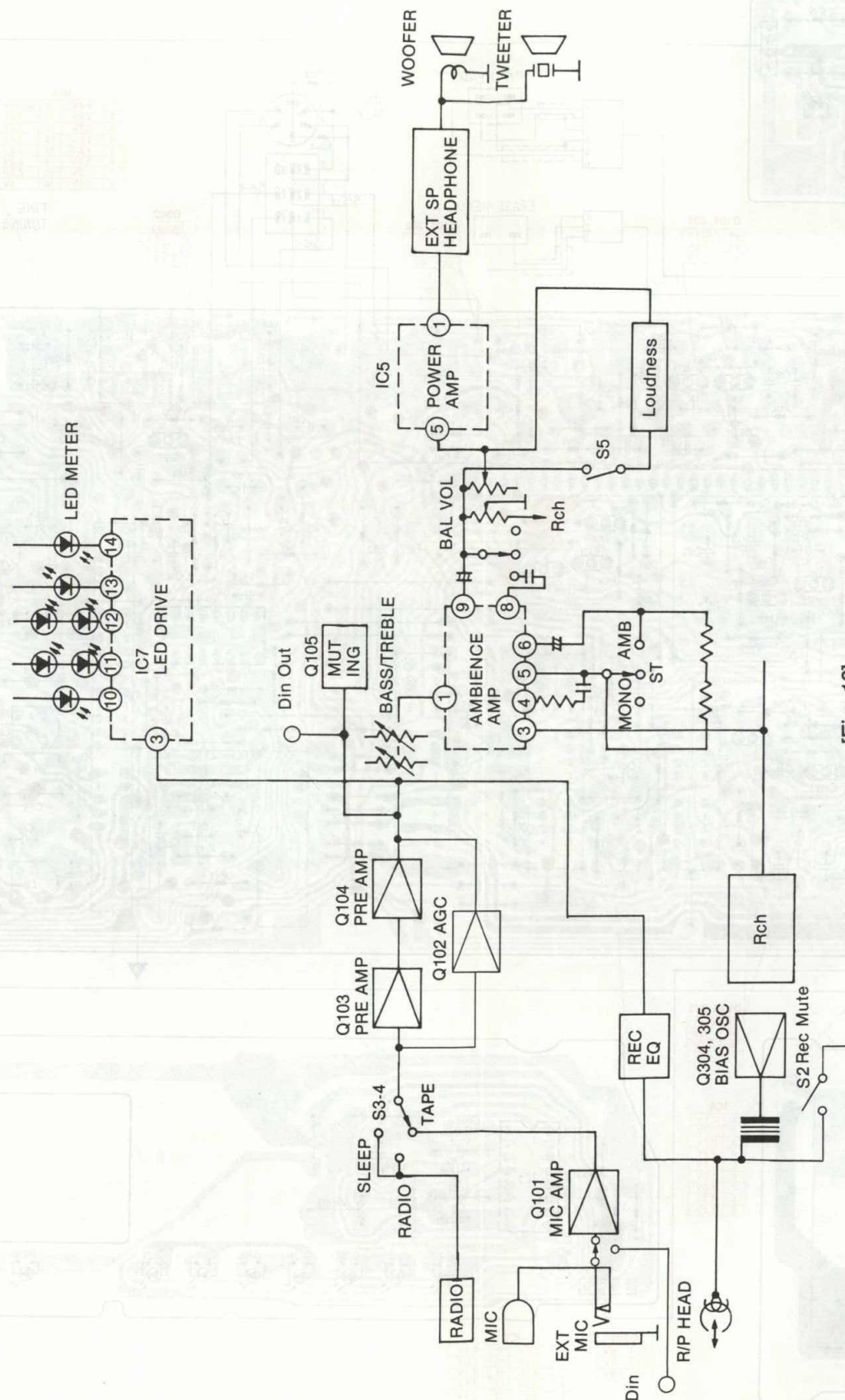
www.freeservicemanuals.info

BLOCK DIAGRAM

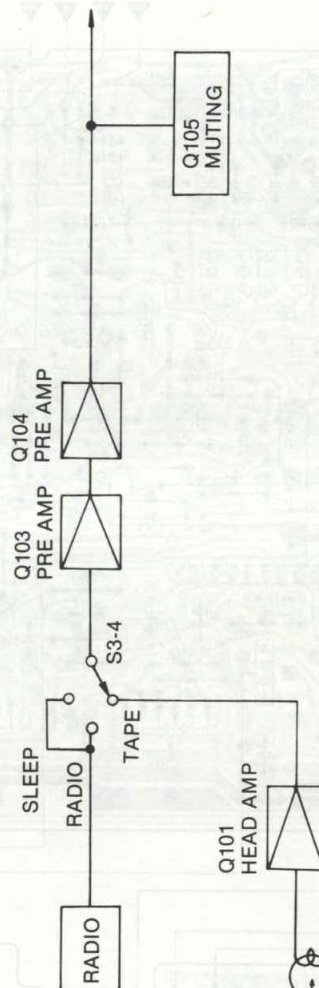
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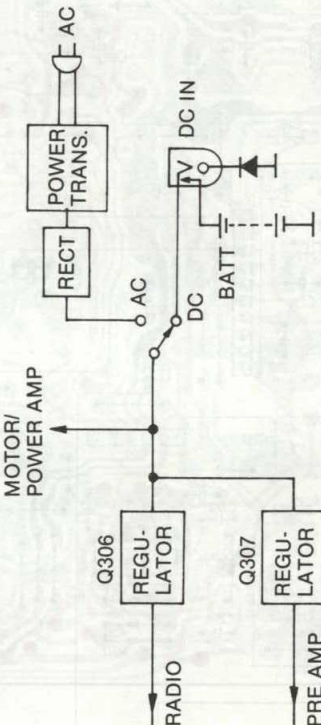
<RECORDING CIRCUIT>



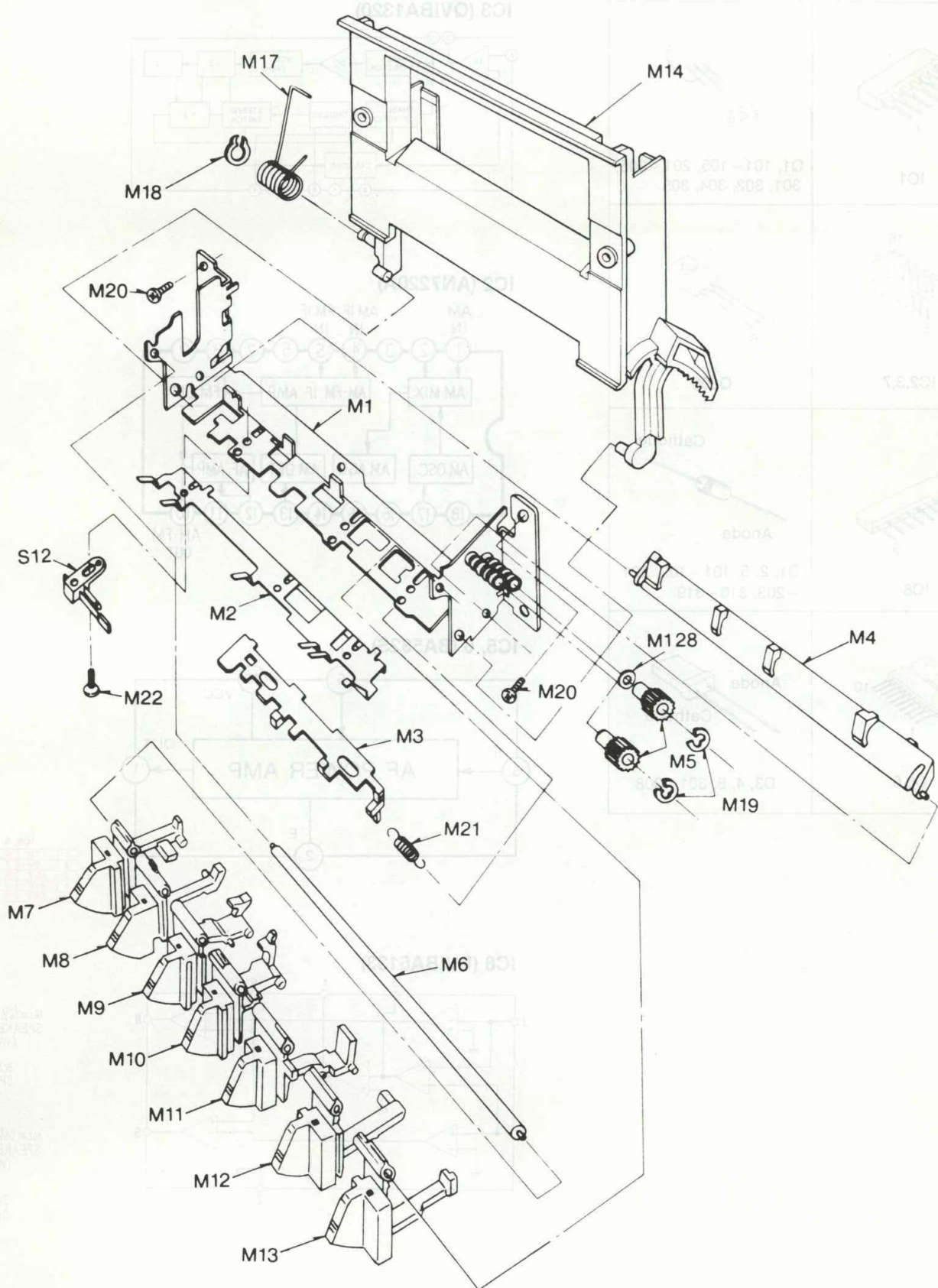
<PLAYBACK CIRCUIT>



<POWER SUPPLY CIRCUIT>

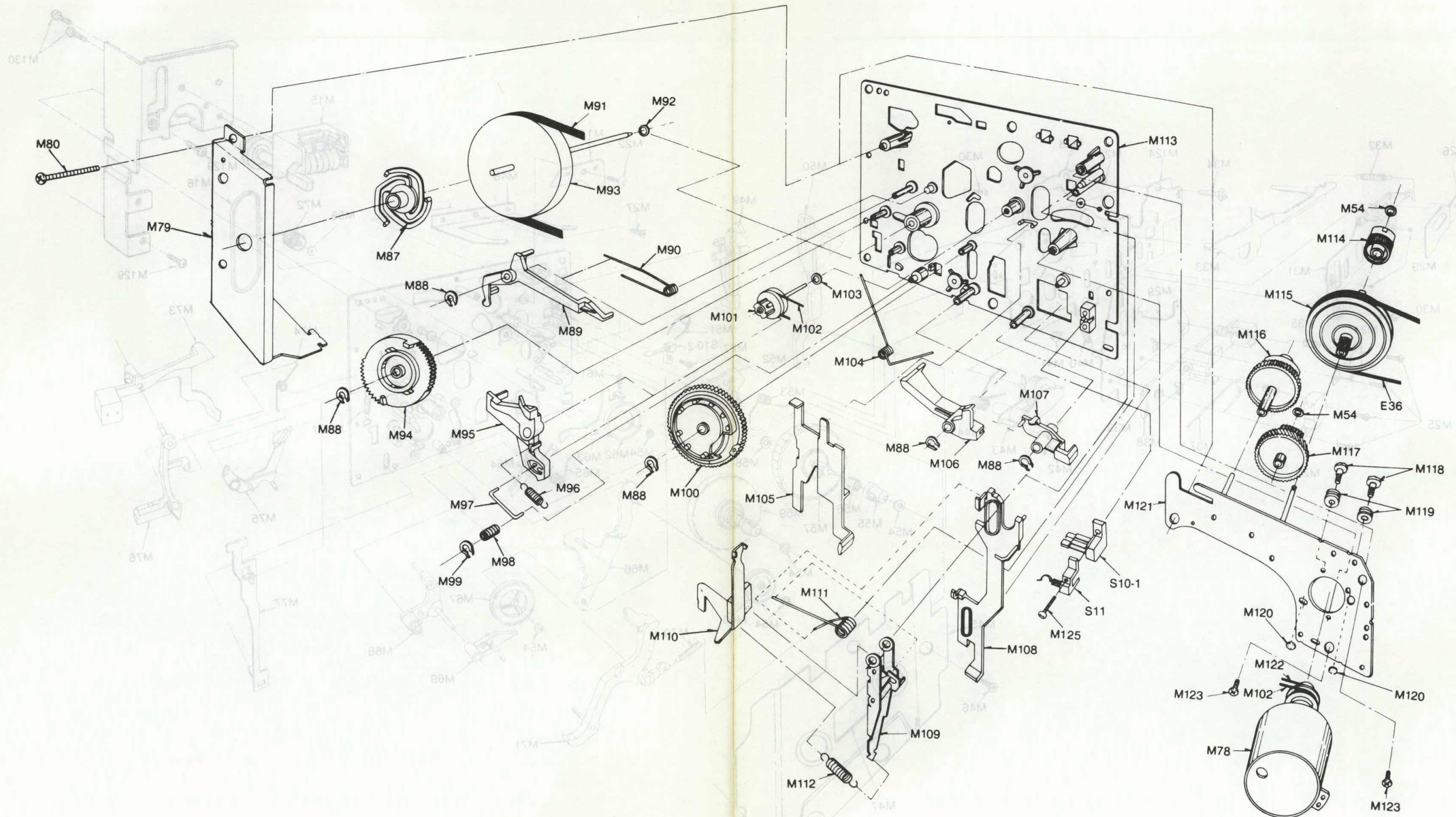


MECHANISM PARTS LOCATION



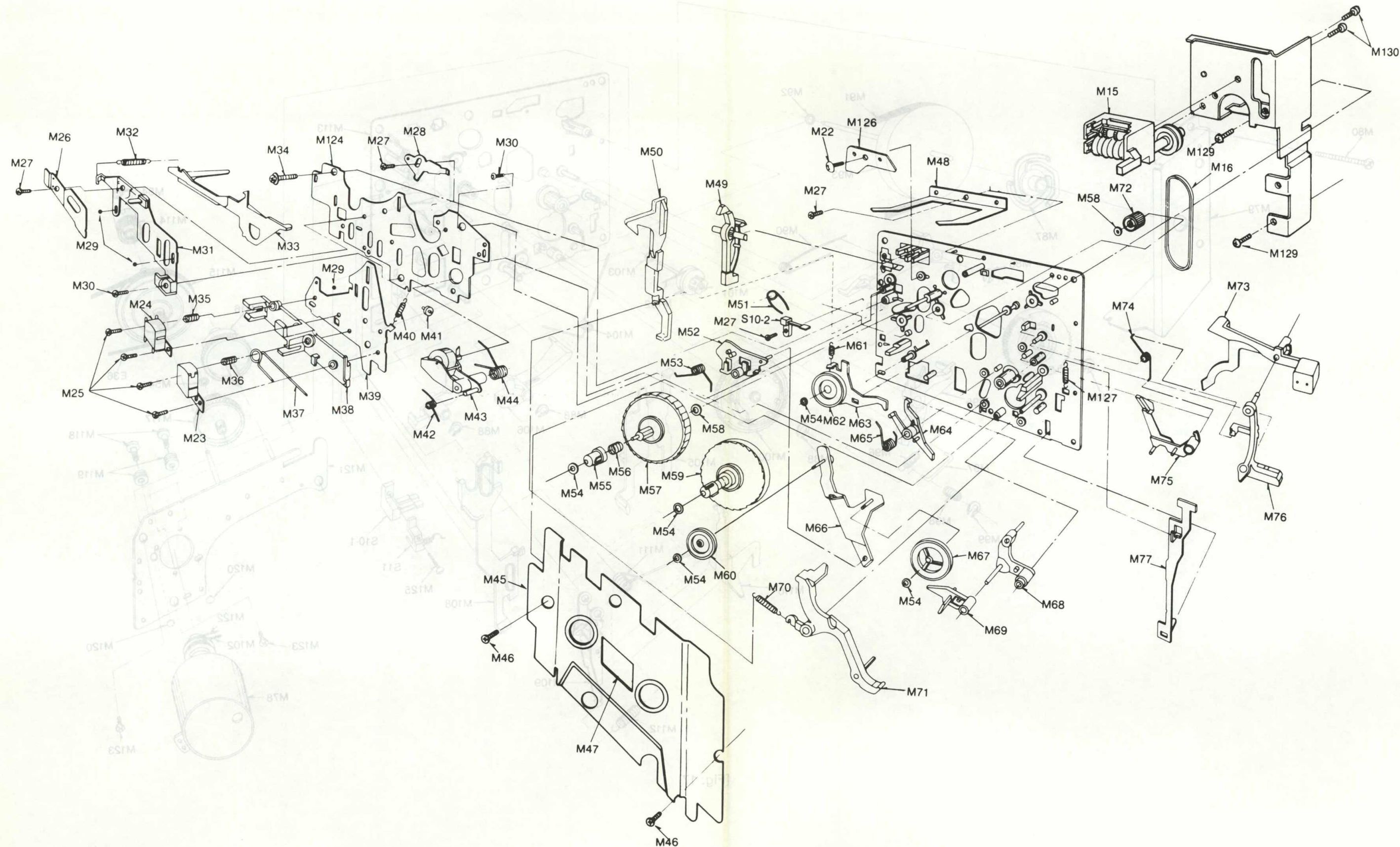
[Fig. 15]

MECHANISM PARTS LOCATION



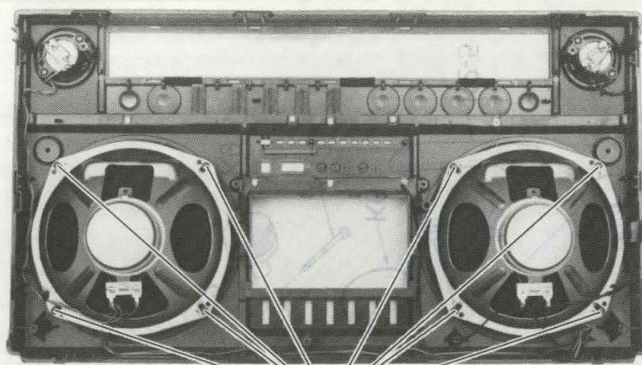
[Fig. 17]

NOIT MECHANISM PARTS LOCATION

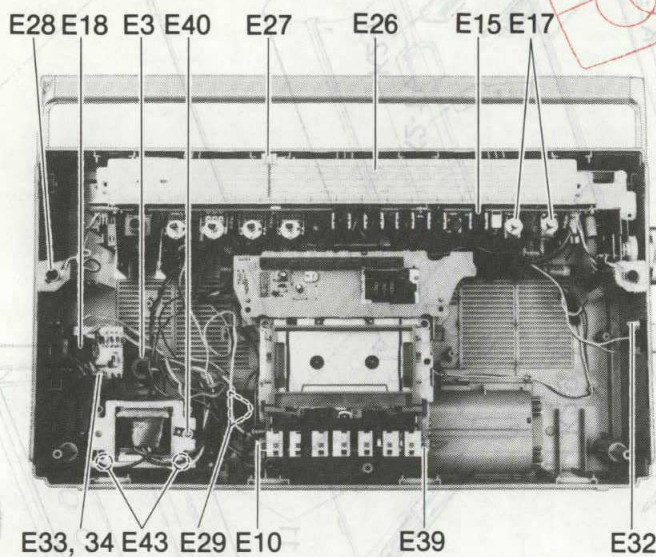


[Fig. 16]

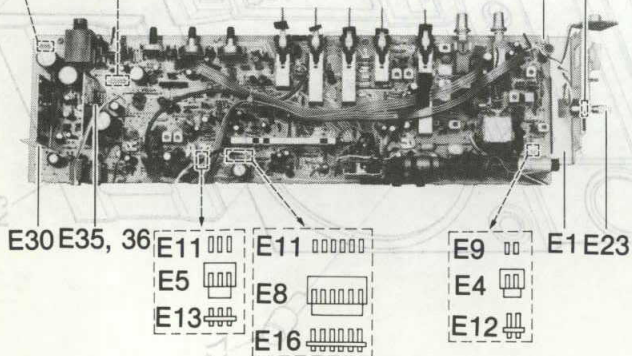
ELECTRICAL PARTS LOCATION



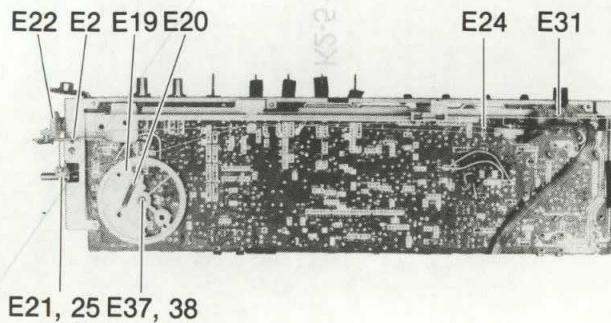
E44
[Fig. 19]



[Fig. 20]



[Fig. 21]

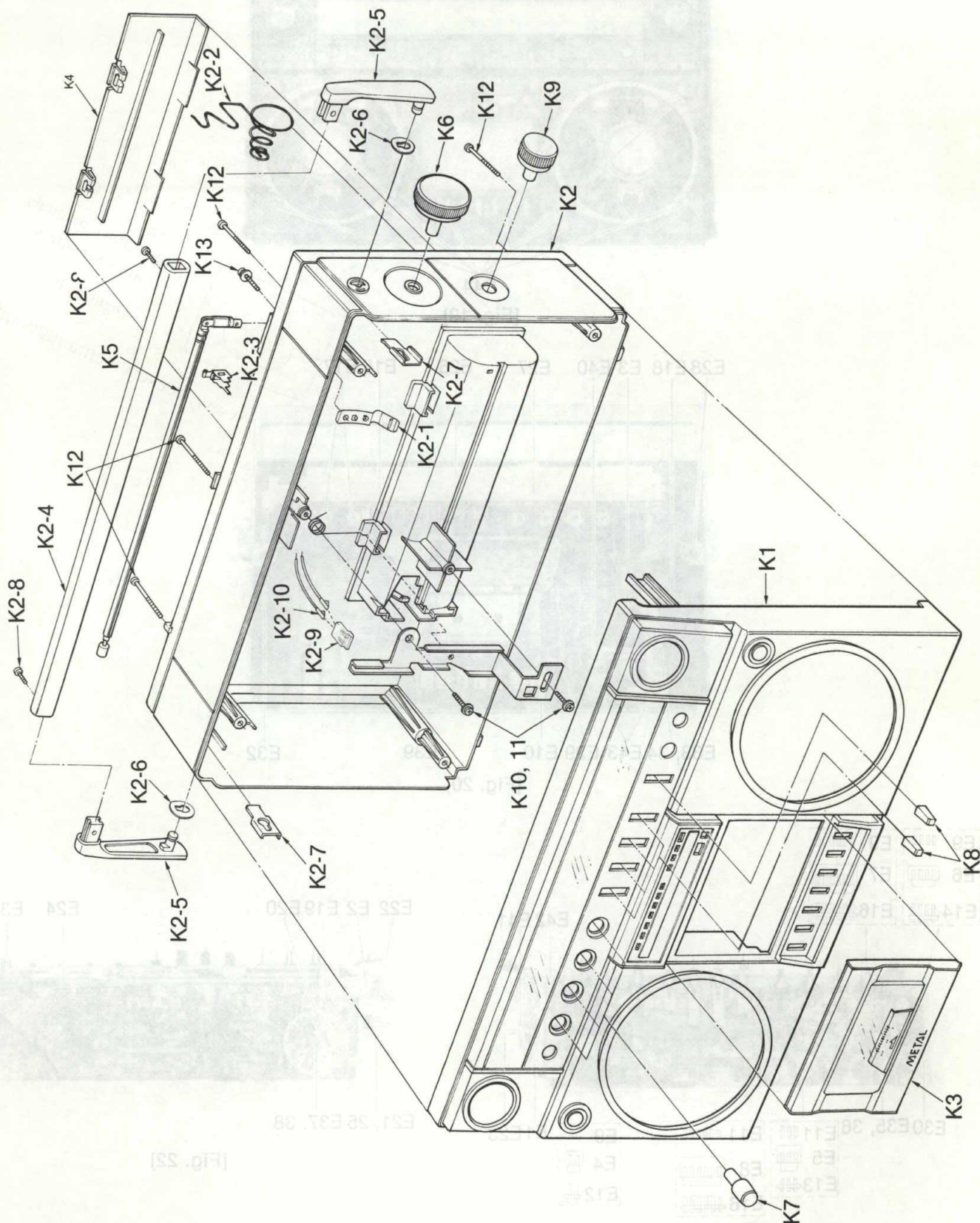


[Fig. 22]

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CABINET PARTS LOCATION



[Fig. 18]

REPLACEMENT PARTS LISTModel RX-5150LS (RD81075213C2)

NOTES: 1. 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.
2. The S mark indicates service standard parts and may differ from production parts.

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
M1	QXAL044	MECHANICAL PARTS		
M2	QBP1875	Button Bracket Ass'y	1	
M3	QMR1823	Spring, Operation Rod	1	
M4	QML3649	Lock Rod	1	
M5	QDGL102	Lock Arm	1	
M6	QMN2554	Gear, Slow Up	1	
M7	QXL1430	Shaft, Operation Rod	1	
M8	QXL1431	Eject Lever Ass'y	1	
M9	QXL1432	Rec Lever Ass'y	1	
M10	QXL1433	Rewind Lever Ass'y	1	
M11	QXL1434	FF Lever Ass'y	1	
M12	QXL1435	Play Lever Ass'y	1	
M13	QXL1436	Stop Lever Ass'y	1	
M14	RYQX5250M	Pause Lever Ass'y	1	
M15	RSE80Z	Cassette Holder	1	
M16	RDVL1Z	Counter	1	
M17	QBN1749	Counter Belt	1	
M18	XUC5FT	Spring, Cassette Slot	1	
M19	XUC4FT	Circlip	1	
M20	XTN26+6B	Circlip	2	S
M21	QBT1597	Screw	2	S
M22	XTN2+6B	Spring	1	
M23	QWY4122Z	Screw	1	
M24	QWY2138Z	R/P Head	1	
M25	XSN2+9	Erase Head	1	S
M26	QBP1873	Screw	4	
M27	XTN26+6B	Head Base Pressure Plate	1	
M28	QMA3858	Screw	7	S
M29	QDK1017	Head Plate	1	
M30	XTN26+10B	Steel Ball	3	
M31	QZM1240	Screw	2	S
M32	QBT1597	Holder, Head Base	1	
M33	QML3591	Spring	1	
M34	XTN26+12B	Brake Arm	1	
M35	QBCA0008	Screw	1	
M36	QBC1278	Head Spring	1	
M37	QBN1740	Head Spring, R/P Head	1	
M38	QML1241	Head Spacer	1	
M39	QMK1840	Head Base Plate	1	
M40	QBT1892	Spring, Head Base Plate	1	
M41	QMN2550	Guide Roller	1	
M42	QBN1742	Spring, Pinch Roller	1	
M43	QXL1381	Pinch Roller Ass'y	1	
M44	QBN1743	Spring, Pinch Roller	1	
M45	QMF2097	Cover	1	
M46	XTN26+6BFZ	Screw	4	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
M47	QKE1104	Reflecting Plate	1	
M48	QBP1874	Cassette Holder Plate	1	
M49	QML3603	Safety Lever	1	
M50	QMR1822	Eject Rod	1	
M51	QBN1747	Spring	1	
M52	QML3588	FF Spring Lever	1	
M53	QBN1748	FF Spring	1	
M54	QBW2008	Washer	6	
M55	QMB1336	Supply Drive Cam	1	
M56	QBC1372	Back Tension Spring	1	
M57	QDR1139	Supply Reel Table	1	
M58	QBW2012	Washer	2	
M59	QXD1143	Take Up Reel Table Ass'y	1	
M60	QXI0113	FF Idler Ass'y	1	
M61	QBT1893	Take Up Idler Spring	1	
M62	QXI0111	Take Up Idler Ass'y	1	
M63	QXL1382	Idler Lever Ass'y	1	
M64	QML3592	Change Lever	1	
M65	QBN1741	Lever Spring	1	
M66	QXL1383	FF Arm Ass'y	1	
M67	QXI0112	Rewind Idler Ass'y	1	
M68	QXL1354	Sub Lever Ass'y	1	
M69	QML3586	MS Lever	1	
M70	QBT1894	Main Lever Spring	1	
M71	QXL1355	Main Lever Ass'y	1	
M72	QDP1828	FF Pulley	1	
M73	QML3605	Auto Stop Detector Lever	1	
M74	QBN1746	Auto Stop Lever Spring	1	
M75	QML3594	Auto Stop Release Lever	1	
M76	QML3604	Auto Stop Drive Lever	1	
M77	QMR1821	Auto Stop Connection Rod	1	
M78	QXU0201	Motor Ass'y	1	
M79	QMA4063	Flywheel Retainer	1	
M80	XTN3+24B	Screw	1	
M81	QMZ1239	Flywheel Thrust Retainer	1	
M82	XUB3FT	Circlip	5	S
M83	QML3581	Sub Operation Lever	1	
M84	QBN1744	Sub Gear Spring	1	
M85	QDB0281	Capstan Belt	1	
M86	QBN2049	Washer	1	
M87	QXF0164	Flywheel Ass'y	1	
M88	QDG1202	Sub Gear	1	
M89	QML3582	Pause Lock Lever	1	
M90	QBT1896	Lever Spring	1	
M91	QBS1128	Lock Pin	1	
M92	QBC1357	Lock Pin Spring	1	
M93	XUB4FT	Circlip	1	
M94	QDG1201	Main Gear	1	
M95	QXP0607	FF Belt Pulley Ass'y	1	
M96	QDB0274	Rewind Belt	1	
M97	QBW2012	Washer	1	
M98	QBN1745	Main Gear Spring	1	
M99	QMR1824	Control Rod	1	
M100	QML3583	Main Operation Lever	1	
M101	QML3584	Reverse Lever	1	
M102	QMR1820	Record Rod	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
M109	QXL1360	R/P Selector Arm Ass'y	1	
M110	QML3580	R/P Selector Lever	1	
M111	QBN1739	Selector Lever Spring	1	
M112	QBT1895	R/P Pressure Spring	1	
M113	QXK2276	Lower Base Plate	1	
M114	QDP1823	Connection Pulley	1	
M115	QXG1047	Take Up Gear Ass'y	1	
M116	QDG1200	Cam Gear	1	
M117	QDG1199	Auto Stop Gear	1	
M118	QHQ1303	Screw	2	
M119	QBG1698	Cushion	1	
M120	QBG1683	Cushion	1	
M121	QXK2286	Sub Chassis Ass'y	1	
M122	QDB0273	Fast Forward Belt	1	
M123	XTN3+10B	Screw	1	
M124	QMK1838	Upper Deck	2	
M125	XTN2+20F	Screw	1	
M126	QMF2118	Fitting Plate	1	
M127	QBT1682	Lock Spring	1	
M128	QBW2026	Washer	1	
M129	XTV26+6F	Screw, Counter Chassis	2	
M130	XTV26+6FZ	Screw, Counter	4	
INTEGRATED CIRCUITS, TRANSISTORS AND DIODES				
IC1	AN7213	IC	1	
IC2	AN7220A	IC	1	
IC3	QVIBAL320	IC	1	
IC5, 6	BA532S	IC	2	
IC7	LB1405	IC	1	
IC8	RVIBA6133	IC	1	
Q1	2SC1359B	Transistor (Si)	1	
Q2, 4, 102, 104, 202, 204, 301	2SC945-Q	Transistor (Si)	7	
Q5, 302	2SA722-S	Transistor (Ge)	2	
Q101, 201	2SC1845E	Transistor (Si)	2	
Q103, 203	2SC945-Q	Transistor (Si)	2	
Q105, 205	2SC1788RDR2	Transistor (Si)	2	
Q304, 305, 307	2SC1317NCR	Transistor (Si)	3	
Q306	2SC1568R	Transistor (Si)	1	
D1	RVDSDL113	Diode (Si)	1	
D2, 5, 101, 103, 201, 203, 309, 319	MA161	Diode (Si)	10	
D3, 4	RVDSLPL155B01	Diode (Si)	2	
D301	RADSLP1014	Diode (Si)	1	
D310	RVDRD7R5FB	Diode (Si)	1	
D311	MA1110	Diode (Si)	1	
D312, 316	SM112	Diode (Si)	5	
D317, 318	MA27WA	Diode (Si)	2	
TH1	RRT202	THERMISTOR	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
C119, 219	ECKD1H682MD	0.0068 50V Ceramic	2	
C57	ECMS05151JH	150 P " Mica	1	
C306	ECQG05223KZ	0.022 " Polyester	1	
C132, 232	ECQG05224MZ	0.022 " "	2	
C341	ECQG05683KZ	0.068 " "	1	
C16	ECQS2B221JZ	220 P 125V Styrol	1	
C17, 136, 236	ECQS2B361JZ	360 P " "	3	
C18	ECQS2B392JZ	3900 P " "	1	
C43	ECQS2B471JZ	470 P " "	1	
C305	ECQS2B562JZ	5600 P " "	1	
C139, 239	ECQS2B681JZ	680 P " "	2	
C108, 208	ECQV05334JZ	0.33 50V Polyester	2	
C60, 308	ECFVD103MD	0.01 25V Semi-Conductor	2	
C42, 116, 216	ECFVD153MD	0.015 " "	3	
C33, 34, 117, 217, 333	ECFVD223MD	0.022 " "	5	
C31, 48, 49, 54, 55	ECFVD333MD	0.033 " "	5	
C29, 30, 37, 120, 220	ECFVD473MD	0.047 " "	5	
C52	ECFVD104MD	0.1 " "	1	
C6, 23, 134, 234	ECFVD683MD	0.068 " "	4	
C26, 46, 130, 230, 318, 332, 338, 342	ECEALAS101	100 10V Electrolytic	8	
C36, 307	ECEALAS221	220 " "	2	
C126, 226, 312, 339	ECEALAS470	47 " "	4	
C314, 317	ECEALAS102	1000 " "	2	
C133, 233	ECEALCS222	2200 16V	2	
C323, 343	ECEALAS470	47 25V	2	
C111, 211, 304, 315	ECEALHS100	10 50V	4	
C104, 204	ECEALHS220	22 25V	2	
C321	ECEALCS221	220 16V	1	
C301	ECEALCS330	330 " "	1	
C322	ECEALCS332	3300 " "	1	
C27, 340	ECEA5023R3	3.3 50V	2	
C44	ECEALHSR22	0.22 " "	1	
C129, 229	ECEALHSR33	0.33 " "	2	
C45, 101, 114, 201, 214, 316	ECEA50ZR47	0.47 " "	6	
C35, 102, 118, 135, 202, 218, 235	ECEALHSOR1	0.1 " "	7	
C38, 41, 47, 58, 107, 113, 115, 123, 207, 213, 215, 223, 313	ECEA50Z1	1 " "	13	
C121, 221	ECEA50Z2R2	2.2 " "	2	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
K1	RYMX5150LS91	CABINET PARTS	1	
K2	RYFX5150LSX7	Front Cabinet Ass'y	1	
K2-1	RJT737Z	Rear Cabinet Ass'y	1	
K2-2	RJC936Z	Terminal, Telescopic Antenna	1	
K2-3	RJF1065Z	Battery Spring, + - Side	2	
K2-4	RKX223Z1	Terminal, EXT Antenna	1	
K2-5	RKX189Z	Handle, Cabinet	1	
K2-6	RKX184Z	Arm, Handle	2	
K2-7	RKT130Z	Spacer, Arm	2	
K2-8	XTB3+8BFN	Stopper, Arm	2	
K2-9	RJS171Z	Screw, Handle M'tg	2	
K2-10	RJT462Z	Socket, 2 Pin	1	
K3	RYPX5150LSXG	Terminal, Socket	2	
K4	RYNX5150LS92	Cassette Panel Ass'y	1	
K5	XEARR345CAN	Battery Cover Ass'y	1	
K6	RBN567X	Telescopic Antenna	1	
K7	RBN568Z	Knob, Tuning	1	
K8	RBS181Y	Knob, Volume & etc.	4	
K9	RBN517T	Knob, Tape Selector Switch & etc.	5	
K10	RNW311Z	Knob, Fine Tuning	1	
K11	XTW3+12F	Washer, R/P Lever	2	
K12	XTB3+50CFN	Screw, R/P Lever	2	
K13	XYN3+FL5FY	Screw, Cabinet M'tg	7	
		Screw, Telescopic Antenna	1	
E1	RZAX5150N	ELECTRICAL PARTS	1	
E2	RZUX5150N	Dial Chassis Ass'y	1	
E3	RUV387Z	Dial Bracket Ass'y	1	
E4	RJS171Z	Cover, Voltage Selector	1	
E5	QJS0784JN	Socket, 2 Pin	1	
E6	RJS216Y	Socket, 3 Pin	1	
E7	RJS112Y	Socket, 4 Pin	1	
E8	QJS0778JN	Socket, 6 Pin	1	
E9	RJT462Z	Socket, 6 Pin	15	
E10	RJT202B	Terminal, Socket	3	
E11	QJT104Z	Terminal, Earth	9	
E12	RJP213Z	Terminal, Socket	2	
E13	RJP137Z	Plug, 2 Pin	2	
E14	RJP107Z	Plug, 3 Pin	2	
E15	RJV628Z	Plug, 4 Pin	1	
E16	RJP142Z	Cover, Switch	5	
E17	RBC335Y	Plug, 6 Pin	2	
E18	RUV603Z	Button, Loudness, REC MUTE	2	
E19	RDD655Z	Cover, AC IN Jack	1	
E20	RDS4170A	Drum, Dial	1	
E21	RDR20-3	Spring, Dial	1	
E22	RDR17Z	Pulley, Dial	2	
E23	RDT3252Z	Pulley, Dial	2	
E24	RZ05Z	Shaft, Tuning	1	
E25	RNW150-2	Cord, Dial	1	
E26	RKD577W	Washer, Pulley	4	
E27	RDP828Z	Scale, Dial	1	
E28	RJM149Z	Pointer, Dial	1	
E29	RJC511Z	Microphone	2	
		Battery Spring, - Side	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
J101	RJS0J12	JACKS		
J103, 203	RJ87Y	Jack, DIN	1	
J105, 205	RJ1D7Z	Jack, EXT SP	2	
J204	RJ1E2Z	Jack, EXT MIC	2	
J302, 303	QJS0329	Jack, Headphone	1	A
		Jack, AC/DC IN	1	
R326	ERC14GK106	RESISTORS (Value is in OHMS)		
R335	ERC14GK475	10 M	1	S
R314	ERD2FCJ2R2	4.7 M	1	S
R311	ERD25FJ1R0	2.2 2W Carbon	1	
R101, 201	ERD25FJ100	1 1/4W	1	S
R2, 11, 328	ERD25FJ329	10 "	2	S
R23, 125, 225, 303, 321, 325, 331	ERD25FJ101	100 "	4	S
R36, 121, 140, 141, 142, 221, 240, 241, 242, 333, 341	ERD25FJ102	1 k	7	S
R1, 129, 229, 302, 304	ERD25FJ103	10 k	11	S
R106, 206	ERD25TJ104	100 k	5	S
R143, 243	ERD25TJ105	1 M	2	S
R10, 137, 237	ERD25FJ121	120 "	2	S
R20, 111, 138, 211, 238, 336, 338	ERD25FJ151	150 "	3	S
R22, 33, 107, 115, 131, 133, 207, 215, 231, 233, 301	ERD25FJ152	1.5 k	7	S
R318	ERD25FJ153	15 k	11	S
R340	ERD25FJ182	1.8 k	1	S
R5, 39, 332	ERD25FJ2R2	2.2 "	1	S
R17, 24, 25, 103, 116, 134, 203, 216, 234, 322	ERD25FJ221	220 "	3	S
R29, 30	ERD25FJ222	2.2 k	10	S
R35, 124, 224	ERD25FJ223	22 k	2	S
R144, 244	ERD25TJ224	220 k	3	S
R113, 213	ERD25FJ272	2.7 k	5	S
R21	ERD25FJ273	27 k	2	S
R14, 110, 210, 330	ERD25FJ330	33 "	1	S
R339	ERD25FJ331	330 "	4	S
R28, 136, 236, 323	ERD25FJ332	3.3 k	1	S
R126, 226	ERD25FJ333	33 k	4	S
R34	ERD25FJ390	39 "	2	S
	ERD25FJ392	3.9 k	1	S
Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
R117, 217	ERD25FJ393	39 k	2	S
R3, 6, 12, 38, 109, 209, 337	ERD25FJ471	"	7	S
R108, 208	ERD25FJ470	"	2	S
R130, 230, 315, 316	ERD25FJ472	4.7 k	4	S
R16	ERD25FJ473	"	1	S
R7, 8, 13, 40, 120, 220	ERD25TJ474	"	6	S
R122, 222	ERD25FJ560	56 k	2	S
R114, 214	ERD25FJ563	"	2	S
R4, 9, 15, 19, 27, 102, 202, 327	ERD25FJ681	680 "	8	S
R112, 128, 135, 212, 228, 235	ERD25FJ682	6.8 k	6	S
R26, 127, 139, 227, 239	ERD25TJ683	68 k	5	S
R18, 132, 232	ERD25FJ822	8.2 k	3	S
R41, 123, 223	ERD25TJ823	82 k	3	S
R305	ERGIANJP680	68 1W Metal Oxide	1	S
C5, 11, 15, 21	ECCLH070DC	CAPACITORS (Value is in MICRO FARADS except P.P=PICO FARADS)		
C1, 19	ECCLH120KC	12 P	4	
C12, 50	ECCLH150KC	15 P	2	
C28, 125, 225, 303	ECCLH181K	180 P	4	
C4, 32, 53	ECCLH470KC	47 P	3	
C103, 203	ECCLH221K	220 P	2	
C9	ECCLH180KC	18 P	1	
C2	ECCLH470KC	47 P	1	
C59	ECCLH331K	330 P	1	
C8, 10, 22, 106, 122, 128, 137, 206, 222, 228, 237	ECCLH102MD	0.001	11	
C24, 112, 212, 302	ECCLH102ZF	0.001	4	
C7, 13, 51	ECCLH103MD	0.01	3	
C20, 319, 320, 334~337	ECCLH103ZF	0.01	7	
C110, 127, 131, 210, 227, 231, 309, 310	ECCLH222MD	0.0022	8	
C39, 105, 109, 205, 209	ECCLH471KB	470 P	5	
C124, 138, 224, 238	ECCLH152MD	0.0015	4	
C25	ECCLH223ZF	0.022	1	
C311	ECCLH472MD	0.0047	1	

Part No.	Part Name or Description	Qty	Remarks
80488100	INSTRUMENT BOOK	1	
80488101	INSTRUMENT BOOK	1	
80488102	INSTRUMENT BOOK	1	
80488103	INSTRUMENT BOOK	1	
80488104	INSTRUMENT BOOK	1	
80488105	INSTRUMENT BOOK	1	
80488106	INSTRUMENT BOOK	1	
80488107	INSTRUMENT BOOK	1	
80488108	INSTRUMENT BOOK	1	
80488109	INSTRUMENT BOOK	1	
80488110	INSTRUMENT BOOK	1	
80488111	INSTRUMENT BOOK	1	
80488112	INSTRUMENT BOOK	1	
80488113	INSTRUMENT BOOK	1	
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80488115	INSTRUMENT BOOK	1	
80488116	INSTRUMENT BOOK	1	
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80488196	INSTRUMENT BOOK	1	
80488197	INSTRUMENT BOOK	1	
80488198	INSTRUMENT BOOK	1	
80488199	INSTRUMENT BOOK	1	
80488200	INSTRUMENT BOOK	1	

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
E30	RMV161Z	Heat Sink	2	
E31	RMP159Z	Holder, LED	1	
E32	QTS144Z	Shield Plate	1	
E33	XBA2C20TRO	Fuse	1	
E34	QTF1054	Holder, Fuse	2	▲
E35	XSN3+8S	Screw, Chassis M'tg	2	▲
E36	XWG3	Washer, Chassis M'tg	2	S
E37	XSN26+8	Screw, Drum M'tg	1	S
E38	XWA26B	Washer, Drum M'tg	1	S
E39	XTW3+12F	Screw, Deck M'tg	4	S
E40	XTW3+16F	Screw, Transformer M'tg	2	
E41	XNS8D	Nut, Tuning Shaft M'tg	2	
E42	XTW3+6L	Screw, Chassis M'tg	4	
E43	XVC4+BF6	Screw, Transformer M'tg	2	
E44	XTV3+10G	Screw, Speaker etc. M'tg	13	
		ACCESSORIES		
	RJA20Z	Power Cord, AC	7	▲
	RJN23Z	Cassette Tape	1	
	RQE13Z	Caution Tag	1	
		PACKING MATERIALS		
	XZB70X50A01	Polyethylene Cover	1	S
	RPN9365Z	Pad Complete	1	
	RPN3403Z	Pad	1	
	RPN3361Z	Pad	1	
	RPK1231Z	Gift Box	1	
		PRINTED MATERIAL		
	RQX6810Z	Instruction Book	1	