



AUTO RADIO SERVICE DATA



+ AR-292 +



Audiovox CAS-250, ID-600B

Boman MACH 40

Delco 91TPB1/BK1

Grundig GEM-5000

JCPenney 981-0246/-0246-00/-6885

Motorola TC883AX

Panasonic CQ-5848EC/EU

Sankyo SCS-202



AUTO RADIO SERVICE DATA

AR-292

REPRODUCED THROUGH THE COURTESY OF THE MANUFACTURER



HOWARD W. SAMS & CO., INC.

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GENERAL SERVICING INFORMATION

The following information applies to all tape units in this volume, and should be followed before any adjustments are made or trouble diagnosis is attempted. Any exceptions or additions will be found in the detailed servicing procedures for each tape unit.

POWER SOURCES

Many tape units require full supply voltage for proper operation. Be sure the supply voltage is maintained at the rated value under load while making adjustments.

CLEANING

All head faces should be cleaned with head cleaner or methyl alcohol to remove dust and accumulated oxide. (An applicator may be fashioned from absorbent cotton.) Do not use a screwdriver or any metallic object near the head faces.

CAUTION: Avoid getting head cleaner on any plastic surface.

Clean capstans, pressure rollers, and tape guides with alcohol using a soft lint-free cloth. Also use alcohol to remove oil and grease from drive belts and other driving surfaces.

LUBRICATING

Clean all surfaces before lubricating. Apply a few drops of #20 machine oil to all bearings and rotating bushings. Apply a thin film of light, nonhardening grease to all cam surfaces and pawls, if they have been factory lubricated. Always wipe excess oil or grease from parts that have been lubricated.

CAUTION: Oil and grease must be kept off all driving surfaces as well as any parts which may transfer oil or grease to them.

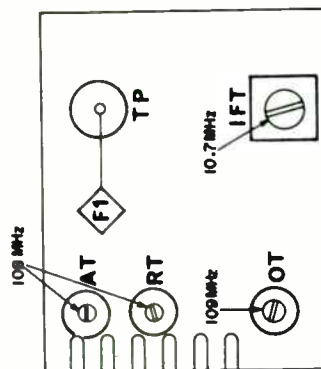
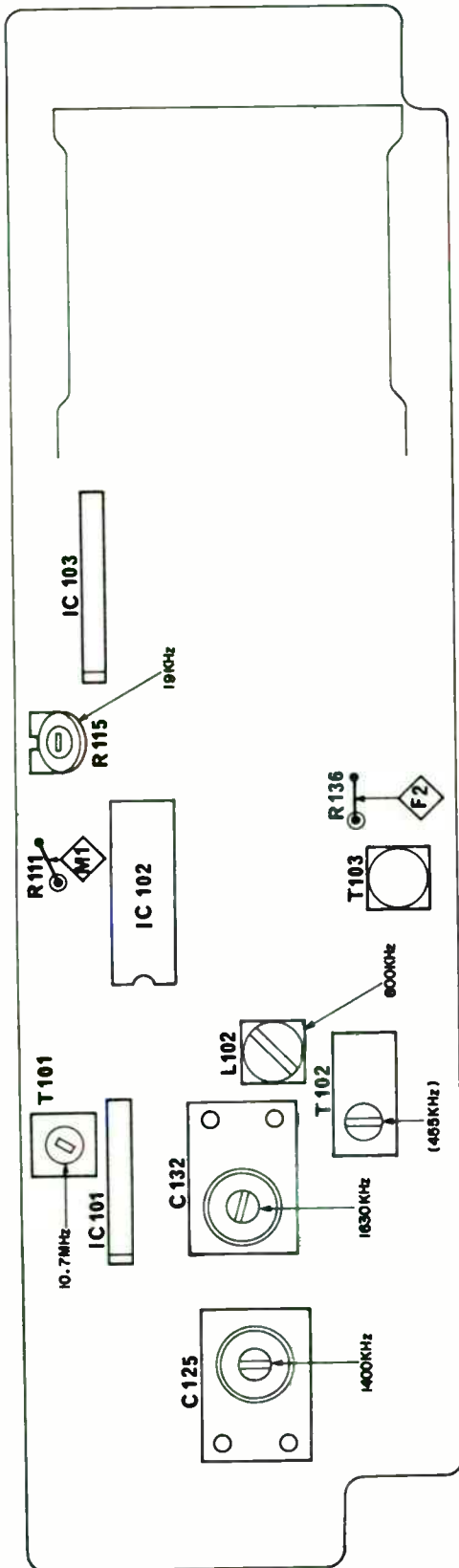
DEMAGNETIZING

Heads require demagnetizing at regular intervals to maintain high-frequency response, dynamic range, and low distortion. (Follow instructions included with the demagnetizing unit.) After demagnetizing the heads, keep all screwdrivers and other metallic objects away from the head faces. Tape guides may also require occasional demagnetizing.

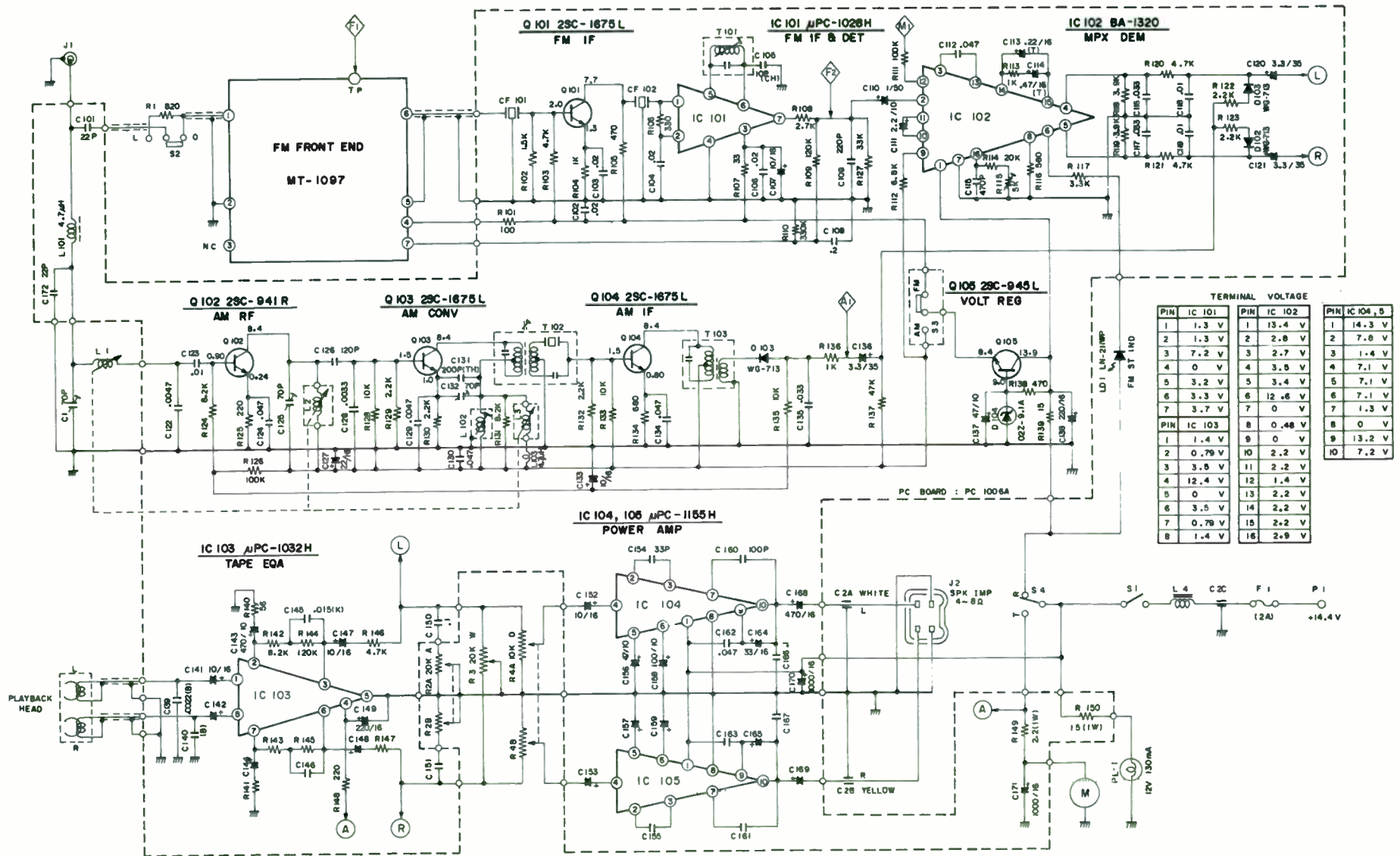
IMPORTANT: Be sure to demagnetize the heads after making resistance measurements in the head circuits.

CARTRIDGES

Many problems associated with tape units result from defective cartridges. Always try a cartridge known to be good before attempting repairs.

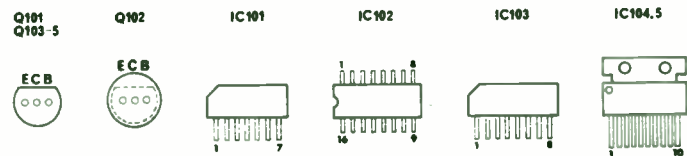


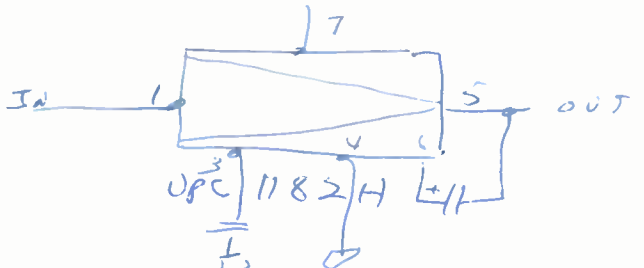
ALIGNMENT LOCATION DETAIL



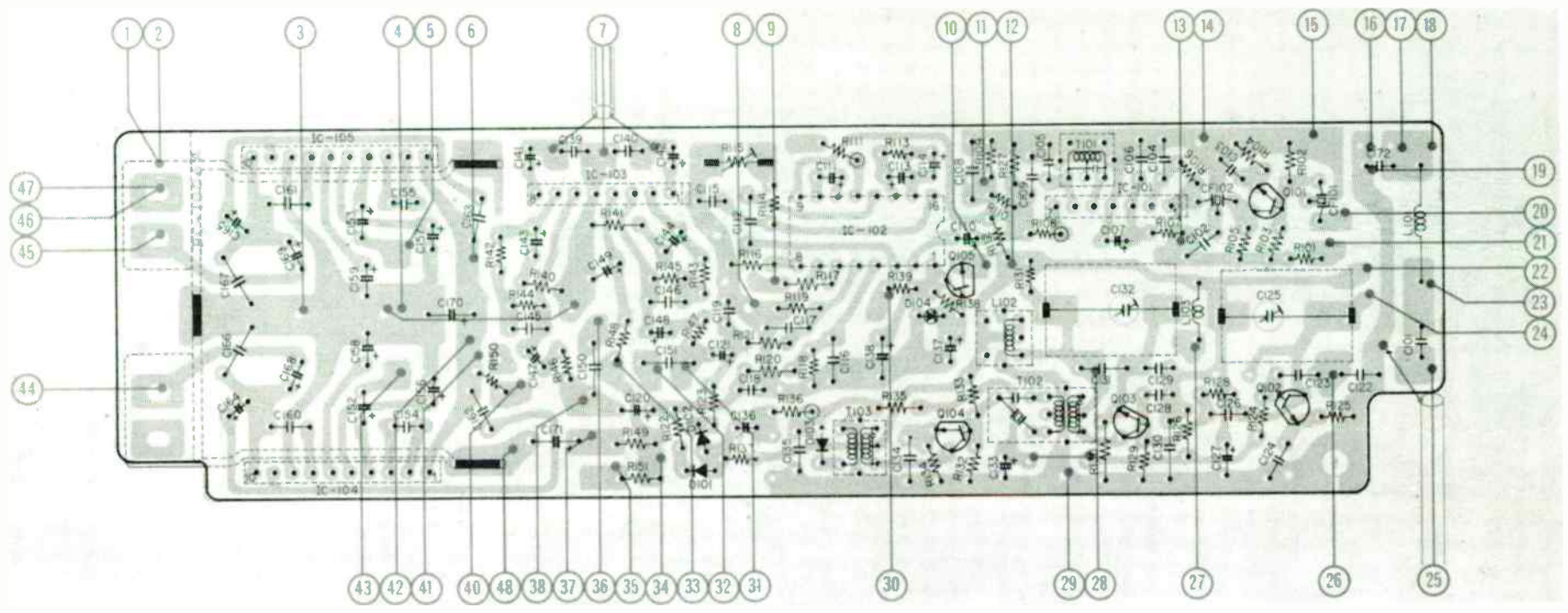
TERMINAL VOLTAGE					
PIN	IC 101	PIN	IC 102	PIN	IC 104, 5
1	1.3 V	1	13.4 V	1	14.3 V
2	1.3 V	2	2.6 V	2	7.8 V
3	7.2 V	3	2.7 V	3	1.4 V
4	0 V	4	3.5 V	4	7.1 V
5	3.2 V	5	3.4 V	5	7.1 V
6	3.3 V	6	12.6 V	6	7.1 V
7	3.7 V	7	0 V	7	1.3 V
PIN	IC 103	8	0.48 V	8	0 V
1	1.4 V	9	0 V	9	13.2 V
2	0.79 V	10	2.2 V	10	7.2 V
3	3.5 V	11	2.2 V		
4	12.4 V	12	1.4 V		
5	0 V	13	2.2 V		
6	3.5 V	14	2.2 V		
7	0.79 V	15	2.2 V		
8	1.4 V	16	2.9 V		

PC BOARD : PC 1006A

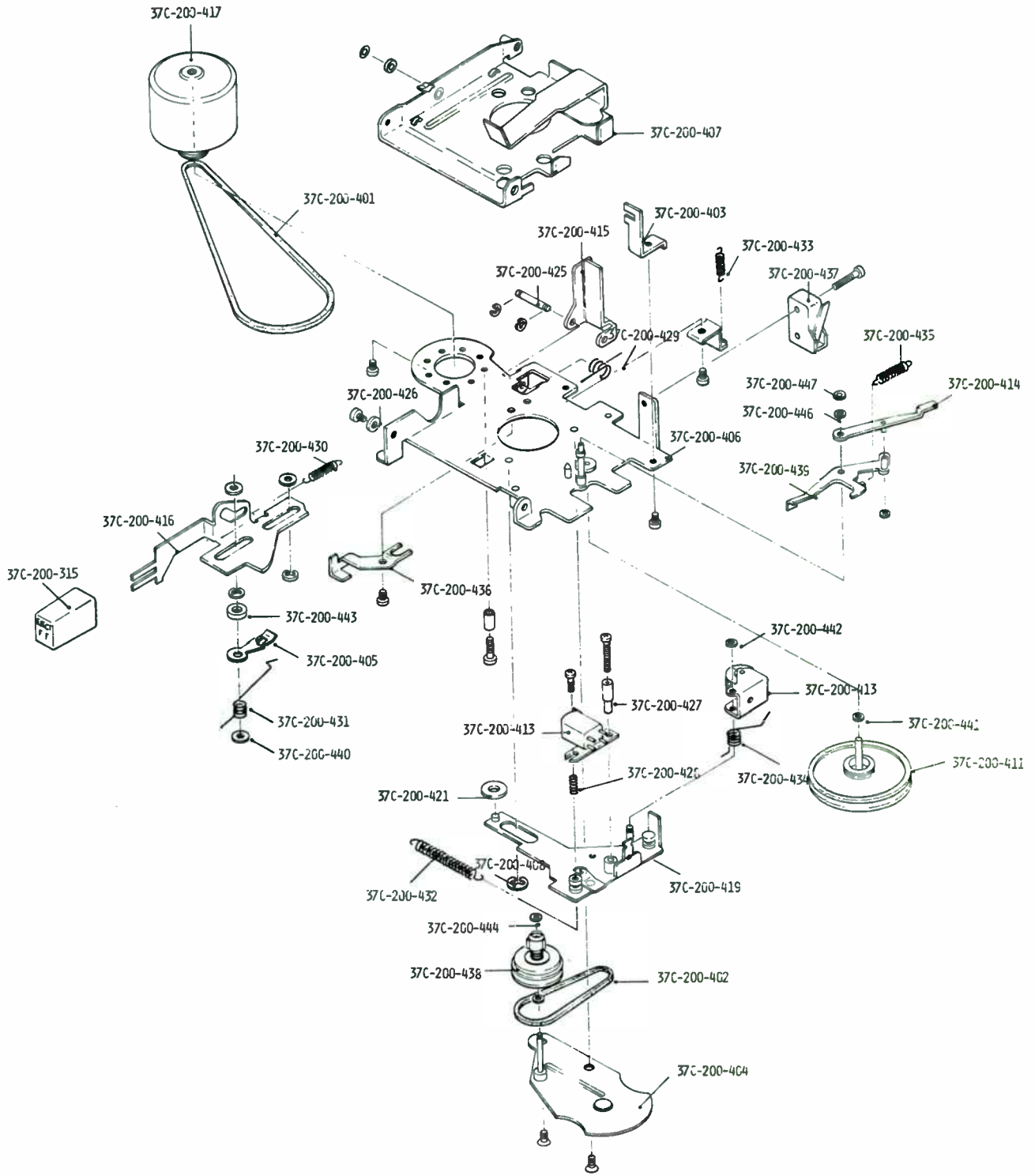




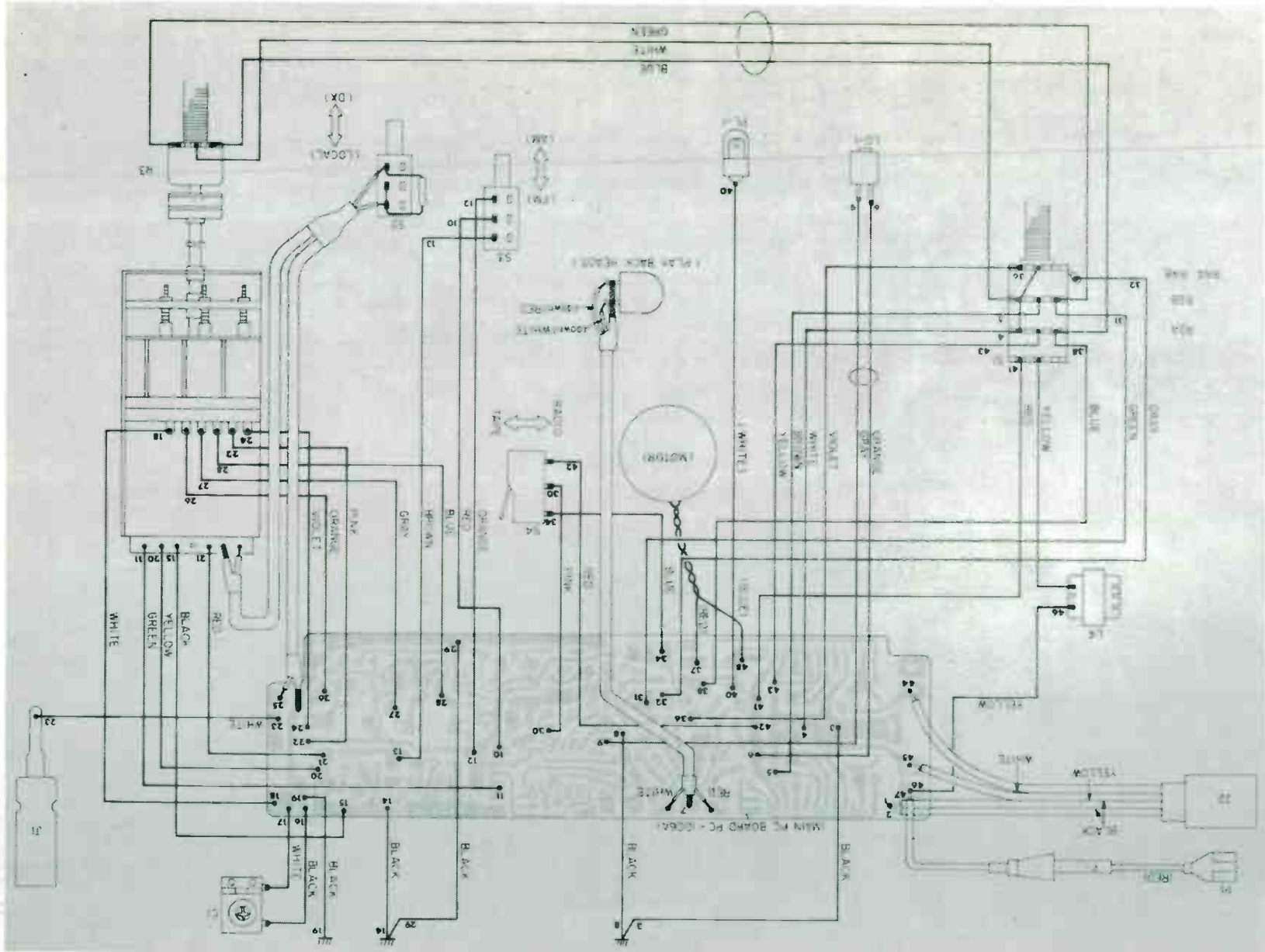
USE 5 1181 & 1182
250C



Audiovox CAS-250, ID-600B



**ASSEMBLY LAYOUT
(DECK CHASSIS)**



Audiovox CAS-250, ID-600B

Reference No.	Part No	Description	Qty	Reference No	Part No	Description	Qty
ELECTRICAL PARTS				TRANSFORMERS			
CAPACITORS (Unlisted capacitors are ceramic type, 50V See schematic diagram for specific values.)				T-101	37C-200-111	FM IFT IT-1030	1
C-1	37C-200-1	70PF, max., trimmer TC-84	1	T-102	37C-200-112	AM IFT IT-2201A	1
C-2A, B, C	37C-200-2	1,000PF, 3, feed-thru FC-30	3	T-103	37C-200-113	AM IFT IT-2201B	1
C-105	37C-200-3	10PF, 50V, NPO, ceramic	1	MECHANICAL PARTS			
C-107, 133, 141, 142, 147, 148, 152, 153	37C-200-4	10uF, 16V, electrolytic	8	37C-200-301	Background, dial	KR-15349B	1
C-108	37C-200-5	0.2uF, 12V, semi-conductor	1	37C-200-302	Bracket, pulley	KR-15351	1
C-110	37C-200-6	1uF, 50V, electrolytic	1	37C-200-303	Bracket, switch	KR-15350	1
C-111	37C-200-7	2.2uF, 10V, tantalum	1	37C-200-305	Cable Ass'y, battery & speaker cord	QS-1024A	1
C-112, 124, 134, 162, 163	37C-200-8	0.047uF, 25V, semi-conductor	5	37C-200-305	Chassis, base	PR-15671	1
C-113	37C-200-9	0.22uF, 16V, tantalum	1	37C-200-306	Clamp, battery & speaker cord	KR-30985	1
C-114	37C-200-10	0.47uF, 16V, tantalum	1	37C-200-307	Coupling, tuning shaft	KR-30921	1
C-115	37C-200-11	470PF, 50V, polyethylene	1	37C-200-308	Cover, top	PR-15346A	1
C-116, 117, 135	37C-200-12	0.033uF, 25V, semi-conductor	3	37C-200-309	Dog-Washer, tuning & volume shaft	KR-15543	2
C-118, 229, 123	37C-200-13	0.01uF, 25V, semi-conductor	3	37C-200-310	Escutcheon Ass'y, with dial plate & dust cover	37C-200C (for tuner No MT-1097)	1
C-120, 121, 136	37C-200-14	3.3uF, 35V, electrolytic	3	37C-200-311	Escutcheon Ass'y, with dial plate & dust cover	37C-220C (for tuner No. MT-2077)	1
C-125, 132	37C-200-15	70PF, max., trimmer TC-1	2	37C-200-312	Holder, pilot lamp	PLH-27	1
C-127	37C-200-16	22uF, 16V, electrolytic	1	37C-200-313	Insulator, fiber	KR-31373	1
C-128	37C-200-17	0.0033uF, 50V, mylar	1	37C-200-314	Knob, AM/FM	KN-302T	1
C-129	37C-200-18	0.0047uF, 50V, mylar	1	37C-200-315	Knob, eject	KN-301T	1
C-130	37C-200-19	0.047uF, 50V, mylar	1	37C-200-316	Knob, local/dx	KN-303T	1
C-131	37C-200-20	200PF, 50V, N470, ceramic	1	37C-200-317	Nut, hex N3/8", 3t		2
C-137, 143, 144, 156/157	37C-200-21	47uF, 10V, electrolytic	5	37C-200-318	P C Board	PC-1006A	1
C-138, 149	37C-200-22	220uF, 16V, electrolytic	2	37C-200-319	Pointer, dial	KR-15354	1
C-145, 146	37C-200-23	0.015uF, 50V, mylar	2	37C-200-320	Receptacle, antenna	YJ-6	1
C-150, 151	37C-200-24	0.1uF, 12V, semi-conductor	2	37C-200-321	Screw, machine P B 2.6 x 4		3
C-158, 159	37C-200-25	100uF, 10V, electrolytic	2	37C-200-322	Screw, machine P P 3 x 4		8
C-164, 165	37C-200-26	33uF, 16V, electrolytic	2	37C-200-323	Screw, machine P P 3 x 6		3
C-166, 167	37C-200-27	0.1uF, 50V, mylar	2	37C-200-324	Screw, tapping P P 2.6 x 5		1
C-168, 169	37C-200-28	470uF, 16V, electrolytic	2	37C-200-325	Screw, tapping P P 3 x 4		7
C-170, 171	37C-200-29	1,000uF, 16V, electrolytic	2	37C-200-326	Screw, tapping P P 3 x 6		5
COILS & CHOKES				37C-200-327	Spring, with dial string	KR-12763	1
L-1, 2, 3	37C-200-41	Tuner Ass'y with front end	1	37C-200-328	Sticker, model no. : 37C-200C (Model CAS-250)		1
L-4	37C-200-42	Choke, DC	1	37C-200-329	Sticker, model no. : 37C-200C2 (Model ID-600B)		1
L-101	37C-200-43	Choke, ANT SL-4.7P	1	37C-200-330	Washer, lock	LW9	2
L-102	37C-200-44	Coil, AM OSC OL-2202-1	1	MECHANICAL PARTS (DECK)			
L-103	37C-200-45	RF Choke LH-4.7	1	37C-200-401	Belt, long	5-2	1
L-1, 2, 3	37C-200-46	Tuner Ass'y MT-2077	1	37C-200-402	Belt, short	5-3	1
CONTROLS				37C-200-403	Bracket, chassis joint string	10-1	1
R-2A, B, 4A, B, S-1	37C-200-51	Volume, Tone & On-Off SW	1	37C-200-404	Bracket, flywheel & reel	4-1	1
R-3	37C-200-52	Balance VR-287	1	37C-200-405	Cam, ff lock	8-1	1
MISCELLANEOUS				37C-200-406	Chassis Ass'y main	TD-119	1
CF-101, 102	37C-200-61	Ceramic Filter : SFE-10 7MA-5	2	37C-200-407	Chassis Ass'y, sub	307-147	1
LD-1	37C-200-62	FM ST Ind. : LN-211WP	1	37C-200-408	E Ring	3-19	1
PL-1	37C-200-63	Lamp, pilot : PL-1B	1	37C-200-409	E Ring	No. 2.5	2
RESISTORS (Unlisted resistors are carbon insulated type, 1/4W. See schematic diagram for specific values.)				37C-200-410	E Ring	No. 3	2
R-1	37C-200-71	820 10%, R-25 type, carbon	1	37C-200-411	Flywheel, capstan	5-1	1
R-115	37C-200-72	5,000, semi-fixed : VR-158	1	37C-200-412	Guide, cartridge	307-071	1
R-149	37C-200-73	2.2, 10%, 1W, metal-film	1	37C-200-413	Head, play back	TD-119	1
R-150	37C-200-74	15, 10%, 1W, metal-film	1	37C-200-414	Lever Ass'y, tape/radio switch	3-23	1
SEMI-CONDUCTORS				37C-200-415	Lever, cartridge eject	7-1	1
D-101, 102, 103	37C-200-81	Diode : WG-713	3	37C-200-416	Lever, ff & eject	6-1	1
D-104	37C-200-82	Diode, zener : 02Z-9.1A	1	37C-200-417	Motor : MMS-3RF2H		1
IC-101	37C-200-83	IC, FM IF : uPC-1028H	1	37C-200-418	Pinch Roller Ass'y	CL-043 (A)	1
IC-102	37C-200-84	IC, MPX : BA-1320	1	37C-200-419	Plate Ass'y, head rest	307-010	1
IC-103	37C-200-85	IC, tape EQA : uPC-1032H	1	37C-200-420	Roller, eject slide lever	307-143	2
IC104, 105	37C-200-86	IC, power : uPC-1155H	2	37C-200-421	Roller, head rest plate	3-18	1
Q-101, 103, 104	37C-200-87	Transistor : 2SC-1675	3	37C-200-422	Screw, machine	4-5	2
Q-102	37C-200-88	Transistor : 2SC-951R	1	37C-200-423	Screw, machine	3-15	1
Q-105	37C-200-89	Transistor : 2SC-945L	1	37C-200-424	Screw, machine	3-16	1
SWITCHES				37C-200-425	Shaft, cartridge eject lever	7-2	1
S-2, 3	37C-200-101	AM-FM Local/Dx : SW-152	2	37C-200-426	Spacer, main & sub chassis	2-8	2

Reference No.	Part No.	Description	Q'ty	Reference No.	Part No.	Description	Q'ty
	37C-200-427	Spacer, timing control lever stopper : 3-14	1		37C-220-449	Spring, vibration protecting : 82307	1
	37C-200-428	Spring, azimuth : 3-13	1		37C-220-450	Stopper, head rest plate : 82400	1
	37C-200-429	Spring, cartridge eject lever : 7-3	1		37C-220-451	Stopper, tape/radio switch : 82403	1
	37C-200-430	Spring, ff & eject lever : 6-4	1		37C-220-452	Switch, tape/radio : 82432	1
	37C-200-431	Spring, ff lock cam : 8-3	1		37C-220-453	Take up Reel Ass'y : 82323	1
	37C-200-432	Spring, head rest plate : 3-17	1		37C-220-454	Timing Control Lever Ass'y : 82300	1
	37C-200-433	Spring, main & sub chassis joint : 4-7	1		37C-220-455	Washer, flywheel : 82300	1
	37C-200-434	Spring, pinch roller : 307-046	1		37C-220-456	Washer, plastic 2.1φ × 0.25t	2
	37C-200-435	Spring, vibration protecting : 3-25	1		37C-220-457	Washer, reel retaining : 80244	1
	37C-200-436	Stopper, ff lock lever : 9-1	1	INSTALLATION & ACCESSORY MODEL CAS-250			
	37C-200-437	Switch, tape/radio : 12-1	1				
	37C-200-438	Take up Reel Ass'y : 4-4	1		37C-200-501	Fuse : 3A	1
	37C-200-439	Timing Control Lever Ass'y : 3-20	1		37C-200-502	Knob, tone & balance : KN-61TCR	2
	37C-200-440	Washer, ff lock spring retaining : 8-4	1		37C-200-503	Knob, volume & tuning : KN-54VCR	2
	37C-200-441	Washer, flywheel : 5-4	1		37C-200-504	Owner's Guide : 37C-200C (01)	1
	37C-200-442	Washer, pinch roller retaining : 3-11	1		37C-200-505	Rear Support Strap : KR-1011	1
	37C-200-443	Washer, plastic : 8-2	1		37C-200-506	Screw Bag, installation : 37C-200C(01)	1
	37C-200-444	Washer, reel retaining : 4-6	1		37C-200-507	Speaker Cord : QS-871	1
	37C-200-445	Washer, roller retaining : CL-201	2		37C-200-508	Trimplate Bag : MR-13110	1
	37C-200-446	Washer, timing control lever retaining : 3-26	2	INSTALLATION & ACCESSORY MODEL ID-600B			
	37C-200-447	Washer, timing control lever retaining : 3-27	1				
MECHANICAL PARTS (DECK)					37C-200-511	"A" Lead Adaptor Bag : QS-579	1
	37C-220-401	Belt, long : 82431	1		37C-200-512	Back up Plate : MR-13267	1
	37C-220-402	Belt, short : 80324	1		37C-200-513	Fuse : 3A	2
	37C-220-403				37C-200-514	Knob Bag (No. 1) : KN-73TCR shallow	1
	37C-220-404	Bracket, flywheel : 82310	1		37C-200-515	Knob Bag (No. 2) : KN-61TCR (deep)	1
	37C-220-405	Bracket, motor : 82340	1		37C-200-516	Knob Bag (No. 3) : KN-54V (front)	1
	37C-220-406	Bracket, reel : 82320	1		37C-200-517	Owner's Guide : 37C-200C (02)	1
	37C-220-407	Cam, ff lock : 82406	1		37C-200-518	Rear Support Strap : KR-1011	1
	37C-220-408	Chassis Ass'y, main : 82021	1		37C-200-519	Rubber Collar : MR-30074	1
	37C-220-409	Chassis Ass'y, Sub : 82101	1		37C-200-520	Screw Bag, installation : 37C-200C (02)	1
	37C-220-410	E Ring : No. 1.5	2		37C-200-521	Spacer Bag : S-099	1
	37C-220-411	E Ring : No. 2	2		37C-200-522	Speaker Cord : QS-871	1
	37C-220-412	E Ring : No. 2.5	1		37C-200-523	Trimplate : FP-49	1
	37C-220-413	E Ring : No. 3	4		37C-200-524	Wire Nut Bag : S-100	1
	37C-220-414	Flywheel, capstan : 82430	1				
	37C-220-415	Guide, cartridge : 82057	1				
	37C-220-416	Head, play back : T-1542HA	1				
	37C-220-417	Lever Ass'y, tape/radio switch : 82305	1				
	37C-220-418	Lever, cartridge eject : 82401	1				
	37C-220-419	Lever, ff & eject : 82388	1				
	37C-220-420	Linkage, ff/eject lever : 82405	1				
	37C-220-421	Motor : MMT-3RF2H	1				
	37C-220-422	Pinch Roller Ass'y : 80119	1				
	37C-220-423	Plate Ass'y, head rest : 82200	1				
	37C-220-424	Puley, motor : 82350	1				
	37C-220-425	Roller, cartridge eject lever (small) : 82107	1				
	37C-220-426	Roller, cartridge eject lever (large) : 82106	1				
	37C-220-427						
	37C-220-428	Roller, head rest plate : 82211	1				
	37C-220-429	Screw, machine : P. B. 2 × 4	1				
	37C-220-430	Screw, machine : P. T. 2 × 6	1				
	37C-220-431	Screw, machine : P. P. 2 × 10	2				
	37C-220-432	Screw, machine : P. T. 2.6 × 3	1				
	37C-220-433	Screw, machine : P. P. 2.6 × 3	2				
	37C-220-434	Screw, machine : P. B. 2.6 × 4	5				
	37C-220-435	Screw, machine : P. P. 2.6 × 4	1				
	37C-220-436	Screw, machine : P. B. 2.6 × 6	2				
	37C-220-437	Screw, machine : P. B. 3 × 3	2				
	37C-220-438	Shaft, cartridge eject lever : 82414	1				
	37C-220-439						
	37C-220-440	Spacer, ff lock cam : 82407	1				
	37C-220-441	Spacer, head rest stopper : 82413	1				
	37C-220-442	Spring, azimuth : 82219	1				
	37C-220-443	Spring, head rest plate stopper : 82420	1				
	37C-220-444	Spring, ff & eject lever : 82428	1				
	37C-220-445	Spring, ff lock cam : 82427	1				
	37C-220-446	Spring, head rest plate : 82421	1				
	37C-220-447	Spring, main & sub chassis joint : 82424	1				
	37C-220-448	Spring, pinch roller : 80120	1				

ALIGNMENT PROCEDURE

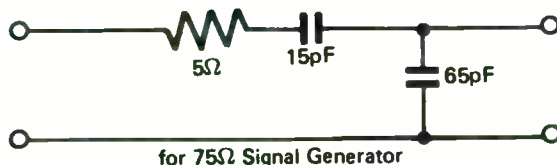
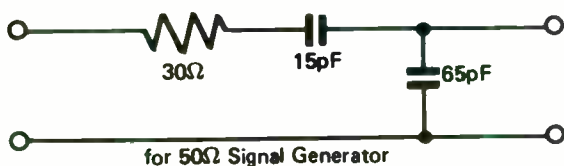
INSTRUMENTS REQUIRED

- AM Signal Generator
- FM Signal Generator
- Sweep Generator
- Marker Generator
- Pulse Generator
- Output Meter (VTVM)
- Oscilloscope
- AM Dummy Ant.
- FM Dummy Ant.
- 2 Signal Dummy Ant.

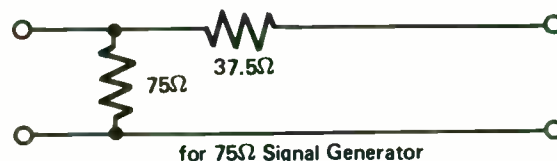
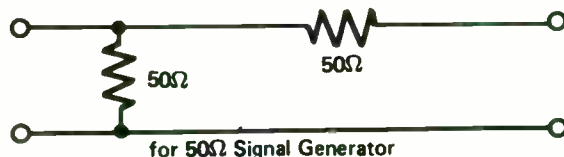
IMPORTANT

- Use non-metallic tools for the following adjustments.
- Generator signal level should be kept as low as possible to avoid signal clipping or saturation.
- RF generator signal should be modulated 30% by 400 kHz sine-wave signal.
- To ensure proper generator-to-receiver impedance matching, connect appropriate dummy antenna between generator and receiver.

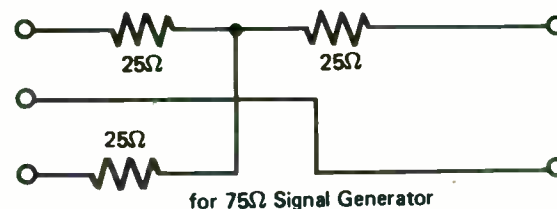
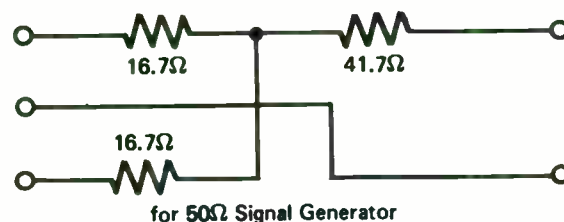
AM Dummy Antenna



FM Dummy Antenna



2 Signal Dummy Antenna



CONNECTION INSTRUCTION IN ALIGNMENT

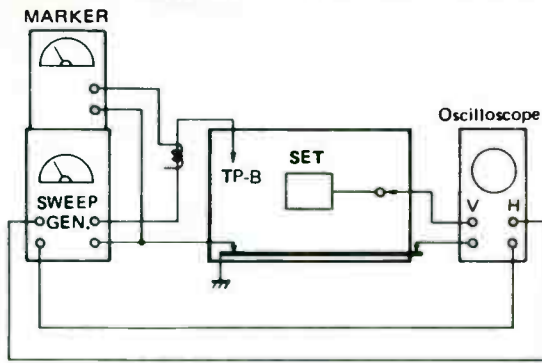


Fig. 1

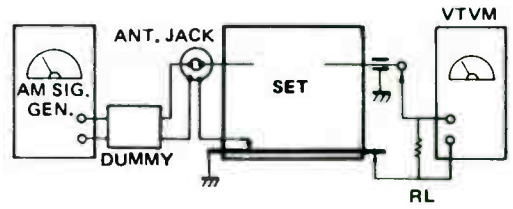


Fig. 2

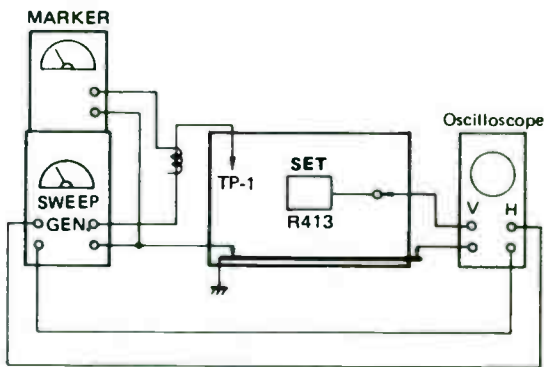


Fig. 3

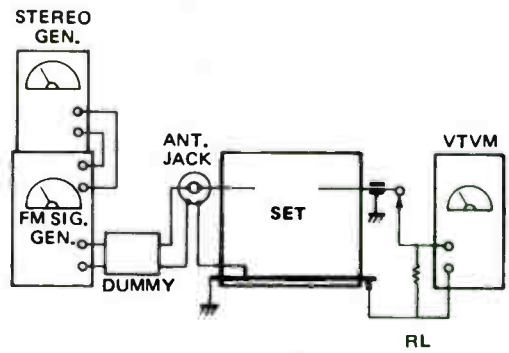


Fig. 4

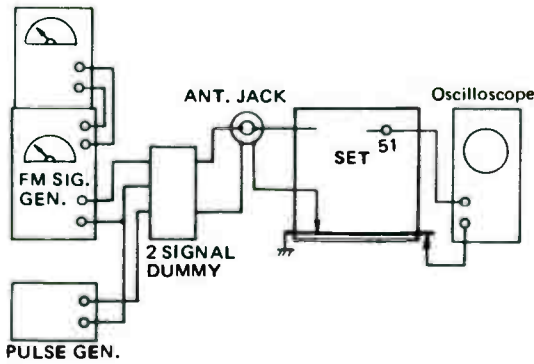


Fig. 5

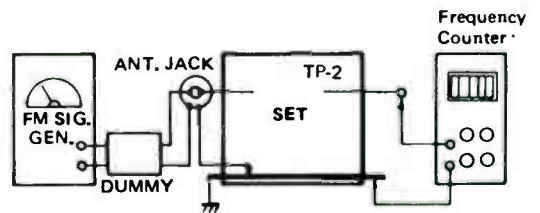


Fig. 6

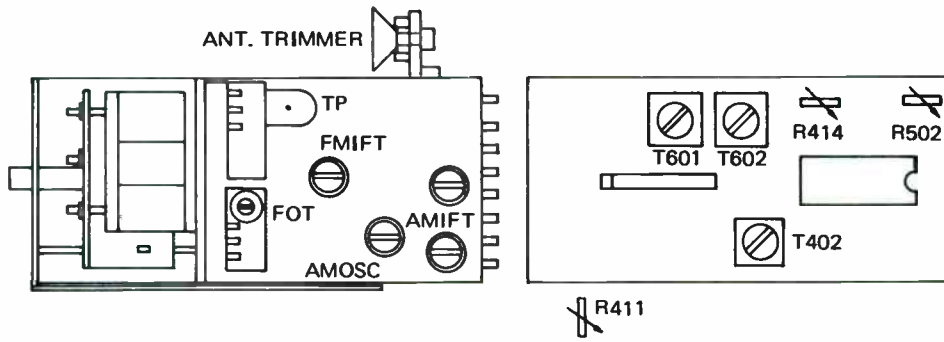
AM ALIGNMENT

Alignment	Instrument Connection	Generator Frequency	Dial Setting	Adjustment
IF	Sweep and Marker Generators loosely to TP-B Oscilloscope to AM Det. output. (See Fig. 1)	455 kHz	High end	T601, T602 and AIFTs for maximum and symmetrical "V" curve.
BAND	AM Signal Generator thru AM Dummy Ant. to the antenna jack. VTVM to Audio Power output terminal. (See Fig. 2)	510 kHz	Low end	AOSC located in the tuner pack for maximum output.
TRACKING	— ditto —	1400 kHz	Tune to Test signal	Ant. Trimmer for maximum output.

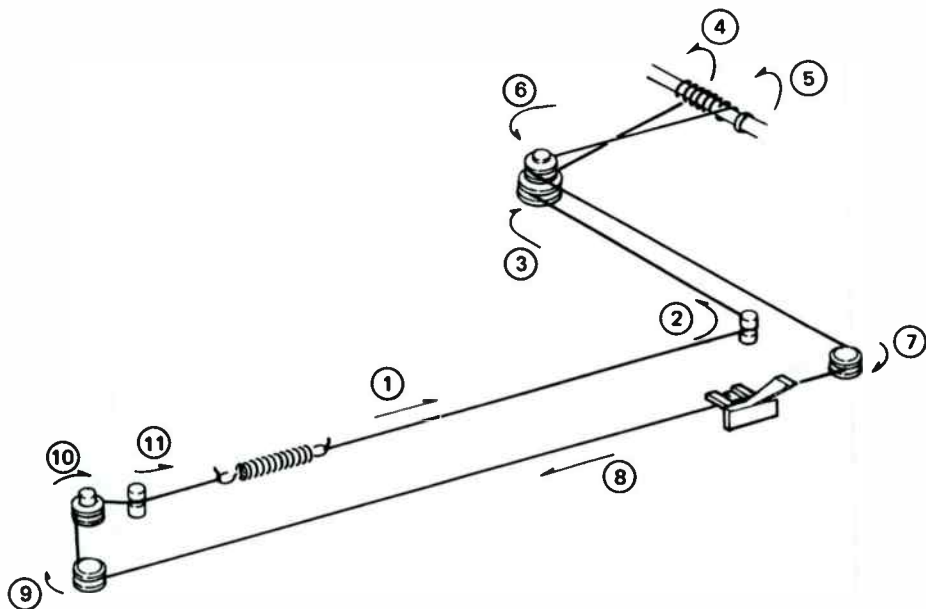
FM and MPX ALIGNMENT

Alignment	Instrument Connection	Generator Frequency	Dial Setting	Adjustment
IF	Sweep and Marker Generators to TP-1 Oscilloscope to R413 (See Fig. 3)	10.7 MHz	Quiet Area near High end	T402 and FIFT to symmetric "S" curve.
		10.7 MHz marker may not center due to Ceramic Filter, tune to max. symmetrical response.		
BAND	FM Signal Generator thru FM Dummy Ant. to antenna jack. VTVM to Audio Power output terminal. (See Fig. 4)	105 MHz (mod.)	High end	FOT (FM OSC Trimmer) to maximum gain.
CALIBRATION OF FREE RUNNING FREQ.	Frequency Counter loose coupled to TP-2 (See Fig. 6)			R502 for 19 kHz.
SEPARATION	FM Signal Generator with Stereo Generator to Ant. jack through Dummy. VTVM and/or Scopes to audio output.	98 MHz	98 MHz	R414 (After R502 is adjusted for 19 kHz, this adjustment may not be necessary.

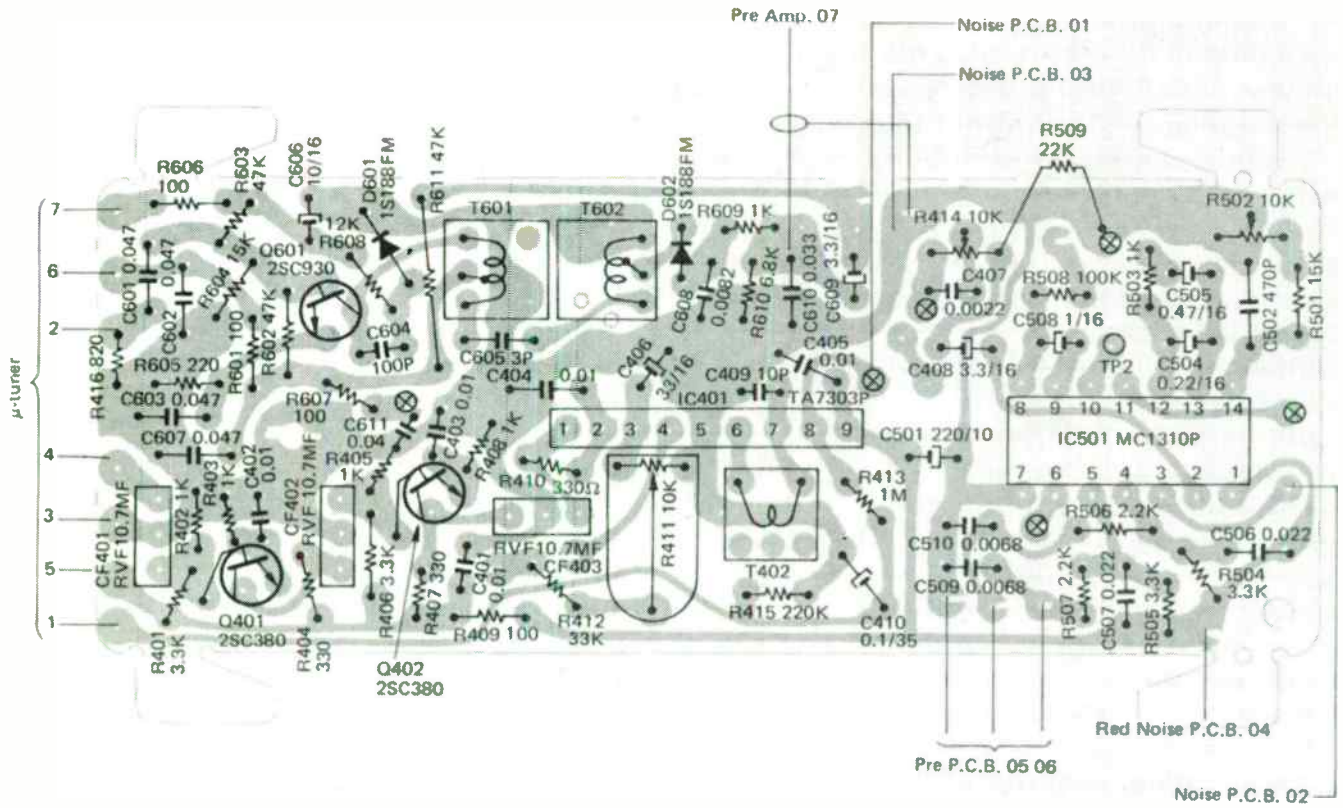
ADJUSTMENT POINTS



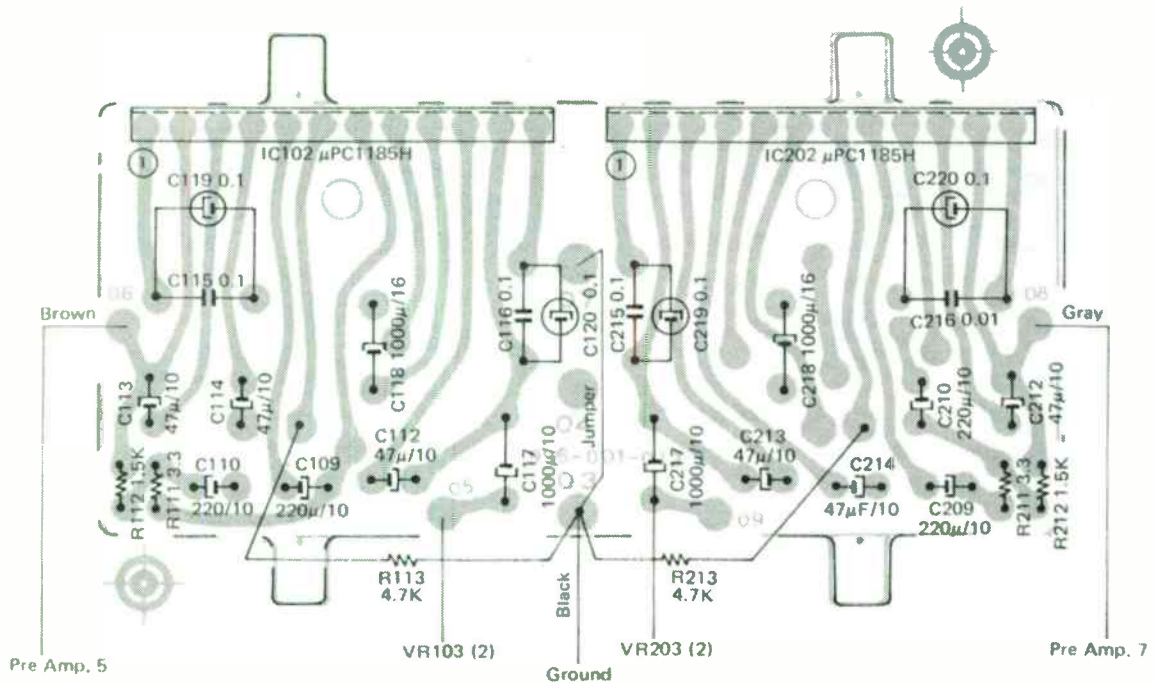
DIAL STRINGING



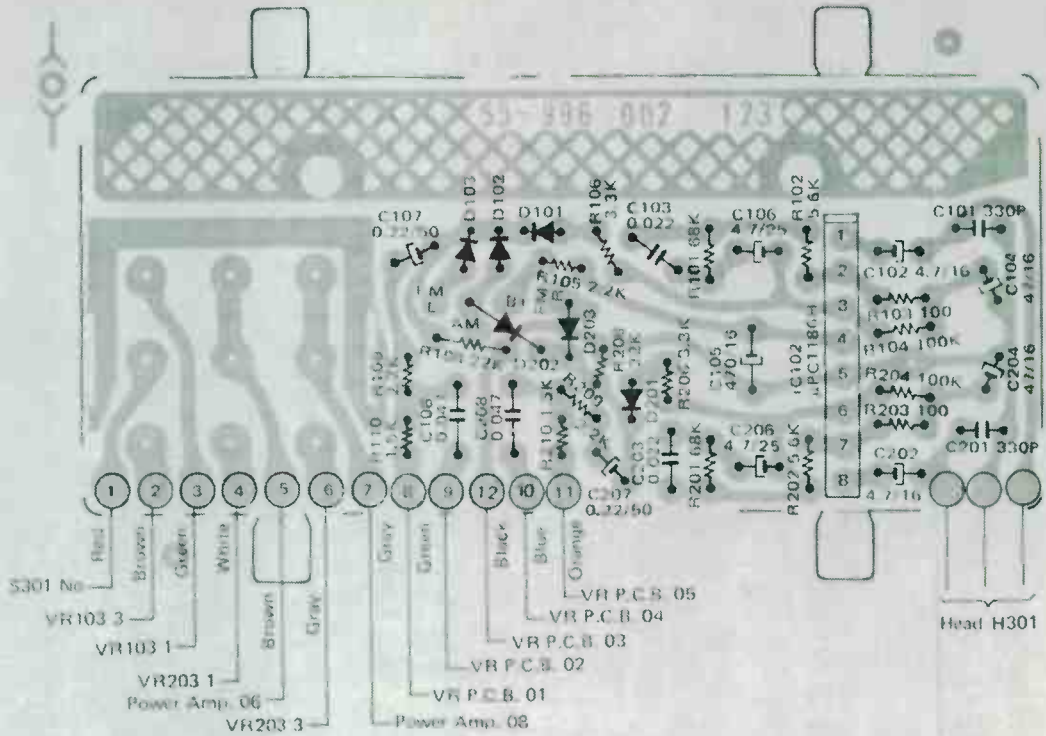
IF P.C. BOARD



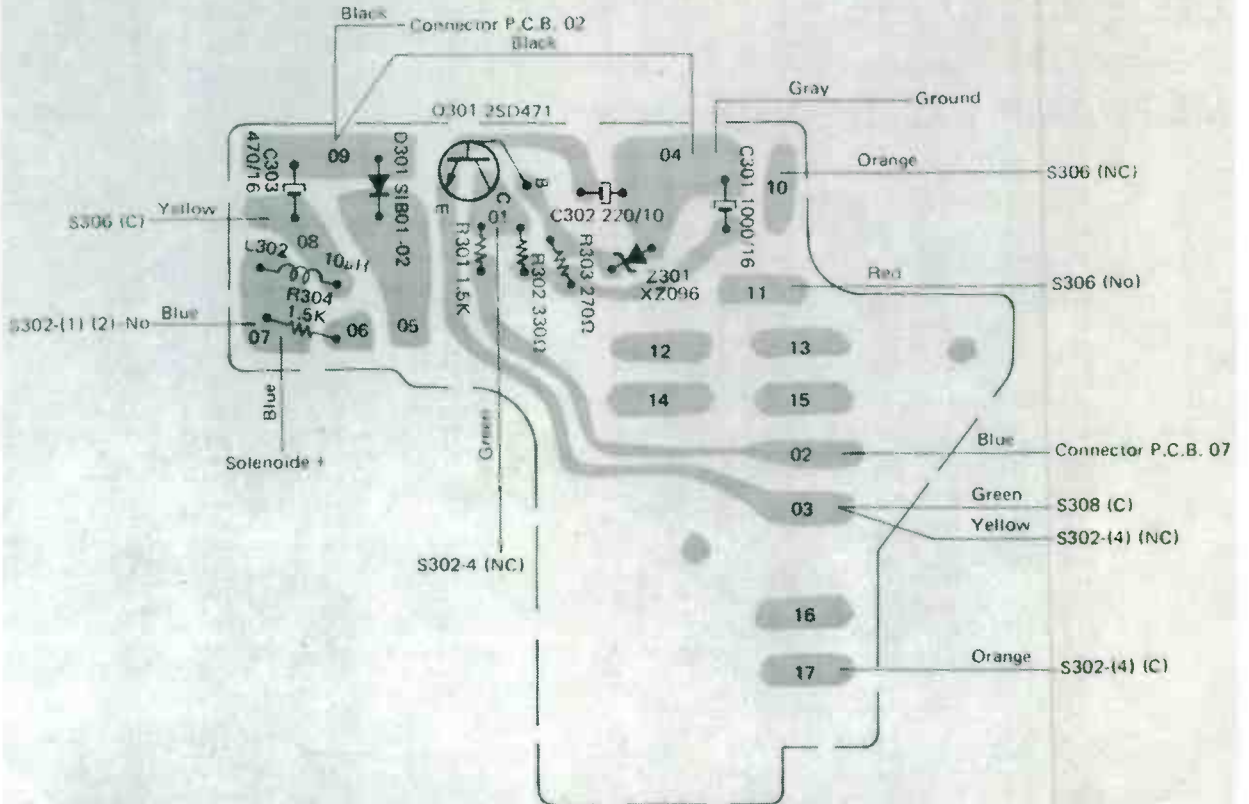
MAIN AMP P.C. BOARD



PRE-AMP P.C. BOARD



POWER SUPPLY P.C. BOARD



IF MPX P.C. BOARD

Symbol	Part No.	Description		Symbol	Part No.	Description	
Semiconductors				R601	81-110-123-2	Carbon	100 ohm 1/4W
IC401	52-040-059-0	IC	TA7303P-C	R602	81-147-323-2	Carbon	47K ohm 1/4W
IC501	52-040-048-0	IC	MC1310P	R603	81-147-323-2	Carbon	47K ohm 1/4W
Q401	52-020-169-1	Transistor	2SC380	R604	81-115-323-2	Carbon	15K ohm 1/4W
Q402	52-020-169-1	Transistor	2SC380	R605	81-122-123-2	Carbon	220 ohm 1/4W
Q601	52-020-115-2	Transistor	2SC930	R606	81-110-123-2	Carbon	100 ohm 1/4W
D601	52-051-004-0	Diode	1S188 FM	R607	81-110-123-2	Carbon	100 ohm 1/4W
D602	52-051-004-0	Diode	1S188 FM	R608	81-112-323-2	Carbon	12K ohm 1/4W
Transformers & Filters				R609	81-110-223-2	Carbon	1K ohm 1/4W
T402	56-050-625-0	FM IFT (Brown)		R610	81-168-223-2	Carbon	6.8K ohm 1/4W
T601	56-050-616-0	AM IFT (Yellow)		Capacitors			
T602	56-050-617-0	AM IFT (Green)		C401	93-632-103-4	Polyester Film	0.01μF 50WV
CF401	56-050-615-0	Filter	RVF 10.7MF	C402	95-253-103-7	Ceramic	0.01μF 25WV
CF402	56-050-615-0	Filter	RVF 10.7MF	C403	95-253-103-7	Ceramic	0.01μF 25WV
CF403	56-050-615-0	Filter	RVF 10.7MF	C404	93-632-103-4	Polyester Film	0.01μF 50WV
Resistors				C405	93-632-103-4	Polyester Film	0.01μF 50WV
R401	81-133-223-2	Carbon	3.3K ohm 1/4W	C406	93-524-33001	Electrolytic	33μF 16WV
R402	81-110-223-2	Carbon	1K ohm 1/4W	C407	93-632-222-4	Polyester Film	0.0022μF 50WV
R403	81-110-223-2	Carbon	1K ohm 1/4W	C408	93-527-33701	Electrolytic	3.3μF 50WV
R404	81-133-123-2	Carbon	330 ohm 1/4W	C409	94-386-100-0	Titanium	10PF 50WV
R405	81-110-223-2	Carbon	1K ohm 1/4W	C410	93-820-101-0	Tantalum	0.1μF 35WV
R406	81-133-223-2	Carbon	3.3K ohm 1/4W	C501	93-523-22102	Electrolytic	220μF 10WV
R407	81-133-123-2	Carbon	330 ohm 1/4W	C502	93-724-471-4	Titanium	470PF 125WV
R408	81-110-223-2	Carbon	1K ohm 1/4W	C504	93-527-22801	Electrolytic	0.22μF 50WV
R409	81-110-123-2	Carbon	100 ohm 1/4W	C505	93-527-47801	Electrolytic	0.47μF 50WV
R410	81-133-123-2	Carbon	330 ohm 1/4W	C506	93-632-223-4	Polyester Film	0.022μF 50WV
R411	81-100-257-0	Semi-fixed	10K ohm	C507	93-632-223-4	Polyester Film	0.022μF 50WV
R412	81-133-323-2	Carbon	33K ohm 1/4W	C508	93-527-10701	Electrolytic	1μF 50WV
R413	81-110-523-2	Carbon	1M ohm 1/4W	C509	93-632-682-4	Polyester Film	0.0068μF 50WV
R414	87-100-246-0	Semi-fixed	10K ohm	C510	83-632-682-4	Polyester Film	0.0068μF 50WV
R415	81-122-423-2	Carbon	220K ohm 1/4W	C601	93-112-473-1	8C	0.047μF 16WV
R416	81-182-123-2	Carbon	820 ohm 1/4W	C602	93-112-473-1	8C	0.047μF 16WV
R501	81-115-323-2	Carbon	15K ohm 1/4W	C603	93-112-473-1	8C	0.047μF 16WV
R503	81-110-223-2	Carbon	1K ohm 1/4W	C604	94-386-101-4	Titanium	100PF 50WV
R504	81-133-223-2	Carbon	3.3K ohm 1/4W	C605	94-333-307-9	Titanium	3PF 50WV
R505	81-133-223-2	Carbon	3.3K ohm 1/4W	C606	93-524-10001	Electrolytic	10μF 16WV
R506	81-122-223-2	Carbon	2.2K ohm 1/4W	C607	93-112-473-1	8C	0.047μF 16WV
R507	81-122-223-2	Carbon	2.2K ohm 1/4W	C608	93-632-822-4	Polyester Film	0.0082μF 50WV
R509	81-122-323-2	Carbon	22K ohm 1/4W	C609	93-527-33701	Electrolytic	3.3μF 50WV
				C610	93-632-822-4	Polyester Film	0.0082μF 50WV
				C611	95-253-403-7	Ceramic	0.04μF 25WV

PRE-AMP P.C. BOARD

Symbol	Part No.	Description	Symbol	Part No.	Description
Semiconductors			R206	81-133-223-2	Carbon 3.3K ohm 1/4W
IC101	52-040-068-0	IC μ PC1186H	R207	81-112-323-2	Carbon 12K ohm 1/4W
D101	52-051-009-0	Diode 1S1588	R208	81-122-323-2	Carbon 22K ohm 1/4W
D102	52-051-009-0	Diode 1S1588	R209	81-122-223-2	Carbon 2.2K ohm 1/4W
D103	52-051-009-0	Diode 1S1588	R210	81-115-223-2	Carbon 1.5K ohm 1/4W
D201	52-051-009-0	Diode 1S1588	Capacitors		
D202	52-051-009-0	Diode 1S1588	C101	94-386-331-4	Titanium 330PF 50WV
D203	52-051-009-0	Diode 1S1588	C102	93-525-47701	Electrolytic 4.7 μ F 25WV
Resistors			C103	93-632-223-4	Polyester Film 0.022 μ F 50WV
R101	81-168-323-2	Carbon 68K ohm 1/4W	C104	93-524-47002	Electrolytic 47 μ F 16WV
R102	81-156-223-2	Carbon 5.6K ohm 1/4W	C105	93-524-47103	Electrolytic 470 μ F 16WV
R103	81-110-123-2	Carbon 100 ohm 1/4W	C106	93-525-47701	Electrolytic 4.7 μ F 25WV
R104	81-110-423-2	Carbon 100K ohm 1/4W	C107	93-527-22801	Electrolytic 0.22 μ F 50WV
R105	81-122-223-2	Carbon 2.2K ohm 1/4W	C108	93-632-473-4	Polyester Film 0.047 μ F 50WV
R106	81-133-223-2	Carbon 3.3K ohm 1/4W	C201	94-836-331-4	Titanium 330PF 50WV
R107	81-112-323-2	Carbon 12K ohm 1/4W	C202	93-525-47701	Electrolytic 4.7 μ F 25WV
R108	81-122-323-2	Carbon 22K ohm 1/4W	C203	93-632-223-4	Polyester Film 0.022 μ F 50WV
R109	81-122-223-2	Carbon 2.2K ohm 1/4W	C204	93-524-47002	Electrolytic 47 μ F 16WV
R110	81-115-223-2	Carbon 1.5K ohm 1/4W	C206	93-525-47701	Electrolytic 4.7 μ F 25WV
R201	81-168-323-2	Carbon 68K ohm 1/4W	C207	93-527-22801	Electrolytic 0.22 μ F 50WV
R202	81-156-223-2	Carbon 5.6K ohm 1/4W	C208	93-632-473-4	Polyester Film 0.047 μ F 50WV
R203	81-110-123-2	Carbon 100 ohm 1/4W	55-996-002-1	Printed Circuit Board (Pre AMP)	
R204	81-110-423-2	Carbon 100K ohm 1/4W			
R205	81-122-223-2	Carbon 2.2K ohm 1/4W			

POWER SUPPLY P.C. BOARD

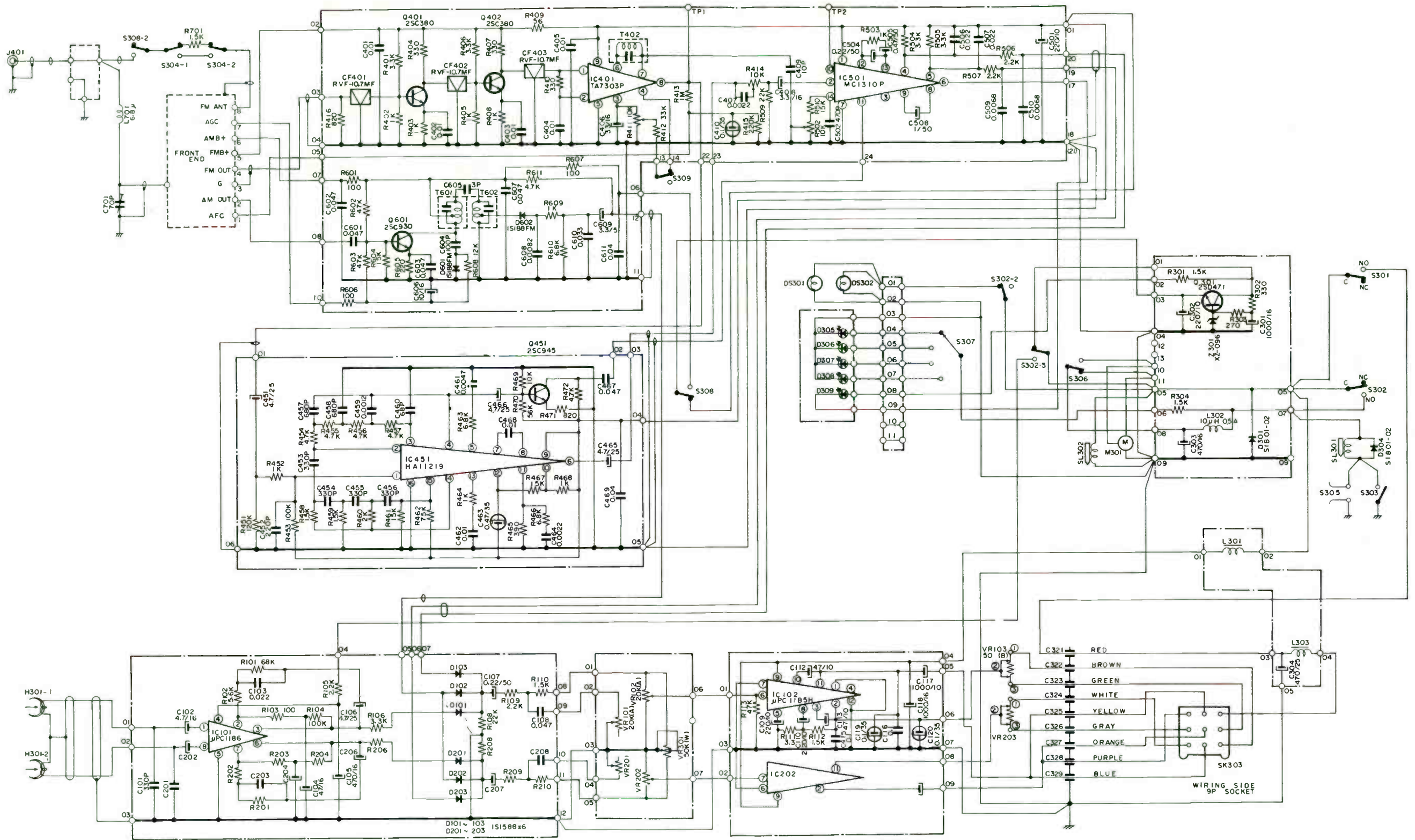
Symbol	Part No.	Description	Symbol	Part No.	Description
Semiconductors			Resistors		
Q301	52-025-012-1	Transistor 2SD471	R301	81-115-223-2	Carbon 1.5K ohm 1/4W
Z301	52-053-030-0	Zener Diode XZ-096	R302	81-133-123-2	Carbon 330 ohm 1/4W
D301	52-054-009-0	Diode SIB-01-02	R303	81-127-123-2	Carbon 270 ohm 1/4W
		Coil	R304	81-115-223-2	Carbon 1.5K ohm 1/4W
L302	56-050-199-1	Peaking Coil 10 μ H 0.5A	Capacitors		
			C301	93-524-10205	Electrolytic 1000 μ F 16WV
			C302	93-523-22103	Electrolytic 220 μ F 10WV
			C303	93-524-47103	Electrolytic 470 μ F 16WV
			55-996-004-0	Printed Circuit Board (Power supply)	

MAIN AMP P.C. BOARD

Symbol	Part No.	Description	Symbol	Part No.	Description
Semiconductors			C114	93-523-47001	Electrolytic 47 μ F 10WV
IC102	52-040-067-0	IC μ PC1185H	C117	93-523-10203	Electrolytic 1000 μ F 10WV
IC202	52-040-067-0	IC μ PC1185H	C118	93-524-10204	Electrolytic 1000 μ F 16WV
Resistors			C119	93-820-101-0	Tantalum 0.1 μ F 35WV
R111	81-133-723-4	Carbon 3.3 ohm 1/4W	C120	93-820-101-0	Tantalum 0.1 μ F 35WV
R112	81-115-223-2	Carbon 1.5K ohm 1/4W	C209	93-523-22103	Electrolytic 220 μ F 10WV
R113	81-147-213-1	Carbon 4.7K ohm 1/4W	C210	93-523-22103	Electrolytic 220 μ F 10WV
R211	81-133-724-4	Carbon 3.3 ohm 1/4W	C211	93-632-104-4	Polyester Film 0.1 μ F 50WV
R212	81-115-223-2	Carbon 1.5K ohm 1/4W	C212	93-523-47001	Electrolytic 47 μ F 10WV
R213	81-147-213-1	Carbon 4.7K ohm 1/4W	C213	93-523-47001	Electrolytic 47 μ F 10WV
Capacitors			C214	93-523-47001	Electrolytic 47 μ F 10WV
C109	93-523-22103	Electrolytic 220 μ F 10WV	C217	93-523-10203	Electrolytic 1000 μ F 10WV
C110	93-523-22103	Electrolytic 220 μ F 10WV	C218	93-524-10204	Electrolytic 1000 μ F 16WV
C111	93-632-104-4	Polyester Film 0.1 μ F 50WV	C219	93-820-101-0	Tantalum 0.1 μ F 35WV
C112	93-523-47001	Electrolytic 47 μ F 10WV	C220	93-820-101-0	Tantalum 0.1 μ F 35WV
C113	93-523-47001	Electrolytic 47 μ F 10WV		55-996-001-0	Printed Circuit Board (Power AMP)
			C116	93-632-104-4	Polyester Film 0.1 μ F 50WV
			C216	93-632-104-4	Polyester Film 0.1 μ F 50WV

FILTER P.C. BOARD

Symbol	Part No.	Description	Symbol	Part No.	Description
C304	93-525-47012	Electrolytic 470/25V	L301	56-050-029-0	Choke Coil No. 29
			L303	56-050-038-0	Choke Coil No. 38
				97-996-005-2	P.C. Board



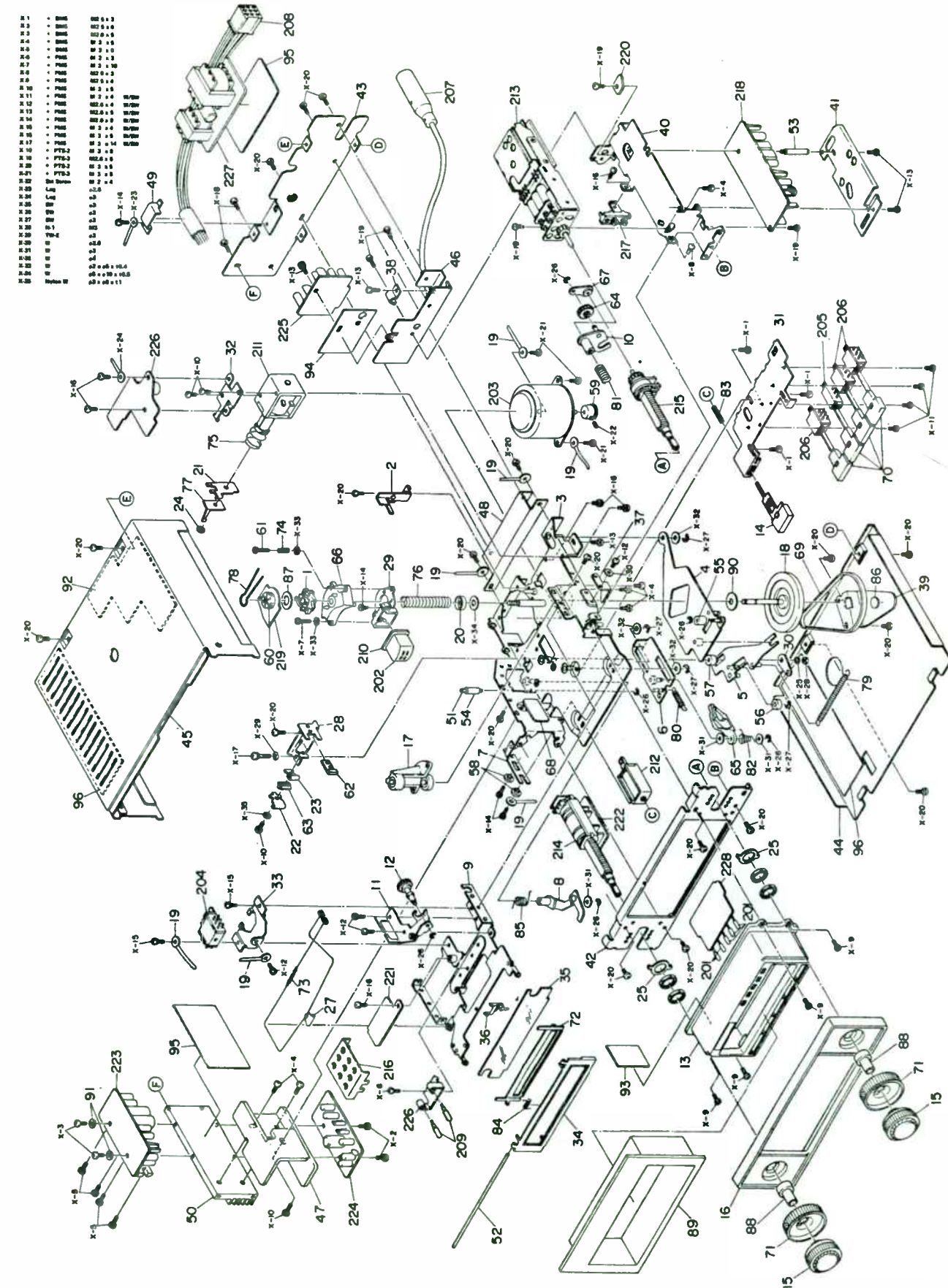
- | | | | |
|------|-----------------------|-----------|----------------|
| S301 | POWER SW (OFF) | DS301-302 | DIAL INDICATOR |
| S302 | TAPE/RADIO SW (RADIO) | D305-308 | CH. INDICATOR |
| S303 | CH. SELECTOR SW (OFF) | D309 | MPX INDICATOR |
| S304 | LOCAL/IX SW (LOCAL) | VR101 | TONE CONT |
| S305 | SENSING SW | VR102-202 | VOLUME CONT |
| S306 | FF SW | VR301 | BAL CONT |
| S307 | CH. INDICATOR SW | VR103-203 | FADER CONT |
| S308 | FM, AM BAND SW | | |
| S309 | MUT. SW (OFF) | | |

NOTE:
 UNLESS OTHERWISE INDICATED
 1. ALL RESISTANCE VALUES ARE IN OHM, K=10³, M=10⁶
 2. ALL RESISTORS ARE RATED AT 1/4 WATT 5%
 3. ALL CAPACITANCE VALUES ARE IN μF, P=10⁻¹² μF
 4. ALL CAPACITORS ARE RATED AT 50WV

NOISE KILLER P.C. BOARD

Symbol	Part No.	Description	Symbol	Part No.	Description
Semiconductors					
IC451	52-040-057-0	IC HA11219	R471	81-182-113-2	Carbon 820 ohm 1/8W
Q451	52-020-114-0	Transistor 2SC945P	R472	81-147-213-2	Carbon 4.7K ohm 1/8W
Resistors					
R451	81-112-413-2	Carbon 120K ohm 1/8W	Capacitors		
R452	81-110-213-2	Carbon 1K ohm 1/8W	C451	93-525-47701	Electrolytic 4.7μF 25WV
R453	81-110-413-2	Carbon 100K ohm 1/8W	C452	95-322-221-4	Ceramic 220PF 50WV
R454	81-147-213-2	Carbon 4.7K ohm 1/8W	C453	95-322-331-4	Ceramic 330PF 50WV
R455	81-147-213-2	Carbon 4.7K ohm 1/8W	C454	95-322-331-4	Ceramic 330PF 50WV
R456	81-147-213-2	Carbon 4.7K ohm 1/8W	C455	95-322-331-4	Ceramic 330PF 50WV
R457	81-147-213-2	Carbon 4.7K ohm 1/8W	C456	95-322-331-4	Ceramic 330PF 50WV
R458	81-115-213-2	Carbon 1.5K ohm 1/8W	C457	95-322-681-4	Ceramic 680PF 50WV
R459	81-115-213-2	Carbon 1.5K ohm 1/8W	C458	95-322-681-4	Ceramic 680PF 50WV
R460	81-120-213-2	Carbon 2K ohm 1/8W	C459	93-632-122-4	Polyester Film 0.0012μF 50WV
R461	81-115-313-2	Carbon 1.5K ohm 1/8W	C460	94-386-680-4	Titanium 6.8PF 35WV
R462	81-175-313-2	Carbon 75K ohm 1/8W	C461	93-632-472-4	Polyester Film 0.0047μF 50WV
R463	81-168-213-2	Carbon 6.8K ohm 1/8W	C462	93-632-103-4	Polyester Film 0.01μF 50WV
R464	81-110-213-2	Carbon 1K ohm 1/8W	C463	93-820-105-0	Tantalum 0.47μF 35WV
R465	81-139-113-2	Carbon 390 ohm 1/8W	C464	93-632-222-4	Polyester Film 0.0022μF 50WV
R466	81-168-213-2	Carbon 6.8K ohm 1/8W	C465	93-525-47701	Electrolytic 4.7μF 25WV
R467	81-115-313-2	Carbon 15K ohm 1/8W	C466	93-525-47701	Electrolytic 4.7μF 25WV
R468	81-110-213-2	Carbon 1K ohm 1/8W	C467	93-632-473-4	Polyester Film 0.047μF 50WV
R469	81-110-313-2	Carbon 10K ohm 1/8W	C468	93-632-103-4	Polyester Film 0.01μF 50WV
R470	81-156-313-2	Carbon 56K ohm 1/8W	C469	95-253-403-7	Ceramic 0.04μF 25WV
			97-996-003-0	Printed Circuit Board (Noise Killer)	

CABINET & MECHANISM EXPLODED VIEW



PARTS LIST

MECHANISM & CABINET

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	12-235-009	Ratchet – head shift	41	20-951-003	Shield Plate
2	12-406-010	Stopper – ratchet	42	20-996-001	Front Panel
3	12-708-001	Main Chassis	43	20-996-002	Rear Panel
4	12-708-002	Pressure Roller Ass'y	44	20-996-003	Cabinet – bottom
5	12-708-003	Slide Plate (1)	45	20-996-004	Cabinet – top
6	12-708-004	Slide Plate (2)	46	20-996-005	Bracket – radio chassis
7	12-708-005	Slide Plate (3)	47	20-996-006	Heat Sink
8	12-708-006	Lock Arm – slide plate	48	20-996-007	Bracket – rear panel
9	12-708-008	Cartridge Guide Ass'y	49	20-996-010	Clamp – wire harness
10	12-708-009	Bracket – tuning gear	50	21-996-001	Heat Sink
11	12-708-010	Bracket – spool	51	25-708-004	Shaft – guide roller
12	12-951-003	Tuning Gear	52	25-708-015	Door Shaft
13	12-996-001	Lever – eject	53	25-951-002	Shaft – shield plate
14	12-996-002	Lever – eject	54	27-708-001	Guide Roller – cartridge
15	12-996-003	Front Knob	55	27-708-002	Pressure Roller
16	12-996-004	Trimplate	56	27-708-003	Spacer – slide plate
17	13-708-101	Bearing – capstan	57	27-708-004	Extruded Washer
18	13-891-001	Flywheel w/capstan	58	27-708-005	Extruded Washer
19	20-176-024	Leadwire Clamp	59	28-891-103	Pulley – motor
20	20-191-009	Cup Washer	60	28-891-111	Wheel – F.T.
21	20-235-022	Plate – plunger	61	29-708-001	Screw – head azimuth adj.
22	20-235-039	Arrow Head – sensor	62	34-147-207	Plastic Chip – tape guide
23	20-235-040	Arrow Head – tape guide	63	34-328-601	Insulator – arrow head
24	20-235-041	Washer – plunger	64	34-673-003	Tuning Gear (3)
25	20-499-023	Locater – control shaft	65	34-708-501	Cam – pressure arm
26	20-668-005	Lamp Holder	66	34-708-502	Carrier – head ass'y
27	20-668-007	Carrier – dial pointer	67	34-708-503	Bearing Plate – turning shaft
28	20-708-002	Tape Guide	68	34-708-504	Plastic Guide – cartridge
29	20-708-003	Head Holder	69	34-891-701	Drive Belt
30	20-708-010	Retainer, slide plate (1)	70	34-996-004	Button – SW
31	20-708-012	Bracket – switch	71	34-996-007	Back Knob
32	20-708-014	Guide – plunger	72	34-996-008	Dial Scale
33	20-708-016	Bracket – power switch	73	37-128-001	Spring – dial thread
34	20-708-026	Cartridge Door	74	37-191-002	Spring – head adj.
35	20-708-027	Dial Scale Escutcheon	75	37-235-101	Spring – plunger
36	20-708-028	Dial Pointer	76	37-235-102	Spring – head shift
37	20-708-036	Guide – pressure arm	77	37-235-201	Spring – ratchet
38	20-833-011	Clamp – ANT. cord	78	37-353-001	Spring – head retaining
39	20-891-013	Bracket – flywheel	79	37-708-001	Spring – pressure roller
40	20-951-002	Radio Chassis	80	37-708-002	Spring – eject

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
81	37-708-003	Spring – tuning gear	209	65-010-170-0	Lamp
82	37-708-101	Spring – cam	210	66-010-003-0	Head Terminal
83	37-708-102	Spring – eject lever			
84	37-708-103	Spring – door	211	70-010-016-1	Solenoid Plunger
85	37-708-104	Spring – lock arm	212	70-010-033-3	Solenoid Plunger
			213	76-010-046-0	AM/FM μ -tuner
86	38-223-406	Thrust Washer	214	86-910-070-0	Potentiometer
87	38-235-003	Washer ϕ 7.4	215	87-030-010-0	Potentiometer
88	38-499-103	Sleeve			
89	38-499-104	Gasket	216	95-960-058-0	Feed thru Cap.
90	38-708-001	Washer	217	96-701-021S1	ANT. Trimmer 70PF
			218	97-100-007-1	Printed Circuit Board (IF)
91	38-708-002	Washer	219	55-334-003-2	Printed Circuit Board (Channel)
92	38-708-403	Fiber	220	55-708-004-0	Printed Circuit Board (Connector)
93	38-996-001	Fiber			
94	38-996-002	Fiber	221	55-708-005-0	Printed Circuit Board (Connector)
95	38-996-003	Fiber	222	55-934-003-1	Printed Circuit Board (VOL)
96	38-996-005	Cover – cabinet	223	97-996-001-0	Printed Circuit Board (Power AMP)
			224	97-996-002-1	Printed Circuit Board (Pre AMP)
201	52-056-043-0	LED	225	97-996-003-0	Printed Circuit Board (Noise)
202	53-010-066-0	Playback Head			
203	54-020-056-0	Motor	226	97-996-004-0	Printed Circuit Board (Power Supply)
204	58-010-135-0	Slide SW			
205	58-010-210-0	Push SW	227	97-996-005-0	Printed Circuit Board (Filter)
			228	55-996-006-0	Printed Circuit Board (LED)
206	58-010-211-0	Push SW			
207	59-010-045-1	ANT. Jack w/cable			
208	62-010-334-0	9P Socket Cord			

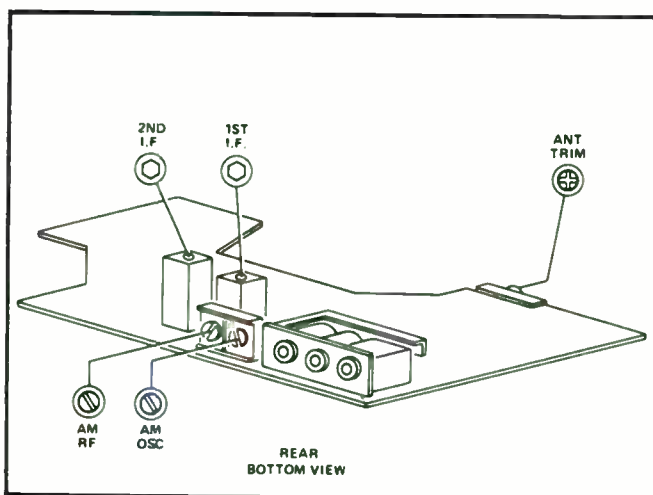
ALIGNMENT

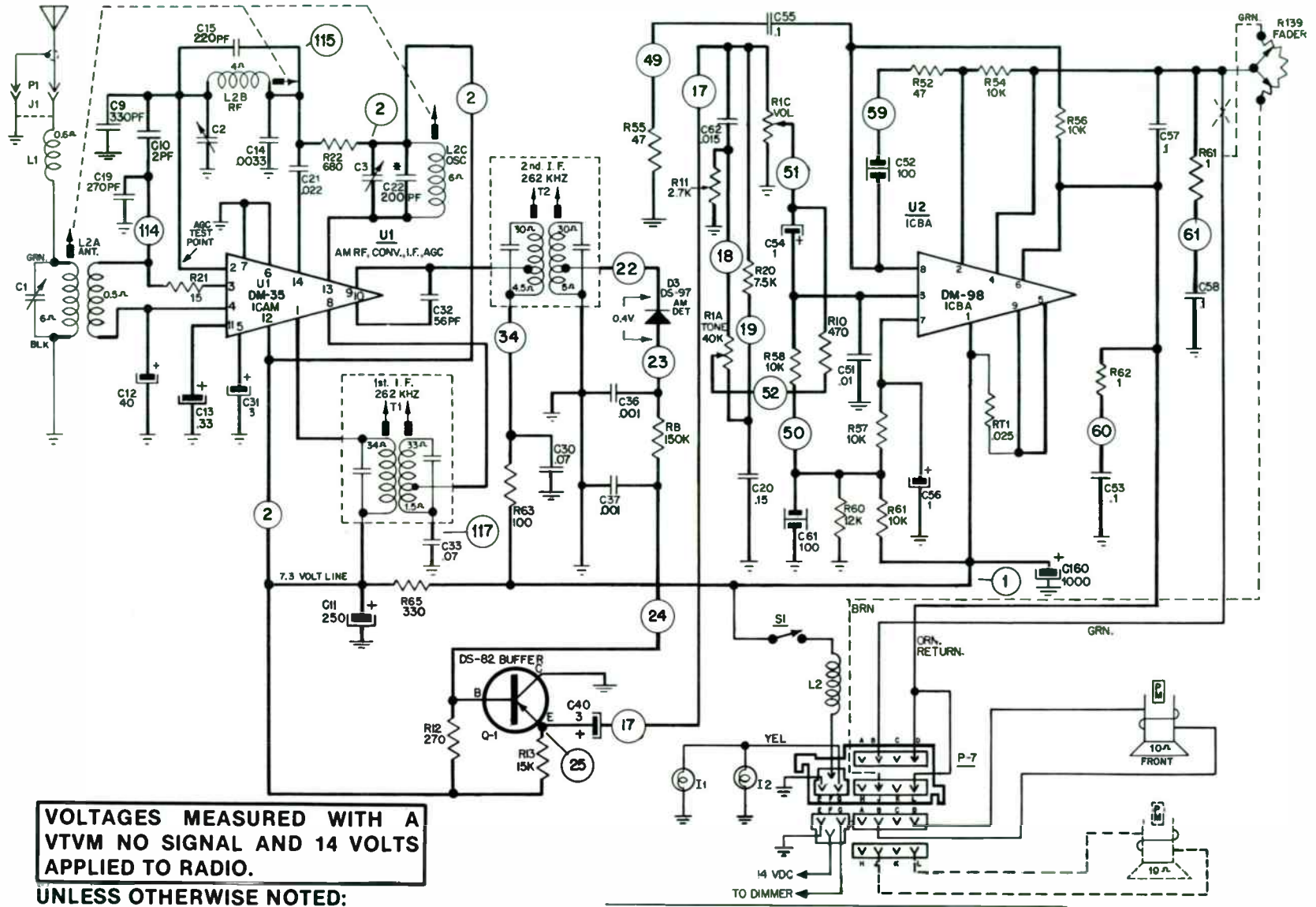
TURN VOLUME CONTROL FULLY CW. CONNECT AC VOLTMETER ACROSS SPEAKER LEADS. KEEP INPUT SIGNAL FROM SIGNAL GENERATOR LOW TO MINIMIZE AGC ACTION.

AM ALIGNMENT PROCEDURE

STEP	GENERATOR FREQUENCY	GENERATOR COUPLING	TUNER SETTING	ADJUST FOR PEAK
1	MODULATED 262 KHZ	THRU - 1MFD. INTO ANTENNA SOCKET	HI-END STOP	1ST SECONDARY 2ND SECONDARY 1ST PRIMARY 2ND PRIMARY
2*	MEASURE DEPTH OF OSC. CORE WITH RADIO TUNED TO HI-END STOP. SHOULD BE 1 3/8".			
3	MODULATED 1615 KHZ	THRU 82 PF INTO ANTENNA SOCKET	HI-END STOP	TRIMMER
4*	MODULATED 600 KHZ	THRU 82 PF	600 KHZ	CORES*

*EXCEPT CHEVETTE





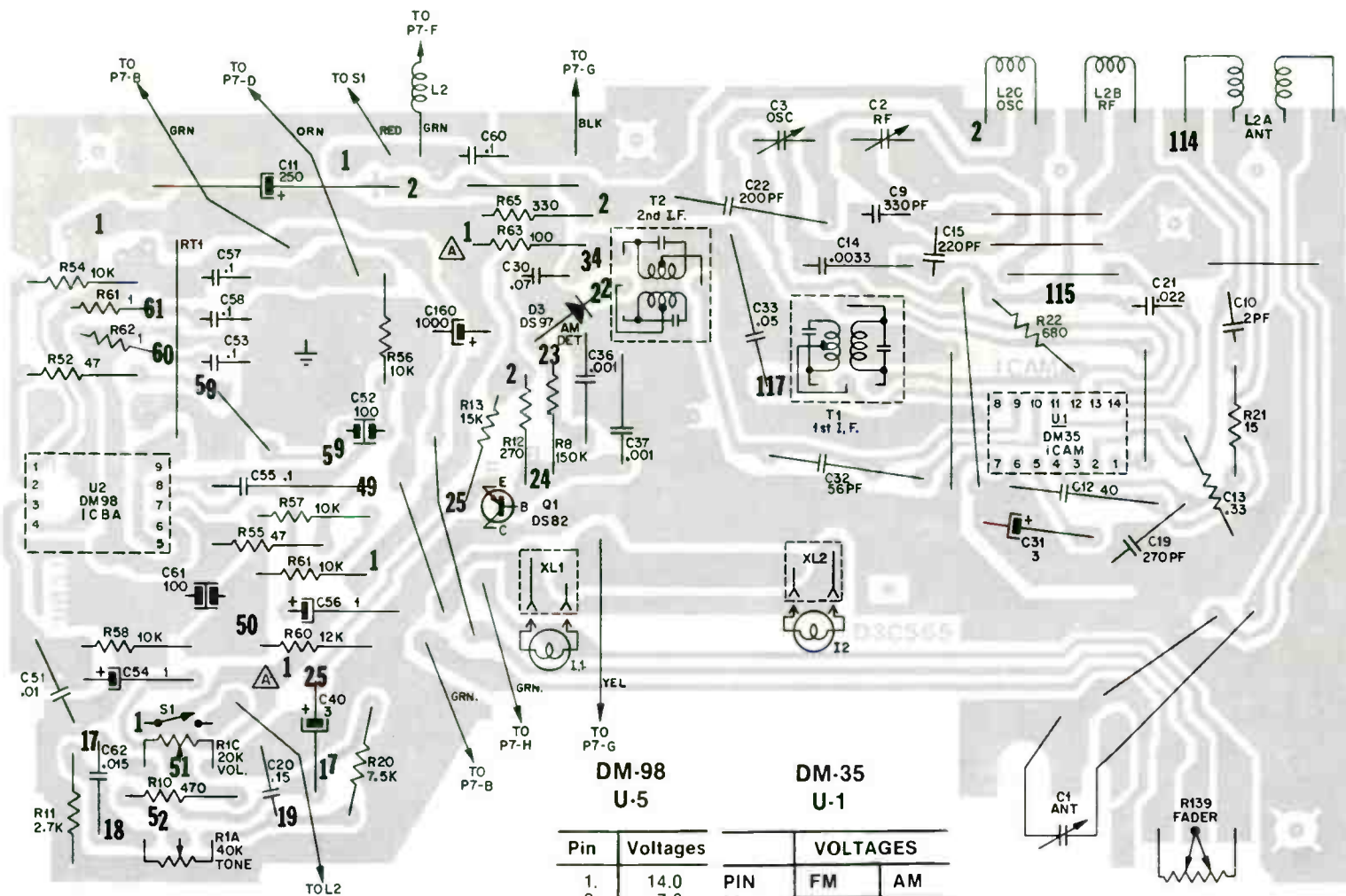
VOLTAGES MEASURED WITH A VTVM NO SIGNAL AND 14 VOLTS APPLIED TO RADIO.

UNLESS OTHERWISE NOTED:

ALL RESISTORS ARE $\pm 10\%$,
 ALL CAPACITORS ARE SHOWN IN MFD
 AND ARE 75 VOLT OR HIGHER EXCEPT
 ELECTROLYTICS AND THOSE NOTED BY
 AN *

NOTICE

**WHEN MAKING VOLTAGE MEASUREMENTS
 AROUND THE DM-35 MAKE CERTAIN TO
 TOUCH ONLY ONE ISLAND AT A TIME.**



VOLTAGES MEASURED WITH A VTVM NO SIGNAL AND 14 VOLTS APPLIED TO RADIO.

NOTICE

WHEN MAKING VOLTAGE MEASUREMENTS AROUND THE DM-32 MAKE CERTAIN TO TOUCH ONLY ONE ISLAND AT A TIME.

**DM-98
U-5**

Pin	Voltages
1.	14.0
2.	7.6
3.	7.6
4.	7.6
5.	14.0
6.	7.6
7.	7.6
8.	7.6
9.	14.0

**DM-35
U-1**

PIN	VOLTAGES	
	FM	AM
1.	7.1	7.3
2.	.4	4.2
3.	.8	.7
4.	.8	.7
5.	.8	.7
6.	0	0
7.	0	0
8.	.7	.7
9.	.9	12.5
10.	.3	.3
11.	4.7	4.8
12.	7.1	7.4
13.	7.1	7.4
14.	4.7	4.8

UNLESS OTHERWISE NOTED:

ALL RESISTORS ARE ± 10%,
ALL CAPACITORS ARE SHOWN IN MFD AND ARE 75 VOLT OR HIGHER EXCEPT ELECTROLYTICS AND THOSE NOTED BY AN *

PARTS LIST

800 cc AM

Illus. No.	Service No.	Description	Illus. No.	Service No.	Description
SEMICONDUCTOR			TUNER PARTS		
D3	DS-97	DIODE, AUDIO DETECTOR	1	7898898	BACKPLATE, POINTER
Q1	DS-82	AUDIO BUFFER	4	9347763	BUSHING, MANUAL DRIVE SHAFT
U1	DM-35	MODULE, ICAM	9	9348371	DRIVE SHAFT & WORM, MANUAL
U2	DS-98	MODULE, ICBA	10	1221529	'E' RING PKG. (20/PKG.)
COILS & TRANSFORMERS			11	*16004801	ESCUTCHEON ASM.
L1	7934553	CHOKER, ANTENNA	12	1223677	FINGER BAR PKG.
L2	*16006185	COIL & HOUSING ASM.	13	9347698	LINK, DRIVE TO POINTER
L4	7939202	CHOKER 'A' SUPPLY INPUT	14	9347698	LINK, DRIVE TO CORE BAR
T1	9349015	TRANSFORMER 1ST IF	18	1223680	NUT CONTROLS (10/PKG.)
T2	9349372	TRANSFORMER 2ND IF	19	7897608	POINTER
CAPACITORS & TRIMMERS			21	7896128	PUSHBUTTON
C1	9349885	TRIMMER, ANTENNA	22	7311994	PUSHBUTTON SLIDE
C2 & 3	7898954	TRIMMER, RF & OSC.	23A	1223106	RETAINER, LINK (10/PKG.)
C11	7896628	250 MFD., 16 VOLT	29	9348786	SPRING, DRIVE SHAFT RETAINER
C12	7298555	40 MFD., 6 VOLT	29A	9348785	SPRING, DRIVE SHAFT RETAINER
C13	7936749	.33 MFD., 20 TANTALUM	30	9347723	SPRING, FINGER BAR
C15	9349992	220 PF., 75V, POLYPROPYLENE	20A	9348720	SPRING, POINTER
C22	7895037	200 PF., 100V, CERAMIC	31	7312130	SPRING, PUSHBUTTON RETURN
C31	7296348	3 MFD., 12V, TANTALUM	32	9342607	SPRING, TREADLE BEARING
C40	7296348	3 MFD., 12V, TANTALUM	33	1221501	SET SCREW & NUT PKG.
C52	9349947	100 MFD., 16V, ELECTROLYTIC	34	9347692	TREADLE BAR ASM.
C54	7936365	1 MFD., 20V, TANTALUM	35	16006185	TUNER COILS & HOUSING
C56	7936365	1 MFD., 20V, TANTALUM	MISCELLANEOUS PARTS		
C61	9349947	100 MFD., 16 VOLT, ELECTROLYTIC	P7	7933709	CONNECTOR, 11-PIN (ON RADIO)
C160	9348314	1000 MFD., 16V, ELECTROLYTIC	J7	1224080	CONNECTOR PKG., BENCH HOOK-UP, 11-PIN
CONTROL & RESISTORS			42	1223490	SCREW PKG., CASE
R1	7897198	CONTROL, VOLUME, TONE & SWITCH	43	1223500	SCREW PKG., CIRCUIT BOARD
R139	16004853	CONTROL, FADER	I1,I2	7895189	DIAL LIGHT
			XL1,XL2	9349334	DIAL LIGHT SOCKET

COMPLETE SPEAKER LISTING

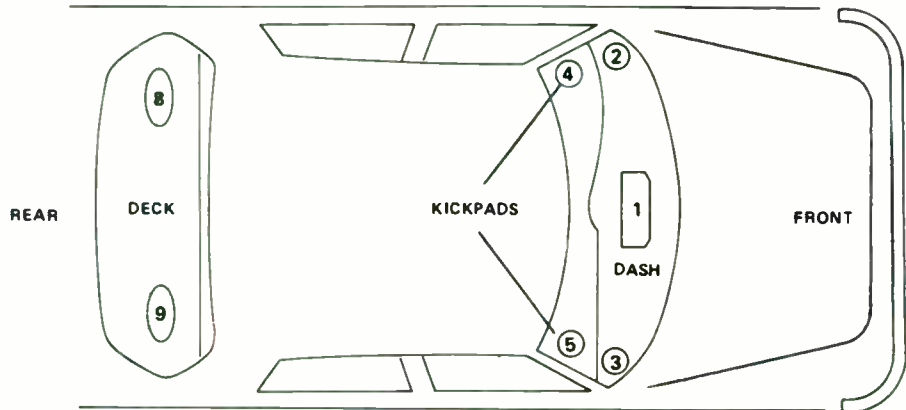
SPEAKER LOCATION GUIDE (TO BE USED WITH SPEAKER LIST)

SPEAKER CODES:

- A - 6 x 9 (Deep Basket)
- B - 6 x 9 (Shallow Basket)
- C - 4 x 10
- D - 4 x 6
- E - 3½ Round
- X - 6 x 9 Extended Range

CAR CODES:

- HATCHBACKH
- PASSENGER CARS ...C
- STATION WAGONS ..W
- TRUCKST



CAR NAME	LOCATION & SPEAKER CODE	CAR CODE	SERVICE SPEAKER NO.	BRACKET NO.
CENTURY	2E & 3E	CW	16000680	7936043
	8A & 9A	C	9348870	
	8C or 9C	W	7898980	
LE SABRE & ELECTRA	2D & 3D	CW	16005880	7896318
	8A or 9A	C	9348870	
	8C or 9C	W	1224050	
	8X or 9X	C	16004150	
REGAL	2E & 3E	C	16000680	
	8C & 9C	C	7898980	
RIVIERA	2D & 3D	C	16005880	
	8C & 9C	C	7898980	
SKYLARK (SEE NOVA)				
SKYHAWK (SEE MONZA)				
DEVILLE AND FLEETWOOD ...	2D & 3D	C	16005880	
	8A or 9A	C	9348870	
ELDORADO	2D & 3D	C	16005880	
	8C or 9C	C	7898980	
SEVILLE	2E & 3E	C	16002296	
	8C or 9C	C	7898980	
MALIBU AND MONTE CARLO ..	1C	CW	7896870	
	8A or 9A	C	9348870	
	8C or 9C	W	7898980	
	2E or 3E	CW	16001981	
MONTE CARLO	8C & 9C	C	7898980	
CHEVETTE	9C	C	9349090	
	1A	C	9349921	
CHEVROLET	1C	CW	7896870	
	8A or 9A	C	9348870	
	8C or 9C	W	1224050	
	2D & 3D	CW	7897421	
CAMARO	1C	C	7933921	7932455
	9A	C	9348870	

COMPLETE SPEAKER LISTING

CAR NAME	LOCATION & SPEAKER CODE	CAR CODE	SERVICE SPEAKER NO.	BRACKET NO.
MONZA, SUNBIRD, SKYHAWK AND STARFIRE	1C 9A 9C	HCW HC CW	16002011..... 9348870 9349690	7930557
CORVETTE	2D & 3D 8A & 9A	C C	16005880 16005641	
NOVA, SKYLARK AND OMEGA	1C 8A & 9A 9C	HC C H	9349690..... 9348870 9349690	7298516
LEMANS	1C 8A or 9A 8C & 9C 2E & 3E	CW C W CW	7896870 9348870 7898980 7895000	
GRAND PRIX	1C 2E & 3E 8A & 9A	C C C	7896870 7895000 7898980	
CATALINA & BONNEVILLE	2D & 3D 8A or 9A 8C or 9C	CW C W	16005880 9348870 1224050.....	7896318
FIREBIRD	1C 9A	C C	16004162..... 9348870	7932768
SUNBIRD (SEE MONZA)				
PHOENIX	1C 8A & 9A 9C	HC C H	7933931..... 9348870 9349690	7298516
88 AND 98	2E & 3E 8A & 9A 8C or 9C	CW C W	16003523 9348870 1224050.....	7896318
CUTLASS & CUTLASS SUPREME	2E & 3E	CW	16000680	
CUTLASS	8A & 9A	C	9348870	
CUTLASS SUPREME	8C & 9C	CW	7898980	
TORONADO	2D & 3D 8C & 9C	C C	16005880 7898980	
OMEGA (SEE NOVA)				
STARFIRE (SEE MONZA)				
EL CAMINO	2E & 3E 1C	T T	16001981 7896870	
CHEVY PICK-UP	1C	T	7938401	
BLAZER, SUBURBAN	1C 8C or 9C	T T	7938401 7938401	
STEP VAN	1C	T	7898980	
"G" VAN	2D & 3D 8A & 9A 8C & 9C	T T T	7895010 9348870 7938401	
STEEL TILT CAB	1B 2D & 3D	T T	7285671 1222940	
ALUMINUM TILT CAB	2C & 3C 8C or 9C	T T	9349690 9349690	
MEDIUM DUTY	2C & 3C 8C	T T	9349690 7938401	

SERVICE ALIGNMENT PROCEDURE

RADIO SECTION

Equipment Required

1. AC V.T.V.M.
2. Stabilized power supply (DC 14V)
3. Sweep generator (455 kHz)
4. AM, RF signal generator

1. AM CIRCUIT

(A) AM IF Alignment.

- (a) Connect sweep generator output to ANT. receptacle through a matching pad shown in Fig. 4, and vertical axis input oscilloscope to TP-1 (R261 10K ohm 1/4W).
- (b) Set the sweep generator to 455 kHz.
- (c) Adjust the output level of the sweep generator so that the wave form as shown on Fig. 1 will be observed on the scope, however, keep the generator output as low as possible to avoid clipping or saturation.
- (d) Align each of I.F.T. (T202, 203 and 204) to obtain the maximum and symmetrical wave form on the scope (Fig. 2).

(B) AM band Alignment.

- (a) Connect V.T.V.M. to the speaker output of either channel, and AM signal generator output to the antenna receptacle through a matching pad.
- (b) Tune the receiver dial to the lowest extreme position, and tune the signal generator frequency to 520 kHz. Then, align T-205 (AM OSC coil) to obtain the maximum indication of the V.T.V.M.
- (c) Then, tune the receiver dial to the highest extreme, and the generator frequency at 1650 kHz. Then align TC-202 (AM OSC trimmer) to obtain the maximum response of the receiver output.
- (d) Repeat procedure (b) and (c) two or three times.
- (e) Tune the signal generator frequency to 1400 kHz and tune the receiver to it. Align TC-601 and TC-201 (ANT. RF trimmers) to the maximum output of the receiver. The output level of the signal generator should be kept low, approximately 30μV so that A.G.C. will not affect the alignment. Antenna trimmer (TC601) is located in the cartridge, right side next to the capstan shaft.

2. FM CIRCUIT

Equipment Required

1. AC V.T.V.M.
2. Stabilized power supply (DC 14V)
3. Sweep generator (10.7 MHz)
4. FM, RF signal generator
5. FM stereo modulator

(A) FM IF Alignment.

- (a) Connect the output of the sweep generator to ANT receptacle, and vertical axis input of the oscilloscope to TP-2 (FM discriminator output). Set the receiver waveband selector to FM.
- (b) Set the sweep generator to 10.7 MHz.
- (c) Adjust the generator output level to obtain the wave form on the scope as shown on Fig. 5. The output level of the generator should be kept as low as possible so that limiter of the receiver would not function to disturb the alignment.

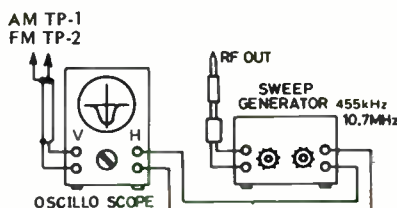


Fig. 1

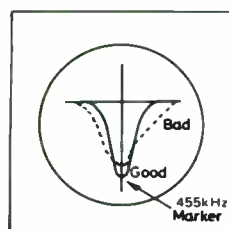


Fig. 2

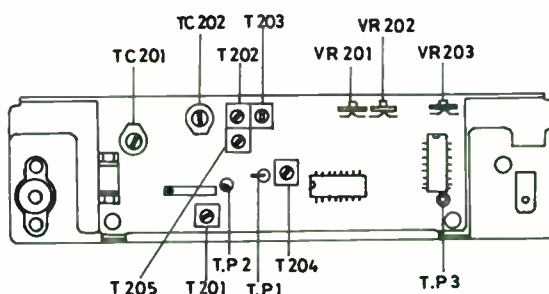


Fig. 3

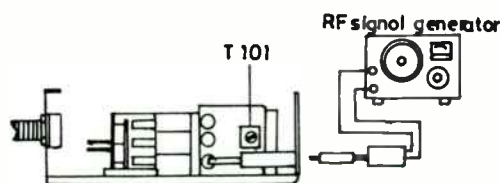


Fig. 4

- (d) Align T101 (I.F.T.) located in the FM tuner pack to the following conditions of the wave form on the scope as shown on Fig. 5. To the maximum indication angle of the part (1), and to the longest width of part (1), and to the vertically symmetrical shape of part (1) to the center position of the part (2). However, it is not necessary to try to center the marker to the center position of the wave form, which is dependent on the center frequency of the ceramic filter.

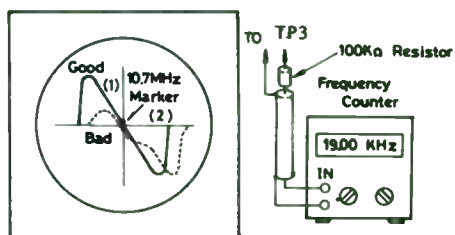


Fig. 5

Fig. 6

(B) FM MPX (Channel separation) Alignment.

- (a) Connect digital frequency counter to TP-3 as shown on Fig. 6. Then, align VR-203 (Semi-potentiometer) to read 19 kHz on the digital counter.
- (b) Connect FM signal generator and stereo signal modulator as shown on Fig. 3, and set the stereo modulator to 7.5 kHz deviation (10%) for pilot signal (19 kHz) and 67.5 kHz deviation (90%) for L + R main signal, and FM signal generator to 98 MHz, 1 mV, 75 kHz deviation (100%).
- (c) Turn mode selector of the stereo modulator to L or R, and confirm the receiver obtain more than 25 dB of channel separation, also confirm that stereo indicator lamp of the receiver goes on and off when stereo/mono. switch is operated.

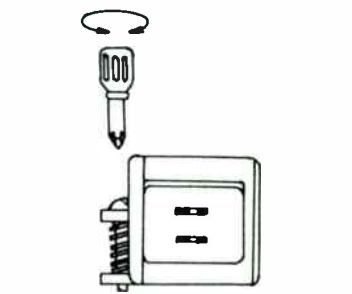


Fig. 7

TAPE SECTION

Equipment Required

1. AC V.T.V.M.
2. Stabilized power supply (DC 14V)
3. 3 kHz
4. Digital frequency counter.

(A) Head Azimuth Angle Alignment.

- (a) Connect V.T.V.M. to the speaker output of the set. And playback 8 kHz test tape.
- (b) Adjust volume control to medium position, and as shown on Fig. 7, align the head azimuth alignment screw with a Philips driver to obtain the maximum output of the set.

(B) Head Height Alignment.

- (a) Connect V.T.V.M. to the speaker output of the set. And playback cross-talk test tape cartridge.
- (b) Adjust volume control to medium position, and as shown on Fig. 8, turn the head height alignment nut with a hexagon box driver until proper head height is obtained.

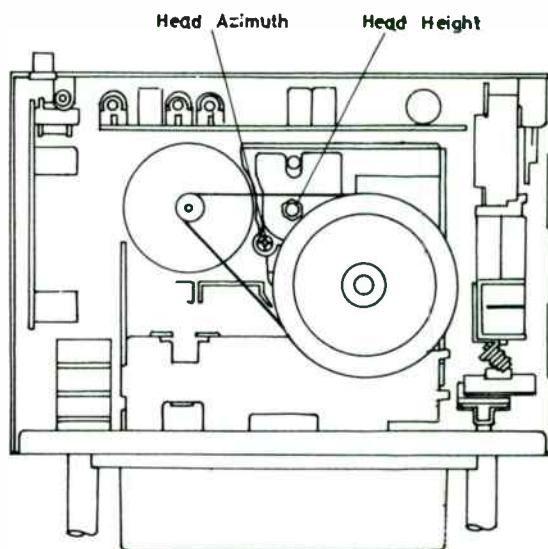
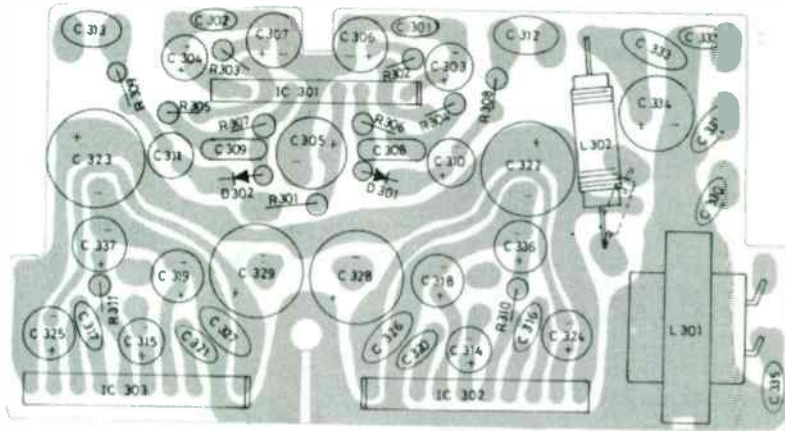


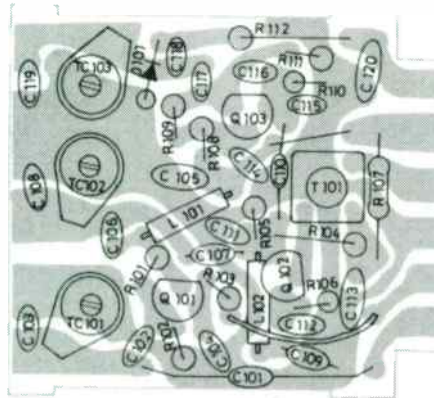
Fig. 8

PRE-AMPLIFIER AND POWER AMPLIFIER COMPONENT LOCATION GUIDE



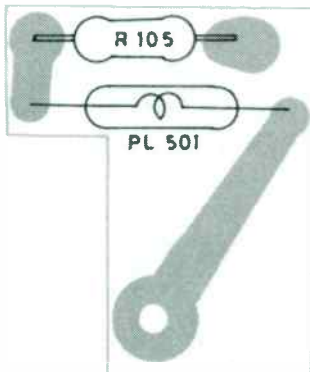
KPB-PM15

AUTO EJECT, AND MOTOR FILTER COMPONENT LOCATION GUIDE



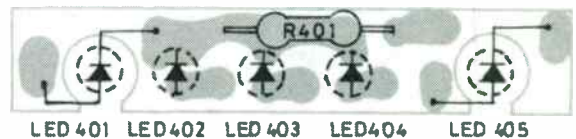
KPB-TF03

ILLUMINATION LAMP COMPONENT LOCATION GUIDE

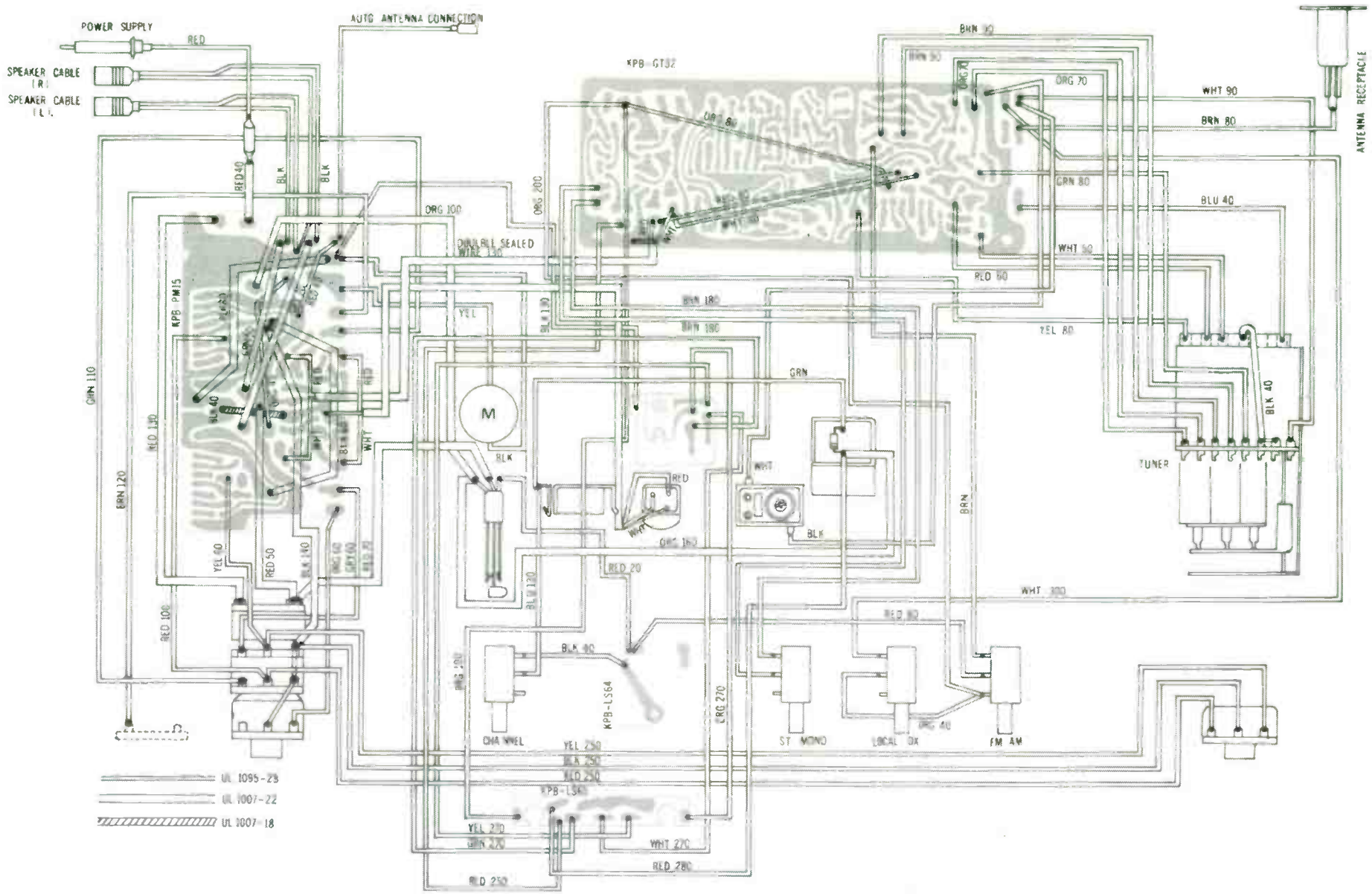


KPB-LS64

SLIDE SWITCH COMPONENT LOCATION GUIDE



KPB-LS65



Grundig GEM-5000

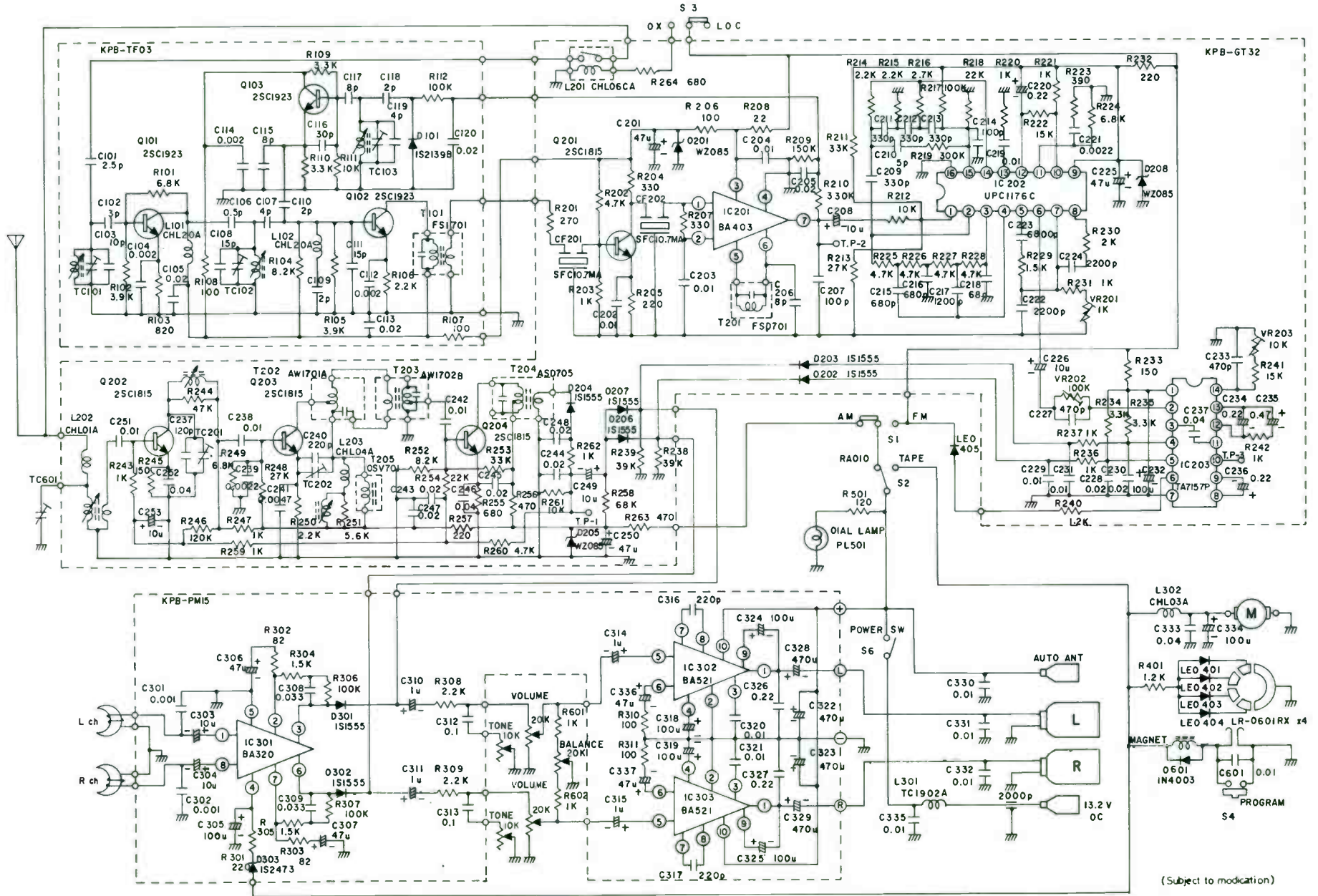
TROUBLE SHOOTING

RADIO SECTION

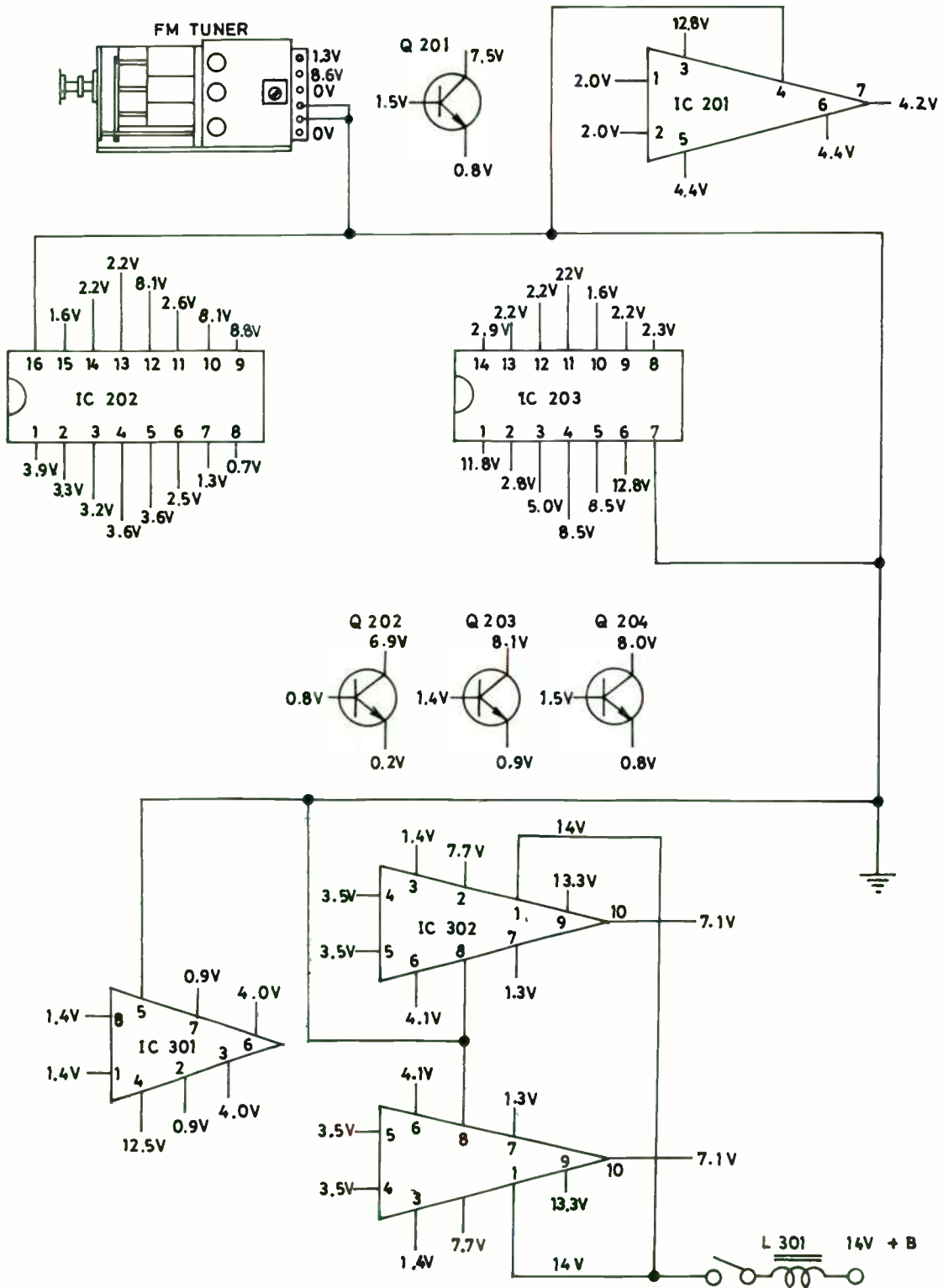
SYMPTOM		DEFECTIVE CIRCUIT	DEFECTIVE POINT AND CAUSE
NO SOUND	AM	Antenna input circuit	Antenna input defective. Poor antenna contact. Check wiring or co-axial cable open.
		Power supply circuit	Poor supply defective. Check wiring or function switch S-6.
		Output circuit	Radio output circuit defective. Check wiring or diode D204 and D205.
		RF & IF circuit	Check wiring or L-202 open. Check for emitter voltage of transistor Q202, Q203 or Q204. IF transformer T202, T203 or T204 open.
	FM	Antenna input circuit	Antenna input defective. Check wiring or co-axial cable open.
		Power supply circuit	Poor supply defective. Check wiring of function switch S-6.
		MPX & output circuit	Diode D202 or D203 defective. Check for emitter voltage of transistor and each pin voltage of IC-202 or IC-203.
		RF & IF circuit	IF transformer T101 or T201 open. Diode D201, or D101 defective. Check for each pin voltage of IC-201. Ceramic filter CF201 or CF202 defective.
INSUFFICIENT SOUND	AM	Antenna input circuit	Poor antenna contact. Antenna input defective. Check wiring or co-axial cable open.
		RF & IF or detector circuit	Deviation in IF transformer T202, T203 & T204. Deviation in tracking alignment. Diode D204 deteriorated. Capacitor C251, C238, C240, C248 or TC601 defective.
	FM	RF & IF or detector circuit	Deviation in IF transformer T101 or T201. Deviation in tracking alignment. Antenna input defective. Diode D201 defective. Ceramic filter CF201 or CF202 defective. Transformer T101 or T201 defective. Capacitor C202, C206 or C207 defective.
DISTORTED SOUND	AM	AGC or detector circuit	Diode D204 or D205 defective.
	FM	Detector circuit	Diode D202 or D203 defective. Deviation in transformer T101 or T201 defective.
OSCILLATION	AM		Capacitor C253, C239 or C243 defective. Diode D205 defective.
	FM		Capacitor C113, C203, C204, C207 or C214 defective.
POOR STEREO EFFECT		MPX circuit	VR203 mis-aligned. MPX IC IC-203 defective. Capacitor C233 defective.
STEREO INDICATOR LIGHT DEFECTIVE		Indicator circuit	Stereo indicator lamp defective. Resistor R240 defective. MPX IC IC-203 defective.

TAPE SECTION

SYMPTOM	DEFECTIVE CIRCUIT	DEFECTIVE POINT AND CAUSE
NO SOUND	Power supply circuit	Fuse open. Choke transformer L301 open. C335 or C334 short circuit. Power supply switch S-6 defective. Faulty connection between speaker and connecting cord.
	Output circuit	Speaker voice coil open. C328 or C329 open. Faulty connection between speaker and connecting cord. Main amplifier defective. Check for power IC IC-302, IC-303 or input signal.
	Pre-amplifier circuit	Pre-amplifier defective. Check pre-amplifier IC-301 circuit. Head lead wire open. Faulty contact of tape/radio changeover switch S-2.
	Motor	Check power supply. Choke L302 defective. Motor defective. Motor lead open.
	Auto. program selector circuit	Solenoid open or short circuit. Solenoid lead open. C601 short circuit. Senser switch S4 defective. Diode D601 defective.
	Playback head	Playback head open or short circuit. Playback head lead open.
DISTORTED SOUND OR INSUFFICIENT SOUND	Output circuit	Speaker defective. Main amplifier defective. Poor contact between output terminal and speaker.
	Pre-amplifier circuit	Pre-amplifier defective. Head wire defective. Head surface dirty.
OSCILLATION	Power supply circuit	C335 capacity insufficient or open.
	Output and pre-amplifier	C305 capacity insufficient or open. Capacity insufficient of external capacitors power IC and pre-IC.
WOW & FLUTTER		Flywheel, Capstan base defective. Motor pulley defective. Belt, Motor pulley, Capstan or Flywheel dirty. Motor defective.

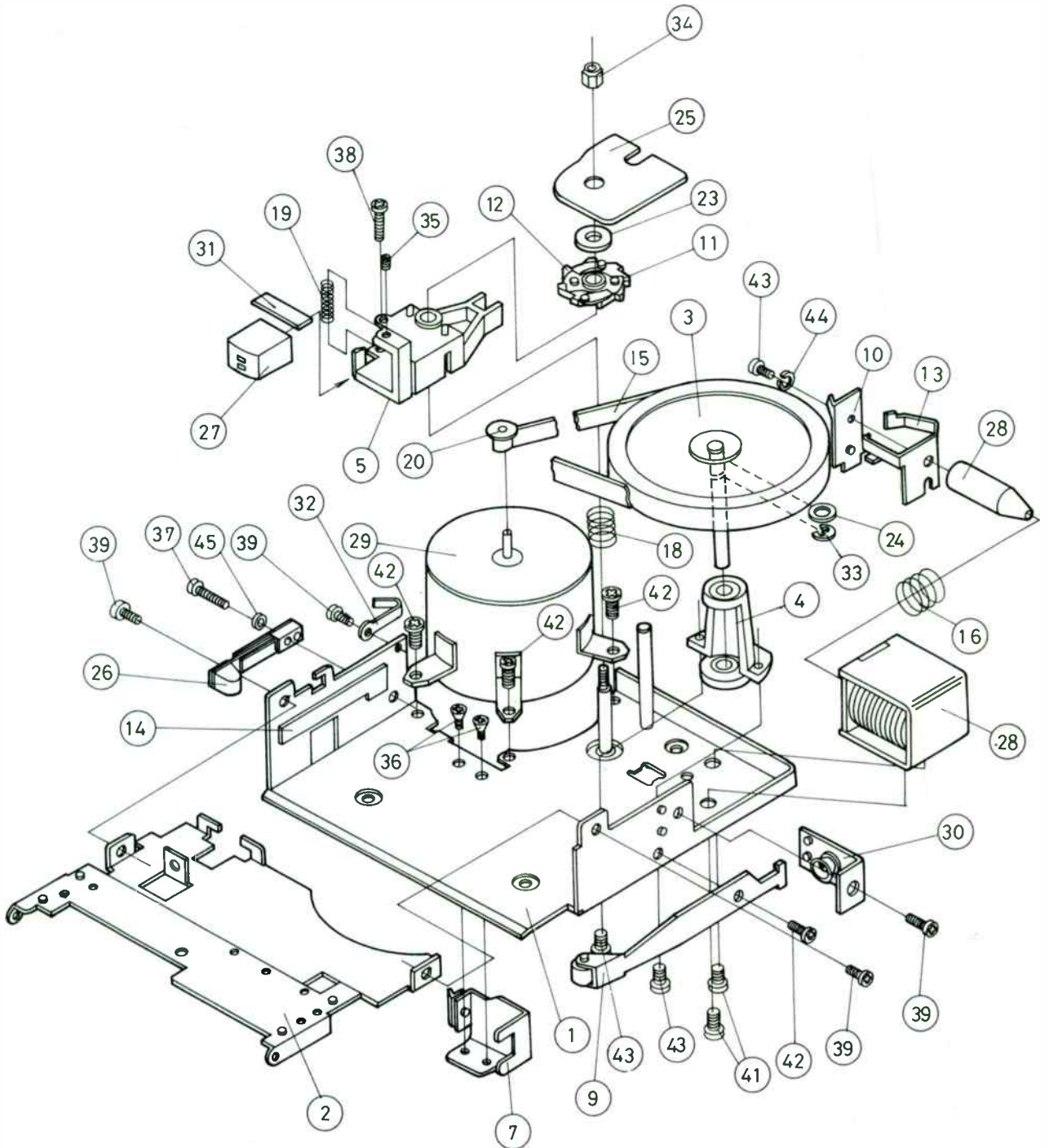


RADIO AND AUDIO VOLTAGE



VOLTAGE READINGS TO COMMON GROUND(-) ARE MEASURED WITH 100 V.T.V.M. UNDER NO SIGNAL.

EXPLODED VIEW MECHANISM



PRE-MAIN AMP. CIRCUIT BOARD PARTS LIST

Ref No.	Part No.	Description	Ref No.	Part No.	Description
	09 222 452 046 0	Printed circuit board (KPB-PM15)	332,335		
IC301	09 000 312 001 0	Monolithic IC BA329	C333	09 000 333 521 3	Ceramic capacitor 0.047μF 25V F
IC302,303	09 000 312 066 0	Monolithic IC BA521	C301,302	09 000 333 342 1	Ceramic capacitor 0.001μF 50V B
D301,302	09 000 305 005 0	Diode 1S1555	C312,313	09 000 333 555 3	Ceramic capacitor 0.1μF 12V B
D303	09 000 305 009 0	Diode 1S2473	C326,327	09 000 333 585 3	Ceramic capacitor 0.22μF 12V B
L302	09 208 309 003 0	RF coil CHL03A	C308,309	09 000 335 512 2	Mylar capacitor 0.033μF 50V
L301	09 206 356 003 0	Choke transformer TC1902A	C306,307	09 000 332 152 2	Electrolytic capacitor 47μF 10V
R302,303	09 000 322 383 4	Carbon film resistor 82 ohm 1/4W	336,337		
R310,311	09 000 322 393 4	Carbon film resistor 100 ohm 1/4W	C318,319	09 000 332 162 2	Electrolytic capacitor 100μF 10V
R301	09 000 322 433 4	Carbon film resistor 220 ohm 1/4W	324,325		
R304,305	09 000 322 533 4	Carbon film resistor 1.5K ohm 1/4W	C328,329	09 000 332 192 2	Electrolytic capacitor 470μF 10V
R308,309	09 000 322 563 4	Carbon film resistor 2.2K ohm 1/4W	C322,323	09 000 332 193 2	Electrolytic capacitor 470μF 16V
R306,307	09 000 322 763 4	Carbon film resistor 100K ohm 1/4W	C305,334	09 000 332 163 2	Electrolytic capacitor 100μF 16V
C316,317	09 000 334 262 1	Ceramic capacitor 220pF 50V SL	C303,304	09 000 332 124 2	Electrolytic capacitor 10μF 16V
C320,321	09 000 333 472 3	Ceramic capacitor 0.01μF 50V F	C310,311	09 000 332 076 1	Electrolytic capacitor 1μF 50V
330,331			314,315		

INDICATOR CIRCUIT BOARD PARTS LIST

Ref No.	Part No.	Description	Ref No.	Part No.	Description
	09 223 452 049 0	Printed circuit board (KPB-LS65)	402,403		
R401	09 000 322 523 4	Carbon film resistor 1.2K ohm 1/4W	404,405		
LED401	09 222 423 001 0	LED LR-0601RX			

LAMP CIRCUIT BOARD PARTS LIST

Ref No.	Part No.	Description	Ref No.	Part No.	Description
	09 222 452 047 0	Printed circuit board (KPB-LS64)	PL501	09 222 422 003 0	Lamp (T-3 6V/60mA) fuse type
R501	09 000 322 404 4	Carbon film resistor 120 ohm 1/2W			

OTHER ELECTRICAL PARTS LIST

Ref No.	Part No.	Description	Ref No.	Part No.	Description
TC601	09 222 344 009 0	Trimmer capacitor (L-1P-5-2)	C601	09 000 333 472 3	Ceramic capacitor 0.01μF 50V F
D601	09 000 305 002 0	Diode 1N4003			

AM/FM. IF, ESU, MPX CIRCUIT BOARD PARTS LIST

Ref No.	Part No.	Description	Ref No.	Part No.	Description
IC201	09 222 452 045 0	Printed circuit board (KPB-GT32)	R224,249	09 000 322 623 4	Carbon film resistor 6.8K ohm 1/4W
	09 000 312 002 0	Monolythic IC BA403	R252	09 000 322 633 4	Carbon film resistor 8.2K ohm 1/4W
IC203	09 000 312 067 0	Monolythic IC TA7157P	R212	09 000 322 643 4	Carbon film resistor 10K ohm 1/4W
IC202	09 000 312 068 0	Monolythic IC μ PC1176C	R222,241	09 000 322 663 4	Carbon film resistor 15K ohm 1/4W
Q201,202	09 000 304 049 0	Transistor 25C1815C	R218,254	09 000 322 683 4	Carbon film resistor 22K ohm 1/4W
203,204			R213,248	09 000 322 693 4	Carbon film resistor 27K ohm 1/4W
D202,203	09 000 305 005 0	Diode 1S1555	R211,253	09 000 322 703 4	Carbon film resistor 33K ohm 1/4W
204,206			R238,239	09 000 322 713 4	Carbon film resistor 39K ohm 1/4W
207			R244	09 000 322 723 4	Carbon film resistor 47K ohm 1/4W
D201,205	09 000 307 012 0	Zener diode WZ085	R258	09 000 322 743 4	Carbon film resistor 68K ohm 1/4W
208			R217	09 000 322 763 4	Carbon film resistor 100K ohm 1/4W
T205	09 208 353 018 0	MW-OSC coil OSV701	R246	09 000 322 773 4	Carbon film resistor 120K ohm 1/4W
T204	09 208 353 017 0	AM-DET coil ASD705	R209	09 000 322 783 4	Carbon film resistor 150K ohm 1/4W
T201	09 208 353 019 0	FM-Peak-DET FSD701	R210,219	09 000 322 823 4	Carbon film resistor 330K ohm 1/4W
T202	09 206 353 024 0	AM-IFT-1 AWI701A	R261	09 000 322 643 4	Carbon film resistor 10K ohm 1/4W
T203	09 206 353 023 0	AM-IFT-2 AWI702B	C206	09 000 334 352 5	Ceramic capacitor 8pF 50V SH
L202	09 208 352 002 0	AM filter coil CHL01A	C237	09 000 334 222 4	Ceramic capacitor 120pF 50V RH
L203	09 208 352 004 0	MW-OSC loading coil CHL04A	C240	09 000 334 262 4	Ceramic capacitor 220pF 50V RH
CF201,202	09 202 364 001 0	Ceramic filter 10.7MHz SFE10.7MA	C210	09 000 334 062 1	Ceramic capacitor 5pF 50V SL
VR201	09 202 328 005 0	Trimmer 1K	C218	09 000 334 192 1	Ceramic capacitor 68pF 50V SL
VR203	09 202 328 006 0	Trimmer 10K	C207,214	09 000 333 212 1	Ceramic capacitor 100pF 50V B
VR202	09 202 328 009 0	Trimmer 50K	C212,211	09 000 333 282 1	Ceramic capacitor 330pF 50V B
TC201,202	09 222 344 008 0	Trimmer cap. 50p	213,209		
L201	09 207 384 002 0	Reed relay CHL06CA	C227	09 000 333 302 1	Ceramic capacitor 470pF 50V B
R208	09 000 322 313 4	Carbon film resistor 22 ohm 1/4W	C215,216	09 000 333 322 1	Ceramic capacitor 680pF 50V B
R206	09 000 322 393 4	Carbon film resistor 100 ohm 1/4W	C217	09 000 333 352 1	Ceramic capacitor 0.0012 μ F 50V B
R233,245	09 000 322 413 4	Carbon film resistor 150 ohm 1/4W	C221,222	09 000 333 382 1	Ceramic capacitor 0.0022 μ F 50V B
R205,232	09 000 322 433 4	Carbon film resistor 220 ohm 1/4W	224,239		
257			C241	09 000 333 432 1	Ceramic capacitor 0.0047 μ F 50V B
R201	09 000 322 443 4	Carbon film resistor 270 ohm 1/4W	C223	09 000 333 452 1	Ceramic capacitor 0.0068 μ F 50V B
R204,207	09 000 322 453 4	Carbon film resistor 330 ohm 1/4W	C202,203	09 000 333 472 3	Ceramic capacitor 0.01 μ F 50V F
R223	09 000 322 463 4	Carbon film resistor 390 ohm 1/4W	204,219		
R256, 263	09 000 322 473 4	Carbon film resistor 470 ohm 1/4W	229,231		
R264,255	09 000 322 493 4	Carbon film resistor 680 ohm 1/4W	238,242		
R203,220	09 000 322 513 4	Carbon film resistor 1K ohm 1/4W	251		
221,231			C205,228	09 000 333 502 3	Ceramic capacitor 0.022 μ F 50V F
236,237			243,244		
242,243			245,247		
247,259			248,230		
262			C235,246	09 000 333 522 3	Ceramic capacitor 0.047 μ F 25V F
R240	09 000 322 523 4	Carbon film resistor 1.2K ohm 1/4W	252		
R229	09 000 322 533 4	Carbon film resistor 1.5K ohm 1/4W	C233	09 000 336 302 2	Polystyrene capacitor 470pF 50V
R230	09 000 322 983 4	Carbon film resistor 2K ohm 1/4W	C220,234	09 000 337 033 2	Tantalum capacitor 0.22 μ F 16V
R214,215	09 000 322 563 4	Carbon film resistor 2.2K ohm 1/4W	236		
250			C235	09 000 337 053 2	Tantalum capacitor 0.47 μ F 16V
R216	09 000 322 573 4	Carbon film resistor 2.7K ohm 1/4W	C201,225	09 000 332 152 2	Electrolytic capacitor 47 μ F 10V
R234,235	09 000 322 583 4	Carbon film resistor 3.3K ohm 1/4W	250		
R202,225	09 000 322 603 4	Carbon film resistor 4.7K ohm 1/4W	C208,226	09 000 332 123 2	Electrolytic capacitor 10 μ F 16V
226,227			249,253		
228,260			C232	09 000 332 163 2	Electrolytic capacitor 100 μ F 16V
R251	09 000 322 613 4	Carbon film resistor 5.6K ohm 1/4W			

FM TUNER CIRCUIT PARTS LIST

Ref No.	Part No.	Description	Ref No.	Part No.	Description
Q101,102 103	09 222 452 044 0	Printed circuit board (KPB-TF03)	C119	09 000 334 052 3	Ceramic capacitor 4pF 50V CH
	09 000 304 048 0	Transistor 2SC1923 R, O	C117	09 000 334 352 3	Ceramic capacitor 8pF 50V CH
D101	09 000 305 008 1	Diode 1S2139B	C118	09 000 334 032 5	Ceramic capacitor 2pF 50V SH
T101	09 222 353 032 0	I.F.T coil FS1701	C115	09 000 334 352 5	Ceramic capacitor 8pF 50V SH
L101,102	09 222 352 006 0	Coil CHL20A	C116	09 000 334 382 1	Ceramic capacitor 30pF 50V TH
TC101,102 103	09 222 344 007 0	Trimmer CVB10-41 {ECV-1ZS10X32}	C106	09 000 334 012 1	Ceramic capacitor 0.5pF 50V SL
			C110	09 000 334 032 1	Ceramic capacitor 2pF 50V SL
R108	09 000 322 393 4	Carbon film resistor 100 ohm 1/4W	C101	09 000 334 432 1	Ceramic capacitor 2.5pF 50V SL
R103	09 000 322 503 4	Carbon film resistor 820 ohm 1/4W	C102	09 000 334 042 1	Ceramic capacitor 3pF 50V SL
R106	09 000 322 563 4	Carbon film resistor 2.2K ohm 1/4W	C107	09 000 334 052 1	Ceramic capacitor 4pF 50V SL
R109,110	09 000 322 583 4	Carbon film resistor 3.3K ohm 1/4W	C103	09 000 334 082 1	Ceramic capacitor 10pF 50V SL
R102,105	09 000 322 593 4	Carbon film resistor 3.9K ohm 1/4W	C108,111	09 000 334 102 1	Ceramic capacitor 15pF 50V SL
R101	09 000 322 623 4	Carbon film resistor 6.8K ohm 1/4W	C109	09 000 334 392 1	Ceramic capacitor 300pF 50V SL
R104	09 000 322 633 4	Carbon film resistor 8.2K ohm 1/4W	C104,112	09 000 333 382 1	Ceramic capacitor 0.002μF 50V B
R111	09 000 322 643 4	Carbon film resistor 10K ohm 1/4W	114		
R112	09 000 322 763 4	Carbon film resistor 100K ohm 1/4W	C105,113	09 000 333 502 3	Ceramic capacitor 0.02μF 50V F
R107	09 000 322 393 4	Carbon film resistor 100 ohm 1/4W	120		

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
1	09 223 681 036 0	Chassis ass'y (M)	1	26	09 222 372 004 0	Leaf switch LSC-3C	1
2	09 223 681 037 0	Chassis holder ass'y (M)	1	27	09 223 447 004 0	P.B head MITSUMI 1482	1
3	09 222 711 011 0	Flywheel	1	28	09 223 436 004 0	Solenoid ass'y	1
4	09 222 702 001 0	Capstan base	1	29	09 223 432 004 0	Motor (MYT-3KCS)	1
5	09 223 622 023 0	Head holder	1	30	09 222 344 009 0	Trimmer capacitor (L-1P-5-2)	1
7	09 222 681 033 0	Tape guide ass'y	1	31	09 223 682 134 0	Head grounding plate	1
9	09 223 681 038 0	Cartridge roller ass'y (M)	1	33	09 000 587 400 4	E ring 4φ	1
10	09 222 682 106 0	Plunger guide plate	1	34	09 000 582 704 4	Nut 3φ	1
11	09 222 682 107 0	Lamp switch contact	1	35	09 000 566 661 4	Slotted head set screw	1
12	09 222 662 020 0	Channel selector cam	1	36	09 000 554 631 0	Flush head screw M2.6 x 3	2
13	09 222 682 108 0	Cam hook	1	37	09 000 573 152 1	Bind head tapping screw M2 x 10	1
14	09 222 662 021 0	Cartridge guide	1	38	09 000 573 362 1	Bind head tapping screw M2.6 x 12	1
15	09 222 714 011 0	Drive belt	1	39	09 000 573 422 1	Bind head tapping screw M3 x 5	4
16	09 222 722 029 0	Plunger spring	1	40	09 000 573 442 1	Bind head tapping screw M3 x 8	2
18	09 223 722 034 0	Head spring (M)	1	41	09 000 553 704 1	Bind head screw M3 x 4	2
19	09 223 722 035 0	Head azimuth adjusting spring	1	42	09 000 553 705 1	Bind head screw M3 x 5	4
20	09 223 692 032 0	Motor pulley (M)	1	43	09 000 553 708 1	Bind head screw M3 x 8	2
23	09 223 683 023 0	3.2mm washer	1	44	09 000 593 600 4	Spring lock washer 3φ	1
24	09 223 683 014 0	5.1mm washer	1	45	09 000 592 300 4	Plain washer 2φ	1
25	09 223 452 060 0	Printed circuit board F-0008	1				

PARTS LIST

Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
	09 222 358 005 0	μ-tuner 2SFE-1	1		09 000 553 810 1	Bind head screw M4 x 10	2
	09 222 682 094 0	Shield case #09	1		09 223 602 006 0	Eyelet 3φ x 5	1
	09 222 452 044 0	Printed circuit board KPB-TF03	1		09 000 587 150 4	E ring 1.5φ	2
	09 222 662 019 0	Tuner coupler C-8 (A)	1		09 000 593 300 0	Spring washer 2φ	3
	09 222 682 098 0	Tuner coupler plate (C)	1		09 000 593 600 4	Spring washer 3φ	3
	09 222 682 100 0	Pulley holder #05	1		09 000 594 602 4	Toothed lock washer	3
	09 222 692 025 0	Dial pulley axle #5508	1		09 000 582 701 4	Nut 3φ	2
	09 223 682 127 0	Cabinet bottom #13A	1		09 000 582 901 4	Nut 5φ	3
	09 223 328 025 0	Potentiometer (L) PR164GDS66	1		09 218 416 001 0	Grounding rug	1
	09 223 328 024 0	Potentiometer (R) PR164DT	1		09 223 682 104 0	10φ VR washer	8
	09 212 681 028 0	Filter holder (E) Ass'y	1		09 223 592 004 0	VR washer 3/8"	4
	09 214 398 001 0	Antenna socket	1		09 223 583 003 0	VR nut 3/8"	6
	09 222 682 096 0	VR adjust washer (C)	2				
	09 223 750 004 0	8-track mechanism SEM-04	1			OTHER	
	09 223 682 129 0	Switch holder R	1		09 202 682 022 0	Perforated strap #8400	1
	09 223 682 130 0	Switch holder S	1		09 208 407 007 0	B fuse wire HA-1	1
	09 223 375 006 0	Push switch ESB-6016	3		09 208 407 008 0	Grounding cable GC-1	1
	09 223 375 007 0	Push switch ESB-6026	1		09 222 782 007 0	Screw kit #17	1
	09 223 652 037 0	Button 49	4		09 223 714 010 0	Rear suspension plug	1
	09 222 452 047 0	Printed circuit board KPB-LS64	1		09 202 923 003 0	Polyethylene bag 300 x 400	1
	09 222 422 003 0	Lamp (T-3 6V/60mA) fuse type	1		09 209 923 001 0	Polyethylene bag 75 x 150	1
	09 222 452 045 0	Printed circuit board KPB-GT32	1		09 223 923 006 0	Polyethylene bag 50 x 75	1
	09 222 452 046 0	Printed circuit board KPB-PM15	1		09 208 736 411 0	Connector label speaker (L)	1
	09 223 682 131 0	Heat sink #25A	1		09 208 736 412 0	Connector label speaker (R)	1
	09 222 672 004 0	Cartridge slot door (805E02)	1		09 202 736 405 0	Connector label Auto-antenna	1
	09 223 656 011 0	Door dial scale (G)	1		09 223 736 106 0	F.C.C. label KF-11	1
	09 222 682 101 0	Door dial background #1678	1		09 223 902 030 0	Operating instruction manual	1
	09 222 652 031 0	Dial pointer #04	1		09 223 922 015 0	Gift box	1
	09 223 682 139 0	String hanger	1		09 222 925 006 0	Plastic foam cushion C-33	1 set
	09 222 692 026 0	Door axle (C-8)	1				
	09 222 723 010 0	Door spring (707)	1				
	09 222 722 028 0	Dial spring #1678	1				
	09 222 792 003 0	Dial string 540mm	1				
	09 206 662 016 0	Dial pulley #7003	2				
	09 208 407 011 0	Power supply wire AE-1	1				
	09 202 407 001 0	Auto antenna connector CA-3	1				
	09 208 402 006 0	Speaker cable	2				
	09 223 682 132 0	Cabinet cover #15C	1				
	09 223 682 133 0	Line cable clamp C	1				
	09 223 652 032 0	Nose piece #1678-4	1				
	09 223 452 049 0	Printed circuit board KPB-LS65	1				
	09 222 423 001 0	LED (LR-0601RX)	5				
	09 223 682 102 0	Snap-in metal bracket (L)	1				
	09 223 682 103 0	Snap-in metal bracket (R)	1				
	09 223 682 111 0	Snap-in bracket supporter (03)	2				
	09 223 682 138 0	VR adjust washer (G)	2				
	09 202 652 008 0	Trimplate	1				
	09 223 732 026 0	Trimplate inlay (L) 28LU081	1				
	09 223 732 027 0	Trimplate inlay (R) 28RU081	1				
	09 223 652 033 0	Front knob 134	2				
	09 223 652 034 0	Backup knob 140	2				
	09 000 554 304 0	Flush head screw M2 x 4	1				
	09 000 554 604 0	Flush head screw M2.6 x 4	2				
	09 000 554 704 0	Flush head screw M3 x 4	1				
	09 000 554 706 0	Flush head screw M3 x 6	2				
	09 000 552 303 0	Pan head screw M2 x 3	3				
	09 000 553 704 1	Bind head screw M3 x 4 (unichromate)	3				
	09 000 573 442 0	Bind head screw M3 x 8 (unichromate)	3				
	09 000 573 442 1	Bind head tapping screw M3 x 8 (unichromate)	3				
	09 000 573 432 0	Bind head tapping screw M3 x 6 (unichromate)	1				
	09 000 573 432 1	Bind head tapping screw M3 x 6 (unichromate)	9				
	09 000 573 435 1	Bind tapping tight screw M3 x 6 (unichromate)	2				

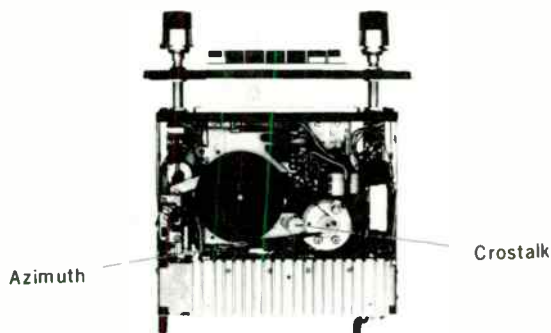


Figure. 9

Mechanical Adjustment

Head cleaning

1. Clean the front of the head with a cotton swab and magnetic head cleaner, or alcohol.
Do not use carbon tetrachloride.

Azimuth (Figure.9)

1. Insert test tape RCA 1-326.
2. Set the Tone to maximum Treble position, program No.2. Balance to Right position.
3. Turn the azimuth adjusting screw until you obtain maximum reading on the VTVM at speaker output.

Crosstalk (Figure. 9)

1. Set the Tone to maximum Treble position, program No.2. Balance to Left position.
2. Turn the crosstalk adjusting screw until you obtain minimum crosstalk.

Electrical Adjustment

General

Test Conditions

- Signal generator output ;..... Modulation frequency 400Hz
 Modulation percentage 30 %
 Signal level just high enough to provide meter deflection.

Signal application : Antenna receptacle through the dummy antenna.

Output meter connection ; ... Across a speaker or a dummy load 8 ohms.

Setting of radio controls ; ... Volume control at maximum response.
 Tone control set for maximum treble.

Power supply ; 14V

*Location of the components for alignment are shown in Tuner P.C. Board (Figure 16).

IF and AM Alignment

Step	Mode	Signal Input	Frequency of Signal Generator	Dial Setting of Radio	Components to be Adjusted for Max. Output
1	AM	Through dummy Ant. (Figure. 12)	455 KHz	Low end	IFT T302, 303, 304, 305
2			505 ± 5 KHz	Low end	OSC coil T301
3			1650 ± 10 KHz	High end	OSC trimmer CT303
4			1400 KHz	1400 KHz	RF trimmer CT302 Ant. trimmer CT301 (Figure. 10)

Repeat steps 1, 2, 3 and 4.

*With radio installed in car and antenna fully extended, tune in a weak station near 1400KHz and adjust CT301 for maximum volume.

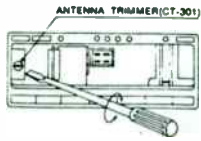


Figure. 10

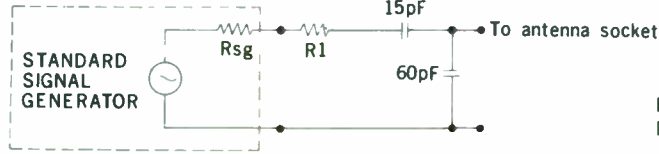
Tuner assembly



Figure. 11

(accessible through tape door)

DUMMY ANTENNA FOR AM TUNER ALIGNMENT



$R1 = 80 - R_{sg}$ (ohms)
 R_{sg} : Internal resistance of a signal generator used.

Figure. 12

FM IF Alignment

Step	Alignment Frequency	Test Equipment Connection	Adjustment
1	10.7MHz	Connect output of FM IF sweep marker generator to ANT terminal connect input of oscilloscope to TP201 and common ground.	Tune T401, T201 for maximum amplitude and symmetrical response curve as shown in Figure. 13 by tuning T201. (See figure 16)
2			Tune T201 for symmetrical S curve as shown in Figure. 14.

* Retune T401, T201 by checking S curve as shown in Fig.14.
 It is not necessary to tune exactly 10.7MHz marker to the center of S curve.

FM TUNER Alignment

Step	Signal Input	Frequency of Signal Generator	Dial Setting of Radio	Components to be Adjusted for Maximum Output
1	Through dummy ANT. Figure. 15.	87.5 MHz	Low end	Osc. trimmer CT403 (Figure. 11)
2		98 MHz	98 MHz	RF trimmer CT402 (Figure. 11) ANT trimmer CT401 (Figure. 11)
3		Confirm overall tuning range to be from 87.5MHz through 109~110 MHz.		

SYMMETRICAL RESPONSE CURVE

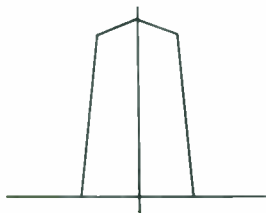


Figure. 13

SYMMETRICAL S CURVE

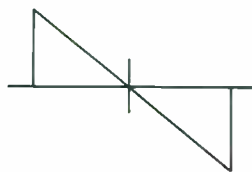
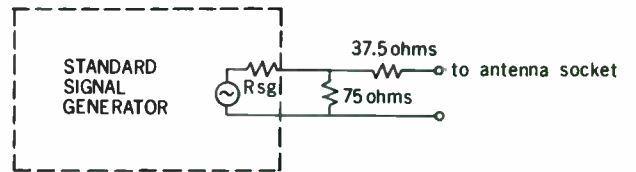


Figure. 14

DUMMY ANTENNA FOR FM TUNER ALIGNMENT.



R_{sg} : Internal resistance of a signal generator used.

Figure. 15

FM Multiplex Alignment (PLL)

Preliminaries :

1. A stereo signal modulator (SSM) and SCA signal generator are necessary to perform this alignment.
2. All adjustments below must be done, setting the dial pointer at 98MHz on dial scale and applying 1K μ V FM signal modulated by specified signals as described below.
3. MPX button should be placed in stereo position during FM multiplex alignment.

Step	Alignment	Instrument Connections		Adjustment
		Input	Output	
1	19 kHz Pilot	No signal	Connect frequency counter to pin 12 of IC 251 (TP251) and common ground.	Adjust VR (R252) for frequency of 19.00 kHz.
2	Stereo Signal	Apply FM stereo signal (modulated by pilot signal at 10% modulation and stereo signal at 30% modulation) through dummy ant. to ant. terminals. Set output signal switch of S.S.M. to right channel.	Connect VTVM to speaker output leads of Left Channel.	Stereo Separation Control (R257) for minimum output on VTVM.

TUNER P.C.Board (component side)

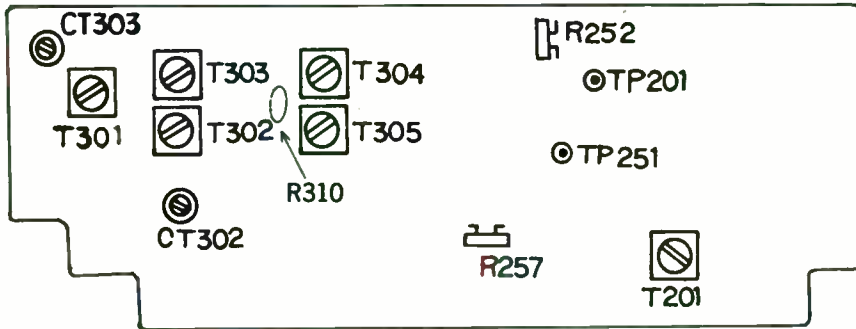
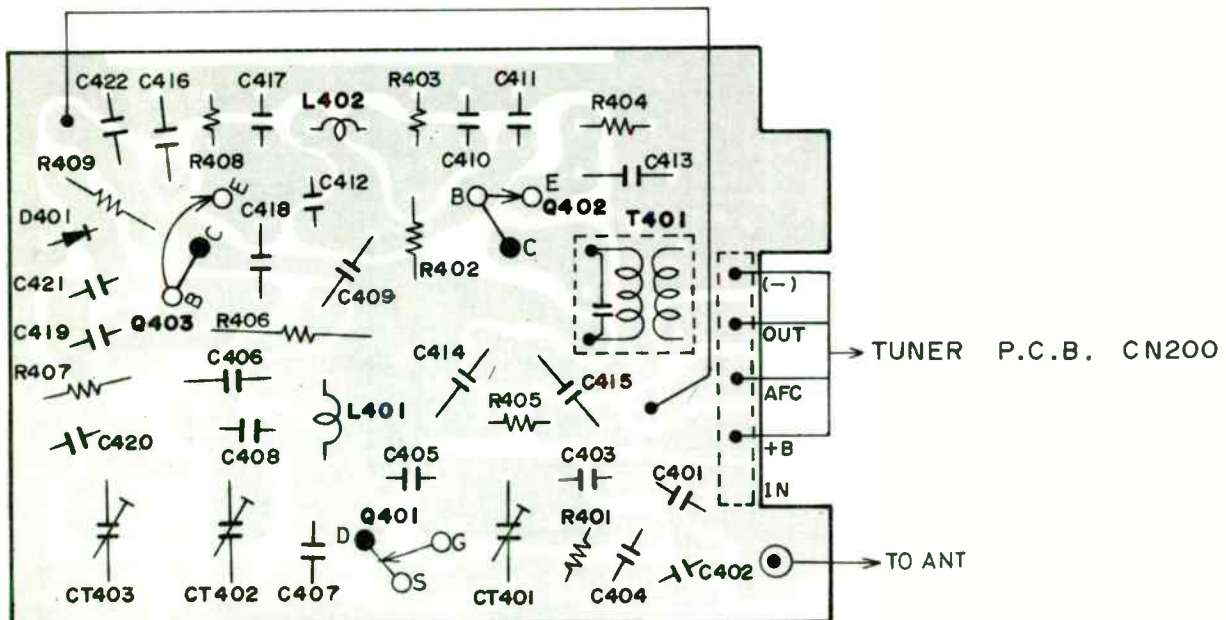
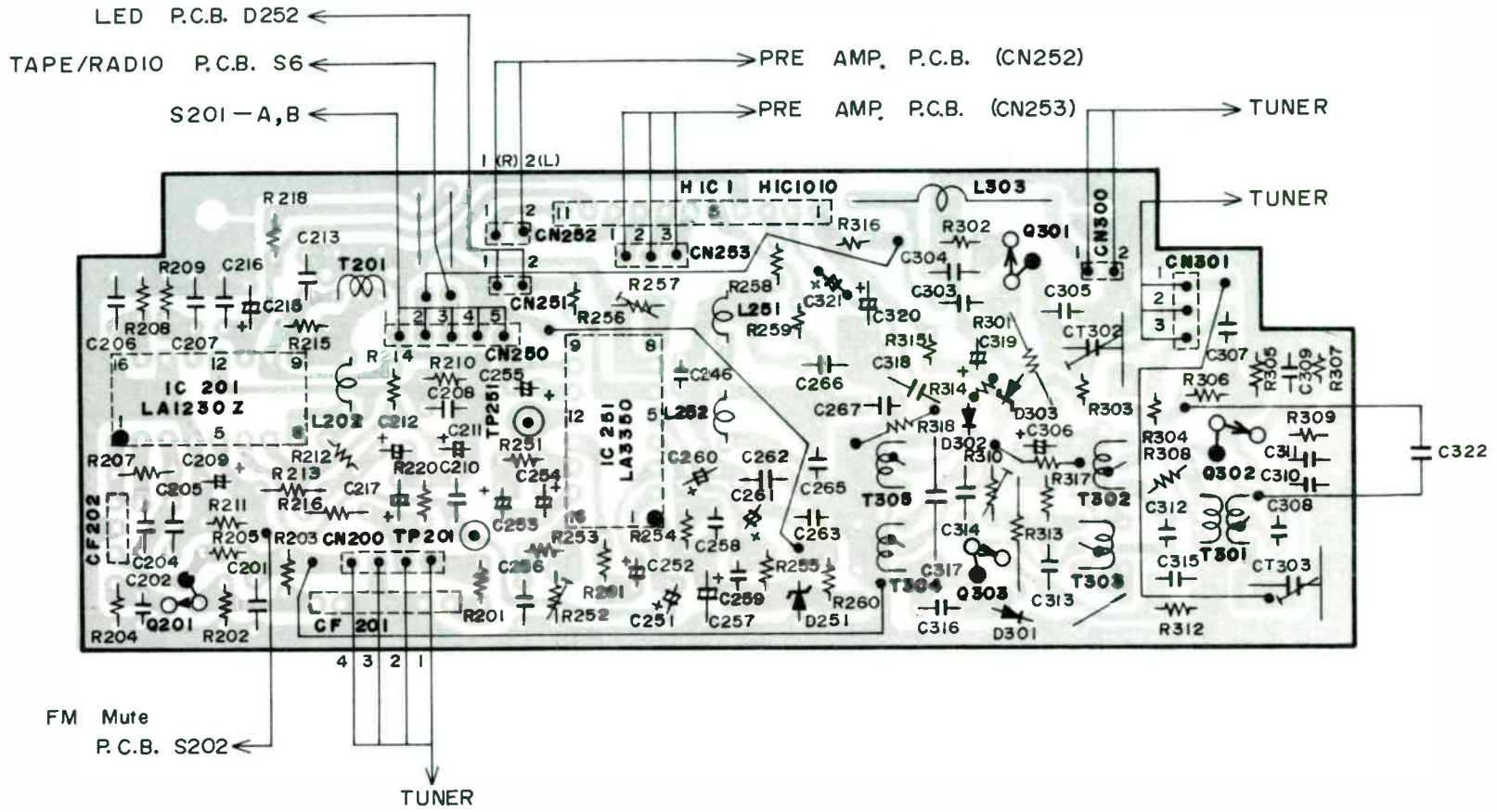


Figure. 16

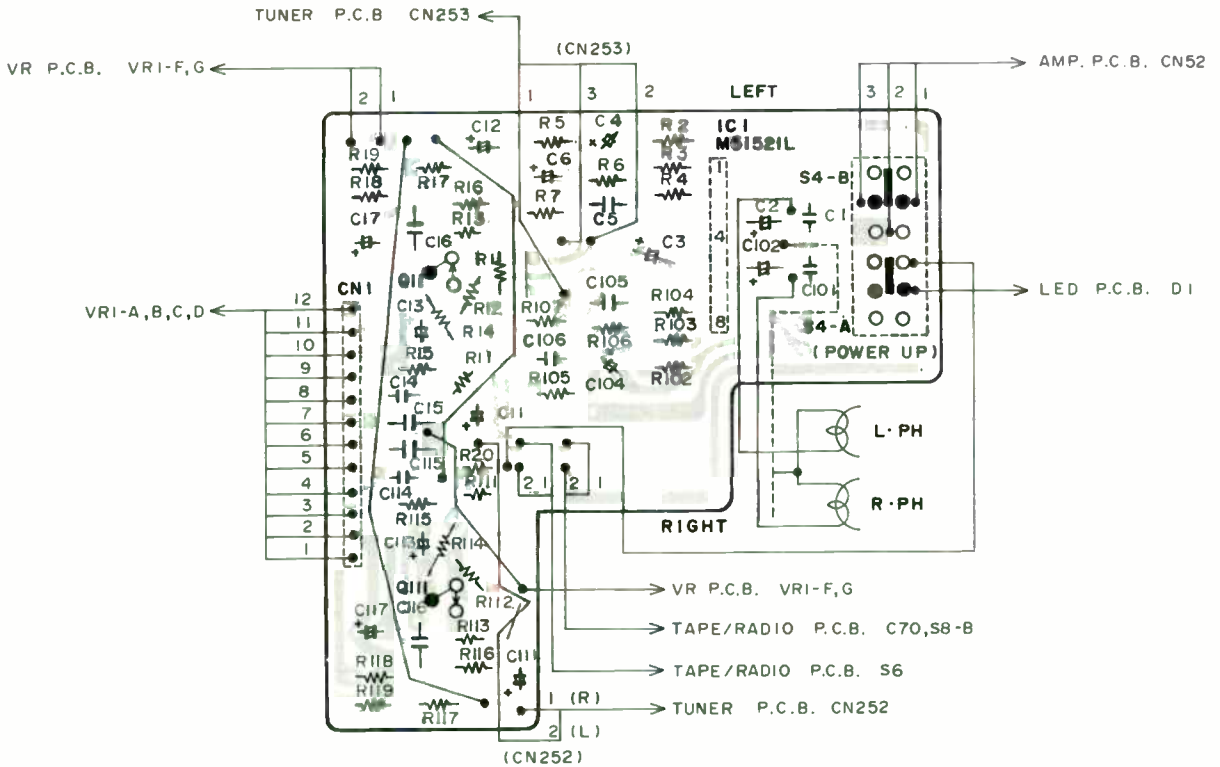
RF tuner PC Board-Solder side



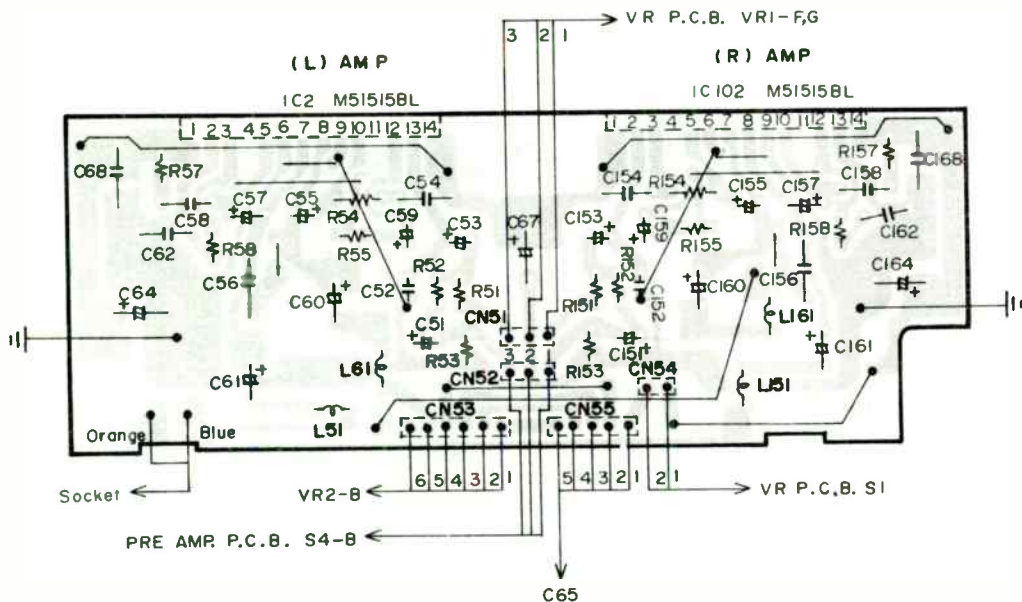


PC Board-Component side

PRE AMP PC Board

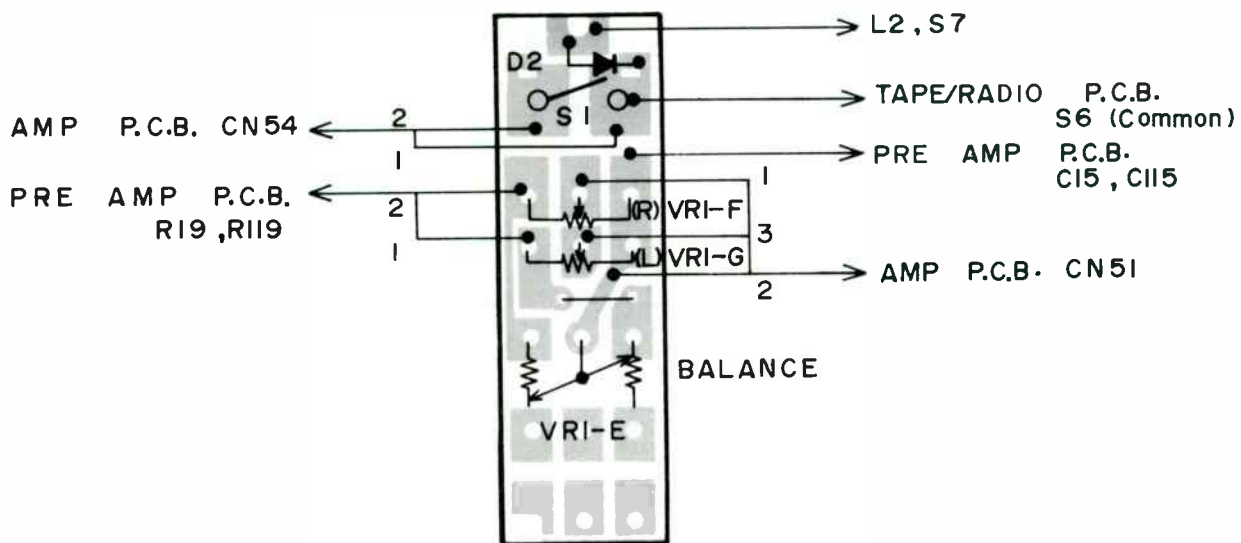


AMP PC Board

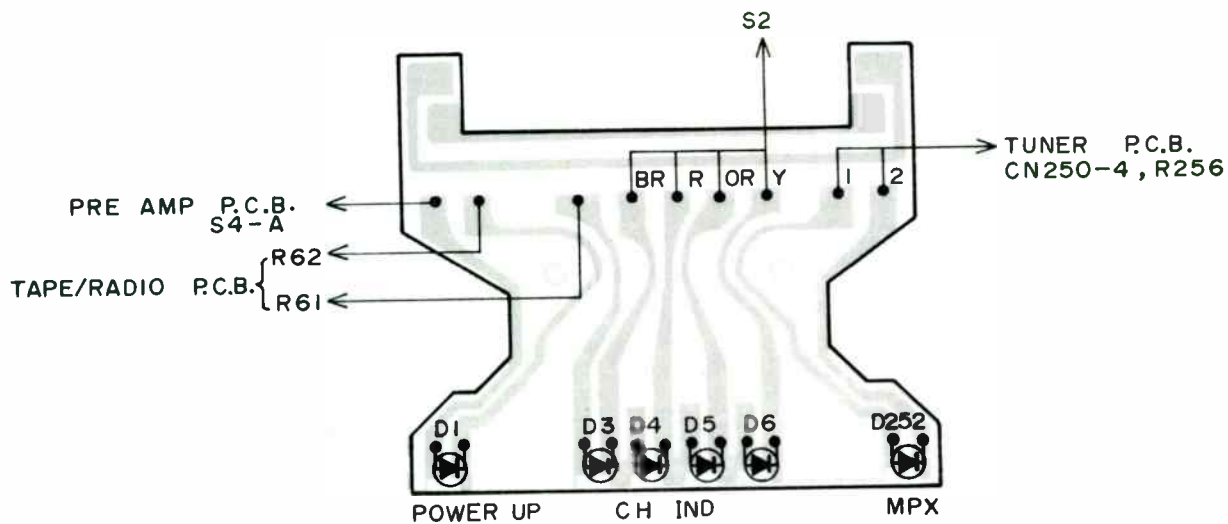


Wiring Diagram

VR P.C.Board (solder side)

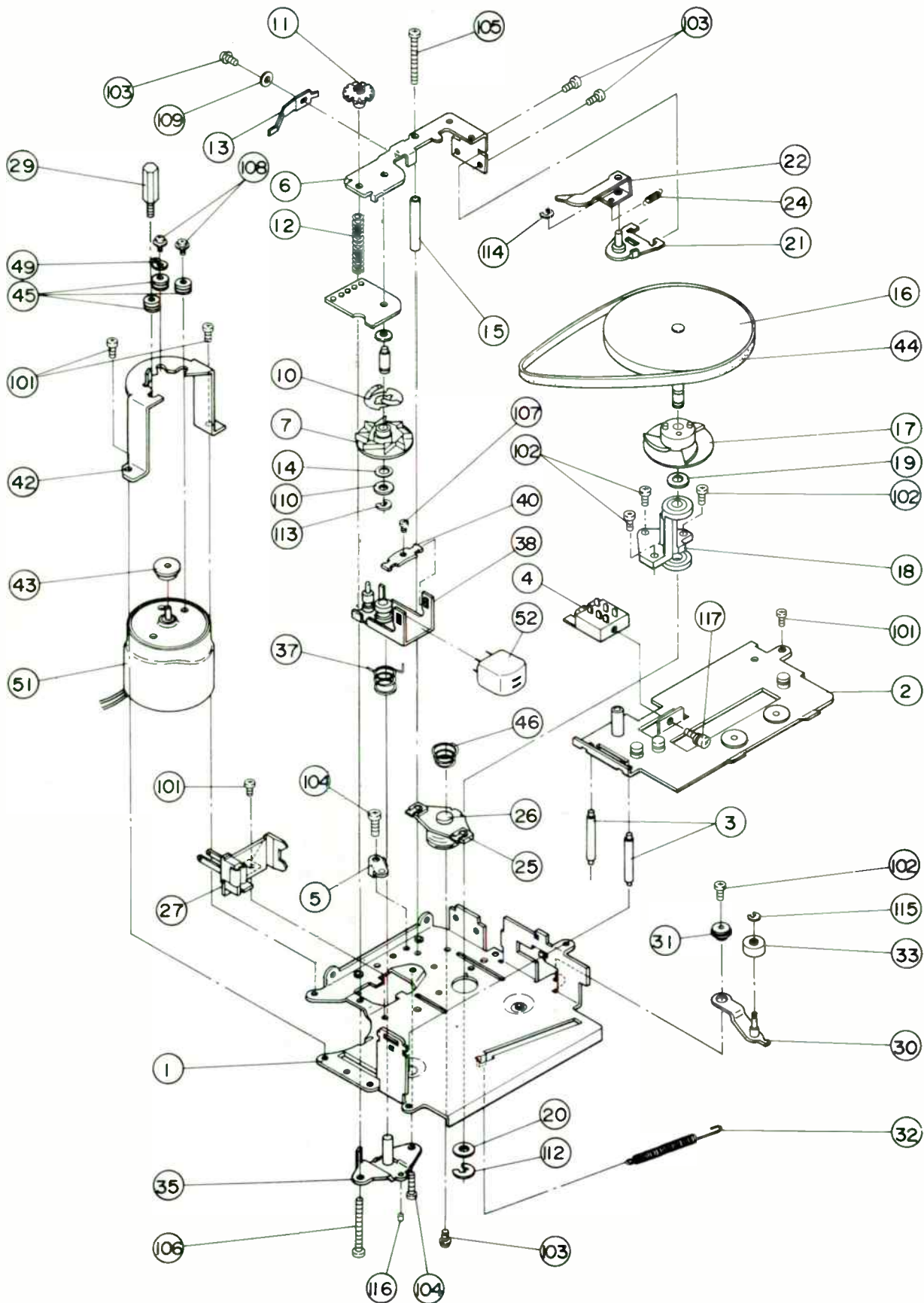


LED P.C.Board (solder side)



JCPenney 981-0246/0246-001-6885

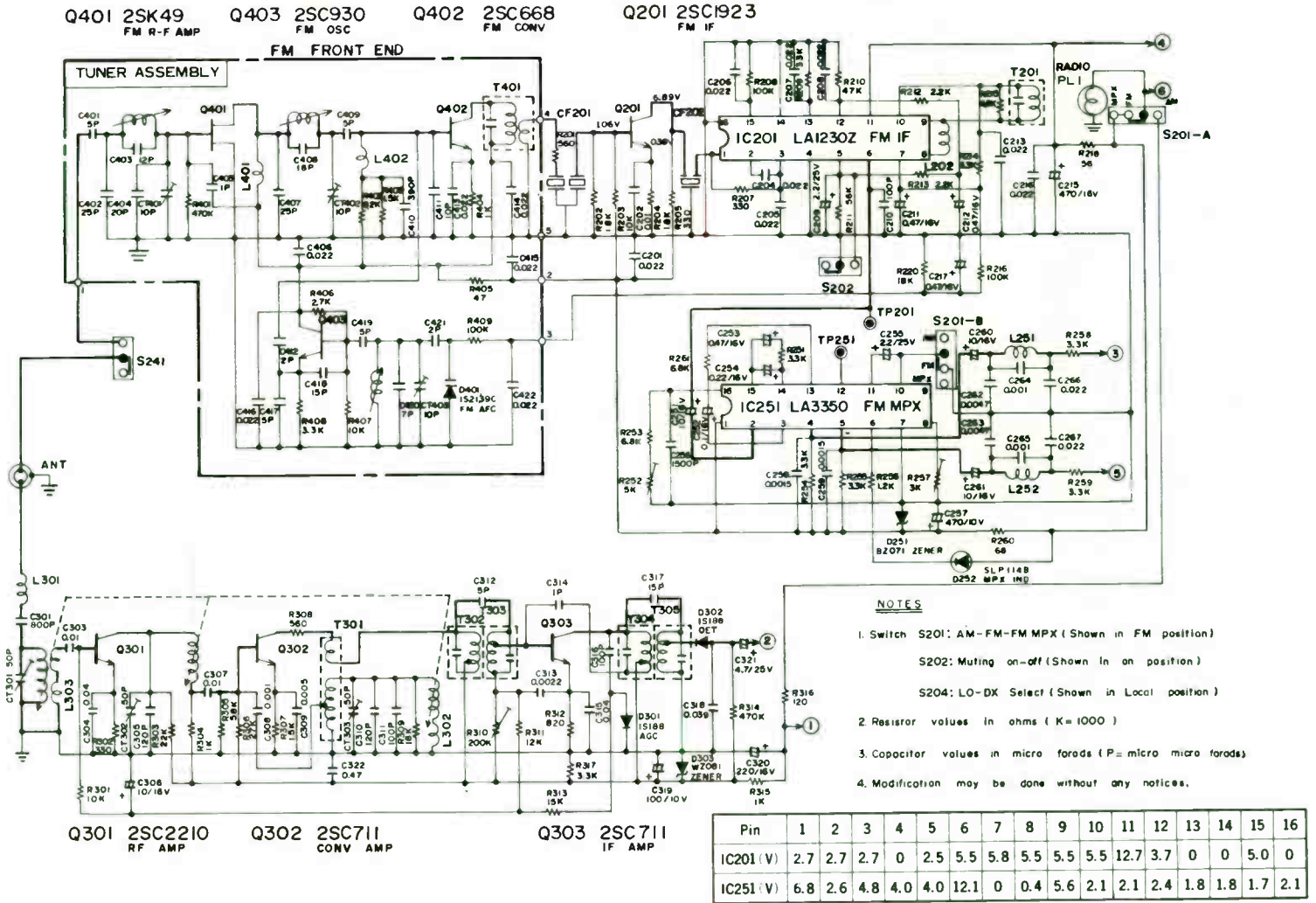
Exploded View-Mechanism



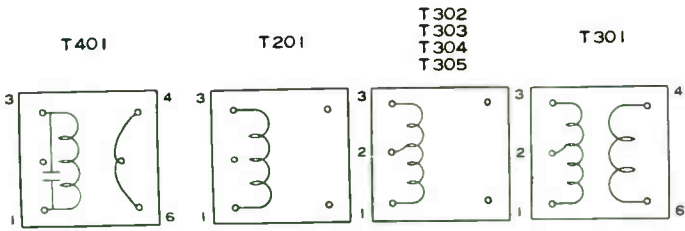
Replacement Parts List

Mechanism (R-S871763)

Ref. No.	JC Penney Part No.	Supplier Part No.	Description
1		947 01 27	Chassis
2		947 01 85	Top plate assembly
3		947 01 03	Roller
4		R-S47515	Slide switch
5		947 08 08	Antag arm
6		947 02 82	Metal bracket assembly
7		947 02 10	8 cam
10		151 02 34	Indicator contact
11		947 02 14	Adjust cam B
12		947 02 13	Adjust spring
13		947 02 16	Leaf spring
14		560 03 05	Wave washer
15		947 02 12	Prop B
16		947 03 01	Flywheel & Capstan
17		947 03 06	Program change cam
18		947 03 03	Flywheel metal
19		947 03 10	Washer
20		151 03 05	F washer
21		947 04 82	Select plate assembly
22		947 04 01B	Select plate
24		289 08 02	Change lever spring
25		560 04 16	Coil E
26		947 04 04	Tug pole
27		947 05 81	Tape guide assembly
29		947 09 10	Protect shaft
30		947 06 81	Arm assembly
31		947 06 02	Arm collar
32		947 06 03	Pressure spring
33		11 03 05	Roller
35		947 08 81	Base plate assembly
37		947 08 05	Head support spring
38		947 08 82	Head holder assembly
40		947 08 06	Head clamp
42		947 09 11	Motor holder
43		947 09 02	Motor pulley
44		947 09 03	Belt
45		947 09 09	Insulator
46		947 04 07	Spring
49		02 15 01	B4 lug plate
51		ST-0444	Motor
52		P-1082	Head
101		*	Tap. Screw. Pan Hd., M3×5
102		*	Tap. Screw. Pan Hd., M3×6
103		*	Sems screw, M2.6×5
104		*	Screw, Pan Hd., M3×6
105		947 02 15	Prop Screw
106		*	Screw, Pan Hd., M3×34
107		*	Screw, Pan Hd., M2.6×4
108		*	Cup Screw, M2.6×5
109		*	Washer, M2.6
110		*	Washer, 4.6×10×0.3
112		*	E-ring, Metal, 4
113		*	E-ring, Metal, 3.2
114		*	E-ring, Metal, 2.3
115		*	E-ring, Metal, 1.5
116		*	Set Screw, M2×2.5



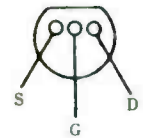
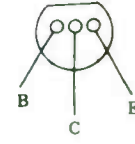
Transformer Termination Information <BOTTOM VIEW>



Q11 2SC536
Q111 2SC1923
Q301 2SC2210
Q402 2SC930
Q403 2SC668

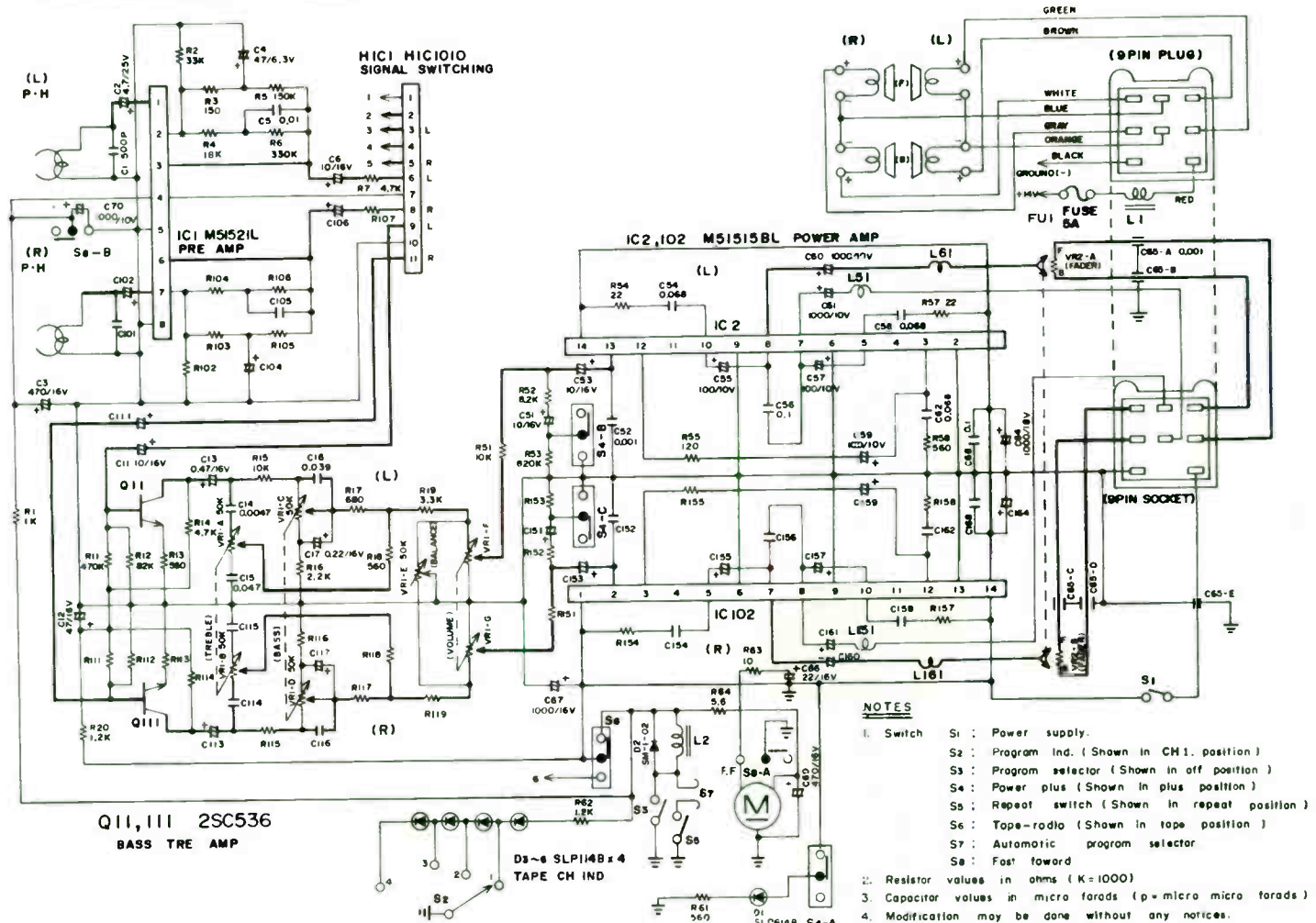
Q302 2SC711
Q303 2SC711

Q401 2SK49

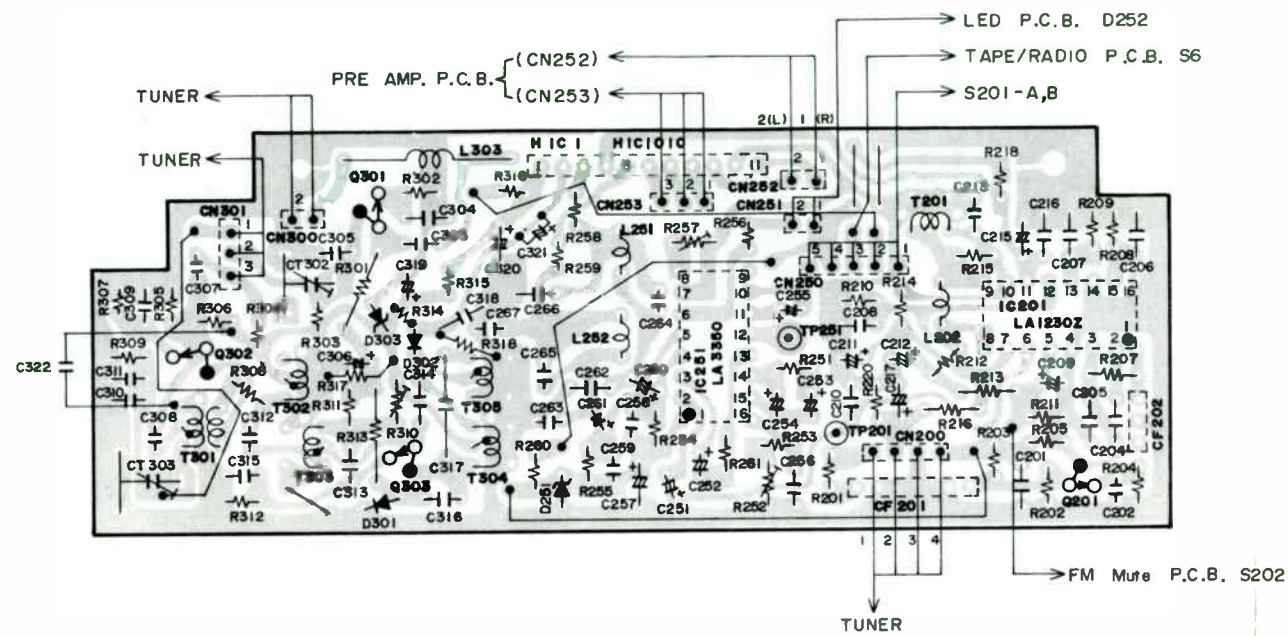


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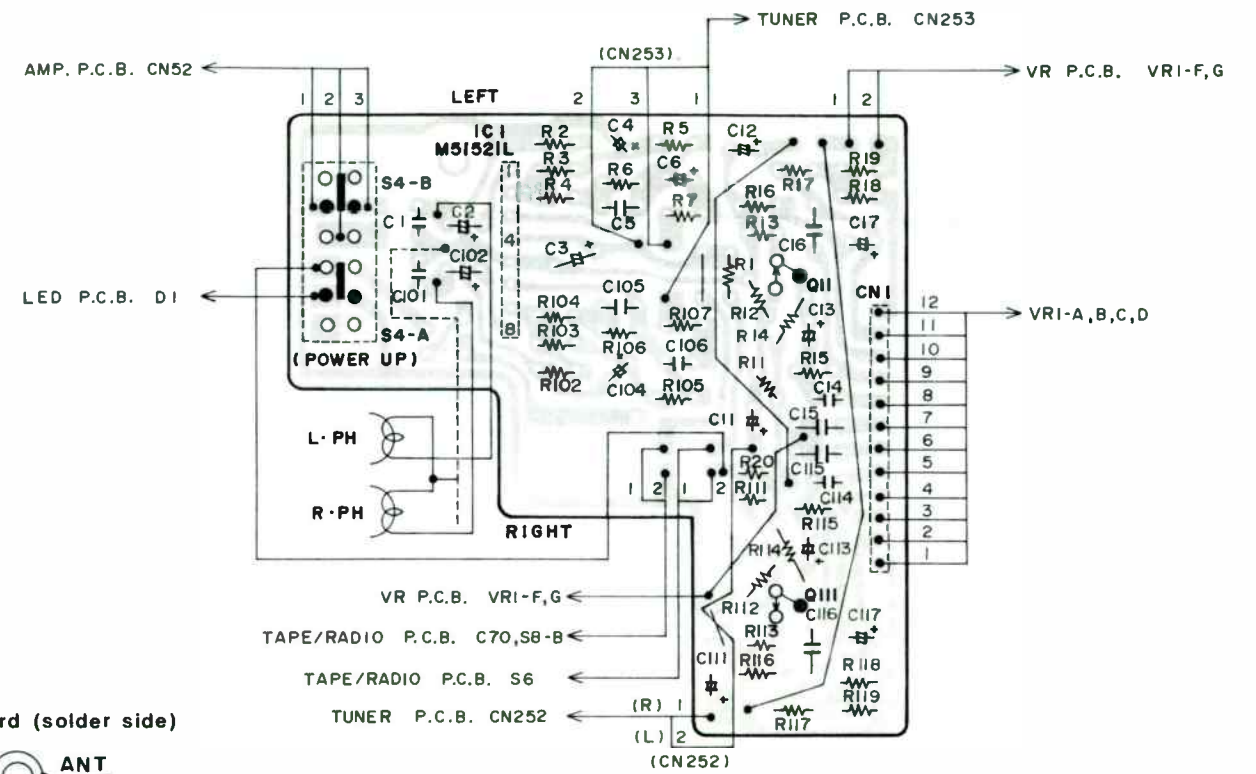
Pin	1	2	3	4	5	6	7	8	9	10	11	12	13	14
IC1 (V)	0.6	0.7	2.9	8	0	2.9	0.7	0.6	/	/	/	/	/	/
IC2,102 (V)	13.8	0	1.2	/	13.6	0	7.4	7.2	0	13.6	/	1.2	0	13.8



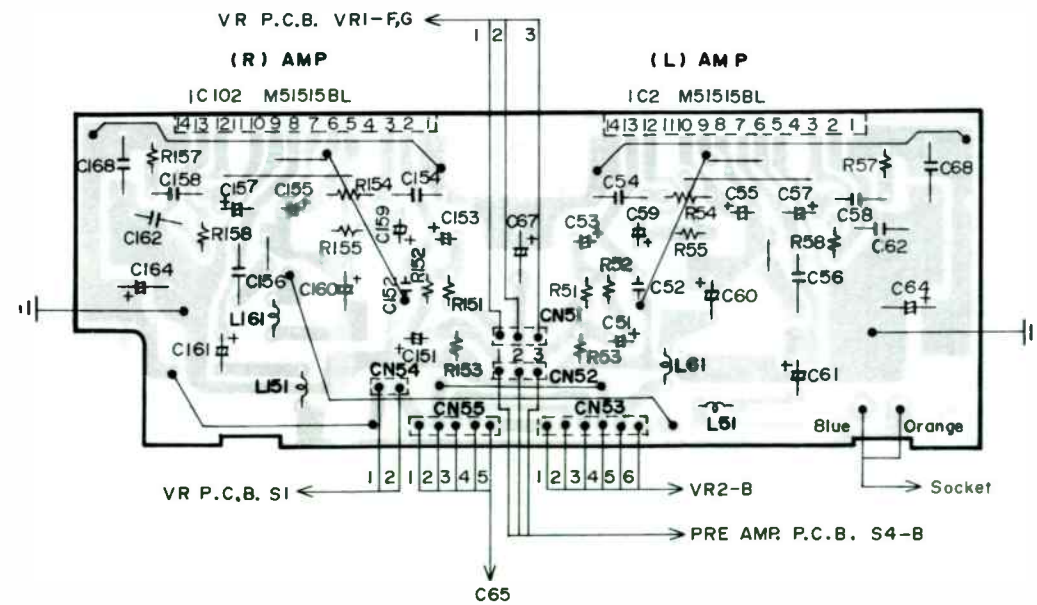
TUNER P.C.Board (solder side)



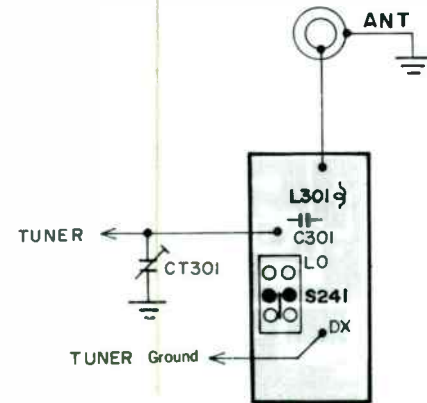
PRE AMP P.C.Board (solder side)



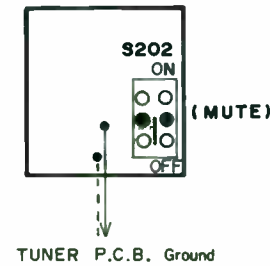
AMP P.C.Board (solder side)



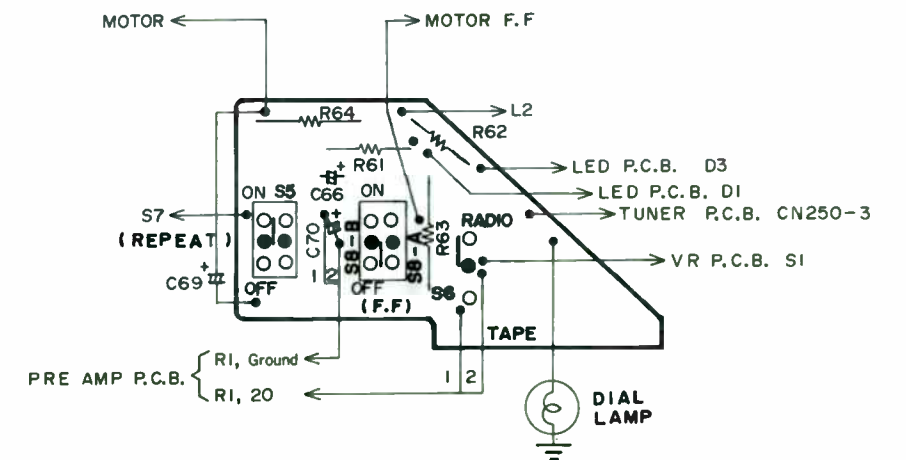
LO/DX P.C.Board (solder side)



FM Mute P.C.Board (solder side)



TAPE/RADIO P.C.Board (solder side)



RF Tuner P.C.B.

D401	1S2139C	Diode, Vari-cap
Q401	2SK49 F2 H1	Transistor
Q402	2SC668 E	Transistor
Q403	2SC930 D E	Transistor
L401	R-W17006	Choke coil
L402	R-W1750a	Choke coil
T401	R-W5T766	IF transformer
R401	*	Carbon Film, 470K ohm, $\pm 10\%$, $\frac{1}{10}$ W
R402	*	Carbon Film, 8.2K ohm, $\pm 10\%$, $\frac{1}{10}$ W
R403	*	Carbon Film, 1.5K ohm, $\pm 10\%$, $\frac{1}{10}$ W
R404	*	Carbon Film, 1K ohm, $\pm 10\%$, $\frac{1}{10}$ W
R405	*	Carbon Film, 47 ohm, $\pm 10\%$, $\frac{1}{10}$ W
R406	*	Carbon Film, 2.7K ohm, $\pm 10\%$, $\frac{1}{10}$ W
R407	*	Carbon Film, 5.6K ohm, $\pm 10\%$, $\frac{1}{10}$ W
R408	*	Carbon Film, 3.3K ohm, $\pm 10\%$, $\frac{1}{10}$ W
R409	*	Carbon Film, 100K ohm, $\pm 10\%$, $\frac{1}{10}$ W
C401	*	Ceramic, 5 pF, $\pm 10\%$, 50V, SL
C402	*	Ceramic, 24 pF, $\pm 10\%$, 50V, SL
C403	*	Ceramic, 12 pF, $\pm 10\%$, 50V, SL
C404	*	Ceramic, 10 pF, $\pm 10\%$, 50V, SL
C405	*	Ceramic, 1 pF, $\pm 10\%$, 50V, CH
C406	*	Ceramic, 0.02 or 0.022 μ F, +80 -20%, 50V, F
C407	*	Ceramic, 24 pF, $\pm 10\%$, 50V, SL
C408	*	Ceramic, 18 pF, $\pm 10\%$, 50V, SL
C409	*	Ceramic, 5 pF, $\pm 10\%$, 50V, SL
C410	*	Ceramic, 390 pF, $\pm 10\%$, 25 or 50V, B
C411	*	Ceramic, 10 pF, $\pm 10\%$, 50V, SL
C412	*	Ceramic, 2 pF, $\pm 10\%$, 50V, CH
C413	*	Ceramic, 0.02 or 0.022 μ F, +80 -20%, 50V, F
C414	*	Ceramic, 0.02 or 0.022 μ F, +80 -20%, 50V, F
C415	*	Ceramic, 0.02 or 0.022 μ F, +80 -20%, 50V, F
C416	*	Ceramic, 0.02 or 0.022 μ F, +80 -20%, 50V, F
C417	*	Ceramic, 5 pF, $\pm 10\%$, 50V, SH
C418	*	Ceramic, 15 pF, $\pm 10\%$, 50V, SH
C419	*	Ceramic, 5 pF, $\pm 10\%$, 50V, SH
C420	*	Ceramic, 5 pF, $\pm 10\%$, 50V, TH
C421	*	Ceramic, 10 pF, $\pm 10\%$, 50V, SH
C422	*	Ceramic, 0.02 or 0.022 μ F, +80 -20%, 50V, F
CT401	R-C0724a	Trimmer
CT402	R-C0724a	Trimmer
CT403	R-C0724a-1 R-S27260-5	Trimmer Plug, 5P Eyelet lug, 2x2.5, ANT

* Common Electronic Part.

Replacement Parts List

Semiconductors

Ref. No.	JC Penney Part No.	Supplier Part No.	Description
IC1		M51521L	IC
IC2		M51515BL	IC
IC102		M51515BL	IC
IC201		LA1230Z	IC
IC251		LA3350B	IC
HIC1		HIC1010	Hybrid IC
D1		SLP-614B	LED
D2		SM-1-02	Diode
D3		SLP-114B	LED
D4		SLP-114B	LED
D5		SLP-114B	LED
D6		SLP-114B	LED
D251		BZ071	Diode
D252		SLP-114B	LED
D301		1S188	Diode
D302		1S188	Diode
D303		WZ081	Diode
Q11		2SC536AUD	Transistor
Q111		2SC536AUD	Transistor
Q201		2SC1923	Transistor
Q301		2SC2210	Transistor
Q302		2SC711	Transistor
Q303		2SC711	Transistor

Coils

L51		R-W17010a	Choke coil, 10 μ H
L61		R-W17010a	Choke coil, 10 μ H
L151		R-W17010a	Choke coil, 10 μ H
L161		R-W17010a	Choke coil, 10 μ H
L202		R-W1798	Choke coil, 18 μ H
L251		R-W1751	Choke coil, 40mH
L252		R-W1751	Choke coil, 40mH
L301		R-W1752	Choke coil, 6.8 μ H
L302		R-W1752	Choke coil, 6.8 μ H
L303		R-W1015e	Choke coil, 6 μ H

Transformers

T201		R-W5T778	IF transformer
T301		R-W8189b	OSC coil
T302		R-W5T246	IF transformer
T303		R-W5T245	IF transformer
T304		R-W5T246	IF transformer
T305		R-W5T247	IF transformer
CF201		R-S17146	Ceramic filter
CF202		R-S17065	Ceramic filter

Resistors (all resistors are 10% tolerance.)

R1		*	Solid, 1 K ohm, $\frac{1}{4}$ W
R2		*	Carbon Film, 33 K ohm, $\frac{1}{4}$ W
R3		*	Carbon Film, 150 ohm, $\frac{1}{4}$ W
R4		*	Carbon Film, 18 K ohm, $\frac{1}{4}$ W

* Common Electronic Part.

Resistors (all resistors are 10% tolerance.)

Ref. No.	JC Penney Part No.	Supplier Part No.	Description
R5		*	150 K ohm. $\frac{1}{4}$ W
R6		*	330 K ohm. $\frac{1}{4}$ W
R7		*	4.7 K ohm. $\frac{1}{4}$ W
R11		*	470 K ohm. $\frac{1}{4}$ W
R12		*	82 K ohm. $\frac{1}{4}$ W
R13		*	560 ohm. $\frac{1}{4}$ W
R14		*	4.7 K ohm. $\frac{1}{4}$ W
R15		*	10 K ohm. $\frac{1}{4}$ W
R16		*	2.2 K ohm. $\frac{1}{4}$ W
R17		*	680 ohm. $\frac{1}{4}$ W
R18		*	560 ohm. $\frac{1}{4}$ W
R19		*	10 K ohm. $\frac{1}{4}$ W
R20		*	1.2 K ohm. $\frac{1}{4}$ W
R51		*	10 K ohm. $\frac{1}{4}$ W
R52		*	8.2 K ohm. $\frac{1}{4}$ W
R53		*	820 K ohm. $\frac{1}{4}$ W
R54		*	22 ohm. $\frac{1}{4}$ W
R55		*	120 ohm. $\frac{1}{4}$ W
R57		*	22 ohm. $\frac{1}{4}$ W
R58		*	560 ohm. $\frac{1}{4}$ W
R61		*	560 ohm. $\frac{1}{4}$ W
R62		*	1.2 K ohm. $\frac{1}{4}$ W
R63		*	Solid, 100 ohm. $\frac{1}{2}$ W
R64		*	Solid, 5.6 ohm. $\frac{1}{2}$ W
R102		*	33 K ohm. $\frac{1}{4}$ W
R103		*	150 ohm. $\frac{1}{4}$ W
R104		*	18 K ohm. $\frac{1}{4}$ W
R105		*	150 K ohm. $\frac{1}{4}$ W
R106		*	330 K ohm. $\frac{1}{4}$ W
R107		*	4.7 K ohm. $\frac{1}{4}$ W
R111		*	470 K ohm. $\frac{1}{4}$ W
R112		*	82 K ohm. $\frac{1}{4}$ W
R113		*	560 ohm. $\frac{1}{4}$ W
R114		*	4.7 K ohm. $\frac{1}{4}$ W
R115		*	10 K ohm. $\frac{1}{4}$ W
R116		*	2.2 K ohm. $\frac{1}{4}$ W
R117		*	680 ohm. $\frac{1}{4}$ W
R118		*	560 ohm. $\frac{1}{4}$ W
R119		*	10 K ohm. $\frac{1}{4}$ W
R151		*	10 K ohm. $\frac{1}{4}$ W
R152		*	8.2 K ohm. $\frac{1}{4}$ W
R153		*	820 K ohm. $\frac{1}{4}$ W
R154		*	22 ohm. $\frac{1}{4}$ W
R155		*	120 ohm. $\frac{1}{4}$ W
R157		*	22 ohm. $\frac{1}{4}$ W
R158		*	560 ohm. $\frac{1}{4}$ W
R201		*	560 ohm. $\frac{1}{4}$ W
R202		*	1.8 K ohm. $\frac{1}{4}$ W
R203		*	10 K ohm. $\frac{1}{4}$ W
R204		*	1.8 K ohm. $\frac{1}{4}$ W

* Common Electronic Part.

Resistors (all resistors are 10% tolerance.)

Ref. No.	JC Penney Part No.	Supplier Part No.	Description
R205		*	330 ohm. $\frac{1}{4}$ W
R207		*	330 ohm. $\frac{1}{4}$ W
R208		*	100 K ohm. $\frac{1}{4}$ W
R209		*	33 K ohm. $\frac{1}{4}$ W
R210		*	47 K ohm. $\frac{1}{4}$ W
R211		*	56 K ohm. $\frac{1}{4}$ W
R212		*	2.2 K ohm. $\frac{1}{4}$ W
R213		*	2.2 K ohm. $\frac{1}{4}$ W
R214		*	3.3 K ohm. $\frac{1}{4}$ W
R215		*	6.8 K ohm. $\frac{1}{4}$ W
R216		*	100 K ohm. $\frac{1}{4}$ W
R218		*	56 ohm. $\frac{1}{4}$ W
R251		*	3.3 K ohm. $\frac{1}{4}$ W
R252		R-R110730	Semi-variable. 5 K ohm
R253		*	6.8 K ohm. $\frac{1}{4}$ W
R254		*	3.3 K ohm. $\frac{1}{4}$ W
R255		*	3.3 K ohm. $\frac{1}{4}$ W
R256		*	1.2 K ohm. $\frac{1}{4}$ W
R257		R-R110738	Semi-variable. 3 K ohm
R258		*	3.3 K ohm. $\frac{1}{4}$ W
R259		*	3.3 K ohm. $\frac{1}{4}$ W
R260		*	Metal oxide film. 68 ohm. $\pm 10\%$. 1W
R261		*	6.8 K ohm. $\frac{1}{4}$ W
R301		*	10 K ohm. $\frac{1}{4}$ W
R302		*	330 ohm. $\frac{1}{4}$ W
R303		*	22 K ohm. $\frac{1}{4}$ W
R304		*	1 K ohm. $\frac{1}{4}$ W
R305		*	5.6 K ohm. $\frac{1}{4}$ W
R306		*	27 K ohm. $\frac{1}{4}$ W
R307		*	1.5 K ohm. $\frac{1}{4}$ W
R308		*	560 ohm. $\frac{1}{4}$ W
R309		*	18 K ohm. $\frac{1}{4}$ W
R310		R-R110742	Semi-variable. 200 K ohm
R311		*	12 K ohm. $\frac{1}{4}$ W
R312		*	820 ohm. $\frac{1}{4}$ W
R313		*	15 K ohm. $\frac{1}{4}$ W
R314		*	470 K ohm. $\frac{1}{4}$ W
R315		*	1 K ohm. $\frac{1}{4}$ W
R316		*	120 ohm. $\frac{1}{4}$ W

Capacitors

C1		*	Styrol. 500 pF. $\pm 10\%$. 50V
C2		*	Electrolytic. 4.7 μ F. 25V. M
C3		*	Electrolytic. 470 μ F. 16V. C
C4		*	Electrolytic. 47 μ F. 6.3V. H
C5		*	SBL ceramic. 0.01 μ F. $\pm 20\%$. 25V
C6		*	Electrolytic. 10 μ F. 16V. M
C11		*	Electrolytic. 10 μ F. 16V. M
C12		*	Electrolytic. 47 μ F. 16V. H
C13		*	Electrolytic. 0.47 μ F. 16V. Tantalum
C14		*	SBL ceramic. 0.0047 μ F. $\pm 10\%$. 25V

* Common Electronic Part.

Capacitors

Ref. No.	JC Penney Part No.	Supplier Part No.	Description
C15		*	SBL ceramic, 0.047 μ F, \pm 10%, 25V
C16		*	SBL ceramic, 0.039 μ F, \pm 10%, 25V
C17		*	Electrolytic, 0.22 μ F, 16V, Tantalum
C51		*	Electrolytic, 10 μ F, 16V
C52		*	Mylar, 0.001 μ F, +30 -20%, 50V
C53		*	Electrolytic, 10 μ F, 16V
C54		*	Mylar, 0.068 μ F, +30 -20%, 50V
C55		*	Electrolytic, 100 μ F, 10V, H
C56		*	Mylar, 0.1 μ F, +30 -20%, 50V
C57		*	Electrolytic, 100 μ F, 10V, H
C58		*	Mylar, 0.068 μ F, +30 -20%, 50V
C59		*	Electrolytic, 100 μ F, 10V, H
C60		*	Electrolytic, 1000 μ F, 10V, C
C61		*	Electrolytic, 1000 μ F, 16V, C
C62		*	Mylar, 0.068 μ F, +30 -20%, 50V
C64		*	Electrolytic, 1000 μ F, 16V, C
C65-A~E		R-C7710a	Noise suppression capacitor
C66		*	Electrolytic, 22 μ F, 16V, H
C67		*	Electrolytic, 1000 μ F, 16V, C
C68		*	Mylar, 0.068 μ F, +30 -20%, 50V
C69		*	Electrolytic, 470 μ F, 16V, C
C101		*	Styrol, 500 pF, \pm 10%, 50V
C102		*	Electrolytic, 4.7 μ F, 25V, M
C104		*	Electrolytic, 47 μ F, 6.3V, H
C105		*	SBL ceramic, 0.01 μ F, \pm 20%, 25V
C106		*	Electrolytic, 10 μ F, 16V, M
C111		*	Electrolytic, 10 μ F, 16V, M
C113		*	Electrolytic, 0.47 μ F, 16V, Tantalum
C114		*	SBL ceramic, 0.0047 μ F, \pm 10%, 25V
C115		*	SBL ceramic, 0.047 μ F, \pm 10%, 25V
C116		*	SBL ceramic, 0.039 μ F, \pm 10%, 25V
C117		*	Electrolytic, 0.22 μ F, 16V, Tantalum
C151		*	Electrolytic, 10 μ F, 16V, M
C152		*	Mylar, 0.001 μ F, +30 -20%, 50V
C153		*	Electrolytic, 10 μ F, 16V, M
C154		*	Mylar, 0.1 μ F, +30 -20%, 50V
C155		*	Electrolytic, 100 μ F, 10V, H
C156		*	Mylar, 0.1 μ F, +30 -20%, 50V
C157		*	Electrolytic, 100 μ F, 10V, H
C158		*	Mylar, 0.068 μ F, +30 -20%, 50V
C159		*	Electrolytic, 100 μ F, 10V, H
C160		*	Electrolytic, 1000 μ F, 10V, C
C161		*	Electrolytic, 1000 μ F, 10V, C
C162		*	Mylar, 0.068 μ F, +30 -20%, 50V
C201		*	SBL ceramic, 0.022 μ F, \pm 10%, 25V
C202		*	SBL ceramic, 0.01 μ F, \pm 10%, 25V
C204		*	SBL ceramic, 0.022 μ F, \pm 10%, 25V
C205		*	SBL ceramic, 0.022 μ F, \pm 10%, 25V
C206		*	SBL ceramic, 0.022 μ F, \pm 10%, 25V
C207		*	SBL ceramic, 0.022 μ F, \pm 10%, 25V

* Common Electronic Part.

Capacitors

Ref. No.	JC Penney Part No.	Supplier Part No.	Description
C208		*	SBL ceramic, 0.022 μ F, \pm 10%, 25V
C209		*	Electrolytic, 2.2 μ F, 25V, M
C210		*	Ceramic, 100 pF, \pm 10%, 50V, SL
C211		*	Electrolytic, 0.47 μ F, 16V, Tantalum
C212		*	Electrolytic, 0.47 μ F, 16V, Tantalum
C213		*	SBL ceramic, 0.022 μ F, \pm 10%, 25V
C215		*	Electrolytic, 470 μ F, 16V, C
C216		*	SBL ceramic, 0.022 μ F, \pm 10%, 25V
C217		*	Electrolytic, 0.47 μ F, 16V, Tantalum
C251		*	Electrolytic, 10 μ F, 16V, M
C252		*	Electrolytic, 0.1 μ F, 16V, Tantalum
C253		*	Electrolytic, 0.47 μ F, 16V, Tantalum
C254		*	Electrolytic, 0.22 μ F, 16V, Tantalum
C255		*	Electrolytic, 2.2 μ F, 25V, M
C256		*	Styrol, 1500 pF, \pm 5%, 50V
C257		*	Electrolytic, 470 μ F, 10V, H
C258		*	SBL ceramic, 0.0015 μ F, \pm 20%, 25V
C259		*	SBL ceramic, 0.0015 μ F, \pm 20%, 25V
C260		*	Electrolytic, 10 μ F, 16V, M
C261		*	Electrolytic, 10 μ F, 16V, M
C262		*	SBL ceramic, 0.0047 μ F, \pm 20%, 25V
C263		*	SBL ceramic, 0.0047 μ F, \pm 20%, 25V
C264		*	SBL ceramic, 0.001 μ F, \pm 20%, 25V
C265		*	SBL ceramic, 0.001 μ F, \pm 20%, 25V
C266		*	SBL ceramic, 0.022 μ F, \pm 20%, 25V
C267		*	SBL ceramic, 0.022 μ F, \pm 20%, 25V
C301		*	Styrol, 500 pF, \pm 5%, 50V
C303		*	SBL ceramic, 0.01 μ F, \pm 20%, 25V
C304		*	SBL ceramic, 0.039 or 0.047 μ F, \pm 20% 25V
C305		*	Ceramic, 120 pF, \pm 10%, 50V, SL
C306		*	Electrolytic, 10 μ F, 16V, M
C307		*	SBL ceramic, 0.01 μ F, \pm 20%, 25V
C308		*	SBL ceramic, 0.001 μ F, \pm 20%, 25V
C309		*	SBL ceramic, 0.0047 μ F, \pm 20%, 25V
C310		*	Styrol, 120 pF, \pm 5%, 50V
C311		*	Ceramic, 82 pF, \pm 10%, 50V, SL
C312		*	Ceramic, 5 pF, \pm 10%, 50V, SL
C313		*	SBL ceramic, 0.0022 μ F, \pm 20%, 25V
C314		*	Ceramic, 1 pF, \pm 10%, 50V, SL
C315		*	SBL ceramic, 0.039 or 0.047 μ F, \pm 20%, 25V
C316		*	Ceramic, 100 pF, \pm 10%, 50V, SL
C317		*	Ceramic, 15 pF, \pm 10%, 50V, SL
C318		*	SBL ceramic, 0.039 μ F, \pm 20%, 25V
C319		*	Electrolytic, 100 μ F, 10V, H
C320		*	Electrolytic, 220 μ F, 16V, H
C321		*	Electrolytic, 4.7 μ F, 25V, M
CT301		R-C07236-1	Trimmer
CT302		R-C0702a	Trimmer
CT303		R-C0702a	Trimmer

* Common Electronic Part.

Replacement Parts List

Mechanical Installation

Ref. No.	JC Penney Part No.	Supplier Part No.	Description
FU1		R-A73906	Knob assembly, ON-OFF VOL./TUNING
		R-3972835	Knob, TREBLE/FADER
		R-3972836	Knob, BASS/AM-FM
		R-3972833	Trim panel
		R-367201	Gasket
		R-111685a-1	Metal bracket
		R-A73886	Lead terminal assembly
		R-S17150	Fuse, 5A
		R-A73885	Mounting hardware assembly

Cabinet & Chassis

		R-1271728	Metal casing, Front
		R-1271729	Metal casing, Left
		R-1271730	Metal casing, Right
		R-1271746	Metal casing, Rear
		R-3672827	Knob, FM MUTE
		R-3972827-1	Knob, POWER UP
		R-3972823	Knob, REPEAT
		R-3972824	Knob, DX/LO
		R-3972825	Knob, F.Fwd
		R-3972822	Nose panel
		R-A73907	8 track door assembly
		R-3971731-1	Pointer
		R-157903	Shaft, 8 track door
		R-1570242	Spring
		R-A73949	Connecting lever assembly
		R-257193	Connecting lever
		R-1271826N	Metal lid, Bottom
		R-1271745	Metal lid, Top
		R-4773416	Specification sheet
		R-127375	Metal bracket
		R-1270130	Washer
		R-1170564	Nut
		R-A73908	Printed circuit board assembly, AMP. ①
		R-A73909	Printed circuit board assembly, TUNER ①
		R-A73910	Printed circuit board assembly, PRE AMP. ①
		R-A73911	Printed circuit board assembly, TAPE/RADIO ②
		R-A73912	Printed circuit board assembly, DX/LO ②
		R-4172083	Printed circuit board, LED ②
		R-4172086a	Printed circuit board, FM Mute ②
		R-4172085	Printed circuit board, VR ②
		R-4171686	Printed circuit board, FADER ②
		R-A73913	Base chassis assembly
		R-1271737	Lever, FM Mute
		R-1271738	Lever, Power up
		R-1271739	Lever, DX/LO

① Field repair, Do not exchange. ② Throw away, Do not repair.

Cabinet & Chassis

Ref. No.	JC Penney Part No.	Supplier Part No.	Description
(VR1-A~G) (VR2-A, B)		R-1271740	Lever, Repeat/F.Fwd
		R-1271736	Metal bracket, DX/LO
		R-1271761	Metal bracket, Base chassis
		R-1271762	Metal bracket, Base chassis
		R-1271735	Metal bracket, ANT trimmer
		R-1271733	Metal bracket, Base chassis
		R-1271734	Metal bracket, Base chassis
		R-2672219	Heat sink, IC
		R-1271732	Metal bracket, Heat sink
		R-247885	Shaft
		R-S871787	Joint shaft assembly
		R-137108	Metal
		R-367131	Hishi tube, 5φ×0.5×20L, Cord
		R-S871415a	Shield sheet assembly
		R-1271825	Metal bracket
		R-S871738	Tuner assembly ⑤
		R-R1167257	Variable resistor, 50K-A,B,D, BASS/TREBLE/VOL./BAL.
		R-R1167256	Variable resistor, 80ohm-B, FADER

Miscellaneous

PL1 (S4) (S5) (S8) (S202) (S241)		R-S871763	Mechanism assembly, FEC5
		R-S37232	Lead terminal
		R-S871389N	Pilot lamp assembly
		*	Eyelet, 2×3
		R-S2156-8	ANT socket
		R-S47434-1	Push switch
		R-S47400-1	Push switch
		R-S47400-1	Push switch
		R-S47400-1	Push switch
		R-S47400-1	Push switch
		R-257160	Terminal
		R-S27322-12	Socket, 140mm
		R-S27322-3	Socket, 200mm
		R-S27322-3	Socket, 200mm
		R-S27322-6	Socket, 260mm
		R-S27322-2	Socket, 340mm
		R-S27322-5	Socket, 260mm
		R-S27322-1	Socket, 160mm
		R-S27322-5	Socket, 260mm
		R-S27322-2	Socket, 340mm
		R-S27322-2	Socket, 340mm
		R-S27322-3	Socket, 200mm
		R-S27322-2	Socket, 340mm
		R-S27322-3	Socket, 200mm
	R-S27321-2	Plug, 2P	

⑤ If estimated repair cost exceeds replacement cost, throw away. Do not repair.

ALIGNMENT INSTRUCTIONS

Check for specified source voltage
 Connect low sides of generator and
 indicator to ground unless specified otherwise.
 Use only enough generator output
 to provide a usable indication.
 Suggested Alignment Tools: GC ELECTRONICS:
 ALL Coils and Trimmers 5000,8276,9089

PUSH-BUTTON ADJUSTMENT

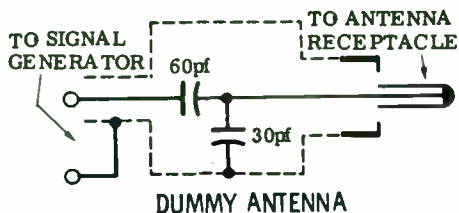
1. Pull button out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

AM ALIGNMENT--SELECTOR IN AM POSITION

Connect output meter across speaker voice coil.

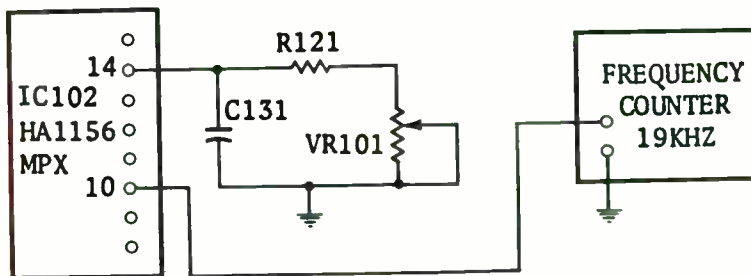
GENERATOR COUPLING	GENERATOR FREQUENCY	RADIO DIAL SETTING	ADJUST	REMARKS
High side thru .1uF	262kHz 400Hz mod.	High freq end stop	T204,T203, T202,T201	Adjust for maximum.
Thru dummy antenna to antenna input.	1610kHz 400Hz mod.	1610kHz	TC203	Adjust for maximum.
Thru dummy antenna to antenna input.	1610kHz 400Hz mod.	1610kHz	TC202,TC201	Adjust for maximum.

With radio installed in car and antenna extended 30", tune in a weak station near 1400kHz and adjust TC201 for maximum output. Antenna adjustment is located on front panel in upper right corner.



FM STEREO ADJUSTMENT

Ideally, one of the most accurate ways to adjust VR101 would be with the aid of a Frequency Counter. Connect the counter to pin no. 10 (TPB) of IC102 as shown in Fig. below. Adjust VR101 for 19kHz as seen on the Counter.



VR101 ADJUSTMENT WITH COUNTER

ALIGNMENT INSTRUCTIONS (Continued)

FM ALIGNMENT

GENERAL INFORMATION - The factory alignment is performed with laboratory equipment. The circuits are quite stable and not ordinarily subject to drift, therefore, before alignment is attempted, the set should be thoroughly checked for circuit troubles. An FM generator should be used for FM alignment.

ALIGNMENT CONDITIONS - Input level to the receiver +14.0V DC. During FM alignment, the generator output signal amplitude must be set above or below the receiver limiting level depending on the adjustment made. The limiting level is the point where further increase in input does not increase the output level. During alignment then, either keep the level below this point (below limiting level) or above this point (into limiting) as pointed out in the alignment procedure. In addition, the signal generator leads must be short and carefully shielded. If noise voltage on the generator leads is high enough to cause limiting, it is almost impossible to align the receiver properly because tuning adjustments will not show up as variations in the VTVM reading.

PRE-ALIGNMENT STEPS

1. The "AM-FM" switch, in "FM" position.
2. "Local/Distance" switch, in "Distance" position.
3. Tone control, in full treble position (C.W.).
4. Balance control, equal power output.
5. Connect resistive loads to left & right speaker output.

FM ALIGNMENT USING FM GENERATOR

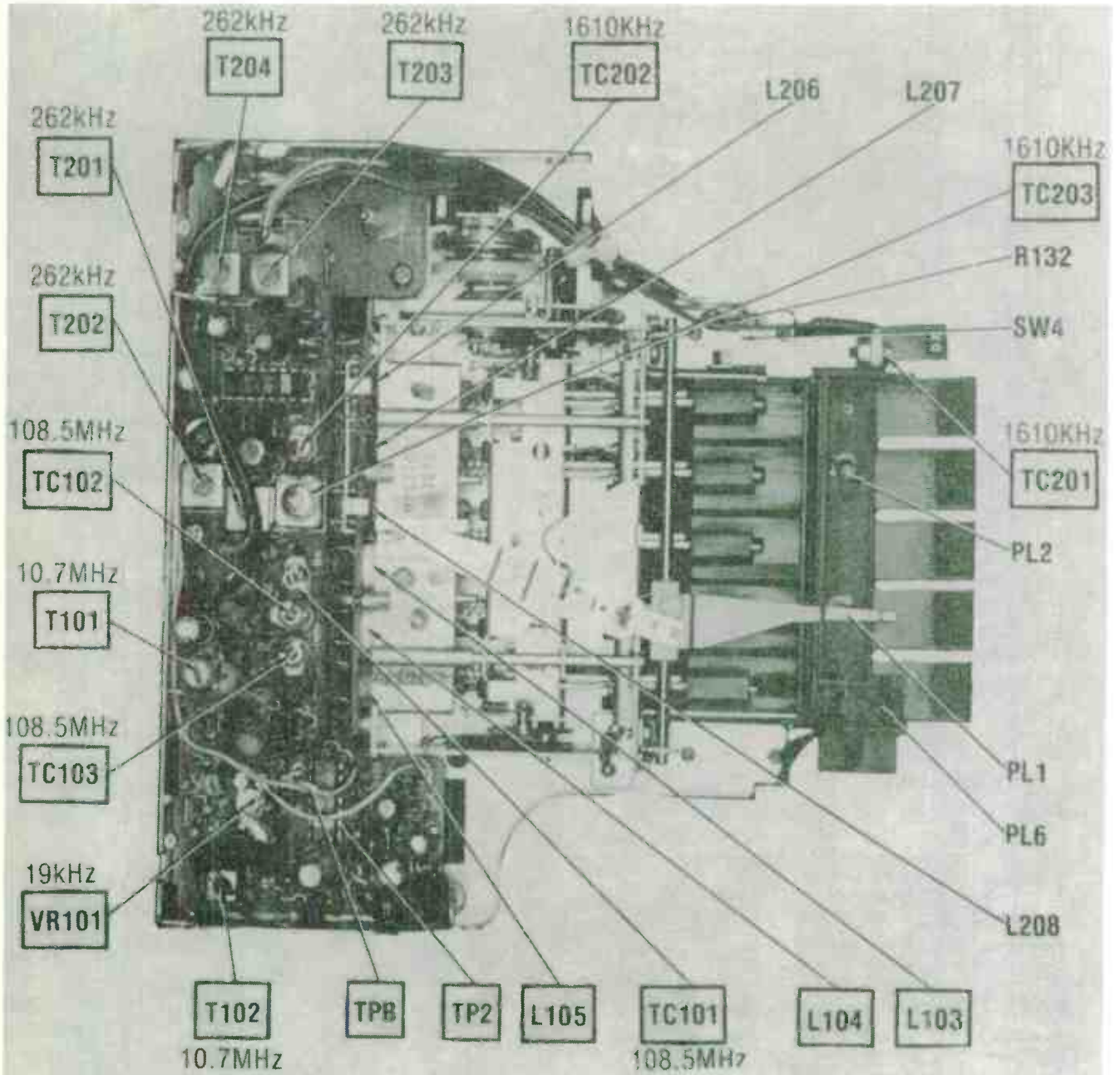
STEP	GENERATOR COUPLING	GENERATOR FREQUENCY	RADIO FREQUENCY	OUTPUT INDICATOR	ADJUST	REMARKS
FM IF ALIGNMENT						
1	To ant recept	10.7MHz (75KHz deviation @ 400Hz Mod-into limiting.)	108.5MHz	VTVM-AC probe or scope across 4.0 ohm output load	T102	Adjust for max output.
2	"	100KuV or better 10.7MHz (75KHz deviation @ 400Hz Mod-below limiting)	"	"	T101	Adjust for max output. Repeat steps 1 & 2 for optimum peak.

The following steps are required to bring the IF system into line with the ceramic filters in order to achieve maximum sensitivity.

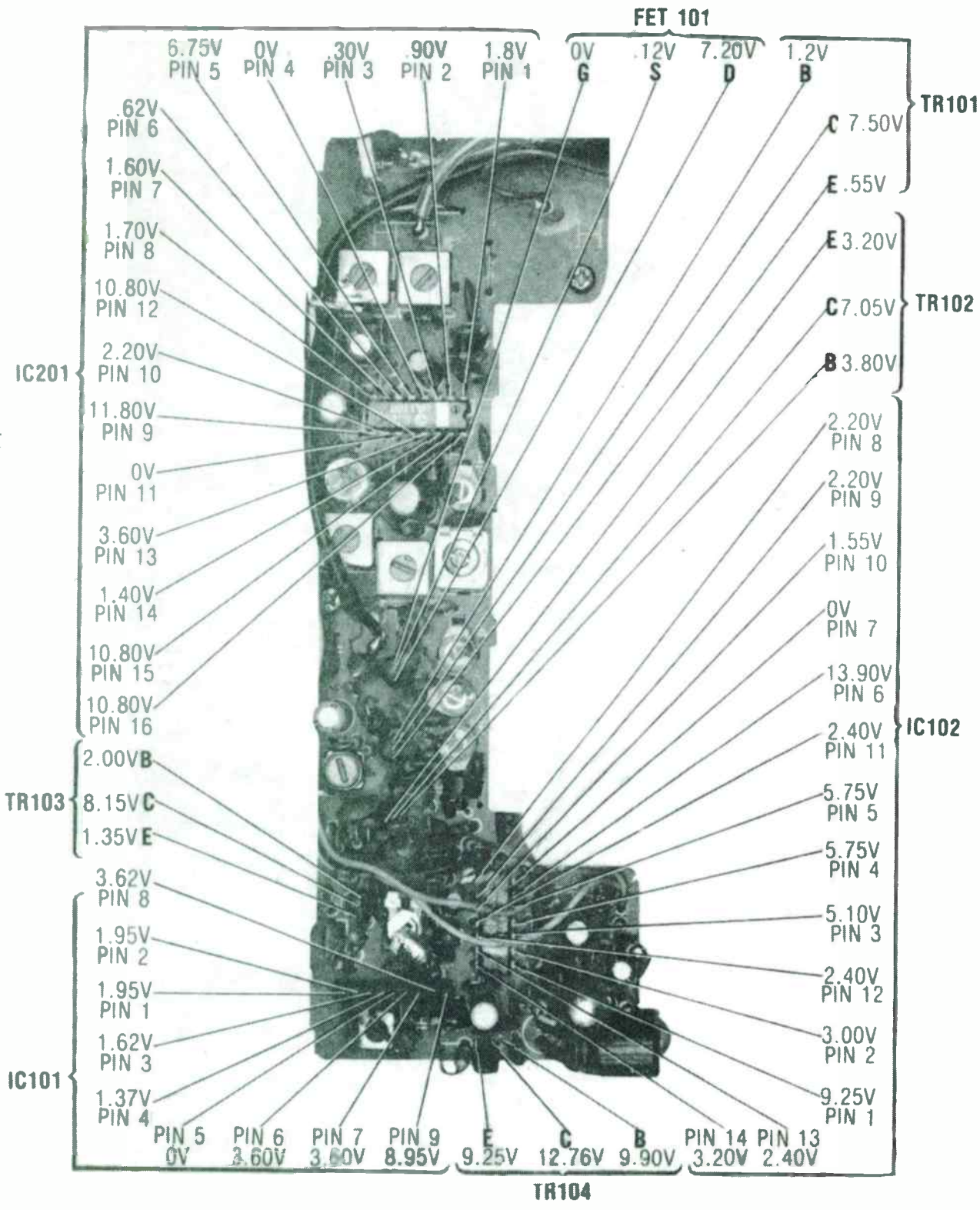
3	"	98MHz (75KHz deviation @ 400Hz Mod-Below limiting)	98MHz	"	Radio freq.	Adjust for best Symmetry on scope, or max output on VTVM.
4	"	98MHz (75KHz deviation @ 400Hz Mod-into limiting 100KuV or better)	"	"	T102	Adjust for max output.
5	"	98MHz (75KHz deviation @ 400Hz Mod-below limiting)	"	"	T101	Adjust for max output. Repeat steps 3,4 & 5 for optimum peak.

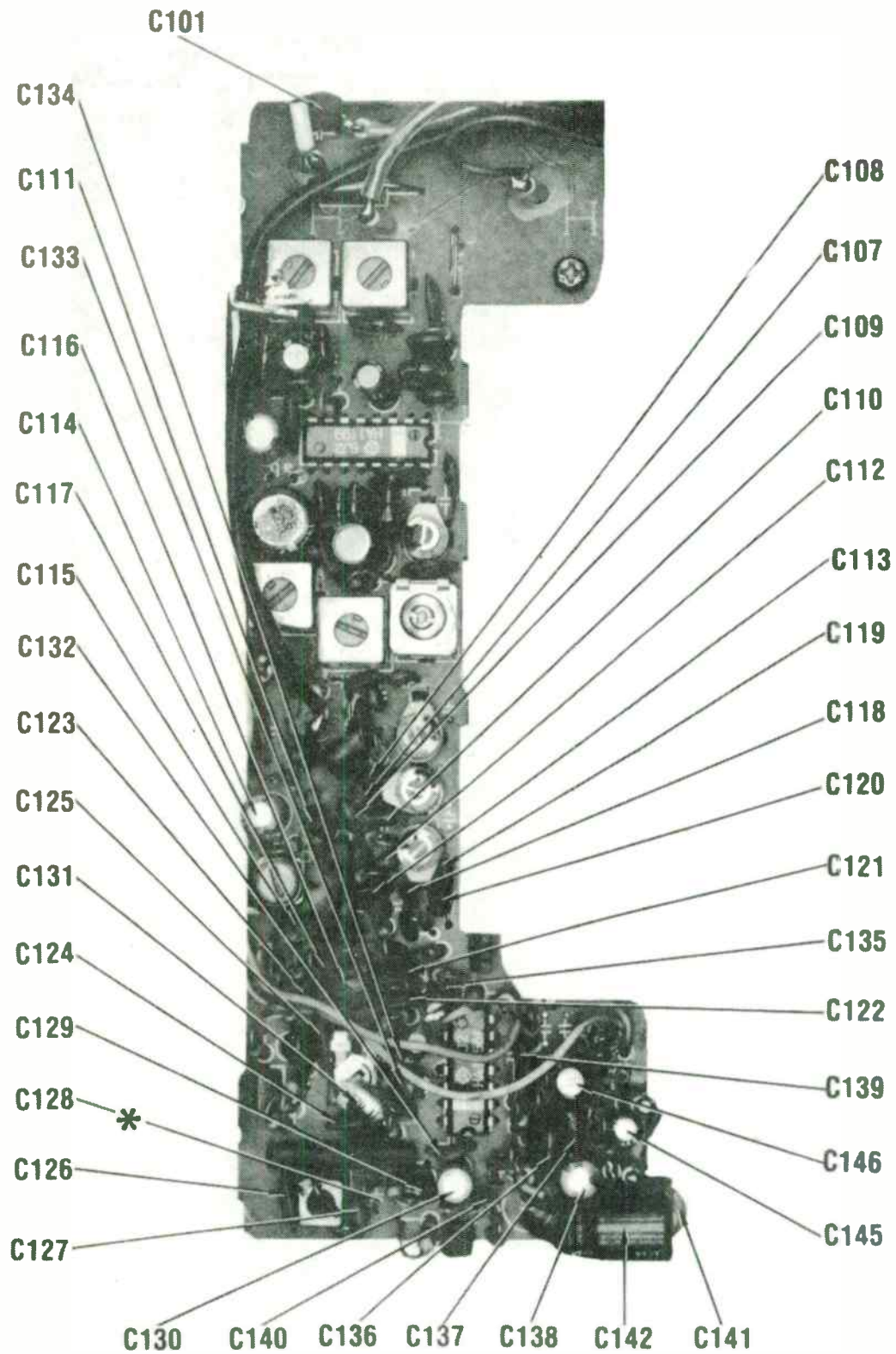
FM RF ALIGNMENT - DO NOT perform Steps 8 & 9 unless the tuner has been tampered with or associated components have been replaced. Before proceeding with Step 8, back the FM tuning cores as far as possible out of the coils to eliminate their effect on trimmer adjustments, and readjust Steps 6 & 7.

6	Ant receptacle	108.5MHz (22.5 KHz deviation @ 400Hz Mod - use max sig.)	108.5MHz	VTVM-AC probe or scope across 4.0 ohm output load	TC103	Adjust for max signal output.
7	"	108.5MHz (22.5 KHz deviation @ 400Hz Mod-below limiting)	"	"	TC102, TC101	"
8	"	98MHz (22.5KHz deviation @400Hz Mod-use max sig)	98MHz	"	L105	Adjust for max signal output. See "FM Alignment Point Location" detail for core carriage note. Adjust for max signal output. Repeat Steps 8 & 9.
9	"	98MHz (22.5KHz deviation @ 400Hz Mod-below limiting.)	"	"	L103, L104	



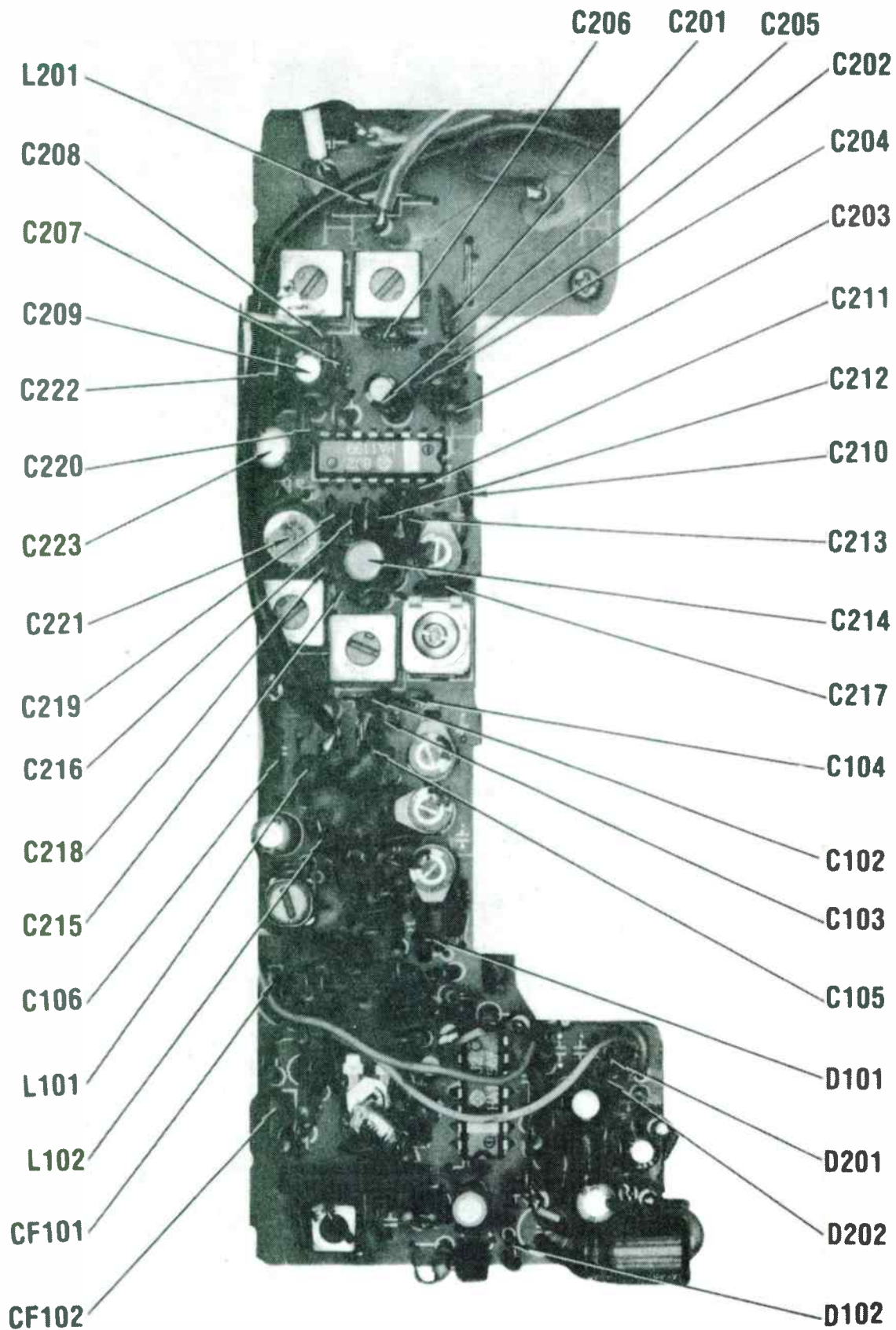
AM-FM ALIGNMENT POINTS LOCATION



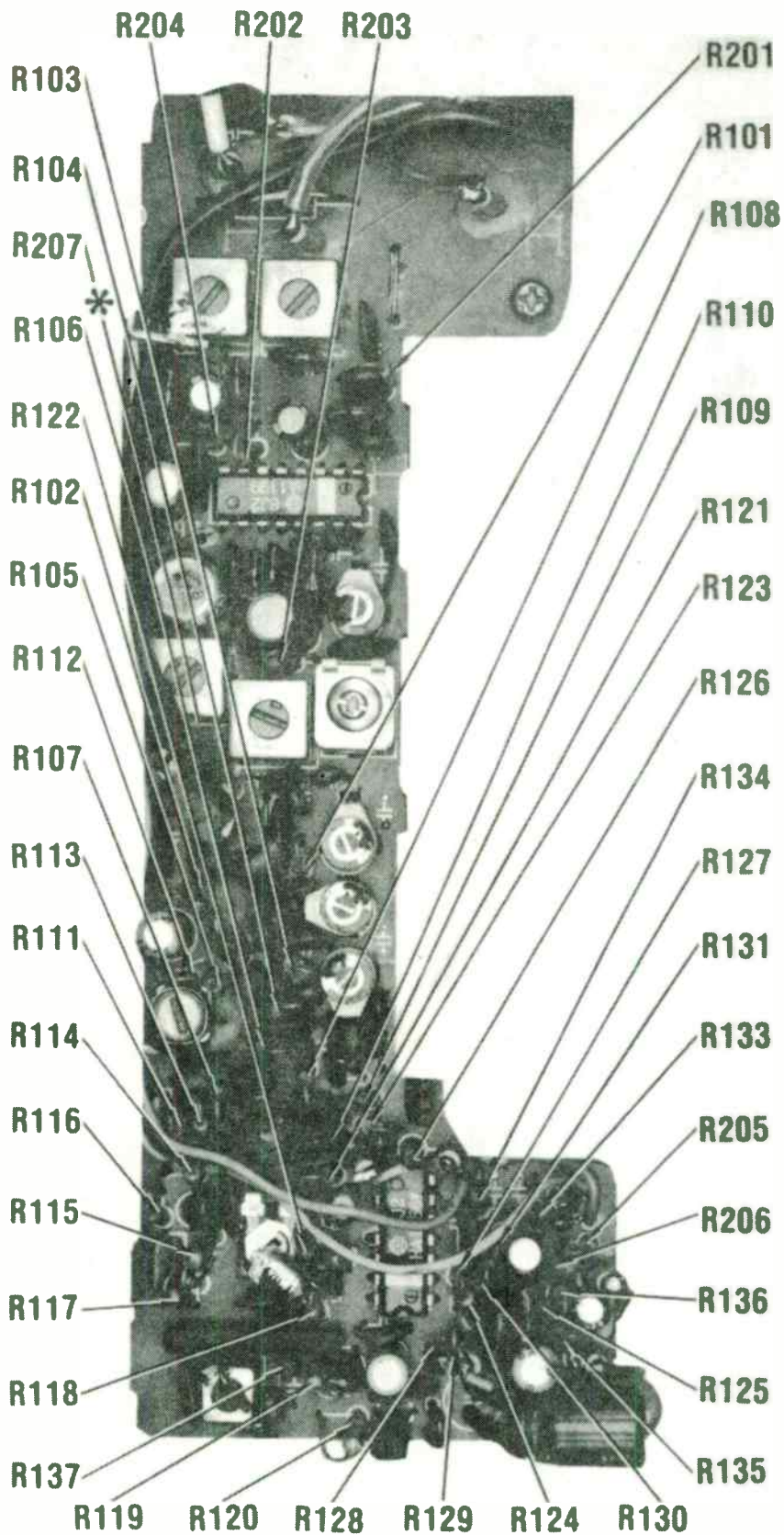


* LOCATED ON BOTTOM OF BOARD

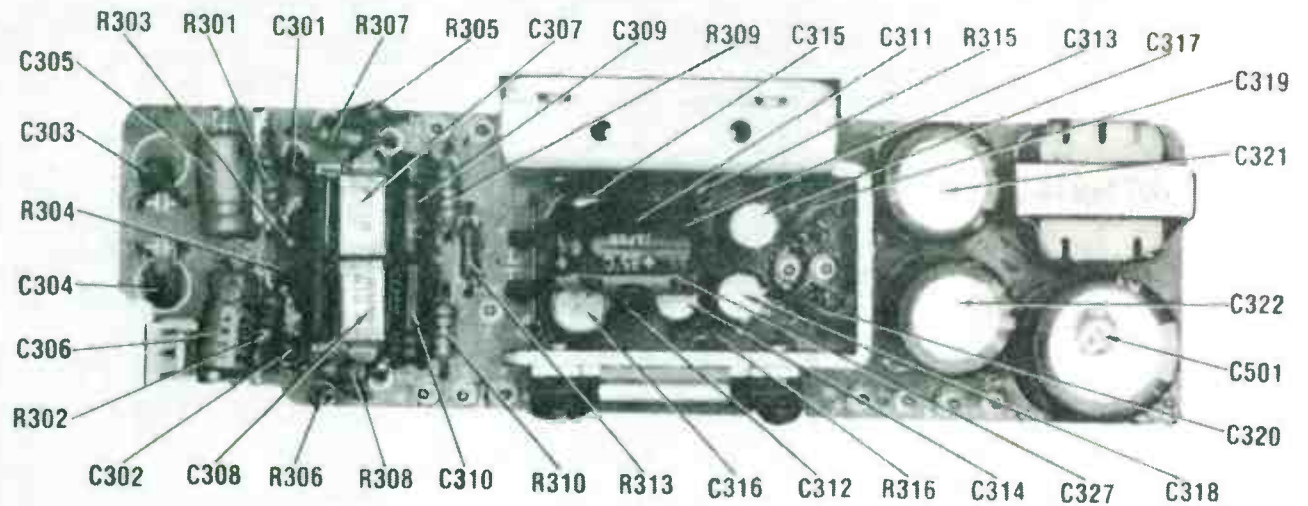
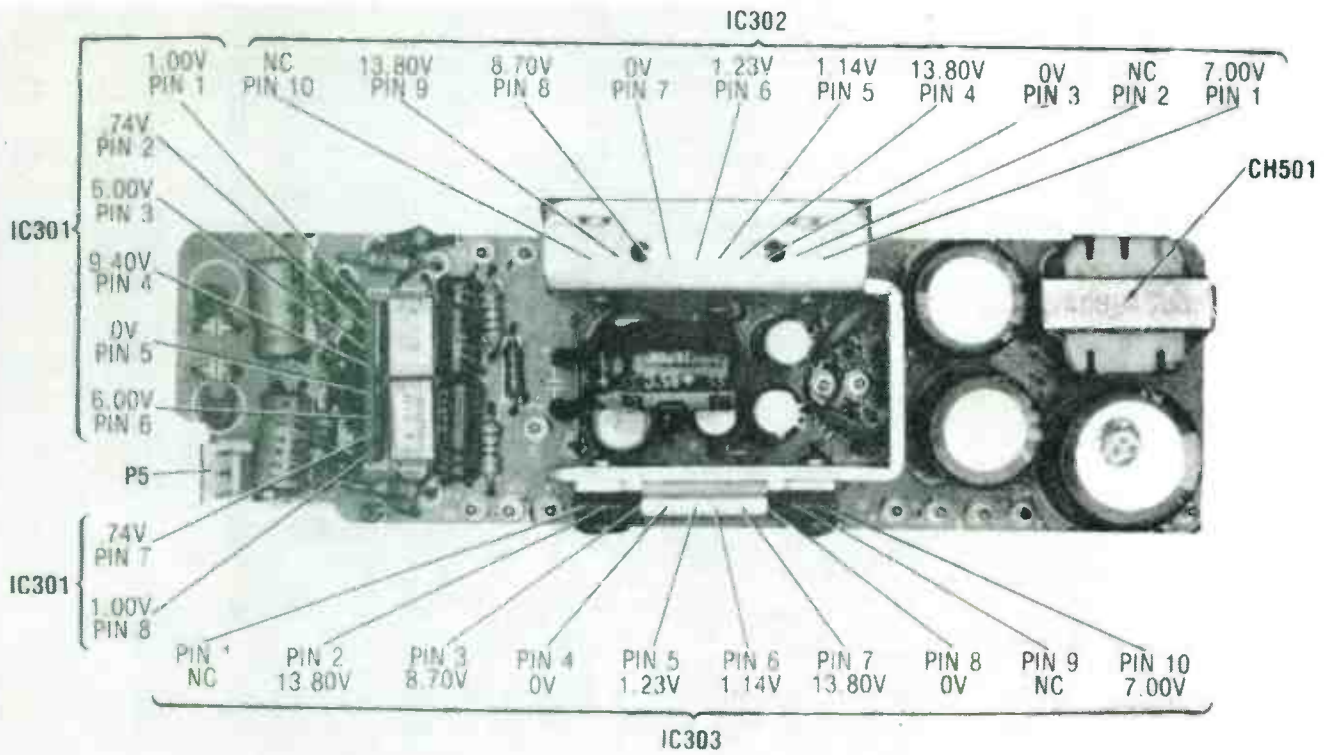
AM-FM BOARD



AM-FM BOARD

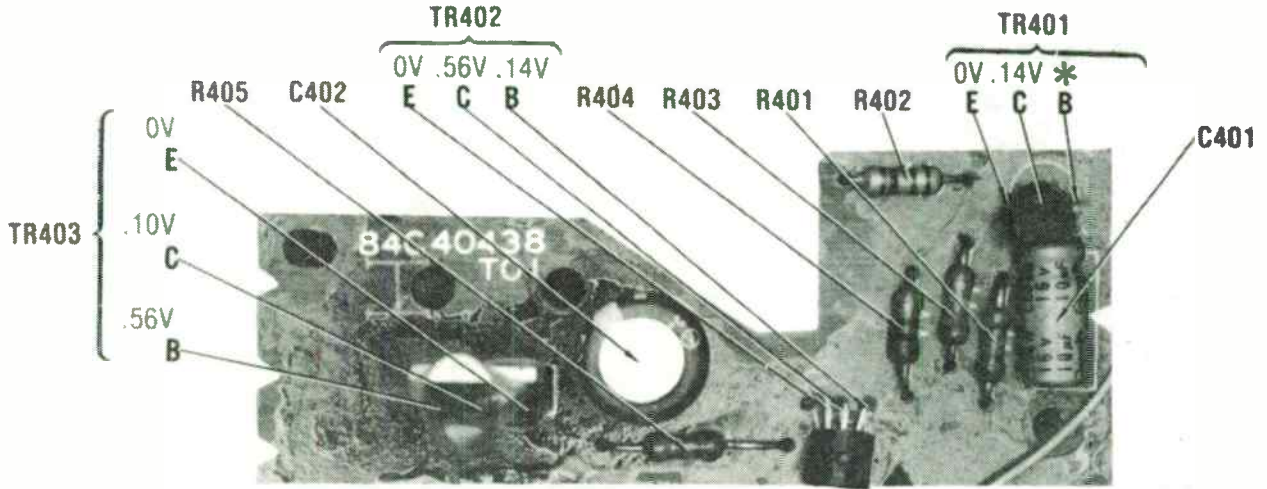


AM-FM BOARD



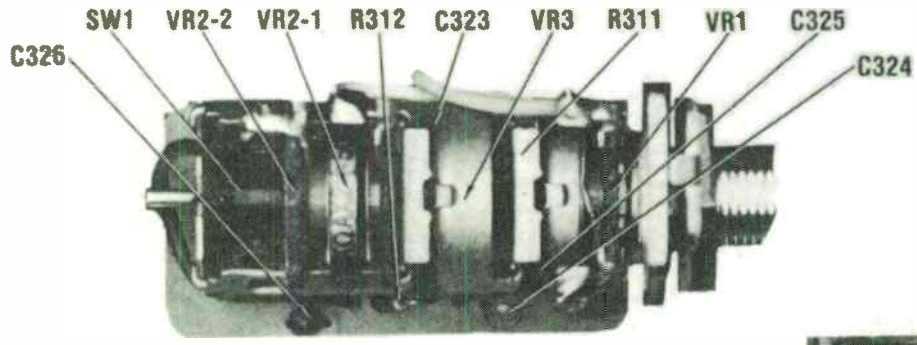
AUDIO BOARD

Motorola TC883AX

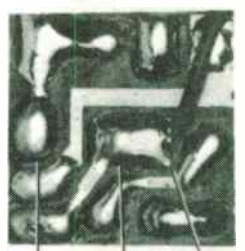


* VOLTAGE VARIES

TAPE BOARD

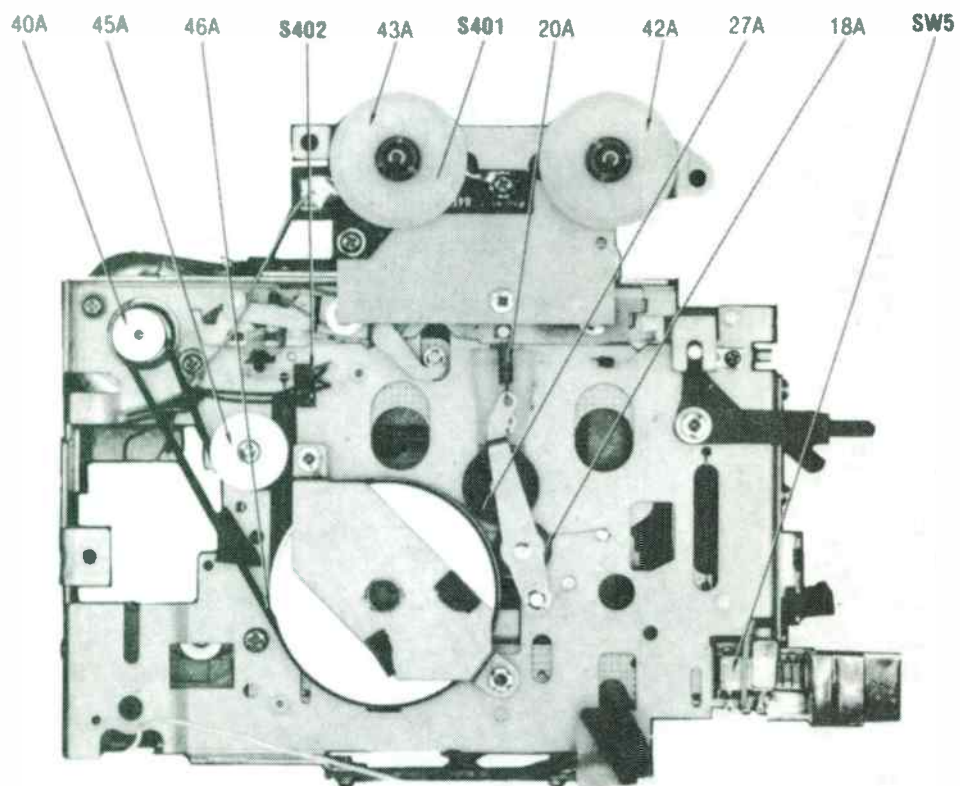
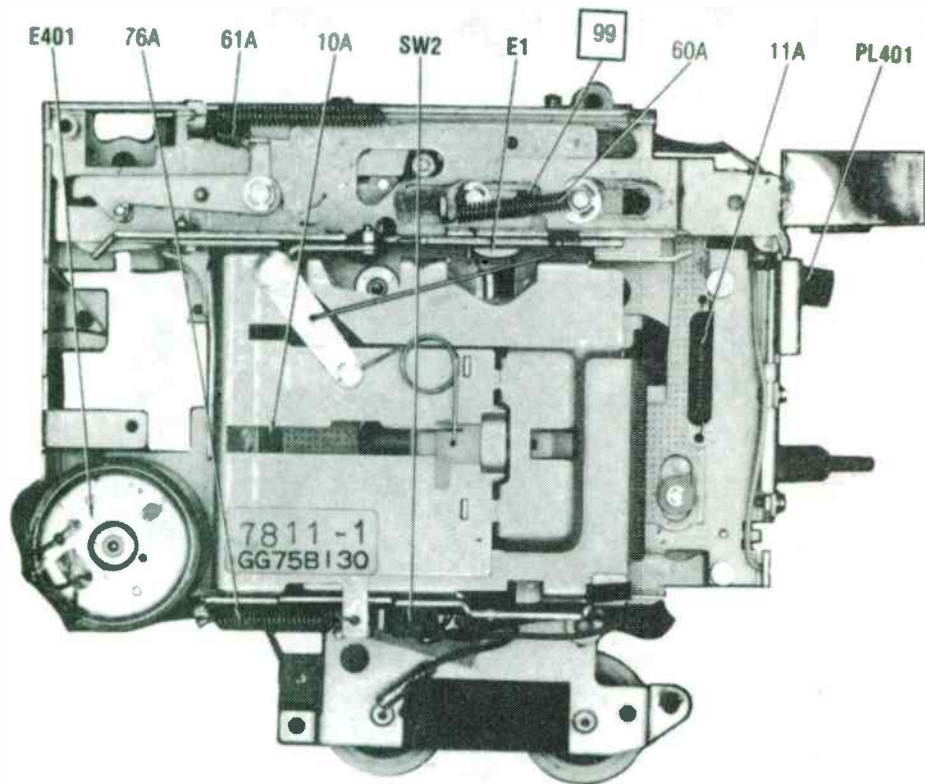


CONTROL BOARD

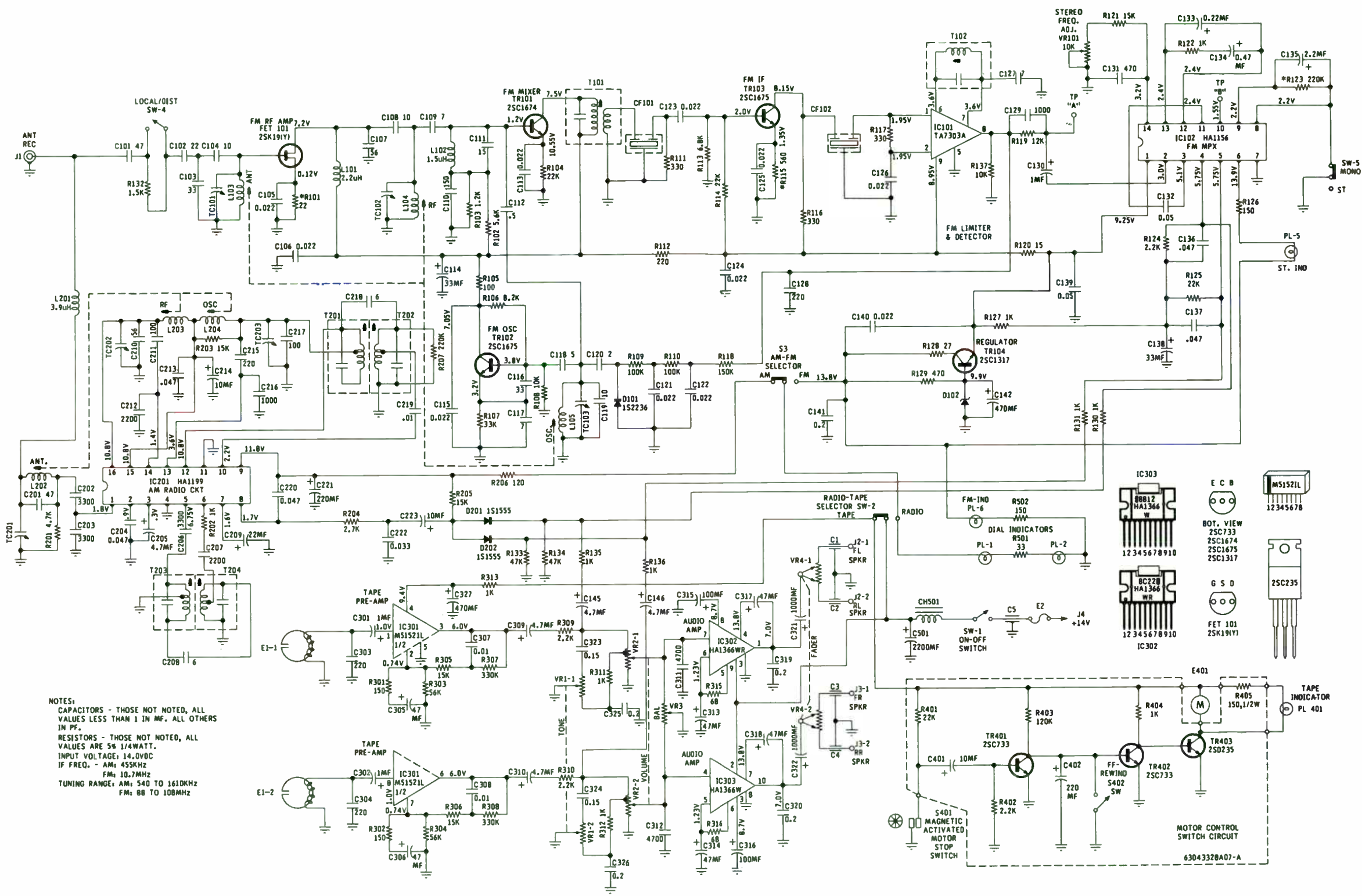


* S3
* R502
* R501

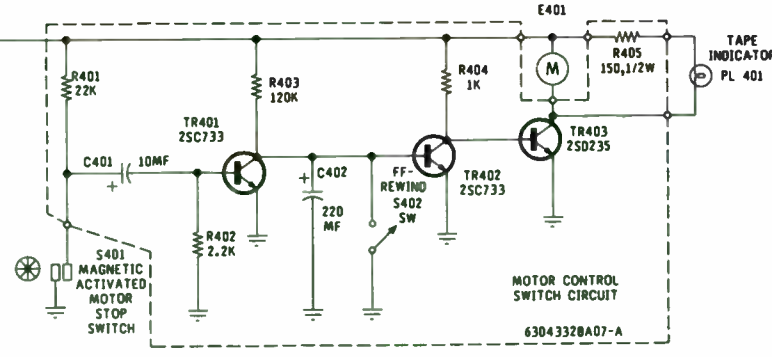
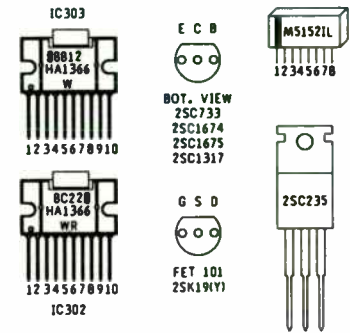
* LOCATED ON TOP OF BOARD
SEL. SW. BOARD



TAPE PARTS LOCATION



NOTES:
 CAPACITORS - THOSE NOT NOTED, ALL VALUES LESS THAN 1 IN MF. ALL OTHERS IN PF.
 RESISTORS - THOSE NOT NOTED, ALL VALUES ARE 5% 1/4WATT.
 INPUT VOLTAGE: 14.0VDC
 IF FREQ. - AM: 455KHz
 FM: 10.7MHz
 TUNING RANGE: AM: 540 TO 1610KHz
 FM: 88 TO 108MHz



Motorola TC883AX

NOTE: ALL PARTS LISTED ARE RECOMMENDED REPLACEMENT PARTS.

REF. NO.	PART NUMBER	DESCRIPTION	REF. NO.	PART NUMBER	DESCRIPTION
ELECTRICAL PARTS CAPACITORS			C305, C306, C307, C308	23-44333G24	47MF 10V lytic
C1-	21-42906J01	1000PF +200-0% 500V feed thru	C309, C310, C311, C312, C313, C314	8-44503P13	.01MF 10% 50V mylar
C5	21-41701J18	47PF 5% 50V disc	C315, C316, C317, C318, C319, C320, C321, C322, C323, C324, C325, C326, C327, C401, C402, C501	23-44333G05	4.7MF 25V lytic
C101	21-45322G14	22PF 5% 50V disc		23-44780P01	47MF 16V lytic
C102	21-45322G16	33PF 5% 50V disc		23-44780P02	100MF 16V lytic
C103	21-45322G10	10PF 5% 50V disc		23-44780P01	47MF 16V lytic
C104	21-45322G32	.022MF +80-20% 50V disc		21-41870J03	.2MF .25% 50V disc
C105	21-45322G19	56PF 5% 50V disc		23-44333G54	1000MF 10V lytic
C106	21-45322G10	10PF 5% 50V disc		23-41059P02	.15MF 10V lytic
C107	21-45322G07	7PF 5% 50V disc		23-41059P03	.22MF 10V lytic
C108	21-45322G24	150PF 5% 50V disc		23-44780P05	470MF 16V lytic
C109	21-45322G12	15PF 5% 50V disc		23-44333G08	10MF 16V lytic
C110	21-45322G34	.5PF 25% 50V disc		23-44333G37	220MF 16V lytic
C111	21-45322G32	.022MF +80-20% 50V disc		23-44780P07	2200MF 16V lytic
C112	23-44333G18	33MF 10V lytic			
C113	21-45322G32	.022MF +80-20% 50V disc			
C114	21-45322G32	.022MF +80-20% 50V disc			
C115	21-41701J38	33PF 5% 50V disc			
C116	21-41701J03	7PF .5PF 50V disc			
C117	21-41701J22	5PF .5PF 50V disc			
C118	21-41701J04	10PF 10% 50V disc			
C119	21-41701J20	2PF .25PF 50V disc			
C120	21-45322G32	.022MF +80-20% 50V disc			
C121-	21-45322G07	7PF 5% 50V disc			
C126	21-45322G07	7PF 5% 50V disc			
C127	21-45322G25	220PF 5% 50V disc			
C128	8-44833J01	.001MF 10% 50V disc			
C129	23-43648P01	1MF 25V lytic			
C130	8-42195G07	470PF 10% 50V mylar			
C131	21-41870J01	.05MF 20% 50V disc			
C132	23-41059P03	.22MF 25V lytic			
C133	23-41059P05	.47MF 25V lytic			
C134	23-41059P12	2.2MF 25V lytic			
C135	8-44833J21	.047MF 10% 50V disc			
C136	23-44333G18	33MF 10V lytic			
C137	21-41870J01	.05MF 20% 50V disc			
C138	21-45322G32	.022MF +80-20% 50V disc			
C139	21-41870J03	.2MF .25% 50V disc			
C140	23-44780P05	470MF 16V lytic			
C141	23-44333G05	4.7MF 25V lytic			
C142	21-41701J18	47PF 5% 50V disc			
C143	8-44833J01	.0033MF 10% 50V film			
C144	8-44833J21	.047MF 10% 50V film			
C145	23-44333G05	4.7MF 25V lytic			
C146	23-44333G05	.0033MF 10% 50V film			
C201	8-44833J07	.0022MF 10% 50V film			
C202	21-45322G06	6PF 5% 50V disc			
C203	23-44333G13	22MF 16V lytic			
C204	21-45322G19	56PF 5% 50V disc			
C205	21-41701J57	100PF 5% 50V disc			
C206	8-44833J05	.0022MF 10% 50V disc			
C207	8-44833J21	.047MF 10% 50V disc			
C208	23-44333G09	10MF 25V lytic			
C209	21-41701J59	220PF 5% 50V disc			
C210	8-44833J01	.001MF 10% 50V mylar			
C211	21-41701J58	100PF 5% 50V disc			
C212	21-45322G06	6PF 5% 50V disc			
C213	8-44833J13	.01MF 10% 50V disc			
C214	21-45322G33	.047MF +80-20% 50V disc			
C215	23-44780P03	220MF 16V lytic			
C216	8-44833J19	.033MF 10% 50V disc			
C217	23-44333G09	10MF 25V lytic			
C218	21-40133G13	22PF 10% 50V disc			
C219	8-44833J13	.01MF 10% 50V disc			
C220	21-45322G33	.047MF +80-20% 50V disc			
C221	23-44780P03	220MF 16V lytic			
C222	8-44833J19	.033MF 10% 50V disc			
C223	23-44333G09	10MF 25V lytic			
C301	23-41059P07	1MF 25V lytic			
C302					
C303					
C304					

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NOTE: ALL PARTS LISTED ARE RECOMMENDED REPLACEMENT PARTS.

REF. NO.	PART NUMBER	DESCRIPTION	REF. NO.	PART NUMBER	DESCRIPTION
MISCELLANEOUS ELECTRICAL PARTS (Cont.)					
PL1, PL2, PL3, PL4, PL5, PL6, PL401	65-43447J01, *65-45037G19, *65-45037G25, *65-42954P16, 65-43447J01, 65-42954P01	LAMP, pilot: DIAL IND. LAMP, pilot: PROGRAM IND. LAMP, pilot: PROGRAM IND. LAMP, pilot: STEREO IND. LAMP, pilot: FM IND. LAMP, pilot: tape player			
RESISTORS (ALL RESISTORS USED ARE 5% 1/4W EXCEPT THOSE UNIQUE ITEMS LISTED BELOW)					
R126, R501, R502, VR1-VR3, VR4, VR101	6-43205J07, 6-43205J05, 6-43205J07, 18-40371U01, 18-44305P01, 18-42061J14	150 10% 1/2W metal 33 10% 1/2W metal 150 10% 1/2W metal CONTROL, MULTIPLE: VOL. 50K, TONE 20K, BALANCE 10K; incl. SW1 CONTROL, FADER 50K incl. manual tuning shaft CONTROL, STEREO FREQ. ADJ. 10K			
SWITCHES					
SW1, SW2, SW3, SW4, SW5, S401, S402	40-42625P01, 40-44772P01, 40-42262P01, 40-42262P01, 40-41223P01, 40-40043U01	ON/OFF (part of VR1) RADIO/TAPE AM/FM DX (local/distance) MONO/STEREO EJECT FF/REV			
TRANSFORMERS					
T101, T102, T201, T202-T204	24-43712J01, 24-44795J01, 24-44776P01, 24-44775P01	IF FM (yel) IF FM (blk) IF AM (pnk) IF AM (blu)			
TRANSISTORS					
TR101, TR102, TR103, TR104, TR401, TR402, TR403, FET101	48-40732P02, 48-44580J02, 48-44580J02, 48-44886G01, 48-40247G02, 48-40662G05, 48-45314G01	2SC1674-L - FM MIXER 2SC1675L - FM OSC 2SC1675L - FM IF 2SC1317 - REGULATOR 2SC733 - MOTOR CONTROL AMP (use 48-134846) 2SD235 - MOTOR CONTROL OUTPUT 2SK19(Y) - FM-RF AMP			
MECHANICAL PARTS					
	1-40300T47, 30-40487T01, 43-43478J01, *1-40900T63	PRE-AMP, chassis: complete CABLE, pick-up head BUSHING, PL-5: stereo indicator VOLUME assembly: incl. control & plated panel			
	1-40100T5B, *7-44119P01, 44-44873J02, *44-44171P01, *47-40473T01, 7-44743J01, 2-40000G24, *41-42613P03, 77-44293P01, 36-40270T01, 43-43478J01, 47-44760J01, 84-44794P01, 41-42612P01, 52-44116P01, *1-40300T38, *52-42291P01, 36-40270T01, 36-40272T01, 36-40273T01, 36-40274T01, 36-40273T02, *15-40366U01, *34-40277T01, 43-44610J03, *1-40300T50, *36-43644P01, 36-40263P01, 32-42348P01, 64-40413U01, 1-40300T47, 1-40300T48, 1-40300T63	ST/MONO switch assembly: incl. switch & plated panel BRACKET, gear shaft GEAR, drive GEAR, transfer SHAFT, coupling: tuning shaft BRACKET, volume NUT, hex: M9x.75; volume & tuning SPRING, pointer tension TUNER: complete KNOB, station selector BUSHING, light shield: PL401 SHAFT, pointer BOARD, plated: less bulb SPRING, pointer POINTER DX SWITCH assembly: incl. control & plated panel POINTER, arm PUSHBUTTON, stereo PUSHBUTTON, FAST FORWARD/REWIND PUSHBUTTON, LOCAL/DISTANCE PUSHBUTTON, EJECT PUSHBUTTON, AM/FM ESCUTCHEON, assembly: incl. esc. scale & door SCALE, dial SPACER, chassis insulating INSTALLATION KIT KNOB, control KNOB, pendant GASKET, NOSE OVERLAY, tape nameplate PRE-AMP PANEL: incl. comp. RADIO PANEL: incl. comp. VOL CONTROL: incl. comp.			
TAPE DECK MECHANICAL PARTS					
	10A, 11A, 18A, 20A, 21A, 27A, 40A, 42A, 43A, *41-40348T03, *41-40348T02, *49-40040U01, *41-40042U01, 4-40070G18, *49-40360T01, 49-40436T01, 1-40429T01, *1-40300T53, *49-40351T01, 42-40367T01, 51A, *41-40353T01, *41-40347T04, *41-40347T05, *41-40347T02, 79A, 80A, 81A	SPRING, sub chassis: left SPRING, sub chassis: right IDLER, wheel: FF/REV SPRING, R/F arm WASHER, pulley drive WHEEL, idler: FF/REV PULLEY, motor REEL, drive assembly REEL, -sw assembly: incl. sw. & plated panel PULLEY, drive BELT, drive SPRING, eject lever: tape lock SPRING, eject lever SPRING, lock lever SPRING, chassis guide AUTO STOP panel assembly: incl. SW. SPACER, motor SHIELD, plate			

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
* DENOTES NEW ITEM APPEARING IN ANY LIST FOR FIRST TIME.

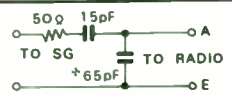
ALIGNMENT INSTRUCTIONS

EQUIPMENT REQUIRED

- Signal Generator: AM 450 ~ 1700 kHz, 400 Hz Mod. @30%
FM 10.7 MHz, 86 ~ 110 MHz, 400 Hz Mod. @30% and Stereo Signal Generator
- Sweep Generator: 450 kHz, 10.7 MHz
- Antenna Pad: Refer to Fig. 1 and Fig. 3.
- Indicator: Output meter (AC voltmeter or VTVM)
Oscilloscope and Frequency Counter
- Power Source Voltage: DC 13.8 V (standard voltage for measurement)

AM (I-F & RF) ALIGNMENT

- Set Volume Control at maximum, and Tone in the treble position.
- Set Band Selector Switch in the AM position.
- Set Balance Control in center.
- Connect the signal generator to the antenna receptacle through the antenna pad. (Fig. 1)
- Keep the signal generator output low enough to prevent overloading the circuit.



*Includes feeder capacitor.

Fig. 1 Antenna Pad

	STEP	GENERATOR FREQUENCY	BAND SELECTOR SETTING	RADIO-DIAL SETTING	SIGNAL FEED POINT	INDICATOR CONNECTION	ADJUST	REMARKS
AM	①-③	450 kHz [Unmodulated or 400 Hz Mod.]	AM	Point of non-interference. (on/about 600 kHz)	Through pad (Fig. 1) to antenna receptacle.	Between Point (A) and ground or speaker terminals.	IFT103 ? IFT101	Adjust for maximum.
	④	510 kHz [400 Hz Mod.]	"	Low freq. end stop.	"	Output meter across speaker terminals.	L105 (OSC)	"
	⑤	1640 kHz [400 Hz Mod.]	"	High freq. end stop.	"	"	C117 (OSC)	"
	⑥-⑦	1400 kHz [400 Hz Mod.]	"	Tune to signal.	"	"	C107 (RF) C101 (ANT)	"

● When radio is installed in car, antenna fully extended, tune in a weak station near 1400 kHz and adjust C101 for minimum output.
● Refer to ANTENNA TRIMMER ALIGNMENT, page 1.
● Repeat steps two or three times.

- The test point (A) is the positive side of C553.

FM (I-F & RF) ALIGNMENT

FM I-F ALIGNMENT USING FM SIGNAL GENERATOR AND SWEEP GENERATOR

- Volume, Tone and Balance Control may be left in any position.
- Set Band Selector Switch in the FM position.
- Set DX/LOCAL Selector Switch in the DX position.
- Connect the signal generator to the antenna receptacle through the antenna pad. (Fig. 3)
- Keep the signal generator output low enough to prevent overloading the circuit.

	STEP	GENERATOR FREQUENCY	RADIO-DIAL SETTING	SIGNAL FEED POINT	INDICATOR CONNECTION	ADJUST	REMARKS
FM	⑧	10.7 MHz	Point of non-interference.	Through pad (Fig. 3) to antenna receptacle.	Vert. amp of scope to point (A), low side to ground.	IFT (FM Front End)	Adjust for maximum amplitude and proper linearity between ±100 kHz markers.
	⑨	"	"	"	"	L152	10.7 MHz

● Repeat steps, two or three times.



Fig. 2

● **FM RF ALIGNMENT**

- Set Volume Control at maximum, and Tone in the treble position.
- Set Band Selector Switch in the FM position.
- Set DX/LOCAL Selector Switch in the DX position.
- Set Balance Control in center.
- Connect the signal generator to the antenna receptacle through the antenna pad. (Fig. 3)
- Keep the signal generator output enough to prevent overloading the circuit.

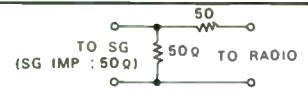


Fig. 3 Antenna Pad

	STEP	GENERATOR FREQUENCY	RADIO-DIAL SETTING	SIGNAL FEED POINT	INDICATOR CONNECTION	ADJUST	REMARKS
FM RF	1	87.0 MHz [400 Hz Mod.]	Low freq. end stop.	Through pad (Fig. 3) to antenna receptacle.	Output meter across speaker terminals.	OSC trimmer (FM Front End)	Adjust for maximum. Repeat steps two or three times.
	<ul style="list-style-type: none"> ● In the step 1, adjust lower frequency at 87.0 MHz. The upper frequency will be within 108 ~ 110 MHz, because of design characteristics. It is nonadjustable. 						

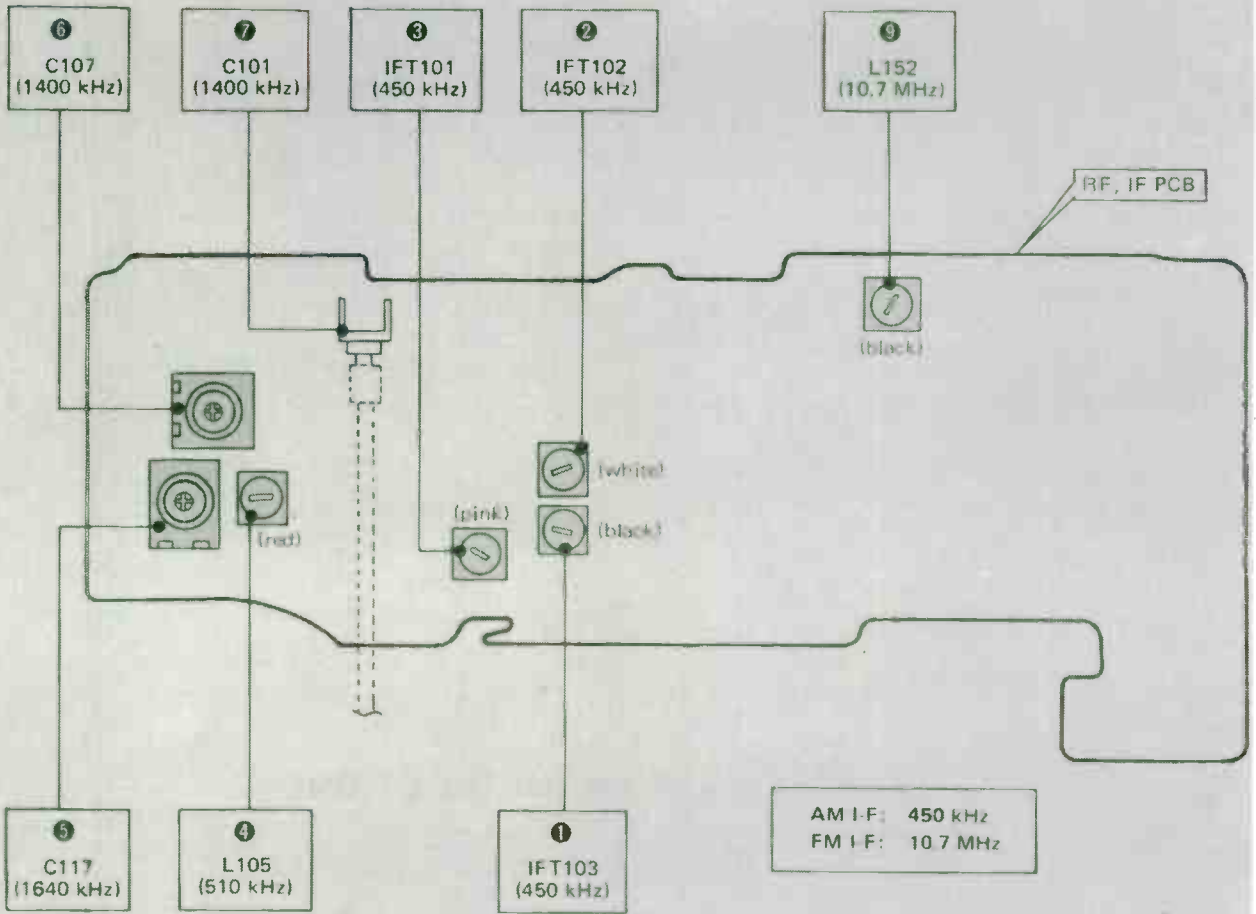
1 **MULTIPLEX ALIGNMENT USING FM SIGNAL GENERATOR AND STEREO SIGNAL GENERATOR**

- Set Volume Control at maximum, and Tone in the treble position.
- Set Balance Control in center.
- Set DX/LOCAL Selector Switch in the DX position.
- Connect the signal generator to the antenna receptacle through the antenna pad. (Fig. 3)
- Keep the signal generator output low enough to prevent overloading the circuit.
- FM signal generator should be modulated by the stereo signal generator.
 - Modulation Level: 19 kHz, 10%
 - 400 Hz, 30%
 - FM signal generator output level: 1 mV
 - FM signal generator frequency: 98 MHz

	STEP	MODULATION FREQUENCY	INDICATOR	ADJUST	REMARKS
FM MPX	1	No signal input	Frequency counter to Test Point ①, low side to ground.	VR552	Adjust to 19 kHz ± 30 Hz.
	2	19 kHz, 400 Hz (Right Channel)	VTVM to right speaker terminals.	VR551	Adjust for minimum.
		19 kHz, 400 Hz (Left Channel)	VTVM to left speaker terminals.		Adjust for minimum.

- Repeat steps two or three times.
- The test point ① is terminal No. 12 of IC551.

ALIGNMENT POINTS *Panasonic CQ-5848EC/EU*



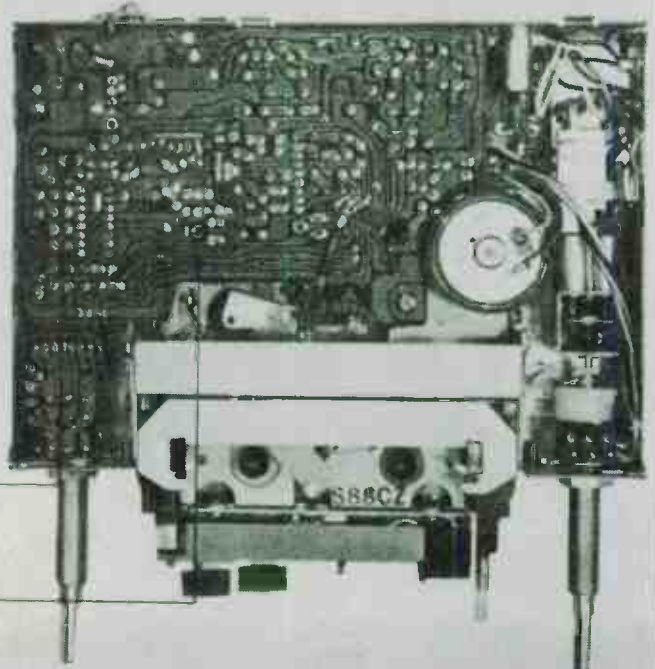
• Numbers in • are indicated ALIGNMENT STEPS.

RIGHT SIDE VIEW

TOP VIEW, WITH COVER REMOVED



- 10 OSC trimmer (87.0 MHz)
- 8 IFT (10.7 MHz)
- 11 VR552 (no signal)
- 12 VR551 (98 MHz)



HEAD AZIMUTH ADJUSTMENT

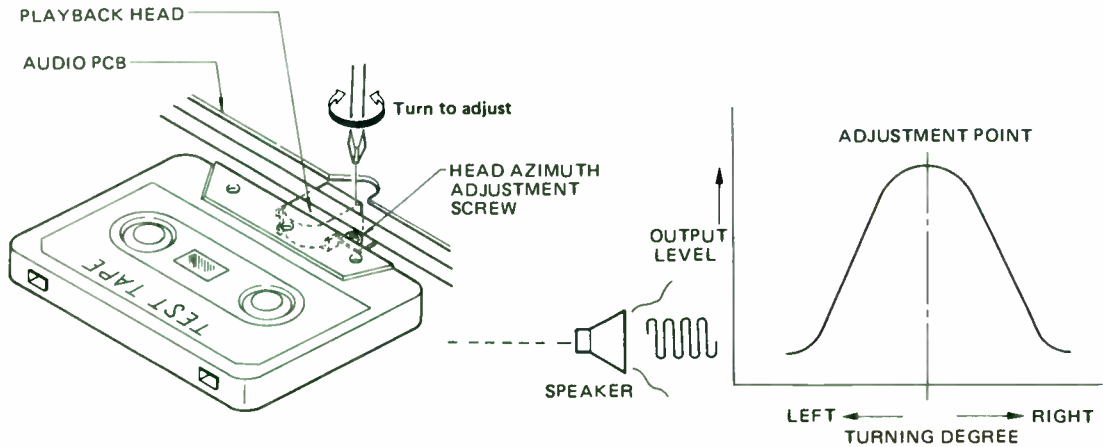
In case of crosstalk, poor high frequency response, or head replacement, adjust the head azimuth.

1) When test tape is available.

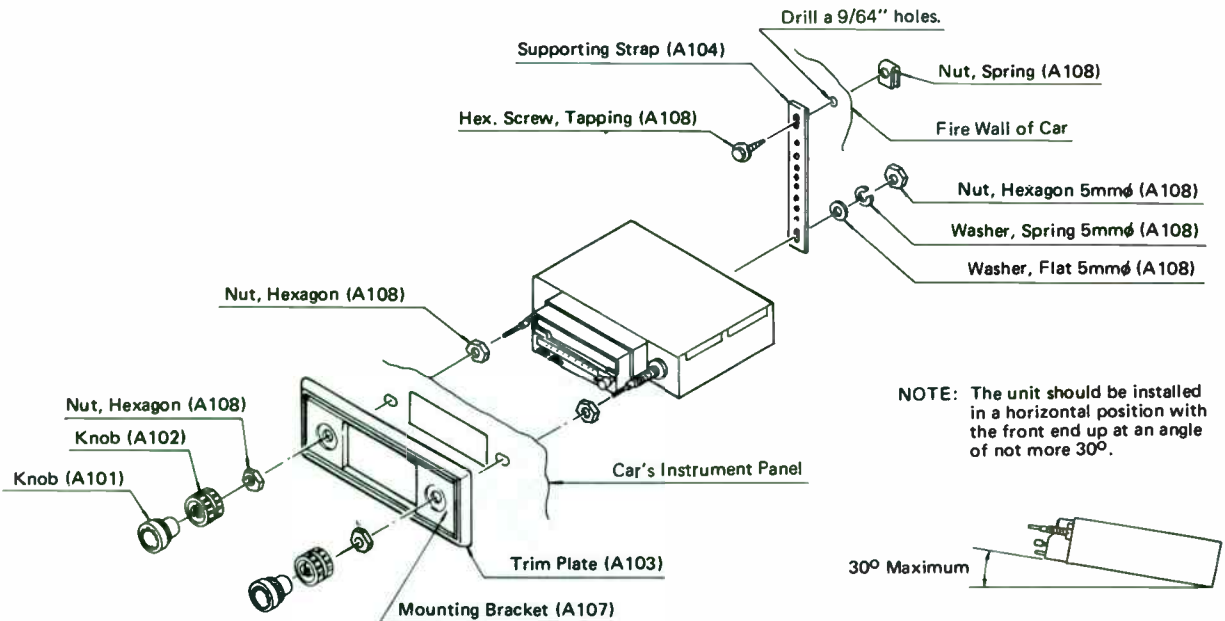
Insert a cassette test tape, and adjust the head adjustment screw for maximum output from the speaker.

2) When test tape is not available.

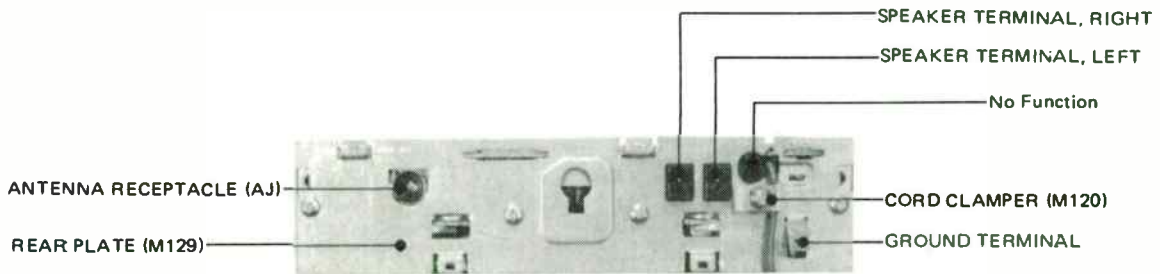
Insert a music cassette tape (music containing treble is recommended), and rotate the head adjustment screw for maximum treble.



INSTALLATION INSTRUCTIONS



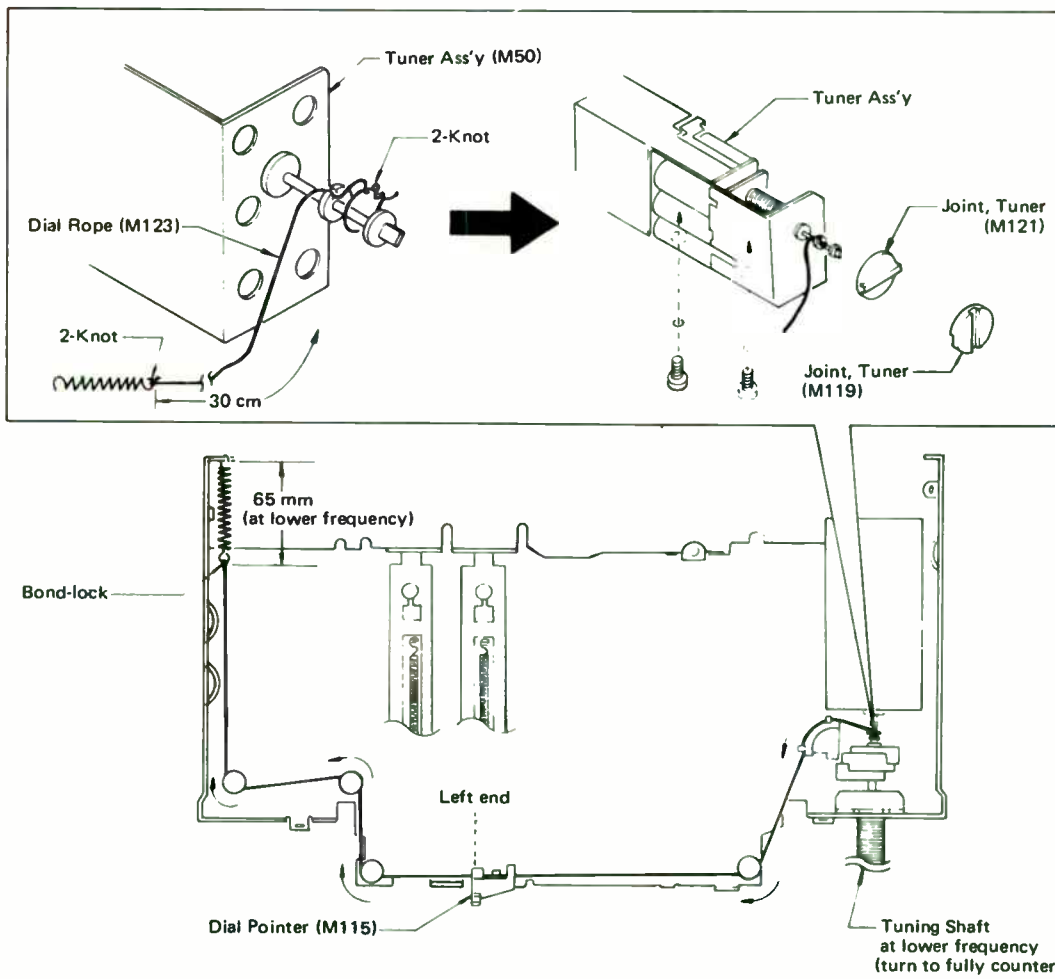
REAR VIEW



DIAL CORD STRINGING GUIDE

String the dial rope as follows, after removing the cassette deck shown in DISASSEMBLY INSTRUCTIONS, page 6.

Easy-to-string it, remove the tuner ass'y by 2 screws.

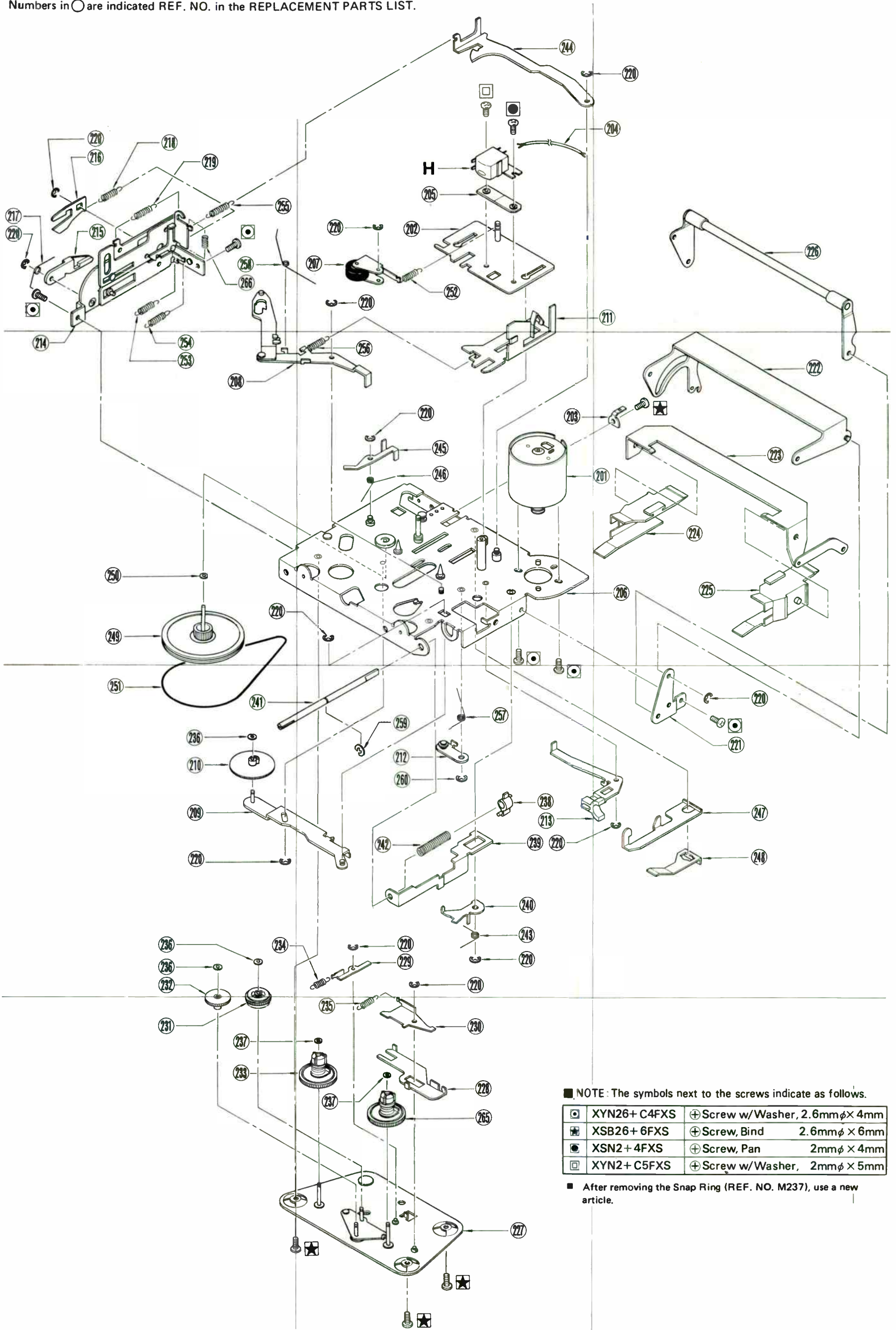


Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
TAPE DECK PARTS				
HEAD				
H	(4-B)	YEAH1542YA	Playback Head	1
MECHANICAL PARTS				
M201	(3-C)	YASAK01035	DC Motor Ass'y (w/Pulley)	1
M202	(4-B)	YEFX018025	Head Base Ass'y	1
M203	(3-B)	YEFX007149	Cord Clamper	1
M204	(4-C)	YEAJ18091	Head Shielded Wire	1
M205	(4-B)	YEFX005263A	Head Azimuth Adjustment Spring	1
M206	(3-C)	YEFA01260	Main Chassis Sub Ass'y	1
M207	(4-B)	YEFX218148D	Pinch Roller Ass'y	1
M208	(3-A)	YEP0FX079	Eject Hook Ass'y	1
M209	(2-A)	YEFX046232	Idler Selector Sub Ass'y	1
M210	(2-A)	YEFX003073	Idler Gear	1
M211	(4-C)	YEP0FX080	SW Selector Plate Ass'y	1
M212	(2-B)	YEP0FX083	Idler Arm Ass'y	1
M213	(2-B)	YEP0FX085	FR Lever Ass'y	1
M214	(3-A)	YEFX046231	Retainer Plate A Sub Ass'y	1
M215	(4-A)	YEFX030020A	Timing Stopper	1
M216	(4-A)	YEFX030023	Slide Plate Stopper	1
M217	(4-A)	YEFX005351	Timing Stopper Spring	1
M218	(4-A)	YEFX005345	Slide Plate Stopper Spring	1
M219	(4-A)	YEFX005358	Slide Spring	1
M220		YEJE01004	E-ring	13
M221	(2-C)	YEP0FX084	Retainer Plate B Ass'y	1
M222	(3-C)	YEFK06036	Cassette Holder Sub Ass'y	1
M223	(3-C)	YEFK06035	Guide Holder Sub Ass'y	1
M224	(3-C)	YEFX235103	Tape Guide A	1
M225	(3-C)	YEFX235104	Tape Guide B	1

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
M226	(4-C)	YEP0FX082	Charge Plate Ass'y	1
M227	(1-B)	YEFX209130	Reel Plate Sub Ass'y	1
M228	(1-B)	YEFX046215	FR Slide Plate	1
M229	(2-B)	YEFX046214	FF Plate	1
M230	(1-B)	YEFX046213	REW Plate	1
M231	(1-A)	YEFX003072	FF Gear	1
M232	(2-A)	YEFX003071	REW Gear	1
M233	(1-A)	YEFX209131	Reel Base Ass'y (Supply)	1
M234	(2-A)	YEFX005363	FF Spring	1
M235	(1-B)	YEFX005348	REW Spring	1
M236	(2-A)	YEFX014008	Snap Ring	3
M237	(1-A) (1-B)	YEFX014007	Snap Ring	2
M238	(2-B)	YEFX234114	FR Selector Cam	1
M239	(2-B)	YEFX046218	FR Release Plate A	1
M240	(2-B)	YEFX046217	FR Release Plate B	1
M241	(2-A)	YEFW06341	Eject Shaft	1
M242	(2-B)	YEFX005348	Eject Shaft Spring	1
M243	(2-B)	YEFX005353	FR Release Spring	1
M244	(4-B)	YEFX046226A	Eject Plate	1
M245	(3-B)	YEFX030022	Stopper	1
M246	(3-B)	YEFX005352	Stopper Spring	1
M247	(2-C)	YEFX030021A	Head Base Stopper	1
M248	(2-C)	YEFX005359	Lock Plate Spring	1
M249	(3-A)	YEFX213126A	Flywheel	1
M250	(3-A)	YAJW05011	Polyslider	1
M251	(2-A)	YEFR03025	Drive Belt	1
M252	(4-B)	YEFX005354B	Head Base Spring	1
M253	(3-A)	YEFX005356	Cassette Holder Spring	1
M254	(3-A)	YEFX005355	Pop Up Spring	1
M255	(4-A)	YEFX005357B	Eject Spring	1
M256	(3-B)	YEFX005347	FR Lock Spring	1
M257	(2-B)	YEFX005350A	Idler Arm Spring	1
M258	(4-A)	YEFX005349	Eject Hook Spring	1
M259	(2-B)	YEJE01003	E-ring	1

EXPLODED VIEW (TAPE DECK)

Numbers in ○ are indicated REF. NO. in the REPLACEMENT PARTS LIST.



NOTE: The symbols next to the screws indicate as follows.

⊕	XYN26+ C4FXS	⊕	Screw w/Washer, 2.6mmφ×4mm
⊕	XSB26+ 6FXS	⊕	Screw, Bind 2.6mmφ×6mm
⊕	XSN2+ 4FXS	⊕	Screw, Pan 2mmφ×4mm
⊕	XYN2+ C5FXS	⊕	Screw w/Washer, 2mmφ×5mm

After removing the Snap Ring (REF. NO. M237), use a new article.

Replacement Parts List
Model NOs. CQ-5848EU/EC

NOTES:
1. Be sure to make your orders of replacement parts according to this list.
2. Components identified by shaded area have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. Next to the Ref. No. in the parts list is a location key, to show the general location of the parts shown in the exploded drawing, as in a road map.

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
MISCELLANEOUS				
F	(4-A)	XBB1C30NR1 Fuse, 3 A	1	
PL	(2-A)	YEAL24001L Pilot Lamp	1	
AJ	(4-C)	YEAA10019A Antenna Receptacle	1	
M101	(1-B)	YEFA01325 Chassis Ass'y	1	
M102	(4-C)	YEFA03343 Upper Cover	1	
M103	(1-C)	YEFA05185 Bottom Cover	1	
M104	(2-B) (1-B)	YEFX021784 Mounting Bracket, Pitch Fixing	2	
M105	(1-C) (3-A)	YEF11016010 Spacer	2	
M106	(1-B)	YEJN01041 Nut, Hexagon	2	
M107	(2-B)	YEFX046261 Lever, AM/FM Selector & DX/Local Selector	2	
M108	(2-B)	YEFX005419 Spring	2	
M109	(2-B)	YEFE10257 Button, AM/FM Selector & DX/Local Selector	2	
M110	(2-C)	YEFX009075 Joint, Switch	2	
M111	(1-B)	YEFE10258 Button, Eject	1	
M112	(3-A)	YEFX021785 Mounting Bracket, Deck	1	
M113	(1-A)	YEF02575 Escutcheon Ass'y	1	
M114	(2-A)	YEFJ10241 Back Plate	1	
M115	(2-A)	YEFH01190 Dial Pointer	1	
M116	(2-A)	YEF04082 Illumination Cap	1	
M117	(2-A)	YEFV04006A Shade Case	1	
M118	(2-B)	YEFH07041 Dial Rope Guide	1	
M119	(2-C)	YEFX009076 Joint, Tuner	1	
M120	(4-C)	YEFX007150 Cord Clamper	1	
M121	(2-C)	YEFX014009 Joint, Tuner	1	
M122	(3-C)	YEFX021786 Mounting Bracket, IC	1	

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
ICs AND TRANSISTORS				
RF & IF BLOCK				
IC101	YEAMUPC1171C	AM RF AMP, Conv., IF AMP	1	
IC151	YEAMUPC1004C	FM IF AMP	1	
Q151	2SC2206	FM IF AMP	1	
AUDIO BLOCK				
IC201	AN7311	PRE AMP	1	
IC202, 301	YEAMUPC2002V	AF Power AMP	2	
IC551	YEAMBA1320	FM MPX Demodulator	1	
DIODES				
RF & IF BLOCK				
D101	YEAD1N60P	AM AGC	1	
D51, 52, 53 102, 104	MA150	Antenna Over-Loading, AM Det	5	
D103	YEAD024	Voltage Stabilizer	1	
AUDIO BLOCK				
D201	LN38GP	Indicator, Tape Running	1	
D552	LN28RP	Indicator, Stereo Signal	1	
D701	YEAD030	Spark Suppression	1	

Panasonic CQ-5848EC/EU

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Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
CAPACITORS				
RF & IF BLOCK				
C51	YECCD1H180KM	18 PF 50VV ±10% Ceramic	1	
C52	ECKD1H103PF	0.01 MFD 50VV +80,-20% Ceramic	1	
C102	YEQN1H103M	0.01 MFD 50VV ±20% Polyester	1	
C103	YEQN1H333M	0.033 MFD 50VV ±20% Polyester	1	
C104	YECCD1H331JM	330 PF 50VV ±5% Ceramic	1	
C105	ECEA10V33L	33 MFD 10VV Electrolytic	1	
C106	ECEA6V33L	33 MFD 6VV Electrolytic	1	
C108	YECCD1H331JM	330 PF 50VV ±5% Ceramic	1	
C109	YECCD1H121KM	120 PF 50VV ±10% Ceramic	1	
C110	YEQN1H103M	0.01 MFD 50VV ±20% Polyester	1	
C111	ECEA50V1L	1 MFD 50VV Electrolytic	1	
C112	YECCD1H101KM	100 PF 50VV ±10% Ceramic	1	
C113	YEQN1H183M	0.018 MFD 50VV ±20% Polyester	1	
C114	YEQN1H332K	0.0033 MFD 50VV ±10% Polyester	1	
C115	YEQN1H103M	0.01 MFD 50VV ±20% Polyester	1	
C116	YECCD1H181JS	180 PF 50VV ±5% Ceramic	1	
C118	ECEA10V100L	100 MFD 10VV Electrolytic	1	
C119	YEQN1H103M	0.01 MFD 50VV ±20% Polyester	1	
C120	YEQN1H103M	0.01 MFD 50VV ±20% Polyester	1	
C121	ECEA10V100L	100 MFD 10VV Electrolytic	1	
C122	ECEA16V100L	100 MFD 16VV Electrolytic	1	
C151	ECEA50V1L	1 MFD 50VV Electrolytic	1	
C152	ECKD1H103PF	0.01 MFD 50VV +80,-20% Ceramic	1	
C153	YEQN1H223M	0.022 MFD 50VV ±20% Polyester	1	
C154	ECKD1H103PF	0.01 MFD 50VV +80,-20% Ceramic	1	
C155	YECCD1H101KM	100 PF 50VV ±10% Ceramic	1	
C156	ECKD1H103PF	0.01 MFD 50VV +80,-20% Ceramic	1	
C157	ECEA16V100L	100 MFD 16VV Electrolytic	1	
C158	YEQN1H223M	0.022 MFD 50VV ±20% Polyester	1	
C159	YECCD1H820KM	82 PF 50VV ±10% Ceramic	1	

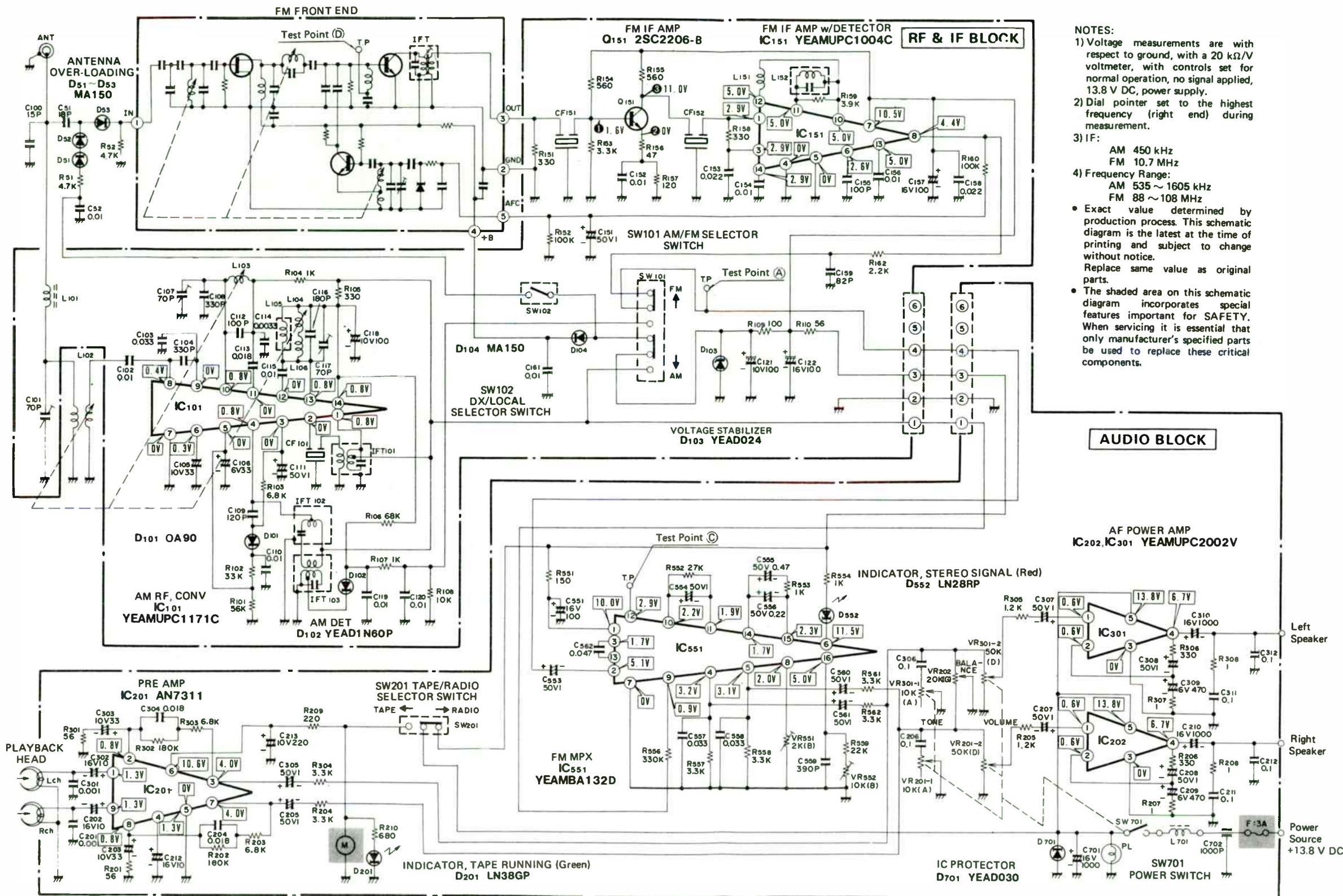
Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
C161	ECKD1H103PF	0.01 MFD 50VV +80,-20% Ceramic	1	
MAIN UNIT				
C100	YECCD1H150K	15 PF 50VV ±10% Ceramic	1	
AUDIO BLOCK				
C201	YEQN1H102K	0.001 MFD 50VV ±10% Polyester	1	
C202	ECEA16V10L	10 MFD 16VV Electrolytic	1	
C203	ECEA10V33L	33 MFD 10VV Electrolytic	1	
C204	YEQN1H183M	0.018 MFD 50VV ±20% Polyester	1	
C205	ECEA50V1L	1 MFD 50VV Electrolytic	1	
C206	YECCD12104M	0.1 MFD 12VV ±20% Ceramic	1	
C207	ECEA50V1L	1 MFD 50VV Electrolytic	1	
C208	ECEA50V1L	1 MFD 50VV Electrolytic	1	
C209	ECEA6V470L	470 MFD 6VV Electrolytic	1	
C210	ECEA16V1000Z	1000 MFD 16VV Electrolytic	1	
C211	EQM1H104MZ	0.1 MFD 50VV ±20% Polyester	1	
C212	ECEA16V10L	10 MFD 16VV Electrolytic	1	
C213	ECEA10V220L	220 MFD 10VV Electrolytic	1	
C301	YEQN1H102K	0.001 MFD 50VV ±10% Polyester	1	
C302	ECEA16V10L	10 MFD 16VV Electrolytic	1	
C303	ECEA10V33L	33 MFD 10VV Electrolytic	1	
C304	YEQN1H183M	0.018 MFD 50VV ±20% Polyester	1	
C305	ECEA50V1L	1 MFD 50VV Electrolytic	1	
C306	YECCD12104M	0.1 MFD 12VV ±20% Ceramic	1	
C307	ECEA50V1L	1 MFD 50VV Electrolytic	1	
C308	ECEA50V1L	1 MFD 50VV Electrolytic	1	
C309	ECEA6V470L	470 MFD 6VV Electrolytic	1	
C310	ECEA16V1000Z	1000 MFD 16VV Electrolytic	1	
C311	EQM1H104MZ	0.1 MFD 50VV ±20% Polyester	1	
C551	ECEA16V100L	100 MFD 16VV Electrolytic	1	
C553	ECEA50V1L	1 MFD 50VV Electrolytic	1	

Ref. No.	Part No.	Part Name & Description				Pcs Set	Remarks
C554	ECEA50V1L	1 MFD	50WV	Electrolytic	1		
C555	ECEA50MR47	0.47 MFD	50WV	Electrolytic	1		
C556	ECEA50MR22	0.22 MFD	50WV	Electrolytic	1		
C557	YECON1H333M	0.033 MFD	50WV ±20%	Polyester	1		
C558	YECON1H333M	0.033 MFD	50WV ±20%	Polyester	1		
C559	ECQS1391JZ	390 PF	125WV ±5%	Polystyrene	1		
C560	ECEA50V1L	1 MFD	50WV	Electrolytic	1		
C561	ECEA50V1L	1 MFD	50WV	Electrolytic	1		
C562	YECON1H473M	0.047 MFD	50WV ±20%	Polyester	1		
C701	ECEA16V1000Z	1000 MFD	16WV	Electrolytic	1		
C702	YECL510387	1000 PF		Feedthrough	1		
RESISTORS							
RF & IF BLOCK							
R51	ERD18TJ472	4.7k OHM	1/8W ±5%	Carbon	1		
R52	ERD18TJ472	4.7k OHM	1/8W ±5%	Carbon	1		
R101	ERD18VJ563	56k OHM	1/8W ±5%	Carbon	1		
R102	ERD18VJ333	33k OHM	1/8W ±5%	Carbon	1		
R103	ERD18VJ682	6.8k OHM	1/8W ±5%	Carbon	1		
R104	ERD18VJ102	1k OHM	1/8W ±5%	Carbon	1		
R105	ERD18VJ331	330 OHM	1/8W ±5%	Carbon	1		
R106	ERD18VJ683	68k OHM	1/8W ±5%	Carbon	1		
R107	ERD18VJ102	1k OHM	1/8W ±5%	Carbon	1		
R108	ERD18VJ103	10k OHM	1/8W ±5%	Carbon	1		
R109	ERD18VJ101	100 OHM	1/8W ±5%	Carbon	1		
R110	ERD14FJ560	56 OHM	1/4W ±5%	Carbon	1		
R151	ERD18VJ331	330 OHM	1/8W ±5%	Carbon	1		
R152	ERD18VJ104	100k OHM	1/8W ±5%	Carbon	1		
R153	ERD18VJ561	560 OHM	1/8W ±5%	Carbon	1		
R154	ERD18VJ332	3.3k OHM	1/8W ±5%	Carbon	1		

Ref. No.	Part No.	Part Name & Description				Pcs Set	Remarks
R155	ERD18VJ561	560 OHM	1/8W ±5%	Carbon	1		
R156	ERD18VJ470	47 OHM	1/8W ±5%	Carbon	1		
R157	ERD18VJ121	120 OHM	1/8W ±5%	Carbon	1		
R158	ERD18VJ331	330 OHM	1/8W ±5%	Carbon	1		
R159	ERD18VJ392	3.9k OHM	1/8W ±5%	Carbon	1		
R160	ERD18VJ104	100k OHM	1/8W ±5%	Carbon	1		
R162	ERD18VJ222	2.2k OHM	1/8W ±5%	Carbon	1		
AUDIO BLOCK							
R201	ERD18VJ560	56 OHM	1/8W ±5%	Carbon	1		
R202	ERD18VJ184	180k OHM	1/8W ±5%	Carbon	1		
R203	ERD18VJ682	6.8k OHM	1/8W ±5%	Carbon	1		
R204	ERD18VJ332	3.3k OHM	1/8W ±5%	Carbon	1		
R205	ERD18VJ122	1.2k OHM	1/8W ±5%	Carbon	1		
R206	ERD18VJ331	330 OHM	1/8W ±5%	Carbon	1		
R207	ERD18VJ1R0	1 OHM	1/8W ±5%	Carbon	1		
R208	ERD18VJ1R0	1 OHM	1/8W ±5%	Carbon	1		
R209	ERD18TJ221	220 OHM	1/8W ±5%	Carbon	1		
R210	ERD18VJ681	680 OHM	1/8W ±5%	Carbon	1		
R301	ERD18VJ560	56 OHM	1/8W ±5%	Carbon	1		
R302	ERD18VJ184	180k OHM	1/8W ±5%	Carbon	1		
R303	ERD18TJ682	6.8k OHM	1/8W ±5%	Carbon	1		
R304	ERD18VJ332	3.3k OHM	1/8W ±5%	Carbon	1		
R305	ERD18VJ122	1.2k OHM	1/8W ±5%	Carbon	1		
R306	ERD18VJ331	330 OHM	1/8W ±5%	Carbon	1		
R307	ERD18VJ1R0	1 OHM	1/8W ±5%	Carbon	1		
R308	ERD18VJ1R0	1 OHM	1/8W ±5%	Carbon	1		
R551	ERD18VJ151	150 OHM	1/8W ±5%	Carbon	1		

Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
R552	ERD18VJ273	27k OHM 1/8W ±5% Carbon	1	
R553	ERD18VJ102	1k OHM 1/8W ±5% Carbon	1	
R554	ERD18TJ102	1k OHM 1/8W ±5% Carbon	1	
R555	ERD18VJ103	10k OHM 1/8W ±5% Carbon	1	
R556	ERD18VJ334	330k OHM 1/8W ±5% Carbon	1	
R557	ERD18VJ332	3.3k OHM 1/8W ±5% Carbon	1	
R558	ERD18VJ332	3.3k OHM 1/8W ±5% Carbon	1	
R559	ERD18VJ223	22k OHM 1/8W ±5% Carbon	1	
R561	ERD18VJ332	3.3k OHM 1/8W ±5% Carbon	1	
R562	ERD18VJ332	3.3k OHM 1/8W ±5% Carbon	1	
VARIABLE CAPACITORS				
C101	ECV1Z70X41	70 PF Trimmer	1	
C107, 117	YECTTC10S700	70 PF Trimmer	2	
VARIABLE RESISTORS				
VR551	EVNK4AA00823	2k OHM (B) Semi-fixed	1	
VR552	EVNK4AA00814	10k OHM (B) Semi-fixed	1	
VR202	EWKY YAS14G24	20k OHM (G) Balance Control	1	
VR201, 301	EWKJSBS90440	50k OHM (D) Volume Control	1	
SW701		10k OHM (A) Tone Control with Power Switch		

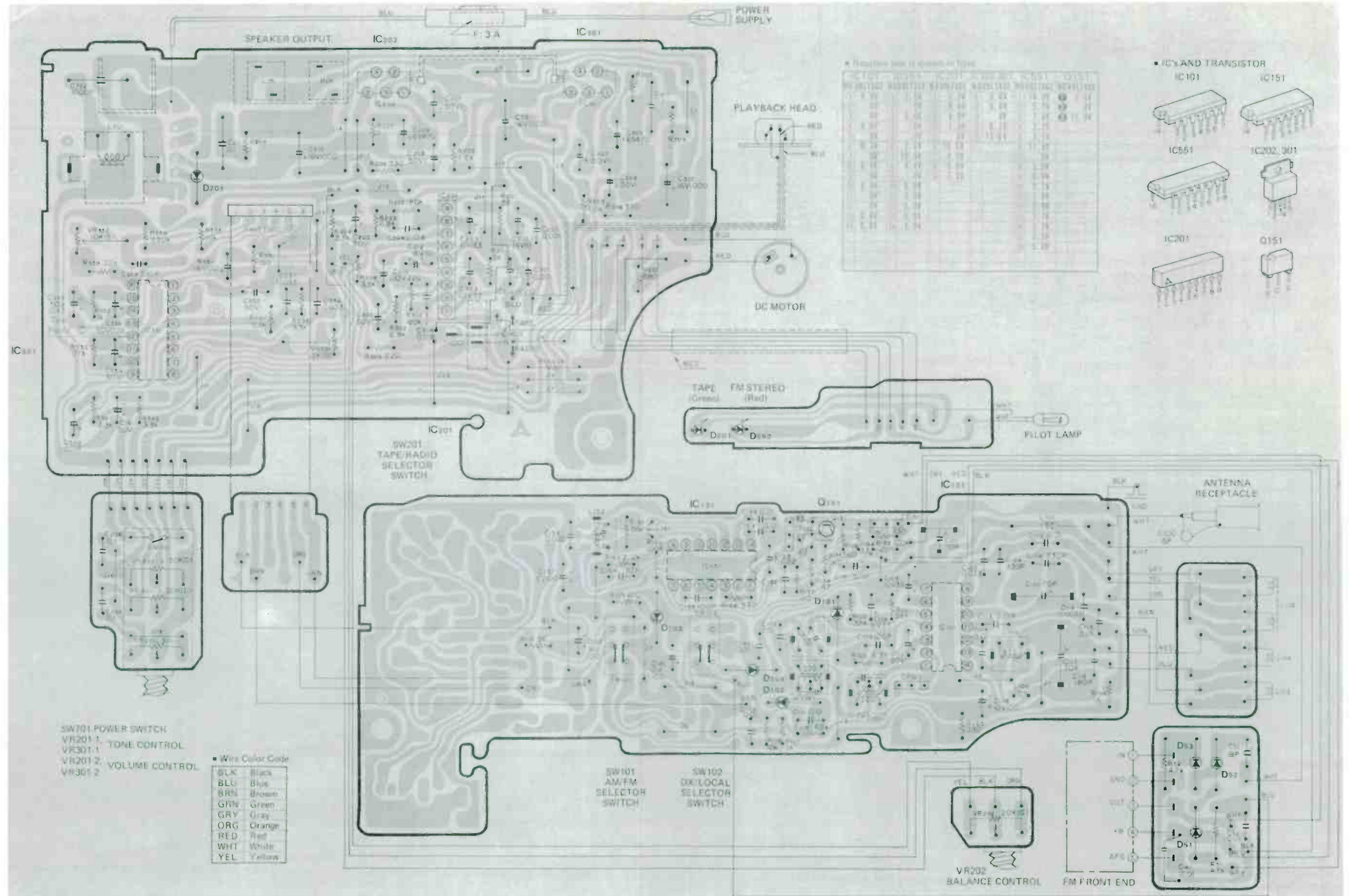
Ref. No.	Part No.	Part Name & Description	Pcs Set	Remarks
COILS, TRANSFORMERS AND CERAMIC FILTERS				
L101	YELT04C8R2K	Loading Coil	1	
L105	YELL07S070	OSC Coil	1	
L106	YELT06N5R6K	RF Coil	1	
L151	YELT06N330K	RF Coil	1	
L152	YEIF07S7052	FM IFT	1	
L701	YETQ017F043	Coke Coil	1	
IFT101	YEIA07S7099	AM IFT	1	
IFT102	YEIA07S7100	AM IFT	1	
IFT103	YEIA07S7101	AM IFT	1	
CF101	YEIN08N5008	Ceramic Filter, AM	1	
CF151, 152	YEIN09N5007	Ceramic Filter, FM	2	
SWITCHES				
SW101, 102	YEAS09074	AM/FM Selector & DX/Local Selector	2	
SW201	YEAS23117	Tape/Radio Selector	1	
TUNER				
M50	YEAU01074	AM/FM Tuner Ass'y	1	



- NOTES:**
- 1) Voltage measurements are with respect to ground, with a 20 kΩ/V voltmeter, with controls set for normal operation, no signal applied, 13.8 V DC, power supply.
 - 2) Dial pointer set to the highest frequency (right end) during measurement.
 - 3) IF:
 - AM 450 kHz
 - FM 10.7 MHz
 - 4) Frequency Range:
 - AM 535 ~ 1605 kHz
 - FM 88 ~ 108 MHz
- Exact value determined by production process. This schematic diagram is the latest at the time of printing and subject to change without notice. Replace same value as original parts.
 - The shaded area on this schematic diagram incorporates special features important for SAFETY. When servicing it is essential that only manufacturer's specified parts be used to replace these critical components.

R	51	52				102	103	104		105	106	108				151	153	155		158	109	110	159			160			306		
	301	201	302	303		202	203	209		210						152	154	156	157		158	553	554	559	561		305	205	307	308	
C	100	51	52	102	103	104	108	112	113	114	115	116	118	119	120	161	151	152		153	154	122	159	155	156		157	158	308		
		301	303			304	105	106	109	110	111	213																309	311	312	
		201	202	203	212		204	204				205				551	552	553	554	555	556	557	558	559	561		206	207	209	211	212

Panasonic CQ-5848EC/EU



AM/FM MPX ALIGNMENT PROCEDURE

Step	Signal Source	Output Indicator	Set Signal to	Set Radio Dial to	Adjust-	Adjust for
1	Set function switch to MW and local-DX switch to DX.					
2	Sweep Gen. connected to TP5, (Fig. 7) and chassis placed nearest to TP5.	Sweep Gen. connected to TP4 (R216) and chassis placed nearest to TP4.	455 kHz	Quiet point on band	Adj 1	Fig. 10
3	Signal Gen. or Sweep Gen. connected to antenna terminal through dummy antenna. (Fig. 11)	VTVM or Sweep Gen. connected to TP4 and chassis placed nearest to TP4	515 kHz	515 kHz Tuning knob fully counterclockwise	Adj 2	Maximum
4			1,650 kHz	1,650 kHz Tuning knob fully clockwise	Adj 3	
5			1,400 kHz	1,400 kHz	Adj 4,11	
6	Repeat steps 2 through 5 if necessary to obtain maximum sensitivity.					
7	Set function switch to FM and local-DX switch to DX.					
8	Sweep Gen. connected to TP1 (Fig. 5) and chassis placed nearest to TP1.	Sweep Gen. connected to TP2 (R130) and chassis placed nearest to TP2.	10.7 MHz	Quiet point on band	Adj 5	Fig. 12
9					Adj 6	Fig. 13
10	Sig. Gen. or Sweep Gen. connected to antenna terminal through dummy antenna. (Fig. 14)	Sweep Gen. connected to TP2 and chassis placed nearest to TP2.	87.5 MHz	Tuning knob fully counterclockwise.	Adj 7	Maximum
11			106 MHz	106 MHz (Mark between 104 MHz and 108 MHz)	Adj 8 Adj 9	
12	Repeat steps 8 through 11 if necessary to obtain maximum sensitivity.					
13	Sig. Gen. connected to antenna terminal through dummy antenna (Fig. 14)	Frequency counter connected to TP3 and chassis placed nearest to TP3.	98 MHz	98 MHz	Adj 10	Frequency 19.5 kHz ± 20 Hz
14	Sig. (stereo signal) connected to antenna terminal through dummy antenna.	VTVM and oscilloscope connected to output.	98 MHz	98 MHz	Adj 10	Separation Maximum



Fig. 10

Adjust to obtain the maximum waveform with a flap top.
The marker is not always centered.

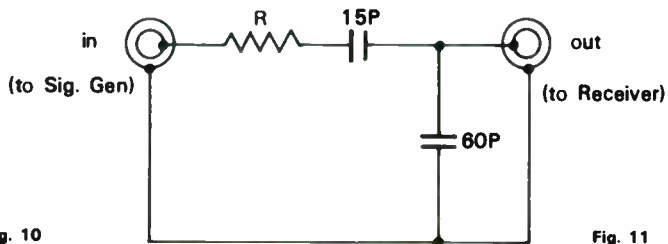


Fig. 11

Dummy Ant.

$$R = (80 - \text{Generator Impedance}) \Omega$$



Fig. 12

10.7 MHz Marker

Turn the orange color core clockwise to maximum and adjust the black color core to obtain maximum waveform. Note that the 10.7 MHz Marker is not always centered because of the ceramic filter used.

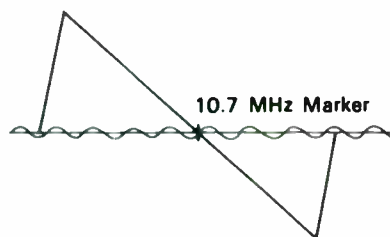


Fig. 13

Turn the black color core to obtain maximum waveform and the orange color core to minimize noise. Repeat these two operations if necessary to obtain symmetry.

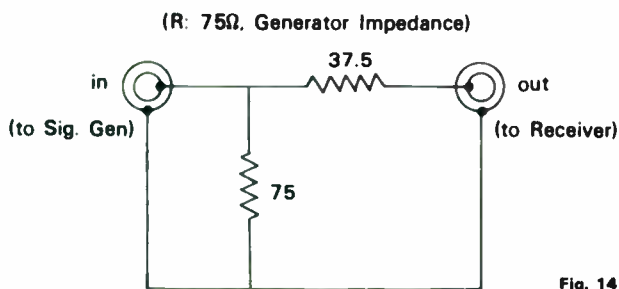


Fig. 14

A) Adjust sections (Symbol: Adj)
Adj 1 — Adj 13

B) Testing points (Symbol: TP)
TP1 — TP11

REPLACEMENT OF COMPONENT

FM IF, Amplifier section

First remove the two screws (3 , 4 Fig. 3). Lift three slots of chassis gently. Observe caution regarding the various lead wire of the P.C.B.

MW section

Loosen two screws (3 , 4 Fig. 4) and MW P.C.B. to the upward (refer to Fig. 4). Observe caution regarding the various lead wires of the P.C.B.

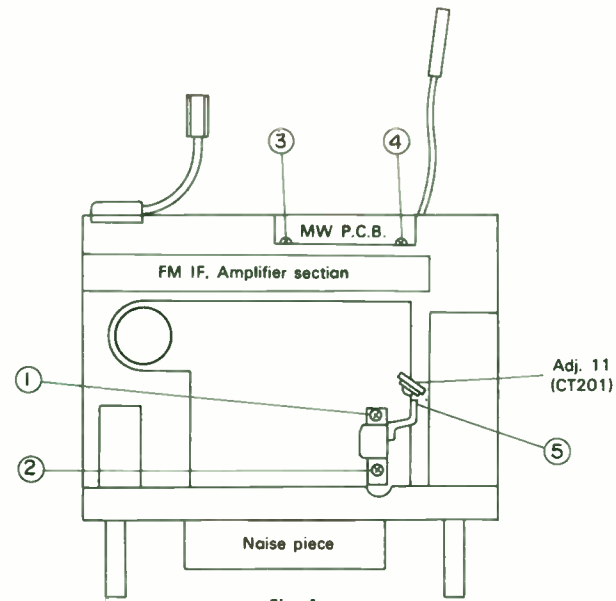


Fig. 4

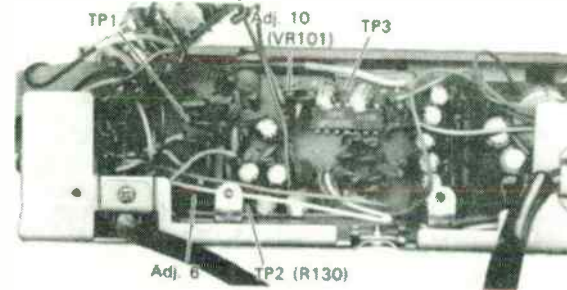


Fig. 5

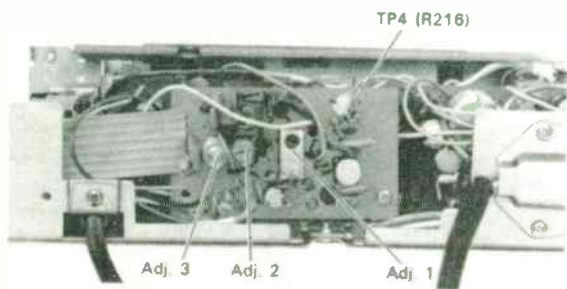
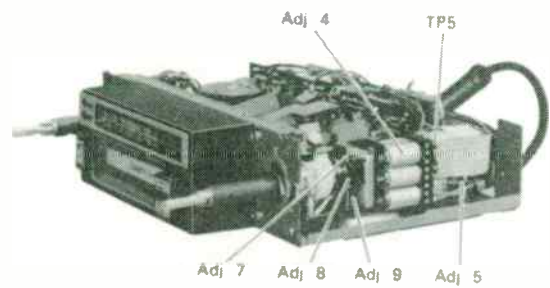


Fig. 6



Be careful not to move Adj. 7, 8 and 9 as far as possible

Fig. 7

Tuner section

Loosen two screws (18 , 19 Fig. 3) and remove the tuner. Be careful with the dial string.

Tape transport mechanism

Most repairs can be done by only removing the top cover, bottom cover and nose piece. But if the tape transport mechanism must be removed.. Loosen the following screws in the order given below:

Screws (15 ~ 17 , Fig. 3)

FF/Eject button

Sliding the mechanism chassis backwards, lift it obliquely.

Playback head

Loosen screws (1 , 2 Fig. 4) and extend the lead wire clamp (5 Fig. 4). Be careful not to lose the azimuth correctly when reassembling.

Motor

After removal of bottom cover as described before, unsolder the motor lead wires, loosen the screws (1 , 2 Fig. 8) and remove the motor.

Place the lead wire outlet in the same position as it was before when reassembling. If it is placed in the opposite position (rotated through 180°), the noise of motor (electrical noise) will increase slightly.

Flywheel

To replace or repair the belt, flywheel, take-up reel, remove the flywheel bracket in the manner described below.

1. Remove bottom cover (refer to Bottom cover).
2. Remove the two screws. (3 , 4 Fig. 8)
3. Lift the flywheel (Exploded view) slightly with your fingers and, at the same time, lift the flywheel bracket with your other hand.

4. By following the operation above the flywheel bracket with the take-up reel, two belts and the flywheel can be removed. Be sure to press the eject button to lift the cassette tape when removing.

When reassembling, wipe the capstan before pressing it to the pinch roller, because the capstan might be stained with bearing oil.

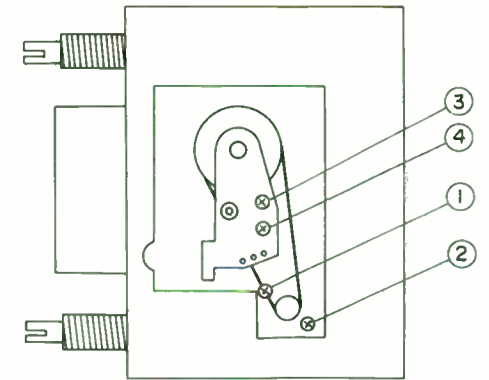


Fig. 8

How to wind dial string

- a) The winding direction and number of turns of the string should be as illustrated.
- b) Mount the pointer at the position and in the manner illustrated.

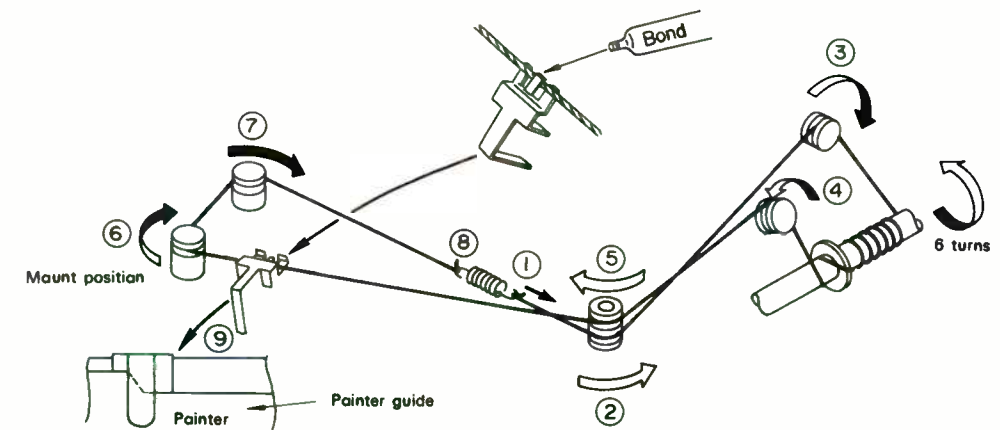




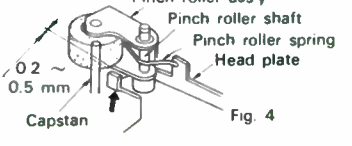
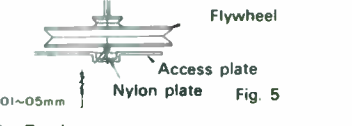

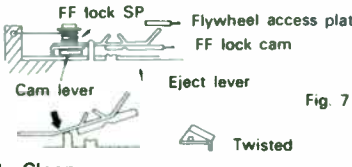
Fig. 9

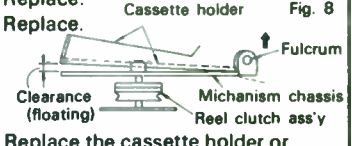
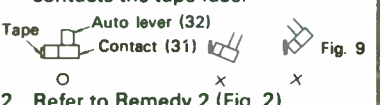

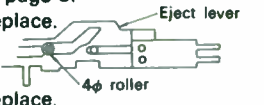
HEAD AZIMUTH ADJUSTMENT

1. Set the tone at high max., adjust the balance to its middle position, put the test tape in and play it back.
2. Adjust the azimuth adjuster to make the tape output (6.3 kHz) maximum when playing back in the FWD direction.
3. Seal the azimuth adjuster after adjusting it.

TROUBLESHOOTING

Tape section

Sympton	Possible cause	Remedy
<ul style="list-style-type: none"> ● Tape does not rotate. (Motor does not rotate.) 	<ol style="list-style-type: none"> 1. Micro or skelton switch defective. 2. Auto lever bent (Micro SW is depressed in FWD mode.) 	<ol style="list-style-type: none"> 1. Replace. 2. Bend auto lever as indicated in Fig. B. 
<ul style="list-style-type: none"> ● Motor rotates but tape does not rotate. 	<ol style="list-style-type: none"> 1. Belt or pinch roller slipping. 2. Belt disengaged. 3. Auto stop spring disengaged (if the leader tape is too thick, the tape with stop during initial winding). 4. Motor pulley unsoldered. 5. Insufficient pinch roller pressure due to defect in pinch roller arm. 6. Excessively bent flywheel access plate. 7. Cassette tape defective. 8. Head plate is displaced from FWD position. 	<ol style="list-style-type: none"> 1. Clean. 2. Re-engage. 3. Re-engage. 4. Resolder. 5. Adjust the angle of the pinch roller stopper arm ass'y as indicated by the arrow on the head plate. 6. Thrust play between the flywheel and access plate should be within 0.1 ~ 0.5 mm. Adjust degree of bending. 7. Replace. 8. Free stuck wire free.   
<ul style="list-style-type: none"> ● Tape speed is too fast. 	<ol style="list-style-type: none"> 1. Insufficient pinch roller pressure. 2. Incorrect head plate position. 3. Motor defective. 4. Motor pulley defective. 	<ol style="list-style-type: none"> 1. Refer to Remedy 4 (Fig. 4) on page 2. 2. Refer to Remedy 7 on page 2. 3. Replace motor. 4. Replace. 
<ul style="list-style-type: none"> ● FF or FWD is not possible. 	<ol style="list-style-type: none"> 1. Insufficient FF lock. 2. Flywheel or reel clutch ass'y dirty. 3. Infussicient reel clutch ass'y take up torque. 4. Motor defective. 5. Micro SW is depressed when FF is locked. 6. Cassette tape defective. 	<ol style="list-style-type: none"> 1. FF lock plate is not horizontal. 2. Clean. 3. Replace. 4. Replace. 5. Refer to Remedy 2 (Fig. 2) on page 1. 
<ul style="list-style-type: none"> ● Excessive wow and flutter. 	<ol style="list-style-type: none"> 1. Capstan, flywheel and belt slipping. 2. Belt worri out, cracked or deformed. 	<ol style="list-style-type: none"> 1. Clean. 2. Replace.

Sympton	Possible cause	Remedy
	<ol style="list-style-type: none"> 3. Excessive reel clutch ass'y take up torque. 4. Flywheel or capstan cracked. 5. No thrust play between flywheel capstan and access plate. 6. Insufficient pinch roller pressure. 7. Motor defective. 8. Cassette defective. 	<ol style="list-style-type: none"> 3. Replace. 4. Replace. 5. Refer to Remedy 5 (Fig. 5) on page 2. 6. Refer to Remedy 4 (Fig. 4) on page 2. 7. Replace. 8. Replace.
<ul style="list-style-type: none"> ● Mechanical noise. 	<ol style="list-style-type: none"> 1. Insufficient lubricant on shaft. 2. Motor defective. 3. Reel clutch defective. 4. Reel clutch ass'y hub slipping on cassette tape hub caused by cassette tape floating (chattering). 5. Flywheel touching the access plate. 	<ol style="list-style-type: none"> 1. Lubricate. 2. Replace. 3. Replace. 4. Replace the cassette holder or bend the fulcrum in the direction of the arrow. 5. Refer to Remedy 5 (Fig. 5) on page 2. 
<ul style="list-style-type: none"> ● Auto stop operation is not possible. 	<ol style="list-style-type: none"> 1. Incorrect contact position. 2. Auto lever bent. 3. Micro SW defective. 	<ol style="list-style-type: none"> 1. Adjust so that the sensor squarely contacts the tape face. 2. Refer to Remedy 2 (Fig. 2) on page 1. 3. Replace. 
<ul style="list-style-type: none"> ● Incorrect head plate position. 	<ol style="list-style-type: none"> 1. Eject lever bent. 2. Head chassis ass'y bent or pronounced chassis burrs present. 3. Cam lever bent. 	<ol style="list-style-type: none"> 1. Replace. 2. Replace. 3. Replace.
<ul style="list-style-type: none"> ● Cassette is not ejected normally. 	<ol style="list-style-type: none"> 1. Incorrect cassette holder spring position. 2. Cassette holder is deformed capstan protrudes from cassette holder face. 3. Cassette tape defective. 	<ol style="list-style-type: none"> 1. Adjust cassette holder spring so that clearance is $7 + 1.5 - 1.0$. 2. Refer to Remedy 3 (Fig. 8) on page 5. 3. Replace. 
<ul style="list-style-type: none"> ● Incorrect ejection. 	<ol style="list-style-type: none"> 1. Incorrect cassette holder spring position. 2. 4φ eject roller broken. 3. Cassette tape defective. 	<ol style="list-style-type: none"> Refer to Remedy 1 (Fig. 10) on page 6. 2. Replace. 3. Replace. 
<ul style="list-style-type: none"> ● Tape lamp (LED) does not light. ● Tape lamp (LED) does not light. 	<ol style="list-style-type: none"> 1. Green LED defective. 2. Auto stop switch defective. 1. Auto stop lever defective. 	<ol style="list-style-type: none"> 1. Check. 2. Adjust or replace. 1. Check.

Amplifier section

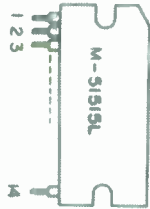
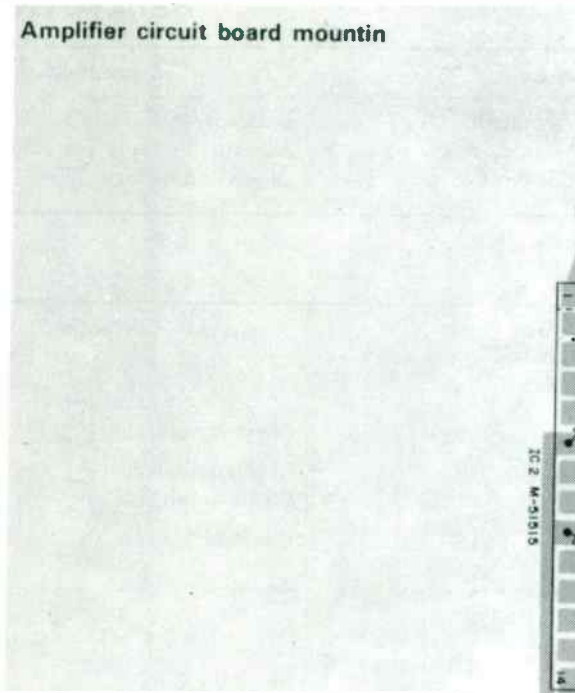
Sympton	Cause	Correction
Lack of sound volume and/or distortion of sound.	<ol style="list-style-type: none"> 1. Head is dirty or damaged. 2. Head position is improper. 3. R205 (405) or 307 (407) is defective. 4. Preamp. or power amp. is defective. 	<p>Clean or replace.</p> <p>Adjust.</p> <p>Replace.</p> <p>Check or replace.</p>

Symptom	Cause	Correction
High notes are lost.	<ol style="list-style-type: none"> 1. Head is dirty or damaged. 2. Head position is improper. 3. R306 (406) or C306 (406) is defective. 	<p>Clean or replace.</p> <p>Adjust.</p> <p>Check and replace.</p>

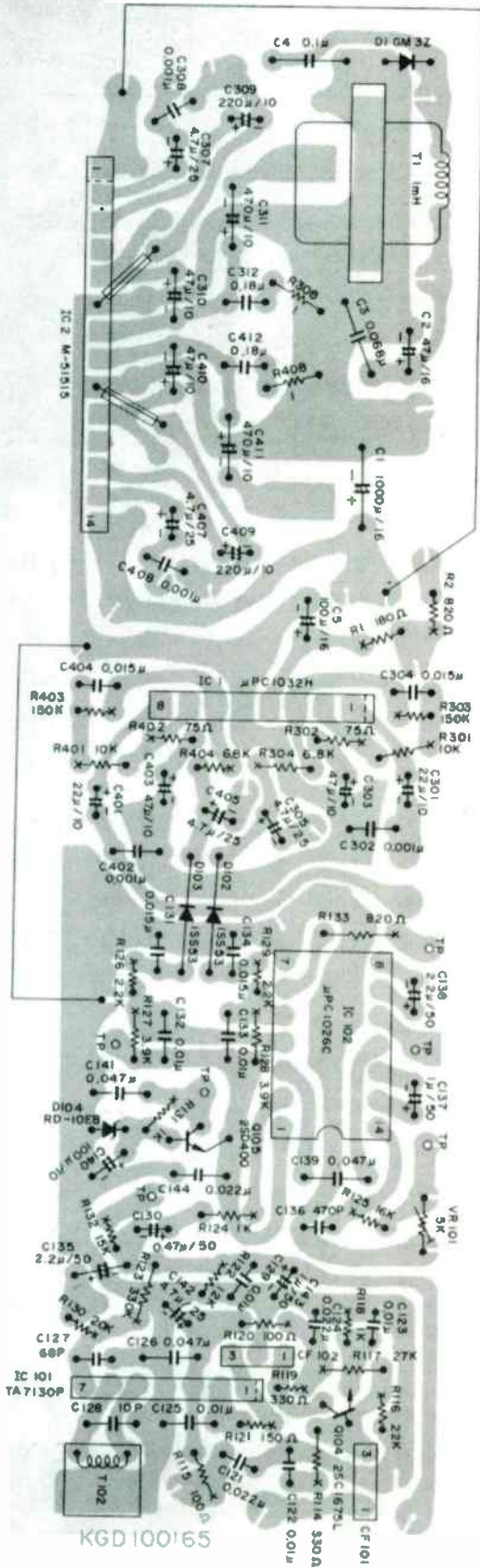
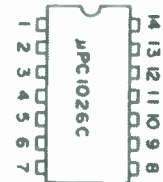
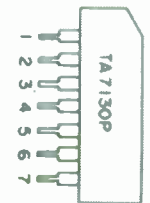
Radio section

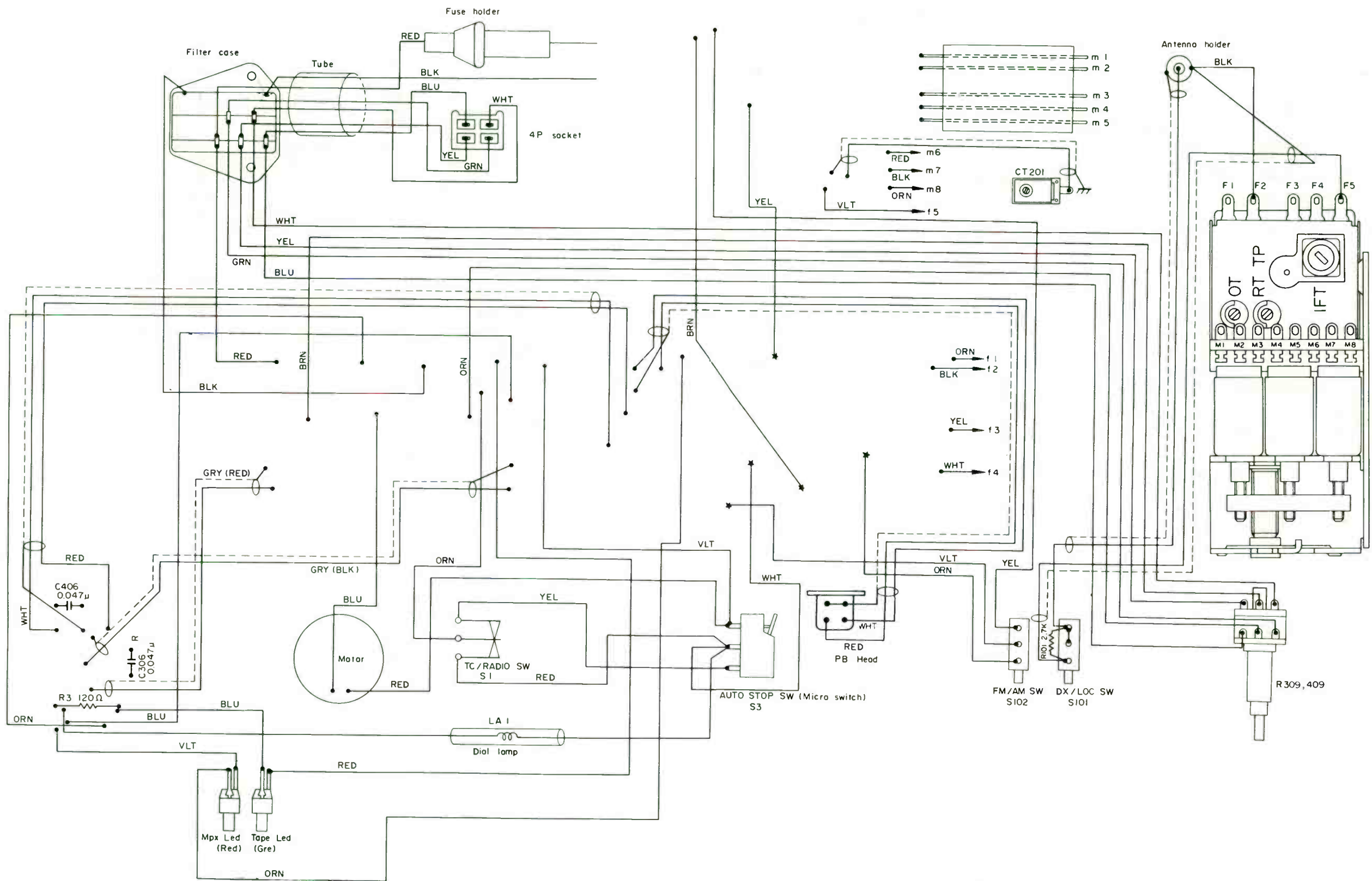
Symptom	Cause	Correction
<p>No sound</p> <ul style="list-style-type: none"> Tape works normally Dial scale lamp lights Output at IC102 is normal with input from antenna jack. 	<ol style="list-style-type: none"> 1. Switch (S1). 1. Switch (S102). 2. Q105, D104. 1. D102, D103. 	<p>Check or replace.</p> <p>Check or replace.</p> <p>Check or replace.</p> <p>Check or replace.</p>
<p>FM doesn't sound</p> <p>FM sensitivity is low</p> <ul style="list-style-type: none"> Q105 base voltage is 9.0V Q105 emitter voltage is 8.4V With 98 MHz modulated by 400 Hz at 30% applied from antenna 3 dB limiting sensitivity is about 20 dBμ at (TP2). With the same input, 3 dB limiting sensitivity is about 20 dBμ at 4 ohm load of audio output. 	<ol style="list-style-type: none"> 1. D104, Q105. 1. Q105, IC101, IC102, Q104, Tuner. 1. Q104, CF101, CF102, S101, L205. 2. T101, T102. 1. IC102, D102, 103, R130, C135, C130, R135. 	<p>Check or replace.</p> <p>Check or replace.</p> <p>Check or replace.</p> <p>Adjust.</p> <p>Check or replace.</p>
<p>Channels are not separated with FM stereo.</p> <p>FM MPX lamp doesn't light.</p> <ul style="list-style-type: none"> With frequency counter connected at (TP3) oscillation frequency is 19.05 kHz \pm 20 Hz. With 98 MHz modulated by 19 kHz at 10% applied and when 20 dBμ input is applied to the above-mentioned signal, the MPX lamp does not light. 	<ol style="list-style-type: none"> 1. VR101. 2. IC102 MPX LED (lamp). 1. Q102, IC102. 2. Lead wire to MPX LED (lamp) is broken. 	<p>Adjust.</p> <p>Check or replace.</p> <p>Check or replace.</p> <p>Replace.</p>
<p>MW doesn't produce sound.</p> <p>MW sensitivity is low.</p> <ul style="list-style-type: none"> Voltage at Q105 base is 9.0V. When 455 kHz modulated by 400 Hz at 30% applied through 0.01 μF to (TP5) from SG, output is normal at (TP4). With same input, output TP4 and IC102 are normal. Output and frequency of local oscillation are normal across lead (flexible lead). 	<ol style="list-style-type: none"> 1. Q105, D104. 1. Q202, Q203, CT201. 1. D102, D103. 1. Lead (from tuner to MW, P.C.B.) disconnected. 2. CT201, T202. 	<p>Check or replace.</p> <p>Check and replace.</p> <p>Check and replace.</p> <p>Connect.</p> <p>Check and replace.</p>

Amplifier circuit board mountin



IC PIN NO





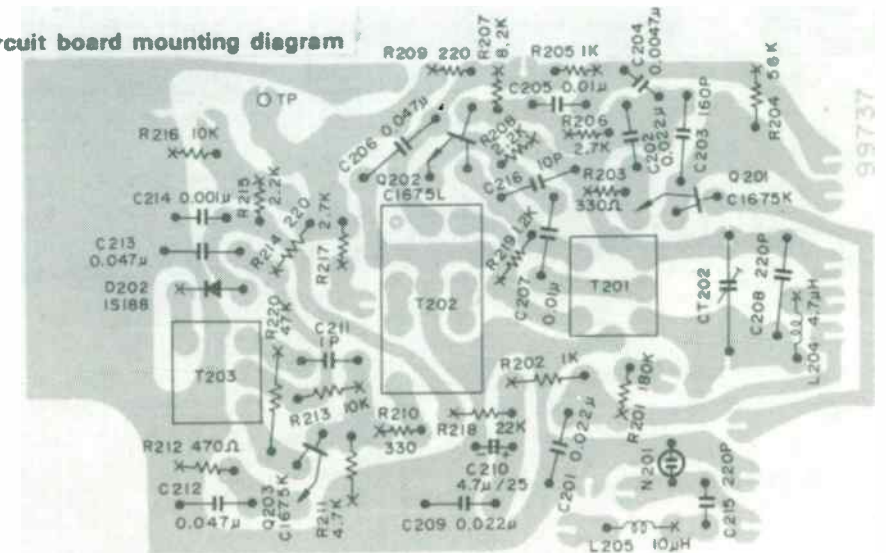
Sankyo SCS-202

Tuner section

Ref. No.	Parts No.	Description	Remarks	Q'ty	Original Model
IC101	KGE46442	IC	TA7130P	1	SCS-222
IC102	KGE46550	IC	μ PC1026C	1	SCS-202
Q101~103		Included in AM/FM tuner	(KGE49367)		
Q104	KGE46338	Transistor	2SC1675L	1	STR-245FS
Q105	KGE46507	Transistor	2SC400E	1	SCS-303E
Q201,203	KGE46339	Transistor	2SC1675K	2	STR-245FS
Q202	KGE46338	Transistor	2SC1674L	1	STR-245FS
D101		Included in AM/FM tuner	(KGE49367)		
D102,103	KGE46465	Diode	1SS53	2	SCS-222
D104	KGE46297	Diode	RD10E8	1	SCS-222
D201	KGE41959	Diode	1S188 FM-1	1	STR-245FS
N201	KGE49220	Neon lamp	NE-38	1	SCS-222
T101		Included in AM/FM tuner	(KGE49367)		
T102	KGE47080	FM IFT	119 ACS-13107Z	1	SCS-222
T201	KGE40951	MW OSC transformer		1	
T202	KGE40677	MW ceramic filter	CFZ-455C	1	SCS-222
T203	KGE47040	MW IFT	159GC-1009	1	SCS-222
S101,102	KGE42488	Push switch		2	SCS-222
L101~104, 201~203		Included in AM/FM tuner	(KGE49367)		
L204	KGE47147	Micro inductor	4.7 μ H	1	SCS-202
L205	KGE47151	Micro inductor	10 μ H	1	
CT101,102		Included in AM/FM tuner	(KGE49367)		
CT201	KGE30092	Trimmer	100pF	1	SCS-222
CT202	KGE30102	Trimmer	50pF	1	SCS-202
CF101,102	KGE47032	FM ceramic filter	SFE 10.7MA5Z	2	SCS-222
VR101	KGE20665	Semi variable resistor	5k Ω	1	SCS-303E
C101~120 C121,124, 144	KGE33564	Ceramic	0.022 μ F/25	3	
C122,123, 125,129	KGE33563	Ceramic	0.01 μ F/25	4	
C126,141	KGE33565	Ceramic	0.047/25	2	
C127	KGE33397	Ceramic	68pF/50	1	
C128	KGE33442	Ceramic	10pF \pm 0.5pF/50	1	
C130	KGE35830	Electrolytic	0.47 μ F/50	1	
C131,134	KGE35119	Semiconductive ceramic	0.015 μ F/25	2	
C132,133	KGE35117	Semiconductive ceramic	0.01 μ F/25	2	
C135,138	KGE35832	Electrolytic	2.2 μ F/50	2	
C136	KGE34641	Styrol	470pF/50	1	
C137,143	KGE35831	Electrolytic	1 μ F/50	2	
C139	KGE10577	Mylar	0.047 μ F/50	1	
C140	KGE35785	Electrolytic	100 μ F/10	1	
C142	KGE35807	Electrolytic	4.7 μ F/25	1	
C201,202, 209	KGE33564	Ceramic	0.022 μ F/50	3	
C203	KGE35751	Ceramic	160pF/50	1	
C204	KGE33562	Ceramic	0.0047 μ F/50	1	
C205	KGE35363	Ceramic	0.01 μ F/50	1	
C206,212,213	KGE33565	Ceramic	0.047 μ F/50	3	
C207	KGE35117	Semiconductive ceramic	0.01 μ F/25	1	
C208	KGE35750	Ceramic	220pF/50	1	
C210	KGE35807	Electrolytic	4.7 μ F/25	1	

Ref No.	Part No.	Description	Remarks	Q'ty	Original Model
C211	KGE33367	Ceramic	1pF \pm 0.2pF/50	1	
C214	KGE35148	Semiconductive ceramic	0.001 μ F/25	1	
C215	KGE33409	Ceramic	220pF/50	1	
C216	KGE33442	Ceramic	10pF \pm 0.5pF/50	1	
R101	KGE26056	Carbon	2.7k Ω , 1/8 SR	1	
R102~112		Included in AM/FM tuner	(KGE49367)		
R114,119	KGE25234	Carbon	330 Ω , 1/4 UR	2	
R115,120	KGE25222	Carbon	100 Ω , 1/4 UR	2	
R116	KGE25278	Carbon	22k Ω , 1/4 UR	1	
R117	KGE25280	Carbon	27k Ω , 1/4 UR	1	
R118,124,131	KGE25246	Carbon	1k Ω , 1/4 UR	3	
R121	KGE25226	Carbon	150 Ω , 1/4 URK	1	
R122	KGE25272	Carbon	12k Ω , 1/4 UR	1	
R123	KGE25306	Carbon	330k Ω , 1/4 UR	1	
R125	KGE25275	Carbon	16k Ω , 1/4 UR	1	
R126,129	KGE25254	Carbon	2.2k Ω , 1/4 UR	2	
R127,128	KGE25260	Carbon	3.9k Ω , 1/4 UR	2	
R130	KGE25277	Carbon	20k Ω , 1/4 UR	1	
R132	KGE25274	Carbon	15k Ω , 1/4 UR	1	
R133	KGE25244	Carbon	820 Ω , 1/4 UR	1	
R201	KGE35300	Carbon	180k Ω , 1/4 UR	1	
R202,205,219	KGE25246	Carbon	1k Ω , 1/4 UR	3	
R203,210	KGE25234	Carbon	330 Ω , 1/4 UR	2	
R204	KGE25288	Carbon	56k Ω , 1/4 UR	1	
R206	KGE25256	Carbon	2.7k Ω , 1/4 UR	1	
R207	KGE25268	Carbon	8.2k Ω , 1/4 UR	1	
R208	KGE25254	Carbon	2.2k Ω , 1/4 UR	1	
R209,214	KGE25230	Carbon	220 Ω , 1/4 UR	2	
R211	KGE25262	Carbon	4.7k Ω , 1/4 UR	1	
R212	KGE25238	Carbon	470 Ω , 1/4 UR	1	
R213	KGE25270	Carbon	10k Ω , 1/4 UR	1	
R215	KGE25254	Carbon	2.2k Ω , 1/4 UR	1	
R216	KGE25784	Carbon	10k Ω , 1/4 SR	1	
R217	KGE25256	Carbon	2.7k Ω , 1/4 UR	1	
R218	KGE25278	Carbon	22k Ω , 1/4 UR	1	
R220	KGE25286	Carbon	47k Ω , 1/4 UR	1	

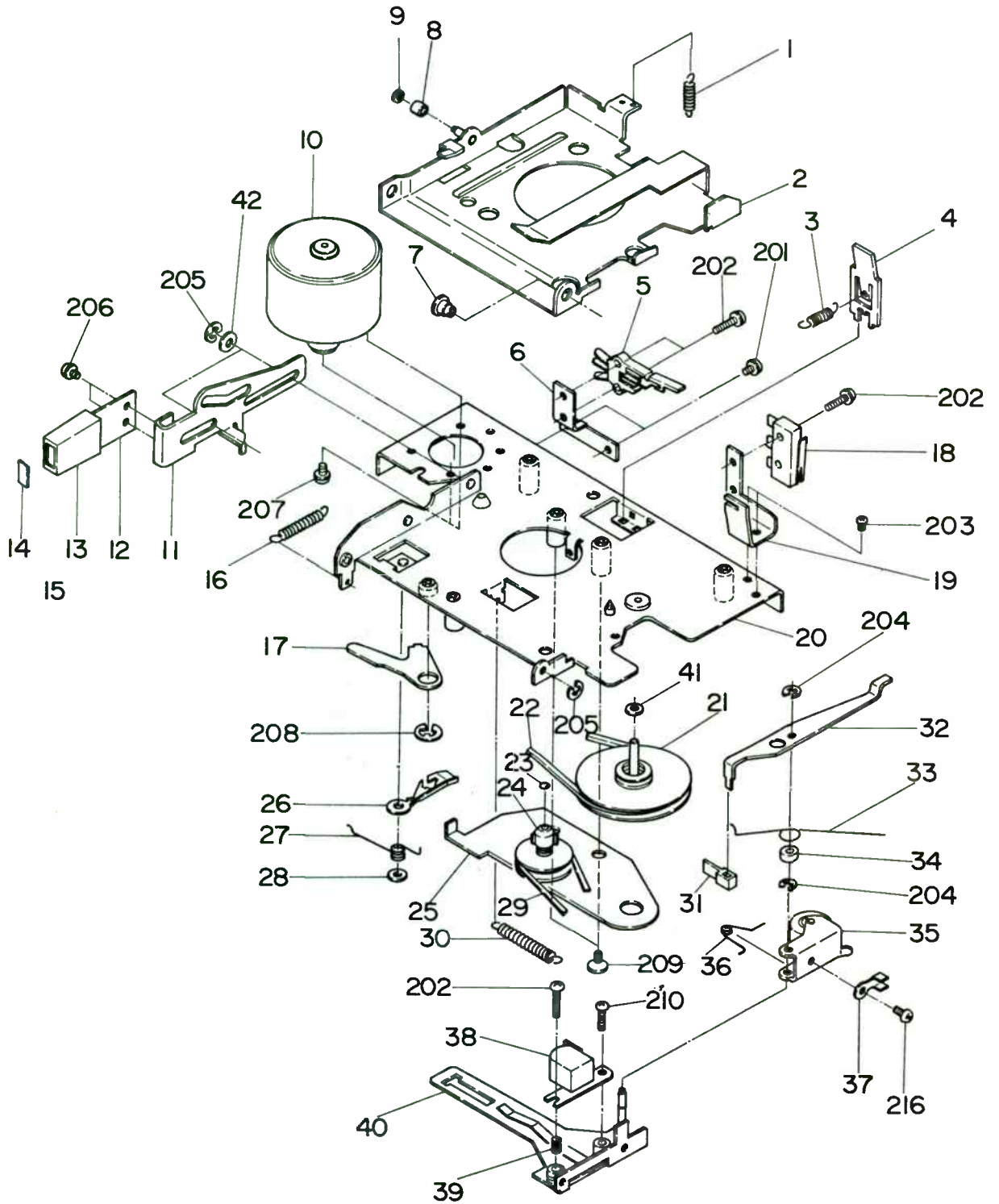
AM circuit board mounting diagram

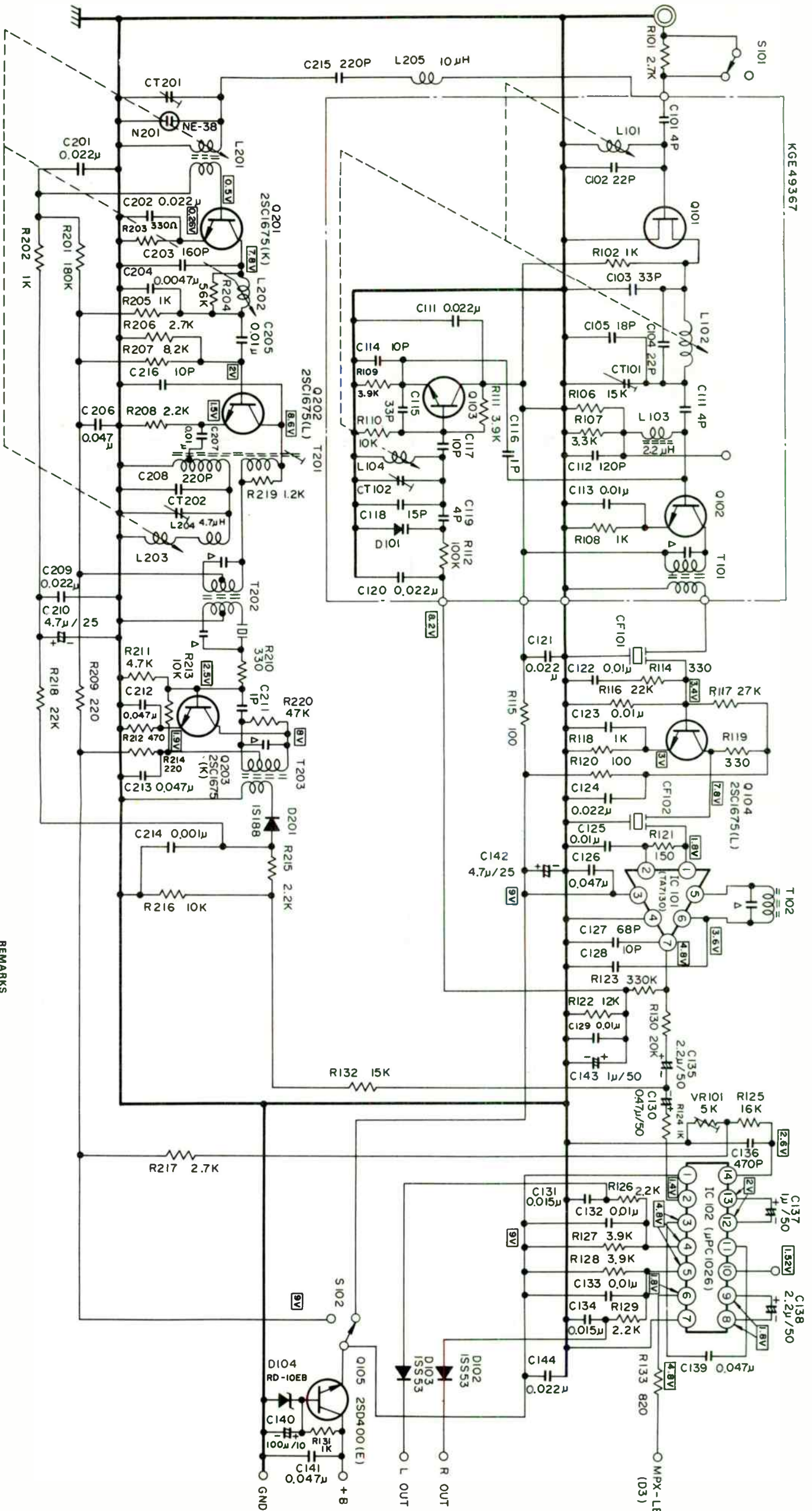


Amplifier section

Ref. No.	Parts No.	Description	Remarks	Q'ty	Original Model
IC1	KGE46551	IC	μ PC1032H	1	SCS-202
IC2	KGE46552	IC	M-51515L	1	SCS-202
D1	KGE46553	Diode	GM3Z	1	SCS-202
D2	KGE46505	Diode (LED)	SEL303E	1	SCS-222E
D3	KGE46504	diode (LED)	SEL103S	1	SCS-222E
L1	KGE47146	Choke coil	1mH	1	SCS-202
S1	CD-307-108	Power switch		1	SCS-222
S2		Included in VR	(KGE20685)		
S3	CD-307-105	Micro switch		1	SCS-222
C1	KGE35803	Electrolytic	1000 μ F/16	1	
C2	KGE35797	Electrolytic	47 μ F/16	1	
C3	KGE35159	Semiconductive ceramic	0.068 μ F/25	1	
C4	KGE31148	Mylar	0.1 μ F/50	1	
C5	KGE35798	Electrolytic	100 μ F/16	1	
C301,401	KGE35782	Electrolytic	22 μ F/10	2	
C302,308, 402,408	KGE10124	Ceramic	0.001 μ F/25	4	
C303,310, 403,410	KGE35784	Electrolytic	47 μ F/10	4	
C304,403	KGE35119	Semiconductive ceramic	0.015 μ F/25	2	
C305,307, 405,407	KGE35807	Electrolytic	4.7 μ F/25	4	
C306,406	KGE35138	Semiconductive ceramic	0.047 μ F/25	2	
C309,409	KGE35786	Electrolytic	220 μ F/10	2	
C311,411	KGE35788	Electrolytic	470 μ F/10	2	
C312,412	KGE35919	Aluminium fixed	0.22 μ F/25	2	
C313,314,315, 316,317	KGE35474	Feed-thru cap.	100pF/50	5	
R1	KGE25228	Carbon	180 Ω , 1/4 UR	1	
R2	KGE25244	Carbon	820 Ω , 1/4 UR	1	
R3	KGE25738	Carbon	120 Ω , 1/4 SR	1	
R301,401	KGE25270	Carbon	10k Ω , 1/4 UR	2	
R302,402	KGE25219	Carbon	75 Ω , 1/4 UR	2	
R303,403	KGE25298	Carbon	150 Ω , 1/4 UR	2	
R304,404	KGE25266	Carbon	6.8 Ω , 1/4 UR	2	
R305,306,307, 405,406,407	KGE20685	Variable resistor	50k Ω	1	
R308,408	KGE25174	Carbon	1 Ω	2	
R309,409	KGE20686	Variable resistor	80 Ω	1	

EXPLODED VIEW

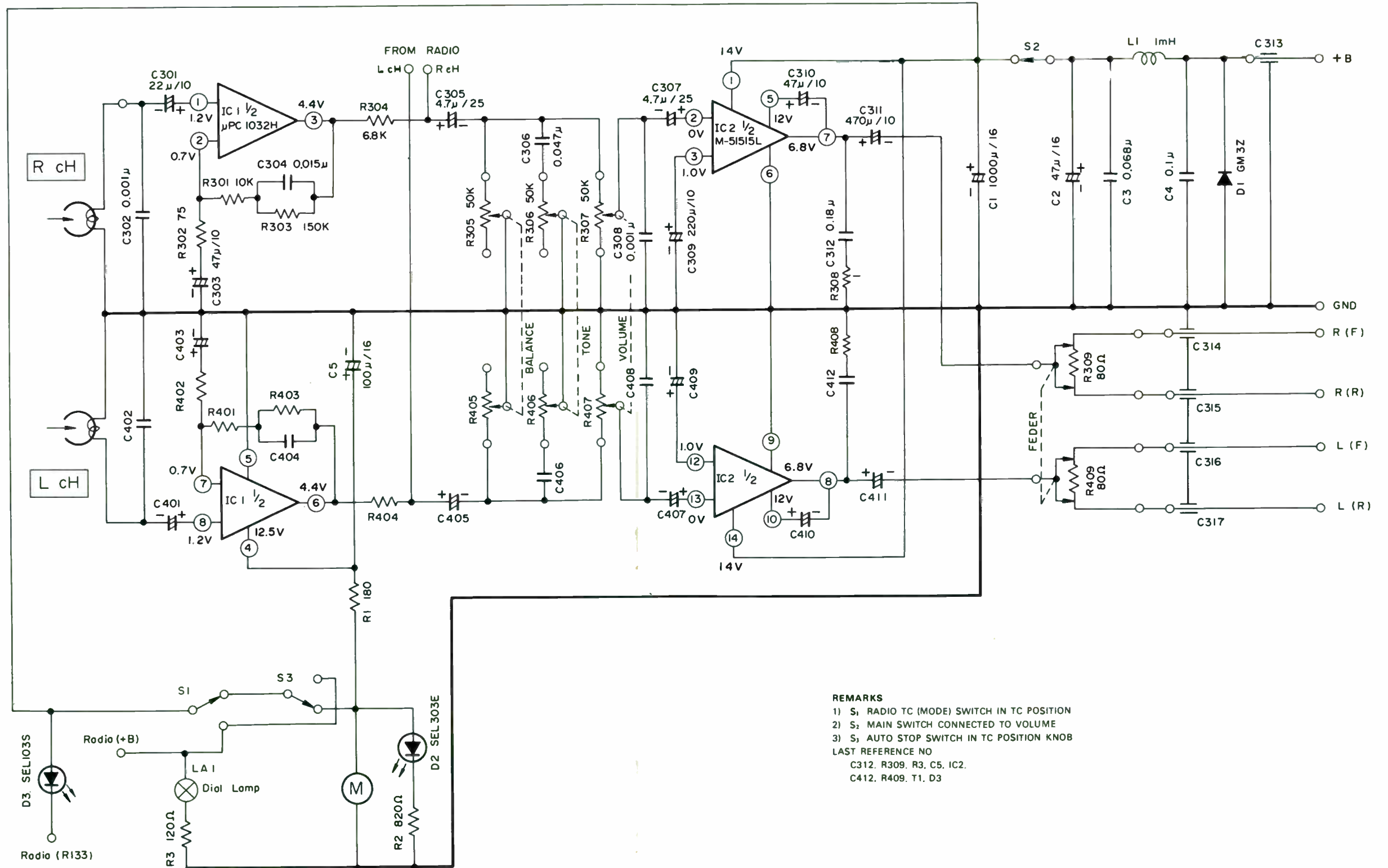




- REMARKS
- 1) SW101 LOC-DX CHANGE SWITCH DX POSITION
 - 2) SW102 FM-MW CHANGE SWITCH IN FM POSITION
 - 3) CAPACITORS MARKED WITH Δ ARE INCLUDED IN TRANSFORMER

Sankyo SCS-202

Amplifier circuit diagram



MECHANICAL PARTS LIST

Sankyo SCS-202

Drawing No.	Parts No.	Description	Q'ty	Remarks	Original Model
132	KGE012691	Pulley bracket ass'y	1		SCS-202
120	KGD012692	Front chassis ass'y	1		SCS-202
107	KGE012693	Upper case ass'y	1		SCS-202
124	KGD012694	Nose piece ass'y	1		SCS-202
141	KGE012744	Push button ass'y A	1		SCS-202
138	KGE012745	Push button ass'y B	1		SCS-202
15	KGE012746	Eject button ass'y	1		SCS-202
127	KGE012749	String ass'y	1		SCS-202
106	KGE012753	AU/FM base ass'y	1		SCS-202
118	KGE012754	Volume (50kΩ) ass'y	1		SCS-202
116	KGE012764	MW base ass'y	1		SCS-202
26	CD-307-030M	Lock cam	1		SCS-202
8	CD-307-033	Roller	1	φ4	SCS-202
21	CD-307-035	Flywheel	1		SCS-222
35	CD-307-038	Pinch roller ass'y	1		SCS-222
24	CD-307-039	Reel clutch ass'y	1		SCS-222
36	CD-307-046	Pinch roller spring	1		SCS-222
39	CD-307-047B	Azimuth spring	1		SCS-222
23	CD-307-101	Teflon washer	1	φ1.2	SCS-222
9	CD-307-102	Teflon washer	1	φ2.1	SCS-222
41	CD-307-104	Washer	1	φ4.1	SCS-202
18	CD-307-105	Micro switch	1	S3	SCS-222
5	CD-307-108	Power switch	1	S1	SCS-222
27	CD-307-170	FF lock spring B	1		SCS-202
28	CD-307-200	Lever stopper	1	φ3.1	SCS-202
22	CD-307-500	Drive belt	1		SCS-202
29	CD-307-501	Clutch belt	1		SCS-202
10	CD-309-100	DC MOTOR	1		SCS-202
20	CD-309-101A	Mech chassis ass'y	1		SCS-202
38	CD-309-106	Cassette head	1		SCS-222
4	CD-309-108	Lock lever	1		SCS-202
2	CD-309-201A	Cassette holder ass'y	1		SCS-202
7	CD-309-202	Cassette holder collar	1		SCS-202
11	CD-309-301	Eject lever	1		SCS-202
17	CD-309-302	Cam lever	1		SCS-202
12	CD-309-310	Eject lever B	1		SCS-202
40	CD-309-401	Head chassis ass'y	1		SCS-202
34	CD-309-403	Auto lever collar	1		SCS-202
32	CD-309-415	Auto lever	1		SCS-202
31	CD-309-417	Contact	1		SCS-202
25	CD-309-509A	Flywheel support ass'y	1		SCS-202
42	CD-309-600	Washer	1	φ8	SCS-202
19	CD-309-601	Micro switch angle	1		SCS-202
6	CD-309-613	Power switch holder	1		SCS-202
30	CD-309-701	Head chassis spring	1		SCS-202
3	CD-309-702	Lock lever spring	1		SCS-202
1	CD-309-703	Cassette holder spring	1		SCS-202
16	CD-309-704	Eject spring	1		SCS-202
33	CD-309-705	Auto lever spring	1		SCS-202
37	KGE3505	Wire clamp	1		SCS-222
101	KGE9541	Bracket	1		SCS-222
102	KGE13841	FCC label	1		SCS-222
130	KGE20686	Tuning shaft with VR	1		SCS-202

Drawing No.	Part No.	Part Name	Q'ty	Remarks	Original Model
131	KGE30092	Trimmer condenser			SCS-222
137	KGE42488	Push switch	2		SCS-222
109	KGE42522	4P socket	1		SCS-202
123	KGE46504	Lamp (For MPX)	1	Red (LED)	SCS-222E
122	KGE46505	Lamp (For tape)	1	Green(LED)	SCS-222
111	KGE49106	Fuse	1	3A	SCS-202
112	KGE49321	Fuse holder	1		SCS-202
119	KGE49379	Dial lamp	1	LA1	SCS-222E
114	KGE49366	Antenna holder	1		SCS-202
133	KGE49367	AM⊙FM ~ TUNER	1		SCS-202
115	KGE49374	Filter case ass'y	1		SCS-202
104	KGE50737	Cover plate	1		SCS-222
110	KGE96135	G label	1		SCS-202
113	KGE96136	P label	1		SCS-202
129	KGE99578	Washer	1		SCS-222E
136	KGD99866	Bottom plate	1		SCS-202
121	KGE99867	Volume holder	1		SCS-202
117	KGC99869	Bottom case	1		SCS-202
126	KGE99870	Back plate	1		SCS-202
128	KGE99871	Indicator	1		SCS-222E
108	KGE99872	Filter clamp	1		SCS-202
125	KGD99877	Pulley holder	1		SCS-202
105	KGE99879	IC holder	1		SCS-202
103	KGE99886	Model name plate	1		SCS-202
139	KGE100117	Push button	2		SCS-202
13	KGE100118	Eject button	1		SCS-202
142	KGE100119	Button name plate A	1		SCS-202
140	KGE100120	Button name plate B	1		SCS-202
14	KGE100121	Button name plate C	1		SCS-202
144	KGD100122	Front panel	1		SCS-202
147	KGD100123	Inner knob	2		SCS-202
146	KGD100124	Outer knob	2		SCS-202
148	KGE100125	Ornamental plate	2		SCS-202
134	KGE100133	Joint Slider A	2		SCS-202
135	KGE100134	Joint slider B	1		SCS-202
143	KGD100351	Back-up plate	1		SCS-202
145	KGE100543	Ornamental plate B	1		SCS-202

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For models covered before 1970, see the Annual Index.

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		5HT1409	167	8991829	83	5VW3401	193	C979	182	DA74PB (Pg 21)	136
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		5HT2409	170	8992252	83			C986A	269	DCF75DLX/B	235
		5HT2511	219	8992290	82			C986C	288	DCF75QDX	226
		5HT2805	279	8992416	86			C990	162	DCF75TPX/A	219
		5HT3510	216	8992417	84			C993	283	DGC10	287
		5HT3607	231	8992522 (2HT1244)	133	AMIC	179	C997B	284	DMO75CXP	218
		5HT3804	277	8992522 (2HT1303)	166	AMF15	192	CA73FM (Pg 21)	153	DMO75DLX/B	235
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		5JC1603/613	234	8992525	166	BAP73PB (Pg 21)	136	CA73PB (Pg 21)	136	DMO75TPX/A	219
		5JC1709	274	8992770 (1RA1226)	155	BAP74FM (Pg 21)	133	CA74FM (Pg 21)	133	DST73FM (Pg 21)	133
		5JC1803/7	278	8992770 (1RA1301)	166	BAP74MPX (Pg 45)	136	CA74MPX (Pg 45)	136	DST73MPX (Pg 45)	136
		5JC3603	231	8992771	131	BAP74PB (Pg 21)	136	CA74PB (Pg 21)	136	DST73PB (Pg 21)	136
		5JC3802	277	8992829 (1JA1227)	133	BKS73FM/MPX	181	CA75CXP	218	DST74FM (Pg 21)	133
		5KJ1405	167	8992829 (1JA1305)	166	BKS73PB	174	CA75DLX/B	235	DST74MPX (Pg 45)	136
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		3591052	87	Micro 42	107	BU75TPX/A	219	CH75QDX	226	DVA73PB (Pg 5)	138
		3601578	87	Micro 44	110	C80	90	CH75TPX/A	219	DVA74FM (Pg 5)	137
		3614434	86			C110	133	CHT73DLX (Pg 21)	160	DVA74MPX	177
		3614435	84			CA05	138	CHT73FM/MPX	181	DVA74PB (Pg 5)	136
		3616442	86			CA06	183	CHT73PB	174	DVA75CXP	218
		3631192	82	6703007	290	CA10	92	CHT74DLX (Pg 21)	160	DVA75DLX/B	235
		3631193	83	6703008	285	CA20	93	CHT74FM/MPX	181	DVA75TPX/A	219
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		3672718	216	792	205	C560	94	CN075CXP	218	FDT73PB	174
		3674344 (1HT/2HT/5HT1509)	212	3900,3901	209	C563	135	CN075DLX/B	235	FDT74FM/MPX	181
		3674344 (2HT1432)	167	4601	212	C565	94	CN075MXD	216	FDT74PB	174
		3676501	217	4801	217	C575	93	CN075TPX/A	219	FDT75CXP	218
		3678002	167			C575A	177	CO73FM (Pg 5)	137	FDT75DLX/B	235
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2CR7	105	D2GPB1/BK1	75	12GPB1	98	22BFPK1	109	31YFM1 (Pg 25)	78	42AFMT1	169
2CR4107	105	03AFM1	80	12GPBK1	98	22BFPK2 (Pg 99)	109	31YFP1 (Pg 25)	127	42APB1, 42AFPK1	173
2FBF/BFAK	127	03AFM2	88	13AFM1	105	22BPB1	118	32AFM1	144	42APB1, 42APBK1	175
2FB1	127	03APB1	98	13APB1	101	22BPB2	122	32AFM2	154	42APBK3 (Pg 85)	175
2FB0	127	03BFM1	80	13AT411	97	22BPB2A	138	32AFM3	154	42APBT1	170
2FBTB, 2FBTPAC	126	03BFM2	88	13BFM1	98	22BPBK1	118	32AFMT1	152	42BFM1	179
2FBZ	127	03BPB1	75	13BFM2	98	22BPBK2	115	32AFMT2	148	42BFM2	168
2FD3	104	03BT411	78	13BFMT1	97	22BPBK2A	138	32AFP1	137	42BFM3	176
2FD4103	104	03BFM1	80	13BFMT2	117	22BPBK3	122	32AFP2	149	42BFMT1	169
2FD4607	223	03BFM2	88	13BPB2	101	22BPBT1	117	32AFP3	137	42BFP1	172
2FD4608	223	03FPB1	73	13BPBT2	96	22BPBT2	127	32AFP4	149	42BFP2	173
2LN4110	102	03ET411	78	13BPBT2	118	22BT411	112	32APB1	140	42BFPK1	172
2MR1	105	03ET412	78	14AFP1	101	22FFM1	113	32APB2	140	42BFPK2	173
2MR4111	105	04AFP1	87	14APB1	106	22FFP1, 22FFP2	120	32APBK1	140	42BPB1, 42BPBK1	175
2MT4108	104	04AFP2	88	14AT411	97	22FFP3 (Pg 89)	120	32APBK2	138	42BPBT1	170
2MY4106	105	04APB1	100	14BFM1	102	22FFPK1, 22FFPK2,		32APBT1	145	42BFM1 (Pg 81)	113
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2MZ4101	104	04AT412	81	14BFMT1	98	22FPB1	114	32BFMT1	152	(Pg 89)	120
2TB4109	102	04BFM1	83	14BFMT2	120	22FPB2	126	32BFMT2	148	42FPB1, 42FPBK1	174
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5F1RAM4	178	04BPP1	77	14BFP2 (Pg 11)	96	22FPBK2	126	32BPB1	140	42GPBK3 (Pg 85)	175
5F2RFM4	178	04BPB2	73	14BPPB1	100	22FT451	112	32BPB2, 32BPBK1	140	43APB1, 43APBK1	173
5F3RMX4	180	04BPP4	77	14BPPB2	114	22GFM1	113	32BPBK2	138	43BFM1	171
5FD2507	200	04BT411	82	14BT41	96	22GFP1, 22GFP2,		32BPBT1	145	43BFMT1	168
5FD4510	199	04BT412	81	14LPB2	97	22GFP3 (Pg 89)	120	32BFM1 (Pg 81)	113	43BFMT2	176
5FD4706 (Pg 45)	228	04EFM1	83	14PPB1	96	22GFPK1, 22GFPK2,		32FFP1 (Pg 89)	120	43BFPK1	176
5FD4802/3	275	04EFM2	85	15CFMT1, 15CFMT2,	97	22GFPK3	120	32FFPK1 (Pg 89)	120	43BFPK1, 43BPBK1	173
5FD4804 (Pg 45)	228	04EFP1	78	15CFMT3	114	22GPB1	114	32FPB1 (Pg 107)	126	43BPT1	172
5DS4806	275	04EFP2	88	15CFP1	100	22GPB2	126	32FPBK1 (Pg 107)	120	44AFM1	175
5LN4707 (Pg 45)	228	04EPB1	77	15CFP2 (Pg 29)	100	22GPBK1	114	32GPB1	140	44AFM2	172
5LN4714 (Pg 45)	228	04EPB2	73	15CMW1	102	22GPBK2	126	32GPB2, 32GPBK1	140	44AFMT1	173
5LN4805 (Pg 45)	228	04EPB4	77	15CMW2 (Pg 19)	102	22XT411	112	32GPBK2	138	44AFP1	170
5PN2318	178	04LPB1	100	15CT411	97	23AFM1	112	33AFM1 (PCB		44AFP1	170
5PN2411	179	04PPB1	100	16TFP1	104	23AFP1	115	AR151)	139	44APB1	171
5PN2508 (Pg 79)	179	05CFP1	76	16TRMP1	96	23AFP2/P3	128	33AFMT1	145	44APBK1	171
5PN2513	200	05CFP2	93	16TT411	96	23APB1	120	33AFMT2	144	44APBT1	169
6AD6DA19A171	226	05CFW1	79	16TTCP1	97	23APB2	128	33AFP1	146	44BFM1	175
6AD6DA18806AA	226	05CMM1/PMK1	78	16UT411	112	23AT411	112	33AFP2	146	44BFM3	172
6AD6EA19A171	221	05CT411	83	20CT411	115	23BFM1	110	33APB1	142	44BFMT1	173
6FD2507	200	05CT412	94	21AFM1 (Chev.)	109	23BFMT1	117	33APB2	147	44BFP1	170
9FBF	73	06TCFP2	92	21AFM1 (Pont.)	113	23BFP1	114	33APBK1	142	44BPB1	171
9FBL	71	06TT411	84	21AFMT1 (Pg 19)	75	23BPB1	115	33APBK2	147	44BPT1	169
9FBLU	71	06TT412	74	21AFP1 (Chev.)	117	23BPB2	125	33APBT1	140	45RFMT1 (PCB	
9FBS	76	06TTCP1	93	21AFP1 (Pont.)	120	23BPP1	118	33BFM1 (PCB		AR151)	175
9FBX	80	11AFM1	100	21AFP2/P3	127	24AFP1	118	AR151)	139	45TFP1 (Pg 25)	127
9MAB1	71	11AFP1	104	21AFP3 (Chev.)	117	24AFP2/P3	129	33BFMT1	145	45TPB1, 45TTCP1	167
73EB18K810AA	153	11APB1	96	21AFP4 (Pont.)	120	24APB1	115	33BFMT2	144	46CFMT1/T2	170
77EB18K810AA,		11BFM1/M2	101	21AFP4/K3	127	24APB2	125	33BFP1	146	46CFP1	175
AB, AC	279	11BFM3 (Pg 25)	101	21APB1 (Chev.)	110	24AT411	112	33BPB1	142	46CMM1	178
		11BFMT1	105	21APB1 (Pont.)	114	24BFM1	113	33BPB2	147	46CMM2	179
		11BFMT2	118	21APB2 (Chev.)	124	24BFMT1	120	33BPT1	140	50APB1	192
		11BFP1/P2	93	21APB2 (Pont.)	126	24BFP1	110	34AFM1	142	50APB3 (Pg 29)	192
		11BFP3/PK3 (Pg 47)	93	21APBK1	114	24BPB1	117	34AFMT1	150	50APBK1	192
		11BFPK1/K2	93	21APBK2 (Chev.)	124	24BPB2	125	34AFMT2	145	50APBK3	192
		11BPPB2	97	21APBK2 (Pont.)	126	24BPT1	114	34AFP1, 34AFP1	140	50BFM1 (Pg 103)	188
		11BPPK2	97	21APBT1 (Pg 57)	74	24BPT2	128	34APB1	139	50BFMT1/T6	191
		11BPT1	102	21AT411	112	24BT411	112	34APB2	144	50BFMT3	210
		11BPT2	115	21BFM1	114	24LPB1	114	34APBK1	139	50BFP1/PK1	
		11BT411	97	21BFMT1	118	24LPB2	126	34APBK2	144	(Pg 103)	191
		11HBP2	97	21BFP1/PK1	113	24PPB1	112	34APBT1	138	50BPB1	192
		11HFP2	93	21BFP2/PK2 (Pg 61)	113	24PPB2	127	34BFM2	142	50BPB3 (Pg 29)	192
		11TFP1	104	21BPB1	112	25CFM1/MT2	114	34BFM4	172	50BPBK1	192
		11TPB1	96	21BPB2	120	25CFP1	112	34BFMT1	145	50BPBK3 (Pg 29)	192
		11TT411	74	21BPBK1	112	25CMM1/HM2	110	34BFP1	140	50BPT1	190
		11VFP1	104	21BPBK2	120	25CT411	112	34BPB1	139	50BPT2	190
		12AFM1	106	21BPBT1	115	26TCFP2/P3	127	34BPB2	144	50BPT3	215
		12AFP1 (71 Pont.)	97	21BPP2	125	26TFP1	117	34BPT1	148	50HFM1 (Pg 103)	188
		12AFP1 (72 Pont.)	120	21HPB1	112	26TRMP1	110	35RMT1 (PCB		50HFP1/PK1	
		12AFP1 (71 Pont.)	97	21HPB2	120	26TRMP2	124	AR151)	175	(Pg 103)	191
		12AFP1 (72 Pont.)	120	21HPBK1	112	26TT411	112	35TFP1 (Pg 25)	127	50HPT1	220
		12APB1	98	21HPBK2	120	26TTCP1	110	35TRMP1 (Pg 47)	124	51APB1/BK1	187
		12APBK1	98	21TFP1	117	26TTCP2	124	35TTCP1 (

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51BPBT1/T2	188	62BFP1/PK2	189	80AFMCI	262	7305841 (51SVPB2)	217	7313562 (12FFPK1)	120	7930134 (24BPBT2)	128
51BPBT3	207	(Pg 103)	189	80BCB1	264	7305841 (21TPB1)	110	72 Pont.	120	7930134 (34BPBT1)	138
51SVPB1	186	62BPPB1/BK1	193	80BFCT1	261	7305841 (21TPB2)	124	7313562 (22FFPK1/K2/	120	7930144 (14BFTM1)	98
51SVPB2	217	(Pg 107)	193	80BFCT2	261	7305841 (41SVPB1)	167	K3)	120	7930144 (14BFTM2)	120
51TFP1	189	62BPPB2	256	80BFMI	265	7305841 (51SVPB1)	186	7313604 (14APB1)	106	7930144 (24BFTM1)	120
51TPB1	186	62FFM1 (Pg 85)	191	80BFMD1	259	7305841 (61/		7313604 (24APB1)	115	7930161	115
51TPB2	217	62FPB1/PK1	189	80BFMT1/T2	261	71SVPB1)	253	7313971 (11BT411)	97	7930202 (12BPK2)	105
51XFMI	191	(Pg 85)	189	80BFPC1	262	7306914	70	7313971 (21AT411)	112	7930202 (22BPK1)	118
51XFMT1/T2	192	62FPB1/PK1	186	80BFPP1	260	7306934	70	7314201 (11BPB2)	97	7930202 (22BPK2)	115
51XFP1, 51XFPK1	189	(Pg 87)	186	80BFPK1	260	7306964	70	7314201 (21BPB1)	112	7930212 (12BPK1)	102
51XPB1	186	62FPB1 (7313522)	252	80BFTC1	264	7307205	70	7314201 (31BPB1)	120	7930212 (22BPK1)	109
51XPB2/BK6	217	62FPBK1	252	80BFTD1	265	7307302 (12APB1)	98	7314201 (31BPB1)	137	7930212 (22BPK2)	109
51XPBK1	186	63AFM1 (Pg 103)	188	80BFTC2	264	7307302 (22APB1)	114	7314201 (31BPB2)	145	(Pg 99)	109
51XPBT1/T2	193	63AFP1/PK1	189	80BFTD1	265	7307303	71	7314201 (41BPB1)	165	7930224	117
51YFMI	191	(Pg 103)	189	80BPPB1 (Pg 93)	239	7307312	72	7314201 (51BPB1)	187	7930234 (14BFP1)	96
51YFP1	189	63APB1/BK1	190	80BPPB1/T2	259	7307313	74	7314201 (71BPB1)	239	7930242 (24BFP1)	110
52AFM1	190	(Pg 93)	190	81TFM2	270	7307332 (12GPB1)	98	7314211 (11BFMI/		7930242 (12BPBT1)	101
52AFMT1, 52AFMT2	187	63APB2	256	81TFP1 (Pg 93)	239	7307332 (22GPB1)	114	M2)	101	7930242 (12BPBT2)	117
52AFMT3	215	65HDPB1 (Pg 87)	186	81TPB1 (Pg 43)	217	7307332 (22GPB2)	126	7314211 (21BFMI)	114	7930242 (22BPBT1)	117
52AFP1, 52AFP1K1	189	65TCFP1 (Pg 85)	189	81TPBK1	273	7307332 (92GPB1)	72	7314211 (31BFMI)		7930244 (14BFP1)	102
52APB1, 52APBK1	193	65TCFP1 (Pg 87)	186	81YFMT1/T2	262	7307402 (12AFP1)		(PCB AR151)	140	7930244 (24BFP1)	127
52APBT1, 52APBT6	192	66CFP1 (Pg 35)	190	81YFP1	260	71 Pont.	97	7314211 (41BFMI)	174	7930244 (24BFP1)	113
52APBT3	213	66CFM1 (Pg 29)	213	82XFM1	242	7307402 (12AFP1)		7314211 (41BFM2)	169	7930244 (24BFP2)	125
52BPM1	190	70AFM1	242	83BPB1	273	72 Pont.	120	7314211 (51BFMI/		7930252	115
52BFMT1, 52BFMT2	187	70AFMT1	255	83BPPK1	273	7307402 (22AFP1/		M2)	191	7930254 (14LPB2)	96
52BFMT3	215	70AFMT2	255	86CFMD1	260	P2)	120	7314221	93	7930254 (24LPB1)	114
52BFP1, 52BFPK1	189	70APB1	239	86CFMT1/T2	263	7307412	73	7314291	104	7930254 (50LPB1)	126
52BPM1, 52BPMK1	193	70APBK1	239	86CFM1	265	7307432 (12GFP1)		7895080	243	7930254 (30LPB2)	139
52BPT1, 52BPT2	192	70BCB1	250	86CFM1	263	71 Pont.	97	7895366	253	7930254 (40LPB1)	171
52BPT3	213	70BCB2	254	86CFM1	263	7307432 (12GFP1)		7895376	247	7930254 (50LPB1)	192
52FPB1	186	70BFM1	242	86CFM1	260	72 Pont.	120	7895511	255	7930492 (12FTA51)	97
52FPB2/BK2	217	70BFM1/MC2	250	86CFM1	260	7307432 (22GFP1/		7895511-1	229	7930492 (22FTA51)	112
52FPBK1	186	70BFM1	254	86CFM1	263	P2)	120	7895511	225	7930495	112
52GPB1, 52GPBK1	193	70BFM1/D2	257	86CFM1	263	7307456	97	7896001 (Pg 47)	221	7930542 (12AFMI)	106
53APB1	190	70BFMT1/T2	245	86CFM1	263	7307554	112	7896111	251	7930542 (24AFMI)	113
53APB2 (Pg 93)	190	70BPP1	240	86CFM1	263	7307615	74	7896200	246	7930631	102
53APBK1	190	70BPPK1	240	86CFM1	264	7307702 (12AT411)	97	7896210	245	7931466 (26TFP1)	117
53APB2 (Pg 93)	190	70BPPB1	239	86CFM1	264	7307702 (22AT411)	112	7896296	244	7931466 (26TCFP2)	127
53BFM1	188	70BPPB1	239	86CFM1	264	7307813	74	7896306	253	7931466 (55TFP1)	189
53BFMT1, 53BFMT2	193	70BPPB1/T2	246	86CFM1	263	7307863	70	7896316	247	7931766 (16TRMP1)	96
53BFMT3	219	70EFM1/H2	243	86CFM1	263	7308166	73	7897241	251	7931766 (26TRMP1)	114
53BFP1, 53BFPK1	191	70EFM1/H2	243	86CFM1	263	7308166 (16UT411)	97	7897366	253	7931766 (26TRMP2)	120
53BPB1	190	70EFM1/H2	243	86CFM1	263	7308166 (26TT411)	112	7897401	253	7931766 (55TPB2)	217
53BPB2 (Pg 93)	190	70EFM1/H2	243	86CFM1	263	7308203	71	7897411 (Pg 85)	189	7931766 (45TPB1)	167
53BPBK1	190	70EFM1/H2	243	86CFM1	263	7311205 (96TT412)	71	7897770	242	7931766 (55TPB1)	186
53BPBT1/T2	195	70EFM1/H2	243	86CFM1	263	7312234 (14PPB1)	97	7897780	242	7932743	101
53BPBT3	210	70EFM1/H2	243	86CFM1	263	7312234 (24PPB1)	112	7898150	246	7932753	105
54BFM1/H2	189	70EFM1/H2	243	86CFM1	263	7312234 (24PPB2)	127	7898220	250	7932763	97
54BFP1, 54BFPK1	188	70EFM1/H2	243	86CFM1	263	7312234 (94PPB1)	70	7898340	262	7933241 (11APB1)	96
54LPB1	192	70EFM1/H2	243	86CFM1	263	7312332 (12GFM1)	106	7898340 (90BFPK1)	286	7933241 (21APB1)	110
55TFP1	189	70EFM1/H2	243	86CFM1	263	7312332 (22GFM1)	113	7898426	256	Chev.	110
55TPB1	186	70EFM1/H2	243	86CFM1	263	7312892 (12APBK1)	98	7898433	239	7933241 (21APB1)	114
55TPB2	217	70EFM1/H2	243	86CFM1	263	7312892 (12APBK1)	98	7898436	250	Pont.	114
55TTC1	186	70EFM1/H2	243	86CFM1	263	7312892 (22APBK1)	114	7898440 (91YFMI)	283	7933241 (21APB2)	124
55TTC2	197	70EFM1/H2	243	86CFM1	263	7312892 (22APBK2)	126	7898443	239	Chev.	124
56CFM1/T2/T3	214	70EFM1/H2	243	86CFM1	263	7312912 (12GPBK1)	98	7898450 (90BFM1)	283	7933241 (21APB2)	126
56CFM2	213	70EFM1/H2	243	86CFM1	263	7312912 (22GPBK1)	114	7898460	259	Pont.	126
56CFP1	190	70EFM1/H2	243	86CFM1	263	7312912 (22GPBK2)	126	7898460 (90BFMD1)	283	7933241 (41XPB1)	167
56CFM1, W2	192	70EFM1/H2	243	86CFM1	263	7312922 (12AFP1)	97	7898470	262	7933241 (51XPB1)	186
60APB1/BK1 (Pg 29)	192	70EFM1/H2	243	86CFM1	263	71 Pont.	120	7898470 (90BFMCI)	286	7933241 (51XPB2/	
60BFM1 (Pg 13)	189	70EFM1/H2	243	86CFM1	263	7312922 (12AFP1)	97	7898473	243	BK2)	217
60BFP1/PK1 (Pg 21)	188	70EFM1/H2	243	86CFM1	263	72 Pont.	120	7898490	261	7933251 (11AFP1)	104
60BPPB1/PK1 (Pg 29)	192	70EFM1/H2	243	86CFM1	263	7312922		7898490 (91YFMT1)	283	7933251 (21AFP1)	109
60BPPB2	256	70EFM1/H2	243	86CFM1	263	(22AFP1/K2/K3)	120	7898493	245	Chev.	120
60HFM1 (Pg 57)	191	70EFM1/H2	243	86CFM1	263	7312942 (12GFP1)	120	7898500	259	7933251 (21AFP1)	109
60HFM1/T2	221	70EFM1/H2	243	86CFM1	263	7312942 (22GFP1/K2/		7898500 (90BPPB1)	283	Pont.	120
60HFP1/PK1 (Pg 27)	186	70EFM1/H2	243	86CFM1	263	K3)	120	7898510	261	7933251 (21AFP2/	
60HFP1 (Pg 103)	191	70EFM1/H2	243	86CFM1	263	7313091	70	7898510 (90BFMT1)	283	P5)	127
60HFPK1 (Pg 103)	191	70EFM1/H2	243	86CFM1	263	7313514 (14AFP1)	101	7898540	255	7933251 (51XFP1/	
60HPB1/BK1 (Pg 65)	187	70EFM1/H2	243	86CFM1	263	7313514 (24AFP1)	118	7898940	250	PK1)	189
60HPBT1/T2	220	70EFM1/H2	243	86CFM1	263	7313514 (24AFP2)	129	7899443	250	7933261 (11AFMI)	100
60XFM1 (Pg 85)	191	70EFM1/H2	243	86CFM1	263	7313522 (12FPB1)	98	7930012 (22BPB2)	122	7933261 (21AFMI)	109
60XFP1/PK1 (Pg 85)	189	70EFM1/H2	243	86CFM1	263	7313522 (22FPB1)	114	7930015 (15CFP1)	100	Chev.	109
60XPB1/BK1 (Pg 87)	186	70EFM1/H2	243	86CFM1	263	7313522 (22FPB2)	126	7930015 (25CFP1)	112	7933261 (21AFMI)	113
61BFMT1 (Pg 29)	206	70EFM1/H2	243	86CFM1	263	7313522 (42FPB1)	174	7930022 (12BFP1)	102	7933261 (51XFM1)	191
61BFMT2 (Pg 47)	221	70EFM1/H2	243	86CFM1	263	7313522 (52FPB1)	186	7930022 (22BFP1)	109	7933271 (21BPBT1)	74
61BPPB1/BK1 (Pg 65)	187	70EFM1/H2	243	86CFM1	263	7313522 (62FPB1)	252	7930022 (22BFP2)		7933271 (51XPBT1/	
61BPBT1 (Pg 5)	207	70EFM1/H2	243	86CFM1	263	7313522 (62FPBK1)	252	(Pg 99)	109	T2)	193
61BPBT2	256	70EFM1/H2	243	86CFM1	263	7313522 (72FPB1)	252	7930025	102	7933281 (21AFMT1)	
61GVFP1 (Pg 85)	189	70EFM1/H2	243	86CFM1	263	7313522 (72FPBK1)	252	7930032 (12BPM1)	100	(Pg 19)	75
61GVPB1	253	70EFM1/H2	243	86CFM1	263	7313532 (12FFP1)		7930032 (22BPM1/		7933281 (51XFM1/	
61HFM2 (Pg 47)	221	70EFM1/H2	243	86CFM1	263	72 Pont.	120	M2)	112	T2)/	192
61HFM3	229	70EFM1/H2	243	86CFM1	263	7313532 (22FFP1/		7930033	98	7933291 (11BPBK2)	97
61SVPB1	253	70EFM1/H2	243	86CFM1	263	P2)	120	7930035	96	7933291 (21BPBK1)	112
61TFP1/PK1	218	70EFM1/H2	243	86CFM1	263	7313542 (12FFMI)	106	7930055 (13BPBT1)	96	7933291 (21BPBK2)	120
61TPB1/BK1	217	70EFM1/H2	243	86CFM1	263	7313542 (22FFMI)	113	7930055 (13BPBT2)	118	7933291 (31BPBK1)	137
61XFMI (Pg 85)	191	70EFM1/H2	243	86CFM1	263	7313542 (52FFMI)	191	7930061	95	7933291 (31BPBK2)	145
61YFM1 (Pg 85)	191	70EFM1/H2	243	86CFM1	263	7313552 (12FPBK1)	98	7930063 (13BPM1)	97	7933291 (41BPBK1)	165
62AFM1 (Pg 103)	190	70EFM1/H2	243	86CFM1	263	7313552 (22FPBK1)	114	7930063 (13BPM2)	117	7933291 (51BPBK1)	187
62AFP1/PK1	189	70EFM1/H2	243	86CFM1	263	7313552 (22FPBK2)	126	7930093	117	7933291 (71BPBK1)	239
(Pg 103)	189	70EFM1/H2	243	86CFM1	263	7313552 (42FPBK1)	174	7930121 (11BPM1)	105	7933301 (11BPB3/PK3)	
62APB1/BK1	193	70EFM1/H2	243	86CFM1	263	7313552 (52FPBK1)	186	7930121 (12BPM1)	104	(Pg 47)	93
(Pg 107)</											

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